Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

QUEENSLAND COMPETITION AUTHORITY

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Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

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Executive summary

Introduction and background

Under Aurizon Network Pty Ltd's (Aurizon Network) 2010 Access Undertaking (UT3), the Queensland Competition Authority (the Authority) 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 2013, Aurizon Network submitted a claim for UT3 post commissioning projects.

The Authority commissioned Sinclair Knight Merz (SKM) to provide technical engineering and prudency of capital expenditure advice to assist with the assessment of Aurizon Network's 2012–2013 capital expenditure claim (2012–2013 claim) for five of these post commissioning projects.

The five post commissioning works requiring prudency assessments were:

- 1. Goonyella to Abbot Point Expansion (GAPE)
- 2. Raglan Feeder Station
- 3. Bluff Feeder Station
- 4. Duaringa Feeder Station
- 5. Wycarbah feeder Station

SKM's assessment methodology conforms 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 scope of the work undertaken in 2012-2013 on the GAPE project was prudent;
- the work undertaken in 2012-2013 on the four Blackwater feeder stations by Aurizon Network was consistent with the scope of works approved by customers;
- the standard of all five projects was prudent; and
- the cost of all five projects was prudent.

The terms of reference for this report can be found in Appendix A.

It should be noted that SKM was engaged by the Authority in November 2012 to provide prudency assessments of 19 projects submitted by Aurizon Network as part of the 2011–2012 capital expenditure claim (2011–2012 claim). Of these 19 projects, SKM assessed the GAPE and the Blackwater Feeder Stations projects which are the subject matter of this assessment report. For completeness the SKM reports prepared in 2013 covering the engineering review of the prudency of the GAPE and the Blackwater Feeder Stations capital expenditure projects in Aurizon Network's 2011-2012 claim are enclosed as attachments to **Appendix D** and **Appendix E** of this report.

This report therefore represents a natural continuation of some of the SKM prudency assessments previously provided to the Authority in 2013.

Difficulties encountered assessing the GAPE post-commissioning activities

The GAPE post commissioning activities, whilst listed in the terms of reference as a single project, in fact consist of 6 major activities and approximately 260 sub-activities with a total claim value of \$20,962,429.

SKM notes that a significant number of credits have been incorporated into the post-commissioning SAP accounts. The credits amount to \$21,009,365 and the total expenditure on GAPE post-commissioning activities totalled \$41,971,797.

SKM assessed the GAPE post commissioning information initially provided by Aurizon Network and found that detailed assessment was hindered by the lack of pertinent information available. As a result SKM issued requests for information (RFIs) detailing the information required from Aurizon Network to enable the assessment to progress on the GAPE post commissioning activities.



During a meeting with the Authority and Aurizon Network on 21 February 2014 and subsequent meetings with Aurizon Network on 24 February 2014 and 26 February 2014, it became known to SKM that the requested information to confirm scope and standard for the majority of the GAPE post commissioning activities was not provided by Aurizon Network. Consequently, the Authority confirmed that a sample of activities should be reviewed by SKM.

Aurizon Network subsequently provided information for an agreed sample of GAPE post commissioning activities. These activities were:

- 1. Abbot Point to Bogie River, existing track upgrades
- 2. Bogie River to Newlands, power supply
- 3. Bogie River to Newlands, Havilah intersection
- 4. Northern Missing Link, Byerwen quarry
- 5. Northern Missing Link, track monumenting
- 6.
- 7. Provisions, insurance payout

The above 7 post commissioning activities comprised 31 sub-activities which represent approximately 25% of the total claim value (excluding all credits) of \$41,971,797.

Discussion

The terms of reference covered the assessment of capital expenditure for the post-commissioning activities claimed in the 2012–2013 financial year; however, SKM found that many of the activities occurred prior to the 2012–2013 financial year (i.e. activities occurred before commissioning, not post-commissioning). SKM notes that Aurizon Network has advised that it intends to submit additional GAPE activities in their 2013–2014 claim.

Aurizon Network's 2012–2013 GAPE post-commissioning claim included credits¹ totalling \$21,009,365. The inclusion of these credits in the claim, whilst lowering the capital expenditure to be possibly included in the RAB (which may be viewed favourably by Customers) does disguise the full extent of the capital expenditure. SKM notes that the total claim value (excluding all credits) of \$41,971,797 represents ~5% of the 2011–2012 GAPE project value of \$771,118,899 (excluding IDC) which is approaching the maximum amount that SKM would expect for activities that occur after commissioning is complete (i.e. post-commissioning activities).

SKM recommends that financial transactions, such as commercial credits, **second second** insurance payouts and similar transactions that do not contain engineering content should not be included in costs submitted for projects requiring engineering prudency assessments allowing analysis of standard and scope. SKM is of the view that such activities would be more appropriately assessed through a financial audit mechanism. For example, insurance payouts for force majeure circumstances do not merit any engineering assessment under a prudency review and are purely financial in nature. The commercial/financial audit of the insurance claims and product insurer's product disclosures statements should be subjected to commercial audits both prior to the claim (to ensure the insurance fees are value for money) and post claim.

SKM recognise the benefits of ex-anti approval (as opposed to ex-post) of capital expenditure

For high value system enhancement and post-commissioning activities, SKM believes Aurizon Network would benefit from obtaining Customer and Authority approval prior to commencement of works.

¹ commercial credits,

Prudency results

SKM's detailed analyses of the post-commissioning activities are contained in the separate mini-reports in **Appendix D** and **Appendix E**, but **Table ES-1** and **Table ES-2** below present a summary of findings of prudency for each of the activities.

Table ES-1: Overview of GAPE prudency of post commissioning projects assessed

	SAP description – Activity description		2012-2013 claimable expenditure (\$'000)	Prudency assessment			Prudent
System		SAP # A.0347.		Project scope	Standard of the works	Project cost	expenditure (\$'000)
GAPE	Abbot Point to Bogie River - existing track upgrades	28000	\$2,396,480	Prudent	Prudent	Prudent	\$2,396,480
	Bogie River to Newlands - power supply	50400	\$275,088	Prudent	Prudent	Prudent	\$275,088
	Bogie River to Newlands - Havilah intersection	46795	\$489,223	Prudent	n/a	n/a	\$489,223
	Northern Missing Link - Byerwen quarry	71400	\$3,666,587	Prudent	Prudent	Prudent	\$3,666,587
	Northern Missing Link - Track monumenting	71131	\$473,789	Prudent	Prudent	Prudent	\$473,789
		82000	\$3,168,226	Prudent	n/a	n/a	\$3,168,226
	Provisions - Insurance payout	86230	-\$9,009,820	Prudent	n/a	n/a	-\$9,009,820
TOTAL (ex IDC) \$1,459,5						\$1,459,573	

Table ES-2: Overview of Blackwater Feeder Stations prudency of post commissioning projects assessed

			2012-2013 claimable expenditure (\$'000)	Prudency assessment			Prudent
System	SAP description – Activity description	SAP #		Project scope	Standard of the works	Project cost	expenditure (\$'000)
Blackwater	Raglan Feeder Station	A.02222	\$4,180,623	Prudent	Prudent	Prudent	\$4,180,623
	Bluff Feeder Station	A.02604	\$1,799,079	Prudent	Prudent	Prudent	\$1,799,079
	Duaringa Feeder Station	A.02603	\$1,898,100	Prudent	Prudent	Prudent	\$1,898,100
	Wycarbah Feeder Station	A.02602	\$453,325	Prudent	Prudent	Prudent	\$453,325
TOTAL (ex IDC)						\$8,331,127	

Prudency conclusions

Based on the detailed analysis conducted, SKM recommends capital expenditure of \$9,790,700 (excluding IDC), comprising \$1,459,573 for the GAPE post commissioning activities and \$8,331,127 for the Blackwater Feeder Stations post commissioning projects, be included in the RAB.

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

1. Glossary

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

Table 1 : Abbreviations, acronyms and terminology

Abbreviation, acronyms and terminology	Description/definition			
2012-2013 claim	Aurizon Network's 2012-2013 Capital Expenditure Submission submitted to the Authority in December 2013.			
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 Aurizon Network refer to asset replacement projects in its 2011-2012 claim.			
Aurizon Network	Aurizon Network			
CAPEX	Capital expenditure			
Capital expenditure	Capital expenditure is considered by SKM to cover both asset replacement expenditure and syste 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's Asset Management Plan dated June 2011.			
CCA	Coal connect alliance			
CETS	Civil engineering and track standards			
CQCR	Central Queensland coal region			
CRIMP	Coal rail infrastructure master plan			
CSA	Coal stream alliance			
Customers	Mining companies that currently or plan to transport mining commodities on Aurizon Network's network.			
DTC	Direct traffic control			
Feasibility IAR	Feasibility investment appraisal report			
FS	Feeder station			
FS	Feasibility study			
GAPE	Goonyella to Abbot Point expansion			
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			
GIS	Gas insulated switchgear (with SF6)			
HF	Harmonic filter			
HV	High voltage			
IDC	Interest during construction			
LV	Low voltage			
Mtpa	million tonnes per annum			
NAMP	Network asset management plans			
NML	Northern missing link			
PAA	Project Alliance Agreement			
PFS	Prefeasibility study			
RAB	Regulatory asset base			
RCS	Remote control signalling			

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim



Abbreviation, acronyms and terminology	Description/definition			
Reasonable Demand	Reasonable Demand relates to the demand for which a capital expenditure project is required in order to enable Aurizon Network 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.			
RFI	Request for Information			
SAP	SAP AG (Systems, Applications, and Products in Data Processing) is a German multinational software corporation			
SKM	Sinclair Knight Merz			
SMOS	Structure mounted outside switchgear			
SNMP	Simple network management protocol			
STS	Specialised track services (a wholly owned subsidiary of Aurizon Holdings Ltd)			
SVC	Static volt amp reactive compensator			
System enhancement capital expenditure	This term is employed by Aurizon Network to refer to capital expenditure other than asset renewals. This term is equivalent to General Expansion Capital Expenditure in UT3,			
the Authority	The Queensland Competition Authority			
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 Five Post-Commissioning Projects in Aurizon Network's 2012-2013 Capital Expenditure.			
UT3	QR Network's 2010 Access Undertaking – as approved 1 October 2010			
UT4	Aurizon Network's 2013 Draft Access Undertaking			

2. Introduction

2.1 Background

The Queensland Competition Authority (the Authority) is responsible for the economic regulation of the belowrail infrastructure owned by Aurizon Network² which operates the coal rail network in Central Queensland and is a wholly owned subsidiary of Aurizon Holdings Ltd.

Under Aurizon Network's 2010 Access Undertaking, the Authority had previously approved a Regulatory Asset Base (RAB) for the Central Queensland Coal Region (CQCR) and approves any subsequent additions to this RAB subject to prudency assessments.

Aurizon Network's approved 2010 Access Undertaking (UT3) includes processes and criteria for the Authority's assessment of the prudency of capital expenditure to determine whether all or some should be included in the RAB for the CQCR. The Authority has appointed Sinclair Knight Merz (SKM) to assess the prudency of five post commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim, focusing on:

- the scope of the works (and in the case of the four Blackwater feeder stations was consistent with the scope of works approved by customers);
- 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

SKM notes that Aurizon Network and the Authority are currently consulting on the draft 2013 Access Undertaking (UT4) and that the five post commissioning projects still fall under the assessment methodology of UT3. As directed by the Authority's terms of reference, SKM undertook the assessment of Aurizon Network's 2012-2013 capital expenditure claim for the five post-commissioning projects paying particular attention to Schedule A - Maintenance of Regulatory Asset Base of the approved UT3 (Schedule A of UT3) enclosed in **Appendix B**.

Prudency of scope

SKM's assessment of prudency of scope drew on the conclusions and assessments completed in 2013 for the 2011-2012 claim as the basis for determining what additional works were required in the 2012-2013 financial year as well as seeking evidence of customer consultation and approval.

Prudency of standard

SKM sought evidence of qualified acceptance of the newly constructed infrastructure into operation. Such evidence was deemed by SKM to be suitable to determine that the standard was suitable for operation. Evidence that over design had not occurred required an engineering assessment as to whether the standard was comparable to the standard applied on similar infrastructure.

Prudency of cost

SKM assessed costs as detailed in the SAP transactions received and sought evidence of invoices where available and project completion reports that supported these claims.

² On 3 December 2012, QR Network Pty Ltd changed its name to Aurizon Network Pty Ltd (Aurizon Network).

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim



2.3 Report overview

This report is structured as follows:

- Section 3 provides an overview of post-commissioning aspects of Aurizon Network's 2012-2013 claim;
- Section 4 discusses the post-commissioning projects' assessment criteria;
- Section 5 summarises the information provided by Aurizon Network for the assessment; and
- Section 6 provides a summary of the results of SKM's assessment and provides recommendations in relation to claimable expenditure to be approved.

The report's appendices 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 of the approved UT3;
- Appendix C lists the requests for information raised by SKM and the responses from Aurizon Network;
- Appendix D contains the GAPE post-commissioning assessment report (mini-report); and
- Appendix E contains the Blackwater Feeder Stations post-commissioning assessment report (mini-report)



3. Aurizon Network's 2012-2013 capital expenditure claim

As required under the UT3 framework, Aurizon Network submitted a claim (2012-2013 claim) for its 2012-2013 capital expenditure to be included in the RAB. This section of the report provides a summary overview of Aurizon Network's submission to the Authority and introduces the post-commissioning activities assessed.

3.1 Aurizon Network's 2012-2013 claim

Aurizon Network submitted its 2012-2013 claim to the Authority in November 2013. The 2012-2013 claim contains eight schedules:

- Schedule 1 Claim Summary Workbook; which includes Aurizon Network's 2012-2013 Capital Expenditure Claim spread sheet;
- Schedule 2 IDC Workbook; which includes the IDC Summary 2012 13 CAPEX Claim spread sheet;
- Schedule 3 Expansion and Post Commissioning Capital Expenditure Claim Submission;
- Schedule 4 TACA Capital Expenditure Claim with supporting documentations;
- Schedule 5 Electrical Capital Expenditure Claim with supporting documentations;
- Schedule 6 Signalling and Track Side Systems Asset Renewal Capital Expenditure Claim;
- Schedule 7 Telecommunications Capital Expenditure Claim with supporting documentations; and
- Schedule 8 Corridor Capital Expenditure Claim with supporting documentations.

SKM reviewed Schedule 1 and parts of Schedule 3 only in accordance with the Authority's terms of reference.

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

3.2 Post-commissioning activities in Aurizon Network's 2012-2013 claim

The five post commissioning works requiring prudency assessment are:

- 1. Goonyella to Abbot Point Expansion (GAPE)
- 2. Raglan Feeder Station
- 3. Bluff Feeder Station
- 4. Duaringa Feeder Station
- 5. Wycarbah feeder Station

Table 3 presents the summary details \$29,293,559 capital expenditure post commissioning projects initially selected for detailed analysis.

Table 3-1: Capital expenditure post commissioning projects initially identified for detailed analysis

System	Project name	Project number	Project type	2012-2013 claimable expenditure (\$'000)
GAPE	GAPE	A.03473	System Enhancement	\$20,962,432
Blackwater	Raglan Feeder Station	A.02222	System Enhancement	\$4,180,623
Feeder Stations	Bluff Feeder Station	A.02604	System Enhancement	\$1,799,079
	Duaringa Feeder Station	A.02603	System Enhancement	\$1,898,100
	Wycarbah Feeder Station	A.02602	System Enhancement	\$453,325
			TOTAL	\$29,293,559

3.3 Sample of GAPE post-commissioning activities

The GAPE post commissioning works, whilst listed in the terms of reference as a single project, in fact consist of 6 major activities and approximately 260 sub-activities with a total claim value of \$20,962,429 as shown in **Table 3-2** below.

 Table 3-2: Breakdown of GAPE post commissioning projects

System	Project name	Project number	Project type	2012-2013 claimable expenditure (\$'000)
GAPE	Owners Costs	A.03473	System Enhancement	\$1,724,084
	Abbot Point to Bogie River	A.03473	System Enhancement	\$8,254,583
	Bogie River to Newlands	A.03473	System Enhancement	\$19,573,912
	Northern Missing Link	A.03473	System Enhancement	\$8,061,413
	Provisions	A.03473	System Enhancement	-\$5,827,883
	Accruals	A.03473	System Enhancement	-\$10,823,680
			GAPE sub-total	\$20,962,429

SKM assessed the GAPE post commissioning information initially provided by Aurizon Network and found a lack of pertinent information available. As a result SKM issued out RFI 004 and RFI 005 indicating the information required from Aurizon Network to enable the assessment to progress on the GAPE post commissioning works.

During a meeting with the Authority and Aurizon Network on 21 February 2014 and subsequent meetings with Aurizon Network on 24 February 2014 and 26 February 2014, it became known to SKM that the requested information to confirm scope and standard for the majority of the GAPE post commissioning activities was not provided by Aurizon Network. Consequently the Authority confirmed that a sample of activities should be reviewed by SKM.

Aurizon Network subsequently provided sufficient information for an agreed and revised GAPE post commissioning set of activities. These activities were:

- 1. Abbot Point to Bogie River, existing track upgrades
- 2. Bogie River to Newlands, power supply
- 3. Bogie River to Newlands, Havilah intersection
- 4. Northern Missing Link, Byerwen quarry
- 5. Northern Missing Link, track monumenting
- 6.
- 7. Provisions, insurance payout

The above 7 GAPE post commissioning activities consisted of 31 sub-activities with a total revised claim value of \$1,459,573 as shown in **Table 3-3** below.

Table 3-3: Revised GAPE post commissioning projects identified for detailed analysis

System	SAP description – activity description	SAP # A.0347.	Project type	2012-2013 claimable expenditure (\$'000)
GAPE	Abbot Point to Bogie River - existing track upgrades	28000	System Enhancement	\$2,396,480
	Bogie River to Newlands - power supply	50400	System Enhancement	\$275,088
	Bogie River to Newlands - Havilah intersection	46795	System Enhancement	\$489,223
	Northern Missing Link - Byerwen quarry	71400	System Enhancement	\$3,666,587
	Northern Missing Link - Track monumenting	71131	System Enhancement	\$473,789
		82000	System Enhancement	\$3,168,226
	Provisions - Insurance payout	86230	System Enhancement	-\$9,009,820
			TOTAL	\$1,459,573



4. Assessment criteria for post commissioning projects

This section of the report describes the assessment criteria and process employed by SKM during its engineering assessment of the selected post commissioning projects.

4.1 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.

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 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 for any post commissioning works.

4.2 Project status assessment

SKM has reviewed the supporting documents provided by Aurizon Network to determine whether the projects under review had been fully or only partially commissioned. If the projects under review 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 post commissioning 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.

4.3 Project scope assessment

In assessing the prudency of the scope of capital expenditure on the post commissioning projects that didn't have prior customer approval, SKM assessed the post commissioning project 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 post commissioning 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 (or, if not, what proportion of the works were funded by Aurizon Network); and
- were capital expenditure and not maintenance projects³.

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

- the need to accommodate what is reasonably required to comply with Access Agreements;
- the appropriateness of Aurizon Network'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 on post commissioning project was subjected to the capital evaluation and selection process.

³ Aurizon Network's maintenance expenditure is considered separately from capital expenditure and is not added to the RAB. The reasonableness of Aurizon Network's policies for determining if projects are maintenance expenditure or capital expenditure, in accordance with their Asset Management Plan, was not reviewed by SKM.



4.4 Project standard assessment

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

In assessing the prudency of the standard of post-commissioning activities of system enhancement projects, following Clause 3.3.3(b)(iii) of Schedule A of UT3, SKM paid particular attention to whether the post commissioning 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 post commissioning 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 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 on the post commissioning 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 internal policies, procedures including project governance procedures and design standards relating to system enhancement projects.

4.5 Project cost assessment

In assessing the reasonableness of the cost of capital expenditure on the post commissioning projects in the 2012-2013 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 post commissioning project; and
- the circumstances prevailing in the markets for engineering, equipment supply and construction.

In forming an opinion on the reasonableness of post commissioning project costs, SKM also had regard to the manner in which Aurizon Network managed the works, including but not limited to, the manner in which Aurizon Network 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.

On this occasion, insufficient information was made available by Aurizon Network for SKM to develop any bottom-up order of magnitude (± 30%) cost estimates of any of the post commissioning projects.

5. Information provided for assessment of post commissioning projects

This section provides an overview of the information provided by Aurizon Network relating to the five post commissioning projects. This section also provides an overview of the availability of suitable data necessary for SKM to complete its assessment of prudency. A more detailed assessment of the information provided is contained in the mini-reports for the GAPE project and the Blackwater Feeder Station Project contained in **Appendix C** and **Appendix D** respectively.

5.1 Information provision

Where information gaps were identified, SKM raised RFIs. A copy of SKM's RFI Register is enclosed in **Appendix C.** The documentation provided by Aurizon Network for the GAPE post commissioning project was found to be insufficient for SKM to perform its initial assessment. In response to RFI004 and RFI005 and in agreement with the Authority, a subset information pack of the GAPE activities was provided which contained sufficient information to conduct the required assessment of those particular activities only.

In **Table 5-1** to **Table 5-10** 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 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. Similarly, a "**No**" result does not automatically mean a project is not prudent, but rather it indicates that Aurizon Network 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.

5.2 Customer / Authority approval/engagement information

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of Customer / Authority approval/engagement of post-commissioning projects is summarised in **Table 5-1** and **Table 5-2** below

Table 5-1: Provision of GAPE customer / authority approval/engagement of sample activity information

			Information provide	d demonstrates
System	Activity description	SAP Element #	customer/authority approval ⁴	customer engagement
	Existing track upgrades	A.03473.28000	Yes	Yes
	Power supply	A.03473.50400	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes
	Track monumenting - NML	A.03473.71131	Yes	Yes
		A.03473.82000	Yes	Yes
	Insurance payout	A.03473.86230	Yes	Yes

⁴ Authority approval via Shareholding Minister on 10 February 2010

Table 5-2: Provision of Blackwater Feeder Station customer / authority approval/engagement information

Information provided demonstrates ...

System	Project name	Project number		customer engagement	
	Raglan Feeder Station	A.02222	Yes	Yes	
	Bluff Feeder Station	A.02602	Yes	Yes	
Blackwater	Duaringa Feeder Station	A.02603	Yes	Yes	
	Wycarbah Feeder Station	A.02604	Yes	Yes	

5.3 Project status information

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of status post-commissioning projects is summarised in **Table 5-3** and **Table 5-4** below

Table 5-3: Provision of information on status of GAPE post-commissioning sample activities

		Information provide	ed demonstrates	
System	Activity description	SAP Element #	activity was fully completed in 2012-2013	"useful and in use" proportion of activity
	Existing track upgrades	A.03473.28000	Yes	Yes
	Power supply	A.03473.50400	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	No
	Track monumenting - NML	A.03473.71131	Yes	Yes
		A.03473.82000	Yes	n/a
	Insurance payout	A.03473.86230	Yes	n/a

Table 5-4: Provision of information on status of Blackwater Feeder Station post-commissioning projects

Information provided demonstrates ...

System	Project name	Project number	project was fully commissioned in 2012- 2013	"useful and in use" proportion of project
	Raglan Feeder Station	A.02222	No	Yes
	Bluff Feeder Station	A.02602	No	Yes
Blackwater	Duaringa Feeder Station	A.02603	Yes⁵	Yes
	Wycarbah Feeder Station	A.02604	No	Yes

⁵ Duaringa Feeder Station was considered not fully commissioned in the 2011-12 assessment report.

Information provided demonstrates ...

5.4 Project scope information

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of scope of the post commissioning projects is summarised in **Table 5-5** and **Table 5-6** below.

Table 5-5: Provision of information on scope of GAPE post-commissioning sample activities

			Information provided demonstrates				
System	Activity description	SAP Element #	Above / below rail split	Funded by Aurizon Network	Scope consistency	Options analysis	Project subjected to evaluation
	Existing track upgrades	A.03473.28000	Yes	Yes	Yes	n/a	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes	Yes	Yes	Yes
	Track monumenting - NML	A.03473.71131	Yes	Yes	Yes	n/a	Yes
		A.03473.82000	Yes	Yes	n/a	n/a	Yes
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a	n/a

Table 5-6: Provision of information on scope of Blackwater Feeder Stations post-commissioning projects

System	Project name	Project number	Above / below rail split	Funded by Aurizon Network Pty Ltd	Scope consistency	Options analysis	Project subjected to evaluation
Blackwater	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes	Yes
	Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes	Yes
	Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes	Yes
	Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes	Yes

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5.5 Project standard information

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of prudency of standard of the post-commissioning projects is summarised in **Table 5-7** and **Table 5-8** below.

Table 5-7: Provision of information on standard of GAPE post-commissioning sample activities

	Information provided demo				ed demonstra	tes
System	Activity description	SAP Element #	Completion of projects to agreed standards	Consistency with existing infrastructure	Matches Railway Operator requirements	Matches forecast usage requirements
	Existing track upgrades	A.03473.28000	Yes	Yes	Yes	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	No	No	n/a
	Track monumenting - NML	A.03473.71131	Yes	Yes	Yes	n/a
		A.03473.82000	n/a	n/a	n/a	n/a
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a

Table 5-8 : Provision of information on standard of Blackwater Feeder Stations post-commissioning projects

			Inform	ation provide	ed demonstra	ites
System	Project name	Project number	Completion of projects to agreed standards	Consistency with existing infrastructure	Matches Railway Operator requirements	Matches forecast usage requirements
	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes
Discharge	Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes
Blackwater	Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes
	Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes

5.6 Project cost information

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of prudency of cost of the post-commissioning projects is summarised in **Table 5-9** and **Table 5-10** below.

Table 5-9: Provision of information on cost of GAPE post-commissioning sample activities

			Information provided was sufficient to assess			
System	Activity description	SAP Element #	Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
	Existing track upgrades	A.03473.28000	No	No	No	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes	Yes	Yes
	Track monumenting - NML	A.03473.71131	Yes	n/a	No	No
		A.03473.82000	n/a	n/a	n/a	n/a
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a

Table 5-10: Provision of information on cost of Blackwater Feeder Station post-commissioning projects

			Information provided was sufficient to assess			
System	Project name	Project number	Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
Blackwater	Raglan Feeder Station	A.02222	Yes	Yes	Yes	Yes
	Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes
	Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes
	Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes



6. Assessment results and recommendations

This section of the report provides a summary of SKM's assessment results and recommendations in relation to claimable post-commissioning capital expenditure to be approved by the Authority.

6.1 Project status review results

The results of SKM's analysis of the status on 30 June 2013 of the capital expenditure on the post commissioning projects submitted for assessment are summarised in **Table 6-1** and **Table 6-2** below.

Table 6-1 : Status of post commissioning GAPE projects submitted for assessment

System	SAP description – activity description	SAP # A.03473.	Claimed 2012- 2013 status	Actual 2012- 2013 status	Is project "breakable"?
GAPE	Abbot Point to Bogie River - existing track upgrades	28000	Complete	Complete	Yes
	Bogie River to Newlands - power supply	50400	Complete	Complete	Yes
	Bogie River to Newlands - Havilah intersection	46795	Complete	Complete	Yes
	Northern Missing Link - Byerwen quarry	71400	Complete	Complete	n/a
	Northern Missing Link - Track monumenting	71131	Complete	Complete	Yes
		82000	Complete	Complete	n/a
	Provisions - Insurance payout	86230	Complete	Complete	n/a

Table 6-2 : Status of post commissioning Blackwater feeder station projects submitted for assessment

System	Project name	Project number	Claimed 2012- 2013 status	Actual 2012- 2013 status	Is project "breakable"?
Blackwater	Raglan Feeder Station	A.02222	Complete	Complete	Yes
	Bluff Feeder Station	A.02602	Complete	Complete	Yes
	Duaringa Feeder Station	A.02603	Complete	Complete	Yes
	Wycarbah Feeder Station	A.02604	Complete	Complete	Yes

It was noted in SKM's report dated July 2013 entitled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment ", that Aurizon Network was intending that documentation on the completion works for the above commissioned projects would be submitted to the Authority for inclusion in the RAB under the category of "post commissioning" activities in the 2012-2013 claim.

6.2 Project prudency results

Table 6-3 and **Table 6-4** provide an overview of SKM's engineering assessment of prudency for each of the post-commissioning capital expenditure projects that were submitted with sufficient information to conduct this analysis.

Table 6-3: Overview of prudency of the post-commissioning GAPE projects that were submitted with sufficient information

		SAP #	2012-2013	Pru	ent	Prudent		
System	SAP description – activity description	Claimable		Project scope	Standard of the worksProject cost		expenditure (\$'000)	
	Abbot Point to Bogie River - existing track upgrades	28000	\$2,396,480	Prudent	Prudent	Prudent	\$2,396,480	
	Bogie River to Newlands - power supply	50400	\$275,088	Prudent	Prudent	Prudent	\$275,088	
	Bogie River to Newlands - Havilah intersection	46795	\$489,223	Prudent	Prudent	Prudent	\$489,223	
GAPE	Northern Missing Link - Byerwen quarry	71400	\$3,666,587	Prudent	Prudent	Prudent	\$3,666,587	
	Northern Missing Link - Track monumenting	71131	\$473,789	Prudent	Prudent	Prudent	\$473,789	
		82000	\$3,168,226	Prudent	Prudent	Prudent	\$3,168,226	
	Provisions - Insurance payout	86230	-\$9,009,820	Prudent	Prudent	Prudent	-\$9,009,820	

The total amount claimed for all GAPE post-commissioning projects was \$20,962,429 (ex IDC) of which an amount of \$1,459,573 is recommended for inclusion into the RAB.

Table 6-4: Overview of prudency of the Blackwater feeder stations post-commissioning projects

System	SAP description – activity description	SAP # A.03473.	2012-2013 Claimable expenditure	Prudency assessment			Prudent
				Project scope	Standard of the works	Project cost	expenditure (\$'000)
Blackwater	Raglan Feeder Station	A.02222	\$4,180,623	Prudent	Prudent	Prudent	\$4,180,623
	Bluff Feeder Station	A.02602	\$1,799,079	Prudent	Prudent	Prudent	\$1,799,079
	Duaringa Feeder Station	A.02603	\$1,898,100	Prudent	Prudent	Prudent	\$1,898,100
	Wycarbah Feeder Station	A.02604	\$453,325	Prudent	Prudent	Prudent	\$453,325

From the above, the total for the four Feeder Station post-commissioning projects amounts to \$8,331,127 (ex IDC) and is recommended for inclusion into the RAB.



6.3 Recommendations

SKM found that the post-commissioning projects reviewed could be considered "useful and in use" and as such were worthy of assessment. SKM found that many of the activities occurred prior to the 2012–2013 financial year (i.e. activities occurred before commissioning, not post-commissioning). SKM notes that Aurizon Network has advised that they intend to submit additional GAPE activities in their 2013–2014 claim.

GAPE project

SKM's review of the GAPE post-commissioning works found that the initial information provided for assessment of works undertaken in the 2012-2013 claim period was insufficient to undertake the assessment. As a result RFIs were issued. In response to these RFIs and subsequent meetings held with Aurizon Network and the Authority, it was agreed that the assessment scope would be narrowed down to assessing capital expenditures worth of \$1,459,573 as compared with the original claim for \$20,962,429.

Aurizon Network's 2012–2013 GAPE post-commissioning claim included credits totalling \$21,009,365. The inclusion of these credits in the claim, whilst lowering the capital expenditure to be possibly included in the RAB (which may be viewed favourably by Customers) does disguise the full extent of the capital expenditure. SKM notes that the total claim value (excluding all credits) of \$41,971,797 represents approximately 5% of the 2011–2012 GAPE project value of \$771,118,899 (excluding IDC) which is approaching the maximum amount that SKM would expect for activities that occur after commissioning is complete (i.e. post-commissioning activities).

From its assessment, SKM concluded that the customers had been consulted on GAPE post commissioning projects under review. SKM's assessment of the GAPE post commissioning claim of \$1,459,573 found that these activities scope, standard and cost to be prudent.

Blackwater feeder stations post-commissioning works

The feeder stations were in fact operational and commissioned in the previous claim period. The postcommissioning works saw the introduction of track sectioning cabins and associated connection for remote control from the operations centre's SCADA systems.

SKM concluded that the Blackwater feeder station post commissioning projects under review had received regulatory pre-approval of scope. SKM's review of the Blackwater feeder stations post-commissioning claim of \$8,331,127 found the standard and cost of these projects to be prudent.

Value of post-commissioning works expenditure eligible for inclusion in the RAB

As shown in **Table 6-5** below, the portion of the \$29,293,556 (excluding IDC) capital expenditure on postcommissioning projects that is deemed eligible for inclusion in the RAB amounts to \$9,790,700.

Table 6-5: Portion of post commissioning expenditure deemed eligible for inclusion in the RAB

System	Project name	Project number	% found be prudent	Value eligible for inclusion in RAB
GAPE	GAPE Post –Commissioning Projects	A.03473	~6.96 %	\$1,459,573
Blackwater	Raglan Feeder Stations	A.0222	100 %	\$4,180,623
	Bluff Feeder Stations	A.02602	100 %	\$1,799,079
	Duaringa Feeder Stations	A.02603	100 %	\$1,898,100
	Wycarbah Feeder Stations	A.02604	100 %	\$453,325
		· · · ·		\$9,790,700



The post-commissioning projects amounted to a total claim of \$29,293,556 (excluding IDC). It is noted that a portions of this claim (approximately 66% of the claim, totalling \$19,502,856) has not been assessed by SKM.

The scope of SKM's assessment covered an amount of \$9,790,700 of the claim of \$29,293,556. Based on SKM's assessment, it is recommended that \$9,790,700 be included in the RAB.

Importance of data collection for future capital expenditure engineering assessments

SKM found, during the assessment of the post commissioning projects, that Aurizon Network 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 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.

Submission of non-engineer activities for assessment

SKM recommends that financial transactions, such as commercial credits, payouts and similar transactions that do not contain engineering content allowing analysis of standard and scope should not be included in engineering prudency assessments. SKM is of the view that such activities would be adequately assessed through a financial audit mechanism. For example, insurance payouts for force majeure circumstances do not merit any further engineering assessment and are purely financial in nature. The commercial/financial audit of the insurance claims and product insurer's product disclosures statements should be subjected to commercial audits both prior to the claim (to ensure the insurance fees are value for money) and post claim.

Application of pre-approval mechanisms to future capital expenditure

SKM recognises the benefits of ex-ante approval (as opposed to ex-post) of capital expenditure and

For high value system enhancement and post-commissioning activities, SKM believes Aurizon Network would benefit from obtaining Customer and Authority approval prior to commencement of works.

For future system enhancement projects, SKM notes that Aurizon Network 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 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.



Appendix A. SKM's engineering assessment terms of reference

Terms of Reference

Assessment of Capital Expenditure

Engineering Assessment of Five Post-Commissioning Projects in Aurizon Network's 2012-13 Capital Expenditure

1 October 2013

1. PROJECT BACKGROUND

Queensland Competition Authority

The Queensland Competition Authority (the Authority) is an independent statutory body responsible for assisting with implementing competition policy in Queensland.

Aurizon Holdings Limited (formerly known as QR National Limited) is a vertically-integrated rail business which provides both above- and below-rail services. That is, it operates train services and provides access to its tracks for its own and third-party operators.

Aurizon Network Pty Ltd (Aurizon Network) operates the below-rail network serving coal mines in central Queensland and is a wholly owned subsidiary of Aurizon Holdings Limited. The services of Aurizon Network's below-rail coal network are declared for third party access under the *Queensland Competition Authority Act 1997* (the QCA Act). The declaration excludes the infrastructure associated with train operations (e.g. freight centres and maintenance facilities).

Aurizon Network's access undertaking

Aurizon Network is subject to an access undertaking (the 2010 undertaking) approved by the Authority that sets out the detailed terms and conditions under which Aurizon Network will provide access to the declared services – the 2010 undertaking is available at http://www.qca.org.au/files/R-JuneGape-Aurizon-GAPE-RevClean-0413.pdf.

The Authority has approved a regulatory asset base for the central Queensland coal region (CQCR), and the 2010 undertaking provides for the Authority to approve any additions to that asset base. The CQCR comprises five systems, namely, Moura, Blackwater, Goonyella, Newlands, and the Goonvella to Abbot Point Expansion (GAPE) _ see http://www.aurizon.com.au/networksystems/Pages/NetworkServices.aspx for further details on these systems.

Approval of capital expenditure

Schedule A of the 2010 undertaking includes processes and criteria for the Authority's annual assessment of the prudency of capital expenditure to determine whether it should be included in the regulatory asset base for the CQCR.

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

• scope of the works;

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

The Authority's assessment of prudency of capital expenditure generally occurs after the capital expenditure has occurred.

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

Expected 2012-13 capital expenditure – Post-commissioning projects

Aurizon Network has provided an indicative list of projects that may form part of the 2012-13 capital expenditure claim, of which approximately \$40 million relates to post-commissioning works. Post-commissioning works on the GAPE totals \$32 million, while works on the Blackwater feeder stations amount to \$8 million (see **table 1** below).

Project Name	System	Indicative 2012-13 Claimable Expenditure (\$ millions)
GAPE	GAPE	32.2
Raglan Feeder Station	Blackwater	4.2
Bluff Feeder Station	Blackwater	1.8
Duaringa Feeder Station	Blackwater	1.9
Wycarbah Feeder Station	Blackwater	0.5

Table 1: Post-Commissioning Projects 2012-13 capital expenditure indicative claim

2. PURPOSE OF THE CONSULTANCY

The purpose of the consultancy is to provide technical engineering advice to assist the Authority to determine whether the scope, standard of works and cost of the five post-commissioning projects were prudent. The consultant is required to assess whether the:

- work undertaken in 2012-13 with respect to the Blackwater feeder stations projects was consistent with the scope of works approved by customers;
- scope of the work undertaken on the GAPE project in 2012-13 was prudent;
- standard of all five projects was prudent; and
- cost of all five projects was prudent.

The scope, standard and costs of the GAPE and Blackwater feeder stations projects were all found to be prudent as part of the 2011-12 assessment. It is therefore likely that the main task of this review will be to determine whether that assessment remains valid in the light of the

additional works undertaken during 2012-13 (in particular the additional GAPE signalling works).

3. TASKS TO BE PERFORMED

The consultant will conduct a desktop review of the five projects. In addition, interviews with selected project managers can be arranged upon the consultant's request.

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

In addition, the consultant will work collaboratively with any other consultant the Authority may appoint to assist the Authority in the assessment of Aurizon Network's capital expenditure.

3.1 Information Review and Request

In order to perform this assessment, the consultant is required to review Aurizon Network's 2012-13 capital expenditure claim materials related to these five projects, along with any supporting material, by:

- (a) ensuring that the data and material provided by Aurizon Network are in a form (and format) to enable the consultant to complete tasks in 3.2-3.4 below;
- (b) identifying any additional data or information that the consultant requires to complete tasks in 3.2-3.4;
- (c) preparing an information request that the Authority will submit to Aurizon Network on the basis of the reviews in 3.1(a) and (b); and
- (d) keeping a register of the consultant's requests for information, including the status of Aurizon Network's responses.

3.2 Assess Project Scope

In assessing post-commissioning projects the consultant is to focus on the scope of the works completed in 2012-13 and whether these works alter the prudency of scope of the project as assessed last year.

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

3.3 Assess Project Standard

The consultant will assess the standard of the works commissioned in 2012-13 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 prudency of the standard of works, the consultant must have regard to whether:

- 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
- in all other cases, that Aurizon 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 the 2010 undertaking.

3.4 Assess Project Cost

In assessing the reasonableness of the cost of works commissioned in 2012-13, the consultant must have regard to the assessment criteria set out in clause 3.3.4 of schedule A of the 2010 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.

4. **PROJECT RESOURCES**

The consultant will be required to source information from Aurizon Network, the 2010 undertaking and supporting documentation, Aurizon Network's Master Plans, and other stakeholders as appropriate.

The consultant is required to request all the data and/or information necessary 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 Aurizon Network for the consultant to conduct this consultancy.

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

5. PROJECT TIME FRAME

The consultancy will commence early December 2013, with a completion date of March 2014.

Exact 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:
 - a) detail the intended tests for prudency of scope, standard and cost; and
 - b) specify the type of cost structure details expected from Aurizon Network's submission to accomplish this task;

- provide a fixed price quote for the provision of the services detailed herein; and
- nominate the key personnel who will be engaged on the assignment together with the following information:
 - c) name;
 - d) professional qualifications;
 - e) general experience and experience which is directly relevant to this assignment, especially rail experience;
 - f) expected time each consultant will work on the project; and
 - g) standard fee rates for any contract variations.

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 workplan.

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 <u>http://www.qca.org.au/about/consultancyagreement.php</u> .

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 the Authority or a third party for the purposes of this consultancy to any party other than with the express permission of the Authority or the relevant third party.

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:

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

If you have answered yes to any or all of the above, 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

Weight	Criteria	Description
Binding	Conflict of interest	Identification of: • actual conflict • perceived conflict • current or past work for any of the stakeholders involved
40%	Technical expertise of Proposed Team	Do the proposed individuals have experience in the types of projects required by this consultancy? What skill sets / experience makes them particularly appropriate for this consultancy?
20%	Firm Experience	Previous experience that the firm can bring to bear on the project. Track record of the firm in undertaking the same, or similar, types of projects. Does the firm have any special resources that give it an advantage over other firms in undertaking this project?
30%	Proposed Methodology and Approach	The proposal clearly identifies the methodology the consultant intends to use to undertake the task. The consultant has structured the proposal such that it is clear there is a comprehensive understanding of the tasks, issues and the outcomes required.
10%	Resourcing	 (i) the proposal itemises the resources that will be used and provides a breakdown of how, when and where they will be used (7%); (ii) the firm appears able to provide backup expertise in the event it is needed (3%).

The Authority uses the following format to assess tenders:

Value for Money	Consideration will be given for:	
	hourly rates;	
	 total number of hours proposed; and 	
	 scope of works proposed in the methodology in relation 	
	to the total cost quoted.	

In making its assessment against the criteria, the Authority will place most weight on relevant experience of the team members involved and the proposed method for the completion of the task.

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. on Friday 11 October 2013**.

For further information concerning this consultancy, please contact Ms Farhana Chowdhury, Analyst, on 07 3222 0554.

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



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

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:
 - 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.
- QR Network will provide to the QCA for approval a copy of its strategic asset 2.4 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 prudency 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 prudency 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 prudency 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:
 - 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);
 - 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;
 - 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);
 - 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:
 - 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;

- 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:
 - 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;
 - 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:
 - 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:
 - 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:
 - 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;
 - 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;
 - 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:
 - 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:
 - 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 and Aurizon Network responses

C.1 RFI register

Table C-1 : RFI register

RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Status	Subject	Comment
001	Post – commissioning projects (Blackwater Feeder Stations and GAPE)	17/01/2013	Kim Kjaer- Olsen	Farhana Chowdhury	22/01/14	Closed	Section 10 of the Aurizon Network document entitled "2012/13 Capital Expenditure Submission" dated December 2013 was missing.	None
002	Post – commissioning projects (Blackwater Feeder Stations and GAPE)	17/01/2013	Kim Kjaer- Olsen	Farhana Chowdhury	22/01/14	Closed	Page 7 of The Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission" dated December 2013 references a "Draft Amending Access Undertaking". The specific title and date of this document(s) and location was requested.	None
003	Post – commissioning projects (Blackwater Feeder Stations and GAPE)	17/01/2013	Kim Kjaer- Olsen	Farhana Chowdhury	22/01/14	Closed	 Page 30 of Aurizon Network provided document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" dated December 2013 makes reference to a number of documents of which the following could not be located: 1) Internal Funding submissions (x 14) for all four projects 2) 2009 CRIMP Working Paper 4.5 – Rational for Power System Upgrade in the Blackwater System – February 2009 3) Blackwater Power System Upgrade Final Project Brief – Trackpower Alliance - September 2009 	None



RFI	Project related to	Date sent out	Originated by	Sent to	Response received	Status	Subject	Comment
004	Post – commissioning projects (GAPE)	5/2/2014	Kim Kjaer- Olsen	Farhana Chowdhury	26/2/14	Closed	Information for GAPE post commissioning projects	None
005	Post – commissioning projects (GAPE)	5/2/2014	Kim Kjaer- Olsen	Farhana Chowdhury	26/2/14	Closed	GAPE post commissioning claim - description of information requirements	None
006	Post – commissioning projects (Blackwater Feeder Stations)	7/2/2014	Kim Kjaer- Olsen	Farhana Chowdhury	14/021/14 and 26/2/14	Closed	Blackwater Feeder Stations Proof of Completion and Scope Understanding.	None

C.2 Aurizon Network RFI responses

C.2.1 RFI001

SKM Request for Information (RFI No.1) Aurizon Network Response

Introduction

SKM has been engaged by the QCA to assist in its review of the 2012/13 Capital Expenditure Claim, in particular with regard to the Post commissioning expenditure on the GPAE project and the 4 Blackwater Feeder Station projects as reviewed by SKM as part of the 2011/12 claim.

RFI

SKM have requested that Aurizon provided Section as referred to on Page 6 of the December 2013 2012/13 Capital Expenditure Submission.

RFI Response

The reference to Section 10 is a drafting error in the December 2013 2012/13 Capital Expenditure Submission.

All documents as referred to in the submission or indicated in the associated schedules:

- · Were provided to the QCA and its identified consultants electronically in December 2013; or
- · Are public documents available on the QCA website: or
- · Are documents that have been provided to the QCA in prior Capital Submission

In the event that a docum ent indicated is not accessible from the above areas Aurizon will seek to provide that docum ent to the QCA and SKM as soon as reasonably practical

Provided Documents

Nil

12/13 CAPEX SKM RFI No1. Aurizon Response – January 2014





C.2.2 RFI002

SKM Request for Information (RFI No.2) Aurizon Network Response

Introduction

SKM has been engaged by the QCA to assist in its review of the 2012/13 Capital Expenditure Claim, in particular with regard to the Post commissioning expenditure on the GPAE project and the 4 Blackwater Feeder Station projects as reviewed by SKM as part of the 2011/12 daim.

RFI

SKM have requested that Aurizon be more specific and state the title and the date of the Blackwater Draft Amending Access Undertaking as referred 1st on page 7 in Section 2.1 of the December 2013 2012/13 Capital Expenditure Submission.

RFI Response

In April 2013 Aurizon submitted a Draft Amending Undertaking proposing changes to the pricing arrangements for electric traction services in the Black water System. A copy of the DAU is available on the QCA website at the following link http://www.gca.org.au/rail/2010-DAU amend/BETPD AAU2013/

During the industry consultation period relating to the 2011/12 CAPEX claim a number of industry customers requested that the QCA consider the 2011/12 CAPEX claim for the Blackwater feeder Station in light of the provisions being put forward by Aurizon in the April 2013 DAU.

As outlined in the October 2013 QCA Final Approval: Aurizon Network's 2011/12 capital expenditure, the QCA (a copy of which is provided with this RFI response) whilst the QCA notes stakeholder comments the QCA had given prior regulatory scope approval of the 4 Blackwater Feeder Stations as part of a Master Plan vote process and that any issues as raised in the April 2013 DAU or in industry comments in response to the 2011/12 CAPEX daim are not relevant considerations for the QCA in considering the prudency of standard and costs as related to these projects.

Given the QCA position on this issue the information relating to the April 2013 DAU and comments on the 2011/12 CAP EX claim for the Blackwater feeder Station project is provided for information purposes only and is not a consideration for the SKM review of the 2012/13 post commissioning claim for these project.

Provided Documents

QCA Final Approval: Aurizon Network's 2011-12 capital expenditure.

12/13 CAPEX SKM RFI No1, Aurizon Response – January 2014.



C.2.3 **RFI003**

SKM Request for Information (RFI No.3) Aurizon Network Response

Introduction

SKM has been engaged by the QCA to assist in its review of the 2012/13 Capital Expenditure Claim, in particular with regard to the Post commissioning expenditure on the GPAE project and the 4 Blackwater Feeder Station projects as reviewed by SKM as part of the 2011/12 daim.

RFI

SKM have requested that Aurizon provide the following documents:

- Internal Funding submissions (x14) for all four projects
- 2009 CRIMP Working Paper 4.5 Rational for Power System Upgrade in the Blackwater System February ٠ 2009
- ٠ Blackwater Power System Upgrade Final Project Brief - Trackpower Alliance - September 2009

RFI Response

Documents are attached

Provided Documents

- Internal Funding submissions (x14) for all four projects
- Bluff Feeder Station Seed Funding \$505k September 2008
- o Duaringa Feeder Station Seed Funding \$505k September 2008
- o Wycarbah feeder Station Seed Funding \$55k-September 2008
- Bluff Additional Seed Funding \$495 November 2008
 Duaringa Additional Seed Funding \$495 November 2008
- o VVycarbah Additional Seed Funding \$495 November 2008
- Bluff Full Project Approval Docs November 2009
- Duaring a Full Project Approval Docs November 2009
- Wycarbah Full Project Approval Docs November 2009 0
- o Bluff Feasibility Funding Increase May 2010
- Duaringa Feasibility Funding Increase May 2010
 Wycarbah Feasibility Funding Increase May 2010
- Ragian Seed Funding September 2008
- Raglan Seed Funding Increase November 2008 0
- Ragian Feasibility IAR Full Project Approval Docs October 2010
- 2009 CRIMP Working Paper 4.5 Rational for Power System Upgrade in the Blackwater System February 2009
- Blackwater Power System Upgrade Final Project Brief Trackpower Alliance September 2009

12/13 CAPEX SKM RFI Aurizon Response - January 2014



C.2.4 RFI004 and RFI005

SKM RFI Numbers 004 & 005 Aurizon Response

Background

The Goonyella to Abbott Point Expansion (GAPE) was one of the largest rail infrastructure project undertaken in Queensland history. The project was delivered by Aurizon on the behalf of coal customers Q Coal, Rio Tinto, BMA, Lake Vermont Resources and MacArthur Coal.

The project saw track capacity installed for 50 mtpa to the post of Abbott Point. The scope of the project included.

- The 69km Northern missing Link railway, linking the Goonyella Rail System to the Newlands Rail System;
- Expansion of existing track through the Newlands System; and
- Works in the Goonyella System to facilitate loaded trains to travel west on Goonyella to link to the GAPE.

Sinclair Knight Mertz (SKM) has been engaged by the QCA to provide a technical review on Post Commissioning costs as included in the 2012/13 Capital Expenditure submission. In particular SKM was asked to review post commissioning costs for the Goonyellato Abbott Point Expansion project (GAPE)

SKM was engaged by the QCA to review the \$1.0b claim against the GAPE projects in the 2011/12 CAPEX Claim so were well placed to provide the QCA further advice re the costs incurred against the project in 2012/13.

The total of the 2012/13 Post commissioning claim is \$21,592,808, this claim excludes

SKM RFI's

SKM provided Aurizon with two RFI's

- 1. RFI 004-Information for GAPE Post commissioning Projects, issued 5th Feb 2014
- 2. RFI 005 GAPE Post Commissioning Claim Description of information requirements, issued 5th Feb 2014

Aurizon had discussion with SKM and the QCA re the quantum of information sought in these RFI's and it was decided that SKM should take a sampling approach rather than request justification of all projects given:

- The compressed period as assigned by the QCA for the review period;
- The value of the post commissioning claim against the full GAPE program of works; and
- The value of the post commission works against the value of the 2012/13 CAPEX claim.

SKM worked directly with the GAPE project team to work through the RFI and determine a suitable sample based on the cost information as provided in the December 2013 submission to the QCA.

The Sample was:

- Existing track upgrades Abbot Point to Bogie River
- Whole of Area Costs (non Aurizon) Boogie River to Newlands, power supply
- Existing track upgrades Bogie river to Newlands, Havilah intersection
- Whole of area costs (non Aurizon) MissingLink, Byerwen Quarry and track monumenting
- · Provisions, insurance claims
- •

Aurizon Supplied Documents

Aurizon provided the documents as per the following table to support its post commissioning claim as related to the selected sample:

2012/13 CAPEX – Formation Strengthening RFI Response March 2013



	Owner	Document Name	Version and Date	Forma
Existing Track Upgrades	Aurizon	Track Upgrade Scope		Word
Abbot Point to Bogie River	Aurizon	Track Upgrade Tracker		Excel
	Ergon Energy	Engineering and Design Proposal for Stand Alone Power Supply	Oct 11	PDF
Mhola af area anata Dagia	Greener Energy	Proposal Revised Off-Grid Solution for QR Signal Boxes	Apr 12	PDF
Nhole of area costs Bogie River to Newlands – Power	Aurizon	Pricing and BOM QR National 7 68kw		Excel
supply	Aurizon	Remote Area Power Supplies for Suttor		Email
	Aurizon	Quotation Proposal – Suttor Creek Passing Loop	Feb 12	Email
	Aurizon	GAPE – Change Information Paper – Havilah Station Crossing & Access	Feb 12	Word
	Coal Connect	IFC Drawing N16365	Issue B Dec 10	PDF
	Coal Conned	IFC Drawing N16366	Issue A Dec 10	PDF
visting Track Upgrades	Coal Connect	IFC Drawing N16367	lssue A Dec 10	PDF
Existing Track Upgrades Bogie River to Newlands, Havilah Intersection	Coal connect	Memo: Havilah Intersection & Occupational Crossing @ chainage 103.02km	Nov 11	PDF
	Aurizon	Commitment Authorisation Request	Oct 2012 Rev 31	PDF
	Coal Conned	T098 Havilah Intersection QR GAP Memo 03 Nov 2011	Nov 11	Email
	Aurizon	Havilah Stn Crossing	Mar 12	Email
	Aurizon	Information Paper Havilah Station Access	Feb 12	Email
	Aurizon	EntitlementPapers	Nov 11	Email
	Aurizon	Instruction to Proceed	Dec 11	Email
	Aurizon	Memo: GAP-50-QR-MEM-0006GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	Oct 12	Word
	Aurizon	Memo: GAP-50-QR-MEM-0007 GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry	Nov 13	Word
Whole of Area NML – Byerwen Quarry	Aurizon	Memo: Supply, Delivery and Loading of Prepared Stone Railway Ballast and Pavement Materials for the GAPE Project Contract No. AT2356	October 12	PDF
	Aurizon	Byerwen Outturn cost Workbook		Excel
	Aurizon	Memo: Supply, Delivery and Loading of Prepared Stone Railway Ballast and Pavement Materials for the GAPE Project – Pavement Rise & Fall Claim	Oct 13	PDF
Whole of Area NML – track Monumenting	Aurīzon	Scope Statement		Excel
Provisions - Insurance	Coal Conned	663140 – Coal connect – Loss Allocation		Excel
Claims	Coal Connect	663187 – Coal Connect – Loss Allocation		Excel

2012/13 CAPEX – Formation Strengthening RFI Response March 2013





In addition to these documents Aurizon provided SKM with a Memo from Kevyn Neal GAP50 Project Director confirming that the 2012/13 works were completed to the required standard and were either part of the original scope, or covered by the project change management process.

Further Information

Aurizon can make available key project staff as required should SKM require any additional or clarifying information or address any additional RFI's.

2012/13 CAPEX – Formation Strengthening RFI Response March 2013



Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

SINCLAIR KNIGHT MERZ

To:			
CC:	Benjamin Wells Andrew Hulbert	From: Date:	Kevyn Neale 26/02/2014
Subject:	GAP50 - SKM QCA Audit		
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lease find (enclosed information requested for ye	our audit of the financial	year 2012/13.
he informa	tion covers the following items from F	RFI 004 & 005:-	
.7 - 5.7	Existing track upgrades Abbot Pol	int to Bogie River	
.19 - 5,19	Whole of area costs (non QR) Bo	gie River to Newlands, p	ower supply
.17 - 5.17	Existing track upgrades Bogie Riv	er to Newlands, Havilah	intersection
.24 - 5.24	Whole of area (QR) Missing Link,	Byerwen Quarry and tra	ck monumenting
.27 - 5.27	Provisions, insurance claims		
1.25 - 5.25			
	m that the works were completed to the change management process.	he required standard and	I were either part of the original scope, or
Regards			
Regards			
Regards			
	le		
Kevyn Nea			
Kevyn Nea	le ject Director		
Regards Kevyn Neal GAP50 Pro			
Kevyn Nea			

C.2.5 RFI 006

Aurizon Response

During the execution phase of this program of work, the delivery of the transmission connections were advanced, to match the anticipated demand.

On average these connections were delivered six months ahead of the original schedule, with Raglan at the one extreme being commissioned 14 months ahead of schedule by Powerlink. Once the Powerlink infrastructure is commissioned, the connection charges commence.

In order to match these timeframes, Aurizon delayed any scope items that were not on the critical path for the energisation until after the Powerlink commissioning.

The post commissioning works, in general it consisted of the conversion of manual to motorised isolators and the associated installation to control these. These units are under the control of the Electrical Control Officer (ECO) with the control cabling installed by the Signalling Construction section – therefore the reference in the WBS elements to Signalling.

- 1. As discussed in the above general comment the ECO tie inns refers to the control of the motorised isolators and not the actual substations or TSC, these were commissioned prior to the Powerlink Commissioning.
- 2. It is correct to state that practical completion was granted for most procurement items, however final completion attracts milestone payments as well. There are also cash retentions and the like that are released on the expiry of the warrantee periods. These commitments were the reason for the post commissioning payments.
- 3. The Signalling scope funded here related to the installation of communication routes to the various PSC buildings to allow the remote control on the converted motorised isolators.
- 4. Please confirm that this payment occurred in this period, as there was no engagement as far as I am aware. Can SKM please identify which project they are referring so as Aurizon can validate this response.
- 5. The works have been completed to the same standard as have previously been approved. Commission and completion certificates will be forwarded.
- 6. There were no insurance claims that Aurizon was involved in on any of these projects.
- 7. These settlements are done according to the Alliance Agreement which is subject to quarterly independent audit.
- 8. There were no new contracts or tenders awarded since the commission was done, the expenses incurred in the past financial year relate to final payments for the major pieces of equipment, such as harmonic filters, supply transformers, switchgear and auto transformers, reveiewed during the previous assessment.

Appendix D. GAPE post commissioning assessment mini-report

D.1 Terms of reference

This report is confined in accordance with the terms of reference (see **Appendix A**) to SKM's assessment of the prudency of scope, standard and cost of the Goonyella to Abbot Point Expansion (GAPE) post commissioning works for the 2012-2013 financial year.

D.2 Project description

The project scope and the previous assessment of prudency for the 2011-2012 financial year can be found in **Attachment D.2** which contains the GAPE mini-report, extracted from the SKM report dated July 2013, titled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment".

D.2.1 Location of the projects

The GAPE (post-GFC) project comprises the Northern Missing Link (NML) from North Goonyella to Newlands and upgrades to the Newlands system.

The project was delivered through a series of alliances. **Figure D-1** 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



Figure D-1: GAPE (post-GFC) project schematic showing limits of various GAPE alliances (Source: Aurizon Network)

D.2.2 Objective of Aurizon Network's 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. The project underwent significant value engineering following the Global Financial Crisis (GFC).

GAPE (post-GFC) project

From the SKM assessment report titled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment " issued in July 2013, it was stated on page 160 that:

"Aurizon Network 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."

GAPE post-commissioning project

SKM notes that the GAPE post-commissioning works has the same project number (i.e. A.03473) as used for the "GAPE post-GFC project".

D.2.3 Status of the projects

From the SKM assessment report titled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment" issued in July 2013, it was stated, in relation to the GAPE post GFC project, on page 161 that:

"After reviewing all of the documentation provided by Aurizon Network 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."

The status as of July 2013 was that some post-commissioning works had been completed and are now claimed by Aurizon Network. Aurizon Network has stated that some post-commissioning activities are still ongoing and are yet to be submitted to the Authority for assessment.

Aurizon Network have stated in their 2012-2013 claim that:

D.3 Capital expenditure

The value of the GAPE post-commissioning expenditure as shown in **Table D-1** below:

Table D-1: GAPE post-commissioning project (A.03473) - proposed capital expenditure profile

Source document name	Item	Project cost
Schedule 1 - 2012/13 CAPEX Claim - Projects Claimed in Submission	Claim value	\$20,962,429
Schedule 1 - 2012/13 CAPEX Claim - Projects Claimed in Submission	Interest During Construction (IDC)	\$630,379
Schedule 3 – System Expansion and Post Commissioning Claim Detail 2012/13 Capital Expenditure Submission	Page 21, Claim Detail section Project - Cost (exc. IDC)	\$20.962 million
Schedule 3 - Expansion and Post Comm CAPEX - A.03473 – GAPE, "A.03473 - Broken Down.xls"	Page 21, Claim Detail section Project - Cost (exc. IDC), \$32,231,878 current year costs but cost of \$11,269,447, Ex.IDC	\$20,962,431

SKM can confirm that there was no additional total cost information sourced and reviewed by SKM other than that which is listed in the above table.

D.4 Provided documentation

This assessment report is based on information provided by Aurizon Network as listed in Attachment D.1

D.4.1 Requests for information (RFI)

A register of all RFIs raised can be found in **Appendix C**.

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

- RFI 001 Page 6 of the Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission" dated December 2013 made reference to a Section 10 and states that "All documents referred to in this submission have been provided and are listed at Section 10". SKM noted that there was no Section 10 in that document and therefore requested a copy of the missing Section 10.
- RFI 004 & RFI 005 Aurizon Network was advised that the information provided up to 4/2/2014 had been assessed by SKM and significant additional information was required.

To assist Aurizon Network, SKM prepared a detailed list for each of the referenced sub-projects (i.e. components of the GAPE post-commissioning project) identifying whether supporting documentation had been provided under the following headings:

- Information on customer approval/engagement of the GAPE postcommissioning projects
- Information on status of GAPE post-commissioning projects
- Information on scope of GAPE post-commissioning projects
- Information on standard of GAPE post-commissioning projects
- Information on cost of GAPE post-commissioning projects

RFI005 covers related information gaps from a SAP assessment perspective and describes the specific information required by individual activity and sub-project that together make up the GAPE-post-commissioning claim.

D.4.2 Sample activities chosen for assessment

In their 2012-2013 GAPE post-commissioning claim, Aurizon Network has broken down the claim amount for project A.03473 into six cost centres, namely:

- 1. Owners costs
- 2. Abbot Point to Bogie River
- 3. Bogie River to Newlands
- 4. Northern Missing Link
- 5. Provisions
- 6. Accruals

Each of these cost centres consisted of a number of activities. The number of activities in each SAP description activity is provided in **Table D-2** below:

Table D-2: GAPE post-commissioning project (A.03473) – number of activities

SAP description	Schedule 3 costs (excl. IDC)	No. of activities
Owners Costs	\$1,724,085	19
Abbot Point to Bogie River	\$8,254,584	65
Bogie River to Newlands	\$19,573,912	99
Northern Missing Link	\$8,061,413	68
Provisions	-\$5,827,882 ⁶	8
Accruals	-\$10,823,680	1
Total	\$20,962,429	

SKM notes that a significant number of credits have been incorporated have been incorporated into the post-commissioning SAP accounts. The total amount of credits was \$21,009,365.

During a meeting with the Authority and Aurizon Network on 21 February 2014 and subsequent meetings with Aurizon Network on 24 February 2014 and 26 February 2014, it became apparent that the requested information to confirm scope and standard for the majority of the activities could not be provided by Aurizon Network. The Authority confirmed that a sample of activities should be reviewed by SKM.

⁶ Credit back due to DTC to RCS upgrade works expended but not claimed.

SKM identified a sample number of significant activities for which Aurizon Network provided details of scope and standard. The list of sample activities and their respective claim details are shown in **Table D-3** below.

Table D-3: GAPE post-commissioning project (A.03473) – sample activities reviewed by SKM

SAP description	SAP Element #	Activity description	Costs (excl. IDC)	% of total claim value of \$41,971,797 ⁷
Abbot Point to Bogie River	A.03473.28000	Existing track upgrades	\$2,396,480	6%
Bogie River to Newlands	A.03473.50400	Power supply	\$275,088	1%
Bogie River to Newlands	A.03473.46795	Havilah intersection	\$489,223	1%
Northern Missing Link	A.03473.71400	Byerwen quarry	\$3,666,587	9%
Northern Missing Link	A.03473.71131	Track monumenting - NML	\$473,789	1%
Provisions	A.03473.82000		\$3,168,226	8%
Provisions	A.03473.86230	Insurance payout	-\$9,009,820	-21%

SKM notes that the first 6 of the 7 SAP elements listed in **Table D-3** above represent 25% of the total claim value (excluding all credits) of \$41,971,797.

D.4.3 Adequacy of information provided

The completeness of information provided by Aurizon Network for these sample activities, including responses to SKM's RFI's, relating to assessment of customer engagement activities and customer/authority approval of the GAPE post-commissioning projects is summarised in **Table D-4** below.

Table D-4: Provision of customer / authority approval/engagement of sample activity information

		Information provided demonstrates			
System	Activity description	SAP Element #	customer/authority approval ⁸	customer engagement	
	Existing track upgrades	A.03473.28000	Yes	Yes	
	Power supply	A.03473.50400 Yes		Yes	
	Havilah intersection	A.03473.46795	Yes	Yes	
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes	
	Track monumenting - NML	A.03473.71131	Yes	Yes	
		A.03473.82000	Yes	Yes	
	Insurance payout	A.03473.86230	Yes	Yes	

⁷ \$41,971,797 comprises \$20,962,432 claim value plus \$21,009,365 of credits

⁸ Authority approval via Shareholding Minister on 10 February 2010

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of status post commissioning projects is summarised in **Table D-5** below

Table D-5: Provision of information on status of GAPE post-commissioning sample activities

			Information provid	ed demonstrates
System	Activity description	SAP Element #	activity was fully completed in 2012-2013	"useful and in use" proportion of activity
	Existing track upgrades	A.03473.28000	Yes	Yes
	Power supply	A.03473.50400	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	No
	Track monumenting - NML	A.03473.71131	Yes	Yes
		A.03473.82000	Yes	n/a
	Insurance payout	A.03473.86230	Yes	n/a

The completeness of information provided by Aurizon Network, for these sample activities, including responses to SKM's RFI's, relating to the assessment of status of the post commissioning projects is summarised in **Table D-6** below.

Table D-6: Provision of information on scope of GAPE post-commissioning sample activities

			In	format	ion pro	vided d	emons	trates .	
System	Activity description	SAP Element #	Above / below rail split	Funded by Aurizon Network	Scope consistency	Inclusion in CRIMP	Need to meet Reasonable Demand	Options analysis	Project subjected to evaluation
	Existing track upgrades	A.03473.28000	Yes	Yes	Yes	Yes	Yes	n/a	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Track monumenting - NML	A.03473.71131	Yes	Yes	Yes	Yes	Yes	n/a	Yes
		A.03473.82000	Yes	Yes	n/a	n/a	n/a	n/a	Yes
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a	n/a	n/a	n/a

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of prudency of standard of the GAP post-commissioning projects is summarised in **Table D-7** below.

Table D-7: Provision of information on standard of GAPE post-commissioning sample activities

			Infor	mation provi	ded demonstra	ates
System	Activity description	SAP Element #	Completion of projects to agreed standards	Consistency with existing infrastructure	Matches Railway Operator requirements	Matches forecast usage requirements
	Existing track upgrades	A.03473.28000	Yes	Yes	Yes	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	No	No	n/a
	Track monumenting - NML	A.03473.71131	Yes	Yes	Yes	n/a
		A.03473.82000	n/a	n/a	n/a	n/a
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a

The completeness of information provided by Aurizon Network, for these sample activities, including responses to SKM's RFI's, relating to the assessment of prudency of cost of the GAP post-commissioning projects is summarised in **Table D-8** below.

Table D-8: Provision of information on cost of GAP post-commissioning sample activities

			Information	provided wa	s sufficient to	assess
System	Activity description	SAP Element #	Scale, nature and complexity of project	Circumstances prevailing in the market	Manner in which projects were delivered	Reasonableness of costs
	Existing track upgrades	A.03473.28000	No	No	No	Yes
	Power supply	A.03473.50400	Yes	Yes	Yes	Yes
	Havilah intersection	A.03473.46795	Yes	Yes	Yes	Yes
GAPE	Byerwen quarry	A.03473.71400	Yes	Yes	Yes	Yes
	Track monumenting - NML	A.03473.71131	Yes	n/a	No	No
		A.03473.82000	n/a	n/a	n/a	n/a
	Insurance payout	A.03473.86230	n/a	n/a	n/a	n/a

D.4.4 Assessment of documentation

The assessment of the information provided by Aurizon Network has been included in **Attachment D.1** to this mini-report. The assessments starts from the high level documentation provided and then progresses through the Schedule 3 information of the GAP post-commissioning directory including the SAP financial reports and finally assess the RFI responses.

D.5 Assessment of prudency

In assessing the prudency 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.5.1 Project scope

The Authority's terms of reference regarding scope was to assess any scope deviation from that which was previously approved and agreed.

Discussion

The information provided in response to RFI 004 and RFI 005 was sufficient to determine if the sample of activities were contained within the previously agreed scope. because evidence was sighted that demonstrated that the:

- commissioned works were accepted into operation;
- relevant as built schematics were provided and were assessed by SKM; and
- the deliverables were aligned and in agreement with the previous year's scope of works (i.e. there was no claim for out of scope works).

The scope of the sample activities is detailed in Table D-9 below.

Table D-9: GAPE post commissioning items chosen for detailed further assessment

SAP description	SAP Element #	Activity description	Description (from Aurizon Network responses to RFI 004 & RFI 005)	Number of sub- activities included in SAP Element #
Abbot Point to Bogie River	A.03473.28000	Existing track upgrades	The majority of the costs are associated with follow up resurfacing, restressing and site tidy which had to be completed in shut downs. The work was carried out by Specialised Track Services (STS) on behalf of the project.	15

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SAP description	SAP Element #	Activity description	Description (from Aurizon Network responses to RFI 004 & RFI 005)	Number of sub- activities included in SAP Element #
Bogie River to Newlands	A.03473.50400	Power supply	It was originally planned to obtain power for the new loops from Ergon. Unfortunately it was not possible to achieve this at Havilah (& Suttor Creek). Solar power was investigated and proved to be a viable alternative. A lengthy study and procurement period meant that the loop had to be run on generator power in order to meet the commissioning date. The vast majority of these costs is for the solar panels etc, but there is a big cost associated with the generators. The change in scope was signed off under change # 170.	3
Bogie River to Newlands	A.03473.46795	Havilah intersection	This was a change to the original scope due to safety concerns with the level crossing and intersection with the main highway. Substantial road works and level crossing changes were required over and above the original scope. CCA had already demobilised from site and BMD were contracted to complete the works. This was signed off under change #184.	1
Northern Missing Link	A.03473.71400	Byerwen quarry	Byerwen quarry was set up and operated by the GAPE project to guarantee supply of capping, ballast and other minor products below market rates. The contract allowed for 'rise and fall' of prices to be taken into account. A claim for \$2.8m was agreed under change # 246. There were also some minor costs for management and royalties.	4
Northern Missing Link	A.03473.71131	Track monumenting - NML	These works were completed after the track was commissioned, and running trains.	1
Provisions	A.03473.82000			4
Provisions	A.03473.86230	Insurance payout	The GAPE project was hit by Cyclone Ellie at the back end of 2011 causing extensive damage to all areas of the job. CCA continued to repair the damage over the following months and finally settled the claim in late 2012. These credits are for the insurance pay out.	3

Conclusion

SKM is of the opinion that, given the 2011-2012 scope was assessed as prudent and following the response to RFIs raised and the agreement with the Authority to assess the sample information provided, the scope delivery for the sample activities in this 2012-2013 claim is contained within the original agreed scope and therefore SKM recommends that the prudency assessment of scope should be extended by the Authority to include the sample projects for this claim period.

D.5.2 Standard of the works

This assessment involved assessing whether the sample of activities completed during 2012-2013 are of a reasonable standard to meet the requirements of the scope of works required to meet the need of the regulated service provision and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudency of the standard of works, SKM 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 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 February 2013, as part of the assessment of prudency of standard of 2011-12 claim, SKM conducted site visits and found all sites were fully operational. SKM found that the standard of works completed were prudent at that time. In SKM's assessment the works were deemed to have been contained within the requirements of the scope and therefore they fulfil criterion a) above.

From SKM's initial evaluation of post-commissioning activities, items of concern were raised in RFI 004 and RFI 005 and are discussed in **Attachment D.1**. SKM subsequently received a series of responses to RFI 004 and RFI 005 which assisted SKM to further assess the standard of an agreed sample of post-commissioning activities. As a result SKM concluded that the standard of the works of the sample projects were not overdesigned and were contained within the requirements of the scope.

SKM was able to conclude that the assessable works were consistent with existing standards and configuration of adjacent infrastructure as required by clause b) above. This was conclusion was reached for activities:

- A.03473.28000 existing track upgrades
- A.03473.50400 power supply
- A.03473.46795 Havilah intersection
- A.03473.71131 track monumenting

because

- 1. evidence was sighted that the track upgrade works had been accepted into operation;
- 2. the use of solar power for mission critical infrastructure is common practice in the CQCR (albeit this was a first for provision of solar power to supply points machines and signals)
- as built documentation or sufficient information was provided to make an assessment of the designs e.g. schematics were provided for the Havilah crossing and full parts lists were provided for the solar power provisioning; and
- 4. track monumenting works were in fact sighted by SKM during the 2013 assessment process and supported by the evidence sighted of acceptance into operation. In addition SKM has investigated and can confirm that track monumenting infrastructure is relatively common in heavy haulCriterion c) above 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 Clause 3.3.3 of Schedule A of UT3.

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

After assessment of claim details in **Attachment D.1.4.5** and **Attachment D.1.4.6**, SKM has concluded that the standard of the works delivered in the following items are entirely commercial arrangements that do not contain information that can be assessed for prudency of standard:

- A.03473.82000 -
- A.03473.86230- insurance claims.

Conclusion

SKM concluded that the sample activities of the GAPE post-commissioning 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) have been designed by Aurizon Network with reasonable grounds.

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

D.5.3 Project cost

SKM's assessment of the prudency of costs involved assessing whether the costs of the sample of activities are reasonable for the scope and standard of work undertaken.

Discussion

The GAPE post-commissioning project claim comprises ~260 sub-activities to which costs had been accrued. The values and number of sub-activities of the SKM assessment sample SAP elements are shown below in **Table D-10**.

Table D-10: Cost and number of GAPE post commissioning items chosen for detailed further assessment

SAP description	SAP Element #	Activity description	Costs (excl. IDC)	Number of sub- activities included in SAP Element #
Abbot Point to Bogie River	A.03473.28000	Existing track upgrades	\$2,396,480	15
Bogie River to Newlands	A.03473.50400	Power supply	\$275,088	3
Bogie River to Newlands	A.03473.46795	Havilah intersection	\$489,223	1
Northern Missing Link	A.03473.71400	Byerwen quarry	\$3,666,587	4
Northern Missing Link	A.03473.71131	Track monumenting - NML	\$473,789	1

and

SAP description	SAP Element #	Activity description	Costs (excl. IDC)	Number of sub- activities included in SAP Element #
Provisions	A.03473.82000		\$3,168,226	4
Provisions	A.03473.86230	Insurance payout	-\$9,009,820	3
TOTAL	·			31

SKM found no discrepancies in the claimed amounts as shown in **Table D-10** above and those provide in the SAP transaction reports contained in the file entitled "A.03473 - Broken Down.xls".

With regards to:

- Existing track upgrades (SAP element # A.03473.28000), as discussed in **Attachment D.1.4.1**, the document with the file name "Track upgrade tracker.xls" provided costs per km which SKM found was within acceptable bench mark parameters.
- Power supply (SAP element # A.03473.50400), as discussed in **Attachment D.1.4.2**, SKM assessed the Ergon proposals and the variations and is of the view that the costs are prudent.
- Havilah intersection (SAP element # A. 03473.46795), as discussed in Attachment D.1.4.3, SKM is of the view that these crossings costs were prudent and safety risks had been identified by both Queensland Rail and Xstrata. The costs for the crossing upgrades also lies within industry norms and therefore the costs are considered prudent.
- Byerwen quarry (SAP element # A.03473.71400), as discussed in Attachment D.1.4.4, the quality of ballast
 was deemed unacceptable by Aurizon Network and therefore the commercial arrangements with Byerwen
 Quarry had to be terminated. Additionally SKM notes that the quarry operator had forgotten to invoice
 according to a pre-agreed indexing system. This item is essentially not really a candidate for an engineering
 assessment but SKM has noted and accepts the commercial arrangements.
- Track monumenting NML (SAP element # A.03473.71131), SKM has developed a bottom up estimate for the monumenting works as described in Attachment D.1.4.5 and finds that the costs for these works is prudent.

Conclusion

The costs of the sample activities of the GAPE post-commissioning project are considered to be prudent.

D.6 Summary

Following the detailed review of the identified sample activities of GAPE 2012-2013 post commissioning works, SKM finds that the works are considered prudent.

The outcomes of this prudency assessment are summarised in Table D-11.

Table D-11: GAPE post-commissioning project – review summary for sample activities

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



A sample of 31 sub-activities out of a total of 260 sub-activities of the GAPE post commissioning project were assessed in detail. This sample included 3 credits from insurance payouts and 28 expenditures. The 28 expenditure sub-activities represent 25% of the total claim value (excluding all credits) of \$41,971,797.

Attachment D.1 Detailed assessment of GAPE post-commissioning projects information

Attachment.D.1.1 Information provided by Aurizon Network for GAPE

A register of the information that was assessed as input to this report is shown below in **Table D1-1** and **Table D1-2**.

Table D1-1 : Information sources – GAPE post-commissioning works specific

Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	Schedule 1 – claim Summary Work Book	Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission	201213 Claim porject (sic) list - Dec 2013.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX	Schedule 3 – System Expansion and Post Commissioning Claim Detail 2012/13 Capital Expenditure Submission	Schedule 3 - New Expansions & Post comm CAPEX.doc	December 2013
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX/ A.03473 - GAPE	(Evans and Peck) Goonyella to Abbot Point Expansion Project, Analysis of Prudency of Scope, Standard and Cost	20121018 GAP50 Report.pdf	18 October 2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX/ A.03473 – GAPE	-	A.03473 - Broken Down.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX/ A.03473 – GAPE	Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request, Goonyella to Abbot Point Expansion Project (GAPE)	GAPE Feas IAR Password is NSIC2IAT.pdf	19 November 2009
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX/ A.03473 - GAPE	Goonyella to Abbot Point expansion Project, Track Upgrade Line Diagrams sheets 1 to 10	QRN-Q-0122-0001-10.pdf	-
Aurizon Network	RFI04 and RF05 response	Memorandum: GAP50 – SKM QCA Audit	GAP50 SKM QCA audit memo.pdf	26/2/2014
Aurizon Network	RFI04 and RF05 response	Content not accessible due to original email being vaulted on AN system. See error messages below	FW QB10592_RFI05_GAPE SAP Information - description of additional information required from AN.msg	Unknown
Aurizon Network	RFI04 and RF05 response	Content not accessible due to original email being vaulted on AN system. See error messages below	FW RFI- CAPEX post- commissioning.msg	Unknown
Aurizon Network	RFI04 and RF05 response	Goonyella to Abbot Point Expansion, Feasibility Study, Scope Endorsement	GAP Feasibility Scope Endorsement 17-11-2009 Signed.pdf	17/11/09
Aurizon Network	RFI04 and RF05 response	GAP50 information	GAP50 information.msg	24/2/14
Aurizon Network	RFI04 and RF05 response	Memorandum: GAP50 – SKM QCA Audit	GAP50 SKM Audit memo.doc	26/2/2014
Aurizon	RFI04 and RF05 response	Memorandum: GAP50 – SKM QCA Audit	GAP50 SKM audit memo.pdf	26/2/2014

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Owner	Referenced in	Document name	Electronic file name	Version and date
Network		(as above)		
Aurizon Network	RFI04 and RF05 response	RFI004: Information for GAPE post commissioning projects.	QB10592_RFI04_Outstanding GAPE Information.doc	5/2/2014
Aurizon Network	RFI04 and RF05 response	RFI005: GAPE post commissioning claim – description of information requirements	QB10592_RFI05_GAPE SAP Information - description of additional information required from AN.doc	5/2/2014
Aurizon Network	RFI04 and RF05 response	-	Revised sample break-up.xls	26/2/2014
Aurizon Network	RFI04 and RF05 response/Alliance pain- gain.	Program alliance agreement, Rail Signalling Projects 2008 to 2012, The Synergy Alliance.	SYN GAP50-AGR-0007.pdf	1 st September 2008
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Memo: Supply, Delivery And Loading Of Prepared Stone Railway Ballast And Pavement Materials For The Goonyella To Abbot Point (Gap) Expansion Project Contract No. At2356. Increase In The Approved Expenditure	2356.066 R&F memo rev1.doc	22 October 2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	-	Byerwen out-turn (Sept 12).xls	Sep 2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Emailing: 2356.066 R&F memo rev1	Emailing 2356 066 R&F memo rev1.msg	23/10/2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	FINAL MG signed.pdf	4 November 2013
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Memo: Supply, Delivery And Loading Of Prepared Stone Railway Ballast And Pavement Materials For The Goonyella To Abbot Point (Gap) Expansion Project Contract No. At2356. Increase In The Approved Expenditure	M Scarbossa signed.pdf	22 October 2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	MCarter signed memo.pdf	22 nd October 2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Memo: Supply, Delivery And Loading Of Prepared Stone Railway Ballast And Pavement Materials For The Goonyella To Abbot Point (Gap) Expansion Project. Payment Of Rise And Fall Claim.	Memo - Byerwen rise & fall.pdf	18 th October 2013



Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	Memo - Final settlement.pdf	4 th November 2013
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Memo: GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	QRN_Memo 006.doc	22nd October 2012
Aurizon Network	RFI04 and RF05 response/Byerwen Quarry/246 - Byerwen Quarry rise and fall claim	Memo: GLB Quarrying & Logistics Pty Ltd (Byerwen Quarry)	QRN_Memo 007.doc	4 th November 2013
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail	Memo: Havilah Intersection & Occupations Crossing @ Chainage 103.02 Km	Emailing T098 Havilah Intersection QR GAP Memo 03 Nov 2011.pdf	03 rd November 2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail	Emailing: T098 Havilah Intersection QR GAP Memo 03 Nov 2011.pdf	Emailing T098 Havilah Intersection QR GAP Memo 03 Nov 2011.pdf	15/11/2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail/ FW Havilah Stn Crossing	FW Havilah Stn Crossing	FW Havilah Stn Crossing.msg	12/03/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail/ FW Havilah Stn Crossing	Occupational Crossing at Chainage 103.070km, set out plan	N16745-1.pdf	02/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail/ FW Havilah Stn Crossing	Occupational Crossing at Chainage 103.070km, general arrangement	N16743-1.pdf	02/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail/ FW Havilah Stn Crossing	Occupational Crossing at Chainage 103.070km, longitudinal section	N16744 -1.pdf	02/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail	Information Paper - Havilah Station access	Information Paper - Havilah Station access.HTML	13 February 2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ Incoming Mail	RE: Information Paper - Havilah Station access (SKM note- this is related to Browne Development Rd.)	RE Information Paper - Havilah Station access.msg	14/2/21012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection &	As above	N16743-1.pdf	02/2012

Owner	Referenced in	Document name	Electronic file name	Version and date
	Occ LX/ New drawings			
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ New drawings	As above	N16744 -1.pdf	02/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX/ New drawings	As above	N16745-1.pdf	02/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah /intersection & Occ LX/ Outgoing Mail/	Entitlement papers	Entitlement papers.msg	25/11/2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah /intersection & Occ LX/ Outgoing Mail/	Instruction to proceed	Instruction to proceed.msg	7/12/2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah /intersection & Occ LX/ Outgoing Mail/ Instruction to proceed	Memo: T195 – Culvert to be replaced at Briaba CH 60.760	CCQRN 0028 - QR Gap Memorandum - Subject T185 - Culvert to be replaced at Briaba CH 60 760.pdf	28 th November 2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah /intersection & Occ LX/ Outgoing Mail/ Instruction to proceed	Memo: Havilah Intersection & Occupational Crossing @ Chainage 103.02 Km	T098 Havilah Intersection QR GAP Memo 03 Nov 2011 (2).pdf	3 rd November 2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	GAP – Havilah Station Crossing & access	Change Information Paper-008 - Havilah Stn Crossing.pdf	13/2/2012
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	Occupational Crossing at Chainage 103.020km, General Arrangement	N16365—B.pdf	01/2011
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	Occupational Crossing at Chainage 103.020km, Longitudinal Section	N16366—A.pdf	3/12/2010
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	Occupational Crossing at Chainage 103.020km, Setout Plan	N16367—A.pdf	3/12/2010
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	As above	T098 Havilah Intersection QR GAP Memo 03 Nov 2011 (2).pdf	
Aurizon Network	RFI04 and RF05 response/ 184- Havilah intersection & Occ LX	Authorisation Request, Havilah Intersection & Occupational Crossing - \$132,525	XP.0111_31.pdf	9/10/2012
Aurizon Network	RFI04 and RF05 response/Insurance refund	-	663140 Loss Allocation.xls	25/2/2014



Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	RFI04 and RF05 response/Insurance refund	-	663187 Loss Allocation.xls	25/2/2014
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	Quotation Proposal- Suttor Creek Passing Loop	FW Quotation Proposal- Suttor Creek Passing Loop.msg	12 October 2011
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops/ Quotation Proposal- Suttor Creek Passing Loop	Engineering and Design Proposal for Stand Alone Power Supply, QR National, Suttor Creek Passing Loop (Ergon)	Suttor Creek Design Proposal.pdf	12 October 2011
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	Revised proposal Stand Alone Solar Off- Grid Electrical Supply Systems for Signalling Equipment (Ergon)	FW Revised proposal Stand Alone Solar Off-Grid Electrical Supply Systems for Signalling Equipment.msg	26/04/2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops/ Revised proposal Stand Alone Solar Off-Grid Electrical Supply Systems for Signalling Equipment	-	Copy of Pricing and BOM QR National7 68kW.xls	26/04/2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops/ Revised proposal Stand Alone Solar Off-Grid Electrical Supply Systems for Signalling Equipment	Proposal, Revised Off-Grid PV Solution for QR Signal Boxes, 7.68 kW for QR National	OffGridProposal7 68kWQRNational.pdf	24 April 2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	As above	OffGridProposal7 68kWQRNational.pdf	24 April 2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	As above	Pricing and BOM QR National7 68kW.xls	26/04/2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	Remote Area Power Supplies for Suttor Creek & Havilah - Additional Funding for Genelite Generators	RE Remote Area Power Supplies for Suttor Creek & Havilah - Additional Funding for Genelite Generators.msg	7/08/2012
Aurizon Network	RFI04 and RF05 response/Power	Quotation Proposal- Suttor Creek Passing Loop	RE Quotation Proposal- Suttor Creek Passing Loop.msg	7/2/2012

Owner	Referenced in	Document name	Electronic file name	Version and date
	supply/170-Alternate Power Supplies to Loops			
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	Remote Area Power Supplies for Suttor Creek & Havilah - Additional Funding for Genelite Generators	Remote Area Power Supplies for Suttor Creek & Havilah - Additional Funding for Genelite Generators.msg	7/8/2012
Aurizon Network	RFI04 and RF05 response/Power supply/170-Alternate Power Supplies to Loops	As above	Suttor Creek Design Proposal Ergon.pdf	12 October 2011
Aurizon Network	RFI04 and RF05 response/SAP info	-	Revised sample 24.02.14.xls	24/2/2014
Aurizon Network	RFI04 and RF05 response/ Track monumenting	-	Monumenting scope.xls	25/2/2014
Aurizon Network	RFI04 and RF05 response/ Track Upgrades	-	Track Upgrade scope.doc	-
Aurizon Network	RFI04 and RF05 response// Track Upgrades	Abbot Point To Newlands Coal System, Formation Treatments, Ballast Upgrades And Relay Works Under Gap50	Track upgrade tracker.xls	5/7/2012
Aurizon Network	RFI04 and RF05 response// Track Upgrades	SKM RFI numbers 004 & 005 Aurizon response	SKM FRI Response Paper	March 2013

Table D1-2: Information sources – general

Owner	Referenced in	Document name	Electronic file name	Version and date
The Authority	Appendix A of this report	Terms of Reference, Assessment of Capital Expenditure, Engineering Assessment of Five Post-Commissioning Projects in Aurizon Network's 2012-13 Capital Expenditure.	Terms of Reference Assessment-Post Commissioning Projects(641680_1).pdf	1 October 2013
Aurizon Network	2012-13 Capex - AN	2012/13 Capital Expenditure, Claim Introduction Presentation	QCA Presentation - December 2013 Draft 1.ppt	Draft 1, December 2013
Aurizon Network	2012-13 Capex - AN	2012/13 Capital Expenditure Submission	201213 CAPEX Claim Report.doc	December 2013
Aurizon Network	Schedule 1 - Claim Summary Workbook	Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission	201213 Claim porject (sic) list - Dec 2013.xls	-
Aurizon Network	RFI 001 response	RFI No.1 Aurizon Network Response	SKM RFI No1 - Aurizon Response.pdf	22/01/14

Owner	Referenced in	Document name	Electronic file name	Version and date
The Authority	Appendix F of this report	Appendix D of "Aurizon Network Pty Ltd, Capital Expenditure 2011-12,Engineering Assessment"	QB10448_QCA QR Network's Capital Expenditure Review – Appendix D _RevF - 29-07- 2013.pdf	July 2013

Some of the information received in response to RFI 004 and RFI 005 could not be accessed and the following error messages were received. SKM understands that this error will occur when attempting to forward on to others archived / vaulted emails.

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Attachment.D.1.2 Review of information provided by Aurizon Network

This section provides an assessment and commentary of the documentation provided by Aurizon Network. The assessment commences with the high level documentation and then progresses into the more detailed information provided, culminating in the SAP analysis and finally an assessment of the relevant RFI responses is given.

Attachment.D.1.2.1 Assessment of 2012-2013 Capital Expenditure, Claim Introduction Presentation

In the Aurizon Network provided document entitled "2012/13 Capital Expenditure, Claim Introduction Presentation", slide 5 as well as from page 9 of the Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission, December 2013" contains amounts claimed as shown in **Table D2-1** below.

From slide 6 of the presentation entitled 2012/13 Capital Expenditure, Claim Introduction Presentation", it is stated that the GAPE post commissioning works costs were \$21.6 million

The document/spreadsheet entitled "Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission" contains the *definitive claim amounts* used by SKM in this assessment. The amount of \$21,592,808 shown in **Table D2-1** below is the capital expenditure that SKM has assessed for inclusion in the RAB.

Table D2-1: List of amounts claimed that contain post commissioning activities for GAPE

Ref	Type of Expenditure	Number of Projects	Amount claimed
GAPE	General Expansion	1	\$21,593,000
Schedule 1 - 2012/13 CAPEX Claim	GAPE post commissioning works	1	\$21,592,808

The Aurizon Network document entitled "Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission" and page 21 of the document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" submitted the claimed amounts as shown below in **Table D2-2**.

Table D2-2: Claim amounts

GAPE post-	Amount claimed (excl. IDC)		
commissioning activities	Schedule 3 - A.03473 - Broken Down.xIs	Schedule 3 - Claim Detail, 2012/13 Capital Expenditure Submission, page 21	
Owners Costs	\$1,724,085	\$1,724,085	
Abbot Point to Bogie River	\$8,254,584	\$8,254,584	
Bogie River to Newlands	\$19,573,912	\$19,573,912	
Northern Missing Link	\$8,061,413	\$8,061,413	
Provisions	-\$5,827,882 ¹⁰	-\$5,827,883	
Accruals	-\$10,823,680	-\$10.823,680	
Total	\$20,962,429	\$20,962,429	

As can be seen from **Table D2-2** there exist no discrepancies in the reported figures. SKM has assessed the figures associated with Schedule 1 but found that only the top line total claim amount was listed. For this reason SKM needed to base the above assessments on the spreadsheet with the file name "A.03473 - Broken Down.xls" located in Schedule 3.

The GAPE post commissioning activities are listed below in **Table D2-3** below together with their associated 2012-2013 expenditures (as extracted from page 21 onwards of the document "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission").

Table D2-3: Activity expenditure summary

Description of works/activities claimed		2012/2013 Claim (\$)	
Owners Costs			
	Corporate Management	-	
	Project Management	1,044,577	
	Project Controls & Commercial Manage	210,595	

¹⁰ Credit back due to DTC to RCS upgrade works expended but not claimed.

Description of works/activities claimed		2012/2013 Claim (\$)	
	Project Services Management	34,096	
	Expenses	434,816	
Sub-Total			1,724,085
"\$1.3m costs relate to project r	nanagement costs and associate	d time spent on the project by support staff a	and management"
"\$0.4m in project expenses inc	luding consultancy fees, travel, le	egal costs and home office costs"	
Abbot Point to Bogie River			
	Abbot Point 2 nd balloon loop and holding road	11,001	
	Kaili to Durraburra Duplication	38,555	
	Pring Extension and Modifications to the Holding Road	62,225	
	Buckley new passing loop	110,465	This should be noted as a discrepancy to the SAP account statements.
	Aberdeen new passing loop	91,172	
	Existing track upgrades	2,396,480	
	Formation and ballast upgrades	203,115	
	Whole of area costs (non QR)	1,902,343	
	Whole of area costs - QR	3,660,158	
Sub-Total			8,254,584

Abbott Point to Bogie River encompassed works on the additional loop at the port, upgrades to Pring Yard and track as well as structure upgrades in the existing Newlands system. Works were completed by the Coal Stream Alliance (civil and structures) Aspect 3 Alliance (signalling) and Aurizon (track laying, telecoms, track renewals).

The item above entitled "Existing track upgrades" with a claim amount of ~\$2.4m contained the following sub-activities:

- \$1.0m for 26.5 tal rail relay
- \$0.6m for level crossing upgrades
- \$0.2m for final re-sleepering works at Pring
- \$0.2m for installation of track lubricators
- \$0.2m for renewal of the access road causeway at Aberdeen

The item above entitle "Whole of area costs (non QR)" with a claim amount of ~\$1.9m contained the following sub-activities:

- •
- \$0.6m for Aspect 3 for final procurement payments

The item above entitled "Whole of Area Costs-QR" with a claim amount of ~\$3.7m contained the following sub-activities:

- \$2.6m for the final track laying packages and close out costs
- \$0.6m for internal service providers final costs including Protection Officers and telecoms backbone works.

Description of works/activities claimed		2012/2013 Claim (\$)	
Bogie River to Newlands			
	Briaba to Collinsville Duplication	309,029	
	Birralee – Extend Passing Loop	455,977	
	Cockool New Passing Loop	573,842	
	McNaughton balloon loop upgrades and turn out replacement	3,636,651	
	Newlands balloon loop upgrades and turn out replacement	743,675	
	Sonoma turnout replacement	331,515	
	Existing track upgrades	2,712,239	
	Formation and ballast upgrades	2,615,298	
	Whole of area costs (non QR)	1,945,828	
	Whole of area costs - QR	6,249,858	
Sub-Total			19,573,912

Bogie River to the Newlands Mine Junction encompassed track and structure upgrades in the existing Newlands system, extension of passing loops and the upgrade of the signalling system from DTC to RCS in the track section Coppabella to NML Junction. Works were completed by the Coal Connect Alliance (civil and structures) Synergy Alliance (signalling) and Aurizon (track laying, telecoms, track renewals).

This track section has attracted the largest value of post commissioning costs in the 2012/13 year.

The item above entitle "Whole of area costs - QR" with a claim amount of ~\$6.2m contained the following sub-activities:

- \$4.3m for the delivery of the final track laying package and close out costs
- \$0.8m for internal service provider's final costs including Protection Officers, Infrastructure Projects integration and telecoms backbone works

The item above entitle "McNaughton balloon loop upgrades and turn out replacement" with a claim amount of ~\$3.6m contained the following sub-activities:

- \$1.8m to Major Rail Construction group for the relay of track during upgrade
- \$1.1 million for materials procurement and freight of rail and sleepers to site

The item above entitle "Existing track upgrades" with a claim amount of ~\$2.7m contained the following sub-activities:

- \$1.4m to upgrade protection at 3 level crossings and to run updated ALCAM assessments
- \$0.5m for culvert upgrades at Havilah
- \$0.4m for signalling upgrades to the Collinsville turnout
- \$0.3m for signalling upgrades to the Havilah turnout

The item above entitle "Formation and ballast upgrades" with a claim amount of ~\$2.6m contained the following sub-activities:

- \$2.0m for track works between Almoola to Briaba
- Formation upgrades
- Rail relay at Collinsville

The item above entitle "Whole of area costs (non QR)" with a claim amount of ~\$1.9m contained the following sub-activities:



Description of works/activities claimed

2012/2013 Claim (\$)

•

Additional track upgrades works not explicitly listed above with a claim amount of ~\$2.7m contained the following sub-activities:

- \$0.6m for final works at the new Cockool passing loop
- \$0.5m for final works at the extended Birralee passing loop
- \$0.3m for final works at the Briaba to Collinsville duplication

Northern Missing Link			
	New NML Railway	1,687,564	
	Whole of Area Costs (Non QR)	141,578	
	Whole of Area Costs - QR	6,232,271	
Sub-Total			8,061,413

Construction of the 69km Greenfield rail section connecting the North Goonyella Branch to the existing Newlands system. The civil works and structures were completed by the Coal Connect Alliance, Signalling by the Synergy Alliance, track laying telecoms completed by Aurizon.

The item above entitle "Whole of Area Costs - QR" with a claim amount of ~\$6.2m contained the following sub-activities:

- \$3.6m payments to the Byerwen quarry operations for supplied ballast and construction rock
- \$0.6m for protection officers ٠
- \$0.5m in property settlements
- \$0.5m in final track works payments

The item above entitle "New NML Railway" with a claim amount of ~\$1.7m contained the following sub-activities:

- \$1.1m for signalling close out works
- \$0.5m for payments to Major Rail Construction

Provisions			
		3,168,226	
	Goonyella System Costs	13,711	
	Insurance Claims	- 9,009,820	
Sub-Total			- 5,827,883

Provisions in this claim include costs related to and benefits of insurance claims.

Aurizon is seeking acceptance of \$20.9m of these post commissioning costs and is not seeking approval for \$11.3 million of costs relating to signalling upgrade works on the NML section of the project.

The item above entitle "Insurance Claims" with a claim amount of ~- \$9.0m contained the following sub-activities:	
- \$8.9m insurance payment related to a November 2012 rain claim	
 - \$0.3m insurance payment related to a rain claim 	

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Accruals		
Sub-Total		-10,823,680

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Description of works/activ	vities claimed	2012/2013 Claim (\$)
-\$10.8m was accrued against th	e project.	
No further information was provi	ded re this cost item.	
Grand Total		20,962,429

The above tabulated sub-total figures when summed up are in error by \$2.

The Abbot Point to Bogie River sub total of \$8,254,584 appears to be in error by \$220,930 i.e. there appears to be an under claimed amount and should be \$8,475,514. SKM has no explanation for this understated claim for Abbot Point to Bogie River. Investigation of the SAP settled account statements shows Buckley new passing loop as a credit to the accounts. This may be the source of the error.

SKM as a matter of record interprets the reference to QR and non-QR works to mean Aurizon Network and not QR.

Aurizon Network state that post commissioning claims should amongst other things be read in conjunction with "details of the insurance claims as represented in this submission"

SKM has not sighted these insurance claims.

Attachment.D.1.2.2 Assessment of 2012/13 Capital Expenditure Submission, December 2013

The Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission, December 2013" is the overarching claim document that summarises all projects and activities for the claim period, hereunder the GAPE post commissioning works. Observations up to page 40 from that document have been extensively captured in the Blackwater Feeder Stations post-commissioning assessment mini-report.and are therefore not repeated here.

RFI 004 and RFI 005 were used as the mechanism to seek additional GAPE post commissioning information relating to those pages.

Page 41 stated as follows:

"Additional works were completed during the 2012/13 year at a value of \$32.2m. In this 2012/13 claim Aurizon is seeking acceptance of \$20.9m of these post commissioning costs

From page 21 of the document entitled "System Expansion and Post Commissioning Claim Detail, 2012 - 2013 Capital Expenditure Submission"), Aurizon Network is seeking inclusion into the RAB for the post commissioning costs, summarised as:

Cost Element	Approved Budget	Total Expenditure	Previous Expenditure	2011/12 Expenditure
OWNERS COSTS	20,288,068	19,767,939	18,043,855	1,724,085
ABBOT POINT TO BOGIE RIVER	265,237,583	263,458,898	255,204,315	8,254,584
BOGIE RIVER TO NEWLANDS	211,307,159	203,937,430	184,363,518	19,573,912
NORTHERN MISSING LINK	306,665,180	302,607,253	294,545,840	8,061,413
PROVISIONS	17,255,611	2,053,249	7,881,133	- 5,827,883
ACCRUALS	10,000,000	75,000	10,898,680	- 10,823,680
TOTAL	851,048,506	803,350,776	771,118,899	20,962,429

SKM also notes that the 2012 - 2013 costs "represents 3.79% of the total project cost to 30 June 2013. The costs to 30 June 2013 are within the approved project budget."

Page 21

Page 21 though to 25 contain the cost break down for each of the sub-projects that make up the GAPE post commissioning works, namely:

- 8. Owners Costs
- 9. Abbot Point to Bogie River
- 10. Bogie River to Newlands
- 11. Northern Missing Link (NML)
- 12. Provisions
- 13. Accruals

And repeated here as follows;

Activity	Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
Corporate Management	96,737	96,737	96,737	-
Project Management	3,929,702	3,886,546	2,841,969	1,044,577
Project Controls & Commercial Manage	4,581,022	4,581,022	4,370,427	210,595
Project Services Management	2,021,992	2,021,992	1,987,895	34,096
Expenses	9,658,615	9,181,643	8,746,827	434,816
OTAL	20,288,068	19.767.939	18,043,855	1,724,085

 \$1.3m costs relate to project management costs and associated time spent on the project by support staff and management.

• \$0.4m in project expenses including consultancies fees, travel legal costs and home office costs.

•

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Whole of Area Costs (QR)

\$3.7m

Abbot Point to Bogie River

The tack section from Abbott Point to Bogie River encompassed woks on the additional loop at the port, upgrades to Pring Yard and track and structure upgrades in the existing Newlands system. Works were completed by the Coal Stream Alliance (civil and structures) Aspect 3 Alliance (signalling) and Aurizon (track laying, telecoms, track renewals).

Activity		Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
Abbot Point Short Balloon Loop	- X25	14,865	14,865	14,865	-
Abbot Pt 2nd Balloon Loop & Ho	olding Rd	26,644,861	26,644,860	26,633,859	11,001
Kaili to Durroburra Duplication		39,809,218	39,786,392	39,747,837	38,555
New Euri Creek bridge		6,752,201	6,752,201	6,752,201	
Pring - Extension & Mods to Hol	ding Rd	48,320,678	48,319,709	48,257,484	62,225
Pring Yard Multi-User Upgrade		17,038,043	17,038,043	17,038,043	-
Buckley New Dessing Loop		7,098,902	7,096,834	7 207 200	110,465
Buckley - New Passing Loop Aberdeen - New passing Loop		8,089,873	8,089,873	7,207,299	91,172
Sheep Station Creek Bridge		6,845,061	6.845.061	6,845,061	51,172
Existing Track Upgrades		21,069,165	21,022,275	18,625,795	2,396,480
Formation & Ballast Upgrades		26,776,019	26,776,015	26,572,900	2,330,400
Whole of Area Costs (Non QR)		31,115,219	30.696.719	28,794,376	1.902.343
Whole of Area Costs - QR		25,663,479	24,376,052	20,715,894	3,660,158
TOTAL		265,237,583	263,458,898	255,204,315	8,254,584
Of the major costs within this t	rack section:				
Existing Track Upgrades \$2.4m	 \$1.0m for 26.5tal rail relay \$0.6m for level crossing upgrades \$0.2m for final re-sleepering works at Pring \$0.2m for installation of track lubricators \$0.2m for renewal of the access road causeway at Aberdeen. 				
Whole of Area Costs (Non QR) \$1.9m		al Stream Alliance v pect 3 for final procu		-	

2.6m for the final track laying package and close out costs

and telecoms backbone works.

\$0.6m for internal service providers final costs including Protection Officers



Bogie River to Newlands

The track section from Bogie River to the Newlands Mine Junction encompassed woks on the track and structure upgrades in the existing Newlands system, extension of passing loops and the upgrade of the signalling system from DTC to RCS in the track section Coppabella to NML Junction. Works were completed by the Coal Connect Alliance (civil and structures) Synergy Alliance (signalling) and Aurizon (track laying, telecoms, track renewals).

This track section has attracted the largest value of post commissioning costs in the 2012/13 year

Activity	Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
Briaba to Collinsville Duplication	63,325,104	63,325,079	63,016,050	309,029
Birralee - Extend Passing Loop	3,221,040	3,221,040	2,765,063	455,977
Cockool - New Passing loop	6,629,879	6,629,878	6,056,035	573,842
McNaughton- BL Upgrade & T/Out Replace	7,206,031	7,214,909	3,578,258	3,636,651
Newlands- BL Upgrade & T/Out Replacemt	5,565,925	5,565,925	4,822,250	743,675
Sonoma - Turnout Replacement	743,354	743,354	411,840	331,515
Coral Creek Passing Loop (Sonoma)	17,756	17,756	17,756	-
Almoola	1,656,738	1,656,738	1,656,738	-
Existing Track Upgrades	19,029,840	13,045,319	10,333,080	2,712,239
Formation & Ballast Upgrades	19,007,732	19,007,732	16,392,434	2,615,298
Whole of Area Costs (Non QR)	65,760,193	65,018,687	63,072,858	1,945,828
Whole of Area Costs - QR	19,143,567	18,491,013	12,241,156	6,249,858
TOTAL	211,307,159	203,937,430	184,363,518	19,573,912

Of the major costs within this track section:

Whole of Area Costs – (QR) \$6.2m	 \$4.3m for the delivery of the final track laying package and close out costs \$0.8m for internal service provider's final costs including Protection Officers, Infrastructure Projects integration and telecoms backbone works.
McNaughton balloon Loop upgrade and turnout replacement - \$3.6m	 \$1.8m to Major Rail Construction group for the relay of track during upgrade \$1.1 million for materials procurement and freight of rail and sleepers to site
Existing Track Upgrades - \$2.7m	 \$1.4m to upgrade protection at 3 level crossings and to run updated ALCAM assessments \$0.5m for culvert upgrades at Havilah \$0.4m for signalling upgrades to the Collinsville turnout \$0.3m for signalling upgrades to the Havilah turnout
Formation and Ballast Upgrades - \$2.6m	 \$2.0m for track works between Almoola to Briaba Formation upgrades Rail relay at Collinsville
Track Upgrades \$1.3m	 \$0.6m for final works at the new Cockool passing loop \$0.5m for final works at the extended Birralee passing loop \$0.3m for final works at the Briaba to Collinsville duplication

Northern Missing Link (NML)

The NML was the construction of the 69km Greenfield rail section connecting the North Goonyella Branch to the existing Newlands system. The civil works and structures were completed by the Coal Connect Alliance, Signalling by the Synergy Alliance, track laying telecoms completed by Aurizon.

Activity	Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
New NML Railway	177,474,277	176,031,205	174,343,640	1,687,564
Rail Bridges (1-11)	12,431,122	12,431,122	12,431,122	-
Road Overpass Bridge Cerito Road	5,501,487	5,501,487	5,501,487	-
Road Overpass Bridge Suttor Road	7,752,320	7,752,320	7,752,320	-
Whole of Area Costs (Non QR)	59,505,455	59,449,090	59,307,513	141,578
Whole of Area Costs - QR	44,000,518	41,442,029	35,209,758	6,232,271
TOTAL	306,665,180	302,607,253	294,545,840	8,061,413

Of the major costs within this track section

	 \$3.6m payments to the Byerwen quarry operations for supplied ballast and construction rock
Whole of Area Costs - QR \$6.2m	 \$0.6m for protection officers
	 \$0.5m in property settlements
	 \$0.5m in final track works payments
New NML Railway \$1.7m	 \$1.1m for signalling close out works
New NIVIL Railway \$1.7m	 \$0.5m for payments to Major Rail Construction

Provisions

Provisions include costs related to Alliance incentive payments, benefits of insurance claims and DTC to RCS upgrade costs.

The following table shows the full costs related to project Provisions including the costs being held back by Aurizon for the DTC to RCS Upgrade.

Activity	Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
Contingency	-	-	-	-
Escalation	-	-	-	-
	9,497,706	9,138,087	5,969,861	3,168,226
Management Contingency	-	-	-	-
Goonyella System Costs	76,544	53,548	39,837	13,711
Insurance Claims	7,681,361	- 7,138,386	1,871,435	- 9,009,820
	12,009,845	11,451,006	181,559	11,269,447
TOTAL	29,265,455	13,504,256	8,062,691	5,441,565

The following table shows the cost as to be included in the 2012/13 claim

Activity	Assigned Budget	Cost to 30 June 2013	Prior Years	2012/13
Contingency	-	-	-	-
Escalation	-	-	-	-
	9,497,706	9,138,087	5,969,861	3,168,226
Management Contingency	-	-	-	-
Goonyella System Costs	76,544	53,548	39,837	13,711
Insurance Claims	7,681,361	- 7,138,386	1,871,435	- 9,009,820
TOTAL	17,255,611	2,053,249	7,881,133	- 5,827,883

Of the major costs associated to provisions

	- \$8.9m insurance payment related to a November 2012 rain claim
Insurance Claims -\$9.0m	 - \$0.3m insurance payment related to a rain claim

Accruals

-\$10.8m was accrued against the project.

All of the above was analysed in some depth by SKM in the SAP analysis section (see Section C.3)

Page 24 states that:



SKM issued RFI004 and RFI005 seeking additional information.

With respect to the prudency of cost assessments, SKM notes that on page 42 of the submission there were references to IDC calculations. All SKM assessments are excluding IDC.

Attachment.D.1.2.3 Assessment of suite of project reports in Schedule 3- Blackwater Feeder Stations

This section covers the assessment of the suite of documents contained within Schedule 3, A.03473 - GAPE and entitled:

- (Evans and Peck) Goonyella to Abbot Point Expansion Project, Analysis of Prudency of Scope, Standard and Cost, dated 18 October 2012
- Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request, Goonyella to Abbot Point Expansion Project (GAPE), dated 19 November 2009
- Goonyella to Abbot Point expansion Project, Track Upgrade Line Diagrams sheets 1 to 10, no date given

All of the above documents have been assessed by SKM. SKM noted that the amount of information provided was scant, as is witnessed from the specific information listed above, to support the claim for activities undertaken during the 2012 – 2013 period. SKM recognises that Aurizon Network does refer the assessors to the copious amount of data provided in the previous year, however such data could not be used to assess any actual work undertaken during the 2012 – 2013 period other than in the context of continuation of agreed scope.

SKM notes that each of the document above pre-date the Financial Year 2012 to 2013. SKM has used these documents to assess the scope component of the terms of reference i.e. to assess if the works completed in the current claim period where aligned and in agreement with the scope previously agreed.

In terms of assessing prudency of standard, it is SKM's view that the above suite of documents could not be used to assess the actual work completed during the current claim period. It should be noted that the line diagrams provided were not dated and did not have sufficient interpretive description to assist SKM in its assessment.

From the report entitled (Evans and Peck) "Goonyella to Abbot Point Expansion Project, Analysis of Prudency of Scope, Standard and Cost", dated 18 October 2012, the following observations are made.

Page 2 states:

The project was constructed to an appropriate standard. New track was constructed to the standard of the Goonyella System and the relevant elements of the Newlands System (previously 20 tal) were upgraded to the standard of the Goonyella System (26.5 tal).

SKM makes here reference to RFI 004 and RFI 005 responses and in particular:

• the need to terminate the continuation of ballast supply from Byerwen Quarry due to the material not complying with the required standard

SKM does not know to what extent (if at all) any sub-standard ballast may have been used on GAPE prior to detection or if this being the case, any rectification works were undertaken.

Page 3 states:

• All works in this submission were commissioned before 30 June 2012.

It was at this juncture that SKM concluded that the Evans and Peck assessment of prudency report was adressing the prior claim period and not adressing the GAPE post commissioning works undertaken in the 2012 – 2013 claim period.

From the report entitled "Stage Gate Process: Capital Expenditure Feasibility Investment Approval Request, Goonyella to Abbot Point Expansion Project (GAPE)", dated 19 November 2009

SKM notes that the document was dated 19 November 2009 and therefore could not be used to address the prudency of scope, cost and standard for the claim period of 2012 – 2013. SKM notes that at this juncture there were no project close out reports, best value reports or any evidence provided of any of the works being accepted into operation. SKM issued RFI's to seek such evidence.

The only information provided in Schedule 3 that SKM could use for this assessment and prior to the responses receive in RFI 001, RFI 004 and RFI 005 was the data contained in the SAP report spreadsheets. Naturally such transaction data would not provide sufficient information but did assist SKM in asking targeted questions via the issued RFI's.

Please refer to Attachment D.1.3: Assessment of SAP reports

Attachment.D.1.3 Assessment of SAP reports

The assessment commentary in the tables contained in this appendix has been retained as the status prior to Aurizon Network's responses to RFI004 and RFI 005.

During the review of the SAP transactions file entitled "A.03473 - Broken Down.xls" as well as all the information provided by Aurizon Network contained in Schedule 3/ A.03473 - GAPE, the following observations were made:

Attachment D.1.3.1 General

As a general statement the following holds for all sub-projects that make up the GAPE post-commissioning claim:

- No scope given.
- No completion evidence.
- No "as-builts" schematics.
- No invoices provided that supported the claim.

There were no completion reports or any other evidence made available that the works conducted were of an acceptable standard and fit for use.

Prior to and after Aurizon networks responses to RFI004 and RFI005, there were no commissioning certificates provided that supported the completion of works for the claim period in question.

From the spreadsheet provided covering the A.03273 broken down costs SKM has provided a list of costs claimed against the GAPE Post Commissioning works as follows:

Attachment D.1.3.2 GAPE (A.03473) SAP / RFI005 extract assessments

The following is based on a line-by-line assessment of the SAP transactions file entitled "A.03473 - Broken Down.xls" as well as all the information provided by Aurizon Network contained in Schedule 3/ A.03473 GAPE

Owners Costs

There was no discrepancy in total amount settled to SAP as compared to the amount claimed.

Owner's costs consist of "Project Managements" and "Expenses" high level activities/deliverables.

The claim of \$1,044,577 for Project Management services would equate to an approximate 2 people full time contracting project manager equivalents. This appears to be a reasonable figure if the rates were for contracting managers at ~ \$250 to \$280 per hour. If the Project Managers were internal resources then the above would equate to perhaps at least 4 full time equivalents which may appear to be excessive considering the fact that the project was in its finalisation.

The claim for \$434,816.00 in "Expenses" appeared initially high. Aurizon explanatory notes state that these costs were for amongst other things "consultancy fees, travel, legal costs and home office costs". SKM has not sighted any invoices or other material to substantiate this claim.

An investigation of the sub-activity claims for "Expenses" shows the following in relation to the type of expenses claimed:

Services	Claimed amount	Comment
Facilitation Services - Lessons Learned	30,800	Appears reasonable
QCA Capital Expndtr - Evans & Peck	233,599	No contracts or competitive tendering or award information was provided.
Home office costs	11,752	Unkown what this is and to what extent it may be covered under overheads
Insurances (work place cover)	-64,449	The were no claim details provided
Marketing and PR	21,884	
Overheads	200,626	Unknown how this is derived and what it covers.

Table D5.2-2: Owners Costs

From page 25 of the Aurizon network document entitled "Schedule 3 – System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission", Aurizon Network state that post commissioning claims should amongst other things be read in conjunction with "details of the insurance claims as represented in this submission". Unfortunately, this information is not in the claim submission.

Abbot Point to Bogie River

There appears to be a discrepancy in total amount settled to SAP as compared to the amount claimed in the document entitled "Schedule 3 – System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission". Please see the Buckley Passing Loop assessment below as well as page 22 of the above mentioned report.

The Abbot Point to Bogie River sub total of \$8,254,584 appears to be in error by \$220,930 (i.e. there appears to be an under claimed amount and should be \$8,475,514). SKM has no explanation for this apparent understated claim for Abbot Point to Bogie River. Investigation of the SAP reports shows Buckley new passing loop as a credit to the accounts. This may be the source of the error. Buckley passing loop claim for \$110,465 is not the same as that claimed in the SAP spreadsheet.

An investigation of the sub-activity claims that make up the high level Abbot Point to Bogie River item, shows the following in relation to the type of expenses claimed under it

Services	Claimed amount	Comment
Abbot Point 2 nd balloon loop and holding road	11,001	Signalling and Telecommunications works only. No scope given. No completion evidence. No "as-builts" schematics.
Kaili to Durraburra Duplication – Signalling works	38,555	Signalling works only. No scope given. No completion evidence. No "as-builts" schematics.
Pring Extension and Modifications to the Holding Road	62,225	46,734 was for track works (MRC operations) and 15,491 was for signalling works from the alliance partner. No scope given. No completion evidence. No "as- builts" schematics.
Buckley new passing loop	-110,465	It appears as a credit to the overall budget. SKM assumes this is an error and should be a debit amount. Entire amount was for alliance signalling works. No scope given. No completion evidence. No "as-builts" schematics.
Aberdeen new passing loop	91,172	All works were Alliance Signalling and telecommunications works. No scope given. No completion evidence. No "as-builts" schematics.
Existing track upgrades	2,396,480	This is analysed below
Formation and ballast upgrades	2013,115	The entire amount was for materials and MRC operations Aberdeen to Armuna. SKM recommends that Aurizon capture the ratio of materials to labour. No scope given. No completion evidence. No "as-builts" schematics.
Whole of area costs (non QR)	1,902,343	This is analysed below
Whole of area costs - QR	3,660,158	This is analysed below

Table D5.2-2: Abbot Point to Bogie River

Services under "Existing Track Upgrades (\$2,396,480)	Claimed amount	Comment
Armuna Turnout Replacement	161,236	All of this was for trackwork materials except for 5,825 Alliance Partner works but with a credit of -1,900 QR construction services in the alliance. No scope given. No completion evidence. No "as-builts" schematics
Binbee Turnout Replacement	-11,984	The entire credit amount was for Alliance signalling and QR (signalling) construction services. No scope given. No completion evidence. No "as-builts" schematics
Level Crossing Upgrades	603,591	Most of the costs were associated with bringing the crossing up to ALCAM standards with some minor works for level crossing phones. It is not clear exactly where the works were. No scope given. No completion evidence. No "as-builts" schematics
Re-Sleepering works at Pring	276,513	All these works were track works (MRC Operations). No scope given. No completion evidence. No "as-builts" schematics
26.5 TAL Rerailing AP-BR	1,026,678	All works were for Track work materials and MRC Operations except for 106,840 for planning and logistics operations. No scope given. No completion evidence. No "as- builts" schematics
Track Lubricators - AP-BR	128,339	This was categorised as asset maintenance for design, supply and install. The number of lubricators was not stated nor their location. No scope given. No completion evidence. No "as-builts" schematics
Aberdeen Causeway Repair	212,107	Civil works only. No scope given. No completion evidence. No "as-builts" schematics



Services under "Whole of area costs (non QR)" (\$1,902,343)	Claimed amount	Comment

Services under "Whole of area costs - QR" (\$3,660,158)	Claimed amount	Comment
QR Service Providers	626,273	Of which 365,194 is for ECD signals, operational systems. This would be associated with control centre works eg DTC and RCS (UTC). What is the scope of this work? Certificates of completion, user requirements and so on. The costs are further broken down into Vizirail (18,995), RTIS (42,660), UTC (9,460) and Wayside Systems (205,0912). What was the wayside systems scope? Additionally there was an Axle counter audit for 28,820 (competitive tendering evidence required). Fibre Optic Backbone (71,434) covering engineering, procurement, test and joining. Protection officers to the amount of 192,349. No scope given. No completion evidence. No "as- builts" schematics. Is this part of RCS to DTC which is not being claimed?
QR-Project Management	189,661	Civil verification works (72,553), Property labour (38,226), PCQ under land acquisition? Aspect 3 Indirect Costs (Paid by QR) (74,219), Scope or reason cannot be determined from the data. No scope given. No completion evidence. No "as-builts" schematics
QR Commercial Services	26,399	Ernst & Young Alliance Audit services.

		Competitive tender process evidence required. No scope given. No completion evidence. No "as-builts" schematics
Finalisation works (AP-BR)	2,817,825	Track Package (2,569,180). Scope not known, certificates of completion etc not sighted. Punchlist (contractors GAP controlled 69,485) – cannot deterrmine what the scope is of this. Telecommunications closeout 171,770 (cannot determine what this is?) No scope given. No completion evidence. No "as-builts" schematics

Bogie River to Newlands

There was no discrepancy in total amount settled to SAP as compared to the amount claimed. An investigation of the SAP sub-activity claims shows the following in relation to the type of expenses claimed:

Table D5.2-2: Bogie River to Newlands

Bogie River to Newlands – Activities/Expenses	Claimed amount	Comment
Briaba to Collinsville Duplication	309,029	SAP analysis is detailed below
Birralee – Extend Passing Loop	455,977	SAP analysis is detailed below
Cockool New Passing Loop	573,842	SAP analysis is detailed below
McNaughton balloon loop upgrades and turn out replacement	3,636,651	SAP analysis is detailed below
Newlands balloon loop upgrades and turn out replacement	743,675	SAP analysis is detailed below
Sonoma turnout replacement	331,515	SAP analysis is detailed below
Existing track upgrades	2,712,239	SAP analysis is detailed below
Formation and ballast upgrades	2,615,298	SAP analysis is detailed below
Whole of area costs (non QR)	1,945,828	SAP analysis is detailed below
Whole of area costs - QR	6,249,858	SAP analysis is detailed below
Briaba to Collinsville – Activities/Expenses	Claimed amount – 309,029	Comment
Trackwork	166,932	Of which 98,946 was for Freight and 67,985 was for MRC Operations. (Interesting that "freight" has not been used in any prior activity). No scope given. No completion evidence. No "as-builts" schematics
Telecomms	18,286	Engineering, materials and commission at Briaba. What was commissioned is unknown. Certificates not sighted. No scope given. No completion evidence. No "as- builts" schematics
Signalling	123,811	Consist of 110,897 Alliance Contract work. Scope is unknown. Certificates not sighted. No scope given. No completion evidence.

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		No "as-builts" schematics
Birralee – Extend Passing Loop , Activities/Expenses	Claimed amount – 455,977	Comment
Signalling	455,977	Alliance partner works. Scope was not provided, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Cockool New Passing Loop, Activities/Expenses	Claimed amount – 573,842	Comment
Trackwork	537,275	180,807 for freight and 256,468 for MRC operations.
Telecomm's	15,325	Telecomm's contractor works at Cockool as an asset maintenance activity. Scope unknown
Signalling	21,242	Alliance partner works. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
McNaughton balloon loop upgrades and turn out replacement, Activities/Expenses	Claimed amount –3,636,651	Comment
Trackwork	94,154	Freight and MRC operations. Why is this listed alone and not as per the other titles for trackwork for example see next line. No scope given. No completion evidence. No "as-builts" schematics
McNaughton- BL Upgrade - Trackwork	3,208,920	Freight, MLC operations, planning and logistics. No scope given. No completion evidence. No "as-builts" schematics
Signalling	325,282	Alliance partner works mostly. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Marketing PR, Scottsville LXC	8,149	
Newlands balloon loop upgrades and turn out replacement, Activities/Expenses	Claimed amount –743,675	Comment
Trackworks	345,698	All MRC operations (no freight this time). No scope given. No completion evidence. No "as-builts" schematics
Signalling	397,977	Alliance works and QR construction services in Alliance. Scope was not documented, handover, certificates, acceptance etc not sighted . No scope given. No completion evidence. No "as-builts" schematics
Sonoma turnout replacement, Activities/Expenses	Claimed amount –331,515	Comment



Signalling	331,515	Signal Alliance works only. Scope wass not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Existing track upgrades Activities/Expenses	Claimed amount -2,712,239	Comment
Collinsville Turnout replacement	388,585	Signal Alliance works only. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Havilah Turnout Replacement	329,126	Signal Alliance works mostly. Scope was not documented, handover, certificates, acceptance etc not sighted A small amount for Telecomms of 8,215 was included No scope given. No completion evidence. No "as-builts" schematics
Level Crossing Upgrades – North Briaba 50km	334,061	Classified as signalling and done as Signal Alliance works only. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Level Crossing Upgrades – Bowen Development Rd 115.9	95,482	Classified as signalling and done as Signal Alliance works only. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Level Crossing Upgrades – Collinsville	250,348	Classified as signalling and done as Signal Alliance works only. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion evidence. No "as-builts" schematics
Level Crossing Upgrades to ALCAM standards–Various	712,006	Trackworks, mostly planning and logisitics (624,609). QR works No scope given. No completion evidence. No "as-builts" schematics
Track Lubricators - maintenance	74,435	Design, supply and install. Vastly different price to the 128,339 claimed under Abbot Point to Bogie River. Perhaps only one installed here and two in the other ?. No scope given. No completion evidence. No "as-builts" schematics
Havilah Culvert Upgrades	38,971	Review and implement. No scope given. No completion evidence. No "as-builts" schematics
Havilah Intersection	489,223	Civil works. Scope was not documented, handover, certificates, acceptance etc not sighted. No scope given. No completion

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		evidence. No "as-builts" schematics
Formation and ballast upgrades (trackworks) - Activities/Expenses	Claimed amount –2,615,298	Comment
Track Relay – Briaba Materials	-27,138	Credit ? No scope given. No completion evidence. No "as-builts" schematics
Formation repair relay	153,430	Material we 554,656 but there was a credit for planning and logistics of -401,226. SKM does not know the circumstances, why there is a credit or what the actual scope was. There are a number of confusing entries in SAP in this area. No scope given. No completion evidence. No "as-builts" schematics
Track upgrades (63.3 – 70.491 km)	1,967,847	MRC operations (Almoola to Briaba). No scope given. No completion evidence. No "as-builts" schematics
Br'ba-C'vl Relay(72.5-73.3+74.45-74.	584,084	MRC operations. No scope given. No completion evidence. No "as-builts" schematics
Whole of area costs (non QR) - Activities/Expenses	Claimed amount –1,945,828	Comment
Coal Connect Alliance Works – Engineering Services	695,204	Construction support. SKM has not sighted any invoices or linkage from this item to any scope definition. No scope given. No completion evidence. No "as-builts" schematics
Synergy Alliance Indirect Costs - Signalling	975,536	Synergy indirects TCE. SKM has not sighted any invoices or linkage from this item to any scope definition. No scope given. No completion evidence. No "as-builts" schematics
Power Supply	275,088	Most of the costs were split between generator signals for Havila and Solar power (RAPS) for signals at Havila. SKM has not sighted any invoices, scope, load ratings etc. No scope given. No completion evidence. No "as-builts" schematics
Whole of area costs - QR - Activities/Expenses	Claimed amount –6,249,858	Comment
QR service providers	813,556	No scope given. No completion evidence. No "as-builts" schematics
ECD Signals	59,770	No scope given. No completion evidence. No "as-builts" schematics
Fibre Optic Backbone	94,796	No scope given. No completion evidence. No "as-builts" schematics
Protection Officers	233,894	Also charged against each project. Why here as well as agains t the above proejcts. No scope given. No completion evidence.

		No "as-builts" schematics
Telecoms – materials	35,686	No scope given. No completion evidence. No "as-builts" schematics
Operational Systems	60,051	Mostly wayside systems – also charged against projects above ?? No scope given. No completion evidence. No "as-builts" schematics
QR Project Management	667,389	Mostly land acquisition related
Finalisation works	4,730,889	Something called "Track - Package 2 - March 2012+" for an amount of 4,254,966 makes up most of this item. SKM does not know what this package is, its scope, completion certificates, invoices etc have not been sighted. No scope given. No completion evidence. No "as-builts" schematics
Telecommunications - closeout	328,792	SKM does not know what this package is, its scope, completion certificates, invoices etc have not been sighted. No scope given. No completion evidence. No "as-builts" schematics

Northern Missing Link

There was no discrepancy in total amount settled to SAP as compared to the amount claimed. It is noted that Aurizon Network do not intend at this stage to claim for \$11.3 million associated with signalling upgrade works. An investigation of the SAP sub-activity claims shows the following in relation to the type of expenses claimed:

Table D5.2-2: Northern Missing Link

Northern Missing Link– Activities/Expenses	Claimed amount - \$8,061,413	Comment
New NML Railway	1,687,564	SAP analysis is detailed below
Whole Area costs (non QR)	141,578	SAP analysis is detailed below
Whole of Area Costs - QR	6,232,271	SAP analysis is detailed below
New NML Railway- Activities/Expenses	Claimed amount (\$1,687,564)	Comment
Trackwork MRC operations	534,350	No scope given. No completion evidence. No "as-builts" schematics
Telecomms – Asset Maintenance for Leichhardt Range, Suttor Creek and Eagleford Creek, North Goonyella	3,905	Maintenance category.A number reversals (credits are in this part of the claim). No scope given. No completion evidence. No "as-builts" schematics
Signalling	1,149,309	Newlands Junction, Leichardt, Suttor Creek, Eaglefield Creek, North Goonyella, Synergy Alliance TCE. No scope given. No completion evidence. No "as-builts" schematics
Whole of Area Costs (Non QR) –	Claimed amount (\$141,578)	Comment

Activities/Expenses		
Synergy fibre optics –construction NML	-374,943	Is this a part of the NML signalling not being claimed. It shows as a credit amount. Is this correct?. No scope given. No completion evidence.
		No "as-builts" schematics
Power Supply	516,521	Generator power for NML signals (256,525). Is this amount attempted claimed when NML signals is not being claimed? Same applies for Solar power for Signals Suttor Creek ? No scope given. No completion evidence. No "as-builts" schematics
Whole of Area Costs - QR) – Activities/Expenses	Claimed amount (\$6,232,271)	Comment
Track work monumenting NML	473,789	No scope given. No completion evidence. No "as-builts" schematics
ECD Signals	69,793	Is this being claimed in error Project coordination of \$37,620 ? Synergy Indirects of 20.684 – whats this? No scope given. No completion evidence. No "as-builts" schematics
Fibre Optic backbone	70,000	Design, procure, install and test. Is this claimable in view of last assessment for 2011-2012? No scope given. No completion evidence.
		No "as-builts" schematics
Protection officers	653,210	Why is this not being charged per project? No scope given. No completion evidence. No "as-builts" schematics
Operational Systems	122,333	RTIS NML 24,030, UTC NML 48,583, Wayside Systems 49,632 Is this not part of the signalling (DTC to RCS) claim which is deferred ? No scope given. No completion evidence. No "as-builts" schematics
Telecoms	1717,218	Includes control centre interfacing and some maintenance activities. Also occupational crossing telephones. No scope given. No completion evidence. No "as-builts" schematics
Project Management – mostly property related	579,234	Is this really project management a correct category? No scope given. No completion evidence. No "as-builts" schematics
Commercial Services - Audits	66,375	Alliance Audit by KPMG 66,374 Synergy Audit by PwC 66,374 (Is this indicative of competitive pricing?) How were these audits awarded?

		No scope given. No completion evidence. No "as-builts" schematics
Byerwen Quarry Operations	3,666,587	Includes royalties, ballast, "other" product. Why is it that the Quarry works is not appropriated as required per sub-project? No scope given. No completion evidence. No "as-builts" schematics
Telecoms Engineering Closeout, Labour and materials	501,700	What is the scope? Can this be claimed in view of the signalling IRCS-DTC) not being claimed or the last assessment report? No scope given. No completion evidence. No "as-builts" schematics

Provisions

There appeared to be a discrepancy in total amount settled to SAP as compared to the amount claimed. The amount claimed by Aurizon is in fact a credit amount of -\$5,827,883 whereas the SAP reports show the amount of \$5,441,565 and as a debit. This was clarified by the credit back from unclaimed costs associated with the DTFC to RCs conversion costs.

An investigation of the SAP sub-activity claims shows the following in relation to the type of expenses claimed:

Table D5.2-2: Provisions

Provisions – Activities/Expenses	Claimed amount	Comment
	3,168,226	SAP analysis is detailed below
Goonyella System Costs	13,711	SAP analysis is detailed below
Insurance Claims	-9,009,820	SAP analysis is detailed below
	Claimed amount (3168,226)	Comment
Goonyella System Costs – Activities/Expenses	Claimed amount (13,711)	Comment
Grade easing at Mallawa - impact on property	13,711	Claimed in relation to impact on property.
Insurance Claims – Activities/Expenses	Claimed amount (-9,009,820)	Comment
BR-N & NML Rain Claim Nov10 (credit) and	-9,009,820	BR-N & NML Rain Claim Nov10
AP-BR Rain Claim No.3 Mar11		AP-BR Rain Claim No.3 Mar11
		No insurance claim details provided

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Not Claimed - Activities/Expenses	Not Claimed amount	Comment
Temporary accrual element	-10,823,680	SKM has no information as to the purpose of this account and what it entails nor its relevance to this assessment. SKM seeks any information available to be able to assess this item.
		This information must cover the UT3 requirements to assess Scope, Cost and Standard.
		No scope given. No completion evidence. No "as-builts" schematics



From page 25 of the Aurizon Network document entitled "Schedule 3 – System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission", Aurizon Network state that post commissioning claims should amongst other things be read in conjunction with "details of the insurance claims as represented in this submission"

Attachment.D.1.4 Assessment of RFI responses

Aurizon Networks response to each RFI are summarised below:

- RFI 001: "The reference to Section 10 is a drafting error in the December 2013 2012/13 Capital Expenditure Submission".
- RFI 004 and 005: Aurizon Network confirmed in a memo entitled GAP50 SKM QCA Audit dated 26/2/2014 that the works covering the sample activities i.e.:
 - 1. Existing track upgrades Abbot Point to Bogie River
 - 1. Whole of area costs (non QR) Bogie River to Newlands, power supply
 - 2. Existing track upgrades Bogie River to Newlands, Havilah intersection
 - 3. Whole of area costs (QR) Missing Link, Byerwen Quarry and track monumenting
 - 4. Provisions, insurance claims
 - 5.

were all completed to the required standard, being either part of the original scope or covered by the change management process.

The documentation received in this RFI response has been tabulate in Section C.1

Attachment.D.1.4.1 Abbot Point to Bogie River, existing track upgrades

The track upgrades scope was described as follows:

Existing	TrackUpgrades
1-escape-escape	
FORMA	TION STRENGTHENING
•	12.2km of formation strengthening. Actual locations are listed on track upgrade plans
•	or o o o o o o o o o o o o o o o o o o
	 CBR 10 and 20 layer is to be taken as the existing ballast layer to remain at
	this depth, and taken as is
•	a a a a a a a a a a a a a a a a a a a
	The best to be motaling
	Works shall include:
	remove ballast after QR Services remove track panels
	 old ballast to be pushed onto existing access road side of the corridor
	 clean culverts out (openings to be protected)
	 follow formation design process
	 clean up after track reinstated
	Works planned to be carried out in designated 6 day system shutdown
	DRAINAGE STRUCTURES & CULVERTS
0.00	Drainage upgrades to the existing Newlands system to be undertaken by QR Services
BALLA	ST UPGRADE
1.16	oo. + intro buildor bool duforning und oplacement
	QR Services to deliver all scope associated with ballast upgrade
	All spoiled ballast to be spread across existing access road closest to Bowen
	Bereichinentertoud, in provide
•	no improveriente aranage of ereen ereeeninge te edear
	are corrected to make promotorio for restressing in accordance man of re
•	Works to be carried out in 6 day system shutdown nominated
TRACK	RELAY
	7.7km of track relay to be completed Abbot Point - Kaili
•	the state of the s
	new type A ballast (300mm below sleepers)

SKM notes that the actual locations were provided in the spreadsheet with the filename "Track upgrade tracker.xls", the information was not dated nor signed as approved works. The contents of this file are as follows:

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TRACK SECTION	SUB-SECTION TR		TRE	ATMENT PRIORITY		CAR reference/Name	SAP Element	Booked	Cost/km	1
	START END		(RECONSTRUCTION)					05/07/12		
			Formation upgrade	Ballast replacement	Track Relay					
Abbot Point to Bogie River	(km) 12.853	(km) 15	(km)	(km)	(km) 7.66	XP.101 Abbot Point Relay	A.03473.28010	6.285.346	820,541	
Abbot Point to Bogle River	6.319	7.819	1.5		7.00	XP.101 Abbot Point Relay XP.151 Pring - Buckley July 10	A.03473.29700	2,017,430		Combine
	7.819	9.2	1.381			XP.151 Pring - Buckley Oct 10	A.03473.29700	2,017,430	0	Combine
	10.7	12.5	1.8			XP.277 Buckley to Armuna - May 11	A.03473.29702	1,481,727	823.182	
	16.191	20.599	1.0		4.408	XP.305 Buckley to Armuna relay - Sept 11	A.03473.29708	2,756,566	625,355	
	20.599	20.399		2.557	4.400	XP.305 Buckley to Armuna Jeray - Sept 11 XP.276 Buckley to Armuna u/cut - May 11	A.03473.29706	575.024	224,882	
	23.146	24.743		2.551	1,597	XP.309 Armuna Yard relay - Sept 11	A.03473.29709	725.927	454,557	
	24.743	28.75		4.007	1.331	Ar 300 Armana Faid felay - Sept 11	11.00410.20100	125,521	454,351	
	28.75	29.3	0.55	4.007		XP.209 Armuna to Aberdeen Oct 10	A.03473.29701	4,979,289	609,684	
	29.3	29.5	0.00	0.2						
	29.5	31.9	2.4							
	31.9	32.91		1.01					_	
	32.91	33.56		0.65						
	33.56	37.2		3.64		XP 242 Aberdeen to Armuna - Dec 10	A.03473.29703	3,624,378	995,708	
	44.49	46.36		1.87		XP.278 Binbee to Bogie River - May 11	A.03473.29707	1,318,588	705,127	
Bogie River to Newlands	46.24	52.7		6.46		XP.275 Bogie river to Briaba Track relay - May 11	A.03473.47715	7,851,111	1,215,342	
	52,700	54.700	2.0			XP.315 Form repair & relay (52.7-54.7) - Sept 11	A.03473.47706	3,502,878	875,720	
	54.700	56.700	2.0				8			
	56.700	57.834		1.134		XP.0336 Track relay 56.700-57.834km - Apr 12	A.03473.47710	907,071	799,886	
	57.914	59.150		1.236		XP.0337 Track relay 57.914-59.150km - Apr 12	A.03473.47720	634,198	513,105	
	63.300	64.800		1.5			and the second second second	1000101010101010		
	66.100	67.100		1		XP.335 Track Upgrades 63.300-70.491km - Apr 12	A 03473 47730	2,678,787	892,929	
	67.900	68.400		0.5		Ar .555 Hack opgrades 05.500-10.431KHT- Apt 12	A.03413.41130	2,010,101	032,323	
	69.879	70.491	0.612							
	72.500	73.300		0.8		XP.342 Briaba - Collinsville relay	A.03473.47740	303,255	268,605	
	74.500	74.829		0.329		An is a shaba domnovine relay	1.00110.41140	000,200	200,000	
TOTALS			12.243	26.893	13.665					
	October Shu	ut down		9.224		More costs to come				
	Percentage of restressing costs 3-		24.20/							
	Perce	ntage of re	stressing costs	34.3%						

SKM notes that the above information covers both Abbot Point to Bogie River as well as Bogie River to Newlands. The practice of keeping track of the cost per km is to be encouraged.
Attachment.D.1.4.2 Bogie River to Newlands, power supply

The Bogie River to Newlands, power supply was a challenge in that the provision of traditional utility supply was for some reason not available and was therefore overcome with the use of photo voltaic solar cells and batteries. The vendor and make of alternators chosen were costlier than other options but SKM accepts that there was a need to ensure standard spares and maintainers familiarity with already deployed equipment type.

The following shows some extracts relating to the above difficulties in securing utility power with an offer from Ergon to supply solar power:



The following correspondence also demonstrates positive proof of Aurizon Networks assertion that all new works were implemented through the approved change management process.

Delete	Respond	JIVE ACTIONS	IVIOVE	lags	(94)	Editing	200m	
From: To: Cc: Subject:	Neale, Kevyn Lewis, John (Signalling); Scuderi, Cassand Hulbert, Andrew; Young, Gemma; Gree RE: Remote Area Power Supplies for Suttor C	ner, Mark	o for Genelite Generator:	6				Sent: Tue 7/08/2012 11
	r my team will not just approve the additit you should not assume that GAP will aut				nt. There is a	change manage	ment process t	that needs to be followed
them or a	I the steering committee signed off on the agreed as a change by GAP and its senio	r managers.			tainer now re	aquire a new brar	id then that cos	it should be either back to
Regards	u please process this changes through C	assie who will then coordinate	the approval with Ger	nma.				
Kevyn								

SKM also notes the intent by Aurizon to potentially implement solar power solutions in the future depending on the performance of the sites commissioned on GAPE.

The scope of works proposed was adequately defined in the Ergon proposals entitled "Engineering and Design Proposal for Stand Alone Power Supply, QR National, Suttor Creek Passing Loop" dated 12 October 2011 and "Revised proposal Stand Alone Solar Off-Grid Electrical Supply Systems for Signalling Equipment " dated 26th April 2012.

SKM is of the view that these works were necessary and the prudency of standard and scope is upheld.

Attachment.D.1.4.3 Bogie River to Newlands, Havilah intersection

The information provided relating to the Existing track upgrades Bogie River to Newlands, Havilah intersection, related to upgrading occupation crossings which were not originally captured in the Alliance TCE.

Never the less the upgrades were deemed required due to safety risk associated with the approaching angle to the pre-existing crossing. These risks were identified by both QR, Aurizon and Xstrata. CoalConnect resources were already placed in the vicinity and provided IFC schematics, scope and cost estimates for ALT approval.

The following information paper summarises the history of Havilah Station Crossing upgrade works:

GOONYELLA TO ABBOT POINT EXPANSION PROJECT CHANGE INFORMATION PAPER



Information Resolution Paper No: CIP-008

Date: 13/2/12

Topic: GAP – Havilah Station Crossing & access

Sponsor: Bill Cruickshank (Project Manager – Bogie River to Goonyella)

Sponsors Recommendation:

I recommend that the upgrade of Havilah Station crossings and associated Bowen Road intersection works be undertaken by CoalConnect as soon as <u>possible</u>. Whilst representing a significant unbudgeted additional expenditure, the works are required to correct several safety issues associated with the existing skewed road crossing (ID3316), the dilapidated stock crossing (ID3315) and the Bowen road intersection.

Various scope reviews have been unable to develop another option without compromising the design requirements for the intended stock vehicles (B-triple)

Issue (s):

- The existing occupational crossing ID3316 gives access to Havilah Station property and crosses the rail line at a severe skew making it non-compliant with current QRN standards.
- An adjacent stock crossing ID3315 has good alignment but is in poor condition
- There is insufficient length between the QRN corridor boundary and the Bowen
- Developmental Road to handle B-triple cattle trucks that the landowner regularly uses.
 Current connection to Bowen Rd has inadequate sight distance.
- DMR requires all new connections to Bowen Road to have slip lanes provided.
- CoalConnect have advised that this work is not budgeted within the Alliance TOC.
- The forecast cost of the works has been estimated as \$518,000 by CoalConnect.

at.



Background:

- There are 2 existing crossings at Havilah Station: -
- ID 3315 @ Ch103.020 is a stock crossing with fencing and approaches in very poor condition and is not in compliant with current QRN standards.
- 2. ID 3316 @ Ch103.180 is the main access road to the property used by vehicles. It crosses the rail line a skew and is not compliant with current QRN standards.
- GAP scope has always involved upgrading crossings to meet current standards and at this location this has meant consolidating these 2 crossings into a single crossing.
- In 2010 CoalConnect and QRN property were involved in discussions with the landowner and DMR
- In order to meet DMR requirements a new intersection to the Bowen rd was required approx 50m from the original.
- CoalConnect have submitted a TCA for the entire scope at this crossing as they believe it was not part of their TCE scope. Estimated cost is \$518,000

Cost/Budget Implications:

 The full scope of work for this crossing & intersection upgrade was not included in the GAP budget or CoalConnect TCE. CoalConnect have submitted an initial TCA requesting

\$518,000 to undertake this work.

Time Implications:

Due to delays associated with assessing this change, it is unlikely that the work can now
completed within the original CoalConnect programme. However there are no problems
with completing the work prior to the overall GAP project completion – June 2012

Other Issues Implications:

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Attachments:

Drawings N16365-B / N16366-A

SKM is of the view that the above works comply with prudency of standard and need.

Attachment.D.1.4.4 Northern Missing Link, Byerwen quarry

SKM's review of the Byerwen Quarry information reveals that the ballast was at some stage deemed as noncompliant with Aurizon Networks acceptance criteria. Therefore the commercial arrangements, being based on an ongoing concern with continued supply to the rail industry, were now null and void. As a result the alliance and the quarry owners made an arrangement to adjust the agreed contracts, assess the value of these commercial changes and transfer money commensurate with these changes.

Further complicating matters was that during the invoicing periods, Byerwen Quarry had not adjusted their invoices according to the agreed rise and fall indices. As a result of this Byerwen Quarry was credited with amounts owing as was vetted and agreed by QR National's legal counsel.

The entire proceedings are not replicated here but SKM has reviewed and accepts the transactions as being prudent and commend Aurizon in its vigilance. SKM does not know at what point the ballast was deemed unacceptable for its nominate purpose nor if in fact there exists sub-standard ballast currently in use on GAPE.

Attachment.D.1.4.5 Northern Missing Link, track monumenting - NML

SKM's review of the track monumenting documentation consisted of a singular spreadsheet provided by Aurizon Network. The contents of this spreadsheet were as follows:

Track Monum	enting Scope				
Track monun	nents to be placed a	at the follow	ing centre	5:-	
Straights	every 200m				
Curve length	every 100m				
Per curve	min 6 per curve				
Monument so	cope consists of:-				
Data plaque o	n 1.6m long aluminiu	m RHS.			
Post placed in	n min 0.6m diameter >	(min 0.6m d	een concret	e footing	

SKM recognises the need for track monumenting and that such a practice is undertaken amongst other rail operators. In terms of standard, therefore this activity is prudent. SKM does not know if the work was competitively tendered or installed by CCA. As an aside, SKM did witness these works under construction during the site visit in early 2013.





Attachment.D.1.4.7 Provisions, insurance claims.

Aurizon Network provided the following information related to insurance claims.

II costs	A\$ GST excl)		
Item	Description		Totals
1	Contract Works Rectification:-		
	71-005 Earthworks	530,133	
	71-010 Drainage	37,786	
	71-015 Bridges	16,394	
	71-020 Misc Repairs	17,324	
	71-025 Access Roads	1,273,361	
2	Direct Cost Total		1,874,998
	Overhead recovery @ 22.10%		414,375
			2,289,373
	Limb 2 (margin) @ 12.75%		291,895
3	CCA costs		2,581,268
4	QRN Costs:-		
	Allocate 33.33% \$1,413,174.		471,058
5	Total (Gross)		3,052,326
6	Deduct Excesses;		
	12-15/11/2010	100,000	
	18-19/11/2010	100,000	
	29/11 - 3/12/2010	100,000	
	10-12/12/2010	100,000	
			-400,000
			2,652,326

all costs	A\$ GST excl)		
Item	Description		Totals
1	Contract Works Rectification:-		
	71-005 Earthworks	2,055,447	
	71-010 Drainage	691,820	
	71-015 Bridges	436,834	
	71-020 Misc Repairs	62,947	
	71-025 Access Roads	704,607	
	71-045 Other	1,592	
2	Direct Cost Total		3,953,247
	Overhead recovery @ 22.10%		873,668
			4,826,915
	Limb 2 (margin) @ 12.75%		615,432
3	CCA costs		5,442,346
4	Expediting Expenses (Extension 1C):-		
	Allow 50%		393,835
5	QRN Costs:-		
	Allocate 66.66% \$1,413,174.		942,116
6	Total (Gross)		6,778,297
7	Deduct Excesses;		
	19/12/2010	100,000	
	26/12-2/01/2011	100,000	
	31/01-3/02/2011	100,000	
	29/03-2/04/11	100,000	
	10-12/06/2011	100,000	
			-500,000
			6,278,297



Attachment D.2 July 2013 assessment of GAPE components of Aurizon Network's 2011-2012 claim



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	
GAPE (post-GFC)	\$851,048,506	complete	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





Figure L1: 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:

Development	2004 to	20	800	20	09	20	10	20)11	20	12	20	13	20	14
Phases	2007	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2	H1	H2
X50 Early Works		Investi	gation 8	Design											
X50 Project				0	onstruc	tion									
Electrification Early Works															
Electrification Project							Phase 1		_		_	Ph	ase 2		-
X75 Early Works															
X75 Project		2			Design		Constr	uction							-
X100 Early Works										1			-	1	
X100 Project									The state	Desig	n (Construe	ction		

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 budge	ts 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 postcommissioning 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 Expendature (sic) Claim Workbook	Claim value	\$107,489,205	\$28,278,584	\$13,887,255
Schedule 2 – IDC Summarry (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 Append	lix 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 Expendature (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 Infrastrcture (sic) Master Plan	5. 2009 CRIMP.pdf (sic)	Adobe PDF	October 2009





L.3.1 Requests for information

Engineering Assessment

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 prudency of the capital expenditure and hence the capital project. Accordingly the following RFIs relating to prudency 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 prudency 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 prudency 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 prudency 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 (Prudency 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 prudency 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 prudency 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 prudency 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 prudency of scope, standard and cost of the GAPE (post-GFC) project.

L.4 Assessment of prudency

In assessing the prudency 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 prudency 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 <u>need</u> to accommodate what was reasonably required to comply with Access Agreements;
- the project responded to a <u>need</u> to accommodate Reasonable Demand²⁰ and the <u>extent</u> 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.

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

Table L-9 : Project scope summary

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

Engineering Assessment

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 Ptv I td res	sponse to RFI 040 received 19 Apri	2013)
	(runzon notwork r ty Eta ros		12010)

Category	Stakeholder name	Key concern/need	Plan to address	Progress to date
- Mining Companies	 GAPE: Macarthur BHP BMA Anglo Coal Lake Vermont Rio Tinto Bowen Central NAPE: QCoal Sonoma Xstrata 	 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, Commercials and Deed of Agreement Delays, etc may impact on their operations 	 Regular contact at three working levels Detailed review and examination of Feasibility Study recommendations, seeking endorsement 	 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 accepte 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 <u>extent</u> 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 <u>extent</u> 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**.



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Table L-11 : Comparison between original scope and actual delivered scope (Aurizon Network Pty Ltd response to RFI 040 received 19 April 2013)

\$27.1mconstruction of the NMLocivil alliance estSeptember 2007•complete a feasibility review on electrification of the future upgradeocivil alliance est+\$63.5m•address associated land, environmental and cultural heritageoEIS for NMLSeptember 2008•identify the scope of works required to upgrade the existing Newlands system to match the capacity growthocultural heritage*Scope summarised in 2007 funding documents is listed below.oIndustry engage oo•civil engineering: oogeotechnical investigationsolegal reviews	
 signalling component of the project. telecommunications: 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: 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 greenent of Commercial Deeds underwriting the proposed X50 project with customers. Commercial framewoil Commercial framewoil design and core design and core	studies: ng and costs studies nce establishment procurement for the tion ML eritage studies ign for X50, X75 and engagement nent of the commercial ting arrangement ews alignment modelling: son Railways ide modelling nfirmations orks: design ks including clear and ull NML and ment to formation level okm, ("top 20") s Works on "top 20" tablishment and at Lancewood consisted of: s and shut down: of works on the NML rity works se down and security and Feasibility Studies: revisit of project back nciples at customer tent and consultation in ad cost development at option investigation bects of scope r presentations re option



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Project	Funding	Original scope	Actual scope
GAPE long lead items(pre-GFC) project	\$27.1m May 2008 + \$\$0.3m September 2008 = \$27.4m	 Procurement of long lead items such as: 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 	 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	The construction of early works for X75 project.	 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.

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SKM notes that the Authority pre-approved \$27m of pre GFC early works on the NML on 17 December 2007. However, SKM find s that Aurizon Network Pty Ltd has <u>not</u> 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 <u>after</u> identifying the customer group's need. Therefore, SKM finds that Aurizon Network Pty Ltd has <u>not</u> 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 <u>extent</u> 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 thought 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.



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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 loses 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-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)

Others	100
Mine problems	E84
Full stockpile (port)	14
Weather	18
Port problems ———	45
Not required/no product	45







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 <u>not</u> 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:



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 <u>not</u> 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 <u>not</u> 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 <u>not</u> 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 <u>prudent</u>.

L.4.2 Standard of the works

SKM's assessment of the prudency 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 prudency 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 <u>prudent</u>.

L.4.3 Project cost

SKM's assessment of the prudency 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



(I) 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).



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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 indicates, 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 <u>not</u> 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 <u>not</u> 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 <u>not</u> 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



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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 <u>not</u> 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 Apect3 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.

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	Signalling	\$95,784,876	9%
telecommunication	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%

Table L-12 : Summary of GAPE (post-GFC) project expenditure (from Table 33 in Schedule 3 report)



Engineering Assessment



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 <u>prudent</u>.

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 <u>prudent</u>.

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	
Appendix E. Blackwater feeder stations post commissioning assessment mini-report

E.1 Terms of reference

This report is confined in accordance with the terms of reference (see **Appendix A**) to SKM's assessment as to whether the post-commissioning work undertaken in 2012-13 was consistent with the scope of works approved by customers and then to assess the prudency of standard and cost.

This assessment is restricted to post commissioning works associated with the Feeder Stations (FS) and Track Section Cabins (TSC) at:

- Raglan
- Bluff
- Duaringa and
- Wycarbah

E.2 Project description

The project scope and the previous assessment of prudency for the 2011-2012 financial year can be found in **Attachment E.3** which contains the Blackwater Feeder Station assessment mini-report, extracted from the SKM report dated July 2013, entitled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment".

This assessment involves post-commissioning works associated with the already commissioned 4 new electrical FS, 7 new or upgraded TSCs and 3 new Auto Transformers (AT).

E.2.1 Location of the projects

The chainages of the FSs and the TSCs shown in Figure E-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 567.5 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 118.1 km and Edungalba TSC at 82.8 km; and
 - Bluff FS at 173.2 km and Umolo TSC at 153.1 km and Blackwater TSC at 186.4 km.





¹¹ From page 25 of document entitled "Schedule 3, System Expansion and Post Commissioning Claim Detail"

E.2.2 Objective of Aurizon Network's investment

The objective of Aurizon Network's investment which is the subject of this assessment was the postcommissioning completion works required for the Blackwater Feeder Stations required to strengthen the power supply along the Blackwater system. This investment is stated by Aurizon Network as being required to allow for the increased power demand of the new electric locomotives that were being progressively purchased to transport the increased coal tonnages along the Blackwater system.

E.2.3 Status of the projects

The FSs and associated TSCs were commissioned as shown in **Table E-1** below:

Location	Equipment	Date commissioned
Raglan ¹²	Feeder Station	24th January 2012
Raglan	Harmonic Filters	February 2012
Raglan	Power Transformers	February 2012
Wycarbah ¹³	Feeder Station	11th January 2012
Bluff ¹⁴	Feeder Station	30th April 2012
Duaringa ¹⁵	Feeder Station	20th February 2012

All of the FSs and TSCs were either inspected or visited by SKM on 26 and 27 February 2013. During the site inspections it was confirmed that all the sites were fully operational.

It is noted from the series of best value reports that only Duaringa had Power Link Queensland (PLQ) connection as of mid-July 2012.

All sites were at practical completion stage prior to the current financial year claim period of 1/7/2012 to 30/6/2013. However, the commissioning of remote controlled TSC's from the centralised SCADA system was undertaken in the claim period 1 July 2012 to 30 June 2013.

E.3 Capital expenditure

On 23 April 2009, the Authority pre-approved an 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 E-2**.

¹² from report entitled "Best Value Report , Raglan CS Raglan FS and Bajool and Mt Larcom"

¹³ From the report entitled "Best Value Report, Wycarbah FS Kabra TSC Westwood TSC Spring Creek AT Gracemere AT"

¹⁴ from the report entitled "Best Value Report, Bluff FS, Blackwater TSC and Umolo TSC"

¹⁵ from the report entitled "Best Value Report. Duaringa FS, Edungalba TSC and AT, Wallaroo TSC"

Table E-2: 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)	Schedule 1 2012/13 Capital Expenditure Claim Workbook - Total Project Expenditure to 30 June 2013 (excl. IDC)
Raglan	\$35,000,000	\$50,045,000	\$46,148,066	\$50,328,689
Bluff	\$45,500,000	\$38,758,000	\$37,868,953	\$39,688,032
Duaringa	\$47,500,000	\$42,308,000	\$41,533,430	\$43,431,530
Wycarbah	\$47,500,000	\$45,058,000	\$44,359,199	\$44,812,524

On page 26 of the Aurizon Network provided documentation entitled "System Expansion and Post Commissioning Claim Detail, 20/12/13 Capital Expenditure Submission" the following statement is made:

"In terms of prudency of scope, these projects were specifically identified in the 2006 and 2008 CRIMPs and have been endorsed by the Blackwater Customer Group and received regulatory scope pre-approved by the QCA in accordance with Section 3.1.1 of Schedule A of the Access Undertaking (see Attachment A)."

Please see **Attachment E.2** which contains copies of the Authority's regulatory pre-approval for the 2008 CRIMP.

E.4 Provided documentation

This assessment report is based on information provided by Aurizon Network as listed in Attachment E.1

E.4.1 Requests for information (RFI)

A register of all RFIs raised can be found in Appendix C.

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

- RFI 001 Page 6 of the Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission" dated December 2013 made reference to a Section 10 and states that "All documents referred to in this submission have been provided and are listed at Section 10". SKM noted that there was no Section 10 in that document and therefore requested a copy of the missing Section 10.
- RFI 002 Page 7 of The Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission" dated December 2013 stated that "the QCA was asked to review the submission in the context of the Blackwater Draft Amending Access Undertaking". SKM requested if Aurizon Network could be more specific and state the title and date of this document(s) and indicate where this document(s) may be located in the data provided.
- RFI 003 Page 30 of Aurizon Network provided document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" dated December 2013 made reference to a number of documents. SKM reviewed the data provided in the schedules and could not locate the following documents from the list:

- 1) Internal Funding submissions (x 14) for all four projects.
- 2) 2009 CRIMP Working Paper 4.5 Rational for Power System Upgrade in the Blackwater System February 2009.
- 3) Blackwater Power System Upgrade Final Project Brief Trackpower Alliance September 2009.

SKM requested that Aurizon Network forward the above 3 referenced sources of information to assist with this assessment of prudency.

• RFI 006 To assist SKM with the assessment of prudency for the Blackwater Feeders Stations SKM request that Aurizon Network provide additional information that supports the claim.

The type of information required should address each of the works itemised in the SAP Reports contained in Schedule 3 (file names A.02222.xls, A.02602.xls, A.02603.xls and A.02604.xls).

To assist in this process SKM provided items listed below as *examples* of information required to complete the assessment.

Information required relating to status of works (i.e. completed?, ongoing? dates?)

- In addition SKM needs to understand why there are claims for works such as "ECO tie in, testing and commissioning costs" when all sites were already at practical completion status and in practical use prior to the claim period?
- SKM does not understand why equipment procurement costs for switchgear, transformers, cabling works and so forth were accrued during this claim period when practical completion was achieved in the previous period.

Information required relating to **scope** of works (i.e. what was being done? why was this necessary?)

- 3) The costs claimed for signalling is not fully understood. SKM would assume that all new neutral sections would have been completed during the prior claim period leading up to practical completion. SKM needs to understand the scope of the signalling works, the business needs, certificates of completion/acceptance (as mentioned above).
- 4) SKM also notes a claim for services provided by Evans and Peck for this claim period. What were the services and was this competitively procured?

Information required relating to standard of works (i.e. quality? fit for purpose?)

5) Evidence of completion and acceptance only partly fulfils the prudency of standard test. To complete the prudency of standard assessment SKM also needs information that demonstrates that the works have not been over-designed. One way to determine this would be to provide copies of the as-built designs for each package. SKM request that Aurizon Network provide information that demonstrates that the works have not been overdesigned and is at an equivalent standard to similar infrastructure used.

Information required relating to costs of works

- 6) Aurizon Network state that post commissioning claims should, amongst other things, be read in conjunction with "details of the insurance claims as represented in this submission". SKM has not sighted any insurance claims details.
- 7) With regard to Alliance settlements, SKM does not know how these amounts were determined, derived or agreed.
- 8) Please note also the terms of reference requires that SKM assesses Aurizon Networks key contracts, tenders and related agreements with. Therefore, will Aurizon Network please provide these key documents for assessment if possible?

E.4.2 Adequacy of information provided

The completeness of information provided by Aurizon Network, including response to SKM's RFIs, relating to assessment of customer engagement activities and customer/authority approval of the Blackwater Feeder Station post-commissioning projects is summarised in **Table E-3** below.

Table E-3: Provision of customer / authority approval/engagement information

			Information provide	ed demonstrates	
SKM ref.	System	Project name	Project number	customer/authority approval	customer engagement
1	Blackwater	Raglan Feeder Station	A.02222	Yes	Yes
2		Bluff Feeder Station	A.02602	Yes	Yes
3		Duaringa Feeder Station	A.02603	Yes	Yes
4		Wycarbah Feeder Station	A.02604	Yes	Yes

The above assessment was based on the provision of Authority approval (see **Attachment E.2**), Aurizon Network provided final project reports and the assessment of prudency issued in July 2013.

The completeness of information provided by Aurizon Network relating to the assessment of status post commissioning projects is summarised in **Table E-4** below

Table E-4: Provision of information on status of Blackwater Feeder Station post-commissioning projects

				Information provid	ed demonstrates
SKM ref.	System	Project name	Project number	project was fully commissioned in 2012-2013	"useful and in use" proportion of project
1	Blackwater	Raglan Feeder Station	A.02222	No	Yes
2		Bluff Feeder Station	A.02602	No	Yes
3		Duaringa Feeder Station	A.02603	Yes ¹⁶	Yes
4		Wycarbah Feeder Station	A.02604	No	Yes

All feeder stations were in practical use prior to this claim period however the SCADA system that remotely monitors the overall system and also controls track isolations was first commissioned in this claim period.

¹⁶ Duaringa Feeder Station was considered not fully commissioned in the 2011-12 assessment report.

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of status of the post commissioning projects is summarised in **Table E-5** below.

Table E-5: Provision of information on scope of Blackwater Feeder Stations post-commissioning projects

					Informa	tion pro	ovided d	emonst	rates	
SKM ref.	System	Project name	Project number	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		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3		Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4		Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes	Yes	Yes	Yes

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of prudency of standard of the Blackwater Feeder Station post-commissioning projects is summarised in **Table E-6** below.

Table E-6 : Provision of information on standard of Blackwater Feeder Stations post-commissioning projects

				Inform	ation provide	ed demonstra	ates
SKM ref.	System	Project name	Project number	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		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes
3		Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes
4		Wycarbah Feeder Station	A.02604	Yes	Yes	Yes	Yes

The completeness of information provided by Aurizon Network, including responses to SKM's RFIs, relating to the assessment of prudency of cost of the Blackwater Feeder Station post-commissioning projects is summarised in **Table E-7** below.

Table E-7 : Provision of information on cost of Blackwater Feeder Station post-commissioning projects

		Informatio	n provided ir asse	nformation su ss …	ufficient to		
SKM ref.	System	Project name	Project number	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		Duaringa Feeder Station	A.02603	Yes	Yes	Yes	Yes
4		Bluff Feeder Station	A.02602	Yes	Yes	Yes	Yes

E.4.3 Assessment of documentation

The assessment of the information provided by Aurizon Network has been included in **Attachment E.1** to this mini-report. The assessments starts from the high level documentation provided and then progresses through the Schedule 3 information of the Blackwater Feeder Stations directory including the SAP financial reports and finally assess the RFI responses.

E.5 Assessment of prudency

In assessing the prudency 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.5.1 Project scope

The Authority's terms of reference regarding scope was to assess any scope deviation from that which was previously approved and agreed.

From page 26 of the Aurizon Network provided document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission") the scope for this 2012-2013 claim is summarised as:

2012/13 Post Commissioning Claim detail:

The project scope for each of the projects is summarised in the following table as well as the scope completed in the 2012/13 year and the subject of this post commissioning claim.

Project	Project Scope	2012/13 Scope
Raglan Feeder Station (A.02222)	 Construct a new feeder station at Raglan Construct 2 TSC's at Bajool and Mt Larcom 	 Final contractor Payments Tie in to the ECO systems Defects and Liability inspection costs Alliance payments
Bluff Feeder Station (A.02602)	 Construct a new feeder station at Wycarbah Construct 2 TSC's at Kabra and Westwood 	 Final payments to suppliers Final contractor payments Testing and commissioning costs Tie in to the ECO systems
Duaringa feeder Station (A.02603)	 Construct a new feeder station at Duaringa Construct 2 TSC's at Wallaroo and Edungalba 	 Final Alliance payments Final payments to suppliers Testing and commissioning costs
Wycarbah Feeder Station (A.02604)	 Construct a new feeder station at Bluff Construct 2 TSC's at Umolo and Blackwater 	 Final supplier payments Final contractor payments

In its review of the 2011/12 Capital Expenditure claimfor these four projects, the QCA appointed Engineer Sinclair Knight Mertz made the following comments around the prudency of scope

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 are 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 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.

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

The activities identified as being completed in the 2012/13 year are typical post commissioning activities and consistent to activities conducted post commissioning on the DBCT Feeder Station and Bolingbroke Feeder Station as approved by the QCA in prior post commissioning cost claims.

In support of this claim Aurizon has provided detailed cost reports from the SAP system that show expenditure against activities against assigned budgets for those activities. All costs incurred are within set internal budgets.

Laurens Hamman, Project Manager of these four projects is available to go through these costs in detail as required by the QCA and their appointed review team.

The above claims for costs associated with the scope of works covering final alliance, contractor and supplier payments, Electric Control Officer (ECO) tie in, testing and commissioning as well as defects and liabilities inspections are in SKM's view all contained within the original scope of deliverables for the following reasons:

- the claim for final payouts to the contractors for works completed and post their defects liability period is standard industry practice
- the final commissioning of Track Sectioning Cabinets and connectivity for remote control by the SCADA control centre system is consistent with all other traction power control in the CQCR and elsewhere and therefore in SKM's assessment should be accepted as prudent in terms of scope.

Discussion

SKM notes that all sites were commissioned by February 2013 and therefore some ECO tie in, testing and commissioning costs would have been expected of Bluff (commissioned July 2012) and Duaringa (commissioned January 2013). SKM raised an RFI to clarify why the ECO tie in, test and commissioning works claimed for Raglan and other sites occurred post their commissioning dates. Aurizon Network's response to RFI 006 confirmed that the commissioning works completed during the claim period were for connection to the SCADA system. This explanation has been accepted by SKM as being reasonable.

SKM also noted some "signalling" works that were completed during the claim period. SKM raised RFI 006 to seek a better understanding of the exact scope of these works. The response was that in reality the works were not signalling but connection works to the SCADA system.

In view of the prudency of scope granted for the 2011-2012 claim, all matters re scope of works delivered during the 2012-2013 period appear well aligned with previous years deliverables. However, a number of areas requiring further investigation were identified by careful analysis of Aurizon Network's SAP data. SKM has chosen to collate these matters under the prudency of standard part of this assessment below.

Conclusion

SKM is of the opinion that, given the 2011-2012 scope was assessed as prudent and following the response to RFIs raised, the scope delivery for this 2012-2013 claim is contained within the original agreed scope and therefore the prudency assessment of scope should be extended for this claim period.

E.5.2 Standard of the works

This assessment involved assessing whether the works completed during 2012-2013 are of a reasonable standard to meet the requirements of the scope of works required to meet the need of the regulated service provision and are not overdesigned such that they are beyond the requirements of the scope.

In assessing the prudency of the standard of works, SKM 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 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 February 2013, as part of the assessment of prudency of standard of 2011-12 claim, SKM conducted site visits and found all sites were fully operational. During the visit SKM specialists witnessed the standard of some of the 2012-2013 post-commissioning activities. SKM found that the standard of works completed were prudent.

In SKM's assessment the works were deemed to have been contained within the requirements of the scope and therefore they fulfil criterion a) above.

From SKM's evaluation, SKM initially understood that there were designs or works delivered that may have deviated from the objectives of the works being delivered during the 2011-2012 period. The items of concern were raised in RFI 006 as possible candidates for over design and are listed below in **Table E-8**.

SKM subsequently received a series of responses to RFI 006 which assisted SKM to further assess the standard and scope. As a result SKM concluded that the works were not overdesigned.

Criterion c) above 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 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 had reasonable grounds for the design of the infrastructure and thus fulfils the requirement of Clause 3.3.3(b)(ii).

SKM notes that the 2012-2013 claim contains costs for signalling and telecommunications works completed as part of the FS and TSC delivery. Initially, SKM was not able to make an opinion if the standard of associated signalling and telecommunications works was prudent because no scope or as-built signalling and telecommunications information had been provided by Aurizon Network. RFI 006 requested information that would assist in making a determination in this regard. In Aurizon Network's responses to RFI006 it was advised that the signalling works were in fact not signalling but telecommunications connection works to the SCADA system. In addition all necessary test and acceptance certificates were provided in response to RFI 006. SKM found that the responses received in RFI006 have adequately addressed the above mentioned concerns.

Claimed activity from SAP accounts	Raglan – amount claimed and commentary			
System Study Services	Claimed amount (ex IDC)	Comment		
System Study	62,590	SKM has no information re this study.		
Telecommunications Services	Claimed amount (ex IDC)	Comment		
PSC Telecommunication works	308,108.16	SKM has not sighted any scope definition for these works, as built information or systems acceptance certificates. RFI006 response states that the signalling works above were used for telecommunications.		

Table E-8: A list of deliverables not adequately documented in the provision of information (prior to RFI006 responses)

Claimed activity from SAP accounts	Bluff – amount claimed and commentary			
System Study Services	Claimed amount (ex IDC)	Comment		
System Model Development	64,730	SKM notes that Bluff was commissioned in a previous period. Why was system modelling services provided in 2012/13?		
Independant Estimator Services	Claimed amount (ex IDC)	Comment		
Independant Estimator/Auditor	36,971.9	SKM is not aware if this service was competitively tendered. SKM has not sighted invoices		

Claimed activity from SAP accounts	Duaringa – amount claimed and commentary			
System Study Services	Claimed amount (ex IDC)	Comment		
System Model Development	64,255	SKM notes that Duaringa was commissioned in a previous claim period. Why was system modelling services		

Claimed activity from SAP accounts	Duaringa – amount claimed and commentary		
		provided in 2012/13? RFI 006 requested information re this and all SAP items.	
Independent Estimator Services	Claimed amount (ex IDC)	Comment	
Independent Estimator/Auditor	31,021.9	SKM is not aware if this service was competitively tendered. SKM has not sighted invoices.	
Capacity Modelling	19,803	SKM does not understand what is being claimed	

Claimed activity from SAP accounts	Wycarbah – amount claimed and commentary		
System Study Services	Claimed amount (ex IDC)	Comment	
System Model Development		As above	
Independant Estimator Services	Claimed amount (ex IDC)	Comment	
Independant Estimator/Auditor		As above	
Corporate Charges Services	Claimed amount (ex IDC)	Comment	
Corporate Charges		As above. SKM does not know what this covers.	

Conclusion

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

- d) were contained within the requirements of the scope;
- e) 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
- f) have been designed by Aurizon Network with reasonable grounds.

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

E.5.3 Project cost

SKM's assessment of the prudency of costs involved assessing whether the costs are reasonable for the scope and standard of work undertaken is detailed below.

From page 26 of the document entitle "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" the following was stated:

Aurizon chose an alliance approach for the design and construction of these four projects, with Aurizon a member of the TrackPower Alliance, as well as the Thiess United Group, AECOM, and Aurecon.

The Alliance approach enabled significant flexibility and innovation with the design and construction phases and a better understanding of the design intent by the construction team, resulting in a more constructible design. The assessment of scope involved a rigorous value engineering process with consideration of many different design, location and equipment options.

Prudency of costs involved assessing whether the costs are reasonable for the scope and the standard of work done. Section 7.3 (p33) of this report identifies many examples of innovation, avoided costs and benefits to QRN and its customers from the Alliance model, which enabled the development and implementation of collaborative and innovative options and solutions.

In its 2011/12 Capital Expenditure claim Aurizon sought a total of \$169.9 million in costs against these projects, the QCA, in its Final Decision, accepted these costs, delivered scope and as built standard as prudent.

In the 2012/13 year Aurizon is seeking a total of \$8.4 million in post commissioning costs across these four projects as per the following table

Project	2011/12 Approved CAPEX (Inc IDC)	CAPEX	IDC	2012/13 Expenditure
Raglan Feeder Station (A.02222)	46,148,066	4,180,623	33,353	4,213,977
Bluff Feeder Station (A.02602)	37,868,953	1,799,079	28,288	1,827,367
Duaringa feeder Station (A.02603)	41,533,430	1,898,100	25,609	1,923,709
Wycarbah Feeder Station (A.02604)	44,359,199	453,325	-773	452,552
TOTAL	169,909,648	8,331,127	86,477	8,417,604

The 2012/13 post commissioning costs equate to 4.7% of total expenditure against these four projects to 30 June 2013. Total costs to 30 June 2013 against approved budgets are detailed in the following table

Project	Approved Budget	Cost to 30 June 2013	% of Spend against Budget
Raglan Feeder Station (A.02222)	54,700,000	50,328,689	92.0%
Bluff Feeder Station (A.02602)	44,180,000	39,668,032	89.8%
Duaringa feeder Station (A.02603)	47,680,000	43,431,530	91.9%
Wycarbah Feeder Station (A.02604)	48,340,000	44,812,524	92.7%
TOTAL	194,900,000	178,240,775	91.4%

Discussion

From the assessment report extract in **Attachment E.1.4** benchmarked data from previous works of a similar scope had been made available. Of particular interest were the details presented in **Table E-9** below, provided by Aurizon Network, comparing the Raglan FS costs to two earlier FS projects at Bolingbroke and Dalrymple Bay. These previous projects were approved by the Authority and provide a good benchmark for the works being assessed in this claim period.

Table E-9: Comparison of Bolingbroke FS (2009), Dalrymple Bay FS (2010) and Raglan FS (2012)

	Boling	oroke	DBCT	FS	Ragla	n	Average
Description	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		

The total costs to date are contained within the above benchmarked data as well as the approved budgetary amounts.

An assessment of the claimed amounts and the SAP reports found no discrepancies.

From the SKM report dated July 2013 entitled "Aurizon Network, Capital Expenditure 2011-12, Engineering Assessment", the following was stated"

"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]".

and

"The forecasted value of the post commissioning activities on the four feeder stations has 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."

SKM note that the 2012-2013 claim was indeed less than 5% of the total capital expenditure.

In consideration of Aurizon Network's responses to RFI006 in the above assessment of the prudency of standard, the related cost items can be accepted into the RAB.

Conclusion

The project costs are considered to be prudent.

E.6 Summary

Following the detailed review of the Blackwater Feeder Stations 2012-2013 post commissioning works, SKM finds that the works are considered prudent.

The outcomes of this prudency assessment are summarised in Table E-10.

Table E-10: Blackwater power systems projects – review summary

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

Attachment E.1 Detailed assessment of Blackwater Feeder Stations postcommissioning projects information

Attachment E.1.1 Information provided by Aurizon Network for Blackwater Feeder Stations

A register of the information that was assessed as input to this report is shown below in **Table E1-1** and **Table E1-2**.

Table E1-1 : Information sources – Blackwater Feeder Stations post-commissioning works specific

Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	Schedule 1 – claim Summary Work Book	Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission	201213 Claim porject (sic) list - Dec 2013.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX	Schedule 3 – System Expansion and Post Commissioning Claim Detail 2012/13 Capital Expenditure Submission	Schedule 3 - New Expansions & Post comm CAPEX.doc	December 2013
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	-	A.02222.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	-	A.02602.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	-	A.02603.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	-	A.02604.xls	-
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Regulatory pre-approval for Coal Master Plan 2008 capacity expansion projects	Attachment A QCA Approval of BS Projects.pdf	23 April 2009
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Authority pre-approval pf the scope of QR's capital expenditure 2006 - 2009	Attachment A QCA Approval of RAG Project.pdf	21 February 2007
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Best Value Report, Bluff FS, Blackwater TSC and Umolo TSC	Attachment D Bluff Best Value Report Final 15 June 2012.pdf	15 June 2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Best Value Report. Duaringa FS, Edungalba TSC and AT, Wallaroo TSC	Attachment D Duaringa Best Value Report final 12 June 2012.pdf	12 June 2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Best Value Report , Raglan CS Raglan FS and Bajool and Mt Larcom TSCs	Attachment D Raglan Best Value Report Final 2 February 2012.pdf	2 February 2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Best Value Report, Wycarbah FS Kabra TSC Westwood TSC Spring Creek AT Gracemere AT	Attachment D Wycarbah Best Value Report Final 21 March 2012.pdf	21 March 2012
Aurizon	Schedule 3 - Expansion and	Raglan CS, Raglan FS and Bajool and Mt	Attachment K Final Project Brief -	10 February

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Owner	Referenced in	Document name	Electronic file name	Version and date
Network	Post Comm CAPEX - Blackwater Feeder Stations	Larcom TSCs, Final Project Brief, Power Systems	Raglan v8.pdf	2010
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Blackwater Power Systems Upgrade Projects – Options Analysis	Attachment L 2.2 WYC-GEN-DR- 00001 Blackwater Options Report v2.pdf	Rev 2 7/12/2009
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Bluff Feeder Station Project, Final Project Report	Attachment N Bluff Final Project Report_rev C.doc	Rev C 18/4/2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Duaringa Feeder Station Project, Final Project Report	Attachment N Duaringa Final Project Report_rev B.pdf	Rev B 9 March 2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Wycarbah Feeder Station Project, Final Project Report.	Attachment N Wycarbah Final Project Report_revB.doc	Rev B 6/2/2012
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	Rail Overhead Construction, Practical Completion Certificate, Raglan Feeder Station.	Raglan FS OHLE Commissioning Certificate.pdf	31 October 2011
Aurizon Network	Schedule 3 - Expansion and Post Comm CAPEX - Blackwater Feeder Stations	(Edge Advantage Pty Ltd) Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/12	Regulatory Asset Base Submission to QCA Final 30 October 2012.doc	30 October 2012
Aurizon Network	RFI03 response	RFI No.3 Aurizon Network Response	SKM RFI No3 - Aurizon Response.pdf	22/01/14
Aurizon Network	RFI03 response	Minor Funding Request - Bluff	081104 Bluff Feeder Station Seed Funding \$505k SIGNED.pdf	20/06/2008
Aurizon Network	RFI03 response	Minor Funding Request - Duaringa	081104 Duaringa Feeder Station Seed Funding \$505k SIGNED.pdf	20/06/2008
Aurizon Network	RFI03 response	Minor Funding Request - Wycarbah	081104 Wycarbah Feeder Station Seed Funding \$505k SIGNED.pdf	20/06/2008
Aurizon Network	RFI03 response	Minor Funding Request - Bluff	081111 Bluff Feeder Station Seed Funding additional \$495k SIGNED.pdf	November 2008
Aurizon Network	RFI03 response	Minor Funding Request - Duaringa	081119 Duaringa Feeder Station Seed Funding additional \$495k SIGNED.pdf	November 2008
Aurizon Network	RFI03 response	Stage Gate Process: Capital Expenditure, Feasibility Investment Approval Request, Raglan Feeder Station.	090921 Feasibility IAR - Raglan (Summary Detail) FINAL IAT.pdf	21 September 2009
Aurizon Network	RFI03 response	Minor Funding Request - Wycarbah	081119 Wycarbah Feeder Station Seed Funding additional \$495k SIGNED.pdf	November 2008
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Bluff	091110 A02602 - Full Project approval docs.pdf	6 November 2009

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Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Duaringa	091110 A02603 - Full Project approval docs.pdf	6 November 2009
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Wycarbah	091110 A02604 - Full Project approval docs.pdf	6 November 2009
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Bluff	100524 - Bluff FS Funding Increase.pdf	19 May 2010
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Duaringa	100524 - Duaringa FS Funding Increase \$3m.pdf	19 May 2010
Aurizon Network	RFI03 response	Memorandum. Notice of Revised Investment Project Approval, Wycarbah	100524 - Wycarbah FS Funding Increase \$2.1m.pdf	19 May 2010
Aurizon Network	RFI03 response	Minor Capital Project Funding Request - Raglan	080905 Raglan Feeder Station - Seed Funding \$500k SIGNED.pdf	16/02/2007
Aurizon Network	RFI03 response	Minor Capital Project Funding Request - Raglan	080923 Raglan Feeder Station - Seed Funding Increase to \$1m SIGNED.pdf	September 2008
Aurizon Network	RFI03 response	Memorandum, Power Systems Proposal	080918 Raglan Feeder Station - Seed funding Increase to \$1m (memo re delivery by TrackStar).pdf	25 September 2007
Aurizon Network	RFI03 response	Memorandum, Raglan Substation: Seed Funding Increase	080918 Raglan Feeder Station - Seed Funding Increase to \$1m (attachment).pdf	18/08/2008
Aurizon Network	RFI03 response	Rationale for Power Systems Upgrade in the Blackwater System, A CRIMP working paper	WP 4 5 Rationale for Power Systems Upgrade in the Blackwater System V3 20 Feb 09.pdf	February 2009
Aurizon Network	RFI03 response	Decision Minute, Raglan Feeder Station	091019 ISO9-20.1 Raglan Feeder Station (Signed Decision Minute).pdf	15/10/2009
Aurizon Network	RFI03 response	Blackwater Power System upgrade, Final Project Brief, Power Systems.	Final Project Brief - Blackwater Power System Upgrade - Rev 3 - 25 Sep 09.pdf	25 September 2009
Aurizon Network	RFI06 response	Request for Information: Blackwater Feeder Stations Proof of Completion and Scope Understanding.	SKM RFI No.6 Aurizon Response.pdf	14/2/2014
Aurizon Network	RFI06 response	-	Bajool IMG_0032.jpeg	14/2/2014
Aurizon Network	RFI06 response	-	Bajool IMG_0034.jpeg	14/2/2014
Aurizon Network	RFI06 response	Bajool, N 603.538km, Overall Conduit Layout.	Bajool PSC As Built data sheets N603.538km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Bajool, N 603.538km, Power Supply Cubicle, Conduit Layout.	Bajool PSC As Built data sheets N603.538km.pdf	Version B 5/12/12

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Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	RFI06 response	Bajool, N 603.538km, Power Supply Cubicle, Earth Grid Layout.	Bajool PSC As Built data sheets N603.538km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala & Bajool, Typical Earth Grid Connection Details	Bajool PSC As Built data sheets N603.538km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala & Bajool, Power Supply Cubicle, Locality Plan & Drawing List.	Bajool PSC As Built data sheets N603.538km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala North, N 577.750 km, Overall Conduit Layout.	Epala North PSC As Built data sheets N577.750km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala North, N 577.750 km, Power Supply Cubicle, Conduit Layout.	Epala North PSC As Built data sheets N577.750km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala North, N 577.750 km, Power Supply Cubicle, Earth Grid Layout.	Epala North PSC As Built data sheets N577.750km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala North, N 577.750 km, Typical Earth Grid Connection Details.	Epala North PSC As Built data sheets N577.750km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala North, N 577.750 km, Power Supply Cubicle, Locality Plan & Drawing List.	Epala North PSC As Built data sheets N577.750km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	-	Epala Nth IMG_0001.jpeg	14/2/2014
Aurizon Network	RFI06 response	-	Epala Nth IMG_0006.jpeg	14/2/2014
Aurizon Network	RFI06 response	Epala South, N 575.815 km, Overall Conduit Layout.	Epala South PSC As Built data sheets N575.815km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala South, N 575.815 km, PSC, Conduit Layout.	Epala South PSC As Built data sheets N575.815km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala South, N 575.815 km, Power Supply Cubicle, Earth Grid Layout	Epala South PSC As Built data sheets N575.815km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala & Bajool, Typical Earth Grid Connection Details.	Epala South PSC As Built data sheets N575.815km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	Epala & Bajool, Power Supply Cubicle, Locality Plan & Drawing List.	Epala South PSC As Built data sheets N575.815km.pdf	Version B 5/12/12
Aurizon Network	RFI06 response	-	Epala Sth IMG_0016	14/2/2014
Aurizon Network	RFI06 response	Certificate of Commissioning Completion – Bluff Feeder Station	Final Completion Certificate Bluff.pdf	1/5/2012
Aurizon Network	RFI06 response	Certificate of Commissioning Completion - Duaringa Feeder Station	Final Completion Certificate Duaringa.pdf	6/2/2012
Aurizon Network	RFI06 response	Memo: Raglan Project - Practical Completion Notification (PCN) Bajool TSC Site	Bajool TSC signed - PCN full document.pdf	12/9/2011
Aurizon	RFI06 response	Memo: Raglan Project - Practical Completion Notification (PCN) Mt Larcom	Mt Larcom TSC signed - full	12/9/2011

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Owner	Referenced in	Document name	Electronic file name	Version and date
Network		TSC Site	document.pdf	
Aurizon Network	RFI06 response	Memo: Raglan Project - Practical Completion Notification (PCN) Raglan CS17 Site	Rag CS QRN PS signed doc P1- 3 img-2070647-0001.pdf	3/2/2012
Aurizon Network	RFI06 response	Certificate of Commissioning Completion – Wycarbah Feeder Station	Final Completion Certificate Wycarbah.pdf	11/1/2012
Aurizon Network	RFI06 response	ABB Aux Supply	AST ABB name plate details.pdf	13/12/2007
Aurizon Network	RFI06 response	Bajool PSC Hut, Site Program	Bajool Program.pdf	18/3 to 26/42013
Aurizon Network	RFI06 response	Electrical Test Report Form	Bajool Test Report Form.pdf	20/5/2013
Aurizon Network	RFI06 response	-	Epala Sth IMG_0015.img	14/2/2014
Aurizon Network	RFI06 response	-	Epala Sth IMG_0016.img	14/2/2014
Aurizon Network	RFI06 response	Comments Register	PSC Comments Register Rev 1.pdf	8/6/2012
Aurizon Network	RFI06 response	Certificate of Electrical Safety For Non- Prescribed Electrical Installation Work & Electrical Test Results	QR1 test sheets 1 of 2.pdf	25/5/2012 and 29/5/2012
Aurizon Network	RFI06 response	F.A.T18 Certificate and Panel Board Routine Test Sheets and "as built wiring diagrams.	QR1 Test sheets 2 of 2.pdf	29/5/2012
Aurizon Network	RFI06 response	Certificate of Commissioning Completion – Raglan Motorised Isolator Upgrade	Raglan MI CCC.pdf	11/10/2013

Table E1-2: Information sources – general

Owner	Referenced in	Document name	Electronic file name	Version and date
The Authority	Appendix A of this report	Terms of Reference, Assessment of Capital Expenditure, Engineering Assessment of Five Post-Commissioning Projects in Aurizon Network's 2012-13 Capital Expenditure.	Terms of Reference Assessment-Post Commissioning Projects(641680_1).pdf	1 October 2013
Aurizon Network	2012-13 Capex - AN	2012/13 Capital Expenditure, Claim Introduction Presentation	QCA Presentation - December 2013 Draft 1.ppt	Draft 1, December 2013
Aurizon Network	2012-13 Capex - AN	2012/13 Capital Expenditure Submission	201213 CAPEX Claim Report.doc	December 2013
Aurizon Network	Schedule 1 - Claim Summary Workbook	Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission	201213 Claim porject (sic) list - Dec 2013.xls	-

¹⁷ CS is a connection station

¹⁸ FAT is a Factory Acceptance Test

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Owner	Referenced in	Document name	Electronic file name	Version and date
Aurizon Network	Schedule 2 - IDC Workbook	IDC Model - 2012/13 CAPEX Claim	IDC Model Workbook 1213 capex Dec 13.xls	Oct-13
Aurizon Network	RFI01 response	RFI No.1 Aurizon Network Response	SKM RFI No1 - Aurizon Response.pdf	22/01/14
Aurizon Network	RFI02 response	RFI No.2 Aurizon Network Response	SKM RFI No2 - Aurizon Response.pdf	22/01/14
Aurizon Network	RFI02 response	File Ref: 632515, Final approval: Aurizon Network's 2011-12 capital expenditure.	RFI No2 - Support Doc - QCA Final Dec 201112 CAPEX.pdf	10 October 2013.
The Authority	Appendix F of this report	Appendix D of "Aurizon Network Pty Ltd, Capital Expenditure 2011-12,Engineering Assessment"	QB10448_QCA QR Network's Capital Expenditure Review – Appendix D _RevF - 29-07- 2013.pdf	July 2013

Attachment E.1.2 Review of information provided by Aurizon Network

This section provides an assessment and commentary of the documentation provided by Aurizon Network. The assessment commences with the high level documentation and then progresses into the more detailed information provided, culminating in the SAP analysis and finally an assessment of the relevant RFI response is given.

Attachment.E.1.2.1 Assessment of 2012-2013 Capital Expenditure, Claim Introduction Presentation

In the Aurizon Network provided document entitled "2012/13 Capital Expenditure, Claim Introduction Presentation", slide 5 as well as from page 9 of the Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission, December 2013" contains amounts claimed as shown in Table D.2 below.

The document entitled "Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission" contains the *definitive claim amounts* used by SKM in this assessment. The amount of \$8,331,127 shown in **Table E2-1** below is the capital expenditure that SKM has assessed for inclusion in the RAB i.e. for the four Blackwater Feeder stations only.

Table E2-1: List of amounts claimed that contain post commissioning activities for Blackwater Feeder Stations

Ref	Type of Expenditure	Number of Projects	Amount claimed
Blackwater	General Expansion (inc Post Commissioning values)	5	~\$8,418,000
Schedule 1 - 2012/13 CAPEX Claim	Blackwater Feeder Stations	4	\$8,331,127

The Aurizon Network document entitled "Schedule 1 - 2012/13 CAPEX Claim – Pojects (sic) Claimed in Submission" and page 18 of the document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" submitted the claimed amounts as shown below in **Table E2-2**.

Table E2-2: Claim amounts

Feeder Station and TSCs	Amount claimed (excl. IDC)	
	Schedule 1 - 2012/13 CAPEX Claim	Schedule 3 - Claim Detail, 2012/13 Capital Expenditure Submission, page 18
Raglan	\$4,180,623	~\$4,109,000
Bluff	\$1,799,079	\$1,799,000
Duaringa	\$1,898,100	~\$1,898,000
Wycarbah	\$453,325	~\$452,000
Total	\$8,331,127	~8,258,00

As can be seen from **Table E2-2** there exist some discrepancies in the reported figures. SKM has assessed the figures associated with Schedule 1 only as being the definitive claim amount and not any amounts from any other sources.

The Coppabella Ingsdon Duplication, whilst referenced in the document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission", is not within the scope of the SKM terms of reference and therefore was not assessed.

Attachment.E.1.2.2 Assessment of 2012/13 Capital Expenditure Submission, December 2013

The Aurizon Network provided document entitled "2012/13 Capital Expenditure Submission, December 2013" is the overarching claim document that summarises all projects and activities for the claim period, hereunder the Post Commissioning Works for the Blackwater Feeder Stations. Observations from that document have been captured in this section of this report.

Page 5

Page 5 makes reference to a Section 9 which "provides a review of the methodology applied in calculating the Interest During Construction (IDC) element of the claim". SKM notes that there is no Section 9 in this document. SKM did not raise an RFI for this information as the checking of IDC's was outside the scope of this assessment.

Page 6 it is stated that:

- "All numbers are expressed as being inclusive of IDC"
- "References to Aurizon Network's Undertaking are to QR Network's Access Undertaking effective 1 October 2010"
- "All documents referred to in this submission have been provided and are listed at Section 10".

SKM noted that there was no Section 10 in this document. SKM raised RFI001 on 17/01/2014 seeking this missing information.

Page 7

Page 7 stated that "the QCA was asked to review the submission in the context of the Blackwater Draft Amending Access Undertaking". SKM raised RFI002 on 17/01/2014 and requested that Aurizon Network be more specific regarding the exact title, date and location of this document.

Page 11 it was stated that:

"Aurizon Network's prudency of scope for the following 2012/13 capital expenditure projects follows from Customer pre-approval of scope and satisfaction of the QCA's evaluation of the Customer voting process in prior years in accordance with Clause 3.2.2(f):

- Grantleigh to Tunnel Duplication
- Coppabella to Ingsdon Duplication
- Bluff Feeder Station
- Duaringa Feeder Station
- Wycarbah Feeder Station
- Raglan Feeder Station
- Coppabella Grade Easing
- Wotonga Angle & Duplication
- Dunsmure Passing Loop

These Customer votes follow Aurizon Network's publication of a Coal Rail Infrastructure Master Plan (CRIMP) which includes the scope of the relevant project."

On page 11 it is stated in regards to prudency of cost that:

"Aurizon Network can demonstrate, in accordance with Clause 3.3.4, that the costs associated with projects commissioned and presented to the QCA for acceptance are efficient. This is based on the following factors impacting the cost build-up:

- The use of external contractors sourced through a range of procurement strategies including open tender and alliances;
- External cost benchmarks for major components such as ballast, rail, sleepers and civil construction;
- Consistency with Aurizon Network's internal investment arrangements; and
- Compliance with Aurizon Network's Project Management Manual.

In this regard, Aurizon Network has provided Project Plans detailing the cost build-ups for each project, internal funding submissions and Project Completion Reports (where available) outlining budget reconciliations and lessons learnt from project outcomes."

SKM has assessed each post commissioning project submitted for inclusion into the RAB and has sought evidence of, amongst other things, for the above information. RFI006 refers.

Page 12

With reference to prudency of standard, SKM notes that on page 12 it is stated that:

"In providing assurance that standards specified were implemented, Aurizon Network has included signed Project Commissioning Certificates (or alike) and Project Completion Reports where these are available." SKM makes the observation that no completion reports or commissioning certificates for the works in question were provided. RFI006 refers.

SKM makes the observation that Authority's terms of reference document entitled "Terms of Reference, Assessment of Capital Expenditure, Engineering Assessment of Five Post-Commissioning Projects in Aurizon Network's 2012-13 Capital Expenditure", contained in **Appendix A**, requires that:

"The consultant will assess the standard of the works commissioned in 2012-13 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 prudency of the standard of works, the consultant must have regard to whether:

- 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
- in all other cases, that Aurizon 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 the 2010 undertaking."

Whilst Project Completion and Commissioning Certificates do provide evidence of completion, SKM holds the view that this in itself may not necessarily indicate prudency of standard.

Page 12 & 13 the following is stated:

"For all projects, the following documents, where accessible, are available in Schedules 3, 4 and 5.

- A summary sheet detailing the degree to which each project has met the criteria set out in the Undertaking;
- Aurizon Network's approved funding claim;
- The Project Plan;
- Where possible, the signed Project Commissioning Certificates and Project Completion Report;
- Any other relevant supporting documentation; and
- Reports run from the SAP system detailing costs against assigned budgets within individual projects.

Additional information for individual projects is available on request during its review of the claim. Project Managers, Project Designers and other relevant staff will also be available for direct interviews."

SKM has assessed each post commissioning project submitted for inclusion into the RAB and has sought evidence of, amongst other things, the above information. RFI006 refers.

SKM received responses to RFI006 which adequately addressed the above mentioned concerns.

Page 13 states that the Capital Expenditure Submission is "accompanied with an External Audit Report that confirms that the claim has been prepared without known material error. The Independent Audit Report as prepared by Ernst & Young has been provided to the QCA."

SKM notes this assertion, however that report only relates to the GAPE post commissioning works and appears to have been charged (payed for) by the Blackwater Feeder Station post commissioning projects. SKM assumes this is an error and that Aurizon Network will correct this part of the claim.

SKM notes that the Ernst and Young report was not provided and would only be deemed relevant to this assessment if any such audit report does not pre-date actual works done during the claim period. No RFI was raised by SKM for such Audit reports.

Page 14

Page 14 of this report references "the Investment Framework Manual".

SKM is of the view that any referenced material should in principal be provided as part of the submission. SKM did not raise an RFI requesting this information.

Page 21

Page 21 of the reports contains a tabulation of all post-commissioning projects.

System / Type of Expenditure	Number of Projects
	 Broadlea Mallawa Wotonga Duplication
Projects with PostCommissioning	 Coppabella Ingsdon Duplication
Values	 Blackwater Feeder Stations (x4)
	GAPE
Projects with Regulatory Pre-Approval of	Wotonga Angle
	Coppabella Angle & Grade Easing
Scope	Dunsmure Passing Loop
New projects with no regulatory pre approval of scope	Millennium Balloon Loop Extension

This assessment covers the Blackwater Feeder Stations only. Appendix C contains an assessment of the GAPE post-commissioning claim. There were no other assessments completed by SKM.

With regards to customer acceptance SKM notes the following caveat from page 21 that:

"Customer approval process in accordance with Clause 3.2.2. Paragraph 3.2.2(f) states that, Customer acceptance of the scope of a capital expenditure project will be deemed to have been received if at least 60% of the Customer Group (as assessed by weighting Customers in accordance with their Reference Tonnes) accepts the scope of the proposed capital expansion projects."

Page 23

Page 23 made reference to Aurizon Network internal standards (CETS) presented in 10 modules. These modules were provided to the Authority as Attachment G to the 2008/09 claim. SKM makes the observation that these standards were not provided as input to this assessment.

Page 24

Page 24 defines the purpose of the commissioning certificates as follows:

"Commissioning Certificates for major infrastructure represents a declaration that the rail, supporting civil works, signalling and electrical overhead (Blackwater and Goonyella only) have been constructed to a standard that provides that the asset is fit for use and meets Aurizon Network's construction and safety standards"

SKM agrees and does not dispute the intent of the certificates but the requirements of prudency of standard in the context of the Authority's requirements are different to that of the above. For example the issue of "over engineering" may not necessarily be addressed through certification alone because over engineered infrastructure may well be fit for use and meet safety standards and therefore be formally accepted into operation

Page 26 stated as follows:

"In the absence of an approved Procurement Policy, Aurizon Network has provided information where possible on the procurement strategies for specific projects. This includes tender information, alliance agreements and the identification of works completed as part of an MOU."

SKM raised RFI006 seeking information showing evidence for this sort of information.

From page 26 of the Aurizon Network provided document entitled "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission") the scope for this 2012/2013 claim is summarised as:

2012/13 Post Commissioning Claim detail:

The project scope for each of the projects is summarised in the following table as well as the scope completed in the 2012/13 year and the subject of this post commissioning claim.

Project	Project Scope	2012/13 Scope
Raglan Feeder Station (A.02222)	 Construct a new feeder station at Raglan Construct 2 TSC's at Bajool and Mt Larcom 	 Final contractor Payments Tie in to the ECO systems Defects and Liability inspection costs Alliance payments
Bluff Feeder Station (A.02602)	 Construct a new feeder station at Wycarbah Construct 2 TSC's at Kabra and Westwood 	 Final payments to suppliers Final contractor payments Testing and commissioning costs Tie in to the ECO systems
Duaringa feeder Station (A.02603)	 Construct a new feeder station at Duaringa Construct 2 TSC's at Wallaroo and Edungalba 	 Final Alliance payments Final payments to suppliers Testing and commissioning costs
Wycarbah Feeder Station (A.02604)	 Construct a new feeder station at Bluff Construct 2 TSC's at Umolo and Blackwater 	 Final supplier payments Final contractor payments

In its review of the 2011/12 Capital Expenditure claimfor these four projects, the QCA appointed Engineer Sinclair Knight Mertz made the following comments around the prudency of scope

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 are 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 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.

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

The activities identified as being completed in the 2012/13 year are typical post commissioning activities and consistent to activities conducted post commissioning on the DBCT Feeder Station and Bolingbroke Feeder Station as approved by the QCA in prior post commissioning cost claims.

In support of this claim Aurizon has provided detailed cost reports from the SAP system that show expenditure against activities against assigned budgets for those activities. All costs incurred are within set internal budgets.

Laurens Hamman, Project Manager of these four projects is available to go through these costs in detail as required by the QCA and their appointed review team.

The above claims for costs associated with the scope of works covering final alliance, contractor and supplier payments, ECO tie in, testing and commissioning as well as defects and liabilities inspections are in SKM's view reasonable and what would generally be expected.

Page 30

From page 30 of "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission" it is stated that:

"This post commissioning claim should be read in conjunction with the 011/12 Capital Expenditure claim submission provided for these projects and with the subsequent material provided to the QCA in the review period.

To assist Aurizon Network has again provided the following documents in electronic format:

- Regulatory Asset Base Submission to the QCA for Blackwater Power Projects Completed during 2011/12 – Edge Advantage – October 2012 (SIGHTED)
- Internal Funding submissions (x 14) for all four projects (??? where are these??)
- 2006 CRIMP Approval Letter QCA 21 February 2007 (SIGHTED)
- 2008 CRIMP Approval Letter QCA 23 April 2009 (SIGHTED)
- 2009 CRIMP Working Paper 4.5 Rational for Power System Upgrade in the Blackwater System February 2009 (?? Which ones are these ??)
- Blackwater Power System Upgrade Final Project Brief Trackpower Alliance September 2009 (?? Where is this??)
- Raglan CS, Raglan FS and Bajool and Mt Larcom TSCs Final Project Brief Trackpower Alliance -February 2010 (SIGHTED)
- Raglan Feeder Station Report Final Project Report Trackpower Alliance –
- Duaringa Feeder Station Report Final Project Report Trackpower Alliance March 2012
- Bluff Feeder Station Report Final Project Report Trackpower Alliance March 2012
- Wycarbah Feeder Station Report Final Project Report Trackpower Alliance March 2012
- Detailed SAP Cost Reports for Costs to 30 June 2013 (x4) (SIGHTED)"

SKM was not able to locate some of the above referenced information and as a result an RFI was raised.

Aurizon Network provided the requested information on 26/02/2014 with certificates of acceptance covering approval of all sites into operation and was subsequently included as input material to this assessment.

Page 34 it was stated that:

"Both the Goonyella and Blackwater systems were electrified in the mid 1980's with the majority of the original installed assets now 28 years old. Whilst electrical assets have few moving parts or physical impacts other than the flow of electricity, these assets have been operating at higher than designed level for a number of years."

SKM will not seek evidence that the Blackwater system has in fact been operating at higher than design levels during this assessment as such assessments have been completed in previous financial years.

Page 41 of the submission also states that :

"The 2012/13 claim is also seeking \$8.3m for costs against six projects that have been reviewed and approved by the QCA in the prior year's claims."

SKM notes that in this reference there is mention of 6 projects. SKM has only assessed 4 projects associated with the Blackwater Feeder Stations

With respect to the prudency of cost assessments, SKM notes that on page 42 of the submission there were references to IDC calculations. All SKM assessments are excluding IDC.

Attachment.E.1.2.3 Assessment of suite of project reports in Schedule 3- Blackwater Feeder Stations

This section covers the assessment of the suite of documents contained within Schedule 3, Blackwater Feeder Stations and entitled:

- Best Value Report, Bluff FS, Blackwater TSC and Umolo TSC, dated 15 June 2012
- Best Value Report. Duaringa FS, Edungalba TSC and AT, Wallaroo TSC, date 12 June 2012
- Best Value Report, Raglan CS Raglan FS and Bajool and Mt Larcom TSCs, dated 2 February 2012
- Best Value Report, Wycarbah FS Kabra TSC Westwood TSC Spring Creek AT Gracemere AT, dated 21 March 2012
- Raglan CS, Raglan FS and Bajool and Mt Larcom TSCs, Final Project Brief, Power Systems, dated 10 February 2010
- Blackwater Power Systems Upgrade Projects Options Analysis, dated 7/12/2009
- Bluff Feeder Station Project, Final Project Report, dated 18/4/2012
- Duaringa Feeder Station Project, Final Project Report, dated 9 March 2012
- Wycarbah Feeder Station Project, Final Project Report, dated 6/2/2012
- Rail Overhead Construction, Practical Completion Certificate, Raglan Feeder Station, dated 21 October 2011
- (Edge Advantage Pty Ltd) Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/12 dated 30 October 2012

All of the above documents have been assessed by SKM. SKM notes that each of these pre-dates the Financial Year 2012 to 2013. SKM has used these documents to assess the scope component of the terms of reference i.e. to assess if the works completed in the current claim period where aligned and in agreement with the scope previously agreed.

In terms of assessing prudency of standard, it is SKM's view that the above suite of documents could not be used to assess the actual work completed during the current claim period.

In terms of assessing the prudency of cost, the above suite of documents could be used, together with the SKM already completed prudency assessments from July 2013, to assist in determining the reasonableness of cost for those items claimed that fell within the already agreed scope remit.

From the report entitled **Blackwater Power Systems Upgrade Projects – Options Analysis**, dated 7/12/2009 the following observations are made.

Page 5 states:

The main objective of this project is to construct new traction feeder stations (FSs) at Wycarbah, Duaringa and Bluff, which are all existing track sectioning cabin (TSC) sites. New TSCs providing open points between the new and existing FSs will also be commissioned. New autotransformer (AT) sites will also be commissioned to provide voltage support to the system where necessary.

SKM notes that Raglan FS is not mentioned here but is mentioned as a "related project" on page 11.

Also page 5 states that the scope in high level terms will encompass the following:

Scope

Table 1, below, details the project scope progressing east to west from Rocklands FS to Rangal FS along the CWL:

Location (km CWL)	Site Name	Site Type	Scope
8.879	Gracemere	AT	Establish new AT site, including a new PSC.
12.000	Gracemere	AT	Decommission site.
15.480	Kabra	TSC	Establish new TSC, between Rocklands and Wycarbah FS
22.794	Warren	AT	Existing AT site. Add manual AT isolation switches.
33.421	Wycarbah	FS	Convert existing Wycarbah TSC to an FS.
40.425	Spring Creek	AT	Establish new AT site, induding a new PSC.
45.689	Westwood	AT	Decommission site.
49.220	Westwood	TSC	Establish new TSC, between Wycarbah and Grantleigh FS
74.975	Tunnel	AT	Existing AT site. Add manual AT isolation switches.
82.712	Edungalba	TSC	New TSC between Grantleigh and Duaringa FS
84.476	Edungalba	AT	Decommission site.
88.905	Edungalba	AT	Establish new AT site, including a new PSC.
103.800	Duaringa	FS	Establish NewFS site. Due to site constraints this could not be constructed behind the existing Duaringa TSC site.
104.880	Duaringa	TSC	Decommission site.
111.074	Duaringa	AT	Existing AT site. Add manual AT isolation switches.
117.072	Wallaroo	AT	Decommission site.
118.027	Wallaroo	TSC	New TSC between Duaringa and Dingo FS.
152.171	Umolo	AT	Decommission site.

153.119	Umolo	TSC	New TSC between Dingo and Bluff FS.
162.202	Walton	AT	Existing AT site. Add manual AT isolation switches.
173.207	Bluff	FS	Convert existing Bluff TSC to an FS.
186.370	Blackwater	TSC	New TSC between Bluff and Rangal FS.
187.613	Blackwater	AT	Decommission site.

Page 6 states as follows.

Option Development and Selection Methodology

The development of the TCE design and evaluation of options has occurred in four phases. Each is described in more detail in the main text of this report.

- a) Formulation of the QR Coal Master Plan (2006 and 2nd Edition 2008)
- b) Power Systems Assessment Study
- c) Site Selection by Queensland Rail/TrackStar
- d) TrackStar TCE Design Development

This report describes the options considered at each phase that contribute to the design concepts conveyed in the TCE submission.

If the end customer agreements were based on these documents and not the Options Report then it would appear reasonable to have received the above referenced documents to complete the terms of reference Scope assessment ie to compare with the original customer agreed scope.

Additional information was referenced by this document as follows:

1.2 References

- [1] Queensland Rail Coal Rail Infrastructure Master Plan (2rd Edition October 2008)
 [2] Maunsell Australia Traction Power Systems Assessment Study Preliminary Report
- [2] Waunsen A ustralia Traction Fower Systems Assessment Study Freiminary Report (June 2007)
- [3] TrackStar Alliance Blackwater Coal Haulage System, Scope Appraisal Capacity Upgrade (April 2008)
- [4] TrackStar Alliance Blackwater Coal Haulage System, Project Cost Comparison Gas Insulated vs. Structure Mounted Outdoor Switchgear (August 2008)
- [5] TrackStar Alliance Blachwater Power System Upgrade, Final Project Brief (August 2009)
- [6] Powerlink Queensland Connection Study for Queensland Rail Blackwater System (Draft, March 2009)

Page 13 of this document the following was stated:

5.1.2 Preferred Option

The Master Plan does not exhaustively list the options examined by QR, however the report concludes that new FSs at Wycarbah, Duaringa and Bluff will address forecast limitations on the Black water rail system.

SKM notes that again there is no mention of Raglan and that the above statement by implication indicates that Raglan FS is not required to meet the forecast limitations on the Blackwater rail system (or in other words that Wycarbah, Bluff and Duaringa would be sufficient).

Page 17 of this report states that:

In September 2008, QR approved TrackStar's TCE Development budget for the Blackwater Power System's Upgrade Project, agreeing to incorporate delivery of this project into TrackStar Power System's program of works.

The remainder of the document reflects sound process and content.

Discussion

SKM notes that all sites were commissioned by February 2013 and therefore some ECO tie in, testing and commissioning costs would have been expected of Bluff (commissioned July 2012) and Duaringa (commissioned January 2013). SKM did not understand why there were ECO tie in, test and commissioning works claimed for Raglan, since that site had been commissioned in January 2012. RFI 006 was raised seeking and explanation for this work and a satisfactory explanation was given.

In view of the prudency of scope granted for the 2011-2012 claim, all matters re scope of works delivered during the 2012-2013 appear well aligned with previous years deliverables pending a satisfactory response to the RFI mentioned above re Raglan having been in fact commissioned in January 2012 yet testing and commissioning as well as ECO tie in works were only claimed for the 2012-21013 period

SKM notes some signalling works were completed that is to be expected when moving electrified track sections. SKM raised RFI 006 to seek a better understanding of the exact scope of these works. RFI006 response indicated that in fact it was not signalling works but telecommunications SCADA connectivity works. Attachment E.1.3 Assessment of Final Project Briefs and Best Value Reports

The following analysis covers the suite of "Final Project Briefs" and "Best Value Reports" in that order for each FS package.

The Final Project Brief suites of documents effectively define the scope of works prior to commencement whilst the "Best Value Reports" provide information on what was finally delivered. To some extent these documents inform the prudency of scope task as per this terms of reference.

From the report entitled "Bluff Feeder Station Project, Final Project Report", dated 18/4/2012 the following observations are made:

Page 5 states that:

"The TCE was accepted and an election notice to proceed with the delivery of this project was issued by QRN on the 6th January, 2010. Detailed designs commenced for all 4 sites once the approval was received and were completed in June 2011."

And

On completion of designs, construction commenced in mid June 2011 after engaging Zenith Civil Pty Ltd to carry out civil earthworks and concrete works. Works commenced on a number of sites concurrently with some sites requiring more earthworks than others. Blackwater TSC was the first site to be commissioned followed by Umolo TSC and finally Bluff FS as shown in the table below.

Key Milestones	TCE Dates	Actual Completion Date
Bluff FS Practical Completion	31/01/2012	30/04/2012
Blackwater TSC Practical Completion	22/11/2011	13/03/2012
Umolo TSC Practical Completion	18/01/2012	02/04/2012
PLQ Connection	30/11/2012	TBA

Page 10 it was stated that:

Site Name	Туре	Description	Location (km CWL)
Bluff	FS	Removes existing Track Sectioning Cabin and replace with a new Feeder Station	CH173k 150m
Blackwater	TSC	Install new Track Sectioning Cabin	CH186k 355m
Umolo	TSC	Install new Track Sectioning Cabin	CH153k 121m

The delivery of the Bluff Feeder Station project was effectively broken into two key components; works delivered by the TrackPower Alliance (referred to as 'above the line' works) and works delivered by QR National (referred to as 'below the line works'). <u>TrackPower's</u> scope encompassed the design and construction of civil and electrical works associated with each site. QRN was responsible for the procurement of long lead items, overhead traction works in the rail corridor and final commissioning and energisation of each site.

The financial position of the project as of April 2012 was tabled on page 22

Page 26 contained key milestone dates as per the table below.

Key Milestones	TCE Dates	Actual Completion Date
ICE Approval	26/10/2009	06/01/2010
Detailed Design IFC (3 Sites)	-	-
Civil Earthworks	22/12/2010	05/05/2011
Structural	22/12/2010	10/06/2011
Power	17/01/2011	18/05/2011
OHLE	19/01/2011	04/05/2011
Site Establishment	23/05/2011	31/08/2011
Blackwater TSC Practical Completion	12/12/2011	13/03/2012
Umolo TSC Practical Completion	03/02/2012	02/04/2012
Bluff FS Practical Completion	17/02/2012	30/04/2012
PLQ Connection	30/11/2012	TBA



- 1 x ABB 132/50 kV 30/40 MVA centre-tapped transformer
- 1 x Areva 132/50 kV 30/40 MVA centre-tapped transformer
- 1 x 10 panel 50 kV Switchroom complete from Siemens
- 2 x 6 panel 50 kV Switchrooms complete from Siemens
- 2 x 50 kV Alstom Harmonic Filters
- 9 x 14 MVA Areva Auto Transformers (AT)
- 3 x 10 MVA Tyree Auto Transformer

The design for all the sites was carried out by the Alliance NOPs AECOM and Aurecon whilst the construction was managed by Thiess and UGL.

TrackPower procured all the consumables, cables and other materials required for the project. TrackPower had to also engage the following subcontractors to carry out specific works:

Zenith Civil Pty Ltd

Zenith carried out the civil earthworks and concrete works for all the sites in the Bluff project. They were the best value for money contractor after running through a tender process. They were engaged under a contract and were managed very well through the project.

Fenced Out

Fenced Out was engaged to install security fence and cattle fence on all sites. Initially this scope was to be carried out by the <u>Civil</u> subcontractor however, the prices received during tender stage for fencing were quite high. This scope was thus excluded from the <u>Civil</u> subcontract and a separate tender process was run to get a competitive price on fencing.

 NKT Cables Australia Pty Ltd NKT Cables were engaged to supply the High Voltage termination kits for the outdoor terminations and also carry out the installation of these terminations on one end of the cable and installation of Pfisterer terminations on the other end of the cable. This was for all sites for

the Bluff project. NKT Cables have been previously engaged by TrackPower on other jobs and their quotation was used for the development of the TCE.

Brandis Industries

Brandis Industries was engaged to carry out the Functional Integration testing (FIT) for all sites. They were also required to carry out earth grid testing for all sites except for Bluff FS. Bluff FS earthgrid testing was carried out by PLQ under an agreement between PLQ and QRN.

Both Civil and Structural works were delivered through Zenith Civil, a medium size construction company who is familiar with <u>TrackPower's</u> system of work having completed the Beerwah Rail Upgrade project recently.

Facilities utilised for this project were relocated from the Robina Varsity Lakes Project, Darra TSC & Raglan Feeder Station Project. As the site was located next to the existing Bluff TSC, water tanks (drinking water provided separately) and temporary LV supply was used for cribbing and office facilities.

From the report entitled "Best Value Report, Bluff FS, Blackwater TSC and Umolo TSC", dated 15 June 2012, the following observations are made.

It is noted that this report was compiled by the Track Power Alliance but that Edge Advantage were involved.

The Bluff Feeder Station involves also two new Track Sectioning Cabins at Blackwater and Umolo (page 7 of this report).

It is noted that "Changes to the supplier of the auto transformers from Areva to Tyree, at the request of QR National, which involved flexible changes from the Alliance to use a refurbished AT from Gracemere and relocation of an AT from Edungalba to Bluff, with 10 MVA AT's instead of 14 MVA AT's." This is noted as a comparative point for the other Feeder Station works to determine if those projects also used 10 MVA as opposed to 14 MVA.

Pages 13, Figure 4 is largely illegible.

Page 14 it is stated that:

The Project Team was involved in a rigorous process to develop and consider options for the project. The Total Cost Estimate (TCE) was accepted and approved by QR National on 6 January 2010 for an amount totalling \$12.570m (includes design and contractors margin).

When scope changes were added to the TCE, the Target Outturn Cost (TOC) became \$13.154m (includes design and contractors margin). As at December 2011, the Actual Outturn Cost (AOC) was \$13.154m.

Site Name	Туре	Description	Location (km CWL)
Bluff	FS	Removes existing Track Sectioning Cabin	CH173k 150m
		and replace with a new Feeder Station	
Blackwater	TSC	Install new Track Sectioning Cabin	CH186k 355m
Jmolo	TSC	Install new Track Sectioning Cabin	CH153k 121m

Page 22 mentions that Zenith Civil were engaged to carry out civil and concrete works.

On completion of designs, construction commenced in mid June 2011 after engaging Zenith Civil Pty Ltd to carry out civil earthworks and concrete works. Works commenced on a number of sites concurrently with some sites requiring more earthworks than others. Blackwater TSC was the first site to be commissioned followed by Umolo TSC and finally Bluff FS as shown in the table below.

Key Milestones	TCE Dates	Actual Completion Date			
Bluff FS Practical Completion	31/01/2012	30/04/2012			
Blackwater TSC Practical Completion	22/11/2011	13/03/2012			
Umolo TSC Practical Completion	18/01/2012	02/04/2012			
PLQ Connection	30/11/2012	TBA			
Table 2 Key Project Milestones as per the Project Brief					

Page 38 mentions cost of variations

Variations

There were a number of variations approved for the project by the ALT, as follows:

- BLU-001: Design Manager and Administration QR National instruction that TrackStar transfer the "Program" costs allocated for the Design Manager and Administrator from January 2010 to the current projects (total claim, \$244,400);
- BLU-002 Insurance Premium Escalation (total claim, \$50,486);
- BLU-003 SVC Yard Variation (total claim, \$221,341);
- BLU-004 PLQ Portion of earthing grid design (total claim, \$14,576);
- BLU-005 Increase in Powerlink Pad Size (total claim, \$105,914);
- BLU-006 Changes to Harmonic Filter Yard & Foundations (total claim, \$55,861);
- BLU-007 Track under-boring work performed by QRN (total claim, -\$201,408).

The plans procured under the tender was (page 39)

- 1 × ABB 132/50 kV 30/40 MVA centre-tapped transformer;
- 1 × Areva 132/50 kV 30/40 MVA centre-tapped transformer;
- 1 × 10 panel 50 kV Switchroom complete from Siemens;
- 2 × 6 panel 50 kV Switchrooms complete from Siemens;
- 2 × 50 kV Alstom Harmonic Filters;
- 9×14 MVA Areva Auto Transformers (AT); and
- 3 × 10 MVA Tyree Auto Transformer.



Page 40 it is noted that :

The design for all the sites was carried out by the Alliance NOPs AECOM and Aurecon whilst the construction was managed by Thiess and UGL.

TrackPower procured all the consumables, cables and other materials required for the project. TrackPower had to also engage the following subcontractors to carry out specific works:

Zenith Civil Pty Ltd

Zenith carried out the civil earthworks and concrete works for all the sites in the BLU project. They were the best value for money contractor after running through a tender process. They were engaged under a contract and were managed very well through the project.

Fenced Out

Fenced Out was engaged to install security fence and cattle fence on all sites. Initially this scope was to be carried out by the Civil subcontractor, however, the prices received during tender stage for fencing were quite high. This scope was thus excluded from the Civil subcontract and a separate tender process was run to get a competitive price on fencing.

NKT Cables Australia Pty Ltd

NKT Cables were engaged to supply the High Voltage termination kits for the outdoor terminations and also carry out the installation of these terminations on one end of the cable and installation of Pfisterer terminations on the other end of the cable. This was for all sites for the BLU project. NKT Cables have been previously engaged by TrackPower on other jobs and their quotation was used for the development of the TCE.

Brandis Industries

Brandis Industries was engaged to carry out the functional Integration testing (FIT) for all sites. They were also required to carry out earth grid testing for all sites except for the BLU FS. BLU FS earthgrid testing was carried out by PLQ under an agreement between PLQ and QRN.

Both Civil and Structural works were delivered through Zenith Civil, a medium size construction company who is familiar with TrackPower's system of work, having completed the Beerwah Rail Upgrade project.
Page 42 contains cost accrued as of April 2012.

Key Milestones	TCE Dates	Actual Completion
		Date
TCE Approval	26/10/2009	06/01/2010
Detailed Design IFC (3 Sites)	-	-
•Civil Earthworks	22/12/2010	05/05/2011
•Structural	22/12/2010	10/06/2011
•Power	17/01/2011	18/05/2011
•OHLE	19/01/2011	04/05/2011
Site Establishment	23/05/2011	31/08/2011
Blackwater TSC Practical Completion	12/12/2011	13/03/2012
Umolo TSC Practical Completion	03/02/2012	02/04/2012
Bluff FS Practical Completion	17/02/2012	30/04/2012
PLQ Connection	30/11/2012	TBA

Page 57 states that:

At the time of this report, all site facilities including tools and equipment remained and they will progressively be transferred to another Project within the Alliance. All excess site facilities will be sold if they are no longer required. Costs associated with the transfer of these assets will be reflected in the cost report.

Page 58 states that:

"All Completion documentation will be submitted to QR National by end June 2012."

Page 77

Page 77 of the report contains the approved budget for the Bluff Project, however some of the figures in this table are illegible.

From the report entitled "**Duaringa Feeder Station Project, Final Project Report**", dated 9 March 2012 the following observations are made:

Page 5

"The TCE was accepted and an election notice to proceed with the delivery of this project was issued by QRN on the 6th January, 2010. Detailed designs commenced for all 4 sites once the approval was received and were completed in March 2011."



On completion of designs, construction commenced in late March 2011 after engaging Zenith Civil Pty Ltd to carry out civil earthworks and concrete works. Works commenced on a number of sites concurrently with some sites requiring more earthworks than others. Edungalba AT was the first site to be commissioned on 30/08/2011 followed by the remaining sites as shown in the table below.

Key Milestones	TCE Dates	Actual Completion Date
Duaringa FS Practical Completion	4/10/2011	30/01/2012
Edungalba AT Practical Completion	6/07/2011	30/08/2011
Edungalba TSC Practical Completion	1/08/2011	27/09/2011
Wallaroo TSC Practical Completion	25/08/2011	20/02/2012
PLQ Connection	28/09/2012	19/06/2012 (Target Date)

The Duaringa Feeder Station project scope encompassed:

Site Name	Type	Description	Location (km CWL)
Duaringa	FS	Removes existing Track Sectioning Cabin and replace with a new Feeder Station	103.80 km
Edungalba	AT	Install new Auto Transformers	88.90 km
Edungalba	твс	Install new Track Sectioning Cabin	82.84 km
Wallaroo	TSC	Install new Track Sectioning Cabin	118.02 km

The delivery of the Duaringa Feeder Station project was effectively broken into two key components; works delivered by the TrackPower Alliance (referred to as 'above the line' works) and works delivered by QR National (referred to as 'below the line works'). TrackPower's scope encompassed the design and construction of civil and electrical works associated with each site. QRN was responsible for the procurement of long lead items, overhead traction works in the rail corridor and final commissioning and energisation of each site.

Page 25

The financial position of the project is reported on page25 and is up to February 2012

Key Milestones	TCE Dates	Actual Completion Date 06/01/2010	
TCE Approval	18/01/2010		
Detailed Design IFC (5 Sites)			
Civil Earthworks	14/09/2010	11/02/2011	
 Structural 	21/09/2010	18/03/2011	
 Power 	23/09/2010	08/03/2011	
 OHLE 	23/09/2010	08/03/2011	
Site Establishment	10/01/2011	05/03/2011	
Duaringa FS Practical Completion	04/10/2011	30/01/2012	
Edungalba AT Practical Completion	06/07/2011	30/08/2011	
Edungalba TSC Practical Completion	01/08/2011	27/09/2011	
Wallaroo TSC Practical Completion	31/08/2011	20/02/2012	
Duaringa FS PLQ Connection	28/09/2012	19/06/2012 (Scheduled	

The design for all the sites was carried out by the Alliance NOPs AECOM and Aurecon whilst the construction was managed by Thiess and UGL.

TrackPower procured all the consumables, cables and other materials required for the project. TrackPower had to also engage the following subcontractors to carry out specific works:

Zenith Civil Pty Ltd

Zenith carried out the civil earthworks and concrete works for all the sites in the Duaringa project. They were the best value for money contractor after running through a tender process. They were engaged under a contract and were managed very well through the project.

Fenced Out

Fenced Out was engaged to install security fence and cattle fence on all sites. Initially this scope was to be carried out by the Civil subcontractor however, the prices received during tender stage for fencing were quite high. This scope was thus excluded from the Civil subcontract and a separate tender process was run to get a competitive price on fencing.

NKT Cables Australia Pty Ltd

NKT Cables were engaged to supply the High Voltage termination kits for the outdoor terminations and also carry out the installation of these terminations on one end of the cable and installation of Pfisterer terminations on the other end of the cable. This was for all sites for

the Duaringa project. NKT Cables have been previously engaged by TrackPower on other jobs and their quotation was used for the development of the TCE.

Brandis Industries

Brandis Industries was engaged to carry out the Functional Integration testing (FIT) for all sites. They were also required to carry out earth grid testing for all sites except for Duaringa. FS. Duaringa FS earthgrid testing was carried out by PLQ under an agreement between PLQ and QRN.

Both Civil and Structural works were delivered through Zenith Civil, a medium size construction company who is familiar with TrackPower's system of work having completed the Beerwah Rail Upgrade project recently.



Duaringa Project is completed and is currently in defects liability period. Majority of the defects identified during final walkover have been completed. Major subcontractors engaged under the project also have either a retention sum or bank guarantee withheld to cover the Alliance during their defects liability period; These have been noted in JDE.

At the time of this report, all site facilities including tools and equipment remained on site. These facilities will either be sold or transferred to Wotonga project should this be elected by the ALT. The Wotonga project is in TCE development phase currently. Outcome of the asset sales or transfer will be reflected in the project finance and managed in the monthly update to the ALT.

From the report entitled "**Best Value Report. Duaringa FS, Edungalba TSC and AT, Wallaroo TSC**" dated 12 June 2012 the following observations are made.

Edge advantage was again listed as providing services.

"The DUA project involved the construction of a new feeder station (FS) at Duaringa, midway between the Grantleigh FS and Dingo FS. This was to replace the existing TSC at Duaringa. New TSCs were required as part of the Duaringa upgrade and were placed in the line at Wallaroo and Edungalba and a new Auto Transformer (AT) at Edungalba"

There were a number of variations approved for the project by the Alliance Leadership Team (ALT), as follows:

- DUA-001: QR National instruction that TrackStar transfer the "Program" costs allocated for the Design Manager and Administrator from January 2010 to the current projects (Total claim \$245,273);
- DUA-002: Insurance premium escalation (Total daim \$52,268);
- DUA-003: Static VAr Compensator (SVC) Yard Variation (Total claim \$224,723);
- DUA-004: PLQ portion of earthing and design (Total claim \$14,576);
- DUA-005: Acceleration to meet PLQ access (\$388,159);
- DUA-006: Powerlink Yard Variation (\$111,030); and
- DUA-007: Track under-boring work performed by QR N (-\$116,482);

The TrackPower component of the project had a total approved budget of \$14.272m which increased to a final TOC of \$15.192 with the seven approved projec²; variations.

The Duaringa site is located one kilometer (km) north-east of the town of Duaringa (approximate rail chainage CWL 103.80km). It is located to the north of the existing rail corridor with access to the southern boundary of the site granted via a QR National access track extending from Edward Street located to the west of the proposed FS site. The proposed FS earthworks and pad covers an area of about 20000m² (200m × 100m). This figure is inclusive of Powerlink (PLQ) and Harmonic Filter yards. The site is situated on very flat ground, with medium dense scrub and with soil conditions consisting of highly reactive day.

The Duaringa FS project scope encompassed:

Site Namie	Туре	Description	Location (km CWL)
Duaringa	FS	Remove existing Track Sectioning Cabin	103.80 km
		and replace with a new Feeder Station	103.00 km
Edungalba	AT	nstall new Auto Transformers 88.90 km	
Edungalba	TSC	nstall new Track Sectioning Cabin 82.84 km	
Wallaroo	TSC	Install new Track Sectioning Cabin	118.02 km
		Table 1 Project Scope	

Zenith was again mentioned as providing services.

Key Milestones	TCE Dates	Actual Completion Date
Duaringa PS Practical Completion	4/10/2011	30/01/2012
Edungalba AT Practical Completion	6/07/2011	30/08/2011
Edungalba TSC Practical Completion	1/08/2011	27/09/2011
Wallaroo TSC Practical Completion	25/08/2011	20/02/2012
PLQ Connection	28/09/2012	Mid July 2012

Table 2 Key Project Milestones as per the Project Brief



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The final Total Outturn Cost (TOC) for the TrackPower component of this project was \$15.192m.

Variations

There were a number of variations approved for the project by the ALT, as follows:

- DUA-001: QR National instruction that TrackStar transfer the "Program" costs allocated for the Design Manager and Administrator from January 2010 to the current projects (Total claim \$245,273);
- DUA-002: Insurance premium escalation (Total daim \$52,268);
- DUA-003: SVC Yard Variation (Total claim \$224,723);
- DUA-004: PLQ portion of earthing and design (Total claim \$14,576);
- DUA-005: Acceleration to meet PLQ access (\$388,159);
- DUA-006: Powerlink Yard Variation (\$111,030); and
 - DUA-007: Track under-boring work performed by QR National (-\$116,482);

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Expenditures to the budget are as of April 2012 on page 39

All Completion documentation will be submitted to QR National by end June 2012.

Page 74

Approved budget page 74 (see above, same comment)

From the report entitled "Raglan CS, Raglan FS and Bajool and Mt Larcom TSCs, Final Project Brief, Power Systems" SKM has the following observations.

This report was a precursor to the Suite of best value reports.

The reports history shows progressive drafting from 27/6/2008 to 28/1/2010 which seems a rather prolonged duration.

This report is somewhat dated and the scope here in is superseded by the agreed scope in the Best Value Report. Any variations that may exist between these two documents would be grandfathered.

The scope of works in this document appear to be substantially the same as that described in the Best Value Report.

Appendix A contains a description of works to be undertaken outside of the alliance scope of works that is highly relevant to this claim in that this document is the only one that describes such activities and is deemed worth noting. The general activity descriptions contained herein informs this claim where such activities may occur.



Appendix A – Reverse Brief

Introduction

The following reverse brief is intended to describe the scope of work to be carried out by the relevant QR Engineering and Operations departments. Tasks described within the reverse brief differ from those noted in the TrackStar project scope of works in the following manner;

- The resources used to execute these tasks do not reside within the TrackStar Alliance offices, and are not fully engaged on TrackStar-related projects, or
- The tasks within the scope of the reverse brief require an intimate knowledge of QR's internal
 operational systems and safe working procedures to the extent that execution by others would
 require significant exposure and instruction by QR prior to being allowed to carry out such tasks
 on 'live' operational systems, or
- The extent of the work described within the reverse brief is within the normal capabilities of the various Engineering and Operating departments, or
- The cost basis for the work described in the reverse brief cannot be established using firm quotations from suppliers or cannot be built up as a 'first principles' estimate by TrackStar.

Tasks described in this reverse brief are included in the 'below the line' part of the TCE estimate, meaning that the delivery risk rests solely with QR.

QR Reverse Brief Scope

a) Civil Works

- Civil access works and road works relating to the 50 kV feeder route easement between Ragian CS and Ragian FS
- Clearing of vegetation and all environmental and property issues relating to the above
- b) Civil Structural Works
- Mast foundations for all masts outside the new CS, FS and TSC fences

c) Power Systems Works

- Management and maintenance of the relevant proposed sectioning diagrams for the purpose of design co-ordination between TrackStar designers and QR internal stakeholders.
- Management of programming of power systems SCADA master station, configuration of operatorscreens and end-to-end testing for each site's RTU installation.
- Final energisation and commissioning of the completed works, including final inspections and injection testing of new traction earthing and bonding equipment within the rail corridor (e.g. grading rings adjacent to the FS and CS).
- Isolation of the existing AT sites at locations 565.135 km and 604.930 NCL prior to removal of equipment and demolition of the site by TrackStar.
- Produce and manage the traction sectioning diagrams throughout the staging of the works.
- Check and approve all possession schedules produced by TrackStar for the works, and have these submitted to Rockhampton Control for approval and implementation.
- Complete secondary injection testing of protection relays as necessary prior to final commissioning.
- Attendance at factory acceptance and site acceptance testing for major procurement items.
- Co-ordinate switching activities with Powerlink during commissioning works.
- Participate in project closure and documentation checking.
- Participate in training sessions for new switchgear and systems.
- Development and approval of protection systems setting philosophy
- Development and approval of protection logic templates
- Review and endorsement of 275/50 KV centre tapped transformer earthing study, refer section 2.4 of this report.



d) Overhead Line Equipment Works

- All EPR studies to determine the extent of grading ring installation adjacent to both the proposed and existing CS and FS, and to verify these are installed and achieve the required touch voltage limits. This is notwithstanding the outcome from the review by TrackStar as detailed in section 2.4.1 of this document.
- Design and construction of the two 50 KV feeders to be installed between Raglan CS and Raglan FS.
- Design and installation of neutral sections at Bajool and Mt Larcom sites, including all associated modifications to OLE structures and catenary tensioning masts.
- Relocation of cross-track isolators at cross-over and depot locations.
- Temporary modifications to back-feed isolators at Raglan FS to enable feeding-through whilst the 50 kV switchgear is unavailable at this site (if required).
- Final aerial connections to each site from the limit of the TrackStar works to the track-side structures.
- Design and installation and subsequent removal of aerial insulators at the Raglan FS site adjacent to existing autotransformers to allow safe working on the existing masts within the compound.
- Design and installation of new impedance bonds as required at various sites.
- Installation and termination of track bonds to the RC bar and impedance bonds at the Raglan FS, Bajool and Mt Larcom sites. Refer figure 2 of the main document for installation of track bonds between Raglan CS and Raglan FS.
- Modify existing autotransformer sites between Rocklands and Callemondah feeder station, including installation of isolation switches and their associated structures and OLE.
 - a. 555.876 km NCL
 - b. 574.010 km NCL
 - c. 594.900 km NCL
 - d. 615.165 km NCL
 - e. 624.379 km NCL

e) Telecommunications Works

- Cutting-in of new optic fibre cables at all sites and termination of same into optic fibre splice/patch panels.
- Commissioning of communications equipment on site and in co-ordination with Rockhampton control centre staff.
- Relocation and/or protection of existing QR telecommunications services affected by TrackStar civil works.
- Design, installation and commissioning of the new optical ground wire (OPGW) communications link between Ragian CS and Ragian FS.



f) • •	Signalling Works Provision of signalling modifications associated with the new neutral section and impedance bond installations at Bajool and Mt Larcom. Relocation and/or protection of existing QR signalling services affected by TrackStarcivil works. Property Acquisition Activities
•	Obtain the necessary property required for each operational site and the 50 KV feeder route from landowners or other parties. Negotiate the price of land for each site with the owner and arrange payment. Negotiate access arrangements with Powerlink and other project stakeholders.
h)	Procurement
•	Provide specifications for all QR-procured equipment.
•	Supply of QRFL modules.
•	Management of QR supply contracts for power transformers for the Ragian CS feeder station.
•	Management of QR supply contracts for autotransformers for all sites that require them. Management of QR supply contracts for 50 KV GIS switchgear (including RTUs) in collaboration with TrackStar (refer section 2.3.2).
	Management of QR supply contracts for Harmonic Filters.
	Management of QR supply contracts for neutral sections and associated OLE equipment.
	Supply of telecommunications equipment and cabling.
i)	Miscellaneous Activities
*	Installation of motorised isolator DC supply, control and indication cabling.
	Internial project management for QR-coordinated activities. Reporting of progress of QR-coordinated activities in accordance with TrackStar monthly
,	reporting format and deadlines.
	Provide track protection officers as necessary to approve and supervise all works within the rail
	corridor and in close proximity to track.
•	Management of QR power connection agreements for LV and HV power.

From "Best Value Report, Raglan CS Raglan FS and Bajool and Mt Larcom TSCs".

Same as above except

Scope was per page 7

"Raglan (RAG) Project, which comprises the Raglan Connection Station (CS), Raglan Feeder Station (FS) and Bajool and Mt Larcom Track Sectioning Cabins (TSCs).

The RAG project primarily involved the provision of:

- A new 275/50kV Raglan Connection Station (CS) south of the existing Raglan TSC;
- A new Feeder Station (FS) at the existing Raglan TSC site;
- Two new 50kV interconnecting feeders to connect the Raglan CS and FS;
- New TSCs at Bajool and Mt Larcom; and

• Removal of Auto transformers (ATs) and provision of isolation switches and decommissioning of the existing Raglan TSC and associated Auto Transformers (AT) and masts. "

Or use this (page 10)

The Ragian Feeder Station project is a major infrastructure project that involved the construction of a new 275/50k V 45/60M VA feeder station at Ragian, approximately 54 km north-west of Gladstone.

This project replaced the existing Raglan track sectioning cabin (TSC) with the Raglan feeder station and two new TSCs at Bajool (75 km north-west of Gladstone) and Mt Larcom (39 km north-west of Gladstone). The existing auto transformers in the vicinity of Bajool and Mt Larcom were removed.



Figure 2 System map is not legible (page 11)

The then existing traction substations at Korenan, Callemondah, and Rocklands provided a very limited amount of redundancy in the event of outages at Callemondah. Full outages at Callemondah could not be supported by the existing adjacent feeder stations. Considering outage time constraints major works to support growth and operations at Wiggins Island and Aldoga yard could not be supported without the Ragian feeder station in service. Ragian FS would facilitate operation of traffic above 69 MTP a and up to 89 MTP a. Operation at or above 89 MTP a would be subject to on-load surveys of traffic operations to verify the need for match impedances at the Ragian TSCs.

The investment at Ragian was endorsed by the Coal industry within the 2008 Coal Master Plan. The main objective of this project was to construct a new feeder station (FS) at Ragian in time to prov the reliability of the new in frastructure prior to roll out of major renewal and reconfiguration works at Callem ondah. Works at Callem ondah were being planned to support growth in the Wiggins Island port complex with commissioning dates planned during the first quarter of 2013. It was to be established as two sites:

- Ragian Connection Station (CS): A 275/50 kV substation to be established approximately 2.1 kr from the existing Ragian TSC; and
- RagIan Feeder Station (FS): A 50 kV substation to be established trackside and adjacent to the existing RagIan TSC.

Ragian CS would be unique within the QR system as it will feature a 275 kV connection, rather than 132 kV, as has previously been standard. Powerlink Queensland (Powerlink) was to establish the site adjacent to an existing 275 kV feeder and provide space for installation of QR's 275/50 kV transformers, 50 kV switchgear and harmonic filters.

QR was to design and construct two 50 kV overhead feeders between Raglan CS and Raglan FS. The configuration of Raglan FS was to be similar to a standard FS site, with incoming 50 kV feeder circuit breakers (CBs) rather than connection to locally sited power transformers.

In addition, new TSCs were to be established at Bajool and Mt Larcom. The existing AT sites in the vicinity of Bajool and Mt Larcom were to be removed from service.

6.4. HIGH LEVEL SCOPE

In brief, the project was to:

- Provide a new 275/50 kV connection substation, Raglan CS, at the 275 kV connection point, located approximately 2.1 km (in a straight line) south of the existing Raglan TSC, approximately at the point where Powerlink's 275 kV feeder intersects Gentle Annie Rd. Raglan CS was to consist of two 275/50 kV transformers, a 50 kV switchgear building, harmonic filters and masts suitable for interface with the 50 kv interconnecting line;
- Provide a newFS at the existing RagIan TSC site (582.506 km NCL);
- Provide a newTSC at Bajool (604.326 km NCL), between existing Rocklands FS and the new Raglan FS;
- Provide a newTSC at Mt Larcom (567.559 km NCL), between the newRagian FS and the existing Callemondah FS sites;
- Remove four redundant auto transformers (ATs) from Bajool (604.930 km NCL) and Mt Larcom (565.135 km NCL); and
- Decommission and remove existing Ragian TSC and associated ATs and masts to be returned to a site to be nominated by QR National (typically a QR National depot in the vicinity, e.g., Gracemere).

Milestone	Projected date (as per Project Brief (Feb 2010)	Actual date of milestone delivery (as at 27/1/12)
Switchgear delivered to site s	Jan 2011 – April 2011	Mt Larcom - 15/04/11
		Bajool - 27/05/11
		Raglan FS - 04/04/11
		Raglan CS - 04/08/11
Autotransform ers delivered to sites	Jan 2011 – April 2011	Mt Larcom — 16/04/11
		Bajool 22/06/11
		Raglan FS - 10/05/11
		Raglan CS – N/A
Ham onic filters and power transformers	February 2012 *	HFU - 22/08/11
		ABB PT - 19/09/11
Raglan FS commissioned as a TSC and existing Raglan TSC decommissioned.	July 2011	25/10/11
Raglan FS commissioned as an FS.	December 2012*	24/01/12
Raglan CS commissioned	December 2012 *	24/01/12
Mt Larcom TSC commissioned and existing AT site at Mt Larcom decommissioned.	May 2011	Mt Larcom commissioned - 30/08/11
		AT removal — 28/11/11
Bajool TSC commissioned and existing Bajool AT site decommissioned	July 2011	Bajool Commissioned - 29/08/11
		AT removal — 28/11/11

12 months.

Table 1 Key Project Milestones as per the Project Brief

The final Total Outturn Cost (TOC) for the TrackPower component of this project was \$17.854m.

Variations

The RAG Project had two variations totalling \$157,414k as follows:

- The insurance estimate from AON at the initial TCE costing stage was less than the final price, which was increased after the TCE was approved (additional \$137k);
- QRN requested that TrackPower undertake a survey of the HV Line, which was originally in QRN's scope, which TrackPower agreed to undertake (additional \$20k); and
- 3. There was also an increase in the Limb 2 Contractors' and Design Margin of \$1,907.

The QCA will consider whether the costs are reasonable for the scope and standard of work done, taking into account:

- QR National's Network Asset Management Plan;
- QR National's Coal Infrastructure Master Plan;

Where are the above documents?

Actual costs accrued are as of December 2011 in this report

"The total final revised budget for the TrackPower work was \$18.011m. The actual outturn cost as at December 2011 was \$16.789m, representing a saving of \$1.222m (Limb 1 + 2) over and above the final revised budget"

NKT Cables were engaged

15. COMMISSIONING

Three of the sites achieved practical completion as follows: Mt Larcom TSC 30/08/2011, Bajool TSC 29/08/2011, Raglan FS 25/10/2011. Project construction works were completed and the site was demobilised as at 1 December 2011. The Principal Contractor status has been relinquished from all sites. The Raglan CS as well as the associated traction infrastructure was successfully commissioned on 24 January 2012. This installation now provides the traction supply for the electrical sections from Bajool TSC at 604.326 and the Mt Larcom TSC at 567.559.

All site facilities and buildings were transferred to the other TrackPower projects enabling less mobilisation costs for other projects, thus representing avoided costs to the client.

The Alliance has compiled "as built" documentation for the RAG project which has all been included in the final handover documentation.

All Completion documentation has been submitted to QR National.

From the report entitled "Wycarbah Feeder Station Project, Final Project Report", dated 6 February 2012 the following observations are made:

Page 5:

"The main objective of this project was to install a new Feeder Station (FS) at Wycarbah adjacent to Powerlink's 132 kV substation, install two new TSCs at Kabra and Westwood to provide open points between the new and existing Feeder Stations and install two new AT's at Gracemere and Springcreek."

And

"The TCE was accepted and an election notice to proceed with the delivery of this project was issued by QRN on the 6th of January, 2010. Detail designs commenced for all 5 sites once the approval was received and were completed in early April, 2010."

On completion of designs, construction commenced in April, 2010 after engaging Zenith Civil Pty Ltd to carry out civil earthworks and concrete works. Works commence on a number of sites concurrently with some sites requiring more earthworks than others. <u>Springcreek</u> AT was the first site to be commissioned on the 31/01/2011 followed by remaining sites as shown in the table below.

Key Milestones	TCE Dates	Actual Completion Date
Spring Creek AT Practical Completion	19/01/2011	31/01/2011
Westwood TSC Practical Completion	14/02/2011	28/02/2011
Gracemere AT Practical Completion	15/02/2011	14/02/2011
Kabra TSC Practical Completion	11/04/2011	11/04/2011
Wycarbah FS Practical Completion	11/05/2011	11/01/2012
PLQ Connection	23/04/2012	_

The Wycarbah Fe	eder Stat	tion project scope encompassed:	
Site Name	Type Description Location (km CV		Location (km CWL)
Gracemere	AT	Install new Auto-Transformer	8.879
Kabra	TSC	Install new Track Sectioning Cabin and remove 15.460 existing AT	
Spring Creek	AT	Install new Auto-Transformer	40.420
Westwood	TSC	Install new Track Sectioning Cabin and remove existing AT	49.220
Wycarbah	FS	Removes existing Track Sectioning Cabin and replace with a new Feeder Station	33.421

The delivery of the Wycarbah Feeder Station project was effectively broken into two key components; works delivered by the <u>TrackPower</u> Alliance (referred to as 'above the line' works) and works delivered by QR National (referred to as 'below the line works'). <u>TrackPower's</u> scope encompassed the design and construction of civil and electrical works associated with each site. QRN was responsible for the procurement of long lead items, overhead traction works in the rail corridor and final commissioning and <u>energisation</u> of each site.

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The financial position as of January 2012 is tabled on page 23

Key Milestones	TCE Dates	Actual Completion Date 06/01/2010	
TCE Approval	18/01/2010		
Detailed Design IFC (5 Sites)			
Civil Earthworks	15/04/2010	09/04/2010	
Structural	22/04/2010	09/04/2010	
Power	27/04/2010	09/04/2010	
OHLE	27/04/2010	09/04/2010	
Site Establishment	22/04/2010	30/04/2010	
Spring Creek AT Practical Completion	19/01/2011	31/01/2011	
Westwood TSC Practical Completion	14/02/2011	28/02/2011	
Gracemere AT Practical Completion	15/02/2011	14/02/2011	
Kabra TSC Practical Completion	11/04/2011	11/04/2011	
Wycarbah FS Practical Completion	11/05/2011	11/01/2012	

Zenith Civil Pty Ltd

Zenith carried out the civil earthworks and concrete works for all the sites in the Wycarbah project. They were the best value for money contractor after running through a tender process. They were engaged under a contract and were managed very well through the project.

Fenced Out

Fenced Out was engaged to install security fence and cattle fence on all sites. Initially this scope was to be carried out by the <u>Civil</u> subcontractor however, the prices received during tender stage for fencing were quite high. This scope was thus excluded from the <u>Civil</u> subcontract and a separate tender process was run to get a competitive price on fencing.

NKT Cables Australia Pty Ltd

NKT Cables were engaged to supply the High Voltage termination kits for the outdoor terminations and also carry out the installation of these terminations on one end of the cable and installation of <u>Pfisterer</u> terminations on the other end of the cable. This was for all sites for the Wycarbah project. NKT Cables have been previously engaged by <u>TrackPower</u> on other jobs and their quotation was used for the development of the TCE.

Brandis Industries

Brandis Industries was engaged to carry out the Functional Integration testing (FIT) for all sites. They were also required to carry out earth grid testing for all sites except for Wycarbah FS. Wycarbah FS earthgrid testing was carried out by PLQ under an agreement between PLQ and QRN.

From "Best Value Report, Wycarbah FS Kabra TSC Westwood TSC Spring Creek AT Gracemere AT"

Same comment as above except as follows

This review considers whether best value was achieved for the Wycarbah (WYC) Project, which comprises the Wycarbah Feeder Station (FS), Kabra Track Sectioning Cabin (TSC), Westwood Track Sectioning Cabin (TSC), Spring Creek Auto Transformer Site (AT), and Gracemere AT site.

The WYC project primarily involved the delivery of the following:

- Establish a new AT site at Gracemere, including a new power supply cubicle (PSC), and decommission the existing AT site at Gracemere;
- Establish a new TSC at Kabra, between Rocklands and Wycarbah FS;
- Add manual AT isolation switches at the existing AT site at Warren;
- Convert the existing Wycarbah TSC to a Feeder Station;
- Establish a new AT site at Spring Creek, including a new PSC;
- Decommission the existing AT sites at Gracemere and Westwood; and
- Establish a new TSC at Westwood, be; ween Wycarbah and Grantleigh FS.

The WYC Project is a major infrastructure project that involved the construction of a new 132/50kV 30/40MVA feeder station at Wycarbah, approximately 33 km south-west of Rockhampton (see figure 1).

This project replaced the existing Wycarbah TSC with the Wycarbah FS and two new TSCs at Kabra (16 km south-west of Rockhampton) and Westwood (49 km south-west of Rockhampton). The project also involved the construction of two AT sites, one at Gracemere (9km south-west of Rockhampton) and one at Spring Creek (40 km south-west of Rockhampton); and the addition of manual AT isolation switches at the existing AT site at Warren. The existing auto transformers at Westwood and Gracemere were decommissioned.

There were a number of variations approved for the project by the ALT, as follows:

- WYC-001: QR National instruction that Trackstar transfer the "Program" costs allocated for the Design Manager and Administrator from January 2010 to the current projects (Total claim \$287,423);
- WYC-002: Insurance premium escalation (Total claim \$49,221);
- WYC-003: TCED phase Geotech (Total claim \$51,322);
- WYC-004: Changes to SVC yard (Total claim \$950,104);
- WYC-005: Design changes, remote end protection study, changes to QRN underbore standards, update of sectioning diagram, ABB HF review and design (\$57,779);
- WYC-006: Ergon civil works (\$17,515);
- WYC-007: Changes to Powerlink yard (\$409,871); and
- WYC-008: Changes to harmonic filter yard and foundation (\$103,351).



The Project Telam were involved in a rigorous process to develop and consider options for the project. A final option was approved on submitted in November 2011, resulting in an approved TCE totalling \$15.322m (includes design and contractors margin).

When scope changes, were added to the TCE, the Target Outturn Cost (TOC) became \$17.249m (includes design and contractors margin). As at December 2011, the Actual Outturn Cost (AOC) was \$17.0m.

6.4. HIGH LEVEL SCOPE

In brief, the project was to:

Location (km CWL)	Site Name	Site Type	Scope
8.879	Gracem ere	AT	Establish new AT site, including a new PSC.
12.000	Gracemere	AT	Decommission site.
15.480	Kabra	TSC	Establish new TSC, between Rocklands and Wycarbah FS.
22.794	Warren	AT	Existing AT site. Add manual AT isolation switches.
33.421	Wycarbah	FS	Convert existing Wycarbah TSC to an FS.
40.425	Spring Creek	AT	Establish new AT site, including a new PSC.
45.689	Westwood	AT	Decommission site.
49.220	Westwood	TSC	Establish new TSC, between Wycarbah and Grantleigh FS.

TCE Dates	Actual Completion Date
19/01/2011	31/01/2011
14/02/2011	28/02/2011
15/02/2011	14/02/2011
11/04/2011	11/04/2011
11/05/2011	11/01/2012
23/04/2012	_
	19/01/2011 14/02/2011 15/02/2011 11/04/2011 11/05/2011



The final Total Outturn Cost (TOC) for the TrackPower component of this project was \$17.0m.

Variations

The WYC Project had eight approved variations totalling \$1.927m as follows:

- VVYC-001: QR National instruction that Trackstar transfer the "Program" costs allocated for the Design Manager and Administrator from January 2010 to the current projects (Total claim \$287,423);
- WYC-002: Insurance premium escalation (Total daim \$49,221);
- WYC-003: TCED phase Geotech (Total claim \$51,322);
- WYC-004: Changes to SVC yard (Total claim \$950,104);
- WYC-005: Design changes, remote end protection study, changes to QRN underbore standards, update of sectioning diagram, ABB HF review and design (\$57,779);
- WYC-006: Ergon civil works (\$17,515);
- WYC-007: Changes to Powerlink yard (\$409,871); and
- WYC-008: Changes to harmonic filter yard and foundation (\$103,351).

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Actual accrued cost were up to January 2012 (page 38)

15. COMMISSIONING

Spring Creek AT was the first site to be commissioned on the 31/01/2011 followed by remaining sites as shown in table 6 below.

Key Milestones	TCE Dates	Actual Completion Date
Spring Creek AT Practical Completion	19/01/2011	31/01/2011
Westwood TSC Practical Completion	14/02/2011	28/02/2011
Gracemere AT Practical Completion	15/02/2011	14/02/2011
Kabra TSC Practical Completion	11/04/2011	11/04/2011
Wycarbah FS Practical Completion	11/05/2011	11/01/2012
PLQ Connection	23/04/2012	_

Table 6 Commissioning dates.

At the time of this report, all site facilities including tools and equipment remained and they will progressively be transferred to another Black water Rail System project namely Duaringa or Bluff. Costs associated with the transfer of these assets shall be reflected in the cost reports for both projects.

All Completion documentation will be submitted to QR National by end February 2012. SKM had requested these in RFI 006 and these were received on 26/2/2014 in Aurizon Network's responses.

Attachment E.1.4 Assessment of Edge Advantage report entitle "Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/12"

From the report compiled by Edge Advantage Pty Ltd, entitled "**Regulatory Asset Base Submission to the QCA for Blackwater Power Projects completed during 2011/12**", dated 30 October 2012. SKM has the following observations:

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As at 2007-08, the BS carried 46.4mtpa in the QRN coal network, and the 2006 Coal Rail Infrastructure Master Plan (CRIMP) identified that 50mtpa coal haulage on the BS system would provide the trigger for investment in power system strengthening at Wycarbah.

In 2008, capacity of the RG Tanna Coal Terminal (RGTCT), was increased to 62mtpa, triggering the need for power supply strengthening at RAG, WYC, DUA and BLU. Without power supply strengthening, there would be increased risk of significant train delays as a result of power supply limitations, resulting in revenue loss for QRN, ports and coal companies, and a reduction in Queensland Government royalties, as well as inflicting damage to Queensland's position as a global leader in the export of coal.

PROJECT NAME	PROJECT TYPE	APPROVED FUNDING	Total Project Expenditure to June 30 2012	2011/12 Claimable Expenditure	Forecast at Completion (FAC) (rounded to the nearest thousand)
Bluff Feeder Station	System Enhancement	44,180,000	37,868,953	37,868,953	38,758,000
Wycarbah Feeder Station	System Enhancement	48,340,000	44,359,199	44,359,199	45,058,000
Duaringa feeder Station	System Enhancement	47,680,000	41,533,430	41,533,430	42,308,000
Raglan Feeder Station	System Enhancement	54,700,000	46,148,066	46,148,066	50,045,000
Total		194,900,000	169,909,648	169,909,648	176,169,000

(Source: Two files: "Copy of 201112 CAPEX file July 18 working file v2" and "Book 3 Laurens Hamman Summary Spreadsheet" – supplied by QR National)

In terms of prudency of scope, these projects were specifically identified in the 2006 and 2008 CRIMPs and have been endorsed by the Blackwater Customer Group and received regulatory scope pre-approved by the QCA in accordance with Section 3.1.1 of Schedule A of the Access Undertaking (see Attachment A).

QRN confirms that the final scope for the four BS projects meets the test of prudency of scope in accordance with Section 3.3.2 of Schedule A of the Access Undertaking (AU) and achieves the scope indicated in the project funding documentation and the 2006 and 2008 CRIMPs.

In assessing the design of the traction power systems, AECOM identified in its study of 2007, that there were deficiencies in QRN's existing designs and recommended the use of gas insulated switchgear (GIS) to replace the aging air insulated switchgear (AIS). As a result, the four BS project feeder stations encompass the new GIS.

Project	Budget (\$'000s)	Actual to 30 June 2012 (\$'000s)	Forecast at Completion (\$'000s)	Projected % Saving at Project End
Bluff	44180	37869	38758	12.27%
Duaringa	47680	41533	42308	11.27%
Wycarbah	48340	44359	45058	6.79%
Raglan	54700	46148	50045	8.51%
Total	194900	169909	176169	9.61%

(source: "Book 3 Laurens Hamman Summary Spreadsheet", - supplied by QR National.)

The expenditure on each project was split between the TrackPower Alliance and QRN. The **TrackPower Alliance** was primarily responsible for design and site construction works, and **QRN** was responsible for power systems works, overhead line equipment (OHLE) works, telecommunications works, signalling works, property acquisition and procurement. The OHLE works for the DUA and WYC projects were sub-contracted to Laing O'Rourke. The following table provides the split for project delivery between the TrackPower Alliance, QR National and other contractor works as per the Forecast Cost at Completion (FAC).

Costs by E	lement and	Service Prov	/ider	
	Bluff	Duaringa	Wycarbah	Raglan
Element	FAC	FAC	FAC	FAC
Project Concepts	893	778	1,008	635
Project Management	750	680	670	860
Signalling	1,200	850	520	1,250
Power Systems	1,900	1,900	1,800	3,100
Telecommunications	480	700	490	900
QR National Internal Cost	5,223	4,908	4,488	6,745
TrackPower Project Delivery	14,735	16,510	18,780	18,700
Equipment Procurement	13,900	13,800	15,900	16,600
Traction & Distribution	4,900	7,100	5,870	8,000
Total	38,758	42,308	45,058	50,045

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The four power supply strengthening projects have all been commissioned during the 2011/12 year with minor works to be completed to ensure the projects are fully completed during the 2012/1013 year. The timing of these projects has been critical due to the significant numbers of new AC electric locomotives ordered by QR National and Pacific National, which are much more power efficient than the old DC locomotives.



In addition, the following attachments are provided (some in electronic form only):

- A. Letters from the QCA pre-approving the regulatory scope.
- B. 2011/12 Capital expenditure claim.
- C. Signed Top Copy of Alliance Agreement.
- D. Best Value Reports on the TrackPower component of the work completed were prepared for each of the projects. These are available electronically for the QCA.
- E. CRIMP Working Paper 4.5, Rational for Power Systems Upgrade in the Blackwater System. QRN, February 2009.
- F. TrackPower verification plan PRG-MP-00008-01.
- G. Variation Benchmarking Guidelines (see best value reports).
- H. Blackwater Power Systems Strategic Overview, Ranbury Management Group P/L, Sept 2009.
- Blackwater Power Systems Upgrade break-even analysis, Ranbury Management Group P/L, Sept 2009.
- J. Procurement Documents (need to confirm these).
- K. Project Briefs and Plans.
- L. Options reports associated with design and engineering workshops were prepared for each of the projects, to ensure the best value for money options were adopted for each project. These are available electronically for the QCA.
- M. Scope Appraisal reports which describe the initial investigations required to complete the power systems upgrades and the process to achieving full project definition and target cost estimating.
- N. Final Project Reports for each project completed at the end of the project by the TrackPower Project Manager, which summarise the outcomes of all TrackPower management aspects of the project.
- O. Commissioning Certificates.
- P. Rail Construction and Overhead Construction Practical Completion Certificates.

Attachment A has been sighted as being **Regulatory pre-approval for Coal Master Plan 2008 capacity expansion** projects, dated 23 April 2009 and Authority pre-approval pf the scope of QR's capital expenditure 2006 – 2009 dated 21 Febraury 2007.

Attachment B is assumed to be "Schedule 3 – System Expansion and Post Commissioning Claim Detail 2012/13 Capital Expenditure Submission" dated December 2013.

Attachment C signed top copy of alliance agreement - unsure what that is

Attachment D best value reports have been sighted

- Att E unsure what this is
- Att F unsure what this document is
- Att G best value reports have been sighted



Att H – not sighted

- Att I not sighted
- Att J not sighted
- Att K not sighted
- Att L Unsure which docs these are
- Att M unsure what these are
- Att N have been sighted
- Att O Not received except for the Raglan OHLE
- Att P has been sighted

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"This claim is for the power projects undertaken on the Blackwater System, namely the **Raglan (RAG)**, **Wycarbah (WYC)**, **Duaringa (DUA) and Bluff (BLU)** projects, which all fall under the category of General Expansion Capital Expenditure"

PROJECT NAME	PROJECT TYPE	APPROVED FUNDING	Total Project Expenditure to June 30 2012	2011/12 Claimable Expenditure	Forecast at Completion (rounded to the nearest thousand)	
Bluff Feeder Station	System Enhancement	44,180,000	37,868,953	37,868,953	38,758,000	
Wycarbah Feeder Station	System Enhancement	48,340,000	44,359,199	44,359,199	45,058,000	
Duaringa feeder Station	System Enhancement	47,680,000	41,533,430	41,533,430	42,308,000	
Raglan Feeder Station	System Enhancement	54,700,000	46,148,066	46,148,066	50,045,000	
Total		194,900,000	169,909,648	169,909,648	176,169,000	
(Source: Two files: "Copy of 201112 CAPEX file July 18 working file v2" and "Book 3 Laurens Hamman Summary Spreadsheet" – supplied by QR National) Figure 2 Summary of the claim for each project.						

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"These projects received customer endorsement of scope in December 2008 and subsequently received QCA endorsement of project scope in April 2009"

Rigorous Scope Definition - Option Development and Selection Methodology

The development of the TCE design and evaluation of options occurred in four phases as follows:

- Formulation of the QR CRIMP (2008) which identified the need for the Blackwater Power Projects;
- Power Systems Assessment Study which identified that the installation of Gas Insulated Switchgear (GIS) was the most appropriate to replace the aging Air Insulated Switchgear (AIS) (Figure 14);
- Site Selection by QRN / TrackPower to determine the theoretical rail chainages that would result from the equal spacing of the power systems assets between Rocklands and Callemondah feeder stations; and
- 4. TrackPower TCE Design Development which considered many major design options for each BS project.

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The scope of the four Blackwater Feeder Stations was presented to customers as part of the projects detailed in the 2006 and 2008 (for scenario SBB 76) CRIMPs for endorsement of project scope, and was endorsed by the Blackwater System Customer Group under the consultation provisions of QRN's 2008 Access Undertaking for new investments in December 2008.

The four projects subsequently received Regulatory Pre-Approval of Scope from the QCA on 23 April 2009 in accordance with Section 3.1.1 of Schedule A of the Access Undertaking.

7.1. INVESTMENT APPROVALS

The investments in the four power enhancement projects were approved by the QR Board, CEO and delegated Senior Executives as follows:

- February 2009 Seed funding for concept design and investigations Raglan \$0.5m.
- March 2009 Procurement of long lead time items for BLU, WYC and DUA \$28.9m.
- August 2009 Seed funding for full concept design for Raglan Feeder Station \$1.705m.
- September 2009 Property and easement procurement \$0.5m.
- October 2009 Funding for the Blackwater Power System Upgrade Project ___\$111.3m.
- October 2009 Funding for the Raglan Feeder Station \$53.0m.

QRN engaged the services of KPMG to undertake quarterly audits of the Alliance to ensure that the process of cost collection, recording, accounting and reporting was undertaken rigorously and accurately. In addition, QRN specified particular aspects of audit interest for each audit, such as at the most recent audit, KRAs and KPIs, as these related to incentive payments.

There was an independent assessment and verification of the TCE undertaken by an independent estimator Curry and Brown.

It is projected that at the completion of all four projects, there will be a saving over the original budget in the order of nine to ten percent.

		Bluff		[Duaringa		V	/ycarbah	1		Raglan	
Element	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
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	15,148	16,600
Signalling	1,302	1,188	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	3,228	2,524	3,100
Traction & Distribution	5,588	4,628	4,900	7,115	6,931	7,100	5,932	5,829	5,870	8,148	7,600	8,000
Telecommunications	568	448	480	717	684	700	687	447	490	982	609	900
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

(Source: "Copy of Blackwater Substation Final (2)")

Figure 16 Budget, Actual to Date Costs, and Forecast at Completion costs for each project LAURENS – NEED TO UPDATE THIS TABLE AND REPLACE THE ATD WITH THE ACTUAL UP TO 30 JUNE 2012



ATTACHMENT A LETTERS FROM THE QCA PRE-APPROVING THE REGULATORY SCOPE	40
ATTACHMENT B 2011/12 CAPITAL EXPENDITURE CLAIM	41
ATTACHMENT C SIGNED TOP COPY OF ALLIANCE AGREEMENT	42
ATTACHMENT D BEST VALUE REPORTS	43
ATTACHMENT E CRIMP WORKING PAPER 4.5, RATIONAL FOR POWER SYSTEMS UPGRAD	DE 44
ATTACHMENT F TRACKPOWER VERIFICATION PLAN PRG-MP-00008-01	45
ATTACHMENT G VARIATION BENCHMARKING GUIDELINES (SEE BEST VALUE REPORTS)	46
ATTACHMENT H BLACKWATER POWER SYSTEMS STRATEGIC OVERVIEW, RANBURY MANAGEMENT GROUP P/L, SEPT 2009.	47
ATTACHMENT I BLACKWATER POWER SYSTEMS UPGRADE – BREAK-EVEN ANALYSIS, RANBURY MANAGEMENT GROUP P/L, SEPT 2009.	48
ATTACHMENT J PROCUREMENT DOCUMENTS	49
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ATTACHMENT N FINAL PROJECT REPORTS	53
ATTACHMENT O COMMISSIONING CERTIFICATES	54
ATTACHMENT P RAIL CONSTRUCTION AND OVERHEAD CONSTRUCTION PRACTICAL COMPLETION CERTIFICATE	55

Attachment E.1.5 Assessment of SAP reports

The assessment commentary in the tables contained in this appendix has been retained as the status prior to Aurizon Network's responses to RFI006. All necessary completion certificates have since been received.

An assessment of the SAP accounts reveals a number of activities and costs associated with the postcommissioning works.

During the review of the SAP reports (file names" 201213 Claim porject list - Dec 2013. xls", "A.02222.xls", "A.02602.xls", A".02603.xls" and "A.02604.xls") the following observations were made:

Attachment.E.1.5.1 General

There were no invoices provided that supported the claim.

Prior to Aurizon networks responses to RFI006, there were no commissioning certificates provided that supported the completion of works for the claim period in question. All necessary completion certificates have since been sighted.

Claim Summary Work Book

The claim summary work book (see Schedule 1, file entitled "201213 Claim project list - Dec 2013.xls") the following is claimed for included in the 2012-2013 RAB

Table E5.1-1	1	Claim	amounts
--------------	---	-------	---------

Project	Claimed amount (ex IDC)
Raglan Feeder Station (A.0222)	4,180,623
Bluff Feeder Station (A.02602)	1,799,079
Duaringa Feeder Station (A.02603)	1,898,100
Wycarbah Feeder Station (A.02604)	453,325
Total	8,331,127

SKM notes that there is not discrepancy between the above figures and those claimed on page 26 of the document entitle "System Expansion and Post Commissioning Claim Detail, 2012/13 Capital Expenditure Submission".

Attachment.E.1.5.2 Raglan (A.02222)

Further assessments of SAP account are documented in the following Table C5.2-2 and Table C5.2-3 for each post-commissioning claim.

Table E5.2-2: Raglan SAP data (A.02222)

Services	Claimed amount (ex IDC)	Comment
Project Concepts	63,677.5	SAP analysis is detailed below
Project Management	97,356.76	SAP analysis is detailed below
Project Delivery	456,713.65	SAP analysis is detailed below
Equipment Procurement	196,7409.3	SAP analysis is detailed below
Signalling	329,037.11	SAP analysis is detailed below

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

SK M

Power Systems	404,015.75	SAP analysis is detailed below
QR Traction & Distribution	107,842.62	SAP analysis is detailed below
QR Services	446,462.45	SAP analysis is detailed below
Telecommunications	308,108.16	SAP analysis is detailed below
Total	4,180,623.30	SAP analysis is detailed below

SKM notes that there is no discrepancy between the claimed amounts and the total of \$4,180,623

Table E5.2-3: Raglan SAP services data (A.02222)

System Study Services	Claimed amount (ex IDC)	Comment
Property Survey & Estimates	1,087.5	Within scope
System Study	62,590	SKM has no information re this study.
Project Delivery - Trackstar Services	Claimed amount (ex IDC)	Comment
Project Admin & Management	86,737.67	This cost with the closure costs below is $\sim(97,356.76/4,180,623)\% = \sim 2\%$ of total claimed amount. SKM notes that this is well within reasonable bounds
Public Communication	282.39	Within scope
Project Closure	10,336.7	See above
Project Delivery Services	Claimed amount (ex IDC)	Comment
TrackStar Project Delivery	421,637.29	SKM has not sighted information re what specific Raglan services were delivered by TrackStar during 2012-13.
External Consultants	31,021.9	As above
Program Cost	626,97.09	As above
PLSL & PCIP	5,397	
Project Insurance	-85,448.84	SKM is not aware what this credit amount is for
ALT attendance	21,409.21	This should be grouped with Project Management services costs above. Doing so gives ~ 3 % project management related services which is still well within reasonable bounds
Equipment Procurement Costs	Claimed amount (ex IDC)	Comment
Switchgear	213,816.63	OK. See RFI006 response. No commissioning certificates sighted.
Supply Transformers	417,354.24	OK. See RFI006 response. No commissioning certificates sighted.
Auto Transformers	2,315	OK. See RFI006 response. No commissioning certificates sighted.
PSC procurement	1,269,825.17	OK. See RFI006 response. No commissioning certificates sighted.

Trial new MI	64,098.26	OK. See RFI006 response. No commissioning certificates sighted.
Signalling Services	Claimed amount (ex IDC)	Comment
Cables admin	28,337.53	SKM would expect around 5 % of capex cost for this but the detailed circumstances are not known.
PSC cabling works	300,699.58	As built information sighted/received per RFI006 response. Scope definition and acceptance certificates not sighted.
Power Systems Services	Claimed amount (ex IDC)	Comment
Project Coordination	55,917.47	~14 % of total Capex costs. This is high but SKM is not aware of the detailed circumstances for this claim.
Equipment Procurement	14,431.21	OK. See RFI006 response. No commissioning certificates sighted.
Construction Support	25,728.75	OK. See RFI006 response. No commissioning certificates sighted.
Testing & Commissioning	75,576.97	OK. See RFI006 response. No commissioning certificates sighted.
Project Closure	62,971.65	OK. See RFI006 response. No commissioning certificates sighted.
System Design	130,325.39	SKM has some designs completed during 2012-2013. See RFI006 response. No commissioning certificates sighted
Fault Locators	26,838.21	OK. See RFI006 response. No commissioning certificates sighted.
Discipline Schedule	12,226.1	SKM has not sighted a description of what this service entails (RFI?)
QR Traction & Distribution Services	Claimed amount (ex IDC)	Comment
T&D Design & Coordination	52,958.07	OK. See RFI006 response. No commissioning certificates sighted.
50 kV Line Design	7,582.14	SKM does not understand the need to design 50kV lines given that Raglan was commissioned in previous claim period?
T & D Equipment Procurement	37,191.35	OK. See RFI006 response. No commissioning certificates sighted.
Construction Inspection & Verification	10,111.06	SKM is not aware if this service was competitively tendered. SKM has not sighted invoices (RFI?) No acceptance certificates sighted as yet.
QR Services	Claimed amount (ex IDC)	Comment
QR Services Construction	426,853.71	OK. See RFI006 response. No commissioning certificates sighted.
TPOs	11,547.22	OK. See RFI006 response. No commissioning certificates sighted.

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

Corporate Charges	8,061.52	SKM has not sighted what this cost item may be. RFI?
Telecommunications Services	Claimed amount (ex IDC)	Comment
PSC Telecommunication works	308,108.16	SKM has not sighted any scope definition for these works, as built information or systems acceptance certificates. RFI 006 stated that the signalling works covered the costs for telecommunications works.

SKM notes again that there is no discrepancy between the claimed amounts and the total of \$4,180,623

Attachment.E.1.5.3 Bluff (A.02602)

Further assessments of SAP account are documented in the following Table C5.3-1 and Table C5.3-2 for each post-commissioning claim

Table E5.3-1: Bluff SAP data (A.02602)

Services	Claimed amount (ex IDC)	Comment
System Study	64,730	SAP analysis is detailed below
Project Delivery - Trackstar	206,211.28	SAP analysis is detailed below
Project Management	95,224.21	SAP analysis is detailed below
Independant Estimator	36,971.9	SAP analysis is detailed below
Property	100,167.84	SAP analysis is detailed below
QR Supply Eq. : S/Gear, AT'S, PT & HF'S	746,236.78	SAP analysis is detailed below
Traction & Distribution	47,626.91	SAP analysis is detailed below
Power Systems	500,825.14	SAP analysis is detailed below
Signals	675.00	SKM notes this claim amount as being rather peculiar and suggests that it may be an error
Telecommunications	409.47	SKM notes this claim amount as being rather peculiar and suggests that it may be an error
Total	1,799,070	

SKM notes that there is no discrepancy between the claimed amounts and the total of \$1,799,070

Table E5.3-2: Bluff SAP services data (A.02602)

System Study Services	Claimed amount (ex IDC)	Comment
System Model Development	64,730	Why was system modelling services provided in 2012/13?
Project Delivery - Trackstar Services	Claimed amount (ex IDC)	Comment
TrackPower Project Delivery	90,147.57	OK. See RFI006 response. No commissioning certificates sighted.
Trackstar Program Costs	116,063.71	OK. See RFI006 response. No commissioning certificates sighted.

SK M

Project Management - Trackstar Services	Claimed amount (ex IDC)	Comment
Project Management	87,694.26	This cost is ~ 5 % of total Capex which is within acceptable parameters howver SKM is not aware of the details and complexities that may have been encountered.
QR Communications	7,529.95	SKM is not aware of what this service entails.
Independant Estimator Services	Claimed amount (ex IDC)	Comment
Independant Estimator/Auditor	36,971.9	SKM is not aware if this service was competitively tendered. SKM has not sighted invoices .
Property Services	Claimed amount (ex IDC)	Comment
Property QR Labour	4,742.1	
Land Acquisition	95,425.74	SKM has not sighted any details regarding these transactions.
QR Supply Eq. : S/Gear, AT'S, PT & HF'S Services	Claimed amount (ex IDC)	Comment
Supply Transformers	137,664.28	OK. See RFI006 response. No commissioning certificates sighted.
AutoTransformers	30,786.05	OK. See RFI006 response. No commissioning certificates sighted.
Switchgear for Bluff, Blackwater, Umolo	84,659.45	OK. See RFI006 response. No commissioning certificates sighted.
Harmonic Filters	493,127	OK. See RFI006 response. No commissioning certificates sighted.
Traction & Distribution Services	Claimed amount (ex IDC)	Comment
T&D Design & Co-ordination	20,579.51	OK. See RFI006 response. No commissioning certificates sighted.
QR Services OHLE Works	27,047.4	OK. See RFI006 response. No commissioning certificates sighted.
Power Systems Services	Claimed amount (ex IDC)	Comment
Project Co-ordination	21,024.28	~ 4 % of total Capex which is acceptable
Design NCP HV Design Review	4,670.18	OK. See RFI006 response. No commissioning certificates sighted.
Design Ops Systms SCADA design	16,788.5	OK. See RFI006 response. No commissioning certificates sighted.
Equipment Procurement	4,130.95	OK. See RFI006 response. No commissioning certificates sighted.
Testing & Commissioning - Commissioning Co-ordination	125,223.42	OK. See RFI006 response. No commissioning certificates sighted.
QR Services ASG Comm. assistance	114,166.04	OK. See RFI006 response. No commissioning certificates sighted.
AB, Manuals & Iso Diagrams	32,951.75	OK. See RFI006 response. No commissioning certificates sighted.

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

Capacity Modelling	60,987	What is this for ?? System capacity modelling would be completed a long time ago.
Current Detectors – procurement and Installation by ASG	1,499.8	OK. See RFI006 response. No commissioning certificates sighted.
PM Exclusions - As Built Meridan Upload	63,516.98	OK. See RFI006 response. No commissioning certificates sighted.
Direct costs - Flights, Accom. and Car Hire - Constr	10,074.9	OK. See RFI006 response. No commissioning certificates sighted.
QRFL – Design, drafting, Comm	34,920.5	OK. See RFI006 response. No commissioning certificates sighted.
Commissioning Technician	2,879.15	OK. See RFI006 response. No commissioning certificates sighted.
Discipline Schedule	7,991.69	OK. See RFI006 response. No commissioning certificates sighted.
Signals Services	Claimed amount (ex IDC)	Comment
QRN NCP TELECOM - CABLE SERVICES COORD	675	
Telecommunications Services	Claimed amount (ex IDC)	Comment
Telecom's Equipment	409.47	

SKM notes again that there is no discrepancy between the claimed amounts and the total of \$1,799,078

Attachment.E.1.5.4 Duaringa (A.02603)

Further assessments of SAP account are documented in the following Table C5.4-1 and Table C5.4-2 for each post-commissioning claim

Table E5.4-1: Duaringa SAP data (A.02603)

Services	Claimed amount (ex IDC)	Comment
System Study	64,255	SAP analysis is detailed below
Project Delivery - Trackstar	650,527.62	SAP analysis is detailed below
Project Management	107,377.94	SAP analysis is detailed below
Independant Estimator	31,021.9	SAP analysis is detailed below
Property	3,655	SAP analysis is detailed below
QR Supply Eq. : S/Gear, AT'S, PT & HF'S	59,8074.2	SAP analysis is detailed below
ASG/Infrastructure Projects	2,525.96	SAP analysis is detailed below
Traction & Distribution	8,695.97	SAP analysis is detailed below
Power Systems	398,648.93	SAP analysis is detailed below
Signals	577.5	SKM notes this claim amount as being rather strange.
Corporate Charges	32,740.18	SKM does not know what this is for
Total	1,799,070	

SKM notes that there is no discrepancy between the claimed amounts and the total of \$1,898,100

Table E5.4-2: Duaringa SAP services data (A.02603)

System Study Services	Claimed amount (ex IDC)	Comment
System Model Development	64,255	OK. See RFI006 response. No commissioning certificates sighted.
Project Delivery - Trackstar Services	Claimed amount (ex IDC)	Comment
TrackPower Project Delivery	473,481.9	OK. See RFI006 response. No commissioning certificates sighted
Trackstar Program Costs	168,556.38	OK. See RFI006 response. No commissioning certificates sighted.
TPO's Trackstar Requirements	8,489.34	OK. See RFI006 response. No commissioning certificates sighted.
Project Management - Trackstar Services	Claimed amount (ex IDC)	Comment
Project Management	104,836.95	This cost is ~ 5.5 % of total Capex which is within acceptable parameters howver SKM is not aware of the details and complexities that may have been encountered.
QR Communications	2,540.99	SKM is not aware of what this service entails
Independant Estimator Services	Claimed amount (ex IDC)	Comment
Independant Estimator/Auditor	31,021.9	SKM is not aware if this service was

		competitively tendered. SKM has not sighted invoices
Property Services	Claimed amount (ex IDC)	Comment
Property QR Labour	3,655	
QR Supply Eq. : S/Gear, AT'S, PT & HF'S Services	Claimed amount (ex IDC)	Comment
Supply Transformers	22,243.47	OK. See RFI006 response. No commissioning certificates sighted.
AutoTransformers supply	357,802.9	OK. See RFI006 response. No commissioning certificates sighted.
Switchgear for durainga, Edungalba, WallarooBluff, Blackwater, Umolo	208,337.66	OK. See RFI006 response. No commissioning certificates sighted.
Harmonic Filters, spares and commissioning	9,690.17	OK. See RFI006 response. No commissioning certificates sighted.
ASG/Infrastructure Projects Services	Claimed amount (ex IDC)	Comment
Labour, travel, accommodation, design, Edungalba repair works	2525.96	OK. See RFI006 response. No commissioning certificates sighted.
		Was it not under warranty? If not is this not maintenance?
Traction & Distribution Services	Claimed amount (ex IDC)	Comment
T&D Design & Co-ordination	3,287.97	OK. See RFI006 response. No commissioning certificates sighted.
PLSL & WHS Levy	5,408	
Power Systems Services	Claimed amount (ex IDC)	Comment
		Common
Project Co-ordination	32,858.45	~ 8 % of total Capex which is acceptable
Project Co-ordination Design NCP HV Design Review, Op		
· · · · · · · · · · · · · · · · · · ·	32,858.45	~ 8 % of total Capex which is acceptable OK. See RFI006 response. No
Design NCP HV Design Review, Op	32,858.45 4,834.41	~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted. OK. See RFI006 response. No
Design NCP HV Design Review, Op Systems SCADA design (18,544)	32,858.45 4,834.41 18,544	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted. OK. See RFI006 response. No commissioning certificates sighted. OK. See RFI006 response. No
Design NCP HV Design Review, Op Systems SCADA design (18,544) Equipment Procurement Testing & Commissioning - Commissioning Co-ordination and QR Services ASG Comm.	32,858.45 4,834.41 18,544 4,824.89	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted.
Design NCP HV Design Review, Op Systems SCADA design (18,544) Equipment Procurement Testing & Commissioning - Commissioning Co-ordination and QR Services ASG Comm. assistance	32,858.45 4,834.41 18,544 4,824.89 203,260.92	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted.
Design NCP HV Design Review, Op Systems SCADA design (18,544) Equipment Procurement Testing & Commissioning - Commissioning Co-ordination and QR Services ASG Comm. assistance QR Services ASG Comm. assistance	32,858.45 4,834.41 18,544 4,824.89 203,260.92 114,166.04	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted. OK. See RFI006 response. No Commissioning certificates sighted. OK. See RFI006 response. No
Design NCP HV Design Review, Op Systems SCADA design (18,544) Equipment Procurement Testing & Commissioning - Commissioning Co-ordination and QR Services ASG Comm. assistance QR Services ASG Comm. assistance AB, Manuals & Iso Diagrams	32,858.45 4,834.41 18,544 4,824.89 203,260.92 114,166.04 63,341.5	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted.
Design NCP HV Design Review, Op Systems SCADA design (18,544) Equipment Procurement Testing & Commissioning - Commissioning Co-ordination and QR Services ASG Comm. assistance QR Services ASG Comm. assistance AB, Manuals & Iso Diagrams Capacity Modelling Direct costs - Flights, Accom. and Car Hire	32,858.45 4,834.41 18,544 4,824.89 203,260.92 114,166.04 63,341.5 19,803	 ~ 8 % of total Capex which is acceptable OK. See RFI006 response. No commissioning certificates sighted. OK. See RFI006 response. No Commissioning certificates sighted. OK. See RFI006 response. No

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim

		commissioning certificates sighted.
Discipline Schedule	2,948	OK. See RFI006 response. No commissioning certificates sighted.
Signals Services	Claimed amount (ex IDC)	Comment
QRN NCP TELECOM - CABLE SERVICES COORD	577.5	?
Corporate Charges Services	Claimed amount (ex IDC)	Comment
Corporate Charges	32,740.18	SKM is ntot aware how these costs are derived or agreed

SKM notes again that there is no discrepancy between the claimed amounts and the total of \$1,898,100

Attachment.E.1.5.5 Wycarbah (A.02604)

The SAP Assessment of Wycarbah contains the same general commentary as the above assessment and is not included

There was no discrepancy in total amount settled to SAP as compared to the amount claimed.

Owners costs consists of "Project Managements" and "Expenses" high level activities/deliverables.

Attachment E.1.6 Assessment of RFI responses

Aurizon Networks response to each RFI are summarised below:

- RFI 001: "The reference to Section 10 is a drafting error in the December 2013 2012/13 Capital Expenditure Submission".
- RFI002: "In April 2013 Aurizon submitted a Draft Amending Undertaking proposing changes to the pricing arrangements for electric traction services in the Blackwater System. A copy of the DAU is available on the QCA website at the following link http://www.qca.org.au/rail/2010-DAUamend/BETPDAAU2013/.

During the industry consultation period relating to the 2011/12 CAPEX claim a number of industry customers requested that the QCA consider the 2011/12 CAPEX claim for the Blackwater feeder Station in light of the provisions being put forward by Aurizon in the April 2013 DAU.

As outlined in the October 2013 QCA Final Approval: Aurizon Network's 2011/12 capital expenditure, the QCA (a copy of which is provided with this RFI response) whilst the QCA notes stakeholder comments the QCA had given prior regulatory scope approval of the 4 Blackwater Feeder Stations as part of a Master Plan vote process and that any issues as raised in the April 2013 DAU or in industry comments in response to the 2011/12 CAPEX claim are not relevant considerations for the QCA in considering the prudency of standard and costs as related to these projects.

Given the QCA position on this issue the information relating to the April 2013 DAU and comments on the 2011/12 CAPEX claim for the Blackwater feeder Station project is provided for information purposes only and is not a consideration for the SKM review of the 2012/13 post commissioning claim for these project"

• RFI003: "Documents are attached".

The provided documents are:

Internal Funding submissions (x 14) for all four projects

6. Bluff Feeder Station Seed Funding \$505k – September 2008 (SKM note - received)

7. Duaringa Feeder Station Seed Funding \$505k – September 2008 (SKM note - received)

- 8. Wycarbah feeder Station Seed Funding \$55k– September 2008 (SKM note, this was for \$505k, received)
- 9. Bluff Additional Seed Funding \$495 November 2008 (SKM note received)
- 10. Duaringa Additional Seed Funding \$495 November 2008 (SKM note received)
- 11.Wycarbah Additional Seed Funding \$495 November 2008 (SKM note received)
- 12.Bluff Full Project Approval Docs November 2009 (SKM note received)
- 13. Duaringa Full Project Approval Docs November 2009 (SKM note received)
- 14. Wycarbah Full Project Approval Docs November 2009 (SKM note received)
- 15.Bluff Feasibility Funding Increase May 2010 (SKM note received)
- 16. Duaringa Feasibility Funding Increase May 2010 (SKM note received)
- 17.Wycarbah Feasibility Funding Increase May 2010 (SKM note received)
- 18. Raglan Seed Funding September 2008 (SKM note received)
- 19. Raglan Seed Funding Increase November 2008 (SKM note received)
- 20.Raglan Feasibility IAR Full Project Approval Docs October 2010 (SKM note received)

2009 CRIMP Working Paper 4.5 – Rational for Power System Upgrade in the Blackwater System – February 2009 (SKM note - received)

Blackwater Power System Upgrade Final Project Brief – Trackpower Alliance - September 2009" (SKM note - received)

The above documents predate this assessment's period for 2012-2103 and all works claimed for inclusion in the RAB have already been assessed as prudent in the 2013 assessment of the 2011-2012 claim. For this reason it is SKM's view that all the above documentation does not inform this assessment process in accordance with the current terms of reference (see **Appendix A**).

The suite of documents received as part of Aurizon Network's response to RFI 003 were :

- Minor Funding Request Bluff, dated 20/6/2008
- Minor Funding Request Duaringa, dated 20/06/2008
- Minor Funding Request Wycarbah, dated 20/06/2008
- Minor Funding Request Bluff, dated November 2008
- Minor Funding Request Duaringa, dated November 2008
- Stage Gate Process: Capital Expenditure, Feasibility Investment Approval Request, Raglan Feeder Station dated 21 September 2009
- Minor Funding Request Wycarbah, dated November 2008
- Memorandum. Notice of Revised Investment Project Approval, Bluff, dated 6 November 2009
- Memorandum. Notice of Revised Investment Project Approval, Duaringa, dated 6 November 2009
- Memorandum. Notice of Revised Investment Project Approval, Wycarbah dated 6 November 2009
- Memorandum. Notice of Revised Investment Project Approval, Bluff dated19 May 2010
- Memorandum. Notice of Revised Investment Project Approval, Duaringa, dated 19 May 2010
- Memorandum. Notice of Revised Investment Project Approval, Wycarbah dated 19 May 2010
- Minor Capital Project Funding Request Raglan, dated 16/02/2007
- Minor Capital Project Funding Request Raglan, dated September 2008
- Memorandum, Power Systems Proposal dated 25 September 2007
- Memorandum, Raglan Substation: Seed Funding Increase dated 18/08/2008
- Rationale for Power Systems Upgrade in the Blackwater System, A CRIMP working paper, dated February 2009
- Decision Minute, Raglan Feeder Station, dated 15/10/2009
- Blackwater Power System upgrade, Final Project Brief, Power Systems. dated 25 September 2009

All of the above documents have been assessed by SKM. SKM notes that each of these pre-dates the Financial Year 2012 to 2013. SKM has used these documents to assess the scope component of the terms of reference i.e. to assess if the works completed in the current claim period where aligned and in agreement with the scope previously agreed.

In terms of assessing prudency of standard, it is SKM's view that the above suite of documents could not be used to assess the actual work completed during the current claim period.

The suite of documents received as part of Aurizon Network's response to RFI 006 were :

- SKM RFI No.6 Aurizon Response.pdf, dated 14/2/2014
- Bajool IMG_0032.jpeg, dated 14/2/2014
- Bajool IMG_0034.jpeg, dated 14/2/2014
- Bajool, N 603.538km, Overall Conduit Layout, dated 5/12/2012
- Bajool, N 603.538km, Power Supply Cubicle, Conduit Layout, dated 5/12/12
- Bajool, N 603.538km, Power Supply Cubicle, Earth Grid Layout, dated 5/12/12
- Epala & Bajool, Typical Earth Grid Connection Details, dated 5/12/12
- Epala & Bajool, Power Supply Cubicle, Locality Plan & Drawing List, dated 5/12/12



- Epala North, N 577.750 km, Overall Conduit Layout, dated 5/12/12
- Epala North, N 577.750 km, Power Supply Cubicle, Conduit Layout., dated 5/12/12
- Epala North, N 577.750 km, Power Supply Cubicle, Earth Grid Layout ,dated 5/12/12
- Epala North, N 577.750 km, Typical Earth Grid Connection Details, dated 5/12/12
- Epala North, N 577.750 km, Power Supply Cubicle, Locality Plan & Drawing List ,dated 5/12/12
- Epala Nth IMG_0001.jpeg, dated 14/02/2014
- Epala Nth IMG_0006.jpeg, dated 14/02/14
- Epala South, N 575.815 km, Overall Conduit Layout, dated 5/12/12
- Epala South, N 575.815 km, PSC, Conduit Layout ,dated 5/12/12
- Epala South, N 575.815 km, Power Supply Cubicle, Earth Grid Layout, dated 5/12/12
- Epala & Bajool, Typical Earth Grid Connection Details., dated 5/12/12
- Epala & Bajool, Power Supply Cubicle, Locality Plan & Drawing List, dated 5/12/12
- Epala Sth IMG_0016.jpeg, dated 14/2/14

All of the above documents have been assessed by SKM. SKM noted that the above information only partly responded to RFI006 queries. A second batch of information was subsequently received from Aurizon Network that adequately addressed the concerns raised by SKM.

SKM has used these documents to assess part of the scope and standard components of the terms of reference i.e. to assess if the works completed in the current claim period where aligned and in agreement with the scope previously agreed.

No completion certificates for any works completed during the claim period had been sighted prior to Aurizon Networks responses to RFI006 on 26/2/2014


Attachment E.2 Regulatory pre-approval for the Coal Master Plan 2008 capacity expansion projects

QUEENSLAND COMPETITION AUTHORITY File Ref: 254640
23 April 2009
Mr Lance Hockridge Chairman QR Network Pty Ltd PO Box 1429 Brisbane Qld 4001 Dear Mr Hoekridge
Regulatory pre-approval for Coal Master Plan 2008 capacity expansion projects
On 24 February 2009, the Authority pre-approved 13 projects detailed in QR Network's Coal Master Plan 2008 (items 1-13 in Attachment 1). At that time, the Authority decided not to pre-approve the scope of four other projects (items 14-17 in the Attachment) and sought further information from QR Network about them.
QR Network has since supplied additional information to support its claim that the four projects are capacity expansion projects. Based on that additional information, the Authority today decided to pre-approve the scope of these four projects as provided for in clauses 2.2(a)(ii) and 2.3.2(b)(i) of schedule FB of the 2008 undertaking.
If you have further questions on this matter, please contact Paul Bilyk on (07) 3222 0506.
Yours sincerely
Brian Parmenter Chairperson

Projects	Indicative Cost (\$millions)
rojects approved by the Authority – February 2009	
1. Rocklands – Gracemere and Walton - Bluff duplications	80
2. Full Blackwater System Main Line Duplications Design package	8
Blackwater main line duplication the following four projects:	140
3. Kabra – Gracemere duplication	
4. Stanwell – Kabra duplication	
5. Dingo – Umolo duplication	
 Walton – Parnabal - Umolo duplication 	
7. Bridge Overload Speed Limits	0.5
8. Coppabella – Ingsdon duplication	
 9. Winchester – Peak Downs duplication 	82
10. Wotonga – Moranbah North duplication	
11. Saraji – Dysart passing loop	225
12. Bridge Overload Speed Limits	1.5
13. Early Works for Wiggins Island coal terminal	46
Sub Total	583
ojects approved by the Authority – April 2009	
14. Blackwater power system upgrade	120
15. Coal Loss project	3.0
16. Level Crossing Investigations	0.5
17. Noise Level Investigations	0.5
Sub Total	124
Total	707

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From Schedule 3, document entitled "Regulatory pre-approval for Coal Master Plan 2008 capacity expansion projects" dated 23 April 2009 the Authority then approved the 4 additional projects including Blackwater Power Systems Upgrades as shown below:

Engineering assessment of five post-commissioning projects in Aurizon Network's 2012-2013 capital expenditure claim



14. Blackwater power system upgrade	120
15. Coal Loss project	3.0
16. Level Crossing Investigations	0.5
17. Noise Level Investigations	0.5
Sub Total	124
Total	707

Item 14 in the above for \$120 million was not specific in terms of locations, however in the document entitled "Authority pre-approval pf the scope of QR's capital expenditure 2006 – 2009" dated 21", February 2007 power systems strengthening (Raglan Substation) is specifically mentioned and approved for an estimated cost of \$16 million and Rangal for an estimated cost of \$3 million. Rangal is not part of the terms of reference for this report.

Project	Estimated cost (Sm)	Estimated cost (\$m)
Blackwater		
Bluff - Blackwater duplication	59 43	
Blackwater - Burngrove Duplication	43	
Aroona - Duaringa duplication	35	
Westwood - Wycarbah Duplication	34	
Power System Strengthening (Raglan Substation)	16	
Yan-Yan Passing Loop	13	
Power System Strengthening at Rangal	3	203



Attachment E.3 July 2013 assessment of Blackwater Feeder Stations components of Aurizon Network's 2011-2012 claim





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.

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

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

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**.





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: - 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 prudency 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 prudency 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 preapproval 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, Duaringa 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 prudency

In assessing the prudency 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 prudency 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 prudency 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 SKMs 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 prudency 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												
		Bluff			Duaringa			Wycarba	h		Raglan	
Element	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)

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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.

	Bolingbroke		DBCT FS		Raglan		Average
Description	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		

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

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 prudency assessment are summarised in Table D-9.



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

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