

Aurizon Network Pty Ltd

Capital Expenditure 2011-12

Engineering Assessment

July 2013





Engineering Assessment of Aurizon Network Pty Ltd Capital Expenditure 2011-12

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Executive summary

Introduction and background

Under Aurizon Network Pty Ltd's 2010 Access Undertaking (UT3), the Queensland Competition Authority (the Authority) has approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Region (CQCR) and is required to review, and if appropriate, approve additions to this RAB. In November 2012, Aurizon Network Pty Ltd submitted a claim amounting to \$1.35bn for its 2011-2012 capital expenditure to be added to the RAB.

The Authority commissioned Sinclair Knight Merz (SKM) to provide technical engineering and prudence of capital expenditure advice to assist with the assessment of Aurizon Network Pty Ltd's capital expenditure claim. This work conformed to the requirements defined in Schedule A - Maintenance of Regulatory Asset Base (Schedule A) of UT3. The Authority, drawing on advice from SKM, is required to assess if:

- the work undertaken by Aurizon Network Pty Ltd in respect of customer approved projects is consistent with the scope of works approved by customers;
- the scope of projects not pre-approved by customers, mostly asset replacement, is prudent, that is it was needed to meet the requirements of the delivery of a regulated service;
- the standard of each project is prudent; and
- the cost of each projects is prudent.

Capital expenditure review

A representative sample of the 108 capital expenditure projects comprising Aurizon Network Pty Ltd's 2011-2012 capital expenditure claim (2011-2012 claim) were selected for detailed review by SKM's team of rail engineers and regulatory consultants in consultation with the Authority. Given the similarity of the four Blackwater system feeder station projects in the 2011-2012 claim, the Authority requested that SKM reviews the Raglan Feeder Station project in detail and then, following a higher level review of the three remaining feeder stations, advise whether the findings of the Raglan Feeder Station review could reasonably be applied to all four feeder station projects in the Blackwater system.

Early in the assessment process Aurizon Network Pty Ltd chose to withdraw one of the sample projects and a replacement project was selected for review following consultation between the Authority, Aurizon Network Pty Ltd and SKM.

In total, SKM undertook a prudence assessment of 19 projects in the 2011-2012 claim. This included major system enhancement projects and a selection of smaller asset replacement projects. In undertaking the prudence assessment, SKM took particular regard to Schedule A of UT3.

Aurizon Network Pty Ltd provided a significant amount of information in response to project-specific requests for information raised by SKM. This information enabled SKM to determine each project's status (i.e. commissioned or ongoing) and conduct an assessment of the prudence of their scope, standard and cost over a six-month period.

SKM would like to take this opportunity to thank Aurizon Network Pty Ltd for its significant time and effort expended in responding to SKM's requests for information and for its collaborative approach to this assessment.

Prudence results

SKM notes that this year's capital expenditure claim eclipses all previous claims in both value and complexity. It is understood that the present economic conditions being felt by the resources sector and related service industries means the findings of this engineering assessment will be the subject of close scrutiny.

¹ On 3 December 2012, QR Network Pty Ltd changed its name to Aurizon Network Pty Ltd and is a wholly owned subsidiary of Aurizon Holdings Ltd.



Table ES-1 below presents a summary of SKM's findings of prudence for each of the projects assessed. Of the 19 projects, 16 were found to be fully prudent in all expenditure, one was found to be partially prudent with a portion of expenditure prudent, and two were either withdrawn or deferred by Aurizon Network Pty Ltd from the 2011-2012 claim.

Based on the detailed analysis conducted, SKM recommends **\$1,123,448,877** worth of capital expenditure (excluding IDC) be included in the RAB.

Table ES-1 : Overview of prudence of selected projects

SKM ref.	System	Project name	Project number	2011-2012 Claimable expenditure ² (\$'000)	Prudence assessment			Prudent expenditure (\$'000)
					Project scope	Standard of the works	Project cost	
1	Blackwater	Raglan Feeder Station	A.02222	46,148	Prudent	Prudent	Prudent	46,148
2		Wycarbah Feeder Station	A.02604	44,359	Prudent	Prudent	Prudent	44,359
3		Duaranga Feeder Station	A.02603	41,533	Prudent	Prudent	Prudent	41,533
4		Bluff Feeder Station	A.02602	37,869	Prudent	Prudent	Prudent	37,869
5		Blackwater Track & Formation Renewal	A.03959	4,281	Prudent	Prudent	Prudent	4,281
6		Overheads Renewal Rocklands to Callemondah	A.03896	3,271	Prudent	Prudent	Prudent	3,271
		Blackwater: Maximising Electric Train Capacity	A.03452	262	Withdrawn			0
7		Marmor to Bajool Track Upgrade	A.04137	547	Prudent	Prudent	Prudent	547
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	4,319	Prudent	Prudent	Prudent	4,319
9		Upgrade of Jilalan Yard Drainage	A.04008	1,249	Prudent	Prudent	Prudent	1,249
10		Bandwidth Increase for Moranbah North	A.03949	65	Prudent	Prudent	Partially prudent	52 (20% above rail)
11	Newlands	Ballast Replacement Newlands Line	A.04055	4,485	Prudent	Prudent	Prudent	4,485
12	GAPE	GAPE (post-GFC)	A.03473	771,119	Prudent	Prudent	Prudent	771,119
13		GAPE Expansion (pre-GFC)	A.01541	107,489	Prudent	Prudent	Prudent	107,489
14		GAPE Long Lead Items (pre-GFC)	A.02559	28,279	Prudent	Prudent	Prudent	28,279

² 2011-2012 Claimable expenditure may not correspond to the full project costs because (i) Aurizon Network Pty Ltd chooses to claim a system enhancement project's expenses once a significant portion of project is commissioned, but post-commissioning works may continue during defects and liability periods and (ii) Aurizon Network Pty Ltd claims asset replacement project costs once a portion of the project are complete, even though further portions of the overall program of works may occur in subsequent years.



SKM ref.	System	Project name	Project number	2011-2012 Claimable expenditure ² (\$'000)	Prudency assessment			Prudent expenditure (\$'000)
					Project scope	Standard of the works	Project cost	
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	13,887	Prudent	Prudent	Prudent	13,887
16		GAPE Electrification Phase (Pre-GFC)	A.02648	7,642	Prudent	Prudent	Prudent	7,642
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	6,920	Prudent	Prudent	Prudent	6,920
18		Thales Axle Counter Trial	A.03640	348	Deferred			0

Recommendations

SKM recommends that 100% of the value of all nine of the system enhancement capital expenditure projects, 100% of the value of seven of the asset replacement capital expenditure projects and 80% of the value of one of the asset replacement capital expenditure project is eligible for inclusion in the RAB. One project was withdrawn and one deferred from the 2011-2012 claim by Aurizon Network Pty Ltd.

Over the course of SKM's six-month assignment it has been recognised that a number of general improvements could be made to the capital expenditure prudency review process, namely:

- redrafting of Clause 3.3.2(c) of Schedule A of UT3 to clarify the necessary tests for prudency of scope, in particular, that the capital expenditure projects submitted for inclusion in the RAB must be:
 - 100% below-rail infrastructure projects (or, if not, what proportion of the works were below-rail);
 - 100% funded by Aurizon Network Pty Ltd (or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd);
 - 100% capital expenditure and not maintenance projects; and
 - 100% commissioned (or, if not, whether the project was “breakable” and, if so, what completed proportion of the works were “useful and in use” and hence contribute to the regulated service).
- greater rigor, on the part of Aurizon Network Pty Ltd, in ongoing data collection for future capital expenditure engineering assessments; and
- application of pre-approval mechanisms to future capital expenditure, in particular:
 - agreement of an Asset Management Plan, so the scope of an asset replacement capital expenditure can be deemed prudent, following Clause 3.1.1 of Schedule A of UT3, if the expenditure is (i) consistent with the asset age and composition of the asset in the CQCR and (ii) in accordance with the Asset Management Plan; and
 - obtaining pre-approval of procurement strategy, so the capital expenditure can be included in the RAB, in accordance with Clause 3.1.3 of Schedule A of UT3, if (i) the contract provisions regarding contract variations and escalation accord with good commercial practice (Clause 3.1.3(f)), and (ii) the independent external auditor engaged (Clause 3.1.3(h)) certifies that the tender has been conducted in accordance with the approved procurement strategy.



1. Glossary

Abbreviations and definitions used in this document (including Appendices) are listed in **Table 1-1**.

Table 1-1 : Abbreviations, acronyms and terminology

Abbreviation, acronyms and terminology	Description/definition
2011-2012 claim	Aurizon Network Pty Ltd.'s 2011-2012 Capital Expenditure Submission submitted to the Authority in November 2012.
ACE	Axle counter equipment
ACUP	Accelerated capital upgrade program
AIS	Air insulated switchgear
AS/NZS	Australian and New Zealand Standards
Aspect3	Aspect3 Alliance comprised Invensys Rail and Aurizon Network Pty Ltd and was primarily responsible for signalling from Abbot Point to Bogie River on the GAPE projects.
Asset Management Plan	Aurizon Network Pty Ltd.'s Asset Policy (Maintenance and Renewal) document dated June 2011.
Asset replacement expenditure	As defined in Part 12 of UT3, Asset replacement expenditure means expenditure on capital projects required to maintain the existing capacity of the rail infrastructure (for example, the replacement of life expired or obsolete assets). Aurizon Network Pty Ltd refer to asset replacement projects in its 2011-2012 claim.
AT	Auto transformer
ATO	Australian Taxation Office
Aurizon Network Pty Ltd	On 3 December 2012, QR Network Pty Ltd changed its name to Aurizon Network Pty Ltd
BCD	Ballast cleaning and drainage
BMA	BHP Mitsubishi Alliance
CAPEX	Capital expenditure
Capital expenditure	Capital expenditure is considered by SKM to cover both asset replacement expenditure and system expansion expenditure and means expenditure required to renew, expand, create or enhance capacity of rail infrastructure and excludes expenditure on maintenance activities as described in Aurizon Network Pty Ltd.'s Asset Management Plan dated June 2011.
CCA	CoalConnect Alliance comprised Leighton Contractors, Aurizon Network Pty Ltd, GHD and Kellogg Brown & Root Pty Ltd. CCA was primarily responsible for civil works from Bogie River to North Goonyella on the GAPE projects.
CCTV	Closed circuit television
CETS	Civil engineering and track standards
CQCR	Central Queensland coal region
COTS	Commercial off the shelf
CRIMP	Coal rail infrastructure master plan
CSA	CoalStream Alliance comprised Aurizon Network Pty Ltd, Macmahon Holdings Limited, MVM Rail, Aurecon Hatch and Parsons Brinckerhoff. CSA was primarily responsible for civil works from Abbot Point to Bogie River on the GAPE projects.
Customers	Mining companies that currently or plan to transport mining commodities on Aurizon Network Pty Ltd.'s network.
DEP	Designated earth points
DTC	Direct traffic control signalling system (track divided into sections known as Blocks). These systems do not use colour light signals. DTC is used to manage areas of track possession with the use of wayside Block Limit Boards



Abbreviation, acronyms and terminology	Description/definition
DTC Mk II	Upgraded DTC incorporating long range and swing nose points' indicators
Feasibility IAR	Feasibility investment appraisal report
FS	Feeder station
FS	Feasibility study
GAPE	Goonyella to Abbot Point Expansion project
General expansion capital expenditure	As defined in Part 12 of UT3, general expansion capital expenditure means expenditure on capital projects required to expand, create or enhance capacity (including to develop new rail infrastructure) where the relevant rail infrastructure is utilised or to be utilised for the benefit of more than one Customer or more than one Access Holder;
GFC	Global Financial Crisis, where: <ul style="list-style-type: none"> • Pre-GFC = before October 2008 • Post-GFC = after October 2008
GIS	Gas insulated switchgear (with SF6)
GLT	Goonyella length train
HF	Harmonic filter
HV	High voltage
IDC	Interest during construction
LAN	Local area network
LEP	Lower earth point
LOC	Location case
LOR	Laing O'Rourke
LV	Low voltage
mtpa	million tonnes per annum
MSR	UHF maintainers supervisory radio (open channel)
NAMP 2006	Network Asset Management Plan 2006
NCL	North coast line
NML	Northern missing link
OHLE	Overhead line equipment
OPGW	Optic fibre ground wire
PFS	Prefeasibility study
R&D	Research and development
RAB	Regulatory asset base
Reasonable Demand	Reasonable Demand relates to the demand for which a capital expenditure project is required in order to enable Aurizon Network Pty Ltd to best meet that demand and is defined as that which is needed to accommodate current contracted demand, likely future demand within a reasonable timeframe and any spare capacity considered appropriate as defined in Clause 3.3.2(d) of Schedule A of UT3.
RCS	Remote control signalling that uses colour light signalling. See also UTC.
RFI	Request for Information
SAP	SAP AG (Systems, Applications, and Products in Data Processing) is a German multinational software corporation
Schedule A	Schedule A - Maintenance of Regulatory Asset Base of UT3



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Abbreviation, acronyms and terminology	Description/definition
Schedule 3 report	Report commissioned by Aurizon Network Pty Ltd and prepared by Evans & Peck in October 2012 which considers the prudence of GAPE projects and comprises Schedule 3 of Aurizon Network Pty Ltd.'s 2011-2012 claim submission.
SKM	Sinclair Knight Merz
SMOS	Structure mounted outside switchgear
SNMP	Simple network management protocol
SNX	Swing nose points
STS	Specialised track services (a wholly owned subsidiary of Aurizon Holdings Ltd)
SVC	Static volt amp reactive compensator
Synergy	Synergy Alliance comprised Ansaldo-STS, United Group Limited and Aurizon Network Pty Ltd and was primarily responsible for signalling works from Bogie River to North Goonyella on the GAPE projects and fibre optic works along all of the GAPE (post-GFC) project.
System enhancement capital expenditure	This term is employed by Aurizon Network Pty Ltd to refer to capital expenditure other than asset renewals. This term is equivalent to General Expansion Capital Expenditure in UT3,
tal	Tonne axle load
the Authority	The Queensland Competition Authority
TLM	Track laying machine
Terms of reference	Terms of reference being a document that sets out the required services to be performed by SKM under the contract between the Authority and SKM for the Engineering Assessment of Aurizon Network Pty Ltd Capital Expenditure 2011-2012.
Top 20	The most northerly 20 km of the Northern Missing Link in the vicinity of Byerwen. This was the site of the Early Works completed pre-GFC.
TSC	Track sectioning cabins
Type Approval	Equipment that has been approved for use in Aurizon Network Pty Ltd.'s rail network.
UHF	Ultra high frequency radio
UT3	QR Network's 2010 Access Undertaking – as approved 1 October 2010
UTC	Universal traffic control which is a train management system installed in Rockhampton control centre and provides the function of RCS.
VAR	Volt amp reactive
WBS	Work breakdown structure
X50	GAPE project to achieve 50mtpa capacity
X75	GAPE capacity expansion to 75mtpa
X100	GAPE capacity expansion to 100mtpa



2. Introduction

2.1 Background

The Queensland Competition Authority (the Authority) is responsible for the economic regulation of the below-rail infrastructure owned by Aurizon Network Pty Ltd³ which operates the coal rail network in Central Queensland and is a wholly owned subsidiary of Aurizon Holdings Ltd.

Under Aurizon Network Pty Ltd.'s 2010 Access Undertaking⁴, the Authority has previously approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Region (CQCR) and approves any subsequent additions to this RAB.

Aurizon Network Pty Ltd.'s approved Access Undertaking (UT3) includes processes and criteria for the Authority's assessment of the prudence of capital expenditure to determine whether all or some should be included in the RAB for the CQCR. To assist it in this process, the Authority has appointed Sinclair Knight Merz (SKM) to assess the prudence of Aurizon Network Pty Ltd.'s claimed 2011-2012 capital expenditure focusing on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

A copy of SKM's terms of reference, as prepared by the Authority, is included in **Appendix A**.

2.2 Extent of SKM's review

As directed by the Authority's terms of reference, SKM undertook the assessment of Aurizon Network Pty Ltd.'s capital expenditure claim with particular regard to Schedule A - Maintenance of Regulatory Asset Base (Schedule A) of the approved UT3. For ease of reference a copy of this schedule is enclosed in **Appendix B**.

2.2.1 Prudence of scope

SKM's assessment of prudence of scope of system enhancement projects focused on customer consultation and approval, and the need to accommodate Reasonable Demand. In absence of information from Aurizon Network Pty Ltd, SKM developed a dynamic capacity model of the GAPE system to investigate passing loop and signalling upgrade requirements to meet Reasonable Demand.

2.2.2 Prudence of standard

SKM acknowledges that some of Aurizon Network Pty Ltd.'s internal policies⁵, procedures and design standards⁶ may result in overdesign of system enhancement and asset replacement projects. Detailed review of these internal policies, procedures and design standards was not included in SKM's scope of works for the assessment.

³ On 3 December 2012, QR Network Pty Ltd changed its name to Aurizon Network Pty Ltd.

⁴ In October 2010, the Authority endorsed an access undertaking developed by Aurizon Network Pty Ltd in accordance with section 136 of the Queensland Competition Authority Act 1997 (Qld). Aurizon Network Pty Ltd.'s access undertaking provides a framework for access to Aurizon Network Pty Ltd.'s rail network for the purposes of operating train services. It covers access to Aurizon Network Pty Ltd.'s rail network by train services other than interstate train services operating between the New South Wales border and Brisbane.

Aurizon Network Pty Ltd.'s access undertaking sets out obligations in relation to (a) ring fencing (Part 3); (b) the framework for negotiating access (Part 4); (c) the development of access agreements (Part 5); (d) pricing principles (Part 6); (e) the utilisation of network capacity (Part 7); (f) interface arrangements between Aurizon Network Pty Ltd and train operators (Part 8); and (g) reporting (Part 9).

In addition, a number of schedules have been developed to support Aurizon Network Pty Ltd.'s access framework, including reference access charges for coal carrying train services.

⁵ For example, the means by which Aurizon Network Pty Ltd determines if projects are asset renewals or maintenance projects.

⁶ For example, the 2008 CETS defined track structure in relation to axle loads and train speeds, without consideration of the criticality of infrastructure in the network.



2.2.3 Prudence of cost

SKM identified possible tax implications associated with considering appropriate asset replacement projects as research and development projects (such as the trial of Thales Axle Counters). Investigations into these tax implications were not included in SKM's scope of works for this assessment.

2.3 Report overview

This report is structured as follows:

- **Section 3** provides an overview of Aurizon Network Pty Ltd.'s 2011-2012 capital expenditure claim;
- **Section 4** describes how the representative sample projects were chosen for review;
- **Section 5** discusses the capital expenditure representative sample project assessment criteria;
- **Section 6** summarises the information provided by Aurizon Network Pty Ltd for the representative sample project assessment; and
- **Section 7** provides a summary of the results of SKM's assessment and provides recommendations in relation to claimable expenditure to be approved.

The report's appendixes contain supporting documentation, namely:

- **Appendix A** contains a copy of SKM's terms of reference, prepared by the Authority;
- **Appendix B** is a copy of Schedule A - Maintenance of Regulatory Asset Base (Schedule A) of the approved UT3; and
- **Appendix C** lists the requests for information raised by SKM and details the responses from Aurizon Network Pty Ltd.

The individual assessment mini-reports of prudence for the selected projects are enclosed in **Appendix D** to **Appendix R** to this main report, as follows:

- **Appendix D:** Blackwater power systems project
- **Appendix E:** Blackwater track and formation renewal project
- **Appendix F:** Overheads renewal Rocklands to Callemondah project
- **Appendix G:** Marmor to Bajool track upgrade project
- **Appendix H:** Concrete sleeper upgrades – Goonyella (Stage 2) project
- **Appendix I:** Upgrade of Jilalan Yard draining project
- **Appendix J:** Bandwidth increase for Moranbah north project
- **Appendix K:** Ballast replacement Newlands system project
- **Appendix L:** GAPE project (comprising both pre-GFC and post-GFC activities)
- **Appendix M:** GAPE expansion (pre-GFC) project – *text combined in Appendix L*
- **Appendix N:** GAPE long lead items (pre-GFCP) project – *text combined in Appendix L*
- **Appendix O:** GAPE X70-X100 early works (pre-GFC) project – *text combined in Appendix L*
- **Appendix P:** GAPE electrification phase project
- **Appendix Q:** Track circuits and points refurbishment project
- **Appendix R:** Thales axle counter trial project



3. 2011-2012 capital expenditure claim

As required under the UT3 framework, Aurizon Network Pty Ltd submitted a claim (2011-2012 claim) for its 2011-2012 capital expenditure to be included in the RAB. This section of the report provides a summary overview of Aurizon Network Pty Ltd.'s submission to the Authority.

3.1 Aurizon Network Pty Ltd.'s 2011-2012 capital expenditure claim

Aurizon Network Pty Ltd submitted its 2011-2012 claim to the Authority in November 2012.

The Aurizon Network 2011/12 Capital Expenditure Submission contains seven schedules:

- Schedule 1 – Claim Summary Workbook; which includes Aurizon Network 2011/12 Capital Expenditure Claim spread sheet;
- Schedule 2 – IDC Model; which includes the IDC Summary 2011/12 CAPEX Claim spread sheet;
- Schedule 3 – GAPE Claim Submission; which includes Evans & Peck's *GAP50 Goonyella to Abbot Point Expansion Project: Analysis of Prudence of Scope, Standard and Cost* (October 2012) report and supporting documentation;
- Schedule 4 – Blackwater Feeder Stations Submission; which includes Edge Advantage's *Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/12* (October 2012) report and supporting documentation;
- Schedule 5 – Projects Claim Submission; which includes project information submissions for the Asset Renewal, Blackwater system, Goonyella system, Moura system, and Newlands system projects and supporting documentation;
- Schedule 6 – Claim for Post Commissioning Costs; which includes Aurizon Network's 2011/12 Post Commissioning Claim report and supporting SAP workbooks; and
- Schedule 7 – Independent Peer Review Charter; which includes Aurizon Network's Networks Services Assets Management Independent Peer Review Charter.

In addition to the above listed documents, Aurizon Network Pty Ltd provided a significant amount of information in response to project specific requests for information raised by SKM. A register of these requests for information is enclosed in **Appendix C**.

3.2 Structure of Aurizon Network Pty Ltd.'s 2011-2012 claim

Aurizon Network Pty Ltd.'s network comprises five major coal systems: Moura, Blackwater, Goonyella, Newlands and the GAPE system. For the purposes of its claim submission, Aurizon Network Pty Ltd categorised its capital expenditure in each system as either:

- system enhancement;
- asset replacement;
- telecommunications; and
- post commissioning.



3.3 Overview of claimable expenditure

The breakdown of Aurizon Network Pty Ltd.'s 2011-2012 claimable expenditure (excluding interest during construction (IDC)) by system can be seen in **Figure 3-1**.

As shown in **Figure 3-1**, 78% of the claimable expenditure relates to the GAPE projects, with the individual systems and the CQCR-wide projects making up the remaining 22%.

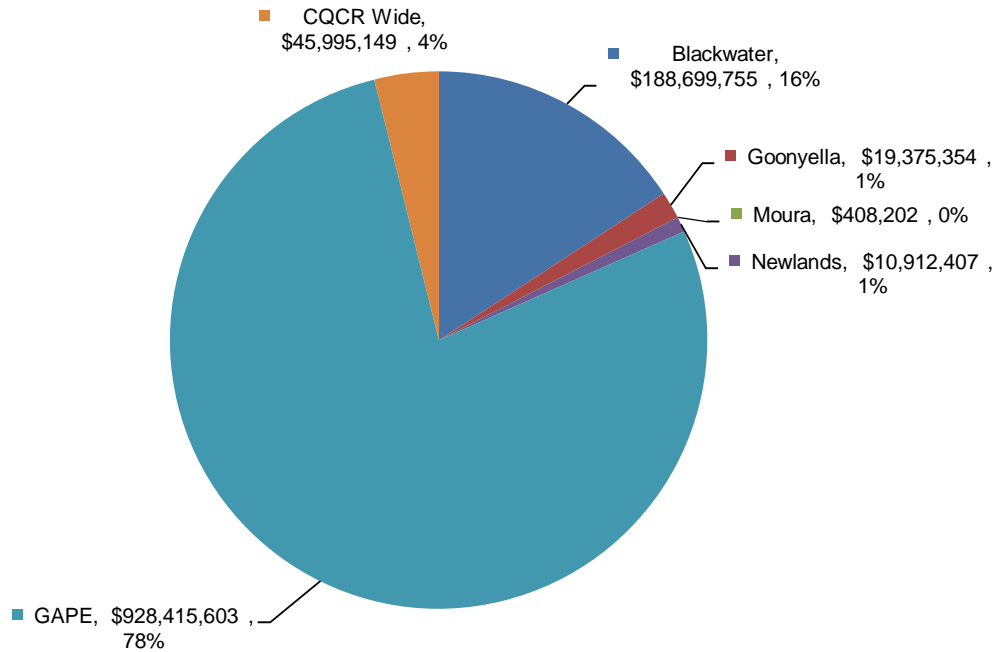


Figure 3-1 : Aurizon Network Pty Ltd.'s 2011-2012 claimable expenditure (excl. IDC) by system

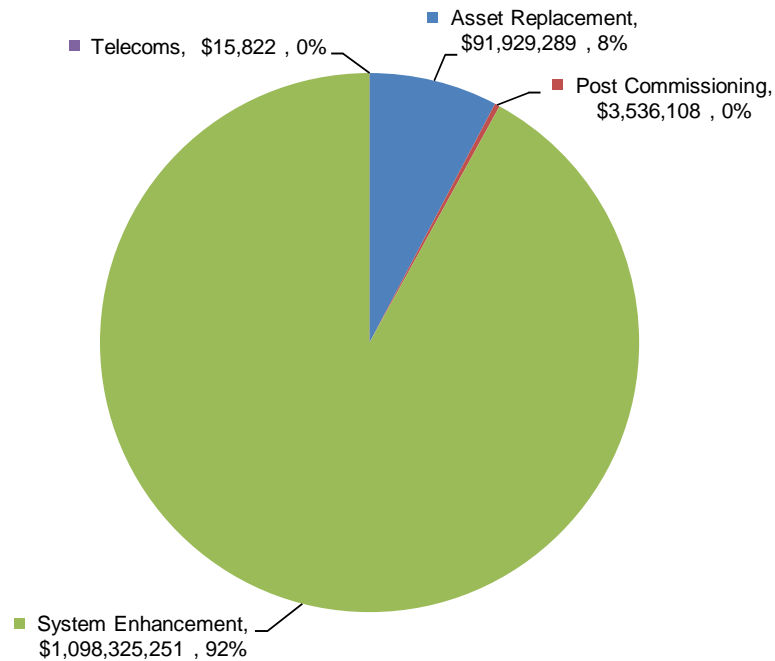


Figure 3-2 : Aurizon Network Pty Ltd.'s 2011-2012 claimable expenditure (excl. IDC) by project type

As shown in **Figure 3-2** above, within its submission, Aurizon Network Pty Ltd states that approximately 92% of the value of the claim relates to the GAPE projects (\$1,030 million) and the Blackwater Feeder Station projects (\$184.6 million) combined. The total value of these projects represents approximately \$1,215 million of the \$1,309 million being claimed.



4. Representative sample projects chosen for review

This section of the report describes the process followed to select the system enhancement and asset replacement projects to be reviewed by SKM from the full list of capital expenditure projects submitted by Aurizon Network Pty Ltd in its 2011-2012 claim.

4.1 Sample selection of projects

SKM conducted a preliminary review of the capital expenditure project list included in the Authority's terms of reference for this assignment and suggested an initial sample selection of projects to be reviewed. With nine of the 108 projects accounting for 92% of the 2011-2012 claim, these projects were identified for inclusion in the sample list. Priority was then given to projects exhibiting a majority of expenditure within the 2011-2012 financial year (i.e. those projects that had not been previously reviewed by the Authority), as it was believed that these projects were likely to have been developed to a sufficiently advanced stage to allow for a thorough review. The chosen list was discussed with the Authority and based on the available information, was agreed to be a representative sample.

The sample included major projects and a selection of minor projects. The intent was to include at least one project from each of the five different systems (Newlands, Goonyella, Moura, Blackwater and GAPE) as well as from the four different project types (capacity enhancement, asset replacement, telecommunications and post commissioning). However, upon review no projects representing the Moura System were considered suitable for assessment. Similarly, all projects categorised as either telecommunications or post commissioning had been previously reviewed by the Authority and hence were not selected for assessment.

Table 4-1 presents the original 15 capital expenditure projects selected for detailed analysis.

Table 4-1 : Capital expenditure projects identified for detailed analysis

System	Project name	Project number	Project type	2011-2012 Claimable expenditure ⁷ (\$'000)
Blackwater	Raglan Feeder Station	A.02222	System enhancement	46,148
	Blackwater Track & Formation Renewal	A.03959	Asset replacement	4,281
	Overheads Renewal Rocklands to Callemondah	A.03896	Asset replacement	3,271
	Blackwater: Maximising Electric Train Capacity	A.03452	Asset replacement	262
Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	Asset replacement	4,319
	Upgrade of Jilalan Yard Drainage	A.04008	Asset replacement	1,249
	Bandwidth Increase for Moranbah North	A.03949	Asset replacement	65
Newlands	Ballast Replacement Newlands Line	A.04055	Asset replacement	4,485
GAPE	GAPE (post-GFC)	A.03473	System enhancement	771,119
	GAPE Expansion (pre-GFC)	A.01541	System enhancement	107,489
	GAPE Long Lead Items (pre-GFC)	A.02559	System enhancement	28,279
	GAPE X70 - X100 Early Works (pre-GFC)	A.02523	System enhancement	13,887
	GAPE Electrification Phase (Pre-GFC)	A.02648	System enhancement	7,641
Asset Renewal	Track Circuit and Points Refurbishment	A.03831	Asset replacement	6,920
	Thales Axle Counter Trial	A.03640	Asset replacement	348

⁷ 2011/12 Claimable expenditure may not correspond to the full project costs because (i) Aurizon Network Pty Ltd chooses to claim a system enhancement project's expenses once a significant portion of project is commissioned, but post-commissioning works may continue during defects and liability periods and (ii) Aurizon Network Pty Ltd claims asset replacement project costs once a portion of the project are complete, even though further portions of the overall program of works may occur in subsequent years.



4.2 Additional reviews

In addition to the listed expenditure items, the Authority requested that SKM determined whether the findings from the Raglan Feeder Station review could be applied to three additional feeder station projects, as identified below in **Table 4-2**. The subsequent review that encompasses all of these projects is referred to as the Blackwater Power Systems.

Table 4-2 : Additional feeder station projects

System	Project name	Project number	Project type	2011-2012 Claimable expenditure ⁴ (\$'000)
Blackwater	Wycarbah Feeder Station	A.02604	System enhancement	44,359
	Duaringa Feeder Station	A.02603	System enhancement	41,533
	Bluff Feeder Station	A.02602	System enhancement	37,869

4.3 Replacement project

The Blackwater: Maximising Electric Train Capacity project was included in the initial selection of projects, however, when additional information was requested Aurizon Network Pty Ltd stated in its response that:

“On detailed internal review of this project it has been determined that the costs are operational in nature and not applicable for inclusion in the regulatory Asset Base as per the provisions within the Undertaking. As such this project has been removed from the 2011/12 Capital Expenditure Claim.”

On 11 February 2013, after Aurizon Network Pty Ltd had withdrawn this project from the selected sample, the Authority requested that SKM reviewed an alternative Blackwater system project, namely the Marmor to Bajool Track Upgrade project as detailed in **Table 4-3**.

Table 4-3 : Replacement for Blackwater: Maximising Electric Train Capacity project

System	Project name	Project number	Project type	2011-2012 Claimable expenditure ⁴ (\$'000)
Blackwater	Marmor to Bajool Track Upgrade	A.04137	Asset replacement	547

4.4 Incomplete project

SKM reviewed the Thales Axle Counter Trail project and issued an RFI and a draft mini-report to the Authority. After having reviewed SKM's comments in the mini-report, in January 2013 the Authority discussed with Aurizon Network Pty Ltd the overarching need for ongoing capital expenditure projects to be “breakable” if their prudent costs can be incorporated, in whole or in part, into the RAB.

Aurizon Network Pty Ltd advised in an email dated 21 February 2013:

Also discussed was the fact that the scope of the Thales Axlecounter Trail was not "breakable" in that the project will not provide full benefit to users until it is completed. Given this it is expected that this project will also be withdrawn and costs held by Aurizon until such time that the project is completed. At this time all costs incurred will be represented to the QCA for review and inclusion into the RAB. As such no additional information for this project has been provided.

For the record and to assist with future regulatory reviews, a copy of SKM's draft mini-report is enclosed in **Appendix R** of this report. However, for the purposes of this prudency review SKM considers that the project has been deferred to a future capital expenditure claim.



5. Representative sample project assessment criteria

This section of the report describes the project assessment criteria and process employed by SKM during its technical review of the selected capital expenditure projects.

5.1 Definition of capital expenditure

It is noted that the term “capital expenditure” is used throughout UT3, yet no definition of this term is provided. It is also noted that Aurizon Network Pty Ltd refers to all its expenditures in its 2011-2012 claim as capital expenditure and then differentiates between system enhancement expenditures and asset replacement expenditure. For the purpose of this review, SKM adopted the following definition for capital expenditure:

Capital expenditure is considered to be the expenditure required to renew, expand, create or enhance capacity of rail infrastructure and excludes expenditure on maintenance activities as described in Aurizon Network Pty Ltd.'s Asset Management Plan dated June 2011.

5.2 Project customer approval/engagement activities assessment

Clause 3.1.1 of Schedule A of UT3 states that the scope of a capital expenditure project is prudent if it has obtained pre-approved by the Authority. As such, SKM set out to determine if the selected projects had achieved regulatory pre-approval.

5.2.1 System enhancement projects

Traditionally the development of a Coal Rail Infrastructure Master Plan (CRIMP) is the document which facilitates regulatory pre-approval of scope and customer review of Aurizon Network Pty Ltd.'s access expansion capital expenditure plans. It is noted that the CRIMP does not seek customer endorsement of indicative cost nor does it include escalation or financing costs in project estimates. SKM also notes that the last CRIMP was issued in 2009.

Clause 3.2 of Schedule A of the UT3 outlines how customer group acceptance of a system enhancement project could be demonstrated if it was subject to a customer vote. As stated in Clause 3.3.1(a)(ii) and 3.3.2(c)(viii) when assessing whether the specific capital expenditure undertaken is prudent, it is necessary to take into account the extent to which Aurizon Network Pty Ltd engaged with its customer group (even if the threshold for acceptance, 60% by weighted tonnage, was not achieved).

Following these directions, SKM paid particular attention to the level of customer engagement undertaken by Aurizon Network Pty Ltd during the development of its system enhancement projects.

5.2.2 Asset replacement projects

Due to the nature of much of its asset replacement projects and the fact that Aurizon Network Pty Ltd finalised its Asset Policy, Maintenance and Renewals document in June 2011 (i.e. Asset Management Plan), Aurizon Network Pty Ltd chose not to obtain regulatory pre-approval of scope under Clause 3.1.1(a)(i) of Schedule A of UT3 prior to undertaking these asset replacement projects.

From its assessment, SKM concluded that none of the asset replacement projects under review had received regulatory pre-approval of scope.

5.3 Project status assessment

Clause 2.5 of the Schedule A of the UT3 states that for a project's capital expenditure to be incorporated in the RAB, the project needs to have been commissioned. However, the Authority has advised that completed parts of a project's capital expenditure can be incorporated if deemed appropriate.



SKM suggests a clearer definition be provided in Schedule A of UT3 to allow a completed portion of a particular project's capital expenditure to be included in the RAB when the project has not been fully commissioned.

Taking the above into account, SKM has reviewed the supporting documents provided by Aurizon Network Pty Ltd to determine whether the projects had been fully or only partially commissioned. For projects that were not fully commissioned, SKM assessed if the project was "breakable", that is, whether it was possible to determine if the completed portions of the project were "useful and in use" and hence could therefore be deemed to contribute to a regulated service for the purposes of inclusion in the RAB.

5.4 Project scope assessment

In assessing the prudence of the scope of capital expenditure projects not having prior customer approval, SKM assessed the projects against the criteria set out in Clause 3.3.2(c) of Schedule A of UT3. In addition to the criteria specifically mentioned in Clause 3.3.2(c) of Schedule A of UT3, SKM also identified the need to confirm that the capital expenditure projects being reviewed:

- were below-rail infrastructure projects (or, if not, what proportion of the works were below-rail);
- were fully funded by Aurizon Network Pty Ltd (or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd); and
- were capital expenditure and not maintenance projects⁸.

5.4.1 System enhancement projects

When assessing system enhancement projects that had customer approval (or considerable customer engagement activities associated with them), SKM endeavoured to determine whether the works undertaken were consistent with the scope approved by the customer vote (or as presented to the customer group during the course of the relevant customer engagement).

The assessment criteria, as set out in Clause 3.3.2(c) of Schedule A of UT3, that SKM judged are pertinent for system enhancement projects are:

- inclusion in the CRIMP;
- the need to accommodate what is reasonably required to comply with Access Agreements;
- the extent of Reasonable Demand⁹, and the need for new capital expenditure projects to accommodate that demand;
- the appropriateness of Aurizon Network Pty Ltd.'s processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process; and
- the extent to which the capital expenditure project was subjected to the capital evaluation and selection process.

With regards to Reasonable Demand assessment, it is noted that if the scope of any particular capital expenditure project was in excess of Reasonable Demand, the element of the prudent costs of the capital expenditure project that was not needed to meet Reasonable Demand would need to be determined and identified as Excluded Capital Expenditure¹⁰ as stated in Clause 3.3.2(d)(ii) of Schedule A of UT3.

5.4.2 Asset replacement projects

SKM judged that the assessment criteria as set out in Clause 3.3.2(c) of Schedule A of UT3 that are pertinent for system enhancement projects are:

⁸ Aurizon Network Pty Ltd.'s maintenance expenditure is considered separately from capital expenditure and is not added to the RAB. The reasonableness of Aurizon Network Pty Ltd.'s policies for determining if projects are maintenance expenditure or capital expenditure, in accordance with their Asset Management Plan, was not reviewed by SKM during this assessment.

⁹ "Reasonable Demand" relates to the scope of the capital expenditure project which is needed to accommodate current contracted demand, likely future demand within a reasonable timeframe and any spare capacity considered appropriate.

¹⁰ "Excluded Capital Expenditure" is the element of the prudent costs of the capital expenditure project that was not needed to meet Reasonable Demand.



- the need to accommodate what is reasonably required to comply with Access Agreements;
- the age and condition of existing assets, the need for replacement capital expenditure projects and consistency with the Asset Management Plan;
- Aurizon Network Pty Ltd.'s legislative requirements, including relating to workplace health and safety, and environmental requirements;
- the appropriateness of Aurizon Network Pty Ltd.'s processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process; and
- the extent to which the capital expenditure project was subjected to the capital evaluation and selection process.

As outlined in Clause 3.1.1(a)(i) of Schedule A of UT3, in assessing the scope of asset replacement expenditure, SKM had regard to whether the level and content of the replacement capital expenditure were consistent with asset age and composition in the CQCR.

An assessment of whether the asset replacement was conducted in accordance with the Asset Management Plan could not be performed because Aurizon Network Pty Ltd has chosen not to submit its various asset management policies and strategies to the Authority, although SKM notes that Aurizon Network Pty Ltd finalised a consolidated Asset Management Plan in June 2011.

5.5 Project standard assessment

SKM, following Clause 3.3.3(a) of Schedule A of UT3, assessed whether the standard of the works¹¹ were necessary to meet the requirements of the scope and were not over designed.

In assessing the prudence of the standard of system enhancement and asset replacement projects, following Clause 3.3.3(b)(iii) of Schedule A of UT3, SKM paid particular attention to whether the works were 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.

In cases where works were not consistent with existing infrastructure, SKM's assessment followed the requirements of Clause 3.3.3(c) of Schedule A of UT3 and focused on whether Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to:

- the requirements of Railway Operators and what is reasonably required to comply with Access Agreements;
- current and likely future usage levels;
- the requirements of the National Codes of Practice;
- the requirements of other relevant Australian design and construction standards;
- Aurizon Network Pty Ltd.'s design standards contained within its Safety Management System and which is accepted by the Safety Regulator; and
- all relevant legislation, including requirements by any Authority (e.g. the Safety Regulator and the EPA).

In all cases, SKM requested completion certificates confirming that the capital expenditure projects had been completed in accordance with the relevant standards.

SKM's review did not extend to an assessment of appropriateness and/or reasonableness of Aurizon Network Pty Ltd.'s internal policies, procedures and design standards relating to system enhancement and asset replacement projects.

¹¹ for works commissioned in 2011-2012



5.6 Project cost assessment

In assessing the reasonableness of the cost of capital expenditure projects in the 2011-2012 claim, SKM had regard to the assessment criteria set out in Clause 3.3.4 of Schedule A of UT3, including, where appropriate:

- the level of such costs relative to the scale, nature, cost and complexity of the project; and
- the circumstances prevailing in the markets for engineering, equipment supply and construction.

In forming an opinion on the reasonableness of project costs, SKM also had regard to the manner in which Aurizon Network Pty Ltd managed the system enhancement and asset replacement projects, including but not limited to, the manner in which Aurizon Network Pty Ltd balanced the needs of:

- safety during construction and operation;
- compliance with environmental requirements during construction and operation;
- minimising disruption to the operation of train services during construction;
- accommodating reasonable requests of access holders to amend the scope and sequence of works undertaken to suit their needs;
- minimising whole of asset life costs including future maintenance and operating costs;
- minimising total project costs which may at times not be consistent with minimising individual contract costs;
- aligning other elements in the supply chain; and
- meeting contractual timeframes and dealing with external factors.

Where sufficient information was made available by Aurizon Network Pty Ltd, SKM developed bottom-up order of magnitude ($\pm 30\%$) cost estimates of components of the individual system enhancement and asset replacement projects. If expenditures claimed by Aurizon Network Pty Ltd for a project under review fell within $+30\%$ of SKM's order of magnitude cost estimate then the project's costs were considered to be prudent.



6. Information provided for representative sample project assessment

Detailed project-specific mini-reports for the 18 sample projects reviewed are enclosed in **Appendix D** to **Appendix R** of this report. Included in these mini-reports are details of the information provided by Aurizon Network Pty Ltd and reviewed by SKM.

This section of the report summarises the completeness of the information provided by Aurizon Network Pty Ltd, including documentation provided in response to SKM's requests for information (RFIs). This section provides an overview of the availability of suitable data necessary for SKM to complete its assessment of prudence.

6.1 Information provision

In general, the documentation provided by Aurizon Network Pty Ltd was found to be sufficient to perform the assessment. Where particular information gaps were identified, SKM raised RFIs. A copy of SKM's RFI Register forms **Table C-1** in **Appendix C**.

In **Table 6-1** to **Table 6-9** below, the column headings constitute a checklist of the assessment criteria as defined in Schedule A of UT3. Against each project, where suitable information to complete a particular assessment was available, a **"Yes"** has been indicated in the table. Some of the criteria are not relevant for some of the projects and where this is the case **"n/a"** has been indicated. A **"No"** has been indicated against the criterion for which no information or incomplete information has been provided.

It is important to understand that a **"Yes"** result does not automatically mean a project is prudent, but rather it indicates that some information was provided by Aurizon Network Pty Ltd. Similarly, a **"No"** result does not automatically mean a project is not prudent, but rather it indicates that Aurizon Network Pty Ltd either (i) did not provide information or (ii) provided insufficient information to satisfy SKM that the relevant criteria could be correctly assessed or (iii) provided information that indicated that the criteria was not achieved.

6.2 Project customer approval/engagement activities information

Where appropriate, Aurizon Network Pty Ltd was asked to provide evidence of customer engagement activities and customer approval for the sample capital expenditure projects.

6.2.1 System enhancement projects

The completeness of information provided by Aurizon Network Pty Ltd, including response to SKM's RFIs, relating to assessment of customer engagement activities and customer approval of the sample system enhancement projects is summarised in **Table 6-1** below.

Table 6-1 : Provision of customer approval/engagement information of sample system enhancement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...	
				... customer approval	... customer engagement
1	Blackwater	Raglan Feeder Station	A.02222	Yes	Yes
2		Wycarbah Feeder Station	A.02604	Yes	Yes
3		Duaranga Feeder Station	A.02603	Yes	Yes
4		Bluff Feeder Station	A.02602	Yes	Yes
12	GAPE	GAPE (post-GFC)	A.03473	No	Yes
13		GAPE Expansion (pre-GFC)	A.01541	No	Yes
14		GAPE Long Lead Items (pre-GFC)	A.02559	No	Yes
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	No	Yes



SKM ref.	System	Project name	Project number	Information provided demonstrates ...	
				... customer approval	... customer engagement
16		GAPE Electrification Phase (Pre-GFC)	A.02648	No	Yes

6.2.2 Asset replacement projects

SKM notes that whilst Schedule A of UT3 allows for regulatory pre-approval, customer approval for asset replacement projects is not required. In response to an SKM RFI, Aurizon Network Pty Ltd supplied a copy of its Asset Management Plan document dated June 2011. SKM suggests that if it has not already done so, Aurizon Network Pty Ltd could share this “Asset Policy, Maintenance and Renewals” document dated June 2011 with the Authority and provide a copy to its customers for their information.

6.3 Project status information

Information outlining status of all the capital expenditure projects in the 2011-2012 claim was provided by Aurizon Network Pty Ltd.

6.3.1 System enhancement projects

The completeness of information provided by Aurizon Network Pty Ltd relating to the assessment of status of system enhancement projects is summarised in **Table 6-2** below.

Table 6-2 : Provision of information on status of sample system enhancement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...	
				... project was fully commissioned in 2011-2012	... “useful and in use” proportion of project
1	Blackwater	Raglan Feeder Station	A.02222	Yes	n/a
2		Wycarbah Feeder Station	A.02604	Yes	n/a
3		Duaranga Feeder Station	A.02603	No	No
4		Bluff Feeder Station	A.02602	Yes	n/a
12	GAPE	GAPE (post-GFC)	A.03473	Yes	n/a
13		GAPE Expansion (pre-GFC)	A.01541	Yes ¹²	n/a
14		GAPE Long Lead Items (pre-GFC)	A.02559	Yes ¹²	n/a
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	Yes ¹²	n/a
16		GAPE Electrification Phase (Pre-GFC)	A.02648	Yes ¹²	n/a

¹² Projects were commissioned prior to 2011-2012 and yet as they form part of the GAPE program of works they could only be submitted to the Authority once the GAPE (post-GFC) project had been commissioned.



6.3.2 Asset replacement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of status of the sample asset replacement projects is summarised in **Table 6-3** below.

Table 6-3 : Provision of information on status of sample asset replacement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...	
				... project was fully commissioned in 2011-2012	... "useful and in use" proportion of project
5	Blackwater	Blackwater Track & Formation Renewal	A.03959	No	Yes
6		Overheads Renewal Rocklands to Callemondah	A.03896	No	Yes
7		Marmor to Bajool Track Upgrade	A.04137	Yes	n/a
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	No	Yes
9		Upgrade of Jilalan Yard Drainage	A.04008	No	Yes
10		Bandwidth Increase for Moranbah North	A.03949	No	Yes
11	Newlands	Ballast Replacement Newlands Line	A.04055	No	Yes
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	No	Yes
18		Thales Axle Counter Trial	A03640	No	No

6.4 Project scope information

Aurizon Network Pty Ltd provided a significant amount of information relating to the scope of the capital expenditure projects in its 2011-2012 claim.

6.4.1 System enhancement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of prudence of scope of the sample system enhancement projects is summarised in **Table 6-4** below.

Table 6-4 : Provision of information on scope of sample system enhancement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...						
				Above / below rail split	Funded by Aurizon Network Pty Ltd	Scope consistency	Inclusion in CRIMP	Need to meet Reasonable Demand	Options analysis	Project subjected to evaluation
1	Blackwater	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2		Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3		Duaranga Feeder Station	A.02603	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes	Yes	Yes	Yes



SKM ref.	System	Project name	Project number	Information provided demonstrates ...							
				Above / below rail split	Funded by Aurizon Network Pty Ltd	Scope consistency	Inclusion in CRIMP	Need to meet Reasonable Demand	Options analysis	Project subjected to evaluation	
12	GAPE	GAPE (post-GFC)	A.03473	Yes	Yes	Yes	No	No	Yes	Yes	
13		GAPE Expansion (pre-GFC)	A.01541	Yes	Yes	No	No	n/a	Yes	Yes	
14		GAPE Long Lead Items (pre-GFC)	A.02559	Yes	Yes	No	No	n/a	Yes	Yes	
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	Yes	Yes	No	No	n/a	Yes	Yes	
16		GAPE Electrification Phase (Pre-GFC)	A.02648	Yes	Yes	Yes	No	n/a	Yes	Yes	

6.4.2 Asset replacement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to RFIs, relating to the assessment of the prudence of scope of the sample asset replacement projects is summarised in **Table 6-5** below.

Table 6-5 : Provision of information on scope of sample asset replacement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...							
				Above / below rail split	Funded by Aurizon Network Pty	Not maintenance projects	Need to comply with Access Agreements	Need for replacement (due to age and condition)	Consistency with Asset Mgt Plan	Options analysis	Project subjected to evaluation
5	Blackwater	Blackwater Track & Formation Renewal	A.03959	Yes	Yes	Yes	No	Yes	No	Yes	Yes
6		Overheads Renewal Rocklands to Callemondah	A.03896	Yes	Yes	Yes	No	Yes	No	Yes	Yes
7		Marmor to Bajool Track Upgrade	A.04137	Yes	Yes	Yes	No	Yes	No	Yes	Yes
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	Yes	Yes	Yes	No	Yes	No	Yes	Yes
9		Upgrade of Jilalan Yard Drainage	A.04008	Yes	Yes	Yes	No	Yes	No	Yes	Yes
10		Bandwidth Increase for Moranbah North	A.03949	No	Yes	Yes	No	n/a	No	Yes	Yes
11	Newlands	Ballast Replacement Newlands Line	A.04055	Yes	Yes	Yes	No	Yes	No	Yes	Yes
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	Yes	Yes	Yes	No	Yes	No	Yes	Yes
18		Thales Axle Counter Trial	A03640	Yes	No	Yes	No	n/a	No	Yes	Yes



6.5 Project standard information

Aurizon Network Pty Ltd provided information to allow for an assessment of whether the sample capital expenditure projects were overdesigned or otherwise.

In addition to the information provided, Aurizon Network Pty Ltd kindly arranged for SKM representatives to (i) interview the Aurizon Network Pty Ltd Study Managers and Project Directors/Managers and (ii) visit the sample system enhancement projects and many of the asset replacement projects. These exchanges provided very valuable contributions to the engineering and prudence assessment process.

6.5.1 System enhancement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of prudence of standard of the sample system enhancement projects is summarised in **Table 6-6** below.

Table 6-6 : Provision of information on standard of sample system enhancement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...			
				Completion of projects to agreed standards	Consistency with existing infrastructure	Matches Railway Operator requirements	Matches forecast usage requirements
1	Blackwater	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes
2		Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes
3		Duaranga Feeder Station	A.02603	Yes	Yes	Yes	Yes
4		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes
12	GAPE	GAPE (post-GFC)	A.03473	Yes	Yes	Yes	Yes
13		GAPE Expansion (pre-GFC)	A.01541	Yes	n/a	n/a	n/a
14		GAPE Long Lead Items (pre-GFC)	A.02559	Yes	n/a	n/a	n/a
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	Yes	n/a	n/a	n/a
16		GAPE Electrification Phase (Pre-GFC)	A.02648	Yes	n/a	n/a	n/a



6.5.2 Asset replacement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of prudence of standard of the sample asset replacement projects is summarised in **Table 6-7** below.

Table 6-7 : Provision of information on standard of sample asset replacement projects

SKM ref.	System	Project name	Project number	Information provided demonstrates ...			
				Completion of projects to agreed standards	Consistency with existing infrastructure	Matches Railway Operator requirements	Matches forecast usage requirements
5	Blackwater	Blackwater Track & Formation Renewal	A.03959	Yes	Yes	Yes	Yes
6		Overheads Renewal Rocklands to Callemondah	A.03896	Yes	Yes	Yes	Yes
7		Marmor to Bajool Track Upgrade	A.04137	Yes	Yes	Yes	Yes
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	Yes	Yes	Yes	Yes
9		Upgrade of Jilalan Yard Drainage	A.04008	Yes	Yes	Yes	Yes
10		Bandwidth Increase for Moranbah North	A.03949	Yes	Yes	Yes	Yes
11	Newlands	Ballast Replacement Newlands Line	A.04055	Yes	Yes	Yes	Yes
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	Yes	Yes	Yes	Yes
18		Thales Axle Counter Trial	A03640	No	Yes	n/a	n/a

6.6 Project cost information

Aurizon Network Pty Ltd systematically provided high level extracts of its SAP project accounting database for the sample capital expenditure projects. In many cases the budget forecasted costs were also provided.

6.6.1 System enhancement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of prudence of cost of the sample system enhancement projects is summarised in **Table 6-8** below.

Table 6-8 : Provision of information on cost of sample system enhancement projects

SKM ref.	System	Project name	Project number	Information provided information sufficient to assess ...			
				Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
1	Blackwater	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes
2		Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes
3		Duaranga Feeder Station	A.02603	Yes	Yes	Yes	Yes



SKM ref.	System	Project name	Project number	Information provided information sufficient to assess ...			
				Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
4		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes
12	GAPE	GAPE (post-GFC)	A.03473	Yes	Yes	Yes	No
13		GAPE Expansion (pre-GFC)	A.01541	Yes	Yes	Yes	Yes
14		GAPE Long Lead Items (pre-GFC)	A.02559	Yes	Yes	Yes	Yes
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	Yes	Yes	Yes	Yes
16		GAPE Electrification Phase (Pre-GFC)	A.02648	Yes	Yes	Yes	Yes

6.6.2 Asset replacement projects

The completeness of information provided by Aurizon Network Pty Ltd, including responses to SKM RFIs, relating to the assessment of prudence of cost of the sample asset replacement projects is summarised in **Table 6-9** below.

Table 6-9 : Provision of information on cost of sample asset replacement projects

SKM ref.	System	Project name	Project number	Information provided information sufficient to assess ...			
				Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
5	Blackwater	Blackwater Track & Formation Renewal	A.03959	Yes	Yes	Yes	Yes
6		Overheads Renewal Rocklands to Callemondah	A.03896	Yes	Yes	Yes	Yes
7		Marmor to Bajool Track Upgrade	A.04137	Yes	Yes	Yes	Yes
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	Yes	Yes	Yes	Yes
9		Upgrade of Jilalan Yard Drainage	A.04008	Yes	Yes	Yes	Yes
10		Bandwidth Increase for Moranbah North	A.03949	Yes	Yes	Yes	Yes
11	Newlands	Ballast Replacement Newlands Line	A.04055	Yes	Yes	Yes	Yes
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	Yes	Yes	Yes	Yes
18		Thales Axle Counter Trial	A03640	Yes	Yes	n/a	n/a



7. Assessment results and recommendations

These summary results are based on the technical reviews completed by SKM, this section of the report provides a summary of SKM's **assessment results and recommendations** in relation to claimable capital expenditure to be approved by the Authority.

7.1 Project status review results

The results of SKM's analysis of the status on 30 June 2012 of the sample capital expenditure projects are summarised in **Table 7-1** and **Table 7-2** below.

7.1.1 System enhancement projects

Table 7-1 : Status of system enhancement projects

SKM ref.	System	Project name	Project number	Claimed 2011-2012 status ¹³	Actual 2011-2012 status ¹⁴	Is project "breakable"?
1	Blackwater	Raglan Feeder Station	A.02222	Complete	Commissioned	Yes
2		Wycarbah Feeder Station	A.02604	Complete	Commissioned	Yes
3		Duringa Feeder Station	A.02603	Complete	Ongoing	Yes
4		Bluff Feeder Station	A.02602	Complete	Commissioned	Yes
12	GAPE	GAPE (post-GFC)	A.03473	Complete	Commissioned	Yes
13		GAPE Expansion (pre-GFC)	A.01541	Complete	Complete	n/a
14		GAPE Long Lead Items (pre-GFC)	A.02559	Complete	Complete	n/a
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	Complete	Complete	n/a
16		GAPE Electrification Phase (Pre-GFC)	A.02648	Complete	Complete	n/a

It is noted that Aurizon Network Pty Ltd is intending that the completion works for the above "commissioned" projects will be submitted to the Authority for inclusion in the RAB under the category of "post commissioning" activities in the 2012-2013 claim.

The forecasted value of the post commissioning activities on the four feeder stations have been provided by Aurizon Network Pty Ltd. When assessing the reasonableness of costs of these system enhancement projects, SKM has compared the claimed expenditure against its bottom-up, order of magnitude costs estimate. SKM has assumed that the actual post commissioning activities associated with the sample projects will amount to less than 5% of the capital expenditure detailed in Aurizon Network Pty Ltd.'s 2011-2012 claim.

7.1.2 Asset replacement projects

Table 7-2 : Status of asset replacement projects

SKM ref.	System	Project name	Project number	Claimed 2011-2012 status ⁵	Actual 2011-2012 status ⁶	Is project "breakable"?
5	Blackwater	Blackwater Track & Formation Renewal	A.03959	Incomplete	Ongoing	Yes
6		Overheads Renewal Rocklands to Callemondah	A.03896	Ongoing	Ongoing	Yes
7		Marmor to Bajool Track Upgrade	A.04137	Complete	Complete	n/a
8	Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	Incomplete	Ongoing	Yes

¹³ As stated in Schedule 5 (Project Claim) of Aurizon Network Pty Ltd.'s 2011-2012 claim submission.

¹⁴ As determined by SKM after detailed review of technical documents provided by Aurizon Network Pty Ltd.



SKM ref.	System	Project name	Project number	Claimed 2011-2012 status ⁵	Actual 2011-2012 status ⁶	Is project "breakable"?
9		Upgrade of Jilalan Yard Drainage	A.04008	Incomplete	Ongoing	Yes
10		Bandwidth Increase for Moranbah North	A.03949	Ongoing	Ongoing	Yes
11	Newlands	Ballast Replacement Newlands Line	A.04055	Incomplete	Ongoing	Yes
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	Ongoing	Ongoing	Yes
18		Thales Axle Counter Trial	A03640	Incomplete	Ongoing	No

7.2 Project prudence results

Table 7-3 provides an overview of SKM's engineering assessment of prudence for each of the selected capital expenditure projects.

Table 7-3 : Overview of prudence of capital expenditure of selected projects

SKM ref	System	Project name	Project number	2011-2012 Claimable expenditure ¹⁵ (\$'000)	Prudence assessment			Prudent expenditure (\$'000)	
					Project scope	Standard of the works	Project cost		
1	Blackwater	Raglan Feeder Station	A.02222	46,148	Prudent	Prudent	Prudent	46,148	
2		Wycarbah Feeder Station	A.02604	44,359	Prudent	Prudent	Prudent	44,359	
3		Duaranga Feeder Station	A.02603	41,533	Prudent	Prudent	Prudent	41,533	
4		Bluff Feeder Station	A.02602	37,869	Prudent	Prudent	Prudent	37,869	
5		Blackwater Track & Formation Renewal	A.03959	4,281	Prudent	Prudent	Prudent	4,281	
6		Overheads Renewal Rocklands to Callemondah	A.03896	3,271	Prudent	Prudent	Prudent	3,271	
		Blackwater: Maximising Electric Train Capacity	A.03452	262	Withdrawn			0	
7		Marmor to Bajool Track Upgrade	A.04137	547	Prudent	Prudent	Prudent	547	
8		Goonyella	Concrete Sleeper Upgrades - Goonyella	A.04040	4,319	Prudent	Prudent	Prudent	4,319
9			Upgrade of Jilalan Yard Drainage	A.04008	1,249	Prudent	Prudent	Prudent	1,249
10	Bandwidth Increase for Moranbah North		A.03949	65	Prudent	Prudent	Partially prudent	52 (as 20% above rail)	

¹⁵ 2011-2012 Claimable expenditure may not correspond to the full project costs because (i) Aurizon Network Pty Ltd chooses to claim a system enhancement project's expenses once a significant portion of project is commissioned, but post-commissioning works may continue during defects and liability periods and (ii) Aurizon Network Pty Ltd claims asset replacement project costs once a portion of the project are complete, even though further portions of the overall program of works may occur in subsequent years.



SKM ref	System	Project name	Project number	2011-2012 Claimable expenditure ¹⁵ (\$'000)	Prudency assessment			Prudent expenditure (\$'000)
					Project scope	Standard of the works	Project cost	
11	Newlands	Ballast Replacement Newlands Line	A.04055	4,485	Prudent	Prudent	Prudent	4,485
12	GAPE	GAPE (post-GFC)	A.03473	771,119	Prudent	Prudent	Prudent	771,119
13		GAPE Expansion (pre-GFC)	A.01541	107,489	Prudent	Prudent	Prudent	107,489
14		GAPE Long Lead Items (pre-GFC)	A.02559	28,279	Prudent	Prudent	Prudent	28,279
15		GAPE X70 - X100 Early Works (pre-GFC)	A.02523	13,887	Prudent	Prudent	Prudent	13,887
16		GAPE Electrification Phase (pre-GFC)	A.02648	7,642	Prudent	Prudent	Prudent	7,642
17	Asset Renewal	Track Circuit and Points Refurbishment	A.03831	6,920	Prudent	Prudent	Prudent	6,920
18		Thales Axle Counter Trial	A.03640	348	Deferred			0

GAPE project – pre-approval of scope

SKM finds that the documents provided by Aurizon Network Pty Ltd highlight that the scope of the pre-GFC GAPE projects evolved significantly after funding was approved by the QR Board in August 2008 and the Shareholding Minister in September 2008. SKM notes that customers were applying significant pressure on Aurizon Network Pty Ltd to advance the GAPE project and approved \$27.1m for the early works. Aurizon Network Pty Ltd has demonstrated that the revised GAPE scope was presented to customers during a detailed construction value management exercise in 2009.

Aurizon Network Pty Ltd provided SKM with a redacted copy of a signed GAPE Deed¹⁶ dated September 2010 and SKM finds that the post-GFC scope of the GAPE projects was not pre-approved by Aurizon Network Pty Ltd.'s customers in accordance with UT3, but agreed approximately 18 months after construction of the GAPE project had restarted. Nevertheless, SKM notes that the agreed GAPE Deed contains a full description of the GAPE project¹⁷, its target cost (i.e. \$1,040m) and a gain/pain sharing mechanism¹⁸ which encourages Aurizon Network Pty Ltd not to exceed the agreed target cost of the GAPE project (comprising pre-GFC and post-GFC activities).

GAPE project – Reasonable Demand

With regards to Aurizon Network Pty Ltd demonstrating that the GAPE project scope was needed to meet Reasonable Demand, Aurizon Network Pty Ltd provided SKM with forecast capacity and operating information dated February 2011 that they claimed demonstrated that checks had been performed to confirm that the commissioned scope would be able to meet the contracted demand of 50mtpa. Upon review SKM found that these checks did not investigate if a reduced scope (such as (i) two rather than three passing loops on the NML

¹⁶ SKM has reviewed the GAPE Deed between QR Network Pty Ltd and BM Alliance Coal Operations Pty Limited dated 23 September 2010.

¹⁷ Schedule 3 (Design Brief) details planned rail capacity, three passing loops on NML and DTC Mark II between Sonoma and Newlands Junction.

¹⁸ Clause 5.1 (Determination of Project Costs) was redacted in the copy of the GAPE Deed provided to SKM. Schedule 5 (Target Cost) states that the Target Cost of the NML and Newlands Upgrades was \$1,040 million. Clause 5 (Determination of the Project Cost Adjustment) of Schedule 2 (GAPE Fee) defines a Project Cost Adjustment that is equal to 50% of (Target Cost - Uncapitalised Project Costs) where, Uncapitalised Project Costs = The Project Cost less the Capitalised Amount.



rail line and/or (ii) DTC rather than DTC Mark II signalling system on part of the GAPE system) would also meet the service requirements.

Accordingly, SKM developed a dynamic capacity model to determine whether the scope and costs associated with the three passing loops and DTC Mark II signalling arrangements of the GAPE project were needed to meet Reasonable Demand. SKM's modelling results highlighted the GAPE system's capacity (and corresponding infrastructure construction costs) is particularly sensitive to the number of days the system is available.

In 2009, during the project's prefeasibility and feasibility study stages, Aurizon Network Pty Ltd had advised customers that 298 days/year availability (after planned maintenance activities and unplanned rail/port/mine shutdowns) would be assumed when determining the infrastructure requirements. SKM's capacity modelling exercise finds that if 298 days/year availability is assumed, then three passing loops (i.e. as-built arrangement) would be required along the NML.

During the Feasibility Study in 2009, Aurizon Network Pty Ltd suggested to industry representatives that anticipated efficiencies in planned downtimes and unplanned above & below rail loses could increase availability to 309 days (i.e. an additional 11 days/year availability). Aurizon Network Pty Ltd also explained that the 24 days/year allowed for mine/port unplanned downtime was conservative and suggested that significant improvement could be achieved through greater coordination with ports and miners (i.e. Aurizon Network Pty Ltd use those times when the port does not want trains (e.g. no stockpiling capacity, no boats) or miners did not need trains (i.e. no product) to undertake their planned events). SKM suggest that this would further increase availability by up to 10 days/year (i.e. 45% of 24 days) to a total of 319 days/year with little additional capital spend.

SKM studied the Moss Vale – Unanderra Line in New South Wales where an availability of 325 days/year is considered reasonable. SKM finds that if 321 days/year is assumed, only two passing loops would have been required across the NML. SKM finds that this would result in a potential saving of over \$50m in design & construction costs.

When SKM questioned Aurizon Network Pty Ltd in June 2013 on appropriate availability forecasts to use in their dynamic operation model, Aurizon Network Pty Ltd replied as follows:

"For the capacity modelling presented in the June 2013 presentation we have used an availability of 90% and a utilisation of that available capacity of 70%. Effectively, this provides a take up of the theoretical maximum capacity of 63%."

SKM interprets Aurizon Network Pty Ltd.'s response that the GAPE system's maximum capacity is 63% to suggest the GAPE system availability would amount to 230 days/year.

SKM finds that 230 days/year availability would require four passing loops (i.e. as built arrangement would not deliver contracted capacity) across the NML.

Finally, SKM notes that in September 2009, Aurizon Network Pty Ltd were predicting that the 28mtpa capacity target for NML was not expected to be needed until 2017 SKM believe (based on the sensitivity of the days/year availability versus number of passing loops) that the construction of Eaglefield Creek passing loop could have been deferred until say 2016.

Nevertheless, SKM finds that the extent of the scope of the GAPE project in its final form (i.e. three passing loops and DTC Mark II over the NML) was needed to accommodate Reasonable Demand.



7.3 Recommendations

7.3.1 Value of system enhancement capital expenditure eligible for inclusion in the RAB

Blackwater power systems project

SKM’s review of the Blackwater power systems project (i.e. Raglan, Wycarbah, Duaringa and Bluff feeder station projects) found the project’s scope, standard and cost to be prudent, although SKM notes that the Duaringa project was not commissioned in 2011-2012.

GAPE project

SKM finds that the scope, standard and cost of the GAPE project (comprising both pre-GFC and post-GFC activities) was prudent, but notes that a less conservative availability assumption would result in over \$50m of savings in overall solution (i.e. 1 less passing loop along the NML).

SKM finds insufficient clarity on the quantities and cost of early works undertaken under the pre-GFC GAPE projects (A.01541, A.02559 and A.02523) has been provided to confirm or otherwise any early works expenditure above and beyond the \$27.1m agreed expenditure.

As shown in **Figure 3-2**, the system enhancement projects, namely Blackwater power system project and GAPE project (comprising both pre-GFC and post-GFC activities), amount to \$1,098,325,251 which represents about 92% of the 2011-2012 claim

Based on the above described engineering and prudence assessment, SKM recommends that the Authority approves the inclusion of 100% of system enhancement capital expenditure in the RAB.

7.3.2 Value of asset replacement capital expenditure eligible for inclusion in the RAB

As shown in **Figure 3-2**, the asset replacement projects amount to \$91,929,289 which represents about 8% of the 2011-2012 claim. Based on the above described engineering and prudence assessment, SKM concludes that portions of the projects listed in **Table 7-5** are not eligible for inclusion in RAB:

Table 7-5 : Portion of asset replacement expenditure deemed not eligible for inclusion in the RAB

System	Project name	Project number	% found to be not prudent	Value not eligible for inclusion in RAB
Blackwater	Blackwater: Maximising Electric Train Capacity	A.03452	n/a	\$262,296
Goonyella	Bandwidth Increase for Moranbah North	A.03949	20%	\$12,978
Asset Renewal	Thales Axle Counter Trial	A.03640	n/a	\$347,839
				\$623,113

Of the \$25,746,739 worth of asset replacement capital expenditure reviewed, SKM recommends the Authority approves the inclusion in the RAB of \$25,123,626.

7.3.3 Clarification of necessary tests for prudence of scope of works

SKM recommends that Clause 3.3.2(c) of Schedule A of UT3 be expanded to ensure future engineering assessment confirm that the capital expenditure projects submitted for inclusion in the RAB are:

- below-rail infrastructure projects (or, if not, what proportion of the works were below-rail);
- fully funded by Aurizon Network Pty Ltd (or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd);
- capital expenditure and not maintenance projects; and



- commissioned in the regulatory period under consideration (or, if not, whether the project was “breakable” and, if so, what completed proportion of the works were “useful and in use” and hence contribute to the regulated service).

7.3.4 Importance of data collection for future capital expenditure engineering assessments

SKM has found, during the assessment of the sample capital expenditure projects, that Aurizon Network Pty Ltd experienced difficulty in collating and providing all of the required project information to allow a full assessment to be undertaken. It is suggested that an opportunity exists to engage future prudency assessor(s) during the capital expenditure period to (i) expedite the collection of pertinent information and (ii) provide a control mechanism to encourage Aurizon Network Pty Ltd to rigorously identify and catalogue the required data during the planning, approval and delivery phases of system enhancement and asset replacement projects to support both capital project decision making and future regulatory reviews.

7.3.5 Application of pre-approval mechanisms to future capital expenditure

For future system enhancement projects, SKM notes that Aurizon Network Pty Ltd may seek pre-approval of a procurement strategy in accordance with Clause 3.1.3 of Schedule A of UT3. SKM suggests that by obtaining such pre-approval, the capital expenditure regulatory assessment and approval process would be significantly simplified. SKM notes that, once the procurement strategy is approved, the Authority will include the capital expenditure in the RAB, in accordance with Clause 3.1.3(f), if (i) the contract provisions regarding contract variations and escalation accord with good commercial practice and (ii) the independent external auditor engaged in accordance with Clause 3.1.3(h) certifies that the tender has been conducted in accordance with the approved procurement strategy.

To facilitate this, SKM suggests that Aurizon Network Pty Ltd could satisfy the Authority that its procurement principles are consistent with the evaluation criteria in Clause 3.1.3(c), namely that they are:

- in accordance with good industry practice;
- will generate an efficient and competitive outcome;
- will avoid conflict of interest or collusion amongst tenderers; and
- will avoid unreasonable exposure to contract variations.

With regards to pre-approval of prudency of scope of asset replacement projects, in accordance with Clause 2.4 of Schedule A of UT3, Aurizon Network Pty Ltd needs to develop a strategic asset management plan. This plan must describe the general standards to be applied when Aurizon Network Pty Ltd determines whether to incur capital expenditure by replacing assets within the RAB rather than maintaining these existing assets. SKM suggests that Aurizon Network Pty Ltd submits its Asset Policy, Maintenance and Renewals document (dated June 2011) to the Authority for review and eventual approval. Upon approval by the Authority this document would become the “Asset Management Plan”.

As stated in Clause 2.4, the Asset Management Plan is not intended to be binding on Aurizon Network Pty Ltd, or represent a pre-assessment of prudency by the Authority, but is intended to provide a useful guide as to the prudency of the scope of Aurizon Network Pty Ltd.’s proposed asset replacement expenditure. Nevertheless, Clause 3.1.1 states that the Authority will accept the scope of a capital expenditure as prudent if the asset replacement expenditure is (i) consistent with the asset age and composition of the asset in the CQCR and (ii) the asset replacement is in accordance with the Asset Management Plan.

7.3.6 Independent verification and validation of standards and designs

SKM notes that Aurizon Network Pty Ltd designed and installed significant portions of the rail system elements on the GAPE project using its own staff. It is unclear if the designs and standards applied were subject to independent verification and validation. SKM recommends that future designs and application of appropriate standards are subject to independent review.



Appendix A. SKM's engineering assessment terms of reference

Terms of Reference

Engineering Assessment of QR Network's Capital Expenditure 2011-12

4 September 2012

1. Project Background

Queensland Competition Authority

The Queensland Competition Authority (the Authority) is an independent statutory body responsible for the implementation of competition policy for monopolies in Queensland. The Authority is responsible for the economic regulation of the below-rail infrastructure owned by QR Network Pty Ltd (QR Network), which operates the below-rail coal network in central Queensland and is a wholly owned subsidiary of QR National Limited.

Under QR Network's current Access Undertaking, the Authority has approved a regulatory asset base for the central Queensland coal region (CQCR), which comprises four systems, namely, Moura, Blackwater, Goonyella and Newlands, and approves any additions to that base. Further detail on these systems and the current undertaking is available at <http://www.qrnational.com.au/networksystems/Pages/NetworkServices.aspx>.

QR Network master plan & approval of capital expenditure

QR Network's approved Access Undertaking includes processes and criteria for the Authority's assessment of the prudence of capital expenditure to determine whether it should be included in the regulatory asset base for the CQCR.

In assessing the prudence of capital expenditure, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

The Authority's assessment of prudence of capital expenditure usually occurs after the capital expenditure has occurred.

However, in order to provide QR Network with some certainty, the undertaking provides for the Authority to accept the scope of works as prudent if QR Network has gained approval from at least 60% of users.

Expected 2011-12 capital expenditure submission

The Authority understands that QR Network's 2011-12 capital expenditure submission is expected to be approximately \$1.35 billion. The projects to be reviewed may include:

- (a) capacity expansion projects, including:

-
- (i) Goonyella to Abbot Point Expansion, also known as the Northern Missing Link, which was built using four alliances (Coal Connect, Coal Stream, Aspect 3 and Synergy) (~\$1.1 billion)¹; and
 - (ii) four new electrical feeder stations located at Bluff, Wycarbah, Duinga and Raglan, which were built through the TrackPower Alliance (~\$160 million)²;
 - (b) a range of system-wide, telecommunications and replacement capital expenditure projects (~\$83 million) (see list in **Appendix**); and
 - (c) post-commissioning work on a number of projects (~\$10 million) (see list in **Appendix**).

2. Purpose of Consultancy

The purpose of the consultancy is to provide technical engineering advice to assist the Authority to determine whether:

- the work undertaken in respect of customer approved projects was consistent with the scope of works approved by customers;
- the scope of projects not pre-approved by customers, mostly asset replacement, was prudent;
- the standard of all projects was prudent; and
- the cost of all projects was prudent.

3. Tasks to be performed

The consultant will conduct a desktop study of QR Network's 2011-12 capital expenditure, with the onsite inspection of a sample of projects. In addition, interviews with selected project managers can be arranged upon the consultant's request.

As part of the assessment of the prudence of the cost of capital expenditure, the consultant will review QR Network's key contracts, tenders and other related agreements, including QR Network's memorandum of understanding (MOU) regarding QR Services' construction of infrastructure for QR Network and alliance agreements.

The Authority anticipates that the consultant would review most if not all major projects but adopt a sampling approach to its assessment of minor projects.

In addition, the consultant will work collaboratively with any other consultant the Authority may hire to help perform the assessment of QR Network's capital expenditure (e.g. an accounting audit of QR Network's claimed costs and those incurred by QR Network and its contractors).

3.1 Assess Project Scope

In assessing projects that have customer approval, the consultant is to determine whether the works undertaken are consistent with the scope approved by the customer vote.

¹ Goonyella to Abbot Point Expansion Project:

<http://www.qrnational.com.au/InfrastructureProjects/Pages/GoonyellatoAbbotPointExpansionProgram.aspx>

² Blackwater Power Systems Strengthening Project:

<http://www.qrnational.com.au/InfrastructureProjects/Pages/BlackwaterPowerSystemsStrengtheningProject.aspx>

In assessing the prudence of the scope of capital works outside customer approval, the consultant must have regard to the assessment criteria set out in clause 3.3.2 of schedule A of QR Network's 2010 undertaking.

In assessing the scope of replacement capital expenditure, the consultant should have regard to whether the level and content of the replacement capital expenditure is consistent with asset age and composition of assets in the CQCR.

The final details of this approach will be settled with the successful consultant.

In reviewing and assessing the scope of all projects, the consultant must establish that the projects:

- are below-rail infrastructure and, if not, what proportion of the works are below-rail;
- were commissioned in 2011-12;
- are capital expenditure and not maintenance; and
- were fully funded by QR Network or, if not, what proportion of the works were funded by QR Network.

3.2 Assess Project Standard:

The consultant will assess the standard of the works commissioned in 2011-12 with the aim of ensuring that the works are necessary to meet the requirements of the scope and are not over designed.

In assessing the prudence of the standard of works, the consultant must have regard to whether:

- (a) the works are 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, in the CQCR; or
- (b) in all other cases, that QR Network had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in clause 3.3.3 of schedule A of QR Network's 2010 Access Undertaking.

3.3 Assess Project Cost

In assessing the reasonableness of the cost of works commissioned in 2011-12, the consultant must have regard to the assessment criteria set out in clause 3.3.4 of schedule A of QR Network's 2010 Access Undertaking, including, where appropriate:

- the level of such costs relative to the scale, nature, cost and complexity of the project; and
- the circumstances prevailing in the markets for engineering, equipment supply and construction.

In forming an opinion on the reasonableness of these costs, the consultant may also have regard to the manner in which QR Network has managed the capital works, including but not limited to, the manner in which QR Network has balanced the needs of:

- (a) safety during construction and operation;

-
- (b) compliance with environmental requirements during construction and operation;
 - (c) minimising disruption to the operation of train services during construction;
 - (d) accommodating reasonable requests of access holders to amend the scope and sequence of works undertaken to suit their needs;
 - (e) minimising whole of asset life costs including future maintenance and operating costs;
 - (f) minimising total project costs which may at times not be consistent with minimising individual contract costs;
 - (g) aligning other elements in the supply chain; and
 - (h) meeting contractual timeframes and dealing with external factors.

The Authority understands that prudence of costs is where previous consultants have spent most of their resources during the consultancy, which is why the Authority considers expertise in quantity surveying would be useful.

4. Project Resources

The consultant will be required to source information from QR Network, QR Network's 2010 Access Undertaking, QR Network's Master Plans and other stakeholders as appropriate. The consultant is required to request all the data and or information needed to complete the deliverables of this consultancy by the due date. The Authority will facilitate the acquisition of all necessary information, including providing introductions and contacts within QR Network for the consultant to complete this consultancy.

Additional information relevant to this consultancy may be found in the Authority's publications, available from the Authority or for downloading from its website at www.qca.org.au:

- QR Network's 2010 Access Undertaking (<http://www.qca.org.au/files/R-2010-DAU-QR-Undertaking-QRN2010DAU-0511.pdf>)
- as an example, the consultant's report for the 2010-11 Capital Expenditure Assessment (<http://www.qca.org.au/files/R-EvensPeck-QRNCapEx-1011ReviewQRNetworkCapEx-0612.pdf>)

The consultant may also rely on information that was, or would reasonably have been, available to QR Network at the time of making the investment decision.

5. Project Time Frame

The consultancy will commence November 2012, with a completion date of March 2013.

Dates for completion will be determined at the time of appointment.

6. Proposal Specifications and Fees

The proposal should:

- include the name, address and legal status of the tenderer;
- provide the proposed methods and approach to be applied, in particular:

-
- detail the intended tests for prudence of scope, standard and cost; and,
 - specify the type of cost structure details expected from QR Network’s submission to accomplish this task;
 - nominate the key personnel who will be engaged on the assignment together with the following information:
 - name;
 - professional qualifications;
 - general experience and experience which is directly relevant to this assignment, especially rail experience;
 - expected time each consultant will work on the project; and
 - standard fee rates for any contract variations;
 - provide a fixed price quote for the provision of the services detailed herein.

The fee quoted is to be inclusive of all expenses and disbursements. A full breakdown of consultancy costs is required with staff costs reconciled to the consultancy work plan.

The fee should also include the costs of providing a two hour presentation to Authority staff regarding the findings/conclusions of this consultancy.

Total payment will be made within 28 days of receiving an invoice at the conclusion of the consultancy.

7. Contractual Arrangements

This consultancy will be offered in accordance with the Authority’s standard contractual agreement.

This agreement can be viewed at <http://www.qca.org.au/about/consultancyagreement.php>

8. Reporting

The consultant will be required to provide the Authority with progress reports on an “as needs” basis and drafts of final reports will be required prior to project completion. If necessary, the consultant should advise at earliest opportunity any critical issues that may impede progress of the consultancy, particularly issues that impact on the successful delivery of the Consultancy Objectives outlined in Section 2 above.

At the conclusion of the consultancy, the consultant will be required to provide the Authority with a personal presentation on the findings of the analysis in addition to presenting three (3) copies of a written report. An electronic version of the final report is also required, saved in Microsoft© Word with any numeric data in Microsoft© Excel.

The consultant may also be required to provide the Authority with a final version of the report that is suitable for publication (omitting confidential information included in the final report to the Authority). The Authority will clarify this prior to the finalisation of the consultancy.

9. Confidentiality

Under no circumstance is the selected consultant to divulge any information obtained from any third party or the Authority for the purposes of this consultancy to any party other than with the express permission of the third party concerned and the Authority.

10. Conflicts of Interest

For the purpose of this consultancy, the consultant is required to affirm that there is no, and will not be any, conflict of interest as a result of this consultancy. In particular:

- (a) Has your firm previously undertaken work for QR Network, or for any of the coal mining companies with operations in central Queensland?
- (b) Has your firm previously undertaken work for the projects that are the subject of the assessment?
- (c) Is your firm currently undertaking work for any of these parties or intending to do so?

If yes, could you briefly outline the nature of the work and when it occurred (or is likely to occur) and the reason(s) why you believe this work does not constitute a conflict of interest.

11. Authority Assessment of Proposal

The proposal will be assessed against the following criteria:

- identification of any potential conflict of interest (as per section 10 above);
- technical ability to undertake the required tasks;
 - skills and experience of the proposed team members, especially rail expertise;
 - firm's experience undertaking similar types of projects;
 - proposed methodology and approach;
 - resourcing proposed;
- capacity to fulfil the project's timing requirements (demonstrated by submitting a project plan); and
- value for money.

In making its assessment against the criteria, the Authority will place most weight on relevant experience of the team members involved (40%) and the proposed methodology for the completion of the task (30%).

12. Insurance

The consultant must hold all necessary workcover and professional indemnity insurance.

13. Quality Assurance

The consultant is required to include details of quality assurance procedures to be applied to all information and outputs provided to the Authority.

14. Grievances

If during the course of your engagement you wish to raise any grievances or make a complaint, please contact Mrs Robyn Farley-Sutton, Director Corporate Services, on (07) 3222 0505 or robyn.farley-sutton@qca.org.au.

15. Lodgement of Proposals

Proposals are to be lodged with the Authority by **5:00 p.m., Friday, 21 September 2012.**

For further information concerning this consultancy, please contact Clotilde Belanger, Senior Analyst, on 07 3222 0587.

Proposals should be submitted to:

The Chief Executive Officer

Queensland Competition Authority
GPO Box 2257
Brisbane Qld 4001

Phone: (07) 3222 0555
Fax: (07) 3222 0599
Email: rail@qca.org.au

Indicative list of projects QR Network Capital Expenditure 2011-12

SYSTEM	PROJECT NAME	PROJECT NUMBER	PROJECT TYPE
Blackwater	Blackwater to Koorilgah Mine - Timber Resleepering	A03810	Asset Replacement
	Bluff Feeder Station	A.02602	System Enhancement
	Whcarbah Feeder Station	A.02604	System Enhancement
	Duaringa feeder Station	A.02603	System Enhancement
	Raglan Feeder Station	A.02222	System Enhancement
	Blackwater: Battery Bank Upgrade 4 Sites	A03701	Asset Replacement
	Blackwater: TEMPL Axle Counter Upgrade	A01897	Asset Replacement
	Callemondah 3rd Spur	A01933	Post Commissioning
	Callemondah Pan Cam	A02100	Asset Replacement
	Callemondah Yard Upgrade (Arrival Roads)	A02471	Asset Replacement
	Grantleigh Tunnel Duplication	A01573	Post Commissioning
	Stanwell - Wycarbah Duplication	A01732	Post Commissioning
	Blackwater: Maximising Electric Train Capacity	A03452	Asset Replacement
	Blackwater: Upgrade Culverts at 33.091km	A03708	Asset Replacement
	Upgrade Raglan Level Crossing Boom Mechanism	A03754	Asset Replacement
	Blackwater: Crew change Pads	A03676	Asset Replacement
	Blackwater: Overhead Traction Equipment Renewal	A03566	Asset Replacement
	Blackwater Sys: Switchroller Proc & Inst	A.02745	Asset Replacement
	Aldoga Axle Counter Renewal	A.03830	Asset Replacement
	Access Road Upgrade Goowarra-Dingo-Umolo	A.03879	Asset Replacement
	Upgrade Drain at 1166.890km Durraburra	A.03925	Asset Replacement
	Blackwater Track & Formation Renewal	A.03959	Asset Replacement
	Fist Fastener Sleeper Upgrade - Callemon	A.04084	Asset Replacement
Bluff Yard Angle Upgrade	A.04120	Asset Replacement	
Tunnel Curve Realignment	A.04135	Asset Replacement	
Upgrade Culverts on Central Line and NCL	A.04136	Asset Replacement	
Overheads Renewal Rocklands to Callemondah	A.03896	Asset Replacement	
Marmor Bajool Track Upgrade	A.04137	Asset Replacement	
System Total - BLACKWATER			
Goonyella	Broadlea - Mallawa - Wotonga Duplication	A01689	Post Commissioning
	Coppabella to Ingsdon Duplication	A02194	Post Commissioning
	DBCT 3rd Loop - Feeder Station	A01505	Post Commissioning
	Goonyella: Harmonic Filter Secondary System Replacement	A03448	Asset Replacement
	Goonyella: Switchrollers	A02117	Asset Replacement
	Jilalan Yard Upgrade	A00893	Post Commissioning
	Replacement of Failed Harmonic Filter at Oonooie	A03845	Asset Replacement
	Teviot Brook Passing Loop	A.03366	System Enhancement
	Grasstree Beach Access Road Drainage Upg	A.03794	Asset Replacement
	Rock Slope Upgde C'bella-Broadlea & C'mo	A.03862	Asset Replacement
	Nebo Cattle Yards	A.03872	Asset Replacement
	Culvert Upgrades at 57.920 & 57.660 Kilometres Hatfield to Bolingbroke	A.03884	Asset Replacement
	Access Road to Mount Sarina Microwave Tower	A.03885	Asset Replacement
	MacKenzie River Overflow Bridge	A.03886	Asset Replacement
	Bandwidth Increase for Moranbah North	A.03949	Asset Replacement
	Hay Point Departure Roads 1 & 2-Track	A.03952	Asset Replacement

	Upgrade of Jilalan Yard Drainage	A.04008	Asset Replacement
	Pan Cam Upgrade at Jilalan	A.04025	Asset Replacement
	Concrete Sleeper Upgrades - Goonyella	A.04040	Asset Replacement
	Track Upgrade Braeside to Mindi	A.04122	Asset Replacement
	Goonyella Balloon Loop - Track Renewal	A.04123	Asset Replacement
	System Total - GOONYELLA		
Moura	Byellee Angle	A00953	Asset Replacement
	Rock Slope Stability Upgrade works - Moura	A03752	Asset Replacement
	System Total - MOURA		
Newlands	Newlands: 53 to 60kg Rail Upgrade	A03803	Asset Replacement
	Collinsville LV Power and Comms Upgrade	A03826	Asset Replacement
	Newlands: Cutting Widening	A03795	Asset Replacement
	Newlands: Slope Upgrades	A03812	Asset Replacement
	Newlands: Scour Remediation at 100.93km	A02263	Asset Replacement
	Derailment Damaged Sleepers - Newlands	A.03882	Asset Replacement
	Newlands Bridge & Culvert Assessment	A.04002	Asset Replacement
	Bowen River Bridge Track Upgrade	A.04035	Asset Replacement
	Upgrade Four Culverts - Newlands	A.04052	Asset Replacement
	Ballast Replacement Newlands Line	A.04055	Asset Replacement
	System Total - NEWLANDS		
GAPE	GAPE Electrification Phase	A.02648	System Enhancement
	GAPE Long Lead Items	A.02559	System Enhancement
	GAPE X70 - X100 Early Works	A.02523	System Enhancement
	GAPE Expansion	A.01541	System Enhancement
	GAPE	A.03473	System Enhancement
	System Total - GAPE		
ement	CQCR: ARMCO Pipe Renewals	A03371	Asset Replacement
	CQCR: Coal Loss Management	A02628	Asset Replacement
	CQCR: Control Centre Consolidation	A03649	Asset Replacement
	CQCR: Fencing Renewal Program	A03324	Asset Replacement
	CQCR: Formation Strengthening	A01980	Asset Replacement
	CQCR: Renewal of Network Inspection Vehicle	A03543	Asset Replacement
	CQCR: Turnout Replacement Stages 2 & 3	A02273	Asset Replacement
	CQCR: Weather Monitoring Stations & Devises	A03099	Asset Replacement
	CQCR: Weighbridge Replacement Strategy (Stage 1)	A02276	Asset Replacement
	CQCR: Weighbridge Replacement Strategy (Stage 2)	A02870	Asset Replacement
	Derailment Sensors at Loadout	A03678	Asset Replacement
	LED Signal Replacement	A01048	Asset Replacement
	Network Services GPS Trial (Rockhampton)	A03786	Asset Replacement
	QRFL (Queensland Rail Fault Locator) Replacement	A02969	Asset Replacement
	Replacement of Radome covers	A03677	Asset Replacement
	Rockhampton Network Control Centre Boundary Changes	A03302	Asset Replacement
	Rockhampton Yard: Control Instrument and Reference Wagons	A02613	Asset Replacement
	Track circuit & Traction Bonding Connection Upgrade	A03761	Asset Replacement
	VAE Turnout Bonding Upgrade	A03809	Asset Replacement
	ViziRail Coal Network Paths	A02575	Asset Replacement
	ViziRail Technology Refresh	A02183	Asset Replacement
	Harmonic Filter Protection Relay Replacement	A03787	Asset Replacement
	Thales Axle Counter Trial	A03640	Asset Replacement
Turnout Detection - Rod Knuckle Upgrade	A03807	Asset Replacement	
UTC Monitor Upgrade Project	A02936	Asset Replacement	

Asset Replac

Critical Neutral Section Replacement	A03805	Asset Replacement
Installation of feeder Wire	A03760	Asset Replacement
Level crossing Half booms Upgrade	A03749	Asset Replacement
PVC Tubes Into Masts - Nest Deterrent	A03806	Asset Replacement
Renew Distributed Traction Assets	A03772	Asset Replacement
Signal Gantry Ladders Upgrade	A03800	Asset Replacement
Upgrade Remote monitoring at 25 Level Crossings	A03759	Asset Replacement
UTC Enhancements: Supervisor Console Alarms	A03673	Asset Replacement
UTC Stop board SPAD Suppression	A03721	Asset Replacement
Traction Fault Locator Upgrade	A03829	Asset Replacement
CQCR: Formation Stengthening Stage 3	A03856	Asset Replacement
CQCR: All Weather Access Roads (Stage 1)	A03341	Asset Replacement
CQCR: Transformer Refurbishments	A03465	Asset Replacement
Network Sleeper Upgrade Strategy	A03722	Asset Replacement
Private / QRN Occupational Crossings	A03709	Asset Replacement
6 Hole Glued Insulation Joint Asset Renewal	A03792	Asset Replacement
Dragging Equipment Detectors: Stages 1&2	A02620	Asset Replacement
Fist Fastened Sleeper Upgrade	A03372	Asset Replacement
Track Curcuit and Points Refurbishment	A.03831	Asset Replacement
Traction SCADA Remote Terminal Unit (RTU	A.03927	Asset Replacement
Fencing Upgrade goonyella & Newlands Sys	A.03928	Asset Replacement
Train Control Disaster Recovery Project	A.03931	Asset Replacement
WIM (Wheel Impact Monitor) Alarms to UTC	A.03947	Asset Replacement
Network Planning System	A.03953	Asset Replacement
ION Meter Installation Upgrade Final	A.03960	Asset Replacement
Level Crossing Protection System	A.04023	Asset Replacement
Network Siding Upgrade Project	A.04134	Asset Replacement
Moura - DMR System Replacement	A02362	Telecoms
Asset Renewal - SYSTEM WIDE		

TOTAL



Appendix B. Schedule A - Maintenance of Regulatory Asset Base of UT3

SCHEDULE A

MAINTENANCE OF REGULATORY ASSET BASE

1. MAINTENANCE OF REGULATORY ASSET BASE

1.1 QR Network will maintain a Regulatory Asset Base for the purposes of Clause 6.2.4(c) of this Undertaking.

1.2 For the purposes of Clause 1.1, on an annual basis, QR Network will roll forward the asset values in its Regulatory Asset Base, applying the following principles:

- (a) the opening asset value will be indexed for the Year using CPI;
- (b) depreciation of the assets will be calculated for the Year using asset lives and a depreciation profile endorsed by the QCA;
- (c) the value of asset disposals and transfers during the Year will be subtracted from the Regulatory Asset Base;
- (d) prudent capital expenditure will be added to the Regulatory Asset Base, where prudent capital expenditure is that accepted by the QCA in accordance with Clause 2; and
- (e) the value of the assets in the Regulatory Asset Base will be adjusted in accordance with Clauses 1.3 to 1.4.

1.3 The value of assets contained in the Regulatory Asset Base may be increased by QR Network if:

- (a) it is at the end of the Term and QR Network is seeking to include a valuation for intangible assets, being a matter that was not considered as part of the initial valuation of assets contained in the Regulatory Asset Base; or
- (b) additional sections of existing Rail Infrastructure are incorporated into the Central Queensland Coal Region, in which case the additional sections will be initially valued in accordance with the Depreciated Optimised Replacement Cost methodology,

provided that the increase in asset value must first be accepted by the QCA.

1.4 The QCA will not require the value of assets contained in the Regulatory Asset Base to be reduced unless:

- (a) the QCA made its decision to accept the expenditure in the Regulatory Asset Base on the basis of information provided by QR Network that QR Network knew, or should have known, was false or misleading at the time it provided the information;
- (b) circumstances arise in the future where demand has deteriorated to such an extent that regulated prices on an unoptimised asset would result in a further decline in demand;
- (c) it becomes clear that there is a possibility of actual (not hypothetical) bypass; or

- (d) an End of Period Assessment conducted in accordance with clause 5 of this Schedule determines that the Rail Infrastructure has deteriorated by more than would have been the case had good operating practice and prudent and effective maintenance and asset replacement policies and practices been pursued.

1.5 QR Network must, at all times during the Term, maintain the Rail Infrastructure in a condition which is fit for the purpose of provision of contracted Train Service Entitlements to Access Holders.

2. ACCEPTANCE OF CAPITAL EXPENDITURE INTO THE REGULATORY ASSET BASE

2.1 The QCA will determine what capital expenditure should be accepted into QR Network's Regulatory Asset Base. The QCA's prior approval is not required for any capital expenditure.

2.2 The QCA will accept all prudent capital expenditure into the Regulatory Asset Base. Prudency has three aspects:

- (a) prudency in scope;
- (b) prudency in standard of works; and
- (c) prudency in cost.

The QCA's consideration of prudent capital expenditure will be in accordance with Clause 3 provided that the assessment of whether actual capital expenditure will be accepted into the Regulatory Asset Base will only be made after the expenditure has been incurred, subject to Clause 3.1 which provides for pre-approval by the QCA of certain aspects of the capital expenditure.

2.3 While Reference Tariffs may include a Capital Indicator at the beginning of a regulatory period, this does not imply an acceptance by the QCA of this level of capital expenditure for inclusion in the Regulatory Asset Base. For clarity, actual capital works undertaken by QR Network during a regulatory period may be determined by the QCA to not be prudent and therefore not accepted by the QCA for inclusion in the Regulatory Asset Base, even though total capital expenditure may be within the Capital Indicator.

2.4 QR Network will provide to the QCA for approval a copy of its strategic asset management plan describing the general standards QR Network will apply in determining whether to incur capital expenditure by replacing assets within the Regulatory Asset Base rather than maintaining the existing assets (on approval by the QCA being the "Asset Management Plan"). The Asset Management Plan is not intended to be binding on QR Network, or represent a pre-assessment of prudency by the QCA, but is intended to provide a useful guide as to the prudency of the scope of QR Network's proposed Asset Replacement Expenditure. QR Network will advise the QCA of any proposed amendments to the Asset Management Plan over the Term. If the QCA assesses any proposed amendments to the Asset Management Plan as material, it will notify QR Network and those amendments will not be taken into account when considering consistency with the Asset Management Plan in accordance with this Schedule, unless the Asset Management Plan including the proposed amendments is resubmitted by QR Network for approval by the QCA, and is approved by the QCA.

- 2.5 The QCA will consider for inclusion in the Regulatory Asset Base any capital expenditure on commissioned projects or projects that have been formally discontinued. The QCA will not consider for inclusion in the Regulatory Asset Base any capital expenditure on projects that have either not been commissioned or have not been formally discontinued. The QCA will either:
- (a) advise QR Network in writing that it has approved the capital expenditure for inclusion in the Regulatory Asset Base; or
 - (b) if the QCA is considering refusing approval for the inclusion of an element of QR Network's capital expenditure in the Regulatory Asset Base, the QCA will give to QR Network a preliminary notice of the QCA's decision, stating the reasons and the way it considers it appropriate to adjust the amount of the capital expenditure.
- 2.6 If the QCA gives QR Network a preliminary notice under Clause 2.5:
- (a) within thirty (30) days of QR Network being given the preliminary notice, QR Network may revise the amount of the capital expenditure and/or provide additional information supporting its view that the capital expenditure was prudent; and
 - (b) the QCA will consider the information provided under Clause 2.6(a) and either approve or refuse to approve the capital expenditure.

3. ASSESSMENT OF CAPITAL EXPENDITURE

3.1 Regulatory Pre-Approval of Capital Expenditure

QR Network may seek pre-approval of the scope or the standard of a capital expenditure project or of a procurement strategy in accordance with this Clause 3.1. If QR Network seeks such a pre-approval, the QCA will assess the prudence of the scope or the standard of the capital expenditure project or the procurement strategy in accordance with this Clause 3.1, provided that a failure to obtain that pre-approval does not affect the right to seek approval in accordance with Clause 3.3 for that capital expenditure.

3.1.1 Regulatory Pre-Approval of Scope of Capital Expenditure

- (a) The QCA will accept the scope of a capital expenditure project as prudent if:
 - (i) it is Asset Replacement Expenditure and is consistent with the asset age and composition of the assets in, as applicable, the Central Queensland Coal Region and asset replacement is in accordance with the Asset Management Plan. However, the QCA retains the right to review the composition of Asset Replacement Expenditure; or
 - (ii) 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); or
 - (iii) it is Customer or, if an Access Holder has no Customer, Access Holder specific capital expenditure for a branch line to a mine which is to be included as a loading point for a Reference Tariff developed in accordance with Part 6 of the

Undertaking, and the scope of the capital expenditure has been accepted by the Customer or Access Holder concerned.

- (b) QR Network, an Access Seeker, an Access Holder or a Customer may make a submission to the QCA seeking regulatory pre-approval of the scope of a capital expenditure project where a capital expenditure project has not been accepted by a Customer Group in accordance with Clause 3.2.2(f) (including a project that has been omitted from the Coal Rail Infrastructure Master Plan and/or the Customer Group acceptance process under Clause 3.2.2), provided that QR Network, the Access Seeker, the Access Holder or the Customer (as the case may be) has provided sufficient information to the QCA to allow it to reasonably consider the request for pre-approval given the criteria set out in Clause 3.3.2.
- (c) The QCA must:
 - (i) consider a submission made under Clause 3.1.1(b) in accordance with the requirements set out in Clause 3.3.2 and taking into account the outcome of a Customer Group vote (if any), in accordance with Clause 3.2.2, in respect of that capital expenditure project; and
 - (ii) notify the person who made a submission under Clause 3.1.1(b) and QR Network:
 - (A) whether the scope of the capital expenditure project is pre-approved by the QCA; and
 - (B) if refused (in whole or in part), stating the reasons for that refusal.

3.1.2 Regulatory Pre-Approval of Standard of Capital Expenditure

- (a) QR Network may make a submission to the QCA seeking regulatory pre-approval of the standard of a capital expenditure project which has received regulatory pre-approval of scope in accordance with Clause 3.1.1, provided that submission includes sufficient information to allow the QCA to reasonably consider the request for pre-approval.
- (b) The QCA must:
 - (i) consider such a submission made under Clause 3.1.2(a) in accordance with the requirements set out in Clause 3.3.3; and
 - (ii) notify QR Network:
 - (A) whether the standard of the capital expenditure project is pre-approved by the QCA; and
 - (B) if refused (in whole or part), stating the reasons for its refusal.

3.1.3 Regulatory Pre-approval of Procurement Strategy

- (a) QR Network may make a submission to the QCA seeking regulatory approval of a procurement strategy for all or aspects of a capital expenditure project, if the QCA has approved the scope of that capital expenditure project as prudent in accordance with Clause 3.1.1.

- (b) The QCA must consider a submission made under Clause 3.1.3(a) in accordance with Clauses 3.1.3(c) and (d) and taking into account the likely outcomes of QR Network's compliance with that procurement strategy and the requirements for prudence of costs set out in Clause 3.3.4.
- (c) The QCA will approve QR Network's procurement strategy if it is satisfied that it is consistent with the following general principles, namely that the procurement strategy:
 - (i) is in accordance with good industry practice;
 - (ii) will generate an efficient and competitive outcome;
 - (iii) will avoid conflict of interest or collusion amongst tenderers;
 - (iv) is prudent in the circumstances of the capital expenditure project (including tending to assist in achieving the requirements for prudence of cost set out in Clause 3.3.4); and
 - (v) will avoid unreasonable exposure to contract variation claims.
- (d) In particular, in considering whether or not to approve QR Network's procurement strategy, the QCA will consider whether, inter alia:
 - (i) there is a clear process for the calling of tenders, including having clear specifications for tenders, and processes for mitigating conflicts of interest (except when it is assessed that calling tenders is likely to be less advantageous than an alternative means of negotiating a contract);
 - (ii) there is a tender assessment process which contains clear and appropriate processes for determining the successful tender, with any decisions to approve a tender that is not the lowest tender being appropriately justified and documented;
 - (iii) the basis of payment for works is clearly specified and the basis for undertaking the works is in accordance with good commercial practice;
 - (iv) there is a process for managing contracts before and after award that accords with good commercial practice for a project of the type and scale of the capital expenditure project and provides appropriate guidance on the criteria that QR Network should apply to decisions regarding the management of the capital expenditure project, including but not limited to:
 - (A) safety during construction and operation;
 - (B) compliance with environmental requirements during construction and operation;
 - (C) minimising disruption to Existing Capacity during construction;
 - (D) accommodation of the reasonable requests of Access Holders and their Customers (if applicable) to change the scope and sequence of construction to suit their needs;

- (E) a prudent balance between:
 - (1) a higher price in return for more certainty as to final cost;
 - (2) a lower price accepting that final cost may be less certain; and
 - (3) costs, schedule and minimising disruption to Existing Capacity during construction;
 - (F) minimising whole of asset life costs including future maintenance and operating costs;
 - (G) minimising total project cost which may at times not be consistent with minimisation of individual contract costs;
- (v) there is a process for managing contract variations and/or escalation that occurs post award of a contract, requiring that reasonable consideration be given to managing the risk of contract variations and/or escalation and the allocation of potential risks during the management of the contract and requiring the provision of clear documentary evidence regarding the nature and reasonableness of any variation and/or escalation; and
- (vi) QR Network has engaged an auditor in accordance with Clause 3.1.3(h) to monitor compliance with the procurement strategy.
- (e) The QCA will give QR Network a notice in writing regarding:
- (i) whether the procurement strategy is approved; and
 - (ii) if the QCA decides not to approve the procurement strategy (in whole or part) the reasons for its refusal and the way the processes should be amended.
- (f) The QCA will accept that the value of a contract as awarded is prudent and will include it into the Regulatory Asset Base if:
- (i) the QCA has approved QR Network's procurement strategy in accordance with Clause 3.1.3(e);
 - (ii) the QCA is satisfied that contract provisions regarding contract variations and escalation accord with good commercial practice; and
 - (iii) the auditor engaged in accordance with Clause 3.1.3(h) certifies that the tender has been conducted in accordance with the approved procurement strategy.
- (g) The QCA will accept that contract variations and/or escalations post award of a contract are prudent and will include them into the Regulatory Asset Base if:
- (i) a contract (the value of which as awarded has been accepted as prudent under Clause 3.1.3(f)) has been managed in accordance with the approved procurement strategy;

- (ii) the auditor engaged in accordance with Clause 3.1.3(h) has certified that the contract variations and/or escalations have been handled in a manner consistent with the relevant contract provisions; and
- (iii) the QCA is satisfied that the cost of contract variations and/or escalations is otherwise appropriate, having regard to:
 - (A) whether adequate consideration was given to properly managing the risk of contract variations and/or escalation or the allocation of potential risks during the awarding and management of the contract;
 - (B) whether the contract has been appropriately managed having regard to the matters in Clause 3.1.3(d)(iv);
 - (C) whether the contract variations and/or escalations are appropriately justified; and
 - (D) whether the contract has been managed with regard to a prudent balance between costs, schedule and minimising disruption to Existing Capacity during construction.
- (h) As part of the implementation of an approved procurement strategy, QR Network will engage an independent external auditor (at QR Network's cost unless otherwise approved by the QCA) to audit the compliance of QR Network's tender and contract management processes with the procurement strategy approved under Clause 3.1.3(e) in accordance with the following process:
 - (i) QR Network will appoint the auditor, subject to obtaining the QCA's prior approval of the selection of the auditor and the terms and conditions of the engagement of the auditor;
 - (ii) the auditor will be required to acknowledge and accept that the auditor owes a separate duty of care to the QCA in the provision of the audit and, in the event of a conflict between the auditor's obligations to QR Network and its duty of care to the QCA, the auditor's duty of care to the QCA will take precedence;
 - (iii) the auditor must agree the processes for conducting an audit with QR Network and obtain the QCA's approval of the audit process (which will consist of a proposed work program, including audit costs, for the execution of the audit);
 - (iv) QR Network will, within a nominated timeframe that is determined by the auditor to be reasonable after consultation with QR Network, provide any relevant information the auditor reasonably requires for the purpose of conducting the audit;
 - (v) if required by QR Network, the auditor will enter into a confidentiality deed with QR Network in relation to any information provided by QR Network to the effect that it must keep the information confidential and only use that information for the purpose of conducting the audit and completing the audit report detailed below;

- (vi) the auditor will compile an audit report:
 - (A) identifying whether QR Network has complied in all material respects with the approved procurement strategy including in relation to contract variations and/or escalation; and
 - (B) if the auditor identifies that QR Network has not complied in all material respects with the approved procurement strategy:
 - (1) details on the relevant non-compliance;
 - (2) any reasons stated by QR Network for the relevant non-compliance; and
 - (3) whether the non-compliance was reasonable in the circumstances;
- (vii) the auditor will provide to QR Network and the QCA:
 - (A) progress reports on the audit process every 6 months; and
 - (B) a copy of the audit report upon completion of the audit (which the QCA may publish if it considers it appropriate); and
- (viii) if the QCA forms the view that any of the auditor's reports (whether progress reports or a final report) are lacking in detail or otherwise deficient, the QCA may direct QR Network to instruct the auditor to review their report and, in doing so, to address the concerns of the QCA.
- (i) When deciding whether to approve a procurement strategy, the QCA may take advice as it considers necessary from appropriately qualified and experienced independent advisors and, if so, the cost of those advisors will be borne by QR Network.
- (j) The QCA will accept for inclusion into the Regulatory Asset Base all costs, paid for by or incurred by QR Network, that QR Network can demonstrate were prudently incurred and solely and directly related to complying with Clause 3.1.3 (including in Clauses 3.1.3(h) and (i)).

3.2 Customer Group Acceptance of Projects

3.2.1 Identification of Customer Groups

- (a) A Customer Group is defined as all Customers and Access Holders who do not have Customers, who have responsibility for Reference Tonnes. Reference Tonnes means that portion of, as applicable, a Customer's or an Access Holder's annual tonnage that:
 - (i) is charged, or will be charged, an Access Charge which is based on a Reference Tariff (including for the avoidance of doubt, Access Charges which are varied from the Reference Tariff pursuant to Clause 6.1.2(b) of the Undertaking or Clause 3, Part A of Schedule F); and

- (ii) will have its Access Charge affected at any future time by the inclusion in the Regulatory Asset Base of the capital expenditure projects for which acceptance is sought in accordance with Clause 3.2.2(f) (i.e. typically, for the Central Queensland Coal Region, within the same Individual Coal System),

and, either:

- (iii) is:
 - (A) if included in an Access Agreement that will be in force at the time that is five (5) years after Customer Group acceptance is sought in accordance with Clause 3.2.2; and
 - (B) if subject to a legally binding commitment in the Access Agreement (even if that commitment is conditional upon the completion of Infrastructure Enhancements or upon other conditions which are the responsibility of QR Network to satisfy or can be waived by QR Network),

comprised of the number of tonnes specified in that Access Agreement for a twelve (12) month period starting five (5) years after the first day of the month in which Customer Group acceptance is sought in accordance with Clause 3.2.2; or

- (iv) is:
 - (A) if included in an Access Agreement which is due to expire within five (5) years after Customer Group acceptance is sought in accordance with Clause 3.2.2; and
 - (B) if it is reasonably expected by QR Network that the Access Agreement will be extended or a new Access Agreement entered in respect of substantially the same annual tonnages from the existing mine which has the benefit of the Access under the existing Access Agreement or a Replacement Mine (taking into account factors such as whether the relevant Customer (or Customer's Access Holder) or the relevant Access Holder is seeking an extension of the Access Agreement and the projected remaining life of the existing mine or Replacement Mine),

comprised of the annual tonnage in the last year of the current Access Agreement.

- (b) QR Network will identify the members of a particular Customer Group with reference to Access Agreements that are in place at the date that Customer Group acceptance of capital projects is sought.

3.2.2 Customer Group Voting Process

- (a) Subject to Clause 3.2.2(b), QR Network may seek a Customer Group acceptance of the scope of capital expenditure projects that are included in the Coal Rail Infrastructure Master Plan prior to proceeding with the projects in order to gain pre-approval of the scope of the

project in accordance with Clause 3.1.1(a)(ii). If QR Network seeks such Customer Group acceptance of the scope of a capital expenditure project:

- (i) QR Network will provide a written request to each member of the Customer Group seeking that acceptance and provide:
 - (A) advice on:
 - (1) the specific list of capital expenditure projects from the Coal Rail Infrastructure Master Plan for which it is seeking Customer Group acceptance; and
 - (2) QR Network's assessment of the member's Reference Tonnes and the total number of Reference Tonnes relating to the list of capital expenditure projects; and
 - (B) an outline of the rights and obligations of a member of a Customer Group in relation to a Customer Group voting process as set out in this Clause 3.2.2,

provided that if, after discussions with QR Network, the member wishes to query these tonnages or the composition of the Customer Group:

- (C) the member must, within two (2) weeks after receiving QR Network's written request in accordance with Clause 3.2.2(a)(i), notify the QCA to seek verification of those matters;
 - (D) if the member has notified the QCA under Clause 3.2.2(a)(i)(C), QR Network and the member must, on request from the QCA, make available all documents necessary to verify the member's tonnages or its assessment of the Customer Group (and the QCA will confine its assessment to the information provided); and
 - (E) the QCA shall notify QR Network and the member of its decision within two (2) weeks after receiving the member's notification under Clause 3.2.2(a)(i)(C); and
- (ii) QR Network will notify contemporaneously any applicable Customer or Access Holder which has not been included within the Customer Group on the basis of QR Network's assessment that Clause 3.2.1(a)(iv) has not been satisfied provided that if, after discussions with QR Network, the Customer or Access Holder wishes to query its non-inclusion in the Customer Group:
 - (A) the Customer or Access Holder must, within two (2) weeks after receiving such notice in accordance with Clause 3.2.2(a)(ii), notify the QCA to seek verification of that matter;
 - (B) if the Customer or Access Holder has notified the QCA under Clause 3.2.2(a)(ii)(A), QR Network and the

Customer or Access Holder must, on request from the QCA, make available all documents necessary to verify whether the Customer or Access Holder should have been included in the Customer Group and, if so, the Customer's or Access Holder's Reference Tonnes (and the QCA will confine its assessment to the information provided);

- (C) the Customer or Access Holder bears the onus of demonstrating to the QCA's satisfaction that Clause 3.2.1(a)(iv) was satisfied; and
 - (D) the QCA shall notify QR Network and the Customer or Access Holder of its decision within two (2) weeks after receiving the Customer's or Access Holder's notification under Clause 3.2.2(a)(ii)(A).
- (b) Unless otherwise approved by the QCA, QR Network may only seek a Customer Group acceptance of the scope of a capital expenditure project that is General Expansion Capital Expenditure if the commencement of that capital expenditure project is anticipated by QR Network to occur not less than 6 months after QR Network provides the written request to each member of the Customer Group in accordance with Clause 3.2.2(a)(i).
 - (c) Unless a member of a Customer Group has, within six (6) weeks after receiving the request under Clause 3.2.2(a)(i), lodged with QR Network bona fide objections to the proposed capital expenditure including reasons why it believes the proposed capital expenditure is not required, then the member will be deemed to have accepted the scope of the proposed capital expenditure projects. If any member of a Customer Group provides information, and claims confidentiality to the extent that it cannot be disclosed to the QCA, that confidential information will be disregarded.
 - (d) If QR Network does not provide adequate or appropriate information in accordance with Clause 11.2.2(c) of the Undertaking, that may form a bona fide basis for a member of a Customer Group to object to the proposed capital expenditure for which Customer Group acceptance is sought.
 - (e) When determining objections, QR Network may seek QCA approval to disregard any votes on the basis that a specific objection is not bona fide. The QCA shall consult with that member of the Customer Group in reaching a decision. The QCA shall advise QR Network and that member of its decision within two (2) weeks after receiving this request from QR Network.
 - (f) Customer Group acceptance of the scope of a capital expenditure project will be deemed to have been received if at least sixty percentage points (60%) of the Customer Group (as assessed by weighting members in accordance with their Reference Tonnes) accepts the scope of the proposed capital expansion projects.
 - (g) Within ten (10) weeks after QR Network having sought acceptance of proposed capital expenditure projects under Clause 3.2.2(a), QR Network will notify each member of the Customer Group of the results of the vote. In the event that a project has not been accepted by the

Customer Group, QR Network will provide each member with details regarding the number and percentage of objections received and, on request, will make available any objecting submissions, excluding any specific sections which the submitting member has specified as confidential.

- (h) A member of a Customer Group who considers that a project should receive regulatory pre-approval of scope, notwithstanding that Customer Group acceptance has not been secured, may apply to the QCA under Clause 3.1.1(b). In this case, QR Network will, on request from the QCA, make available to the QCA all relevant documents, including any confidential elements of objections.

3.3 Prudency of Capital Expenditure

3.3.1 Assessment of Prudency of Capital Expenditure

- (a) In assessing whether the capital expenditure undertaken is prudent, the QCA will:
 - (i) only consider information that was, or would reasonably have been, available to QR Network at the time of making the investment decision (and in assessing the prudency of capital expenditure on the basis of that information, the QCA can take into account any advice or comments received pursuant to Clause 3.3.1(b)); and
 - (ii) take into account the extent to which QR Network has achieved compliance with Clause 3.2.2(f) (for example, where a significant number of the members of a Customer Group have accepted the scope of works but the threshold test for Clause 3.2.2(f) has not been met).
- (b) The QCA will take advice as it considers necessary from independent advisors using appropriate benchmarks and experience, and consult as it considers necessary with relevant stakeholders.

3.3.2 Prudency of Scope of Works

- (a) Assessing the prudency of scope of works involves assessing whether the works are reasonably required.
- (b) The QCA will accept the scope of a capital expenditure project:
 - (i) if it has been approved by a Customer Group under Clause 3.2.2(f) or pre-approved in accordance with Clause 3.1.1; or
 - (ii) if QR 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.
- (c) In assessing the scope of a capital expenditure project the QCA shall have regard to, inter alia:
 - (i) the Coal Rail Infrastructure Master Plan;
 - (ii) the need to accommodate what is reasonably required to comply with Access Agreements;

- (iii) the extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand;
 - (iv) the age and condition of existing assets, the need for replacement capital expenditure projects and consistency with the Asset Management Plan;
 - (v) QR Network's legislative requirements, including relating to workplace health and safety and environmental requirements;
 - (vi) the appropriateness of QR Network's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process;
 - (vii) the extent to which the capital expenditure project was subjected to the capital evaluation and selection process; and
 - (viii) the extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.
- (d) The QCA may determine, in assessing the scope of a capital expenditure project, that:
- (i) the scope of the capital expenditure project is in excess of that needed to accommodate current contracted demand, likely future demand within a reasonable timeframe and any spare capacity considered appropriate ("Reasonable Demand"); and
 - (ii) if the scope of that capital expenditure project is in excess of Reasonable Demand, the element of the prudent costs of the capital expenditure project that was not needed to meet Reasonable Demand ("Excluded Capital Expenditure").
- (e) If the QCA has determined Excluded Capital Expenditure in respect of a capital expenditure project, then:
- (i) that Excluded Capital Expenditure will be set aside and escalated at the rate of Approved WACC or Varied WACC, as applicable to the relevant capital expenditure project (from the date of commissioning of the capital expenditure project) until the full scope of the capital expenditure project is accepted by the QCA as required to meet Reasonable Demand (whether on one occasion or in parts over time); and
 - (ii) when the QCA accepts that all or part of the excluded aspects of the capital expenditure project are required to meet Reasonable Demand:
 - (A) the QCA will accept all or the relevant part of the Excluded Capital Expenditure into the Regulatory Asset Base at its escalated value; and
 - (B) if only part of the Excluded Capital Expenditure is included in the Regulatory Asset Base, paragraph (i) will continue to apply to the remainder.

3.3.3 Prudency of Standard of Works

- (a) 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 overdesigned such that they are beyond the requirements of the scope.
- (b) The QCA will accept the standard of the works undertaken where:
 - (i) the standard of works has been pre-approved in accordance with Clause 3.1.2;
 - (ii) QR Network can demonstrate to the QCA's reasonable satisfaction, having regard to the factors set out in Clause 3.3.3(c), QR Network had reasonable grounds for its design of the infrastructure; or
 - (iii) the proposed works are 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.
- (c) Where QR Network proposes to depart from the standard and configuration of adjacent and/or existing infrastructure with similar usage levels in assessing the standard of the works undertaken, or where the standard of such existing or adjacent infrastructure has not been accepted by the QCA as reasonable, the QCA will have regard to, inter alia:
 - (i) the requirements of Railway Operators and what is reasonably required to comply with Access Agreements;
 - (ii) current and likely future usage levels;
 - (iii) the requirements of the National Codes of Practice;
 - (iv) the requirements of other relevant Australian design and construction standards;
 - (v) QR Network's design standards contained within its Safety Management System and which is accepted by the Safety Regulator; and
 - (vi) all relevant legislation, including requirements by any Authority (e.g. the Safety Regulator and the EPA).

3.3.4 Prudency of Costs

- (a) Assessing the prudency of costs involves assessing whether the costs are reasonable for the scope and standard of work done.
- (b) The QCA will accept the prudency 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 project was undertaken (as applicable).

- (c) In assessing the reasonableness of the cost of works undertaken, the QCA will have regard to, inter alia:
 - (i) QR Network's Coal Rail Infrastructure Master Plan;
 - (ii) the level of such costs relative to the scale, nature, cost and complexity of the project;
 - (iii) the circumstances prevailing in the markets for engineering, equipment supply and construction;
 - (iv) QR Network's compliance with any applicable procurement strategy approved by the QCA in accordance with Clause 3.1.3;
 - (v) the Asset Management Plan; and
 - (vi) the manner in which the capital expenditure project has been managed, including QR Network's balancing of:
 - (A) safety during construction and operation;
 - (B) compliance with environmental requirements during construction and operation;
 - (C) compliance with Laws and the requirements of Authorities;
 - (D) minimising disruption to the operation of Train Services during construction;
 - (E) accommodating reasonable requests of Access Holders to amend the scope and sequence of works undertaken to suit their needs;
 - (F) minimising whole of asset life costs including future maintenance and operating costs;
 - (G) minimising total project cost which may at times not be consistent with minimisation of individual contract costs;
 - (H) aligning other elements in the supply chain; and
 - (I) meeting contractual timeframes and dealing with external factors.

4. CAPITAL EXPENDITURE CARRYOVER ACCOUNT

- (a) QR Network will maintain a register in which it will annually record all Approved Capital Expenditure. The register will include the following information:
 - (i) capital expenditure by project;
 - (ii) categorisation of capital expenditure to that related to electrification assets and that not related to electrification assets; and
 - (iii) for capital expenditure not related to electrification assets, categorisation of capital expenditure based on Individual Coal System.

- (b) If, at the end of each Year, the Approved Capital Expenditure differs from the Capital Indicator, the difference will give rise to an entry in the Capital Expenditure Carryover Account. The balance recorded in the Capital Expenditure Carryover Account will be deemed as:
 - (i) an under recovery of revenue, if the Approved Capital Expenditure exceeds the Capital Indicator; or
 - (ii) an over recovery of revenue, if the Approved Capital Expenditure is less than the Capital Indicator.
- (c) The balance recorded in the Capital Expenditure Carryover Account will include:
 - (i) a return on capital component, calculated as the difference between the return on capital assumed for the Capital Indicator and the return on capital that should have applied for the Approved Capital Expenditure, accrued at the Discount Rate;
 - (ii) a depreciation component, calculated as the difference between the depreciation assumed for the Capital Indicator and the depreciation that should have applied for the Approved Capital Expenditure; and
 - (iii) a tax depreciation component, calculated as the difference between the tax depreciation assumed for the Capital Indicator and the tax depreciation that should have applied for the Approved Capital Expenditure,

and will be calculated using the modelling parameters and assumptions used to determine the Reference Tariffs.
- (d) The balance in the Capital Expenditure Carryover Account at the end of each Year will be rolled forward at the Discount Rate.
- (e) The balance in the Capital Expenditure Carryover Account at the end of the Term will be taken into account when determining Reference Tariffs to apply in the next undertaking with the intention of clearing the Capital Expenditure Carryover Account over the term of that next undertaking. In the event there is no next undertaking, the balance in the Capital Expenditure Carryover Account will be recovered from, or returned to, Access Holders (as the case may be) in the form of a single payment following the Terminating Date.

5. CONDITION BASED ASSESSMENTS

- (a) QR Network must procure, at the cost of QR Network, a condition based assessment of the Rail Infrastructure in the Central Queensland Coal Region in accordance with this clause 5 within 3 months of the Approval Date (the Initial Assessment) and 6 months prior to the Terminating Date (the End of the Period Assessment);
- (b) If the End of Period Assessment finds that the condition of the Rail Infrastructure in the Central Queensland Coal Region has deteriorated between the Initial Assessment and End of Period Assessment by more than would have been the case had good operating practice and prudent and effective maintenance and asset replacement policies and practices been pursued, the Authority will be entitled to reduce the Regulatory Asset Base to reflect the additional deterioration;

- (c) QR Network will nominate three independent qualified consultants from which the QCA will select the independent consultant (the Assessor) which must be appointed to conduct both the Initial Assessment and the End of Period Assessment;
- (d) the Assessor will have a duty of care to the QCA in the conduct of the Initial Assessment and the End of Period Assessment and, in the event of a conflict between the Assessor's obligations to QR Network and its duty of care to the QCA, the Assessor's duty of care to the QCA will take precedence;
- (e) Prior to commencing an Initial Assessment or End of Period Assessment, the Assessor must agree an assessment plan with QR Network, document that assessment plan and obtain the QCA's approval of that assessment plan;
- (f) The assessment plan will:
 - (i) consist of a proposed work program for the execution of the Initial Assessment or End of Period Assessment (as applicable) including the costs which shall be payable by QR Network;
 - (ii) provide for the establishment of an assessment liaison group, comprising the Assessor, QR Network and the QCA, during the course of the Initial Assessment and the End of Period Assessment (as applicable) to provide a forum for the resolution of any issues that arise; and
 - (iii) propose a methodology for assessing track condition to be agreed between QR Network and the QCA and in the absence of agreement determined by the QCA;
- (g) QR Network will provide the Assessor with:
 - (i) any relevant information; and
 - (ii) access to land or sites,as reasonably required by the Assessor for the purposes of conducting an Initial Assessment or the End of Period Assessment.
- (h) To the extent QR Network is requested to provide confidential information to the Assessor, the Assessor will be required to enter into a confidentiality deed with QR Network in relation to any information provided by QR Network, to the effect that it must keep the information confidential and only use that information for the purpose of conducting the Initial Assessment and the End of Period Assessment and completing the assessment report.
- (i) The Assessor must provide to QR Network and the QCA a report on the findings of the Initial Assessment or the End of Period Assessment (as applicable), with the report of the End of Period Assessment including:
 - (i) identifying the extent to which the Rail Infrastructure in the Central Queensland Coal Region has deteriorated by more than would have been the case had good operating practice and prudent and effective maintenance and asset replacement policies and practices been pursued; and
 - (ii) to the extent such greater deterioration is identified, the value of that deterioration.



Appendix C. SKM RFI register

Table C-1 : RFI register

RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
001	Raglan Feeder Station	20/12/2012	Stephen Hinchliffe	Drew Hellyer	31/01/2013	42 days	Closed	Capital expenditure review information requirements for Project 01	Information received from Aurizon Network Pty Ltd on 31/01 and 21/02. Meetings held with Aurizon Network Pty Ltd.'s PM on 9/01 and 6/02 Site visit on 25/02 to 27/02 Additional information received on 5/04 and 19/04 and 22/04.
002	Blackwater Track & Formation Renewal	20/12/2012	Stephen Hinchliffe	Drew Hellyer	31/01/2013	42 days	Closed	Capital expenditure review information requirements for Project 02	Information received from Aurizon Network Pty Ltd on 31/01
003	Overheads Renewal Rocklands to Callemondah	20/12/2012	Stephen Hinchliffe	Drew Hellyer	31/01/2013	42 days	Closed	Capital expenditure review information requirements for Project 03	Information received from Aurizon Network Pty Ltd on 31/01
004	Blackwater: Maximising Electric Train Capacity						Withdrawn	Capital expenditure review information requirements for Project 04	Project withdrawn by Aurizon Network Pty Ltd
005	Concrete Sleeper Upgrades - Goonyella	20/12/2012	Stephen Hinchliffe	Drew Hellyer	31/01/2013	42 days	Closed	Capital expenditure review information requirements for Project 05	Information received from Aurizon Network Pty Ltd on 31/01
006	Upgrade of Jilalan Yard Drainage	20/12/2012	Stephen Hinchliffe	Drew Hellyer	21/02/2013	63 days	Closed	Capital expenditure review information requirements for Project 06	No response



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
007	Bandwidth Increase for Moranbah North	20/12/2012	Stephen Hinchliffe	Drew Hellyer	21/02/2013	63 days	Closed	Capital expenditure review information requirements for Project 07	No response
008	Ballast Replacement Newlands Line	20/12/2012	Stephen Hinchliffe	Drew Hellyer	21/02/2013	63 days	Closed	Capital expenditure review information requirements for Project 08	No response
009	GAPE	20/12/2012	Stephen Hinchliffe	Drew Hellyer	21/02/2013	63 days	Closed	Capital expenditure review information requirements for Project 09	Information received from Aurizon Network Pty Ltd on 13/02 and 18/02. Meetings held with Aurizon Network Pty Ltd.'s PM on 22/02 Site visit on 18/03 to 20/03 Additional information received on 26/03 and 19/04. Email correspondence provided additional information on 6/03, 8/03, 11/03, 12/03, 26/03.
010	GAPE Expansion	20/12/2012	Stephen Hinchliffe	Drew Hellyer	26/03/2013	96 days	Closed	Capital expenditure review information requirements for Project 10	Information received from Aurizon Network Pty Ltd on 26/03.
011	GAPE Long Lead Items	20/12/2012	Stephen Hinchliffe	Drew Hellyer	26/03/2013	96 days	Closed	Capital expenditure review information requirements for Project 11	Information received from Aurizon Network Pty Ltd on 26/03.
012	GAPE X70 - X100 Early Works	20/12/2012	Stephen Hinchliffe	Drew Hellyer	26/03/2013	96 days	Closed	Capital expenditure review information requirements for Project 12	Information received from Aurizon Network Pty Ltd on 26/03.
013	GAPE Electrification Phase	20/12/2012	Stephen Hinchliffe	Drew Hellyer	26/03/2013	96 days	Closed	Capital expenditure review information requirements for Project 13	Information received from Aurizon Network Pty Ltd on 26/03.



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
014	Track Circuit and Points Refurbishment	20/12/2012	Stephen Hinchliffe	Drew Hellyer	15/03/2013	85 days	Closed	Capital expenditure review information requirements for Project 14	Information was received from Aurizon Network Pty Ltd on 15/03. Additional information received on 28/03 in response to issues raised in SKM draft mini-report.
015	Thales Axle Counter Trial	20/12/2012	Stephen Hinchliffe	Drew Hellyer			Open	Capital expenditure review information requirements for Project 15	No response
016	Raglan Feeder Station	20/12/2012	Peter Moore	Drew Hellyer	21/02/2013	63 days	Closed	According to AS 3000, the first step in an electrical design is the determination of the maximum demand. In the case of a railway project, the maximum demand calculation would be a load flow calculation from which the capacity and size of the required power supply, switchgear, cables etc could be assessed. Please supply the load flow calculation along with data such as the train movement per hour, headway and the current drawn by a fully laden train on level track and ascending a hill.	Aurizon Network Pty Ltd provided access to the information on 6/02



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
017	Blackwater: Maximising Electric Train Capacity	20/12/2012	Maddy Kench	Drew Hellyer	1/01/2013	12 days	Closed	<p>The list of capital expenditure projects to be reviewed includes a project called Blackwater: Maximising Electric Train Capacity within the Blackwater System. Project Number A03452. SKM has not been able to identify documentation relating to this project in the information that has been supplied by Aurizon Network Pty Ltd to date.</p> <p>In addition to the information requested as part of RFI 001-015, please can you provide similar initial information on this project, as per the other projects? Alternatively please confirm if this project is a combination of other projects (for which information has been provided) and if so, please advise which projects.</p>	Project withdrawn by Aurizon Network Pty Ltd from 2011-2012 claim.
018	Raglan Feeder Station	20/12/2012	Peter Moore	Drew Hellyer	1/03/2013	71 days	Closed	<ul style="list-style-type: none"> SKM noted the claim in the supporting documentation of the replacement of the existing electro mechanical protection relays with later models. Please advise where the existing relays were replaced and also please supply data on the new and replacement relays installed on the project. Please also supply details of the designed/as-installed protection scheme for the FS and TSCs showing size and locations of CTs and VTs. The information supplied should also contain details of the fault location equipment used to determine the location of a fault on the traction system. This information is necessary to determine the extent of the claimed "Best Value" as detailed in the report titled "Best Value Report" dated 2 February 2012 	Aurizon Network Pty Ltd provided access to the information on 6/02.



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
019	Raglan Feeder Station	20/12/2012	Peter Moore	Drew Hellyer	28/03/2013	98 days	Closed	SKM noted that the designed cable entry to the Feeder Station and the associated TSCs was by conduit and cable pit. Please supply calculations of cable derating for depth of burial, bunching and effects of cables of different voltages in close proximity. This information is necessary to determine the extent of the claimed "Best Value" as detailed in the report titled "Best Value Report" dated 2 February 2012	Aurizon Network Pty Ltd provided access to the information on 6/02.
020	Raglan Feeder Station	20/12/2012	Peter Moore	Drew Hellyer	28/03/2013	98 days	Closed	<ul style="list-style-type: none"> SKM noted that on page 36 of the report "Best Value Report" dated 2 Feb 2012 mention was made to the effect that the SMOS by Theiss Kentz was not acceptable to QR technical specifications. Please explain the reasons for this decision. Please also supply fault level calculations at the FS and the TSCs and also please advise the ratings of the GIS circuit breakers selected for the project. This information is necessary to determine the extent of the claimed "Best Value" as detailed in the report titled "Best Value Report" dated 2 February 2012 	Aurizon Network Pty Ltd provided access to the information on 6/02.



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
021	GAPE Electrification Phase	20/12/2012	Peter Moore	Drew Hellyer	25/01/2013	36 days	Closed	<p>SKM has been engaged to assess the GAPE Electrification Phase as part of the 2011-2012 Capital Expenditure listed this project as part of the scope of work. All the data supplied so far has been examined and there is no information on this project.</p> <p>Please supply the documentation on the GAPE Electrification Phase as listed below:</p> <ul style="list-style-type: none">• Scope of work• All calculations of load flow, cable derating etc• Transformer and switchgear ratings• Protection scheme	Information received from Aurizon Network Pty Ltd on 25/01



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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
022	Thales Axle Counter Trials						Withdrawn	<ul style="list-style-type: none"> 1. Why was it decided to trial 8 axle counter heads as opposed to for example 4 axle counters? 2. What were the original and what are the current contractual agreements with Thales as well as the Thales sub-contractor Madison Communications? 3. What was the internal hourly charge out rates for each category of internal Aurizon Network Pty Ltd labour deployed onto this project during the periods in question? 4. "A full commercial and safety risk assessment will is to be conducted as part of the ACE RFI" was stated in the document dated April 2012, entitled "Minor capital Funding Request". Can we receive a copy of this document please? 5. Was a technical and project delivery risk assessment ever undertaken and if so can we receive a copy of these please? 6. Has Aurizon Network Pty Ltd submitted part refunding of outlays to the ATO via the R&D mechanisms? If not why not? 7. Is it correct that in the status update of April 2012, the milestone to complete the original scope is also indicated as being April 2012, given that the latest submission seeks to substantially achieve the same outcomes as the original scope ie type approval ? 	As stated in email from Drew Hellyer on 21/02, Aurizon Network Pty Ltd will probably withdraw project from 2011-2012 claim.



Aurizon Network Pty Ltd Capital Expenditure 2011-12 Engineering Assessment



RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
023	A.03959 Blackwater Track & Formation Renewal	29/01/2013	Andrew Henry	Drew Hellyer	15/03/2013	45 days	Closed	Please provide additional evidence (Track Validation Certificates, Track Acceptance Certificates, and Test Results etc) for all works completed on the Blackwater Track & Formation Renewal Projects. Only evidence of completion for 22.800 – 23.300 DN CL has been provided via Track Validation Certificates at a project value of approximately \$1,000,000 yet a claim has been made for \$4,280,912.	Information received from Aurizon Network Pty Ltd via email communication on 15/03. Additional information received from Aurizon Network Pty Ltd on 19/04.
024	Various	29/01/2013	Andrew Henry	Drew Hellyer	22/02/2013	24 days	Closed	Several below rail renewal projects have been undertaken due to the age and condition of existing assets and infrastructure and make reference to the Asset Management Plan. Please provide a copy of the Asset Management Plan for cross referencing of projects to enable a Prudency of Scope review and analysis of benefit to applicable system.	Information received from Aurizon Network Pty Ltd on 22/02.
025	Upgrade of Jilalan Yard Drainage	4/02/2013	Andrew Henry	Drew Hellyer	4/03/2013	28 days	Closed	Please provide evidence (Track Validation Certificates, Track Acceptance Certificates, Test Results, photographs etc) for all works completed on the Upgrade of the Jilalan Yard Drainage to support the completion claim of \$1,249,056.	Information received from Aurizon Network Pty Ltd on 4/03. Additional information received from Aurizon Network Pty Ltd on 19/04 via emails in response to issues raised by SKM in draft mini-report.
026	Marmor to Bajool Track Upgrade	11/02/2013	Stephen Hinchliffe	Drew Hellyer	11/03/2013	28 days	Closed	Capital expenditure review information requirements for all capital projects - Project 16	Information received from Aurizon Network Pty Ltd on 11/03. Additional information received from Aurizon Network Pty Ltd on 17/04 via email in response to issues raised by SKM in draft mini-report.



Aurizon Network Pty Ltd Capital Expenditure 2011-12

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RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
027	Various						Withdrawn	To assist with the assessment of the prudence of a number of projects up to date Line Diagrams for the Aurizon Network Pty Ltd are required.	Information provided by Authority
028	Bandwidth Increase for Moranbah North						Withdrawn	What were the cost estimates and cost approvals for the engagement and payment to ByteComm? The document entitled "Bandwidth Increase for Moranbah Depot – Minor Capital Funding request" provides costs estimates for Aurizon Network Pty Ltd internal labour and hardware procurement only.	Replaced by RFI 039
029	Bandwidth Increase for Moranbah North						Withdrawn	Does the claimed capital expenditure of \$62,824 represent the total or the apportioned (approximately 80%) below rail expenditure?	Replaced by RFI 039
030	Bandwidth Increase for Moranbah North						Withdrawn	<ul style="list-style-type: none"> How was the cost attributed to above rail (of approximately 20%) derived? Can evidence be provided to support this percentage figure? 	Replaced by RFI 039
031	GAPE						Withdrawn	<ul style="list-style-type: none"> Please provide documentation relating to Capacity analysis and simulations showing track, signal, consists scenarios for 50, 75 and 10 mtpa. (SKM would expect a comparative throughput analysis of traditional DTC vs DTC Mark 2 vs RCS to support the decision to deliver the scope of works (for each of the projected tonnages). Please provide Scott Wilson reports which address this. 	Replaced by RFI 040
032	GAPE						Withdrawn	Please provide evidence that the previous DTC system was not capable of handling 50 mtpa. (There is no evidence provided that the traditional DTC would not meet the projected task of 50 mtpa and in so doing not requiring an optic fibre network or remote control of points)	Replaced by RFI 040



Aurizon Network Pty Ltd Capital Expenditure 2011-12 Engineering Assessment



RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
033	GAPE						Withdrawn	Please provide evidence that DTC Mark II type configuration existed elsewhere on the network.	Replaced by RFI 040
034	GAPE	20/02/2013	Kim Kjaer-Olsen	Drew Hellyer	4/03/2013	12 days	Closed	<ul style="list-style-type: none"> Please provide S&T call for tender documentation, successful proponent response with the BOM and cost estimates. Please provide all S&T alliances variations (change requests) registers. (The tender for the S&T works should describe in detail the scope of the S&T so that tenderers could provide cost estimates.) 	Information received from Aurizon Network Pty Ltd on 5/03
035	GAPE	20/02/2013	Kim Kjaer-Olsen	Drew Hellyer	4/03/2013	12 days	Closed	Please provide all signalling AS plans and designs.	Information received from Aurizon Network Pty Ltd on 5/03
036	GAPE	20/02/2013	Kim Kjaer-Olsen	Drew Hellyer	4/03/2013	12 days	Closed	Please provide telecommunications optic fibre route plans and designs.	Information received from Aurizon Network Pty Ltd on 5/03
037	GAPE	20/02/2013	Kim Kjaer-Olsen	Drew Hellyer	4/03/2013	12 days	Closed	Please provide plan and section diagrams.	Information received from Aurizon Network Pty Ltd on 5/03
038	Overhead Renewal Rocklands to Callemondah	20/02/2013	Kim Kjaer-Olsen	Drew Hellyer	6/03/2013	14 days	Closed	<ul style="list-style-type: none"> Does the project include the costs for LEP (lowering earth points) works at Mount Larcom Yard? Is this yard used / available for common access by all operators and that the LEP works can therefore be claimed and added to the RAB? If not, please advise what the adjusted claim for this project should be (take out costs) by deducting appropriate costs for the Mount Larcom Yard works. 	Information received from Aurizon Network Pty Ltd on 6/03



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
039	Bandwidth Increase for Moranbah North	3/04/2013	Ben Wells	Drew Hellyer	11/04/2013	8 days	Closed	<ul style="list-style-type: none"> What were the cost estimates and cost approvals for the engagement and payment to ByteComm? The document entitled "Bandwidth Increase for Moranbah Depot – Minor Capital Funding request" provides costs estimates for Aurizon Network Pty Ltd internal labour and hardware procurement only. Does the claimed capital expenditure of \$62,824 represent the total or the apportioned (approximately 80%) below rail expenditure? How was the cost attributed to above rail (of approximately 20%) derived? Can evidence be provided to support this percentage figure? The project close out report entitled "A.03949 – Moranbah Bandwidth Upgrade, Project Completion Report" showing certificates of completion dated 5/11/2012 for project A.03927. Aurizon Network Pty Ltd is required to advise why a new project number has been provided and what relevance that number has to this claim for project number A.03949. 	Information received from Aurizon Network Pty Ltd via email communication on 11/4
040	GAPE	3/04/2013	Ben Wells	Drew Hellyer	18/04/2013	15 days	Closed	<ul style="list-style-type: none"> Please provide a comparison between the forecast scope and final deliverables associated with the pre-GFC projects (i.e. scope as approved by QR National Board/Shareholding Minister vs actual delivered scope). Please provide documentation relating to capacity analysis and simulations (TSG or Systemwide analyses) showing track, signal, consist scenarios for 50 mtpa. SKM 	Information received from Aurizon Network Pty Ltd via email communication and documents provided in person on 18/4



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Duration	Status	Subject	Comment
								<p>is keen to see throughput analysis demonstrating potential capacity of (i) 2 sidings vs 3 sidings along NML and (ii) traditional DTC vs DTC Mark 2.</p> <ul style="list-style-type: none">• Please provide evidence that DTC Mark II type configuration existed elsewhere on the network.• Please provide evidence of Customer Group interaction during the determination of the scope for A.03473.• As discussed on 28th February, customer approval of the expected GAPE project costs could possibly be demonstrated by the fact that Customers signed the GAPE Deeds and NAPE Deeds (believed to have been signed in November 2009). It is appreciated that copies of the design brief (i.e. scope) have been provided in the Schedule 3 of CAPEX Claim submission documentation in November 2012, but further detail is required of the agreed cost and pain/gain share mechanisms developed in the GAPE Deeds and NAPE Deeds.	



Appendix D. Blackwater power systems project

D.1 Project description

In the 2011-2012 financial year, Aurizon Network Pty Ltd commissioned a project, known as “Blackwater Power Strengthening Project”, to strengthen power supply on the Blackwater system. These projects combined have nearly doubled the electrical capacity in the Blackwater system.

This project included the design and construction of the four new Feeder Stations (FS), seven new or upgraded Track Section Cabins (TSCs) and three Auto Transformers (AT),

Aurizon Network Pty Ltd is seeking to claim capital expenditure of \$184.6 million across the four projects. Given the value and complexity of these projects Aurizon Network Pty Ltd had commissioned Edge Advantage to complete a separate submission for these four projects.

Given the similarity of the four Blackwater FS projects in the 2011-2012 claim, the Authority requested that SKM reviewed the Raglan FS project in detail and then, following a higher level review of the three remaining FSs, advise whether the findings of the Raglan FS review could reasonably be applied to all four FS projects in the Blackwater system.

Key project information is provided in **Table D-1**.

Table D-1 : Project information as advised by Aurizon Network Pty Ltd

Project number:		Project status	
Raglan	A02222		Complete
Wycarbah	A02604		Complete
Duaringa	A02603		Ongoing
Bluff	A02602		Complete
Previously considered by the Authority		Previous approved funding	
Raglan	No		\$0
Wycarbah	No		\$0
Duaringa	No		\$0
Bluff	No		\$0
Total approved funding:		Projects financially complete	
Raglan	\$54,700,000		No
Wycarbah	\$48,340,000		No
Duaringa	\$47,680,000		No
Bluff	\$44,180,000		No

D.1.1 Location of the projects

The chainages of the FSs and the TSCs shown in **Figure D-1** are as follows:

- between Rockhampton and Gladstone on North Coast Line:
 - Raglan FS at 582.5 km and Bajool TSC at 604.9 km and Mt Larcom TSC at 56.1 km.
- between Rockhampton and Blackwater on Central Line:
 - Wycarbah FS at 33.4 km, Kabra TSC at 15.5 km and Westwood TSC at 49.2 km;
 - Duaringa FS at 103.8 km, Wallaroo TSC at 118.0 km and Edungalba TSC at 82.8 km; and
 - Bluff FS at 173.1 km and Umolo TSC at 153.1 km and Blackwater TSC at 186.3 km.

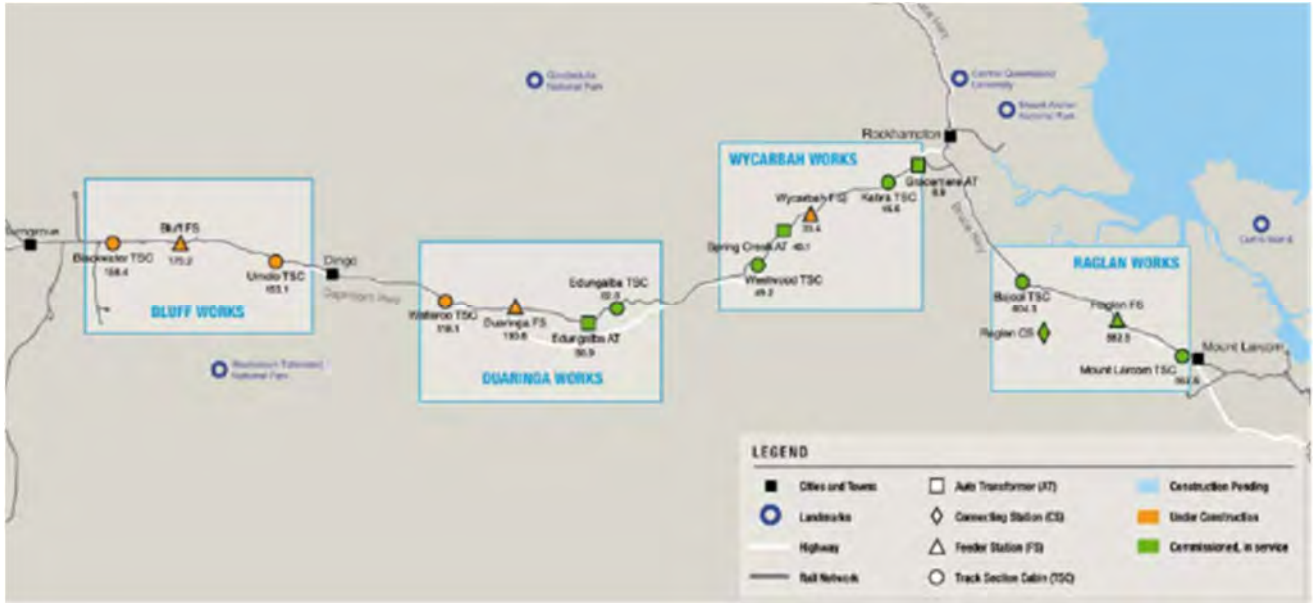


Figure D-1 : Blackwater power system project locations

D.1.2 Objective of this investment

The objective of this investment was to strengthen the power supply along the Blackwater system to allow for the increased power demand of the new electric locomotives that were being progressively purchased to transport the increased coal tonnages.

D.1.3 Status of the projects

During a meeting held between SKM reviewers, the Authority and Aurizon Network Pty Ltd.'s Project Manager on 9 January 2013, Aurizon Network Pty Ltd advised that the FSs and associated TSCs were commissioned as follows:

- Raglan January 2012;
- Wycarbah June 2012;
- Bluff July 2012; and
- Duaringa expected in January 2013.

All of the FSs and TSCs were either inspected or visited by SKM on 26 and 27 February 2013 by SKM. Maps and photographs from the site visit by SKM representatives are enclosed in **Appendix D-A**. During the site visit it was confirmed that all the sites are fully operational.

D.2 Capital expenditure

In **Table D.2** the progression of the cost assessments of the Raglan FS and associated TSCs are indicated. The progression of cost assessments for Bluff FS, Duaringa FS and Wycarbah FS and their associated TSCs are shown in **Table D-3**.



Table D-2 : Project A.02222 - Raglan FS and TSCs – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
2006 CRIMP	Estimated cost	\$16,000
2007 CRIMP	Power System Strengthening is listed for Raglan traction feeder station. The cost estimate for Raglan is included in the group of projects labelled SBB76	\$490,000
Attachment A QCA Approval of RAG Project	Authority letter, File Ref 166111 dated 21 February 2007. Authority pre-approval of the scope of QR's capital expenditure 2006-2009	\$16,000
2008 CRIMP	Power System Strengthening is listed for Raglan traction feeder station. The cost estimate for Raglan is included in the group of projects labelled SBB76	\$490,000
2009 CRIMP	Power System Strengthening at Raglan Substation is listed	\$35,000

The Authority's letter dated 21 February 2007, included in the table above, pre-approved the expenditure of \$16 million for the Raglan FS. The 2009 CRIMP extended the estimate for Raglan FS to a value of \$35 million. This latest approved amount for Raglan is substantially less than the approximately \$50 million claimed by Aurizon Network Pty Ltd. This difference in approved and claimed value will be discussed below.

Table D-3 : Projects, A.02604, A.02603 and A.02602- Wycarbah FS, Duaringa FS and Bluff FS and associated TSCs – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
2006 CRIMP	The requirement for additional substations on the Blackwater system is mentioned	Not indicated
2007 CRIMP	The requirement for three additional substations between Rocklands and Burngrove is mentioned, these additional substations are costed with other projects as a group in the Southern Bowen Basin	\$225,000
2008 CRIMP	The requirement for additional substations at Bluff, Duaringa and Wycarbah are listed and these additional substations are costed with other projects in the Southern Bowen Basin	\$120,000
Attachment A QCA Approval of Blackwater system projects	Authority letter, File ref 254640, dated 23 April 2009. Regulatory pre-approval for Coal Master Plan 2008 capacity expansion projects	\$120,000
2009 CRIMP	The new feeder stations are itemised and costed as: <ul style="list-style-type: none"> - Wycarbah - Duaringa - Bluff 	\$47,500 \$47,500 \$45,500

On the 23 April 2009, the Authority pre-approved the amount of \$120 million for Bluff FS, Duaringa FS and Wycarbah FS. The 2009 CRIMP estimates for Bluff FS, Duaringa FS and Wycarbah FS amounted to \$140.5 million. The claimed value for these three FSs in the 2011-2012 claim was \$126.124 million.

The 2009 CRIMP budget, the "Schedule 1, Attachment B 2011/12 Capital Expenditure Claim" forecast to complete, and the "Schedule 1 2011/12 Capital Expenditure Claim Workbook" claim are shown in **Table D-4**.



Table D-4 : 2011-2012 claim details

Feeder Station and TSCs	2009 CRIMP	Schedule 4, Attachment B 2011/12 Capital Expenditure Claim - Forecast at completion	Schedule 1 2011/12 Capital Expenditure Claim Workbook - Total Project Expenditure to 30 June 2012 (excl. IDC)
Raglan Feeder Station	\$35,000,000	\$50,045,000	\$46,148,066
Bluff Feeder station	\$45,500,000	\$38,758,000	\$37,868,953
Duaringa Feeder station	\$47,500,000	\$42,308,000	\$41,533,430
Wycarbah Feeder station	\$47,500,000	\$45,058,000	\$44,359,199

SKM notes that the claimed expenditure for Bluff FS, Duaringa FS and Wycarbah FS is less than the 2009 CRIMP budget estimate. However, in Raglan's case the sum claimed by Aurizon Network Pty Ltd in the 2011-2012 claim is significantly higher than the pre-approved amount of \$35 million in the 2009 CRIMP.

SKM notes that Wycarbah's budget estimate in the 2009 CRIMP is \$47.5 million whilst Raglan's is \$35 million. In SKM's opinion, Aurizon Network Pty Ltd based its estimates in the 2009 CRIMP on 132 kV infrastructure connection costs at Raglan and failed to take into consideration the significantly greater cost of the 275 kV power supply connection and the reticulation of two 50 kV 60 MVA power supplies over a distance of at least 5 km.

In SKM's opinion, the 2009 pre-approved amount of \$35 million was insufficient to execute the supply and installation of a feeder station as complex as Raglan.

SKM notes that the Authority has contracted RSM Bird Cameron to provide a cost audit of the Blackwater power system projects' financial transactions.

D.3 Provided documentation

SKM's assessment is based on information sourced from documents listed in **Appendix D-B**.

D.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 001 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd in identifying the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost;
- RFI 016 SKM requested for the supply of a load flow calculation to quantify the power supply demand to justify the expenditure of strengthening the traction power supply to the existing rail network. The intent of the RFI was also to justify the increased size of the Raglan's transformers from the standard 30MVA to the installed size of 45 MVA;
- RFI 018 SKM requested the supply of information relating to electro mechanical protection relays, fault location equipment.
- RFI 019 SKM requested the supply of de-rating calculations for cables installed in buried conduit and adjacent to other power cables in trenches and cable pits; and
- RFI 020 SKM requested the supply of information explaining why GIS was favoured over SMOS and fault level calculations as an indication of the thoroughness of the protection design.



D.3.2 Adequacy of information provided and general comments

Aurizon Network Pty Ltd.'s Project Manager, Laurens Hamman, provided a detailed response to RFI 001.

The four projects have been endorsed by the relevant Customer Group and have received regulatory pre-approval of scope by the Authority as per Clause 3.1.1(a)(ii) of the UT3. Aurizon Network Pty Ltd has provided the relevant supporting documents demonstrating the inclusion in the CRIMP, Customer Endorsement and regulatory pre-approval and scope development including option analysis in scope development.

In order for the Authority to provide regulatory pre-approval of scope it must endorse and approve the customer vote process in terms of it being applied correctly and that voting customers had sufficient information on which to base their vote. For both the 2006 CRIMP and 2008 CRIMP, which contained these projects, this process and the vote outcome were approved by the Authority.

Scope and costs as presented in the CRIMP are high level and as such change or variations to the scope as presented in the CRIMP are not recorded.

In SKM's opinion Aurizon Network Pty Ltd.'s response has satisfactorily answered all points in the RFI.

In response to RFI 016, Aurizon Network Pty Ltd presented a capacity planning report by Evans and Peck. The Evans and Peck report did not contain the expected load flow calculation but claimed that capacity modelling had been carried out on the Blackwater Coal Haulage system. The report indicated the requirement for new feeder stations at Raglan, Wycarbah, Duinga and Bluff. On the subject of the choice of the 45MVA transformer over the 30MVA transformer at Raglan, Aurizon Network Pty Ltd presented a schedule of prices indicating that the larger transformer could be obtained for a lower price than the 30MVA transformer.

In response to RFI 016, Aurizon Network Pty Ltd also presented a report by AECOM of a generic study of buried and cables bundled together. The analysis was conducted using SymCap application software and indicated that the de-rated cables satisfactorily carried the load current.

SKM's reviewer was given access to documents pertaining to RFI 018 during a full day's meeting with Aurizon Network Pty Ltd.'s Project Manager on 6 February 2013.

In response to RFI 020, Aurizon Network Pty Ltd presented an options analysis report for Raglan FS that compared the attributes of the GIS and SMOS range of circuit breakers. Aurizon Network Pty Ltd deemed that the protection design was the intellectual property of Trackstar and permitted only the perusal of the document in the Aurizon Network Pty Ltd offices. SKM found that the calculations and protection design indicated that the protection has been thoroughly designed.

D.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.



D.4.1 Project scope

The projects for the construction of FSs and associated TSCs at Raglan, Bluff, Duaringa and Wycarbah have been provided with Customer Group Approval under Clause 3.3.2(b)(i) of UT3. These approvals are contained in letters from the Authority under File Ref 254640 dated 23 April 2009 and File Ref: 166111 dated 21 February 2007. The projects were also included in a succession of CRIMPs from 2006 to 2009.

The ability of the project to meet these criteria is outlined in **Table D-5** followed by a discussion section that provides that analysis.

Table D-5 : Project scope summary

Criteria	Response
Do the projects consist entirely of below-rail infrastructure?	Yes
Were the projects commissioned in 2011-12?	Partially, refer to Section D.1.3 of this report
Does the project consist of capital expenditure and not maintenance?	Yes
Were the works fully funded by Aurizon Network Pty Ltd, or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes, 100% of the works were funded by Aurizon Network Pty Ltd
Has the scope of work been approved by a Customer Group under Clause 3.3.1(a)(ii) of Schedule A of UT3?	Yes
Has the scope of work been pre-approved in accordance with Clause 3.3.2(b)(i) of Schedule A of UT3?	Yes
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

The Raglan FS and TSCs have customer approval as Raglan has been costed and listed in the 2006, 2007, 2008 and 2009 CRIMP. This approval is further enhanced in a letter from the Authority under File Ref: 166111 dated 21 February 2007.

The Bluff, Duaringa and Wycarbah FSs and TSCs are mentioned as an unknown quantity and an unnamed grouping in the 2006 CRIMP with an estimated group cost. Three feeder stations and an estimated cost are listed in the 2007 CRIMP. The 2008 CRIMP names the three new feeder stations and is again accompanied by a group cost. The 2009 CRIMP identifies the three feeder stations and provides realistic estimates for each project. This approval is confirmed in a letter from the Authority under File Ref 254640 dated 23 April 2009.

The uniform spacing and placement of the feeder stations along the Blackwater system achieves the primary objective of the power system strengthening proposal by shortening the distance between existing feeder stations. Along with the placement of new FS, interposing TSCs is required to provide a separation of the single phase supply of the FS and also as a secondary role, a means of interconnecting sections in the event of a failure. The additional ATs were needed to share the traction load in the areas of track with steeper grades and higher traffic density. Shortening the separation between the feeder stations will increase power distribution per unit of track length. The increased power distribution will decrease the voltage drop in the catenary and feeder wires, increase the number of trains capable of being supported per unit length of track as well as ensuring that there is sufficient pantograph voltage to prevent operational delays. The increase in train traffic will directly lead to an increase in tonnage capacity to meet the projected increase in tonnage capacity requirement.



Conclusion

Given the project received customer approval, SKM concludes that the scope of this project is prudent.

D.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope in meeting the need of the regulated service provision and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

In SKM's assessment the works were deemed to have successfully been contained within the requirements of the scope and therefore fulfils criterion a) above. Details of the completed works were well defined with clear and concise work breakdown structure.

Thorough site inspections of a number of Raglan, Wycarbah and Duaringa FSs, TSCs and ATs were carried out between 25 and 27 February 2013. SKM concluded that the works were not only consistent with each new site but also consistent with other traction substations throughout the Queensland rail network. In each FS and TSC visited the equipment was deemed to be fit for purpose, functional, well laid out, fully labelled, wiring and cabling was well secured and supported. Cable pits and cable entries into each FS and TSC were well spaced and carefully laid out to prevent unnecessary cable crossings. Despite the heavy rain and flooding in the area the cable pits were relatively dry. All equipment in the FSs and TSCs was spaced sufficiently to allow maintenance and service work to be safely and efficiently carried out.

In SKM's opinion the FSs and TSCs were not overdesigned and in comparison to the traction substations being installed in other rail networks may be considered a little austere.

It is considered that the traction equipment and plant inspected fulfil criterion b) above as well as Clause 3.3.3(b)(iii) of Schedule A of UT3.

Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. SKM advises that all the LV and HV plant and equipment as visited or inspected fully complies with AS/NZS 3000, AS/NZS 2067 and AS/NZS 7000.

SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii).

These projects are not, in the view of SKM, over designed. Appropriate option studies were undertaken and appropriate solutions have been designed appropriately to reasonably accommodate the power demand of the locomotives understood to be scheduled to operate on the Blackwater System.



Conclusion

SKM concluded that the Raglan, Bluff, Duaringa and Wycarbah FS projects:

- a) were contained within the requirements of the scope;
- b) are deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the Central Queensland Coal Region; and
- c) have been designed by Aurizon Network Pty Ltd with reasonable grounds.

Given the above, SKM considers that the standard of works for this project is prudent.

D.4.3 Project cost

SKM’s assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

Table D-6 was extracted from “Schedule 1, Attachment B 2011/12 Capital Expenditure Claim”.

Table D-6 : Funding and approvals

Costs by Element and Service Provider												
Element	Bluff			Duaringa			Wycarbah			Raglan		
	Budget	ATD	FAC	Budget	ATD	FAC	Budget	ATD	FAC	Budget	ATD	FAC
Project Concepts	949	847	893	768	768	778	975	973	1,008	824	481	635
Project Management	782	681	750	666	660	680	669	653	670	887	810	860
Signalling	1,302	1,186	1,200	1,043	835	850	507	507	520	1,394	623	1,250
Power Systems	2,471	1,751	1,900	2,291	1,786	1,900	1,882	1,745	1,800	3,226	2,524	3,100
Telecommunications	568	446	480	717	684	700	687	447	490	982	609	900
QR National Internal Cost	6,073	4,911	5,223	5,485	4,733	4,908	4,719	4,324	4,488	7,313	5,047	6,745
TrackPower Project Delivery	15,694	14,147	14,735	18,056	16,101	16,510	20,020	18,267	18,780	20,868	18,259	18,700
Equipment Procurement	14,748	13,759	13,900	14,940	13,594	13,800	16,583	15,650	15,900	17,071	15,146	16,600
Traction & Distribution	5,588	4,628	4,900	7,115	6,931	7,100	5,932	5,829	5,870	8,146	7,600	8,000
Total	44,180	37,444	38,758	47,680	41,359	42,308	48,340	44,071	45,058	54,700	46,053	50,045

The Authority’s terms of reference, paragraph 1(a)(ii) states that the four FSs at Bluff, Wycarbah, Duaringa and Raglan were built through the TrackPower Alliance and Aurizon Network Pty Ltd undertook some concept design works, signalling, power and telecommunications works.

According to the Edge Advantage document titled: “Regulatory Asset Base Submission to the Authority for Blackwater Power Projects completed during 2011-2012” Executive Summary, page 8:

“The expenditure on each project was split between the TrackPower Alliance and Aurizon Network Pty Ltd. The TrackPower Alliance was primarily responsible for design and site construction works and Aurizon Network Pty Ltd was responsible for power systems works, property acquisition OHLE works, telecommunications and signalling works etc.”

In the original 2011-2012 claim submission only documentation regarding TrackPower’s components of the projects was provided. SKM asked Aurizon Network Pty Ltd to provide details of the component of the projects completed by internal teams and this data was received on 5 April 2013 and 19 April 2013.

The TrackPower component of the projects, amounts to approximately 70-75% of the value of each project, SKM considered that the TrackPower component for each project covers the work associated with the rows in **Table D-6** above labelled Project Delivery and Equipment Procurement.

The extracted applicable costs for TrackPower’s components and the SKM estimate for those components are shown in **Table D-7**.



Table D-7 : Forecasted projects costs and SKM estimates (\$'000)

Feeder station	Bluff	Duaringa	Wycarbah	Raglan
Project Delivery	14,735	16,510	18,780	18,700
Equipment Procurement	13,900	13,800	15,900	16,600
Total	28,635	30,310	34,680	35,300
SKM Estimate	28,134	29,254	30,416	33,946
Percentage Difference	1.75%	3.48%	12.29%	3.83%

Discussion

The SKM cost estimate was based on knowledge of commercial rates and prices and experience from similarly sized rail projects undertaken by SKM. In view of the close approximation between the actual costs, even considering that the forecast figures include the post-commissioning works, and the SKM estimate it is considered that for the TrackPower components of the projects, the requirements of Clause 3.3.4 of Schedule A of UT3, have been satisfied. SKM's estimate for the TrackPower components is shown in **Appendix D-C**.

A breakdown of the project costs of the remaining components of works performed by Aurizon Network Pty Ltd were verified following analysis of additional scope, standard and cost information received on 5 April 2013 and 19 April 2013.

Of particular interest were the details presented in **Table D-8** below, provided by Aurizon Network Pty Ltd, comparing the Raglan FS costs to two earlier FS projects at Bolingbroke and Dalrymple Bay. These previous project were approved by the Authority and provide a good benchmark for the Raglan FS project.

Table D-8 : Comparison of Bolingbroke FS (2009), Dalrymple Bay FS (2010) and Raglan FS (2012)

Description	Bolingbroke		DBCT FS		Raglan		Average
	Actual	%	Actual	%	At 30/6/12	%	%
Project Concepts	378	1.3%	439	1.5%	481	1.0%	1.3%
Project Management	326	1.1%	408	1.4%	814	1.8%	1.4%
Project Delivery	12,740	42.3%	12,071	40.1%	18,321	39.7%	40.7%
Equipment Procurement	11,910	39.6%	8,825	29.3%	15,146	32.8%	33.9%
Signalling	279	0.9%	568	1.9%	624	1.4%	1.4%
Power Systems	1,475	4.9%	1,578	5.2%	2,545	5.5%	5.2%
QR Traction & Distribution	2,619	8.7%	5,881	19.5%	7,608	16.5%	14.9%
Telecommunications	364	1.2%	343	1.1%	609	1.3%	1.2%
Total	30,091		30,114		46,148		

Conclusion

The project costs as identified in **Table D-7** and **Table D-8** are considered to be prudent.

D.5 Summary

Following the detailed review of Raglan FS and the requested high level review of the three remaining FSs in the 2011-2012 claim, SKM advises that the findings of the Raglan FS review can reasonably be applied to all four FS projects in the Blackwater system.

The outcomes of this prudence assessment are summarised in **Table D-9**.



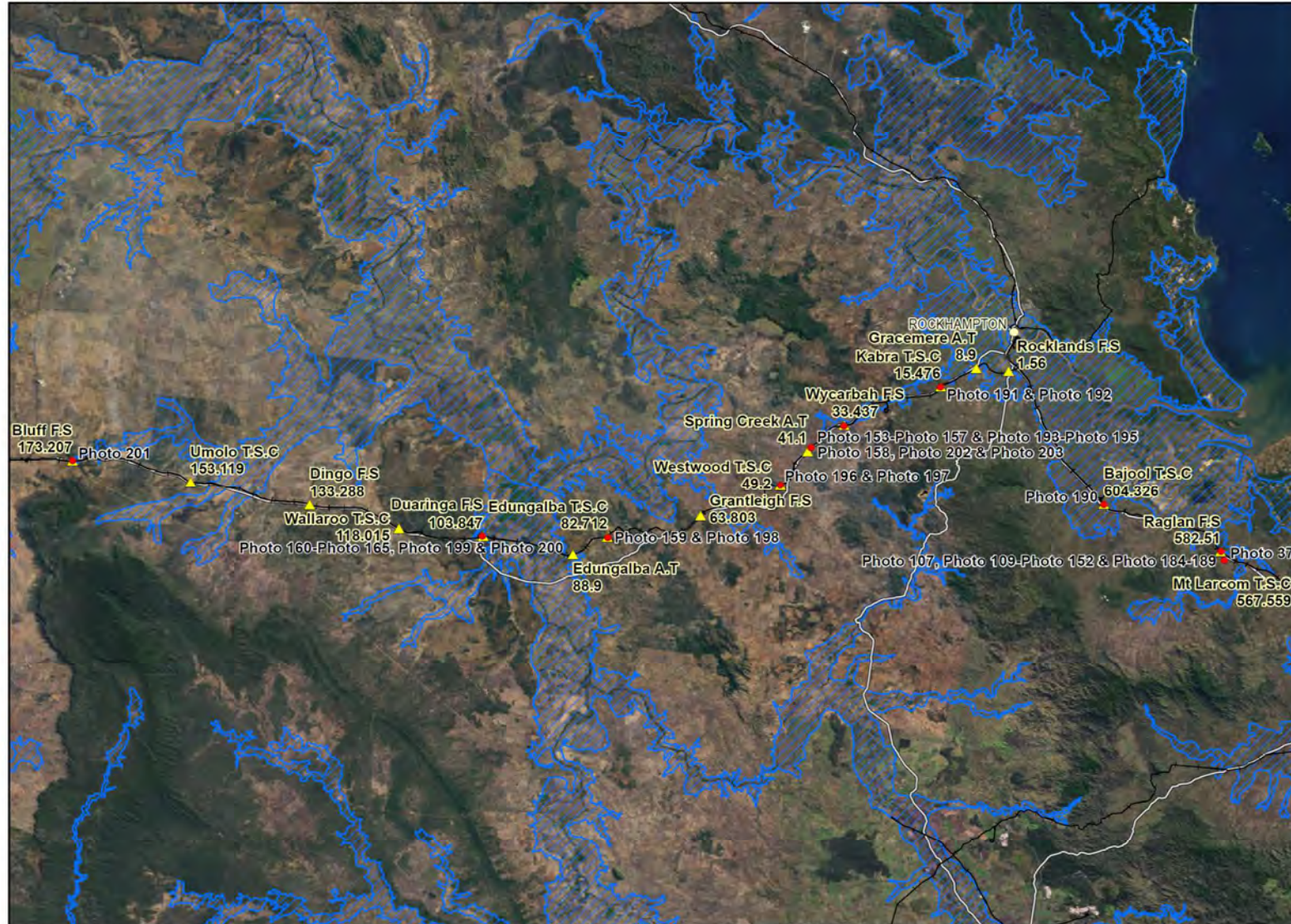
Table D-9 : Blackwater power systems projects – review summary

Item	Prudency
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



D.6 Appendix D-A: SKM site visit map and photos

BLACKWATER ELECTRICAL SYSTEMS - PHOTO LOCATIONS



- LEGEND**
- Photo Location
 - ▲ Electrical Equipment
 - Towns
 - Railway
 - Highway
 - DERM Floodplain Assessment Overlay

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NOT TO SCALE





Bluff Feeder Station



Figure D-A 1 Photo 201 – Ch 173.207

Duaringa Feeder Station



Figure D-A 2 Photo 160 – Ch 103.928



Figure D-A 3 Photo 161 – Ch 103.928



Figure D-A 4 Photo 162 – Ch 103.928



Figure D-A 5 Photo 163 – Ch 103.928



Figure D-A 7 Photo 165 – Ch 103.928



Figure D-A 8 Photo 199 – Ch 103.847



Figure D-A 6 Photo 164 – Ch 103.928



Figure D-A 9 Photo 200 – Ch 103.847



Edungalba T.S.C



Figure D-A 10 Photo 198 – Ch 82.712



Figure D-A 11 Photo 159 – Ch 82.673

Westwood T.S.C



Figure D-A 12 Photo 196 – Ch 149.200



Figure D-A 13 Photo 197 – Ch 49.200

Spring Creek A.T



Figure D-A 14 Photo 202 – Ch 41.100



Figure D-A 15 Photo 203 – Ch 41.100



Figure D-A 16 Photo 158 – Ch 40.451

Wycarbah F.S



Figure D-A 17 Photo 193 – Ch 33.437



Figure D-A 18 Photo 195 – Ch 33.437



Figure D-A 19 Photo 194 – Ch 33.437



Figure D-A 20 Photo 153 – Ch 33.425



Figure D-A 21 Photo 154 – Ch 33.425



Figure D-A 23 Photo 156 – Ch 33.425



Figure D-A 22 Photo 155 – Ch 33.425



Figure D-A 24 Photo 157 – Ch 33.425

A.1.1 Kabra T.S.C



Figure D-A 15 Photo 191 – Ch 15.476



Figure D-A 26 Photo 192 – Ch 15.476



Bajool T.S.C



Figure D-A 17 Photo 190 – Ch 604.326

Raglan Feeder Station



Figure D-A 18 Photo 107 – Ch 582.481



Figure D-A 29 Photo 109 – Ch 582.481

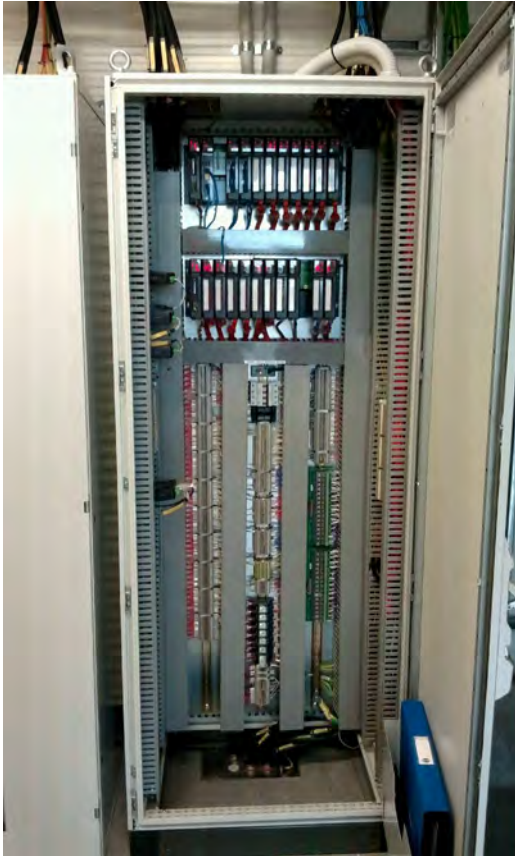


Figure D-A 30 Photo 110 – Ch 582.481



Figure D-A 32 Photo 112 – Ch 582.481

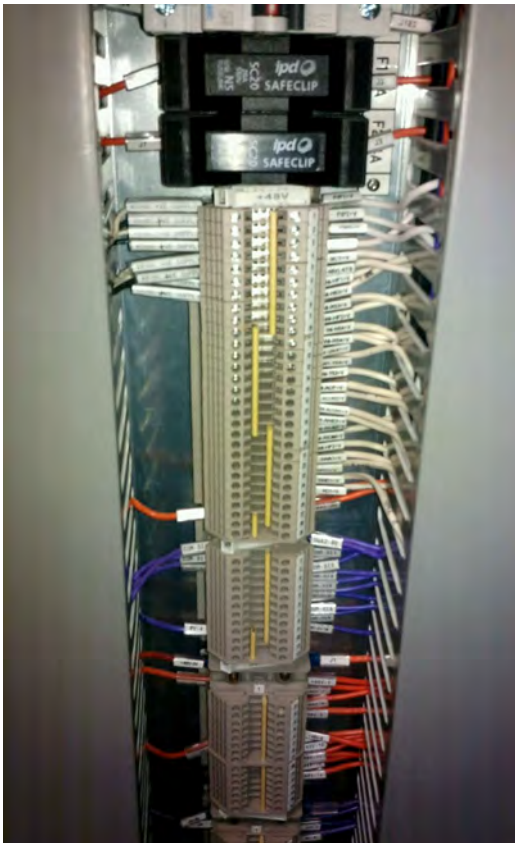


Figure D-A 31 Photo 111 – Ch 582.481



Figure D-A 33 Photo 113 – Ch 582.481



Figure D-A 34 Photo 114 – Ch 582.481



Figure D-A 36 Photo 116 – Ch 582.481



Figure D-A 35 Photo 115 – Ch 582.481



Figure D-A 37 Photo 117 – Ch 582.481



Figure D-A 38 Photo 118 – Ch 582.481



Figure D-A 40 Photo 120 – Ch 582.481



Figure D-A 41 Photo 121 – Ch 582.481



Figure D-A 39 Photo 119 – Ch 582.481



Figure D-A 42 Photo 122 – Ch 582.481

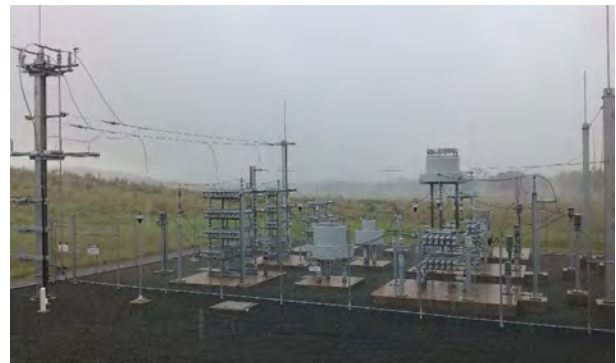


Figure D-A 43 Photo 123 – Ch 582.481



Figure D-A 44 Photo 124 – Ch 582.481



Figure D-A 48 Photo 128 – Ch 582.481



Figure D-A 45 Photo 125 – Ch 582.481



Figure D-A 49 Photo 129 – Ch 582.481



Figure D-A 46 Photo 126 – Ch 582.481



Figure D-A 50 Photo 130 – Ch 582.481



Figure D-A 47 Photo 127 – Ch 582.481

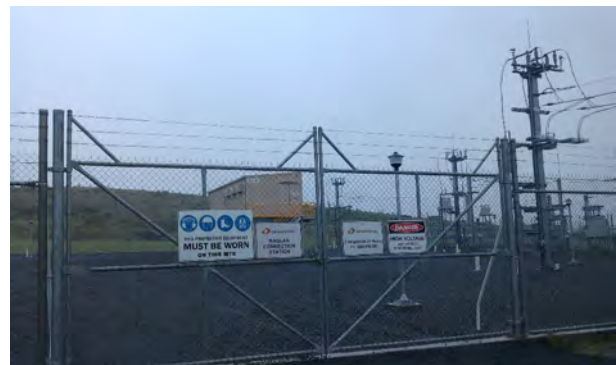


Figure D-A 51 Photo 131 – Ch 582.481



Figure D-A 52 Photo 132 – Ch 582.481



Figure D-A 56 Photo 136 – Ch 582.481



Figure D-A 53 Photo 133 – Ch 582.481



Figure D-A 57 Photo 137 – Ch 582.481



Figure D-A 54 Photo 134 – Ch 582.481



Figure D-A 58 Photo 138 – Ch 582.481



Figure D-A 55 Photo 135 – Ch 582.481



Figure D-A 59 Photo 139 – Ch 582.481



Figure D-A 60 Photo 141 – Ch 582.481



Figure D-A 63 Photo 143 – Ch 582.481



Figure D-A 61 Photo 140 – Ch 582.481



Figure D-A 64 Photo 144 – Ch 582.481



Figure D-A 65 Photo 145 – Ch 582.481



Figure D-A 62 Photo 142 – Ch 582.481

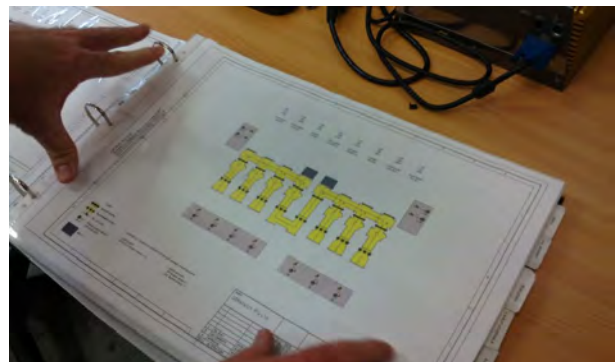


Figure D-A 66 Photo 146 – Ch 582.481



Figure D-A 67 Photo 147 – Ch 582.481



Figure D-A 69 Photo 149 – Ch 582.481



Figure D-A 68 Photo 148 – Ch 582.481



Figure D-A 70 Photo 150 – Ch 582.481



Figure D-A 71 Photo 151 – Ch 582.481



Figure D-A 73 Photo 184 – Ch 582.481



Figure D-A 72 Photo 152 – Ch 582.481



Figure D-A 74 Photo 185 – Ch 582.481



Figure D-A 75 Photo 186 – Ch 582.481



Figure D-A 77 Photo 189 – Ch 582.481



Figure D-A 76 Photo 187 – Ch 582.481



Figure D-A 78 Photo 188 – Ch 582.481






Aurizon Network Pty Ltd Capital Expenditure 2011-12
Engineering Assessment





D.7 Appendix D-B: Blackwater power systems project document register



QCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Schedule 4 – Blackwater Feeder Stations Claim Submission						
0	Regulatory Asset Base Submission to QCA Final 30 October 2012		Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/2012	Peter Mathews; , Edge Advantage, Microsoft Word	Final Version, 30 October 2012	■
1	1. 080403 Blackwater PS Upgrades - discussion paper		Blackwater Coal Haulage System Scope Appraisal – Capacity Upgrade Power Systems	Colin Rossetti; Adobe pdf	Draft for Comment; 3 April 2008	■
2	2. 29795570		Rationale for Power Systems Upgrade in the Blackwater System A Coal Rail Infrastructure Master Plan Working Paper	QR; Adobe pdf	February 2009	■



QCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	3. Attachment A QCA Approval of BS Projects		Regulatory pre-approval for Coal Master Plan 2008 capacity expansion projects	Brian Parmenter; Adobe pdf	23 April 2009	■
4	4. Attachment A QCA Approval of RAG Project		Authority pre-approval of the scope of QR's capital expenditure 2006-2009	EJ Hall; Adobe pdf	21 February 2007	■
5	5. Attachment B 2011 - 2012 Capital Expenditure Claim		2011-2012 Capital Expenditure Claim	No author; excel	October 2012	■
6	6. Attachment B 201112 CAPEX file July 18		2011-12 CAPEX File	No author; excel	18 July 2012	■



OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
7	7. Attachment C Alliance Agreement Signed Top Copy		Alliance Agreement	Trackpower Alliance; Adobe pdf	Final Version	■
8	8. Attachment D Bluff Best Value Report Final 15 June 2012		Best Value Report: Bluff FS, Blackwater TSC and Umolo TSC	Peter Mathews; Adobe pdf	Final Version; 15 June 2012	■



OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
9	9. Attachment D Duaringa Best Value Report final 12 June 2012		Best Value Report: Duaringa FS, Edungalba TSC and AT, Wallaroo TSC	Peter Mathews; Adobe pdf	Final Version; 12 June 2012	■
10	10. Attachment D Raglan Best Value Report Final 2 February 2012		Best Value Report: Raglan CS Raglan FS and Bajool and Mt Larcom TSCs	Peter Mathews; Adobe pdf	Final Version; 2 February 2012	■

OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
11	11. Attachment D Wycarbah Best Value Report Final 21 March 2012		Best Value Report L Wycarbah FS Kabra TSC Westwood TSC Spring Creek AT Gracemere AT	Peter Mathews; Adobe pdf	Final Version; 21 March 2012	■
12	12. Attachment F TrackPower Verification Plan PRG-MP-00008-01 (signed)		Verification Plan	P Hermann; Adobe pdf	Revision 1; 26 October 2006	■

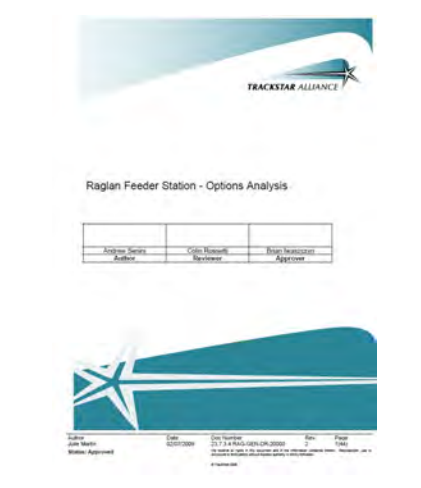

OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
13	13. Attachment H 090909 Attach B - Strategic Overview(Ranbury)- 4 Sep 09		Blackwater Power Systems Strategic Overview	Ross Hunter; Microsoft word document	4 September 2009	■
14	14. Attachment I 090909 Attach C B'water Break-even Analysis(Ranbury) - 4 Sep 09		Blackwater Power System Upgrade Feasibility – Breakeven Cost Analysis	Ross Hunter; Microsoft word document	4 September 2009	■

OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
15	15. Attachment K Final Project Brief - Raglan v8		Raglan CS, Raglan FS and Bajool and Mt Larcom TSCs Final Project Brief Power Systems	Andrew Senini; Adobe pdf	Revision 8; 10 February 2010	■
16	16. Attachment L 2.2 WYC-GEN-DR- 00001 Blackwater Options Report v2		Blackwater Power Systems Upgrade Project – Options Analysis	Andrew Senini; Adobe pdf	Revision 2; 7 December 2009	■



OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
17	17. Attachment L RAG-GEN-DR- 20000_1 Raglan Options Report rev 2 AS		Raglan Feeder Station – Options Analysis	Julie Martin; Adobe pdf	Revision 2; 2 July 2009	■
18	18. Attachment L Raglan Options Presentation		Raglan Feeder Station – Project Options (Presentation)	Richard Combrink; Adobe pdf	15 February 2010	■

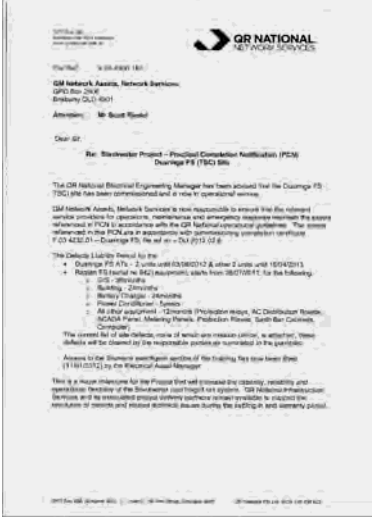
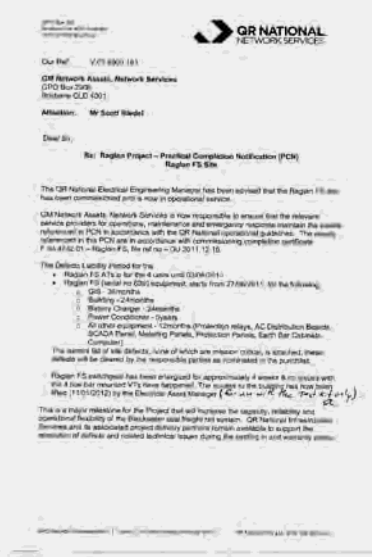
OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
19	19. Attachment M 080403 Blackwater PS Upgrades - discussion paper Scope Appraisal		Blackwater Coal Haulage System Scope Appraisal – Capacity Upgrade Power Systems	Colin Rossetti; Adobe pdf	Draft for Comment; 3 April 2008	■
20	20. Attachment N Bluff Final Project Report_rev C		Bluff Feeder Station Project Final Project Report	Rakesh Solanki; Microsoft Word document	Revision C	■


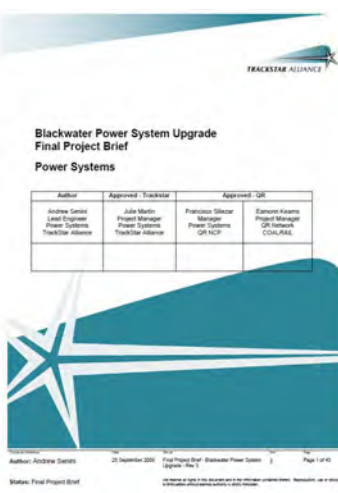
OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category						
21	21. Attachment N Duaringa Final Project Report_rev B	 <p>Duaringa Feeder Station Project Final Project Report 9 March 2012</p> <table border="1"> <tr> <td>Rakesh Solanki Project Manager</td> <td>Vai Sengul Design Manager</td> <td>Brian Newaczyk Alliance Manager</td> </tr> <tr> <td>Author</td> <td>Reviewer</td> <td>Approver</td> </tr> </table>	Rakesh Solanki Project Manager	Vai Sengul Design Manager	Brian Newaczyk Alliance Manager	Author	Reviewer	Approver	Duaringa Feeder Station Project Final Project Report	Rakesh Solanki; Adobe pdf	Revision B; 9 March 2012	■
Rakesh Solanki Project Manager	Vai Sengul Design Manager	Brian Newaczyk Alliance Manager										
Author	Reviewer	Approver										
22	22. Attachment N Wycarbah Final Project Report_revB	 <p>Wycarbah Feeder Station Project Final Project Report 11 March 2012</p> <table border="1"> <tr> <td>Rakesh Solanki Project Manager</td> <td>Vai Sengul Design Manager</td> <td>Brian Newaczyk Alliance Manager</td> </tr> <tr> <td>Author</td> <td>Reviewer</td> <td>Approver</td> </tr> </table>	Rakesh Solanki Project Manager	Vai Sengul Design Manager	Brian Newaczyk Alliance Manager	Author	Reviewer	Approver	Wycarbah Feeder Station Project Final Project Report	Rakesh Solanki; Microsoft Word document	Revision B	■
Rakesh Solanki Project Manager	Vai Sengul Design Manager	Brian Newaczyk Alliance Manager										
Author	Reviewer	Approver										



OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
23	23. Attachment O Duinga FC PCN		Blackwater Project – Practical Completion Notification (PCN) Duinga FS (TSC) Site	QR National; Adobe pdf	February-March 2012	■
24	24. Attachment O Raglan FS PCN		Raglan Project – Practical Completion Notification (PCN) Raglan FS Site	QR National; Adobe pdf	January 2012	■



OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
25	26. Attachment P Raglan FS OHLE Commissioning Certificate		Practical Completion Certificate Raglan Feeder Station	QR National; Adobe pdf	31 October 2011	■
26	26. BW Power Systems Upgrade Final Project Brief September 2009		Blackwater Power System Upgrade Final Project Brief Power Systems	Andrew Senini; Adobe pdf	Revision 3; 25 September 2009	■



QCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
27	27. Raglan FS OHLE Commissioning Certificate		Practical Completion Certificate Raglan Feeder Station	QR National; Adobe pdf	31 October 2011	■
Received from QCA 25 January 2013						
1	1. 090612 QR Network Pty Ltd Delegations Framework June 2009		Notice of Revised Investment Project Approval Memorandum Duingra Feeder Station	QR; Adobe pdf	Version 1.0; 6 November 2009	■


OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	2. 091019 ISO9-20.1 Raglan Feeder Station (Signed Decision Minute)		Notice of Revised Investment Project Approval Memorandum Duaringa Feeder Station	QR; Adobe pdf	Version 1.0; 6 November 2009	■
3	3. 091110 A02602 - Full Project approval docs		Notice of Revised Investment Project Approval Memorandum Bluff Feeder Station	QR; Adobe pdf	Version 1.0 6 November 2009	■

OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	4. 091110 A02603 - Full Project approval docs		Notice of Revised Investment Project Approval Memorandum Duaringa Feeder Station	QR; Adobe pdf	Version 1.0; 6 November 2009	■
5	5. 091110 A02604 - Full Project approval docs		Notice of Revised Investment Project Approval Memorandum Duaringa Feeder Station	QR; Adobe pdf	Version 1.0; 6 November 2009	■

OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6	6. CNS41 - Blackwater Feeder Stations		Blackwater Feeder Station Costing excel sheet A.02604, A.02222, A02603, A02602 (tabs)	No author; excel document		■
7	7. Cost Review of Aurizon's Capital Expenditure - Requirements - BWFS 24012013		Client Deliverables Listing – Aurizon Capital Expenditure Submission Audit – BW Feeder Stations	RSM Bird Cameron; Microsoft word document		■
8	8. ZCJ13 - Blackwater Feeder Stations		Blackwater Feeder Stations No title A.02604, A.02222, A02603, A02602 (tabs)	No author; excel document		■
9	9. ZWISR - Blackwater Feeder Stations		Blackwater Feeder Stations No title A.02604, A.02222, A02603, A02602 (tabs)	No author; excel document		■

QCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to RFI001 to 015						
Additional information received on 5 April 2013						
1	QCA Clarifications V1 – BW Feeder Stations		Memorandum Subject: QCA Clarifications	Laurens Hamman (Aurizon); Adobe pdf	5 April 2013	■
2	CNS41 - Raglan - Internal costs		Raglan Feeder Station Internal costs	No author; Excel	No date	■


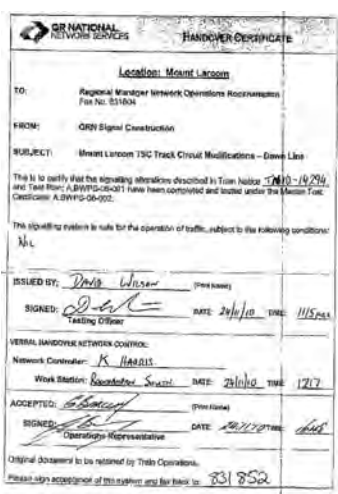
QCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	A.02222 ZWISR - Internal Costs		A.02222 Internal Costs	No author; Excel	No date	■



Additional information received on 19 April 2013

1	QCA Clarifications V2		Memorandum Subject: QCA Clarifications	Laurens Hamman (Aurizon); Adobe pdf	19 April 2013	■
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Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	IR-SP-RAG-01 - Complete		<p>Energisation and Section Proving of the Electric Traction Fixed Equipment</p> <p>Raglan Feeder Station Project</p> <p>Raglan FS</p>	QR National; Adobe pdf	Final; 3 October 2011	■
3	Mt Larcom Signalling COC		<p>Handover Certificate</p> <p>Mount Larcom TSC Track Circuit Modifications – Down Line</p>	QR National; Adobe pdf	24 November 2010	■

OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	Raglan Feeder Station Mt Larcom Signalling Scope		Project Brief (Raglan Feeder Station – Mt Larcom TSC)	QR Network; Adobe pdf	16 October 2008	■
5	Scope of Works - Raglan Feeder Station Project 20080928		Raglan Feeder Station Project Scope of Works Telecommunications Installation and Commissioning	No author; Adobe pdf	28 September 2008	■


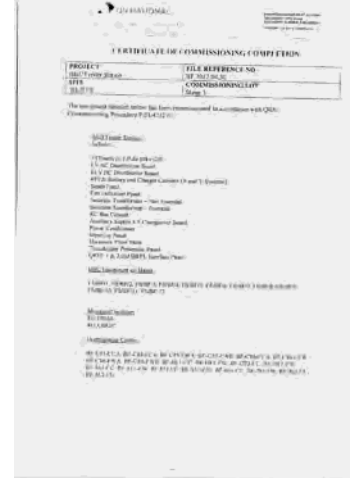
OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Initial information received						
0	RFI No.1 Aurizon Response		SKM Request for Information (RFI No.1) Aurizon Network Response	Aurizon Network Pty Ltd; Word	January 2013	■
1	1. 100524 - Bluff FS Funding Increase \$3m		Notice of Revised Investment Project Approval Memorandum Bluff Feeder Station	QR; Adobe pdf	Version 1.0; 19 May 2010	■



OCA AURIZON 2011/12 Capital Expenditure Submission
 Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	2. 100524 - Duaringa FS Funding Increase \$3m		Notice of Revised Investment Project Approval Memorandum Duaringa Feeder Station	QR; Adobe pdf	Version 1.0; 19 May 2010	■
3	3. 100524 - Wycarbah FS Funding Increase \$2.1m		Notice of Revised Investment Project Approval Memorandum Wycarbah Feeder Station	QR; Adobe pdf	Version 1.0; 19 May 2010	■

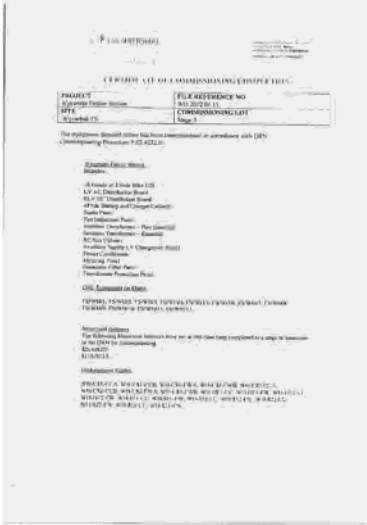

OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	4. ATTACH-1		<p>Rationale for Power Systems Upgrade in the Blackwater System</p> <p>A Coal Rail Infrastructure Master Working Plan Paper</p>	QR Network; Adobe pdf	February 2009	■
5	5. Bluff		<p>Certificate of Commissioning Completion Bluff Feeder Station</p>	QR National; Adobe pdf	March-April 2012	


OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6	6. Duaringa		Certificate of Commissioning Completion Duaringa Feeder Station	QR National; Adobe pdf	August-September 2011 and February 2012	
7	7. Raglan		Certificate of Commissioning Completion Raglan Connection Station	QR National; Adobe pdf	2011-2012	■



OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
8	8. Wycarbah		Certificate of Commissioning Completion Wycarbah Feeder Station	QR National; Adobe pdf	January-April 2011 and January 2012	■
Response to RFI016						
1	1. RFI 0016 Aurizon response		Summary of Blackwater Electrification Capacity Planning Reports Produced by Evans & Peck	Scott Hagaman; Adobe pdf	Version 4; 17 September 2009	■


OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	2. RFI 0016 Additional Aurizon Response		Memorandum Blackwater Feeder Stations: QCA Response	Laurens Hamman; Adobe pdf	21 February 2013	■
Response to RFI018						
Response to RFI019						

OCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
1	1. RFI 19 and Aurizon response		Request for Information Subject: Capital expenditure review information requirements Roma St Feeder Station Preliminary Design Power Systems Assessment Study HV Cable Rating Study	Maunsell Australia; Adobe pdf	Revision A; 16 December 2007	■
Response to RFI020						
1	1. RFI 20 and Aurizon response		Request for Information Subject: Fault Level Calculations Raglan Feeder Station – Options Analysis	Andrew Senini; Adobe pdf	Revision 2; 2 July 2009	■

QCA AURIZON 2011/12 Capital Expenditure Submission
Blackwater Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Meeting Minutes						
1	1. RFI 20 and Aurizon response		Minutes Interview with Aurizon's Blackwater Feeder Station PM	B Wells; Adobe pdf	9 January 2013	■



D.8 Appendix D-C: SKM capital expenditure estimates

D.8.1 Raglan feeder stations and TSCs

EQUIPMENT	QTY	COSTper item	TOTAL PURCHASE COST	LABOUR COST
		\$million	\$million	\$million
CVILS	1	3	3	0
CONNECTION STATION				
masts/poles	40	0.012	0.48	0.192
aerial landing	1	0.01	0.01	0.004
ABS	4	0.005	0.02	0.008
SMOS circuit breakers	4	0.05	0.2	0.08
transformers	2	1.058	2.116	0.8464
protection relays	8	0.004	0.032	0.0128
earth mat	1	0.015	0.015	0.006
trenching/cable pits	1	0.02	0.02	0.01
cables	400	100	0.04	0.02
switchroom	1	2	2	0.8
Feeder Station			0	
cables	400	100	0.04	0.02
switchroom	1	2.6	2.6	1.3
Auto trannies	12	0.7	8.4	4.2
masts	24	0.005	0.12	0.06
earth mat	1	0.015	0.015	0.0075
trenching/cable pits	1	0.02	0.02	0.01
harmonic Filters	2	1.2	2.4	0.48
ABS	4	0.005	0.02	0.008
TSC			0	0
switchroom	2	1.7	3.4	0.68
masts	24	0.002	0.048	0.0192
earth mat	2	0.01	0.02	0.008
cables	300	100	0.03	0.012
trenching/cable pits	2	0.02	0.04	0.02
ABS	8	0.005	0.04	0.016
TOTALS			25.126	8.8199
GRAND TOTAL million dollars			33.9459	



D.8.2 Wycarbah feeder stations and TSCs

		COST	PURCHASE	LABOUR
		per item	COST	COST
EQUIPMENT	QTY	\$million	\$million	\$million
CMILS	1	1.8	1.8	0
Feeder Station				
transformers	2	1	2	0.6
cables	400	100	0.04	0.02
switchroom	1	2.6	2.6	1.3
Auto trannies	16	0.7	11.2	3.36
masts	24	0.005	0.12	0.06
earth mat	1	0.015	0.015	0.0075
trenching/cable pits	1	0.02	0.02	0.01
harmonic Filters	2	1.2	2.4	0.48
ABS	4	0.005	0.02	0.008
TSC			0	0
switchroom	2	1.7	3.4	0.68
masts	32	0.002	0.064	0.0256
earth mat	2	0.01	0.02	0.008
cables	300	100	0.03	0.012
trenching/cable pits	2	0.02	0.04	0.02
ABS	8	0.005	0.04	0.016
TOTALS			23.809	6.6071
GRAND TOTAL million dollars			30.4161	

D.8.3 Duinga feeder stations and TSCs

		COST	PURCHASE	LABOUR
		per item	COST	COST
EQUIPMENT	QTY	\$million	\$million	\$million
CMILS	1	1.5	1.5	0
Feeder Station				
transformers	2	1	2	0.6
cables	400	100	0.04	0.02
switchroom	1	2.6	2.6	1.3
Auto trannies	14	0.7	9.8	3.92
masts	24	0.005	0.12	0.06
earth mat	1	0.015	0.015	0.0075
trenching/cable pits	1	0.02	0.02	0.01
harmonic Filters	2	1.2	2.4	0.48
ABS	4	0.005	0.02	0.008
TSC			0	0
switchroom	2	1.7	3.4	0.68
masts	24	0.002	0.048	0.0192
earth mat	2	0.01	0.02	0.008
cables	300	100	0.03	0.012
trenching/cable pits	2	0.02	0.04	0.02
ABS	8	0.005	0.04	0.016
TOTALS			22.093	7.1607
GRAND TOTAL million dollars			29.2537	



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D.8.4 Bluff feeder stations and TSCs

		COST	PURCHASE	LABOUR
		per item	COST	COST
EQUIPMENT	QTY	\$million	\$million	\$million
CMILS	1	1.5	1.5	0
Feeder Station				
transformers	2	1	2	0.6
cables	400	100	0.04	0.02
switchroom	1	2.6	2.6	1.3
Auto trannies	12	0.7	8.4	4.2
masts	24	0.005	0.12	0.06
earth mat	1	0.015	0.015	0.0075
trenching/cable pits	1	0.02	0.02	0.01
harmonic Filters	2	1.2	2.4	0.48
ABS	4	0.005	0.02	0.008
TSC			0	0
switchroom	2	1.7	3.4	0.68
masts	24	0.002	0.048	0.0192
earth mat	2	0.01	0.02	0.008
cables	300	100	0.03	0.012
trenching/cable pits	2	0.02	0.04	0.02
ABS	8	0.005	0.04	0.016
TOTALS			20.693	7.4407
GRAND TOTAL million dollars			28.1337	



Appendix E. Blackwater track & formation renewal project

E.1 Project description

The Blackwater track and formation renewal project is related to the replacement and upgrade of aged track and formation assets.

A total of 5 km of track reconstruction areas have been identified on a priority basis in the Blackwater System. Reconstruction of these areas would enable the system to cope with current and increased future capacity requirements.

The full reconstruction of the identified areas includes:

- rail replacement;
- sleeper upgrades (from Fist Fastener to Pandrol/26.5 tal concrete sleepers);
- ballast renewal (A Grade Ballast); and
- formation renewal.

Key project information is provided in **Table E-1**.

Table E-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.03959	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$8,915,000	Project financially complete	No

E.1.1 Location of project

A total of 5km across a number of areas within the Blackwater System has been identified for track and formation renewal. These locations are;

- 600.000 km to 601.000 km Up Blackwater North Coast Line;
- 601.600 km to 602.600 km Up Blackwater North Coast Line;
- 623.000 km to 624.000 km Down Blackwater North Coast Line;
- 22.800 km to 23.300 km Down Blackwater Central Line;
- 36.720 km to 37.220 km Up Blackwater Central Line; and
- 67.000 km to 68.000 km Up Blackwater Central Line.

The locations have been identified by the high frequency of the following failure modes experienced within the Blackwater System:

- formation failures due to weak clay subgrades;
- high ballast fouling due to coal contamination;
- corroded pins in concrete fist fastened sleepers; and
- high rail wear on curves.



E.1.2 Objective of this investment

The primary objective of this project was to undertake full track and formation renewal of identified areas within the Blackwater System replacing aged and/or below standard rail infrastructure and formations.

The Blackwater Systems have experienced significant growth over recent years. In addition to the development of new coal mines, demand from existing mines has increased with the level of tonnage being hauled putting pressure on existing infrastructure. SKM is of the opinion that this has resulted in an increase in track and formation failures. The works are required to facilitate the current and future traffic task, minimise loss of capacity from speed restrictions, avoid delays from reactive maintenance, and reduce the likelihood of incidents/derailments caused by track or formation failures.

The project aligns with Aurizon Network Pty Ltd.'s strategic initiatives as follows:

- Safety – To improve safety and ensure the systems can cope with current and increased future capacity requirements;
- Customer Service – Increased customer satisfaction due to less train delays;
- Growth – Increased reliability of the network leading to greater tonnage capacity for future expansion; and
- Commercial Capability – Increased customer satisfaction by reducing delay caused by track circuit and point failures.

SKM is of the opinion that the overarching business objective of Aurizon Network Pty Ltd is to maintain and improve the rail infrastructure and to ensure there are no delays to operations due to defective assets.

E.2 Capital expenditure

Table E-2 shows the cost of the Blackwater Track and Formation Renewal Project.

Table E-2 : Project A.03959 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	2011/12 Claimable Expenditure	\$4,281
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$4,239
Schedule 5 – Project Claims Submission: “Blackwater System Projects”	Blackwater Track & Formation Renewal	\$4,281

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and that provided in the project background documents. . As such there was no additional cost information sourced by SKM other than that which is listed in the above table.

The funding and approvals and claim details for this project are shown in **Table E-3**.

Table E-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$4,280,912
Applicable Financial Interest	-\$42,300
Total amount for inclusion in the RAB	\$4,238,612

There were no finance data discrepancies in the information provided.



E.3 Provided documentation

This review is based on information sourced from documents as shown in **Table E-4** and **Table E-5** below.

Table E-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Reasons for Track & Formation Renewal Project	SCOPE FOR TRACK & FORMATION RENEWALS	Word	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Blackwater System Projects	Blackwater Project Info Submission	Word	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Minor Capital Funding Request	MFR – Blackwater Track and Formation Renewal Project_Signed	Adobe PDF	4 October 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions		A.03959 ZWISR	Excel	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Track Construction Representative – Track Validation Certificate – Stanwell Formation Renewal	Form 02-0069-10 Track Validation Certificate Stanwell Stages 1-3	Adobe PDF	No date

Table E-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP	Adobe PDF	October 2009



E.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 002 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 023 SKM requested Aurizon Network Pty Ltd to supply additional track validation certificates for the completed works for the Blackwater Track and Formation Renewal program.

Responses were received for each individual question raised from RFI 002.

SKM found that track validation certificates have only been provided for the 22.800 km – 23.300 km Down Blackwater Central Line although the project claim includes works completed between 600.000 km – 601.000 km Up Blackwater North Coast Line and 601.600 km – 602.600 km Up Blackwater North Coast Line.

In response to RFI 023 SKM was provided with an emailed statement regarding the completion of the Blackwater Track and Formation Renewal works from a Track and Civil Engineer for Aurizon Network Pty Ltd stating that all works were constructed to Aurizon Network Pty Ltd standard drawings, and standard earthworks specifications, and that all track was constructed to the relevant CETS.

Work Health and Safety documents and original signed Inspection and Test Plan (ITP) certificates were sent to the relevant project managers.

E.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”).

Project overviews and rationale are of a high standard and clearly state the need for the project as set out earlier in Section E.1.

Of the \$8,915,000 budget, \$4,280,912 (approximately 49%) has been claimed.

E.4 Assessment of prudence

In assessing the prudence of capital expenditure, in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

E.4.1 Project scope

The project scope was required to ensure continuing track quality and to reduce the number of speed restrictions in those areas identified to meet access holder requirements for capacity on the Blackwater System.

The scope of works to be undertaken was full reconstruction of all identified areas including:

- rail replacements (upgrade 2 km of aged and worn rail with new 60 kg head hardened rail);
- sleeper upgrades (upgrade 3,000 from pre-existing 22.5 tal sleepers to 26.5 tal sleepers);
- ballast renewal (replace aged and substandard ballast with A grade ballast); and
- formation rectification works including installation of geo-fab and sub grade to facilitate 26.5 tal operations.



A limited options analysis was completed as part of the internal funding request approval. The option of not completing the proposed scope was discussed and discounted given the significant system disruptions and speed restrictions that had been in place in these areas prior to these upgrade works being completed.

Furthermore, SKM is of the opinion that the retention of below standard infrastructure would have an adverse effect on the ongoing required maintenance task as the track structure would be facilitating a traffic task well above its design.

The works were proposed to be aligned and planned within the 2 monthly exiting closures (36 hour closures on the Central Line and 12 hour closures on the North Coast Line) occurring from October 2011 to February 2012. During these closure periods it was also planned to undertake a closure of one track for up to 16 days.

However, according to the information provided in Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”, this project remains incomplete/ongoing.

Table E-6 below indicates the forecast milestones as per the information contained in “Blackwater Track and Formation Renewal Project Minor Capital Funding Request” dated 4 October 2011.

Table E-6 : Milestones as forecast in October 2011

Milestone description	Milestone date
Feasibility gate	October 2011
Project Completion	February 2012
Post Project Review	April 2012

Aurizon Network Pty Ltd claims the following project scope was completed during the 2011-2012 financial year:

- 22.800 km to 23.300 km Blackwater Central Line – Remove existing ballast, place new sub ballast layer of subtype 2.3 road base, replace ballast with A Grade ballast;
- 600.000 km to 601.100 km Blackwater North Coast Line – Replace 9 lengths of 110 m rail with new 60 kg rail, upgrade 1500 sleepers with new 26.5 tal concrete sleepers, place new sub ballast layer of subtype 2.3 road base, replace ballast with A Grade ballast; and
- 601.000 km to 602.600 km Blackwater North Coast Line - Replace 10 lengths of 110 m rail with new 60 kg rail, upgrade 1500 sleepers with new 26.5 tal concrete sleepers, place new sub ballast layer of subtype 2.3 road base, replace ballast with A Grade ballast.

For those projects that have not obtained Customer Group Approval under Clause 3.2, in particular 3.2.2(f), of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3 and the criteria outlined in the Authority’s terms of reference.

The ability of the project to meet these criteria is outlined in **Table E-7**, followed by a discussion section that provides the analysis.

Table E-7 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Partially, the project is on-going.
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes



Criteria	Response
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

SKM found that all track sections east of Stanwell on the Blackwater system carry 100% of coal railings through to the ports at Gladstone.

Post the significant flooding events of late 2010 a number of mines in the Blackwater System were still dealing with waste water in mine pits resulting in greatly reduced production rates. This flowed through as a reduction in ordered train path requirements on the rail network and reduced tonnages and system utilisation.

This reduced usage resulted in more access to the track infrastructure and the ability to take longer than normal track possessions. This represented a change from the limited track access possibilities during normal operations.

During this period of extended track access a number of locations were identified for track and formation renewals. SKM is of the opinion that these locations were based on the track condition data collated and the high frequency of the following failure modes observed:

- high numbers of speed restrictions occurring as a result of track failures;
- high rail wear on curves;
- formation failures due to weak clay subgrades;
- high ballast fouling due to coal contamination; and
- corroded pins in concrete fist fastened sleepers.

SKM found that formation inspection history collated for the past 9 years showed repetitive failures of the formation. This was used to identify the 5 km section proposed to undergo reconstruction and track renewal.

In reviewing the supplied Track Validation Certification SKM is of the opinion that all installed infrastructure is consistent with similar rail, sleeper and ballast profiles both within the Blackwater System and within other CQCR networks.

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

In SKM's view the project has been correctly categorised as an Asset Replacement Expenditure Project and that the project is reasonably required. In determining the scope of works SKM has considered the following issues:

- the project is consistent with the reasonable demand expectations associated with existing entitlements through the CQCR Systems and future entitlements relating to access rights under negotiation; and
- Aurizon Network Pty Ltd.'s requirements for a safe working environment for Aurizon Network Pty Ltd.'s above rail operations and Pacific National (and any other subsequent operators) on the rail infrastructure.



SKM is of the opinion that a failure to undertake this project would result in a significant increase in formation deterioration within the Blackwater System. This could potentially increase the number of speed restrictions required on parts of the network and thereby reduce overall capacity, accelerate the degradation of the track structure and components, increase maintenance costs, and provide a greater potential for failure causing derailments.

Conclusion

Since some parts of the project have not been completed the criteria for prudence of scope have not been fulfilled and those elements of the project which are yet to be completed should be carried over to the next regulatory review. However, it is SKM's view that the scope of works is appropriate given the age and condition of the pre-existing assets. Those parts that have been completed are delivering a regulated service.

We recommended that the Authority accepts for inclusion in the RAB those works that have been completed by 30 June 2012.

Given the above SKM therefore concludes that the scope of this project is prudent.

E.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope and are not overdesigned such that they deliver a capability beyond the requirements of the scope and regulated service need.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

SKM has reviewed all of the information provided for the Blackwater Track and Formation Renewal Project and can only confirm that approximately 20% of the completed works to date has been undertaken and completed in accordance with the relative Aurizon Network Pty Ltd policies and procedures, relative industry and Australian Standards, and associated internal Civil Engineering Track Standards (CETS).

Track Validation Certification has only been provided for the 22.80 km to 23.30 km Down Blackwater Central Line Section confirming that these works were carried out to standard and that the required electrical height and stagger threshold tests were completed.

SKM raised a request for information (RFI 023) specifically requesting additional track validation certificates for the remainder of the completed works for the Blackwater Track and Formation Renewal program. In response to that RFI, SKM was provided with an emailed statement from a, Track and Civil Engineer for Aurizon Network Pty Ltd confirming that all works had been constructed to Aurizon Network Pty Ltd standard drawings, and standard earthworks specifications, and that all track work had been constructed to the relevant CETS. It was also stated that the relevant Work Health and Safety documents and original signed Inspection and Test Plan (ITP's) certificates were sent to the relevant project managers for file. In absence of appropriate Track Completion Certificates, SKM accepts the evidence in the provided email as being demonstration of satisfactory completion of the works and subsequent hand over of the infrastructure to operations. However, SKM would urge Aurizon Network Pty Ltd to obtain and file Track Completion Certificates for all future works to support subsequent regulatory reviews and any future safety inspections and audits.



The installed infrastructure is consistent in all material respects with the existing standard and configuration of adjoining infrastructure and infrastructure with similar usage levels in other sections of the CQCR Systems.

Conclusion

SKM concluded that this project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards, policies and procedures, and internal CETS.

Given the above, SKM considers that the standard of works for this project is prudent.

E.4.3 Aurizon Network Pty Ltd.'s project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”.

Blackwater Track & Formation Renewal

Project Information

Project Number	A.03959	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$8,915,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Estimate
Business Case	October 2011	\$8,915,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$4,280,912
Applicable Financial Interest	- \$42,300
Total amount for inclusion in the RAB	\$4,238,612

Table E-8 provides a breakdown of the project funding.

Table E-8 : Project funding

Item	Value
Track and Formation Renewals	\$8,440,000
Supervision/Engineering	\$225,000
Contingency & Risk	\$250,000
Total Project Budget	\$8,915,000



Costs to 30 June 2012 were \$4,280,912 against the \$8,915,000 budget; this represents approximately 49% of approved budget.

The supplied SAP extract report for this project showed that the expenditure against each individual track section of the upgrade works was expensed in the 2011-2012 financial year on track sections on the North Coast Line between 600.00 km and 624.00 km.

A detailed breakdown of the project costs is included in **Appendix E-A**.

Discussion

Of the \$8,915,000 budget, \$4,280,912 (approximately 49%) has been claimed.

SKM found that Track Validation Certificates have only been provided for the 22.80 km – 23.30 km Down Blackwater Central Line although the project claim includes works completed between 600.00 km – 601.00 km Up Blackwater North Coast Line and 601.60 km – 602.60 km Up Blackwater North Coast Line.

The validation certification is therefore not consistent with the percentage of budget being claimed, although SKM was provided with an emailed statement from a Track and Civil Engineer for Aurizon Network Pty Ltd confirming that all completed works had been constructed to Aurizon Network Pty Ltd standard drawings, and standard earthworks specifications, and that all track work had been constructed to the relevant CETS.

The project is ongoing and additional claims will need to be made against this project in future capital claims to the Authority.

Conclusion

SKM considers that the costs for the claim submitted and works completed to date are prudent.

E.5 Summary

The outcomes of this prudence assessment are summarised in **Table E-9**.

Table E-9 : Blackwater track and formation renewal project – review summary

Item	Prudence
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Project costs extracted from spread sheet with electronic file name "A.03959 ZWISR"

Lev	WBS	Description	Assigned Bu	Released Bu	WBS Status	Cost Plan	Total Actual	Total Cost To
1	A.03959.000	Blackwater Track & Formation	8,915,000.00	8,915,000.00	CRTD BUDG	8,915,000.00	4,280,912.16	4,280,912.16
2	A.03959.300	FEASIBILITY	198,907.00	198,907.00	REL BUDG A	0.00	167,391.69	167,391.69
2	A.03959.400	EXECUTION	7,686,534.50	6,153,534.50	REL BUDG A	0.00	4,113,520.47	4,113,520.47
3	A.03959.420	Civil	6,537,127.50	5,404,127.50	REL BUDG A	0.00	3,882,575.43	3,882,575.43
4	A.03959.42	Construction	6,443,817.50	5,310,817.50	REL BUDG A	0.00	3,847,694.63	3,847,694.63
5	A.03959.4	Construction Internal	6,443,817.50	5,310,817.50	REL BUDG A	0.00	3,847,694.63	3,847,694.63
6	A.03959.4	22.800-23.300 CL DN	808,000.00	808,000.00	REL BUDG A	0.00	505,619.52	505,619.52
7	A.03959.	Supervision/Engineering	65,000.00	65,000.00	REL BUDG S	0.00	57,272.00	57,272.00
7	A.03959.	Plant Hire	395,000.00	395,000.00	REL BUDG S	0.00	166,750.87	166,750.87
7	A.03959.	Labour	137,000.00	137,000.00	REL BUDG S	0.00	78,986.96	78,986.96
7	A.03959.	Materials	211,000.00	211,000.00	REL BUDG S	0.00	202,609.69	202,609.69
6	A.03959.4	36.720-37.220 CL UP	0.00	0.00	REL BUDG A	0.00	0.00	0.00
7	A.03959.	Supervision/Engineering	0.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Plant Hire	0.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Labour	0.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Materials	0.00	0.00	REL BUDG S	0.00	0.00	0.00
6	A.03959.4	67.000-68.000 CL UP	4,530.50	4,530.50	REL BUDG A	0.00	4,530.50	4,530.50
7	A.03959.	Supervision/Engineering	0.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Plant Hire	0.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Labour	3,270.75	3,270.75	REL BUDG S	0.00	3,270.75	3,270.75
7	A.03959.	Materials	1,259.75	1,259.75	REL BUDG S	0.00	1,259.75	1,259.75
6	A.03959.4	600.000-601.100 NCL UP	1,362,000.00	1,362,000.00	REL BUDG A	0.00	1,350,985.13	1,350,985.13
7	A.03959.	Supervision/Engineering	60,000.00	60,000.00	REL BUDG S	0.00	50,519.32	50,519.32
7	A.03959.	Plant Hire	786,000.00	786,000.00	REL BUDG S	0.00	785,688.37	785,688.37
7	A.03959.	Labour	257,000.00	257,000.00	REL BUDG S	0.00	256,019.08	256,019.08
7	A.03959.	Materials	259,000.00	259,000.00	REL BUDG S	0.00	258,758.36	258,758.36
6	A.03959.4	601.600-602.600 NCL UP	1,906,000.00	1,906,000.00	REL BUDG A	0.00	1,902,878.46	1,902,878.46
7	A.03959.	Supervision/Engineering	0.00	0.00	REL SETC A	0.00	0.00	0.00
7	A.03959.	Plant Hire	967,000.00	967,000.00	REL BUDG S	0.00	965,539.27	965,539.27
7	A.03959.	Labour	227,000.00	227,000.00	REL BUDG S	0.00	226,322.07	226,322.07
7	A.03959.	Materials	712,000.00	712,000.00	REL BUDG S	0.00	711,017.12	711,017.12
6	A.03959.4	623.000-624.000 NCL DN	1,120,000.00	93,000.00	REL BUDG A	0.00	83,681.02	83,681.02
7	A.03959.	Supervision/Engineering	100,000.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Plant Hire	240,000.00	18,000.00	REL BUDG S	0.00	11,837.00	11,837.00
7	A.03959.	Labour	280,000.00	0.00	REL BUDG S	0.00	0.00	0.00
7	A.03959.	Materials	500,000.00	75,000.00	REL BUDG S	0.00	71,844.02	71,844.02



The following was extracted from the spread sheet entitled "Schedule 2 – IDC Summary 2011/12 CAPEX Claim" dated 1 November 2012.

Project Name		Blackwater Track and formation Renewals	
Project Number		A.03959	
WACC (UT3)	9.96%		
Monthly Int Calc (WACC)	0.79%		
SAP Recorded Expenditure		4,280,912	
Construction Finance Interest		- 42,300	
Total Capex Claim (including interest)		4,238,612	
Period/year	Number of Months	Actual SAP Recorded Spend	Interest (\$ as at 30 June 12)
001.2012 July 2011	5.5	-	-
002.2012 August 2011	4.5	-	-
003.2012 September 2011	3.5	-	-
004.2012 October 2011	2.5	-	-
005.2012 November 2011	1.5	-	-
006.2012 December 2011	0.5	-	-
007.2012 January 2012	-0.5	3,343,629.90	13,205
008.2012 February 2012	-1.5	83,439.68	985
009.2012 March 2012	-2.5	325,299.52	6,373
010.2012 April 2012	-3.5	36,749.28	1,004
011.2012 May 2012	-4.5	175,613.91	6,144
012.2012 June 2012	-5.5	389,678.43	16,598
Total of 2011/12 capex claim		4,280,912.16	- 42,300.41
Project Name		Blackwater Track and formation Renewals	
Project Number		A.03959	



Appendix F. Overheads renewal Rocklands to Callemondah project

F.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

Key project information is provided in **Table F-1**.

Table F-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.03896	Project status	Ongoing
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$4,525,000	Project financially complete	Ongoing

F.1.1 Location and status of trials

This project upgraded elements within the Overhead Line Equipment (OHLE) system between Rocklands (at the junction of the North Coast Line and Central Line) and Callemondah (north of Gladstone) on the North Coast Line section of the Blackwater System, as shown in **Figure F-1**.

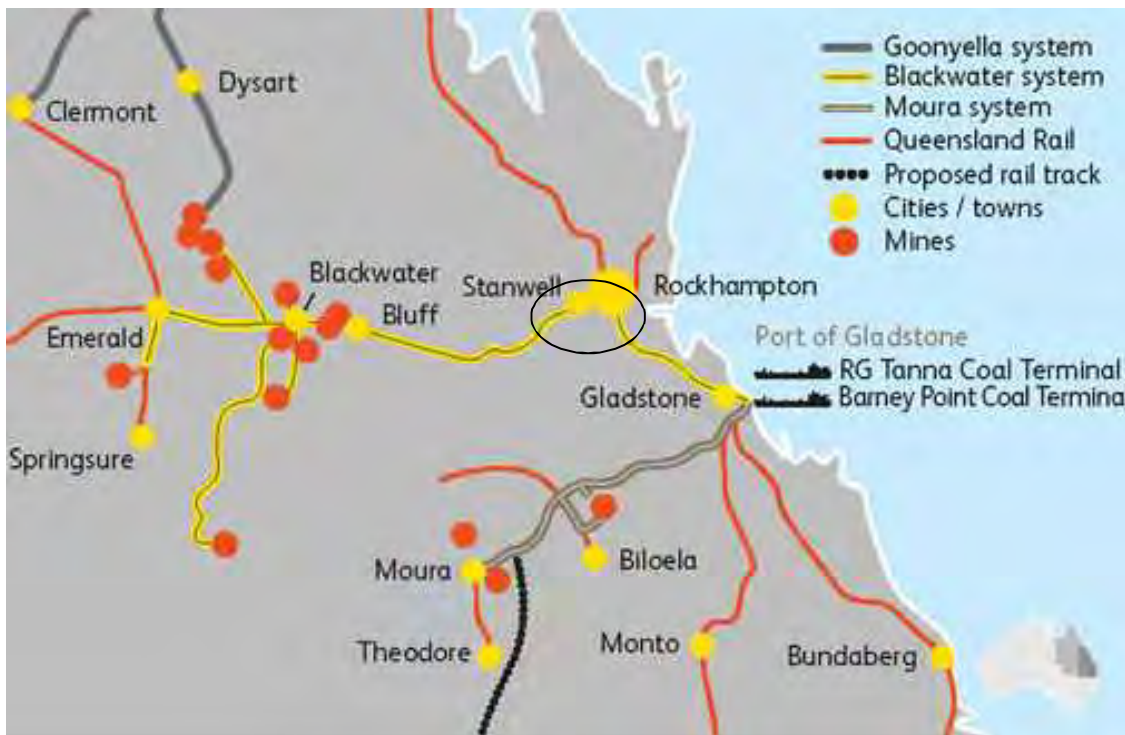


Figure F-1 : Blackwater system showing Rocklands to Callemondah (extracted from <http://www.aurizon.com.au/networksystems/Pages/BlackwaterSystem.aspx>)

The OHLE systems were first erected in the early 1980's with the electrification of the Blackwater System. The OHLE includes all infrastructure used to distribute electricity to trains fed from the Aurizon Network Pty Ltd Feeder Stations.



SKM notes that a part of this project included Designated Earth Points (DEP) works at Mount Larcom Yard as was submitted in Schedule 5 – Project Claim Submissions – Blackwater, “Project Change Request - Change Request No: 1.0” dated 28 November 2011. RFI 038 was raised on 4th March 2013 seeking to determine what portion (if any) of the works at Mount Larcom Yard should be included in the below rail RAB.

The status of this project was reported in Schedule 5 – Project Claim Submissions – Blackwater, “Minor Capital Funding Request - Designated Earthing Points “ dated 13 January 2012, “Renewals Project EAM-113-ES – Project Report No: 03” dated April 2012, “Blackwater System Projects” and subsequently in RFI 003 response document “Laing O’Rourke – Rail North – July 2012 Monthly Update”.

The project was reported as ongoing.

The information contained in response to RFI 003 entitled “EAM-113 - ES Renewals Project, June 2012 Quantities” provided the final status of all the quantities installed for the claim period as shown in **Figure F-2** below.

		Monthly Totals											
Month:		February		March		April		May		June		Total	Target
Date:		Total	Target	Total	Target	Total	Target	Total	Target	Total	Target		
Installed	As Built	235	576	626	1344	970	1248	999	1536	593	1536	3423	6240
	Structure Numbers	409	1008	835	756	1454	1092	1032	2352	691	1092	1244	1764
	Anti Bird Nest Device	0	0	84	84	371	400	0	320	0	0	455	804
	OPGW clamps	0	0	26	168	371	400	0	320	0	0	397	888
	DEP's	0	0	0	8	17	16	0	12	0	0	17	36

Figure F-2 : Quantities of completed works for financial year 2012

F.1.2 Objective of this investment

This project was a consolidation of four smaller related projects being:

- A.03706 Insulation of Feeder Wire;
- A.03805 Critical Neutral Section;
- A.03844 Earth Wire Clamp Upgrade; and
- A.03896 Designated Earthing Points.

The consolidation of the above projects enabled the streamlining of project management requirements and greater coordination of already engaged and on site contract staff to complete the works.

The primary objective of this investment was to reduce the likelihood of electrical faults and possession time, leading to train delays and system disruptions by funding:

- designated earthing points;
- lower earthing points;
- mast numbering;
- PVC bird nesting deterrents;
- earth wire clamp upgrades; and
- as-built drawings.

The documents describing the change requests and the internal funding requests as contained in Schedule 5 – Project Claim Submissions – Blackwater provide the detailed requirements for these works and are summarised in more detail in **Section F.4.1** below.



The following benefits were claimed:

DEPs:

- being able to earth the electrical subsection without entering the danger zone will eliminate the need to apply for blocking protection and create barriers between the adjacent tracks. This will save a significant amount of otherwise wasted time;
- reduced risk of electric trains entering an overhead section that has been turned off but not earthed (due to waiting for a track block);
- reduced risk of worker injuries, from lifting heavy cables above their head, therefore less chance of compensation claims;
- if a poor connection is made between the temporary earth cable and the catenary wire and a fault occurs, damage or de-wirement of the OHLE will occur. This will be eliminated with the permanent connections made with the DEP; and
- if the temporary earth wire clamp comes loose, it can fall off and become snagged by diesel trains operating in the section. This can then bring down overhead equipment.

Mast Numbering and PVC nest deterrents:

- will reduce the risk of electrical linesmen sustaining injuries related to electric shock when placing temporary earthing on OTWE at incorrect locations on site which are energised. This will reduce chances of compensation claims;
- will facilitate linesmen working on correct line/track where train blocks are in place thus reducing the risk of injury of being struck by train traffic. This will reduce chances of compensation claims;
- reduces track down time for linesmen to find electrical faults by their knowing their location on site via kilometre marker information in structure number; and
- reduces track down time for traction linesmen maintenance work by providing efficiencies in the location of work sites, isolation switching and temporary earthing.

Earth Wire Clamps:

- will realise savings through a reduction in earth wire breakages. Earth wire breakages last year cost Aurizon Network Pty Ltd more than \$600,000 (refer to Attachment 11 of **Appendix F-B** for details);
- will reduce network outages will lead to increased availability and throughput on the Blackwater System;
- will reduce maintenance costs involved with repairing broken feeder wires; and
- earth wire clamps have been superseded and are now aging. The area that experiences the greatest amount of faults and breakages are in the area that also have the largest bird related trips and are being fitted with PVC pipes. The effect of aging infrastructure can be seen in the increasing trend in earth wire breakages over time in Attachment 11 of **Appendix F-B**.

Aurizon Network Pty Ltd.'s investigations identified that there are over 70 wildlife trips per year causing between \$500,000 to \$1,000,000 worth of train delays. The PVC pipes and feeder wire insulators will address this cost. Attachment 14 of **Appendix F-B** shows the success the initial 1400 deterrents have had during the nesting season of December 2012. Aurizon Network Pty Ltd claims that PVC pipes are very simple and robust, that a lifespan of 25 years could easily be expected and that the benefits of this upgrade will outweigh the cost when installed in areas of high wildlife activity.



F.2 Capital expenditure

Table F-2 shows the cost of the Overheads Renewal Rocklands to Callemondah project.

Table F-2 : Project A.03896 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expendature (sic) Claim Workbook	2011/12 Claimable Expenditure	\$3,271
Schedule 2 – IDC Summary (sic) 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$3,176
Schedule 5 – Project Claims Submission: “Blackwater System Projects document”	Page 10, Overheads Renewal Rocklands to Callemondah Total amount for inclusion in the RAB	\$3,176

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and those provided in the project background documents. . The details contained in the SAP accrued project costs information contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, file name “A.03896 ZWISR” can be found in **Appendix F-B**.

The funding and approvals and claim details for this project are shown in **Table F-3**.

Table F-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$3,271,351
Applicable Financial Interest	-\$95,603
Total amount for inclusion in the RAB	\$3,175,748

There were no financial data discrepancies in the information provided in **Table F-3**.

F.3 Provided documentation

This review is based on information sourced from documents as shown in **Table F-4** and **Table F-5** below.

Table F-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Project Change Request - Change Request No: 1.0	Project Change Request DEP A03896_1 - LEP	Word	28 November 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Project Change Request - Change Request No: 2.0	Project Change Request DEP A03896_2 - PVC birds nest deterrents	Word	28 November 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Project Change Request - Change Request No: 3.0	PROJECT2	Word	28 November 2011



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Project Change Request - Change Request No: 4.0	PROJECT1	Word	2 December 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Minor Capital Funding Request - Designated Earthing Points	MFR - Overhead Renewals - Callemondah to Rocklands - Signed	Adobe PDF	13 January 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Minor Capital Funding Request - Designated Earthing Points	MFR- A03896 Overhead Renewals Callemondah to Rocklands_Final	Word	13 January 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Renewals Project EAM-113-ES – Project Report No: 03	EAM-113-ES PROJECT REPORT April 2012	Word	April 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater	Renewals Project EAM-113-ES – Project Report No: 03	EAM-113-ES PROJECT REPORT April 2012	Word	April 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Blackwater		A.03896 ZWISR	Excel	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Blackwater System Projects	Blackwater Project Info Submission	Word	No date
Aurizon Network Pty Ltd	RFI 003 response	Tender Evaluation Report	LOR Contract Approval	Adobe PDF	5 March 2012
Aurizon Network Pty Ltd	RFI 003 response	Project Brief	Project Brief EAM-113-ES	Adobe PDF	5 March 2012
Aurizon Network Pty Ltd	RFI 003 response	Laing O'Rourke – Rail North – July 2012 Monthly Update	OHLE Renewal Rocklands to Callemondah LOR QLD July 2012 Monthly Update.	Adobe PDF	July 2012
Aurizon Network Pty Ltd	RFI 003 response	EAM-113 - ES Renewals Project, June 2012 Quantities	Monthly Quants June 2012	Word	No date
Aurizon Network Pty Ltd	RFI 038 response	Network Ownership Diagram, North Coast Line, Parana – Midgee, schematic	NorthCoastLineParana MidgeeSchematic	Adobe PDF	CNA2013-1. 13 December 2012
Aurizon Network Pty Ltd	RFI 038 response	SKM Request for Information (RFI No.038) Overhead Renewal Rocklands to Callemondah	RFI No.038 Aurizon Response	Word	January 2013



Table F-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms Of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure (sic) Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure (sic) Master Plan	5. 2009 CRIMP.pdf (sic)	Adobe PDF	October 2009

F.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 003 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 038 Request for further information in relation to the claim for Mt Larcom Yard works.

An RFI 003 was raised, seeking inter alia the current status of this project on 20 December 2012. Supporting evidence such as completion reports or certificates of completion was requested. The claim was for the entire financial year, yet SKM, at the time, had only sighted completion reports for a part of the period. This request for additional information was satisfactorily addressed with the provision from Aurizon Network Pty Ltd of the information contained in RFI 003 response, documents entitled “Laing O’Rourke – Rail North – July 2012 Monthly Update” and “EAM-113 - ES Renewals Project, June 2012 Quantities”.

SKM noted that LEP works in Mount Larcom Yard were included as a part of this claim. It was unclear to what extent Mt Larcom Yard is a common access, contestable rail infrastructure or if it was exclusive to a single above rail operator and therefore if this part of the claim may be added to the RAB. In response to RFI 038, Aurizon Network Pty Ltd provided sufficient evidence to confirm that Mt Larcom Yard is a common access facility and therefore should be included in the RAB.

SKM had no further outstanding queries relating to this project.

F.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”).

Prior to the responses to RFI 003, a report from Laing O’Rourke (see Schedule 5 – Project Claim Submissions, document entitled “Renewals Project EAM-113-ES – Project Report No: 03” dated April 2012) contained the only equivalent of a completion report for assessment of prudence by SKM. SKM notes that in Appendix C to G of that report the status of works for ‘as built’, installed structure numbers, anti-bird devices, OPGW clamp



replacements and DEPs, only provided status as of April 2012. Section 10.8 of the same document provides a progress claims summary that is shown below.

Claim No.	Period Ending	Claimed Amount	Certified Amount	Outstanding	Due Date	Date Paid	Comments
1	29/02/12	\$401,041	\$401,041	\$0	4/04/12	10/04/12	Includes materials
2	31/03/12	\$387,143	\$387,143	\$0	29/04/12	1/05/12	
3	30/04/12	\$530,298		\$530,298	28/05/12		
4	31/05/12			\$0			
5	30/06/12			\$0			
6							
7							

SKM noted that when adding Claim 1 and Claim 2 result in a total of \$788,184 which was payed and settled by 1 May 2012 and then assessing the data captured in SAP (see Schedule 5 – Project Claim Submissions – Blackwater, spreadsheet file name “A.03896 ZWISR”) an amount of \$1,286,757 had settled to the account. SKM was not able to find an explanation for the mismatch between the Laing O’Rourke reported claim payments and the information being reported in SAP.

Appendix G of Schedule 5 – Project Claim Submissions, document entitled “Renewals Project EAM-113-ES – Project Report No: 03” dated April 2012, contained a tabulation of all works claimed completed by Laing O’Rourke from and including February to April 2012 (see **Figure F-3** below).

Monthly Totals													
	Month:	February		March		April		May		June		Total	Target
		Total	Target	Total	Target	Total	Target	Total	Target	Total	Target		
Installed	As Built	235	576	626	1344	970	1248					1831	3168
	Structure Numbers	409	1008	835	756	1454	1092					1244	1764
	Anti Bird Nest Device	0	0	84	84	371	400					455	484
	OPGW clamps	0	0	26	168	371	400					397	568
	DEP's	0	0	0	8	17	16					17	24

Figure F-3 : Status and quantities of completed works up to and including April 2012

SKM is of the view that the above information could be accepted as a completion report for that period only and that there was insufficient evidence to support the claim for entire financial year up to 30 June 2012.

Response to RFI 003 entitled “EAM-113 - ES Renewals Project, June 2012 Quantities” contained the monthly status of works completed for the entire claim period up to and including June 2012 and is shown in **Figure F-4** below.

Monthly Totals													
	Month:	February		March		April		May		June		Total	Target
		Total	Target	Total	Target	Total	Target	Total	Target	Total	Target		
Installed	As Built	235	576	626	1344	970	1248	999	1536	593	1536	3423	6240
	Structure Numbers	409	1008	835	756	1454	1092	1032	2352	691	1092	1244	1764
	Anti Bird Nest Device	0	0	84	84	371	400	0	320	0	0	455	804
	OPGW clamps	0	0	26	168	371	400	0	320	0	0	397	888
	DEP's	0	0	0	8	17	16	0	12	0	0	17	36

Figure F-4 : Status of works and quantities completed for the claim period up to 30 June 2012

The information provided in **Figure F-4** has been accepted by SKM as proof of completion for the entire claim period.



F.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

F.4.1 Project scope

The Aurizon Network Pty Ltd information contained in Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects” indicates project approval for total amounts of \$3,695,000 in January 2012 and \$4,525,000 in February 2012. The project number was A03896.

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 or Customer Group Approval under Clause 3.2, in particular Clause 3.2.2(f), of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3 and the criteria outlined in the Authority’s terms of reference. The ability of the project to meet these criteria is outlined in **Table F-6**, followed by a discussion section that provides the analysis.

Table F-6 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes. RFI 038 was raised to determine if the yard is a single operator owned yard or if it is eligible for inclusion in the RAB. Aurizon Network Pty Ltd.’s response to RFI 038 satisfied SKM that this asset can be included in the RAB.
Was the project commissioned in 2011-12?	Partially, the project is on-going.
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd, or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

It is SKM’s view that this project fulfils the asset replacement definition above including replacement of life-expired assets and is an expenditure required to maintain the existing capacity of the rail infrastructure and to fulfil statutory safety requirements.



This project has not been completed but SKM accepts that the completed portion of the works provides incremental and immediate network benefits in accordance with the programme of completed works as submitted in the RFI 003 response document entitled “Laing O’Rourke – Rail North – July 2012 Monthly Update”.

Where a partial completion or staged approach to funding is required, it is recommended that such an approach be agreed with the Authority, included in the CRIMP and submitted in such a manner that expenditures associated with the agreed staged delivery are clearly identifiable.

The documents describing the change requests and the internal funding requests as contained in Schedule 5 – Project Claim Submissions – Blackwater provide the detailed requirements for these works. This project consists of a consolidation of a number of other projects as described in **Section F.1.2** above. The scope, extracted and summarised from the above referenced documents, is described below:

- DEP
 - replacement of old electrical earthing points;
 - install DEP arrangements where regular earthing of the OHLE is required as part of the isolation process;
 - replace old earth wire clamp with new design if needed;
 - confirmation and installation of grading (sic) rings on DEP masts;
 - alteration of isolation and TSMS diagrams; and
 - review of mast numbering at these locations. Add mast numbering and “DEP” to the back of the mast.
- the lower earthing points (LEP) scope includes the design and installation of DEPS for higher feeders wires at Mt Larcom Yard on 6 portals.
- mast numbering to assist with location requirements:
 - supply all materials and equipment to install structure numbers onto existing overhead traction wiring support structures where it is observed on site that numbers are missing or in need of replacement;
 - the renewal of mast numbering will be carried out in the Goonyella System west of Coppabella and will be completed in the entire Blackwater System;
 - work shall be carried out in accordance with Aurizon Network Pty Ltd design which includes system drawings and wiring layout tension length plans;
 - as-built drawings and tension length plans will be created for the area between Callemondah FS and Rocklands FS; and
 - the mast numbering will not overlap the work being carried out by renewals project A.03831 which was responsible for renumbering masts east of Coppabella.
- PVC birds nest deterrents to stop birds from nesting in masts thus reducing the number of electrical trips caused by contact with the electrical wires:
 - supply and install all materials and equipment to install PVC nest deterrents on existing overhead traction wiring infrastructure support structures (e.g. masts, portals and headspans); and
 - upgrade the Earth Wire Clamp and if necessary replace earth wire on all masts visited for a PVC pipe.
- earth wire clamp upgrade – replacement of broken clamps and re-bonding of existing clamps; and
- critical neutral section – replacement of aged neutral section infrastructure. A neutral section provides a break in electrical sections between Feeder Stations.

A more detailed description and analysis of the scope of works is contained in **Appendix F-A**.

Conclusion

This project has not been completed and requires inclusion in the master plan (CRIMP). RFI 038 was issued requesting information related to the LEP works claimed for Mt Larcom Yard. Aurizon Network Pty Ltd responded to RFI 038 providing confirmation to SKM’s satisfaction that the LEP works at Mt Larcom may be accepted into the RAB.

SKM therefore concludes that the scope of this project is prudent.



F.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved 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 and the regulated service need.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

In SKM's assessment the works were deemed to have been contained successfully within the requirements of the scope and therefore fulfil criterion a) above. The scope of the works was also well defined with clear and concise work breakdown structure.

The Overheads Renewal Rocklands to Callemondah works were deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR and therefore fulfil criterion b) above as well as Clause 3.3.3(b)(iii) of Schedule A of UT3. Furthermore the project has in fact diminished latent safety risks within the network in question.

Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. In this regard, SKM could find no evidence that the works had been pre-approved as is required by Clause 3.3.3(b)(i). In particular, the 2009 CRIMP makes no explicit mention of this project.

SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii).

This project was not in the view of SKM over engineered, has been designed appropriately to accommodate reasonable demand, improved safety and would likely minimise possession times.

Conclusion

SKM concluded that the Overheads Renewal Rocklands to Callemondah works:

- were contained within the requirements of the scope;
- are deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR; and
- Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure.

Given the above, SKM considers that the standard of works for this project is prudent.

F.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.



The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”.

Overheads Renewals Rocklands to Callemondah

Project Information

Project Number	A.03896	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$4,525,000	Project Financially Complete	Ongoing

Funding & Approvals

Stage	Date	Estimate
Business Case	January 2012	\$3,695,000
Project Consolidations	February 2012	\$4,525,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$3,271,351
Applicable Financial Interest	-\$95,603
Total amount for inclusion in the RAB	\$3,175,748

Discussion

The itemised descriptions and quantities provided by Aurizon Network Pty Ltd are well documented and therefore the reasonableness of the costs claimed could readily be confirmed. The details contained in the Aurizon Network Pty Ltd cost claims have been included in **Appendix F-B**.

Conclusion

As discussed above and in consideration of the information provided, SKM considers that the costs for the project are prudent.

F.5 Summary

The outcomes of this prudence assessment are summarised in **Table F-7**.

Table F-7 : Overhead renewal Rocklands to Callemondah – review summary

Item	Prudence
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



F.6 Appendix F-A: Detailed analysis of scope

The following scope descriptions were extracted from Schedule 5 – Project Claim Submissions – Blackwater, “Minor Capital Funding Request - Designated Earthing Points” dated 13 January 2012, which states as follows:

DEP:

“A DEP arrangement ensures an improved electrical connection between the Overhead traction Equipment and the clamp of the earthing cable and eliminates the need for line staff to stand on the track while earthing the OHLE directly above the track. This DEP arrangement employs the use of shorter earthing cables (less weight) and hence reduces the risk of injuries to staff while lifting the insulated earth sticks and cable during the earthing process. If the existing earth wire suspension clamp is the old arrangement as per drawing 426/11/A3 (attached), this clamp will be replaced with the new Earth Wire/O.P.G.W. Support Assembly as per drawing 629/12/A3 (attached) to ensure an improved electrical connection between the earth wire and the OHLE structure.”

“The main two reasons for this upgrade are to eliminate the risk of back injuries to workers and a possible dewirement caused by a poor connection of the temporary earthing bonds. The existing Earth wire cables are connected directly to the catenary wire which is often dirty from things like diesel smoke, and corrosion. The clamp can also be a poor connection if it is not installed correctly. If a fault occurs, this earthing point will become a high impedance joint which will produce arcing and usually burns through the catenary wire causing it to break. The DEP’s will eliminate this as the catenary wire will be cleaned when they are installed, and conductive grease is applied to stop any future corrosion.”

PVC Birds Nest Deterrents, Mast Numbering and As-Built drawings:

“Involves the installation of structure numbers and PVC nest deterrents on existing overhead traction wiring infrastructure support structures (e.g. masts, portals and head spans) as per Network drawings 148/850/A3 and N188/235/A3 (attached) and updating/creating the relevant As Built Wiring Layout Plan. This work will ensure that the structure numbering on electrical infrastructure is in accordance with Network mandatory standards. Currently there exist on numerous support structures on site missing or illegible labels which make up the structure number (refer to drawing 148/850/A3 attached). This has occurred as the existing labels were installed 25 years ago. This work will refurbish structure numbers on site by ensuring all labelling that makes up the structure number on each support structure is present and fit for purpose.”

“The As-Built drawings are to be completed for the section between Callemondah Feeder Station and Rocklands Feeder Station. Currently there are no As-built drawings for this area which impacts disaster recovery work and future planning. A large number of overhead traction trips (automatic opening of the circuit breaker) occur as a result of birds building nests in LS mast and the material (sticks etc) coming into contact with the Live OHLE. This situation becomes more critical during rain periods where this material becomes saturated.”

“Double trips of the OHLE require the overhead line staff to carry out an inspection of the faulted area resulting in delays to the movement of Electric Traffic. The PVC Piping installed in the LS mast prevents nests being built within the masts. A trial of this device has just been completed in the Goonyella System and inspections carried out since the installations have found that no nests have been rebuilt. This trial completed about 1400 in the Goonyella System. The device developed has a low manufacture cost and requires minimum maintenance.”

“The cost estimate to install one unit is \$228 and it is proposed to install 7000 units in both the Goonyella and Blackwater systems in the areas most frequent by birds.”

“This project is partially related to the Earth Wire clamp upgrade project as it will also be upgrading the earth wire clamps to the new clamp type, Drawing No 629/12/A3 (attached). This will help provide a higher quality earthing connection from the earth wire to the mast in the locations where the Designated Earthing Points are to be installed. These Earth Wire clamps will be at different locations to the ones being upgraded in the Earth Wire clamp upgrade project.”



The sub project, Critical Neutral Section, scope was not described (nor any status given) in any of the documents reviewed in **Table F-4**.

A concise breakdown of the January 2012 scope for this project was extracted from Schedule 5 – Project Claim Submissions – Blackwater, “Minor Capital Funding Request - Designated Earthing Points” dated 13 January 2012 which was the status at project commencement and is shown below.

A breakdown of what related overhead renewal works have been done to date and what remains to do after this project can be found in the table below.

Item	To date	This Project	Future projects
DEPs	0	Every Kilometre Between Mt Larcom and Rocklands (180)	2000 (every kilometre in the GA and BW systems)
Mast Re-numbering	6500 (East of Coppabella in GA system)	4000 (Between Mt Larcom and Rocklands)	25500
PVC nest deterrents	1440	7000 (5600 between Mt Larcom and Rocklands, remainder between South Walker and Ports)	As required after next aerial survey
Earth Wire Clamps	4000 (All new work since 2006)	300 + DEP locations + PVC locations	24520
As Built Drawings	All of system except CA to RK	Callemondah to Rocklands	0

The above scope and quantities was further clarified in the same document with the following qualifications:

“Project Scope has increased from:

180 DEPs and 300 Earth Clamps.

To:

180 DEPs, 7000 Earth Clamps, 7000 PVC pipes, 7200 As-Built Drawings and 11,500 Mast numbers.

Of this scope it is expected to have the following amounts done by 30th June 2012:

42 DEPs, 1120 Earth Clamps, 120 PVC pipes, 7200 As-Built Drawings and 11500 Mast Numbers.”

The above numbers are additionally reflected in the estimated work required completed by Laing O’Rourke as outlined in the RFI 003 response document entitled “Project Brief” dated 5th March 2012.

Further scope definition from Schedule 5 – Project Claim Submissions – Blackwater document entitled “Minor Capital Funding Request - Designated Earthing Points” dated 13 January 2012 is depicted below:



Attachment 3: Traction Wiring Support Structure locations and numbers of PVC pipes to be installed

System	Location	Km's from	Km's to	Dual track	Estimated single track kms
Goonyella	Wandoo to Waitara	GA 87	GA 98	yes	22
Goonyella	Praugelands to Ports	GA 19	Unloaders	multiple	72
Goonyella	Black Mountain	GA 36	GA 38	yes	4
Goonyella	Mindi	GA 111	GA 112	yes	2
Blackwater	Gladstone to Rocklands	NC 550	NC 634	yes	168
Blackwater	Ensham Branch	EN 0	EN 15	single	15
Blackwater	Crew	GG 9.5	GG 11	yes	1.5
Blackwater	Bluff	CL 169	CL 171	multiple, yard	4
Blackwater	Blackwater	CL 188	CL 196	multiple, yard	16
Blackwater	Stanwell to Westwood	CL 26	CL 48	yes	44
					348.5

The areas identified above are **high priority areas**, identified via detailed aerial photographic survey, as being those areas currently having a significant number of bird nests.

Based on the assumption of an overhead mast every 50m, the above provides the following details:-

Location	Estimated single track kms	Estimated number of PVC tubes
Wandoo to Waitara	22	440
Praugelands to Ports	72	1440
Black Mountain	4	80
Mindi	2	40
Gladstone to Rocklands	168	3360
Ensham Branch	15	300
Crew	1.5	30
Bluff	4	80
Blackwater	16	320
Stanwell to Westwood	44	880
	348.5	6970

Schedule 5 – Project Claim Submissions – Blackwater document entitled “Minor Capital Funding Request - Designated Earthing Points” dated 13 January 2012 references additional scope descriptions outlined in the Laing O’Rourke scope of works (which was received in response to RFI 003 in the document entitled “Project Brief” dated 5 March 2012).

Response to RFI 003 document entitled “Project Brief” dated 5 March 2012 the following schedule was provided detailing quantities and estimated completion dates for the works.

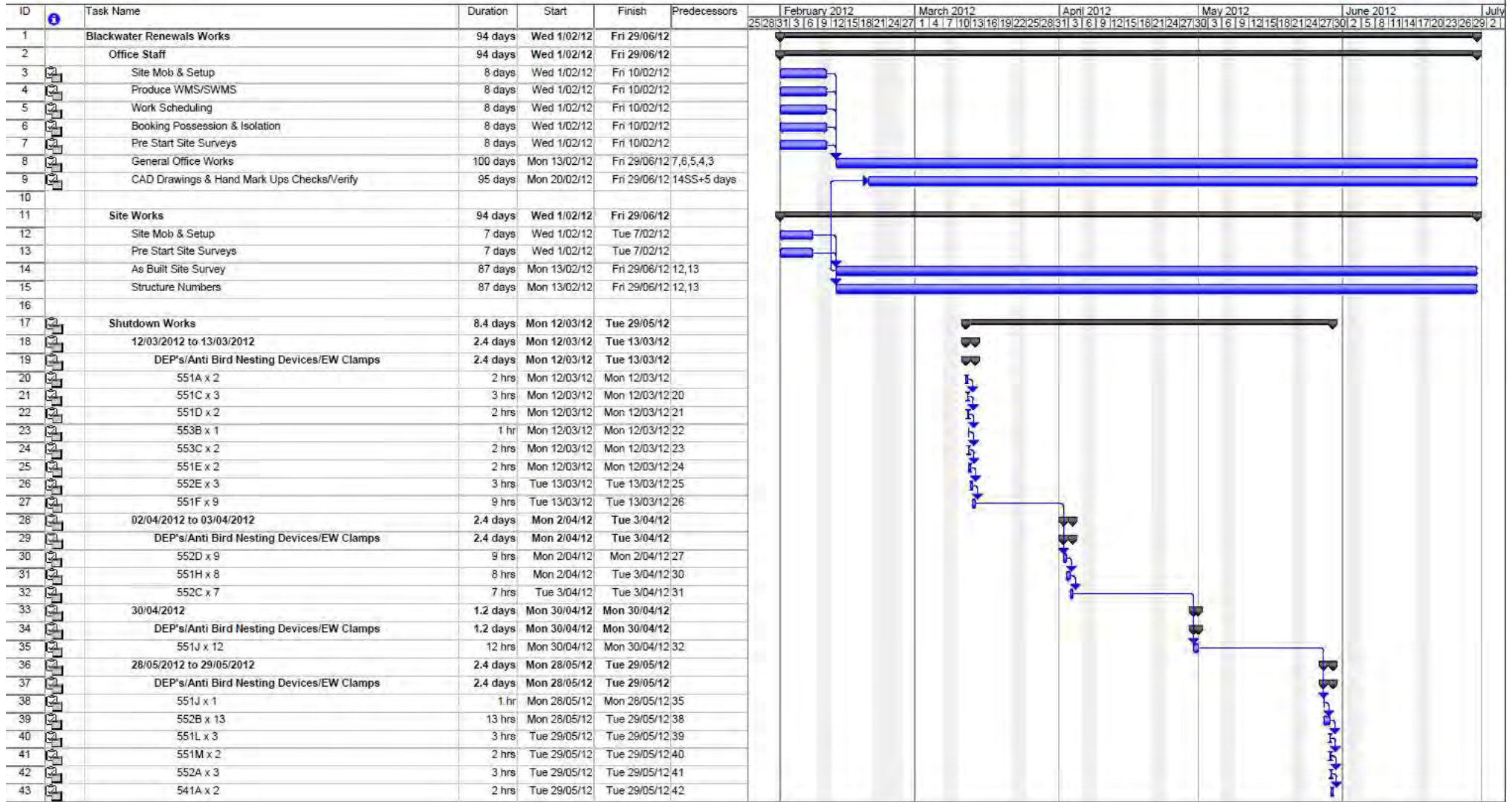


Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Blackwater Renewals Works Program





F.7 Appendix F-B: Detailed analysis of cost

Costs estimates from Schedule 5 – Project Claim Submissions – Blackwater document entitled “Minor Capital Funding Request - Designated Earthing Points” dated 13th January 2012.

Attachment 1: Original Project Cost Estimate

Attachment 1: Original Project Cost Estimates:

Original DEP Estimate (A.03896):

Cost Component	Cost
Labour	\$208,000
Materials	\$126,000
Plant Hire	\$66,000
Isolation Costs	\$100,000
Install Mast Numbers and DEP stickers	\$19,000
Alteration of Isolation Diagrams and TSMS	\$20,000
Grading Ring Confirmation and Installations	\$55,000
Subtotal	\$594,000
Contingency (10%)	\$59,400
Asset Management (2.5%)	\$14,800
Project Management (5%)	\$29,700
Total	\$700,000

Original Earth Wire Clamp Estimate (A.03844):

Cost Component	Cost
Labour	\$69,720
Materials	\$24,000
Plant Hire	\$9,060
Subtotal	\$102,780
Contingency (10%)	\$10,278
Asset Management (\$3000 or 2.5%)	\$3,000
Project Management	\$12,500
Total	\$130,000




Aurizon Network Pty Ltd Capital Expenditure 2011-12

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Attachment 2: Updated project cost estimate

QR NATIONAL - INFRASTRUCTURE SERVICES - CAPITAL DELIVERY								
Feasibility Capex Estimate			A.03896		Blackwater Overhead Renewal			
DISCIPLINE ESTIMATE SUMMARY								
Description of Work	Discipline Base Estimate Total (Raw & Allowances)	Uncertainty Contingencies (Planned Risks)				TOTAL DISCIPLINE ESTIMATES SIMPLE RANGING (Excluding Unplanned Risks and Optimism Bias)		
		Best Case \$	Aver. %	Worst Case \$	Aver. %	Best Case \$	Worst Case \$	
COST TO DATE	\$ 39,745		0%		0%	\$ 39,745	\$ 39,745	
TPO's	\$ 346,763	-\$ 17,338	-5%	\$ 52,014	15%	\$ 329,424	\$ 398,777	
Laing O Rourke (Electrical Quote)	\$ 3,623,494	-\$ 181,175	-5%	\$ 543,524	15%	\$ 3,442,319	\$ 4,167,018	
MATERIALS	\$ 145,000		0%		0%	\$ 145,000	\$ 145,000	
PM COST - BRISBANE (2.5 of CC)	\$ 102,881		0%		0%	\$ 102,881	\$ 102,881	
CONTINGENCY @ 2.5%	\$ 102,881		0%		0%	\$ 102,881	\$ 102,881	
ASSET MANAGEMENT (2.5% of CC)	\$ 102,881		0%		0%	\$ 102,881	\$ 102,881	
INSURANCES AND LEVIES (1.5% of CC)	\$ 61,729		0%		0%	\$ 61,729	\$ 61,729	
SUBTOTALS	\$ 4,525,375	-\$ 198,513	-4%	\$ 595,538	13%	\$ 4,326,862	\$ 5,120,913	

Estimate No: Rev 1

Timeframe: _____

Staging: Feasibility

Project Manager: C. Browne Date: 13/02/2012

Project Delivery Services: _____ Date: _____

Network Access: _____ Date: _____

Assumptions

1. LOR price assumed as Fixed Lump sum
2. No escalation has been allowed for
3. No unplanned risk has been allowed for
4. Asset Management and Insurance are simply a fixed percentage of construction cost



Attachment 3: Traction Wiring Support Structure locations and numbers of PVC pipes to be installed

System	Location	Km's from	Km's to	Dual track	Estimated single track kms
Goonyella	Wandoo to Waitara	GA 87	GA 98	yes	22
Goonyella	Praugelands to Ports	GA 19	Unloaders	multiple	72
Goonyella	Black Mountain	GA 36	GA 38	yes	4
Goonyella	Mindi	GA 111	GA 112	yes	2
Blackwater	Gladstone to Rocklands	NC 550	NC 634	yes	168
Blackwater	Ensham Branch	EN 0	EN 15	single	15
Blackwater	Crew	GG 9.5	GG 11	yes	1.5
Blackwater	Bluff	CL 169	CL 171	multiple, yard	4
Blackwater	Blackwater	CL 188	CL 196	multiple, yard	16
Blackwater	Stanwell to Westwood	CL 26	CL 48	yes	44
					348.5

The areas identified above are **high priority areas**, identified via detailed aerial photographic survey, as being those areas currently having a significant number of bird nests.

Based on the assumption of an overhead mast every 50m, the above provides the following details:-

Location	Estimated single track kms	Estimated number of PVC tubes
Wandoo to Waitara	22	440
Praugelands to Ports	72	1440
Black Mountain	4	80
Mindi	2	40
Gladstone to Rocklands	168	3360
Ensham Branch	15	300
Crew	1.5	30
Bluff	4	80
Blackwater	16	320
Stanwell to Westwood	44	880
	348.5	6970



Attachment 9: Breakdown of costs involved in a de-wirement

A dewirement will generally take a minimum of 14 hours to repair; it will also normally block both tracks as the overhead wire will often go through a crossover. This can end up with both diesel and electric trains being blocked on both tracks.

Blackwater system has approximately 46 trains per day
Goonyella system has approximately 72 trains per day

Costs of Train's Delays

BW = 28 trains delayed over the 14 hours
Approximating (13.5h + 13h + 12.5h..... etc)
BW = 189hours of train delays

GA = 46 trains delayed over the 14 hours
GA = 287 hours of train delays

Train delay cost = \$2460 per hour

BW = 189 x 2460
BW = \$464,940

GA = 287 x 2460
GA = \$706,020

Labour Costs

6 men @ 14 hours

Labour = 6 x \$120 p/h x 14
Labour = \$10,080

Attachment 10: Cost involved with a back injury

This info has been received from Amanda Raines (Rehabilitation Case Manager) and Kelvin Sinclair (Senior Safety Facilitator).

Direct Quote:

On average a back claim cost \$2022.21 for medical expenses/loss of wages and \$227 955.41 for common law expenses (not all claims go to common law, but those that do, tend to be costly). That figure would be even higher if we factored in neck and shoulder injuries.



Attachment 11: Annual cost of earth wire breakages

QFD Rev 458
Riverview Qld 4011 Australia
Level 14, 305 Edward Street
Brisbane Qld 4000

T: +61 (0)7 3236 1372
F: +61 (0)7 3236 2573
E: Simon.Matthews-Frederick@skm.com.au
Frederick@skm.com.au



MEMO

To: Chris Browne
CC:
From: Simon Matthews-Frederick
Date: 19/01/2012

Subject: Earth Wire Failure Cost Estimate

Earth Wire Failure Cost Estimate

The following cost estimate has been completed to assist the development of scope:

Assumptions:

Time for overhead crew to:
Get to the site = 30 mins
Safety brief = 30 mins
Isolation = 30 mins
Machinery on-tracked = 30 mins
Repair earth wire (could be large variance) = 3 hrs
Testing = 30 mins
Reverse the Isolation = 30 mins
Remove Block = 30 mins
Total time approx = 6.5 hrs

Cost Estimate:

Time x average number of faults per year
= 6.5 x 15
= 97.5

Average delay to trains for 2011 earth wire failures is 932 minutes
cost of train delay (\$41 per minute, \$2460 per hour)
= 932 x 15 x 41
= \$573,180

Costs associated with labour:
Typically a fault like this will require 4 lineworkers.
= 4 x 97.5
= 390 hrs

At \$110 per hour
= 390 x 110
= \$42,900

Other Costs involved that are negligible include:
Plant and Equipment Hire
Materials

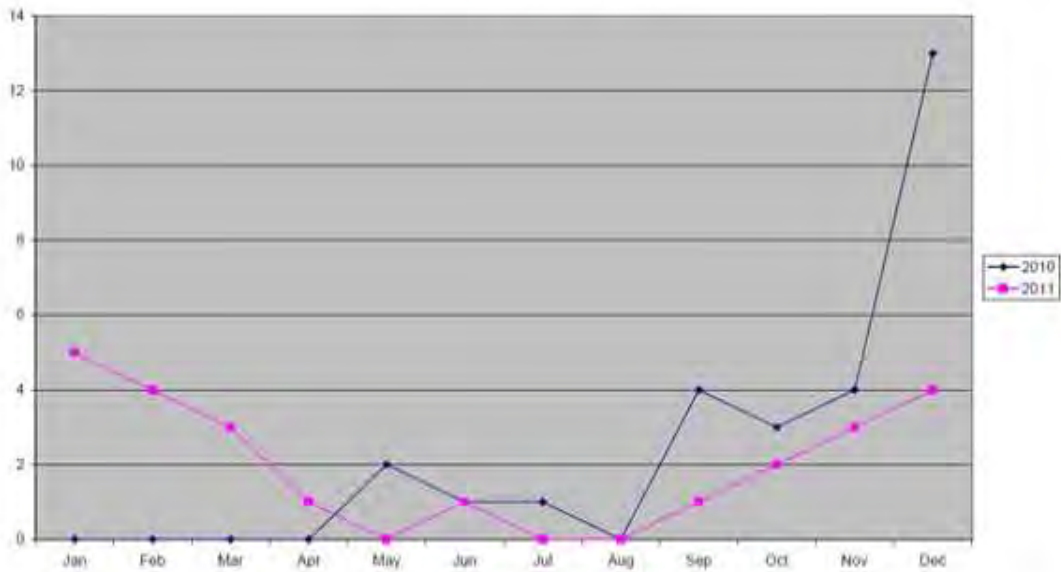
Total Cost of Earth Wire breakages for 1 year:
= \$573,180 + \$42,900
= \$616,080

Earth Wire Breakages are estimated to cost \$616,080 per year

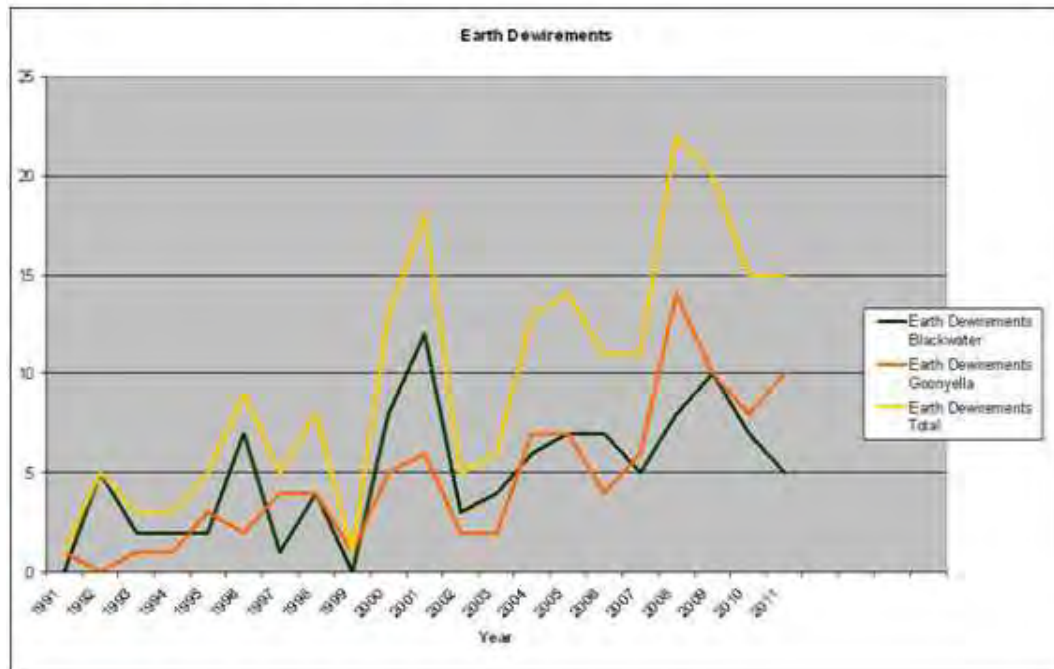


Attachment 12: Faults due to birds nests comparison

Bird Related Trips on 211 and 212



Attachment 13: Earth wire breakage trend





Estimates for anti-nesting contained in Schedule 5 – Project Claim Submissions – Blackwater, “Project Change Request - Change Request No: 2.0” of 28 November 2011 were as per that shown below:

Attachment 1: Estimate of Costs

Installation of PVC Piping	Calculation	Rate	Total
ASSUMPTIONS:			
Number of units installed during initial scoping project		1000 pipes	
Number of units to be installed during this project		7000 pipes	
Number of workers per installation team		2 workers	
Number of installations by one team in one hour		5 Units/Hr	
Isolation cost per isolation		\$3,000/isolation	
Isolation duration		8 hrs	
1 x 90mm Storm Water Pipe		\$25/6m	
Cost per 3m length of pipe	\$25 / 2	\$12/unit	
8mm Gal wire		\$10/unit	
Miscellaneous		\$8/unit	
MATERIAL COST			
Total material cost per unit	\$12 + \$10 + \$8	\$30	
Total material cost	\$30 x 7000		\$210,000.00
LABOUR COSTS			
Labour cost to install one unit	2 x 1/5hr x \$130	\$52	
Cost to manufacture hooks per unit	1 x \$130/hr x 1/6hr	\$21	
Total labour cost	\$52 x \$21 x 7000		\$511,000.00
ISOLATION COSTS			
Number of installations per 8hr isolation	8hrs x 5units/hr	40 units/isolation	
Isolation Cost per Unit	\$3,000/40	\$75	
Total isolation cost	\$75 x 7000		\$525,000.00
PLANT HIRE COSTS			
Crane & Dog Box per isolation	10hrs x \$200/hr	\$2,000	
Crane & Dog Box per unit	\$2000 / 40	\$50	
Total plant hire costs	\$50 x 7000		\$350,000.00
COST BREAKDOWN:			
Total cost per unit	30+52+21+75+50	\$228/Unit	
Material cost			\$210,000.00
Labour cost			\$511,000.00
Isolation cost			\$525,000.00
Plant hire costs			\$350,000.00
Sub Total for PVC installation			\$1,596,000.00

Estimates for the mast numbering contained in Schedule 5 – Project Claim Submissions – Blackwater, “Project Change Request - Change Request No:3.0” of 28 November 2011 were as per the extract below:



COST SCHEDULE OF CHANGE

Item	Total
Labour cost	\$462,000.00
Material cost	\$18,750.00
Safety & Planning	\$5,000.00
Risk Management	\$5,000.00
Asset Handover Docs (ITP)	\$5,000.00
Sub-total	\$495,750.00
Asset Management (2hrs x \$150 x 30weeks)	\$9,000.00
Project Management (2hrs x \$150 x 30weeks)	\$9,000.00
Sub-total	\$513,750.00
Contingency (10%)	\$51,375.00
Total Project Change Estimate	\$565,000.00

Attachment 1: Estimate of Costs

Refurbishment of Structure Numbering	Calculation	Rate	Total
ASSUMPTIONS:			
Mast numbering and As-Builts can be completed outside of isolations			
As-Built drawings can be reviewed and updated while completing mast numbering			
Number of labels installed per hour in a two man crew		60 labels/hour	
Assume 8 hours on site of which 2 hours is lost driving between sites, working between trains and time to set up track blocks with Train Control.	8hrs - 2hrs	6 working hrs/day	
The number of labels installed in one day	6 × 60	360 labels/day	
Assume working 5 days/week			
Number of labels installed/week	5 × 360	1800 labels/week	
Number of labels to be installed		75000 labels	
Number of weeks to complete works for (one crew)	75000/1800	42 weeks	
Assume a crew consists of a labourer and a linesman (TPO trained)			
Labourer rate (rates include vehicle hire)		\$90/ hr	
linesman (rates include vehicle hire)		\$130/ hr	
Label cost and cleaning material		\$0.25/label	
LABOUR COSTS			
Total Labourer cost	\$90 × 10hr × 5days × 42weeks		\$189,000.00
Total Linesman cost	\$130 × 10hr × 5days × 42weeks		\$273,000.00
Total labour cost			\$462,000.00
MATERIAL COST			
Total material cost	\$0.25 × 75000		\$18,750.00
COST BREAKDOWN:			
Labour Cost			\$462,000.00
Material Cost			\$18,750.00
Sub Total for Structure Numbering and As-Builts			\$480,750.00



From RFI Response 001 – 015, entitled “Tender Evaluation Report” dated 5 March 2012 provided the following cost estimates for Aurizon Network Pty Ltd:

EAM-113-ES
1:A
Renewal Project Blackwater System
Tender Evaluation Report

4.2 QR National Costs

Item	Renewal Project
OH Design, Documentation & Coordination	\$237,000.00
Procurement support	\$12,000.00
QR Services	\$1,188,568.00
Project Support Coordination	\$33,000.00
Total QR Costs	\$1,470,568.00

4.3 Insurance Costs

Item	
PCIP	\$19,480.00
PLSL & WHS Fee	\$7,611.00
Tender Administration	\$7,000
Total Insurance Costs	\$34,091.00

5. TOTAL PROJECT COSTS

In accordance with the above, total project cost is as follows:

Item	
LOR Contract	\$3,373,243.54
QR National Costs	\$1,470,568.00
Insurance Costs	\$34,091.00
TOTAL	\$4,877,902.54



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Project costs extracted from spread sheet with electronic file name "A.03896 ZWISR"

Description	Assigned Budget	Released Budget	Total Actual Expenditure	Nov	Dec	Jan	Feb	Mar	Apr	May	June	2011/2012
Overhead Renewals - Rocklands to Callemo	4,525,000	4,525,000	3,271,351	15,596	7,870	46,775	238,691	1,095,320	482,158	105,402	1,279,539	3,271,351
PLANT HIRE	20,000	13,046	5,081	-	-	-	-	-	5,081	-	-	5,081
plant hire	20,000	13,046	5,081	-	-	-	-	-	5,081	-	-	5,081
LABOUR	599,000	599,000	498,775	-	-	34,000	220,061	46,682	141,138	125,015	25,243	498,775
Isolation	358,000	358,000	346,235	-	-	-	74,540	84,103	50,686	116,211	20,695	346,235
Installation	176,000	176,000	152,541	-	-	34,000	145,522	130,784	90,451	8,804	4,548	152,541
John Holland Works	65,000	65,000	-	-	-	-	-	-	-	-	-	-
MISCELLANEOUS	55,000	50,000	21,897	-	-	-	-	120	126	6,082	15,569	21,897
Alteration of Isolation Diagrams & TSM	5,000	5,000	3,418	-	-	-	-	120	126	2,937	235	3,418
Grading Ring Confirmation and Install	-	-	-	-	-	-	-	-	-	-	-	-
As built Review	35,000	30,000	18,478	-	-	-	-	-	-	3,145	15,334	18,478
LEP Design	15,000	15,000	-	-	-	-	-	-	-	-	-	-
Discipline Schedule	-	-	-	-	-	-	-	-	-	-	-	-
ASSET MANAGEMENT	35,000	35,000	29,885	12,384	-	-	6,386	2,877	-	3,906	4,332	29,885
Asset Management	35,000	35,000	29,885	12,384	-	-	6,386	2,877	-	3,906	4,332	29,885
PROJECT MANAGEMENT	119,500	119,500	82,364	3,212	7,870	12,775	11,827	13,239	12,901	11,691	8,850	82,364
Project Management	119,500	119,500	82,364	3,212	7,870	12,775	11,827	13,239	12,901	11,691	8,850	82,364
PROGRAM SUPPORT	12,500	11,860	8,887	-	-	-	417	3,941	2,599	410	1,520	8,887
Estimating	7,000	6,360	6,360	-	-	-	-	3,505	2,208	185	832	6,360
Environment	-	-	-	-	-	-	-	-	-	-	-	-
Scheduling	5,500	5,500	2,528	-	-	-	417	437	391	595	688	2,528
LOR Contract works	3,299,000	3,298,784	2,477,253	-	-	-	-	967,099	302,144	38,299	1,169,712	2,477,253
LOR Contract works	3,278,000	3,278,000	2,456,469	-	-	-	-	946,315	302,144	38,299	1,169,712	2,456,469
QLeave fees	21,000	20,784	20,784	-	-	-	-	20,784	-	-	-	20,784
MATERIALS	250,000	250,000	96,713	-	-	-	-	154,725	18,170	80,000	3,817	96,713
TPO	120,500	120,500	37,000	-	-	-	-	-	-	-	37,000	37,000
Construction (internal)	120,500	120,500	37,000	-	-	-	-	-	-	-	37,000	37,000
RISK/CONTINGENCY	-	-	-	-	-	-	-	-	-	-	-	-
Insurance	13,497	13,497	13,497	-	-	-	-	-	-	-	13,497	13,497
FY11-12 Insurance	13,497	13,497	13,497	-	-	-	-	-	-	-	13,497	13,497



Appendix G. Marmor to Bajool track upgrade project

G.1 Project description

The Marmor to Bajool track section is on the North Coast Line of the Blackwater System and carries 100% of traffic from the mines in the Blackwater System to the ports and domestic users in the Gladstone area.

Top and line issues caused by sub-standard formation and ballast, along with aged 20 tal sleepers are considered by Aurizon Network Pty Ltd to have a significant impact on system capability.

Similarly to the Blackwater Track and Formation Renewal project (A.03959) the project was to replace aged and derailment damaged 20 tal fist fastened sleepers with new full depth 26.5 tal Pandrol sleepers and associated rail along with the restoration of the ballast profile.

Key project information is provided in **Table G-1**.

Table G-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.04137	Project status	Completed
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$592,000	Project financially complete	Yes

G.1.1 Location of project

A total of 682.5 m between Marmor and Bajool has been identified for the track upgrade works. These locations, shown on **Figure G-1** below, are:

- 600.880 km to 601.600 km; and
- 600.103 km to 600.250 km.

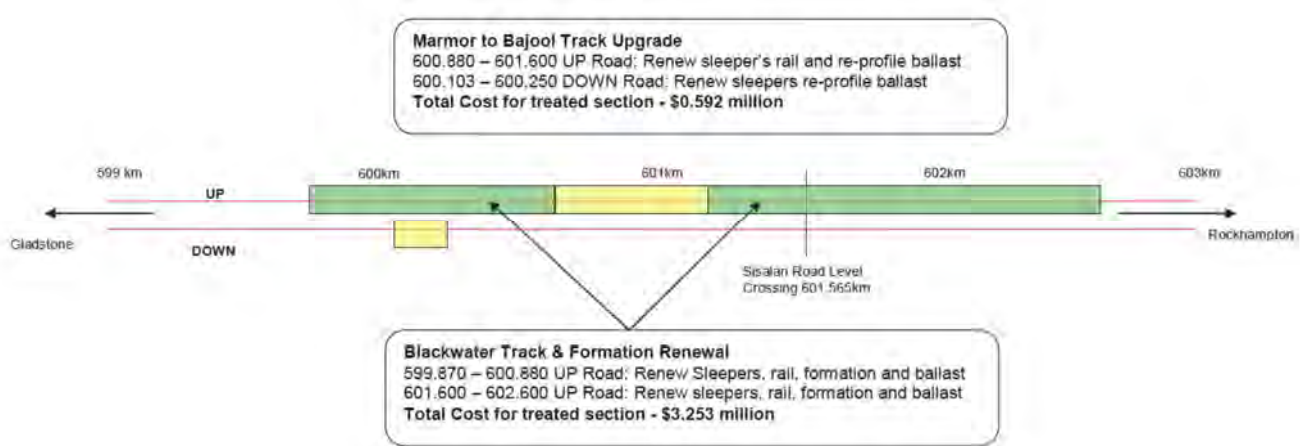


Figure G-1 : Location of Marmor to Bajool track upgrade (and relationship to Blackwater track & formation renewal project)



G.1.2 Objective of this investment

An opportunity arose to utilise machinery and labour already in the area for completion of this formation strengthening. SKM is of the opinion that by completing these works on the back of other planned capital activity the time required to mobilise plant and labour was averted, saving both time and capital expenditure. To undertake the project as a standalone project would require a three day shutdown of the Blackwater System. Aurizon Network Pty Ltd.'s initiative to complete these works during the window of opportunity is commended.

The primary objective of this project is to undertake full track and formation renewal of identified areas between Marmor and Bajool on the Blackwater System replacing aged and/or below standard rail infrastructure and formations.

The Blackwater System has experienced significant growth over recent years. In addition to the development of new coal mines, demand from existing mines has increased with the level of tonnage being hauled putting pressure on existing infrastructure. SKM is of the opinion that this has resulted in an increase in track and formation failures. The works are required to facilitate the current and future traffic task, minimise loss of capacity from speed restrictions, avoid delays from reactive maintenance, and reduce the likelihood of incidents/derailments caused by track or formation failures.

SKM agrees that this project aligns with Aurizon Network Pty Ltd.'s strategic initiatives as follows:

- Safety – Renewal of life expired rail and fist fastened sleepers will reduce the potential for derailment due to broken rails or track spread due to the condition of the fist fastened sleepers and fastenings;
- Customer Service – Renewal of the life expired track components will ensure the required amounts of revenue train paths over the section will be achievable;
- Growth – Renewal of the life expired track components will ensure the section of track is able to meet the requirements of predicted future tonnage increases; and
- Commercial Capability – Non-completion of the additional works in conjunction with the planned projects has the potential for the section of track to be managed with speed restrictions until the additional works can be completed.

SKM understands that the overarching business objective of Aurizon Network Pty Ltd is to maintain and improve the rail infrastructure and to ensure there are no delays to operations due to defective assets. The track upgrade works will minimise the need for possible speed restrictions and therefore reduce the impact on cycle times and available capacity thereby supporting this business objective.

G.2 Capital expenditure

Table G-2 shows the cost of the Marmor to Bajool Track Upgrade.

Table G-2 : Project A.04137 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	2011/12 Claimable Expenditure	\$547
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$523
Schedule 5 – Project Claims Submission: “Blackwater System Projects”	Page19, Marmor to Bajool Track Upgrade	\$547

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and that provided in the project background documents.



The funding and approvals and claim details for this project are shown in **Table G-3**.

Table G-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$546,689
Applicable Financial Interest	-\$23,286
Total amount for inclusion in the RAB	\$523,404

There were no finance data discrepancies in the information provided.

G.3 Provided documentation

This review is based on information sourced from documents as shown in **Table G-4** and **Table G-5** below.

Table G-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Minor Capital Funding Request – Marmor Bajool Track Upgrade Additional Works	MFR – Marmor to Bajool Track Upgrade - Signed	Adobe PDF	June 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions		A.04137 ZWISR	Excel	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Blackwater System Projects	Blackwater Project Info Submission	Word	No date

Table G-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009



G.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 004 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost.

Responses were received for each individual question raised from RFI 004.

SKM found that no track validation certificates have been provided for the works completed, although an emailed statement regarding the completion of works on the Marmor to Bajool track upgrade project, and signed Inspection and Test Plan (ITT) certificate has been provided by a Track and Civil Engineer for Aurizon Network Pty Ltd.

G.3.2 Adequacy of information provided and general comments

This project has been indicated as complete by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Marmor to Bajool Track Upgrade”) and forms additional works undertaken following the opportunity to utilise machinery and labour from other capital projects within the area.

Project overviews and rationale are of a high standard and clearly state the need for the project.

Of the \$592,000 budget, \$546,689 has been claimed.

G.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

G.4.1 Project scope

The scope of this project is based on the Minor Funding Requests, as identified and approved by the Senior Vice President Network Finance and Regulation and forms additional works undertaken following the opportunity to utilise machinery and labour from other capital projects within the area.

In summary project scope was to replace 1150 life expired fist fastened sleepers and associated rail and replace them with 26.5 tal Pandrol e-clip fastened concrete sleepers, along with 410 m³ of ballast re-profiling.

The inclusion of these works to coincide with works that require similar plant and labour resources is an example of the asset renewal program being co-ordinated within Capital Delivery to realise benefits of joint working reducing project establishment costs.

According to the information provided in Schedule 5 – Project Claim Submissions, document entitled “Marmor to Bajool Track Upgrade”, this project has been completed.

Table G-6 below indicates the forecast milestones as per the information contained in “Marmor to Bajool Track Upgrade” Minor Capital Funding Request” dated June 2012.



Table G-6 : Milestones as forecast in June 2012

Milestone description	Milestone date
Funding Provided	June 2012
Project Completion	June 2012
Post Project Review	September 2012

For those projects that have not obtained Customer Group Approval under Clause 3.2, in particular 3.2.2(f), of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3 and the criteria outlined in the Authority’s terms of reference. The ability of the project to meet these criteria is outlined in **Table G-7**, followed by a discussion section that provides the analysis.

Table G-7: Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Yes
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

SKM found that the track sections between Marmor and Bajool on the Blackwater system carries 100% of coal railings through to the ports and domestic users within the Gladstone area; therefore these sections are critical components of the network.

Post the significant flooding events of late 2010 a number of mines in the Blackwater System were still dealing with waste water in mine pits resulting in greatly reduced production rates. This flowed through as a reduction in ordered train path requirements on the rail network and reduced tonnages and system utilisation. This reduced usage resulted in more access to the track infrastructure and the ability of Aurizon Network Pty Ltd to take longer than normal track possessions. This is a change to the limited track access availability during normal operations.

An opportunity arose on the Marmor to Bajool track section to take advantage of the major track possessions being conducted for formation strengthening projects between 599.870 km and 602.600 km on the Up road and utilise the machinery and labour already on site to replace additional life expired 20 tal fist fastened sleepers and life expired rail in the vicinity of these formation strengthening works. SKM considers that to conduct these additional works at a later date would require an estimated three days of track possessions.

SKM is of the opinion that the safety and integrity of the section of track between Marmor and Bajool would be enhanced with the removal of life expired sleepers and rail, and that the works would reduce the need for additional inspection and unplanned maintenance.



In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

It is SKM's view that this project is correctly categorised as an Asset Replacement Expenditure Project and that the project is reasonably required. In determining the scope of works, SKM has considered the following issues:

- the project is consistent with the reasonable demand expectations associated with existing entitlements through the CQCR Systems and future entitlements relating to access rights under negotiation; and
- Aurizon Network Pty Ltd.'s requirements for a safe working environment for Aurizon Network Pty Ltd.'s above rail operations and Pacific National (and any other subsequent operators) on the rail infrastructure.

Conclusion

This project has been completed and the criteria for Prudence of Scope have been fulfilled. It is SKM's view that the scope of works is appropriate given the age and condition of the pre-existing assets.

Given the above SKM therefore concludes that the scope of this project is prudent.

G.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved 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.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

SKM has undertaken a review of all the information provided for the Marmor to Bajool Track Upgrade project and is of the opinion that the identified scope has been undertaken in accordance with appropriate Aurizon Network Pty Ltd policies and procedures, relative industry and Australian Standards, and associated internal Civil Engineering Track Standards (CETS), although SKM found that there were no Track Validation Certificates provided for each completed track section. Such document provides conformation that the infrastructure is safe prior to returning the track section into rail operations.

However, an emailed statement regarding the completion of works on the Marmor to Bajool track upgrade project, and a signed Inspection and Test Plan (ITT) certificate has been provided by a Track and Civil Engineer for Aurizon Network Pty Ltd. This confirms tracks standards were adhered to and met during the construction phase of the upgrade. In absence of a Track Validation Certificate, SKM has accepted this email and evidence that the works were completed and complied with appropriate and relevant safety and technical standards.

The project used and installed 26.5 tal concrete sleepers and galvanised E-clips; this work is similar to works being undertaken on the Fist Clip Sleeper Replacement projects undertaken in Callemondah and Goonyella in the 2011-2012 financial year.



SKM found that 26.5 tal concrete sleepers are the standard sleeper design utilised in all current expansions works. This sleeper design is also standard within the Blackwater and Goonyella Systems and is being rolled out as the standard design in Moura and Newlands Systems.

The installed infrastructure is consistent in all material respects with the existing standard and configuration of adjoining infrastructure and infrastructure with similar usage levels in other sections of the CQCR Systems.

Conclusion

SKM concluded that this project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards, policies and procedures, and internal CETS.

Given the above, SKM considers that the standard of works for this project is prudent.

G.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Blackwater System Projects”.

Marmor to Bajool Track Upgrade

Project Information

Project Number	A.04137	Project Status	Completed
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$592,000	Project Financially Complete	Yes

Funding & Approvals

Stage	Date	Estimate
Business Case	June 2012	\$592,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$546,689
Applicable Financial Interest	-\$23,286
Total amount for inclusion in the RAB	\$523,404



Table G-8 presents a breakdown of the project funding for the project.

Table G-8 : Project funding

Item	Value
Labour	\$40,500
Plant Hire	\$253,000
Materials	\$258,000
Consumables	\$40,500
Total Project Budget	\$592,000

Costs to 30 June 2012 were \$546,689 against the \$592,000.

All costs in the claim were incurred in the 2011-2012 financial year. Details provided by Aurizon Network Pty Ltd are included in **Appendix G-A**.

Discussion

SKM found that at project inception this project was subject to an independent peer review process to ensure scope, standard, and cost were justified. Detailed cost estimates were developed and provided.

The SAP cost breakdown sheet showed that all works in the 2011-2012 claim occurred late in the year and as such a negative IDC has been incurred.

The works were completed within a planned system closure so no additional impact on the Blackwater system was incurred as a result of the project.

SKM is of the opinion that the forecasts and costs claimed to date are consistent with the proposed project scope and works completed and with project costs from other projects with similar scopes.

The project has reached a financial close, and as such no additional claim will be required in future capital submissions to the Authority.

Conclusion

SKM considers that the costs for the claim submitted and works completed are prudent.

G.5 Summary

The outcomes of this prudence assessment are summarised in **Table G-9**.

Table G-9 : Marmor to Bajool track upgrade project – review summary

Item	Prudence
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



G.6 Appendix G-A: Detailed analysis of cost for Marmor to Bajool track upgrade project

Project costs extracted from spread sheet with electronic file name "A.04137 ZWISR"

Lev	Description	Assigned Budget	Total Actual Expenditure	Prev Yrs	2011/2012
1	Marmor Bajool Track Upgrade	592,000.00	546,689.28	0.00	546,689.28
2	Marmor Bajool - Labour	40,500.00	40,152.41	0.00	40,152.41
2	Marmor Bajool - Plant Hire	253,000.00	243,205.78	0.00	243,205.78
2	Marmor Bajool - Material	258,000.00	256,257.09	0.00	256,257.09
2	Marmor Bajool - Consumables	7,500.00	7,074.00	0.00	7,074.00

The following was extracted from the spread sheet entitled "Schedule 2 – IDC Summary 2011/12 CAPEX Claim" dated 1 November 2012.

Project Name	Mamor to Bajool Track Upgrade		
Project Number	A.04137		
WACC (UT3)			TOTAL
Monthly Int Calc (WACC)			
SAP Recorded Expenditure		546,689	188,699,755
Construction Finance Interest		23,286	14,400,089
Total Capex Claim (including interest)		523,404	203,099,844
Period/year	Actual SAP Recorded Spend	Interest (\$ as at 30 June 12)	
001.2012 July 2011	-	-	
002.2012 August 2011	-	-	
003.2012 September 2011	-	-	
004.2012 October 2011	-	-	
005.2012 November 2011	-	-	
006.2012 December 2011	-	-	
007.2012 January 2012	-	-	
008.2012 February 2012	-	-	
009.2012 March 2012	-	-	
010.2012 April 2012	-	-	
011.2012 May 2012	-	-	
012.2012 June 2012	546,689.28	23,286	
Total of 2011/12 capex claim	546,689.28	23,285.59	
Project Name	Mamor to Bajool Track Upgrade		
Project Number	A.04137		



Appendix H. Concrete sleeper upgrades – Goonyella (Stage 2) project

H.1 Project description

The concrete sleeper upgrade project involves the replacement of life expired and corroded fist fastened sleepers designed for 22.5 tal at numerous sites within the Goonyella System with new 28 tal concrete sleepers with galvanised Pandrol E clips. This upgrade will facilitate the carrying of current and future traffic loads and provide an asset suitable to the corrosive environments within the coal network.

Stage 1 (A.03372) scope completed as of May 2012 equated to 9.809 km.

Stage 2 of the Concrete Sleeper Upgrade project forms the 2nd part in a series of staged replacement projects. Aurizon Network Pty Ltd identified priority locations for replacement works. Stages 1 and 2 address the highest priority sites located in the Goonyella System.

Key project information is provided in **Table H-1**.

Table H-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.04040	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$8,020,000	Project financially complete	No

H.1.1 Location of project

A total of 6.14 km across a number of track sections within the Goonyella System has been identified for the concrete sleeper upgrade. These locations are:

- 19.383 km to 20.300 km Jilalan Yard Down Road;
- 18.816 km to 18.116 km Jilalan Yard Down Road;
- 14.180 km to 12.900 km Praguelds to Daly Bay CT Down Road;
- 12.900 km to 11.160 km Praguelds to Daly Bay CT Down Road; and
- 11.160 km to 9.660 km Praguelds to Daly Bay CT Down Road.

The locations have been selected due to their proximity to the coastal areas between Jilalan and the ports that increase the exposure of the fastenings to corrosive conditions when combined with coal contamination.

Note - 19.383 km to 20.300 km Jilalan Yard Down Road works will not be completed due to a reassessment of the priority and the introduction of the Jilalan Bypass.

On this basis the total approved funding should be reduced. Proportionally this would be by \$1.2 million (from 6.137 km of route to 5.220 km). That said there was a later addition in scope and the saving identified was employed to negate a need to increase the budget.

The general location of the works in Goonyella System is depicted in **Figure H-1** below.



Figure H-1 Yukan (South) to Hay Point (North); extracted from "Project Plan A.03372 & A.04040 June 2012, Version 3.0"

H.1.2 Objective of this Investment

The primary objective of this project is to replace life expired and corroded fist fastened sleepers designed for 22.5 tal at numerous sites within the Goonyella System with new 28 tal concrete sleepers with galvanised Pandrol e-clips. The upgrade is to facilitate the current and future traffic task and provide an asset suitable to the corrosive environments within the coal network.

The project aligns with Aurizon Network Pty Ltd.'s strategic initiatives in the following ways:

- Safety – Reduced risk of sleeper failure decreases the derailment risk caused by track failure;
- Customer Service – The replacement and upgrade of the affected sections will improve the ability of Aurizon Network Pty Ltd to provide a reliable and safe network to the customer; and
- Commercial Capability – The successful implementation of this project will allow Aurizon Network Pty Ltd to provide the required track standard and capacity to meet its contractual requirements.

The overarching business objective of Aurizon Network Pty Ltd is to maintain and improve the rail infrastructure and to ensure there are no delays to operations due to defective assets. The sleeper renewal works will minimise the need for possible speed restrictions and therefore reduce the impact on cycle times and available capacity.



H.2 Capital expenditure

Table H-2 shows the cost of the Concrete Sleeper Upgrades – Goonyella (Stage 2) Project.

Table H-2 : Project A.04040 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Claim value	\$4,319
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$4,319
Schedule 5 – Project Claims Submission: “Goonyella System Projects”	Page 5, Concrete Sleeper Upgrades - Goonyella	\$4,319

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and those provided in the project background documents. . There was no additional cost information sourced other than that which is listed in the above table.

The funding approvals and claim details for this project are shown in **Table H-3**.

Table H-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$4,318,840
Applicable Financial Interest	-\$158,283
Total amount for inclusion in the RAB	\$4,160,557

There were no finance data discrepancies in the information provided.

H.3 Provided documentation

This review is based on information sourced from documents as shown in **Table H-4** and **Table H-5** below.

Table H-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Goonyella Systems Projects	Goonyella Project Info Submission	Word	
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Project Change Request – Sleeper Replacement Project Stage 2	A.04040 Scope Change Request 1 v2 Approved	Adobe PDF	19 June 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	CAPEX Estimate Discipline Estimate Summary – Goonyella Fist Clip Upgrade	Group Estimate Summary Rev 3	Adobe PDF	



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Minor Capital Funding Request – Concrete Sleeper Upgrades – Goonyella – Stage 2	MFR – Concrete Sleeper Upgrades – Stage 2 - Signed	Adobe PDF	February 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Project Plan A.03372 & A.04040, June 2012	Stage 1 and 2 Project Plan v1	Word	June 2012 Version 3
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions		A.04040 ZWISR	Excel	
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Rail Construction Track Safety Validation – Track Relay: Fist Clip Renewal Project (sic)	Track Safety Certificates	Adobe PDF	Version 1, 2 August 2010

Table H-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009

H.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 005 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost.

Responses were received for each question raised from RFI 005.



H.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Goonyella Systems Projects” and forms Stage 2 of a previous Asset Renewal Project A.03372).

Project overviews and rationale are of high standard and clearly state the need for the project.

Of the \$8,020,000 budget, \$4,318,840 (54%) has been claimed. Track Safety Validation certificates have been supplied and are consistent with the 54% of completion being claimed (i.e. 3.285 km of the total 6.14 km identified).

H.4 Assessment of prudence

In assessing the prudence of capital expenditure and in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

H.4.1 Project scope

The scope of this project is based on Minor Funding Requests, as identified and approved by the Principle Engineer Track and Civil Network Assets and forms Stage 2 of the previously funded and completed Concrete Sleeper Upgrade project A.03372. This earlier project replaced approximately 8.2 km of fist fastened sleepers in the port vicinity of Daly Bay Down Road and Hay Point in November and December 2011.

In summary, the project scope was to replace 6.14 km of effected 22.5 tal fist clip sleepers ‘on a face’ using the Track Laying Machine (TLM) with new 28 tal concrete sleepers with galvanised E Clips.

Aurizon Network Pty Ltd analysed other engineering solutions prior to the proposed scope being defined. This was reviewed at the options section of the internal funding submission.

The project scope also included the confirmation of overhead alignment to the track prior to the completion of the works to ensure that the contact wire height was within pre-defined heights.

The scope of works has been, and the remaining sections will be delivered using the TLM. The TLM allows for fast sleeper placement to ensure that all works are carried out in planned port and rail maintenance shutdowns. This will limit the impact of the project on throughput capacity of the Goonyella System.

According to the information provided in Schedule 5 – Project Claim Submissions, document entitled “Goonyella Systems Projects”, this project remains incomplete/ongoing.

Table H-6 below indicates the forecast milestones as per the information contained in “Concrete Sleeper Upgrades – Goonyella – Stage 2 Minor Capital Funding Request” dated February 2012.

Table H-6 : Milestones as forecast in February 2012

Milestone description	Milestone date
Concept Gate	n/a
Feasibility Gate	February 2012
Project Completion	November 2012
Post Project Review	December 2012



In February and March 2012, 3.285 km of the proposed 6.14 km of works was completed (i.e. 54% of scope). Of the outstanding 2.855 km, 19.383 km to 20.300 km Jilalan Yard Down Road will not be completed as there is no need to complete the works as the priority has been re-assessed due to the introduction of the Jilalan Bypass Project. This location is no longer Priority 1.

It has been proposed to add the following sleeper renewal works to the scope of the Concrete Sleeper Upgrades – Goonyella (Stage 2):

- rollout of Pelican Creek Bridge

The location has been included for the following reasons:

- sleepers are in poor condition due to corrosion and derailment damage and are a priority replacement; and
- operational opportunity to undertake without bridge rollout works to gain cost efficiencies.

These works were originally included in the Newlands Sleeper Upgrade 12/13 MFR: however Aurizon Network Pty Ltd decided to bring these works forward to June 2012.

The estimated cost of the proposed works is \$612,000 including 8% margin, therefore the works can be undertaken without increasing the original Stage 2 budget.

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3. The ability of the project to meet these criteria is outlined in **Table H-7**, followed by a discussion section that provides the analysis.

Table H-7 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Partially, the project is on-going (54% of scope was completed in 2011-2012 financial year)
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

At the time of mainline construction during the early 1980’s pre-stressed concrete sleepers with fist fasteners were installed with an approximate life of 25 – 30 years. Many of these sleepers, fastening pins, and lugs are now life expired. Furthermore these sleepers are rated to a 22.5 tal whereas the current track standard calls for 26.5 tal sleepers. These fist clips fasten the rail to the sleeper by leveraging via a pin and clip arrangement through the body of the sleeper.

SKM accepts that with constant exposure to the coal and coastal environments, the pins and clips of these sleepers are highly likely to have become severely corroded. The clips and pins could lose tension and this would result in wide gauge issues, derailment potentials and eventual failure of the sleepers.



To manage this issue, to date, some of the sleepers that appear to have significant corrosion and no longer support the gauge of the rail have been manually replaced by Aurizon Network Pty Ltd during routine maintenance activities. It is SKM's opinion that this is no longer sustainable nor efficient given the increased gauge defect issues that are now being reported.

The Concrete Sleeper Upgrades within the Goonyella are of similar scope as the works completed in the Callemondah Yard under project A.04084 in the Blackwater system.

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets)”

In SKM's view this project is correctly categorised as an Asset Replacement Expenditure Project and that the project is reasonably required. In determining the scope of works SKM has considered the following issues:

- the project is consistent with the reasonable demand expectations associated with existing entitlements through the CQ coal systems and future entitlements relating to access rights under negotiation; and
- Aurizon Network Pty Ltd.'s requirements for a safe working environment for Aurizon Holdings' above rail operations and Pacific National (and any other subsequent operators) on the rail infrastructure.

SKM is of the opinion that failure to undertake this project would indeed increase the rate of current sleeper failure, increase the amount of immediate maintenance requirements of the effected track sections and could potentially lead to a number of sleepers failing under load potentially causing a derailment due to wide gauge.

Conclusion

Since some parts of the project have not been completed the criteria for prudence of scope have not been fulfilled and those elements of the project which are yet to be completed should be carried over to the next regulatory review. However, it is SKM's view that the scope of works is appropriate given the age and condition of the pre-existing assets. Those parts that have been completed are delivering a regulated service.

We recommended that the Authority accepts for inclusion in the RAB those works that have been completed by 30 June 2012.

Given the above, SKM therefore concludes that the scope of this project is prudent.

H.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope under the delivery of the regulated service and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.



Discussion

SKM has undertaken a review of all the information provided for the Concrete Sleeper Upgrade – Goonyella (Stage 2) project and is of the opinion that 54% of identified scope has been undertaken in accordance with the relative Aurizon Network Pty Ltd policies and procedures, relative industry and Australian Standards, and associated internal Civil Engineering Track Standards (CETS).

SKM found that at the completion of each treated track section a Track Safety Validation Certificate has been signed. This document provides confirmation that standard was safe prior to returning the track section to rail operations. Aurizon Network Pty Ltd has provided Track Safety Certification for the 54% of scope associated with the claim.

The installed infrastructure is consistent in all material respects with the existing standard and configuration of adjoining infrastructure and infrastructure with similar usage levels in other sections of the CQCR Systems.

The project used and installed galvanised E-clips; galvanised E-clips are commonly used in areas of high coal contamination or coastal environments along with Grade A Ballast.

Conclusion

SKM has concluded that this project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards, policies and procedures, and internal CETS.

Given the above, SKM considers that the standard of works for this project is prudent.

H.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Goonyella System Projects”.



Concrete Sleeper Upgrades - Goonyella

Project Information

Project Number	A.04040	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$8,020,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case	February 2012	\$8,020,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$4,318,840
Applicable Financial Interest	-\$158,283
Total amount for inclusion in the RAB	\$4,160,557

Table H-8 presents a breakdown of the project funding for the project.

Table H-8 : Project funding

Item	Value
Track work (included O/H Wire)	\$6,514,025
Project Management	\$349,601
Asset Management	\$183,541
Contingency & Risk	\$381,765
Total Project Budget	\$8,020,000

Costs to 30 June 2012 were \$4,318,840 against the \$8,020,000 budget; this represents 54% of approved.

All costs in the claim were incurred in the 2011-2012 financial year.

Discussion

SKM found that the major items for procurement were the pre-stressed concrete sleepers and fasteners. Aurizon Network Pty Ltd stated that the procurement of these would have been via existing supply contracts awarded based on element cost, supply arrangement, and product quality. The specifications for the 28 tal sleepers are standardised and are the same as all other new sleepers used in the CQCR Systems to reduce the price of the sleepers.

SKM undertook an order of magnitude, estimate ($\pm 30\%$) of these works and is of the opinion that the forecasts and costs claimed to date are consistent with the proposed project scope and works completed to date and in time with project costs from other projects with similar scopes.



The project is ongoing and additional claims will need to be made against this project in future capital claims to the Authority. The details contained in the Aurizon Network Pty Ltd cost claims have been included in **Appendix H-A**.

Conclusion

SKM considers that the costs for the claim submitted and works completed to date are prudent.

H.5 Summary

The outcomes of this prudence assessment are summarised in **Table H-9**.

Table H-9 : Concrete sleeper upgrade – Goonyella project – review summary

Item	Prudence
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



H.6 Appendix H-A. Detailed analysis of cost for concrete sleeper upgrades – Goonyella (Stage 2) project

A detailed breakdown of the project costs is presented below:

Project costs (extracted from the document entitled “Concrete Sleeper Upgrades – Goonyella (Stage 2) – February 2012 - Minor Capital Funding Request”)



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



QR NATIONAL - INFRASTRUCTURE SERVICES - CAPITAL DELIVERY			
Capex Estimate DISCIPLINE ESTIMATE SUMMARY			
		A.XXXX M	Goonyella Fist Clip Upgrade

Description of Work	Discipline Base Estimate Total (Raw & Allowances)	FROM SHEET 1 OF DISCIPLINE ESTIMATES				TOTAL DISCIPLINE ESTIMATES SIMPLE RANGING (Excluding Unplanned Risks and Optimism Bias)	
		Uncertainty Contingencies (Planned Risks)				Best Case \$	Worst Case \$
		Best Case \$	Aver. %	Worst Case \$	Aver. %		
COST TO DATE	\$ -	\$ -	0%	\$ -	0%	\$ -	\$ -
TRACK WORK (inc OH)	\$ 6,514,025	-\$ 651,403	-10%	\$ 1,302,805	20%	\$ 5,862,623	\$ 7,816,830
MARGIN	\$ 478,000	-\$ 47,800	-10%	\$ 95,600	20%	\$ 430,200	-\$ 47,800
PROJECT MANAGEMENT (BRISBANE)	\$ 349,601	-\$ 17,480	-5%	\$ 52,440	15%	\$ 332,121	\$ 402,041
ASSET MANAGEMENT (2.5% of CC)	\$ 183,541	-\$ 9,177	-5%	\$ 27,531	15%	\$ 174,364	\$ 211,072
INSURANCES AND LEVIES (1.5% of CC)	\$ 110,124	-\$ 5,506	-5%	\$ 16,519	15%	\$ 104,618	\$ 126,643
CONTINGENCY (5%)	\$ 381,765	-\$ 19,088	-5%	\$ 57,265	15%	\$ 362,676	\$ 439,029
SUBTOTALS	\$ 8,017,056	-\$ 750,454	-9%	\$ 1,552,160	19%	\$ 7,266,602	\$ 8,947,815

Estimate No: Rev 3

Timeframe: _____

Staging: Design

Project Manager: C Forde Date: 16/01/2012

Project Delivery Services: _____ Date: _____

Network Access: _____ Date: _____

Assumptions

Local support and project management has been included in the track cost provided

There is no escalation allowed for

Contingency includes risk allowance as per the cost provided

No allowance for TPO has been made

Margin as nominated by R Kemp 21/12/11

Track work now includes a provision for OH as nominated by Caroline Wilke



Project costs extracted from spreadsheet with electronic file name "A.04040 ZWISR"

Lev	Description	Assigned Budget	Total Actual Expenditure	Prev Yrs	2011/2012
1	Concrete Sleeper Upgrades - Goonyella	8,020,000	4,318,840	-	4,318,840
2	EXECUTION	7,741,090	4,318,840	-	4,318,840
3	PROJECT MANAGEMENT/DELIVERY	381,665	224,653	-	224,653
4	Project Management & Support	154,000	19,122	-	19,122
4	Project Control	4,000	-	-	-
4	Commercial & Development	223,665	205,530	-	205,530
5	Asset Management	183,541	183,440	-	183,440
5	Project Insurance	40,124	22,090	-	22,090
3	OVERHEAD	1,177,425	800,479	-	800,479
4	Management	50,000	41,768	-	41,768
4	Procurement	46,000	24,325	-	24,325
4	Construction	1,081,425	734,386	-	734,386
5	Construction Internal	1,061,425	734,386	-	734,386
5	Test & Commission	20,000	-	-	-
3	TRACK	5,570,000	3,293,708	-	3,293,708
4	Management	210,000	194,648	-	194,648
4	Procurement	2,000,000	1,319,172	-	1,319,172
4	Construction	3,310,000	1,778,862	-	1,778,862
4	Close Out	50,000	1,026	-	1,026
3	PELICAN CREEK	612,000	-	-	-
2	Temporary Budget for A3627	-	-	-	-
2	Temporary Budget for A3676	-	-	-	-
2	Temporary Budget for A3876	-	-	-	-

The following was extracted from the spread sheet entitled "Schedule 2 – IDC Summary 2011/12 CAPEX Claim" dated 1 November 2012.

Project Name	Concrete Sleeper Upgrade Goonyella
Project Number	A.04040
WACC (UT3)	
Monthly Int Calc (WACC)	
SAP Recorded Expenditure	4,318,840
Construction Finance Interest	- 158,283
Total Capex Claim (including interest)	4,160,557

Period/year	Actual SAP Recorded Spend	Interest (\$ as at 30 June 12)
001.2012 July 2011		-
002.2012 August 2011		-
003.2012 September 2011		-
004.2012 October 2011		-
005.2012 November 2011		-
006.2012 December 2011		-
007.2012 January 2012		-
008.2012 February 2012		-
009.2012 March 2012		-
010.2012 April 2012		-
011.2012 May 2012	3,374,835.62	- 118,075
012.2012 June 2012	944,004.22	- 40,209
Total of 2011/12 capital expenditure claim	4,318,839.84	- 158,283.31



Appendix I. Upgrade of Jilalan Yard drainage project

I.1 Project description

The Jilalan Yard drainage upgrade project consists of the replacement and upgrade of turnouts and drainage structures that were originally installed in 1975 and 1980 within the Jilalan rail yard.

The scope of this project is to upgrade the drainage on the below rail infrastructure within the yard that belongs to Aurizon Network Pty Ltd. The project scope has been derived from a condition assessment of the infrastructure and through analysis of fault data recorded in the maintenance fault database.

Key project information is provided in **Table I-1**.

Table I-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.04008	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$1,484,000	Project financially complete	No

I.1.1 Location of project

The following locations have been identified as the main areas in which to perform upgrade drainage works and turnout replacement:

- Location 1 – Area between JN41B and the crew change platforms;
- Location 2 – 19.800 km to 19.920 km between JY1 and JY2;
- Location 3 – 20.400 km (right side of the yard near the emergency access); and
- Location 4 – 20.700 km to 21.100 km (right side of the yard).

The location of the proposed drainage works within Jilalan Yard is depicted in **Figure I-1** and **Figure I-2**.

For clarity, the turnouts highlighted in green are the below rail infrastructure which will be serviced by the drainage renewals and turnout replacements undertaken by this project.

Aurizon Network Pty Ltd.'s above rail coal haulage business is also conducting drainage works within the Jilalan Yard to address similar issues. That above rail work is identified by the 'blue roads'. These works have been kept separate to ensure no cross works or costs are incurred between the two projects.



Figure I-1 : Northern end of Jilalan Yard (Note: The red lines indicate Aurizon Network Pty Ltd.'s below rail infrastructure)

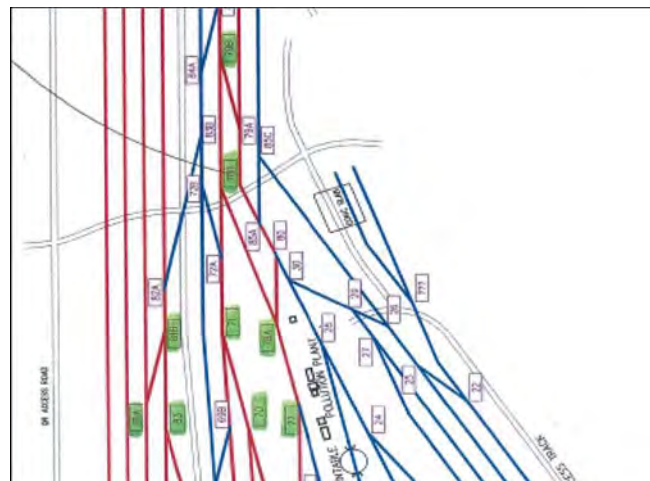


Figure I-2 : Southern end of Jilalan Yard (Note: The red lines indicate Aurizon Network Pty Ltd.'s below rail infrastructure)

Note – The red lines indicate Aurizon Network Pty Ltd.'s below rail infrastructure.

I.1.2 Objective of this investment

The primary objective of this project is to replace and upgrade aged and life expired turnouts and drainage structures within the Jilalan rail yard in order to improve the robustness of the yard operations during wet weather and to reduce yard closures and infrastructure failures resulting in capacity losses to the supply chain.

The project aligns with Aurizon Network Pty Ltd.'s strategic initiatives in the following ways:

- Safety – When there is localised flooding there is excess surface or storm water on walkways and crew change areas, therefore creating an unsafe work environment for the train operations staff and hampering their work; and
- Growth – A number of turnouts are to be re-ballasted and sub-surfaced drainage installed to reduce/alleviate the problem of water ponding around turnouts and points machines which currently causes point machine faults. The alleviation of these failures will allow an increase in capacity.

SKM understands that the overarching business objective of Aurizon Network Pty Ltd is to maintain and improve the rail infrastructure and to ensure there are no delays to operations due to defective assets, failures, and unsafe work sites and considers that this project supports that business objective.



I.2 Capital expenditure

Table I-2 shows the cost of the Upgrade of Jilalan Yard Drainage Project.

Table I-2 : Project A.04008 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Claim value	\$1,249
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$1,205
Schedule 5 – Project Claims Submission: “Goonyella System Projects”	Upgrade of Jilalan Yard Drainage	\$1,249

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and those provided in the project background documents. . There was no additional cost information sourced by SKM other than that which is listed in the above table.

The funding and approvals and claim details for this project are shown in **Table I-3**.

Table I-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$1,249,056
Applicable Financial Interest	-\$44,287
Total amount for inclusion in the RAB	\$1,204,769

There were no finance data discrepancies in the information provided.

I.3 Provided documentation

This review is based on information sourced from documents as shown in **Table I-4** and **Table I-5** below.

Table I-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Goonyella Systems Projects	Goonyella Project Info Submission	Word	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Minor Capital Funding Request – Upgrade of Jilalan Yard Drainage	MFR – Jilalan Yard Drainage - Signed	Adobe PDF	March 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions		A.04008 ZWISR	Excel	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Incident/Accident Management Briefing – Number: IR11-07517	Incident Report 1 st April 2011 Form42 IR11-07517	Adobe PDF	1 April 2011



Table I-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009

I.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 006 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 025 SKM requested Aurizon Network Pty Ltd to supply evidence for all works completed on the Upgrade of the Jilalan Yard Drainage to support the completion claim of \$1,249,056.

Responses were received for each individual question raised from RFI 006 and a response to RFI 025 was received on 4 March 2013.

SKM found that no track validation certificates, track acceptance certificates, test results etc. have been provided.

In response to RFI 025, requesting track verification certificates, SKM received the following response from a Principal Analyst Regulated Assets at Aurizon Network Pty Ltd.

“The works related to this project were ongoing as at June 30 2012, as such a Project completion report has not been completed.”

The Jilalan Drainage Upgrade Status Report dated 29 June 2012 stated that works had been completed at 5 of the 7 Nests identified in the project scope.

Aurizon Network Pty Ltd has provided the Operational Plans for the works carried out in the 2011/12 year. Each of these Operational Plans included the Network control Centre Train Notices for each possession taken to complete works. The Jilalan Yard operates under local control from the Jilalan Control Board. The process for hand back of track was radio communication between the Track Possession Officer (TPO) and Works Supervisor and Network control handing back the track possession and therefore allowing traffic to enter the section where works had been completed.



There are no formal Track Validation Certificates available for works completed under this project. The works were completed as per the detailed scope and works handed back to traffic on completion. Works occurred in yard with low tonnages and limited speeds.

The Day to Day Reports, provided with this paper outline the specific delivery timings and issues during track possessions. This includes progression of works against scope for the detailed possessions.

1.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Upgrade of Jilalan Yard Drainage”).

Project overviews, photographs, and rationale are of a high standard and explicitly state the need for the project.

Of the \$1,484,000 budget, \$1,249,056 (approximately 84%) has been claimed. An operational plan for the proposed drainage works within the Jilalan Yard has been provided and is consistent with the 84% of completion being claimed.

1.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

1.4.1 Project scope

The scope of this project is based on the Minor Funding Requests as identified by a CCTV inspection undertaken to identify problem areas and possible solutions. The inspection report revealed that there are several jump ups which have been covered with ballast from the construction of the walkways. Turnouts were also found to be subject to water ponding.

SKM is of the opinion that these drainage problems have worsened over time and are also being impacted by runoff water from associated buildings, walkways, and access roads within the Jilalan Yard. A number of safety incidents (water over rail) have been recorded in recent times.

Given the level of faults and the condition of the infrastructure, SKM considered that the option to do nothing would have seen fault levels continue to increase causing further negative impacts on yard operations.

The project scope was separated into turnout specific works and drainage specific works. The total below rail scope was as follows:

- 10 turnouts rollouts, 1 catch point, and 1 crossover rollout; and
- drainage works at 5 locations within the yard.

In summary, a turnout rollout included the following track works:

- remove turnout;
- remove contaminated ballast, re-profile formation drainage and construct a rolled ballast bed;
- carry out repairs to turnout components as required;
- replace ballast and profile with A Grade ballast;
- replace and resurface turnout; and
- reconstruct walkways as required.



The scope of works is to be delivered outside of the traditional wet season given the need to install drainage below ground level. The works were staged to allow for continuing yard operations.

Table I-6 below indicates the forecast milestones as per the information contained in the “Upgrade of Jilalan Yard Drainage Minor Capital Funding Request”.

Table I-6 : Milestones as forecast in February 2012

Milestone description	Milestone date
Concept Identified	July 2010
Funding	February 2012
Project Completion	March 2012 - August 2012
Post Project Review	September 2012

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3. The ability of the project to meet these criteria is outlined in **Table I-7**, followed by a discussion section that provides the analysis.

Table I-7 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Partially, the project is currently on-going.
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

The older section of the Jilalan Yard turnouts was installed between 1975 and 1980. These turnouts are now 25 to 30 years old. SKM found that water ponding in the yard was a problem that had been observed for some time. When flooding occurs in the yard, trains are stowed, and traction power is isolated. A number of areas of the yard currently flood to over 200 mm.

SKM found that all the turnouts to be rolled out require drainage improvements both around and underneath (sub-surface drainage). In addition to this, the contaminated ballast being removed has been insitu for some 20 years plus and is B Grade ballast. When the turnouts were installed the track was designed for 90 tonne locomotives and B Grade ballast was the standard. The traffic load has now increased whereby 110 tonne locomotives now traverse these turnouts. The standard for such loads is A Grade ballast which would constitute an upgrade from the original standard.

The drainage works includes the installation of a sub-drain, construction of additional jump ups and upgrades to the existing drains. A part of the drainage upgrade was to have the ability of the old yard to collect and remove



excess surface water. SKM is of the opinion that this would assist the drainage of the turnouts and reduce the amount of sitting water in the yard.

The size of the jump ups was determined from exposure of the existing jump ups and their suitability. The jump ups were extended to surface level. From the investigations that took place using CCTV in the drains it was evident that the jump ups would generally be 300 mm in diameter.

As detailed in Aurizon Network Pty Ltd.'s response to RFI 025, the above rail and below rail works were completed together but costs were allocated dependant on the works completed specific to each turnout within nests. From the Operational Plans provided by Aurizon Network Pty Ltd it is evident that the scope of the drainage works performed to the above-rail routes was of a similar nature, if not identical to the scope of the drainage works performed to the below-rail routes.

SKM is of the opinion that the upgrade of this infrastructure was required to bring infrastructure to the standards detailed in the CETS, and reduce infrastructure faults that in turn have a negative capacity impact on the supply chain through un-availability of the yard.

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

In SKM's view this project is correctly categorised as an Asset Replacement Expenditure Project and that the project is reasonably required. In determining the scope of works SKM has considered the following issues:

- the project is consistent with the reasonable demand expectations associated with existing entitlements through the CQCR Systems and future entitlements relating to access rights under negotiation; and
- Aurizon Network Pty Ltd.'s requirements for a safe working environment for Aurizon Holdings' above rail operations and Pacific National (and any other subsequent operators) on the rail infrastructure.

Conclusion

Since some parts of the project have not been completed the criteria for prudence of scope have not been fulfilled and those elements of the project which are yet to be completed should be carried over to the next regulatory review. However, it is SKM's view that the scope of works is appropriate given the age and condition of the pre-existing assets and the current flooding issues and associated faults being experienced within the Jilalan Yard. Those parts that have been completed are delivering a regulatory service.

We recommended that the Authority accepts for inclusion in the RAB those works that have been completed by 30 June 2012.

Given the above SKM therefore concludes that the scope of this project is prudent.

1.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope and required for delivery of a regulated service and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.



Discussion

SKM has undertaken a review of all the information provided for the Upgrade of the Jilalan Yard Drainage project and is of the opinion that the 84% of the identified scope completed has been undertaken in accordance with the relative Aurizon Network Pty Ltd policies and procedures, relative industry and Australian Standards, and associated internal Civil Engineering Track Standards (CETS).

All drainage was constructed using standard design reinforced concrete pipes and culverts, headwalls, and jump ups. This drainage material is consistent with other material used throughout the CQCR Systems and was installed in the recently completed new section of the Jilalan Yard and Bypass Road.

SKM has also reviewed a list of the applicable standards, Work Method Statements, and Work Instructions in the provided Operational Plan and is of the opinion that the upgraded and installed kit was consistent to turnout infrastructure, ballast standards and sub-grade arrangements located in other below rail yards such as Callemondah in the Blackwater System and Bluff in the Goonyella System.

Conclusion

SKM has concluded that the project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards, policies and procedures, and internal CETS.

The Jilalan Drainage Upgrade Status Report dated 29 June 2012 stated that works had been completed at 5 of the 7 Nests identified in the project scope.

Aurizon Network Pty Ltd has provided the Operational Plans for the works carried out in the 2011-2012 year. Each of these Operational Plans included the Network Control Centre Train Notices for each possession taken to complete works. The Jilalan Yard operates under local control from the Jilalan Control Board. The process for hand back of track was radio communication between the Track Possession Officer and Works Supervisor, and Network Control handing back the track possession and therefore allowing traffic to enter the section where works had been completed.

There are no formal Track Validation Certificates available for works completed under this project. The works were completed as per the detailed scope and works handed back to traffic on completion. Although works occurred in a yard with low tonnages and limited speeds SKM considers that it is good industry practice for Track Validation Certificates to be completed and filed prior to hand over of assets to operations.

The Day to Day Reports, provided with this paper, outline the specific delivery timings and issues during track possessions. This includes progression of works against scope for the detailed possessions.

Given the above, SKM considers that the standard of works for this project is prudent.

1.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Goonyella System Projects”.



Upgrade of Jilalan Yard Drainage

Project Information

Project Number	A.04008	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$1,484,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case	March 2012	\$1,484,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$1,249,056
Applicable Financial Interest	-\$44,287
Total amount for inclusion in the RAB	\$1,204,769

Table I-8 presents a breakdown of the project funding for the project.

Table I-8 : Project Funding

Item	Value
Civil Works (including materials)	\$1,333,034
Project Management/Delivery	\$110,000
Contingency & Risk	\$415
Total Project Funding	\$1,484,000

Costs to 30 June 2012 were \$1,249,056 against the \$1,484,000 budget; this represents approximately 84% of the approved budget.

The minor funding request document identified that the project would be completed by August 2012 with a post project review to be completed by September 2012. The project delivery was delayed as such the project works have yet to be completed and as such the production of the post project review also delayed.

All costs in the claim were incurred in the 2011-2012 financial year. Cost details are included in **Appendix I-A**.

Discussion

Of the scope identified the following below rail works were completed to 30 June 2012:

- turnout rollouts – 81.6% complete; and
- drainage works – 75% complete.



SKM is of the opinion that the forecasts and costs claimed to date are consistent with the proposed project scope, works completed to date and project costs from other projects with similar scopes.

From the Operational Plans provided by Aurizon Network Pty Ltd it is evident that the scope of the drainage works performed to the above-rail routes was of a similar nature, if not identical to the scope of the drainage works performed to the below-rail routes and therefore the costs of improving the Jilalan Yard drainage have been suitably allocated between the two areas of the business.

The project is ongoing and additional claims will need to be made against this project in future capital claims to the Authority.

Conclusion

SKM considers that the costs for the claim submitted and works completed to date are prudent.

1.5 Summary

The outcomes of this prudency assessment are summarised in **Table I-9**.

Table I-9 : Upgrade to Jilalan Yard drainage project – review summary

Item	Prudency
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



I.6 Appendix I-A: Detailed analysis of cost upgrade of Jilalan yard drainage project

A detailed breakdown of the project costs is presented below:

Project costs (extracted from the document entitled “Upgrade of Jilalan Yard Drainage” - Minor Capital Funding Request”)



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



QR National Confidential

Project Name: Upgrade of Jilalan Yard Drainage
Date:

Attachment 1: Cost Schedule - Revised

QR NATIONAL - INFRASTRUCTURE SERVICES - CAPITAL DELIVERY

Capex Estimate

DISCIPLINE ESTIMATE SUMMARY

A.XXXX M

Jilalan Yard Rollouts and Drainage



Description of Work	Discipline Base Estimate Total (Raw & Allowances)	FROM SHEET 1 OF DISCIPLINE ESTIMATES				TOTAL DISCIPLINE ESTIMATES SIMPLE RANGING (Excluding Unplanned Risks and Optimism Bias)	
		Uncertainty Contingencies (Planned Risks)				Best Case \$	Worst Case \$
		Best Case \$	Aver. %	Worst Case \$	Aver. %		
QRN NETWORK COST	\$ 1,483,421	-\$ 129,682		\$ 278,024		\$ 1,353,739	\$ 1,761,446
COST TO DATE	\$ 29,035	-\$ 1,452	-5%	\$ 4,355	15%	\$ 27,583	\$ 33,390
PM - BRISBANE (10% of CC)	\$ 111,022	-\$ 5,551	-5%	\$ 16,653	15%	\$ 105,471	\$ 127,675
ROLLOUT REFURBISHMENTS	\$ 827,009	-\$ 82,701	-10%	\$ 165,402	20%	\$ 744,308	\$ 992,411
DRAINAGE (EQUAL SHARE OF COST)	\$ 283,210	-\$ 28,321	-10%	\$ 56,642	20%	\$ 254,889	\$ 339,852
PROJECT MANAGEMENT (5% of CC)	\$ 55,511	-\$ 2,776	-5%	\$ 8,327	15%	\$ 52,735	\$ 63,838
ASSET MANAGEMENT (2.5% of CC)	\$ 27,755	-\$ 1,388	-5%	\$ 4,163	15%	\$ 26,368	\$ 31,919
INSURANCES AND LEVIES (2.5% of CC)	\$ 27,755	-\$ 1,388	-5%	\$ 4,163	15%	\$ 26,368	\$ 31,919
CONTINGENCY (10% of TC)	\$ 122,124	-\$ 6,106	-5%	\$ 18,319	15%	\$ 116,018	\$ 140,443

Estimate No: Rev 5

Timeframe: _____

Staging: Design

Project Manager: L. Vo 12/10/2011

Project Delivery Services: _____ Date: _____

Network Access: _____ Date: _____

Assumptions

1. Based on the estimated provided by Long Vo
2. Value of work benchmarked
3. No escalation
4. Risk is ranged on a standardised form
5. Cost to Complete is allowance for Project Management Costs
6. Asset Management and Insurance are simply a fixed percentage of construction costs



Project costs extracted from spreadsheet with electronic file name "A.04008 ZWISR"

Lev	Description	Assigned Budget	Total Actual Expenditure	Prev Yrs	2011/2012
1	Upgrade of Jilalan Yard Drainage	1,484,000	1,249,056	-	1,249,056
2	EXECUTION	1,443,449	1,249,056	-	1,249,056
3	PROJECT MANAGEMENT/DELIVERY	110,000	63,535	-	63,535
4	Project Management & Support	55,000	29,140	-	29,140
4	Commercial & Development	55,000	34,395	-	34,395
5	Asset Management	27,500	26,985	-	26,985
5	Project Insurance	27,500	7,410	-	7,410
3	CIVIL	1,333,034	1,185,521	-	1,185,521
4	Construction External	1,333,034	1,185,521	-	1,185,521
5	Rollout JY Nest 1	225,031	274,947	-	274,947
6	Materials	7,522	9,865	-	9,865
6	Labour	134,013	170,562	-	170,562
6	Plant Hire	46,903	62,536	-	62,536
6	Re-surfacing	25,593	18,055	-	18,055
6	Miscellaneous	11,000	13,929	-	13,929
5	Rollout JY Nest 2	101,857	197,558	-	197,558
6	Materials	5,000	3,848	-	3,848
6	Labour	61,955	123,908	-	123,908
6	Plant Hire	27,431	54,861	-	54,861
6	Re-surfacing	-	-	-	-
6	Miscellaneous	7,471	14,941	-	14,941
5	Rollout JY Nest 3	213,904	21,527	-	21,527
6	Materials	90,650	17,308	-	17,308
6	Labour	82,112	1,561	-	1,561
6	Plant Hire	37,142	2,658	-	2,658
6	Re-surfacing	3,500	-	-	-
6	Miscellaneous	500	-	-	-
5	Rollout JY Nest 4	238,400	219,097	-	219,097
5	Rollout JY Nest 5	330,107	14,932	-	14,932
5	Rollout JY Nest 6	38,025	345,095	-	345,095
5	Rollout JY Nest 7	120,210	86,882	-	86,882
5	Jilalan Yard C11	25,500	25,482	-	25,482
5	Drainage	40,000	-	-	-
6	Location 1	10,000	-	-	-
6	Location 2	10,000	-	-	-
6	Location 3	10,000	-	-	-
6	Location 4	10,000	-	-	-
3	PROJECT CONTINGENCY	415	-	-	-



The following was extracted from the spread sheet entitled "Schedule 2 – IDC Summary 2011/12 CAPEX Claim" dated 1 November 2012.

Project Name		Upgrade Jilalan Yard Drainage
Project Number		A.04008
WACC (UT3)	9.96%	
Monthly Int Calc (WACC)	0.79%	
SAP Recorded Expenditure		1,249,056
Construction Finance Interest		- 44,287
Total Capex Claim (including interest)		1,204,769
	Number of	
Period/year	Months	Actual SAP Recorded Spend
001.2012 July 2011	5.5	-
002.2012 August 2011	4.5	-
003.2012 September 2011	3.5	-
004.2012 October 2011	2.5	-
005.2012 November 2011	1.5	-
006.2012 December 2011	0.5	-
007.2012 January 2012	-0.5	-
008.2012 February 2012	-1.5	-
009.2012 March 2012	-2.5	-
010.2012 April 2012	-3.5	39,511.40
011.2012 May 2012	-4.5	1,092,605.91
012.2012 June 2012	-5.5	116,939.03
Total of 2011/12 capex claim		1,249,056.34



Appendix J. Bandwidth increase for Moranbah north project

J.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

Key project information is provided in **Table J-1**.

Table J-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.03949	Project status	Ongoing
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$71,000	Project financially complete	No

J.1.1 Location of the project

The works were located at Coppabella and Moranbah, providing general administrative LAN upgrades (from 2 Mbit to 10 Mbit) to the Central Queensland Coal Systems, including the Aurizon Network Pty Ltd below rail maintenance facility at Moranbah depot which services the western spur lines of the Goonyella System, as shown in **Figure J-1**.

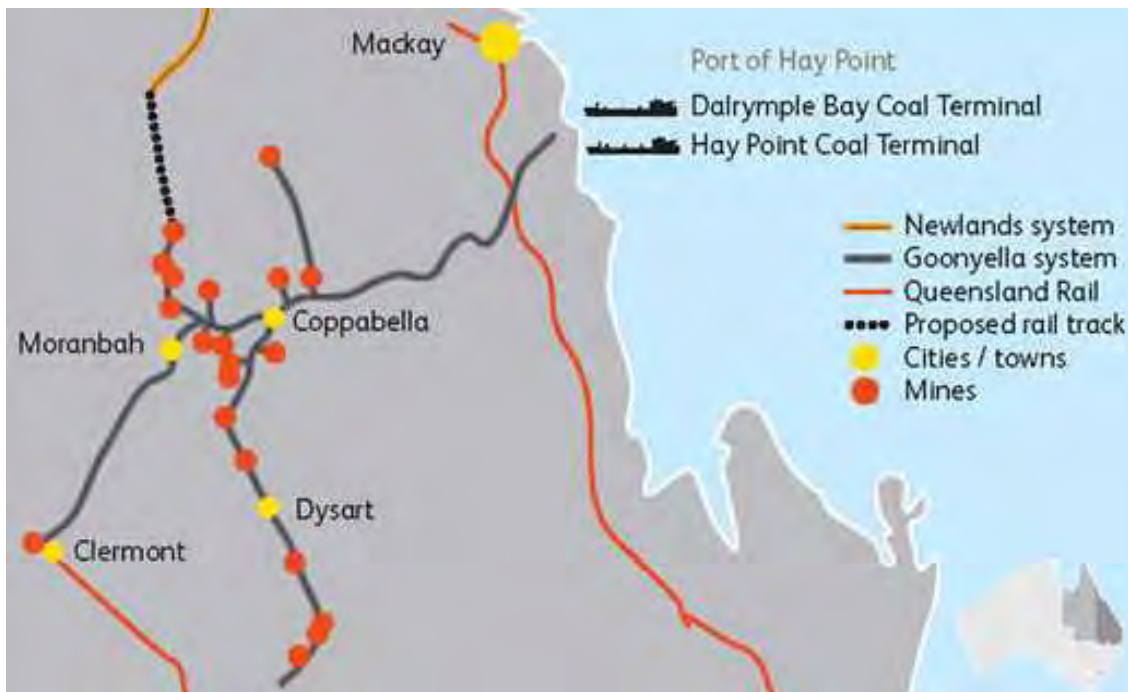


Figure J-1 : Goonyellas system showing Moranbah and Coppabella (extracted from <http://www.aurizon.com.au/networksystems/Pages/GoonyellaSystem.aspx>)



J.1.2 Objective of this investment

The objective of this investment was to address the LAN administrative data needs of the Aurizon Network Pty Ltd maintenance facility at Moranbah depot using Commercial off the Shelf (COTS) products. Previous LAN performance could no longer cope with the data traffic.

J.1.3 Status of the project

The LAN equipment was installed by ByteComm and testing and commissioning was performed by Aurizon Network Pty Ltd. As of June 2012 the LAN equipment was in use and providing business benefit. This project was close to practical completion and tracking at under budget in June 2012. In response to SKM's request for information (RFI 007) a project completion report was received containing certificates of completion dated 5 November 2012.

J.2 Capital expenditure

Table J-2 shows the cost of the Bandwidth Increase for Moranbah North.

Table J-2 : Project A.03949– proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	2011/12 Claimable Expenditure	\$65
Schedule 5 – Project Claim Submissions – Goonyella: “Bandwidth Increase for Moranbah Depot – Minor Capital Funding request” October 2011	No claim amount was tabled in this document. This document states that approximately 20% of the total expenditure should be attributed to above rail.	
Schedule 5 – Project Claim Submissions – Goonyella: “Goonyella Systems Projects”	2011/12 Claim Details	\$63
Schedule 5 – Project Claim Submissions – Goonyella: (file name: “A.03949 ZWISR”)	No claim amount was tabled in this document.	
Schedule 2 – Calculation of IDC: “IDC Summary 2011/12 CAPEX Claim”	Total CAPEX Claim (including interest)	\$63

There was no additional cost information sourced by SKM other than that which is listed in the above table. There is no discrepancy between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and those provided in the project background documents. . However, according to Schedule 5, Project Claim Submissions, Goonyella, from the document entitled “Bandwidth Increase for Moranbah Depot – Minor Capital Funding request” dated October 2011, a portion of the total expenditure (around 20 %) should be attributed to above rail.

The funding and approvals and claim details for this project are shown in **Table J-3**.

Table J-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$64,893
Applicable Financial Interest	-\$2,070
Total amount for inclusion in the RAB	\$62,824



There were no financial data discrepancies in the information provided.

J.3 Provided documentation

This report is based on information sourced from documents as shown in **Table J-4** and **Table J-5** below.

Table J-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Goonyella Systems Projects	Goonyella Project Info Submission	Word	November 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Moranbah – Coppabella LAN/WAN Upgrade – Design document	Design Document	Adobe PDF	Draft 0.1. 10 April 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Moranbah – Coppabella LAN/WAN Upgrade – ByteComm Scope of Work	Construction Contractor Scope	Adobe PDF	Release 24 April 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Bandwidth Increase for Moranbah Depot – Minor Capital Funding request	MFR - Bandwidth Increase for Moranbah Depot - Signed	Adobe PDF	October 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Network Change Control Request – Coppabella	Network Change Request - Coppabella	Adobe PDF	Version 1.0
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella	Network Change Control Request – Moranbah	Network Change Request - Moranbah	Adobe PDF	Version 1.0
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Goonyella		A.03949 ZWISR	Excel	None
Aurizon Network Pty Ltd	RFI 007 response	A.03949 – Moranbah Bandwidth Upgrade, Project Completion Report	A03949 Close Out Report MBU (3)	Adobe PDF	30 November 2012
Aurizon Network Pty Ltd	RFI 039 response	SKM Request for Information (RFI No.39) Bandwidth Increase for Moranbah North	RFI No.39 Aurizon Response.docx	Word	None
Aurizon Network Pty Ltd	RFI 039 response	Interface Statistics (Detailed) - Last 90 Days	Book2.xls	Excel	April 2013
Aurizon Network Pty Ltd	RFI 039 response	Moranbah Bandwidth Upgrade	Re Moranbah Bandwidth Upgrade.msg	Email msg	February 2013



Table J-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer TOR(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009

J.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 007 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 039 Request additional information relating to prudence of cost.

J.3.2 Adequacy of information provided and general comments

In response to RFI 007, Aurizon Network Pty Ltd sent a close out report entitled “A.03949 – Moranbah Bandwidth Upgrade, Project Completion Report” containing certificates of completion. This close out report made no adjustments to the original capital expenditure claims against project A.03949. There was some expenditure assigned to another project (A.03927) which had no relevance for this claim. Aurizon Network Pty Ltd in its response to RFI 039 state that this was a typographical error and that the close out report should have made reference to this project's number i.e. A.03949.

In response to RFI 039, received on 18 April 2013, Aurizon Network Pty Ltd stated:

1. *“The Minor Capital Funding Request budgeted the use of internal resources undertaking the construction work to install the equipment.*

Aurizon Network has no telecommunication installation resources to undertake these works. Telecommunication Engineering were engaged under a design and construct arrangement. Bytecomm were utilised by Telecommunication Engineering to undertake the installation and commissioning services. They operate under a standing order contract with a set capped limit on the Vendor Purchase Agreement (VPA).

Due to the complexity and size of the works, Bytecomm were issued the scope and utilised on day rates. An Aurizon engineer supervises the works. Bytecomm supply an invoice with detailed breakdown



in hours, materials and overheads (open book arrangement) as they are engaged on day rates. The invoice is approved by Manager of Telecommunication Engineering (as the contract is executed by this discipline)”

2. *“The \$62,824 represented in the November 2012 submission is 100% of project costs to June 30 2012 (nil costs beyond this date).*

The use of the data network capacity by other Aurizon Business groups became evident after the original November 2012 submission was made. As such an adjustment to the claim in the submission will be required to represent the 80% of costs for inclusion in the RAB.

As such the revised below rail claim will be as follows

	Nov 12 total	Revised total
CAPEX	64,893	51,915
IDC	-2,070	-1,656
Total	62,824	50,259

An adjustment will be made to the claim total and submitted to the Authority as along with other identified changes. The timing of this re-submission has yet to be confirmed.”

3. *“The attribution of 80% of bandwidth usage to below rail was a judgement decision made by the Telecommunications and Signalling Assets Manager, Network Assets.*

The attribution was made based on the traffic measurements and staffing numbers at Moranbah during the project development and roll out.

The Asset Manager has also stated that over the life of the equipment, the equipment as some point in the future could only be used for below rail operational network.

An email received from the Asset Manager has been provided with this Aurizon Response.”

4. *“Page 5 of the closeout report, section 6.2, states project A.03927 three times, this is a mistake (typo). It should state A.03949.*

With regard to completion certificates, there is no reference of a project number on these certificates. However, the documents reference Moranbah CER and Coppabella CER which are the locations and devices installed under this project A.03949.”

J.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.



J.4.1 Project scope

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3.

The ability of the project to meet these criteria is outlined in **Table J-6** followed by a discussion section that provides the analysis.

Table J-6 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	No, approximately 80% of total expenditure of the Bandwidth Increase for Moranbah North is considered by Aurizon Network Pty Ltd to be below rail.
Was the project commissioned in 2011-12?	No
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion.
Were the works fully funded by Aurizon Network Pty Ltd, or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	100% per cent of the works were funded by Aurizon Network Pty Ltd
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

With regards to the status of the project, the document entitled “Goonyella Systems Projects” dated November 2012 indicates that the project was substantially complete as at that date. In response to RFI 007, a project close out report was provided showing certificates of completion dated 5 November 2012. Aurizon Network Pty Ltd subsequent to the issue of RFI 039 advised that this was a typographical error and that the correct project number was as per this project i.e. A.03949.

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

It is SKM’s view that this project fulfils the asset replacement definition including replacement of life-expired assets and is an expenditure required to maintain the existing capacity of the rail infrastructure.

From Schedule 5, Project Claim Submissions, Goonyella, from the document entitled “Bandwidth Increase for Moranbah Depot – Minor Capital Funding request” dated October 2011, a portion of the total expenditure (around 20 %) should be attributed to above rail. See extract from the document below.



BENEFITS	
Financial	Around 20% of the utilisation of the LAN relates to the Above Rail Coal Group. Accordingly, 80% of the cost of the project is to be included in the Regulatory Asset Base for the Central Queensland Coal System, allowing QR National to earn a regulatory rate of return on the investment.
Non-Financial	Efficient work environment and tools for Network staff in Moranbah.

There was no evidence, prior to Aurizon Network Pty Ltd.'s response to RFI 039, that demonstrated that the above appropriation of costs had occurred. In response to RFI 039 Aurizon Network Pty Ltd agreed that the claim amount will be adjusted at some stage in the future from \$64,893.00 to \$50,259.00.

The need to replace equipment that could no longer support the LAN data traffic from, to and within the Aurizon Network Pty Ltd.'s facility located at the Moranbah depot is well aligned with the need to fulfil the access undertakings, taking into consideration the age (old) and condition of the existing equipment as well as potential safety implications if this upgrade were not to take place.

Conclusion

Given the above, SKM therefore concludes that the scope of this project is prudent.

J.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope and is required for the delivery of a regulated service, and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

The extent to which alternative products were considered was not evident in this project, but SKM recognises that a high level strategy, locking into a particular technology base, communications standardisation and protocol compatibility, is required so that corporate systems can be deployed.

In SKM's assessment the works were deemed to have successfully been contained within the requirements of the scope and therefore fulfil criterion a) above. The scope of the works was also well defined with clear and concise work breakdown structure.

The Bandwidth Increase for Moranbah North works were deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR and therefore fulfils criterion b) above as well as Clause 3.3.3(b)(iii) of Schedule A of UT3.



Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3.

In this regard, SKM could find no evidence that the works had been pre-approved as is required by Clause 3.3.3(b)(i). In particular, the 2009 CRIMP makes no explicit mention of this project. However, SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii).

This project was not in the view of SKM over engineered. As such, SKM considers that it has been designed appropriately to accommodate reasonable demand.

Conclusion

SKM concluded that the Bandwidth Increase for Moranbah North works:

- a) were contained within the requirements of the scope;
- b) are deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the Central Queensland Coal Region; and
- c) Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure.

Given the above, SKM considers that the standard of works for this project is prudent.

J.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, “Goonyella System Projects” dated November 2012.



Bandwidth Increase for Moranbah Depot

Project Information

Project Number	A.03949	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$71,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case	October 2011	\$71,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$64,893
Applicable Financial Interest	-\$2,070
Total amount for inclusion in the RAB	\$62,824

An estimate for the project was submitted in October 2011 (see document entitled “Bandwidth Increase for Moranbah Depot – Minor Capital Funding Request”).

The approved cost breakdown was as per **Table J-7**.

Table J-7 : Budget for the bandwidth increase for Moranbah north project

Component	Cost
Cisco Router 3945 – Coppabella	\$22,000.00
Cisco 2911 Router – Moranbah	\$5,000.00
Cisco 3750X switch	\$10,000.00
Aurizon Technicians Labour	\$5,760.00
Telecommunications Engineer	\$6,800.00
Telecommunications Asset Manager	\$2,000.00
Asset Management 2.5 %	\$1,289.00
Project Management	\$12,000.00
Contingency 10%	\$5,800.00
TOTAL	\$70,649.00

It is noted from the above that there is no separate and identifiable estimate for the works required of an external contractor and SKM initially assumed that on this occasion Aurizon Network Pty Ltd used internal labour. In response to RFI 039, Aurizon Network Pty Ltd advised that in fact an external contractor was utilised (Bytecomm) for the installation and commissioning works but under the supervision of an Aurizon Network Pty Ltd Telecommunications Engineer. Bytecomm operates under a standing order contract with a set capped limit on a “vendor Purchase Agreement, utilised on day rates and invoicing using an open book arrangement.



The costs to June 2012 were provided in the spread sheet file A.03949 ZWISR. The activities (cost elements) assigned in this spread sheet do not correspond to the activities used in the approved budget (as per above **Table J-7**).

From Schedule 5 – Project Claim Submissions – Goonyella, the document entitled “Goonyella Systems Projects” dated November 2012, indicates that the status of this project as of June 2012 was substantively complete, with only minor project close out costs to come. Aurizon Network Pty Ltd.’s response to RFI 007 (document entitled “A.03949 – Moranbah Bandwidth Upgrade, Project Completion Report”, dated 30 November 2012) indicates that the project is complete.

The contents of the spreadsheet file A.03949 ZWISR can be seen in **Table J-8**.

A cost element, activity and work breakdown structure cross reference between **Table J-7** and **Table J-8** is made difficult due to the lack of consistent naming and descriptions in Aurizon Network Pty Ltd source documents.

The document entitled “Bandwidth Increase for Moranbah Depot – Minor Capital Funding request” dated October 2011 refers to the need to assign approximately 20% of costs to the above rail operator. In RFI 039 Aurizon Network Pty Ltd provided the figures that will be used at some future date for an adjusted claim figure. The adjusted figures can be found in the relevant section above relating to RFIs.



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Table J-8 : Assigned budget and costs to June 2012

Description	Assigned budget	Total actual expenditure	Jan	Feb	Mar	Apr	May	June	2011/12
Project Manager	\$7,500	\$6,986	\$1,123	\$2,188	\$204	\$2,450	\$497	\$525	\$6,986
Project Control	\$500	-	-	-	-	-	-	-	-
Commercial & Development	\$1,139	\$1,139	-	\$1,139	-	-	-	-	\$1,139
Telecomms - Project Coordination	\$1,000	\$468	-	-	\$260	\$208	-	-	\$468
Telecomms - Discipline Schedule	\$1,000	\$819	-	-	\$645	\$174	-	-	\$819
Telecomms - Design	\$18,800	\$18,506	-	-	\$4,091	\$10,376	\$4,040	-	\$18,506
Telecomms - Contract/Procurement	\$25,973	\$25,304	-	-	-	-	\$25,304	-	\$25,304
Telecomms - Construction	\$14,937	\$11,671	-	-	-	-	-	\$411,671	\$11,671
Project Contingency	\$151	-	-	-	-	-	-	-	-
TOTAL	\$71,000	\$64,893							\$64,893



A breakdown of the project costs to June 2012 is presented below in **Table J-9** (sub-activities were not costed due to the inability to cross reference between the approved budget in **Table J-7** and the actual expenditure cost element descriptors in **Table J-8**).

Table J-9 : Project costs

Items	Aurizon Network Pty Ltd cost
Project Management	\$9,412.00
Aurizon Supply – Design Stage	\$18,506.00
Aurizon Supply – Construction Stage	\$11,671.00
Contractor and Hardware Procurement	\$25,304.00
TOTAL	\$64,893.00

Costs to 30 June 2012 were \$64,893 against the \$71,000 approved budget, minor project close out costs are expected in the 2012-2013 financial year. The provision of SAP extracted expenditures without the associated intelligence mapping to the WBS is insufficient to enable SKM to properly assess the reasonableness of capital costs for the project. However, considering the size of this project and the satisfactory level of auditable detail, SKM did not consider it necessary to provide an independent estimate for the works.

Discussion

In the opinion of SKM the costs reasonably reflect the scale, nature and complexity of this project and provide a good case to support Aurizon Network Pty Ltd maintenance activities and in so doing minimise future operational disruptions and below rail maintenance costs. Unfortunately, the Aurizon Network Pty Ltd claims did not provide the required evidence for adjusted costs attributable to the above rail operations. RFI 039 was issued to seek rectification or clarification on this matter. Aurizon Network Pty Ltd confirmed in its response to RFI 039 that the claimed amount did indeed require changes as per the following response:

“...an adjustment to the claim in the submission will be required to represent the 80% of costs for inclusion in the RAB.

As such the revised below rail claim will be as follows

	Nov 12 total	Revised total
CAPEX	64,893	51,915
IDC	-2,070	-1,656
Total	62,824	50,259

An adjustment will be made to the claim total and submitted to the Authority as along with other identified changes. The timing of this re-submission has yet to be confirmed.”

Conclusion

It was unclear if the \$64,893 was the total or the apportioned below rail expenditure and therefore the costs for the project were considered not prudent. Clarification of the absolute level of expenditure apportioned to above rail costs was received in response to RFI 039. An adjusted claimed amount of \$50,259.00 will be deemed prudent once re-submitted. At the time of writing of this report there was no evidence of a revised submission reflecting the adjusted amount and therefore at this stage the claim remains with a status of not prudent.

J.5 Summary

The outcomes of this prudence assessment are summarised in **Table J-10**.



Table J-10 : Bandwidth increase at Moranbah north – review summary

Item	Prudency
Project scope	Prudent
Standard of the works	Prudent
Project cost	Partially prudent



Appendix K. Ballast replacement Newlands system project

K.1 Project description

The ballast located on the Newlands Line is mainly the original ballast used in the construction of the line in the early 1980's and has been identified as degraded ballast which is sub-standard, subject to severe crumbling, and lacks the resilience required for future planned axle loads.

In order to allow for future planned axle loads and help alleviate the risk of formation failures the ballast is required to be upgraded from B Grade to A Grade ballast.

Key project information is provided in **Table K-1**.

Table K-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.04055	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	Nil
Total approved funding	\$4,500,000	Project financially complete	No

K.1.1 Location of project

The ballast located between 83.800 km and 93.800 km has been identified as the highest priority for replacement on the Newlands Line.

Contingency track chainage has been identified between 80.000 km and 83.800 km if the initial track length location is completed ahead of time and budget.

K.1.2 Objective of this investment

The primary objective of this work is to upgrade the existing B Grade ballast to A Grade ballast on the Newlands Line between chainage 83.800 km and 93.800 km.

Also included in the scope of work is the:

- build up of current access track with spoil;
- improvement of drainage throughout the section; and
- clean out of existing drains, culverts and cuttings.

The project aligns with Aurizon Network Pty Ltd.'s strategic initiatives in the following ways:

1. Safety – The improvement to the ballast to allow heavier axle loads provides safer infrastructure for all rail users;
2. Customer Service – An upgrade to the ballast to carry heavier axle loads will enable Aurizon Network Pty Ltd to provide a more economic service to clients;
3. Growth – An upgrade to the ballast to carry heavier axle loads will enable increased capacity on the Newlands line in the future; and
4. Commercial capability – An upgrade to the ballast to carry heavier axle loads will enable Aurizon Network Pty Ltd to provide a more economic service to clients through increased capacity in the future.

SKM is of the opinion that the overarching business objective of Aurizon Network Pty Ltd is to maintain and improve the rail infrastructure and to ensure there are no delays to operations due to defective assets. The completion of this project will strengthen the track structure in this area and increase the drainage capabilities of the ballast and, as such, support that objective.



K.2 Capital expenditure

Table K-2 shows the cost of the Ballast Replacement project on the Newlands System.

Table K-2 : Project A.04055 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Claim value	\$4,485
Schedule 5 – Project Claims Submission: “Newlands System Projects”	Ballast Replacement Newlands System	\$4,485
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$4,323

There are no discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and project background documents. There was no additional cost information sourced by SKM other than that which is listed in the above table.

The funding, approvals and claim details for this project are shown in **Table K-3**.

Table K-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$4,485,331
Applicable Financial Interest	-\$162,251
Total amount for inclusion in the RAB	\$4,323,080

There were no finance data discrepancies in the information provided.

K.3 Provided documentation

This review is based on information sourced from documents as shown in **Table K-4** and **Table K-5** below.

Table K-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Newlands System Projects	Newlands Project Info Submission	Word	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	CAPEX Estimate A.03867 – Ballast Replacement Newlands Line	Deliverables Estimate Summary Rev 1	Adobe PDF	Rev 1 23 February 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Minor Capital Funding Request – Ballast Replacement Newlands Line	ID355 MFR – Ballast Replacement Newlands Line	Adobe PDF	23 February 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions		A.04055 SWISR	Excel	No date



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	BCD Project Quality Sign Off Form – McNaughton to Birralee	A.04055 B, C and D Project Quality Sign Off Form	Adobe PDF	24 April 2012

Table K-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009

K.3.1 Request for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 008 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 024 SKM requested a copy of the Asset Management Plan for cross referencing of projects to enable a prudence of scope review, and analysis of benefit to applicable system via a request for information.

Responses were received for each question raised from RFI 008.

Several below rail renewal projects have been undertaken due to the age and condition of existing assets and infrastructure, and make reference to the Asset Management Plan.

K.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled “Newlands System Projects”).

SKM is of the opinion that the project overviews and rationale provided are of a high standard and clearly state the need for the project.



K.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

K.4.1 Project scope

The ballast located on the Newlands Line between chainage 83.800 km and 93.800 km has been identified as B Grade ballast which is substandard, subject to severe crumbling and lacks the resilience for future planned axle loads. In order to allow for future axle loads, the ballast is required to be upgraded from B Grade ballast to A Grade ballast. This upgrade would provide strategic alignment with the Aurizon Network Pty Ltd pillars.

The scope of works was required given the age and condition of the asset, and the future tonnage requirements on this line section under contracted tonnages.

The scope was subject to a review of engineering options to rectify the issue of the degraded ballast. These options were considered and discounted by Aurizon Network Pty Ltd as detailed in the options section of the internal funding submission.

SKM considers that these works were required in advance of the onset of full GAPE tonnages as track access would be limited once full tonnages were in place.

According to the information provided in Schedule 5 – Project Claim Submissions, document entitled “Newlands System Projects”, this project remains ongoing.

Table K-6 indicates the forecast milestones as per the information contained in “Ballast Replacement Newlands Line Minor Capital Funding Request” dated 23 February 2012.

Table K-6 : Milestones as forecast in February 2012

Milestone description	Milestone date
Concept gate	n/a
Feasibility gate	March 2012
Project Completion	April 2012
Post Project Review	June 2012

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3. The ability of the project to meet these criteria is outlined in **Table K-7**, followed by a discussion section that provides the analysis.



Table K-7 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Partially, the project is on-going.
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

SKM is of the opinion that maintaining adequate track top and line on this track section with the degraded ballast could be expected to be more difficult under the current and future tonnages compared to the scenario of this track section utilising new A Grade ballast. The retention of the existing ballast and associated coal fouling would result in reduced drainage capability of the ballast which in turn would cause further deterioration of the formation and potentially cause formation failures.

SKM understands that the recent Ground Penetrating Radar data taken on the Newlands Line in July 2011 initially indicated that the ballast located between 83.800 km and 93.800 km was part of the highest priority for the Newlands Line. The fouling causing the Percentage of Void Contamination reading was likely caused by coal and possible subgrade material from the formation.

SKM considers that the fouling would result in reduced drainage capability of the ballast. As drainage occurs only in the ballast layer of the formation, the replacement of the ballast would address these drainage issues.

SKM is of the opinion that the completion of this project will strengthen the track structure in this area and increase the drainage capabilities of the ballast. This will, in turn, reduce the need for future track speed restrictions associated with the loss of top and line currently being experienced in this area, and enable the ability to operate 26.5 tal consists on the infrastructure.

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

In SKM’s view this project should be categorised as an Asset Replacement Expenditure Project and that the project is reasonably required. In determining the scope of works SKM has considered the following issues:

- the project is consistent with the reasonable demand expectations associated with existing entitlements through the CQ coal systems and future entitlements relating to access rights under negotiation; and
- Aurizon Network Pty Ltd.’s requirements for a safe working environment for Aurizon Holdings’ above rail operations and Pacific National (and any other subsequent operators) on the rail infrastructure.

SKM is of the opinion that failure to undertake this project and leave the current ballast in place would render the proposed future axle load and capacity requirements unachievable.

Conclusion

Since this project has not been completed the criteria for prudence of scope has not been fulfilled and the project should therefore be carried over to the next regulatory review on this ground alone although the majority



of scope of this project has been completed and only minor project close out costs are expected. It is SKM's view that the scope of works was appropriate given the age and condition of the pre-existing assets.

Given the above SKM therefore concludes that the scope of this project is prudent.

K.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard to meet the requirements of the scope and the regulated service requirement and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

SKM has reviewed all the information provided for the Ballast Replacement Project on the Newlands Line and can confirm that the works completed have been undertaken in accordance with the relative Aurizon Network Pty Ltd policies and procedures, relative industry and Australian Standards, and associated internal Civil Engineering Track Standards (CETS).

A Ballast Cleaning and Drainage (BCD) project quality sign off form has been signed and submitted. This document is confirmation that standard was safe prior to returning the track section into rail operations.

SKM is of the opinion that the installed infrastructure is consistent in all material respects with the existing standard and configuration of adjoining infrastructure and infrastructure with similar usage levels in other sections of the CQCR Systems. Grade ballast is the standard ballast requirement for track operating with 26.5 tal.

Conclusion

SKM has concluded that this project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards, policies and procedures, and internal CETS.

Given the above, SKM considers that the standard of works for this project is prudent.



K.4.3 Project cost

SKM’s assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Newlands System Projects”.

Ballast Replacement Newlands System

Project Information

Project Number	A.04055	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$4,500,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case	February 2012	\$4,500,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$4,485,331
Applicable Financial Interest	-\$162,251
Total amount for inclusion in the RAB	\$4,323,080

Table K-8 presents a breakdown of the project funding for the project.

Table K-8 : Project funding

Item	Value
Materials	\$4,400,109
Project Management	\$99,891
Total Project Budget	\$4,500,000

Costs to 30 June 2012 were \$4,485,331 against the \$4,500,000 approved budget. These costs relate to the delivery of the proposed scope of works. All works were completed in May and June 2012, and as such a negative IDC has been calculated for this project.

Cost details are included in **Appendix K-A**.

Discussion

The major item for procurement was the A Grade ballast and associated materials required. SKM is of the opinion that the \$4,399,999 incurred for 30,000 m³ of A Grade ballast and associated materials is reasonable.



The specification for A Grade ballast is the standard requirement for track operating at 26.5 tal. All track sections upgraded under the GAPE project have utilised A Grade ballast.

The costs claimed to date are consistent with the scope of works completed and with project costs from other projects with similar scopes.

The scope of the Ballast Replacement Project on the Newlands Line is complete. Minor project close out costs are expected and a further minor claim will be included in the 2012/13 claim.

Conclusion

SKM considers that the costs for the claim submitted and works completed to date are prudent.

K.5 Summary

The outcomes of this prudency assessment are summarised in **Table K-9**.

Table K-9 : Ballast replacement Newland system project – review summary

Item	Prudency
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



K.6 Appendix K-A: Detailed analysis of cost for ballast replacement Newlands system project

A detailed breakdown of the project costs is presented below:


Project costs (extracted from the document entitled “Ballast Replacement Newlands Line – 23 February 2012 - Minor Capital Funding Request”)



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



QR NATIONAL - INFRASTRUCTURE SERVICES - CAPITAL DELIVERY		A.03867 00661	Ballast Replacement Newlands Line	
Capex Estimate				
DISCIPLINE ESTIMATE SUMMARY				

Description of Work	Discipline Base Estimate Total (Raw & Allowances)	FROM SHEET 1 OF DISCIPLINE ESTIMATES				TOTAL DISCIPLINE ESTIMATES SIMPLE RANGING	
		Uncertainty Contingencies (Planned Risks)				(Excluding Unplanned Risks and Optimism Bias)	
		Best Case \$	Aver. %	Worst Case \$	Aver. %	Best Case \$	Worst Case \$
COST TO DATE	\$ 11,179	\$ -	0%	\$ -	0%	\$ 11,179	\$ 11,179
PLANNING	\$ 37,325	-\$ 3,733	-10%	\$ 7,465	20%	\$ 33,593	\$ 44,790
PROJECT CO ORDINATION	\$ 193,632	-\$ 19,363	-10%	\$ 38,726	20%	\$ 174,269	\$ 232,358
U/C	\$ 756,375	-\$ 75,638	-10%	\$ 151,275	20%	\$ 680,738	\$ 907,650
RESURFACING	\$ 623,735	-\$ 62,374	-10%	\$ 124,747	20%	\$ 561,362	\$ 748,482
BALLAST	\$ 1,411,500	-\$ 141,150	-10%	\$ 282,300	20%	\$ 1,270,350	\$ 1,693,800
FREIGHT - BALLAST/UC	\$ 404,250	-\$ 40,425	-10%	\$ 80,850	20%	\$ 363,825	\$ 485,100
EARTHWORKS - PRE/POST	\$ 376,413	-\$ 37,641	-10%	\$ 75,283	20%	\$ 338,772	\$ 451,696
ACCOMODATION	\$ 49,500	-\$ 4,950	-10%	\$ 9,900	20%	\$ 44,550	\$ 59,400
TPOS	\$ 78,953	-\$ 7,895	-10%	\$ 15,791	20%	\$ 71,058	\$ 94,744
SUNDRIES - FUEL ETC	\$ 78,004	-\$ 7,800	-10%	\$ 15,601	20%	\$ 70,204	\$ 93,605
ON SITE SECURITY	\$ 30,000	-\$ 3,000	-10%	\$ 6,000	20%	\$ 27,000	\$ 36,000
PM COST - BRISBANE (3% of CC)	\$ 110,347	-\$ 11,035	-10%	\$ 22,069	20%	\$ 99,312	\$ 132,416
ASSET MANAGEMENT (2.5% of CC)	\$ 83,224	-\$ 4,161	-5%	\$ 12,484	15%	\$ 79,063	\$ 95,708
INSURANCES AND LEVIES (1.5% of CC)	\$ 41,612	-\$ 2,081	-5%	\$ 6,242	15%	\$ 39,532	\$ 47,854
CONTINGENCY (5% of CC)	\$ 208,061	-\$ 10,403	-5%	\$ 31,209	15%	\$ 197,658	\$ 239,270
SUBTOTALS	\$ 4,494,110	-\$ 431,648	-10%	\$ 879,941	20%	\$ 4,062,462	\$ 5,374,051

Estimate No: Rev 1
 Timeframe: _____
 Staging: Design
 Project Manager: Brendan Campbell
 Project Delivery Services: _____
 Network Access: _____

Assumptions
 Date: 23/02/2012
 Date: _____
 Date: _____



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Project costs extracted from spreadsheet with electronic file name “A.04055 ZWISR”

Lev	Description	Assigned Budget	Total Actual Expenditure	Prev Yrs	2011/2012
1	Ballast Replacement Newlands Line	4,500,000	4,485,331	-	4,485,331
2	EXECUTION	4,500,000	4,485,331	-	4,485,331
3	Project Management/Delivery	99,891	85,332	-	85,332
3	Civil	-	-	-	-
3	SIGNALLING	-	-	-	-
3	Power Systems	-	-	-	-
3	Traction Distribution / Overhead	-	-	-	-
3	Telecommunications	-	-	-	-
3	Track	4,400,109	4,399,999	-	4,399,999
4	Management	-	-	-	-
4	Contract/Procurement	-	-	-	-
4	Engineering	-	-	-	-
5	Track Design	-	-	-	-
4	Enabling Works	-	-	-	-
4	Construction	4,400,109	4,399,999	-	4,399,999
5	Construction Internal	4,400,109	4,399,999	-	4,399,999
5	Construction External	-	-	-	-
5	Test & Commission	-	-	-	-
4	Operational Systems	-	-	-	-
4	Close Out	-	-	-	-
4	Discipline Contingency	-	-	-	-
3	Property	-	-	-	-
3	Project Contingency	-	-	-	-

The following was extracted from the spread sheet entitled “Schedule 2 – IDC Summary 2011/12 CAPEX Claim” dated 1 November 2012.

Project Name			Ballast Replacement Newlands	
Project Number			A.04055	
WACC (UT3)	9.96%			
Monthly Int Calc (WACC)	0.79%			
SAP Recorded Expenditure			4,485,331	
Construction Finance Interest			- 162,251	
Total Capex Claim (including interest)			4,323,080	
Period/year	Number of Months	Interest (\$ as at 30 June 12)	Actual SAP Recorded Spend	Interest (\$ as at 30 June 12)
001.2012 July 2011	5.5	-	-	-
002.2012 August 2011	4.5	-	-	-
003.2012 September 2011	3.5	-	-	-
004.2012 October 2011	2.5	-	-	-
005.2012 November 2011	1.5	-	-	-
006.2012 December 2011	0.5	-	-	-
007.2012 January 2012	-0.5	-	-	-
008.2012 February 2012	-1.5	-	-	-
009.2012 March 2012	-2.5	-	-	-
010.2012 April 2012	-3.5	-	-	-
011.2012 May 2012	-4.5	- 75	3,785,478.60	- 132,442
012.2012 June 2012	-5.5	- 19,793	699,852.57	- 29,809
Total of 2011/12 capex claim		- 19,868.34	4,485,331.17	- 162,251.02
Project Name			Ballast Replacement Newlands	
Project Number			A.04055	



Appendix L. GAPE project (comprising both pre-GFC and post-GFC activities)

L.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

A project overview is provided in **Table L-1**.

Table L-1 : Project information as advised by Aurizon Network Pty Ltd

Project numbers		Project status	
GAPE (post-GFC)	A.03473		Incomplete
GAPE expansion (pre-GFC)	A.01541		Complete
GAPE long lead items (pre-GFC)	A.02559		Complete
GAPE X70-X100 early works (pre-GFC)	A.02523		Complete
Previously considered by the Authority		Previous approved funding	
GAPE (post-GFC)	No		\$0
GAPE expansion (pre-GFC)	No		\$0
GAPE long lead items (pre-GFC)	No		\$0
GAPE X70-X100 early works (pre-GFC)	Yes		\$31,854,711
Total approved funding		Project financially complete	
GAPE (post-GFC)	\$851,048,506		No
GAPE expansion (pre-GFC)	\$107,489,205		Yes
GAPE long lead items (pre-GFC)	\$28,280,165		Yes
GAPE X70-X100 early works (pre-GFC)	\$45,741,966		Yes

L.1.1 Location of project

Figure L-1 below shows the GAPE (pre-GFC) project as shown in 2007 CRIMP and the GAPE (post-GFC) project as it was described in the 2009 CRIMP. The project comprises the Northern Missing Link (from North Goonyella to Newlands) and upgrades to the Newlands system.

The project was delivered through a series of alliances. **Figure L-2** below details the geographical split between these alliances. The works can be divided as follows:

- Civil works from Abbot Point to Bogie River: Coal Stream Alliance (CSA) and Aspect3 Alliance
- Civil works from Bogie River to North Goonyella: Coal Connect Alliance (CCA) and Synergy Alliance
- Trackwork: Aurizon Holdings Ltd.'s Specialised Track Services (STS)
- Communication infrastructure: Synergy Alliance



Aurizon Network Pty Ltd Capital Expenditure 2011-12 Engineering Assessment

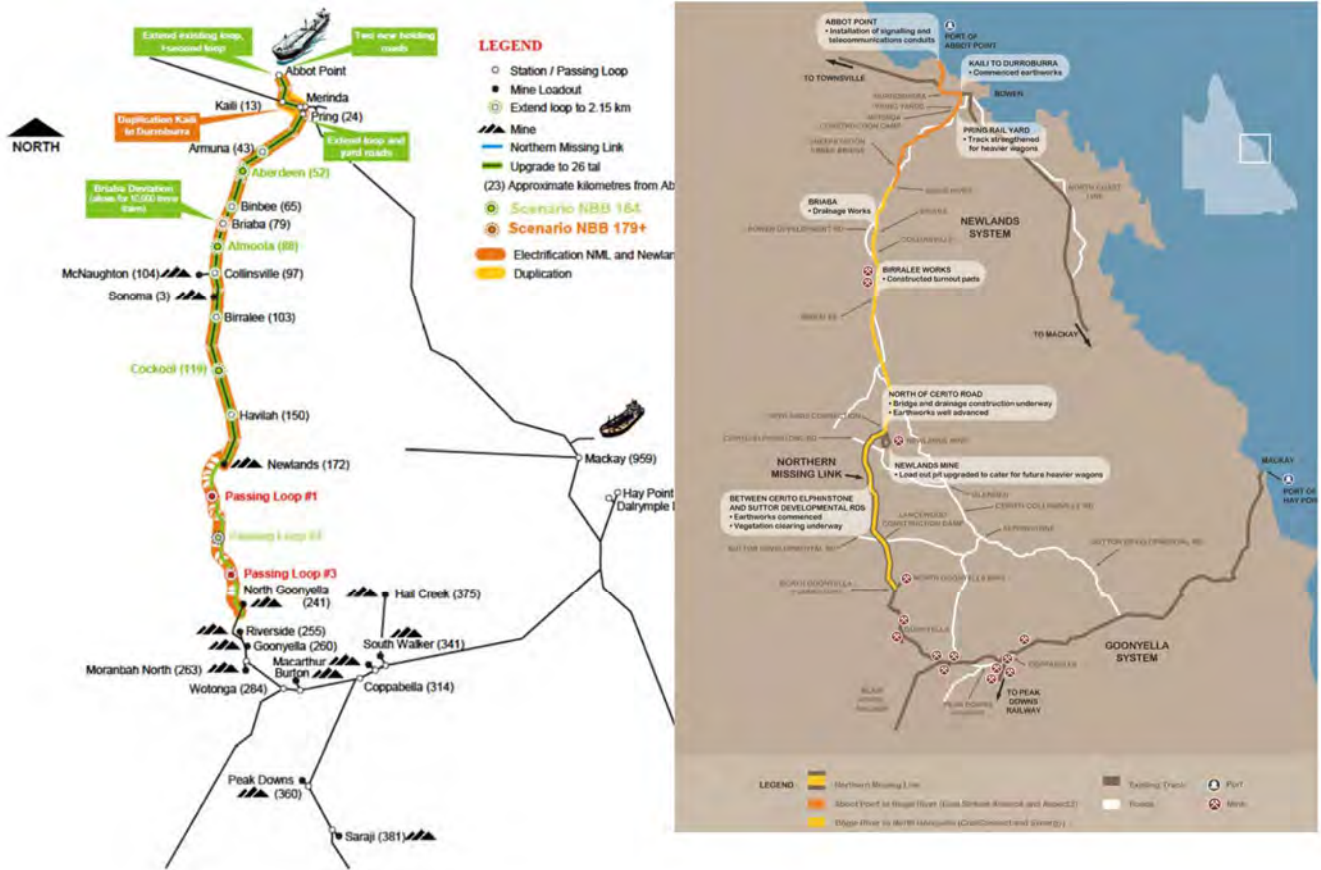


Figure L 1 : GAPE (pre-GFC) project (2007 CRIMP) and GAPE (post-GFC) project location (2009 CRIMP)

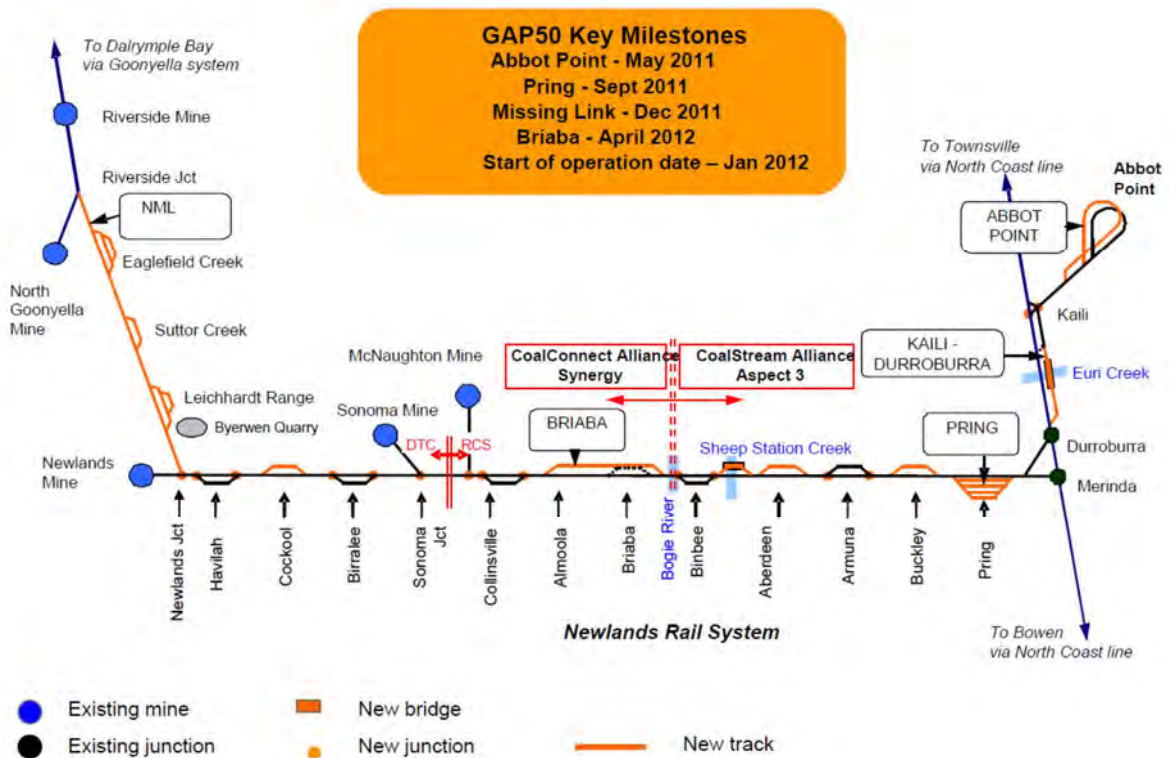


Figure L 2 : GAPE (post-GFC) project schematic showing limits of various GAPE alliances (Source: Aurizon Network Pty Ltd)



L.1.2 Objective of this investment

The benefit of constructing a connection between the Goonyella and Newlands systems was identified by the coal industry to the Federal Government’s Export and Infrastructure Taskforce in 2005. The concept was further developed through the preparation of QR’s Network Asset Management Plans (NAMP) in 2006, the CRIMPs of 2006, 2007, 2008 and 2009.

GAPE (pre-GFC) projects

The 2008 CRIMP built upon a staged project plan, with the initial design based on a capacity of 50mtpa and providing for trains of the same length as those on the Goonyella line, with the following stages building capacity up to 75 mtpa and 100 mtpa. The proposed project expansion schedule can be seen in **Figure L-3** below:

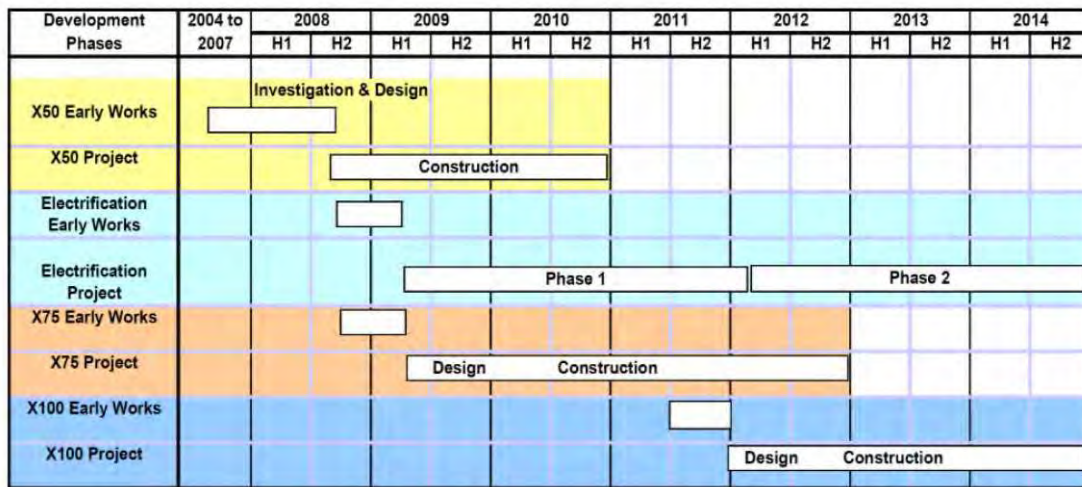


Figure L-3 : GAPE (pre-GFC) projects proposed expansion schedule (CRIMP 2008)

The above schedule includes the additional X75 and X100 stages and, of particular interest, it indicates the X50 early works and the X75 early works and the X100 early works.

Aurizon Network Pty Ltd has demonstrated that \$198,000,000 of funding achieved internal approval in July/August 2008 and final Shareholding Minister approval on 3 September 2008.

Aurizon Network Pty Ltd allocated this internally approved \$198,000,000 across four separate SAP numbers for the GAPE (pre-GFC) projects. **Table L-2** below indicates these project numbers, names and assigned budgets.

Table L-2 : Numbers, names and assigned budgets of GAPE (pre-GFC) projects

Project number	Project name	Assigned budget
A.01541	GAPE expansion	\$109,600,000
A.02559	GAPE long lead items	\$27,400,000
A.02523	GAPE X70-X100 early works	\$49,600,000
A.02648	GAPE electrification phase	\$11,400,000

The detailed SAP transaction records provided by Aurizon Network Pty Ltd for GAPE expansion project (A.01541) indicate that the project number was established in November 2004. Although Aurizon Network Pty Ltd allocated \$109,600,000 of expenditure on the GAPE expansion, SKM finds that Aurizon Network Pty Ltd also settled expenditure to this account for feasibility studies, environmental & cultural heritage studies, property acquisition, Newlands system early works, NML early works, electrification studies and Aurizon Network Pty Ltd project management.



The detailed SAP transaction records provided by Aurizon Network Pty Ltd for GAPE long lead items project (A.02559) indicate that the project number was established in June 2008. Although Aurizon Network Pty Ltd allocated the \$27,400,000 of expenditure on the procurement of long lead items, SKM finds that Aurizon Network Pty Ltd actually settled expenditure to this account for track materials, bridge girders, overhead mast bolts, signalling equipment, camp accommodation, camp offices and vehicles and early works at Abbot Point, Pring and CCA progress payments.

The detailed SAP transaction records provided by Aurizon Network Pty Ltd for GAPE X70-X100 early works project (A.02523) indicate that the project number was established in May 2008. Although Aurizon Network Pty Ltd allocated the \$49,600,000 of expenditure on the X75 early works, SKM finds that Aurizon Network Pty Ltd actually settled expenditure to this account for the concept and operational modelling studies, civil and structural works and project management activities by CSA, CCA for X50, X75/X100 and project wide studies and engineering costs for prefeasibility studies (PFS) and feasibility studies (FS) for the GAPE (post-GFC) project.

The other GAPE (pre-GFC) project, namely the GAPE electrification project (A.02648), is the subject of separate SKM prudency review mini-reports found in **Appendix P**.

GAPE (post-GFC) project

Following a thorough review of the project triggered by the GFC and the material reduction in forecasted international demand for coal, the overarching objective of the GAPE project became the provision of a link between the Goonyella system and Abbot Point with a 50mtpa capacity. SKM notes that this change in objective from 100mtpa capacity also marked a shift in delivery philosophy where previously programme had driven costs, after the GFC had materialised Aurizon Network Pty Ltd emphasises that costs drove programme.

Aurizon Network Pty Ltd has demonstrated that \$1,105,000,000 of funding for the post-GFC project achieved internal approval in December 2009 and final Shareholding Minister approval on 10 February 2010. SKM notes that the \$1,105,000,000 includes the \$198,000,000 approved for the pre-GFC projects.

The detailed SAP transaction records provided by Aurizon Network Pty Ltd for GAPE (post-GFC) project (A.03473) indicate that the project number was established in March 2010.

L.1.3 Status of the project

GAPE (pre-GFC) projects

After reviewing all documentation provided by Aurizon Network Pty Ltd pertaining to the GAPE expansion (pre-GFC) project, SKM concludes that the project is complete and no further expense should be settled to the project number in SAP. SKM notes that the detailed SAP transaction reports also show that significant expenditure was settled to the project number in 2004 to 2011.

Similarly, with regards the GAPE long lead items (pre-GFC) project, SKM concludes that the project is complete and no further expense should be settled to the project number in SAP. SKM notes that the detailed SAP transaction reports also show that significant expenditure was settled to the project number in 2008, 2009, 2010 and 2011.

Also, with regards the GAPE X70-X100 early work (pre-GFC) project, SKM concludes that the project is complete and no further expense should be settled to the project number in SAP. SKM notes that \$31,857,711 was claimed in Aurizon Network Pty Ltd.'s 2008-2009 RAB submission (i.e. claim for all expenses up to 30 June 2009) and a further \$13,887,255 is presented in the 2011-2012 claim. The SAP documentation provided to SKM for its review does not enable identification of the particular expenditure that constitutes this \$13,887,255. Nevertheless, SKM has found evidence of significant engineering and project management effort related to the GAPE program of works that occurred after 30 June 2009, in particular the finalisation of the PFS and FS studies for the GAPE (post-GFC) project. The detailed SAP transaction records show that this expenditure was settled to the X70-X100 early works project number. SKM notes that the detailed SAP transaction reports also show that significant expenditure was settled to the project number in 2010 and 2011.



GAPE (post-GFC) project

After reviewing all of the documentation provided by Aurizon Network Pty Ltd pertaining to the GAPE (post-GFC) project, SKM concludes that the project was commissioned in 2011-2012 financial year and as such post-commissioning expenditure can be expected to be settled to the project number in SAP up to June 2013.

L.2 Capital expenditure

GAPE (pre-GFC) projects

Table L-3 shows the cost of the GAPE expansion project (A.01541), GAPE long lead items project (A.02559) and GAPE X70-X100 early works project (A.02523) respectively.

Table L-3 : GAPE (pre-GFC) projects - proposed capital expenditure profiles

Source document name	Item	GAPE expansion project (A.01541)	GAPE long lead items project (A.02559)	GAPE X70-X100 early works project (A.02523)
Schedule 1 – 2011/12 Capital Expenditure (sic) Claim Workbook	Claim value	\$107,489,205	\$28,278,584	\$13,887,255
Schedule 2 – IDC Summary (sic) 2011/12 CAPEX Claim	Interest During Construction	\$41,018,504	\$9,690,125	\$3,406,185
Schedule 3 – GAPE Claims Submission: “20121018 GAP50 Report”	Page 51 or 52 Summary of Total Current Expenditure GAP50 Project - Cost (exc. IDC)	\$107,489,205	\$28,278,584	\$13,887,255

There was no additional cost information sourced other than that which is listed in the above tables.

The funding and approvals and claim details of the GAPE expansion project (A.01541), GAPE long lead items project (A.02559) and GAPE X70-X100 early works project (A.02523) are shown in **Table L-4**.

Table L-4 : GAPE (pre-GFC) projects – 2011-2012 funding and approvals and claim details

Claim	GAPE expansion project (A.01541)	GAPE long lead items project (A.02559)	GAPE X70-X100 early works project (A.02523)
Prior Years Expenditure	\$107,611,925	\$29,569,002	\$45,741,965
Prior Authority Approved Value	\$0	\$0	\$31,854,711
2011/12 YTD Expenditure	(\$122,720)	(\$1,290,418)	\$0
Total 11/12 Claimable Expenditure	\$107,489,204	\$28,278,584	\$13,887,255
Applicable Financial Interest	\$41,018,504	\$9,690,125	\$3,406,185
Total amount for inclusion in the RAB	\$148,507,708	\$37,968,709	\$17,293,440

There were no finance data discrepancies in the information provided.

SKM notes that the GAPE expansion project is considered a pre-GFC project but negative expenditure has been settled during the 2011-2012 financial year. This was investigated by RSM Bird Cameron who undertook a cost audit of the GAPE financial transactions on behalf of the Authority.



GAPE (post-GFC) project

Table L-5 shows the cost of the GAPE (post-GFC) project.

Table L-5 : GAPE (post-GFC) project (A.03473) - proposed capital expenditure profile

Source document name	Item	Project cost
Schedule 1 – 2011/12 Capital Expendature (sic) Claim Workbook	Claim value	\$771,118,899
Schedule 2 – IDC Summarry (sic) 2011/12 CAPEX Claim	Interest During Construction	\$45,198,523
Schedule 3 – GAPE Claims Submission: “20121018 GAP50 Report”	Page 51, Summary of Total Current Expenditure GAP50 Project - Cost (exc. IDC)	\$771,118,899

There was no additional cost information sourced by SKM other than that which is listed in the above table.

The funding and approvals and claim details for this project are shown in **Table L-6**.

Table L-6 : GAPE (post-GFC) project (A.03473) - 2011-2012 funding and approvals and claim details

Claim	Value
Prior Years Expenditure	\$442,450,906
Prior Authority Approved Value	\$0
2011/12 YTD Expenditure	\$328,667,993
Total 11/12 Claimable Expenditure	\$771,118,899
Applicable Financial Interest	\$45,198,523
Total amount for inclusion in the RAB	\$816,317,422

There were no finance data discrepancies in the information provided. SKM notes that the Authority has contracted RSM Bird Cameron to provide a cost audit of the GAPE financial transactions.

L.3 Provided documentation

In addition to approximately 100MB of GAPE project reference information provided in the 2011-2012 claim, SKM reviewed a significant amount of documentation provided by Aurizon Network Pty Ltd pertaining to pre-GFC and post-GFC activities for the GAPE projects. Aurizon Network Pty Ltd provided information in response to various RFIs, namely:

- RFI 009 by email on 13 February 2013 and supporting documents on a USB data stick 18 February 2013 (~4.5GB) and additional supporting documentation (~105MB) and SAP transaction reports (~6MB) provided on 26 March 2013;
- RFI 010, RFI 011, RFI 012, RFI 013 by email and a USB data stick containing pre-GFC funding information (~6MB);and SAP transaction reports (~22MB) on 26 March 2013;
- RFI 021 by email and on a USB data stick 25 January 2013 (~19MB);
- RFI 034 by email and on a USB data stick on 5 March 2013 (~81MB);
- RFI 035 by email and on a USB data stick on 5 March 2013 (~14MB);
- RFI 036 by email and on a USB data stick on 5 March 2013 (~13MB);
- RFI 037 by email and on a USB data stick on 5 March 2013 (~23MB); and
- RFI 040 by email and on a USB data stick on 19 April 2013 (~17MB);



In addition to the above, SKM reviewers held meetings with the GAPE projects' accounts manager, signalling designers and study managers on 18 and 22 February 2012 and undertook a site visit to GAPE project with project manager and engineers from 18 to 20 March 2013. Aurizon Network Pty Ltd also provided additional information in email correspondence on 6, 8, 11 and 12 March 2013.

Following the completion of a draft version of this engineering assessment report, Aurizon Network Pty Ltd provided significant information to SKM containing (i) details of GAPE telecommunication design and fibre optic requirements and (ii) documents relating to operational capacity of GAPE.

Meetings were held between Aurizon Network Pty Ltd, the Authority and SKM to discuss the telecommunications design on 20 May 2013 and Aurizon Network Pty Ltd.'s static modelling results on 5 June 2013. Aurizon Network Pty Ltd provided telecommunication supporting documents on 21 May 2013 and 14 June 2013 and additional operational capacity (in particular the section run times and availability assumptions) information on 5 June 2013 and 3 July 2013.

This review is based on information sourced from documents as shown in **Table L-7** and **Table L-8** below.

Table L-7 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
See Appendix L-B					

Table L-8 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure (sic) Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	
Aurizon Network Pty Ltd	Schedule 7 – IPR Charter	Schedule 7 – Assets Management Independent Peer Review Charter	Schedule 7 – Assets Management Independent Peer Review Charter	Adobe PDF	
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure (sic) Master Plan	5. 2009 CRIMP.pdf (sic)	Adobe PDF	October 2009



L.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed on a number of items in order for SKM to be able to assess prudence of the capital expenditure and hence the capital project. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 009-012 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost of the pre-GFC and post-GFC projects;
- RFI 034 SKM asked for (i) signalling and telecommunications call for tender documentation, successful proponent response with project cost estimates, (ii) signalling and telecommunications alliances variations (change requests) registers
- RFI 035 SKM asked for signalling AS plans and designs
- RFI 036 SKM asked for telecommunications optical fibre route plans and designs
- RFI 037 SKM asked for signalling plan and section diagrams
- RFI 040 For the GAPE (pre-GFC) projects, SKM asked for a comparison between the forecast scope and final deliverables associated with the pre-GFC projects (i.e. scope as approved by QR Board/Shareholding Minister vs actual delivered scope).
For the GAPE (post-GFC) project, SKM asked for
 - i. documentation relating to capacity analysis and simulations showing track, signal, consists scenarios for 50mtpa. SKM also advised that it wished to see throughput analysis demonstrating potential capacity of (i) two sidings versus three sidings along NML and (ii) traditional DTC vs DTC Mark II.
 - ii. evidence that DTC Mark II type configuration existed elsewhere on the network.
 - iii. evidence of Customer Group interaction during the determination of the scope for GAPE (post-GFC) project
 - iv. further detail of GAPE and NAPE Deeds required to review (i) customer acceptance of target costs of GAPE projects and (ii) details of any agreed cost and pain/gain share mechanisms developed in the Deeds.

SKM also interviewed Aurizon Network Pty Ltd GAPE (post-GFC) project staff on two occasions to collect data on the project. Aurizon Network Pty Ltd staff and SKM representatives searched together the GAPE project SharePoint site for information pertinent to SKM's assessment of prudence of scope, standard and cost.

As discussed above, following the completion of a draft version of this engineering assessment report, Aurizon Network Pty Ltd provided significant information to SKM containing (i) details of GAPE telecommunication design and fibre optic requirements and (ii) documents relating to operational capacity of GAPE system.

L.3.2 Adequacy of information provided and general comments

SKM believes that good record keeping practices dictate that detailed auditable data should be kept for any Aurizon Network Pty Ltd project that merits a separate project reference in SAP. SKM has therefore considered each of the GAPE projects as a stand-alone project and so conducted an assessment of each project's prudence of scope, standard and cost.

SKM notes that Aurizon Network Pty Ltd prefers to consider the GAPE program of works as one project, comprising all pre-GFC and post-GFC activities. Accordingly, Schedule 3 – GAPE Claims Submission of the 2011-2012 claim contains one report, namely "20121018 GAP50 report" (Schedule 3 report), which covers all pre-GFC and post-GFC components.

This Schedule 3 report, commissioned by Aurizon Network Pty Ltd and prepared by Evans & Peck in October 2012, provides a good overview of the GAPE projects and identified some important supporting information, including:

- 2006, 2007, 2008, 2009 CRIMP;
- 2006 NAMP;



- CETS (track, rail, ballast);
- Constructor Selection Report 2007;
- Designer selection report 2007; and
- User Group support letter to the Authority dated 10 July 2007.

GAPE (pre-GFC) projects

The Schedule 3 report discusses the GAPE (pre-GFC) projects in Section 5.3 (Prudence of Cost) only. This section of the Schedule 3 report provides a general overview of the costs settled to the project account. Given the incomplete nature of information made available at the time by Aurizon Network Pty Ltd, SKM questions the Schedule 3 report's ability to reach conclusions on the prudence of scope, standard and cost of the GAPE (pre-GFC) projects.

Following the identification and review of the considerable number of documents provided by Aurizon Network Pty Ltd and listed in **Table L-7** above, SKM has been able to undertake its assessment of prudence of scope, standard and cost of the GAPE (pre-GFC) projects.

GAPE (post-GFC) project

The Schedule 3 report focuses on the GAPE (post-GFC) project and discusses its scope, standard and costs. SKM found the commentary on the standard of the works (i.e. Section 5.2) to be useful. The analysis of post-GFC costs in Section 5.3, in particular the benchmarking analyses of both CSA and CCA bridge unit rates (\$/m²) and trackwork unit rates (\$/km) was relevant to its assessment of reasonableness of costs. Unfortunately, the Schedule 3 report does not provide a similar unit rate analysis for the Synergy and Aspect3 costs. SKM also understands the effort necessary to compile the summary cost information contained in Table 33 in the Schedule 3 report which identified the approximate percentage that the various types of works/costs represented in the total project costs. However, given the incomplete nature of information made available at the time by Aurizon Network Pty Ltd, SKM questions the Schedule 3 report's ability to reach conclusions on the prudence of scope and elements of the cost of the GAPE (post-GFC) project.

Following the identification and review of the considerable number of additional documents provided by Aurizon Network Pty Ltd and listed in **Table L-7** above, SKM has been able to undertake its assessment of prudence of scope, standard and cost of the GAPE (post-GFC) project.

L.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

L.4.1 Project scope

SKM identified the need to confirm that the GAPE project (comprising both pre-GFC and post-GFC activities):

- was a below-rail infrastructure project (or, if not, what proportion of the works are below-rail);
- was fully funded by Aurizon Network Pty Ltd (or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd); and
- was a capital expenditure and not maintenance project¹⁹.

¹⁹ Aurizon Network Pty Ltd.'s maintenance expenditure is considered separately from capital expenditure and is not added to the RAB. The reasonableness of Aurizon Network Pty Ltd's policies for determining if projects are maintenance expenditure or capital expenditure, in their Asset Management Plan, was not reviewed by SKM during this assessment.



SKM found that Aurizon Network Pty Ltd had engaged with the customer group to develop the general GAPE project via the CRIMP process, but had failed to obtain customer group approval under Clause 3.2, in particular 3.2.2(f), of Schedule A of UT3 for the GAPE (post-GFC) project. Therefore, SKM paid particular attention to whether the scope of the works was prudent as per Clause 3.3.2(c).

In assessing the prudence of the scope of the GAPE (post-GFC) project (i.e. a project that did not have regulatory pre-approval or customer approval), SKM assessed the project against the criteria set out in Clause 3.3.2(c) of Schedule A of UT3. Hence SKM assessed if Aurizon Network Pty Ltd had demonstrated, for the GAPE (post-GFC) project, that:

- the project was presented in the CRIMP;
- the project responded to a need to accommodate what was reasonably required to comply with Access Agreements;
- the project responded to a need to accommodate Reasonable Demand²⁰ and the extent of that demand;
- alternatives to the project were evaluated;
- the project was subjected to capital evaluation and selection process; and
- consultation occurred with relevant stakeholders about the project and the extent of that consultation.

With regards to a Reasonable Demand assessment, it is noted that if the scope of any particular capital expenditure project was in excess of Reasonable Demand, the element of the prudent costs of the project that was not needed to meet Reasonable Demand would need to be determined and identified as Excluded Capital Expenditure²¹ as stated in Clause 3.3.2(d)(ii) of Schedule A of UT3.

The ability of the project to meet some of these criteria is outlined in **Table L-9** followed by a discussion section that provides the analysis.

Table L-9 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Yes (SKM notes that all pre-GFC projects were completed prior to 2011-2012 financial year)
Does the project consist of capital expenditure and not maintenance?	Yes
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd ?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

²⁰ "Reasonable Demand" is defined as current contracted demand, likely future demand within a reasonable timeframe and any spare capacity considered appropriate.

²¹ "Excluded Capital Expenditure" is the element of the prudent costs of the capital expenditure project that was not needed to meet Reasonable Demand.



Discussion

Pre-requisite checks of eligibility of capital expenditure for inclusion in RAB

After studying the documents made available, SKM found that Aurizon Network Pty Ltd had sufficiently demonstrated that: (i) the project consisted entirely of below-rail infrastructure; (ii) was commissioned in 2011-2012; (iii) consisted of capital expenditure and not maintenance; and (iv) the works were fully funded by Aurizon Network Pty Ltd.

Regulatory pre-approval

SKM finds that Aurizon Network Pty Ltd has not submitted documentation indicating that the GAPE projects had received regulatory pre-approval from the Authority as described in Clause 3.1.1 of Schedule A of UT3.

Customer group approval

To assess if the GAPE (post-GFC) project had been approved by its customer group (Clause 3.3.2(b)(i) of Schedule A of UT3), SKM considered whether 60% of the customer group (as assessed by weighted members in accordance with the Reference Tonnes) had accepted the scope of the project, in accordance with Clause 3.2.2(f) of Schedule A of UT3.

GAPE (pre-GFC) projects

After reviewing the information provided by Aurizon Network Pty Ltd documenting the various pre-GFC project funding requests, SKM notes that in July 2007 51.7% (15mtpa of 29mtpa) of the customer group (i.e. BMA, Rio Tinto only) wrote to the Authority supporting the inclusion in the RAB of \$27.1m of early works. Aurizon Network Pty Ltd.'s Shareholding Minister approved expenditure of the same \$27.1m in September 2007.

SKM notes that prior to the July 2007 customer group support of this \$27.1m, Aurizon Network Pty Ltd had already spent \$19m since November 2004 on GAPE (pre-GFC) projects.

After having gained approval for \$46.1m (\$19m + \$27.1m), Aurizon Network Pty Ltd went on to internally approve expenditure of an additional \$27.1m (for GAPE long lead items in May 2008) and then an additional \$1m (as seed funding for GAPE X75-X100 early works in June 2008).

By June 2008, a total of \$74.2m had been approved (\$19m+\$27.1m+\$27.1m+\$1m). In September 2008, the Shareholding Minister approved funding of \$198m, comprising \$137m for X50 early works, \$49.6m for X75 early works and \$11.4m for electrification studies. This \$198m included the previously approved \$74.2m.

In conclusion, based on the information provided by Aurizon Network Pty Ltd, SKM finds that, until September 2008, only 51.7% of the customer group approved 13.6% (\$27.1m of \$198m) of funds for the GAPE (pre-GFC) projects. SKM therefore concludes that the GAPE (pre-GFC) projects did not have customer group approval at the time of commencement.

GAPE (post-GFC) project

SKM notes that in December 2008 Aurizon Network Pty Ltd.'s Board delegated authority to negotiate the GAPE Deeds to the Chief Executive Officer. The next GAPE funding approval was received in February 2010 when the Shareholding Minister approved GAPE (post-GFC) project funding of \$1,105m and the GAPE Deed with BMA was signed in September 2010. SKM notes that the copy of extracts of the GAPE Deed shared with SKM shows that BMA signed up to a Target Cost of \$1,040m.

In conclusion, based on the information provided by Aurizon Network Pty Ltd, SKM finds that BMA signed the GAPE Deed 18 months after construction works on GAPE (post-GFC) project had restarted. SKM therefore concludes that the GAPE (post-GFC) project did not have prior customer group approval.



Consultation occurred with relevant stakeholders about the project and the extent of that consultation.

GAPE (pre-GFC) projects

As explained above Aurizon Network Pty Ltd did not achieve the required 60% customer pre-approval and therefore under Clause 3.3.2(c) SKM has reviewed the extent of consultation with relevant stakeholders.

Aurizon Network Pty Ltd has provided the information in **Table L-10** below, which formed part of Feasibility IAR presented for internal approvals in November 2009 to summarize the consultation activities that occurred during the GAPE (pre-GFC) projects in 2009:

Table L-10: Stakeholder consultation (Aurizon Network Pty Ltd response to RFI 040 received 19 April 2013)

Category	Stakeholder name	Key concern/need	Plan to address	Progress to date
- Mining Companies	<ul style="list-style-type: none"> - GAPE: <ul style="list-style-type: none"> o Macarthur o BHP BMA o Anglo Coal o Lake Vermont o Rio Tinto o Bowen Central - NAPE: <ul style="list-style-type: none"> o QCoal o Sonoma o Xstrata 	<ul style="list-style-type: none"> - Primary underwriters of the Project and expect a high-level of engagement and value-for-money - High capital cost leading to higher than tolerable tariffs - Need to ensure these stakeholders support this project through Design, Commercial and Deed of Agreement - Delays, etc may impact on their operations 	<ul style="list-style-type: none"> - Regular contact at three working levels - Detailed review and examination of Feasibility Study recommendations, seeking endorsement 	<ul style="list-style-type: none"> - Engaged through industry workshops focussed on project design review - Mining companies have endorsed the project through Pre-feasibility phase. - Commercial terms and conditions have been accepted in principle by GAPE users

SKM finds that Aurizon Network Pty Ltd has demonstrated that consultation with customers of GAPE (pre-GFC) projects occurred in 2009. Unfortunately, without more detailed information (i.e. attendance lists, minutes of meetings, correspondence etc.) from Aurizon Network Pty Ltd, SKM cannot validate the stated extent of the consultation.

GAPE (post-GFC) project

From the fact that Aurizon Network Pty Ltd was discussing the GAPE Deeds with its customers during late 2009 and 2010 and the fact that Aurizon Network Pty Ltd was preparing monthly progress reports for all project stakeholders, SKM finds that consultation with relevant stakeholders did occur. Unfortunately, without more detailed information (i.e. attendance lists, minutes of meetings, correspondence etc.) from Aurizon Network Pty Ltd, SKM cannot validate the extent of that consultation.

Consistency of scope

GAPE (pre-GFC) projects

SKM compared the detailed transaction SAP files with the project funding information received on 26 March 2013, and found that the scopes for the GAPE (pre-GFC) projects evolved significantly between the moment funding was approved and the final delivered scope.

In RFI 040 SKM requested a comparison between the forecast scope and final deliverables associated with these projects (i.e. scope as approved by QR Board/Shareholding Minister versus actual delivered scope). Aurizon Network Pty Ltd provided a comparison between the scope approved by the Shareholding Minister and that actually delivered for the GAPE (pre-GFC) projects as shown below in **Table L-11**.



Table L-11 : Comparison between original scope and actual delivered scope (Aurizon Network Pty Ltd response to RFI 040 received 19 April 2013)

Project	Funding	Original scope	Actual scope
GAPE expansion (pre-GFC) project	\$19m September 2005 + \$27.1m September 2007 + \$63.5m September 2008 = \$198m	Scope identified in internal business case funding documents in 2005 included: <ul style="list-style-type: none"> • conduct a feasibility study on construction of the NML • complete a feasibility review on electrification of the future upgrade • address associated land, environmental and cultural heritage • identify the scope of works required to upgrade the existing Newlands system to match the capacity growth 	Pre GFC scope delivered: <ul style="list-style-type: none"> • Prefeasibility studies: <ul style="list-style-type: none"> ○ engineering and costs studies ○ civil alliance establishment ○ property procurement for the NML section ○ EIS for NML ○ cultural heritage studies ○ early design for X50, X75 and X100 ○ Industry engagement ○ development of the commercial underwriting arrangement ○ legal reviews • Capacity and alignment modelling: <ul style="list-style-type: none"> ○ Scott Wilson Railways ○ Systemwide ○ dynamic modelling ○ model confirmations • Early NML works: <ul style="list-style-type: none"> ○ detailed design ○ civil Works including clear and grub of full NML and establishment to formation level on top 20km, (“top 20”) ○ structures Works on “top 20” ○ camp Establishment and operation at Lancewood
		Scope summarised in 2007 funding documents is listed below. <ul style="list-style-type: none"> • civil engineering: <ul style="list-style-type: none"> ○ geotechnical investigations ○ detailed engineering design ○ civil survey, design and track work ○ level crossing investigation ○ fencing • signalling and cables: <ul style="list-style-type: none"> ○ detailed design costs for signalling component of the project. • telecommunications: <ul style="list-style-type: none"> ○ purchase DC generators and interface equipment and re-cable mobile radio sites along the NML route and the Newlands system to Collinsville • pre-construction works: <ul style="list-style-type: none"> ○ greenfield NML line corridor fencing ○ formation strengthening in the existing Newlands system: formation reconstruction works [approx 6kms] and lime slurry pressure injection works [approx 20kms] ○ protection officers during works 	
		Scope in 2008 funding was described as works necessary to continue project development, including works on the X75 and electrification phases, and the agreement of Commercial Deeds underwriting the proposed X50 project with customers.	



Project	Funding	Original scope	Actual scope
GAPE long lead items(pre-GFC) project	\$27.1m May 2008 + \$0.3m September 2008 = \$27.4m	<ul style="list-style-type: none"> • Procurement of long lead items such as: <ul style="list-style-type: none"> ○ Rail – 40km of single rail ○ Sleepers – 29,000 in total for total distance of 20km ○ Turnouts – 18 in total ○ Ballast – 50,000 tonnes ○ Culverts – 125 large Concrete box culverts ○ Microwave Telecommunications – 45km of optic fibre cable ○ HV Transformers – 4 in total ○ Powerlink Design – Deposit for PLQ to commence detailed design ○ Signals Equipment – various items ○ Glued Insulated Joints , Thermit welds ○ Level Crossing – guard rails and fixed sleepers ○ Bridge Girders – 240x10m spans ○ Overhead Mast base bolts – 60,000 	<ul style="list-style-type: none"> • Procurement of track materials, bridge girders, overhead mast bolts, signalling equipment. • Camp accommodation, offices and vehicles. • Early works at Abbot Point, Pring. • CCA progress payments for engineering, earthworks and civil works.
Project	Funding	Original scope	Actual scope
GAPE X70-X100 early works (pre-GFC) project	\$1m June 2008 + \$48.6m September 2008 = \$49.6m	<ul style="list-style-type: none"> • The construction of early works for X75 project. 	<ul style="list-style-type: none"> • The concept and operational modelling studies • Civil and structural works and project management activities by CSA, CCA for X50, X75/X100 • Project wide studies and engineering costs for prefeasibility studies (PFS) and feasibility studies (FS) for the GAPE (post-GFC) project.

From its analysis of the information provided, SKM finds that the intended and actual scope for the GAPE (pre-GFC) projects was not consistent.

GAPE (post-GFC) project

SKM has compared the scope as it was defined at the end of the feasibility study phase with that delivered when the project was commissioned. SKM finds that the delivered works are consistent with the scope.

Presentation in CRIMP

The GAPE early works package was presented to industry in the 2007 Addendum to the CRIMP. Aurizon Network Pty Ltd has claimed that the proposed investment received the required endorsement of 60%+ of customers during the related customer vote process and SKM understands that this customer vote process was endorsed by the Authority.



SKM notes that the Authority pre-approved \$27m of pre GFC early works on the NML on 17 December 2007. However, SKM finds that Aurizon Network Pty Ltd has not demonstrated that the GAPE (post-GFC) project received regulatory pre approval of project scope

Need to accommodate what was reasonably required to comply with Access Agreements

SKM has not sighted any of the Access Agreements related to GAPE, but has sighted the GAPE Deed signed by BMA. After reviewing the documents provided, SKM notes that the GAPE Deeds were signed after identifying the customer group’s need. Therefore, SKM finds that Aurizon Network Pty Ltd has not demonstrated that the GAPE (post-GFC) project was needed to accommodate what was reasonably required to comply with Access Agreements.

Need to accommodate Reasonable Demand and extent of that demand

Reasonable Demand, as stated in Clause 3.3.2(d) of Schedule A of UT3, is defined as current contracted demand²², likely future demand within a reasonable timeframe and any spare capacity considered appropriate.

SKM finds that the extent of Reasonable Demand (i.e. likely future demand) was well understood when the comprehensive construction value management process facilitated by McKinsey Consulting began in 2009. The chart in **Figure L-4** below shows the Reasonable Demand expected across the NML section of the GAPE project. SKM notes that the required output of 50mtpa through Abbot Point equates to ~28mtpa through the NML section.

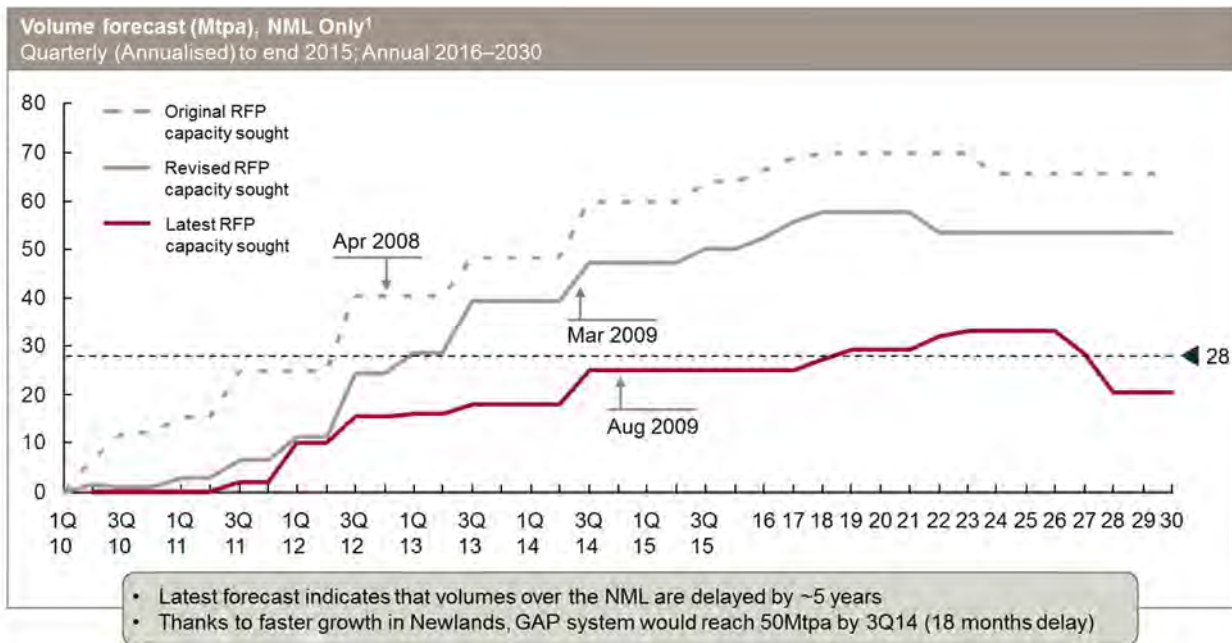


Figure L 4 : NML volume forecast (Aurizon Network Pty Ltd.’s FS presentation on 14 September 2009)

Aurizon Network Pty Ltd provided SKM with forecast capacity and operating information dated February 2011 that they claimed demonstrated that checks had been performed to confirm that the commissioned scope would be able to meet the contracted demand of 50mtpa. Upon review SKM found that these checks did not investigate if a reduced scope (such as (i) two rather than three passing loops on the NML rail line and/or (ii) DTC rather than DTC Mark II signalling system on part of the GAPE system) would also meet the service requirements.

Accordingly SKM developed a dynamic capacity model to determine whether the scope and costs associated with the three passing loops and DTC Mark II signalling arrangements of the GAPE project were needed to meet Reasonable Demand. SKM’s modelling results highlighted the GAPE system’s capacity (and corresponding infrastructure construction costs) is particularly sensitive to the number of days the system is available.

²² SKM recommends comparison of contracted tonnage between the Access Agreements and the GAPE Deeds.



In 2009, during the project's prefeasibility and feasibility study stages, Aurizon Network Pty Ltd had advised customers that 298 days/year availability (after planned maintenance activities and unplanned rail/port/mine shutdowns) would be assumed when determining the infrastructure requirements. **Figures L-5** shows how Aurizon Network Pty Ltd arrived at 298 days/year availability forecast based on claimed analysis of 5 years of operational data. Aurizon Network Pty Ltd suggested that anticipated efficiencies in planned downtimes and unplanned above & below rail losses could increase availability to 309 days (i.e. an additional 11 days/year availability) as shown in **Figure L-6**.

Aurizon Network Pty Ltd also explained the causes of the 24 days/year of mine/port unplanned downtime, as shown in **Figure L-7**, and suggested that significant improvement can be achieved through greater coordination with ports and miners (i.e. Aurizon Network Pty Ltd use those times when the port doesn't want trains (e.g. no stockpiling capacity, no boats) or miners didn't need trains (i.e. no product) to undertake their planned events). SKM suggest that this would further increase availability by up to 10 days/year (i.e. 45% of 24 days) to a total of 319 days/year with little additional capital spend.

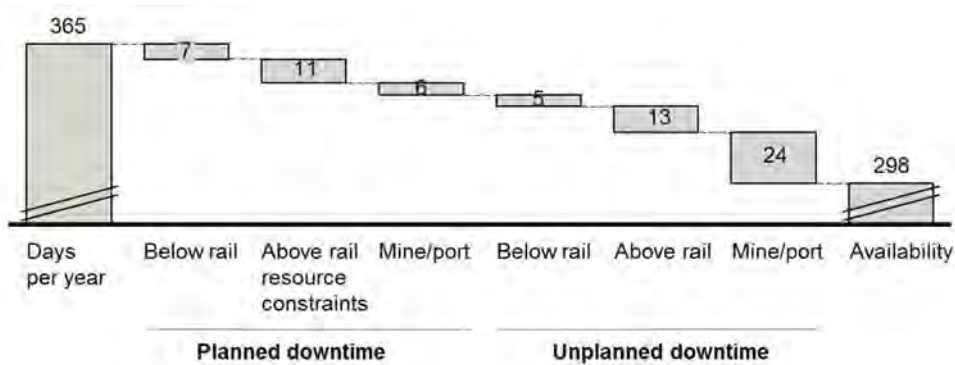


Figure L-5 : Baseline historical day/year availability after planned and unplanned downtimes (Aurizon Network Pty Ltd.'s PFS presentation on 8 July 2009)

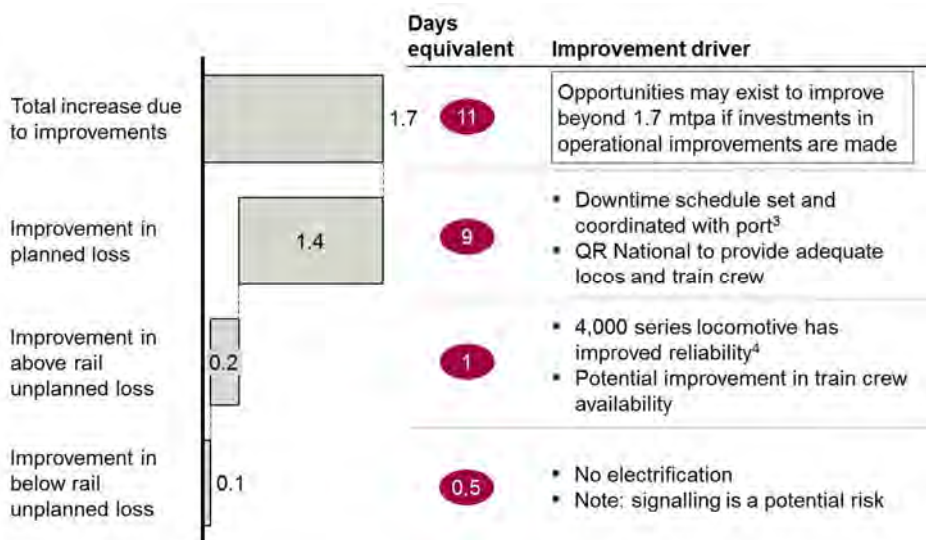
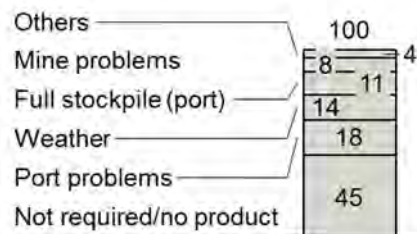


Figure L-6 : Aurizon Network Pty Ltd suggested 11 days/year increase in availability due to improvements in planned loss, above & below rail unplanned losses (Aurizon Network Pty Ltd.'s FS presentation on 14 September 2009)

Figure L-7 : Percentage split of 24 days/year of unplanned capacity losses caused by mine/port unplanned shutdowns (Aurizon Network Pty Ltd.'s FS presentation on 14 September 2009)





When SKM questioned Aurizon Network Pty Ltd in June 2013 on appropriate availability forecasts to use in their dynamic operation model, Aurizon Network Pty Ltd replied as follows:

“For the capacity modelling presented in the June 2013 presentation we have used an availability of 90% and a utilisation of that available capacity of 70%. Effectively, this provides a take up of the theoretical maximum capacity of 63%.”

SKM interprets Aurizon Network Pty Ltd.’s response that the GAPE system’s maximum capacity is 63% to suggest the GAPE system availability would amount to 230 days/year.

SKM studied the Moss Vale – Unanderra Line in New South Wales where an availability of 325 days/year is considered reasonable. SKM finds that if 321 days/year is assumed, only two passing loops would have been required across the NML. SKM finds that this would result in a potential saving of over \$50m in design & construction costs.

SKM’s capacity modelling exercise finds that if 298 days/year availability is assumed, then three passing loops (i.e. as-built arrangement) would be required along the NML. SKM finds that 230 days/year availability would require four passing loops (i.e. as built arrangement would not deliver contracted capacity) across the NML.

Finally, SKM notes that in September 2009, as shown in **Figure L-4** above, Aurizon Network Pty Ltd were predicting that the 28mtpa capacity target for NML was not expected to be needed until 2017. SKM believe (based on the sensitivity of the days/year availability versus number of passing loops) that the construction of Eaglefield Creek passing loop could have been deferred until say 2016.

Nevertheless, SKM finds that the extent of the scope of the GAPE project in its final form (i.e. three passing loops and DTC Mk II over the NML) was needed to accommodate Reasonable Demand.

Evaluation of alternatives to the project

SKM finds that Aurizon Network Pty Ltd did evaluate alternatives to the GAPE project during the 2007 CRIMP process. Alternative capacity improvements were studied during a system expansion evaluation exercise performed by Aurizon Network Pty Ltd in 2007. **Figure L-8** below shows on a macro-scale the alternative solutions explored.

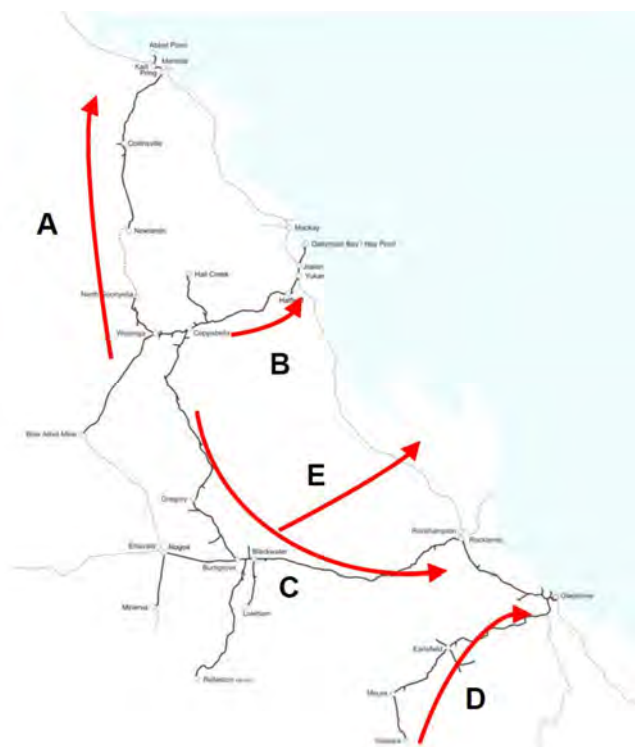


Figure L-8 : System expansion evaluation exercise performed by Aurizon Network Pty Ltd (2007 CRIMP)



Project subjected to capital evaluation and selection process

GAPE (pre-GFC) projects

During the pre-GFC period, against the backdrop of coal producers pushing for rapid development of coal haulage capacity across the CQCR, SKM finds that Aurizon Network Pty Ltd have not demonstrated that the GAPE (pre-GFC) projects were subjected to capital evaluation processes.

SKM has reviewed the tender documents and selection reports provided and found that Aurizon Network Pty Ltd has demonstrated that the choice of the civil alliances that contributed to parts of the GAPE (pre-GFC) project followed a transparent selection process.

GAPE (post-GFC) project

Aurizon Network Pty Ltd has demonstrated, via the comprehensive construction value management process conducted throughout 2009, that the GAPE (post-GFC) project was subjected to extensive capital evaluation process. At a number of workshops, some with the participation of customers, Aurizon Network Pty Ltd.'s study team investigated design choice variants²³, including:

- train configurations;
- track configurations;
- track life;
- electrification;
- signalling;
- operating parameters;
- access road locations; and
- bridge structure types.

Savings of \$68m were identified during the construction value management review process, between prefeasibility and feasibility study phases, as shown in **Figure L-9** below:

	PFS \$m	FS ¹ \$m	Change \$m	Percent
New track	114	108	-\$6m	-5%
Track upgrades	81	75	-\$6m	-8%
Civil works	494	423	-\$70m	-14%
Signalling	105	120	+\$15m	+15%
Project costs	120	127	+\$7m	+6%
Project escalation	20	27	+\$6m	+31%
Risk and contingency	36	22	-\$14m	-39%
Total²	1,107	1,039	-\$68m	-6%

Figure L-9 : Summary of outcomes of feasibility study (Aurizon Network Pty Ltd.'s FS presentation on 20 September 2009)

²³ Design choice variants workshop on 10 March 2009, PFS industry workshop on 9 July 2009 and various civil design meetings in September 2009.



SKM has reviewed the tender documents and selection reports provided and finds that Aurizon Network Pty Ltd has demonstrated that the choice of the civil alliances that contributed to the GAPE (post-GFC) project followed a transparent selection process.

SKM finds that Aurizon Network Pty Ltd has not demonstrated that the establishment of the signalling alliances was subject to a transparent selection process.

Conclusion

GAPE (pre-GFC) projects

SKM notes that the available funds for the GAPE (pre-GFC) were not used for their originally intended purpose, and whilst Aurizon Network Pty Ltd has consulted with the customer group it has not demonstrated the extent of this consultation.

Based on the assessment criteria as they are described in Clause 3.3.2 of Schedule A of UT3, SKM is unable to satisfactorily determine if the customer group understood the scope of works and agreed they were reasonably required prior to Aurizon Network Pty Ltd beginning the works. However, SKM is cognisant that the customers did support the commencement of \$27.1m worth of early works. Indeed a significant portion of the GAPE (pre-GFC) projects costs have been previously approved by the Authority for inclusion in the RAB.

SKM notes that the customers did sign the GAPE Deeds which highlighted the prefeasibility and feasibility study effort accrued to the pre-GFC SAP projects and therefore finds the scope of all the GAPE (pre-GFC) projects prudent.

GAPE (post-GFC) project

SKM notes that Aurizon Network Pty Ltd has consulted with the customer group, however, it has not demonstrated the extent of this consultation nor that this consultation was sufficiently extensive to meet the requirements of UT3.

Nevertheless, based on the assessment criteria as they are described in Clause 3.3.2 of Schedule A of UT3, and for the reasons outlined in the discussion section above, SKM finds that Aurizon Network Pty Ltd did have reasonable grounds for proceeding with the project given the circumstances relevant at the time the investment decision was made and so the scope of the GAPE (post-GFC) project is deemed to be prudent.

L.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved 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.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.



Discussion

GAPE (pre-GFC) projects

SKM has reviewed a significant number of prefeasibility study and feasibility study documents developed during the GAPE (pre-GFC) projects and finds that, on the whole, they are well prepared and in accordance with modern engineering practices.

SKM has not been able to verify the GAPE early works during the site visit, but SKM finds that the documents provided by Aurizon Network Pty Ltd associated with GAPE (pre-GFC) projects demonstrate that they have been contained successfully within the requirements of the scope (i.e. not overdesigned) and therefore the works fulfil criterion a) above.

SKM finds that the GAPE (pre-GFC) works were consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR and therefore fulfil criterion b) above as well as Clause 3.3.3 (b)(iii) of Schedule A of UT3.

Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. SKM is not aware of pre-approval of the standards of works as is possible under Clause 3.3.3(b)(i), however, SKM is of the opinion that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards and thus fulfils the requirement of Clause 3.3.3(b)(ii) of Schedule A of UT3.

GAPE (post-GFC) project

In SKM's assessment the works are found to have successfully been contained within the requirements of the scope and therefore fulfil criterion a) above.

Further to the review of the as-built drawings and design/construction documentation, SKM undertook a two day site visit to the NML and Newlands System to see first-hand the GAPE works. Details of works inspected by SKM and photographs taken during this visit are provided in **Appendix L-A**. During this visit SKM paid particular attention to whether the GAPE (post-GFC) works can be deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR. SKM concluded that the project fulfils criterion b) above as well as Clause 3.3.3 (b)(iii) of Schedule A of UT3.

With regards to criterion c) above, SKM is satisfied that Aurizon Network Pty Ltd had reasonable grounds for the design standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. SKM is not aware of pre-approval of the standards of works as is required by Clause 3.3.3(b)(i), however, SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii) of Schedule A of UT3.

SKM would make the following comments on the overall standard of the GAPE (post-GFC) project:

- Aurizon Network Pty Ltd has positioned the rail alignment in the middle of the corridor. However, SKM would suggest that in the interest of limiting the requirement for land acquisition activities for future duplication works, the alignment could have been positioned to one side.
- Aurizon Network Pty Ltd chose to construct passing loops at 6m centres from the mainline and this limits the clearance to undertake routine and corrective maintenance works. Wider spacing would allow the 3m safe working limit to be respected for each track.
- In the duplicated sections of the Newlands line, Aurizon Network Pty Ltd has installed larger capacity culverts under the new sections of track than are installed under the existing track. SKM understands that this difference comes from improved hydrological modelling for the new track than was available when the original track was installed. SKM recognises that deferring the replacement of the existing culverts (i.e. not replacing them as part of the GAPE (post-GFC) project) will ultimately increase the cost of these works.



Nevertheless, SKM recognises the decision not to undertake the work as being in keeping with the objective to reduce capital expenditure along the GAPE project.

- To simplify the introduction of overhead traction distribution, Aurizon Network Pty Ltd has chosen to extend every second bridge pier head on the bridges with more than one span to accommodate OHL masts. Whilst this future proofing could be considered unnecessary, the costs associated with it are considered minimal. Nevertheless, SKM suggests that it would have been acceptable to extend only every third bridge pier head.
- In the interest of cost savings through standardisation, Aurizon Network Pty Ltd accepted a new typical bridge beam for the structures installed by CCA. This longer bridge beam was a departure from the standard and configuration of existing infrastructure following Aurizon Network Pty Ltd.'s standards, but meant the clearance requirements under the structure requested by neighbouring land owners for their occupational crossings could be obtained.
- SKM would like to highlight that Aurizon Network Pty Ltd.'s decision to create a quarry at Berwyn for the project and free issue the ballast and other derivative products to CCA and CSA would have saved the project a significant amount of capital expenditure and as such shows good foresight and sound engineering reasoning.
- SKM notes that Aurizon Network Pty Ltd settled on DTC Mark II signalling system for a significant section of the GAPE project. The use of self-normalising point indicators was first trailed at Ried River on the Mt Isa Line and then the use of long range point's indicators and swing nose point indicators was first used in an operational signalling arrangement for the Sonoma Mine spur and balloon loop, commissioned in June 2008.
- In DTC Mark II territory, power failure to, for example, the point's machines and vital signalling is not remotely monitored. Where such failures occur a blue flashing light is activated at that location presumably for a train driver to notice and report over the UHF back to train control. SKM is not aware if this method and standard of critical equipment failure event annunciation has been deployed elsewhere in train controlled territory.

Conclusion

Given the above, SKM considers that the standard of works for the GAPE project (comprising both pre-GFC and post-GFC activities) is prudent.

L.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

When assessing the level of GAPE projects costs relative to the scale, nature and complexity of the projects, following Clause 3.3.4(c)(vi), SKM focused on the manner in which the capital expenditure projects had been managed. In particular, SKM assessed Aurizon Network Pty Ltd.'s balancing of:

- (A) safety during construction and operation;
- (B) compliance with environmental requirements during construction and operation;
- (C) compliance with Laws and the requirements of Authorities;
- (D) minimising disruption to the operation of train services during construction;
- (E) accommodating reasonable requests of Access Holders to amend the scope and sequence of works undertaken to suit their needs;
- (F) minimising whole of asset life costs including future maintenance and operating costs;
- (G) minimising total project costs;
- (H) aligning other elements in the supply chain; and



- (l) meeting contractual timeframes and dealing with external factors.

GAPE (pre-GFC) projects

An extract of the A.01541 ZWISR document, provided by Aurizon Network Pty Ltd in their 2011-2012 claim, identifies the expenditure for the GAPE expansion (pre-GFC) project and how it is classified in SAP. A copy is enclosed in **Appendix L-C**.

An extract of the A.02559 ZWISR document, provided by Aurizon Network Pty Ltd in their 2011-2012 claim, identifies the expenditure for the GAPE long lead items (pre-GFC) project and how it is classified in SAP. A copy is enclosed in **Appendix L-D**.

An extract of the A.02523 ZWISR document, provided by Aurizon Network Pty Ltd in their 2011-2012 claim, identifies the expenditure for the GAPE X70-X100 early works (pre-GFC) project and how it is classified in SAP. A copy is enclosed in **Appendix L-E**.

GAPE (post-GFC) project

An extract of the A.03473 ZWISR document, provided by Aurizon Network Pty Ltd in their 2011-2012 claim, identifies the expenditure for the GAPE (post-GFC) project and how it is classified in SAP. A copy is enclosed in **Appendix L-F**.

Discussion

SKM finds that Aurizon Network Pty Ltd provided sufficient information on the scale, nature and complexity of the GAPE project (comprising both pre-GFC and post-GFC activities) to allow for an assessment of the reasonableness of its costs.

Safety during construction and operation

GAPE (pre-GFC) projects

The SAP extract enclosed in **Appendix L-C** shows that \$81,454,084 was settled to the account for civil, track and signalling construction activities by CSA, CCA and Aurizon Network Pty Ltd. SKM notes that \$202,665 was booked for safety management/protection officers on GAPE early works (A.01541.00235 + A.01541.20900 + A.01541.30900).

The SAP extract enclosed in **Appendix L-D** shows that civil and signalling construction activities were settled to the account, namely (i) CSA booked \$1,176, 171 for construction works at Abbot Point; (ii) CCA booked \$18,667,494 for construction works from Buckley to Newlands, on NML and Goonyella works; and (iii) \$1,075,772 was booked to signalling service relocations. SKM notes that CSA separated \$64,176 for protection officers (A.02559.20902).

The SAP extract enclosed in **Appendix L-E** shows that civil and structural activities were settled to the account: CSA booked \$2,656,028 for construction works from Abbot Point to Pring; CCA booked \$5,849,934 for construction works from Buckley to Newlands and \$4,625,823 for works on NML. SKM notes that CSA separated \$535 for safety management/protection officers (A.02523.20900)

CSA, CCA and Aurizon Network Pty Ltd developed health and safety management plans which define its commitment to safety, therefore, SKM finds that Aurizon Network Pty Ltd has demonstrated that it considered safety during construction and operation when completing the GAPE (pre-GFC) projects.

GAPE (post-GFC) project

The SAP extract enclosed in **Appendix L-F** shows that \$734,113,673 was settled to the account for civil, track, signalling and telecommunications construction activities by CSA, CCA, Aspect3, Synergy and Aurizon Network Pty Ltd. SKM notes that \$11,110,848 was booked for protection officers on GAPE early works (A.03473.35160 + A.03473.51160 + A.03473.71160).



CSA, CCA and Aurizon Network Pty Ltd developed health and safety management plans which define its commitment to safety. Aspect3 requested that Aurizon Network Pty Ltd provided protection officers. Synergy developed a Construction Safety Plan and HSE Risk Register. Aurizon Network Pty Ltd provided monthly progress reports to project stakeholders which reported against key safety performance indicators, namely (i) total recordable injury frequency (40); (ii) lost time injury frequency rate (2.5); (iii) medical treated injury frequency rate (24.81); and (iv) safety interactions (100%)

SKM finds that Aurizon Network Pty Ltd has demonstrated that they considered safety during construction and operation when completing the GAPE (post-GFC) project.

Compliance with environmental requirements during construction and operation

GAPE (pre-GFC) projects

For the GAPE expansion (pre-GFC) project SKM notes that \$1,136,067 was settled to the SAP account for environmental and cultural heritage activities for the Abbot Point to Bogie River, Bogie River to Newlands and NML sections of the project. For the GAPE long lead items (pre-GFC) project SKM finds that no distinct environmental studies or compliance activities in the SAP extract provided by Aurizon Network Pty Ltd. SKM notes that \$1,721 was settled to the GAPE X70-X100 early works (pre-GFC) project account for environmental studies associated with Goonyella system works (A.02523.67122).

For the pre-GFC activities CSA, CCA and Aurizon Network Pty Ltd developed environmental management plans which define its commitment to compliance with environmental requirements, therefore, SKM finds that Aurizon Network Pty Ltd has demonstrated that it considered compliance with environmental requirements during construction and operation when completing the GAPE (pre-GFC) projects.

GAPE (post-GFC) project

SKM notes that \$359,665 was settled to the SAP account for land offsets, environmental management (labour and audit) activities during the post-GFC activities. These activities are identified as being undertaken by Aurizon Network Pty Ltd staff.

SKM finds that Aurizon Network Pty Ltd has demonstrated that it attempted compliance with environmental requirements during construction and operation when completing the GAPE (post-GFC) project. However, Aurizon Network Pty Ltd has not shared details of any non-compliance with environmental requirements during construction with SKM.

Compliance with Laws and the requirements of Authorities

GAPE (pre-GFC) projects

SKM finds that Aurizon Network Pty Ltd has not demonstrated compliance with all Laws and the requirements of Authorities when completing the GAPE (pre-GFC) project. (for example, SKM has not been provided with environmental consents and development approvals etc.).

GAPE (post-GFC) project

SKM notes that the four alliances engaged by Aurizon Network Pty Ltd were subject to independent audits, as follows: CCA – KPMG; CSA – Ernst & Young; Aspect3 – KPMG; Synergy – Price Waterhouse Coopers.

SKM finds that Aurizon Network Pty Ltd has not demonstrated compliance with all Laws and the requirements of Authorities when completing the GAPE (post-GFC) project (for example, SKM has not been provided with relevant environmental consents and development approvals etc.).

Minimising disruption to the operation of train services during construction

Aurizon Network Pty Ltd has stated that the brownfield works were completed both within dedicated network closures for both rail and port expansion works. Some of the bridge structures were built offline to allow operation to continue using the existing structure to minimise the impact on operations.



SKM finds from its review of these audits that Aurizon Network Pty Ltd and its alliance partners were conscious of the need to minimise disruption to the operation of train services during construction when completing the GAPE project (comprising both pre-GFC and post-GFC activities).

Accommodating reasonable requests of Access Holders to amend the scope and sequence of works undertaken to suit their needs

SKM notes that despite approval by the Shareholding Minister in September 2008, Aurizon Network Pty Ltd took the decision in late 2008 to pause the construction of the X50 to X75/X100 pre-GFC scope and instead undertake a detailed construction value management process and effectively take the project back to prefeasibility and feasibility study phases. SKM recognises that the decision to challenge the X50 to X75/X100 scope, in light of the GFC, was prudent.

SKM finds that Aurizon Network Pty Ltd has demonstrated that it accommodated reasonable requests of Access Holders in late 2008 to amend the scope and sequence of works undertaken to suit their needs when completing the GAPE project (comprising both pre-GFC and post-GFC activities).

Minimising whole of asset life costs including future maintenance and operating costs

SKM finds that during the comprehensive construction value management process conducted throughout 2009, in particular during a workshop in March 2009 entitled "Maximising the Value of the GAP Project", the Aurizon Network Pty Ltd study team highlighted their intention to complete analysis of potential design trade-offs between CAPEX and OPEX when looking at track configuration (ruling grade, flood immunity, line speed) and track life/alignment (track lifespan, formation and capping layer).

SKM finds that Aurizon Network Pty Ltd has demonstrated that it minimised whole of asset life costs including future maintenance and operating costs when completing the GAPE (post-GFC) project.

Minimising total project costs

GAPE (pre-GFC) projects

SKM notes that in September 2008, the Shareholding Minister approved funding for the GAPE expansion (pre-GFC) project of \$109,600,000 and yet Aurizon Network Pty Ltd has claimed actual capital expenditure in its 2011-2012 claim of \$107,489,204. SKM concludes that the project was delivered \$2,110,796 under the agreed budget.

Similarly, for the GAPE long lead items (pre-GFC) project, the Shareholding Minister approved \$27,400,000 in September 2008 and yet Aurizon Network Pty Ltd has claimed actual capital expenditure in its 2011-2012 claim of \$28,278,584. SKM concludes that the project was delivered \$878,584 over the agreed budget.

Also for the GAPE X70-X100 early works (pre-GFC) project, in September 2008 the Shareholding Minister approved funding of \$49,600,000 for the project and yet Aurizon Network Pty Ltd has claimed actual capital expenditure in its 2011-2012 claim of \$45,741,965. SKM concludes that the project was delivered \$3,858,035 under the agreed budget.

However, as discussed above, SKM is mindful of the fact that the scope of all the GAPE (pre-GFC) projects evolved significantly due to the reappraisal of the project after the GFC. SKM finds that Aurizon Network Pty Ltd have not demonstrated that they minimised total project costs.

GAPE (post-GFC) project

SKM notes that in February 2010, the Shareholding Minister approved funding for the GAPE (post-GFC) project of \$1,105,000,000 which translates into a budget for the post-GFC project of \$907,000,000 and yet Aurizon Network Pty Ltd has claimed actual capital expenditure in its 2011-2012 claim of \$771,118,899. SKM understands that post commissioning activities are ongoing, but records that the project may well be completed around \$100,000,000 under the agreed budget.

SKM notes that Aurizon Network Pty Ltd chose to deliver the GAPE project via an alliance procurement mechanism. SKM notes that the alliance mechanism was considered best practice at the time for projects



who's scope had not been clearly defined. It is SKM's opinion that whilst the alliance mechanism may remove a certain driver for innovation on the part of the private sector participants, Aurizon Network Pty Ltd can rightly claim the adoption of alliance delivery model minimised total project costs when completing the GAPE (post-GFC) project.

Aurizon Network Pty Ltd highlighted during the prefeasibility study phase that a number of mechanisms were used to keep the alliancing costs competitive, as shown in **Figure L-10** below.

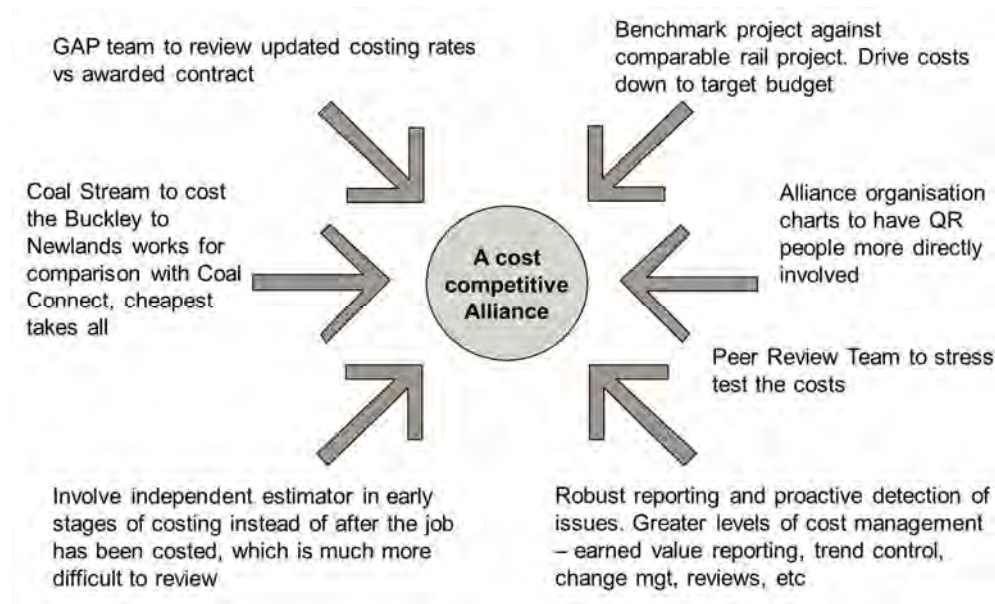


Figure L-10 : Mechanisms employed to drive cost competitive alliancing (Aurizon Network Pty Ltd.'s PFS presentation on 8 July 2009)

As discussed above, following the review of a draft version of this engineering assessment report, Aurizon Network Pty Ltd submitted significant information to SKM for review. This information was made available to demonstrate that elements of the GAPE project were necessary to meet Reasonable Demand. The documents provided are listed in Appendix L-B, and focused on (i) the operational capacity modelling undertaken to determine the required number of passing loops along the NML; (ii) the requirements to upgrade existing DTC signalling to DTC Mark II and (iii) the design and utility of the optical fibre installed along the length of the project.

SKM notes that Aurizon Network Pty Ltd designed and installed significant portions of the rail system elements on the GAPE project and it is unclear if designs and standards are subject to independent verification and validation.

Aligning other elements in the supply chain

SKM finds that Aurizon Network Pty Ltd has demonstrated that it aligned its project with other elements in the supply chain for the GAPE project. This has been demonstrated via the comprehensive construction value management process conducted throughout 2009.

SKM notes that Aurizon Network Pty Ltd recognises the capacity advantages that can be achieved by coordinating and programming the planned maintenance activities of railway, port and mine simultaneously. Although unplanned shutdowns occur by their very nature at unexpected times, there is an opportunity to forecast when bad weather is likely to close the ports or when stockpiles or mining operations are going to cause issues and allow preventative maintenance activities to the rail/port/mine infrastructure to occur.

As highlighted during the construction value management study there is an opportunity to improve the operational performance of loading and unloading facilities at mine and port to reduce cycle time and improve availability. SKM appreciate that this requires broad agreement from all mines to deliver value and there is a risk of free rider as improvements at one mine are shared by all.



Meeting contractual timeframes and dealing with external factors

SKM finds that by navigating the GAPE project through the turmoils of the GFC, Aurizon Network Pty Ltd has demonstrated that it dealt with the external factors to the GAPE project. SKM considers that the change of scope occurred in approximately 12 months, from October 2008 to November 2009, and finds the time Aurizon Network Pty Ltd required to complete prefeasibility, feasibility and associated reviews, customer engagement and internal approvals for an approximately \$1bn project was reasonable.

Also, Aurizon Network Pty Ltd states that the timing of the post-GFC project was designed to meet the expansion of the port facilities at Abbot Point and to minimise the period between tonnage readiness from mines.

SKM finds that Aurizon Network Pty Ltd delivered the GAPE (post-GFC) project in accordance with its contractual timeframes²⁴. SKM notes that Aurizon Network Pty Ltd.'s choice to deliver the project via the alliance model, promoted by the government and wider industry at the time, facilitated the timely delivery of the project.

SKM finds that Aurizon Network Pty Ltd has demonstrated that it met contractual timeframes and dealt successfully with external factors when completing the GAPE (post-GFC) project.

Reasonableness of costs

GAPE (pre-GFC) projects

In RFIs 010, 011 and 012 SKM asked Aurizon Network Pty Ltd to provide indicative quantities of key materials that formed part of the GAPE (pre-GFC) projects, but this information has not been provided. Without this information SKM is unable to build a bottom up, +/-30% order of magnitude cost estimate to compare against the claimed costs associated with this project.

SKM notes that the cost of all the GAPE (pre-GFC) projects amount \$198m which represents ~20% of the GAPE project (comprising both pre-GFC and post-GFC activities) capital expenditure of \$960m.

SKM suggests that prefeasibility and feasibility studies for a project could be expected to amount to 4-5% of the total costs of any given project. Aurizon Network Pty Ltd has accrued ~\$14m for these activities on the GAPE expansion (pre-GFC) project, ~\$30m for these activities on GAPE X70-X100 early works (pre-GFC) project. \$44m amounts to ~4.5% of the ~\$960m capital expenditure.

SKM would anticipate the property acquisition costs of this type of project would be expected to amount to 1-2%. Aurizon Network Pty Ltd accrued ~\$12m for property acquisition, which represents ~1.25% of the ~\$960m capital expenditure.

SKM finds that the costs of the elements of the GAPE (pre-GFC) projects that it is able to interpret are reasonable.

GAPE (post-GFC) project

SKM notes that in February 2010, the Shareholding Minister approved GAPE project funding of \$1,105m and the copy of extracts of the GAPE Deed shared with SKM shows that BMA signed up to a Target Cost of \$1,040m in September 2010. Aurizon Network Pty Ltd has not explained the \$65m difference between the approved funding and Target Cost.

SKM finds that the analysis of post-GFC costs in Section 5.3 of the Schedule 3 report, in particular the benchmarking analyses of both CSA and CCA bridge unit rates (\$/m²) and trackwork unit rates (\$/km) was relevant to its assessment of reasonableness of costs.

²⁴ The extracts of GAPE Deed shared with SKM does not indicate delivery date for the GAPE project, but does state in Schedule 3 (Design Brief) that planned rail capacity from 1 January 2012 to 31 March 2012 is 35mtpa.



With regards the bridge unit rates, for the purposes of preliminary estimating SKM would typically use a rate of \$5,000/m² for a new bridge given the limited detail available at that stage of the design, this excludes any costs associated with service interruption or temporary works (e.g. a temporary bridge and diversion while a new bridge is constructed, demolition of the existing structure or creation of working platforms or laydown areas adjacent to the work site). To this the factors of complexity, location and the like (e.g. specialised construction equipment required due to terrain, remoteness of location and associated labour premiums (remote working / camp establishment etc)). SKM finds the bridge unit rates (\$/m²) are reasonable.

With regards the trackwork unit rates, as with the bridges item above, SKM appreciates that the typical costs of construction are a factor of a track sections' location, complexity and environment. For example, working in a live rail corridor will be far more expensive than new construction. When conducting its review, SKM considered (i) the incidence of switches and crossings (particularly whether there was a large quantity of equipment over a short distance); (ii) variables such as level crossings and structural works; and (iii) the quantities of cutting/embankment/culvert/bridge. SKM finds that the significantly lower trackwork unit rates of the NML relative to the Bogie River to Newlands or Abbot Point to Bogie River sections can be explained by considering the factors discussed above. SKM finds the trackwork unit rates (\$/km) are reasonable.

Unfortunately, the Schedule 3 report does not provide a similar unit rate analysis for the Synergy and Aspect3 costs. In RFI 009, SKM asked Aurizon Network Pty Ltd to provide indicative quantities of key materials, but this information has not been provided. Without this information SKM used professional engineering judgement to develop a bottom up, +/-30% order of magnitude cost estimate to compare against the claimed costs associated with this project. SKM finds that the Synergy and Aspect3 costs are reasonable.

SKM finds the approximate percentages of total project costs, as presented in Table 33 of the Schedule 3 report are reasonable. This table is recreated in **Table L-12** below.

Table L-12 : Summary of GAPE (post-GFC) project expenditure (from Table 33 in Schedule 3 report)

Element	Item	Costs	Approximate % of total project costs
Geotechnical	Geotechnical	\$2,816,688	0.3%
	Environmental and heritage	\$1,928,347	0.2%
Design	Design works (includes pre-GFC X75/X100 study)	\$117,772,154	11%
Survey	Survey	\$1,190,885	0%
Civil	Civil structural	\$295,260,259	27%
	Civil trackwork	\$289,021,070	26%
	Formation and ballast upgrading	\$39,091,941	4%
	Level crossing upgrade	\$3,108,972	0.3%
	Turnout replacement	\$11,068,168	1%
Signalling and telecommunication	Signalling	\$95,784,876	9%
	Telecommunication	\$4,266,941	0.4%
Overhead wiring	Overhead wiring	\$1,225,845	0.1%
Project management	Project management	\$41,372,305	4%
Property	Property acquisition	\$15,832,246	1%
Protection	Protection	\$8,999,242	1%
Insurances	Insurances	\$153,588,932	14%
Power	Electric phase design	\$7,641,661	1%



Element	Item	Costs	Approximate % of total project costs
Other	Commercial, legal, regulatory, etc	\$8,538,430	1%
		\$1,098,508,962	100%

SKM notes that the total in this table does not correspond to the total in Aurizon Network Pty Ltd.'s 2011-2012 claim.

Conclusion

GAPE (pre-GFC) projects

As discussed above, without further information from Aurizon Network Pty Ltd on quantities of early works, SKM has only been able to assess the reasonableness of costs of certain elements of the GAPE (pre-GFC) projects. SKM finds that the costs of these elements of the GAPE (pre-GFC) project are prudent.

GAPE (post-GFC) project

After assessing the reasonableness of costs of the GAPE (post-GFC) project as described above, SKM finds costs of the GAPE (post-GFC) project are prudent.

L.5 Summary

The outcomes of this prudency assessment are summarised in **Table L-13**.

Table L-13 : GAPE project (comprising both pre-GFC and post-GFC activities) – review summary

Item	Prudency
Project scope	
GAPE (post-GFC)	Prudent
GAPE Expansion (pre-GFC)	Prudent
GAPE long lead items (pre-GFC)	Prudent
GAPE X70-X100 early works (pre-GFC)	Prudent
Standard of the works	
GAPE (post-GFC)	Prudent
GAPE Expansion (pre-GFC)	Prudent
GAPE long lead items (pre-GFC)	Prudent
GAPE X70-X100 early works (pre-GFC)	Prudent
Project cost	
GAPE (post-GFC)	Prudent
GAPE Expansion (pre-GFC)	Prudent
GAPE long lead items (pre-GFC)	Prudent
GAPE X70-X100 early works (pre-GFC)	Prudent



L.6 Appendix L-A: SKM site visit photos and location map

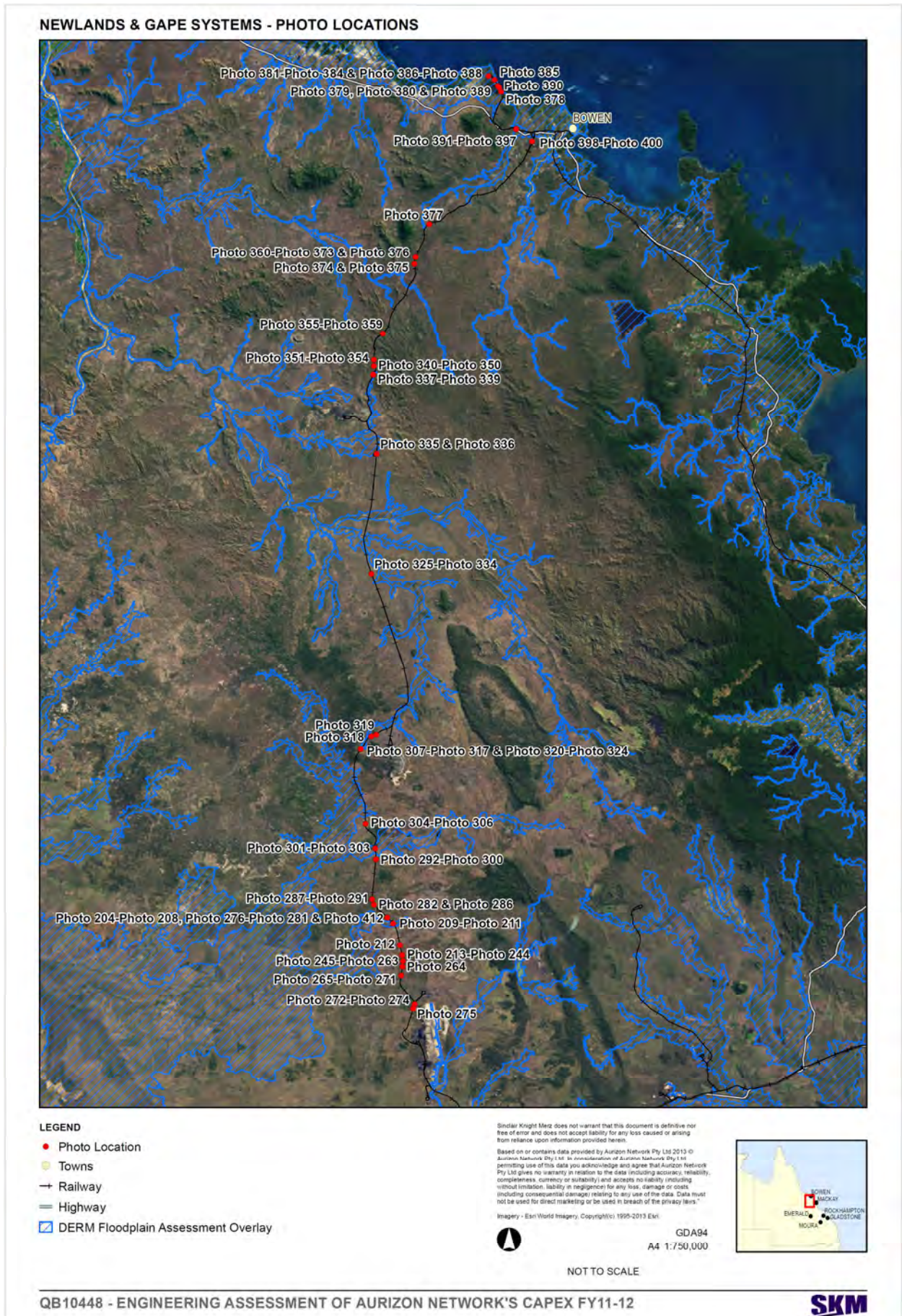




Figure L-A 1 Ch. 2.9



Figure L-A 5 Ch. 15



Figure L-A 2 Ch. 3



Figure L-A 6 Ch. 16



Figure L-A 3 Ch. 3.2



Figure L-A 7 Ch. 16.5



Figure L-A 4 Ch. 14



Figure L-A 8 Ch. 17



Figure L-A 9 Ch. 18



Figure L-A 13 Ch. 19.6



Figure L-A 10 Ch. 18



Figure L-A 14 Ch. 31.8



Figure L-A 11 Ch. 18



Figure L-A 15 Ch. 39.6



Figure L-A 12 Ch. 19.5



Figure L-A 16 Ch. 39.6



Figure L-A 17 Ch. 39.6



Figure L-A 18 Ch. 39.6



Figure L-A 19 Ch. 39.6



Figure L-A 20 Ch. 39.6



Figure L-A 21 Ch. 39.6



Figure L-A 22 Ch. 39.6



Figure L-A 23 Ch. 39.6



Figure L-A 24 Ch. 39.6



Figure L-A 25 Ch. 39.6



Figure L-A 26 Ch. 39.6



Figure L-A 30 Ch. 57.9



Figure L-A 27 Ch. 40.0



Figure L-A 28 Ch. 41.0



Figure L-A 29 Ch. 57.9



Figure L-A 31 Ch. 57.9



Figure L-A 32 Ch. 57.9



Figure L-A 33 Ch. 57.9



Figure L-A 34 Ch. 64



Figure L-A 35 Ch. 64.371



Figure L-A 36 Ch. 64.371



Figure L-A 37 Ch. 65.0



Figure L-A 38 Ch. 65.73



Figure L-A 41 Ch. 65.73



Figure L-A 39 Ch. 65.73



Figure L-A 42 Ch. 65.73



Figure L-A 40 Ch. 65.73



Figure L-A 43 Ch. 65.835



Figure L-A 44 Ch. 65.835



Figure L-A 46 Ch. 65.835



Figure L-A 45 Ch. 65.835



Figure L-A 47 Ch. 66.2



Figure L-A 48 Ch. 66.5



Figure L-A 49 Ch. 67.9



Figure L-A 50 Ch. 67.9



Figure L-A 51 Ch. 86.2



Figure L-A 52 Ch. 112.0



Figure L-A 53 Ch. 112.0



Figure L-A 54 Ch. 112.0



Figure L-A 56 Ch. 112.0



Figure L-A 55 Ch. 112.0



Figure L-A 57 Ch. 112.0



Figure L-A 58 Ch. 112.0



Figure L-A 60 Ch. 112.0



Figure L-A 59 Ch. 112.0



Figure L-A 61 Ch. 112.0



Figure L-A 62 Ch. 151.5



Figure L-A 66 Ch. 154.7



Figure L-A 63 Ch. 154.7



Figure L-A 64 Ch. 154.7



Figure L-A 65 Ch. 154.7



Figure L-A 67 Ch. 154.7



Figure L-A 68 Ch. 155.1



Figure L-A 69 Ch. 155.1



Figure L-A 70 Ch. 155.25



Figure L-A 71 Ch. 155.25



Figure L-A 72 Ch. 155.25



Figure L-A 73 Ch. 155.25



Figure L-A 74 Ch. 155.25



Figure L-A 76 Ch. 171.5



Figure L-A 77 Ch. 171.5



Figure L-A 75 Ch. 155.25



Figure L-A 78 Ch. 177.7



Figure L-A 79 Ch. 177.7



Figure L-A 80 Ch. 177.7



Figure L-A 83 Ch. 180.0



Figure L-A 81 Ch. 180.0



Figure L-A 84 Ch. 180.0



Figure L-A 85 Ch. 180.0



Figure L-A 82 Ch. 180.0



Figure L-A 86 Ch. 180.0



Figure L-A 87 Ch. 180.0



Figure L-A 90 Ch. 188.25



Figure L-A 88 Ch. 180.0



Figure L-A 91 Ch. 188.25



Figure L-A 89 Ch. 180.0



Figure L-A 92 Ch. 188.25



Figure L-A 93 Ch. 189.46



Figure L-A 94 Ch. 189.5



Figure L-A 95 Ch. 189.5



Figure L-A 96 Ch. 189.6



Figure L-A 97 Ch. 193.475



Figure L-A 98 Ch. 193.475



Figure L-A 99 Ch. 193.475



Figure L-A 100 Ch. 193.475

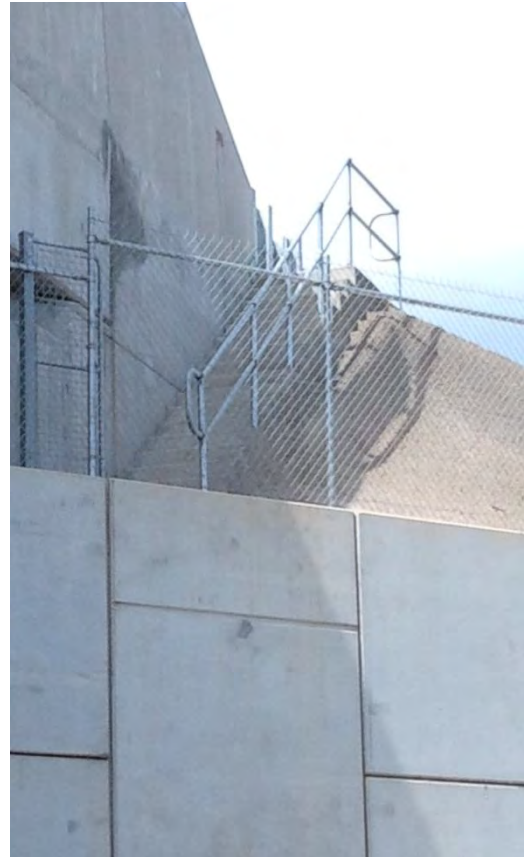


Figure L-A 101 Ch. 193.475



Figure L-A 102 Ch. 193.7



Figure L-A 103 Ch. 193.7



Figure L-A 106 Ch. 193.7



Figure L-A 107 Ch. 195.25



Figure L-A 104 Ch. 193.7



Figure L-A 105 Ch. 193.7



Figure L-A 108 Ch. 195.25



Figure L-A 109 Ch. 195.25



Figure L-A 110 Ch. 200.05



Figure L-A 113 Ch. 201.0



Figure L-A 111 Ch. 201.0



Figure L-A 112 Ch. 201.0



Figure L-A 114 Ch. 201.0



Figure L-A 115 Ch. 201.0



Figure L-A 117 Ch. 201.0



Figure L-A 118 Ch. 201.2



Figure L-A 116 Ch. 201.0



Figure L-A 119 Ch. 201.5



Figure 120 Ch. 201.8



Figure 123 Ch. 201.8



Figure 121 Ch. 201.8



Figure 122 Ch. 201.8



Figure 124 Ch. 201.8



Figure 125 Ch. 201.8



Figure 128 Ch. 201.9



Figure 126 Ch. 201.9



Figure 129 Ch. 201.9



Figure 127 Ch. 201.9



Figure 130 Ch. 201.9



Figure 131 Ch. 201.9



Figure 133 Ch. 202.15



Figure 134 Ch. 202.15



Figure 132 Ch. 201.95



Figure 135 Ch. 202.2



Figure 136 Ch. 202.2



Figure 137 Ch. 202.2



Figure 139 Ch. 202.5



Figure 140 Ch. 202.5



Figure 138 Ch. 202.5



Figure 141 Ch. 203.4



Figure 142 Ch. 203.4



Figure 143 Ch. 203.4



Figure 144 Ch. 203.4



Figure 145 Ch. 203.4



Figure 146 Ch. 203.4



Figure 147 Ch. 203.4

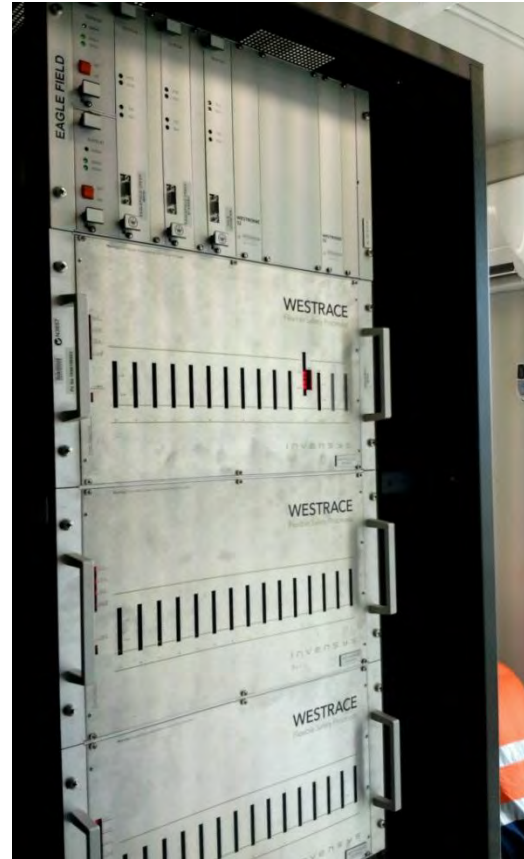


Figure 149 Ch. 203.4



Figure 148 Ch. 203.4



Figure 150 Ch. 203.4



Figure 151 Ch. 203.4



Figure 153 Ch. 203.4



Figure 154 Ch. 203.4



Figure 152 Ch. 203.4



Figure 155 Ch. 203.4



Figure 156 Ch. 203.4



Figure 159 Ch. 206.5



Figure 160 Ch. 206.5



Figure 157 Ch. 203.4



Figure 161 Ch. 206.5



Figure 158 Ch. 204.6



Figure 162 Ch. 206.5



Figure 163 Ch. 206.5



Figure 165 Ch. 206.5



Figure 164 Ch. 206.5



Figure 166 Ch. 211.9



Figure 167 Ch. 213.5



Figure 168 Ch. 213.8



Figure 172 Ch. 1160.5



Figure 169 Ch. 213.8



Figure 173 Ch. 1160.5



Figure 170 Ch. 1159



Figure 174 Ch. 1160.5



Figure 171 Ch. 1160.5



Figure 175 Ch. 1160.5




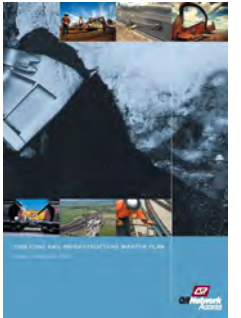
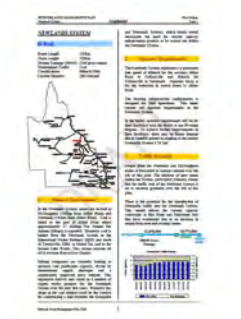
Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment






L.7 Appendix L-B: GAPE project document register




OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
Schedule 3 - GAPE Claim Submission							
0	20121018 GAP50 Report		GAP50 Goonyella to Abbot Point Expansion Project - Analysis of Prudency of Scope, Standard and Cost	Evans & Peck; Adobe pdf	Revision B, 18 October 2012		Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
1	1. 2006 CRIMP		2006 Coal Rail Infrastructure Master Plan	QR Network Access; Adobe pdf	September 2006	Pg 26, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
2	2. 2006 NAMP		Network Asset Management Plan, Newlands System (First Edition), Issue 1	QR; Adobe pdf	2006	Pg 32, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost

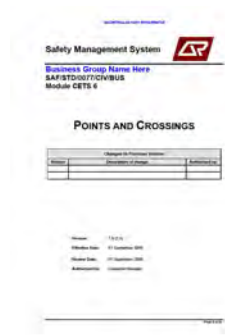


OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
3	3. 2007 CRIMP Addendum		Coal Rail Infrastructure Master Plan, Second Edition – Industry Consultation Draft	QR Network Access; Adobe pdf	December 2007	Pg 26, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
4	4. 2008 CRIMP		Coal Rail Infrastructure Master Plan, Second Edition	QR Network; Adobe pdf	October 2008	Pg 27, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
5	5. 2009 CRIMP		2009 Coal Rail Infrastructure Master Plan	QR Network; Adobe pdf	October 2009	Pg 28, 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope




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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
6	6. 2008 09 Audit Report 29		Audit Report No.29 2008-09 - Delivery of Projects on the AusLink National Network	Australian National Audit Office; Adobe pdf	23 April 2009	Pg 67, 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
7	7. Aspect3 Alliance Alliance Financial Auditor Report March – May 2012		QR National Limited – Aspect3 Alliance March 2012 to May 2012	KPMG; Adobe pdf	September 2012	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Cost
8	8. Investment Framework Manual		QR'S Investment Framework Manual – Specification FIN/SPC/4601/INV	QR; Adobe pdf	Version 3.2, 17 November 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Standard ■ Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
9	9. CETS - Points & Crossings		Safety Management System: Module CETS 6 - Points and Crossings	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
10	10. CETS – Rail		Safety Management System: Module CETS 2 - Rail	QR; Adobe pdf	Version 1.0 (3.1), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
11	11. CETS - Rail for Special Applications		Safety Management System: Module CETS 5 - Rail for Special Applications	QR; Adobe pdf	Version 1.0 (3.1), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard



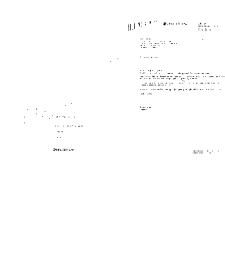
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
12	12. CETS - Sleepers & Fasteners		Safety Management System: Module CETS 3 - Sleepers and Fasteners	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
13	13. CETS - Track Alignment		Safety Management System: Module CETS 8 - Track Alignment	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
14	14. CETS - Track Geometry		Safety Management System: Module CETS 9 - Track Geometry	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard

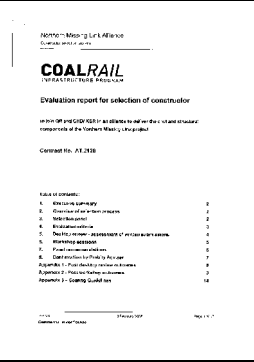


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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
15	15. CETS - Track Monitoring		Safety Management System: Module CETS 1 - Track Monitoring	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Not relevant
16	16. CETS - Track Stability		Safety Management System: Module CETS 10 - Track Stability	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
17	17. CETS - Track Structure		Safety Management System: Module CETS 7 - Track Structure	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard

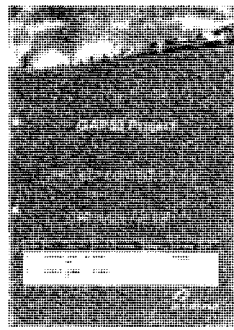

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
18	18. CETS – Ballast		Safety Management System: Module CETS 4 - Ballast	QR; Adobe pdf	Version 1.0 (2.0), 01 September 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
19	19. Coal Connect Alliance		QR National Limited – Coal Connect Alliance Alliance Financial Auditor Report February to April 2012 progress claims	KPMG; Adobe pdf	18 September 2012	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Cost
20	20. CSA GAP50 Completion Procedures		Coal Stream Alliance – GAP50 Completion Procedures	Ernst & Young; Adobe pdf	3 July 2012	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Standard ■ Cost




OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
21	21. Constructor Selection Report		COALRAIL Infrastructure Program – Evaluation report for selection of constructor	COALRAIL Infrastructure Program; Adobe pdf	19 February 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Cost
22	22. Designer Selection Report		COALRAIL Infrastructure Program – Evaluation report for selection of designer Northern	COALRAIL Infrastructure Program; Adobe pdf	30 January 2008	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Cost
23	23. TMR Project Management Guide		Transport Infrastructure (non ICT) – Project Cost Estimating Manual	Queensland Department of Transport and Main Roads; Adobe pdf	Fifth Edition, March 2012	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost



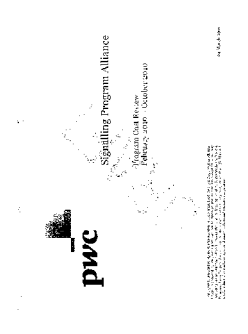
OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
24	24. GAP50-QN-PLA-001 GAP50 Project-Project Controls Plan		GAP50 Project – Project Controls Plan GAP50-QN-PLN-0001	QR National Network Services; Adobe pdf	Revision 1, 24 July 2011	Pg 74, 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
25	No document provided to SKM						
26	26. 20100907 Aspect 3 TOC Estimate Review Report FINAL		ASPECT 3 ALLIANCE – Signalling – GAP 50 Abbot Point to Bogie River Independent Estimate – Target Outturn Cost Estimate Review Report	Evans & Peck; Adobe pdf	Draft, 7 September 2010	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost




OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
27	27. 20091105 Coal Rail Infrastructure Program_Goonyella to Bogie River_FINAL		Goonyella to Abbot Point – GAP: Coal Rail Infrastructure Program – Goonyella to Bogie River Independent Estimator Report on the CoalConnect Alliance Target Out-turn Cost	Evans & Peck; Adobe pdf	November 2009	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
28	28. Independent Estimators Report on the CSA Target Out-turn Cost		Goonyella to Abbot Point – GAP: Coal Rail Infrastructure Program – Bogie River to Abbot Point Independent Estimator Report on the CoalConnect Alliance Target Out-turn Cost	Evans & Peck; Adobe pdf	November 2009	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
29	29. 20100903 Synergy TOC Estimate Review Report FINAL		SYNERGY ALLIANCE – Signalling – GAP 50 Bogie River to Riverside Junction Independent Estimate – Target Outturn Cost Estimate Review Report	Evans & Peck; Adobe pdf	Final, 3 September 2010	Pg 65, 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
30	30. Contracting Arrangements Rail, Ballast & Sleepers (254755_1)		2007/08 CAPEX – Overview of Tendering Process for Track Construction elements QCA information request April 2009	QR Network; Adobe pdf	No date	Pg 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
31	31. Coal Plan 2030		Coal Plan 2030 – Laying the foundations of a future	Office of Coordinator General; Adobe pdf	November 2010	Pg 28, 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope
32	32. Signalling Program Alliance Program Cost Review Feb-Oct 2010		Signalling Program Alliance Program – Program Cost Review February 2010 – October 2010	Price Waterhouse Coopers; Adobe pdf	24 March 2011	Pg 77	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost

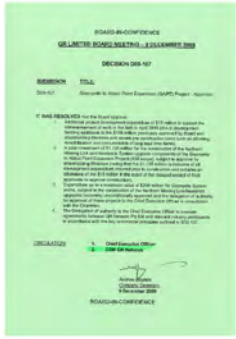

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
33	33. User Group Support Letter to QCA			Micheal Gray (Macarthur Coal); Adobe pdf	10 July 2007	Pg 27, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
34	34. Best Practice Alliancing Guidelines		Project Alliancing Practitioners' Guide	Department of Treasury and Finance, Victoria; Adobe pdf	April 2006	Pg 4, 14, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope
35	35. Australia's Export Infrastructure		Australia's Export Infrastructure – Report to the Prime Minister by the Exports and Infrastructure Taskforce	Exports and Infrastructure Taskforce; Adobe pdf	May 2005	Pg 30, 77	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
36	A.01541 SWISR			No author; Excel	No date		Phase:


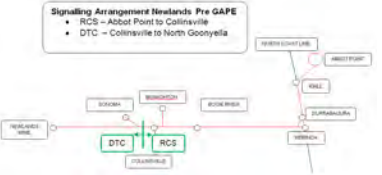
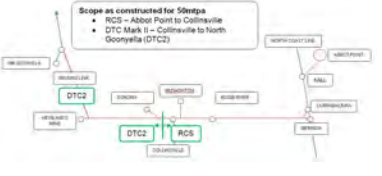
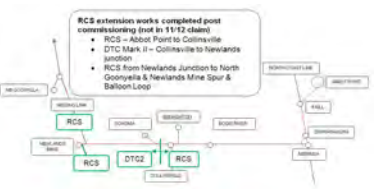
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
							<ul style="list-style-type: none"> ■ Pre-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
37	A.02523 SWISR			No author; Excel	No date		<p>Phase:</p> <ul style="list-style-type: none"> ■ Pre-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
38	A.02559 SWISR			No author; Excel	No date		<p>Phase:</p> <ul style="list-style-type: none"> ■ Pre-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
39	A.02648 ZWISR			No author; Excel	No date		<p>Phase:</p> <ul style="list-style-type: none"> ■ Pre-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Reference in Evans & Peck Prudency Report	Category
40	A.03473 ZWISR			No author; Excel	No date		Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
41	Board Approval D09-107 Signed 9-12-2009		QR Limited Board Meeting – 9 December 2009 Decision D09-107	QR Limited; Adobe pdf	9 December 2009		Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost
42	GAPE Feas IAR Password is NSIC2IAT		Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request Goonyella to Abbot Point Expansion Project (GAPE)	QR Network; Adobe pdf	19 November 2009		Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost <ul style="list-style-type: none"> ■ Document password: NSIC2IAT

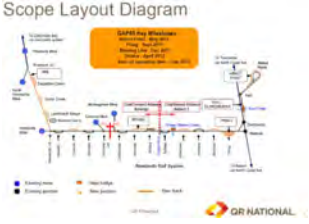
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Meeting Minutes						
1	Meeting Minutes - Feb 2013		Meeting minutes - GAPE Signalling QCA/SKM Review	Aurizon Network; Word	22 February 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
4	Pic 1 - Newlands pre GAPE		Signalling Arrangement Newlands Pre GAPE	Word	No date	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope
5	Pic 2 - Scope at 50mtpa		Scope as constructed for 50mtpa	Word	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope
6	Pic 3 - Extension of RCS post commissioning		RCS extension works completed post commissioning (not in 11/12 claim)	Word	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status



QCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
						<ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
2	Meeting Minutes GAPE Commercial and Background - Feb 2013 2		Meeting minutes - GAPE Project QCA/SKM Review	Aurizon Network; Word	22 February 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
GAPE documents collected on 22nd February						
00 - GAPE Video						
1	GAP Binbee-Collinsville Feb12		<ul style="list-style-type: none"> ■ 14 - Binbee to Briaba.MPG ■ 15 - Briaba.MPG ■ 16 - Briaba to Almoola 1.MPG ■ 16 - Briaba to Almoola 2.MPG ■ 17 - Almoola to Collinsville.MPG ■ 18 - Collinsville.MPG 			Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
01 - GAPE scope schematic						
1	01 - GAP scope diagram		Scope Layout Diagram	QR National; Adobe pdf	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope
02 - GAPE Peer Review						

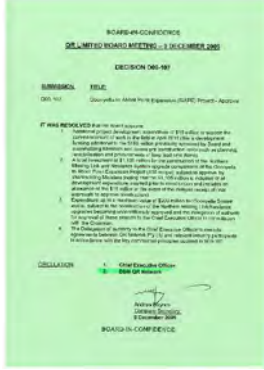
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
1	01 - GAP Record of Peer Review for Scope Configuration Design Signed 25-5-2009		Record of Peer Review GAP Pre-Feasibility Study	QR Network; Adobe pdf	29 May 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
2	02 - GAP Record of Peer Review for Risk Management Signed 24-7-2009		Record of Peer Review GAP Pre-Feasibility Study	QR Network; Adobe pdf	24 July 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
03 - GAPE Project Approvals						



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
1	01 - GAP Memo M Carter Approval Stage CCCS Phase 4 Signed 24-11-2009		Memorandum: Goonyella to Abbot Point Expansion Project 'GAP50' Phase 4 "Approvals Stage" Expenditure Limits for Civil Alliances'	QR Network; Adobe pdf	24 November 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Cost
2	02 - GAP Investment Approval Request - IAR - Final Signed 25-11-2009		Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request Goonyella to Abbot Point Expansion Project (GAPE)	QR Network; Adobe pdf	19 November 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	03 - Board Approval D09-107 Signed 9-12-2009	 <p>The image shows the title page of a document titled 'BOARD OF CHIEF EXECUTIVE OFFICERS LIMITED BOARD MEETING - 9 DECEMBER 2009'. It includes a 'SUBMISSION TITLE' section with 'D09-107' and 'Capital Expenditure Submission GAPE Project - Approval'. There is a section for 'IT WILL BE REVIEWED' with several bullet points. At the bottom, there is a signature block for 'Chief Executive Officer' dated '9 December 2009'.</p>	QR Limited Board Meeting – 9 December 2009 Decision D09-107	QR Network; Adobe pdf	9 December 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
04 - Coal Connect						
1	01 - CoalConnect Handover of Deliverables Report X50 14-5-2009 Signed		CoalConnect – Goonyella to Buckley X50 Civil Works Project CC-RPT-0101	CoalConnect; Adobe pdf	Revision A, 14 May 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2	02 - CC-WDD-0041-01		GAP50 Works Definition Documents CC-WDD-0041-01	CoalConnect; Adobe pdf	Revision 1, 4 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost


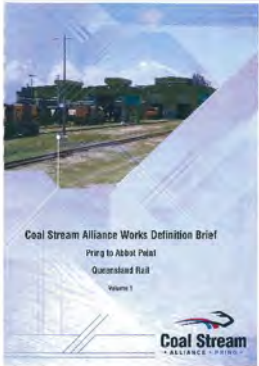

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	03 - ALT Meeting CC No 39 161209		Minutes of Meeting ALT Meeting #39 – GAP50 Project	CoalConnect; Adobe pdf	16 December 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Cost?
4	04 - CC-RPT-0145 - Project Proposal		CC-RPT-145 Project Proposal	CoalConnect; Adobe pdf	22 December 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Cost
5	05 - CCA GAP50 Election Notice 090410 signed		Goonyella to Abbot Point (GAP50) Expansion Project Election Notice – Phase 5 Execution Stage	QR Network; Adobe pdf	9 April 2010	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope


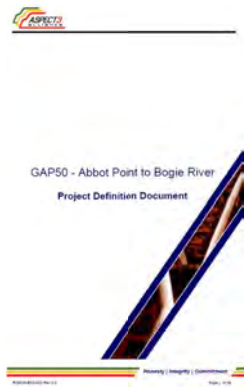
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6	06 - CC-SPC-0010-05 - Project Specification - COMBINED		Project Specification Report Number: CC-SPC-0010-Rev05	CoalConnect; Adobe pdf	Revision 5, 16 June 2010	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
05 - Coal Stream						
1	01 - GAP50-TEN-0001 Project Proposal Submission		Letter Re: SA GAP50 Project Proposal Submission	Coal Stream; Adobe pdf	11 November 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Cost


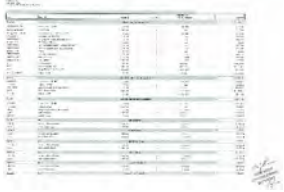
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	02 - CSA GAP50 Election Notice 090410 signed		Letter Goonyella to Abbot Point (GAP50) Expansion Project Election Notice – Phase 5 Execution Stage	QR Network; Adobe pdf	9 April 2010	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Cost
3	03 - Coal Stream Alliance Works Definition Brief		Coal Stream Alliance Definition Brief Pring to Abbot Point Volume 1	Coal Stream; Adobe pdf	Revision 2, 26 June 2008	Phase: <ul style="list-style-type: none"> Pre-GFC Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
4	04 - Summary June 2011					Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
06 - Aspect 3						
1	01 - Scheme Plans		Abbot Point GAP 50 Combined Sig & Construction Plan	Aspect 3 Alliance; Adobe pdf	20 August 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2	02 - R39538-B03-003 GAP50 PDD Rev2.0		GAP50 – Abbot Point to Bogie River Project Definition Document	Aspect 3 Alliance; Adobe pdf	Revision 2, 27 August 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	03 - 100906 TOC Summary Sheet ver 1.0			Aspect 3 Alliance; Adobe pdf		Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
4	04 - GAP50_SAOS Aspect3 Estimate v1.0 Approval Submission		Resource Utilization Unique Invensys Rail	Aspect 3 Alliance; Adobe pdf	??	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



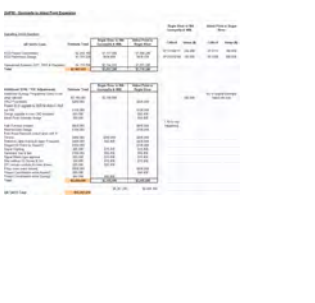
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
07 - Synergy						
0	00 - Signalling Scope of Works BogieRiver to Nth Goonyella		GAP50 Project Signalling Scope of Works Bogie River to Nth Goonyella	QR Network; Adobe pdf	Revision 1:B, 16 February 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
1	01 - 0_SYA-GAP-10-PD-02013 Project Definition Document 2v0 12.08.10		GAP 50 Bogie River to Riverside Junction Project Definition Document	Synergy Alliance; Adobe pdf	Revision 2, 6 September 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



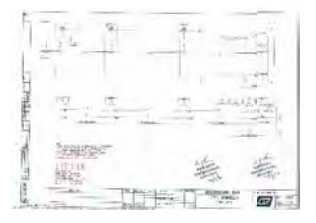
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	02 - 1_SYA-GAP-10-GL-02387-Clarification of General Signalling Specifications 1.0		GAP-50 Bogie River to Riverside Junction Clarification of General Signalling Specifications	Synergy Alliance; Adobe pdf	Revision 1, 31 August 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
3	03 - 5_SYA-GAP-05-SG-02025-Testing and Commissioning Strategy 0.2		GAP-50 Bogie River to Riverside Junction Testing and Commissioning Strategy	Synergy Alliance; Adobe pdf	Revision 0.2, 5 October 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost

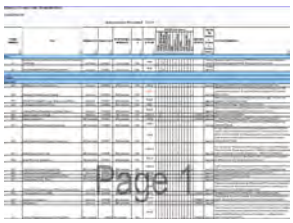

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	04 - 14_COM-PLA-003-Procurement Management Plan		Synergy Alliance Procurement Management Plan	Synergy Alliance; Adobe pdf	Revision 1, 20 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
5	05 - 19_20100903 Synergy TOC Estimate Review Report		Synergy Alliance – Signalling – GAP 50 Bogie River to Riverside Junction Independent Estimate – Target Outturn Cost Estimate Review Report	Evans & Peck	Draft, 3 September 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
6	06 - GAP50 Synergy Saos Breakdown		GAP50 - Goonyella to Abbot Point Expansion Signalling SAOS Numbers	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost

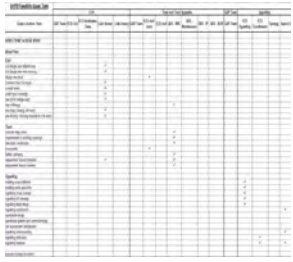


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
7	07 - Optical fibre project proposal		Letter Re: GAP 50: Optical Fibre Project Proposal	Synergy Alliance; Adobe pdf	15 October 2010	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
8	08 - Signed 056 MEMO SYN TCA 2		Memo Fibre Optic cable installation between Bogie River & Goonyella	QR National Network Services; Adobe pdf	9 February 2011	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
9	09 – Drawings		North Goonyella Scheme Plan	Synergy Alliance; Adobe pdf	1A, 13 July 2010	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost



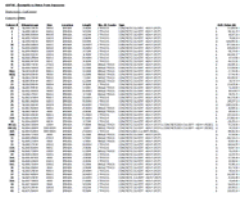
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
08 - GAPE Change Detail						
1	01 - Change Register 110217.2		Goonyella to Abbot Point Expansion Project Change Register	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
09 - GAPE Programme						
1	01 - GAP50 Planned V Baseline Detail		GAP50 Project Master Milestone Schedule	Major Prjects – Engineering and Project Delivery; Adobe pdf	Revision 1, 25 January 2013	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Cost

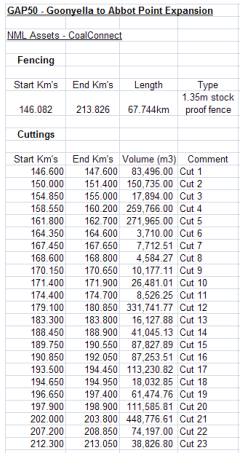
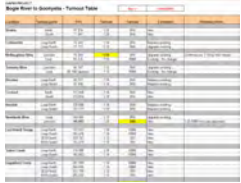
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
10 - Track						
1	01 - Track Feasibility Overall Scope (final).xls		GAP50 Feasibility Scope Table	Excel	No date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
11 - GAPE civil quantities						
1	01 - GAP Materials Summary		No title	Excel	No date	Phase: <ul style="list-style-type: none"> Pre-GFC Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
2	02 - QR Assets 310112 - external version (COAL STREAM)		QR Assets - Volumes & Costs - as at 31/1/12	Excel	No date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost



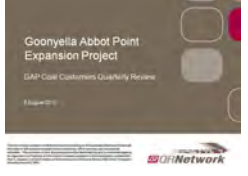
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	03 - CoalConnect Asset Report v1.0_Birralee		GAP50 - Goonyella to Abbot Point Expansion CoalConnect Asset requirements	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
4	04 - CoalConnect Asset Report v1.0_Cockool		GAP50 - Goonyella to Abbot Point Expansion CoalConnect Asset requirements	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
5	05 - CoalConnect assets - Briaba 270712		GAP50 - Goonyella to Abbot Point Expansion Briaba Assets - CoalConnect	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost

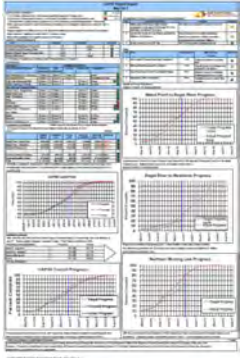
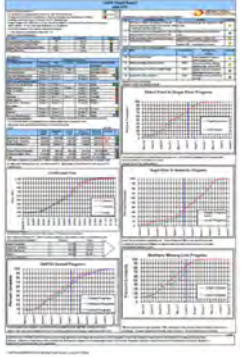
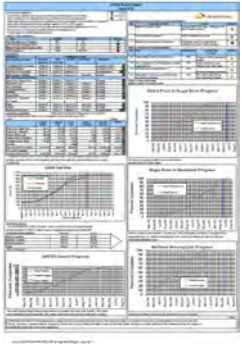
OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category																																																																																																																
6	06 - NML asset register_CCA confirmed	 <p>GAP50 - Goonyella to Abbot Point Expansion NML Assets - CoalConnect</p> <table border="1"> <thead> <tr> <th colspan="4">Fencing</th> </tr> <tr> <th>Start Km's</th> <th>End Km's</th> <th>Length</th> <th>Type</th> </tr> </thead> <tbody> <tr> <td>146.082</td> <td>213.826</td> <td>67.744km</td> <td>1.35m stock proof fence</td> </tr> </tbody> </table> <table border="1"> <thead> <tr> <th colspan="4">Cuttings</th> </tr> <tr> <th>Start Km's</th> <th>End Km's</th> <th>Volume (m3)</th> <th>Comment</th> </tr> </thead> <tbody> <tr><td>146.600</td><td>147.600</td><td>83.496.00</td><td>Cut 1</td></tr> <tr><td>150.000</td><td>151.400</td><td>150.735.00</td><td>Cut 2</td></tr> <tr><td>154.850</td><td>155.000</td><td>17.894.00</td><td>Cut 3</td></tr> <tr><td>158.550</td><td>160.200</td><td>259.765.00</td><td>Cut 4</td></tr> <tr><td>161.800</td><td>162.700</td><td>271.965.00</td><td>Cut 5</td></tr> <tr><td>164.350</td><td>164.600</td><td>3.710.00</td><td>Cut 6</td></tr> <tr><td>167.450</td><td>167.650</td><td>7.712.51</td><td>Cut 7</td></tr> <tr><td>168.500</td><td>168.800</td><td>4.594.27</td><td>Cut 8</td></tr> <tr><td>170.150</td><td>170.650</td><td>10.177.11</td><td>Cut 9</td></tr> <tr><td>171.400</td><td>171.900</td><td>26.481.01</td><td>Cut 10</td></tr> <tr><td>174.400</td><td>174.700</td><td>8.526.25</td><td>Cut 11</td></tr> <tr><td>179.100</td><td>180.850</td><td>331.741.77</td><td>Cut 12</td></tr> <tr><td>183.300</td><td>183.800</td><td>16.127.88</td><td>Cut 13</td></tr> <tr><td>188.450</td><td>188.900</td><td>41.045.13</td><td>Cut 14</td></tr> <tr><td>189.750</td><td>190.550</td><td>87.827.89</td><td>Cut 15</td></tr> <tr><td>190.850</td><td>192.050</td><td>87.253.51</td><td>Cut 16</td></tr> <tr><td>193.500</td><td>194.450</td><td>113.230.82</td><td>Cut 17</td></tr> <tr><td>194.650</td><td>194.950</td><td>18.032.85</td><td>Cut 18</td></tr> <tr><td>196.650</td><td>197.400</td><td>61,474.76</td><td>Cut 19</td></tr> <tr><td>197.900</td><td>198.900</td><td>111,585.81</td><td>Cut 20</td></tr> <tr><td>202.000</td><td>203.800</td><td>448,776.61</td><td>Cut 21</td></tr> <tr><td>207.200</td><td>208.650</td><td>74,191.00</td><td>Cut 22</td></tr> <tr><td>212.300</td><td>213.050</td><td>38,826.80</td><td>Cut 23</td></tr> </tbody> </table>	Fencing				Start Km's	End Km's	Length	Type	146.082	213.826	67.744km	1.35m stock proof fence	Cuttings				Start Km's	End Km's	Volume (m3)	Comment	146.600	147.600	83.496.00	Cut 1	150.000	151.400	150.735.00	Cut 2	154.850	155.000	17.894.00	Cut 3	158.550	160.200	259.765.00	Cut 4	161.800	162.700	271.965.00	Cut 5	164.350	164.600	3.710.00	Cut 6	167.450	167.650	7.712.51	Cut 7	168.500	168.800	4.594.27	Cut 8	170.150	170.650	10.177.11	Cut 9	171.400	171.900	26.481.01	Cut 10	174.400	174.700	8.526.25	Cut 11	179.100	180.850	331.741.77	Cut 12	183.300	183.800	16.127.88	Cut 13	188.450	188.900	41.045.13	Cut 14	189.750	190.550	87.827.89	Cut 15	190.850	192.050	87.253.51	Cut 16	193.500	194.450	113.230.82	Cut 17	194.650	194.950	18.032.85	Cut 18	196.650	197.400	61,474.76	Cut 19	197.900	198.900	111,585.81	Cut 20	202.000	203.800	448,776.61	Cut 21	207.200	208.650	74,191.00	Cut 22	212.300	213.050	38,826.80	Cut 23	GAP50 - Goonyella to Abbot Point Expansion NML Assets - CoalConnect	Excel	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
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7	07 - BR2G-Turnout Location Table-v7 15-6-10		GAP50 PROJECT Bogie River to Goonyella - Turnout Table	Excel	Revision 7, 15 June 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost 																																																																																																																

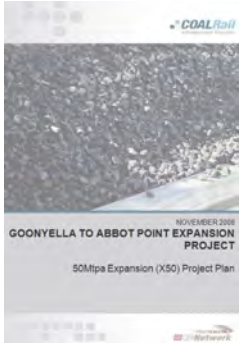


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12 - GAPE Industry Comms						
1	01 - GAP Customer Briefing 010610		GAP Project – Customer Briefing	QR Network; Word	28 May 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2	02 - GAP Monthly Summary Report - June 2010		GAP50 Project Report June 2010	QR Network; Adobe pdf	June 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
3	03 - Coal Customer Qt Brief_ Aug 6 2010 JA_290Jul		Goonyella Abbot Point Expansion Project GAP Coal Customers Quarterly Review	QR Network; PowerPoint ppt	6 August 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



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4	04 - GAP50-REP-0019 GAP Monthly Flash Report - May 2011		GAP50 Project Report May 2011	QR Network; Adobe pdf	May 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
5	05 - GAP50-QN-REP-0003 GAP Monthly Flash Report - June 2011 – Final		GAP50 Project Report June 2011	QR Network; Adobe pdf	June 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
6	06 - GAP50-QN-REP-0027 GAP Monthly Flash Report - June 2012		GAP50 Project Report June 2012	QR Network; Adobe pdf	June 2012	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost




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13 - GAPE QR Project Plans						
1	01 - 100119 GAP Project Plan Overall - Draft		Goonyella to Abbot Point Expansion Project 50Mtpa Expansion (X50) Project Plan	QR Network; Word	November 2008	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2	02 - GAP Project Plan - BSJ Draft 14 May		Goonyella to Abbot Point Expansion Project GAP50 Project Plan	QR Network; Word	May 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
3	03 - Project Management Plan GAP_LINK - DRAFT 230910_v2 (2)		Project Management Plan	QR Network; Word	No date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	04 - Project Management Plan GAP SP 100119 (Elle VS)		Project Management Plan GAP 50 - Abbot Point to Bogie River	QR Network; Word	Revision 0.0, 11 November 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
14 - GAPE Signalling Data						
1	01 - GAP Feasibility Scope Endorsement 17-11-2009 Signed.pdf		Goonyella to Abbot Point Expansion Feasibility Study Scope Endorsement	QR Network; Adobe pdf	Revision 1, 17 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2	02 - Optic Fibre cable installed by signalling Alliances					

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2.1	01 - DRAFT Signalling Estimate Scope and Methodology (1of2)		DRAFT Signalling Estimate Scope and Methodology Goonyella to Abbot Point Expansion Project (GAP50)	Adobe pdf	16 December 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2.2	02 - Independent estimate Evans and Peck		Synergy Alliance – Signaling – GAP 50 Fibre Optic Cable Independent Estimate – Target Outturn Cost Estimate Review Report	Evans & Peck; Adobe pdf	13 December 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2.3	03 - Optical fibre project proposal		Letter Re: GAP 50: Optical Fibre Project Proposal	Synergy Alliance; Adobe pdf	15 October 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



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2.4	04 - Target Cost Adjustment letter		Letter Synergy Alliance Target Cost Adjustment #2	QR National Network Services; Adobe pdf	4 February 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
2.5	05 - Signed 056 MEMO SYN TCA 2		Memo Fibre Optic cable installation between Bogie River & Goonyella	QR National Network Services; Adobe pdf	9 February 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
15 - GAPE Handover						
1	01 - NML GAP50-QN-SFC-001 rev1.0 pt1		GAP50 Project Safety Certification for: Northern Missing Link GAP50-QN-SFC-0001	QR National; Adobe pdf	Revision 1, 8 December 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost


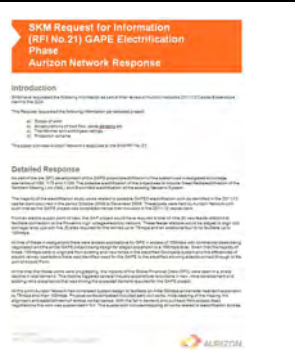
QCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	02 - NML GAP50-QN- SFC-001 rev1.0 pt2		Safety Certificate 2 – Signalling and Operational Systems	QR National; Adobe pdf	Revision 1, 8 December 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
3	03 - AP-BR 00_GAP50 Safety Certificate SFC-002 ABP draft3		GAP50 Project Safety Certificate for: Abbot Point to Bogie River GAP50-QN-SFC-0002	QR National; Word	Revision 1, 2 February 2012	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
4	04 - BR-NL GAP50 Safety Certificate SFC-003 NL draft4		GAP50 Project Safety Certificate for: Bogie River to Newlands GAP50-QN-SFC-0003	QR National; Word	Revision 1, 16 December 2011	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost


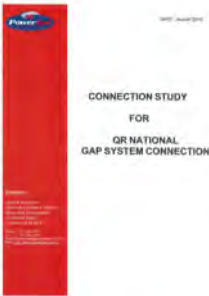

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5	05 - Culvert Propping BR-N 19 Dec_30 Jun 004		GAP50 Project Safety Certificate for: Culvert Propping Bogie River to Newlands (19-Dec-11 to 30-June-12) GAP50-QN-SFC-0004	QR National; Adobe pdf	Revision 1, 30 June 2012	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
6	06 - Culvert Propping BR-N 19 Dec_30 Jun 005		GAP50 Project Safety Certificate for: Culvert Propping Abbot Point to Bogie River (19-Dec-11 to 30-June-12) GAP50-QN-SFC-0005	QR National; Adobe pdf	Revision 1, 30 June 2012	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to RFI 001 – All GAPE projects						
1	Goonyella to Abbott Point Expansion		Goonyella to Abbott Point Expansion (GAPE)	Aurizon Network; Word	No date	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
Response to RFI 021 – GAPE Electrification						
1	RFI No.21 250114		SKM Request for Information (RFI No.21) GAPE Electrification Phase - Aurizon Network Response	Aurizon Network; Word	January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	A02648 Cash flow report			Aurizon Network; Excel	No date	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Status Cost
3	PLQ GAPE Connection Study		Connection Study for QR National GAP System Connection	Powerlink Queensland; Adobe pdf	August 2010	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Status Scope Standard Cost
4	Siemens System Power Study Report		Queensland Rail GAP Electrification Project – Interim System Power Study Summary	Siemens; Adobe pdf	13 March 2009	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard



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5	Siemens Voltage Drop Report		Queensland Railway GAP – Interim System Power Study Voltage Drop and FS r.m.s. Current	Siemens; Adobe pdf	6 March 2009	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard
Response to RFI 034						
1	RFI No.34 Aurizon Response		SKM Request for Information (RFI No.034) S&T Call for Tender Documentation & Variations - GAPE	Aurizon; Word	March 2013	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Status ■ Scope ■ Standard ■ Cost
Aspect 3 - GAP50 Referral						
1	Aspect3 Concept Plans		Goonyella to Abbot Point Expansion Project – GAP 50 Concept Line Diagram	QR Limited; Adobe pdf	November 2009	<ul style="list-style-type: none"> ■






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2	GAP50 - Scope of Works - Abbot Point to Bogie River		GAP50 PROJECT SIGNALLING SCOPE OF WORKS ABBOT POINT TO BOGIE RIVER	QR Network; Adobe pdf	February 2010	■
3	Gap50 Referral Letter		Letter Referral of Signalling Alliance Project GAP 50 – Abbot Point to Bogey River	QR Network; Adobe pdf	January 2010	■





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Aspect 3 - TCE Soft Copy						
1.0 Covering Letter						
1	Copy of ALT Endorsement Signatures R39538-F03 Rev 1.0		ALT Endorsement of GAP50 Abbot Point to Bogie River TCE Proposal	Aspect3 Alliance; Adobe pdf	Rev 1.0; September 2010	■
2	R395381		Letter RE: GAP50 Abbot Point to Bogie River Project	Aspect3 Alliance; Adobe pdf	November 2011	■



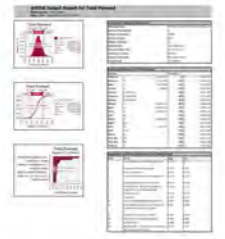
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2.0 Project Definition Document						
1	Copy of R39538-B03-003 GAP50 PDD Rev2.0		GAP50 - Abbot Point to Bogie River Project Definition Document	Aspect3 Alliance; Adobe pdf	Rev 2.0; August 2010	■
3.0 Scheme Plans						
1	GAP50 Scheme Plan - Abbot Point 20100823		Abbot Point GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
2	GAP50 Scheme Plan - Aberdeen 20100823		Aberdeen GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
3	GAP50 Scheme Plan - Armuna 20100823		Armuna GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
4	GAP50 Scheme Plan - Binbee 20100823		Binbee GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
5	GAP50 Scheme Plan - Buckley 20100823		Buckley GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
6	GAP50 Scheme Plan - Durraburra 20100823		Durraburra GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■




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7	GAP50 Scheme Plan - Kaili 20100823		Kaili GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
8	GAP50 Scheme Plan - Pring 20100823		Pring GAP 50 Combined Sig & Construction Plan	Aspect3 Alliance; Adobe pdf	Version 1A; August 2010	■
4.0 RAM						
1	R39538-B03-RAM rev 2.0 GAP50 RAM		R39538-Responsibility of Work Assignment GAP50 Abbot Point to Bogie River	Aspect3 Alliance; Adobe pdf	Revision 2; August 2010	■
5.0 VFM						
1	Microsoft Word - Copy of R39538-E03-003 Rev 1.0 Value for Money Report		GAP50 Abbot Point to Bogie River Value for Money Report	Aspect3 Alliance; Adobe pdf	Revision 1.0; no date	■



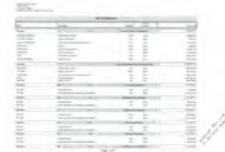

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2	R39538-E03-001 GAP 50 VE Register Register Rev 0.6		GAP50 Abbot Point to Bogie River Value Engineering Register	Aspect3 Alliance; Adobe pdf	Revision 3.0; no date	■
6.0 Risk Report						
1	Copy of R39538-E02-001 GAP50 Risk Register Unplanned V2.0		Aspect3 Alliance - Risk Register	Aspect3 Alliance; Adobe pdf	Version 2.0; no date	■
2	Copy of R39538-E02-002 GAP50 Planned Risk Register V2.0		@RISK Output Report for Total Planned	Aspect3 Alliance; Adobe pdf	September 2010	■




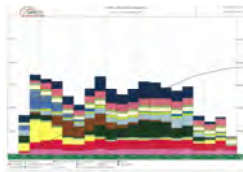
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	MICROS_1		GAP50 Abbot Point to Bogie River Risk Report	Aspect3 Alliance; Adobe pdf	Revision 1.0; no date	■
4	R39538-E02-001 GAP50 Risk Register Unplanned Cost Build Up V2.0		Cost Build Up	No author; Adobe pdf	No date	■
5	R39538-E02-001 GAP50 Risk Register Unplanned V2.0		@RISK Output Report for Unplanned Risk	Aspect3 Alliance; Adobe pdf	September 2010	■





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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
7.0 TCE						
1	100906 TOC Summary Sheet ver 1.0		No title	Aspect3 Alliance; Adobe pdf	No date	■
2	Copy of GAP50_SAOS Aspect3 Estimate v1.0 Approval Submission		Resource Utilization: Unique INVENSYS RAIL Job Code: 39583-1 Description: GAP50 – Abbot Point to Bogie River	No author; Adobe pdf	September 2010	■
3	copy of IP Partner TCE endorsement		QR CS Estimate Resource Utilization: Unique INVENSYS RAIL Job Code: 39583-1 Description: GAP50 – Abbot Point to Bogie River	No author; Adobe pdf	August 2010	■
4	Copy of R39538-E01-003 Rev 1.0 GAP50 TCE Cost Breakdown Structure		Pay Item Summary INVENSYS RAIL Job Code: 39583-1 Description: GAP50 – Abbot Point to Bogie River	No author; Excel	No date	■

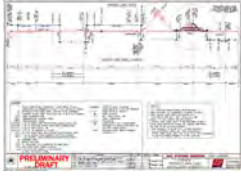
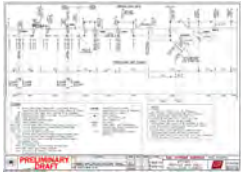
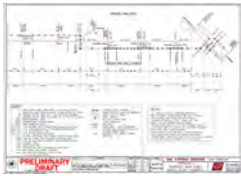

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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
8.0 Independent Evaluator Report						
1	20100907 Aspect 3 TOC Estimate Review Report FINAL		ASPECT 3 ALLIANCE – Signalling – GAP 50 Abbot Point to Bogie River Independent Estimate – Target Outturn Cost Estimate Review Report	Evans & Peck; Adobe pdf	September 2010	■
9.0 Programme						
1	Copy of Abbot Point to Bogie River TCE Baseline - B1		GAP50 - Abbot Point to Bogie River TCE Baseline-B1	Aspect3 Alliance; Adobe pdf	September 2010	■
2	COPYOF~2		Agreed Level 1 and 2 Interface Milestones – GAP50 Abbot Point to Bogie River	Aspect3 Alliance; Adobe pdf	September 2010	■
10.0 Resource Plan						
1	Copy of GAP50 Abbot Point to Bogie River Resource Histogram @ 6 Sept 10		GAP50 Abbot Point to Bogie River Aspect 3 - 11. Resource Histogram (A3L)	Aspect3 Alliance; Adobe pdf	September 2010	■




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	Copy of GAP50 Abbot Pt to Bogie River Resource Plan @ 6 Sept 10		GAP50 - Abbot Point to Bogie River Aspect 3 - 12. Resource Plan (A3L)	Aspect3 Alliance; Adobe pdf	September 2010	■
3	Visio-Copy of C39538-B05-002 R1.0 GAP50 Project Organisation Structure		Change History	Aspect3 Alliance; Adobe pdf	Version 1.0; no date	■
11.0 Project Plans						
1	Copy of C39538-B03-002 Project Management Plan Rev 0.3		GAP50 Abbot Point to Bogie River Project Management Plan	Aspect3 Alliance; Adobe pdf	Issue 0.1; July 2010	■
2	Copy of C39538-B03-002 Rev 1.0 GAP50 Management Plans Hierarchy Rev 1.0		GAP50 Abbot Point to Bogie River Management Plans Hierarchy	Aspect3 Alliance; Adobe pdf	Version 1.0; no date	■






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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Optical Fibre Referral						
1	lf294_1558_2_0001_1A003design		Appendix 1 Proposed Main Cable Installation Schematic	QR; Adobe pdf	March 2010	■
2	lf294_1558_2_0002_1A002design		Appendix 1 Proposed Main Cable Installation Schematic	QR; Adobe pdf	March 2010	■
3	lf294_1558_2_0003_1A002design		Appendix 1 Proposed Main Cable Installation Schematic	QR; Adobe pdf	March 2010	■
4	OF Referral GAP 50		Letter Referral of Signalling Alliance Project GAP 50 – Optical Fibre Installation – Abbot Point to Bogey River	QR Network ; Adobe pdf	April 2010	■

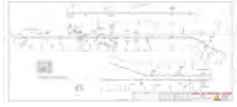
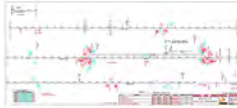
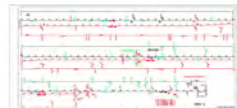
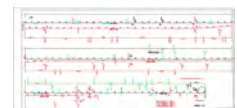
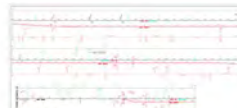

OCA AURIZON 2011/12 Capital Expenditure Submission
 GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
5	SIGNALLING AND TELECOMMUNICATIONS Version 2		SIGNALLING AND TELECOMMUNICATIONS OPTICAL FIBRE CABLE INSTALLATION ABBOT POINT TO RIVERSIDE	No author; Word	No date	■
Synergy - Referral						
1	GAP50 - Scope of Works - Bogie River to Nth Goonyella		GAP50 PROJECT SIGNALLING SCOPE OF WORKS BOGIE RIVER TO NTH GOONYELLA	QR Network ; Adobe pdf	February 2010	■
2	Synergy Concept Plans		GAP 50 Signalling Cable Overview	QR Limited; Adobe pdf	November 2009	■



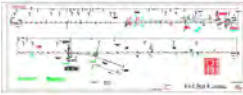

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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to RFI 035						
1	RFI No.35 Aurizon Response		SKM Request for Information (RFI No.035) GAPE Signalling AS Plans and Designs	Aurizon; Word	March 2013	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
Aspect 3 - As Plans						
1	as13		Signal and Operational Systems Buckley Signalling Arrangement	QR National ; Adobe pdf	December 2011	■
2	as294_existing		Signal and Operational Systems Abbot Point Signalling Arrangement	QR National ; Adobe pdf	April 2011	■
3	as337		Signal and Operational Systems Armuna Signalling Arrangement	QR National ; Adobe pdf	October 2011	■
4	as721		Signal and Operational Systems Durroburra Signalling Arrangement	QR National ; Adobe pdf	October 2011	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
5	as1001_existing		Signal and Operational Systems Kaili Signalling Arrangement	QR National ; Adobe pdf	October 2011	■
6	as1509		Signal and Operational Systems Pring Signalling Arrangement	QR National ; Adobe pdf	October 2011	■
Synergy- As Plans						
1	AS 420 Birralee 5C 003 design		Signal and Operational Systems Birralee Signalling Arrangement	QR National; Adobe pdf	December 2010	■
2	as5 Almoola 2A 010 req		Signal and Operational Systems Almoola Signalling Arrangement - Requirements	QR National; Adobe pdf	March 2004	■
3	as5 Almoola 2A 014 Design		Signal and Operational Systems Almoola Signalling Arrangement - Design	QR National; Adobe pdf	November 2010	■
4	as5_concept_gap		Signal and Operational Systems Almoola Signalling Arrangement	QR National; Adobe pdf	March 2004	■
5	as141 Sonoma 4A 006 req		Sonoma Signalling Arrangement - Requirements	QR National; Adobe pdf	September 2010	■


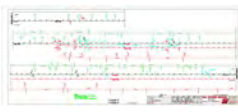
OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6	as141 Sonoma 4B 001 Design		Signal and Operational Systems Sonoma Signalling Arrangement - Design	QR National; Adobe pdf	November 2010	■
7	as141_concept_gap		Rail Systems Services Sonoma Signalling Arrangement	Queensland Rail; Adobe pdf	February 2010	■
8	as207 Collinsville 6A 008 req		Collinsville Signalling Arrangement - Requirements	Adobe pdf	September 2010	■
9	as207 Collinsville 6A 012 Design		Signal and Operational Systems Collinsville Signalling Arrangement - Design	QR National; Adobe pdf	October 2010	■
10	as207 Collinsville 6A 012 req		Signal and Operational Systems Collinsville Signalling Arrangement - Requirements	QR National; Adobe pdf	October 2010	■
11	as207 Collinsville 6B 02 incorporating Stage Work		Signal and Operational Systems Collinsville Signalling Arrangement - Design	QR National; Adobe pdf	February 2011	■
12	as207 Collinsville stage 0 6B 002 req		Collinsville Signalling Arrangement Stage 0 - Requirements	Adobe pdf	March 2008	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
13	as207_design_stage3		Signalling and Operational Systems Collinsville Signalling Arrangement Stage 3 - Design	QR National; Adobe pdf	March 2012	■
14	as207_existing		Rail Systems Services Collinsville Signalling Arrangement – Requirements	Queensland Rail; Adobe pdf	March 2008	■
15	as414_2		Signal and Operational Systems Binbee Signalling Arrangement – Design	QR National; Adobe pdf	April 2011	■
16	as420 Birralelee 5A 009 req		Birralelee Signalling Arrangement – Requirements	Adobe pdf	November 2008	■
17	as420 Birralelee 5B 001 Design		Signal and Operational Systems Birralelee Signalling Arrangement – Design	QR National; Adobe pdf	October 2010	■
18	as420 Birralelee 5B 001 req		Signal and Operational Systems Birralelee Signalling Arrangement – Requirements	QR National; Adobe pdf	October 2010	■
19	as420_concept_gapx		Rail Systems Services Birralelee Signalling Arrangement – Requirements	Queensland Rail; Adobe pdf	November 2008	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
20	as476.1 Briaba 3A 008 Design		Signal and Operational Systems Briaba Signalling Arrangement – Design	QR National; Adobe pdf	October 2010	■
21	as476.1 Briaba 3A 008 req		Signal and Operational Systems Briaba Signalling Arrangement – Requirements	QR National; Adobe pdf	October 2010	■
22	as476.1 Briaba Stage 0 2A 001 req		Briaba Signalling Arrangement Stage 0 – Requirements	Adobe pdf	January 2010	■
23	as476_1_concept_gap		Rail Systems Services Briaba Signalling Arrangement – Requirements	Queensland Rail; Adobe pdf	January 2010	■
24	as604 Cockool 1A 017 Design		Signal and Operational Systems Cockool Signalling Plan – Design	QR National; Adobe pdf	October 2010	■
25	as604 Cockool 1A 017 req		Signal and Operational Systems Cockool Signalling Plan – Requirements	QR National; Adobe pdf	October 2010	■
26	as604		Signal and Operational Systems Cockool Signalling Plan – Design	QR National; Adobe pdf	April 2011	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
27	as604_requirements		Rail Systems Services Cockool Signalling Plan – Requirements	Queensland Rail; Adobe pdf	Version 1A	■
28	AS730 Eagelefield Creek AS 1E 002		Signal and Operational Systems Eaglefield Creek Signalling Arrangement – Design	QR National; Adobe pdf	Version 1E; July 2011	■
29	as730 Eaglefield Creek 1A 006 concept		Eaglefield Creek Signalling Arrangement – Concept	Adobe pdf	Version 1A	■
30	as730 Eaglefield Creek 1B 001 design		Signal and Operational Systems Eaglefield Creek Signalling Arrangement – Design	QR National; Adobe pdf	Version 1B; November 2011	■
31	as730 Eaglefield Creek 1B 001 req		Signal and Operational Systems Eaglefield Creek Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 1B; November 2010	■

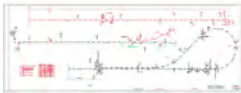
QCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
32	as730_concept		Signal and Operational Systems Eaglefield Creek Signalling Arrangement – Concept	QR National; Adobe pdf	Version 1A; November 2010	■
33	as919 Havilah 4A 012 design		Havilah Signalling Arrangement – Design	No author; Adobe pdf	August 2010	■
34	as919 Havilah 4B 001 design		Signal and Operational Systems Havilah Signalling Arrangement – Design	QR National; Adobe pdf	Version 4B; October 2010	■
35	as919 Havilah rough Stage AS		Signal and Operational Systems Havilah Signalling Arrangement – Design	QR National; Adobe pdf	Version 4B; October 2010	■
36	as919		Rail Systems Services Havilah Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 4A; July 2010	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
37	AS919s Havilah AS Stage One 1A 005		Signal and Operational Systems Havilah Signalling Arrangement Stage 1 – Design	QR National; Adobe pdf	Version 1A; May 2011	■
38	as1131 Leichhardt Range 1A 008 req		Leichhardt Range Signalling Arrangement – Requirements	No author; Adobe pdf	Version 1A; no date	■
39	as1131 Leichhardt Range 1B 001 Design		Rail Systems Services Leichhardt Range Signalling Arrangement – Design	QR National; Adobe pdf	Version 1B; October 2010	■
40	as1131 Leichhardt Range 1B 001 req		Rail Systems Services Leichhardt Range Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 1B; October 2010	■
41	AS1131 Leichhardt Range AS 1E 004		Signal and Operational Systems Leichhardt Range Signalling Arrangement – Design	QR National; Adobe pdf	Version 1E; June 2011	■
42	as1131_requirements_gap		Rail Systems Services Leichhardt Range Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 1A; no date	■
43	as1169 McNaughton 2 003		Signal and Operational Systems McNaughton Signalling Arrangement – Design	QR National; Adobe pdf	Version 2; December 2010	■


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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
44	as1374 Newlands 4A 009 req		Newlands Signalling Arrangement – Requirements	No author; Adobe pdf	Version 4A; March 2008	■
45	as1374 Newlands 4B 001 Design		Signal and Operational Systems Newlands Signalling Arrangement – Design	QR National; Adobe pdf	Version 4B; October 2010	■
46	as1374 Newlands 4B 001 req		Signal and Operational Systems Newlands Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 4B; October 2010	■
47	AS1374 Newlands AS 4D 005		Signal and Operational Systems Newlands Signalling Arrangement – Design	QR National; Adobe pdf	Version 4D; June 2011	■
48	as1374		Rail Systems Services Newlands Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 4A; March 2008	■
49	AS1374S1 Newlands AS 1A 006		Signal and Operational Systems Newlands Signalling Arrangement – Design	QR National; Adobe pdf	Version 1A; April 2011	■
50	AS1374S2 Newlands AS Stage 2 1A 007		Signal and Operational Systems Newlands Signalling Arrangement Stage 2 – Design	QR National; Adobe pdf	Version 1A; August 2010	■
51	as1388 North Goonyella 2A 005 req		North Goonyella Signalling Arrangement – Requirements	No author; Adobe pdf	Version 2A; August 2010	■


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
52	as1388 North Goonyella 2A 006 Design		Signal and Operational Systems North Goonyella Signalling Arrangement – Design	QR National; Adobe pdf	Version 2A; October 2010	■
53	as1388 North Goonyella 2A 006 req		Signal and Operational Systems North Goonyella Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 2A; October 2010	■
54	AS1388 North Goonyella AS 2B 004		Signal and Operational Systems North Goonyella Signalling Arrangement – Design	QR National; Adobe pdf	Version 2B; June 2011	■
55	AS1388 North Goonyella AS 2D 003		Signal and Operational Systems North Goonyella Signalling Arrangement – Design	QR National; Adobe pdf	Version 2D; November 2011	■
56	as1388		Rail Systems Services North Goonyella Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 2A; July 2010	■
57	as1632 Suttor Creek 1A 010 req		Suttor Creek Signalling Arrangement	No author; Adobe pdf	Version 1A; August 2010	■
58	as1632 Suttor Creek 1A 011design		Signal and Operational Systems Suttor Creek Signalling Arrangement – Design	QR National; Adobe pdf	Version 1A; November 2010	■


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
59	as1632 Suttor Creek 1B 001 design		Signal and Operational Systems Suttor Creek Signalling Arrangement – Design	QR National; Adobe pdf	Version 1B; November 2010	■
60	AS1632 Suttor Creek AS 1E 005		Signal and Operational Systems Suttor Creek Signalling Arrangement – Design	QR National; Adobe pdf	Version 1E; July 2011	■
61	as1632_design		Signal and Operational Systems Suttor Creek Signalling Arrangement – Requirements	QR National; Adobe pdf	Version 1AE; July 2010	■
Response to RFI 036						
1	RFI No.36 Aurizon Response		SKM Request for Information (RFI No.036) GAPE Fibre optic route plans and designs	Aurizon; Word	March 2013	Phase: ■ Post-GFC Document relevant to: ■ Scope ■ Standard ■ Cost

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	Meeting Minutes - Feb 2013			Aurizon; Word	February 2013	
CVM - Synergy TCE						
1	0_SYA-GAP-10-PD-02013 Project Definition Document 2v0 12.08.10		GAP 50 Bogie River to Riverside Junction Project Definition Document	Synergy Alliance; Adobe pdf	Issue 2.0; August 2010	■

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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	1_SYA-GAP-10-GL-02387-Clarification of General Signalling Specifications 1.0		GAP-50 Bogie River to Riverside Junction Clarification of General Signalling Specifications	Synergy Alliance; Adobe pdf	Issue 1.0; August 2010	■
3	2_SYA-GAP-10-PL-02019 Design Managemet Plan		GAP-50 Bogie River to Riverside Junction Design Management Plan	Synergy Alliance; Adobe pdf	Issue 3.0; September 2010	■
4	3_DE 1131 1A 003 Leichhardt Range		Leichhardt Range Scheme Plan	Synergy Alliance; Adobe pdf	August 2010	■
5	3_DE141 1A 003 Sonoma		Sonoma Scheme Plan	Synergy Alliance; Adobe pdf	July 2010	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6	3_DE420 1A 003 Biralee		Birralee Scheme Plan	Synergy Alliance; Adobe pdf	June 2010	■
7	3_DE604 1A 008 Cockool		Cockool Scheme Plan	Synergy Alliance; Adobe pdf	August 2008	■
8	3_DE730 1A 004 Eagelfield Creek		Eagelfield Creek Scheme Plan	Synergy Alliance; Adobe pdf	July 2010	■
9	3_DE919 1A 005 Havilah		Havilah Scheme Plan	Synergy Alliance; Adobe pdf	August 2008	■
10	3_DE1374 1A 006 Newlands		Newlands Scheme Plan	Synergy Alliance; Adobe pdf	July 2010	■

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
11	3_DE1388 1A 003 North Goonyella		Goonyella Scheme Plan	Synergy Alliance; Adobe pdf	July 2010	■
12	3_DE1632 1A 003 Suttor Creek		Suttor Creek Scheme Plan	Synergy Alliance; Adobe pdf	July 2010	■
13	4_SA GAP50 All Activities 06092010		GAP50 Execution Schedule	Synergy Alliance; Adobe pdf	September 2010	■
14	4_SA GAP50 Station Summary 06092010		GAP50 Execution Schedule	Synergy Alliance; Adobe pdf	September 2010	■

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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
15	5_SYA-GAP-05-SG-02025-Testing and Commissioning Strategy 0.2		GAP-50 Bogie River to Riverside Junction Testing and Commissioning Strategy	Synergy Alliance; Adobe pdf	Issue 1.0; July 2010	■
16	6_SYA-GAP-06-PL-02020 v0.2 Responsibility Assignment Matrix		Responsibility Of Work Assignment Gap 50 Project	Synergy Alliance; Adobe pdf	Version 2:A; September 2010	■
17	7_Example Design Packages		Example Design Packages	Synergy Alliance; Adobe pdf	Issue 0.0; September 2010	

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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
18	8_SYA-GAP-22-PL-02349 GAP 50 Project Role Definitions and Resource Chart v2.0 03.09.10		SYNERGY ALLIANCE GAP 50 PROJECT ROLE DEFINITIONS & RESOURCE CHART GAP 50 Project Role Definitions & Resource Chart	Synergy Alliance; Adobe pdf	Issue 2.0; September 2010	
19	9_SA GAP50 Testing and Commissioning 03092010		GAP50 Execution Schedule	Synergy Alliance; Adobe pdf	September 2010	
20	9_SA GAP50 Testing and Commissioning Summary 03092010		GAP50 Execution Schedule	Synergy Alliance; Adobe pdf	September 2010	

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
21	12_Civil Works Location Information		Civil Works Location Information	Synergy Alliance; Adobe pdf	Issue 0.0; September 2010	
22	13_SA GAP50 Project - VFM Register - Rev 0.7		GAP 50 - Bogie River to Riverside Junction VALUE FOR MONEY (VFM) REGISTER	Synergy Alliance; Adobe pdf	September 2010	
23	14_COM-PLA-003-Procurement Management Plan		Procurement Management Plan	Synergy Alliance; Adobe pdf	Issue 1.0; November 2009	



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
24	14_GAP50 BOM Ver 0.8		No title	Synergy Alliance; Adobe pdf	September 2010	
25	18_GAP50 CBS v22		No title	Synergy Alliance; Adobe pdf	Version 1.0; March 2010	
26	21_Below Line Risk and Opportunity Estimate V0.4		GAP 50 TCE - Below The Line Risks & Opportunities	Synergy Alliance; Adobe pdf	Version 0.4; September 2010	
27	21_Risk output Summary		Risk Out Put Result 020910	Synergy Alliance; Adobe pdf	September 2010	



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
28	21_SYA-GAP-22-AN-02017-GAP50 Risk Model		GAP-50 Risk Model @RISK Output Report for Total NOP Management Travel	Synergy Alliance; Adobe pdf	Issue 1.0; September 2010	
29	22_SYA-GAP-17-SH-02400-Turnout Delivery Schedule 0.3		GAP-50 Bogie River to Riverside Junction Turnout Delivery Schedule	Synergy Alliance; Adobe pdf	Issue 3.0; September 2010	
30	23_SA GAP50 WBS03092010		GAP50 Execution WBS	Synergy Alliance; Adobe pdf	September 2010	



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to RFI 037						
1	RFI No.37 Aurizon Response		SKM Request for Information (RFI No.037) GAPE Plan & Section Diagrams	Aurizon; Word	March 2013	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
Response to RFI 040						
1	RFI No.40 Aurizon Response		SKM Request for Information (RFI No.040) Outstanding pre and post GFC GAPE Project Documentation	Aurizon; Word	April 2013	Phase: <ul style="list-style-type: none"> Pre-GFC Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2.2 Capacity Modeling						
1	Capacity and Operating Plan Review GAP50 Systemwide - Feb 2011		Capacity and Operating plan review of GAP50	Systemwide; Adobe pdf	7 February 2011	
2	GN to AP Project Scott Wilson Strategic Review - May 2008		Queensland Rail Goonyella to Abbot Point Project Strategic Review Q1019-BI-ZZ-REP-0001	Scott Wilson; Adobe pdf	V 2.0; 7 May 2008	

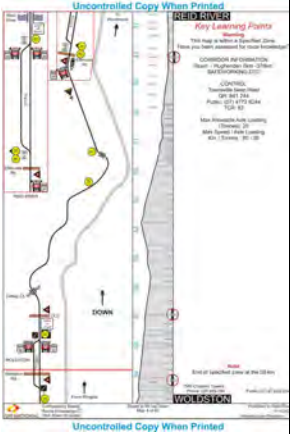
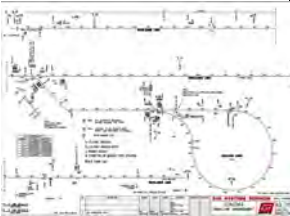
OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	GN to AP Project Systemwide - Sept 2008		Goonyella to Abbot Point Project Queensland Rail FINAL REPORT	Systemwide; Adobe pdf	Version 0.1.1; 17 September 2008	
4	GN to AP X75 Delivery Strategy GAPE Project Team - Aug 2008		Goonyella to Abbot Point - X75 Delivery Strategy DRAFT	QR Network; Word	Version 0.2; 26 August 2008	


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GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2.3 DTC Mark 2						
1	A01584 Sonoma Balloon Loop Project Completion Report Rev 1 26-11-08		Project Completion Report For Sonoma Rail Project Project Number: A01584	QR Network; Adobe pdf	Revision 1; November 2008	
2	Route Map Sonoma Spur & Balloon		Abbot Point to North Goonyella Up – Sonoma Balloon Loop	QR National; Adobe pdf	Revision 6; 22 February 2012	

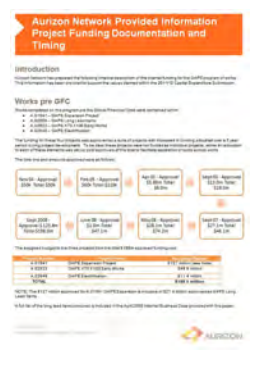

OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	Route Map Woldston to Reid River		Stuart to Mt Isa Down – Woldston to Reid River	QR National; Adobe pdf	Revision 10; 1 November 2011	
4	Signal Arrangement Drawing Sonom Spur & Balloon		Sonoma Signalling Arrangement	QR; Adobe pdf	Version 3; 30 May 2008	




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2.5 GAPE Deed						
1	GAPE Deed - Redact Version for CAPEX Review		Goonyella Abbot Point Expansion Project Deed (2009) QR Network Pty Ltd BM Alliance Coal Operations Pty Ltd	Corrs Chambers Westgarth Lawyers; Adobe pdf	23 September 2010	


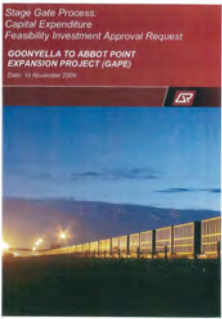

OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
GAPE Pre GFC Study Documents collected on 26th March						
2	Project Funding Documentation and Timing - March 2013		Aurizon Network Provided Information Project Funding Documentation and Timing	Aurizon Network; Word	March 2013	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Cost
Funding Approval Documents						
1	GAPE Approval up to \$198m Sept 2008		QR Board Submission The Goonyella to Abbot Point (GAP) Expansion Project	QR Limited; Adobe PDF	28 July 2008	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Cost


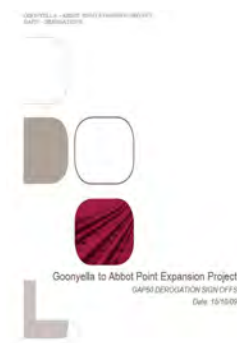
OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	GAPE Approval \$1.0m June 2008		Minor Capital Project Funding Request	Adobe PDF	7 March 2008	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Cost
3	GAPE Approval \$13.0m Sept 2005		Memorandum Note of Revised Investment Project Approval Project Name: Newlands – North Goonyella Link	Project Services; Adobe PDF	27 September 2005	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Cost
4	GAPE Approval \$27.1m Sept 2007		PBC Decision Minute Northern Missing Link Early Works (Newlands – North Goonyella Link)	Adobe PDF	28 August 2007	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Cost



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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
5	GAPE Approval \$28.1m April 2008		Investment Business Case Goonyella – Abbot Point (GAP) Expansion Project Long Lead Time Items	QR Network; Adobe PDF	April 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
6	GAPE Feasibility Approval up to \$1.105b Nov 2009		Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request Goonyella to Abbot Point Expansion Project (GAPE)	Adobe PDF	19 November 2009	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope (Post-GFC) ■ Cost (Pre-GFC)
7	Ministerial Support Letters 2005		Letter Shareholding Ministers for Queensland Rail Goonyella and Newlands Rail Systems	Adobe PDF	22 March 2005	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
1	GAPE Project Supporting Documentation – March 2013		Aurizon Network Provided Information GAPE Project Supporting Documentation	Aurizon Network; Word	March 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
Further Supporting Documents						
1. Civil						
1.1	GAP50Derogations		Goonyella to Abbot Point Expansion Project GAP50 DEROGATION SIGN OFFS	Word	15 October 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost



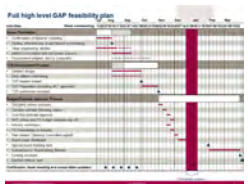
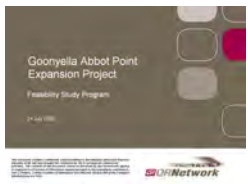
OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
1.2	GAPETrackCentres1	 <p>The image shows the title page of a document. At the top, it says 'QR Network' with a logo. Below that, the main title is 'GOONYELLA to ABBOT POINT EXPANSION' and the subtitle is '4.3 m vs 6.0 m TRACK CENTRES'. There is also a table with project details and names of the preparer and author.</p>	<p>GAP Track Centres GOONYELLA to ABBOT POINT EXPANSION 4.3 m vs 6.0 m TRACK CENTRES</p>	QR Network; Word	19 March 2013	<p>Phase:</p> <ul style="list-style-type: none"> ■ Post-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
1.3	ValueEngineeringoptionsFS	 <p>The image shows a table of contents or index for a document. The title is 'Feasibility study value engineering documentation index'. The table lists various sections and their corresponding page numbers.</p>	<p>Feasibility study value engineering documentation index</p>	Excel	No Date	<p>Phase:</p> <ul style="list-style-type: none"> ■ Post-GFC <p>Document relevant to:</p> <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

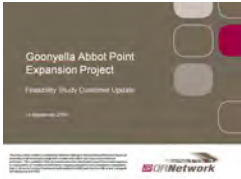
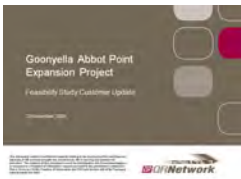
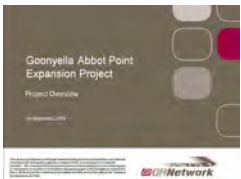

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2. Civil – Access Roads						
2.1	090730 Access road activities review 050809		Comparison of maintenance operations between proposed access road and Type 1 solution	QR Network; Powerpoint	30 July 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
2.2	090814AccessroadpresentationV5 (RSmodifiedversion)		Goonyella Abbot Point Expansion Project NML Access Road Review – with inputs agreed with Rod Sweeney	QR Network; Powerpoint	14 August 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
3. Civil – Bridges						
3.1	090914FSIndustryPresentation-VEBridges		No Title	QR Network; Powerpoint	14 September 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
3.2	090914Steelconcreteslidefor industrypresentation_0		Bridge value management process is ongoing as steel option pursued was unviable	QR Network; Powerpoint	14 September 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost

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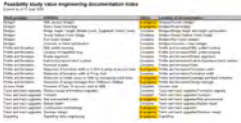
#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3.3	090917SuttorRoadover bridgeappeal		Grounds for appealing Suttor Road bridge	QR Network; Powerpoint	17 September 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
4. Civil – Line Diagrams						
4.1	N11030-06BuckleytoAbbotPoint_0		GOONYELLA TO ABBOT POINT EXPANSION PROJECT – GAP 50 CONCEPT LINE DIAGRAM – SHEET 1 OF 3	QR Limited; Adobe PDF	August 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
4.2	N11031-06CockooltoArmuna		GOONYELLA TO ABBOT POINT EXPANSION PROJECT – GAP 50 CONCEPT LINE DIAGRAM – SHEET 2 OF 3	QR Limited; Adobe PDF	August 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost
4.3	N11032-06NthGoonyellaJcttoHavilah		GOONYELLA TO ABBOT POINT EXPANSION PROJECT – GAP 50 CONCEPT LINE DIAGRAM – SHEET 3 OF 3	QR Limited; Adobe PDF	August 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Cost

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
5. Customer Engagement						
5.1	090708 Industry Workshop v7		Goonyella Abbot Point Expansion Project Final PFS Industry workshop	QR Network; Powerpoint	8 July 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
5.2	091120 Final Feasibility Presentation (draft2)		Goonyella Abbot Point Expansion Project Feasibility Study Customer Update	QR Network; Powerpoint	20 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
6. Feasibility Study						
6.1	090715FSplan		Full high level GAP feasibility plan Feasibility activities prior to finalisation of design	QR Network; Powerpoint	15 July 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
6.2	090727DetailedFSplan		Goonyella Abbot Point Expansion Project Feasibility Study Program	QR Network; Powerpoint	24 July 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

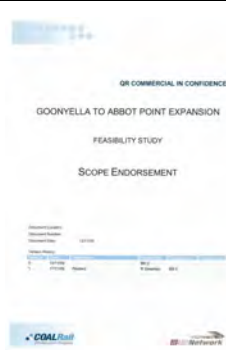


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
6.3	090914FSIndustryUpdate(draftv5)		Goonyella Abbot Point Expansion Project Feasibility Study Customer Update	QR Network; Powerpoint	14 September 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
6.4	091120FinalFeasibilityPresentation (draft)		Goonyella Abbot Point Expansion Project Feasibility Study Customer Update	QR Network; Powerpoint	20 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
6.5	DN 11 372185 091119 GAP Project Overview Mark Dobbs		Goonyella Abbot Point Expansion Project Project Overview	QR Network; Powerpoint	19 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
7. Feasibility Study – Risk						
7.1	DN 11 372183 091117 Project Risk Analysis- TF		GAP PROJECT – FS Project Risk Analysis	QR Network; Powerpoint	17 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
7.2	DN 11 372186 091119 Integrated Capital-Schedule Risk Analysis		GAP PROJECT Integrated Capital – Schedule Risk Analysis	QR Network, Greg Ramsay (Hatch); Powerpoint	19 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
8. Feasibility Study – Scope						
8.1	2005CESDrainageInvestigation		NORTH MISSING LINK – STRUCTURAL WORKS	Word	No Date	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
8.2	090917FSValueEngineering DocumentationIndex		Feasibility study value engineering documentation index Current as of 17 Sept 2009	Excel	17 September 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

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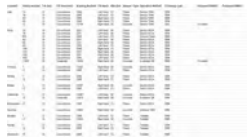

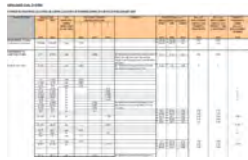
#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
8.3	GAPFeasibilityScopeEndorsement17-11-2009Signed		GOONYELLA TO ABBOT POINT EXPANSION FEASIBILITY STUDY SCOPE ENDORSEMENT	QR Network; Adobe PDF	13 November 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
8.4	NewlandsSystem-ScopeofWorkforCrossingsAbbot PointtoKailitoDurroburritoCollinsville		NEWLANDS SYSTEM UPGRADE PROJECT LEVEL CROSSINGS SCOPE OF WORK ABBOT POINT TO KAILI	Word	14 April 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
8.5	NewlandsSystem-ScopeofWorkforCrossings Collinsville to Newlands		NEWLANDS SYSTEM UPGRADE PROJECT LEVEL CROSSINGS SCOPE OF WORK COLLINSVILLE TO NEWLANDS	Word	14 April 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
9. Feasibility Study – Signalling						
9.1	GAP50 - RCS Lite Analysis - 24 Feb 2010		GAP50 PROJECT SIGNALLING COMPARISON REPORT ABBOT POINT TO NEWLANDS	QR Network; Word	Rev1:A 24 February 2010	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
9.2	Positioning of DED on the Buckley to Newlands rail line - Rev B		Proposed Positioning of DED on the Buckley to Newlands rail line – Rev B, 11-06-08	Word	Rev B 11 June 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

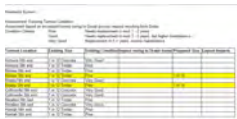


#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
10. Feasibility Study – Track						
10.1	2008GAPFormationStrategy1m2 (ErnieMcCombe)		GOONYELLA to ABBOT POINT EXPANSION Formation Strengthening Strategy	CoalRail; Adobe PDF	Rev 1 1 September 2008	Phase: ■ Pre-GFC Document relevant to: ■ Scope ■ Standard ■ Cost
10.2	CC-RPT-0108(01)		Level Crossing Data Packs Abbot Point to North Goonyella Junction	Coal Connect; Adobe PDF	April 2009	Phase: ■ Post-GFC Document relevant to: ■ Scope ■ Standard ■ Cost
10.3	ExistingMineLoopsto26.5tal		EXISTING NEWLANDS MINE LOOPS- SUITABILITY FOR 26.5T AXLE LOADS	Excel	No Date	Phase: ■ Post-GFC Document relevant to: ■ Scope ■ Standard ■ Cost

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category																																																																														
4	FormationUpgrades-CoalConnectscope	 <table border="1"> <thead> <tr> <th rowspan="2">SUBSECTION</th> <th colspan="2">START</th> <th rowspan="2">END</th> <th rowspan="2">LENGTH</th> </tr> <tr> <th>CHAINS</th> <th>STAKES</th> <th>(M)</th> </tr> </thead> <tbody> <tr> <td>From 10 Fine Mine Creek</td> <td>0.370</td> <td>3.2</td> <td>2.831</td> <td>2.461</td> </tr> <tr> <td>Artificial area</td> <td>28.134</td> <td>27.25</td> <td>1.720</td> <td>0.886</td> </tr> <tr> <td>Artificial area for Aberdeen</td> <td>29.75</td> <td>31</td> <td>2.25</td> <td>0.507</td> </tr> <tr> <td>Aberdeen</td> <td>31</td> <td>31.9</td> <td>0.9</td> <td>0.3</td> </tr> <tr> <td>Abbotside</td> <td>32.831</td> <td>36.148</td> <td>3.317</td> <td>3.277</td> </tr> <tr> <td>Abbotside</td> <td>38.15</td> <td>38.17</td> <td>0.02</td> <td>0.02</td> </tr> <tr> <td>Abbotside</td> <td>38.21</td> <td>39.12</td> <td>0.91</td> <td>0.91</td> </tr> <tr> <td>Abbotside to Binata</td> <td>44.42</td> <td>45.925</td> <td>1.495</td> <td>1.495</td> </tr> <tr> <td>Abbotside to Binata</td> <td>47.281</td> <td>47</td> <td>0.281</td> <td>0.281</td> </tr> <tr> <td>Abbotside to Binata</td> <td>50</td> <td>51.608</td> <td>1.608</td> <td>1.608</td> </tr> <tr> <td>Abbotside to Binata</td> <td>52.700</td> <td>57.200</td> <td>4.5</td> <td>4.5</td> </tr> <tr> <td>Abbotside to Collinsville</td> <td>69.875</td> <td>70.491</td> <td>0.616</td> <td>0.616</td> </tr> <tr> <td>Abbotside to Collinsville</td> <td>72.8</td> <td>73.5</td> <td>0.7</td> <td>0.7</td> </tr> <tr> <td>TOTALS</td> <td></td> <td></td> <td></td> <td>28.739</td> </tr> </tbody> </table>	SUBSECTION	START		END	LENGTH	CHAINS	STAKES	(M)	From 10 Fine Mine Creek	0.370	3.2	2.831	2.461	Artificial area	28.134	27.25	1.720	0.886	Artificial area for Aberdeen	29.75	31	2.25	0.507	Aberdeen	31	31.9	0.9	0.3	Abbotside	32.831	36.148	3.317	3.277	Abbotside	38.15	38.17	0.02	0.02	Abbotside	38.21	39.12	0.91	0.91	Abbotside to Binata	44.42	45.925	1.495	1.495	Abbotside to Binata	47.281	47	0.281	0.281	Abbotside to Binata	50	51.608	1.608	1.608	Abbotside to Binata	52.700	57.200	4.5	4.5	Abbotside to Collinsville	69.875	70.491	0.616	0.616	Abbotside to Collinsville	72.8	73.5	0.7	0.7	TOTALS				28.739	Treatment Locations	Excel	No Date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
SUBSECTION	START			END	LENGTH																																																																															
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TOTALS				28.739																																																																																
5	GeotechnicalreportdraftV1090206		Goonyella to Abbot Point Expansion Permanent way and Track Substructure Assessment & Rectification Strategy	Word	No Date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost 																																																																														
6	Newlandsformationtreatmentreport8-draft		CIVIL ENGINEERING REPORT NEWLANDS COAL SYSTEM UPGRADE - FINE-TUNING OF FORMATION TREATMENT EXTENTS, AND ASSESSMENT OF EXISTING BALLAST FOR CONFORMANCE TO SPECIFICATION REQUIREMENTS AND SUITABILITY FOR REUSE AS CAPPING LAYER MATERIAL	QR Network; Adobe PDF	Draft No Date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost 																																																																														




OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
10.7	NewlandsUpgrade-proposedtreatmentlocationsbasedonalternativerailtrafficlevels		NEWLANDS COAL SYSTEM PROPOSED FORMATION TREATMENT LOCATIONS, INCLUDING LOCATIONS DETERMINED DURING SITE INSPECTION IN JANUARY 2009, FOR X38, X42, X46 AND X50 SCENARIOS	Excel	No Date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
10.8	Newlandturnoutreport		No Title	Excel	No Date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
10.9	Sb_NewlandsLine (UpgradeforMissingLinkProject)		No Title	Excel	No Date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
10.10	TrackFormationScopereviewV2090114		NEWLANDS COAL SYSTEM FORMATION TREATMENT LOCATIONS, INCLUDING LOCATIONS DETERMINED DURING SITE INSPECTION IN JANUARY 2009	Excel	No Date	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost





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 GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
10.11	TurnoutAssessment		Newlands System Assessment: Existing Turnout Condition	Excel	No Date	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
11. Operational						
11.1	ExampleGAPEtimetable(2.5day)		GAPP This file contains an Excel version of the timetable modelled for GAPP	Systemwide; Excel	16 July 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
11.2	GAP50OperatingProposalV1.0051009 (QRNetworkinternalandoperators)		GAP50 Project Operating Proposal	QR Network; Word	2 October 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost

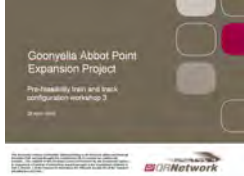
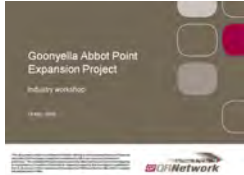
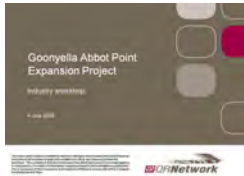

OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
11.3	GAPOpsmodelling_OperatingCriteria_290609_V10(InternalOperators)		Goonyella to Abbot Point Expansion Project Operational Criteria	Word	1 June 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
12. Prefeasibility Study						
12.1	100MTPAScopeDescriptionSummarySWR150808		GOONYELLA TO ABBOT POINT EXPANSION TO 100Mtpa Summary Scope Description	Word	15 August 2008	Phase: <ul style="list-style-type: none"> Pre-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost
12.2	090310GAPdesignchoicevariants		No Title	QR Limited; Powerpoint	10 March 2009	Phase: <ul style="list-style-type: none"> Post-GFC Document relevant to: <ul style="list-style-type: none"> Scope Standard Cost

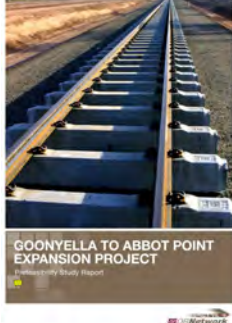
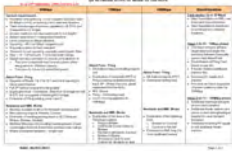

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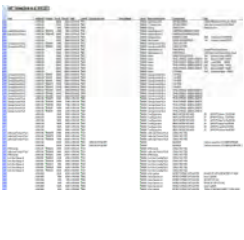
#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
12.3	090323Industryworkshopdocv9		Goonyella Abbot Point Expansion Project Industry Workshop 1	QR Network; Powerpoint	23 March 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.4	090324GAPTeamworkshopkickoff		Maximising the Value of the GAP Project Phase 2—workshops to develop the revised build profile and configuration	QR Network; Powerpoint	24 March 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.5	090401Trainconfigurationworkshop		Goonyella to Abbot Point Project Pre-feasibility train configuration workshop	QR Network; Powerpoint	1 April 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.6	090414PortsCorporationQueensland		Goonyella Abbot Point Expansion Project Ports Corporation Queensland	QR Network; Powerpoint	14 April 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

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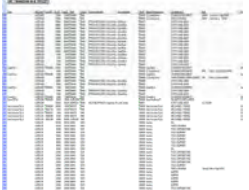

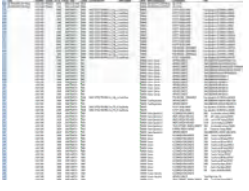
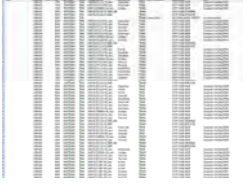
#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
12.7	090428Industryworkshop3(FINAL)		Goonyella Abbot Point Expansion Project Pre-feasibility train and track configuration workshop 3	QR Network; Powerpoint	28 April 2009	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.8	090519IndustryWorkshopv2		Goonyella Abbot Point Expansion Project Industry Workshop	QR Network; Powerpoint	19 May 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.9	090604Industryworkshop		Goonyella Abbot Point Expansion Project Industry Workshop	QR Network; Powerpoint	4 June 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.10	20090401_OperatonaIParameterSlides forworkshop		No Title	QR Network; Powerpoint	1 April 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
12.11	GAPFeasibilityReportWithMarkups-Unfinished7-12-2009		GOONYELLA TO ABBOT POINT EXPANSION PROJECT Prefeasibility Study Report	QR Network; Adobe PDF	Draft 7 December 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.12	GAP-ScopeofWork-100Mtpa100908v20(2)		Goonyella To Abbot Point Expansion Project QR NETWORK SCOPE OF WORK TO 100 MTPA	Word	Version 2 10 September 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
12.13	IndustryBriefing_04062009		GAP Project Integrated Capital – Schedule Risk Analysis	QR Network; Powerpoint	4 April 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
13. Prefeasibility Study - Operational						
13.1	090305PresentationGAPPaths_Options-RH		GROWTH PATH OPTIONS Goonyella to Abbot Point Expansion	QR Network; Powerpoint	5 March 2009	Phase: <ul style="list-style-type: none"> ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
14. X75_X100						
14.1	GAPX75DeliveryStrategyv02		Goonyella to Abbot Point X75 Delivery Strategy	Network Access Group; Word	Version v0.2 26 August 2008	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost
SAP Transaction Reports						
1	A.01541 - ZCJ13 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Scope ■ Standard ■ Cost

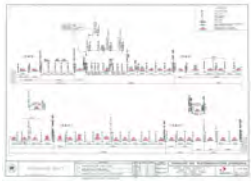
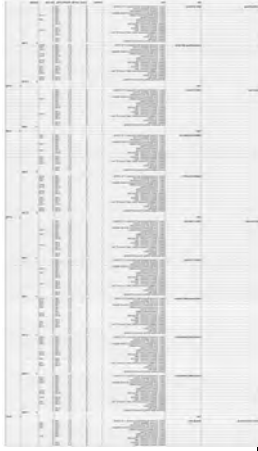

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	A.02523 - ZCJI3 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
3	A.02559 - ZCJI3 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
4	A.02648 - ZCJI3 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
5	A.03473 - ZCJI3 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost
6	Master File - ZCJI3 130116		GAP Transactions as at 16/01/2013	Excel	16 January 2013	Phase: <ul style="list-style-type: none"> ■ Pre-GFC ■ Post-GFC Document relevant to: <ul style="list-style-type: none"> ■ Cost




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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
GAPE documentation received 21 May 2013						
1	Coal Power termination letter		Letter Notice of Termination – Coal Power Alliance Agreement Goonyella to Abbot Point (GAP50) Expansion Project	QR Network; Adobe PDF	30 July 2010	
Response to QCA Query - GAPE NML Telecommunications received 21 May 2013						
1	Aurizon GAPE NML QCA Query Telecommunications Scope		A.03473 GAP50 Project Northern Missing Link Execution Stage Telecommunications Sub-Project Plan	QR National Network Services; PDF	27 September 2013	
2	Aurizon GAPE NML QCA Query Telecommunications Cost Actuals.xls		Aurizon GAPE NML QCA Query Telecommunications Cost Actuals	Aurizon; Excel	May 2013	

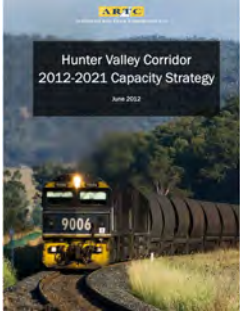
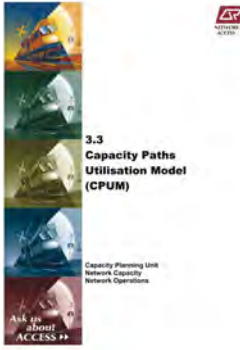

QCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
3	Aurizon GAPE NML QCA Query Telecommunications As-Built Drawing Package		Telecommunications As-Built Drawing Package	Aurizon; PDF	December 2011	
4	Aurizon GAPE NML QCA Query Telecommunications Cost Estimate		Aurizon GAPE NML QCA Query Telecommunications Cost Estimate	Aurizon; PDF	11 October 2011	
Response to SKM GAPE Report Final received 24 May 2013						
1	Response to SKM GAPE Report Final		Aurizon Network Response to SKM Comments – GAP CAPEX 2011/12 May 2013	Aurizon Pty Ltd; Adobe PDF	May 2013	

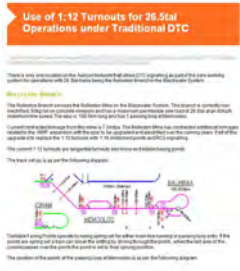

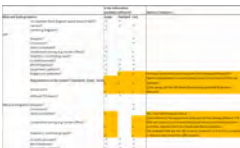

OCA AURIZON 2011/12 Capital Expenditure Submission
GAPE Project Document Register

#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
2	Attachment 1 - DTC Synopsis_2_5_13		Memorandum Subject: GAP50 – Capacity Synopsis for QCA	Mark Dobbs (Aurizon Pty Ltd); Adobe PDF	2 May 2013	
3	Att 2 - GAPE review 20130521		Memorandum Subject: QCA GAPE Review - 3 loops on the NML	Robert Williamson (Aurizon Pty Ltd); Adobe PDF	21 May 2013	
4	Attachment 3 - GAPE DAU		Aurizon Network Access Undertaking (2010) Draft Amending Access Undertaking Reference Tariff for the GAPE System	Aurizon Pty Ltd; Adobe PDF	April 2013	


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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to QCA received 5 June 2013						
1	2012-21 Hunter Valley Corridor Capacity Strategy FINAL		Hunter Valley Corridor 2012 2012----2021 Capacity Strategy June 2012	Australian Rail Track Corporation Ltd; PDF	June 2012	
2	3 3 Capacity Paths Utilisation Model CPUM v04_MB		3.3 Capacity Paths Utilisation Model (CPUM)	Queensland Rail – Network Access; PDF	31 October 2006	
3	WP2 Designing and Managing Capacity on Queensland Coal Rail Systems		Designing and Managing Capacity on Queensland Coal Rail Systems A Coal Rail Infrastructure Master Plan Working Paper Working Paper 2	QR Network; PDF	July 2008	

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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
4	1 in 12 Points with DTC Detail.docx		Use of 1:12 Turnouts for 26.5tal Operations under Traditional DTC	Aurizon; Word	June 2013	
5	GAPE review 20130603		GAPE Review 3 loops on the NML	Aurizon; pptx	June 2013	
Response to QCA Query - GAPE NML Telecommunications - status received 14 June 2013						
1	Kim list.xlsx		Excel spreadsheet with overview of project information	Aurizon Pty Ltd; Excel	14 June 2013	
2	RE: Query - GAPE NML Telecommunications - status		Email response from Kanwar Cheema Re: Query - GAPE NML Telecommunications - status	Aurizon Pty Ltd; Excel	12 June 2013	

OCA AURIZON 2011/12 Capital Expenditure Submission
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#	Electronic file name	Title page image	Title / description	Author and document type	Version and date	Category
Response to Questions on GAPE capacity assumptions received 3 July 2013						
1	130703 Memo to DH Re GAPE Capacity Assumptions Jul 13.docx		Memorandum - QCA Query – GAPE Modelling Assumptions	Aurizon Pty Ltd; Word	3 July 2013	



L.8 Appendix L-C : Extract from A.01541 ZWISR (level 1, 2, 3, 4 & 5) – GAPE expansion (pre-GFC) project

Lev	WBS	Description	Assigned Budget
1	A.01541.00001	Goonyella - Abbot Point Expansion	107,489,205
2	A.01541.00002	STAGE 1 PRE-FEASIBILITY	224,170
3	A.01541.00003	MCE	58,986
3	A.01541.00004	Projects	113,227
3	A.01541.00005	Property	48,033
3	A.01541.00006	SAOS	3,924
2	A.01541.00008	STAGE 2 FEASIBILITY STUDY	25,810,950
3	A.01541.00009	Commercial	147,740
4	A.01541.00020	Freight Demand & Logistics Assessment	76,000
5	A.01541.00052	Consultancy Costs	76,000
4	A.01541.00024	Communication	508
5	A.01541.00114	QR Expenses	508
4	A.01541.00025	QR Labour	71,232
5	A.01541.00063	NAG Labour	71,232
3	A.01541.00011	Regulatory	51,272
4	A.01541.00028	Regulatory Issues	51,272
5	A.01541.00072	Consultancy Costs	51,272
3	A.01541.00012	Legal	225,634
4	A.01541.00029	Legal Issues	225,634
5	A.01541.00076	Consultancy Costs	225,634
3	A.01541.00013	Operational Issues	24,714
4	A.01541.00031	NAG Traffic Study	12,544
4	A.01541.00113	Newlands - Abbot Point Train Simulati	12,170
3	A.01541.00014	Engineering	3,142,768
4	A.01541.00032	Civil Engineering Costs	1,649,445
5	A.01541.00080	Civil Survey	444,649
5	A.01541.00081	Civil Design	28,486
5	A.01541.00082	Civil Track	155,432
5	A.01541.00083	Consultancy Costs	945,406
5	A.01541.00115	Level Crossing Investigation	75,472
4	A.01541.00033	Electrical Engineering Costs	701,302
5	A.01541.00086	Electrification Study	334,174
5	A.01541.00094	QR Labour	367,128
4	A.01541.00034	SAOS Costs	411,450
4	A.01541.00035	ISG Costs	82,911
4	A.01541.00036	Telecommunications Costs	244,585
4	A.01541.00121	Signalling - Consultancy	53,075
3	A.01541.00015	Environmental, Cultural Heritage	1,129,560
4	A.01541.00037	Environmental Study Costs	500,288
5	A.01541.00095	Field Investigation Costs	166,827
5	A.01541.00098	EIS Consultancy Costs	152,936
5	A.01541.00101	QR Labour Costs	163,915
5	A.01541.00120	EIS Advertising Costs	6,010
5	A.01541.00122	Miscellaneous	10,600
4	A.01541.00038	Cultural Heritage Costs	629,272
5	A.01541.00102	Traditional Owner Consultation	230,338
5	A.01541.00103	CH Consultancy Costs	262,901
5	A.01541.00106	CH Legal Costs	16,865
5	A.01541.00107	QR Labour Costs	119,168
3	A.01541.00016	Property Acquisition	11,981,157
4	A.01541.00039	Property Acquisition Costs	11,981,157
5	A.01541.00108	Property Acquisition Consultancy Cos	210,413
5	A.01541.00112	QR Labour Costs	222,804
5	A.01541.00123	Property Costs	11,469,935
5	A.01541.00229	QT Costs	78,005
3	A.01541.00017	Project Management	1,977,422
4	A.01541.00040	QR Project Management	1,912,356
4	A.01541.00041	Project Management Consultants	24,662
4	A.01541.00042	Risk Assessment & Management	40,404
3	A.01541.00018	QRNational Costs	142
4	A.01541.00046	Miscellaneous	142



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



3	A.01541.00019	Miscellaneous Costs	80,527
4	A.01541.00047	Project Office Rental, Phones	71,061
4	A.01541.00048	Project Office Stationery Furniture E	708
4	A.01541.00049	Travel & Accommodation	472
4	A.01541.00050	Other Costs	8,285
3	A.01541.00900	GOONYELLA-NEWLANDS	7,050,015
4	A.01541.00901	INITIAL WORKS	7,050,015
5	A.01541.00902	GN -Survey	1,500
5	A.01541.00903	GN - Geotech	18,867
5	A.01541.00904	GN- Design	6,995,059
5	A.01541.00905	GN - Software	34,590
2	A.01541.00192	NEWLANDS TO ABBOT POINT (BROWNFIELD)	2,853,160
3	A.01541.00193	FORMATION STRENGTHENING STAGE 1	1,983,222
4	A.01541.00198	FORMATION RECONSTRUCTION 2007 (8-10km)	846,459
5	A.01541.00194	ISG	811,046
5	A.01541.00195	Survey Design	19,443
5	A.01541.00221	MCE Geotech Evaluations	15,970
4	A.01541.00250	FORMATION RECONSTRUCTION ST.1	569,575
5	A.01541.00252	Survey Design	111,186
5	A.01541.00253	CIVIL ENGINEERING	457,013
5	A.01541.00258	ISG District	1,376
4	A.01541.00217	LSPI	567,188
5	A.01541.00218	LSPI (2007)	567,188
3	A.01541.00199	DRAINAGE UPGRADES	308,662
4	A.01541.00200	CULVERT UPGRADES 2007	308,662
5	A.01541.00204	ISG Works	307,491
5	A.01541.00205	MCE Design and Supervision	1,171
3	A.01541.00197	PROJECT SERVICES	2,302
4	A.01541.00207	Project Management	2,302
3	A.01541.00206	GEOTECHNICAL INVESTIGATION	393,343
4	A.01541.00213	ISG Works	6,551
4	A.01541.00215	Project Services	199,875
4	A.01541.00235	Protection Officers	27,140
4	A.01541.00236	Contract Works	159,777
3	A.01541.00450	TELECOMMUNICATIONS	7,401
4	A.01541.00451	Abbot Point to Newlands Upgrade	7,401
5	A.01541.00452	Network Engineering Design	7,401
3	A.01541.00500	COMMUNICATION	158,229
4	A.01541.00501	Communication Consultant	105,486
4	A.01541.00503	Communication Production Costs	500
4	A.01541.00504	QR Property Costs	52,243
2	A.01541.01000	GAP - Overall 2	849,849
3	A.01541.01001	Owner's Costs (QR)	121,784
4	A.01541.01002	QR Support Services - Personnel & Exp	34,102
5	A.01541.01003	Systems & IT	34,102
4	A.01541.01005	Expenses	87,683
5	A.01541.01006	Consultants	86,546
5	A.01541.01010	Home Office Costs	1,137
3	A.01541.02000	ABBOT Pt -PRING	460,497
4	A.01541.02010	APR QR Internal Concept Works	155,627
5	A.01541.02011	APR Concept Studies	155,627
4	A.01541.02050	APR External Concept Works	304,870
5	A.01541.02051	APR CoalStream	304,870
3	A.01541.03000	NEWLANDS UPGRADE	4,163
4	A.01541.03001	GAP Project Management & QR Support	4,163
5	A.01541.03002	Engineering Support	4,163
3	A.01541.05000	NML GY - NL	253,861
4	A.01541.05100	NML - Survey	160,650
4	A.01541.05105	NML - Geotech	93,211
3	A.01541.06000	GOONYELLA ANGLES	9,544
4	A.01541.06010	GY QR Internal Concept Works	9,544
5	A.01541.06011	GY Concept Studies	9,544



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2	A.01541.08000	GAP - EARLY WORKS	77,751,075
3	A.01541.20000	Abbot Point to Bogie River	13,942,379
4	A.01541.20100	Land & Environmental	1,222,787
5	A.01541.20105	Property Acquisition	870,963
5	A.01541.20130	Environmental & Cultural Heritage	351,824
4	A.01541.20200	Civil & Structural Works (Alliance)	7,030,131
5	A.01541.20205	Project Management & Engineering	6,479,718
5	A.01541.20290	Alliance Indirect Costs - Civil Work	550,412
4	A.01541.20300	Trackwork (QR)	3,444,087
5	A.01541.21300	AP - Short Balloon Loop for #2 Unloa	477,790
5	A.01541.29300	Miscellaneous Track Works	2,966,297
4	A.01541.20400	Signalling	604,700
5	A.01541.21400	Abbot Point	430,456
5	A.01541.23400	Kailli to Durroburra	174,244
4	A.01541.20500	UTC & Wayside Equipment	10,354
5	A.01541.21500	Abbot Point	10,354
4	A.01541.20550	Telecommunications (QR)	44,593
5	A.01541.20551	Main Fibre Optic Backbone Cable	44,593
4	A.01541.20900	Safety Management	154,178
5	A.01541.20901	Protection Officers	154,178
4	A.01541.20940	GAP Project Management & QR Support	1,253,498
5	A.01541.20941	GAP Project Management	324,044
5	A.01541.20950	QR Engineering Support	690,985
5	A.01541.20970	QR Legal & Commercial Support	206,083
5	A.01541.20980	Network Operations Support - QR-NA	32,386
4	A.01541.26400	*** QRN-Funded Work ***	178,052
5	A.01541.26401	Coal Stream Alliance	178,052
3	A.01541.30000	Bogie River to Newlands	21,980,966
4	A.01541.30100	Land & Environmental	500,441
5	A.01541.30101	Property Acquisition	476,543
5	A.01541.30102	Environmental & Cultural Heritage	23,898
4	A.01541.30200	Civil & Structural Works (Alliance)	15,687,237
5	A.01541.30205	Project Management & Engineering	7,109,239
5	A.01541.31200	Pring to Armuna Civil Works	882
5	A.01541.32200	Armuna Civil Works	2,590
5	A.01541.34200	Binbee Civil Works	17,407
5	A.01541.41200	Birrallee Civil Works	1,167,688
5	A.01541.42200	Cockool Civil Works	5,254
5	A.01541.40290	Alliance Indirect Costs - Civil Work	7,384,176
4	A.01541.30300	Trackwork (QR)	2,481,055
5	A.01541.32300	Buckley	647,635
5	A.01541.42300	Cockool	418,472
5	A.01541.45300	Ballast & Drainage Upgrade	695,302
5	A.01541.49300	Miscellaneous Track Works	719,646
4	A.01541.30400	Signalling	1,322,556
5	A.01541.32400	Armuna	260,899
5	A.01541.33400	Aberdeen	222
5	A.01541.34400	Binbee	276,556
5	A.01541.35400	Briaba	671
5	A.01541.36400	Almoola	560
5	A.01541.37400	Collinsville	671
5	A.01541.41400	Birrallee	319,841
5	A.01541.42400	Cockool	180,649
5	A.01541.43400	Havilah	104,419
5	A.01541.39400	Sonoma	176,704
5	A.01541.38400	McNaughton (Mine funded)	560
5	A.01541.44400	Newlands (Mine funded)	802
4	A.01541.30900	Safety Management	21,347
5	A.01541.30901	Protection Officers	21,347
4	A.01541.30910	Capital Procurement (QR)	122,610
5	A.01541.30911	Equipment & Materials	122,610
4	A.01541.30940	GAP Project Management & QR Support	1,762,840
5	A.01541.30941	GAP Project Management	116,544
5	A.01541.30950	QR Engineering Support	1,476,848
5	A.01541.30960	QR Legal & Commercial Support Serv	169,448
4	A.01541.30259	Civil & Structural Works (QR)	82,882
5	A.01541.30260	Project Mgmt & Engineering (QR)	82,882



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3	A.01541.50000	Northern Missing Link	36,042,600
4	A.01541.50100	Land and Environmental	1,266,847
5	A.01541.50110	Property Acquisition	506,502
5	A.01541.50130	Environmental & Cultural Heritage	760,345
4	A.01541.50200	Civil & Structures Works (CoalConnect)	28,868,763
5	A.01541.50205	Project Management & Engineering	10,076,880
5	A.01541.51200	Greenfields formation construction-6	9,056,116
5	A.01541.55200	Road Overpass Bridges	14,957
5	A.01541.56200	Bridge Structures - Creek Crossings	561,909
5	A.01541.50290	Alliance Indirect Costs - Civil Work	9,158,901
4	A.01541.50400	Signalling	171,873
5	A.01541.51400	Section 1-Eaglefield Creek Passing L	227
5	A.01541.52400	Section 2-Suttor Creek Passing Loop	69,556
5	A.01541.53400	Section 3-Leichhardt Range Passing L	89,415
5	A.01541.54400	Kangaroo Creek Junction Ballast Sidi	12,674
4	A.01541.50550	Telecommunications (QR)	127,024
5	A.01541.59550	Telecommunications - Misc	127,024
4	A.01541.50940	GAP Project Management & QR Support	5,608,093
5	A.01541.50941	GAP Project Management	124,329
5	A.01541.50943	QR Engineering Support Services	4,695,945
5	A.01541.50960	QR Legal & Commercial Support Serv	604,855
5	A.01541.50920	Cyclone Ellie Insurance Works 2009	182,964
3	A.01541.60000	Goonyella System Works	221,452
4	A.01541.60100	Land & Environmental	2
5	A.01541.68110	Coppabella Angle GE Acqui Costs & Cu	1
5	A.01541.68120	CAGE GE Environmental Issues	1
4	A.01541.60400	Signalling Goonyella	203,318
5	A.01541.67400	Mallawa - Wotonga GE Signalling	4,487
5	A.01541.61400	North Goonyella Signalling	198,832
4	A.01541.60940	GAP Project Management & QR Support	18,132
5	A.01541.67941	Mallawa - Wotonga GE Project Mngt PD	938
5	A.01541.69946	Legal & Commercial Support - General	17,194
3	A.01541.70000	GAP Electrification	705,484
4	A.01541.70940	GAP Project Management & QR Support	385,884
5	A.01541.70941	GAP Project Management (Incl IWI)	128,453
5	A.01541.70950	QR Engineering Support	167,492
5	A.01541.70960	QR Legal & Commercial Support	84,682
5	A.01541.70970	Misc Expenses	5,256
4	A.01541.70600	Electrification Studies	319,600
5	A.01541.70601	Concept & Feasibility Studies	319,600
3	A.01541.80000	Owner's Costs (QR)	4,858,195
4	A.01541.81000	Management	3,743,057
5	A.01541.81100	Corporate & Project Management	3,743,057
4	A.01541.82000	QR Support Svcs - Personnel & Expense	221,527
5	A.01541.82200	Feasibility Study & Early Works	62,340
5	A.01541.82300	Engineering	159,187
4	A.01541.83000	Expenses	620,531
5	A.01541.83100	Feasibility Studies & Early Works	143,768
5	A.01541.83200	Project Implementation	379,012
5	A.01541.83400	Alliance Overhead Costs	97,751
4	A.01541.85000	Project Wide Studies & Engineering	273,080
5	A.01541.85001	X50 Works	273,080



L.9 Appendix L-D : Extract from A.02559 ZWISR (level 1, 2, 3, 4 & 5) – GAPE long lead items (pre-GFC) project

Lev	WBS	Description	Assigned Bud
1	A.02559.00001	GAPE: Long Lead Time Items	28,280,165
2	A.02559.20912	Abbot Point to Pring	414,226
3	A.02559.20940	Triggers Purchase for AP Loader - PCQ	229,470
3	A.02559.21300	Short Balloon Loop for No.2 Unloader	184,756
4	A.02559.21310	Trackwork Materials	184,756
5	A.02559.21311	Materials Costs	0
5	A.02559.21312	Freight Costs	184,756
2	A.02559.30912	Buckley to Newlands	969,126
3	A.02559.30930	Bridge Girders	103,322
4	A.02559.30931	Materials	103,322
5	A.02559.30934	Sheepstation Creek	103,322
3	A.02559.30300	Trackwork (QR)	865,804
4	A.02559.32300	Armuna Loop	271,671
5	A.02559.32310	Materials	198,828
5	A.02559.32350	Freight	41,228
5	A.02559.32370	Planning & Logistics	31,616
4	A.02559.34300	Binbee Loop	278,385
5	A.02559.34310	Materials	227,356
5	A.02559.34330	MRC Operations	1,031
5	A.02559.34350	Freight	31,268
5	A.02559.34370	Planning & Logistics	18,730
4	A.02559.41300	Birralee Loop	315,747
5	A.02559.41310	Materials	295,785
5	A.02559.41330	MRC Operations	1,440
5	A.02559.41370	Planning & Logistics	18,522
2	A.02559.50912	Northern Missing Link	52,472
3	A.02559.50929	OH Mast Base Bolts/Screw Footings	52,472
4	A.02559.50930	Materials	52,472
2	A.02559.50931	Signalling	1,377,491
3	A.02559.50932	Materials	1,377,491
2	A.02559.45320	RM80	0
3	A.02559.45322	Upgrade Implementation	0
4	A.02559.45323	Plant	0
4	A.02559.45324	Labour	0
4	A.02559.45325	Materials	0
2	A.02559.00002	CoalConnect Alliance	18,667,494
3	A.02559.00003	Progress Payments	18,667,494
4	A.02559.00004	Buckley to Newlands	5,237,320
5	A.02559.30220	Alliance Engineering	5,213,938
5	A.02559.41200	Birralee Civil Works	23,382
4	A.02559.00005	NML	13,085,524
5	A.02559.50220	Alliance Engineering	5,402,477
5	A.02559.51201	All Earthworks Construction	7,683,047
4	A.02559.00006	Gooniyella Works	344,651
5	A.02559.60220	Alliance Engineering	344,651
2	A.02559.40291	Camp Accom., Offices, Veh - B-N	1,405,224
2	A.02559.20005	Abbot Point X25 Works	1,176,171
3	A.02559.20010	Civil Works	159,728
4	A.02559.21210	Civil - Coal Stream	158,864
4	A.02559.20951	Civil - MCES Supervision	864
3	A.02559.20300	Track	952,267
4	A.02559.21330	Track Work	952,267
3	A.02559.20015	Operations Personnel	64,176
4	A.02559.20902	Protection Officers	64,176
2	A.02559.50291	Camp Accom., Offices, Veh - NML	1,405,224
2	A.02559.70000	Early Works 2010	2,812,737
3	A.02559.71000	QR Services - IP	326,705
4	A.02559.71200	Byerwen Development	3,603
4	A.02559.71400	Signalling - Armuna Interlocking Equi	323,101
3	A.02559.73000	Signalling	2,486,033
4	A.02559.73400	Services Relocation - AP, Pring, Bria	1,075,772
4	A.02559.73500	Signalling Development Costs	1,410,260
5	A.02559.73505	Bogie River to North Goonyella	937,336
5	A.02559.73515	Abbot Point to Bogie River	472,924



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L.10 Appendix L-E : Extract from A.02523 ZWISR (level 1, 2, 3, 4 & 5) – GAPE X70-X100 early works (pre-GFC) project

Lev	WBS	Description	Assigned Budget
1	A.02523.00001	GAP Expansion: Early Works & Feasibility	45,741,966.00
2	A.02523.00010	Scott Wilson Railways	1,641,219.69
3	A.02523.00011	Concept Study	1,641,219.69
2	A.02523.00020	QR Project Management	5,910.00
2	A.02523.20000	Abbot Point to Pring	2,656,028.12
3	A.02523.20200	Civil & Structural Works (Coal Stream)	2,598,455.30
4	A.02523.20205	Project Management & Engineering (CSA)	1,136,438.58
5	A.02523.20210	Alliance PM - QRNA - X75/X100	328,073.17
5	A.02523.20220	Alliance Engineering - QRNA - X75/X1	808,365.41
4	A.02523.20290	Alliance Indirect Costs - Civil Works	1,462,016.72
5	A.02523.20291	Camp Accommodation, Offices, Vehicle	1,462,016.72
3	A.02523.20900	Safety Management/Network Support	534.82
4	A.02523.20901	Protection Officers	534.82
5	A.02523.20902	Protection Officers - QR-NA - X75/X1	534.82
3	A.02523.20940	GAP Project Management & QR Support	57,038.00
4	A.02523.20941	GAP Project Management (Incl IWI)	56,858.00
5	A.02523.20942	PM Personnel & Expenses -QR-NA- X75/	56,858.00
4	A.02523.20950	QR Engineering Support	180.00
5	A.02523.20951	Engineering Support Svcs-QR-NA- X75/	180.00
2	A.02523.30000	Buckley to Newlands	5,849,933.78
3	A.02523.30200	Civil & Structures Works (CoalConnect)	5,803,687.78
4	A.02523.30205	PM & Engineering (CoalConnect)	5,803,687.78
5	A.02523.30210	Alliance Project Management - X75/X1	4,774,599.10
5	A.02523.30211	Alliance Project Management - X50	462,533.69
5	A.02523.30221	Alliance Engineering - X50	566,554.99
3	A.02523.30940	GAP Project Management & QR Support	46,246.00
4	A.02523.30941	GAP Project Management (Incl IWI)	46,246.00
5	A.02523.30942	PM Personnel & Expenses -QR-NA- X75/	46,246.00
2	A.02523.50000	Northern Missing Link	4,625,823.34
3	A.02523.50200	Civil & Structures Works (CoalConnect)	4,625,823.34
4	A.02523.50205	PM & Engineering (CoalConnect)	1,230,541.06
5	A.02523.50211	Alliance Project Management - X50	462,533.69
5	A.02523.50221	Alliance Engineering - X50	768,007.37
4	A.02523.50290	Alliance Indirect Costs - Civil Works	3,395,282.28
5	A.02523.50295	Demobilisation & Repairation Costs -	1,808,776.95
5	A.02523.50296	Ongoing Site Costs & Maintenance	1,586,505.33
2	A.02523.60000	Goonyella System Works	121,265.34
3	A.02523.60100	Land, Environmental & Cultural Heritag	49,088.10
4	A.02523.67110	Mallawa-Wotonga GE Property Acquisiti	47,366.70
5	A.02523.67111	MWGE GM Property Costs	23,804.54
5	A.02523.67112	MWGE CH Assessment	1,584.66
5	A.02523.67113	MWGE GM Property Surveys	12,600.00
5	A.02523.67114	MWGE Land Compensation Payments	9,377.50
4	A.02523.67120	MWGE Environmental Issues	1,721.40
5	A.02523.67122	MWGE Environmental Studies Consultan	1,721.40
3	A.02523.60200	Civil & Structural Works	28,002.10
4	A.02523.67200	Mallawa - Wotonga GE Civil Works	28,002.10
5	A.02523.67210	MWGE Civil Design Surveys & Coord	28,002.10
3	A.02523.60300	Trackwork (QR)	284.28
4	A.02523.67300	Mallawa - Wotonga GE Trackwork (QR)	284.28
5	A.02523.67380	MWGE Track Planning & Coord ISG	284.28
3	A.02523.60700	Traction Power Supply	4,424.00
4	A.02523.67700	Mallawa - Wotonga GE Traction Power S	4,424.00
5	A.02523.67710	MW TPS Design & Co-ord PEPS	4,424.00
3	A.02523.60940	GAP Project Management & QR Support	39,466.86
4	A.02523.67941	Mallawa - Wotonga GE Project Mgt PDS	39,466.86



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2	A.02523.80000	Owner's Costs (QR)	30,841,785.09
3	A.02523.81000	Management	606,634.71
4	A.02523.81100	Corporate & Project Management	606,634.71
5	A.02523.81101	Corporate Management - X75/X100	10,612.90
5	A.02523.81110	Project Management - X75/X100	309,744.15
5	A.02523.81120	Project Controls & Commercial - X75/	246,951.16
5	A.02523.81130	Project Services Management - X75/X1	39,326.50
3	A.02523.84000	Project Wide Studies & Engineering	30,235,150.38
4	A.02523.84001	X75/X100 Early Works	660.66
5	A.02523.84150	Miscellaneous Expenses	660.66
4	A.02523.84170	Cost Optimisation Study	118,986.62
5	A.02523.84172	Project Management - General	95,031.00
5	A.02523.84174	Track and IWI	11,190.62
5	A.02523.84175	Signals	12,765.00
4	A.02523.84200	PRS - Engineering & Cost Studies	7,285,112.86
5	A.02523.84220	Env'l & Cultural Heritage - Consulta	69,411.73
5	A.02523.84230	Coal Stream Alliance - PM	234,828.38
5	A.02523.84235	Coal Stream Alliance - Engineering	434,169.21
5	A.02523.84245	CoalConnect Alliance - PM	312,352.92
5	A.02523.84250	CoalConnect Alliance - Engineering	788,105.78
5	A.02523.84255	CoalConnect Alliance - Expenses	352,885.24
5	A.02523.84260	Operations Support - QR	7,704.65
5	A.02523.84265	Operations Support - Consultants	47,497.50
5	A.02523.84270	Civil Engineering - QR	24,120.30
5	A.02523.84275	IWI - QR	70,121.06
5	A.02523.84280	Signalling - QR	74,407.39
5	A.02523.84290	Consultants	4,799,236.10
5	A.02523.84271	Regression Survey B-N	70,272.60
4	A.02523.84300	PRS - Corporate & Project Management	1,792,027.30
5	A.02523.84305	Corporate Management	470,498.25
5	A.02523.84310	Study & Project Managers	690,426.00
5	A.02523.84315	Project Controls & Commercial	481,222.80
5	A.02523.84320	Project Services	149,880.25
4	A.02523.84400	PRS - Provisions	66,835.00
5	A.02523.84415	Field Work - Consultants	66,835.00
4	A.02523.84500	FS - Eng/Cost Studies - Civil Allianc	4,216,206.23
5	A.02523.84501	Coal Stream - Project Management	363,558.03
5	A.02523.84502	Coal Stream - Engineering	678,817.11
5	A.02523.84503	Coal Stream - Expenses	69,065.35
5	A.02523.84504	CoalConnect - Project Management	705,634.64
5	A.02523.84505	CoalConnect - Engineering	2,203,794.40
5	A.02523.84506	CoalConnect - Expenses	195,336.70
4	A.02523.84510	FS - Engineering & Cost Studies - QR	3,980,393.08
5	A.02523.84514	Env & Cultural Heritage - Consultant	64,194.60
5	A.02523.84515	Operations Support - QR	35,231.80
5	A.02523.84516	Operations Support - Consultants	64,268.86
5	A.02523.84517	Civil Engineering - QR	459,807.61
5	A.02523.84518	Civil Engineering - Consultants	33,000.00
5	A.02523.84519	IPI - QR	172,933.71
5	A.02523.84520	Signalling - QR	175,614.70
5	A.02523.84521	Signalling Alliance Works	50,000.00
5	A.02523.84522	Consultants	2,873,922.37
5	A.02523.84523	QR Asset Services	20,629.19
5	A.02523.84525	Telecoms - QR	30,790.24
4	A.02523.84540	FS - Corporate & Project Management	2,105,431.62
5	A.02523.84541	Corporate Management	343,638.84
5	A.02523.84542	Study & Project Management	941,700.58
5	A.02523.84543	Project Controls/Commercial Managem	596,153.62
5	A.02523.84544	Project Services Management	216,727.86
5	A.02523.84545	Expenses	7,210.72
4	A.02523.86001	Pre-Start Civil Alliances	6,136,762.29
5	A.02523.86002	Coal Stream - MacMahon Staff	686,414.70
5	A.02523.86003	Coal Stream - Design Works	897,005.88
5	A.02523.86004	Coal Stream - Expenses	325,066.54
5	A.02523.86005	CSA - QR IT HelpDesk etc.	373.20
5	A.02523.86006	CSA Telecoms Install Merinda - QR-fu	250,273.48
5	A.02523.86007	Coal Stream IT&T Support - QR-funded	146,713.00
5	A.02523.86008	CSA - Jilalan IT Assets Transfer	77,000.00
5	A.02523.86010	Coal Connect - LCL Staff	1,043,521.41
5	A.02523.86011	Coal Connect - Design & Approvals	2,373,584.21
5	A.02523.86012	Coal Connect - Expenses	336,809.87



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4	A.02523.86020	Pre-Start QR Engineering & Services	2,373,855.49
5	A.02523.86021	Property & Environmental	102,825.64
5	A.02523.86022	Cultural Heritage	200,947.71
5	A.02523.86023	Civil Verification Team - Coal Strea	630,824.36
5	A.02523.86024	Civil Verification Team - CoalConnec	528,397.72
5	A.02523.86025	Civil Engineering	8,565.67
5	A.02523.86030	Power Systems	49,559.77
5	A.02523.86035	Signalling (RSS)	339,305.75
5	A.02523.86036	Signalling Alliances	7,312.50
5	A.02523.86040	Telecommunications	154,563.53
5	A.02523.86045	QR Services (IP)	351,552.84
4	A.02523.86060	Pre-Start Corporate & Project Managem	2,158,879.23
5	A.02523.86061	Corporate Management	119,346.11
5	A.02523.86062	Study & Project Management	685,981.73
5	A.02523.86063	Project Controls/Commercial Manageme	668,864.80
5	A.02523.86064	Project Services Management	345,852.85
5	A.02523.86065	Expenses	66,668.61
5	A.02523.86070	Consultants - Legal, Financial, etc	272,165.13



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L.11 Appendix L-C : Extract from A.03473 ZWISR (level 1, 2, 3, 4 & 5) – GAPE (post-GFC) project

Lev	WBS	Description	Total Actual Expenditure
1	A.03473.00001	GAP 50	771,118,899
2	A.03473.01000	OWNERS COSTS	18,043,855
3	A.03473.10000	Management	9,297,028
4	A.03473.10100	Corporate & Project Management	9,297,028
5	A.03473.10110	Corporate Management	96,737
5	A.03473.10120	Project Management	2,841,969
5	A.03473.10130	Project Controls & Commercial Manage	4,370,427
5	A.03473.10140	Project Services Management	1,987,895
3	A.03473.11000	Expenses	8,746,827
4	A.03473.11100	Consultants	481,141
5	A.03473.11101	Misc Consultants	32,059
5	A.03473.11103	Facilitation Services incl Prep of K	56,090
5	A.03473.11104	System Modelling by Systemwide	59,376
5	A.03473.11105	Traffic Impact Assmt - Mt Coolon Rd	85,929
5	A.03473.11106	Traff Impact Assmt -Mt Coolon Rd LXC	3,700
5	A.03473.11107	GPR testing - Newlands Coal System	143,937
5	A.03473.11108	IE Reviews - TOC Adjustments	100,051
5	A.03473.11109	Facilitation Services - Lessons Lear	0
5	A.03473.11112	QCA Capital Expndtr - Evans & Peck	0
4	A.03473.11110	Home Office Costs	14,136
5	A.03473.11111	General Expenses	14,136
4	A.03473.11120	Legal Costs, Audits, Insurances & Fee	7,867,790
5	A.03473.11121	Insurances & Fees	430
5	A.03473.11122	Legal Costs	51,133
5	A.03473.11123	Works and PI Insurances	5,444,148
6	A.03473.11124	Coal Stream Premiums	1,469,310
6	A.03473.11125	CoalConnect Premiums	3,621,161
6	A.03473.11126	Insurance Premiums - Aspect 3	115,294
6	A.03473.11128	Insurance Premiums - Synergy	227,232
6	A.03473.11129	Insurance Premiums - Motor Vehicles	11,152
5	A.03473.11127	QLeave	2,372,079
4	A.03473.11130	Travel, Site Vehicles & Accommodation	75,216
5	A.03473.11131	Travel & Accommodation	55,388
5	A.03473.11132	Site Vehicles	5,326
5	A.03473.11133	Corporate Travel & Accommodation	14,502
4	A.03473.11140	Marketing & PR	308,543
5	A.03473.11141	Stakeholder Management & Comms	21,750
5	A.03473.11142	Comms Material - Smoke, & Parsons B/	9,015
5	A.03473.11143	TPD Media - Public Relations	68,840
5	A.03473.11144	Misc Comms / PR Costs	16,543
5	A.03473.11145	Donate Accom Unit - Bowen Community	20,800
5	A.03473.11146	C'ville Stn - Fence Hire & Property	2,832
5	A.03473.11147	GAP Community Update Printing Costs	5,349
5	A.03473.11149	Bowen River Rodeo&Campdraft-Sponsors	2,000
5	A.03473.11115	Landowner's Livestock Replacement	28,000
5	A.03473.11117	Collinsville School Donation & Newsl	2,329
5	A.03473.11118	Mysite Design - Consultation Manager	818
5	A.03473.11119	ADITS - IT Resources & Support	979
5	A.03473.11180	Bowen PCYC Sponsorship	3,545
5	A.03473.11181	Grand Opening Event - Dec11	116,652
5	A.03473.11182	Collinsville Youth Precinct Sponsors	9,091
5	A.03473.11183	Smith property - Flood gate repair	0
5	A.03473.11184	BR-N Carpet Snake Ck Path	0
5	A.03473.11185	Collinsville School Sports	0



2	A.03473.02000	ABBOT POINT TO BOGIE RIVER	255,204,315
3	A.03473.20000	Abbot Point Short Balloon Loop - X25	14,865
4	A.03473.20800	Operations	14,865
5	A.03473.20801	Points Testing X25 Phase II	11,701
5	A.03473.20803	Install Sensor Equip - Abbot Point N	3,164
3	A.03473.21000	Abbot Pt 2nd Balloon Loop & Holding Rd	26,633,859
4	A.03473.21200	Civil/Structural - CSA	12,434,273
5	A.03473.21201	Civil Construction	12,434,273
4	A.03473.21700	Trackwork	8,366,581
5	A.03473.21710	Materials	4,350,287
5	A.03473.21720	Freight	324,453
5	A.03473.21730	MRC Operations	3,140,773
5	A.03473.21740	Planning & Logistics Operations	551,069
4	A.03473.21400	Telecoms	492,254
5	A.03473.21410	Telecoms Contractor - AP	87,755
5	A.03473.21411	Asset Maintenance - AP	57,791
5	A.03473.21412	Eng Supervision & Commissioning - AP	45,587
5	A.03473.21413	Telecommunications Material - AP	286,691
5	A.03473.21420	Microwave Link at Abbot Point -Tempo	14,431
4	A.03473.21300	Signalling	5,290,751
5	A.03473.21301	Telecoms Enabling Works - AP 2nd BL	20,742
5	A.03473.21310	Alliance Contract	5,270,009
6	A.03473.21311	Alliance Partner Works	4,644,321
6	A.03473.21312	QR SAOS in Alliance	51,371
6	A.03473.21313	QR Construction Services in Allianc	213,601
6	A.03473.21314	QR Issued Material	360,715
4	A.03473.21800	Operational Systems	50,000
5	A.03473.21810	Unloader Sensors & Triggers	50,000
6	A.03473.21811	Spare triggers - no 2 unloader	50,000
3	A.03473.22000	Kailli to Durroburra Duplication	39,747,837
4	A.03473.22200	Civil/Structural - CSA	26,512,734
5	A.03473.22201	Civil Construction	26,512,734
4	A.03473.22700	Trackwork	6,280,376
5	A.03473.22710	Materials	3,482,630
5	A.03473.22720	Freight	435,787
5	A.03473.22730	MRC Operations	1,961,994
5	A.03473.22740	Planning & Logistics Operations	399,966
4	A.03473.22400	Telecoms	176,761
5	A.03473.22410	Telecoms Contractor - Kailli-Durro	63,223
5	A.03473.22411	Asset Maintenance - Kailli-Durro	7,737
5	A.03473.22412	Eng Supervision & Commissioning - K-	12,610
5	A.03473.22413	Telecommunications Material - Kailli-	93,191
4	A.03473.22300	Signalling	6,777,965
5	A.03473.22310	Alliance Contract	6,777,965
6	A.03473.22311	Alliance Partner Works	6,076,822
6	A.03473.22312	QR SAOS In Alliance	79,752
6	A.03473.22313	QR Construction Services In Allianc	134,514
6	A.03473.22314	QR Issued Material	486,877
3	A.03473.23000	New Euri Creek bridge	6,752,201
4	A.03473.23200	Civil/Structural - CSA	6,752,201
5	A.03473.23201	Civil Construction	6,752,201
3	A.03473.24000	Pring - Extension & Mods to Holding Rd	48,257,484
4	A.03473.24200	Civil/Structural - CSA	29,910,838
5	A.03473.24201	Civil Construction	29,910,838
4	A.03473.24700	Trackwork	10,017,892
5	A.03473.24710	Materials	4,717,218
5	A.03473.24720	Freight	408,158
5	A.03473.24730	MRC Operations	3,936,448
5	A.03473.24740	Planning & Logistics Operations	956,069
4	A.03473.24400	Telecoms	293,497
5	A.03473.24410	Telecommunications Contractor - Prin	91,574
5	A.03473.24411	Asset Maintenance - Pring	17,895
5	A.03473.24412	Eng Supervision & Commissioning - Pr	22,637
5	A.03473.24413	Telecommunications Material - Pring	161,392
4	A.03473.24300	Signalling	8,035,257
5	A.03473.24301	Telecoms Enabling Works - Pring Yard	21,107
5	A.03473.24310	Alliance Contract	7,469,669
6	A.03473.24311	Alliance Partner Works	6,561,706
6	A.03473.24312	QR SAOS In Alliance	95,549
6	A.03473.24313	QR Construction Services In Allianc	423,026
6	A.03473.24314	QR Issued Material	389,387
5	A.03473.24302	Pring Yard Signalling Enabling Works	299,160
5	A.03473.24303	Pring Gantries Add'l Enabling Wks -A	193,957
5	A.03473.24304	Pring Yard-Add'l Enabling Works-Cabl	31,740
5	A.03473.24305	PringYard-Add'l Enabling Works-Telec	19,624



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3	A.03473.30000	Pring Yard Multi-User Upgrade	17,038,043
4	A.03473.30200	Civil/Structural - CSA	17,038,043
5	A.03473.30201	Civil Construction	17,038,043
3	A.03473.25000	Buckley - New Passing Loop	7,207,299
4	A.03473.25200	Civil/Structural - CSA	3,087,182
5	A.03473.25201	Civil Construction	3,087,182
4	A.03473.25700	Trackwork	1,539,974
5	A.03473.25710	Materials	788,762
5	A.03473.25720	Freight	99,020
5	A.03473.25730	MRC Operations	522,066
5	A.03473.25740	Planning & Logistics Operations	130,127
4	A.03473.25400	Telecoms	203,610
5	A.03473.25410	Telecoms Contractor - Buckley	41,170
5	A.03473.25411	Asset Maintenance - Buckley	39,379
5	A.03473.25412	Eng Supervision & Commissioning - Bu	20,571
5	A.03473.25413	Telecommunications Material - Buckle	102,490
4	A.03473.25300	Signalling	2,376,533
5	A.03473.25301	Telecoms Enabling Works - Buckley Ne	13,840
5	A.03473.25310	Alliance Contract	2,362,693
6	A.03473.25311	Alliance Partner Works	2,131,817
6	A.03473.25312	QR SAOS In Alliance	2,661
6	A.03473.25313	QR Construction Services In Allianc	27,550
6	A.03473.25314	QR Issued Material	200,665
3	A.03473.26000	Aberdeen - New passing Loop	7,998,702
4	A.03473.26200	Civil/Structural - CSA	3,291,173
5	A.03473.26201	Civil Construction	3,291,173
4	A.03473.26700	Trackwork	1,857,578
5	A.03473.26710	Materials	1,049,881
5	A.03473.26720	Freight	147,671
5	A.03473.26730	MRC Operations	534,363
5	A.03473.26740	Planning & Logistics Operations	124,442
5	A.03473.26760	Norman's Pipe Repair	1,220
4	A.03473.26400	Telecoms	244,170
5	A.03473.26410	Telecoms Contractor - Aberdeen	42,373
5	A.03473.26411	Asset Maintenance - Aberdeen	50,936
5	A.03473.26412	Eng Supervision & Commissioning - Ab	20,855
5	A.03473.26413	Telecommunications Material - Aberde	114,369
5	A.03473.26420	SER - Temporary Link thru Summer Hil	15,636
6	A.03473.26422	Radio Tech & Rigging Labour - Temp	12,727
6	A.03473.26423	Telecoms Materials - Temp Radio	2,909
4	A.03473.26300	Signalling	2,605,781
5	A.03473.26310	Alliance Contract	2,531,261
6	A.03473.26311	Alliance Partner Works	2,263,907
6	A.03473.26312	QR SAOS In Alliance	30,280
6	A.03473.26313	QR Construction Services In Allianc	65,709
6	A.03473.26314	QR Issued Material	171,365
5	A.03473.26301	Aberdeen Signalling Enabling Works	74,520
3	A.03473.27000	Sheep Station Creek Bridge	6,845,061
4	A.03473.27200	Civil/Structural - CSA	5,825,727
5	A.03473.27201	Civil Construction	5,825,727
4	A.03473.27700	Trackwork	887,558
5	A.03473.27710	Materials	524,168
5	A.03473.27720	Freight	37,706
5	A.03473.27730	MRC Operations	199,058
5	A.03473.27740	Planning & Logistics Operations	126,625
4	A.03473.27300	Signalling	99,360
5	A.03473.27301	Sheep Stn Bridge Signalling Enabling	99,360
4	A.03473.27100	Old Sheep Station Ck Bridge - Demolit	32,415
5	A.03473.27101	Old ShpStn Ck Brdg-Demolition-Cnstr	32,415



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3	A.03473.28000	Existing Track Upgrades	18,625,795
4	A.03473.28010	Abbot Point Relay	6,285,346
5	A.03473.28711	Trackwork	6,285,346
6	A.03473.28712	Materials	3,154,444
6	A.03473.28713	Freight	592,588
6	A.03473.28714	MRC Operations	1,903,156
6	A.03473.28715	Planning & Logistics Operations	635,158
4	A.03473.28020	Armuna Turnout Replacement	3,656,278
5	A.03473.28721	Trackwork	1,155,005
6	A.03473.28722	Materials	287,361
6	A.03473.28724	MRC Operations	306,564
6	A.03473.28725	Planning & Logistics Operations	561,081
5	A.03473.28420	Telecoms	98,161
6	A.03473.28421	Telecoms Contractor - Armuna	40,722
6	A.03473.28423	Eng Supervision & Commissioning - A	6,592
6	A.03473.28424	Telecommunications Material - Armun	50,847
5	A.03473.28320	Signalling	2,403,112
6	A.03473.28321	Telecoms Enabling Works - Armuna	12,266
6	A.03473.28322	Alliance Partner Works	2,128,952
6	A.03473.28323	QR SAOS In Alliance	27,653
6	A.03473.28324	QR Construction Services In Allianc	138,727
6	A.03473.28325	QR Issued Material	70,674
6	A.03473.28340	Armuna Signalling Enabling Works	24,840
4	A.03473.28030	Binbee Turnout Replacement	3,899,029
5	A.03473.28731	Trackwork	879,571
6	A.03473.28732	Materials	392,321
6	A.03473.28733	Freight	6,411
6	A.03473.28734	MRC Operations	394,485
6	A.03473.28735	Planning & Logistics Operations	86,354
5	A.03473.28430	Telecoms	118,009
6	A.03473.28431	Telecoms Contractor - Binbee	38,891
6	A.03473.28433	Eng Supervision & Commissioning - B	21,399
6	A.03473.28434	Telecommunications Material - Binbe	57,718
5	A.03473.28330	Signalling	2,901,449
6	A.03473.28331	Telecoms Enabling Works - Binbee	12,219
6	A.03473.28332	Alliance Partner Works	2,681,628
6	A.03473.28333	QR SAOS In Alliance	69,714
6	A.03473.28334	QR Construction Services In Allianc	113,643
6	A.03473.28335	QR Issued Material	24,245
4	A.03473.28040	Level Crossing Upgrades	1,836,095
5	A.03473.28041	LXC Upgrades to ALCAM Standard - AP-	1,087,595
5	A.03473.28044	Gee Dee Rd LXC - Hatch IFC Drawings	21,820
5	A.03473.28050	LXC 3279	369,978
6	A.03473.28351	Signalling	369,978
7	A.03473.28352	Alliance Partner Works	369,978
7	A.03473.28353	QR SAOS in Alliance	0
5	A.03473.28060	LXC 3285	355,822
6	A.03473.28361	Signalling	355,822
7	A.03473.28362	Alliance Partner Works	355,822
7	A.03473.28363	QR SAOS in Alliance	0
5	A.03473.28051	LXC 3292	880
6	A.03473.28451	Telecoms	880
7	A.03473.28452	Estimation of Works for Phone Cabl	880
5	A.03473.28052	LXC 3286/87/89/90/91	0
6	A.03473.28455	Telecoms	0
7	A.03473.28456	Level Crossing Telephones - Aberde	0
4	A.03473.28130	Re-Sleeping works at Pring	1,182,264
5	A.03473.28100	Trackwork	1,182,264
6	A.03473.28102	Materials	677,884
6	A.03473.28103	Freight	62,265
6	A.03473.28104	MRC Operations	158,470
6	A.03473.28105	Planning & Logistics Operations	283,645
4	A.03473.28080	26.5 TAL Rerailing AP-BR	1,757,961
5	A.03473.28741	Trackwork	1,757,961
6	A.03473.28742	Materials	1,109,258
6	A.03473.28743	Freight	52,052
6	A.03473.28744	MRC Operations	486,056
6	A.03473.28745	Planning & Logistics Operations	110,595
4	A.03473.28090	Track Lubricators - AP-BR	8,823
5	A.03473.28791	Asset Maintenance	8,823
6	A.03473.28792	Design - Track Lubricators	650
6	A.03473.28793	Supply & Install - Track Lubricators	8,173
4	A.03473.28200	Aberdeen Causeway Repair	0
5	A.03473.28201	Aberdeen Causeway Repair - Civil Wor	0



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3	A.03473.29000	Formation & Ballast Upgrades	26,572,900
4	A.03473.29200	Civil/Structural - CSA	8,761,092
5	A.03473.29201	Civil Construction	8,761,092
4	A.03473.29700	Trackworks - Pring to Buckley - July	2,017,430
5	A.03473.29710	Pring to Buckley - Track Materials	577,994
5	A.03473.29720	Pring to Buckley - Freight Costs	18,297
5	A.03473.29730	Pring to Buckley - Track Constructio	1,065,727
5	A.03473.29740	Pring to Buckley - Planning	355,411
4	A.03473.29701	Trackworks - October 2010	4,979,289
5	A.03473.29711	Armuna to Aberdeen - Track Materials	2,053,854
5	A.03473.29721	Armuna to Aberdeen - Freight Costs	631,433
5	A.03473.29731	Armuna to Aberdeen - Planning	629,309
5	A.03473.29741	Armuna to Aberdeen -Track Constructi	1,659,983
5	A.03473.29761	SAOS Performed Enabling Work - Oct 1	4,711
4	A.03473.29703	Trackworks - Aberdeen to Armuna - Dec	3,624,378
5	A.03473.29723	Abdn-Armuna - Materials	789,159
5	A.03473.29733	Abdn-Armuna - Freight	108,874
5	A.03473.29743	Abdn-Armuna - MRC Operations	1,333,741
5	A.03473.29753	Abdn-Armuna - P&L Operations	679,280
5	A.03473.29764	900m Scope Tradeoff	713,324
4	A.03473.29704	Trackworks - March 2011	332,890
5	A.03473.29773	Newlands Speed Restriction Removal W	332,890
4	A.03473.29705	Trackworks - Buckley-Armuna-Ucut - Ma	575,024
5	A.03473.29715	Buckley - Armuna - Materials	160,617
5	A.03473.29725	Buckley - Armuna - Freight	41,958
5	A.03473.29735	Buckley - Armuna - Planning	0
5	A.03473.29745	Buckley - Armuna - Construction	372,449
4	A.03473.29706	Trackworks - Buckley-Armuna - May11	1,481,747
5	A.03473.29716	Buckley - Armuna - Materials	443,223
5	A.03473.29726	Buckley - Armuna - Freight	102,558
5	A.03473.29736	Buckley - Armuna - Planning	156,326
5	A.03473.29746	Buckley - Armuna - Construction	779,640
4	A.03473.29707	Trackworks - Binbee-Bogie River - May	1,318,558
5	A.03473.29717	Binbee - Bogie River - Materials	463,600
5	A.03473.29727	Binbee - Bogie River - Freight	163,899
5	A.03473.29737	Binbee - Bogie River - Planning	240,849
5	A.03473.29747	Binbee - Bogie River - Construction	450,209
4	A.03473.29708	Trackworks - Buckley-Armuna Relay Sep	2,756,566
5	A.03473.29718	Buckley-Armuna Relay - Materials	1,071,494
5	A.03473.29728	Buckley-Armuna Relay - Freight	335,005
5	A.03473.29738	Buckley-Armuna Relay - P&L	197,433
5	A.03473.29748	Buckley-Armuna Relay - Construction	1,152,635
4	A.03473.29709	Trackworks - Armuna Yard Relay Sep 11	725,927
5	A.03473.29719	Armuna Yard Relay - Materials	235,040
5	A.03473.29729	Armuna Yard Relay - Freight	117,111
5	A.03473.29739	Armuna Yard Relay - MRC	350,282
5	A.03473.29749	Armuna Yard Relay - P&L	23,494
3	A.03473.34000	Whole of Area Costs (Non QR)	28,794,376
4	A.03473.34100	Coal Stream Alliance Works	9,829,341
5	A.03473.34110	Alliance - Project Management	1,771,363
5	A.03473.34120	Alliance - Engineering	5,821,155
5	A.03473.34130	Camp, Accom,Vehicles etc	598,729
5	A.03473.34140	Construction preliminaries	123,346
5	A.03473.34150	Public Utility Relocations	14,748
5	A.03473.34170	GAP Share of CoalStream Set up Costs	1,500,000
5	A.03473.34190	Defects Liability Period Works - CSA	0
4	A.03473.34200	Aspect 3 Alliance - Whole of Area	18,626,707
5	A.03473.34311	Alliance - Procurement Other	18,626,707
6	A.03473.34312	Alliance Partner Works	17,647,410
6	A.03473.34313	QR SAOS In Alliance	461,162
6	A.03473.34314	QR Construction Services In Allianc	471,684
6	A.03473.34315	QR Comms - Mobilisation Costs	46,452
5	A.03473.34320	Defects Liability Period Works -Aspe	0
4	A.03473.34400	Power Supply	338,328
5	A.03473.34410	Ergon Energy Power for Signals	338,328



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3	A.03473.35000	Whole of Area Costs - QR	20,715,894
4	A.03473.35100	QR - Service Providers	14,361,670
5	A.03473.35110	Infrastructure Projects Integration	1,811,501
6	A.03473.35111	IPI - June to August 2010	20,960
6	A.03473.35112	IPI - Sept 2010 to Dec 2011	1,790,542
5	A.03473.35130	Track Work	255,828
6	A.03473.35131	Monumenting AP-BR	196,483
6	A.03473.35132	Install of Access Road Signage - AP	41,848
6	A.03473.35133	Locate Survey Info - Monumenting -	17,497
5	A.03473.35140	ECD Signals	2,414,842
6	A.03473.35141	Preliminary Design	977,693
6	A.03473.35142	Project Coordination	588,842
6	A.03473.35143	ECD Signals - IP Activities - AP-BR	18,622
6	A.03473.35144	Signalling System Audit	24,726
6	A.03473.35347	Ergon Power Applications	41,518
6	A.03473.35348	Operational Systems	763,441
7	A.03473.35349	SAOS Operatl systems - ViziRail -	15,030
7	A.03473.35350	SAOS Operatl systems - RTIS - AP-B	29,787
7	A.03473.35351	SAOS Operatl systems - UTC - AP-BR	579,877
7	A.03473.35352	IE - Evans & Peck AP-BR	97,457
7	A.03473.35353	SAOS Op Sys - Wayside Systems - AP	41,291
7	A.03473.35354	Axle Counter Audit - AP-BR	0
5	A.03473.35150	Fibre Optic Backbone	2,194,008
6	A.03473.35151	Fibre Optic - QR Eng & Coord - AP-B	101,141
6	A.03473.35152	Fibre Optic Cable Procurement - AP-	161,950
6	A.03473.35153	Optical Fibre Testing Equipment - A	38,087
6	A.03473.35155	Fibre Optic - Testing & Jointing -	27,826
6	A.03473.35156	Survey-Durro to Pring Property Boun	6,373
6	A.03473.35355	Alliance Partner Works	1,858,631
6	A.03473.35356	QR Construction Services in Allianc	0
5	A.03473.35160	Protection Officers	7,290,599
6	A.03473.35161	Protection Officers AP-BR - Jun-Nov	1,662,536
6	A.03473.35163	Protection Officers AP-BR - Jan12-D	5,563,339
6	A.03473.35164	Protection Officers - QR - Jan11	64,724
5	A.03473.35170	Operations Integration	43,311
6	A.03473.35171	Additnl Commissioning Costs - Kaili	43,311
5	A.03473.35180	Telecoms	351,581
6	A.03473.35181	Project Co-ordination & Scheduling	38,456
6	A.03473.35183	Engineering Design	146,796
6	A.03473.35184	Eng Supervision & Commissioning	37,794
6	A.03473.35185	Telecommunications Contractor	23,292
6	A.03473.35187	Telecommunications Material	22,837
6	A.03473.35188	Enabling Works - Bowen etc (from A2	82,406
4	A.03473.35200	QR - Project Management	4,511,994
5	A.03473.35210	Project Management	1,131,345
6	A.03473.35211	GAP50 Area PM AP-BR	1,108,235
6	A.03473.35212	Commissioning Implementation Planni	17,802
6	A.03473.35213	Network Representative for Shut-Dow	5,308
5	A.03473.35220	ECD Civils	2,534,618
6	A.03473.35221	Civil Verification Team Costs & Exp	2,176,522
6	A.03473.35222	Civil Overheads Hours & Expenses	343,138
6	A.03473.35223	Track upgrade line diagram updates	14,957
5	A.03473.35230	Property, CH & NT	461,491
6	A.03473.35231	Property Labour	128,548
6	A.03473.35232	Land acquisition	28,061
7	A.03473.35233	PCQ	2,753
7	A.03473.35234	Howarth & Stone	11,739
7	A.03473.35235	Woodhouse	2,379
7	A.03473.35236	DERM	8,805
7	A.03473.35237	Norman	2,385
6	A.03473.35243	Cultural Heritage - External	132,779
6	A.03473.35244	DTMR Advice/Handover package	8,073
6	A.03473.35245	Land offsets (Environmental)	0
6	A.03473.35246	GAP Crossing Closures	111,585
7	A.03473.35247	Compensation and Legal Costs	11,758
7	A.03473.35248	Consultancy	99,827
6	A.03473.35249	Environmental Management Labour AP-	43,513
6	A.03473.35280	Environmental Audits - AP-BR	8,933



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5	A.03473.35260	Coal Stream Indirects - Paid by QR	358,576
6	A.03473.35261	CSA IT Support from 1/7/10-excl Hel	57,405
6	A.03473.35262	CSA IT Support - ISD/GAP Agreement	301,171
7	A.03473.35263	CSA IT HelpDesk Resource	248,188
7	A.03473.35264	CSA IT HelpDesk Equipment	7,522
7	A.03473.35265	CSA IT -Other (Maintenance, Equipm	45,461
5	A.03473.35270	Aspect3 Indirect Costs (Paid by QR)	25,963
6	A.03473.35272	Aspect3 Program Costs	25,963
4	A.03473.35300	QR - Commercial Services	431,327
5	A.03473.35301	Audit Services	142,577
6	A.03473.35302	Alliance Audit Services - Ernst & Y	142,577
5	A.03473.35311	Insurances, Permits & Fees	288,750
6	A.03473.35320	QLeave	288,750
7	A.03473.35321	Signalling Works AP - BR	288,750
4	A.03473.35400	Finalisation Works - AP-BR	1,410,902
5	A.03473.35401	Track - Package 1 - March 2012+	1,410,902
5	A.03473.35410	Punchlist Items - AP-BR	0
6	A.03473.35411	Contractors - GAP controlled	0
5	A.03473.35420	Telecoms Engineering Closeout - AP-B	0
6	A.03473.35421	Telecoms Eng/Coord Labour - Closeou	0
6	A.03473.35422	Asset Maintenance Labour - Closeout	0
6	A.03473.35423	Telecoms Contractor/Material - Clos	0
2	A.03473.04000	BOGIE RIVER TO NEWLANDS	184,363,518
3	A.03473.40000	Briaba to Collinsville Duplication	63,016,050
4	A.03473.40200	Civil/Structural - CCA	49,089,946
5	A.03473.40201	Briaba Civils - CCA	49,089,946
4	A.03473.40700	Trackwork	10,251,447
5	A.03473.40710	Materials	5,224,199
5	A.03473.40720	Freight	1,366,552
5	A.03473.40730	MRC Operations	2,659,650
5	A.03473.40740	Planning & Logistics Operations	653,924
5	A.03473.40760	Remove/Reinstate Track - Briaba - J	12,800
5	A.03473.40731	Construction - Oct 10	72,592
5	A.03473.40741	Planning/Logistics - Oct 10	3,140
5	A.03473.40761	Remove&Reinstate Track-Culvert Wks M	56,498
5	A.03473.40771	Remove&Reinstate Track-CulvertWrks-S	202,092
4	A.03473.40400	Telecoms	419,053
5	A.03473.40410	Telecommunications Contractor - Bria	132,089
5	A.03473.40411	Asset Maintenance - Briaba	19,889
5	A.03473.40412	Eng Supervision & Commissioning - Br	36,101
5	A.03473.40413	Telecommunications Material - Briaba	230,974
4	A.03473.40300	Signalling	2,920,321
5	A.03473.40301	Telecoms Enabling Works - Briaba-C'v	37,077
5	A.03473.40320	Early Design Works	133,543
6	A.03473.40322	Synergy - Early Design Briaba - Axl	133,543
5	A.03473.40310	Alliance Contract	2,747,270
6	A.03473.40311	Alliance Partner Works	2,025,737
6	A.03473.40312	QR SAOS in Alliance	68,114
6	A.03473.40313	QR Construction Services in Allianc	653,419
5	A.03473.40330	Miscellaneous	2,430
6	A.03473.40331	Signal Repairs - Briaba	2,430
4	A.03473.40240	Civil/Structural - QR	335,284
5	A.03473.40241	Culvert Upgrades	335,284
6	A.03473.40242	Culvert C1 Upgrade - Briaba	135,466
6	A.03473.40243	Culvert C3 Upgrade - Briaba	108,313
6	A.03473.40244	Culvert C2 Upgrade - Briaba	91,505
6	A.03473.40245	Culvert C38a Upgrade - Briaba - BR-	0
3	A.03473.41000	Birralee - Extend Passing Loop	2,765,063
4	A.03473.41200	Civil/Structural - CCA	98,944
4	A.03473.41700	Trackwork	1,048,945
5	A.03473.41710	Materials	378,422
5	A.03473.41720	Freight	24,455
5	A.03473.41730	MRC Operations	578,905
5	A.03473.41740	Planning & Logistics Operations	67,163
4	A.03473.41300	Signalling	1,614,154
5	A.03473.41310	Alliance Contract	1,614,154
6	A.03473.41311	Alliance Partner Works	1,343,668
6	A.03473.41312	QR SAOS in Alliance	53,869
6	A.03473.41313	QR Construction Services in Allianc	216,618
4	A.03473.41400	Telecoms	3,020
5	A.03473.41410	Telecommunications Contractor - Birr	3,020



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3	A.03473.42000	Cockkool - New Passing loop	6,056,035
4	A.03473.42200	Civil/Structural - CCA	2,843,392
4	A.03473.42700	Trackwork	1,271,249
5	A.03473.42710	Materials	635,247
5	A.03473.42720	Freight	84,288
5	A.03473.42730	MRC Operations	498,850
5	A.03473.42740	Planning & Logistics Operations	52,864
4	A.03473.42400	Telecoms	249,662
5	A.03473.42410	Telecommunications Contractor - Cock	55,493
5	A.03473.42411	Asset Maintenance - Cockkool	35,740
5	A.03473.42412	Eng Supervision&Commissioning - Cock	5,047
5	A.03473.42413	Telecommunications Material - Cockoo	153,382
4	A.03473.42300	Signalling	1,691,733
5	A.03473.42310	Alliance Contract	1,691,733
6	A.03473.42311	Alliance Partner Works	1,449,882
6	A.03473.42312	QR SAOS in Alliance	34,362
6	A.03473.42313	QR Construction Services in Allianc	207,488
3	A.03473.43000	McNaughton- BL Upgrade & T/Out Replace	3,578,258
4	A.03473.43210	Civil/Structural TCA1 - CCA	80,779
5	A.03473.43211	McNaughton Mine Loadout - CCA	80,779
4	A.03473.43700	Trackwork	122,589
5	A.03473.43710	Materials	41,699
5	A.03473.43720	Freight	0
5	A.03473.43730	MRC Operations	49,113
5	A.03473.43740	Planning & Logistics Operations	6,982
5	A.03473.43711	Materials - Oct 10	400
5	A.03473.43731	MRC Operations - Oct 10	4,703
5	A.03473.43741	Planning & Logistics - Oct 10	1,781
5	A.03473.43752	Safe Access to Point Machine (wall&r	17,911
4	A.03473.43760	McNaughton- BL Upgrade - Trackwork	3,096,551
5	A.03473.43761	Materials	1,578,382
5	A.03473.43762	Freight	153,887
5	A.03473.43763	MRC Operations	1,184,456
5	A.03473.43764	Planning & Logistics Operations	179,826
4	A.03473.43400	Telecoms	33,445
5	A.03473.43412	Eng Supervision & Commissioning - Mc	0
5	A.03473.43413	Telecommunications Material - McNgnt	33,445
4	A.03473.43300	Signalling	234,378
5	A.03473.43310	Alliance Contract	234,378
6	A.03473.43311	Alliance Partner Works	129,606
6	A.03473.43312	QR SAOS in Alliance	14,246
6	A.03473.43313	QR Construction Services in Allianc	90,526
4	A.03473.43800	Marketing & PR	10,516
5	A.03473.43810	PR & Comms - Scottsville LXC	10,516
3	A.03473.44000	Newlands- BL Upgrade & T/Out Replacem	4,822,250
4	A.03473.44700	Trackwork	455,910
5	A.03473.44710	Materials	145,913
5	A.03473.44730	MRC Operations	15,481
5	A.03473.44740	Planning & Logistics Operations	110,359
5	A.03473.44761	Newlands Mine Works (Oct 2010)	184,158
4	A.03473.44770	Newlands - BL Upgrade - Trackwork	4,018,026
5	A.03473.44771	Materials	1,923,143
5	A.03473.44772	Freight	648,956
5	A.03473.44773	MRC Operations	1,053,495
5	A.03473.44774	Planning & Logistics Operations	392,433
4	A.03473.44300	Signalling	348,314
5	A.03473.44310	Alliance Contract	348,314
6	A.03473.44311	Alliance Partner Works	265,562
6	A.03473.44312	QR SAOS in Alliance	17,770
6	A.03473.44313	QR Construction Services in Allianc	64,982
3	A.03473.45000	Sonoma - Turnout Replacement	411,840
4	A.03473.45700	Trackwork	19,338
5	A.03473.45710	Materials	6,347
5	A.03473.45720	Freight	9,624
5	A.03473.45740	Planning & Logistics Operations	3,367
4	A.03473.45300	Signalling	385,481
5	A.03473.45310	Alliance Contract	385,481
6	A.03473.45311	Alliance Partner Works	318,469
6	A.03473.45313	QR Construction Services in Allianc	67,013
4	A.03473.45400	Telecoms	7,020
5	A.03473.45410	Telecommunications Contractor - Sono	7,020



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3	A.03473.49000	Coral Creek Passing Loop (Sonoma)	17,756
4	A.03473.49200	Civil/Structural	17,756
5	A.03473.49210	ECD Civils	17,756
6	A.03473.49211	Prelim Design	17,756
3	A.03473.48000	Almoola	1,656,738
4	A.03473.48300	Signalling	1,656,738
5	A.03473.48310	Alliance Contract	1,656,738
6	A.03473.48311	Alliance Partner Works	1,656,738
3	A.03473.46000	Existing Track Upgrades	10,333,080
4	A.03473.46010	Collinsville Turnout Replacement	1,274,898
5	A.03473.46210	Civil/Structural - CCA	12,183
5	A.03473.46711	Trackwork	0
5	A.03473.46310	Signalling	1,262,715
6	A.03473.46311	Alliance Contract	1,262,715
7	A.03473.46312	Alliance Partner Works	1,141,570
7	A.03473.46313	QR SAOS in Alliance	19,674
7	A.03473.46314	QR Construction Services in Allian	101,471
4	A.03473.46020	Havilah Turnout Replacement	3,941,732
5	A.03473.46220	Havilah Civils for T/out Replacement	684,288
5	A.03473.46721	Trackwork	1,369,100
6	A.03473.46722	Materials	481,972
6	A.03473.46723	Freight	6,954
6	A.03473.46724	MRC Operations	831,711
6	A.03473.46725	Planning & Logistics Operations	48,462
5	A.03473.46420	Telecoms	4,812
6	A.03473.46432	Asset Maintenance - Havilah	4,812
5	A.03473.46320	Signalling	1,883,532
6	A.03473.46421	Alliance Contract	1,883,532
7	A.03473.46422	Alliance Partner Works	1,604,052
7	A.03473.46423	QR SAOS in Alliance	49,370
7	A.03473.46424	QR Construction Services in Allian	230,111
4	A.03473.46025	Level Crossing Upgrades - BR-N	5,107,691
5	A.03473.46030	LX ID 0659 North Briaba 50km	273,114
6	A.03473.46330	Signalling	273,114
7	A.03473.46331	Alliance Contract	273,114
8	A.03473.46332	Alliance Partner Works	258,878
8	A.03473.46333	QR SAOS in Alliance	14,236
5	A.03473.46040	LX ID 819 Bowen Development Rd 115.9	486,157
6	A.03473.46340	Signalling	486,157
7	A.03473.46341	Alliance Contract	486,157
8	A.03473.46342	Alliance Partner Works	486,157
5	A.03473.46050	LX ID 3301 Collinsville x.xxxkm	528,963
6	A.03473.46350	Signalling	528,963
7	A.03473.46351	Alliance Contract	528,963
8	A.03473.46352	Alliance Partner Works	506,288
8	A.03473.46353	QR SAOS in Alliance	22,675
5	A.03473.46060	LX to ALCAM Standard - Various - BR-	1,155,974
6	A.03473.46761	Trackwork	1,155,974
7	A.03473.46762	Materials - LX Upgrades - BR-N	172,860
7	A.03473.46765	Planning & Logistics - LX Upgrades	983,114
5	A.03473.46070	26.5 TAL Newlands Rerailing BR-N	2,663,483
6	A.03473.46771	Trackwork	2,663,483
7	A.03473.46772	Materials	1,168,421
7	A.03473.46773	Freight	191,040
7	A.03473.46774	MRC Operations	1,303,080
7	A.03473.46775	Planning & Logistics Operations	943
5	A.03473.46080	Track Lubricators - BR-N	0
6	A.03473.46781	Asset Maintenance	0
7	A.03473.46782	Design - Track Lubricators	0
7	A.03473.46783	Supply & Install - Track Lubricator	0
4	A.03473.46090	DED Sleepers - Supply & Install	8,759
5	A.03473.46791	Trackwork - DED Sleepers	8,759
4	A.03473.46085	Havilah Culvert Upgrades	0
5	A.03473.46086	Engineering Review - Pitt & Sherry	0
4	A.03473.46095	Havilah Intersection	0
5	A.03473.46795	Havilah Intersection-Civil Works	0



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3	A.03473.47000	Formation & Ballast Upgrades	16,392,434
4	A.03473.47700	Trackworks	16,392,434
5	A.03473.47701	Ballast Upgrade Works - Oct 10	134,521
5	A.03473.47702	Ballast Upgrade - Briaba Yard (Oct 2	298,493
5	A.03473.47703	Track Investigations - Nov 2010	13,473
5	A.03473.47704	NL Speed Restriction Removal Works-M	68,647
5	A.03473.47705	Bogie River - Briaba Track Relay - M	7,851,111
6	A.03473.47715	BR - Briaba - Materials	2,529,323
6	A.03473.47725	BR - Briaba - Freight	654,502
6	A.03473.47735	BR - Briaba - Planning	134,032
6	A.03473.47745	BR - Briaba - Construction	4,533,254
5	A.03473.47706	Formation Repair&Relay 52.7-54.7km	3,502,878
6	A.03473.47716	Materials	654,583
6	A.03473.47746	Planning & Logistics Operations	2,848,295
5	A.03473.47710	Track Relay 56.700-57.834km - Apr12	907,071
6	A.03473.47711	Materials	262,458
6	A.03473.47712	Freight	36,517
6	A.03473.47713	MRC Operations	603,341
6	A.03473.47714	Planning & Logistics Operations	4,755
5	A.03473.47720	Track Relay 57.914-59.150km - Apr12	634,198
6	A.03473.47721	Materials	267,744
6	A.03473.47722	Freight	120,757
6	A.03473.47723	MRC Operations	238,834
6	A.03473.47724	Planning & Logistics Operations	6,862
5	A.03473.47730	Track Upgrades 63.300-70.491km - Apr	2,678,787
6	A.03473.47731	Materials	789,270
6	A.03473.47732	Freight	162,889
6	A.03473.47733	MRC Operations	1,528,246
6	A.03473.47734	Planning & Logistics Operations	198,381
5	A.03473.47740	Briaba-C'vi Relay(72.5-73.3+74.45-74.	303,255
6	A.03473.47741	Materials	196,963
6	A.03473.47742	Freight	87,412
6	A.03473.47743	MRC Operations	0
6	A.03473.47744	Planning & Logistics Operations	18,881
3	A.03473.50000	Whole of Area Costs (Non QR)	63,072,858
4	A.03473.50100	CoalConnect Alliance Works	40,064,124
5	A.03473.50110	Alliance - Project Management	2,351,867
5	A.03473.50120	Alliance - Engineering	1,812,100
5	A.03473.50140	Construction preliminaries	32,771,754
5	A.03473.50121	Construction Support - Engineering	3,128,402
4	A.03473.50300	Synergy Alliance Indirect Costs	19,348,913
5	A.03473.50311	Synergy Indirects - TCE	19,348,913
6	A.03473.50312	Alliance Partner Works	18,750,590
6	A.03473.50313	QR SAOS in Alliance	598,324
6	A.03473.50314	QR Construction Services in Allianc	0
4	A.03473.50320	Synergy Fibre Optics	3,157,697
5	A.03473.50321	Fibre Optic Construction - BR-N	3,157,697
4	A.03473.50400	Power Supply	502,124
5	A.03473.50410	Ergon Energy Power for Signals	427,976
5	A.03473.50411	Investig Stand-alone Solar Power-Hav	18,099
5	A.03473.50412	Generator power for Signals - Havila	56,050
5	A.03473.50413	Solar power (RAPS) for Signals - Hav	0
3	A.03473.51000	Whole of Area Costs - QR	12,241,156
4	A.03473.51100	QR - Service Providers	8,256,992
5	A.03473.51110	Infrastructure Projects Integration	1,699,752
6	A.03473.51112	IPI - Sept 2010 to Dec 2011 - BR-N	1,621,924
6	A.03473.51113	Telecoms for IP - to C'ville Site O	77,828
5	A.03473.51130	Track Work	80,926
6	A.03473.51131	Monumenting BR-N	45,775
6	A.03473.51132	Install of Access Road Signage - BR	35,152
5	A.03473.51140	ECD Signals	2,499,706
6	A.03473.51141	Preliminary Design	393,408
6	A.03473.51142	Project Coordination	521,742
6	A.03473.51143	ECD Signals - IP Activities - BR-N	24,645
6	A.03473.51144	Synergy Rent - BR-N	620,346
6	A.03473.51145	IE - Evans & Peck - BR-N	38,755
6	A.03473.51146	BR-N Signalling Relocations	775,001
6	A.03473.51147	Synergy Indirects -ISD etc - BR-N	125,810



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5	A.03473.51150	Fibre Optic Backbone	385,857
6	A.03473.51151	Fibre Optic - QR Eng & Coord - BR-N	97,449
6	A.03473.51152	Fibre Optic Cable Procurement BR-N	280,527
6	A.03473.51153	Fibre Optic - Testing & Jointing -	7,881
5	A.03473.51160	Protection Officers	3,284,832
6	A.03473.04001	TPO - Newlands Loadout	1,215
6	A.03473.51161	Protection Officers BR-N - Jun-Nov	397,099
6	A.03473.51163	Protection Officers BR-N - Sep11-De	2,861,699
6	A.03473.51164	Protection Officers Hawlah Interse	0
6	A.03473.51162	Temporary Protection Officer - Jan1	24,819
5	A.03473.51170	Operations Integration	6,616
6	A.03473.51171	Operating Plans - BR-N	2,604
6	A.03473.51172	Simulation Modelling	4,013
5	A.03473.51180	Telecoms	139,110
6	A.03473.51181	Project Co-ordination & Scheduling	54,875
6	A.03473.51182	Engineering Design	67,080
6	A.03473.51186	Telecommunications Material	17,154
5	A.03473.51190	Operational Systems	160,193
6	A.03473.51191	SAOS Operatl systems - ViziRail - B	0
6	A.03473.51192	SAOS Operatl systems - RTIS - BR -	8,922
6	A.03473.51193	SAOS Operatl systems - UTC - BR - N	108,214
6	A.03473.51194	SAOS Op Sys - Wayside Systems - BR-	43,057
4	A.03473.51200	QR - Project Management	2,626,372
5	A.03473.51210	Project Management	1,054,408
6	A.03473.51211	GAP50 Area PM BR-N	1,045,654
6	A.03473.51212	Network Rep for Shut-Down - BR-N	8,754
5	A.03473.51220	ECD Civils	907,375
6	A.03473.51221	Civil Verification Team Costs & Exp	841,218
6	A.03473.51222	Civil Overheads Hours & Expenses	66,157
5	A.03473.51230	Property, CH & NT	641,234
6	A.03473.51231	Property Labour	126,699
6	A.03473.51232	Land acquisition	220,127
7	A.03473.51233	Cowan	132,103
7	A.03473.51234	DERM	88,024
7	A.03473.51235	Xstrata	0
6	A.03473.51242	Native Title - External	191
6	A.03473.51243	Cultural Heritage - External	175,289
6	A.03473.51244	DTMR Advice/Handover package	31,129
6	A.03473.51245	Land offsets (Environmental)	0
6	A.03473.51249	Environmental Management Labour BR-	21,015
6	A.03473.51280	Environmental Audits - BR-N	8,933
6	A.03473.51246	GAP Crossing Closures	41,747
7	A.03473.51247	Compensation and Legal Costs	5,022
7	A.03473.51248	Consultancy	36,726
6	A.03473.51241	Pepper Property - Fencing - Briaba	16,104
5	A.03473.51250	QR Capital Procurement	348
6	A.03473.51251	Rail Materials	348
7	A.03473.51252	Rail Materials from A.01541	348
5	A.03473.51260	Stakeholder Management	23,007
6	A.03473.51261	Collinsville Station	23,007
7	A.03473.51262	Collinsville Station - Upgrade Wor	23,007
4	A.03473.51300	QR - Commercial Services	178,117
5	A.03473.51301	Audit Services	140,656
6	A.03473.51302	Alliance Audit - KPMG - BR-N	110,656
6	A.03473.51303	Synergy Audit by PwC - BR-N	30,000
5	A.03473.51311	Insurances, Permits & Fees	37,461
6	A.03473.51320	QLeave	37,461
7	A.03473.51321	QLeave - CoalConnect BR-N	37,461
4	A.03473.51400	Finalisation Works - BR-N	1,179,674
5	A.03473.51401	Track - Package 2 - March 2012+	1,179,674
5	A.03473.51410	Punchlist Items - BR-N	0
6	A.03473.51411	Culvert Chainage Marking	0
6	A.03473.51413	Misc Fencing - Briaba	0
6	A.03473.51414	Fencing Repairs at LX3312 (Abdn/Hav	0
6	A.03473.51415	Contractors - GAP controlled - BR-N	0
5	A.03473.51420	Telecoms Engineering Closeout - BR-N	0
6	A.03473.51421	Telecoms Eng/Coord Labour - Closeou	0
6	A.03473.51422	Asset Maintenance Labour - Closeout	0
6	A.03473.51423	Telecoms Contractor/Material - Clos	0



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2	A.03473.06000	NORTHERN MISSING LINK	294,545,840
3	A.03473.60000	New NML Railway	174,343,640
4	A.03473.60200	Civil/Structural	116,008,138
5	A.03473.60210	Formation Construction 69km	116,008,138
4	A.03473.60700	Trackwork	49,897,288
5	A.03473.60710	Materials	29,607,004
5	A.03473.60720	Freight	5,347,902
5	A.03473.60730	MRC Operations	14,455,003
5	A.03473.60740	Planning & Logistics Operations	487,379
4	A.03473.60400	Telecoms	1,163,162
5	A.03473.60410	Leichhardt Range	303,937
6	A.03473.60411	Telecoms Contractor - Leichhardt Ra	52,486
6	A.03473.60412	Asset Maintenance - Leichhardt Rang	51,247
6	A.03473.60413	Eng Super & Commish - Leichhardt Ra	20,133
6	A.03473.60414	Telecoms Material - Leichhardt Rang	180,071
5	A.03473.60420	Suttor Creek	21,336
6	A.03473.60422	Asset Maintenance - Suttor Creek	17,878
6	A.03473.60423	Eng Super & Commish - Suttor Creek	3,458
5	A.03473.60430	Eaglefield Creek	273,584
6	A.03473.60431	Telecoms Contractor - Eaglefield Cr	44,530
6	A.03473.60432	Asset Maintenance - Eaglefield Cree	41,450
6	A.03473.60433	Eng Super & Commish - Eaglefield Cr	28,230
6	A.03473.60434	Telecoms Material - Eaglefield Cree	159,374
5	A.03473.60440	North Goonyella	564,305
6	A.03473.60441	Telecoms Contractor - North Goonyel	82,579
6	A.03473.60442	Asset Maintenance - North Goonyella	42,987
6	A.03473.60443	Eng Super & Commish - North Goonyel	50,250
6	A.03473.60444	Telecoms Material - North Goonyella	388,489
4	A.03473.60300	Signalling	7,275,052
5	A.03473.60310	Alliance Contract	59,429
6	A.03473.60311	Alliance Partner Works	58,567
6	A.03473.60312	QR SAOS in Alliance	863
5	A.03473.60320	Newlands Junction	937,907
6	A.03473.60321	Synergy TCE	937,907
7	A.03473.60322	Alliance Partner Works	918,490
7	A.03473.60323	QR SAOS In Alliance	19,417
5	A.03473.60330	Leichardt	1,393,754
6	A.03473.60331	Synergy TCE	1,393,754
7	A.03473.60332	Alliance Partner Works	1,214,347
7	A.03473.60333	QR SAOS In Alliance	13,238
7	A.03473.60334	QR Construction Services In Allian	166,170
5	A.03473.60340	Suttor Creek	1,333,735
6	A.03473.60341	Synergy TCE	1,333,735
7	A.03473.60342	Alliance Partner Works	1,173,403
7	A.03473.60343	QR SAOS In Alliance	8,735
7	A.03473.60344	QR Construction Services In Allian	151,597
5	A.03473.60350	Eaglefield Creek	1,226,169
6	A.03473.60351	Synergy TCE	1,226,169
7	A.03473.60352	Alliance Partner Works	987,833
7	A.03473.60353	QR SAOS In Alliance	26,389
7	A.03473.60354	QR Construction Services In Allian	211,948
5	A.03473.60360	North Goonyella	2,324,057
6	A.03473.60361	Synergy TCE	2,324,057
7	A.03473.60362	Alliance Partner Works	2,128,330
7	A.03473.60363	QR SAOS In Alliance	86,669
7	A.03473.60364	QR Construction Services In Allian	109,058



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3	A.03473.61000	Rail Bridges (1-11)	12,431,122
4	A.03473.61101	Rail Bridge 1 at 204.61km	833,090
5	A.03473.61201	Civil/Structural - CCA	833,090
4	A.03473.61102	Rail Bridge 2 at 200.040km	919,271
5	A.03473.61202	Civil/Structural - CCA	919,271
4	A.03473.61103	Rail Bridge 3 at 195.265km	2,543,879
5	A.03473.61203	Civil/Structural - CCA	2,543,879
4	A.03473.61104	Rail Bridge 4 at 193.065km	345,072
5	A.03473.61204	Civil/Structural - CCA	345,072
4	A.03473.61105	Rail Bridge 5 at 189.4km	598,102
5	A.03473.61205	Civil/Structural - CCA	598,102
4	A.03473.61106	Rail Bridge 6 at 178.35km	958,953
5	A.03473.61206	Civil/Structural - CCA	958,953
4	A.03473.61107	Rail Bridge 7 at 177.653km	2,523,443
5	A.03473.61207	Civil/Structural - CCA	2,523,443
4	A.03473.61108	Rail Bridge 8 at 173.79km	613,951
5	A.03473.61208	Civil/Structural - CCA	613,951
4	A.03473.61109	Rail Bridge 9 at 169.5km	1,021,555
5	A.03473.61209	Civil/Structural - CCA	1,021,555
4	A.03473.61110	Rail Bridge 10 at 165.3km	1,085,813
5	A.03473.61210	Civil/Structural - CCA	1,085,813
4	A.03473.61111	Rail Bridge 11 at 153.28km	987,994
5	A.03473.61211	Civil/Structural - CCA	987,994
3	A.03473.62000	Road Overpass Bridge Cerito Road	5,501,487
4	A.03473.62200	Civil/Structural - CCA	5,501,487
5	A.03473.62201	Cerito Rd Overpass Bridge Civils - C	5,501,487
3	A.03473.63000	Road Overpass Bridge Suttor Road	7,752,320
4	A.03473.63200	Civil/Structural - CCA	7,752,320
5	A.03473.63201	Suttor Rd Overpass Bridge Civils - C	7,752,320
3	A.03473.70000	Whole of Area Costs (Non QR)	59,307,513
4	A.03473.70100	CoalConnect Alliance Works	56,010,894
5	A.03473.70110	Alliance - Project Management	2,921,674
5	A.03473.70120	Alliance - Engineering	2,183,691
5	A.03473.70130	Camp, Accom, Vehicles etc	9,281,544
5	A.03473.70140	Construction preliminaries	34,365,381
5	A.03473.70160	Insurances, Permits, Fees	551,000
5	A.03473.70170	Other CoalConnect Indirect Costs	1,814,994
5	A.03473.70180	Demob & Reparation Costs (Pre May 10	569,243
5	A.03473.70121	Construction Support - Engineering	1,555,720
5	A.03473.70125	Engineering Support for Construction	2,767,646
4	A.03473.70320	Synergy Fibre Optics	2,197,739
5	A.03473.70321	Fibre Optic Construction - NML	2,197,739
4	A.03473.70400	Power Supply	1,098,880
5	A.03473.70410	Ergon Energy Power for Signals	931,861
5	A.03473.70411	QR Coordination- Ergon Signals Power	19,540
5	A.03473.70412	Investig Stand-alone Solar Power-Sut	10,396
5	A.03473.70413	Generator power for Signals - NML	137,084
5	A.03473.70414	Solar power (RAPS) for Signals-Sutto	0
3	A.03473.71000	Whole of Area Costs - QR	35,209,758
4	A.03473.71100	QR - Service Providers	3,000,707
5	A.03473.71110	Infrastructure Projects Integration	392,054
6	A.03473.71111	IPI - June to August 2010 - NML	11,130
6	A.03473.71112	IPI - Sept 2010 to Dec 2011 - NML	375,818
6	A.03473.71113	Lancewood Camp WAN service - Teleco	5,106
5	A.03473.71130	Track Work	60,082
6	A.03473.71131	Monumenting - NML	60,082
5	A.03473.71140	ECD Signals	1,264,638
6	A.03473.71141	Preliminary Design	130,027
6	A.03473.71142	Project Coordination	305,704
6	A.03473.71143	ECD Signals - IP Activities - NML	18,682
6	A.03473.71144	Synergy Rent - NML	620,370
6	A.03473.71145	IE - Evans & Peck - NML	64,045
6	A.03473.71146	Synergy Indirects -ISD etc - NML	125,810
5	A.03473.71150	Fibre Optic Backbone	291,129
6	A.03473.71151	Fibre Optic - QR Eng & Coord - NML	73,563
6	A.03473.71152	Fibre Optic Cable Procurement NML	180,778
6	A.03473.71153	Optical Fibre Testing Equipment - N	15,197
6	A.03473.71154	Fibre Optic - Testing & Jointing -	14,679
6	A.03473.71155	Survey for Fibre Optic-GY Line 200-	6,912



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5	A.03473.71160	Protection Officers	535,417
6	A.03473.71161	Protection Officers NML - Jun-Nov 2	8,337
6	A.03473.71163	Protection Officers NML - Dec10-Dec	527,080
5	A.03473.71180	Operational Systems	103,264
6	A.03473.71181	SAOS Operatl systems - ViziRail - N	6,603
6	A.03473.71182	SAOS Operatl systems - RTIS - NML	831
6	A.03473.71183	SAOS Operatl systems - UTC - NML	68,357
6	A.03473.71184	SAOS Op Sys - Wayside Systems - NML	27,473
5	A.03473.71610	Telecoms	354,124
6	A.03473.71611	Whole of Area	97,069
7	A.03473.71612	Project Coordination & Scheduling	37,054
7	A.03473.71613	Engineering Design	60,015
6	A.03473.71621	Control Centre Interfacing	117,459
7	A.03473.71623	Asset Maintenance - Ctrl Ctr Inter	42,849
7	A.03473.71624	Eng Super & Commish - Ctrl Ctr Int	14,046
7	A.03473.71625	Telecoms Material - Ctrl Ctr Inter	60,565
6	A.03473.71630	Occupational Crossing Telephones -	139,596
7	A.03473.71631	Engineering Design	16,020
7	A.03473.71632	Engineering Co-ord	780
7	A.03473.71633	Procurement	116,087
7	A.03473.71634	Telecomms Contractor	0
7	A.03473.71635	Engineering Commissioning	6,709
4	A.03473.71200	QR - Project Management	3,356,859
5	A.03473.71210	Project Management	616,838
6	A.03473.71211	GAP50 Area PM NML	616,838
5	A.03473.71220	ECD Civils	2,163,525
6	A.03473.71221	Civil Verification Team Costs & Exp	2,041,463
6	A.03473.71222	Civil Overheads Hours & Expenses	122,062
5	A.03473.71230	Property, CH & NT	576,496
6	A.03473.71231	Property Labour	42,837
6	A.03473.71232	Land acquisition	199,354
7	A.03473.71233	Kemps (now BHP)	24,521
7	A.03473.71234	Masons	23,521
7	A.03473.71235	Pini	70,188
7	A.03473.71236	Perry	27,868
7	A.03473.71237	Maddern	23,521
7	A.03473.71238	Colinta	24,521
7	A.03473.71239	DERM	0
7	A.03473.71240	Sunwater	0
7	A.03473.71241	Peabody	5,212
6	A.03473.71243	Cultural Heritage - External	8,410
6	A.03473.71244	DTMR Advice/Handover package	8,987
6	A.03473.71245	Land offsets (Environmental)	226,537
6	A.03473.71246	Cadastral Survey - NML	44,321
6	A.03473.71247	Land Offsets - Legal Costs - NML	3,726
6	A.03473.71248	Environmental Management Labour NML	33,391
6	A.03473.71280	Environmental Audits - NML	8,933
4	A.03473.71300	QR - Commercial Services	289,440
5	A.03473.71301	Audit Services	187,046
6	A.03473.71302	Alliance Audit - KPMG - NML	157,046
6	A.03473.71303	Synergy Audit by PwC - NML	30,000
5	A.03473.71311	Insurances, Permits & Fees	102,394
6	A.03473.71320	QLeave	102,394
7	A.03473.71321	QLeave - CoalConnect NML	102,394
4	A.03473.71400	Byerwen Quarry Operations	28,541,415
5	A.03473.71410	Fencing of Byerwen Quarry Site	48,700
5	A.03473.71430	QR Quarry Management	182,951
5	A.03473.71440	QR Quarry Inventory	0
5	A.03473.71450	Quarry Royalties	1,393,212
5	A.03473.71460	Misc QR Costs	15,536
5	A.03473.71470	Quarry Operation Contract	26,901,016
6	A.03473.71471	Ballast Product	9,874,239
6	A.03473.71472	Capping Product	14,980,222
6	A.03473.71473	RSS Fill Product	437,200
6	A.03473.71474	Other Product	1,609,355
4	A.03473.71500	Cyclone Ellie Insurance - QR Works 20	21,338
5	A.03473.71511	QR Project Management	15,423
5	A.03473.71512	QR Civils	5,915
4	A.03473.71700	Finalisation Works - NML	0
5	A.03473.71710	Punchlist Items - NML	0
6	A.03473.71711	Punchlist Items - General - NML	0
6	A.03473.71712	Punchlist Items - Asset Maintenance	0
5	A.03473.71720	Telecoms Engineering Closeout - NML	0
6	A.03473.71721	Telecoms Eng/Coord Labour - Closeou	0
6	A.03473.71722	Asset Maintenance Labour - Closeout	0
6	A.03473.71723	Telecoms Contractor/Material - Clos	0



2	A.03473.08000	PROVISIONS	8,062,691
3	A.03473.82000	Alliance Incentive Payments	5,969,861
4	A.03473.82200	Coal Stream KRAs	550,000
4	A.03473.82300	Aspect3 KRAs	254,993
4	A.03473.82600	Coal Stream Painshare/Gainshare	2,864,868
4	A.03473.82700	Aspect3 Painshare/Gainshare	2,300,000
4	A.03473.82800	Synergy Painshare/Gainshare	0
3	A.03473.84000	Goonyella System Costs	39,837
4	A.03473.84100	Mallawa-Wotonga Grade Easing	39,837
5	A.03473.84300	Signalling	2,694
6	A.03473.84301	Signalling Study	2,694
5	A.03473.84200	Property, CH & NT	37,143
6	A.03473.84201	Property Labour	1,504
6	A.03473.84202	Land acquisition	35,640
3	A.03473.86000	Insurance Claims	1,871,435
4	A.03473.86200	BR-N & NML Rain Claim Nov10	7,602,916
5	A.03473.86210	Non QRN	7,511,060
6	A.03473.86211	CoalConnect Alliance Works	7,498,775
6	A.03473.86212	Legal/Audit/Insurance Services	12,285
5	A.03473.86220	QRN	91,855
6	A.03473.86221	QR Project Management & Admin	85,955
6	A.03473.86222	QR Civils	5,900
4	A.03473.86300	AP-BR Rain Claim No.1 Sep10	10,746
5	A.03473.86320	QRN	10,746
6	A.03473.86321	QR Project Management & Admin	10,746
4	A.03473.86400	AP-BR Rain Claim No.1+2 Sep+Nov10	38,694
5	A.03473.86420	QRN	38,694
6	A.03473.86421	QR Project Management & Admin	38,694
4	A.03473.86500	AP-BR Rain Claim No.3 Mar11	-4,586,207
5	A.03473.86520	QRN	29,005
6	A.03473.86521	QR Project Management & Admin	29,005
3	A.03473.87000	DTC to RCS Upgrade	181,559
4	A.03473.87300	Program Management	0
5	A.03473.87301	Project Management and Admin	0
5	A.03473.87305	Synergy Rent - RCS Upgrade	0
5	A.03473.87306	Synergy Indirects -ISD etc - RCS Upg	0
5	A.03473.87307	Consultancies	0
6	A.03473.87308	IE - Evans & Peck	0
4	A.03473.87100	Signalling Non QRN	86,028
5	A.03473.87110	Synergy Prelim Design Mar-May12	86,028
5	A.03473.87111	Long Lead Items - DTC to RCS Upgrade	0
5	A.03473.87112	Alice Partner Early Works	0
5	A.03473.87117	Alice QRN S&T Test & Commission	0
4	A.03473.87200	Signalling QRN	95,531
5	A.03473.87210	QRN S&T Signalling	95,531
6	A.03473.87211	QRN S&T Signalling Coordination	27,990
6	A.03473.87212	QRN S&T Signalling Preliminary Desi	62,327
6	A.03473.87213	QRN S&T Op Sys - Development	4,550
6	A.03473.87214	QRN S&T Lines & Cables	665
6	A.03473.87220	QRN S&T Operational Systems	0
7	A.03473.87221	QRN S&T Op Sys UTC Design and Cons	0
4	A.03473.87400	Telecoms	0
5	A.03473.87410	Telecommunications Design	0
6	A.03473.87411	Engineering Design	0
6	A.03473.87412	Drafting	0
6	A.03473.87413	Data Comms Network IP WAN Lab Testi	0
5	A.03473.87420	Telecommunications Management	0
6	A.03473.87421	Project Coordination	0
6	A.03473.87422	Discipline Scheduling	0
5	A.03473.87430	Procurement	0
6	A.03473.87431	Procurement Management	0
6	A.03473.87432	Material Procurement	0
5	A.03473.87440	Construction External	0
6	A.03473.87441	Telecommunications Contractor	0
5	A.03473.87450	Test and Commission	0
6	A.03473.87451	Eng Commissioning and Technical Coo	0
6	A.03473.87452	Labour - Commissioning	0
4	A.03473.87500	Track Protection	0
5	A.03473.87510	TPO's - Aug 12 Early Works	0
4	A.03473.87600	STS	0
5	A.03473.87610	STS - Catchpoints	0
2	A.03473.90000	ACCRUALS	10,898,680
3	A.03473.99999	Temporary Accrual Element	10,898,680



Appendix M. GAPE expansion (pre-GFC) project

SKM's min-report has been incorporated in **Appendix L** above.



Appendix N. GAPE long lead items (pre-GFC) project

SKM's mini-report has been incorporated in **Appendix L** above.



Appendix O. GAPE X70-X100 early works (pre-GFC) project

SKM's mini-report has been incorporated in **Appendix L** above.



Appendix P. GAPE electrification phase project

P.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

Key project information is provided in **Table P-1**.

Table P-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.02648	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	\$7,641,661
Total approved funding	\$7,641,660	Project financially complete	Yes

P.1.1 Location of project

Figure P-1 below, from the 2007 CRIMP, shows the location of the GAPE electrification project. The project comprises the Northern Missing Link (from North Goonyella to Newlands) and upgrades to the Newlands system.

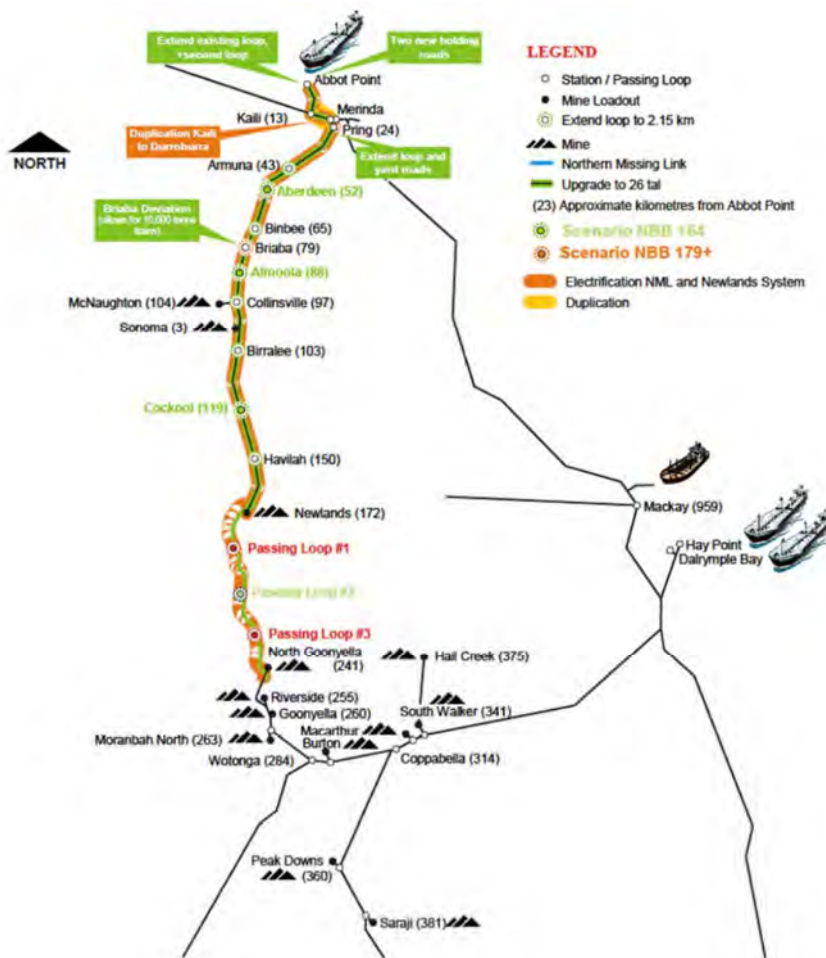


Figure P-1 : Location of GAPE electrification project



P.1.2 Objective of this investment

The Schedule 3 – GAPE Claims Submission of the 2011-2012 claim contains one report, namely “20121018 GAP50 report” (Schedule 3 report), which states that in late 2007 the demand for coal was still strong and that the 2008 CRIMP concluded that the 50mtpa expansion would be required by 2010, 75mtpa by mid-2012 and 100mtpa by mid-2014. On the basis of the industry's request to expedite works identified in the 2008 CRIMP, Aurizon Network Ltd Pty initiated the X50 project and commenced longer range planning for X75 and X100.

This longer range planning included electrification of the Newlands system which was considered to offer significant cost advantages and which would provide benefits from the flexibility of common fleet resources between the Goonyella and Newlands systems.

The Schedule 3 report states that the aim of the studies was to produce a reference estimate on the electrification works, in order for stakeholders to make an informed decision on whether to implement electrification.

P.1.3 Status of the project

Slide 2 of a presentation dated November 2009 to Customers, enclosed in Appendix B of the Schedule 3 report states that the electrification study costs previously incurred were to be included in the project costs. It also states that the study had concluded that electrification would be uneconomic at the foreseeable tonnages.

The majority of the electrification study works occurred in the period October 2008 to December 2009, although expenditure continued to be attributed to the project until February 2011. These costs were held by Aurizon Network Pty Ltd until such time as the GAPE (post-GFC) project was completed.

P.2 Capital expenditure

Table P-2 shows the cost of the GAPE electrification project.

Table P-2 : Project A.02648 - proposed capital expenditure profile

Source document name	Item	Project Cost
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Claim value	\$7,641,661
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Interest During Construction	\$2,356,244
Schedule 3 – GAPE Claims Submission: “20121018 GAP50 Report”	Page 51, Summary of Total Current Expenditure GAP50 Project - Cost (exc. IDC)	\$7,641,661

There was no additional cost information by SKM other than that which is listed in the above table.

The funding and approvals and claim details for this project are shown in **Table P-3**.



Table P-3 : 2011-2012 claim details

Claim	Value
Prior Years Expenditure	\$7,641,661
Prior Authority Approved Value	\$0
2011/12 YTD Expenditure	\$0
Total 11/12 Claimable Expenditure	\$7,641,661
Applicable Financial Interest	\$2,356,244
Total amount for inclusion in the RAB	\$9,997,905

There were no finance data discrepancies in the information provided.

P.3 Provided documentation

This review is based on information sourced from documents as shown in **Table P-4** and **Table P-5** below.

Table P-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
See Appendix L-B					

Table P-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure (sic) Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	
Aurizon Network Pty Ltd	Schedule 7 – IPR Charter	Schedule 7 – Assets Management Independent Peer Review Charter	Schedule 7 – Assets Management Independent Peer Review Charter	Adobe PDF	
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure (sic) Master Plan	5. 2009 CRIMP.pdf (sic)	Adobe PDF	October 2009



P.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 013 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost; and
- RFI 021 SKM requested (i) scope of work, (ii) all calculations of load flow, cable derating etc (iii) transformer and switchgear ratings and (iv) protection scheme.
- RFI 040 Amongst other requests, SKM asked for a comparison between the forecast scope and final deliverables associated with the pre-GFC projects (i.e. scope as approved by QR Board/Shareholding Minister vs actual delivered scope).

P.3.2 Adequacy of information provided and general comments

The initial and additional supporting documents received from Aurizon Network Pty Ltd have enabled SKM to undertake its assessment of prudence of scope, standard and cost. SKM notes that to date no GAPE electrification project specific reply to RFI 013 has been received, but the reply to RFI 021 was comprehensive and contained significant information for this assessment of prudence of standard and cost.

P.4 Assessment of prudence

In assessing the prudence of capital expenditure and in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

P.4.1 Project scope

As part of the pre- GFC development of the GAPE project the electrification of the system was investigated at tonnage scenarios of X50, X75 and X100. The possible electrification of the project was to include greenfield electrification of the Northern Missing Link and brownfield electrification of the existing Newland System.

As stated in response to RFI 021, Aurizon Network Pty Ltd coordinated the Coal Power Alliance, comprising Siemens and Aurizon Network Pty Ltd, to develop options for electrification and review the locations required for feeder stations and supply points. Up to December 2009 works were centred on option investigation, site selection and engagement with Powerlink for the connection to the high voltage network.

The studies carried out by Siemens were to determine the technical feasibility of the proposed power supply system for the GAPE project by means of a train simulation including electrical network calculations. These simulations were run utilising the Sitras Sidytrac system.

The following design variants were considered in a total of nine differing combinations:

- tonnages at 50mtpa, 75mtpa and 100mtpa;
- AC locomotives and DC locomotives;
- two arrangements of feeder station sites; and
- differing electrical supply options.



Table P-6 provides a summary of the project scope.

Table P-6 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	No
Does the project consist of capital expenditure and not maintenance?	Yes
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

In response to RFI 021, Aurizon Network Pty Ltd has stated that, at the time of these electrification investigations, there were access applications for GAPE in excess of 100mtpa with commercial deals being negotiated. Thus the entire GAPE project was, at this time, being designed for staged expansion to a 100mtpa level. The majority of this 100mtpa was to originate from existing and new mines in the electrified Goonyella system. There was an identified need for the GAPE to be electrified allowing electric locomotive powered trains access through to the port of Abbott Point.

The electrification studies were progressing when the impacts of the GFC resulted in a sharp decline in coal demand internationally. This decline triggered several industry expenditure reductions. Planned new mine developments and existing mine expansions that were driving the expected demand for the GAPE project slowed significantly. With the fall in demand and pull back from access deed negotiations, the GAPE electrification studies were stopped.

SKM is of the opinion that, given the initial projected demand for 100mtpa, the decision to begin studies to investigate the electrification of the proposed GAPE and Newlands systems made sound economic sense. The option to electrify the lines was prudent given the fact that the connecting Goonyella system is electrified.

Conclusion

Given the above, SKM concludes that the scope of this project is prudent.

P.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved 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.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.



These elements are discussed further below.

Discussion

The “Siemens Interim System Power Study Summary” document supplied with RFP 021 response details the tested scenarios, as shown in the **Table P-7**.

Table P-7 : GAPE electrification scenarios tested

Case	Tonnage (mtpa)	Train Type ²⁵	No. of FS	Rated TF Power (MVA)	Contact Line	Double Sided Feeding
1	50	25% 5x3600 75% 3x7000	4+1 ²⁶	40/50	reinforced	No
2	75	100% 3x3700	4+1	40/50	reinforced	Yes
3	75	100% 3x3700	4+1	40/50	reinforced	No
4	75	25% 5x3600 75% 3x7000	4+1	40/50	reinforced	Yes
5	75	25% 5x3600 75% 3x7000	4+1	40/50	reinforced	No
6	75	100% 5x3600	4+1	40/50	reinforced	No
7	100	25% 5x3600 75% 3x7000	9+1	40/50	reinforced	Yes
8	100	25% 4x3600 75% 3x7000	9+1	30/40	Standard	No
9	100	100% 4x3600	9+1	30/40	Standard	No

Siemens concluded that the electrification of the GAPE project would have required a total of nine new feeder stations to facilitate connection to the Powerlink high voltage electricity transmission network. These feeder stations would be staged to align with tonnage ramp ups with five sites required for the tonnes up to 75mtpa and an additional four to facilitate up to 100mtpa.

In SKM's assessment, the works are deemed to have successfully been contained within the requirements of the scope and therefore fulfil criterion a) above.

The electrification studies are deemed consistent with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR and therefore fulfils criterion b) above as well as Clause 3.3.3(b)(iii) of Schedule A of UT3.

Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. SKM is not aware of pre-approval of the standards of works as is required by Clause 3.3.3(b)(i), however, SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii) of Schedule A of UT3.

Conclusion

Given the above, SKM considers that the standard of works for this project is prudent.

²⁵ Train type represents number and class of locomotives. 3600 are DC and 3700 are AC.

²⁶ The +1 represents the existing Coppabella Feeder Station



P.4.3 Project cost

Table P-8 below gives details of the cost breakdown for the GAPE electrification project as presented in Table 26 in Schedule 3 report.

Table P-8 : GAPE electrification cost breakdown

Project item	Cost
PM and Engineering (Coal Power Alliance)	\$6,092,486
Electric Traction Power Supply	\$549,270
GAP50 Project Management and QRN Support	\$401,321
Land and Environment	\$2,506
Electrification Studies	\$596,078
Total	\$7,641,661

Aurizon Network Pty Ltd stated in response to RFI 021 that the costs of the GAPE electrification related to load, location and connection studies. The GAPE electrification costs include the application and information provisions as required by Powerlink for the connection studies. A copy of the connection study was provided with response to RFI 013.

Discussion

A copy of the A.02648 ZWISR document is enclosed in **Appendix P-A**. This SAP generated document states that the \$6,092,486 consists of \$3,482,843 for Alliance Project management and \$2,609,643 for Alliance Engineering. No further detail is available from the A.02648 ZWISR document.

SKM notes that the A.02648 cash flow report that was provided in response to RFI 021, states that expenditure continued to be settled to the project after November 2009 when, as evident in the customer engagement prefeasibility meeting presentations, that the customers had agreed for the electrification studies to be stopped. Similarly it is noted that Powerlink’s “Connection Study for QR National GAP System Connection” report is dated August 2010.

Aurizon Network Pty Ltd.’s response to RFI 021 advised that early layout diagrams and location identification design of the nine required sites was undertaken. The Schedule 3 report states that the electrification study included environmental studies and “the development of a full set of concept drawings to enable a robust estimate to be undertaken of the total cost of electrification works” (approximately \$700 million - \$1 billion). Aurizon Network Pty Ltd advised SKM that a significant amount of concept drawings and environmental studies were prepared for this project.

The response to RFI 021 included “Siemen System Power Study Report” and ‘Seimens Voltage Drop Report” both dated 13 March 2009. SKM has not seen any documents from the Coal Power Alliance after this date.

The electrification study cost equates to 0.7% to 1% of the total estimated capital costs of between \$700 million and \$1 billion. Given the significant engineering effort to complete concept engineering design, SKM finds this 0.7% to 1% ratio to be reasonable.

Conclusion

Given the above SKM considers that the costs are reasonable for the scope and standard of work undertaken. SKM finds that the manner in which the capital expenditure has been managed by Aurizon Network Pty Ltd and the level of such costs relative to the scale, nature and complexity of the project, SKM deems the cost of the project as prudent.



P.5 Summary

The outcomes of this prudency assessment are summarised in **Table P-8**.

Table P-8 : GAPE electrification (pre-GFC) project – review summary

Item	Prudency
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



P.6 Appendix P-A: Extract from A.02648 ZWISR (level 1, 2, 3, 4 & 5)

Lev	WBS	Description	Assigned Budget
1	A.02648.00001	GAP Electrification Phase	7,641,661
2	A.02648.70609	PM & Engineering (Coal Power Allce)	6,092,486
3	A.02648.70610	PM & Engineering (Coal Power)	6,092,486
4	A.02648.70620	Alliance Project Management	3,482,843
4	A.02648.70630	Alliance Engineering	2,609,643
4	A.02648.70640	Consultants	0.00
4	A.02648.70650	Other	0.00
2	A.02648.70604	Electric Traction Overhead Wiring	0.00
3	A.02648.71600	Abbot Point to Pring	0.00
4	A.02648.71610	Supply & Install Masts	0.00
4	A.02648.71620	Supply & Install Overhead Wiring	0.00
3	A.02648.71630	Buckley to Newlands	0.00
4	A.02648.71631	Supply & Install Masts	0.00
4	A.02648.71635	Supply & Install Overhead Wiring	0.00
3	A.02648.71640	Northern Missing Link	0.00
4	A.02648.71641	Supply & Install Masts	0.00
4	A.02648.71645	Supply & Install Overhead Wiring	0.00
3	A.02648.71650	Electrification Misc Works	0.00
4	A.02648.71655	QR - Overhead Wiring Engineering	0.00
2	A.02648.70700	Electric Traction Power Supply	549,270
3	A.02648.72700	Abbot Point to Pring	0.00
4	A.02648.72710	Supply & Install Feeder Stations	0.00
4	A.02648.72720	Supply & Install Track Section Cabins	0.00
4	A.02648.72730	Supply & Install Auto Transformers	0.00
4	A.02648.72740	Supply & Install Other Materials	0.00
4	A.02648.72750	Ancillary Items (local systems)	0.00
4	A.02648.72760	Power Utility Works	0.00
3	A.02648.74700	Buckley to Newlands	0.00
4	A.02648.74710	Supply & Install Feeder Stations	0.00
4	A.02648.74720	Supply & Install Track Section Cabins	0.00
4	A.02648.74730	Supply & Install Auto Transformers	0.00
4	A.02648.74740	Supply & Install Other Materials	0.00
4	A.02648.74750	Ancillary Items (local systems)	0.00
4	A.02648.74760	Power Utility Works	0.00
3	A.02648.75700	Northern Missing Link	0.00
4	A.02648.75710	Supply & Install Feeder Stations	0.00
4	A.02648.75720	Supply & Install Track Section Cabins	0.00
4	A.02648.75730	Supply & Install Auto Transformers	0.00
4	A.02648.75740	Supply & Install Other Materials	0.00
4	A.02648.75750	Ancillary Items (local systems)	0.00
4	A.02648.75760	Power Utility Works	0.00
3	A.02648.76700	Electrification Misc Works	549,270
4	A.02648.76710	QR - Power Systems Engineering	549,270
5	A.02648.76711	Preliminary Work for GAP Electrifica	549,270
2	A.02648.70701	Power Supply from PowerLink	0.00
3	A.02648.72770	Abbot Point to Pring	0.00
4	A.02648.72771	PowerLink Authority Works	0.00
3	A.02648.74770	Buckley to Newlands	0.00
4	A.02648.74771	PowerLink Authority Works	0.00
3	A.02648.75770	Northern Missing Link	0.00
4	A.02648.75771	PowerLink Authority Works	0.00



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Engineering Assessment



2	A.02648.70790	Field Indirect Costs	0.00
3	A.02648.70791	Indirect Costs	0.00
4	A.02648.70792	Camp Accom, Offices, Vehicles etc.	0.00
2	A.02648.70900	Safety Management	0.00
3	A.02648.70901	Protection Officers	0.00
4	A.02648.70902	Protection Officers	0.00
2	A.02648.70940	GAP Project Management & QR Support	401,321
3	A.02648.70941	GAP Project Management (Incl IWI)	213,448
4	A.02648.70942	PM Personnel & Expenses - QRNA	213,448
4	A.02648.70943	PM Personnel & Expenses - QRNational	0.00
4	A.02648.70944	PM Personnel & Expenses - Mines Scope	0.00
3	A.02648.70950	QR Engineering Support	1,908
4	A.02648.70952	QR Network Modelling Services	1,908
4	A.02648.70951	QR Eng Support Services - PM/General	0.00
5	A.02648.70953	Track and IWI	0.00
4	A.02648.70963	Consulting Services	0.00
3	A.02648.70960	QR Legal & Commercial Support	185,965
4	A.02648.70961	Legal/Auditing Support Services	185,965
4	A.02648.70962	Insurances	0.00
3	A.02648.70970	Misc Expenses	0.00
4	A.02648.70971	Venues, Catering etc.	0.00
4	A.02648.70972	Misc	0.00
2	A.02648.70990	Contingency	0.00
3	A.02648.70991	Contingency	0.00
4	A.02648.70992	Sub Project Contingency	0.00
3	A.02648.70993	Escalation	0.00
4	A.02648.70994	Sub Project Escalation	0.00
2	A.02648.70100	Land and Environmental	2,505
3	A.02648.70110	Property Acquisition	2,505
4	A.02648.70120	Property Acquisition	2,505
5	A.02648.70121	QR Labour & Expenses - Property Aqn	2,505
3	A.02648.70130	Environmental & Cultural Heritage	0.00
4	A.02648.70140	Environmental Services	0.00
4	A.02648.70150	Cultural Heritage Consultants	0.00
2	A.02648.70600	Electrification Studies	596,078
3	A.02648.74200	Engineering & Cost Studies	208,875
4	A.02648.74205	Coal Power Alliance - Management	0.00
4	A.02648.74210	Coal Power Alliance - Eng/Cost Studie	0.00
4	A.02648.74215	Coal Power Alliance - Expenses	0.00
4	A.02648.74220	Power Systems Studies - QR	2,475
4	A.02648.74225	Overhead Wiring Studies - QR	0.00
4	A.02648.74230	Consultants - Electrification	18,900
4	A.02648.74235	Powerlink Study	187,500
3	A.02648.74300	Project Management	387,203
4	A.02648.74310	Study & Project Managers	329,801
4	A.02648.74315	Project Controls & Commercial	57,402
4	A.02648.74320	Project Services	0.00
4	A.02648.74325	Expenses	0.00
2	A.02648.98888	Interest Capitalisation	0.00



Appendix Q. Track circuits and points refurbishment project

Q.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

Key project information is provided in **Table Q-1**.

Table Q-1: Project information as advised by Aurizon Network Pty Ltd

Project number	A.03831	Project status	Ongoing
Previously considered by the Authority	No	Previous approved funding	None
Total approved funding	\$7,305,000	Project financially complete	No

Q.1.1 Location and status of the project

The refurbishment works were undertaken on the Goonyella line between the ports and Coppabella from chainage 60 km to 87 km from the port unloading loops, as shown in **Figure Q-1**.

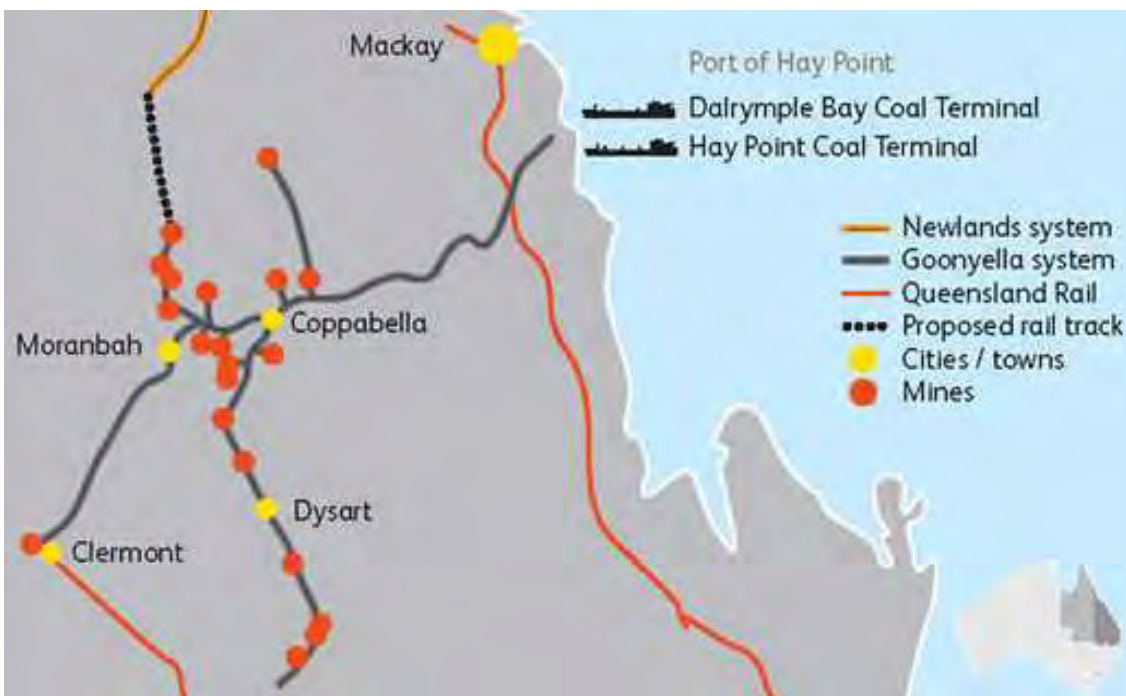


Figure Q-1 : Goonyella system showing Moranbah and Coppabella (extracted from <http://www.aurizon.com.au/networksystems/Pages/GoonyellaSystem.aspx>)

The completion reports, Schedule 5 – Project Claim Submissions “Accelerated Capital Upgrade Program – Completion Report First Closure Block, 7 July 2011 – 12 July 2011” and “Accelerated Capital Upgrade Program – Completion Report Second Closure Block, 21 July 2011 – 25 July 2011” indicate that works were undertaken from Bolingbroke to Balook Yard from 7 to 12 July 2011 and from Balook Yard to Wandoo from 21 to 25 July 2011 respectively.

A draft version of this report was issued by the Authority to Aurizon Network Pty Ltd on 14 March 2013 indicating that based on the lack of scope definition and in particular the lack of completion reports, the claim could not be deemed prudent in terms of standard and cost. Aurizon Network Pty Ltd responded on 28 March



2013 with additional evidence supporting the completion of the works. The list of additional documents provided is listed in **Table Q-4**.

The final funding submission in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms entitled “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” of 27 February 2012 stated that works were still to be conducted at South Walker, Tootoolah and Braeside as per the extract below.

For this continuation of the project it is proposed to, between the ports and Coppabella, take possession of a work site comprising 2 sections of one track at a time in a series of 5 x 12 hour closures as below:-

- 19 – 23 January 2012 at South Walker and Tootoolah
- 2 – 6 February 2012 at Braeside.

These are the last locations to be completed under ACUP; once these are funded and last costs are received the ACUP project will be closed.

The above sites extend approximately from the chainages 107 km to 135 km from the ports of Dalrymple Bay and Hay Point unloading balloons. Prior to the draft version of this report being issued to Aurizon Network Pty Ltd on 14 March 2013 no evidence had been provided demonstrating that these works had been completed. Subsequent information provided by Aurizon Network Pty Ltd confirmed that the works at:

- South Walker were completed from the 19 January to the 20 January 2012 and Tootoolah from the 21 January to the 23 January 2012 as evidenced in the report entitled “Project Possession Report 19 January – 23 January”; and
- Braeside were completed from 2 to 6 February 2012 as evidenced in the report entitled “Project Possession Report 2 February – 06 February”.

Q.1.2 Objective of this investment

This project was categorised by Aurizon Network Pty Ltd as an “Asset Renewal”, for the period July 2011 to December 2011 at a cost of \$1,455,000 as indicated in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled “Track Circuits and Points Refurbishment – Minor Capital Funding Request” of June 2011.

The objective of this investment as stated in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled “Track Circuits and Points Refurbishment – Minor Capital Funding Request” of June 2011, was to carry out renewal and upgrades to assist in improving points and track circuit performance between the ports and Coppabella. The works to be completed were:

- test and replace Z bonds cross bonds / Z bond to mast / install grading rings;
- replace aluminium bonds at starter signals, inspect and re-test points machines, replace blue tint cable and track connection boxes, replace aluminium bonds at transmitter and receiver LOCS, testing of points;
- replace the existing Cadweld type connections with Cembre bolted connections;
- upgrade points and SNX equipment including rodding, pins, ferrules, cradle, and claws; and
- inspect point’s machine and lubricate, replace parts as necessary.

Works pertaining to installation of switch rollers and turnout detection rod knuckles would be funded from other projects.

The above objectives were again restated in a second submission (see Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms entitled “Track Circuits & Points Refurbishment – Minor Capital Funding Request” of 15 August 2011) for additional funding of \$4,995,000 for works to be undertaken from September 2011 to February 2012.



SKM notes that the above two documents make no reference in the scope for the provision of:

- undercutting and re-ballasting; and
- adjustments to the overhead and traction power systems.

The costs associated with undercutting were extensively claimed and reported in the completion certificates. In both of these documents the works were categorised as “Asset Renewal Upgrades”.

SKM has reviewed the scope statements in the above two documents (Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled “Track Circuits and Points Refurbishment – Minor Capital Funding Request” of June 2011 and “Track Circuits & Points Refurbishment – Minor Capital Funding Request” of 15 August 2011) and notes that an “upgrade of points and SNX equipment” was included in the scope but that there was no explicit mention of installing new points nor like-for-like replacement. The term “upgrade” is taken to mean the re-use of the existing points but with replacement or reconditioning of existing parts. SKM is of the view that the scope description needs to explain why undercutting and OHLE adjustments would have been required.

The above objectives were yet again restated in a third and final submission (see Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms entitled “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” of 27 February 2012) for additional funding of \$855,000 for works to be undertaken from December 2011 to February 2012.

This document references the provision of undercutting and re-ballasting of turnouts as a part of this project's scope and also refers to the project as an “upgrade” (in lieu of “renewal”).

SKM notes the change in project category from “renewal” to “upgrade”.

This document also contained an attached peer review report that contained the following pertinent information with regards to a revised scope and the need for an improved quantification of the business benefits:

6. Key findings:

This funding is to pay for the outstanding costs for final 2 closures.

Discussion centred around whether this project is still to proceed as Daryl believed works will stop from 6th Feb. Originally project was to utilise available access upto 31/3/2012 (ACUP). It was agreed that the project needs a revised scope given the revised timeframes and \$dollars for funding. The benefits from the accelerated works program need to be quantified (eg impact \$40k per train path). These benefits need to be detailed in the rationale. Need to clarify the sites and locations requiring works to be completed.

The initial program requested funds to complete parts of the accelerated investment program for July. Based on the outcomes of this work, the program will now be extended to end December 2011. A closure regime to allow access to the track has been locked in. Not all costs have been reported for July currently. While some costs have been estimated, given the July works, the Project Manager has a high level of confidence that the estimate has a +/- 10% level of accuracy. The Project Manager is keeping a database of what work was completed.

From the documentation provided SKM understands that visibility of actual work undertaken was first reported as a part of the submission for funding for the next stage and post depletion of funds from the previous round that is injecting finances on an as required basis.

The completed works are reported to be providing business benefit based on the signalling performance comparisons made pre and post completion.

In undertaking this review SKM had difficulty in reconciling the stated objectives/scope information provided with the actual works undertaken.



Aurizon Network Pty Ltd responded on the 28 March 2013 to a draft version of this report issued by the Authority that satisfactorily addressed the comments and observations raised in this section of the earlier drafts of this report concerning the initial communicated objectives of this investment. A summary and assessment of the Aurizon Network Pty Ltd response has been included in section A.3.2 entitled “Adequacy of Information and Discussion” as well as some clarifications contained in Section A.3.1 “Requests for Information”.

Q.2 Capital expenditure

Table Q-2 shows the cost of the Track Circuits and Points Refurbishment Project.

Table Q-2 : Project A. 03831 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	2011/12 Claimable Expenditure	\$6,920
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$6,969
Schedule 5 – Project Claims Submission: “Asset Renewal Projects”	Page 6, Track Circuits and Points Refurbishment Project Total amount for inclusion in the RAB	\$6,969

There was no additional cost information sourced by SKM for this assessment other than that which is listed in the above table and the details contained in the SAP accrued project costs information contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, file name “A.03831 ZWISR”.

There are some discrepancies between the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and that provided in project supporting documents for this review that require additional information from Aurizon Network Pty Ltd to reconcile. These discrepancies are described in more detail in the RFI section below. The claim was for the entire financial year, yet SKM initially only sighted completion reports for July 2011. Following a response to a draft version of this report issued by the Authority, Aurizon Network Pty Ltd responded on 28 March 2013 with additional and sufficient information to satisfactorily conclude this prudence assessment.

SKM notes that the scope (i) did not explicitly include undercutting and re-ballasting for a substantial part of financial year 2011-2012 (yet there has been expenditure incurred for this activity during the periods where this was outside of the explicitly stated scope) and (ii) did not explicitly include adjustments to the overhead wire system (yet that expenditure was incurred against this project for this work). However, from its analysis, SKM is of the opinion that such work could reasonably be required as a part of the track circuits and points refurbishment works.

The funding approvals and claim details for this project are shown in **Table Q-3**.

Table Q-3 : 2011-2012 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$6,919,531
Applicable Financial Interest	\$49,735
Total amount for inclusion in the RAB	\$6,969,267

At this consolidated level, there were no financial data discrepancies in the information provided. Clarification issues relating to scope are briefly discussed above and in more detail in the RFI section below.



Q.3 Provided documentation

This review is based on information sourced from documents as shown in **Table Q-4** and **Table Q-5** below.

Table Q-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Track Circuits and Points Refurbishment – Minor Capital Funding Request	MFR - Track Circuit and Points Refurbishment - Final	Word	June 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Track Circuits & Points Refurbishment – Minor Capital Funding Request	MFR Aud 11	Adobe PDF	15 August 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request	MFR August 11R2	Adobe PDF	27 February 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms		A.03831 ZWISR	Excel	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Asset Renewal Projects	Asset Renewal Project Info Submission	Word	No date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Accelerated Capital Upgrade Program – Completion Report First Closure Block, 7 July 2011 – 12 July 2011	ACUP Completion Report 7 July 12 July 2011	Word	15 July 2011
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Accelerated Capital Upgrade Program – Completion Report Second Closure Block, 21 July 2011 – 25 July 2011	ACUP Completion Report 21 July 25 July 2011	Word	27 July 2011
The Authority	Email to Aurizon Network Pty Ltd from the Authority on 14 March 2013	Track Circuits and Points Refurbishment	Track Circuits and Points Refurbishment v5_Clotilde edits accepted KKO(513110_1)	Word	No date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Aurizon Response to SKM Draft Report, Track Circuit & Points Refurbishment	Response Paper - A.03831	Word	No date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	CLOSURE REPORT – GOONYELLA SYSTEM – BOLINGBROKE, 9 July 2011	Closure Report 09072011	Word	9 July 2011



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	ACUP CLOSURE REPORT GOONYELLA SYSTEM – BALOOK, 9 July 2011	Closure Report 10072011	Word	9 July 2011
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	ACUP CLOSURE REPORT GOONYELLA SYSTEM – BALOOK, 11 July 2011	Closure Report 11072011	Word	11 July 2011
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	ACUP CLOSURE REPORT GOONYELLA SYSTEM – BALOOK, 12 July 2011	Closure Report 12072011	Word	12 July 2011
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Accelerated Capital Upgrade Program – Completion Report First Closure Block, 7 July 2011 – 12 July 2011	Completion Report first Closure Block	Word	15 July 2011
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	ACUP Completion Report 21 July 25 July 2011	Completion Report Second Closure Block	Word	27 July 2011
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 1st – 5th September	Project Possession Report 1- 5 September	Word	1 September
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 15 – 19th September	Project Possession Report 15 - 19 September	Word	15 September
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 11 October to 15 October	Project Possession Report 11th October – 15th October	Word	11 October
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 10 – 14 November	Project Possession Report 10 - 14 November	Word	10 November
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 24-28 November	Project Possession Report 24 - 28 November	Word	24 November
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 08th December to 12th December 2011	Project Possession Report 8 - 12 December	Word	8 December
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 19th January – 23rd January	Project Possession Report 19 jan-23 jan 2012	Word	19 January



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013	Project Possession Report 02nd February – 06th February	Project Possession Report 02 Feb-06 Feb 2012	Word	2 February
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013		img-Z211047-0001	Adobe PDF	No date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013		img-Z211047-0002	Adobe PDF	No date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013		img-Z211048-0003	Adobe PDF	No date
Aurizon Network Pty Ltd	Email to the Authority from Aurizon Network Pty Ltd on 28 March 2013		img-Z211048-0004	Adobe PDF	No date

Table Q-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure (sic) Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure (sic) Master Plan	5. 2009 CRIMP.pdf (sic)	Adobe PDF	October 2009



Q.3.1 Requests for Information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 014 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost;

Sufficient information was provided by Aurizon Network Pty Ltd on 28 March 2013 in response to a draft version of this mini-report issued by the Authority on 13 March 2013, to indicate to SKM's satisfaction, completion works covering the entire claim period.

SKM also noted that the reason for the larger than expected re-ballasting works was often due to remedial works associated with mud holes. Such remedial work resulting in improved safety, extension of asset life and removal of local speed restrictions is deemed prudent by SKM.

SKM had some difficulty in reconciling the claimed expenditure and actual works performed with the defined scope description in documents provided for this review. SKM has taken the view that the substantial claimed amount of expenditure on undercutting, re-ballasting and adjustments to the OHLE were in part a consequence of the track circuits and points refurbishment defined scope of works as well as needed overall track condition improvement, and notes:

- i) The claim submission contained in Schedule 5 – Project Claim Submissions, Asset Renewal Projects, does not include the scope for undercutting and re-ballasting of turnouts which was approved in the funding request contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, entitled “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” of 27 February 2012.
- ii) Aurizon Network Pty Ltd is claiming for adjustments to the overhead wire system (OHLE), undercutting and re-ballasting during the period where the scope descriptions for those periods (see Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, “Track Circuits and Points Refurbishment – Minor Capital Funding Request” and “Track Circuits & Points Refurbishment – Minor Capital Funding Request”) do not state that undercutting and OHLE adjustments would be required to achieve the track circuit and points refurbishment objectives.
- iii) Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms file name “A.03831 ZWISR” contains claims for:
 - a) Undercutting and re-ballasting works where such works were not included in the scope for that period.
 - b) Overhead line adjustment works by Lang O’Rourke where such works were not included in the scope for that period.
- iv) The points refurbishment parts of this project may be considered maintenance activities and represent minimal costs.
- v) The details that underpin the summary cost items, showing how these summary estimates were derived, have not been provided. The funding request estimates contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, “Track Circuits and Points Refurbishment – Minor Capital Funding Request”, “Track Circuits & Points Refurbishment – Minor Capital Funding Request” and “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” contain insufficient detail in their attached estimates. SKM was not provided with any additional and sufficiently detailed cost estimates that list out how these summary cost estimates were developed.



The Authority issued a draft version of this report to Aurizon Network Pty Ltd on 14 March 2013. A detailed and satisfactory response was received from Aurizon Network Pty Ltd on 28 March 2013 that addressed the above issues. SKM's assessment of the response is discussed in the following section with additional potential clarifications required as follows:

- A. The document (file name "CLOSURE REPORT 09072011") entitled "CLOSURE REPORT – GOONYELLA SYSTEM – BOLINGBROKE, 9 July 2011" stated that signalling works continued in Bolingbroke Yard with approximately 2,500 man hours consumed. SKM does not know if Bolingbroke Yard is a common access yard
- B. Works were undertaken at Balook Yard. SKM does not know if Balook Yard is a common access yard.
- C. Aurizon Network may consider searching for additional completion reports that may cover the invoiced periods from John Holland, for works completed from:
 - a. 2 August to 23 August 2011,
 - b. 27 September to 15 October 2011,
 - c. Other John Holland invoiced works that claim for works completed outside the completion report periods as SKM has received no project completion reports for this period.
- D. The document (file name Project Possession Report 24 - 28 November) entitled "Project Possession Report 24-28 November" stated that on 28 November 2011 site clean-up works were planned for Bolingbroke – Down. SKM is not aware of any works conducted around this date for the Bolingbroke – Down tracks and questions if Aurizon Network Pty Ltd has additional relevant information with respect to these works not as yet submitted for review.
- E. The document (file name img-Z211047-0001) contains a number of invoices from John Holland, Laing O'Rourke, Adept Civil. Some of these invoices are either not relevant to this project or there is no evidence of completed works for periods in question, for example:
 - a. John Holland, for works completed from 27 September 2011 to 15 October 2011, SKM has received no project completion reports for this period.
 - b. John Holland, for works completed from 25 October to 30 November 2011, SKM has sighted completion reports for 24 to 28 November 2011 only.
 - c. John Holland, for works completed from 24 October to 30 November 2011, SKM has sighted completion reports for 24 to 28 November 2011 only.
 - d. John Holland, for works completed from 5 December to 14 December 2011, SKM has received no project completion reports for this period.
 - e. 3 Invoices from Laing O'Rourke for works and consumables. It is not clear when these works were completed, their relevance to this project and therefore cannot be further assessed.
 - f. John Holland, for works completed from 2 August to 23 August 2011, SKM has received no project completion reports for this period.
 - g. 2 Invoices from Adept Civil, for works completed from 29 – 31 August and 6 September 2011, SKM has received no project completion reports for this period.

SKM notes that if the above invoices are relevant to this project, then there would presumably be a number of additional completion reports required to be submitted to cover the invoice claim periods.

- F. The document (file name img-Z211047-0002) contains a number of invoices from John Holland, Laing O'Rourke. Some of these invoices are either not relevant to this project or there is no evidence of completed works for periods in question, for example:
 - a. 6 invoices from Laing O'Rourke for works and consumables. It is not clear when these works were completed, their relevance to this project and therefore cannot be further assessed.
 - b. John Holland, for works completed at Westwood from 24 October to 26 October 2011, SKM has received no project completion report for this period
 - c. John Holland, for traction power works completed at Gregory Feeder Station and Fair Hill Yard. The date these works were conducted was not indicated. It is not clear when these works were completed, their relevance to this project and therefore cannot be further assessed.
 - d. John Holland, for works completed from 30 January 2012 to 21 February 2012, SKM has received no project completion report for this period.
 - e. John Holland, for works completed from 27 September 2011 to 15 October 2011, SKM has received no project completion report for this period.



SKM notes that if the above invoices are relevant to this project, then there would presumably be a number of additional completion reports required to be submitted to cover the invoice claim periods.

- G. The document (file name img-Z211048-0003) containing a number of invoices from John Holland and Laing O'Rourke. Some of these invoices are either not relevant to this project or there is no evidence of completed works for periods in question, for example:
- a. 6 invoices from Laing O'Rourke for works and consumables. It is not clear when these works were completed, their relevance to this project and therefore cannot be further assessed.
 - b. John Holland, for works completed from 16 January to 25 January 2012.
 - c. John Holland, for works completed from 30 January 2012 to 21 February 2012.
 - d. John Holland, for works completed from 5 December to 14 December 2011.
 - e. John Holland, for works completed from 24 October to 30 November 2011.

SKM notes that the above invoices have claim dates that do not correctly map to the possession report dates.

- H. The document (file name img-Z211048-0004) containing a number of invoices from John Holland and Laing O'Rourke. Some of these invoices are either not relevant to this project or there is no evidence of completed works for periods in question, for example:
- a. One Invoice from Laing O'Rourke for works and consumables. It is not clear when these works were completed, their relevance to this project and therefore cannot be further assessed.
 - b. John Holland, for works completed from 29 August to 20 September 2011.

SKM notes that the above invoices have claim dates that do not correctly map to the possession report dates.

SKM notes that whilst copies of invoices from Adept Civil have been received, these amounts are not explicitly included in any claim amounts submitted by Aurizon Network Pty Ltd and therefore have not been assessed.

Q.3.2 Adequacy of information provided and general comments

The three funding requests provided by Aurizon Network Pty Ltd contained the same/similar high level scope descriptions and gave a perception of a rolling budget.

The status updates included a mixture of works completed that were within the given scope and other works that were not explicitly within the defined scope. Aurizon Network Pty Ltd stated that the need to utilise common resources to expedite different works packages from multiple funding sources would provide efficiencies, but in SKM's view this complicates the ability to accurately report this –project-specific expenditure.

SKM understands the pressures created by (i) short windows of opportunity to take possessions and implement upgrades/refurbishments across multiple disciplines and (ii) potential overlapping project boundaries. In this environment, it is reasonable to expect detailed planning including clear unambiguous description of the possession sites and works to be carried out at each site. Pre-event planning will allow development of more accurate cost estimates and schedules. SKM notes that for the project under review Aurizon Network Pty Ltd have not provided sufficient evidence of pre-planning.

The claim submission contained in Schedule 5 – Project Claim Submissions, Asset Renewal Projects, did not explicitly include the scope for undercutting and re-ballasting of turnouts which was approved in the funding request contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, entitled "Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request" of 27 February 2012. This was confirmed by Aurizon Network Pty Ltd on 28 March 2013 (in response to a draft issuance of this report by the Authority). Aurizon Networks response (document entitled "Aurizon Response to SKM Draft Report, Track Circuit & Points Refurbishment") refers:

"The project scope included the upgrade and refurbishment of point's elements and motors. Works at the sites revealed a requirement for badly fouled ballast under turnouts to be removed and replaced with new Grade ballast. As part of this activity the sites were resurfaced by a 4S tamper and the overhead alignments checked and adjusted where necessary. The check of the overhead alignment is standard procedure post changes to ballast to ensure that the distances are within specification. It should be noted that the Laing O'Rourke contractors were onsite predominately to provide electrical bonding and grading ring upgrades and the overhead line adjustment was a minor cost to the contract."



The project status is noted as being “ongoing” however business benefit had already been achieved for the works already completed.

The current partially completed status of this project does therefore allow consideration of that part of the claim that has been completed. The extent to which these completed works may be accepted into the RAB is discussed in the following sections. RFI 014 requested the current status through the provision of up to date completion reports or certificates of completion to support the claim for all the works completed in the period.

Q.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

Q.4.1 Project scope

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3.

The ability of the project to meet these criteria is outlined in **Table Q-6**, followed by a discussion section that provides the analysis.

Table Q-6 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	Partially, the project is on-going.
Does the project consist of capital expenditure and not maintenance?	Yes
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Yes
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes

Discussion

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

It is SKM’s view that this project’s intent was to maintain the existing capacity and is rightfully categorised as Asset Replacement Expenditure as defined above.

It is noted that Aurizon Network Pty Ltd has expediently utilised contractors engaged at the same time in other works and already on site. Whilst seizing such an opportunity is considered efficient, SKM considers that Aurizon Network Pty Ltd should sufficiently breakdown the works and associated cost estimates to the required



detail and granularity prior to commencement to enable and evaluation of prudence. These details should be provided as part of the claim. Submission to SKM of estimates containing only one line statements for amounts of (or in excess of) \$400,000 for a single activity/deliverable is considered to be insufficiently detailed.

Three funding requests contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms contain a number of anomalies. The scopes in the three funding requests are similar, but the cost estimates do not accurately follow the stated scope, for example:

- in “Attachment 1: Cost Schedule” of “Track Circuits and Points Refurbishment – Minor Capital Funding Request” dated June 2011, there is a cost estimate for “Traction” works of an amount of \$151,312 and yet traction works are not mentioned in the scope section of that document. The meaning or intent of the word Traction was not defined (SKM is unable to determine if this refers to track works or power works);
- in “Attachment 1: Cost Schedule” of “Track Circuits & Points Refurbishment – Minor Capital Funding Request” dated 15 August 2011, there is a cost estimate for “Overhead Wiring” for an amount of \$329,332 labour and \$52,600 materials and yet overhead wiring works are not mentioned in the scope section of that document; and
- in “Attachment 1: Cost Schedule” of “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” dated 27 February 2012 there is an estimate for “Traction” works for an amount of \$46,980 labour and \$27,540 materials and yet traction works are not mentioned in the scope section of that document. The meaning or intent of the word Traction was not defined (Again, SKM is unable to determine if this refers to track works or power works). It is noted that ballast and undercutting is now mentioned in the scope but not identifiable in the cost estimates.

With reference to the above three documents, there was no mention of overhead wiring and Traction works in the Scope or Rationale sections nor was there mention of executing such works in any of the two completion reports (see Schedule 5 – Project Claim Submissions, “Accelerated Capital Upgrade Program – Completion Report First Closure Block, 7 July 2011 – 12 July 2011” and “Accelerated Capital Upgrade Program – Completion Report Second Closure Block, 21 July 2011 – 25 July 2011”).

In addition, the ballast and undercutting works were explicitly excluded from the scope and estimates of the first two funding requests, yet are included in the Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms file name “A.03831 ZWISR” and are claimed for inclusion in the RAB for the same periods as reported in the completion reports referenced above.

SKM makes the observation that without suitable detail underpinning and creating clarity around the scope and estimates, the task of conducting this prudence analysis is made difficult. Furthermore, accountability and auditability with respect to proving that cross subsidisation of project costs associated with the contractor’s other works at the time are also made complex.

With reference to the following statements made in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” :

Analysis of TSMS database revealed that there were 349 points faults and 350 track circuit faults in this length of track in the 6 months to 31/05/11.

Point’s faults have been responsible for 255 delays totalling 15,733 minutes and track circuits, 258 and 10,809 respectively.

Work at 10 sites was completed between July and December 2011 and a similar analysis of TSMS faults data for the 6 month period 01/07/2011 to 31/12/2011 has revealed a reduction in faults, delays and minutes as per below:-

- 226 points faults causing 199 delays totalling 12858 minutes
- 165 track circuit faults causing 168 delays totalling 7973 minutes

Therefore since the commencement of the project there has been an improvement in the performance of the network resulting in:-

- 123 less points faults equating to a 35% reduction



- 185 less track circuit faults equating to a 53 % reduction
- 146 less trains delayed equating to a 28% reduction
- 5711 less minutes of running time lost equating to a 22% reduction

Average time taken by a loaded coal train from Coppabella to the ports is 150 minutes and unloaded trains approx 135 minutes, meaning that approximately 20 extra paths in the subject area have been made available by the work completed to December.

SKM makes the observation that the application of statistical inferences to underpin the business case should be reviewed by suitably qualified persons. For example, the comparison of two 6-month periods to argue a return on investment and improved performance without making adjustment for the track usage during that time, weather conditions, seasonality and other factors may be erroneous. Whilst the conclusion that infrastructure reliability had improved may be correct, the reasoning for this conclusion requires more rigour. SKM has taken the position that the performance of the network has improved post the track upgrades (and therefore provided the business benefits sought) but that the method of provision of proof by Aurizon Network Pty Ltd may not be based on good statistical methods.

As mentioned, the status reports (Schedule 5 – Project Claim Submissions, “Accelerated Capital Upgrade Program – Completion Report First Closure Block, 7 July 2011 – 12 July 2011” and “Accelerated Capital Upgrade Program – Completion Report Second Closure Block, 21 July 2011 – 25 July 2011”) indicate extensive track and ballast work, no traction power overhead line works, relatively minor costs attributable to track circuit replacements and points reconditioning or renewal.

Information provided by Aurizon Network Pty Ltd in response to a draft of this report has addressed the above observations. The above observations stand in this final report for future reference and submissions as a means of communicating an expectation from the Authority to Aurizon Network Pty Ltd of the level of detail required to substantiate its submissions with the expectation that that this will help in making future regulatory reviews more efficient.

Conclusion

SKM agrees that Aurizon Network Pty Ltd had reasonable grounds to implement the Track Circuits and Points Refurbishments and that this asset “renewal” was required to improve the signalling reliability, thus assisting in meeting the rail task.

Based on the information provided, SKM is of the view that Aurizon Network Pty Ltd.’s process of seeking internal funding approval for this capital expenditure has not been subjected to sufficient evaluation and that the urgency of this project may have been a major contributing factor to this. SKM’s view is supported by the fact that in June 2011 an amount of \$1,455,000 was approved and only one month later an additional \$4,995,000 was requested and approved. SKM suggests the original scope could have been better defined.

After detailed analysis of additional information provided by Aurizon Network Pty Ltd, SKM has accepted that the track undercutting, re-ballasting and OHLE re-tensioning/adjustment works were required as a consequence of the primary scope i.e. track circuit and points refurbishment. Additionally, SKM notes the relatively minor expenditure incurred on points reconditioning in comparison with the overall project costs.

SKM notes that from the information provided (i) the traction and overhead wiring components of the works were funded yet not evidentially executed and (ii) the re-ballasting and undercutting works were not in the scope description yet the works were executed.

SKM concludes that the works were required and therefore the scope of this project is prudent.

Q.4.2 Standard of the works

SKM’s assessment of the prudence of standard of works involved assessing whether the works are of a reasonable standard in keeping with good industry practice, and relevant industry and national standards to meet the requirements of the scope and are not overdesigned such that they are beyond the requirements of the scope.



In assessing the prudence of the standard of works, SKM has considered whether:

- the works were contained within the requirements of the scope;
- the works were 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, in the CQCR; and
- in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

The use of contractors already on site to conduct these works is considered an efficient use of limited resources. SKM makes the observation that in such circumstances the assignment of work and actual expenditures carry the risk that cross subsidising of works may occur and therefore this requires careful consideration and management of cost allocation.

After detailed and thorough assessment of the information provided, SKM has taken the view that the works were contained within the requirements of the scope (including implied scope) and therefore in compliance with the requirements of Clause 3.3.3(a). SKM's opinion in this area has been supported by additional information provided by Aurizon Network Pty Ltd on 28 March 2013 as discussed earlier.

SKM notes that the completion reports received for review did not indicate commencement or completion of work associated with Traction and Overhead Wiring which was funded and required execution. Invoices submitted for works completed by Lain O'Rourke, advised as being for amongst other things "predominately to provide electrical bonding and grading ring upgrades and the overhead line adjustment was a minor cost to the contract" could not be adequately assessed (See section on "Request for Information" regarding the invoices from this company).

In addition, funding was initially not sought for ballast and undercutting works, but costs for this were settled to the SAP accounts.

The Track Circuits and Points Refurbishment works are deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR and therefore fulfils criterion b) above as well as Clause 3.3.3(b)(iii) of Schedule A of UT3.

Criterion c) above was tested to determine if Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3 of Schedule A of UT3. In this regard, SKM could find no evidence that the works had been pre-approved as is required by Clause 3.3.3(b)(i). In particular, SKM makes the observation that the 2009 CRIMP makes no explicit mention of this project. However, SKM is of the view that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure and thus the expenditure fulfils the requirement of Clause 3.3.3(b)(ii) *for the agreed and implied scope*. SKM concludes that Aurizon Network Pty Ltd had reasonable grounds to make use of the construction occupancy and improve the signalling related to track circuit and points thus also fulfilling Clauses 3.3.3(c)(v) and (vi). However, there was no evidence provided to support approval from any Customer Group.

SKM has sighted all relevant completion reports for the works conducted during the entire financial year and is satisfied that the works have been completed to the required standards.



Conclusion

SKM concludes that the Track Circuits and Points Refurbishment works:

- were contained within the requirements of the agreed and implied scope;
- are deemed consistent in all material aspects with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the Central Queensland Coal Region; and
- Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure (within the confines of the agreed scope).

SKM considers that the standard of works for this project is prudent.

Q.4.3 Project cost

SKM's assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in the 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Asset Renewal Projects”.

Track Circuit & Points Refurbishment

Project Information

Project Number	A.03831	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$7,305,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case 1	June 2011	\$1,455,000
Business Case 2	August 2011	\$4,995,000
Business Case 3	February 2012	\$855,000
Total Approved Funding		\$7,305,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$6,919,531
Applicable Financial Interest	\$49,735
Total amount for inclusion in the RAB	\$6,969,267

Estimates for the project were submitted in June 2011, 15 August 2011 and 27 February 2012 (refer documents Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms entitled “Track Circuits and Points Refurbishment – Minor Capital Funding Request”, “Track Circuits & Points Refurbishment – Minor Capital Funding Request” and “Track Circuits & Points Refurbishment – A.03831 - Minor Capital Funding Request” respectively).



The approved cost breakdowns were as per **Table Q-7**, **Table Q-8** and **Table Q-9**.

Table Q-7 : Budget for the track circuit and points refurbishment project – A.03831, June 2011

June 2011 Estimated Costs	Cost
Indirect (management, travel, etc)	\$376,521
Traction	\$151,312
Safety (included in discipline costs)	-
Signalling Electrical	\$374,000
Signalling Mechanical	\$406,500
Contingency	\$146,667
TOTAL	\$1,455,000

Table Q-8 : Budget for the track circuit and points refurbishment project – A.03831, 15th August 2011

15th August 2011 estimated costs	Labour	Materials
Project Management	\$102,688	-
Vehicle Hire/Traffic/Comms EQ	-	\$178,600
Overhead Wiring	\$329,332	\$52,600
Signalling Electrical	\$726,000	\$85,000
Signalling Mechanical	\$985,200	\$897,600
Track	\$145,800	-
Safety	\$1,165,200	\$60,000
Project Planning and Integration	\$295,248	-
Construction Mgmt (int & ext)	\$453,432	-
TOTAL	\$4,202,900	\$1,273,800

Table Q-9 : Budget for the track circuit and points refurbishment project – A.03831, 27 February 2012

27 February 2012 estimated costs	Labour	Materials
Project Management	\$29,240	-
Vehicle Hire/Traffic/Comms EQ	-	\$10,300
Traction	\$46,980	\$27,540
Signalling Electrical	\$133,250	\$30,000
Signalling Mechanical	\$62,370	\$8,100
Track	\$86,670	\$105,420
Civils	\$97,200	\$60,750
Safety	\$63,180	\$11,745
Project Planning and Integration	\$34,020	-
Construction Mgmt (int & ext)	\$47,420	-
TOTAL	\$600,330	\$253,855

Discussion

In the opinion of SKM the costs implicitly reflect the scale, nature and complexity of the given scope of works as described. It is the view of SKM that the additional activities such as undercutting, re-ballasting and adjustments to the OHLE were as a consequence of the primary scope. However, SKM was not able to satisfactorily correlate the actual works completed and their accrued costs to the explicit scope description provided by Aurizon Network Pty Ltd.

The documentation provided was insufficiently detailed to clarify how the above estimates were derived.



The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Asset Renewal Projects”.

“Total costs to 30 June 2012 were \$6,919,531 against the approved \$7,305,000 budget. These costs were incurred in the broad categories as per following table:

Activity	Budget	Actual
Project management	238,043	225,622
Planning Activities	218,677	218,677
Safety	848,985	640,174
Traction	567,353	567,353
Signals Electrical	829,038	829,038
Signals Mechanical	1,048,695	1,048,095
Track	1,725,080	1,721,795
Civils	1,287,168	1,126,817
TOTAL	6,763,039	6,377,571

An analysis of the SAP data provided in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, excel spreadsheet file “A.03831 ZWISR” confirms that the actual expenditure in the above table has been correctly transcribed without error.

The budgetary amounts and descriptions in the estimates contained in **Table Q-7, Table Q-8 and Table Q-9** above have little correlation with the SAP structure and costs contained in file “A.03831 ZWISR”. A comparison of the above budgeted and actual expenditures with the approved budgets from **Table Q-7, Table Q-8 and Table Q-9** shows, in the opinion of SKM, that little cross referencing is possible. For example a simple addition of the approved finances for Safety amounts to \$1,228,380 whilst the budgeted amount in the above is \$848,985. SKM cannot reconcile the statement above based on the information provided. In addition the Aurizon Network Pty Ltd claim of \$6,919,531 does not equal the totals derived from the actual column of \$6,377,571.

It is noted in Schedule 5 – Project Claim Submissions, “Asset Renewal Projects” that “a number of internal and external service providers” were “utilized on this project under a number of contracting and engagement arrangements as per the following table”:

Company	Internal / external	Activity undertaken	Engagement arrangement	Costs to 30 June 2012
Lang O’Rouke	External	Overhead line adjustment post track works	MOU for works in the Goonyella System	\$567,000
Queensland Rail	External	Signalling works post track adjustments	Service Level Agreement with QR Network	\$929,000
John Holland	External	Civil works	Single Source Contract	\$1,287,000
Construction Services and Asset Maintenance	Internal	Track works, Safety, Points works, Minor signalling and telecoms	Internal service provider	\$1,725,000

SKM does not have sufficient information to determine if or how the costs above are attributable to this project, some other project or a combination of same.

For example the SAP costs captured in the data provided in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, excel spreadsheet file “A.03831 ZWISR” indicates that the John Holland actual costs were in total \$517,403 (as compared with a budgeted amount of \$517,403). Additionally, this cost has no bearing on the costs of \$1,287,000 attributed to John Holland in the above table.



SKM has taken the view that the above was provided for information only and the costs were part of the other programs underway at that time in that corridor and was not intended for reconciliation in its entirety to this project.

A detailed scope description, underpinning the estimates for this project was not provided to support the high level budgetary estimates and as a consequence SKM has not been able to develop an independent estimate for this project for comparative analysis.

It should be noted that provision of SAP extracted expenditures without the associated intelligence mapping to a WBS and the original estimates is insufficient to enable an assessment of prudence of costs and it is recommended that this deficiency is addressed in future regulatory reviews. Nevertheless, SKM has developed order of magnitude estimate of the works and compared this to the costs allocated to the project by Aurizon Network Pty Ltd. SKM finds them to be reasonable and prudent given that that these works were required.

Conclusion

As discussed above, up-to-date status or completion reports for the entire period (supported with the provision of contractor invoices) does corroborate actual works undertaken and the claim amounts.

SKM considers that the cost for this project is prudent.

Q.5 Summary

The outcomes of this prudence assessment are summarised in **Table Q-10**.

Table Q-10 : Track circuits and points refurbishment project – review summary

Item	Prudence
Project scope	Prudent
Standard of the works	Prudent
Project cost	Prudent



Appendix R. Thales axle counter trial project

R.1 Project description

This section provides a brief description of the nature, location and function of the capital expenditure.

Key project information is provided in **Table R-1**.

Table R-1 : Project information as advised by Aurizon Network Pty Ltd

Project number	A.03640	Project status	Incomplete
Previously considered by the Authority	No	Previous approved funding	\$350,000
Total approved funding	\$790,000	Project financially complete	No

R.1.1 Location of project

The Thales axle counter trials were originally planned for the Windah to Grantleigh section of track on the Blackwater Systems. The trials were however conducted at Rocklands which is closer to the Signalling Depot at Rockhampton, as shown in **Figure R-1**. The last status update received (Memorandum - 30 August 2010 – Notice of New Investment Project Approval) indicates that the equipment had to be removed ahead of the Rocklands to Kabra track upgrades (a part of the Wiggins Island Rail Project). The choice of new location to continue the testing and fault rectifications has not been advised to SKM.

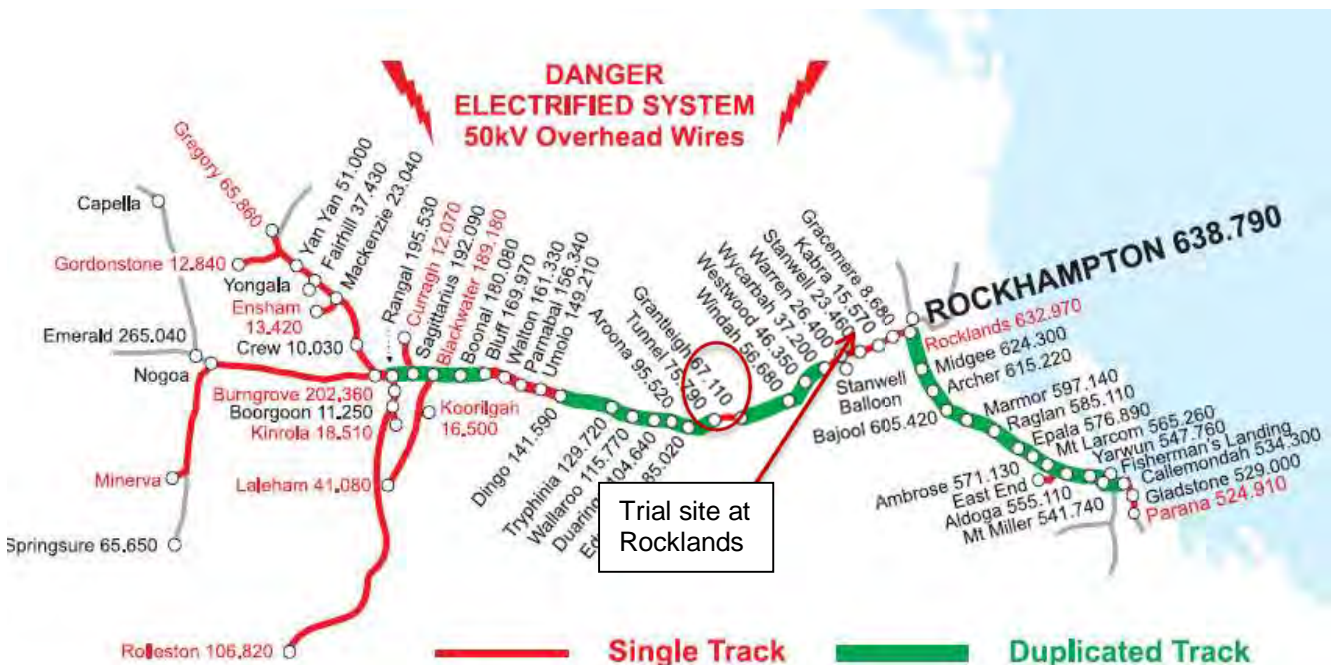


Figure R-1 : Blackwater System (extracted from "Blackwater System, Information Pack, Issue 3 November 2008")



R.1.2 Objective of this Investment

The primary objective of this investment was to trial the Thales Axle Counters with a view to achieving type approval and thus securing an alternative supplier of axle counters. Siemens was the only type approved supplier of Axle Counters at the time the Thales Axle Counter trials commenced in 2010.

This project remains categorised by Aurizon Network Pty Ltd (formally QR National) as an “Asset Replacement” as indicated in the document entitled “Memorandum - 30 August 2010 – Notice of New Investment Project Approval”.

R.2 Capital expenditure

Table R-2 shows the cost of the Thales Axle Counter Trial Project.

Table R-2 : Project A.03640 – proposed capital expenditure profile

Source document name	Item	Cost (\$'000)
Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Claim value	\$348
Schedule 2 – IDC Summary 2011/12 CAPEX Claim	Total CAPEX Claim (including interest)	\$366
Schedule 5 – Project Claims Submission: “Asset Renewal Projects document”	Page 46, Thales Axle Counter Trial Total amount for inclusion in the RAB	\$366

There are no discrepancies in the costs claimed by Aurizon Network Pty Ltd in Schedule 1 and that provided in the project supporting documents for this review. There was no additional cost information sourced other than that which is listed in the above table.

The funding and approvals and claim details for this project are shown in **Table R-3**.

Table R-3 : 2011-202 claim details

Claim	Value
Total 11/12 Claimable Expenditure	\$347,839
Interest during construction	\$17,994
Total amount for inclusion in the RAB	\$365,833

There were no finance data discrepancies in the information provided.

R.3 Provided documentation

This review is based on information sourced from documents as shown in **Table R-4** and **Table R-5** below.

Table R-4 : Information sources – project specific

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions	Asset Renewal Projects	Asset Renewal Project Info Submission	Word	No date



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Thales Axle Counter Trial – August 2010 - Minor Capital Funding Request	100823 - Seed Funding – Final	Word	August 2010
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Minor Capital Funding Request – Thales Axle Counter Trail	A03xxx - Thales Axle Counter Trial	Adobe PDF	August 2010
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Memorandum - 30 August 2010 – Notice of New Investment Project Approval	A03xxx - Thales Axle Counter Trial signed	Adobe PDF	Doc No V.00.4120.01, Version 1.0 Date: 18 October 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms	Thales Axelcounters – April 2012 - Minor Capital Funding Request	120401 - Thales Axel (sic) counter Trail MFR Additional Funds Final V2	Word	April 2012
Aurizon Network Pty Ltd	Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms		A.03640 ZWISR	Excel	No date

Table R-5 : Information sources – general

Owner	Referenced in	Document name	Electronic file name	Document type	Version and date
Aurizon Network Pty Ltd	General Information	QR Network's 2010 Access Undertaking – As approved 1 October 2010	R-2010-DAU-QR-Undertaking-QRN2010DAU-0511	Adobe PDF	1 October 2010
The Authority		Terms of Reference, Engineering Assessment of QR Network's Capital Expenditure 2011-12	QRN 2011-12 CAPEX engineer terms of reference(462601_1)	Adobe PDF	4 September 2012
Aurizon Network Pty Ltd	Schedule 2 – Calculation of IDC	Schedule 2 – IDC Summary 2011/12 CAPEX Claim	IDC MODEL 2011_12 Final	Excel	No date
Aurizon Network Pty Ltd	Schedule 1 – Claim Summary Workbook	Schedule 1 – 2011/12 Capital Expenditure Claim Workbook	Schedule 1 2011_12 CAPEX Submission Workbook V2	Excel	1 November 2012
Aurizon Network Pty Ltd		2009 Coal rail Infrastructure Master Plan	5. 2009 CRIMP.pdf	Adobe PDF	October 2009



R.3.1 Requests for information

SKM reviewed the documents originally provided for this project and found that clarification was needed. Accordingly the following RFIs relating to prudence of scope, standard and cost were raised:

- RFI 015 SKM asked 18 general questions designed to assist Aurizon Network Pty Ltd to identify the key documents needed to allow the completion of the assessment of prudence of scope, standard and cost.

The Authority advised on 14 January 2013 that finalisation of SKM's review of the Thales Axle Counter Trial should be deferred until clarity is provided by Aurizon Network Pty Ltd as to the project status and desire to include the capital expenditure in the RAB. Aurizon Network Pty Ltd has advised verbally that it may withdraw the project from the 2011-2012 claim.

If the review is to continue, SKM proposes to raise an RFI to address following areas of required information:

Potential prudence of scope questions:

- Why did Aurizon Network Pty Ltd decided to trial eight axle counter heads to achieve type approval?;
- What were the original and what are the current contractual agreements with Thales as well as the Thales sub-contractor Madison Communications?;
- Has Aurizon Network Pty Ltd submitted part refunding of outlays to the ATO via the R&D mechanisms?; and
- Was a detailed technical and project delivery risk assessment ever done?

Potential prudence of standard questions:

- "A full commercial and safety risk assessment will is [sic] to be conducted as part of the ACE RFI" was stated in the document dated April 2012, entitled "Minor capital Funding Request". Can this document be provided for assessment?

Potential prudence of cost questions:

- What was the internal hourly charge out rates for each category of internal Aurizon Network Pty Ltd labour deployed onto this project during the periods in question?; and
- Can clarity be provided as to why the project was indicated as essentially "completed" in the report entitled "Thales Axel counters – April 2012 - Minor Capital Funding Request"?

R.3.2 Adequacy of information provided and general comments

This project has been indicated as incomplete (i.e. ongoing) by Aurizon Network Pty Ltd (see Schedule 5 – Project Claim Submissions, document entitled "Asset Renewal Projects").

A full work breakdown structure with associated costs for labour and itemised costs for materials and consumables could reasonably be expected for a project of this magnitude/cost.

In addition, a detailed business case showing the expected cost savings associated with the introduction of a type approved Thales axle counter supported by quantitative analysis could reasonably be expected. The information provided in Schedule 5 – Project Claim Submissions, document entitled "Asset Renewal Projects" and other documents reviewed as per **Table R-4** and **Table R-5**) consists mostly of unqualified qualitative information supported by anecdotal evidence, and is insufficient for determining return on investment, regulated service need and hence prudence.

The contractual arrangements in place between Aurizon Network Pty Ltd and Thales (as well as with Madison Communications) should also be tabled. It is unclear how much Thales has expended to date in achieving the type approval and the level of any commercial risk sharing with Aurizon Network Pty Ltd. It is industry practice that retention sums are set at attractive levels as an enticement to achieve project completion. Such a strategy



was not tabled nor discussed as a part of any risk mitigation strategy in the documents submitted by Aurizon Network Pty Ltd to SKM.

Whilst SKM has not deployed taxation expertise to this submission by Aurizon Network Pty Ltd, it would be recommended that Aurizon Network Pty Ltd investigates, and if appropriate seeks part cost recovery via the Australian Taxation Office's (ATO's) R&D tax offset avenues.

R.4 Assessment of prudence

In assessing the prudence of capital expenditure in order to determine whether capital expenditure will be accepted into the RAB, the Authority focuses on:

- the scope of the works;
- the standard of the works; and
- the cost of the works.

Each of these items is discussed in the following sections.

R.4.1 Project scope

Aurizon Network Pty Ltd.'s memorandum, dated 30 August 2010 with PDF file name "A03xxx - Thales Axle Counter Trial signed" indicates project approval (for an amount of \$350,000) on 25 August 2010 with an estimated completion date of April 2011. The project number and CW File assigned was A.03640.

The Manager Capital Planning & Budgeting requested in this memorandum, the provision of a Cost Schedule for the current and future financial years. This cost schedule was tabled in a more recent document, dated April 2012, entitled "Minor Capital Funding Request" with electronic file name "120401 - Thales Axel counter Trail MFR Additional Funds Final V2", seeking additional funding of \$390,000 for a total of \$740,000.

The rationale in part, for the additional funding is that the equipment needs to be removed ahead of the Rocklands – Kabra (Wiggins Island Rail Project) track upgrade project and that the original objectives of the project remain substantively unchanged.

The current status indicated in Schedule 5 – Project Claim Submissions, document entitled "Asset Renewal Projects" and in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled "Thales Axel counters – April 2012 - Minor Capital Funding Request" that the desired type approval has not been achieved and that the scope and objectives set out in 2010 are for all intents and purposes the same as the funding objectives sought in 2012. According to the information provided in Schedule 5 – Project Claim Submissions, document entitled "Asset Renewal Projects", this project remains incomplete/ongoing.

Table R-6 below indicates the forecast milestones as per the information contained in "Thales Axle Counter Trial – August 2010 - Minor Capital Funding Request" and subsequently updated in "Thales Axel counters – April 2012 - Minor Capital Funding Request".

Table R-6 : Milestones as forecast in August 2010

Milestone description	Milestone date	Status as of
Concept Gate	February 2011	August 2010
Feasibility Gate	April 2011	August 2010
Project Completion	December 2012	August 2010
Post Project Review	February 2013	August 2010



Table R-7 : Milestones as forecast in April 2012

Milestone description	Milestone date	Status	Status as of
Installation and monitoring commenced	February 2011	Achieved	April 2012
Completion of original scope	April 2012		April 2012
Completion of V6.3 install and final reporting	December 2012		April 2012

Comparing **Table R-6** and **Table R-7**, it is noted that the completion of the original scope was initially estimated to be December 2012 and that the more recent forecast completion date was also December 2012. The status updates of April 2012 indicated that the trials had not as yet been successful.

It is noted that should the trials be successful then further funding will be required to purchase the axle counter system.

It is tabled in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled “Thales Axel counters – April 2012 - Minor Capital Funding Request”, that Thales has “entered an agreement” with Madison Communications. The contractual arrangements in place between Aurizon Network Pty Ltd and Thales (as well as with Madison Communications) should also be tabled. It is unclear how much Thales has expended to date in endeavouring to achieve type approval and the degree of any commercial risk sharing with Aurizon Network Pty Ltd. It is industry practice that retention sums are set at attractive levels as an enticement to achieve project completion. Such a strategy was not tabled nor discussed as a part of any risk mitigation strategy in the documents submitted by Aurizon Network Pty Ltd to SKM. The document also does not explain why 8 axle counter heads were installed for testing instead of a smaller sample.

A more detailed analysis of the project status is included in **Appendix R-A**.

For those projects that have not obtained regulatory pre-approval under Clause 3.1.1 of Schedule A of UT3, SKM’s assessment of the prudence of scope of works has involved assessing whether the works are reasonably required in the delivery of a regulated service. The project scope has been reviewed based on the assessment criteria outlined in Schedule A of UT3. The ability of the project to meet these criteria is outlined in **Table R-8**, followed by a discussion section that provides the analysis.

Table R-8 : Project scope summary

Criteria	Response
Does the project consist entirely of below-rail infrastructure?	Yes
Was the project commissioned in 2011-12?	No. The project is on-going.
Does the project consist of capital expenditure and not maintenance?	Yes, see Discussion below.
Were the works fully funded by Aurizon Network Pty Ltd or, if not, what proportion of the works were funded by Aurizon Network Pty Ltd?	Some funds were covered by Thales and some funds were covered by Aurizon Network Pty Ltd operating costs. Neither of these costs were submitted for review. See Discussion below.
Has the scope of work been approved by a Customer Group under Clause 3.2.2(f) of Schedule A of UT3?	No
Has the scope of work been pre-approved in accordance with Clause 3.1.1 of Schedule A of UT3?	No
Did Aurizon Network Pty Ltd have reasonable grounds for proceeding with a project given the circumstances relevant at the time the investment decision was made having regard to the factors set out in Clause 3.3.2(c) of Schedule A of UT3?	Yes



Discussion

In Part 12 – Definitions & Interpretation of UT3 the following definition has been provided:

“Asset Replacement Expenditure” means expenditure on capital projects required to maintain the Existing Capacity of the Rail Infrastructure (for example, the replacement of life expired or obsolete assets);”

In SKM's view, it may be argued that type approval projects may in some instances be categorised as an Asset Replacement Expenditure activity for example where a trial is undertaken to assess the risk of adopting a new product before general deployment. Hence it is SKM's view that this type approval project is rightfully categorised as Asset Replacement Expenditure as defined and explained above.

SKM also considers that Aurizon Network Pty Ltd may be able to seek Tax R&D re-imbursments for this project in so far as the profile of this project meets the requirements of the ATO. Such recovery, if any, should be deducted from the capital value allowed in the RAB.

Since this project has not been completed the criteria for Prudence of Scope has not been fulfilled and must therefore be carried over on this ground alone. Where a partial completion or staged approach to funding is required, it is recommended that such an approach be agreed with the Authority, included in the CRIMP and submitted in such a manner where expenditures associated with the agreed staged delivery are clearly identifiable.

It is noted that Aurizon Network Pty Ltd has covered some of the costs within its general operating budget. The reason for doing this is unknown and could limit the total expenditure from being separately identifiable and auditable should Aurizon Network Pty Ltd wish to claim partial recovery of costs via the ATO R&D avenues or with the Authority in the future.

The information provided by Aurizon Network Pty Ltd makes qualitative assessments of the potential financial and operational advantages of this project. Given the expenditure to date and the possible future roll-out expenditures it is not considered good practice to base such investments on anecdotal qualitative assessments. Full quantitative financial benefit analysis should be tabled, for example including whole of life cost comparisons with track circuits versus Siemens axle counters versus Thales type approved axle counters and demonstrating the benefits of having competing suppliers. Such analysis would give confidence in the prudence of this project or disprove the veracity of the business case.

Conclusion

This project has not been completed, requires a quantifiable business case analysis and inclusion in the CRIMP. Re-submission according to an agreed partial completion is discussed above.



R.4.2 Standard of the works

SKM's assessment of the prudence of standard of works involved 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.

In assessing the prudence of the standard of works, SKM has considered whether:

- a) the works were contained within the requirements of the scope;
- b) the works were 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, in the CQCR; and
- c) in all other cases, that Aurizon Network Pty Ltd had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in Clause 3.3.3(c) of Schedule A of UT3.

These elements are discussed further below.

Discussion

SKM could not determine if this project was contained within the requirements of the scope as per Clause 3.3.3(a). Aurizon Network Pty Ltd has chosen that the trial would involve eight axle counter heads. It is unclear why eight axle counter heads were chosen, as opposed to say four axle counter heads. Insufficient information was available to make a determination that over design beyond the scope of the project did not occur. The contractual agreement with the vendor (Thales) was not provided for assessment, therefore it could not be determined if "the works were contained within the requirements of the scope".

Since axle counter trials and track circuit replacements were not explicitly mentioned in the 2009 CRIMP, pre-approval as is required by Clause 3.3.3(b)(i) could not be proven and was therefore not further assessed by SKM.

A comparison of the Thales Axle Counter Trials with the existing standard and configuration of adjacent infrastructure and/or existing infrastructure with similar usage levels, or its modern engineering equivalent, in the CQCR was not deemed appropriate as this equipment under trial has never been installed or tested previously in Queensland. Therefore, Clause 3.3.3(b)(iii) did not apply and was not further assessed by SKM. The fact that the type of axle counters under trial has never been used in adjacent infrastructure is considered to be material. Therefore, Clause 3.3.3(b)(ii) was tested to determine if Aurizon Network had reasonable grounds for the design of the infrastructure standards with reference to the assessment criteria set out in that Clause. SKM concluded that Aurizon Network had reasonable grounds to attempt to find an alternative axle counter vendor, thus removing a sole supplier situation. SKM also agrees that, in order to pursue such a strategy, a type approval process is/was required to comply with Aurizon Network's internal design standards as well as the Safety Regulator requirements, thus fulfilling Clauses 3.3.3(b)(ii) and 3.3.3(c)(v) and (vi).

Conclusion

SKM concluded that this project demonstrates prudence of standard in that it fulfils the requirements of Aurizon Network Pty Ltd.'s internal safety standards and the Safety Regulator type approval process and procedures.



R.4.3 Project cost

SKM’s assessment of the prudence of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken. In assessing the reasonableness of the cost of works commissioned in 2011-2012 financial year, SKM took into account the circumstances relevant at the time when the costs were incurred and had regard to criteria set out in Clause 3.3.4(c) of Schedule A of UT3.

The following was extracted from Schedule 5 – Project Claim Submissions, document entitled “Asset Renewal Projects” dated April 2012.

Thales Axle Counter Trial

Project Information

Project Number	A.03640	Project Status	Ongoing
Previously considered by the QCA	No	Previous Approved Funding	Nil
Total Approved Funding	\$740,000	Project Financially Complete	No

Funding & Approvals

Stage	Date	Funding
Business Case 1	August 2010	\$350,000
Business Case 2	April 2012	\$390,000
Total Approved Funding		\$740,000

2011/12 Claim Details

Total 211/12 Claimable Expenditure	\$347,839
Applicable Financial Interest	\$17,994
Total amount for inclusion in the RAB	\$365,833

Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, file name “A.03640 ZWISR” and Attachment 1: Cost Schedule contained in Schedule 5 – Project Claim Submissions – Asset Renewal and Telecoms, document entitled “Thales Axelcounters – April 2012 - Minor Capital Funding Request” were used as the source documentation providing itemised break down of costs used to compare against the SKM estimated costs in the contents of Table 2.10 below. Should the Authority instruct SKM to continue with this assessment following submission of this report, SKM will develop a bottom up order of magnitude estimate. This estimate will be compared to the costs reported by Aurizon Network Pty Ltd. If the costs are within +30% of SKM’s estimate then SKM will conclude the expense to be reasonable and hence prudent. To enable this estimate to be undertaken, SKM will issue an RFI seeking the hourly rates for internal resources used by Aurizon Network Pty Ltd at the time in order to complete this cost estimation comparison.

Our estimate of the project costs is shown in **Table R-9**.



Table R-9 : Project costs

Items	Aurizon Network Pty Ltd cost	SKM estimated cost	SKM percentage difference	Comment
Thales supply				
Thales Original Order	\$146,410			It is assumed that this is the initial amount covering the purchase of the hardware and coverage of some of Thales initial labour costs.
Madison Communications Supply.	\$20,625			It is assumed that this cost item is for additional Madison equipment supply as well as some installation costs. It is not possible to determine the scope from this description alone.
Contract Spares	\$37,744	From \$35,000 to \$45,000	~5 % to ~15 %	Without access to the as constructed design many assumptions were made re the hardware and quantities.
Thales Additional Engineering, Hardware and Monitoring	\$0			Reference is made to an email was sent to Thales on 14 February 2012. It is assumed that some costs are attributable to this item that is not being carried on the books (the contents are of the email are unknown). The actual expenditure by Thales is therefore unknown and the SKM independent estimates may have parts of these costs included thus elevating the SKM independent estimates.
Additional Spares and Commissioning Support	\$19,864			Contracted labour and materials (hardware) are mixed into this item. The SKM independent estimates separate these activities in hardware and labour.
Version 6.3	\$64,400	From \$110,000 to \$130,000	From 70% to 100%	There are no readily identifiable costs attributed to Aurizon Network Pty Ltd.'s activities to implement Version 6.3. It is not known if Aurizon Network Pty Ltd and Thales have a cost sharing arrangement in place. On the face of it, it appears that the cost to implement version 6.3 is grossly underestimated. SKM has assumed that there will be a need to purchase new counter and evaluator hardware.
Total Thales Supply without Version 6.3	\$224,643	From \$240,000 to \$290,000	From 5% to 30%	The bottom up SKM estimate is attached in Appendix P-B . This estimate contains many untested assumptions. SKM has also allocated an allowance for modifications and rectifications.
Total Thales Supply with Version 6.3	\$289,043	From \$345,000 to \$420,000	From 20% to 45%	Discrepancy mostly attributed to Version 6.3 cost difference.
SAOS engineering & supervision				
Rugged Comm Training 48ED8	\$11,009	From \$7000 to \$8500	From 35% to 25%	Insufficient information provided. SKM assumed 6 people would attend a course held in conjunction with the installation works for the purpose of maintaining the equipment. It is not clear if this amount includes the cost of the course only or does it include the cost of attendees as well.



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Items	Aurizon Network Pty Ltd cost	SKM estimated cost	SKM percentage difference	Comment
Initial Design and Supervision	\$29,477	From \$25,000 to \$30,000	From 1% to 20%	SKM's interpretation of what is required during this stage is attached in Appendix P-B together with assumptions.
Pipeline	\$0			SKM has no understanding of what this item means. The source information states that the costs for this item were (and/or will be) absorbed under the General SAOS expense. The actual amount absorbed is not known by SKM.
Total Estimate without Version 6.3	\$55,487	From \$225,000 to \$260,000	More than 100%	A vast difference in total costs to complete. Without a meaningful breakdown of costs as per the style used in the SKM estimate (Appendix P-B) there can be no confidence in either estimate.
Total Estimate with Version 6.3	\$80,487	From \$260,000 to \$305,000	More than 100%	As above. The SAOS additional costs for implementing Ver 6.3 was \$25,000 as compared with the SKM additional cost of approximately \$40,000
Total Estimate to Complete without Version 6.3	\$15,000	From \$185,000 to \$220,000	More than 100%	As above. A meaningful breakdown of items as per Appendix P-B would be required to understand the difference.
Total Estimate to Complete with Version 6.3	\$40,000	From \$220,000 to \$265,000	More than 100%	An interesting observation is that the Aurizon Network Pty Ltd total estimate to complete is close to the SKM estimate for implementing version 6.3 alone which may indicate an Aurizon Network Pty Ltd error in allocating the additional funds required as the total funds required.

The item descriptions provided by Aurizon Network Pty Ltd cannot readily be interpreted as to their actual meaning. In order to undertake a comparison of Aurizon Network Pty Ltd.'s costs with SKM's benchmark costs it was decided to develop a bottom up estimate of what would likely be required. An attempt was then made to cross correlate with Aurizon Network Pty Ltd.'s items that could be identified by SKM.

Discussion

The cost breakdown provided by Aurizon Network Pty Ltd cannot be assessed as this project is not complete. It should be noted however that once the project has been completed, it is expected that detailed expenditures clearly mapped against an original work break down structure (WBS), including variations and itemised materials, will be provided so that an assessment can be made.

Also, it should be noted that provision of SAP extracted expenditures without the associated intelligence mapping to the WBS is insufficient to enable SKM to properly assess the reasonableness of capital costs for the project.

Whilst Aurizon Network Pty Ltd claims that ultimately this project will minimise whole of life costs, such qualitative claims should be backed up with quantitative analysis.



Conclusion

As discussed above with particular emphasis on the lack of information and status of this project, SKM considers insufficient information has been provided to enable an assessment of prudence of costs.

R.5 Summary

The outcomes of this prudence assessment are summarised in **Table R-10**. If SKM is instructed by the Authority to complete this assessment post the delivery of this report, subject to receipt of necessary information from Aurizon Network Pty Ltd to allow such an assessment to be undertaken, then a final recommendation can be provided.

With the information provided to date, SKM finds the project's scope and costs not prudent as shown below.

Table R-10 : Thales axle counter trials project – review summary

Item	Prudence
Project scope	Not prudent
Standard of the works	Prudent
Project cost	Not prudent

Aurizon Network Pty Ltd has indicated that it intends to submit the project for review when the project has been completed. As such Aurizon Network Pty Ltd have deferred this project from their 2011-2012 claim.



R.6 Appendix R-A: Detailed analysis of scope and status

Scope as of August 2010

The following text in small type was extracted from the document entitled “Minor Capital Funding Request” with the word data file name “100823 - Seed Funding – Final” and the PDF file name “A03xxx - Thales Axle Counter Trial”. Both these documents are dated August 2010:

“Group General Manager Network approval of project seed funding for preliminary investigations prior to the concept stage.”,

“The purpose of this project is to trial the Thales axle counter for train detection purposes to evaluate if the Thales product is a viable alternative to the Siemens axle counter (which is currently in use by QR National). The evaluation will include trial of a replacement for the jointless track circuits for broken rail detection function.

The scope includes establishment of standard designs for widespread implementation and development of revised operational procedures and training and maintenance packages. A type approval will be required.

At this stage the trial will be installed between Windah and Grantleigh; however the final selection will be decided in the initial stage of the concept design process. The track circuiting between Windah and Grantleigh will be replaced with axle counters.

Axle counter evaluator equipment will be installed in both signalling equipment rooms with axle counter heads installed on the track. The trial will use an existing communication quad cable with the axle counter heads configured in a multidrop configuration. The Westrace interlockings will be modified to interface with axle counters.

A final report covering the reliability and costs of axle counters compared with like-for-like replacement of track circuits with recommendations and an implementation plan will be prepared.”,

“QR National Signals Design is expected to provide the majority of inputs required initially. They may go to the market for support.”,

And

“The trial is expected to take 5 months to complete”.

And under the section risks it is stated that:

“A full commercial and safety risk assessment will be conducted if further investment is required post the trial”

Strategic Alignment

Aurizon Network Pty Ltd stated in the above referenced document that this trial is strategically aligned as follows:

Strategic Alignment	QR National pillars	Board-approved business strategy alignment
	Safety	– Beneficial replacement for track circuits
	Customer service	– More reliable track
	Growth	– Targeting improved capacity
	Commercial capability	– Establishment of an alternative competitive supplier
	People	– Reduced wayside maintenance



Rationale

The following rationale was put forward (August 2010) for this investment by Aurizon Network Pty Ltd:

“The safety of a modern signalling system relies on the detection of trains and whether a section of track is occupied or clear. Within the CQ coal systems QR uses a combination of track circuits and axle counters to detect the location of trains.

Track circuits rely on the detection of an electrical current in the rails to prove the section of track is free from trains. Track circuits impose certain restrictions on the arrangement of the track and in particular the maximum length of track sections for each track circuit. A single pair of axle counter heads may be used for any length of track, so less number of axle counters are required compared with track circuits and this is expected to lead to improved reliability.

Axle counters operate by counting train axles into a track section and then counting them out again upon leaving that track section, if the result is zero, then a track section is deemed to be free from trains.

There are about 4500 jointless track circuits in the Goonyella and Blackwater systems that are approaching end-of-life and failures are on an increasing trend. The hardware cost alone for replacing the track circuit's like-for-like is over \$100M. It is proposed that these could be replaced with the new Thales axle counter at a considerable cost saving.

The Thales brand axle counter is a microprocessor system that can simultaneously evaluate up to 32 track sections, a significant benefit compared to the incumbent Siemens product. The Thales model has been type approved in Victoria and is considered the only likely alternative axle counter.

If the Thales axle counters are proven satisfactory then QR Network will have a competitive alternative to the Siemens product. Also, axle counters may be proven more reliable than jointless track circuits, leading to improved track reliability/availability reduced track circuit failures leading to capacity losses as well as possible maintenance costs reductions. These financial benefits will be further investigated and quantified post the trial for discussion and justification for further investment if the trial is successful.

This work needs to be undertaken in the short term because the existing jointless track circuits are becoming less reliable. It is prudent to trial the Thales axle counter equipment in the operating environment to ensure that the equipment can successfully be adapted to operate within the coal network and to confirm the configuration is operationally appropriate. “

In the above referenced document, Aurizon Network Pty Ltd describes a part of the testing and commissioning methodology i.e.:

“The project involves silent testing of axle counters in parallel with operational track circuits in a selected track section between two interlockings. “

“Track access is required and a series of short track closures to effect installation of track circuits and upgrade interlocking equipment.”

“Signalling design personnel, signalling electricians, train controllers, service schedulers, safety personnel and to a less extent, train drivers will be involved.”

Key Milestones and Future Funding

The following milestones and potential additional financing are also referenced:

“If the trial is successful then further funding will be required in order to purchase and install the axle counter system. As a forecast of full project value is unclear at this stage the following time line is indicative only.

Concept gate	February 2011
Feasibility gate	April 2011
Project completion	December 2012
Post project review	February 2013”



Financial and Other Benefits

"The full implementation cost estimate is subject to subsequent scope definition as part of the trial and will be presented in a future Concept IAR for revision prior to project sanction. The financial benefits to QR Network will be further developed as part of the final report produced following the trial.

Expected financial benefits include, reduced track equipment failures resulting in improved track capacity and reduced maintenance costs.

This project will be claimed through the annual QCA Capital Expenditure process as an asset replacement project with costs to be recovered via coal access revenue.

This project has been endorsed for submission by the General Manager Assets, Network."

"A contribution towards the future capacity needs is anticipated and reduced train delays that currently result from failed track circuits"

An uncommitted plan substitution is not taking place – clarity required

The original project name was "Replace Axle Counters – Goonyella & Blackwater", AR Number : APR – 10499. The uncommitted amount recorded against the AR in SAP IM was \$1,050,000 for 2011-2012 financial year and \$450,000 for 2012-2013 financial year. The current request for 2010-2011 financial year was \$350,000.

This project was categorised by Aurizon Network Pty Ltd as an "Asset Replacement".

In addition to the above, a more recent word document, dated April 2012, entitled "Minor capital Funding Request" with electronic file name "120401 - Thales Axel counter Trail MFR Additional Funds Final V2" was assessed. This document sought additional (to the previous amount of \$350,000) funding of \$390,000 for a total of \$740,000.

Scope going forward

"The scope of this project is to evaluate the Thales Axel counter Equipment (ACE) in a multidrop communications environment with multiple rail mounted detectors networked to an SER over existing signalling multi-core or quad cabling.

It was stated in that document that a project close out report is required.

Rationale

The rationale of this more recent document extensively replicates that of the original proposal, except with regards to some key points as quoted below:

"The Thales model has been type approved in Victoria, ARTC for use on the national standard gauge network. Other type approvals exist elsewhere in the world. Thales is presently engaged in a trial in Adelaide expected to lead to type approval for the Adelaide suburban system and testing is about to commence in Victoria leading to type approval.

In a separate initiative, Assets called for submissions from ACE suppliers. Evaluation continues. The Thales product is evaluated as the highest merit offering. A Frauscher offering is also highly ranked but yet untested by QR National. The Siemens 350U product that is currently used has a lower order of merit and this is underlined by the present reliability issues being experienced especially in the Newlands system.

If the Thales axle counters are proven satisfactory then QR Network will have a competitive alternative to the Siemens product. Also, axle counters may be proven more reliable than jointless track circuits, leading to improved track reliability/availability reduced track circuit failures leading to capacity losses as well as possible maintenance costs reductions. These financial benefits are being further investigated and quantified in the separate initiative mentioned above.

The second significant value sought is demonstration that data may be successfully networked over existing copper multi-core and quad cables. The communications equipment being installed would be available for other trackside devices where copper conductors are available. Considerable cost saving could be achieved compared with laying new cable. This may be valuable for proposed points and track circuit monitoring systems and connection of asset protection equipment."



In this more recent document, Aurizon Network Pty Ltd describes a part of the testing and commissioning methodology which has additional activities to that of the original i.e.:

"There are no projects dependant on the completion of this project nor is it dependant on the completion of any other current project. If V6.3 data communications proves successful, V6.3 will be applied to subsequent stages of the WIRP. A decision was made to use Thales ACE in the WIRP; however, data communication is proposed mostly over fibre. Other suitable alternatives over copper include point-to-point connection and, depending on the outcome to testing at Rocklands, use of the communication network type that is being tested at Rocklands.

The successful completion of this project is dependant on the following:

- The project involves testing of axle counters in parallel with operational track circuits
- Track access is required and a series of short track closures to effect installation of axle counter detectors and wayside equipment and an evaluator in the SER and Back-up power supply in the PER.
- Signalling design personnel, signalling electricians, train controllers, service schedulers, safety personnel and to a lesser extent, train drives will also be involved.

Risks

- Commercial risks: Price competitiveness and longer term competitive supply (supply agreement)
- Resources demand: Signalling designers (utilise some external resources, if required)
- Safety Risks: Working on track (use existing controls). Interface with track machines and high rail vehicles. Mid-section track entry of high rail vehicles. Procedures following clearing of axle counter failures. Develop new operational controls.
- Timeliness: Resource demand is at issue. Priority of works to be reviewed. Delay in completion will cause cost increase of the project
- Technology Evolution: Changes will continue to occur requiring review of type approvals as this occurs.

A full commercial and safety risk assessment will be conducted as part of the separate ACE RFI."

Key Milestones and Future Funding

The following milestones and potential additional financing are also referenced:

Installation and monitoring commenced	February 2011 (achieved)
Completion of Original Scope	April 2012
Completion of V6.3 install & Final Reporting	December 2012

Financial and Other Benefits

"The financial benefits to QR Network will be further developed as part of the final report produced following the project.

Expected financial benefits include:

- Competitive and technically superior alternative to Siemens ACE
- Reduced track equipment failures resulting in improved track capacity and reduced maintenance costs.
- A new cost effective data communications networking method utilising existing copper cables

This project will be claimed through the annual QCA Capital Expenditure process as an asset replacement project with costs to be recovered via coal access revenue.

A contribution towards the future capacity needs is anticipated and reduced train delays that currently result from failed track circuits."

"An uncommitted plan substitution is taking place. "

The original project name was referred to as "Thales Axle Counters, Train Detection Program – System Wide", AR Number : APR12189 (\$220,000 for 2011-2012 financial year and \$80,000 for 2012-2013 financial year) and APR12153 (with \$90,000 for 2012-2013 financial year) . The uncommitted amount recorded against the AR in SAP IM was \$220,000 for 2011-2012 financial year and \$80,000 for 2012-2013 financial year, but with a total of



\$80,000. On the second line the uncommitted amount recorded against the AR (assumed to be the second AR above) in SAP was \$3,315,000 for 2012-2013 financial year, \$3,379,000 for 2013-2014 financial year, \$3,750,000 for 2014-2015 financial year with a total of \$10,444,000.

A footnote is now allocated as follows:

“Note: If the project is substituting an existing project the amounts recorded against the existing project AR in SAP IM will be reduced and recorded against a new AR.”

The funding approval sought in this round is:

\$220,000 for 2011-2012 financial year and \$170,000 for 2012-2013 financial year.

Status Analysis

The Aurizon Network Pty Ltd memorandum, dated 30 August 2010 with PDF file name “A03xxx - Thales Axle Counter Trial signed” indicates project approval (for an amount of \$350,000) on 25 August 2010 with an estimated completion date of April 2011. The project number and CW File assigned was A03640.

The Manager Capital Planning & Budgeting, Anthony Webb requested in this memorandum, the provision of a Cost Schedule for the current and future financial years. This was tabled in a more recent document, dated April 2012, entitled “Minor Capital Funding Request” with electronic file name “120401 - Thales Axlecounter Trail MFR Additional Funds Final V2” sought additional (to the previous amount of \$350,000) funding of \$390,000 for a total of \$740,000.

The current status indicates that little progress has been made in achieving the desired type approval and that the scope and objectives set out in 2010 are for all intents and purposes the same as the funding objectives sought in 2012. According to the information provided, this project remains incomplete.

The rationale in part, for this additional funding is that the equipment needs to be removed ahead of the Rocklands – Kabra (WIRP) track upgrade project (WIRP).

The following extract from the April 2012 document provides a sufficient synopsis of the current status of these trials:

“Thales entered an agreement with Madison Communications to provide equipment and engineering services to support the project. QR National placed an order on Thales for supplies and services in November 2010. Spare parts are included. The ACE is operating in shadow mode with active track occupancy detection continuing to be provided by existing track circuits.

The installation of equipment is being conducted at Rocklands north of the White Road level crossing. This location was selected for ready access from Rockhampton and proximity to QR National’s signalling maintenance personnel who are involved and because of the representative track environment with overhead traction, adjacent level crossing and high traffic level.

The installed infrastructure includes nine rail mounted detection points, trackside ‘mushrooms’ adjacent to each detection point with data signal converters for relay of information to the ACE evaluator in Rocklands SER, all supplied with secure power from a Sunny Island inverter. Cabling is provided between mushrooms and existing location cases. Existing multi-core cabling between trackside location cases and the SER rack is used.

The plan is to remove ACE and the Sunny Island inverter at the completion of the project, ahead of Rocklands – Kabra (WIRP) track upgrade project, and then use these components, to the extent practical, on a future installation, location yet to be finalised. Thales and Madison have some recovery of costs under the agreement negotiated but are contributing generously to cover much of their own time and expenses with a view to receiving type approvals to pave the way for future sales.

Success criteria are included in the agreement with Thales. A number of discrete test plans have been defined as a framework for reporting.

A number of shortcomings of the Thales Version 6.1.11 communications arrangement have been determined and the installed equipment is performing at a reliability level well below what is acceptable. Considerable effort has been expended to date by all parties including two visits from Germany by Thales engineers and trial of several communications protocols and data loss timeout settings. The project team believes that V6.1.11 can be made to work and continues to make minor modifications to the data loss



Aurizon Network Pty Ltd Capital Expenditure 2011-12 Engineering Assessment



timeout to accommodate data transmission losses due to the noisy electrical environment on the circuits. This difficulty was anticipated and is at the heart of the project.

Thales is in the process of developing and releasing the next generation communications arrangement for its ACE product. The proposed 'Version 6.3' communications arrangement is to be used in the new Swiss rail tunnel scheduled to be in operation in 2016. The new arrangement is simple, eliminating two data conversions between the track and the SER. V6.3 is expected to be less expensive and more reliable in operation but has not as yet been independently safety certified or type approved by others.

The original seed funding request was prepared before the project manager commenced work with QR National and before the scope was defined to provide a basis for cost estimating. Significant changes in scope from that originally contemplated include:

- The level of difficulty of obtaining reliable communications to support the SIL 4 ACE.
- Two site visits by a Thales communications engineer from Germany
- Damage to equipment arising from failure to provide adequate protection in the circuits requiring some replacements
- A number of additional visits to Rockhampton by Thales and Madison Australian personnel
- Time overrun from the expected schedule by twelve months
- Proposed extension to scope to include install of V6.3.

Completion of the original scope was expected to take 5 months. Delays were incurred following the procurement process, supply of equipment, installation and commissioning. Reliability issues continue to cause delay. Without the V6.3 time extension, the project is now expected to be completed by end April 2012, 17 months from approval. With V6.3 testing, the total project period is expected to extend to 25 months, with completion by end December 2012."



R.7 Appendix R-B: Detailed analysis of cost

A detailed breakdown of the project costs is presented below:

Project costs (extracted from the document entitled “Thales Axelcounters – April 2012 - Minor Capital Funding Request”)



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



QR National Confidential

Project Name: Thales Axlecounters
Date: April 2012

Attachment 1: Cost Schedule

A.03640 THALES AXLE COUNTER TRIAL - ROCKLANDS											
FORECAST COST AT COMPLETION, MARCH 2012											
Item	Project Element or Work Order	Cost at 12.02.12	Committed	Estimate to Complete	Total without V6.3	Additional for V6.3	Total Including V6.3	Seed Funding Estimate	File Reference	Comments	
Thales Supply											
1	Thales Original Order	\$117,128.00	\$29,282.00		\$146,410.00		\$146,410.00		A		
2	Madison Communications Supply		\$20,825.00		\$20,825.00		\$20,825.00		A	Right to return equipment - not equitable	
3	Contract Spares		\$37,744.00		\$37,744.00		\$37,744.00		A	Right to return equipment - not equitable	
4	Thales Additional Engineering Hardware and Monitoring		\$0.00		\$0.00		\$0.00		B	See e-mail to Thales 14/2/12	
5	Additional Spares & Commissioning Support		\$19,864.00		\$19,864.00		\$19,864.00		C	One of two trips by German Engineer plus spares	
6	Version 6.3					\$64,400.00	\$64,400.00		D	Optional	
7	Total Thales Supply	\$117,128.00	\$107,515.00	\$0.00	\$224,643.00	\$64,400.00	\$289,043.00	\$146,410.00			
SAOS Engineering & Supervision											
8	Rugged Comm Training 4REQ	\$11,009.65			\$11,009.65		\$11,009.65			Rockhampton and SAOS personnel	
9	Initial Design & Supervision	\$29,477.84			\$29,477.84		\$29,477.84			Includes sunny island \$5,000	
10	Pipeline		\$0.00		\$0.00		\$0.00			Absorbed in S&CSA General SAOS Expense	
11	Estimate to Complete			\$15,000.00	\$15,000.00	\$25,000.00	\$40,000.00		E	See Attachment	
12	Total SAOS Engineering & Supervision	\$40,487.49	\$0.00	\$15,000.00	\$55,487.49	\$25,000.00	\$80,487.49	\$30,000.00			
Asset Services											
13	Asset Maintenance	\$0.00			\$0.00		\$0.00				
14	Pipeline		\$1,500.00		\$1,500.00		\$1,500.00				
15	Estimate to Complete			\$14,000.00	\$14,000.00	\$25,000.00	\$39,000.00		F	See Attachment	
16	Total Asset Services	\$0.00	\$1,500.00	\$14,000.00	\$15,500.00	\$25,000.00	\$40,500.00	\$0.00		Originally included with Construction Services	
Construction Services											
17	Construction Services	\$120,374.98			\$120,374.98		\$120,374.98				
18	Pipeline Costs (estimate)		\$2,500.00		\$2,500.00		\$2,500.00				
19	Estimate to Complete			\$9,000.00	\$9,000.00	\$12,000.00	\$21,000.00		G		
20	Total Construction Services	\$120,374.98	\$2,500.00	\$9,000.00	\$131,874.98	\$12,000.00	\$143,874.98	\$103,500.00			
Signalling & Corridor Systems Assets											
21	Signalling & Corridor Systems Assets	\$69,848.71			\$69,848.71		\$69,848.71				
22	Pipeline Costs		\$12,250.00		\$12,250.00		\$12,250.00				
23	Incurred in February 2012		\$5,950.00		\$5,950.00		\$5,950.00				
24	Estimate to Complete			\$30,000.00	\$30,000.00	\$30,000.00	\$60,000.00		HI		
25	S&CSA Project Management	\$69,848.71	\$21,140.00	\$30,000.00	\$120,988.71	\$30,000.00	\$150,988.71	\$70,000.00			
26	Contingency Allowance 15%	\$0.00	\$0.00	\$10,200.00	\$10,200.00	\$23,400.00	\$33,600.00	\$0.00			
27	Total Estimated Cost	\$347,839.18	\$132,655.00	\$78,200.00	\$558,694.18	\$179,800.00	\$738,554.18	\$350,000.00			
28	Rounding	\$347,839.18	\$132,655.00	\$79,505.82	\$560,000.00	\$180,000.00	\$740,000.00	\$350,000.00			
REF: 13.05.12											

Project costs extracted from spreadsheet with electronic file name "A.03640 ZWISR"



Aurizon Network Pty Ltd Capital Expenditure 2011-12

Engineering Assessment



Lev	Description	Assigned Budget	Total Actual Expenditure	Prev Yrs	July	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	2011/2012
1	Thales Axle Counter Trial	740,000.00	347,839.18	197,678.40	0.00	120,080.00	18,240.08	770.89	1,332.11	9,737.70	0.00	0.00	0.00	0.00	0.00	0.00	150,160.78
2	Rocklands Axle Counter Trial	704,000.00	347,839.18	197,678.40	0.00	120,080.00	18,240.08	770.89	1,332.11	9,737.70	0.00	0.00	0.00	0.00	0.00	0.00	150,160.78
3	Thales Supply	289,000.00	128,137.65	0.00	0.00	117,128.00	0.00	0.00	1,271.95	9,737.70	0.00	0.00	0.00	0.00	0.00	0.00	128,137.65
3	SAOSE	80,000.00	29,477.84	29,477.84	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Asset Maintenance	40,000.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Construction Services	144,000.00	120,374.98	98,351.85	0.00	2,952.00	18,240.08	770.89	60.16	0.00	0.00	0.00	0.00	0.00	0.00	0.00	22,023.13
3	Infrastructure Services	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Track & Civil Assets	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Maintenance Alliance	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Signalling & Corridor Systems Assets	151,000.00	69,848.71	69,848.71	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
3	Contingency	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	Rocklands v6.3 AC Trial	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00



The following was extracted from the spread sheet entitled "Schedule 2 – IDC Summary 2011/12 CAPEX Claim" dated 1 November 2012.

Project Name	Thales Axle Counter Trial	
Project Number	A.03640	
WACC (UT3)		
Monthly Int Calc (WACC)		
SAP Recorded Expenditure	347,839	
Construction Finance Interest	17,994	
Total Capex Claim (including interest)	365,833	
<hr/>		
Period/year	Actual SAP Recorded Spend	Interest (\$ as at 30 June 12)
005.2011 November 2010		-
006.2011 December 2010	1,150.00	120
007.2011 January 2011	41,256.00	3,931
008.2011 February 2011	3,464.81	300
009.2011 March 2011	4,620.00	361
010.2011 April 2011	15,300.03	1,065
011.2011 May 2011	38,288.34	2,341
012.2011 June 2011	93,599.22	4,941
001.2012 July 2011	-	-
002.2012 August 2011	120,080.00	4,354
003.2012 September 2011	18,240.08	512
004.2012 October 2011	770.89	15
005.2012 November 2011	1,332.11	16
006.2012 December 2011	9,737.70	39
007.2012 January 2012		-
008.2012 February 2012		-
009.2012 March 2012		-
010.2012 April 2012		-
011.2012 May 2012		-
012.2012 June 2012		-
Total of 2011/12 capex claim	347,839.18	17,994.23
<hr/>		
Project Name	Thales Axle Counter Trial	
Project Number	A.03640	