Queensland Competition Authority

Engineering Assessment of Aurizon Network's Capital Expenditure Claim 2013-14

22 MAY 2015

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MARSDEN JACOB ASSOCIATES

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Title Engineering Assessment of Aurizon Network's Capital Expenditure Claim 2013-14 (CIC)

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Executive Summary

Aurizon Network is obliged to maintain a Regulatory Asset Base (RAB) for the Central Queensland Coal Network (CQCN). The RAB is a compilation and summation of the assets upon which CQCN is permitted to earn a reasonable return. The RAB is used to support the modelling of Reference Tariffs for the CQCN and Aurizon Network's Access Undertaking.

The requirements of Aurizon Network's Access Undertaking are that within four months of the end of the relevant year, Aurizon Network will provide to the QCA details of the capital expenditure that Aurizon Network considers should be approved and included in its RAB for that year. Unless otherwise agreed between Aurizon Network and the Queensland Competition Authority (QCA), Aurizon Network and QCA will annually roll forward all prudent capital expenditure approved by the QCA in each financial year.

In October 2014, Aurizon Network formally submitted its request to the QCA to approve $321,681,594 (exclusive of Interest during Construction (IDC)) of capital expenditure on projects commissioned within the 2013-14 period. QCA will accept prudent capital expenditure upon a risk-based assessment of prudency in scope, standard and cost.

QCA commissioned CMT Solutions, Atkins and Marsden Jacob Associates (known forthwith as the Review Team) to undertake a prudency review of a sample of 63 projects, including a total of three major feasibility projects made up of 25 individual studies. The total expenditure claim for the project sample projects was $244,104,259 (exclusive of IDC).

The Review Team carried out an assessment determining whether the scope, standards and costs of the works were prudent. This assessment was undertaken in accordance with criteria agreed with the QCA, and in alignment with Schedule A of Aurizon Network's Access Undertaking 2010.

Detail of the assessment outcome is provided in Table 4-2 and summarised in the following paragraphs

Prudency of scope

'Scope' in this report refers to the extent of the project and all its elements. In general the Review Team found the projects within the assessed sample to be prudent in scope.

Prudency of standard

'Standard' in this report refers to the technical and/or operational criteria within which the work scope is specified. This includes consistency with existing standards for similar purposes, and compliance with national, industry and federal legislative requirements.

Projects are assessed with respect to Aurizon Network's internal standards and their relevance to and/or compliance with Australian Standards. International current industry trends and practices for similar purposes are also considered in the assessment if appropriate.

From the information provided it was evident to the Review Team that Aurizon has established systems and structures to ensure high standards compliance across their engineering works. Works assessed were consistent with existing infrastructure and the appropriate assurances applied to ensure fitness for purpose for current and (as far as reasonably possible) known future requirements. Therefore in general the projects assessed were found to be prudent in standard with the following minor exceptions.

Project A.04288 Radio System Replacement was not able to be assessed as prudent in standard for the 2013-14 expenditure claim. This project relies upon the submission of three reports to underlie a

robust strategy for radio system replacement over the CQCN. The project is not complete and the two reports submitted serve only as background information for the strategy and recommendations to be provided in the final report. As such these two reports on their own do not fulfil the criteria for prudency in standard. On completion of the final report the prudency of the completed works should be reassessed.

Prudency of cost

The projects were assessed as being consistent and aligned with overall supply chain and operational objectives. In general from the information provided the projects assessed had met contractual timeframes and safety and quality requirements.

The expiry of Aurizon Network's long term national contract for the supply of steel rail in 30 June 2013 provided the opportunity for Aurizon Network to take advantage of new opportunities for cost-effectively sourcing railway products from a global competitive market. The costs of rail procurement can be a significant item in capital expenditure projects, therefore prudency in the evaluation for procurement of this item is paramount in the achievement of overall prudency in project cost outcomes. The review of the steel rail tendering and procurement process undertaken highlighted that Aurizon Network's stage gate process for evaluation of alternatives appears to be a sound and thorough process. However, the review identified a number of potential issues in the total cost of ownership model and several recommendations were made to enhance this process in the future.

Based upon the information provided the Review Team assessed the majority of sample projects as being prudent in cost with the exception of the following:

- A portion of project A.02870 Weighbridge Replacement Program Stage 2 was assessed as not prudent in cost as this portion ($796,533 in value) had been claimed in previous financial years 2010-11 and 2011-12.
- A number of the projects were found to be not completed or commissioned and as such could not be assessed for prudency on cost.
  - A.04221 Microwave Resilience System Upgrades
  - A.04231 Ethernet to Corner – SCADA Upgrade
  - A.04297 AzS600 Axle Counter Replacement
  - A.04320 Optical Fibre Transmission Network Upgrade
  - A.04429 Burnett Highway Bridge Protection System
- A portion of A.04568 Track Upgrade was found to be not completed and hence could not be assessed as prudent.

On recommendation of the Review Team the projects above were deferred or removed from the final revised claim as appropriate. As a result of these actions and accounting revisions[1] the original 2013-14 Capital Expenditure claim submitted in October 2014 of $321,681,594 was revised to $302,010,789 and re-submitted in April 2015. The assessment detailed in this report is based upon the original submission but takes into account the revised submission figures and Aurizon Network decisions submitted in their revised 2013-14 capital expenditure claim

[1] Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim

1 INTRODUCTION

1.1 Background

Aurizon Network Holdings Limited is a national provider of rail and road based freight transport. Aurizon Network Pty Ltd (Aurizon Network), a wholly owned subsidiary of Aurizon Network Holdings Limited, is the Rail Infrastructure Manager of the 2,670km Central Queensland Coal Network (CQCN), and is responsible for its operation, expansion and maintenance (see Figure 1-1[2]).

The Queensland Competition Authority Act 1997 (QCA Act) and the Queensland Competition Authority Regulation 2007 (QCA Regulation) regulate access to the CQCN. The QCA Act and Regulation are supplemented by the Aurizon Network 'Access Undertaking' as approved by the QCA.

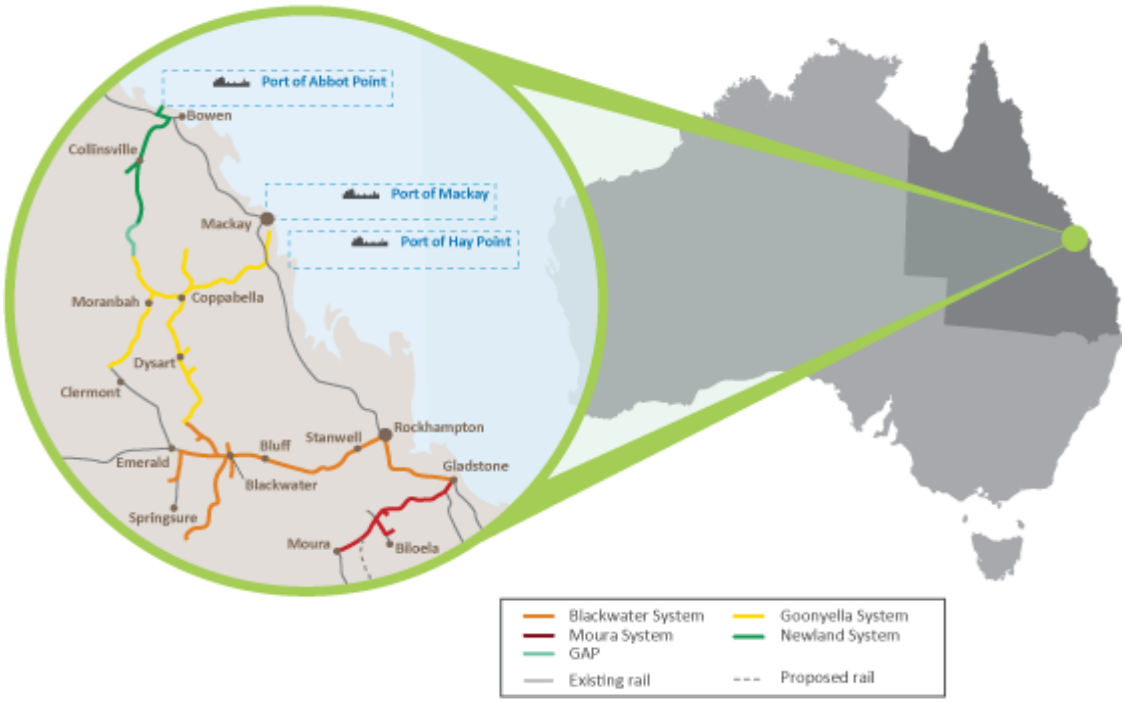

Figure 1-1: Central Queensland Coal Network

The Access Undertaking provides a framework for access to the CQCN, including setting out the pricing principles and process for setting tariffs. The tariffs determine the access charges Aurizon Network can levy on access holders. It provides the primary means by which Aurizon Network recovers its infrastructure investment costs. Reference tariffs are derived from, among other things, the size of Aurizon Network's Regulatory Asset Base (RAB). The RAB, which is rolled forward over time, comprises the initial asset base, plus capital expenditure minus any asset disposals. Capital expenditure therefore influences the size of reference tariffs. However, any

[2] Source: http://www.qca.org.au/Rail/Aurizon/Aurizon-rail-systems

capital expenditure Aurizon Network proposes to add to its RAB must first be approved by the QCA.

Under the terms of the Access Undertaking, QCA is required to review, and if appropriate approve, additions to the RAB with reference to prudency. As part of the approval process, Aurizon Network must submit documentary evidence to the QCA that clearly demonstrates and substantiates prudency in terms of scope, standard and cost of selected infrastructure project works.

In December 2014 the QCA commissioned CMT Solutions, supported by Atkins, and Marsden Jacob Associates (the Review Team), to provide technical advice to assist the QCA to determine whether the:

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

1.2 Extent of the Review

As directed by the QCA's terms of reference, the Review Team undertook the assessment of Aurizon Network's capital expenditure claim with particular regard to Schedule A – Maintenance of Regulatory Asset Base (Schedule A) of the approved QR Network Access Undertaking (2010 Access Undertaking).

The Team's assessment included a review of a sample of the projects submitted as the 2013-14 Aurizon Network capital expenditure. The methodology used to ascertain the sample of projects is provided in Section 3.1, and a full list of projects submitted by Aurizon Network for the 2013-14 capital expenditure claim is provided in Appendix A.

1.3 Structure of this report

This report is structured as follows:

Section 1: Provides an introduction and overview of the report.

Section 2: Provides an overview of Aurizon Network's 2013-14 capital expenditure claim.

Section 3: Describes the methodology and criteria adopted for assessment, and how the representative sample projects were chosen for review.

Section 4: Summarises the information provided by Aurizon Network for the representative sample project assessment.

Section 5: Provides a summary of the overall assessment results and recommendations.

Section 6: Details assessment results for each project schedule.

Appendix A: Gives the full list of projects and total expenditure for the 2013-14 claim.

Appendix B: Details assessment results for individual projects as assessed from the sample.

1.4 Supplementary Report

In addition to this document is an accompanying supplementary report: Aurizon Network CAPEX Review 2013-14: Prudency Assessment Forms. This supplementary report includes the full assessment forms, inclusive of the comments and analysis that form the basis upon which the final prudency outcomes outlined in this report were developed.

2 AURIZON NETWORK 2013-14 CAPITAL EXPENDITURE CLAIM

2.1 Aurizon Network 2013-14 CAPEX Submission Claim

Aurizon Network's total 2013-14 original capital expenditure (CAPEX) claim submission was valued at $321,681,594 excluding IDC. The 2013-14 claim was submitted and assessed under the 2010 Access Undertaking framework to be included in the RAB. Subsequent to this assessment, Aurizon Network has revised its 2013-14 CAPEX claim to $302,010,789 excluding IDC.

2.2 Structure of claim

Aurizon Network has structured its 2013-14 CAPEX Claim into nine schedules as detailed below:

Schedule 1 Claim summary workbook; includes a summary of the Aurizon Network 2013-14 CAPEX Claim.

Schedule 2 IDC claim model; includes the IDC summary 2013-14 CAPEX claim spreadsheet. For the purposes of the engineering assessment project costs are assessed exclusive of IDC.

Schedule 3 Expansion and post-commissioning projects: These are the projects that add capacity to the existing network, albeit track capacity or additional electrical capacity, and ongoing expenditure for any projects which have been commissioned and approved in the claims from previous years. For the 2013-14 claim, Aurizon Network is seeking $117,161,353 (revised from $117,179,683[1]) excluding IDC in capital expenditure for a total of six post-commissioning costs for system expansion projects that were commissioned or formally discontinued as per Clause 2.5 of Schedule A of the 2010 Access Undertaking, and three new expansion projects.

Schedule 4 Track and civil assets (TACA): All assets related to the rail formation, corridor civil works, ballast, sleepers, rail and structures such as culverts and bridges are classified as 'TACA'. The original 2013-14 claim was made up of 35 projects totalling $96,983,906 excluding IDC, this was revised to $88,436,445 excluding IDC after the deduction of $7,138,091 of operational costs. An additional $1,098,000 was also deducted due to accounting anomalies[3]. TACA projects include eight asset classes: structures, formation/ballast, sleepers, rail, turnouts, corridor access, civil and track upgrades.

Schedule 5 Electrical assets: This category includes all elements of the electrical supply and distribution network that provides power for electric traction on the systems. Electrical projects include three types: network distribution, power systems and supervisory systems. The electrical assets total for the original 2013-14 claim was $9,875,333 excluding IDC for a total of 11 projects.

[3] Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim

Schedule 6 Signalling and track side systems (S&TSS) assets: These assets are required to control train movements, identify train location, operate rail points, operate active level crossing protection, and to monitor and protect the below rail assets from rolling stock defects, to reduce the risk of derailment or infrastructure damage. The S&TSS original total for the 2013-14 claim was $15,572,661 excluding IDC for 25 projects. Subsequent to this review two S&TSS projects were deferred from this year's claim, making the revised submission $13,365,772 for 23 projects due to a deduction of $796,533 which had been included in the 2010-11 and 2011-12 expenditure claim. A further $122,718 was deducted due to accounting discrepancies[4].

Schedule 7 Telecommunications assets: These assets provide data linkages between field equipment and network control, the network control systems, digital and microwave radio systems, and the IT system, and are critical to the operability of the Aurizon Network. This asset class also includes projects that build network control resilience and disaster recovery ability. The telecommunications 2013-14 claim includes 14 projects at a total cost of $13,972,507 excluding IDC. Four projects were subsequently deferred from this years' claim making the final revised 2013-14 expenditure claim for telecoms projects $8,146,744 excluding IDC.

Schedule 8 Corridor assets: These are all assets within, or that access, the rail corridor, but are not directly part of the track structure, signalling or telecoms networks, or the electrical overhead systems. These assets include fencing and corridor security, environmental protection, corridor access, and level crossings. The corridor assets total for the original 2013-14 claim was $11,524,636 excluding IDC for 18 projects. This was revised to $11,401,257 due to deferring of one project from this year's claim period.

Schedule 9 Feasibility studies: These are Coal Rail Infrastructure Master Plan (CRIMP) voted feasibility studies which have been ceased due to the economic downturn. The final expenditure claim for these studies is $53,623,886 (revised from $56,572,868[4]) excluding IDC.

2.3 Supporting information

For each project, the following documentation was provided:

- SAP ZWISR project cost report
- funding requests, as applicable.

For a number of projects, the following information was also provided:

- pre-feasibility Investment Approval Request (IAR)
- project plans.

Completion certification or other closing documentation is required to comply with the prudency terms as set out in 2010 Access Undertaking, Schedule A. Although not submitted for the majority

[4] Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim

of projects, this information was requested by the Review Team and provided during the period of the review.

During the course of the assessment, additional data was required, and a Request Register Log along with RFI list was subsequently developed. In response to the RFI list, Aurizon Network provided the Review Team with a significant amount of additional data. A copy of the Request Register Log is provided in Appendix B.

The Review Team acknowledges the effort Aurizon Network made to provide additional requested data as quickly and efficiently as possible.

The Review Team believes there is considerable potential to improve the information management system relating to capital infrastructure investments made by Aurizon Network, to facilitate the availability of data, especially where it is crucial to the prudency criteria, and to thereby streamline future capital expenditure reviews.

3 PRUDENCY ASSESSMENT METHODOLOGY AND CRITERIA

Aurizon Network's total 2013-14 revised submission claim is valued at $302,010,789 excluding IDC and includes a total of 138 projects (113 projects and 25 feasibility studies). This assessment, which was initially undertaken on the original submission submitted to the QCA in October 2014, has been revised to include Aurizon Network's responses to the draft assessment report and any subsequent revisions to the original submission expenditure claim.

3.1 Overall methodology for prudency assessment

3.1.1 Overview

Figure 3-1 provides a summary of the flow of tasks and considerations undertaken in the assessment of prudency for each project reviewed.

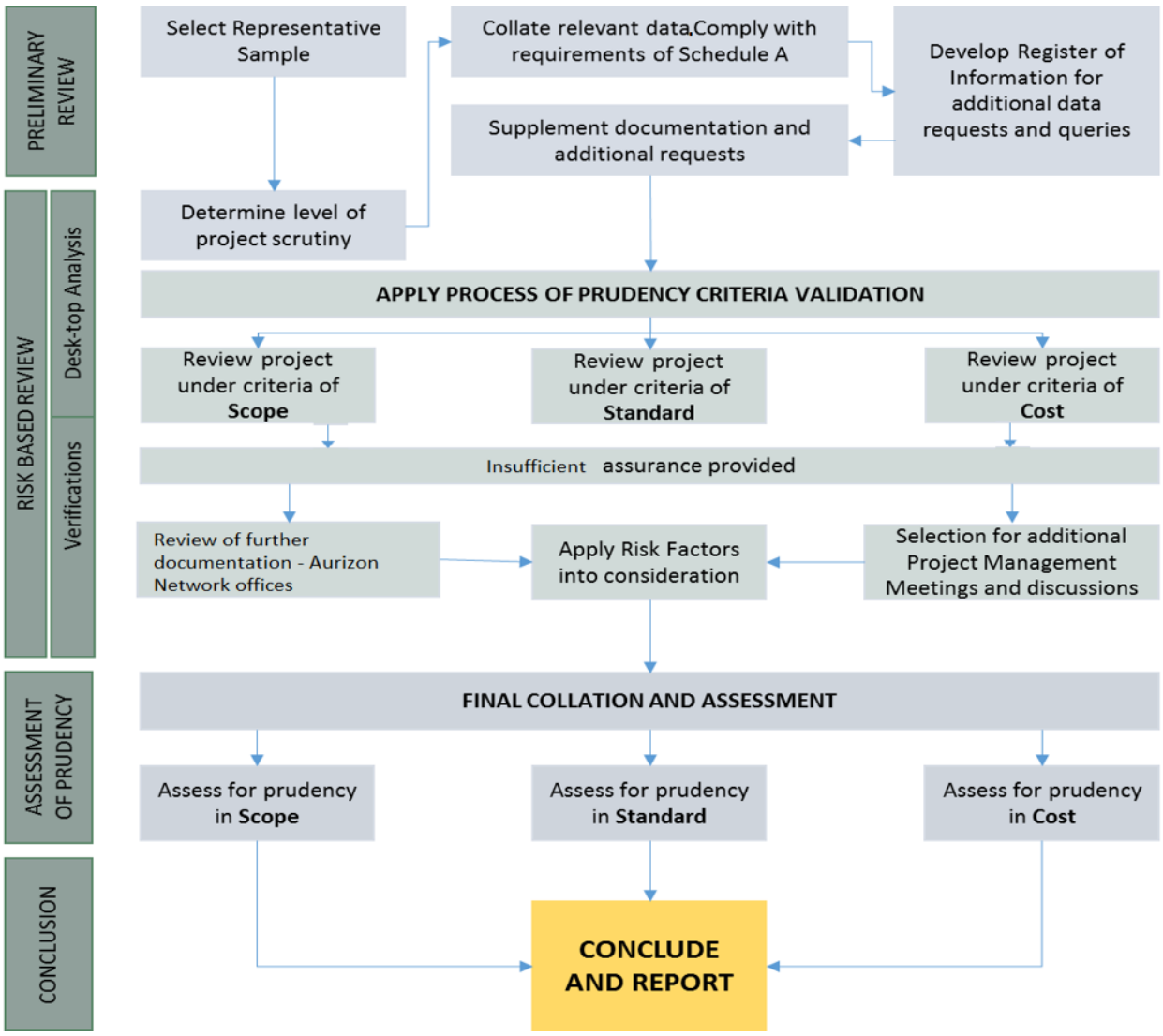

Figure 3-1: Project methodology flowchart

To ensure a consistency of approach in the test for prudency, the Review Team developed a risk matrix and structured assessment format. This approach ensured rigour around the assessment process, and provided assurance that all prudency criteria were considered equally across the works.

3.1.2 Assessment sample selection

Figure 3.2 shows the spilt based on project claimed value as submitted in the 2013-14 Aurizon Network capital expenditure claim. As can be noted more than 50% includes claims of value under $500,000. To assess all of these minor claims would be considered inefficient and therefore the first step in undertaking the prudency assessment was to select a representative sample of projects from the total submission.

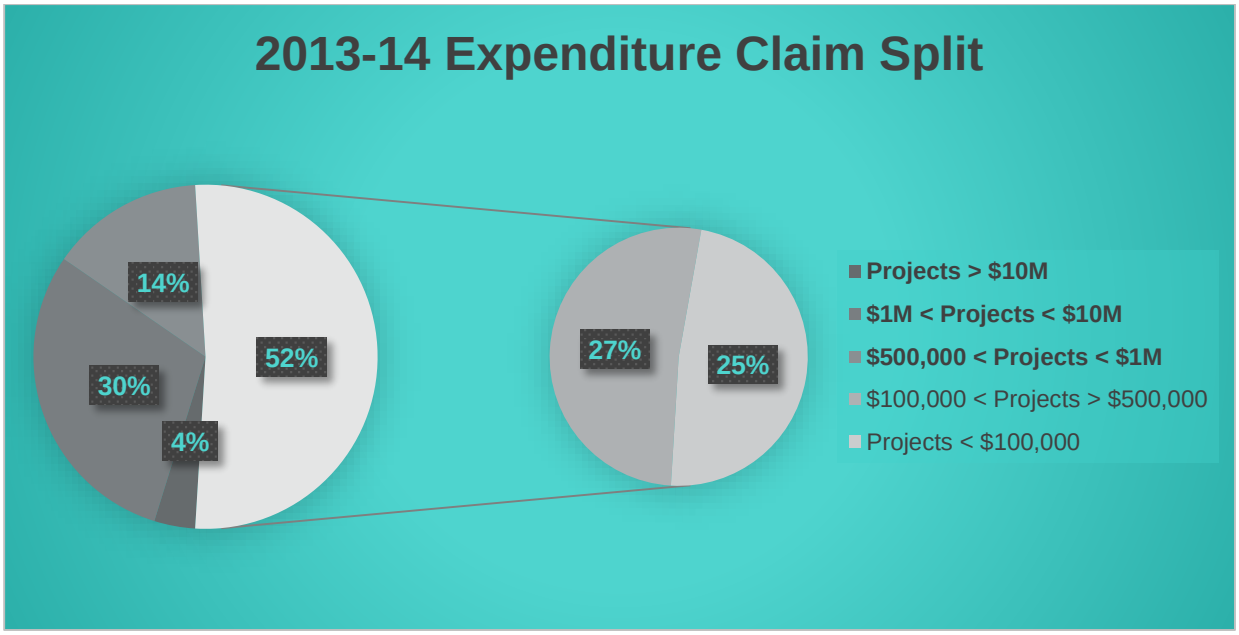

Figure 3-2 Project value split 2013-14 expenditure claim

The process undertaken is summarised in the following steps:

- The projects in the 2013-14 CAPEX claim submitted by Aurizon Network were initially sorted by system
- From this sorted list a selection was made to ensure that for each system (wherever possible) at least one example per discipline was selected. This ensures that different management approaches to scope programming, costing structures and application of standards inherent across different systems and disciplines are captured.
- Where there was only a small number of projects overall in a system, typically all or the majority of projects were selected to optimise consistency of assessment across all systems
- Where there was a number of projects of the same type in one system, projects of higher value were be selected (i.e. over $10,000,000)
- The “preliminary” sample developed from the above was then reviewed at a very high level review (i.e. skim of the scope and cost). Both the projects selected and omitted were reviewed at this level to ensure that high value projects, or projects which may

be of specific interest or risk were considered. This risk approach is based upon using professional knowledge and experience to identify potential issues from the project summary write ups in the schedule submitted. At this stage additional projects were added or omitted as appropriate to develop the draft sample.

- The Review Team's draft sample was then submitted to the QCA for discussion and approval. Any additional projects identified as being of interest to the QCA were then added to the sample and the final sample selection completed.
- Finally from the approved sample the percentage of value from the total claim is calculated to ensure an adequate representation cost wise from the whole claim. From previous experience over the years a sample of around 70-80% is aimed for, however this has been higher or lower depending on the individual values and types of projects submitted.

The summary of the final sample selection, including total percentages, values and types of projects selected from the 2013-14 claim is shown in Table 3-1 below. This sample, for the purposes of this report, is hereto referred to as the projects, in that it is the total of the projects assessed and discussed in this report.

Table 3-1: Summary of representative sample of projects selected for assessment

Category		Total projects claimed	Total projects assessed by the Review Team	% from total number in category	Total value of projects selected *	% of value from total submission value
System	Blackwater	26	8	31%	$21,810,692	44%
	Goonyella	23	6	26%	$106,952,684	90%
	Moura	3	2	67%	$532,945	99%
	Newlands	6	2	33%	$4,488,492	99%
	System Wide	54	20	37%	$53,746,576	76%
Type	Corridor	18	6	33%	$6,152,741	53%
	Electrical	12	3	25%	$2,732,400	28%
	Expansion	9	3	33%	$98,997,035	84%
	S&TSS	25	8	32%	$11,601,126	74%
	TACA	35	12	34%	$60,695,587	63%
	Telecoms	14	6	43%	$7,352,500	71%
	Feasibility	25	25	100%	$56,572,868	100%
TOTAL projects assessed			63		$244,104,259	76%

*Based on original submission figures to accurately represent sample size on selection

3.1.3 Risk-based approach

The Review Team assessed each individual project to meet the prudency criteria as outlined in Schedule A of 2010 Access Undertaking, and as summarised in Table 3-2 below. Table 3-2 highlights the process for assessment of prudency, which involves an evaluation of each individual project under a set of approved criteria within the parameters of:

- scope
- standard
- cost.

3.1.4 Criteria

Table 3-2 lists the key criteria from Schedule A and the QCA's Terms of Reference that have been applied by the Review Team in assessing prudency of scope, standard and cost.

Table 3-2: Key criteria in assessment of prudency of scope, standard and cost[5]

Scope	The projects are: • below rail infrastructure • commissioned in 2013-14 • capital expenditure and not maintenance • approved by a majority of the relevant customer group (weighted by Reference Tonnes[6]) • not excessive to reasonable demand • consistent with the Network Asset Management Plan • funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated • where Aurizon Network had reasonable grounds to proceed, given the circumstances relevant at the time of the decision[7]. An assessment of the appropriateness of processes used to evaluate alternatives. The asset replacement expenditure was consistent with asset age and composition. Customer-specific capital expenditure was approved by the customer concerned.
Standard	The projects are: • of a reasonable standard to meet the scope, and not overdesigned • consistent with existing standard and configuration of adjacent infrastructure (to the extent that the existing infrastructure has been accepted as reasonable[8]) • compliant with appropriate approved processes in circumstances where there is a departure from existing standards[9].
Cost	The project costs are reasonable for the scope and standard considering: • scale, nature and complexity • market conditions • procurement policies • project management aspects.

[5] Derived from Schedule A of Aurizon Network 2010 Access Undertaking, and the QCA's Terms of Reference to CMT

[6] QR Network's Access Undertaking 2010, Schedule A, Clause 3.2.2 (f)

[7] QR Network's Access Undertaking 2010, Schedule A, Clause 3.3.2 b (ii)

[8] QR Network's Access Undertaking 2010, Schedule A, Clause 3.3.3 b (iii)

[9] QR Network's Access Undertaking 2010, Schedule A, Clause 3.3.3 c

Within each element of scope, standard and cost criteria, an assessment was made based upon the data submitted in the claim, professional judgement and the risk profile of the individual project. The risk profile was determined based on a combination of the criticality of the financial, network supply chain, and safety risks associated with the project.

Assessment of scope

The Review Team assessed the scope of the works against achieving appropriate discretionary scope while ensuring the works were reasonably required. In particular:

- the need for the capital expenditure to accommodate demands at the time of approval
- the evaluation process adopted by Aurizon Network and the overall effectiveness of the selection process in terms of value for money to the customer
- the specifics around the capital evaluation process and any limitations or strengths of the process to achieve a value-for-money outcome
- that work undertaken and commissioned in respect of customer pre-approved scope projects was consistent with the scope of works approved by the customer vote.

Where applicable, additional data to support the scope was requested and reviewed, for example:

- future forecasts/demand generators
- current condition reports and engineering recommendations
- safety/accident reports with specific information on regulatory requirements and capital expenditure investment.

In assessing the scope, the Review Team considered the process of capital project selection and evaluation in relation to the process adopted by Aurizon Network and its overall effectiveness in achieving value for money.

Assessment of standard

The Review Team assessed the standard of the works within a project focusing on the function/capacity of the delivered infrastructure against the planned outcome. This included:

- ensuring as far as is reasonably practical that works were consistent in all material aspects with existing and adjacent infrastructure
- where possible, comparing current and likely future usage levels
- where it was evident that works had been altered sufficiently from standards, the engineering justification for any departures from the standard was reviewed for its appropriateness and prudency
- where there may be additional requirements of operators or forecasted current and future usage levels requiring augmented capacity or heightened standards (e.g. safety)
- compliance with National Australian Standards, Codes of Practice, or other relevant design and construction standards
- Aurizon Network design standards

- all relevant legislation, including requirements by any authority (e.g. the Safety Regulator and the EPA).[10]

Assessment of cost

The Review Team focused cost reviews on capital expenditure for prudency in terms of scale of costs, nature of the costs and complexity of the projects at hand. The Review Team's detailed cost evaluation considered the separation of above and below rail costs where applicable, and strove to identify amongst the sample projects any situation where 2013-14 approved costs may have been approved in a previous period.

The Review Team applied a risk-based approach and used experienced professional judgement in each circumstance to decide the depth to which a project cost review would be taken**.**

In addition to the review of project costs, the Review Team undertook a comprehensive assessment of procurement processes for major infrastructure items such as rail. The assessment focused on checking that the procurement arrangements supported the achievement of the capital works outcomes in a least cost manner (referred to by the Australian National Audit Office as 'Getting the right outcome at the right price').

The fundamental criteria applied for this assessment are shown in Figure 3-3.

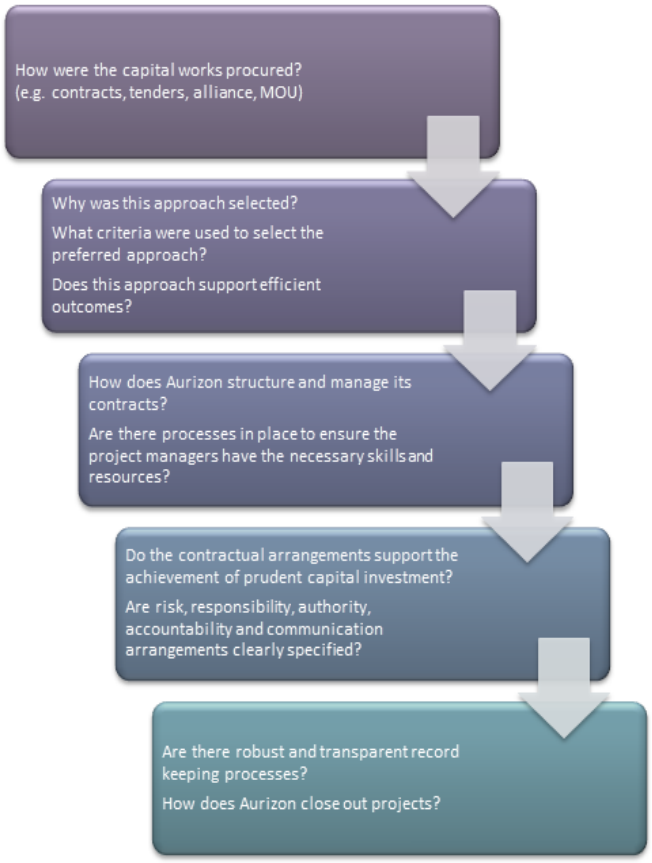

Figure 3-3 Basic criteria for assessment of procurement processes

[10] 3.3.3 Prudency of Standard of Works Schedule A, 2010 Access Undertaking (consolidated version prepared June 2014)

3.2 Risk matrix

It is acknowledged that the terms of prudency can still be generally accepted even if specific individual criteria are not fully satisfied. For example, a project may still be prudent in scope even if it cannot be shown that the work has been the subject of a rigorous priority assessment, or all variations from the authorised scope have been authorised using a standard process. Similarly, prudency of standard may still be possible if a suitable piece of equipment which has been installed in the network does not meet the usual norms of the company or system. Finally, costs may still be deemed as prudent, depending upon the individual circumstances, even if a disproportionate amount of the approved budget has been expended on the work delivered up to a given point in time or the calculated unit rate for the provision of the asset is higher (or lower) than might normally be expected.

Under these conditions the risk matrix shown in Figure 3-4 was applied as a guide by the Review Team during the assessment process.

Figure 3-4: Risk matrix

Assessment of information supporting the element (refer Table 3-2)	Project is of high cost ($10m+)[1]	Project is of medium cost ($5 to 10m+)[2]	Project is of low cost (<$5m)[3]
Project appears to fulfil requirement – information fully supportive	**1**	**1**	**1**
Project fulfils overall prudency requirement but: ► information not supplied; **or** ► some issues identified	**2**	**2**	**1**
Project fulfils overall prudency requirement but: ► information not supplied; **and** ► some issues identified	**3**	**2**	**1**

Key:

1. Project is of high cost ($10m+) and/or commercial/safety critical, with high risks to supply chain if standards/scope/cost are compromised. Project is comprised of components not familiar to Aurizon Network's operations, or is outsourced to Alliance or other major contract

2. Project or components of project are of medium cost ($5-10m), and are comprised of components considered as 'business as usual' for Aurizon Network

3. Project or components are low cost (less than $5m), and of low commercial/safety risk to supply chain – 'business as usual'

By implementing the rigour of applying the risk matrix around each criterion detailed in Table 3-2, the Review Team was able to ensure that each identified risk was documented by applying a simple scoring rating of 1 to 3.

The scoring is based on the premise that omissions in relatively minor low risk or low value activities have a lesser effect on overall prudency, and the scores allocated to each project take this into account.

Projects (or components thereof) costing less than $5m which are also of low commercial or safety risk to the 'business as usual' operation of the supply chain are allocated a score of 1 for

the criterion under consideration, even if some information is not available for review or issues have been identified with the management or delivery of the project works.

As the value of the project under consideration increases, so does the potential effect of any issues identified as part of the review. For projects with a value of $5–10m, and which are comprised of components considered as 'business as usual' for Aurizon Network, a score of 2 is awarded for criteria where the project does not fully meet a requirement or where the information supplied for review is not fully supportive of the works delivered and/or cost expended.

When considering projects which have a cost in excess of $10m and/or include other high risk elements, however, there is a clear steep increase in the scores awarded for the review of each criterion. Where a project is fully documented and appears to fulfil the identified requirements, a score of 1 will be awarded. Where the project fulfils the overall requirement but there are deficiencies in the documentation provided for review **or** some issues were identified, a score of 2 is awarded. Finally, where a project of high cost value fulfils the overall requirement but there is some information absent **and** issues are identified, then a score of 3 is awarded.

Large groupings of 2 or 3 scorings within a number of criteria indicate potential major issues concerning prudency in any specific parameter (i.e. scope, standard or cost).

In the Review Team's assessment, the risk matrix in combination with the use of the assessment forms detailed below acted as a guide and provided assurance that equal rigour was being applied to each project regardless of its nature.

3.3 Assessment forms

To ensure consistency in the assessment, the Review Team developed a form for each project, excluding feasibility projects, to be reviewed under the criteria defined in Table 3-2. The reasoning behind not preparing separate forms for feasibility studies, was due to works being classified as formally discontinued as opposed to commissioned[11]. Thus a slightly different approach was required in the assessment of prudency for these projects (refer to Section 5.7).

The assessment form was originally developed for previous capital expenditure reviews and found to be successful as a way to ensure consistency across projects, regardless of the scale, nature and level of complexity of the project. The format of the form has been refined in accordance with experience and feedback from previous assessments.

A summary of each project assessed (the first page of the assessment form) is provided in Appendix B of this report and details the overall and final assessment of cost, standard and scope. The full assessment form and details on the prudency outcome for all of the criteria detailed in Table 3-2 for each of the 38 representative sample projects assessed is provided in the supplement to this report, Aurizon Network CAPEX Review 2013-14: Prudency Assessment Forms.

The supplementary report is structured as follows:

- Part 1: Schedule 3 – Expansion projects

[11] Part 2 Acceptance of Capital Expenditure into the Regulatory Asset Base, Prudency of Standard of Works Schedule A, 2010 Access Undertaking.

- Part 2: Schedule 4 – Track and civil assets (TACA) projects
- Part 3: Schedule 5 – Electrical systems projects
- Part 4: Schedule 6 – Signalling and track side systems (S&TSS) projects
- Part 5: Schedule 7 – Telecommunications asset projects
- Part 6: Schedule 8 – Corridor asset projects
- Part 7: Schedule 9 – Feasibility projects

3.4 Projects review – Aurizon Network

As part of the assessment process, the Review Team spent an intensive week within Aurizon Network offices to review projects in the agreed sample. The team found this week to be invaluable through the provision of access to:

- the appropriate project management staff who could discuss any issue(s) identified
- review documentation held in files and databases

The Review Team would like to acknowledge and thank Aurizon Network staff for making that week a success.

4 ASSESSMENT RESULTS AND RECOMMENDATIONS

4.1 General

Aurizon Network's 2013-14 revised capital expenditure original claim total of $321,681,594 was reduced to $302,010,789 excluding IDC. From the original claim total the Review Team has assessed 63 representative sample projects. The reduction of $19,670,805 from the original claim of $321,681,594 is partially due to eight of these sample projects being deferred or removed, and two being partially reduced[12]. These revisions result in the final revised total for the sample projects being $226,733,033 as shown in Table 4-1 below.

Table 4-1: Summary of assessments undertaken by the Review Team

	Values excluding IDC	Revised Values excluding IDC
Value of overall claim	$ 321,681,594	$302,010,789
Value of projects reviewed	$ 244,104,259	$226,733,033
Percentage of available claim covered in sample	76%	75%

Table 4-2 below provides a summary of the project types and cost claims of the projects assessed.

Project number	Project name	System	2013–2014 Revised Claimable expenditure exclusive of IDC[13] ($)	Prudency assessments			Comments on evaluation results
				Scope	Standard	Cost	
A.02503	Dunsmure Passing Loop		$0	Removed from 2013-14 claim[1]			A.03364 and A.02503 Feasibility Studies removed from claim. Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim
A.02673	Winchester to Peak Downs Duplication		$1,250,555	✓	✓	✓	
A.02689	Connors Range: Additional Crossing		$5,423,857	✓	✓	✓	
A.02730	Goonyella System Expansion		$2,328,434	✓	✓	✓	

[12] A total reduction of $14,937,526 due to projects being deferred or removed from the 2013-14 claim (refer Table 4-2) and a further $4,733,279 reduction due to accounting issues (Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim)

[13] Interest during construction

Project number	Project name	System	2013–2014 Revised Claimable expenditure exclusive of IDC[13] ($)	Prudency assessments			Comments on evaluation results
				Scope	Standard	Cost	
A.02787	Blackwater System Expansion: Concept Stu		$2,688,836	✓	✓	✓	
A.02827	South Goonyella (Lilyvale) Passing Loop	Goonyella	$21,532,523	✓	✓	✓	
A.02870	Weighbridge Replacement Program: Stage 2	System Wide	$231,825	✓	✓	✓	Revised submission found to be prudent in scope, standard and cost.
A.02974	WIRP2: Moura Link		$14,999,136	✓	✓	✓	
A.02976	WIRP 1 North Coast Line (Part)		$8,390,585	✓	✓	✓	
A.03323	Rolleston: Upgrade Spur Line 9.75 MTPA	Blackwater	$2,894,490	✓	✓	✓	
A.03353	GSE X140 - DBCT to HPSCT 2nd Road	Goonyella	$74,555,477	✓	✓	✓	
A.03360	Ingsdon to Red Mountain Duplication		$1,475,505	✓	✓	✓	
A.03361	Peak Downs Feeder Station		$268,798	✓	✓	✓	
A.03363	Wotonga to Moranbah North Duplication		$1,036,598	✓	✓	✓	
A.03364	Coppabella Angle and Grade Easing		$0	Removed from 2013-14 claim[1]			A.03364 and A.02503 Feasibility Studies removed from claim. Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim
A.03366	Teviot Brook Passing Loop		$1,207,519	✓	✓	✓	
A.03529	HPSCT to DBCT: Third Road		$250,344	✓	✓	✓	
A.03530	DBCT to Yukan: Track Upgrades		$1,950,565	✓	✓	✓	
A.03531	Hatfield to Coppabella: Track Upgrades		$2,938,049	✓	✓	✓	
A.03532	Moranbah North to North Goonyella: Dupln		$954,709	✓	✓	✓	
A.03533	Red Mountain to Winchester: Duplication		$790,332	✓	✓	✓	
A.03534	Peak Downs to Dysart: Duplication		$1,249,805	✓	✓	✓	
A.03535	Wotonga to Moranbah: Duplication		$1,164,372	✓	✓	✓	

Project number	Project name	System	2013–2014 Revised Claimable expenditure exclusive of IDC[13] ($)	Prudency assessments			Comments on evaluation results
				Scope	Standard	Cost	
A.03620	Gladstone 140		$964,073	✓	✓	✓	
A.03635	WIRP2: NCL Aldoga – Wiggins Balloon Loop		$639,983	✓	✓	✓	
A.03636	WIRP2: 2nd Balloon Loop		$1,529,702	✓	✓	✓	
A.03640	Thales Axle Counter Trial	System Wide	$600,028	✓	✓	✓	
A.03676	Blackwater Crew Change Pads	Blackwater	$969,282	✓	✓	✓	
A.03679	Red Mountain: Feeder Station		$91,449	✓	✓	✓	
A.03681	Saraji: Feeder Station		$104,272	✓	✓	✓	
A.03876	Moura Corridor Crew Change & Stowage Loc	Moura	$409,565	✓	✓	✓	
A.03892	Access Road Hatfield Koumala – Bollingbroke Road	Goonyella	$236,808	✓	✓	✓	
A.03896	Overheads Renewal Rocklands to Callemondah	Blackwater	-$95,035	✓	✓	✓	
A.03932	DPCT Balloon Loops and Rail Spur		$1,926,411	✓	✓	✓	
A.03934	CQ Coal Formation Strengthening Project	System Wide	$179,804	✓	✓	✓	
A.03961	Operational Network LAN WAN Architecture	System Wide	$866,136	✓	✓	✓	
A.03978	O/F Transmission Network Upgrade Rockhampton to Gladstone	Blackwater	$709,993	✓	✓	✓	
A.04066	BW Model 10/Harmon Boom Mech Replacement	Blackwater	$114,304	✓	✓	✓	
A.04138	Level Crossing Upgrade at Sonoma Coal	Newlands	$103,000	✓	✓	✓	
A.04145	Newlands Culvert Upgrade Project	Newlands	$4,385,492	✓	✓	✓	
A.04190	Digital TI21 Track Circuit Upgrade – Coppabella to Hay Point	Goonyella	$5,162,302	✓	✓	✓	This is new technology and learnings during the execution phase have resulted in the full approved budget being spent while only a proportion of the work has been completed. Additional funding may be necessary, and this

Project number	Project name	System	2013–2014 Revised Claimable expenditure exclusive of IDC[13] ($)	Prudency assessments			Comments on evaluation results
				Scope	Standard	Cost	
							should be noted for next year's claim.
A.04203	Formation Eng. Assessment & GPR Record	System Wide	$301,519	✓	✓	✓	
A.04221	Microwave Resilience System Upgrades	System Wide	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Majority of cost is the procurement of equipment currently in storage in Emerald, not in service
A.04231	Ethernet to Corner – SCADA Upgrade	System Wide	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Sufficient equipment not in service during claim period
A.04254	Section Insulator Replacements	System Wide	$1,875,987	✓	✓	✓	
A.04283	12/13 Formation Strengthening Project	System Wide	$2,439,683	✓	✓	✓	
A.04288	Radio System Replacement	System Wide	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Study incomplete
A.04297	AzS600 Axle Counters Replacement	System Wide	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Commissioning is postponed on this project until 2015-16
A.04308	Culvert Asset Renewal Project Goonyella	Goonyella	$4,499,581	✓	✓	✓	
A.04320	Optical Fibre Transmission Network Upgrade	System Wide	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Sufficient equipment not in service during claim period
A.04345	Sleeper Renewal Program 2013-14	System Wide	$22,635,014	✓	✓	✓	
A.04366	Level Crossing Upgrades 13 14 FY	System Wide	$4,310,705	✓	✓	✓	
A.04390	Track Upgrade Project 13 14 – Newlands	System Wide	$2,208,312	✓	✓	✓	
A.04407	Axle Counters vs. Track Circuit Replacement	System Wide	$415,799	✓	✓	✓	
A.04421	Powerhouse Roads 1, 2 & Loop Track Upgrade	Blackwater	$6,409,698	✓	✓	✓	
A.04422	13 14 Formation Strengthening Project	System Wide	$4,741,463	✓	✓	✓	
A.04423	OH Equipment Renewal – Goonyella System	Goonyella	$951,448	✓	✓	✓	

Project number	Project name	System	2013–2014 Revised Claimable expenditure exclusive of IDC[13] ($)	Prudency assessments			Comments on evaluation results
				Scope	Standard	Cost	
A.04429	Burnett Highway Bridge Protection System	Moura	$0	Not prudent as originally submitted in the 2013/14 claim but now deferred to future years.			Project due for completion June 2015
A.04479	Callemondah Roads 4 & 5 Renewal	Blackwater	$1,547,959	✓	✓	✓	
A.04490	Flood Claim January 2013	Blackwater	$2,121,909	✓	✓	✓	
A.04548	Weighbridge Renewal	System Wide	$2,000,502	✓	✓	✓	
A.04568	Track Upgrade FY14	System Wide	$1,775,691	✓	✓	✓	Glued Insulated Joint work removed from 2013-14 claim
IV.00001	Asset Protection Systems: Braeside WILD	System Wide	$2,017,880	✓	✓	✓	
Total revised expenditure claim assessed ($)			226,733,033				
Total revised expenditure claim provided to the Review Team ($)			302,010,789				

Table 4-2: Prudency assessment summary

4.2 Projects selected for economic review

The Review Team used a risk-based approach to select a number of major projects which were subject to an economically focused prudency assessment in addition to the technically focused review. This assessment included an economic assessment of market (i.e. procurement and contractual efficiencies) and non-market (regulatory economics) conditions as appropriate.

The significant projects selected were:

- South Goonyella (Lilyvale) Passing Loop (A.02827 – $21,532,523 excluding IDC)
- GSE X140 – DBCT to HPSCT 2nd Road (A.03353 – $74,555,477 excluding IDC)
- WIRP2: Moura Link (A.02974 – $14,999,136 excluding IDC)
- Sleeper Renewal Program 2013-14 (A04345 - $22,628,559)

These individual projects were assessed and have been discussed within their respective discipline sections in Section 5. In addition, specific topics relevant to the prudency review of the projects included in the 2013-14 expenditure claim were reviewed. These topics included:

- procurement processes for major infrastructure items such as rail
- market analysis in terms of the prudency of continuing with feasibility studies prior to and during the GFC, and specifically in relation to land purchase.

The results of the analysis are discussed in the following sections.

4.3 Procurement

4.3.1 Introduction

A review of Aurizon Network's steel rail procurement process was undertaken. Rail procurement is a significant item in capital expenditure and underlies numerous capital expenditure projects including civil expansions, TACA and corridor projects. As a result, the procurement of this major component was considered to be a major influencing item in the prudency of cost in these projects and reviewed accordingly.

The review was informed by interviews with Aurizon Network management and the following key 'commercial-in-confidence' reports and models:

- QR National (July 2012) Sourcing Strategy Approval Engagement Pack #2, Steel Rail Sourcing
- Steel Rail Request for Proposals Technical Evaluation (October 2012) Excel file
- Aurizon Network (January 2013) Steel Rail, Request for Proposal [NC 2616] 2nd Evaluation Summary
- Aurizon Network (May 2013) Enterprise Procurement Approval to Award Engagement Pack #3

- Steel Rail Total Cost of Ownership (TCO)[14] (November 2014) Excel file.

4.3.2 Background

Prior to the 2013-14 claim period, all steel rail was purchased from Australian supplier One Steel via a contract which had been ongoing for several years but was due to expire on 30 June 2013. A decision was made to explore options to identify potential improvements to the purchase of steel rail. This process was initiated both because the existing contract was to expire and an internal review found that the Australian steel manufacturing industry is facing pressures due to a strong Australian dollar, high operating costs and an unstable world economy; also that Aurizon Network is using a product that can be cost-effectively sourced from a global competitive market. Fourteen potential steel rail suppliers were identified[15], and a four stage process was initiated:

- Engagement Pack #1 – Define the Scope
- Engagement Pack #2 – Analysis and Strategies
- Engagement Pack #3 – Engage with the Market and Negotiate with Suppliers
- Engagement Pack #4 – Implementation, Contract Management Plan and transition to Category Management

4.3.3 Initial analysis (Engagement Pack #2)

The analysis underpinning Engagement Pack #2 identified that sourcing of rail from China or Europe could be more cost-effective:

- Australian Steel Rail = [redacted] per track km (NPV[16])
- European Steel Rail = [redacted] per track km (NPV)
- China Steel Rail = [redacted] per track km (NPV)

However, it also identified that the storage capacity at the Yeerongpilly facility for the welding and storage of steel rails is limited. If rail was imported in shipments of [redacted] tonnes then storage at Yeerongpilly would not be sufficient and storage at port would need to be considered.

4.3.4 Request for Proposal process (Engagement Pack #3)

In September 2012, 12 suppliers were invited to participate in a request for proposal (RFP) process. From the RFP process, eight potential suppliers were identified and initial proposal review meetings were held with each.

RFP evaluation was conducted on five key areas: supplier commercial background, supplier capability, technical compliance, compliance with terms and conditions, and pricing.

[14] TCO is Total Cost of Ownership analysis. This analysis compares the present value sum of capital and operating costs for capital infrastructure alternatives.

[15] QR National (July 2012) Sourcing Strategy Approval Engagement Pack #2, Steel Rail Sourcing

[16] NPV = net present value

Where pricing is concerned the evaluation identified that [redacted] current and RFP prices were [redacted] than all other options, with the RFP price being [redacted] per tonne [redacted] than the existing contract rate.

The analysis also noted that four overseas suppliers quoted on Deep Head Hardened (DHH) rails which normally carry a [redacted] premium over Head Hardened (HH) rails. The report noted that the head hardness of DHH rail ranges from 350-440 HB, as measured on the Brinell scale, and that [redacted] does not produce this type of rail. The evaluation identified that: *"It is assumed that DHH rails would reduce maintenance costs hence resulting in a lower total cost of ownership compared to HH rails. However, this needs to be proved by detailed case study."* (page 9, January 2013)

4.3.5 Final shortlisting (Engagement Pack #3)

Aurizon Network's Enterprise Procurement Approval to Award Engagement Pack #3 (May 2013) identified that the evaluation and negotiation processes short listed four suppliers, see Figure 4-1. The Stage 1 supplier was recommended for commercial agreement which was subsequently negotiated with [redacted] and Aurizon has subsequently received shipments. Stage 2 suppliers were shortlisted for further investigation.

Suppliers	Invited for RFP	Responded to RFP	Evaluated	Invited for initial proposal review	Invited for revised proposal	Shortlisted for further negotiations	Shortlisted for stage 1 award	Shortlisted for stage 2
[redacted]	✓	✓	✓	✓	✓	✓		
	✓	✓	✓	✓	✓	✓	✓	
	✓	✓	✓	✓	✓	✓		
	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓	✓		✓
	✓	✓	✓	✓	✓			
	✓	✓	✓	✓	✓			
	✓	✓						
	✓	✓						
	✓							
	✓							

Figure 4-1: Shortlisting of suppliers

Source: Aurizon Network (May 2013) Enterprise Procurement Approval to Award Engagement Pack #3

[redacted] was recommended as the preferred supplier, because:

- negotiations with [redacted] had resulted in a [redacted] reduction in price per tonne and a further [redacted] on volume discount.
- if Aurizon Network procured [redacted] tonnes or more per annum, negotiations had resulted in a potential annual saving of approximately [redacted] million.

- total cost of ownership (TCO) analysis comparing [redacted] 350 and 370 hardness rails concluded that use of 370 hardness rails would result in a cost saving of [redacted] per tonne in net present value (NPV) terms, when compared with [redacted]

As part of the cost prudency assessment, the Review Team considered the procurement process and the total cost of ownership analysis undertaken by Aurizon.

While the overall procurement process appears to be sound, a number of errors were identified with the total cost of ownership analysis, and the cumulative effect of these was to skew the result of the analysis significantly in favour of the [redacted] rail. Correction of the errors did not alter the overall result of the total cost of ownership analysis, although it did significantly reduce the quantum of benefits from the [redacted] product. The Review Team recommend that the findings of this assessment be taken into account to improve the accuracy and integrity in future total cost of ownership analyses.

4.3.6 TCO analysis

The issues identified with the total cost of ownership modelling fall into three broad categories: calculation; assumptions; and sensitivity tests.

Calculation

The **NPV calculation** in the spreadsheet was incorrect. The NPV calculation in the total cost of ownership spreadsheet requires that all cells relating to the calculation contain a value, even if that value is zero (0). If a cell is left blank that year is missed in the NPV calculation and the result is incorrect.

To illustrate, Aurizon Network calculated that the purchase of [redacted] rail would cost [redacted] (NPV, 20 years for one kilometre of track) but when the required zero values are included in the blank cells the NPV result drops to [redacted] (over 20 years for one kilometre of track).

This error recurs across all of the spreadsheets. It must be noted that correcting the error does not change the result but it does significantly reduce the quantum of the saving that is achieved by switching from [redacted].

The Review Team understand that Aurizon Network has subsequently corrected this error in response to our enquiries.

It appears that there was also an **error in the replacement cycle** used in the model for [redacted]. [redacted] analysis assumes that the 370 HB rail lasts longer than 350 HB rail supplied by [redacted]. The analysis assumes the 370HB rail would be replaced in year 9, but omits to include a further replacement cycle in year 18. In comparison, the [redacted] analysis assumes that the rail has to be replaced every 7 years, so the rail is replaced twice over 20 year analysis period (year 7 and year 14). Including a second replacement cycle (and residual value) for [redacted] educes the cost saving that results from switching rail supply options.

When the calculations are corrected (using the model supplied by Aurizon Network) the total cost of ownership benefit from switching to [redacted] rail falls from [redacted] per tonne (NPV over 20 years for one kilometre of track).).

Assumptions

The review has identified several issues with the assumptions in the total cost of ownership analysis. These relate to the assumed exchange rate, grinding costs and weighted average cost

of capital (WACC). Storage at the port is another (significant) cost associated with the [redacted] rails but this cost appears to have been underestimated in the model.

Exchange rate changes are a key risk to projects involving international transactions, because they can be highly volatile. This means that their inclusion in the total cost of ownership modelling needs to be rigorously assessed, using careful projections and sensitivity ranges to confirm that exchange rate risk does not undermine project outcomes.

Discussions with Aurizon Network identified that the risk is being managed through exchange rate hedging. However, it should be noted that while hedging is possible for individual shipments it cannot address the exchange rate risk over a 20 year period, so this should be tested through sensitivity testing.

Reduced **rail grinding** cost was a key reason that [redacted] 370 HB rail was preferred to [redacted]350 HB rail, because this reduction significantly reduced the total cost of ownership. This is based on trials conducted by Aurizon which found that 30% less grinding passes were needed on 370 HB rail. To illustrate the cost differential, in year 1 the assumed grinding cost is [redacted](for one kilometre of track). Thus, over 20 years the [redacted] rail grinding cost is [redacted]

[redacted]rail grinding = [redacted]per kilometre of track (NPV)

[redacted] rail grinding = [redacted] per kilometre of track (NPV)

The rail grinding cost assumptions used in the model were high in comparison to industry values. Previous benchmarking analysis has found that the cost per kilometre is around [redacted] less than that assumed. In addition, the number of grinding passes in the model for [redacted] appear to be based upon the worst case scenario which would only apply to a very small percentage of the network. Changing the assumptions to benchmarked industry expectations significantly alters the total cost of ownership. For instance, when the benchmark rail grinding assumptions are used the cost saving from switching to [redacted]rail falls significantly.

Where the **weighted average cost of capital** (WACC) is concerned the analysis is based on a [redacted]

Reducing the WACC will marginally improve the NPV outcome from shifting to [redacted] rail.

Discussions with Aurizon Network confirmed that the original **storage cost estimates** underestimated the actual cost of storing the imported rails, because additional storage capacity had to be acquired at the port. The review team were not advised of the full additional cost involved, but notes that this would have a negative impact on the NPV outcome.

Sensitivity tests

No sensitivity tests appear to have been undertaken in the total cost of ownership analysis. It is important that sensitivity testing is undertaken to determine how sensitive the outcome is to changes in key assumptions, and to test that worst case scenario analysis does not alter the outcome. For this analysis the following sensitivity tests should have been undertaken (as a minimum):

- exchange rates,

- operating and maintenance costs,
- capital costs,
- high and low WACCs, and
- worst case scenario.

4.3.7 Key Conclusions and recommendations

Key conclusions from this review:

- Aurizon Network's stage gate process, involving four Engagement Packs, appears to be a sound and thorough process for identifying whether alternative actions should be implemented for major procurements.
- the total cost of ownership modelling that underpinned the rail procurement decision making is an important and necessary component of the assessment process but one which suffered from calculation errors, causing the net present value (NPV) benefit of switching from [redacted] to be materially overstated.
- the review has identified potential issues with a number of the key assumptions that underpinned the total cost of ownership analysis. Changes to these assumptions can materially affect the NPV result.
- the lack of sensitivity tests in the model means that a worst case scenario has not been tested; instead a single scenario is considered in isolation.
- the [redacted] should be used for the analysis.

In conclusion the outcome of the review resulted in a recommendation that Aurizon Network implement several actions to address the problems with the total cost of ownership analysis:

1. training in how to complete the total cost of ownership spreadsheet model, and the fundamentals of NPV analysis, should be implemented for analysts responsible for completing the spreadsheet model.
2. internal review of the total cost of ownership modelling by financially qualified personnel within Aurizon Network should be routinely undertaken to check the assumptions, method and results.
3. external peer review of the total cost of ownership modelling should be undertaken periodically to check the assumptions, method and results.
4. all assumptions need to be transparently presented and justified to confirm that analysis is providing a robust assessment of the alternatives.
5. sensitivity testing should be undertaken for all key model inputs with a particular focus on the 'worst case' scenario.
6. the total cost of ownership modelling should be based on the [redacted]

Recent discussions with Aurizon Network have confirmed that all of these recommendations are being implemented or have already been established.

4.4 Feasibility studies – market analysis

4.4.1 Outlook for rail demand and its influence on capital expenditure

When considering prudency of scope, specifically for progress of works in the feasibility studies (including purchase of land), an assessment must be made as to whether Aurizon Network had reasonable justification to proceed with an investment, given the circumstances relevant at the time.

One of the key reasons that underpins some of Aurizon Network's investments was to prepare for a projected increase in the demand for its rail services. Aurizon Network's capital expenditure submission includes a range of projects that were undertaken based on expected future growth in coal production and exports. There are two types of projects in the 2013-14 capital expenditure claim that fitted into this category:

- Expansion projects: These projects involve the development and construction of new track related infrastructure.
- Feasibility projects: These projects examine the feasibility of future investments.

For example, two of the largest projects in Aurizon Network's 2013-14 capital expenditure submission were the AS 02827 Lilyvale passing loop and the AS 03353 GSE X140 DBCT to HBSCT Second Road[17]. Both of these projects involved the development and construction of new track-related infrastructure. The Lilyvale project was undertaken to increase capacity to move coal in both the Goonyella and Blackwater systems, while the GSE project was undertaken to increase capacity in the Goonyella system. Both projects were undertaken by Aurizon Network, taking into consideration future growth expected for coal production and exports.

4.4.2 Queensland coal market

Assessment of market conditions requires consideration of the timing of historical market development and investments. That is, in order to assess whether the expenditure on the feasibility studies was prudent, it is necessary to understand the market demands and customer needs at the time when the expenditure was being made.

In particular, it is noted that many of the projects in Aurizon Network's submission were undertaken over several years. This is typically because the investments incorporate the different stages of a project – from concept to pre-feasibility to investment approval, and then construction and commissioning. For example, the key investment decisions for the Lilyvale and GSE projects were made prior to 2013-14 – the Lilyvale passing loop began in concept stage in 2009, while the GSE project began in a similar way in 2010.

From the available documentation and publicly accessible information, it appears that Aurizon Network's investment decisions were a logical response to strong and increasing demand for its services, resulting from elevated coal prices. Moreover, Aurizon Network's growth-related investment decisions were made at times when there were expectations that demand for coal would continue to rise.

There is a range of evidence to support this, including documentation provided by Aurizon Network for the Lilyvale and GSE projects which indicates that they have undertaken modelling

[17] Goonyella System Expansion to Dalrymple Bay Coal Terminal to Hay Point Second Coal Terminal Second Road

of future demand and compared this to available rail capacity. This documentation is also consistent with historical Coal Rail Infrastructure Master Plans (CRIMPs) which indicate that Aurizon Network planned to increase capacity across its network in response to increasing demand for rail track services. It is also noted that coal production trended upwards over the period 2009-10 to 2013-14 (see Figure 4-2).

4.4.3 Coal market in 2013-14

The coal market changed considerably during the 2012-13 and 2013-14 financial years. Prices fell significantly below those witnessed in 2010, 2011 and the first half of 2012 (see Figure 4-3). However, during the 2013-14 financial year there was some uncertainty around the outlook, particularly with the price rise that was witnessed in November and December of 2013.

Reflecting this uncertainty, Aurizon Network appears to have adjusted to this changing environment in an appropriate manner, as many of the projects which have only progressed to the feasibility stage in their 2013-14 submission will not be progressing to the next stage of the investment process in the short term. This appears to be a reasonable response, taking into account contemporary market conditions for coal. For instance, in December 2013 Aurizon Network announced that Glencore had put the Wandoan Mine on hold (in September 2013) and that the Surat Basin Rail Venture was terminated.

Since then, there have been further price falls during the first half of 2014-15. The price falls in 2014 have placed further pressure on coal mining margins, which will likely have consequences for future coal mining production growth, particularly if prices do not recover to 2011 and 2012 levels.

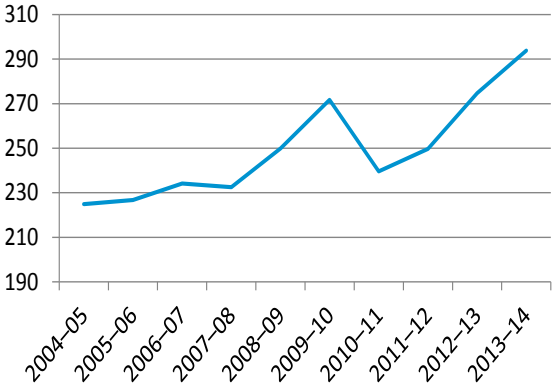

Figure 4-2: Queensland coal production (million tonnes)

Source: Department of Industry (2014), Resources and Energy Statistics 2014, Office of the Chief Economist, Canberra, p. 44

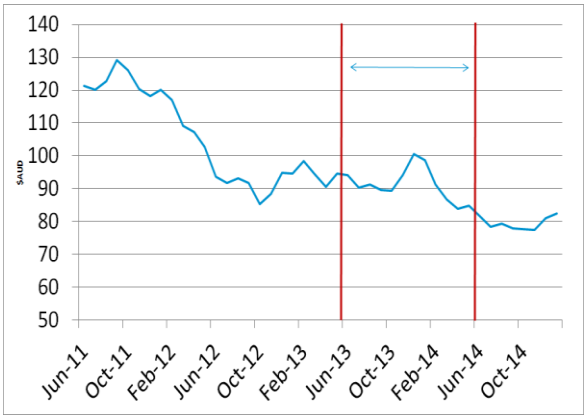

Figure 4-3: Thermal coal prices (AUD per metric tonne)

Source: http://www.indexmundi.com, Coal, Australian thermal coal monthly Price – Australian Dollar per Metric Ton

4.4.4 Purchase of land for feasibility studies

There are six feasibility projects which include costs for the purchase of land. Although these projects were abandoned before any site execution works had begun, key parcels of land were purchased along the proposed corridor alignments.

These projects and the associated land costs are:

Table 4-3 Summary of Land Acquisition costs per project

Project	Project name	Land Acquisition costs
A.02689	Connors Range: Additional crossing	$2,562,880
A.02974	WIRP2: Moura Link	$2,210,441
A.03366	Teviot Brook Passing Loop	$50,755
A.03530	DBCT to Yukan: track upgrades	$300,000
A.03531	Hatfield to Coppabella: track upgrades	$996,159
A.03932	DPCT Balloon Loops and Rail Spur	$300,000
Total:		$6,420,235

Despite the consideration of the market analysis above (Table 4-3), where property acquisition is concerned two key issues have been identified:

Why was property acquisition undertaken during the prefeasibility stage?

Concept level analysis tends to be high level and the project could change significantly by the time the prefeasibility analysis is completed. Purchasing land appears to be more prudent during a feasibility stage when the project is more clearly defined.

On the other hand, this early purchasing strategy could be seen as a prudent management technique, with land being purchased before the proposed project becomes widely known. This may allow the purchasing authority to acquire the relevant land at closer to true market value, without the local property market becoming artificially inflated.

Further, where limited corridors are available for a given proposed route due to environmental or topographical factors, and it is likely that the same parcel of land may be required for an opposing project, there may be merit in the early acquisition of the land in question.

Another factor to be considered is the attitude of the existing landowner, which is unlikely to be known with any certainty until after an initial approach has been made. An unwilling vendor can cause significant delay in the land acquisition process, with resumptions, where required, generally taking 12–18 months to complete. The process for revocation of state forest can take even longer and is generally between 2 and 3 years.

Such delays can significantly impact the delivery of a project, so it can be seen that an early approach to the affected landowner would be prudent to minimise any potential impacts on the project schedule. In times of rising mineral prices and increasing demand, this strategy would be in the best interests of all parties; but in times of falling prices and decreased demand, Aurizon could be left holding surplus land if projects are deferred or cancelled. In such cases, it would seem prudent for the surplus land to be disposed of, but this can be difficult to achieve.

When Aurizon wishes to acquire land, it may undertake negotiations with the landowner and purchase the freehold interest. The normal process, however, is for such negotiations and purchases to be conducted by the Department of Transport and Main Roads (DTMR) acting on their behalf. DTMR purchases the land and then invoices Aurizon for the relevant cost. Although the purchase price is paid by Aurizon, the land becomes Crown Land managed by DTMR, and is

included in the rail head lease and sublease. Aurizon's use of this land is then restricted by the terms and conditions of the sub-lease. Permitted uses are:

1. the installation, maintenance, operation, use, repair, replacement and renewal of rail transport infrastructure on the land, and the associated management and operations of a railway

2. commercial and community purposes as approved by the Chief Executive.

In addition, Aurizon cannot grant any registered interest or sub-interest to a third party without prior approval from DTMR.

Any disposal of such land will require approval from DTMR to release their lease interest, and a request for the Minister to convert the land back to freehold. The land will then be subject to the State Government's Land and Asset Management Policy, where land deemed surplus by one government agency will need to be offered to other government agencies before it can be sold to a private party. This also implies that Aurizon may have to pay DTMR the market value of the land for a second time before the freehold title can be transferred to Aurizon Network.

Notwithstanding these restrictions, inclusion of land in the sub-lease does carry advantages for Aurizon, as such land is exempt from town panning restrictions, land tax and council rates.

Where a negotiated agreement cannot be reached and land is resumed, however, as was the case for the Moura Link project, it must be placed in the sub-lease, and in the case of any subsequent disposal it must be offered back to the original owner before being placed on the open market. For any sale back to the original owner the price achieved would be less than that originally paid because:

1. the original land acquisition cost included compensation paid to the landowner in addition to the purchase price. This compensation would have been assessed under Heads of Compensation (i.e. injurious affection, severance and disturbance). These generally make up the majority of the compensation paid, with the land cost itself being comparatively low.

2. DTMR could only sell the land back to the original owner at market value, which would not take into account the Heads of Compensation.

The land purchases for the now abandoned feasibility studies were first being negotiated at a time when the price of coal was fluctuating but still looking relatively buoyant and these feasibility studies were therefore still expected to progress to the execution stage. Accordingly, the land purchase costs shown above are considered prudent. This is especially so for the Moura Link project, where Aurizon Network would have been competing with coal seam gas pipeline projects to find a suitable corridor to the port of Gladstone. In this case, Aurizon Network believed it prudent to engage in land acquisition to ensure that any future railway construction would not involve the avoidance or relocation of high pressure gas mains running to the port from central Queensland.

Given that these projects have now been discontinued indefinitely, such that the land will not be used within the foreseeable future, the question arises as to why it is being retained and included in the RAB.

The criteria in Schedule A state that to be considered prudent, the project should be commissioned or formally discontinued. This would imply that all parts of the project must stop doing or providing something – if land is retained, it is potentially gaining capital or has the potential to be leased or used in another manner. As the project has ceased, the land is no longer offering any part of a service to provide rail operations to the users; hence it is debatable whether

it should be charged as such. However, in view of the requirement to include purchased land in the rail head lease and sub-lease it appears that the use of this land for purposes other than rail transport is unlikely and as such it appears reasonable to consider it as formally discontinued until such times where it will be required for rail transport purposes.

Because this land is not going to be developed, and discussions with Aurizon Network confirmed a possibility better route options being identified as a result of further analysis, there is an argument for not including its value in the RAB due to the risk of future asset disposal. Conversely, given the complexity of the process to be followed for anything other than Aurizon freehold land, and the potential costs involved to achieve this, it is considered unlikely that Aurizon would consider any such asset disposal in the foreseeable future.

The value of land included in the original claim is $6,420,235, of which only $2,000,000 for one acquisition is held under Aurizon Property ownership in freehold title and which could, theoretically, be disposed of with relative ease. As agreed in principle with Aurizon Network the Review Team suggested that the area of this property currently required for future rail purposes should be sub-divided out for any future disposal, with the value claimed for inclusion in the RAB reduced accordingly. Adopting this approach, and based on proposals received from Aurizon Network, the value of the portion of this property required for railway purposes is $415,200 of the original $2,000,000 purchase price. This creates a reduction of $1,584,800 from the land value originally claimed, with a balance of $4,835,435 for inclusion in the RAB.

On balance this reduced claim is considered to be prudent and is recommended for inclusion in the RAB.

5 PROJECT ASSESSMENT SUMMARIES

5.1 Project assessments – Schedule 3 Expansion

5.1.1 Overview

Projects falling into the expansion category are shown in Table 5-1 below.

Table 5-1: Total claim value of expansion projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)
Lilyvale Passing Loop	A.02827	Blackwater	21,532,523
GSEX140_DBCT to HPSCT 2nd Road	A.03353	Goonyella	74,555,477
Rolleston Upgrade Spur line 9.75T	A.03323	Goonyella	2,894,490

The detailed assessments for the expansion projects listed above in Table 5-1 are shown in Appendix B. In addition, a summary of the two major projects Lilyvale Passing Loop and GSEX140 are provided in the following sections.

5.1.2 Detailed projects

5.1.3 A.02827 Lilyvale Passing Loop

During 2012, Aurizon Network undertook a number of capacity reviews of the Bundoora to Yan Yan section of track. These reviews indicated that the utilisation along the section at that time was close to a threshold capacity of 75% (measured in terms of paths per day). Aurizon Network estimated that future demand (as at January 2016) would exceed this threshold capacity, and therefore support the commissioning of the Lilyvale passing loop.

In addition, Aurizon Network has indicated the Lilyvale passing loop was required in preparation for the Wiggins Island Rail Project (WIRP), and needed to be provided under the terms of the Access Agreement with Lake Vermont mine.

The scope of work involved the construction of a 2.4km long, overhead electrified passing loop. The number of additional signalling routes created and the lack of capacity within the existing signalling system meant the works also involved the provision of a new standalone interlocking for the new loop.

The signalling, power, track and civil scopes are all considered prudent, and consisted mainly of work on the 2.4km of new track, together with the access and egress points connecting the new work to the existing track layout. The standard of the work is considered prudent given the use of standard materials and equipment for each aspect of the project, and the costs have been assessed as falling within the expected reasonable range.

5.1.4 A.03353 GSEX140 DBCT to HPSCT 2nd Road

The DBCT to HPSCT second road was constructed to increase annual tonnage throughput at the port of Hay Point. Due to the complexities of the site topography and existing track layout, a significant amount of civil engineering and railway remodelling work was required to deliver the final project.

The overall scope is considered prudent given the complexity of the site and the requirement to maintain throughput of traffic during the construction process.

The standard of work delivered is also considered prudent for all disciplines, given the use of standard and class-leading materials and equipment.

Some of the costs fall within the higher end of the expected range on a strict per km basis but this can be attributed to complexities in site topography, location and regulatory requirements for safe working in a live rail environment. From the information provided, and in consideration of the nature of the site, costs are considered prudent.

5.2 Project assessments – Schedule 4 TACA

5.2.1 Overview

Projects falling into the TACA category were claimed for all systems. The range of projects is shown in Table 5-2.

Table 5-2: Total claim value of TACA projects assessed

Project name	Project number	Location	CAPEX $	COMMENTS
Powerhouse Roads 1, 2 & Loop Track Upgrade	A.04421	Blackwater	6,409,698	
Callemondah Roads 4 & 5 Renewal	A.04479	Blackwater	1,547,959	
Flood Claim January 2013	A.04490	Blackwater	2,121,909	Reduced from original of $9,260,000
Culvert Asset Renewal Project Goonyella	A.04308	Goonyella	4,499,581	
Newlands Culvert Upgrade Project	A.04145	Newlands	4,385,492	
CQ Coal Formation Strengthening Project	A.03934	System Wide	179,804	
Formation Eng. Assessmt & GPR Record	A.04203	System Wide	301,519	
12/13 Formation Strengthening Project St	A.04283	System Wide	2,439,683	
Sleeper Renewal Program 2013-14	A.04345	System Wide	22,635,014	
Track Upgrade Project 13 14 – Newlands	A.04390	System Wide	2,208,312	
13 14 Formation Strengthening Project St	A.04422	System Wide	4,741,463	
Track Upgrade FY14	A.04568	System Wide	1,775,691	Reduced from original of $2,087,061

Detailed assessments of these projects are provided in Appendix B, while the following summarises the findings from the assessment of the TACA projects.

5.2.2 Assessment of scope

Within this category there are some groups of projects that link together to form overall renewal programs of work. These projects typically only delivered a single product type, such as upgraded culverts, new rail, sleepers or strengthened formation which, when combined, could be seen to form an overall renewal strategy.

On the whole, the project scopes were considered prudent given the reasonable expectations of Aurizon Network and its customers. No major issues were identified in the scope within this category.

5.2.3 Assessment of standard

The technical standards to which the projects within the TACA category have been designed and delivered were generally in accordance with current industry expectations and likely future traffic needs.

5.2.4 Assessment of cost

In consideration of industry and the current market, the Review Team can confirm that the project costs submitted for TACA works are broadly in line with reasonable expectations.

For limited TACA projects it has been possible to derive unit costs for the work scopes delivered, and these are shown on the individual project assessment forms. However, in view of the difficulty of obtaining the unit rate costs for components of these projects, such as cost per km of re-railing as an alternative, a comprehensive review was undertaken of the rail procurement process. As rail is a major element in many of the TACA projects, it was considered that a review of the prudency of the procurement process and material cost of rail would provide a sound prudency test on the major cost items across the majority of TACA projects. This review is in Section 4.3 of this document.

In general, where unit rates were obtained it was found that these were within an industry expected range with works being performed adjacent to live railroad usually falling at the higher end of the industry range, as was expected.

Where unit costs could not be calculated due to inconsistencies in work breakdown in the SAP reports, a more high-level approach was taken to form a view of the prudency of the project costs. That is, the project cost was viewed overall in relation to previous Aurizon similar works and benchmarked industry costs for similar projects.

That aside, the TACA project costs are believed to be prudent, with the exception of the two projects discussed in Section 5.2.5.

5.2.5 Detailed Projects

A.04568 Track Upgrade FY13-14

The project scope included three distinct work streams, track upgrades, formation upgrades and replacement of old style 4 hole glue insulated joints (GIJs) with the modern equivalent 6 hole type.

From the data provided unit rates were calculated for the track and formation upgrades. The rate for the track upgrades fell at the lower end of the expected scale, while those for the formation upgrades came at the higher end of the scale. Despite this the formation upgrade costs are still considered to be prudent due to the very short lengths of formation where work was required. Further, the distance between the work sites was sufficient that no efficiencies could be generated by completing multiple sites in a single track closure.

For the GIJ works it was not possible to calculate a unit rate from the information provided and the costs claimed for this portion of the project scope therefore cannot be confirmed as prudent.

The Review Team's recommendation is that this element of the project be removed from the submission claim and submitted when more detailed data becomes available. Subsequent to this

advice Aurizon Network have removed the GIJ costs previously included in this project from the 2013-14 expenditure claim.

A.04490 Flood Claim January 2013

Central Queensland suffers from a harsh climate and in times of adverse weather conditions watercourses can quickly become overloaded, generating either localised or wide spread flooding.

In such circumstances any structures or other assets in the path of the flood water can be seriously affected. For railways typical flood damage might include failure of cutting or embankment slopes, undermining or washing away of bridges or viaducts, or washing away of ballast.

The claim submitted for project A.04490, Flood Claim January 2013 included various works but predominantly was for ballast replacement and undercutting activities required to safely reopen the line. The costs for ballast replacement totalled approximately $7 million. Under the criteria of the access undertaking prudency requires that the expenditure claimed can be defined as capital expenditure and not maintenance operating costs. As it is considered that ballast undercutting is only treated as a capital cost if ballast return thresholds are under 25-30% the Review Team requested that Aurizon provide further information on the ballast undercutting activity included in the claim. Subsequent to the Review Team's request for additional information it was found that the costs for the ballast works had been captured as part of the flood event claim in FY13. As a result of this assessment, and to remove the potential double-count of the ballast costs, Aurizon Network removed the undercutting works from the original claim of $9,260,000. Forthwith a revised claim for $2,121,909 was submitted and the works included in the remaining flood claim were assessed to be prudent.

5.3 Project assessments – Schedule 5 Electrical

5.3.1 Overview

The range of projects falling into this category is shown in Table 5-3 below.

Table 5-3: Total claim value of electrical projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)
Overheads Renewal Rocklands to Callemondah	A.03896	Blackwater	-95,035
OH Equipment Renewal Goonyella System	A.04423	Goonyella	951,448
Section Insulator Replacements	A.04254	System Wide	1,875,987

Detailed assessments of these projects are provided in Appendix B, while the following summarises the findings from the assessment of the electrical projects.

5.3.2 Assessment of scope

The scopes of the electrical projects claimed are generally in accordance with what would be expected to maintain existing capability and satisfy expected future demand.

For overhead renewal projects, however, the scope does seem to be very loosely defined, and the works were undertaken in conjunction with other activities such as ballast undercutting or re-sleepering. It is understood that some faults with electrical equipment, such as frayed cable strands, can only be seen when inspected at close quarters; also that once one issue has been identified which might necessitate the replacement of other elements of the system it is considered prudent to undertake the replacements whilst staff are already mobilised to site. Thus these loose scopes are seen as prudent for the minimisation of overall costs, especially as the work is being undertaken at times when electrical staff would already be attending site to facilitate other works.

Overall, therefore, the scope of the electrical projects assessed in the Aurizon Network 2013-14 capital expenditure claim are considered prudent.

5.3.3 Assessment of standard

Many of the systems and individual components found within the CQCN are now aged beyond their original design life.

The only economic option for components such as catenary, contact wires or harmonic filters is replacement of assets. Where possible, the refurbishment of existing equipment/components beyond economic repair, such as transformers, is the prudent option.

Considering this, the standards to which the electrical projects have been designed and delivered are generally in accordance with reasonable expectations for current and future traffic needs, and are therefore considered prudent.

5.3.4 Assessment of cost

Costs for the electrical project programs are in line with the approved costs for the 2012-13 programs and within industry expectations for similar works.

Overall, the costs of the electrical projects are considered prudent.

5.4 Project assessments – Schedule 6 S&TSS

5.4.1 Overview

The range of S&T capital expenditure projects is listed in Table 5-4 below.

Table 5-4: Total claim value of S&TSS projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)	COMMENTS
BW Model 10/Harmon Boom Mech Replacement	A.04066	Blackwater	114,304	
Digital TI21 Track Circuit Upgrade – Coppabella to Hay Point	A.04190	Goonyella	5,162,302	
Weighbridge Replacement Program: Stage 2	A.02870	System Wide	231,825	
Thales Axle Counter Trial	A.03640	System Wide	600,028	
AzS600 Axle Counters Replacement	A.04297	System Wide	Deferred	Original claim $261,955
Axle Counters vs. Track Circuit Replacement	A.04407	System Wide	415,799	
Weighbridge Renewal	A.04548	System Wide	2,000,502	
Asset Protection Systems: Braeside WILD	IV.00001	System Wide	2,017,880	

Detailed assessments of these projects are provided in Appendix B, while the following summarises the findings from the assessment of the S&TSS projects.

5.4.2 Assessment of scope

The majority of signalling projects consist of replacing old or obsolete equipment. These replacements are justified in regards to the age of the existing equipment which is life expired. From the information provided, it was evidenced that for the projects submitted, faults on the specific equipment have been rising (i.e. they have reached the rising edge of the 'bath tub' curve of equipment failure), and spare parts for much of the outdated equipment are no longer available; hence replacement is considered prudent.

Alternatively, some signalling projects are safety or regulation driven, such as upgrades to level crossing or asset protection systems.

In consideration of the above, the majority of the scope of S&TSS projects is assessed as prudent.

However, for a minority of these projects the scope provided had a number of inconsistencies and could not be assessed as prudent – greater detail is provided in the specific project summaries at the end of this section.

5.4.3 Assessment of standard

For all signalling projects it is considered that Aurizon Network is using proven, mature, widely used standards.

All products are supplied by market leaders such as Thales, CSEE/Ansaldo, Siemens or Frauscher. They are therefore expected to comply with the latest industry standards and have rigorous quality assurance procedures in place in the design, manufacturing, testing and commissioning phases.

Aurizon Network has developed a strategy to use track circuits and axle counters in a consistent manner over the various areas and configuration of the rail network.

From the information provided for this review, it is considered that all the projects within the S&TSS category are prudent in standard.

5.4.4 Assessment of cost

Generally, costs of signalling projects appear to be at the high end of the scale when compared with signalling projects in other parts of the world. This can be explained by the following context:

- in the years 2012 and 2014, there was a peak of activity in signalling projects in Australia and signalling resources were scarce. The Aurizon Network internal signalling resources could not handle the overall workload and Aurizon Network put in place Alliance partnerships.
- the costs of subcontracting to Alliance partners are generally higher than the costs of using Aurizon Network internal resources. Use of Alliance partners generally allows a more timely delivery however, due to the contractual commitment of the Alliance partner.
- access to the corridor is limited due to the high traffic on existing tracks. This increased the costs of installation and testing that require track possession.
- some works areas were very remote and travelling time reduced actual working time on site.

In consideration of the above, the Review Team confirms that the costs of the signalling projects were generally prudent. However the Review Team did identify a number of issues relating to projects and these are detailed in Section 5.4.5.

5.4.5 Detailed projects

A.04190 Digital TI21 Track Circuit Upgrade

This project consists of upgrading around 506 track circuits in the Goonyella system between Coppabella and Hay Point.

The approved budget is $8,343,000, and project costs as of 30 June 2014 are $8,243,822.

This project encountered difficulties in the upgrade of the track circuits. In particular, bonds had to be replaced or refurbished and power supplies had to be replaced.

As at the end of June 2014, only 262 out of a scoped 506 track circuits had been fully upgraded, even though the approved project budget had been fully expended.

No information about the estimated costs to complete the upgrade was provided at the time of the assessment. Thus, it was not possible to assess the prudency of the costs of the global project.

Although it is considered that project standard and scope are prudent, the Review Team's recommendation is to accept the costs this year (as they are within budget), but that detailed assessment should be undertaken next year for any additional costs claimed.

A.04297 AzS600 Axle Counters Replacement

The scope of the project is to replace existing life expired Siemens Az600 axle counters with Frauscher Advanced Counters (FAdC) from Moranbah to Villafranca and Villafranca to Mount McLaren. This is the first installation of FAdC on Aurizon Network.

The submitted claim is $269,000 out of an approved budget of $400,000.

The equipment is not yet commissioned and Aurizon Network states in schedule 6 that the "project is ongoing with commissioning now postponed until the 2015-16 financial year".

No explanation was provided as to why the commissioning of this small project was postponed by two years.

From the information provided it is considered that the project standard and scope are prudent. However, as the project scope was neither completed nor commissioned during the 2013-14 financial period, costs cannot be assessed and hence cannot be considered as prudent.

The Review Team's recommendation is that this project be removed from the submission claim and submitted when the equipment has been commissioned. Subsequent to this advice Aurizon Network has removed this project from the 2013-14 expenditure claim.

A.02870 Weighbridge Replacement Program Stage 2

The weighbridge replacement programs commenced in 2007 and are basically a continuation of the strategic reconsideration of the commercial weighbridge agreements, and Aurizon Network's future commercial and regulatory obligations in relation to trade certification.

A.02870 Weighbridge Program Stage 2 was the finalisation of the program which commenced in 2009, and involved the installation and verification of new weighbridge systems at Rolleston, Callide and Boundary Hill mine loadouts.

As part of the review of all projects the Review Team undertake a check on previous years' expenditure claims to ensure that projects are not claimed twice. During this check it was noted that A.02870 had a previous QCA approved claim of $600,832 (including IDC) in 2010-11 (refer to Review of 2010-11 Capital Expenditure Claim, Evans & Peck report) and an approved expenditure of $190,482 (including IDC) in the 2011-12 expenditure claim. The costs included in the original submission for the current year could not, therefore, be considered as prudent.

Aurizon Network have subsequently revised the original submission for this year to remove these previously approved amounts. The revised claimable expenditure for 2013-14 is $231,825 (excluding IDC) and includes an additional funding request of $202,000 for the completion of designs and scope requirements for the weighbridge renewal program (A.04548). In consideration of the revised claim the project is considered to be prudent in scope, standard and cost.

A.04548 Weighbridge Renewal

In addition to the completion of any outstanding scope from A.02870 this project (A.04548) provided for the replacement of three more weighbridges; Oaky Creek, Moranbah North and Hail Creek.

The completed 2013-14 scope included:

- weigher installation and trade certification at Boundary Hill
- weigher installation and trade certification at Callide (outstanding scope from A.02870)
- weigher trade certification at Dawson

The Review Team noted that Callide had been installed and tested for certification in the 2010-11 period. The weigher was installed in the same location as the old pit weigher with the adjacent rail plates re-installed and grouted. Although not known at the time, movement of the grouted plates leading up to the weighbridge had a significant impact on the accuracy of the weighing equipment such that the weigher subsequently failed standard accuracy tests in 2011, shortly after new installation.

As a result of the weigher failure significant reparatory works in addition to re-verification had to be performed at Callide under A.04548 to obtain accurate functionality of the weighbridge equipment. This resulted in an additional $748,178 being required for final completion and commissioning of the Callide weigher. This expense was included as outstanding scope in A.04548.

Aurizon Network have confirmed that great care has been taken at subsequent sites to ensure that the initial implementation error was not repeated and robust processes have been developed and refined using learnings gained from the experience.

In addition, it is noted that the implementation of the specific weighbridge equipment on a concrete slab assembly is a relatively new departure for Aurizon Network and it is accepted that there will be a learning curve associated with the introduction of new designs within the industry. Aurizon Network have confirmed that the learnings from this experience have been applied to subsequent sites with potential savings for the future weighbridge renewal program. Based on this fact and the additional information provided to the Review Team the final assessment has concluded that the project is prudent in scope, standard and cost.

5.5 Project assessments – Schedule 7 Telecommunications

5.5.1 Overview

Projects falling into this category are shown in Table 5-5 below.

Table 5-5: Total claim value of telecom projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)	COMMENT
O/F Transmission Network Upgrade Rockhampton to Gladstone	A.03978	Blackwater	709,993	
Operational Network LAN WAN Architecture	A.03961	System Wide	866,136	
Microwave Resilience System Upgrades	A.04221	System Wide	Deferred	Original claim $2,202,162
Ethernet to Corner – SCADA Upgrade	A.04231	System Wide	Deferred	Original claim $1,647,935
Radio System Replacement	A.04288	System Wide	Deferred	Original claim $320,665
Optical Fibre Transmission Network Upgrade	A.04320	System Wide	Deferred	Original claim $1,605,609

Detailed assessments of these projects are provided in Appendix B, while the following summarises the findings from the assessment of the telecommunications projects.

5.5.2 Assessment of scope

Most telecom projects consist of replacing old equipment or improving the availability of the telecom networks. The information provided on the Capital Funding Request documents submitted by Aurizon Network generally included good justification for the projects.

From the information provided, globally the scope of the projects was considered prudent.

5.5.3 Assessment of standard

Equipment standards such as Ethernet, IP and SDH used in the Aurizon Network telecom networks are those widely used across the telecom industry. The choice of equipment to be deployed is sometimes dictated by the network interface capabilities of the existing equipment to which it will be connected. In some cases, Aurizon Network has to use mature standards instead of more modern technology due to compatibility issues with heritage signalling systems which do not support the latest standards.

Proven telecom products are generally used in railway telecommunication systems (e.g. CISCO routers), or products compatible with existing systems (e.g. Semaphore RTUs).

In consideration of the above, it is considered that the standards used in the telecom projects are prudent.

5.5.4 Assessment of cost

Costs of equipment are in line with market prices for comparable purchase volumes. The costs of services such as project management, design and testing seem to be on the high end, but remain reasonable in consideration of railway safety and regulatory requirements. A detailed study would be necessary to confirm if costs are over the high end of industry benchmarked expectations.

A significant proportion of the telecoms projects assessed had not been completed or commissioned. If a project is not completed an assessment is required to determine whether the project works meet the 80% completeness threshold. Further, in these circumstances, a full prudency cost assessment cannot be undertaken, as it is not always possible to fully assess costs against delivered scope and standard.

Therefore a number of telecommunication projects could not be assessed as prudent in cost. These are detailed in Section 5.5.6.

5.5.5 Recommendations

During the assessment, a number of specific recommendations have been identified and these are detailed in the following dot points:

- Evidence that the selected telecom products typically have a 15-year life span should be provided during assessment.
- At MFR stage, the life span of identified equipment should be evaluated (it might not be the right time to do the upgrade if a newer generation equipment is coming in one year). When bulk procurement of telecom equipment is undertaken, an assessment of the potential supplier's product roadmaps should be undertaken to ensure that there is no new generation product with a longer life span to be released in the coming months.
- The titles of projects in the MFR documents are sometimes misleading, for example 'Operational network LAN WAN architecture' mainly consists of the deployment of a LAN WAN network. The choice of a good project title will help all stakeholders to communicate better with each other.

5.5.6 Detailed projects

A.04288 Radio System Replacement

The deliverable under this concept funding was a strategy and recommendation for the replacement of Aurizon Network's existing radio systems. The project will allow Aurizon Network to complete documentation to progress through to the feasibility and implementation phases of the radio system replacement program.

The project scope is to perform one global study detailed in three reports of which Aurizon Network provided two to the Review Team. The two reports provided were delivered before 30 June 2014, but the third report is the one that is expected to deliver the final strategy and recommendations for the replacement of Aurizon Network's existing radio systems.

The costs incurred during the claim period and shown in the SAP cannot be assessed as prudent because they are related to the preparation of the two reports delivered in 2013-14 year. Similarly the scope and standard could not be assessed on this occasion as the final report, which delivers the strategy and recommendations has not been completed.

The Review Team therefore recommended that the project be re-assessed once the final report has been completed as the results of this final study should create an asset to be considered as capital expenditure.

Subsequent to this recommendation Aurizon Network have confirmed that they will be removing this submission from the 2013-14 expenditure claim.

A.04221 Microwave Resilience Upgrade, A.04231 Ethernet SCADA Upgrade & A.04320 Optical Fibre Network Upgrade projects

As of 30 June 2014, the telecom equipment for these three projects was not in service and most of the project costs were for bulk procurement. The costs expended are also well below 80% of project budget, and less than 25% for the microwave resilience upgrade.

The costs to date are considered prudent for the equipment purchased but because the scopes were not completed during the claim period the final cost cannot be assessed. Therefore the projects cannot currently be considered prudent in cost.

The Review Team therefore recommended that the costs be assessed next year or on commissioning of the works.

Subsequent to this recommendation Aurizon Network have confirmed that they will be removing these three projects from the 2013-14 expenditure claim.

A. 03961 Operational LAN WAN Architecture

The project includes a LAN Wide Area Network (WAN) architecture study for a budget of $144,000, and the actual deployment of the LAN WAN network for a budget of $850,000. The original objective of the project outlined in the MFR is to connect ION meters with the deployment of the LAN WAN network.

The scope of the project, to build a common network that can transport data for various operational system and administration/business network traffic, is considered prudent.

The WAN was deployed during the claim period, as were some of the LANs (Local Area Network), but the LAN to connect the ION meters was not deployed. The project team is understood to be waiting for additional funding to be able to connect the ION meters.

The Review Team noted that the connection of the ION meters was one of the justifications in the MFR and has not been completed. However, this is a minor portion of the scope completed, which is successfully providing a common network to transport data throughout the Aurizon Network business. Therefore, overall, the scope, standard and costs of project are considered prudent.

5.6 Project assessments – Schedule 8 Corridor CAPEX

5.6.1 Overview

The projects chosen for review within this category covered a variety of works, such as the implementation of crew change pads, construction of access roads and level crossing upgrades. The corridor projects assessed are listed in Table 5-6 below.

Table 5-6: Total claim value and list of corridor projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)	COMMENT
Blackwater Crew Change Pads	A.03676	Blackwater	969,282	
Access Road Hatfield Koumala – Bollingbroke Road	A.03892	Goonyella	236,808	
Moura Corridor Crew Change & Stowage Loc	A.03876	Moura	409,565	
Burnett Highway Bridge Protection System	A.04429	Moura	Deferred	Original claim $123,380
Level Crossing Upgrade at Sonoma Coal	A.04138	Newlands	103,000	
Level Crossing Upgrades 13 14 FY	A.04366	System Wide	4,310,705	

Detailed assessments of these projects are provided in Appendix B, while the following summarises the findings from the assessment of the corridor projects.

5.6.2 Assessment of scope

On the whole, assessment of the scope of work within the corridor category has shown the projects undertaken to be prudent.

The exception is project A.04429, which was not able to be assessed as prudent as the works had not been designed or constructed within the 2013-14 claim period. Details are provided in Section 5.6.5.

5.6.3 Assessment of standard

The standards to which the corridor projects have been designed and delivered are generally in accordance with current expectations for this type of business and future traffic needs.

All of the level crossing work, in particular, was required to meet legal obligations with regard to safety of the corridor and road users.

5.6.4 Assessment of cost

Overall, the costs of the assessed projects within this corridor category are believed to be prudent.

5.6.5 Detailed projects

A.04429 Burnett Highway Bridge Protection System

This is a safety driven project to install a bridge protection system at Burnett Highway Bridge on the Moura line. The rail bridge has been struck on numerous occasions by road traffic that exceeds the height limit for vehicles passing under the structure.

Bridge strikes can be costly and cause major delays to railway operations, as well as causing severe road accidents. This low rail bridge is considered a safety danger to road users, and hence the project scope, which involved installing a system to warn road users, is considered prudent.

The overall cost provided in the claim appears reasonable and the standard, which needs to comply with the requirements of DTMR, falls under regulatory requirements and therefore shall be prudent.

However, from information provided it appears that the initial design did not meet additional DTMR regulatory requirements and hence had to be revised. As it is evident from the documentation provided that additional design work had to be completed to bring the proposed solution within DTMR standards and requirements, the project cannot be assessed as prudent in standard until the final design is completed and approved.

Accordingly costs were not able to be assessed for prudency as the majority of works were not completed within the 2013-14 period.

The Review Team recommends that the submission be removed from the 2013-14 claim and submitted on completion and commissioning of the finished works.

Subsequent to this recommendation Aurizon Network have confirmed that they will be removing A.04429 Burnett Highway Bridge Protection System from the 2013-14 expenditure claim.

5.7 Project assessments – Schedule 9 CRIMP – voted feasibility studies

The review has included consideration of 25 abandoned feasibility studies from three major programs:

- WIRP2
- DPCT X 34
- GAPE Future.

Together, the abandoned feasibility studies included in these programs account for approximately $66m of the overall original claim, as shown in Table 5-7 below.

Table 5-7: Total claim value of feasibility projects assessed

Project name	Project number	Location	CAPEX $ (exclusive of IDC)	COMMENT
Winchester to Peak Downs Duplication	A.02673		1,250,555	
Connors Range: Additional Crossing	A.02689		5,423,857	
Goonyella System Expansion	A.02730		2,328,434	
Ingsdon to Red Mountain Duplication	A.03360		1,475,505	
Peak Downs Feeder Station	A.03361		268,798	
Wotonga to Moranbah North Duplication	A.03363		1,036,598	
HPSCT to DBCT: Third Road	A.03529		250,344	
DBCT to Yukan: Track Upgrades	A.03530		1,950,565	
Hatfield to Coppabella: Track Upgrades	A.03531		2,938,049	
Moranbah North to North Goonyella: Dupln	A.03532		954,709	
Red Mountain to Winchester: Duplication	A.03533		790,332	
Peak Downs to Dysart: Duplication	A.03534		1,249,805	
Wotonga to Moranbah: Duplication	A.03535		1,164,372	
Red Mountain: Feeder Station	A.03679		91,449	
Saraji: Feeder Station	A.03681		104,272	

DPCT Balloon Loops and Rail Spur	A.03932	1,926,411	
Dunsmure Passing Loop	A.02503	Removed*	Original claim $774,172
Coppabella Angle and Grade Easing	A.03364	Removed*	Original claim $552,187
Teviot Brook Passing Loop	A.03366	1,207,519	
Blackwater System Expansion: Concept STU	A.02787	2,688,836	
WIRP2: Moura Link	A.02974	14,999,136	
WIRP 1 North Coast Line (Part)	A.02976	8,390,585	
Gladstone 140	A.03620	964,073	
WIRP2: NCL Aldoga – Wiggins Balloon Loop	A.03635	639,983	
WIRP2: 2nd Balloon Loop	A.03636	1,529,702	

*Refer RSM Bird Cameron Report: Cost Review of Aurizon Network's 2013-14 Capital Expenditure Claim

These projects have typically not generated any asset apart from consultant produced studies, reports, estimates or property valuations, but have been considered for inclusion in the RAB this year as they have now been officially closed and formally discontinued, with no prospect of the works being undertaken in the foreseeable future.

The works undertaken within these feasibility projects include mainly concept designs or environmental, heritage and other preliminary works engineering studies. These works have been undertaken by qualified and proven consulting organisations or by Aurizon Network engineers. Consideration of the documents provided for review highlights that generally the scope, standard and cost of these studies can be deemed prudent.

However, the issue that is apparent with these feasibility studies is:

- whether works should have continued into the 2013-14 period (refer to Section 4.5 of this report)
- whether land should have been purchased at this stage of the works (refer to Section 4.4.4).

In summary the market analysis undertaken by the Review Team has determined that, in view of the market and customer needs and expectations at the time, overall it appears that Aurizon's Networks investment decisions to proceed and subsequently formally discontinue with the feasibility projects were a logical and appropriate response. The review undertaken appears to demonstrate that Aurizon's Networks growth-related investment decisions, including the purchasing of land, were supported when there were expectations that demand for coal would continue to rise and ceased when market trends clearly indicated a downturn with corresponding decrease in customer demand.

6 CONCLUSION

CMT, supported by Marsden Jacob and Atkins (the Review Team), was commissioned to assess Aurizon Network's 2013-14 capital expenditure claim. For the purpose of this assessment, from the total 138 projects submitted, a representative sample of 63 projects was selected.

As far as was reasonably possible, the sample selected included items from all systems, projects types and a range of disciplines, thereby reflecting external validity to the total project claim. In consequence, it is the Review Team's calculation that the representative sample selected was a reasonable representation of all 138 projects.

The Review Team applied a structured and rigorous risk-based process, developed in compliance with the requirements of prudency to assess the 63 projects selected.

On the basis of the information provided by Aurizon Network for assessment, it is the Review Team's considered opinion that the majority of projects assessed should be considered prudent in scope, standard and cost.

Based on the assessment the Review Team concluded that the Aurizon Network 2013-14 capital expenditure projects submitted are recommended to be included in the RAB with consideration of the following exceptions:

- Projects assessed as not completed or commissioned were recommended to be deferred from the 2013-14 claim until such time as the works are commissioned and the costs and scope can be assessed as prudent
- Portions or whole projects which had been claimed in previous capital expenditure claims were recommended to be removed from the 2013-14 claim
- Portions of projects claimed through other events (e.g. flood claim events) were removed from the 2013-14 claim to avoid risk of double-counting

As a result of the above recommendations Aurizon Networks October 2014 submission for 2013-14 capital expenditure of $321,681,594 excluding IDC was revised to $302,010,789 (excluding IDC) and resubmitted in April 2013-14. The Review Team considers the figures and projects submitted in this revised claim to be prudent.

However, although the Review Team noted that overall the requirements for prudency have been met, it is considered that there is potential to streamline future capital expenditure reviews by:

- ensuring crucial information relating to or substantiating prudency criteria (such as commissioning certification) is, if not submitted with the claim, easily accessible and available for assessment
- providing where possible, alignment with scope breakdown, estimating information and collation of expenditure in the SAP (for example programs of works and extent of works completion dates). This would facilitate calculating unit costs in order to compare with industry-range expectations for cost prudency criteria.
- for technology projects (e.g. telecom and signals) evidence that products typically have a 15-year life span should be provided as part of the assessment

APPENDIX A: AURIZON NETWORKS PTY LTD 2013-14 CAPITAL EXPENDITURE SUBMISSION

2013/14 CAPEX Claim - Projects List

Project Number	Project Name	Project Type	Project Discipline	Asset Type	2013/14 Claimable Expenditure	IDC	2013/14 Total Claim Value (inc IDC)
A.02628	CQCR: Coal Loss Management	Capital Renewal	Corridor	Environmental	721,634	2,752	724,385
A.02816	CQ Coal: Level Crossing Investigations	Capital Renewal	Corridor	Level Crossings	1,342,487	-3,670	1,338,817
A.03627	Goonyella Corridor: Stowage Locations	Capital Renewal	Corridor	Corridor Access	1,335,025	5,594	1,340,619
A.03676	Blackwater Crew Change Pads	Capital Renewal	Corridor	Corridor Access	969,282	10,079	979,362
A.03709	Private / QRN Level Crossing Infrastructure	Capital Renewal	Corridor	Level Crossings	194,324	5,135	199,459
A.03875	Newlands Corridor Crew Change & Stowage	Capital Renewal	Corridor	Corridor Access	1,652	32	1,684
A.03876	Moura Corridor Crew Change & Stowage Loc	Capital Renewal	Corridor	Corridor Access	409,565	1,230	410,796
A.03892	Access Road Hatfield Koumala - Bollingbroke Road	Capital Renewal	Corridor	Corridor Access	236,808	3,404	240,212
A.04022	Security Fencing - Coppabella and Dingo Yards	Capital Renewal	Corridor	Fencing & Corridor S	3,180	95	3,275
A.04036	Fencing Upgrade Moura and Blackwater Systems	Capital Renewal	Corridor	Fencing & Corridor S	1,600	35	1,635
A.04044	Upgrade CQ Coal System Fencing (2012/13)	Capital Renewal	Corridor	Fencing & Corridor S	1,123,874	5,031	1,128,905
A.04045	Upgrade Fencing Moura/Blackwater/Newland	Capital Renewal	Corridor	Fencing & Corridor S	33,697	315	34,012
A.04138	Level Crossing Upgrade at Sonoma Coal	Capital Renewal	Corridor	Level Crossings	103,000	-1,063	101,937
A.04285	CQCN Mine Loadout OTV Contact Signs	Capital Renewal	Corridor	Fencing & Corridor S	121,712	2,996	124,708
A.04322	CQ Access Roads - Accelerated Program	Capital Renewal	Corridor	Corridor Access	457,505	10,170	467,675
A.04366	Level Crossing Upgrades 13 14 FY	Capital Renewal	Corridor	Level Crossings	4,310,705	-41,296	4,269,409
A.04429	Burnett Highway Bridge Protection System	Capital Renewal	Corridor	Corridor Access	123,380	-1,735	121,644
A.04480	Dysart Road Relocation	Capital Renewal	Corridor	Corridor Access	35,205	-616	34,589
A.03448	Goonyella: Harmonic Filter Secondary System Repl	Capital Renewal	Electrical	Power Systems	8,028	-22	8,006
A.03465	CQ Coal Transformer Refurbishments	Capital Renewal	Electrical	Power Systems	2,469,015	-19,656	2,449,359
A.03845	Harmonic filter reactor replacement	Capital Renewal	Electrical	Power Systems	1,600	31	1,631
A.03896	Overheads Renewal Rocklands to Callemondah	Capital Renewal	Electrical	Distribution Network	-95,035	1,086	-93,949
A.04215	OH Equipment Renewal Goonyella FY13	Capital Renewal	Electrical	Distribution Network	580,120	12,859	592,978
A.04254	Section Insulator Replacements	Capital Renewal	Electrical	Distribution Network	1,875,987	-20,226	1,855,761
A.04304	Dalrymple Bay Yard Cantilever Renewal	Capital Renewal	Electrical	Distribution Network	762,861	-826	762,035
A.04305	Dalrymple Bay FS Protection Upgrade	Capital Renewal	Electrical	Power Systems	198,378	4,970	203,348
A.04423	OH Equipment Renewal - Goonyella System	Capital Renewal	Electrical	Distribution Network	951,448	-2,302	949,146
A.04424	OH Equipment Renewal - Blackwater System	Capital Renewal	Electrical	Distribution Network	2,780,987	10,237	2,791,224
A.04446	Feeder Station Protection Upgrade	Capital Renewal	Electrical	Power Systems	191,592	-2,586	189,007
A.02222	Raglan Feeder Station	Growth	Expansion	Electrical Expansion	583,078	5,435	588,514
A.02517	Millennium Balloon Loop Upgrade	Growth	Expansion		191,016	-2,244	188,772
A.02602	Bluff Feeder Station	Growth	Expansion	Electrical Expansion	148,787	2,245	151,033
A.02603	Duaringa feeder Station	Growth	Expansion	Electrical Expansion	685,764	-11,284	674,480
A.02604	Wycarbah Feeder Station	Growth	Expansion	Electrical Expansion	209,629	2,588	212,217
A.02827	STH GOONYELLA (LILYVALE) PASSING LOOP	Growth	Expansion	System Expansion	21,532,523	599,878	22,132,401
A.03323	ROLLESTON: UPGRADE SPUR LINE 9.75 MTPA	Growth	Expansion	Electrical Expansion	2,894,490	11,636	2,906,126
A.03353	GSE X140 - DBCT to HPSCT 2nd Road	Growth	Expansion	System Expansion	74,570,022	5,906,956	80,476,978
A.03473	GAPE 50	Growth	Expansion	System Expansion	16,364,372	754,857	17,119,229
A.04404	Energy Efficiency Study	Other	Other		150,352	-1,554	148,798
A.01048	LED Signal Replacement	Capital Renewal	S&TSS	Signalling Equipmen	301,534	4,054	305,588
A.02613	Rockhampton Yard: Control Instrument and Referer	Capital Renewal	S&TSS	Weighbridges / Over	13,196	-28	13,167
A.02620	Dragging Equipment Detectors: Stages 1&2	Capital Renewal	S&TSS	Operational Systems	394,375	33,962	428,337
A.02870	WEIGHBRIDGE REPLACEMENT PROGRAM: STA	Capital Renewal	S&TSS	Weighbridges / Over	1,028,358	159,375	1,187,733
A.03640	Thales Axle Counter Trial	Capital Renewal	S&TSS	Operational Systems	600,028	74,549	674,577
A.03678	DERAILMENT SENSORS AT LOADOUTS		S&TSS	Signalling Equipmen	204,621	21,039	225,660

A.03759	Upgrade Remote Monitoring Sys @ 25 Level	Other	S&TSS		291,574	26,882	318,456
A.03979	Weather Stations in the Blackwater System	Capital Renewal	S&TSS	Asset Protection	4,480	-66	4,414
A.04023	Level Crossing Protection System	Capital Renewal	S&TSS	Signalling Equipmen	1,952	86	2,038
A.04025	Pan Cam Upgrade at Jilalan	Capital Renewal	S&TSS	Asset Protection	5,427	-59	5,368
A.04065	Provision of Split Detection - Blackwater	Capital Renewal	S&TSS	Operational Systems	27,504	770	28,274
A.04066	BW Model 10/Harmon Boom Mech Replacement	Capital Renewal	S&TSS	Signalling Equipmen	114,304	435	114,739
A.04074	POSS Points Condition Monitors	Capital Renewal	S&TSS	Operational Systems	366,783	-2,589	364,194
A.04150	Standby Power Upgrade	Capital Renewal	S&TSS	Operational Systems	91,551	3,054	94,605
A.04151	Duaringa Flood Detection System	Capital Renewal	S&TSS	Asset Protection	22,284	461	22,745
A.04187	CSEE Track Circuit Renewal - Stage 1	Capital Renewal	S&TSS	Operational Systems	500,097	-3,293	496,804
A.04190	Digital TI21 track circuit upgrade – Coppabella to Ha	Capital Renewal	S&TSS	Operational Systems	5,162,302	12,052	5,174,355
A.04259	Trial of SST HBD/HWD in Goonyella	Capital Renewal	S&TSS	Operational Systems	474,288	5,762	480,049
A.04296	CDS Rail Points Condition Monitoring	Capital Renewal	S&TSS	Operational Systems	146,651	-783	145,868
A.04297	AzS600 Axle Counters Replacement	Capital Renewal	S&TSS	Operational Systems	261,955	7,246	269,200
A.04321	Central Coal UPS Upgrade Project	Capital Renewal	S&TSS	Operational Systems	740,460	3,782	744,241
A.04407	Axle Counters vs Track Circuit Replaceme	Capital Renewal	S&TSS	Operational Systems	415,799	3,252	419,051
A.04483	German Creek Weighbridge Renewal	Capital Renewal	S&TSS	Weighbridges / Over	384,757	-6,466	378,291
A.04548	Weighbridge Renewal	Capital Renewal	S&TSS	Weighbridges / Over	2,000,502	-58,184	1,942,317
IV.00001	Asset Protection Systems: Braeside WILD	Capital Renewal	S&TSS	Operational Systems	2,017,880	-45,943	1,971,937
A.02263	Newlands: Scour Remediation at 100.39kms	Capital Renewal	TACA	Civil	1,746	20	1,766
A.02273	Coal System: Turnout Replacements St 2	Capital Renewal	TACA	Turnouts	2,145,982	-59,105	2,086,877
A.03372	Fist Fastened Sleeper Upgr: Coal Systems	Capital Renewal	TACA	Sleepers	1,459,140	2,380	1,461,520
A.03792	6 Hole Glued Insulation Joint Asset Rene	Capital Renewal	TACA	Rail	635,133	1,467	636,599
A.03843	Rail Replacement Program	Capital Renewal	TACA	Rail	1,275	24	1,299
A.03882	Sleeper Replacements - Newlands	Capital Renewal	TACA	Sleepers	3,860	120	3,980
A.03934	CQ Coal Formation Strengthening Project	Capital Renewal	TACA	Formation / Ballast	179,804	-464	179,340
A.03945	Replacement of Damaged Fist Sleeper-Ragl	Capital Renewal	TACA	Sleepers	15,241	321	15,562
A.04040	Concrete Sleeper Upgrades - Goonyella	Capital Renewal	TACA	Sleepers	14,354	272	14,626
A.04112	Callemondah Yard Turnout Upgrade Project	Capital Renewal	TACA	Turnouts	1,863,305	-4,840	1,858,465
A.04113	Concrete Sleeper Upgrade - Newlands	Capital Renewal	TACA	Sleepers	507	15	522
A.04114	Blackwater & Goonyella Turnout Upgrade 2	Capital Renewal	TACA	Turnouts	5,480,718	-63,438	5,417,280
A.04145	Newlands Culvert Upgrade Project	Capital Renewal	TACA	Structures	4,385,492	50,641	4,436,134
A.04154	Concrete Sleeper Upgrade GN Phase 1	Capital Renewal	TACA	Sleepers	1,499,644	26,125	1,525,769
A.04155	Concrete Sleeper Upgrade GN Phase 2	Capital Renewal	TACA	Sleepers	5,348,979	21,602	5,370,582
A.04194	Cathodic Bridge Protection to Access Platform	Capital Renewal	TACA	Civil	62,130	693	62,822
A.04203	Formation Eng Assessmt & GPR Record	Capital Renewal	TACA	Formation / Ballast	301,519	3,143	304,662
A.04252	Rolleston Flood Protection Stage 2	Capital Renewal	TACA	Formation / Ballast	210,360	2,186	212,546
A.04283	12/13 Formation Strengthening Project St	Capital Renewal	TACA	Formation / Ballast	2,439,683	31,675	2,471,358
A.04292	Rocklands Top of Rail Lubricator	Capital Renewal	TACA	Track	10,933	-144	10,790
A.04293	Bad Order Siding Access Upgrade	Capital Renewal	TACA	Structures	213,347	2,912	216,259
A.04307	Culvert Asset Renewal Project Blackwater	Capital Renewal	TACA	Structures	4,428,485	-35,178	4,393,307
A.04308	Culvert Asset Renewal Project Goonyella	Capital Renewal	TACA	Structures	4,499,581	-14,902	4,484,679
A.04313	Gauge Face Lubrication Asset Renewal	Capital Renewal	TACA	Track	686,952	-6,118	680,834
A.04345	Sleeper Renewal Program 2013 14	Capital Renewal	TACA	Sleepers	22,635,014	-6,951	22,628,063
A.04368	Formation Renewal Wallaroo to Dingo, Dow	Capital Renewal	TACA	Formation / Ballast	3,709,230	25,152	3,734,382
A.04390	Track Upgrade Project 13 14 - Newlands	Capital Renewal	TACA	Track	2,208,312	5,574	2,213,886
A.04421	Powerhouse Roads 1, 2 & Loop Track Upgra	Capital Renewal	TACA	Track	6,409,698	12,193	6,421,892
A.04422	13 14 Formation Strengthening Project St	Capital Renewal	TACA	Formation / Ballast	4,741,463	10,237	4,751,701
A.04426	2013 14 Track Renewal	Capital Renewal	TACA	Track	462,908	-11,496	451,412
A.04479	Callemondah Roads 4 & 5 Renewal	Capital Renewal	TACA	Track	1,547,959	-14,568	1,533,391
A.04484	Sandhurst Creek Bridge	Capital Renewal	TACA	Structures	1,736,115	-30,932	1,705,183
A.04490	Flood Claim January 2013	Capital Renewal	TACA	Formation / Ballast	9,260,000	-123,407	9,136,593

A.04511	Accelerated Culvert Asset Renewal Projec	Capital Renewal	TACA	Structures	6,297,975	-166,623	6,131,353
A.04568	Track upgrade Fy14	Capital Renewal	TACA	Track	2,087,061	-60,702	2,026,359
A.03649	CQ Control Centre Consolidation	Capital Renewal	Telecoms	Network Controls	48,709	1,286	49,996
A.03673	UTC ENHANCE: SUPERVISOR CONSOLE ALARM	Other	Telecoms	Network Controls	114,664	7,052	121,716
A.03931	Train Control Disaster Recovery Project	Capital Renewal	Telecoms	Network Controls	2,537,840	-770	2,537,070
A.03960	ION Meter Installation Upgrade Final	Capital Renewal	Telecoms	Telecoms Backbone	70,870	1,874	72,743
A.03961	Operational Network LAN WAN Architecture	Capital Renewal	Telecoms	Telecoms Backbone	866,136	32,406	898,542
A.03962	Westrace Hot Standby Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	32,364	311	32,675
A.03978	O/F Transmission Network Upgrade Rockhampton t	Capital Renewal	Telecoms	Telecoms Backbone	709,993	13,942	723,935
A.04111	Dual Telemetry Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	2,486,757	-205	2,486,553
A.04124	S1 to S2 Telemetry Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	886,887	-4,425	882,462
A.04221	Microwave Resilience System Upgrades	Capital Renewal	Telecoms	Telecoms Backbone	2,202,162	20,486	2,222,648
A.04231	Ethernet to Corner - SCADA Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	1,647,935	-1,230	1,646,705
A.04288	Radio System Replacement	Capital Renewal	Telecoms	Telecoms Backbone	320,665	1,647	322,312
A.04320	Optical Fibre Transmission Network Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	1,605,609	-11,148	1,594,461
A.04338	IAMPS Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	441,916	-7,315	434,601
Subtotal Construction Projects					**265,108,725**	**7,141,717**	**272,250,442**
DPCT X 34 Program :							
A.02689	CONNORS RANGE: ADDITIONAL CROSSING				5,682,378	1,110,728	6,793,106
A.02730	GOONYELLA SYSTEM EXPANSION				2,328,434	499,458	2,827,892
A.03679	RED MOUNTAIN: FEEDER STATION				91,449	13,724	105,173
A.03681	SARAJI: FEEDER STATION				104,272	14,823	119,095
A.02673	WINCHESTER TO PEAK DOWNS DUPLICATION				1,250,555	20,481	1,271,036
A.03360	INGSDON TO RED MOUNTAIN DUPLICATION				1,475,505	96,742	1,572,247
A.03361	PEAK DOWNS FEEDER STATION				268,798	55,053	323,851
A.03529	HPSCT TO DBCT: THIRD ROAD				250,344	69,295	319,638
A.03530	DBCT TO YUKAN: TRACK UPGRADES				2,188,285	561,084	2,749,369
A.03533	RED MOUNTAIN TO WINCHESTER: DUPLICATION				790,332	178,083	968,415
A.03534	PEAK DOWNS TO DYSART: DUPLICATION				1,249,805	361,395	1,611,200
A.03535	WOTONGA TO MORANBAH: DUPLICATION				1,164,372	331,400	1,495,771
A.03932	DPCT Balloon Loops and Rail Spur				2,228,675	491,295	2,719,970
A.03363	WOTONGA TO MORANBAH NORTH DUPLICATION				1,036,598	276,447	1,313,044
A.03531	HATFIELD TO COPPABELLA: TRACK UPGRADES				3,726,608	521,777	4,248,385
A.03532	MORANBAH NORTH TO NORTH GOONYELLA: DUPLN				954,709	130,325	1,085,035
WIRP 2 Program :							
A.02787	BLACKWATER SYSTEM EXPANSION: CONCEPT STU				2,688,836	520,815	3,209,651
A.02974	WIRP2: MOURA LINK				15,034,695	3,033,568	18,068,263
A.03620	Gladstone 140				964,073	97,483	1,061,556
A.03635	WIRP2: NCL ALDOGA - WIGGINS BALLOON LOOP				639,983	71,425	711,408
A.03636	WIRP2: 2nd BALLOON LOOP				1,529,702	153,815	1,683,517
A.02976	WIRP 1 North Coast Line (Part)				8,390,585	1,123,025	9,513,610
GAPE Future Programs :							
A.03364	Coppabella Angle and grade Easing				552,187	128,972	681,159
A.03366	Teviot Brook Passing Loop	Growth	Expansion	System Expansion	1,207,519	195,406	1,402,925
A.02503	DUNSMURE PASSING LOOP				774,172	198,787	972,959
Sub Total Feasibility Studies					**56,572,868**	**10,255,405**	**66,828,274**
TOTAL CLAIM					**321,681,594**	**17,397,122**	**339,078,716**

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Level 4, 192 Ann Street
Brisbane Qld 4000

Mr Charles Millsteed
Director Economic Regulation
Queensland Competition Authority
Level 27, 145 Ann Street
Brisbane QLD 4001

8 April 2015

Dear Charles

Aurizon Network Pty Ltd 2010 Access Undertaking – Revised 2013/14 Capital Expenditure Claim

Aurizon Network welcomes the opportunity to submit adjustments to the 2013/14 Capital Expenditure Claim.

The purpose of this letter is to confirm the agreed adjustments included in the attached table, as a result of the:

- Queensland Competition Authority's (QCA) consultants review of the projects provided as part of the original submission in October 2014;
- Aurizon Network's review of the original submission on the composition of the projects and the calculation of Interest During Construction; and
- Positive collaboration between Aurizon Network and the QCA resulting in issues being discussed and where appropriate, actions taken in a timely manner.

The overall approach to the assessment of the 2013/14 Capital Expenditure Claim has been positive and Aurizon Network seeks to continue working collaboratively with the QCA for future claims.

If any additional information or clarification regarding this is required, please contact me on (07) 3019 5548.

Regards

[redacted]

Cissy Ma
Manager Regulation (Access Undertaking)
Aurizon Network

2013/14 Revised CAPEX Claim including IDC - Projects List

Project Number	Project Name	Project Type	Project Discipline	Asset Type	System	Post Commission	Approved Funding	Total Project Expenditure to June 30 2014	Prior Years Expenditure	Prior QCA Approved Value	2013/14 YTD Expenditure	2013/14 Claimable Expenditure	IDC	2013/14 Total Claim Value (inc IDC)
A.01048	LED Signal Replacement	Capital Renewal	S&TSS	Signalling Equipment	System Wide		2,830,000	2,589,786	2,419,463	2,419,463	170,323	170,323	4,391	174,713
A.02222	Raglan Feeder Station	Growth	Expansion	Electrical Expansion	Blackwater	Yes	54,700,000	50,911,767	50,328,689	50,328,689	583,078	583,078	5,852	588,931
A.02263	Newlands: Scour Remediation at 100.39kms	Capital Renewal	TACA	Civil	Newlands		2,340,000	2,265,562	2,263,817	2,263,817	1,746	1,746	22	1,768
A.02273	Coal System: Turnout Replacements St 2	Capital Renewal	TACA	Turnouts	System wide		21,993,009	18,510,045	16,364,063	16,364,063	2,145,982	2,145,982	-63,483	2,082,499
A.02517	Millennium Balloon Loop Upgrade	Growth	Expansion		Goonyella	Yes	10,972,000	8,942,119	8,751,103	8,751,103	191,016	191,016	-2,417	188,600
A.02602	Bluff Feeder Station	Growth	Expansion	Electrical Expansion	Blackwater	Yes	44,180,000	39,816,819	39,668,032	39,668,032	148,787	148,787	2,417	151,204
A.02603	Duaringa feeder Station	Growth	Expansion	Electrical Expansion	Blackwater	Yes	47,680,000	44,117,294	43,431,530	43,431,530	685,764	685,764	-12,120	673,644
A.02604	Wycarbah Feeder Station	Growth	Expansion	Electrical Expansion	Blackwater	Yes	48,340,000	45,022,153	44,812,524	44,812,524	209,629	209,629	2,787	212,416
A.02613	Rockhampton Yard: Control Instrument and Reference Wa	Capital Renewal	S&TSS	Weighbridges / Overloaders	System Wide		235,000	226,079	212,884	212,884	13,196	13,196	-30	13,165
A.02620	Dragging Equipment Detectors: Stages 1&2	Capital Renewal	S&TSS	Operational Systems	System Wide		760,000	394,375	359,430	-	34,945	0	0	0
A.02628	CQCR: Coal Loss Management	Capital Renewal	Corridor	Environmental	System Wide		4,462,000	3,674,883	2,953,249	2,953,249	721,634	721,634	2,969	724,603
A.02816	CQ Coal: Level Crossing Investigations	Capital Renewal	Corridor	Level Crossings	System Wide		5,182,000	4,021,967	2,679,480	2,679,480	1,342,487	1,342,487	-3,932	1,338,555
A.02827	STH GOONYELLA (LILYVALE) PASSING LOOP	Growth	Expansion	System Expansion	Goonyella		25,640,000	21,532,523	7,213,913	-	14,318,610	21,532,523	824,029	22,356,552
A.02870	WEIGHBRIDGE REPLACEMENT PROGRAM: STAGE 2	Capital Renewal	S&TSS	Weighbridges / Overloaders	System Wide		1,049,000	1,028,358	1,013,901	796,533	14,457	231,825	81,037	312,862
A.03323	ROLLESTON: UPGRADE SPUR LINE 9.75 MTPA	Growth	Expansion	Electrical Expansion	Blackwater		11,468,070	10,581,444	7,686,953	7,686,953	2,894,490	2,894,490	12,561	2,907,052
A.03353	GSE X140 - DBCT to HPSCT 2nd Road	Growth	Expansion	System Expansion	Goonyella		82,113,100	74,555,477	63,867,204	-	10,688,273	74,555,477	8,848,940	83,404,417
A.03372	Fist Fastened Sleeper Upgr: Coal Systems	Capital Renewal	TACA	Sleepers	Goonyella		14,230,000	13,694,475	12,235,335	12,235,335	1,459,140	1,459,140	2,566	1,461,706
A.03448	Goonyella: Harmonic Filter Secondary System Replacemer	Capital Renewal	Electrical	Power Systems	Goonyella		2,680,000	2,615,690	2,607,662	2,607,662	8,028	8,028	-23	8,005
A.03465	CQ Coal Transformer Refurbishments	Capital Renewal	Electrical	Power Systems	System Wide		12,107,000	7,891,702	5,422,687	5,422,687	2,469,015	2,469,015	-21,091	2,447,923
A.03473	GAPE 50	Growth	Expansion	System Expansion	GAPE	Yes	851,048,506	808,441,916	803,346,991	792,081,329	5,094,925	16,360,587	1,126,325	17,486,912
A.03627	Goonyella Corridor: Stowage Locations	Capital Renewal	Corridor	Corridor Access	Goonyella		10,522,000	3,481,329	2,146,304	2,146,304	1,335,025	1,335,025	6,028	1,341,053
A.03640	Thales Axle Counter Trial	Capital Renewal	S&TSS	Operational Systems	System Wide		740,000	600,028	659,972	-	- 59,944	600,028	114,642	714,669
A.03649	CQ Control Centre Consolidation	Capital Renewal	Telecoms	Network Controls	System Wide		6,196,000	5,564,628	5,515,918	5,515,918	48,709	48,709	1,385	50,094
A.03673	UTC ENHANCE: SUPERVISOR CONSOLE ALARMS	Other	Telecoms	Network Controls	System Wide		125,000	114,664	42,225	49,391	72,439	65,273	12,080	77,353
A.03676	Blackwater Crew Change Pads	Capital Renewal	Corridor	Corridor Access	Blackwater		7,355,000	5,841,186	4,871,903	4,871,903	969,282	969,282	10,850	980,133
A.03678	DERAILMENT SENSORS AT LOADOUTS		S&TSS	Signalling Equipment	Goonyella		252,500	204,621	121,812	121,492	82,810	83,129	24,811	107,940
A.03709	Private / QRN Level Crossing Infrastructure	Capital Renewal	Corridor	Level Crossings	System Wide		3,620,000	3,615,212	3,420,888	3,420,888	194,324	194,324	5,527	199,852
A.03759	Upgrade Remote Monitoring Sys @ 25 Level	Other	S&TSS		System Wide		305,000	291,574	289,935	-	1,639	291,574	40,690	332,264
A.03792	6 Hole Glued Insulation Joint Asset Rene	Capital Renewal	TACA	Rail	System Wide		3,418,484	3,407,942	2,772,809	2,772,809	635,133	635,133	1,582	636,715
A.03843	Rail Replacement Program	Capital Renewal	TACA	Rail	System Wide		406,000	399,881	398,606	398,606	1,275	1,275	26	1,301
A.03845	Harmonic filter reactor replacement	Capital Renewal	Electrical	Power Systems	Goonyella		390,000	276,289	274,689	274,689	1,600	1,600	34	1,634
A.03875	Newlands Corridor Crew Change & Stowage	Capital Renewal	Corridor	Corridor Access	Newlands		153,000	150,102	148,450	148,450	1,652	1,652	34	1,686
A.03876	Moura Corridor Crew Change & Stowage Loc	Capital Renewal	Corridor	Corridor Access	Moura		1,874,000	1,142,462	732,896	732,896	409,565	409,565	1,326	410,892
A.03882	Sleeper Replacements - Newlands	Capital Renewal	TACA	Sleepers	Newlands		1,920,000	1,919,774	1,915,914	1,915,914	3,860	3,860	129	3,989
A.03892	Access Road Hatfield Koumala - Bollingbroke Road	Capital Renewal	Corridor	Corridor Access	Goonyella		250,000	236,808	72,109	-	164,699	236,808	6,520	243,329
A.03896	Overheads Renewal Rocklands to Callemondah	Capital Renewal	Electrical	Distribution Network	Blackwater		4,525,000	4,402,483	4,497,518	4,497,518	- 95,035	-95,035	1,168	-93,867
A.03931	Train Control Disaster Recovery Project	Capital Renewal	Telecoms	Network Controls	System Wide		18,800,000	16,648,469	14,110,629	14,110,629	2,537,840	2,537,840	-784	2,537,056
A.03934	CQ Coal Formation Strengthening Project	Capital Renewal	TACA	Formation / Ballast	System Wide		374,000	307,442	127,637	127,637	179,804	179,804	-497	179,307
A.03945	Replacement of Damaged Fist Sleeper-Ragl	Capital Renewal	TACA	Sleepers	Blackwater		3,405,000	2,294,376	2,279,135	2,279,135	15,241	15,241	345	15,587
A.03960	ION Meter Installation Upgrade Final	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		1,566,000	1,390,736	1,319,866	1,319,866	70,870	70,870	2,016	72,886
A.03961	Operational Network LAN WAN Architecture	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		994,000	866,136	201,491	-	664,644	866,136	43,222	909,357
A.03962	Westrace Hot Standby Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		85,000	84,834	52,470	52,470	32,364	32,364	334	32,698
A.03978	O/F Transmission Network Upgrade Rockhampton to Glad	Capital Renewal	Telecoms	Telecoms Backbone	Blackwater		2,941,000	2,871,058	2,161,065	2,161,065	709,993	709,993	15,005	724,998
A.03979	Weather Stations in the Blackwater System	Capital Renewal	S&TSS	Asset Protection	Blackwater		201,000	185,379	180,898	180,898	4,480	4,480	-71	4,409
A.04022	Security Fencing - Coppabella and Dingo Yards	Capital Renewal	Corridor	Fencing & Corridor Security	Goonyella		522,000	409,402	406,222	406,222	3,180	3,180	103	3,283
A.04023	Level Crossing Protection System	Capital Renewal	S&TSS	Signalling Equipment	System Wide		2,588,000	2,532,497	2,531,771	2,531,771	727	726	23	750
A.04025	Pan Cam Upgrade at Jilalan	Capital Renewal	S&TSS	Asset Protection	Goonyella		208,000	180,889	175,462	175,462	5,427	5,427	-64	5,364
A.04036	Fencing Upgrade Moura and Blackwater Systems	Capital Renewal	Corridor	Fencing & Corridor Security	Moura		200,153	200,152	198,553	198,553	1,600	1,600	38	1,638
A.04040	Concrete Sleeper Upgrades - Goonyella	Capital Renewal	TACA	Sleepers	Goonyella		8,020,000	6,178,765	6,164,411	6,164,411	14,354	14,354	293	14,647
A.04044	Upgrade CQ Coal System Fencing (2012/13)	Capital Renewal	Corridor	Fencing & Corridor Security	System Wide		1,969,305	1,789,325	665,452	665,452	1,123,874	1,123,874	5,430	1,129,303
A.04045	Upgrade Fencing Moura/Blackwater/Newland	Capital Renewal	Corridor	Fencing & Corridor Security	System Wide		430,542	430,541	396,844	396,844	33,697	33,697	339	34,036
A.04065	Provision of Split Detection - Blackwater	Capital Renewal	S&TSS	Operational Systems	Blackwater		225,000	187,903	160,399	160,399	27,504	27,504	828	28,332
A.04066	BW Model 10/Harmon Boom Mech Replacement	Capital Renewal	S&TSS	Signalling Equipment	Blackwater		260,000	229,468	115,164	115,164	114,304	114,304	469	114,773
A.04074	POSS Points Condition Monitors	Capital Renewal	S&TSS	Operational Systems	System Wide		1,740,000	1,534,578	1,167,795	1,167,795	366,783	366,783	-2,779	364,004
A.04111	Dual Telemetry Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		9,080,000	5,103,433	2,616,676	2,616,676	2,486,757	2,486,757	-198	2,486,559
A.04112	Callemondah Yard Turnout Upgrade Project	Capital Renewal	TACA	Turnouts	Blackwater		7,860,991	4,512,391	2,947,087	2,947,087	1,565,305	1,565,305	-16,565	1,548,740
A.04113	Concrete Sleeper Upgrade - Newlands	Capital Renewal	TACA	Sleepers	Newlands		5,220,000	4,867,006	4,866,499	4,866,499	507	507	16	523
A.04114	Blackwater & Goonyella Turnout Upgrade 2	Capital Renewal	TACA	Turnouts	Blackwater		8,473,390	8,224,977	2,744,259	2,744,259	5,480,718	5,480,718	-68,105	5,412,613
A.04124	S1 to S2 Telemetry Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		2,303,000	1,923,339	1,036,452	1,036,452	886,887	886,887	-4,740	882,146
A.04138	Level Crossing Upgrade at Sonoma Coal	Capital Renewal	Corridor	Level Crossings	Newlands		103,000	103,000	3,197	-	99,803	103,000	-1,027	101,973
A.04145	Newlands Culvert Upgrade Project	Capital Renewal	TACA	Structures	Newlands		16,048,000	15,023,116	10,637,624	10,637,624	4,385,492	4,385,492	54,506	4,439,999

2013/14 Revised CAPEX Claim including IDC - Projects List

Project Number	Project Name	Project Type	Project Discipline	Asset Type	System	Post Commission	Approved Funding	Total Project Expenditure to June 30 2014	Prior Years Expenditure	Prior QCA Approved Value	2013/14 YTD Expenditure	2013/14 Claimable Expenditure	IDC	2013/14 Total Claim Value (inc IDC)
A.04150	Standby Power Upgrade	Capital Renewal	S&TSS	Operational Systems	System Wide		94,000	91,551	66,182	-	25,369	91,551	4,576	96,128
A.04151	Duaringa Flood Detection System	Capital Renewal	S&TSS	Asset Protection	Blackwater		295,000	207,641	185,356	185,356	22,284	22,284	496	22,780
A.04154	Concrete Sleeper Upgrade GN Phase 1	Capital Renewal	TACA	Sleepers	Goonyella		9,900,000	8,222,399	7,457,755	7,457,755	764,644	764,644	46	764,690
A.04155	Concrete Sleeper Upgrade GN Phase 2	Capital Renewal	TACA	Sleepers	Goonyella		9,740,000	8,403,327	3,119,348	3,119,348	5,283,979	5,283,979	30,991	5,314,971
A.04187	CSEE Track Circuit Renewal - Stage 1	Capital Renewal	S&TSS	Operational Systems	System Wide		680,000	500,097	29,996	-	470,101	0	0	0
A.04190	Digital TI21 track circuit upgrade – Coppabella to Haypoint	Capital Renewal	S&TSS	Operational Systems	Goonyella		8,343,000	8,243,822	3,081,519	3,081,519	5,162,302	5,162,302	13,028	5,175,331
A.04194	Cathodic Bridge Protection to Access Platform	Capital Renewal	TACA	Civil	Blackwater		63,000	62,130	21,058	-	41,072	62,130	1,205	63,335
A.04203	Formation Eng Assessmt & GPR Record	Capital Renewal	TACA	Formation / Ballast	System Wide		2,886,000	2,611,038	2,309,519	2,309,519	301,519	301,519	3,383	304,902
A.04215	OH Equipment Renewal Goonyella FY13	Capital Renewal	Electrical	Distribution Network	Goonyella		4,210,000	3,625,087	3,044,967	3,044,967	580,120	580,120	13,838	593,958
A.04221	Microwave Resilience System Upgrades	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		8,040,300	2,202,162	558,259	-	1,643,904	0	0	0
A.04231	Ethernet to Corner - SCADA Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		3,046,000	1,647,935	338,296	-	1,309,639	0	0	0
A.04252	Rolleston Flood Protection Stage 2	Capital Renewal	TACA	Formation / Ballast	Blackwater		8,980,150	8,249,036	8,038,676	8,038,676	210,360	210,360	2,354	212,714
A.04254	Section Insulator Replacements	Capital Renewal	Electrical	Distribution Network	System Wide		4,925,000	1,875,987	214,077	-	1,661,910	1,875,987	-16,353	1,859,634
A.04259	Trial of SST HBD/HWD in Goonyella	Capital Renewal	S&TSS	Operational Systems	Goonyella		699,000	474,288	3,029	-	471,258	474,288	6,260	480,548
A.04283	12/13 Formation Strengthening Project St	Capital Renewal	TACA	Formation / Ballast	System Wide		7,000,000	6,975,643	4,535,960	4,535,960	2,439,683	2,439,683	34,096	2,473,779
A.04285	CQCN Mine Loadout OTV Contact Signs	Capital Renewal	Corridor	Fencing & Corridor Security	System Wide		422,000	254,101	132,390	132,390	121,712	121,712	3,225	124,937
A.04288	Radio System Replacement	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		498,000	320,665	94,166	-	226,500	0	0	0
A.04292	Rocklands Top of Rail Lubricator	Capital Renewal	TACA	Track	Blackwater		96,000	84,083	73,149	73,149	10,933	10,933	-154	10,779
A.04293	Bad Order Siding Access Upgrade	Capital Renewal	TACA	Structures	System Wide		312,000	213,347	20,400	-	192,947	213,347	3,464	216,811
A.04296	CDS Rail Points Condition Monitoring	Capital Renewal	S&TSS	Operational Systems	System Wide		1,528,000	1,283,034	1,136,383	1,136,383	146,651	146,651	-840	145,811
A.04297	AzS600 Axle Counters Replacement	Capital Renewal	S&TSS	Operational Systems	System Wide		400,000	261,955	181,176	-	80,778	0	0	0
A.04304	Dalrymple Bay Yard Cantilever Renewal	Capital Renewal	Electrical	Distribution Network	Goonyella		1,070,000	762,861	5,868	-	756,993	762,861	-793	762,068
A.04305	Dalrymple Bay FS Protection Upgrade	Capital Renewal	Electrical	Power Systems	Goonyella		200,000	198,378	92,863	-	105,515	198,378	6,731	205,109
A.04307	Culvert Asset Renewal Project Blackwater	Capital Renewal	TACA	Structures	Blackwater		7,470,000	4,428,485	319,553	-	4,108,932	4,428,485	-32,769	4,395,716
A.04308	Culvert Asset Renewal Project Goonyella	Capital Renewal	TACA	Structures	Goonyella		7,013,000	4,499,581	205,251	-	4,294,330	4,499,581	-12,530	4,487,051
A.04313	Gauge Face Lubrication Asset Renewal	Capital Renewal	TACA	Track	System Wide		8,900,000	2,669,456	1,982,504	1,982,504	686,952	686,952	-6,568	680,384
A.04320	Optical Fibre Transmission Network Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		3,827,000	1,605,609	250,252	-	1,355,357	0	0	0
A.04321	Central Coal UPS Upgrade Project	Capital Renewal	S&TSS	Operational Systems	System Wide		1,895,000	740,460	244,724	-	495,736	740,460	14,437	754,897
A.04322	CQ Access Roads - Accelerated Program	Capital Renewal	Corridor	Corridor Access	System Wide		1,510,000	457,505	59,139	-	398,366	457,505	11,833	469,338
A.04338	IAMPS Upgrade	Capital Renewal	Telecoms	Telecoms Backbone	System Wide		727,000	441,916	-	-	441,916	441,916	-7,860	434,056
A.04345	Sleeper Renewal Program 2013 14	Capital Renewal	TACA	Sleepers	System Wide		25,013,000	22,635,014	52,469	-	22,582,544	22,635,014	-6,454	22,628,559
A.04366	Level Crossing Upgrades 13 14 FY	Capital Renewal	Corridor	Level Crossings	System Wide		9,057,298	4,310,705	121,000	-	4,189,705	4,310,705	-42,561	4,268,144
A.04368	Formation Renewal Wallaroo to Dingo, Dow	Capital Renewal	TACA	Formation / Ballast	Blackwater		5,164,000	3,709,230	109,279	-	3,599,951	3,709,230	28,677	3,737,907
A.04390	Track Upgrade Project 13 14 - Newlands	Capital Renewal	TACA	Track	System Wide		2,310,000	2,208,312	-	-	2,208,312	2,208,312	6,023	2,214,335
A.04404	Energy Efficiency Study	Other	Other		System Wide		200,000	150,352	-	-	150,352	150,352	-1,669	148,683
A.04407	Axle Counters vs Track Circuit Replaceme	Capital Renewal	S&TSS	Operational Systems	System Wide		416,000	415,799	-	-	415,799	415,799	3,499	419,298
A.04421	Powerhouse Roads 1, 2 & Loop Track Upgra	Capital Renewal	TACA	Track	Blackwater		7,339,000	6,409,698	-	-	6,409,698	6,409,698	13,187	6,422,885
A.04422	13 14 Formation Strengthening Project St	Capital Renewal	TACA	Formation / Ballast	System Wide		5,252,105	4,741,463	-	-	4,741,463	4,741,463	11,081	4,752,544
A.04423	OH Equipment Renewal - Goonyella System	Capital Renewal	Electrical	Distribution Network	Goonyella		2,065,000	951,448	-	-	951,448	951,448	-2,466	948,982
A.04424	OH Equipment Renewal - Blackwater System	Capital Renewal	Electrical	Distribution Network	Blackwater		3,435,000	2,780,987	-	-	2,780,987	2,780,987	-20,055	2,760,932
A.04426	2013 14 Track Renewal	Capital Renewal	TACA	Track	System Wide		706,000	462,908	-	-	462,908	462,908	-12,347	450,561
A.04429	Burnett Highway Bridge Protection System	Capital Renewal	Corridor	Corridor Access	Moura		241,000	123,380	-	-	123,380	0	0	0
A.04446	Feeder Station Protection Upgrade	Capital Renewal	Electrical	Power Systems	System Wide		460,000	191,592	-	-	191,592	191,592	-2,778	188,814
A.04479	Callemondah Roads 4 & 5 Renewal	Capital Renewal	TACA	Track	Blackwater		1,554,000	1,547,959	-	-	1,547,959	1,547,959	-15,658	1,532,301
A.04480	Dysart Road Relocation	Capital Renewal	Corridor	Corridor Access	Goonyella		76,000	35,205	-	-	35,205	35,205	-662	34,543
A.04483	German Creek Weighbridge Renewal	Capital Renewal	S&TSS	Weighbridges / Overloaders	Goonyella		482,000	384,757	-	-	384,757	384,757	-6,948	377,809
A.04484	Sandhurst Creek Bridge	Capital Renewal	TACA	Structures	Blackwater		1,750,000	1,736,115	-	-	1,736,115	1,736,115	-33,236	1,702,879
A.04490	Flood Claim January 2013	Capital Renewal	TACA	Formation / Ballast	Blackwater		9,260,000	2,121,909	-	-	2,121,909	2,121,909	-30,392	2,091,517
A.04511	Accelerated Culvert Asset Renewal Projec	Capital Renewal	TACA	Structures	Blackwater		6,300,000	6,297,975	-	-	6,297,975	6,297,975	-178,978	6,118,997
A.04548	Weighbridge Renewal	Capital Renewal	S&TSS	Weighbridges / Overloaders	System Wide		4,803,000	2,000,502	-	-	2,000,502	2,000,502	-62,495	1,938,007
A.04568	Track upgrade Fy14	Capital Renewal	TACA	Track	System Wide		2,692,000	2,087,061	-	-	2,087,061	1,775,691	-55,472	1,720,220
IV.00001	Asset Protection Systems: Braeside WILD	Capital Renewal	S&TSS	Operational Systems	System Wide		2,654,000	2,017,880	25,289	-	1,992,590	2,017,880	-48,961	1,968,919
	Subtotal Construction Projects						**1,575,677,903**	**1,417,883,318**	**1,242,146,536**	**1,152,774,592**	**175,736,782**	**248,386,903**	**10,679,202**	**259,066,105**
DPCT X 34 Program :														
A.02689	CONNORS RANGE: ADDITIONAL CROSSING						5,976,000	5,423,857	5,395,182	0	28,675	5,423,857	1,685,972	7,109,829
A.02730	GOONYELLA SYSTEM EXPANSION						3,000,000	2,328,434	2,327,666	0	768	2,328,434	768,163	3,096,597
A.03679	RED MOUNTAIN: FEEDER STATION						340,000	91,449	91,449	0	-	91,449	21,016	112,465
A.03681	SARAJI: FEEDER STATION						340,000	104,272	104,272	0	-	104,272	22,672	126,943
A.02673	WINCHESTER TO PEAK DOWNS DUPLICATION						1,485,000	1,250,555	1,250,555	0	-	1,250,555	560,121	1,810,676
A.03360	INGSDON TO RED MOUNTAIN DUPLICATION						1,952,000	1,475,505	1,475,505	0	-	1,475,505	394,306	1,869,811

2013/14 Revised CAPEX Claim including IDC - Projects List

Project Number	Project Name	Project Type	Project Discipline	Asset Type	System	Post Commission	Approved Funding	Total Project Expenditure to June 30 2014	Prior Years Expenditure	Prior QCA Approved Value	2013/14 YTD Expenditure	2013/14 Claimable Expenditure	IDC	2013/14 Total Claim Value (inc IDC)
A.03361	PEAK DOWNS FEEDER STATION						1,477,000	268,798	268,798	0	-	268,798	85,158	353,956
A.03529	HPSCT TO DBCT: THIRD ROAD						550,000	250,344	250,344	0	-	250,344	76,219	326,563
A.03530	DBCT TO YUKAN: TRACK UPGRADES						2,210,280	1,950,565	1,950,565	0	-	1,950,565	331,077	2,281,642
A.03533	RED MOUNTAIN TO WINCHESTER: DUPLICATION						1,568,000	790,332	790,332	0	-	790,332	179,899	970,231
A.03534	PEAK DOWNS TO DYSART: DUPLICATION						2,568,000	1,249,805	1,249,805	0	-	1,249,805	254,040	1,503,845
A.03535	WOTONGA TO MORANBAH: DUPLICATION						2,585,000	1,164,372	1,164,372	0	-	1,164,372	229,483	1,393,855
A.03932	DPCT Balloon Loops and Rail Spur						3,195,000	1,926,411	1,926,411	0	-	1,926,411	224,163	2,150,574
A.03363	WOTONGA TO MORANBAH NORTH DUPLICATION						1,566,000	1,036,598	1,035,361	0	1,237	1,036,598	300,289	1,336,886
A.03531	HATFIELD TO COPPABELLA: TRACK UPGRADES						4,985,000	2,938,049	2,936,150	0	1,899	2,938,049	682,941	3,620,989
A.03532	MORANBAH NORTH TO NORTH GOONYELLA: DUPLN						1,541,000	954,709	925,904	0	28,806	954,709	198,742	1,153,452
WIRP 2 Program :														
A.02787	BLACKWATER SYSTEM EXPANSION: CONCEPT STU						2,710,000	2,688,836	2,688,836	0	-	2,688,836	803,957	3,492,793
A.02974	WIRP2: MOURA LINK						19,408,000	14,999,136	14,949,570	0	49,566	14,999,136	4,701,172	19,700,308
A.03620	Gladstone 140						970,000	964,073	825,533	0	138,540	964,073	147,459	1,111,532
A.03635	WIRP2: NCL ALDOGA - WIGGINS BALLOON LOOP						787,000	639,983	639,859	0	124	639,983	108,483	748,465
A.03636	WIRP2: 2nd BALLOON LOOP						1,804,000	1,529,702	1,529,702	0	-	1,529,702	233,951	1,763,653
A.02976	WIRP 1 North Coast Line (Part)						232,743,231	37,938,456	5,301,000	0	32,637,456	8,390,585	1,708,332	10,098,918
GAPE Future Programs :														
A.03364	Coppabella Angle and grade Easing							552,187	552,187	552,187	-	0	0	0
A.03366	Teviot Brook Passing Loop	Growth	Expansion	System Expansion	Goonyella		3,200,000	1,207,519	1,180,372	-	27,147	1,207,519	300,660	1,508,179
A.02503	DUNSMURE PASSING LOOP							774,172	774,172	774,172	-	0	0	0
Sub Total Feasibility Studies							**297,198,231**	**86,120,739**	**53,206,521**	**1,326,359**	**8,641,604**	**53,623,886**	**14,018,276**	**67,642,162**
TOTAL CLAIM							**1,872,876,134**	**1,504,004,057**	**1,295,353,057**	**1,154,100,951**	**184,378,385**	**302,010,789**	**24,697,478**	**326,708,267**

APPENDIX B: INDIVIDUAL PROJECT PRUDENCY ASSESSMENTS

INDEX to FORMS

Number	Name	Discipline (colour code)	System	Claim excluding IDC ($)	No
A.03676	Blackwater Crew Change Pads	**Corridor**	Blackwater	969,282	1
A.03876	Moura Corridor Crew Change and Stowage Locations	**Corridor**	Moura	409,565	2
A.03892	Access Road Hatfield Koumala – Bolingbroke Road	**Corridor**	Goonyella	236,808	3
A.04138	Level Crossing Upgrade at Sonoma Coal	**Corridor**	Newlands	103,000	4
A.04366	Level Crossing Upgrades 13 14 FY	**Corridor**	System Wide	4,310,705	5
A.04429	Burnett Highway Bridge Protection System	**Corridor**	Moura	123,380 (Revised to 0)	6
A.03896	Overheads Renewal Rocklands to Callemondah	**Electrical**	Blackwater	-95,035	7
A.04254	Section Insulator Replacements	**Electrical**	System Wide	1,875,987	8
A.04423	OH Equipment Renewal – Goonyella System	**Electrical**	Goonyella	951,448	9
A.02827	South Goonyella (Lilyvale) Passing Loop	**Expansion**	Goonyella	21,532,523	10
A.03323	Rolleston: Upgrade Spur Line 9.75MTPA	**Expansion**	Blackwater	2,894,490	11
A.03353	GSE X140 - DBCT to HPSCT 2nd Road	**Expansion**	Goonyella	74,570,022 (Revised to 74,555,477)	12
A.02870	Weighbridge Replacement Program: Stage 2	**S&TSS**	System Wide	1,028,358 (Revised to 231,825)	13
A.03640	Thales Axle Counter Trial	**S&TSS**	System Wide	600,028	14
A.04066	BW Model 10/Harmon Boom Mech Replacement	**S&TSS**	Blackwater	114,304	15
A.04190	Digital TI21 Track Circuit Upgrade – Coppabella to Hay Point	**S&TSS**	Goonyella	5,162,302	16
A.04297	AzS600 Axle Counters Replacement	**S&TSS**	System Wide	261,955 (Revised to 0)	17
A.04407	Axle Counters vs Track Circuit Replacement	**S&TSS**	System Wide	415,799	18
A.04548	Weighbridge Renewal	**S&TSS**	System Wide	2,000,502	19
IV.00001	Asset Protection Systems: Braeside WILD	**S&TSS**	System Wide	2,017,880	20
A.03934	CQ Coal Formation Strengthening Project	**TACA**	System Wide	179,804	21
A.04145	Newlands Culvert Upgrade Project	**TACA**	Newlands	4,385,492	22
A.04203	Formation Eng. Assessment and GPR Record	**TACA**	System Wide	301,519	23

A.04283	12/13 Formation Strengthening Project	**TACA**	System Wide	2,439,683	24
A.04308	Culvert Asset Renewal Project Goonyella	**TACA**	Goonyella	4,499,581	25
A.04345	Sleeper Renewal Program 2013-14	**TACA**	System Wide	22,635,014	26
A.04390	Track Upgrade Project 13 14 - Newlands	**TACA**	System Wide	2,208,312	27
A.04421	Powerhouse Roads 1, 2 & Loop Track Upgrade	**TACA**	Blackwater	6,409,698	28
A.04422	13 14 Formation Strengthening Project	**TACA**	System Wide	4,741,463	29
A.04479	Callemondah Roads 4 & 5 Renewal	**TACA**	Blackwater	1,547,959	30
A.04490	Flood Claim January 2013	**TACA**	Blackwater	9,260,000 (Revised to 2,121,909)	31
A.04568	Track Upgrade FY14	**TACA**	System Wide	2,087,061 (Revised to 1,775,691)	32
A.03961	Operational Network LAN WAN Architecture	**Telecoms**	System Wide	866,136	33
A.03978	O/F Transmission Network Upgrade Rockhampton to Gladstone	**Telecoms**	Blackwater	709,993	34
A.04221	Microwave Resilience System Upgrades	**Telecoms**	System Wide	2,202,162 (Revised to 0)	35
A.04231	Ethernet to Corner - SCADA Upgrade	**Telecoms**	System Wide	1,647,935 (Revised to 0)	36
A.04288	Radio System Replacement	**Telecoms**	System Wide	320,665 (Revised to 0)	37
A.04320	Optical Fibre Transmission Network Upgrade	**Telecoms**	System Wide	1,605,609 (Revised to 0)	38

Type of project: Corridor *System: Blackwater* *Expenditure Claim (excluding IDC): $969,282*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The scope of work is consistent with the Zero Harm philosophy and the minimisation of installation and maintenance costs.	1
Standard	The standard of works is consistent with the Zero Harm philosophy.	1
Cost	There has been adequate demonstration of the initial prudent procurement process and cost reductions since. In consideration of the information provided the project is considered prudent in cost.	1

Information provided and assessed:

- Engineering assessment - AECOM
- Tender Evaluation – Trial
- Minor Capital Funding Requests
- Change Requests 1,2,3 and 4
- Delivery Program
- Blackwater Scope Table
- Tender Evaluation - Execution
- Project Brief
- Construction Environmental Management Plan

Background

The project was developed to provide a firm and level trackside walking route which offered low installation and maintenance costs, and was light enough to be handled without mechanical lifting devices.

Stage	Project Cost or Estimate
Minor Funding Request	$100,000 $900,000 $6,355,000
Completion Report Forecast	$7,355,000
Actual Costs to Date	$5,841,186
Previous Cap Ex Claim Amount Approved by QCA	$4,871,903
Cap Ex Submission 2013-14	$969,282

Has project achieved financial completion	No

3876 Moura Corridor Crew Change & Stowage Location 02

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $409,565*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Scope of works is considered prudent and consistent with Zero Harm philosophy and the minimisation of installation and maintenance costs.	1
Standard	Standard of works is consistent with Zero Harm philosophy and considered prudent	1
Cost	There has been adequate demonstration of the initial prudent procurement process and cost reductions since. In consideration of the information provided the project is considered prudent in cost.	1

Information provided and assessed:

- Minor Capital Funding Request
- Scope Table
- Minor Capital Funding Request (for additional funds)
- Project Program (February 2014)
- Inspection and Test Plans
- Tender Evaluation for Fibre Reinforced Plastic (FRP) Panels

Background

The project was developed to provide a firm and level trackside walking route which offered low installation and maintenance costs, and was light enough to be handled without mechanical lifting devices.

Stage	**Project Cost or Estimate**
Actual Costs to Date	$1,142,462
Previous Cap Ex Claim Amount Approved by QCA	$732,896
Cap Ex Submission 2013-14	$409,565

Has project achieved financial completion	No

3892 Access Road Hatfield Koumala – Bollingbroke Road 03

Type of project: Corridor *System: Goonyella* *Expenditure Claim (excluding IDC): $236,808*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criterion	Comment/Recommendation	Risk
Scope	Execution of this scope improves safety for staff needing access to or egress from the corridor. It is therefore considered prudent.	1
Standard	The standard of this road is comparable with others on the Aurizon network and is therefore considered prudent.	1
Cost	Overall the costs included in this claim are considered prudent but additional funds have been authorised so it is recommended that the project be re-examined as part of the 2014-15 Cap Ex Review.	1

Information provided and assessed:

- Cost Estimate - Hatfield Access Road Earthworks and others
- Hatfield access 002 Image
- Hatfield access 004 Image
- Hatfield Access Road Koumala Bolingbroke Road Upgrade MFR final
- Hatfield-Bolingbroke Route Map Up Direction

Background

This upgrade was undertaken to replace an existing access road with restricted sighting of approaching road traffic for railway vehicles wishing to turn right into or out of the railway corridor.

Stage	**Project Cost or Estimate**
Actual Costs to Date	$236,808
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$236,808

Has project achieved financial completion?	No

4138 Level Crossing Upgrade at Sonoma Coal 04

Type of project: Corridor *System: Newlands* *Expenditure Claim (excluding IDC): $103,000*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes

Overall Assessment Comments and Recommendations

Criteria	Comment/Recommendation	Risk
Scope	The scope is considered prudent in view of the changed traffic conditions and requirements of the contractual agreement with the Sonoma mine.	1
Standard	The project standard is considered prudent and consistent with existing successful solutions of similar purpose.	1
Cost	The project is considered prudent in cost for the scope performed	1

Information provided and assessed:

- Cost for Level Crossing Upgrade - Mine Component Sonoma Coal - ID3310
- MFR - Level Crossing Upgrade at Sonoma Coal - Signed
- Email "Re Sonoma Crossing" and attached completion certification

Background

The Sonoma Coal crossing provides access to the Sonoma mine across the Sonoma balloon loop. In 2010 the Sonoma Mine commenced using B double and triple road vehicles to access the mine. Due to this change in traffic loading an upgrade was required to increase capacity of the crossing. The Level Crossing Deed held with the mine requires that should an upgrade be required due to changes in traffic flow or type then the mine will be responsible for the costs of such upgrades.

Stage	**Project Cost or Estimate**
Minor Funding Request	$103,000
Actual Costs to Date	$103,000
Previous Cap Ex Claim Amount Approved by QCA	Nil
Cap Ex Submission 2013-14	$103,000

Has project achieved financial completion?	Yes

4366 Level Crossing Upgrades 13 14 FY 05

Type of project: Corridor *System: System Wide* *Expenditure Claim (excluding IDC): $4,310,705*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes

Overall Assessment Comments and Recommendations

Criteria	Comment/Recommendation	Risk
Scope	The selection of the scope was undertaken using risk assessment and review processes under the guidelines of the Transport Rail Safety Act (2010). In view of this it is considered that the scope development is prudent	1
Standard	From the information provided the project is prudent in terms of standard	1
Cost	At the time of review, and from the information provided, it appears the project has expended some 48% of its costs against 40% of the program. Despite this, for the scope achieved the current expenditure appears reasonable and it is noted that there may be a program lag between design and estimation for the following years scoping which may be skewing the cost figures.	2

Information provided and assessed:

- Level Crossing Priority List as at 31 May 2013
- Coal System Crossings for QCA Information
- Tabulated Scope
- Pre and Post Upgrade ALCAM Scores Table
- CQCN Level Crossing Priority and Scope List
- Capital Funding Request
- Inspection and Test Plans

Background

This is one of four projects related to works at level crossings across the network. Aurizon Network has undertaken a program of identifying and assessing the risks associated with the rail and private road crossings throughout its network in accordance with the Transport Rail Safety Act (2010) and proposed Interface Agreements between Aurizon and road managers/owners. This program is a result of this assessment. It is anticipated that upgrades will provide an enhanced level of safety to users and thereby reduce the risks of operational disruptions arising from incidents at level crossings.

Stage	Project Cost or Estimate
Capital Funding Request	$8,424,000
Transfer of funds memorandum	$633,298
Total Approved Funding	$9,057,298
Previous Cap Ex Claim Amount Approved by QCA	Nil
Cap Ex Submission 2013-14	$4,310,705

Has project achieved financial completion?	No

4429 Burnett Highway Bridge Protection System 06

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	No
	Prudency of Cost	No

Overall Assessment Comments and Recommendations

Criteria	Comment/Recommendation	Risk
Scope	The overall project scope is considered prudent.	1
Standard	The standard of the initial design did not comply with DTMR requirements and therefore cannot be assessed as prudent. A revised design was undertaken but not completed within the claim period. This project should therefore be reconsidered in a future claim.	1
Cost	Due to inconsistency in the claimed submission figure and the total approved funding, costs cannot be assessed for prudency.	1

Information provided and assessed:

- Capital Funding Requests
- Project Management Plan
- Client Requirement Brief (draft)
- Asset Renewal Works Brief
- Group Estimate Summary Rev 2 AT
- Project Schedule

Background

This is a safety driven project to install a bridge protection system at the Burnett Highway Bridge on the Moura short Line (at 130.820km). The rail over bridge has been struck on numerous occasions by highway traffic that exceeds the height limit for vehicles passing under the bridge.

The risk of bridge strike is significant, and the resultant infrastructure damage has potential to significantly impact rail operations and network capacity.

This system will provide a warning to road users to advise if their load is at a height that will strike the bridge.

Stage	Project Cost or Estimate
Minor Funding Request	$241,000
Actual Costs to Date	$123,380
Previously approved QCA claim	N/A
Original Cap Ex Submission 2013-14	$123,380
Revised Cap Ex Submission	$0 – Claim Deferred

Has project achieved financial completion?	No

3896 Overheads Renewal Rocklands to Callemondah 07

Type of project: Electrical *System: Blackwater* *Expenditure Claim (excluding IDC): $-95,035*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criterion	Comment/Recommendation	Risk
Scope	No scope claimed as part of the FY2013/4 claim.	1
Standard	As above.	1
Cost	The 'claim' is actually a credit against the cost of surplus materials taken into inventory. Despite this, however, there is a positive IDC charge against this credit.	1

Information provided and assessed:

- Minor Funding Request OV1
- Project Change Request 2
- Project Change Request 3
- Project Change Request 4
- Project Completion Report
- Laing O'Rourke Project Brief

Background

The overall project was for the renewal of overheads between Rocklands and Callemondah. Although execution works were completed in the FY12/13 claim period, a credit for surplus materials placed into stores has been received in the current claim period.

Stage	Project Cost or Estimate
Minor Funding Request	$4,525,000
Actual Costs to Date	$4,402,483
Previous Cap Ex Claim Amount Approved by QCA	$4,497,518
Cap Ex Submission 2013-14	-$95,035

Has project achieved financial completion?	Yes

4254 Section Insulator Replacements 08

Type of project: Electrical *System: System Wide* *Expenditure Claim (excluding IDC): $1,875,987*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The scope consists of both reactive and proactive replacement of equipment to ensure reliability of the network and is therefore considered prudent.	1
Standard	The standard of equipment used.	1
Cost	The costs currently being claimed are considered prudent but it is noted that the project has not achieved financial closure and an additional $180,000 budget has been released against the project. It is therefore suggested that this project been reviewed again in future years.	1

Information provided and assessed:

- Approved MFR - Section Insulator Renewal
- Memorandum for Exemption from Tendering for Flury Insulators
- Project Change Request No. 1 Installation Program

Background

The purpose of this project is to replace a number of life expired and aged electrical components in the Blackwater and Goonyella systems.

Stage	Project Cost or Estimate
Actual Costs to Date	$1,875,987
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$1,875,987

Has project achieved financial completion?	No

4423 OH Equipment Renewal – Goonyella System 09

Type of project: Electrical *System: Goonyella* *Expenditure Claim (excluding IDC): $951,448*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	These works are considered prudent in terms of scope.	1
Standard	This work is considered prudent in terms of standard.	1
Cost	Although it is unclear where costs for the unmanned aerial vehicles (UAV) units have settled, as the total costs for the scope of work commissioned is considered within industry expectations, overall the costs are considered prudent.	1

Information provided and assessed:

- 2-002 OH Equipment Renewal GY 1314_Signed
- Capital Funding Request
- Overhead Renewals behind the BCM - Criticality Study
- Study of how the Renewals address Critical Areas

Background

This project was undertaken to renew electrical assets in the Goonyella system. Project works took place within electrical possessions taken for ballast undercutting or re-sleepering work.

Stage	Project Cost or Estimate
Actual Costs to Date	$951,448
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$951,448

Has project achieved financial completion?	No

2827 Sth Goonyella (Lilyvale) Passing Loop 10

Type of project: Electrical *System: Goonyella* *Expenditure Claim (excluding IDC): $21,532,523*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The increased capacity provided by this new asset makes the work prudent in terms of scope.	1
Standard	Use of standard material, equipment and systems makes this work prudent in terms of standard.	1
Cost	The work is considered generally prudent in terms of cost.	1

Information provided and assessed:

- Minor Capital Funding Requests
- Business Case Approval Model South Goonyella Passing Loops v3
- SAP ZWISR data
- Signalling and Telecoms' User Requirements Specifications
- Signalling Scheme Plan
- Wiring Layout Plans
- Civil Tender Design and Documents
- Civil Works Safety Validation
- Signalling and Overhead Construction Practical Completion Certificate
- Signalling Handover to Operations
- Capital Expenditure Concept and other Investment Approval Requests
- Mini Board Investment Framework Pre-Feasibility and Feasibility Capital Decision Minutes
- Lilyvale Passing Loop User Requirement Brief
- Signalling Arrangement Drawings
- Generic Catenary Design Documentation applicable to Aurizon overhead network
- Earthing and Bonding Plans
- Project Management Plan v1.4
- Bill of Materials
- Bundoora to Yan Yan Capacity Reviews v1.00 and 1.01
- Track Validation Certificate

Background

Lilyvale Passing Loop was constructed to provide additional route capacity for electric traction along the South Goonyella corridor.

Stage	**Project Cost or Estimate**
CRIMP or other evidence of customer approval	The analysis study (originally Oaky Creek) was part of the $11m endorsed by QCA in April 2010 under the 2009 Coal Rail Infrastructure Master Plan (CRIMP). An allowance of $45M was provided for the 2010 Draft CRIMP for two additional passing loops.
Actual Costs to Date	$21,532,523
Previous Cap Ex Claim Amount approved by QCA	N/A
Cap Ex Submission 2013-14	$21,532,523

Has project achieved financial completion?	Yes

3323 Rolleston Upgrade Spur Line 9.75 MTPA 11

Type of project: Expansion *System: Blackwater* *Expenditure Claim (excluding IDC): $2,894,490*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criterion	Comment/Recommendation	Risk
Scope	The scope of work is believed prudent.	1
Standard	The standard to which the work is constructed is believed to be prudent.	1
Cost	The project costs are believed to be prudent.	1

Information provided and assessed:

- Capital Project Minor Funding Request
- Notice of Revised Investment Project Approval
- Capital Expenditure Request for Additional Funds – January 2012
- Line Diagram
- Rail Infrastructure Construction Deed
- Memo for Additional Funds
- Project Change Request No. 6
- Project Timeline Document
- Certificate of Practical Completion for Aurizon Network works
- Variation Register

Background

This work was undertaken following the signing of a contract which took expected annual tonnages past a pre-determined threshold limit where track upgrade would be required.

Stage	Project Cost or Estimate
Actual Costs to Date	$10,581,444
Previous Cap Ex Claim Amount Approved by QCA	$7,686,953
Cap Ex Submission 2013-14	$2,894,490

Has project achieved financial completion?	No

3353 GSE X140 DBCT to HPSCT 2nd Road 12

Type of project: Expansion *System: Goonyella* *Expenditure Claim (excluding IDC): $74,555,477 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Prudent within the bounds of Aurizon processes in use at the time.	1
Standard	This is work is considered to be prudent in terms of standard.	1
Cost	The cost is considered generally prudent	2

Information provided and assessed:

- SAP ZWISR data
- Generic Catenary Design Documentation applicable to Aurizon Overhead Network
- Signalling Feasibility Scope of Works
- Synergy Practical Completion Certificate for New Signalling for Hay Point Second Arrival Road
- Track Validation Certificate for Track Construction Works on Arrival Road 2 and Departure Road 2
- Report for Insulation Resistance Testing, Energisation and Section Proving of the Electric Traction Fixed Equipment
- Request for Increase to Contract Sum for Q50 Variation
- User Requirements Brief (signed)
- Track Validation Certificate for the Installation of Glued Insulated Joints
- Feasibility Estimate Work Brief
- Power Systems Feasibility Report and Cost Estimate
- Signalling Arrangement Drawings v 3E and 5F
- Report of Final Inspection of Signalling Installation Works
- Practical Completion Certificate for Overhead Line Construction
- Track Validation Certificate for Installation of Turnouts
- October Cost Plan
- Preliminary Project Proposal
- Q50 Flood Immunity Compliance Briefing Paper

Background

The DBCT to HPSCT second road was constructed to increase annual tonnage throughput at the port of Hay Point. Due to the complexities of the site topography and existing track layout a significant amount of civil engineering and railway modelling work was required to deliver the final project.

Stage	**Project Cost or Estimate**
CRIMP or other evidence of customer approval	This project was approved in April 2010 as part of the 2009 CRIMP. This is confirmed in both the CRIMP and the memorandum of 24 September 2014.
Total approved funding	$82,113,100
Actual Costs to Date	$74,555,477
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$74,570,022
Revised Cap Ex Submission	$74,555,477
Future Claim	Future claims are anticipated for related projects: A.03362 – Jilalan to DBCT holding road A.02803 – Wotonga Feeder Station

Has project achieved financial completion?	Yes

2870 Weighbridge Replacement Program Stage 2 13

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $231,825 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	No
	Prudency of Standard	Yes
	Prudency of Cost	No

Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Scope could not be assessed as a portion of the scope appears to have been claimed in the 2010-11 Capital Expenditure Submission claim.	2
Standard	The required conformity to the Queensland Trade measurement Act 1990 indicates that the standard of works will be approved and rigorously monitored and controlled.	1
Cost	Due to discrepancies found in the scope of works completed and claimed in the 2010-11 capital expenditure submission and the total claimable expenditure in the 2013-14 period the costs could not be assessed as prudent.	1

Information provided and assessed:

- 090707 Business Case approval
- Notice of New Investment Project Approval
- Coal Weighbridge Priorities and Cost Estimates
- Coal Loadout Facilities – QR drawing CM347 Issue G
- German Creek Site Plan and Conduit Positional Layouts Rev A
- Weekly Return of Thermite Welds (German Creek)
- Minor Funding Requests
- Notice of Revised Investment Project Approval
- German Creek Commissioning Program
- German Creek Track Weigher Layout and Conduit Proposals Rev A
- Track Validation Certificate – German Creek Train Loadout and Weighbridge

Background

Stage 2 of the weighbridge replacement programs commenced in 2009 and are basically a continuation of the strategic reconsideration of the commercial weighbridge agreements and QR (later Aurizon) Network's weighbridge maintenance policies which were revised in Stage 1 of the project in 2007.
Following the determination of Aurizon Network's weighbridge strategy this Project 2870 and Project 4548 will rationalise remaining works from previous weighbridge renewal projects and implement replacement and reparation works as required.
Stage 2 of the project allows for the installation of new weighbridge facilities at Rolleston, Callide and Boundary Hill mine loadouts and the trade certification of these. This installation complies with the requirements of the 2004 Coal, 2008 Coal, and Rolleston Access Agreements to provide trade-verified weighbridges at these locations.

Stage	**Project Cost or Estimate**
Business Case Minor Funding Request Minor Funding Request	July 2009 $300,000 October 2010 $547,000 $202,000
Previously QCA approved value	$796,533
Actual Costs to Date	$1,028,358
Previous Cap Ex Claim Amount approved by QCA	N/A
Original Cap Ex Submission 2013-14	$1,028,358
Revised Cap Ex Submission	$231,825

Has project achieved financial completion?	Yes

3640 Thales Axle Counter Trial 14

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $600,028*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project is considered prudent in scope.	1
Standard	Axle counter is a technology widely used in railways as an alternative to track circuit. Thales is a leader in signalling equipment. In consideration of these facts the project is considered prudent in standard.	1
Cost	Although the trial lasted longer than expected, it is noted that this was due to technical issues which were appropriately solved. Despite these issues overall the costs of the trial is within budget and are considered reasonable.	1

Information provided and assessed:

- A03xxx - Thales Axle Counter Trial signed
- Type Approval Certificates
- Signed MFR - Thales Axle Counters

Background

The purpose of the project is to trial the Thales axle counter (for train detection purpose) as of the source for replacement of ageing axle counters or for new deployment. The trial allowed Aurizon to evaluate the Thales axle counter solution in real operation. The outputs of this trial were used as inputs to the Axle Counter versus Track Circuit study (project A.04407). The Axle counters were also Type Approved. The Axle counters are currently in service. Thales axle counter will be one of the two axle counter products to be used by Aurizon in the comings year

Stage	Project Cost or Estimate
Approved total funding	$740,000
Actual Costs to Date	$600,028
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$600,028

Has project achieved financial completion?	No

4066 BW Model 10/Harmon Boom Mech Replacement 15

Type of project: S&TSS *System: Blackwater* *Expenditure Claim (excluding IDC): $114,304*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Given the age of the original equipment, consequent reliability issues and lack of ongoing supplier support, replacement of the electrical mechanism is considered prudent.	1
Standard	The standard is believed prudent as the new equipment (Invensys S60) is widely deployed in many countries and is standard to Aurizon/QR National and typical of installation nationally.	1
Cost	Costs are believed prudent considering this is a partial retrofit of a small number of existing level crossings (no saving due to large scale project).	1

Information provided and assessed:

- MFR - BW Model 10 Harmon Boom Mech replacement - Signed
- Model 10 Harmon Boom Replacement PMP 12-13
- SAP report

Background

The project consists of the replacement of electrical boom mechanisms at 4 locations. The old equipment (Westinghouse) was originally installed in the 70's. The contacts have become worn, creating reliability issues, and the product was no longer supported by the supplier.

Stage	Project Cost or Estimate
Total Approved Funding	$260,000
Actual Costs to Date	$229,468
Previous Cap Ex Claim Amounts Approved by QCA	$115,164
Cap Ex Submission 2013-14	$114,304
Financial completion achieved?	No

Type of project: S&TSS *System: Goonyella* *Expenditure Claim (excluding IDC): $5,162,302*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The upgrade of the track circuits and the replacement or refurbishment of impedance bonds and replacement of power supplies are prudent. However Aurizon reports that only 262 units, out of the 506 to be replaced have been installed on site (but not all have been commissioned as of 30 June 2014) with ongoing works planned up to December 2015. Thus only part of the asset was in service on 30th June 2014.	2
Standards	The new equipment is type approved so the work is considered prudent in terms of standard.	1
Cost	The budgeted costs of $8,343,000 for the retrofit of 506 track circuits, including the replacement or refurbishment of impedance bonds and replacement of power supplies is prudent. However only 262 units, out of the 506 to be replaced have been installed. The SAP reports indicate that $8,243,821 has already been spent on the project. No information was provided regarding the forecasted cost to completion, therefore although assessed as prudent in 2013-2014 claim (costs are considered prudent as the works completed to date are within the current approved budget), any additional expenditure should be carefully assessed in next year's claim.	2

Information provided and assessed:

- Digital TI21 Track Circuit Replacement Signed MFR
- QRN CA-HP TI21 track circuit replacements 0_003RBL
- Aspect 3 Alliance report December 2014
- Typical audit sheets, pinks, pictures, bon testing and test certificates
- Project Plan Ti21 - 250712
- TI 21 Track Circuit Replacements PMP 12-13
- Email from Allan Gough dated 16 February 2015

Background

The project consists in upgrading around 500 track circuits in the Goonyella system between Coppabella to Hay Point. The project also included the replacement or refurbishment of impedance bonds and the replacement of power supplies.

Stage	Project Cost or Estimate
Total approved funding	$8,343,000
Actual Costs to Date	$8,243,822
Previous Cap Ex Claim Amount Approved by QCA	$3,081,519
Cap Ex Submission 2013-14	$5,162,302

Has project achieved financial completion?	No

4297 AzS600 Axle Counters Replacement 17

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	No

Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The replacement of the old Siemens Axle counters by the new Frauscher Advanced Counter (FAdC) is prudent. However the new equipment is not commissioned yet. The schedule 6 document indicates that the commissioning is now postponed until the 2015/2016 financial year.	1
Standard	Frauscher is one of leading suppliers of axle counters. The FAdC product will be installed for the first time on Aurizon network for this project. This product is one of the two axle counter equipment recommended for axle counter replacement in the Aurizon study "Axle Counter versus Track Circuit"	1
Costs	The budgeted costs are considered reasonable in regards to the first implementation of the Frauscher Axle counters. However as the equipment is not in service and potentially considerable additional costs may be incurred (potentially up to 2016), at the time of this review it is not possible to assess the prudency of the costs, therefore it is recommended that this project be deferred until the works are completed and commissioned. In view of the above. Aurizon Network have deferred this project until the 2014-15 submission claim.	1

Information provided and assessed:

- AzS600 Axle Counter Replacement Signed MFR_Aurizon

Background

Scope of the project is to replace the existing Siemens Az600 axle counters that reached end of life by Frauscher Advanced Counter (FAdC) between Moranbah to Villafranca and Villafranca to Mount McLaren. This is the first installation of FAdC on Aurizon network. The equipment has not yet been commissioned.

Stage	Project Cost or Estimate
Total approved funding	$400,000
Actual Costs to Date	$261,955
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013 – 14	$261,955
Revised Cap Ex Submission	$0 – Project Deferred

Has project achieved financial completion?	No

4407 Axle Counters vs Track Circuit Replacement 18

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $415,799*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	It was prudent to perform such a study that will bring significant savings in the deployment of track circuits and axle counters on the Aurizon network in the coming years. The study, through its unique recommendation for the Aurizon Network is considered to be an asset.	1
Standard	The study is evaluating proven technology and proven products.	1
Cost	The costs of the study were found to be on the high end in relation to the scale, nature and complexity of the study. However the recommendations and strategies presented in the study will add value and ultimately save costs, and hence overall the project cost is still considered as prudent.	1

Information provided and assessed:

- AC Vs TC Replacement_Final_Funding_Signed MFR
- Axle Counter versus Track Circuit Study report dated 26 March 2014. Draft – not signed.

Background

The scope of work of this project is to deliver a study about the use of axle counters versus track circuit as train detection systems. The study includes recommendations and a proposed strategy on the optimal uses of both types of equipment on the Aurizon network.

Stage	Project Cost or Estimate
Minor Funding Request	$416,000
Total approved funding	$416,000
Actual Costs to Date	$415,799
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$415,799

Has project achieved financial completion?	Yes

4548 Weighbridge Renewal 19

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $2,000,502*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	On consideration of the additional information provided by Aurizon Network the scope is considered prudent	2
Standard	All weighbridges are required to be calibrated to the Queensland Trade Measurement Act 1990. Conformance with this act indicates the standard of works required and completed.	1
Cost	It is noted that an additional $748,178 was required for final completion and commissioning of the Callide weigher which had been installed and expenditure claimed in project A.02870. This was due to original weigher failure as a resultant of movement of grouted plates which had been re-installed and grouted in the same location as the replaced pit weigher. These reparatory works added significant additional works and scope to this project. It is noted that the implementation of the specific weighbridge equipment on a concrete slab assembly is a relatively new departure for Aurizon Network and it is accepted that there will be a learning curve associated with the introduction of new designs within the industry. Aurizon Network have confirmed that the learnings from this experience have been applied to subsequent sites with potential savings for the future weighbridge renewal program. Based on this fact and the additional information provided to the Review Team the final assessment has concluded that the project is prudent in cost.	2

Information provided and assessed:

- Capital Funding Request - Weighbridge Renewal_Final_signoff_AG20062014

Background

Stage 2 of the weighbridge replacement programs commenced in 2009 and are basically a continuation of the strategic reconsideration of the commercial weighbridge agreements and QR (later Aurizon) Network's weighbridge maintenance policies which were revised in Stage 1 2007.

Following the determination of Aurizon Network's weighbridge strategy Project 2870 and this Project 4548 will rationalise remaining works from previous Weighbridge Renewal Projects and implement replacement and reparation works as required.

In addition to the above new weighbridges will be installed at Oaky Creek, Moranbah North and Hail Creek.

Stage	**Project Cost or Estimate**
Total approved funding	$4,803,000
Actual Costs to Date	$2,000,502
Previous Cap Ex Claim Amounts Approved by QCA	N/A
Cap Ex Submission 2013-14	$2,000,502

Has project achieved financial completion?	No

IV.0000 Asset Protection Systems Braeside WILD 20

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $2,017,880*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project includes provision of a Wheel Impact Load Detector (WILD) and the construction of a super site between Wandoo and Waitara (named Wandoo super site). The scope is considered generally prudent although justification (including evaluation of alternatives to build a super site) was not provided at time of assessment	1
Standard	The WILD is a well proven product supplied by Signal & System Technik. The project is therefore considered prudent in terms of standard.	1
Cost	The cost of the WILD is considered reasonable in regards to the solution used and the fact that there is only one location so no economy of scale. The cost of the super site is also considered reasonable given its size and technical complexity.	1

Information provided and assessed:

- 3-MFR Braeside WILD and CER Final (signed)
- Super Site Selection Tool
- Wandoo Communication Equipment Compound Project Design Brief
- Wandoo Compound As Built Drawings
- Super Site Decision Document
- Estimate for Super Site
- Memorandum – Transfer of Funds with Network Asset Renewal Program – Additional Capital Works
- Electrical As Built Drawings

Background

The project includes provision of a Wheel Impact Load Detector (WILD) and the construction of a super site between Wandoo and Waitara (named Wandoo super site). The original funding request of $854,000 included only the WILD to be installed between Waitara and Braeside. The construction of the super site and associated move of the WILD position was funded though reallocation of $1,800,000 to the project.

Stage	**Project Cost or Estimate**
Total approved funding	$2,654,000
Actual Costs to Date	$2,017,880
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$2,017,880

Has project achieved financial completion?	No

3934 CQ Coal Formation Strengthening Project 21

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $179,804*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	From the information provided the project is considered prudent in scope.	1
Standard	From the information provided the project is considered prudent in standard.	1
Cost	Considering the analysis undertaken and the final report the project is considered prudent in cost.	1

Information provided and assessed:

- CQ Coal Formation Strengthening Project Stage 4
  - Formation Analysis Signed MFR
- Final Report CQ Coal Formation Strengthening

- Minor Capital Funding Request

Background

This project is part of an ongoing program related to the strengthening of the rail formation via either removal or replacement, re-building or injecting with lime slurry. The project involved collating critical measurement and testing data to develop a report which provides the background and essential information for developing prioritisations and the program of formation works going forward.

Stage	**Project Cost or Estimate**
Total approved funding	$374,000
Actual Costs to Date	$307,442
Previous Cap Ex Claim Amount Approved by QCA	$127,637
Cap Ex Submission 2013-14	$179,804

Has project achieved financial completion?	No

4145 Newlands Culvert Upgrade Project 22

Type of project: TACA *System: Newlands* *Expenditure Claim (excluding IDC): $4,385,492*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	This work is considered to be prudent in terms of scope.	1
Standard	This work is considered to be prudent in terms of standard.	1
Cost	Given the overall situation, and information available to decision makers at the time, this work is considered prudent in terms of cost.	1

Information provided and assessed:

- Newlands Culverts_Additional Funding_Signed MFR
- Estimate Detail - RB 111012
- Feas_RoR_Rev01_PPoint
- IAR - Feasibility V6_Final
- Newlands Culverts 230812_Rolled up
- Newlands_Culverts_06092012
- Schedule_CashFlow_230812
- 120605 - IAR - Prefeasibility - Final v2

Background

This project was established to strengthen identified culverts in the Newlands system where the condition of the existing structure was such that speed restrictions had been imposed on rail traffic passing over them.

Stage	**Project Cost or Estimate**
Total approved funding	$16,048,000
Actual Costs to Date	$15,023,116
Previous Cap Ex Claim Amount Approved by QCA	$10,637,624
Cap Ex Submission 2013-14	$4,385,492

Has project achieved financial completion?	No

4203 Formation Engineering Assessment & GPR Record 23

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $301,519*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project provides a knowledge base which can aid decision makers in creating a proactive and risk based prioritisation program for formation strengthening works in the future. This will enable a move from a current "fix-on-fail" approach to a more structured and proactive risk based prioritisation approach. As such the work is considered prudent in scope.	1
Standard	From the information provided the project is considered prudent in standard.	1
Cost	Overall the costs for the extent of track tested appear reasonable and as the information may significantly reduce costs due to incidents/derailments the project is considered prudent.	1

Information provided and assessed:

- 2012-13 Formation Engineering Assessment Program
- Minor Capital Funding Requests (x5)

Background

This project is part of an ongoing program related to the strengthening of the rail formation via both removal and replacement, re-building or injecting with lime slurry. This project involved the collection of 1,324 kilometres of GPR data and other testing including dynamic cone penetrometers (DCP), soil testing (CBR, grading and Atterberg) and geotechnical analysis.

Stage	**Project Cost or Estimate**
Total approved funding	$2,886,000
Actual Costs to Date	$2,611,038
Previous Cap Ex Claim Amount Approved by QCA	$2,309,519
Cap Ex Submission 2013-14	$301,519

Has project achieved financial completion?	No

4283 12/13 Formation Strengthening Project 24

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $2,439,683*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	From the information provided the project is considered prudent in scope.	1
Standard	From the information provided the project is considered prudent in standard.	1
Cost	These works are considered critical to maintain the structural integrity of the track to meet its contractual requirements and minimise risks of derailment. From the information provided costs appear to remain consistent with this and scope delivered in previous years. Hence from the information provided the project is considered prudent in cost.	1

Information provided and assessed:

- Minor Capital Funding Request
- Change Request No. 2
- Summary of Cost Split by System
- AUC Transfer Form

Background

This was one of three ongoing projects related to the strengthening of the rail formation via both removal and replacement, re-building or injecting with lime slurry to increase rigidity of the formation. As much of the Central Queensland Coal Network was originally designed and constructed for lighter axle loads and less traffic than is currently carried, formation strengthening is a necessary activity to ensure the capacity of the formation meets the current tonnages to be hauled. Failures in formation can result in speed restrictions and/or derailments and such can cause major disruptions to operations.

Stage	**Project Cost or Estimate**
Total approved funding	$7,000,000
Actual Costs to Date	$6,975,643
Previous Cap Ex Claim Amounts Approved by QCA	$4,535,960
Cap Ex Submission 2013-14	$2,439,683

Has project achieved financial completion?	No

4308 Culvert Asset Renewal Project Goonyella 25

Type of project: TACA *System: Goonyella* *Expenditure Claim (excluding IDC): $4,499,581*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The works are considered prudent in terms of scope.	1
Standard	The works are considered prudent in terms of standard.	1
Cost	The works are considered prudent in terms of cost.	1

Information provided and assessed:

- Minor Capital Project Funding Request (signed)
- Execution Minor Capital Funding Request (signed)
- Build-up of estimate spreadsheet
- Memorandum – Transfer of Funds within Network Asset Renewal Program – Additional Capital works
- Addendum to memorandum above
- Project Plan
- Culvert Renewal Goonyella Priority Works signed PBMC
- Change Request No. 1
- Change Request No. 3
- Letter confirming Practical Completion of Separable Portions 1 and 2

Background

This project is to upgrade and replace identified aged and below standard culverts in the Goonyella and Newlands systems. The culverts have been identified through routine track inspections as exhibiting signs of significant corrosion, degradation, concrete spalling and significant scour damage.

Stage	Project Cost or Estimate
Total approved funding	$7,013,000
Actual Costs to Date	$4,499,581
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$4,499,581

Has project achieved financial completion?	No

4345 Sleeper Renewal Program 2013-14 26

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $22,635,014*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The work is considered prudent in terms of scope.	1
Standard	The work is considered prudent in terms of standard although it is noted that there is a minor redundancy built into the load rating of the sleepers when compared with the expected applied axle loads.	1
Cost	The work is considered prudent in terms of cost.	1

Information provided and assessed:

- Capital IAR Sleeper Renewal 13_14 v9 Final_Signed
- IAR 13-04 Sleeper Renewal Program 20132014 (Signed Decision Minute)
- Sleeper Program 2013-14 North Evidence
- Sleeper Renewal Program North and South 13 - 14
- Memorandum - Transfer of Funds – Fist Sleeper
- Sleeper Renewal 13_14 Project Plan v0
- Sleeper Renewal 13_14 Safety Risk Register
- Analysis of Planned v Actual Costs
- Concrete Sleeper Fastening Policy – e-clip (Reissued)
- Track Validation Certificate

Background

This project involves the replacement of life expired and corroded fist fastened sleepers designed for 22.5TAL or 20TAL at identified sites within the coal systems with new 28TAL concrete sleepers with galvanised Pandrol ‘e’ clips. This upgrade will facilitate the current and future traffic task and provide an asset suitable for the corrosive elements within the coal network.

Stage	**Project Cost or Estimate**
Total approved funding	$25,013,000
Actual Costs to Date	$22,635,014
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$22,635,014

Has project achieved financial completion?	No

4390 Track Upgrade Project 13-14 Newlands 27

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $2,208,312*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The work is considered prudent in terms of scope.	1
Standard	The work is considered prudent in terms of standard.	1
Cost	Although there is a wide variation in per km rates at different project sites, the costs are considered prudent	1

Information provided and assessed:

- Track Upgrade Newlands 1314 CFR _Signed Final

Background

This is a safety and commercially driven project to upgrade life expired sleepers and rail in the Newlands system. Failure of this infrastructure would result in significant delays to the network. There is also a risk of derailment where track fails.

In the past re-railing and re-sleepering activities have been undertaken independently, often resulting in teams coming back to a specific location only months after one product had been replaced. It is proposed to align these activities with sites within the re-rail program needing to be re-sleepered, and vice versa.

Stage	Project Cost or Estimate
Total approved funding	$2,310,000
Actual Costs to Date	$2,208,312
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$2,208,312

Has project achieved financial completion?	No

4421 Powerhouse Roads 1,2 & Loop Track Upgrade 28

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $6,409,698*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Generally the project is considered prudent in terms of scope.	1
Standard	Generally the project is considered prudent in terms of standard	1
Cost	Generally the project is considered prudent in terms of cost.	1

Information provided and assessed:

- Asset Renewal Client Requirement Brief Revision 1.2
- Capital Funding Request
- Powerhouse Photos (44 photos)

Background

The Powerhouse Balloon Loop track had deteriorated to the point where almost all the timber sleepers were marked as defective, the ballast was badly coal fouled, drainage was poor and some of the 47kg rail was at the end of its life. These factors made the infrastructure increasingly at risk of failure and/or derailment and as such in need of upgrade.

The lengths covered for the upgrade comprised a distance of 4.8km on Powerhouse Loop 1 and 2.3km for Powerhouse Loop 2.

Stage	**Project Cost or Estimate**
Total approved funding	$7,339,000
Actual Costs to Date	$6,409,698
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$6,409,698

Has project achieved financial completion?	No

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $4,741,463*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project provides a knowledge base which can aid decision makers in programming a proactive and risk based prioritisation program for formation strengthening works in the future. This will enable a move from a current "fix-on-fail" approach to a more structured risk base prioritisation proactive approach and this is considered prudent.	1
Standard	From the information provided the project is considered prudent in terms of standard.	1
Cost	From the information provided the project is considered reasonable in terms of cost.	1

Information provided and assessed:

- Capital Funding Request (signed)
- SAP Financial Records

Background

This was one of three ongoing projects related to the strengthening of the rail formation via either removal and replacement, re-building or injecting with lime slurry to increase rigidity of the formation. As much of the Central Queensland Coal Network was originally designed and constructed for lighter axle loads and less traffic than is currently carried, formation strengthening is a necessary activity to ensure the capacity of the network meets contractual operational requirements. Failures in formation can result in speed restrictions and/or derailments and can cause major disruptions to operations.

This project pertained to additional funding in order to continue formation strengthening on a prioritised basis throughout the network. The scope included the engineered repair of isolated and unspecified formation failures identified through inspections and geotechnical investigations.

Stage	**Project Cost or Estimate**
Total approved funding	$5,125,000
Actual Costs to Date	$2,611,038
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$4,741,463

Has project achieved financial completion?	No

4479 Callemondah Roads 4 & 5 Renewal 30

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $1,547,959*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Overall the works for the project were considered to be prudent in engineering scope however clarification is required as to whether the full provisioning works are Aurizon Network owned asset or partially Operations Owned Asset.	1
Standard	The works for the project were considered to be prudent in standard.	1
Cost	From the information provided the project is considered prudent in cost.	1

Information provided and assessed:

- BMD Invoice - Callemondah Arrival Roads
- Letter to BMD awarding work as a Variation to Contract AUR.CC1240
- Memorandum of Safety Validation
- Callemondah – Capital Funding Request - Final
- Progress Payment Certificate No. 4
- Provisioning Shed Slab - Draft Shine Article

Background

This project involves reconstruction works to upgrade Callemondah Arrival Roads 4 & 5. The works include the reconstruction of the base slab to the provisioning shed, which has deteriorated to the extent that the rails have come loose and are deflecting into the slab.

Stage	Project Cost or Estimate
Total approved funding	$1,554,000
Actual Costs to Date	$1,547,959
Previous Cap Ex Claim Amount approved by QCA	N/A
Cap Ex Submission 2013-14	$1,547,959

Has project achieved financial completion?	Yes

4490 Flood Claim January 2013 31

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $2,121,909 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	**Yes**
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Subsequent to Aurizon Network removal of the ballast undercutting scope from this project the remaining scope is considered prudent.	1
Standard	The remaining project works are considered to be generally prudent in terms of standard.	1
Cost	Aurizon Network have removed the costs accepted of the undercutting works (considered as operational expenditure not capital) and it considered that the remaining costs are prudent.	1

Information provided and assessed:

- Copy of AUC Transfer Form - flood
- Final Floods FY13 - Recovery Plan with Capital inc costs_RC21Jan2014
- Client Requirement Briefs for selected sample sites
- Flood Capitalisation Process v4
- Flood Claim CFR _Final 05032014

Background

The project was established to facilitate the early reopening of elements of the Central Queensland Coal Network rendered unusable by the January 2013 flood event.

Stage	Project Cost or Estimate
Total approved funding	$9,260,000
Actual Costs to Date	$9,260,000
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$9,260,000
Revised Cap Ex Submission	$2,121,909

Has project achieved financial completion?	No

4568 Track Upgrade FY14 32

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $1,775,691 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	Scope identification and development followed normal Aurizon procedures. The project is therefore considered prudent in terms of scope.	1
Standard	The work was completed using standard machinery and materials, and the project is considered prudent in terms of standard.	1
Cost	The project contains three distinct work streams. Costs for the ballast undercutting works are considered to fall within the lower end of expectations and are considered prudent. Per km unit rate costs for formation upgrade are considered higher than would normally be expected but as the lengths of track involved are very short (58m or less) the costs are still assessed as prudent. Costs for the replacement of Glued Insulated Joints could not be assessed as no data was available to confirm the number of joints replaced. During the review process it was agreed that the claim for costs for this latter work stream would be deferred to FY15.	1

Information provided and assessed:

- Track Upgrade FY14_Signed Final

Background

This project is for the track upgrade works at Dawson River and Plum Tree Creek, also the replacement of Glued Insulated Joints (GIJs) and the renewal of formation at specified locations. The proposed works were identified through the standard Aurizon process of track inspections and defect monitoring, and highlighted as priority sites for remedial action.

Stage	Project Cost or Estimate
Total approved funding	$2,692,000
Actual Costs to Date	$2,087,061
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$2,087,061
Revised Cap Ex Submission	$1,775,691

Has project achieved financial completion?	Yes

3961 Operational Network LAN WAN Architecture 33

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $866,136*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project includes a LAN WAN architecture study for a budget of $144,000 and the actual deployment of the LAN WAN network for a budget of $850,000. The scope of the project to build of a common network that can transport data for various operational system and administration/business network traffic is considered prudent. The WAN (Wide Area Network) was deployed by 30th June 2014. Some LANs (Local Area Network) were also deployed, but the LAN to connect the ION meters was not deployed and the project team is waiting for additional funding to facilitate connection to the ION meters. Connection of the ION meters was one of the main justifications in the MFR.	1
Standard	Standard is considered prudent as the network is using proven and widely used standards (IP, Ethernet, Fibre optic interface) and products (CISCO)	1
Cost	Costs are considered reasonable in regard to the scope, and the use of best in class product (CISCO).	1

Information provided and assessed:

- MFR - Operational Network LAN WAN Architecture Final _Signed
- SAP report
- Operational Network Change Request #2
- Aurizon Wayside Network Detailed Design by UXC
- Aurizon Wayside Design – POC acceptance tests
- Aurizon network design –High Level Design by UXC

Background

The project includes a LAN WAN architecture study for a budget of $144,000 and the actual deployment of the LAN WAN network for a budget of $850,000. The WAN (Wide Area Network) was deployed by 30th June 2014. Some LANs (Local Area Network) were also deployed. But the LAN to connect the ION meters is not deployed.

Stage	**Project Cost or Estimate**
Total approved funding	$994,000
Actual Costs to Date	$866,136
Previous Cap Ex Claim Amount Approved by QCA	N/A
Cap Ex Submission 2013-14	$866,136

Has project achieved financial completion?	No

3978 O/F Transmission Network Upgrade Rockhampton to Gladstone 34

Type of project: Telecoms *System: Blackwater* *Expenditure Claim (excluding IDC): $709,993*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	Yes
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk*
Scope	The scope of the project is to replace life expired SDH and PDH telecom equipment, some of which was installed in the 1980's. The new equipment also uses the mature SDH and PDH technology rather than more recent IP/Ethernet technology. This is because the new equipment is required to interface with existing signalling equipment which does not have IP/Ethernet compatibility.	1
Standards	SDH/PDH is a very mature technology that is now in the declining phase but is still widely deployed for time critical application like railway control systems. The choice of this technology is imposed by the existing equipment, in particular the signalling equipment which does not have Ethernet connection. Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to equipment life span of at least 15 years.	1
Cost	Taking in account the strong external constraints arising from legacy equipment, the cut over operations and the location, the costs are considered prudent.	1

Information provided and assessed:

- Bytecomm Invoice 0270
- MFR_Optic Fibre Transmission
- Project Management Plan
- QRN OFibre Faults 2010-2011 year
- Quality Management Plan v0
- RKA-GLTomniUpgrade2 (4) 2011 11 22
- Rton-Gstone OF Faults 01072010 to present
- Site Scope - AmbroseAT

Background

The project consists of replacing life expired previous generation SDH/PDH telecommunication equipment between Rockhampton and Gladstone with new generation SDH/PDH equipment.

Stage	Project Cost or Estimate
Total approved funding	$2,941,000
Actual Costs to Date	$2,871,058
Previous Cap Ex Claim Amount Approved by QCA	$2,161,065
Cap Ex Submission 2013-14	$709,993

Has project achieved financial completion?	No

4221 Microwave Resilience System Upgrades 35

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	No
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The replacement of the old Siemens SRT1-C by next generation NEC equipment is prudent, as is the search for a solution to the radio path obstacles suffered by the existing tower at the Goonyella site.	1
Standard	NEC 5000s is a mature product that was introduced in 2007 – the equipment procured for this project will be put into service in 2015. Although it is considered that Aurizon could have selected a newer product it is acknowledged that NEC 5000s are already deployed on other parts of the Aurizon Network, and NEC is one of the world leaders in microwave transmission equipment.	1
Cost	The majority of costs included in the claim are for procurement of telecom equipment in storage in Emerald. While the costs of the purchased telecom equipment is reasonable, the project is not complete and the 80% completion threshold has not been met. The overall project costs can therefore not be assessed as prudent at this stage.	1

Information provided and assessed:

- Minor Capital Project Funding Requests
- Bill of material

Background

The project consists of replacing life expired microwave transmission equipment with new generation equipment supplied by NEC. The project also includes the construction of a new transmission tower in Moranbah as the current site at Goonyella suffers from path obstacles generated by the growing stockpiles at Goonyella mine.

Stage	Project Cost or Estimate
Total approved funding	$8,040,300
Actual Costs to Date	$2,202,162
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$2,202,162
Revised Cap Ex Submission	$0 – Project Deferred

Has project achieved financial completion?	No

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	No
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The replacement of life expired modules and replacement of V34 modems by Ethernet modules is prudent. But as of June 2014, most of equipment was not in service. Most of the costs were spent on design project management and data communication/RTU modules procurement.	1
Standards	Ethernet is the most commonly used telecommunication interface standard in the world and in SCADA. The selected products are mature products. Semaphore (Kingfisher) is a medium size supplier of RTUs with support centre in Melbourne	1
Cost	The costs of the equipment are considered reasonable. Costs of design are considered to be on the high end. The project is not complete and expenditure suggests the work is below the 80% completion threshold. It is not possible to assess the cost of the full project as prudent at this time and it is recommended that this project is deferred to the next claim or when complete so that an informed assessment of cost can be undertaken.	1

Information provided and assessed:

- Signed MFR - Ethernet to Corner – SCADA Upgrade
- Proof of Concept dated 6 December 2013
- Bojool Lobe Testing and Commissioning Plan 10/06/2014

Background

The project consist in replacing the old RTU (Remote Terminal Unit of the SCADA) telecommunication modules (using V34 modems) with Ethernet modules and upgrading the telecommunication network to be able to connect the retrofitted RTUs to the Ethernet network.

Stage	Project Cost or Estimate
Total approved funding	$3,046,000
Actual Costs to Date	$1,647,935
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$1,647,935
Revised Cap Ex Submission	$0 – Project Deferred

Has project achieved financial completion?	No

4288 Radio System Replacement 37

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	No
	Prudency of Cost	No
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The study was not completed by 30th June 2014. The strategy and recommendation for the replacement of Aurizon existing radio systems was not delivered during the claim period. The two documents 'Concept phase – Existing Systems Review 05/03/14' and 'Concept Stage- Client Requirements – 29 May 2014' do not create an asset although they are documents that can potentially create an asset once the concept study is finalized and delivers a strategy and recommendations for the replacement of Aurizon existing radio systems.	1
Standard	The study has to ensure that the new radio network will use standards that will be fit for purpose and known future requirements. The review of the radio standards was not part of the two documents delivered by 30th June 2014.	1
Cost	The prudency of claimed costs cannot be assessed as the study is not finished. The costs claimed cover the preparation of the two documents released before 30th June 2014 but, probably, also part of the costs related to the preparation of the report dated 1 Dec 2014. It is recommended that prudency of costs be assessed at the end of the study.	1

Information provided and assessed:

- Radio System Replacement - signed MFR
- Concept phase – Existing Systems Review 05/03/14
- Concept Stage- Client Requirements – 29 May 2014
- Concept Stage- Technology Research and Review dated 1 Dec 2014 (not in 2013/2014 year)

Background

The scope to be delivered under this concept funding is to deliver a strategy and recommendation for the replacement of Aurizon existing radio systems. This project will allow Aurizon to complete documentation to progress through to the feasibility and implementation phases of the project.

Stage	**Project Cost or Estimate**
Total approved funding	$498,000
Actual Costs to Date	$320,665
Previously Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$320,665
Revised Cap Ex Submission	$0 – Project Deferred

Has project achieved financial completion?	No

4320 Optical Fibre Transmission Network Upgrade 38

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Summary of Prudency Assessment

Assessment overview:

	Prudency of Scope	Yes
	Prudency of Standard	Yes
	Prudency of Cost	No
Overall Assessment Comments and Recommendations		
Criteria	Comment/Recommendation	Risk
Scope	The project was completed after June 2014 (however equipment was no in service until February 2015). As of June 2014, most of the costs incurred were for design, project management and procurement of equipment. Therefore as the project was not commissioned in the 2013-14 financial year it cannot be considered prudent for the 2013-14 claim and it is recommended that this project be re-submitted in the 2014-15 claim.	1
Standards	SDH/PDH technology is a very mature technology that is now in the declining phase but is still widely deployed in 2014 for time critical applications like railway control systems. The choice of this technology is imposed by the existing equipment (and in particular the signalling equipment that does not have Ethernet connection). Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to an equipment life span of at least 15 years.	1
Cost	The cost of equipment purchased is considered reasonable but the project work is not complete and actual expenditure against budget suggests it has not yet reached the 80% completion threshold for consideration in this claim. It is not possible to assess the overall project costs as prudent at this stage.	1

Information provided and assessed:

- Fibre RoR 6a
- SAP report
- Minor Capital Project Funding Requests

Background

The project scope is to replace life expired SDH and PDH equipment, some of which dates back to the 1980's) with new generation SDH/PDH equipment.

Stage	Project Cost or Estimate
Total approved funding	$3,827,000
Actual Costs to Date	$1,605,609
Previous Cap Ex Claim Amount Approved by QCA	N/A
Original Cap Ex Submission 2013-14	$1,605,609
Revised Cap Ex Submission	$0 – Project Deferred

Has project achieved financial completion?	No

Queensland Competition Authority

Engineering Assessment of Aurizon Network's Capital Expenditure Claim 2013-14

SUPPLEMENTARY REPORT

26 APRIL 2015

Commercial in Confidence (CIC)

Solutions

&

MARSDEN JACOB ASSOCIATES

&

ATKINS

Title Engineering Assessment of Aurizon Network's Capital Expenditure Claim 2013-14 (CIC) **SUPPLEMENTARY Report**

Version: FINAL

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Date: 26 April 2015

INDEX to FORMS

Number	Name	Discipline (colour code)	System	Claim excluding IDC ($)	No
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A.03876	Moura Corridor Crew Change and Stowage Locations	Corridor	Moura	409,565	2
A.03892	Access Road Hatfield Koumala – Bolingbroke Road	Corridor	Goonyella	236,808	3
A.04138	Level Crossing Upgrade at Sonoma Coal	Corridor	Newlands	103,000	4
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A.04429	Burnett Highway Bridge Protection System	Corridor	Moura	123,380 (Revised to 0)	6
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A.03323	Rolleston: Upgrade Spur Line 9.75MTPA	Expansion	Blackwater	2,894,490	11
A.03353	GSE X140 - DBCT to HPSCT 2nd Road	Expansion	Goonyella	74,570,022 (Revised to 74,555,477)	12
A.02870	Weighbridge Replacement Program: Stage 2	S&TSS	System Wide	1,028,358 (Revised to 231,825)	13
A.03640	Thales Axle Counter Trial	S&TSS	System Wide	600,028	14
A.04066	BW Model 10/Harmon Boom Mech Replacement	S&TSS	Blackwater	114,304	15
A.04190	Digital TI21 Track Circuit Upgrade – Coppabella to Hay Point	S&TSS	Goonyella	5,162,302	16
A.04297	AzS600 Axle Counters Replacement	S&TSS	System Wide	261,955 (Revised to 0)	17

A.04407	Axle Counters vs Track Circuit Replacement	**S&TSS**	System Wide	415,799	18
A.04548	Weighbridge Renewal	**S&TSS**	System Wide	2,000,502	19
IV.00001	Asset Protection Systems: Braeside WILD	**S&TSS**	System Wide	2,017,880	20
A.03934	CQ Coal Formation Strengthening Project	**TACA**	System Wide	179,804	21
A.04145	Newlands Culvert Upgrade Project	**TACA**	Newlands	4,385,492	22
A.04203	Formation Eng. Assessment and GPR Record	**TACA**	System Wide	301,519	23
A.04283	12/13 Formation Strengthening Project	**TACA**	System Wide	2,439,683	24
A.04308	Culvert Asset Renewal Project Goonyella	**TACA**	Goonyella	4,499,581	25
A.04345	Sleeper Renewal Program 2013-14	**TACA**	System Wide	22,635,014	26
A.04390	Track Upgrade Project 13 14 - Newlands	**TACA**	System Wide	2,208,312	27
A.04421	Powerhouse Roads 1, 2 & Loop Track Upgrade	**TACA**	Blackwater	6,409,698	28
A.04422	13 14 Formation Strengthening Project	**TACA**	System Wide	4,741,463	29
A.04479	Callemondah Roads 4 & 5 Renewal	**TACA**	Blackwater	1,547,959	30
A.04490	Flood Claim January 2013	**TACA**	Blackwater	9,260,000 (Revised to 2,121,909)	31
A.04568	Track Upgrade FY14	**TACA**	System Wide	2,087,061 (Revised to 1,775,691)	32
A.03961	Operational Network LAN WAN Architecture	**Telecoms**	System Wide	866,136	33
A.03978	O/F Transmission Network Upgrade Rockhampton to Gladstone	**Telecoms**	Blackwater	709,993	34
A.04221	Microwave Resilience System Upgrades	**Telecoms**	System Wide	2,202,162 (Revised to 0)	35
A.04231	Ethernet to Corner - SCADA Upgrade	**Telecoms**	System Wide	1,647,935 (Revised to 0)	36

A.04288	Radio System Replacement	**Telecoms**	System Wide	320,665 (Revised to 0)	37
A.04320	Optical Fibre Transmission Network Upgrade	**Telecoms**	System Wide	1,605,609 (Revised to 0)	38

Type of project: Corridor System: Blackwater Expenditure Claim (excluding IDC): $969,282

Section 1 - Assessment Prudency of Scope

Overview	This claim is a continuation of the establishment of crew change pads program which was found to be prudent by the 2012-13 expenditure claim. As in last years' claim the crew change pads are being implemented throughout the coal systems to provide safer facilities at crew change facilities by allowing safe transition from locos to the ground by providing a level non-slip surface. The scope of works completed during the 2013-14 period included the completed survey, location selection and design for "Phase 1" and the completed survey, location selection of 10,767 metres (29 locations) from the total Phase 2 works which in total comprise 15,120 metres (35 locations).

Requirements	Comments
Is below-rail infrastructure	Yes, and is available for all above rail operators.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes
Is capital expenditure and not maintenance	Yes the works are considered to be capital expenditure.
Creates an asset	The installation of the crew change pads creates an asset and enhances safety for the existing asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes the project has been funded by Aurizon Network
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The project has been approved by the QCA in a previous claim.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes – this work is a requirement of Access Agreements.	
- And that appropriate processes were implemented to evaluate alternatives	Several options were evaluated and the results and recommendations of this analysis were sighted by the reviewer.	1
- And that the replacement strategy is consistent with asset age and composition	n/a – this work creates a totally new asset.	
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	At the time of evaluation a review was undertaken of this product and various other options. The review includes an assessment of the product against Australian Standards for the provision for access. It should be noted that there is no relevant Australian Standard for crew change or walkways in the rail corridor. However the design and implementation of the product is compliant with the following standards:	1

Type of project: Corridor System: Blackwater Expenditure Claim (excluding IDC): $969,282

	• AS1428.0 – 2009 Design for access and Mobility – New building Works; and • AS1657 – 1992 Fixed Platforms, Walkways, Stairways and Ladders – Design, construction and	
That the appropriate Customer approvals have been sought and documented	The provision of crew change locations and train stowage is a condition of the Access agreements. The scope of this project is in order to safety comply with these requirements.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Yes, evidence was sighted for any variations or additional minor funding requests.	1

Overall Comment	The scope of work is consistent with the Zero Harm philosophy and the minimisation of installation and maintenance costs.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Not applicable	
Consistent with adjacent infrastructure.	The pads as installed are compatible with the adjacent track and ballast.	
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Not applicable – this is a new product type.	
Fit for purpose for current and known future requirements.	One of the claimed benefits of these pads is that being bright yellow they provide a tonal contrast with the surrounding ballast. Site inspection (in previous years) has shown that the pads become covered in grease and coal dust such that the tonal contrast is lost. Regardless of this they are easy to differentiate from their surroundings and the benefits they continue to offer makes them fit for current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	As above

Overall Comment	The standard of works is consistent with the Zero Harm philosophy.

Type of project: Corridor System: Blackwater Expenditure Claim (excluding IDC): $969,282

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The project costs have remained reasonably consistent across the corridor with total expenditure to date of $10,615,079 against the approved budget of $19,904,000 (53.3% expensed).	1
	Market conditions for engineering, equipment supply and construction	The cost of the FRP panels has been continually reviewed (and reduced) during the project lifecycle and is therefore considered reasonable. Installation costs have also reduced as the crews have been familiar with the product.	1
	Procurement processes	The FRP panels were procured using a competitive tender process. The evaluation document has been provided for review and is considered to be reasonable.	1
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality	The project appears value for money considering the solution	1
	In terms of reducing future operational costs and increasing efficiencies	In addition to their expected durability these panels are much are easier (than previous systems) to remove for and replace after track maintenance work.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	The product has a 20 year life with little maintenance requirement post construction, as such the whole of life costs are low outside the initial capital outlay. In addition the panels are easy to lay during initial installation, remove for track work and reinstall thereafter. Damaged panels can also be replaced individually. Both Capex and Opex considerations have therefore been optimised.	1
	In terms of alignment with supply chain and operational objectives	Completion of this work enhances the Zero Harm philosophy of supply chain operators.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Specialist material developed for this project.					

Overall Comment	There has been adequate demonstration of the initial prudent procurement process and cost reductions since. In consideration of the information provided the project is considered prudent in cost.

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $409,565*

Section 1 - Assessment Prudency of Scope

Overview	This claim is a continuation of the establishment of crew change pads program which was found to be prudent by the 2012-13 expenditure claim. As in last years' claim the crew change pads are being implemented throughout the coal systems to provide safer facilities at crew change facilities by allowing safe transition from locos to the ground by providing a level non-slip surface.

Requirements	Comments
Is below-rail infrastructure	Yes, and is available for all above rail operators.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Sample Inspection and Test Plan documents submitted and it is believed the submitted total is for works completed and assets commissioned during or prior to the claim period.
Is capital expenditure and not maintenance	This is capital expenditure to create a new asset.
Creates an asset	This work creates a new asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	This work is funded by Aurizon Network.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	It is considered that Aurizon Network did have reasonable justification to proceed and the project has been as accepted as prudent by QCA in previous claims.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes – this work is a requirement of Access Agreements.	
- And that appropriate processes were implemented to evaluate alternatives	Documentation shows that previous solutions to this problem involved the use of rolled stone or glued ballast. Both of these proved expensive to install and difficult to maintain. One option not specifically considered was the installation of metal grates (instead of FRP) but these would be heavy.	1
- And that the replacement strategy is consistent with asset age and composition	n/a – this work creates a totally new asset.	
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	This work was undertaken to improve the occupational safety of staff needing to alight from locomotives or inspect a train of vehicles at the selected work locations. Completion of this work provides a firm and level walkway to reduce the incidence of musculo skeletal injuries suffered by staff who would previously be required to undertake their duties while walking on loose and uneven ballast. It should be noted that there is no relevant Australian Standard for crew change or walkways in the rail corridor. However the design and implementation of the product is compliant with the following standards:	1

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $409,565*

	• AS1428.0 – 2009 Design for access and Mobility – New building Works; and • AS1657 – 1992 Fixed Platforms, Walkways, Stairways and Ladders – Design, construction and	
That the appropriate Customer approvals have been sought and documented	The provision of crew change locations and train stowage is a condition of the Access agreements. The scope of this project is in order to safety comply with these requirements.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	n/a for this review period	

Overall Comment	Scope of works is considered prudent and consistent with Zero Harm philosophy and the minimisation of installation and maintenance costs.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	n/a	1
Consistent with adjacent infrastructure.	The pads as installed are compatible with the existing track and ballast.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	n/a – this is a new product type.	
Fit for purpose for current and known future requirements.	One of the claimed benefits of these pads is that being bright yellow they provide a tonal contrast with the surrounding ballast. Site inspection (in previous years) has shown that the pads become covered in grease and coal dust such that the tonal contrast is lost. Regardless of this they are easy to differentiate from their surroundings and the benefits they continue to offer makes them fit for current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	Standard of works is consistent with Zero Harm philosophy and considered prudent

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $409,565*

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs are considered reasonable for the level of complexity of the site work and development of the product for use in the railway environment.	1
	Market conditions for engineering, equipment supply and construction	The cost of the FRP panels has been continually reviewed (and reduced) during the project lifecycle and is therefore considered reasonable. Installation costs have also reduced as the crews have been familiar with the product.	1
	Procurement processes	The FRP panels were procured using a competitive tender process. The evaluation document has been provided for review and is considered to be reasonable.	1
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality	Although compliance with planned timescales has not been demonstrated capital costs are well within budget.	1
	In terms of reducing future operational costs and increasing efficiencies	In addition to their expected durability these panels are much are easier (than previous systems) to remove for and replace after track maintenance work.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	The product has a 20 year life with little maintenance requirement post construction, as such the whole of life costs are low outside the initial capital outlay. In addition the panels are easy to lay during initial installation, remove for track work and reinstall thereafter. Damaged panels can also be replaced individually. Both Capex and Opex considerations have therefore been optimised.	1
	In terms of alignment with supply chain and operational objectives	Completion of this work enhances the Zero Harm philosophy of supply chain operators.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
		Specialist material developed for this project.			

Overall Comment	There has been adequate demonstration of the initial prudent procurement process and cost reductions since. In consideration of the information provided the project is considered prudent in cost.

Type of project: Corridor *System: Goonyella* *Expenditure Claim (excluding IDC): $236,808*

Section 1 - Assessment Prudency of Scope

Overview	This upgrade was undertaken to replace an existing access road with restricted sighting of approaching road traffic for railway vehicles wishing to turn right into or out of the railway corridor.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes
Is capital expenditure and not maintenance	Yes. This is construction of a new access on a new alignment to remove an existing highway junction with sub-standard visibility of approaching road traffic, not just maintenance of an existing access.
Creates an asset	Yes, although part of the route is located on an easement.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Given the sub-standard visibility and nature of Aurizon vehicles needing access to or egress from the rail corridor, this work is deemed to be justified.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates		
- And that appropriate processes were implemented to evaluate alternatives	Although other solutions were considered, the topography of the land on that side of the corridor was such that the implemented solution was the only viable option.	1
- And that the replacement strategy is consistent with asset age and composition	This work to relocate the access road created a new highway junction with DTMR compliant sighting distances.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The project aligns with Aurizon WHS and Zero Harm goals by replacing an identified unsafe junction for staff entering or leaving the rail corridor with a safer alternative.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	n/a	

Overall Comment	Execution of this scope improves safety for staff needing access to or egress from the corridor. It is therefore considered prudent.

Type of project: Corridor *System: Goonyella* *Expenditure Claim (excluding IDC): $236,808*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The works are consistent with good practice and the objective of Zero Harm.	1
Consistent with adjacent infrastructure.	Although accessing the corridor via a new diverse it provides access to the same portion of the corridor as the previous road it replaces.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	This is consistent with other existing infrastructure of a similar purpose.	1
Fit for purpose for current and known future requirements.	The asset created is fit for purpose.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The standard of this road is comparable with others on the Aurizon network and is therefore considered prudent.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs included in this claim are considered reasonable for the scope delivered. It is, however, noted that another $180,000 has been approved against this project. It is therefore suggested that the project should be re-examined as part of the 2014-15 Cap Ex Review process.	1
	Market conditions for engineering, equipment supply and construction	n/a – the work was undertaken by in-house staff	
	Procurement processes	n/a	
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality	This work does not reduce capital costs but does improve safety.	1
	In terms of reducing future operational costs and increasing efficiencies	The work is likely to improve future operational efficiencies by removing an element of danger for staff entering or leaving the corridor.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	n/a	

Type of project: Corridor *System: Goonyella* *Expenditure Claim (excluding IDC): $236,808*

	In terms of alignment with supply chain and operational objectives	n/a	

Overall Comment	Overall the costs included in this claim are considered prudent but additional funds have been authorised so it is recommended that the project be re-examined as part of the 2014-15 Cap Ex Review.

Type of project: Corridor *System: Newlands* *Expenditure Claim (excluding IDC): $103,000*

Section 1 - Assessment Prudency of Scope

Overview	The Sonoma Coal crossing provides access to the Sonoma mine across the Sonoma balloon loop. In 2010 the Sonoma Mine commenced using B double and triple road vehicles to access the mine. Due to this change in traffic loading an upgrade was required to increase capacity of the crossing. The Level Crossing Deed held with the mine requires that should an upgrade be required due to changes in traffic flow or type then the mine will be responsible for the costs of such upgrades. The full scope included upgrade of the private level crossing at the Sonoma mine (87.250km) and this involved renewing the ballast, replacing the track panels over the crossing and upgrading the existing four hole GIJ's to new six hole equivalents.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes email sent in 9 May detailing completion of the works and with attached photographs of finished works and safety compliance was sighted by the reviewer.
Is capital expenditure and not maintenance	Yes, the upgrade involves replacement of ballast and track panels with greater loading capacity for changed traffic conditions at the crossing.
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes upgrading of the crossing to fulfil loading capacity requirements is part of the Level Crossing Deed signed with the Sonoma Mine.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates		1
- And that appropriate processes were implemented to evaluate alternatives	In the circumstances appropriate evaluation was undertaken.	1
- And that the replacement strategy is consistent with asset age and composition	The replacement strategy is consistent with the deterioration of the materials due to changes in traffic loading.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Complies with safety and regulatory requirements of the customer agreement.	1
That the appropriate Customer approvals have been sought and documented		

Overall Comment	The scope is considered prudent in view of the changed traffic conditions and requirements of the contractual agreement with the Sonoma mine.

Type of project: Corridor *System: Newlands* *Expenditure Claim (excluding IDC): $103,000*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	From the information provided the works are consistent with existing standards.	1
Consistent with adjacent infrastructure.	From the information provided the works are consistent with adjacent standards.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The solution upgrade is considered typical for the changes in traffic loading and type.	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	The project standard is considered prudent and consistent with existing successful solutions of similar purpose.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The total costs of the project appear reasonable in consideration of the scope performed.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies	The upgrade will increase the capacity of the crossing infrastructure to meet the increased loading of the changed traffic conditions. This will reduce future maintenance requirements by reducing deterioration.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives	Upgrade of the crossing was undertaken to meet operational objectives of the Sonoma mine.	1

Overall Comment	In consideration of the scope performed the project is considered prudent in cost.

Type of project: Corridor *System Wide* *Expenditure Claim (excluding IDC): $4,310,705*

Section 1 - Assessment Prudency of Scope

Overview	This is one of four projects related to works at level crossings across the network. Aurizon Network has undertaken a program of identifying and assessing the risks associated with the rail and private road crossings throughout its network in accordance with the Transport Rail Safety Act (2010) and proposed Interface Agreements between Aurizon and road managers/owners. This program is a result of this assessment. It is anticipated that upgrades will provide an enhanced level of safety to users and thereby reduce the risks of operational disruptions arising from incidents at level crossings. The scope planned under this project includes the following: • The development of scope and estimates for a number of sites where reparation works are to be undertaken the latter half of 2013-14 financial year. These renewal and replacement works include a variety of minor works such as replacement of signage, replacement of fences and installation of flashing lights and booms. • Completion of design and renewals for six priority level crossing sites. • Development of the scope and estimates for sites to be programmed for execution at the beginning of the 2014-15 financial year.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The program is ongoing, however from the information provided it appears the extent of the works submitted have been completed.
Is capital expenditure and not maintenance	The works are capital expenditure and create an asset.
Creates an asset	
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The project is safety driven and will assist in the reduction of incidents at level crossings.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	From the information provided the strategy for upgrade works at these level crossings has been developed in accordance with Transport Rail Safety Act (2010) requirements. The methods used to prioritise the crossing work was made in reference to the current Australian Level Crossing Assessment Model (ALCAM). The level and range of treatment options which appear to have been implemented in the scope of works appear reasonable and consistent with similar rail applications.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		

Type of project: Corridor *System Wide* *Expenditure Claim (excluding IDC): $4,310,705*

That the appropriate Customer approvals have been sought and documented	The work is in alignment with Rail Safety Act. Hence it is in accordance with the requirements of Interface Agreements between Aurizon and road owners and subsequently, rail users.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	From the information provided for review it is believed that there have not been any changes from the approved scope.	1

Overall Comment	The selection of the scope was undertaken using risk assessment and review processes under the guidelines of the Transport Rail Safety Act (2010). In view of this it is considered that the scope development is prudent

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The works are consistent with existing standards and the processes of selection and prioritisation of works are aligned with state requirements such as the Transport Rail Safety Act (2010)	1
Consistent with adjacent infrastructure.	From the images of completed works provided the upgrades appear to be consistent with adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		1
Fit for purpose for current and known future requirements.	Aurizon confirmed that all works on upgraded level crossings have reduced the risk rating of these crossings.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable.

Overall Comment	The project is considered prudent for standard

Type of project: Corridor *System Wide* *Expenditure Claim (excluding IDC): $4,310,705*

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Due to the variations between the levels of works at each site, an overall unit rate per crossing is difficult to ascertain and benchmark. However for the scope of works achieved the total expenditure to date appears reasonable.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies		The project is ongoing with this year's capital claim being $4,301,705 against the $9,057,298 (48%). Although from the program provided a substantial number of sites are yet to be completed it is noted that the development of scope, method of work and estimates has been completed for the subsequent financial year, making the program of works at an approximated 40% against a 48% financial spend. This is considered reasonable at the stage of the project reviewed but this has been noted for consideration in next year's review.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	From the information provided the project is considered prudent for cost.

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $0 revised*

Section 1 - Assessment Prudency of Scope

Overview	This is a safety driven project to install a bridge protection system at Burnett Highway Bridge on the Moura short Line (at 130.820km). This bridge has been struck on numerous occasions by highway traffic that exceeds the height limit for vehicles passing under the bridge The risk of bridge strike is significant, and the resultant infrastructure damage has the potential to significantly impact on rail operations and network capacity. This system will provide a warning to road users to advise if their load is at a height that will strike the bridge. Implementing the bridge protection system will warn road users about upcoming sacrificial structures erected to reduce the chance of collision, injury and/or death and minimize the risk of bridge collisions resulting in train path cancellations and delays to operations

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Further information was requested in relation to providing completion certificates. However this new information appears to indicate that the asset is not commissioned and was not in service for 2013-14 period – quote Aurizon email received 25/02/2015 *"A.04429 Burnett Highway Bridge Protection is still on-going, until completed no construction completion certificate will be produced. To-date the only item completed has been design",* Information provided appears to indicate that design was not finished till August 2014 and whilst the date for completion appears to have been January 2015, it appears from the email above that this target has not been met.
Is capital expenditure and not maintenance	Yes the works are considered to be capital expenditure.
Creates an asset	On completion of the works an asset will be created.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The rail bridge has been struck on numerous occasions with some incidents causing significant damage to both the structure and to road vehicles. By installing an over height barrier at this location, the bridge will maintain current rail capacity, reduce maintenance costs significantly and prevent further bridge strikes by over-height highway traffic.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	As evidenced from new information supplied, it appears additional funding for this project has been requested but this has not been fully reflected in the submission.	1
- And that appropriate processes were implemented to evaluate alternatives	It appears that some alternative solutions were reviewed.	1
- And that the replacement strategy is	Not applicable	

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $0 revised*

consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The project is to be compliant with Department of Main Roads (DTMR) and road user safety regulatory requirements	2
That the appropriate Customer approvals have been sought and documented	Not applicable	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	There has been a 100% increase in the funding required for this project. It appears that this may be due to additional requirements put forward by DTMR, but this is not clear. The additional funding requirements are detailed on the MFR signed 29 September 2014, but have not been included in the submission figures.	2

Overall Comment	The overall project scope is considered prudent.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	It is understood that DTMR approval for the proposed design was not obtained until after the claim period had expired.	2
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.		

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	The standard of the initial design did not comply with DTMR requirements and therefore cannot be assessed as prudent. A revised design was undertaken but not completed within the claim period. This project should therefore be reconsidered in a future claim.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
	Scale, nature and complexity		2

Type of project: Corridor *System: Moura* *Expenditure Claim (excluding IDC): $0 revised*

The project costs are considered reasonable considering:	Market conditions for engineering, equipment supply and construction	The cost cannot be assessed as although the original approved figure is provided at $241,000 and stated as such in the expenditure claim, it appears an additional funding request has been submitted for $225,000. The supporting information indicates that this increase is due to the requirement to use specified contractors nominated by DTMR. However from the information provided this is not confirmed.	
	Procurement processes		
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	Due to inconsistency in the claimed submission figure and the total approved funding costs cannot be assessed for prudency.

Type of project: Electrical System: Blackwater *Expenditure Claim (excluding IDC): $-95,035*

Section 1 - Assessment Prudency of Scope

Overview	The overall project was for the renewal of overheads between Rocklands and Callemondah. Although execution works were completed in the FY12/13 claim period, a credit for surplus materials placed into stores has been received in the current claim period.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates		
- And that appropriate processes were implemented to evaluate alternatives	This has not been assessed due to the nature of this year's 'claim'.	1
- And that the replacement strategy is consistent with asset age and composition	As above.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	As above.	1
That the appropriate Customer approvals have been sought and documented	As above.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	As above.	1

Type of project: Electrical System: Blackwater *Expenditure Claim (excluding IDC): $-95,035*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	This has not been assessed due to the nature of this year's 'claim'.	1
Consistent with adjacent infrastructure.	As above.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	As above.	1
Fit for purpose for current and known future requirements.	As above.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	This has not been assessed due to the nature of this year's 'claim'.

Overall Comment	No work was delivered within the claim period, but it is noted that prudency of standard has been accepted in previous years.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	This has not been assessed due to the nature of this year's 'claim'.	1
	Market conditions for engineering, equipment supply and construction	As above	1
	Procurement processes	As above	1
The project has met contractual timeframes and project management efficiencies		As above	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	As above	1
	In terms of reducing future operational costs and increasing efficiencies	As above	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	As above	1
	In terms of alignment with supply chain and operational objectives	As above	1

Type of project: Electrical System: Blackwater *Expenditure Claim (excluding IDC): $-95,035*

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
n/a					

Overall Comment	The 'claim' for this financial year consists of a credit against the cost of surplus materials taken into inventory. It has not been possible to confirm whether this credit was for the full purchase price of the material but, regardless, the value of the credit seems to be reasonable when compared with practices in some other organisations.

Type of project: Electrical *System Wide* *Expenditure Claim (excluding IDC): $1,875,987*

Section 1 - Assessment Prudency of Scope

Overview	The purpose of this project is to replace a number of life expired and aged electrical components in the Blackwater and Goonyella systems.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes. These assets are installed during an electrical isolation of the line and come into use as soon as that isolation is removed.
Is capital expenditure and not maintenance	Yes – this is renewal of previous assets
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes, including procurement of relatively expensive Arthur Flury type insulators

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The works delivered maintain the capacity of the overhead line electric system to accommodate reasonable market demand.	1
- And that appropriate processes were implemented to evaluate alternatives	Insulators in low speed locations are of the Jacques Gallard type and have been replaced on a like for like basis, but for higher speed situations a trial was undertaken to assess the suitability of a 'new to Aurizon' Arthur Flury unit as used in the United Kingdom.	1
- And that the replacement strategy is consistent with asset age and composition	The strategy as executed is consistent with the age and composition of the adjacent asset.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works were carried out in accordance with Aurizon safe working requirements.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	The change of scope to install (previously unused by Aurizon) Arthur Flury insulators is justified in higher speed situations as they are a more appropriate replacement item for the existing but now obsolete Rebussio units they are replacing than the alternative Jacques Gallard item used in lower speed locations. The Aurizon overhead line system is very similar to that established in the UK and although the Flury units have not previously been used in the Aurizon network they are used widely on the Network Rail portion of the UK rail network.	1

Type of project: Electrical *System Wide* *Expenditure Claim (excluding IDC): $1,875,987*

Overall Comment	The scope consists of both reactive and proactive replacement of equipment to ensure reliability of the network and is therefore considered prudent.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	All newly installed units meet this criterion	1
Consistent with adjacent infrastructure.	As above	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	The previous standard for high speed section insulators was the now defunct Rebussio unit. As these are no longer available the closest replacementis the Arthur Flury type. These are new to Aurizon but were expected to be suitable for use in the Central Queensland Coal Network as they are commonly used in overhead line electric systems in the United Kingdom on which the system on the CQCN is based. One Arthur Flury unit was successfully trialled, as a result of which a number of this type of units were procured.

Overall Comment	Although no formal type approval of the Arthur Flury unit has been undertaken its use in the CQCN is deemed prudent due to its dimensional similarity to the Rebussio unit it replaces. Jacques Gallard units are replaced on a like for like basis and this is also deemed prudent.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Yes	1
	Market conditions for engineering, equipment supply and construction	Yes. The additional procurement cost of the Arthur Flury units over that for the Jacques Gallard type is compensated for by efficiencies within the installation process and operational requirements of the OLE system.	1
	Procurement processes	Both types of unit are believed to be sole source specialist items.	1
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes. Use of section insulators differing in length from those units they replace requires modification of the adjacent OLE system.	1

Type of project: Electrical System Wide Expenditure Claim (excluding IDC): $1,875,987

	In terms of reducing future operational costs and increasing efficiencies	Yes. Where longer units were replaced by shorter items a length of contact wire would need to be spliced in to the system adjacent to the insulator. This would cause a hard spot capable of damaging locomotive pantographs.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes	1
	In terms of alignment with supply chain and operational objectives	Yes	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
These are specialist single source items.					

Overall Comment	The costs currently being claimed are considered prudent but it is noted that the project has not achieved financial closure and an additional $180,000 budget has been released against the project. It is therefore suggested that this project been reviewed again in future years.

Type of project: Electrical *System: Goonyella* *Expenditure Claim (excluding IDC): $951,448*

Section 1 - Assessment Prudency of Scope

Overview	This project was undertaken to renew electrical assets in the Goonyella system. Project works took place within electrical possessions taken for ballast undercutting or re-sleepering work.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	As the Minor Funding Request was only approved within the claim period and all works are taken into use immediately at the end of the electrical isolation in which they are installed it is considered that all works were completed and commissioned within the claim period.
Is capital expenditure and not maintenance	Although the scope of the work could be considered as maintenance it involves the installation of new equipment within the electrical system, replacing items which had passed their design lifespan, and is therefore considered to be capital expenditure.
Creates an asset	The work creates a renewed asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	This work is funded by Aurizon Network.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Given the complexity of the overhead line system and need for periodic renewal of various components to ensure continued reliability of the whole system it is considered that there was sufficient justification to proceed.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The solution does accommodate reasonable market demand estimates.	1
- And that appropriate processes were implemented to evaluate alternatives	There are no appropriate alternatives for this type of work within an existing system.	1
- And that the replacement strategy is consistent with asset age and composition	The replacement strategy is considered consistent with asset age, condition and overhead location.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Undertaking of this work within periods of electrical isolation complies with Aurizon safe working requirements.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Due to the nature of the work there is no approved (detail) scope. Elements of the system are replaced as considered necessary upon visual inspection.	1

Type of project: Electrical *System: Goonyella* *Expenditure Claim (excluding IDC): $951,448*

Overall Comment	This work is considered prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Yes, this work replaces elements of the system on a like for like basis.	1
Consistent with adjacent infrastructure.	Yes, this work replaces elements of the system on a like for like basis.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes, this work replaces elements of the system on a like for like basis.	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	This work is considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The low overall claimed cost reflects the relatively simple, repetitive nature of the work.	1
	Market conditions for engineering, equipment supply and construction	Implementation work is understood to be by in house staff installing specialist equipment. As such market conditions are not considered material.	1
	Procurement processes	The works involve the use of standard items subject to ongoing procurement agreements.	1
The project has met contractual timeframes and project management efficiencies		Although a program of works was not provided the scope of works claimed in the time period was commissioned in the required period	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Timely replacement of life expired or damaged electrical equipment can assist in the prevention of problems in other parts of the system.	1
	In terms of reducing future operational costs and increasing efficiencies	Proactive work such as this is intended to improve the overall reliability of the system to reduce delays to rail traffic.	1

Type of project: Electrical *System: Goonyella* *Expenditure Claim (excluding IDC): $951,448*

	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Proactive work of this nature will prevent premature failure of the overall system or individual constituent elements thereof.	1
	In terms of alignment with supply chain and operational objectives	Proactive work of this nature aligns with the supply chain objective to operate a reliable product transport system.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
See overall comment on cost					

Overall Comment	Although it is unclear where costs for the UAV units have settled, as the total costs for the scope of work commissioned is considered within industry expectations, overall the costs are considered prudent.

2827 Sth Goonyella (Lillyvale) Passing Loop 10

Type of project: Expansion *System: Goonyella* *Expenditure Claim (excluding IDC): $21,532,523*

Section 1 - Assessment Prudency of Scope

Overview	Lilyvale Passing Loop was constructed to provide additional route capacity for electric traction along the South Goonyella corridor.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes - the passing loop is understood to have been commissioned in June 2013.
Is capital expenditure and not maintenance	Yes – this is a system expansion project.
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The capacity analysis undertaken during 2012 provides a reasonable justification to proceed. In 2012 Aurizon undertook a number of capacity reviews of the Bundoora to Yan Yan section of track. These reviews indicated that the utilisation at the time was close to a threshold capacity of 75 per (measured in terms of paths per day) along this section of track. Aurizon estimated that future demand (as at January 2016) would exceed threshold capacity and support the commissioning of the Lilyvale passing loop. Additionally, Aurizon has indicated that the Lilyvale passing loop was undertaken in preparation for the Wiggins Island Rail Project (WIRP). This seems reasonable as the 2010 CRIMP provided for future consideration of a passing loop on the South Goonyella branch between Bundoora and Yan Yan to allow for the WIRP. We note that the capacity analysis undertaken during 2012 may have been more insightful if it had incorporated medium to long term analysis of the demand and supply along the line section – rather than a point in time estimate of January 2016. We also note that it is difficult to validate many of the assumptions in the capacity analysis since it is a high level summary of modelling that was undertaken at the time.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Aurizon has undertaken appropriate market demand analysis in their capacity modelling. However, there are limitations in our ability to evaluate this data. This is because we have not been provided with the market demand estimates that relate to particular customers. Rather, the data is presented at an aggregated level (i.e. paths/day on the line section).	2
- And that appropriate processes were implemented to evaluate alternatives	Aurizon has considered alternative options to address the capacity issues and the design of the passing loop. However, we have not been provided with evidence that Aurizon has undertaken detailed financial analysis to compare alternative options. This may have been appropriate in comparing some of the options. In 2010 Aurizon considered alternative solutions to the capacity issue. This included track duplication and a passing loop. The passing loop option was preferred	2

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $21,532,523

	because Aurizon concluded that it would provide adequate additional capacity at a lower cost compared to the track duplications. In 2013 Aurizon considered alternative design options related to signalling, electrification and location.	
- And that the replacement strategy is consistent with asset age and composition	n/a – this is construction of an additional asset	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All work was carried out in accordance with Aurizon safe working requirements.	1
That the appropriate Customer approvals have been sought and documented	There has been no formal customer approval of this project as part of the CRIMP or otherwise. However, we note that the 2010 CRIMP provided for an investigation of a passing loop on the South Goonyella branch between Bundoora and Yan Yan to allow for the WIRP. Additionally, documentation provided by Aurizon indicates that discussions about the project did occur with some of the key customers.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	There is no evidence to suggest there were any changes form the approved scope.	1

Overall Comment	The increased capacity provided by this new asset makes the work prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The delivered work is consistent with the existing standard and configuration of the electrified Aurizon network.	1
Consistent with adjacent infrastructure.	The asset created is consistent with adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The new loop is consistent with existing infrastructure serving a similar purpose.	1
Fit for purpose for current and known future requirements.	The delivered work is fit for purpose for both current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	Use of standard material, equipment and systems makes this work prudent in terms of standard.

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $21,532,523

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Signalling and power costs have been assessed as reasonable. Analysis of track construction costs gives a rate of $4.5m per km. this cost is also considered reasonable, albeit at the higher end of the scale compared with the wider Australian rail industry.	1
	Market conditions for engineering, equipment supply and construction	Civil materials are sourced using standing offer arrangements, and signalling systems are typically specialist equipment procured via single source arrangements. As such market conditions do not have a significant impact on this type of work.	1
	Procurement processes	With the exception of civil construction, the project work was delivered by internal Aurizon providers as this was considered to offer lower cost and risk than external resources but no documentation has been offered for review in support of this hypothesis. The civil construction was undertaken externally via a tender process. The tender documentation was provided for review and is believed to be appropriate.	1
The project has met contractual timeframes and project management efficiencies		This is believed to be the case.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Provision of this passing loop rather than the considered alternative of a longer section of duplicated does reduce capital costs without compromising safety or quality.	1
	In terms of reducing future operational costs and increasing efficiencies	Provision of a passing loop rather than duplicated track creates a shorter length of additional railway to be maintained and therefore reduces future operating costs.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	While it is noted that the asset has been constructed using standard equipment and materials no evidence has been supplied for review to confirm that the whole of life capital and operating costs were considered in the investment and/or options analysis.	2
	In terms of alignment with supply chain and operational objectives	As discussed above, Aurizon undertook this project to deliver greater train path capacity along a line section that Aurizon had forecast would be capacity constrained at a future point in time and aligns with the WIRP.	1

Overall Comment	The work is considered generally prudent in terms of cost.

Type of project: Expansion System: Blackwater Expenditure Claim (excluding IDC): $2,894,490

Section 1 - Assessment Prudency of Scope

Overview	This work was undertaken following the signing of a contract which took expected annual tonnages past a threshold limit where track upgrade would be required. This work is therefore believed to be prudent in terms of scope.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Due to the nature of the upgrade, works would have been undertaken during periods of track closure and taken into service as soon as the line reopened to traffic. As such the submitted total is deemed to be works commissioned or in service during or before the 2013-14 claim period.
Is capital expenditure and not maintenance	This is capital upgrade of the existing asset required due to increase in contracted tonnages for this section of track.
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	From the documents submitted for review it is accepted that the work is funded by Aurizon. What is less clear is the rate of return Aurizon is seeking in this asset. In fact it is said that Aurizon was to seek a higher than regulated rate of return. As such it is unclear whether this asset is eligible for inclusion in the RAB.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The decision to proceed was based on the increased tonnage reaching the threshold at which upgrade had previously been assessed as being required.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes – contract for increased tonnage had been signed.	1
- And that appropriate processes were implemented to evaluate alternatives	Alternatives are considered in the funding request but increase in ballast depth was assessed as being the option required to optimise asset life.	1
- And that the replacement strategy is consistent with asset age and composition	This enhancement is consistent with a longer term plan devised when the original asset was constructed.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Environmental Assessment of project area undertaken. Works undertaken in line with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	A Rail Infrastructure Construction Deed was prepared and signed for this work.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Only Project Change Request Number 6 was supplied for review but the change requested therein was appropriately treated.	2

Type of project: Expansion System: Blackwater Expenditure Claim (excluding IDC): $2,894,490

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Only ballast depth altered as part of this work. Overall track configuration is consistent with Aurizon standards.	1
Consistent with adjacent infrastructure.	Increased ballast depth brings this spur up to a standard consistent with other sections of track carrying similar tonnage.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Increased ballast depth brings this spur up to a standard consistent with other sections of track carrying similar tonnage.	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The standard of the upgraded asset is in accordance with an independent engineering assessment and is therefore to be prudent.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	These works are relatively straightforward and the project costs reflect this.	1
	Market conditions for engineering, equipment supply and construction	The works were completed using in house staff and machinery using ballast procured under a supply agreement so external market conditions are of reduced significance.	1
	Procurement processes	n/a	
The project has met contractual timeframes and project management efficiencies		No. Original commissioning date was May 2012.	2
Value for money	In terms of reducing total capital costs without compromising safety and quality	The work was undertaken in relatively short duration track closures. Costs could have been reduced if track closures had been of longer duration	1
	In terms of reducing future operational costs and increasing efficiencies	The reason for increasing the ballast depth was to increase future operational efficiency and reduce required maintenance work.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure	The reason for increasing the ballast depth was to increase future operational efficiency and reduce required maintenance work.	1

Type of project: Expansion System: Blackwater Expenditure Claim (excluding IDC): $2,894,490

	optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives	The ballast upgrade was to align the asset life with that of the mine it serves.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
As extra charges are expected on this project a unit rate cannot be accurately determined at this time but costs to date give a per km rate of $95,772. This is considered to lie within reasonable industry rates.					

Overall Comment	This project is considered prudent in terms of cost.

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $74,555,477 revised

Section 1 - Assessment Prudency of Scope

Overview	The DBCT to HPSCT second road was constructed to increase annual tonnage throughput at the port of Hay Point. Due to the complexities of the site topography and existing track layout a significant amount of civil engineering and railway modelling work was required to deliver the final project.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes
Is capital expenditure and not maintenance	Yes – this is system expansion
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	There is reasonable to justification for this expenditure because it was undertaken to support the future development of the Dalrymple Bay Coal Terminal (DBCT) and Hay Point Services Coal Terminal (HPSCT, owned by BMA). However, we note that capacity analysis and evidence of the development timetable for the development has not been provided which would enable us to validate this conclusion.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The information provided by Aurizon identifies that the Dalrymple Bay Coal Terminal (DBCT) and Hay Point Services Coal Terminal (HPSCT, owned by BMA) are separately and concurrently developing port expansion plans. This will take the Goonyella System capacity to 140mtpa (with DBCT at 85mtpa), i.e., GSE X140. With the recent downturn in the coal market there a risk that the predicted throughput tonnages will not be achieved for the terminal developments. However, at the time of the capital project the extent and nature of the downturn was not clear. Capacity analysis was apparently undertaken to underpin decision-making on this project, but despite being requested this information has not been provided.	2
- And that appropriate processes were implemented to evaluate alternatives	A range of alternatives have been explored. At the pre-feasibility stage there were initially six (6) projects proposed but, through detailed investigation, the number of projects required to meet system capacity was reduced to 3, with GSE X140 DBCT to HPSCT 2nd Road (A03353) being one of the short-listed projects. Where possible, development options appear to have been considered for this project but the range of these was quite limited, reflecting development constraints. A financial analysis has been undertaken of the options but this does not involve a comparison of the options to identify the most cost-effective alternative as it did not	2

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $74,555,477 revised

	involve a present value analysis of the capital and operating costs over the 'whole of asset life'.	
- And that the replacement strategy is consistent with asset age and composition	n/a – this is an expansion project	
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works were undertaken in accordance with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	Customer approvals were sought and documented through the 2009 CRIMP process.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	n/a	

Overall Comment	Within the bounds of Aurizon processes in use at the time relevant decisions were made, and with the information to hand regarding contemporary coal market conditions, this project is considered prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The delivered works are consistent with existing standard and configuration elsewhere on the Aurizon network.	1
Consistent with adjacent infrastructure.	Yes, this work as designed and delivered is consistent with adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes, the use of standard proprietary items makes this new asset consistent with existing infrastructure of similar purpose.	1
Fit for purpose for current and known future requirements.	This asset is fit for purpose for current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	From the information received for review it is believed there are no departures from existing standards.

Overall Comment	This is work is considered to be prudent in terms of standard.

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $74,555,477 revised

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The project has been reviewed with respect to power, signalling and track and civil costs. Given the scale and complexity of the work the power costs are considered reasonable, while the signalling and track and civil costs are considered to sit at the high end of the reasonable scale. In mitigation it is understood that this was a challenging site with a number of technical difficulties but these have not been demonstrated at the time of writing.	1
	Market conditions for engineering, equipment supply and construction	The project was undertaken at a time of peak workload, both for Aurizon and in the wider Australian market place. The signalling portion of this work was sub-contracted to an alliance partner to ensure timely delivery as internal resources were engaged on other works. The use of an alliance partner of this type usually generates higher costs than would be incurred by internal resources undertaking the same work.	1
	Procurement processes	The procurement processes for this project involve a combination of: - Competitive tendering (ballast) - Sole sourcing (civil works) - Internal sourcing (design, project management) - Existing supply contracts (rail, sleepers, overheads) - Alliance (signalling) The reports provided by Aurizon note that the lack of volume means that no significant savings were identified by using alternative suppliers for civil works. The proposed procurement approaches appear to exploit market opportunities where competitive tendering is possible (namely ballast). Where existing supply contracts are in-place it makes sense that these are used instead of setting up a new contract, particularly as there are relatively few suppliers for rail and sleeper capital items. It is critical, however, that existing supply contracts are periodically tested to confirm that they deliver cost-effective outcomes on a whole of asset life perspective.	2

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $74,555,477 revised

		Civil works were undertaken by BMD contractors because of the proximity of their quarry to the works. Prima facie this approach is reasonable, but cost-effectiveness has not been demonstrated. This is important because Civil works cost over $25 million. Overall the procurement strategies appear to have used an appropriate combination of arrangements to deliver cost-effective outcomes. However, there is only limited detail to substantiate the claims in the information provided. Background information on the selection processes was requested but has not yet been made available by Aurizon.	
The project has met contractual timeframes and project management efficiencies		This is believed to be the case.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	From the information provided for review it appears that Aurizon has achieved consistent capital costs, not value for money capital costs. For instance, Schedule 3 of the claim states "Long standing commercial agreements with rail and turnout suppliers ensured consistent pricing and supply." Despite this safety and quality were not compromised.	2
	In terms of reducing future operational costs and increasing efficiencies	The feasibility IAP states that the critical viable alternatives have been thoroughly considered and this is the solution that delivers the Minimal Total Cost of Ownership (page 3). However, no evidence has been provided to confirm this.	2
	- in terms of optimisation of whole of life considerations has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Capital expenditure has been optimised across the GSE X140 project, delivering considerable savings on the concept level analysis. There is no evidence that CAPEX and OPEX optimisation has been undertaken. This requires a net present value (NPV) based analysis to be undertaken that assesses the present value outcomes of different capital and operating cost alternatives and identifies the option with the lowest NPV outcome. This analysis could not be provided by Aurizon although discussions with the finance area confirmed that at the time of the project the financial model did not readily facilitate Total Cost of Ownership analysis. It is, however, understood that the financial model has now been changed so that Total Cost of Ownership analysis is undertaken.	2

Type of project: Expansion System: Goonyella Expenditure Claim (excluding IDC): $74,555,477 revised

	In terms of alignment with supply chain and operational objectives	As discussed above, the project aligns with the future development of the Dalrymple Bay Coal Terminal (DBCT) and Hay Point Services Coal Terminal (HPSCT, owned by BMA).	1

Overall Comment	From the information provided costs are considered prudent.

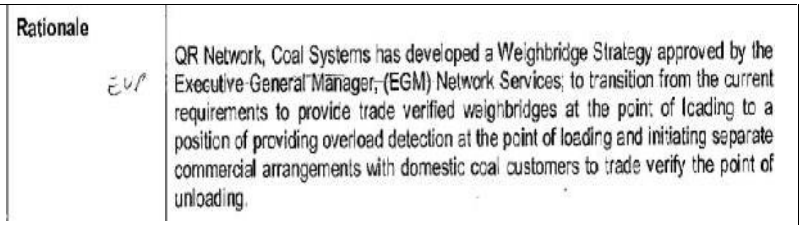
Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $231,825 revised*

Section 1 - Assessment Prudency of Scope

Overview	The weighbridge replacement programs commenced in 2009 and are basically a continuation of the strategic reconsideration of the commercial weighbridge agreements and QR (later Aurizon) Network's weighbridge maintenance policies which were revised in Stage 1 of the project in 2007. Historically a condition of the Rail Access Agreements between Aurizon and above rail operators included a requirement for trade certified weighbridges to be provided at points of loading for mines that supply coal to domestic customers. It is understood that Aurizon Network has been revising these agreements since 2009 to exclude this requirement, as the process of trade-certification is costly and ties up valuable resources and infrastructure. Following the determination of Aurizon Network's Weighbridge strategy this Project 2870 and Project 4548 (Weighbridge Replacement) will rationalise remaining works from previous Weighbridge Renewal Projects and implement replacement and reparation works as required. Stage 2 of the project allows for: • Replacement of overload detectors at coal loading facilities • Development of a maintenance server requirements specification for the Remote Weighbridge Interface (RWI) 'master server' at Rockhampton • The installation and trade certification of new (CanAmp) weighbridge systems at Rolleston, Callide and Boundary Hill mine loadouts. This installation complies with the requirements of the 2004 Coal, 2008 Coal, and Rolleston Access Agreements, to provide trade-verified weighbridges at Rolleston, Callide and Boundary Hill.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	There appear to be some discrepancies in the submitted total. In the 2010-11 claim Project A02870 Weighbridge Replacement Strategy Stage 2 was submitted for a total claim of $600,832 from an approved funding of $847,000. As part of that submission a project practical completion certificate was supplied to confirm supply and installation of Meridian ME Trackweigh facilities which were confirmed to be complete and verified in service. Callide was not verified and Boundary equipment had been purchased and supplied but was not installed. The remaining works ($246,168) were to be completed in a subsequent claim. The 2013-14 claim includes the installation of all 3 weighbridges where it appears only the installation of Boundary should be outstanding.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	The information provided implies that there is no need for verifiable weighbridges at the point of loading, only loading detection.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $231,825 revised*

	 Aurizon Submission rational "*101115 Weighbridge Replacement Stage 2 A2870 09 11 2010*" Therefore if there are specific needs for trade verifiable weighbridges at the point of loading for only specific customers, it is questionable whether the costs should be funded or included in the RAB, or whether they should be part of separate commercial agreements with the customer (as they would only relate to domestic customer requirements).

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The replacement strategy appears to be inconsistent with Aurizon Network commercial strategy (see above).	2
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		
That the appropriate Customer approvals have been sought and documented		

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	In addition to the issues above the 2013-14 claim totals $1,028,358 against a $1,049,000 budget. (Refer Aurizon Schedule 6 submission). This appears to include a variation of $202,000 (from the original approved funding figure of $847,000) for which no justification has been supplied.	1

Overall Comment	Scope could not be assessed as a portion of the scope appears to have been claimed in the 2010-11 Capital Expenditure Submission claim.

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $231,825 revised*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The standard of works carried out appears to be consistent with previous similar works on the CQCN. All installation works are being carried out by third party contractors Meridian Engineers (supply of equipment and certification) and Qencom (installation of equipment). All weighbridges are required to be calibrated to the Queensland Trade measurement Act 1990. The required conformity to the Act indicates that the standard of works will be approved and rigorously monitored and controlled.	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.		

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	The required conformity to the Queensland Trade Measurement Act 1990 indicates that the standard of works will be approved and rigorously monitored and controlled.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs in terms of industry benchmarking of the supply and installation of similar equipment are considered prudent and consistent with the required scope	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies		Discrepancies appear to be evident from the time scales/scope and costs expended and claimed for 2870 in the 2010-11 Capital Submission Claim and the 2013-14 Expenditure claim	2
Value for money	In terms of reducing total capital costs without compromising safety and quality	This could not be assessed due to discrepancies in the scope and expended capital claimed over this period and the 2010-11 period.	1
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $231,825 revised*

	In terms of alignment with supply chain and operational objectives		

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Unit rates were not able to be calculated.					

Overall Comment	Due to discrepancies found in the scope of works completed and claimed in the 2010-11 capital expenditure submission and the total claimable expenditure in the 2013-14 period the costs could not be assessed as prudent.

Type of project: S&TSS *System: System Wide Expenditure Claim (excluding IDC): $600,028*

Section 1 - Assessment Prudency of Scope

Overview	The purpose of the project is to trial the Thales axle counter (for train detection purpose) as of the source for replacement of ageing axle counters or for new deployment. The trial allowed Aurizon to evaluate the Thales axle counter solution in real operation. The outputs of this trial were used as inputs to the Axle Counter versus Track Circuit study (project A.04407). The Axle counters were also Type Approved. The Axle counters are currently in service. Thales axle counter will be one of the two axle counter products to be used by Aurizon in the comings year

Requirements	Comments
Is below-rail infrastructure	Yes (trackside signalling equipment)
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes. Commissioning certificates were not provided but Type Approval certificates were provided. Aurizon confirmed in schedule 6 that physical scope has been completed.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes (100%)
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes. Replacing aging axle counters is prudent and the process of evaluating them as being undertaken in this project is considered a prudent method of identifying a solution.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Not Applicable.	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes. Aurizon need to identify solution to replace aging axle counters	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not Applicable.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	No changes in scope were specified	1

Type of project: S&TSS *System: System Wide Expenditure Claim (excluding IDC): $600,028*

Overall Comment	The project is considered prudent in scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Axle counter is a technology widely used in railways as an alternative to track circuit. Thales is a leader in signalling equipment.	1
Consistent with adjacent infrastructure.	Yes, one of the purposes of the trial was to identify a solution that can be installed on a large part of the Aurizon network.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes, one of the purposes of the trial was to check that solution is compatible with existing infrastructure.	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	Axle counter is a technology widely used in railways as an alternative to track circuit. Thales is a leader in signalling equipment. In consideration of these facts the project is considered prudent in standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Yes	1
	Market conditions for engineering, equipment supply and construction	Yes	1
	Procurement processes	Yes	1
The project has met contractual timeframes and project management efficiencies		No, the completion date mentioned in the MFR is December 2012. The project was completed only in 2014 due, in particular, to technical issues in the communication between the axle counter detectors (along the track) and the evaluators (in Signalling Equipment Room)	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes	1

Type of project: S&TSS *System: System Wide Expenditure Claim (excluding IDC): $600,028*

	In terms of reducing future operational costs and increasing efficiencies	Yes	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes	1
	In terms of alignment with supply chain and operational objectives	Yes	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: Costs for such a trial seems reasonable. It was not possible to assess specific unit rates as this trial is customized to the Aurizon network and technical problems encountered are specific to the Aurizon network case.

Overall Comment	Although the trial lasted longer than expected, it is noted that this was due to technical issues which were appropriately solved. Despite these issues overall the costs of the trial is within budget and are considered reasonable.

Type of project: S&TSS *System: Blackwater* *Expenditure Claim (excluding IDC): $114,30*

Section 1 - Assessment Prudency of Scope

Overview	The old equipment (Westinghouse) was originally installed in the 70's. The contacts were worn and created reliability issue and the product was no more supported by the supplier. It was prudent to replace the electrical mechanism.

Requirements	Comments
Is below-rail infrastructure	Yes (part of level crossing)
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes. Aurizon indicates in the schedule 6 that upgrade works at all four locations is now complete.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	The work is fully funded by Aurizon.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes. The age of the original equipment, consequent reliability issues and scarcity of spare parts provided reasonable justification to undertake this work.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Not applicable	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes. This upgrade replaces aged and relatively unreliable equipment with a modern engineering equivalent.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The replacement enhances the safe and reliable operation of these crossings and maximises route availability for rail traffic passing over them.	1
That the appropriate Customer approvals have been sought and documented	Not applicable	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not applicable	

Overall Comment	The new equipment (Invensys S60) is widely deployed in many countries, is standard to Aurizon Network and typical of installation nationally. Its use in this situation is therefore considered prudent.

Type of project: S&TSS *System: Blackwater* *Expenditure Claim (excluding IDC): $114,30*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The new equipment (Invensys S60) is widely deployed in many countries.	1
Consistent with adjacent infrastructure.	Yes	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes, the equipment installed is standard to Aurizon/QR National and typical of installation nationally.	1
Fit for purpose for current and known future requirements.	The Invensys S60 is a recent product. Despite change of corporate ownership it is understood that Siemens who bought out Invensys continue to sell this equipment.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not Applicable

Overall Comment	The new equipment (Invensys S60) is widely deployed in many countries, is standard to Aurizon Network and typical of installation nationally. Its use in this situation is therefore considered prudent.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs are believed prudent considering this is a partial retrofit of a small number of existing level crossings (no saving due to large scale project).	1
	Market conditions for engineering, equipment supply and construction	Yes	1
	Procurement processes	Yes	1
The project has met contractual timeframes and project management efficiencies		No, the project was supposed to be completed in the year 2012/2013. It was only completed in June 2014. Aurizon has also indicated that there were costs accrued and paid in July 2014 so there will be a minor claim to be lodged in 2014/2015 claim.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes. Safety will be improved by the replacement of the component.	1
	In terms of reducing future operational costs and increasing efficiencies	Yes. The replacement will reduce the number of failures due to worn contacts.	1

Type of project: S&TSS *System: Blackwater* *Expenditure Claim (excluding IDC): $114,30*

	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes. The new equipment is more reliable and thus will reduce maintenance OPEX.	1
	In terms of alignment with supply chain and operational objectives	Yes	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Project Management	25%	10 to 15%			PM on high side due to small scale of project

Note: Benchmark for such a small scale project (4 locations to upgrade) is not relevant.

Overall Comment	Costs are believed prudent considering this is a partial retrofit of a small number of existing level crossings (no saving due to large scale project).

Type of project: S&TSS *System: Goonyella* *Expenditure Claim (excluding IDC): $5,162,302*

Section 1 - Assessment Prudency of Scope

Overview	The upgrade of the track circuits and the replacement or refurbishment of impedance bonds and replacement of power supplies is prudent. However Aurizon reports that only 262 units, out of the 506 to be replaced have been installed on site (but not all have been commissioned as of 30 June 2014) with ongoing works planned up to December 2015. Thus only part of the asset was in service on 30th June 2014.

Requirements	Comments
Is below-rail infrastructure	Yes - track circuits are part of signalling trackside equipment
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No, Aurizon reports that only 262 units, out of the 506 to be replaced have been installed on site and that not all had been commissioned as of 30 June 2014. Aurizon also indicates that works are planned up to December 2015. Thus only part of the asset was in service on 30th June 2014.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes (100%)
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes, the previous track circuits were life expired and were becoming unreliable. Spares parts were no longer available from supplier.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Not applicable	
- And that appropriate processes were implemented to evaluate alternatives	Replacing the track circuit equipment is cheaper than installing new technology such as axle counters.	1
- And that the replacement strategy is consistent with asset age and composition	Yes – the previous track circuits were installed in the 70's and were life expired.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works were undertaken in accordance with Aurizon safe working requirements.	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	For technical reasons, some linked to safety, the scope of project was varied to include the replacement or refurbishment of impedance bonds and replacement of power supplies.	1

Type of project: S&TSS *System: Goonyella* *Expenditure Claim (excluding IDC): $5,162,302*

Overall Comment	The upgrade of the track circuits and the replacement or refurbishment of impedance bonds and replacement of power supplies are prudent. However Aurizon reports that only 262 units, out of the 506 to be replaced have been installed on site (but not all have been commissioned as of 30 June 2014) with ongoing works planned up to December 2015. Thus only part of the asset was in service on 30th June 2014.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Track circuits are a train detection solution widely used in railways. The new equipment is type approved.	1
Consistent with adjacent infrastructure.	Although the digital track circuits installed differ from the adjacent older technology analogue track circuits, they are consistent in purpose with adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes	1
Fit for purpose for current and known future requirements.	Yes.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	The new equipment is type approved.

Overall Comment	The new equipment is type approved so the work is considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The budgeted costs of $8,343,000 cover the retrofit of 506 track circuits, including the replacement or refurbishment of impedance bonds and replacement of power supplies is prudent. However only 262 units, out of the 506 to be replaced were installed during the claim period. The SAP reports indicate that to achieve this $8,243,821 (98% of budget) has already been spent on the project. No information was provided regarding the forecasted cost to completion and thus it is not possible to assess the prudency of cost.	2
	Market conditions for engineering, equipment supply and construction	The project was launched at time of peak work load in Queensland and Australia signalling projects.	1

Type of project: S&TSS *System: Goonyella* *Expenditure Claim (excluding IDC): $5,162,302*

		Consequently the cost of signalling contractors was relatively high.	
	Procurement processes	A large part of the works was subcontracted to the Aspect3 Alliance. No information was provided on the procurement process.	2
The project has met contractual timeframes and project management efficiencies		No. A total of 262 units, out of the 506 to be replaced had been installed, but not all had been commissioned during the claim period. Aurizon indicates that works are planned up to December 2015.	2
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes. Bonds and power supplies were also retrofitted.	1
	In terms of reducing future operational costs and increasing efficiencies	The replacement of the old equipment will reduce the number of faults on the system and, thus, maintenance costs	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Not assessed.	
	In terms of alignment with supply chain and operational objectives	A large part of the works was subcontracted to Aspect3 Alliance partner.	2

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: As the project total costs at termination are not known, it was not possible to assess specific unit rates.

Overall Comment	The budgeted costs of $8,343,000 for the retrofit of 506 track circuits, including the replacement or refurbishment of impedance bonds and replacement of power supplies is prudent. However only 262 units, out of the 506 to be replaced have been installed. The SAP reports indicate that $8,243,821 has already been spent on the project. No information was provided regarding the forecasted cost to completion, therefore although assessed as prudent in 2013-2014 claim (costs are considered prudent the works are completed within the current approved budget), any additional expenditure should be carefully assessed in next years' claim.

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Section 1 - Assessment Prudency of Scope

Overview	The replacement of the old Siemens Axle counters by the new Frauscher Advanced Counter (FAdC) is prudent. However the new equipment is not commissioned yet. The schedule 6 document indicates that the commissioning is now postponed until the 2015/2016 financial year.

Requirements	Comments
Is below-rail infrastructure	Yes, Axle counters are below rail infrastructure.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No, the equipment is not commissioned. The schedule 6 document indicates that the commissioning is now postponed until the 2015/2016 financial year. Neither installation certificates nor commissioning certificates were provided. No explanations were given why the commissioning is postponed to 2015/2016.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes (once the axle counter will be in service)
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes	1
- And that appropriate processes were implemented to evaluate alternatives	This project is a result of a comprehensive study “Axle Counter versus Track Circuit”	1
- And that the replacement strategy is consistent with asset age and composition	Yes, the axle counters to be replaced are Siemens Az600 that reached end of life. Spares are no longer commercially available and existing spares are running out.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified		

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $0 revised

Overall Comment	The replacement of the old Siemens Axle counters by the new Frauscher Advanced Counter (FAdC) is prudent. However the new equipment is not commissioned yet. The schedule 6 document indicates that the commissioning is now postponed until the 2015/2016 financial year.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Frauscher is one of leading suppliers of axle counters. The FAdC product will be installed for the first time on Aurizon network for this project. This product is one of the two axle counter recommended for axle counter replacement in the Aurizon study "Axle Counter versus Track Circuit"	1
Consistent with adjacent infrastructure.	The product is designed to replace the existing Siemens axle counter that is capable of sending vital information between two evaluators.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes.	1
Fit for purpose for current and known future requirements.	The project will verify that the product is fit for purpose. The Frauscher FAdC is a new product and it is expected that it will have at least 15 years life.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	Frauscher is one of leading suppliers of axle counters. The FAdC product will be installed for the first time on Aurizon network for this project. This product is one of the two axle counter equipment recommended for axle counter replacement in the Aurizon study "Axle Counter versus Track Circuit"

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs are considered reasonable in regards to first implementation of the Frauscher Axle counter. The costs as of end June 2014 include a large percentage of project management costs.	1
	Market conditions for engineering, equipment supply and construction	Yes	1
	Procurement processes	Yes	1

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $0 revised

The project has met contractual timeframes and project management efficiencies		No, the project was supposed to be completed by June 2013 (per MFR). The commissioning is now planned for 2015/2016.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes	1
	In terms of reducing future operational costs and increasing efficiencies	Yes	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes	1
	In terms of alignment with supply chain and operational objectives	Not assessed	

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: As the project is not completed is was not possible to assess specific unit rates.

Overall Comment	The budgeted costs are considered reasonable in regards to first implementation of the Frauscher Axle counters. However as the equipment is not in service and additional costs will be incurred (potentially up to 2016), it is not possible to assess the prudency of the costs. In view of the above. Aurizon Network have deferred this project until the 2014-15 submission claim.

4407 Axle Counters vs Track Circuit Replacement 18

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $415,799*

Section 1 - Assessment Prudency of Scope

Overview	The scope of work of this project is to deliver a study about the use of axle counters versus track circuit as train detection systems. The study includes recommendations and a proposed strategy on the optimal uses of both types of equipment on the Aurizon network.

Requirements	Comments
Is below-rail infrastructure	Yes, track circuit and axle counters are below rail infrastructure.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes. The project is closed. CMT received only a draft /unsigned copy of the report but this report included the results of the study and clear recommendation on the uses of the two technologies. CMT did not get information to confirm that a final version will be issued. The gap between the final version and the draft version should not be significant.
Is capital expenditure and not maintenance	Yes. It can be considered as capital expenditure as it creates an asset.
Creates an asset	The study can be considered as an asset for the following reasons: - It includes a recommendation on the use of the two technologies on the Aurizon network that will allow savings on the total cost of ownership of the equipment to be deployed in the coming years. In regards to the costs of axle counters and track circuit to be deployed in the coming 10 years, the savings will be significantly higher than the cost of the study - It includes a recommendation that will improve the availability of the train detection device and thus improve the capacity of the Aurizon network. - The study is based on data collected about the use of track circuits and axle counters on the Aurizon network over many years. The results are specific to the Aurizon network (such information could not have been found on the internet).
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes	1

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $415,799*

Requirements	Comments	Risk
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not applicable	

Overall Comment	It was prudent to perform such a study that will bring significant savings in the deployment of track circuits and axle counters on the Aurizon network in the coming years. The study, through its unique recommendation for the Aurizon Network is considered to be an asset.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Yes, the study is evaluating proven technology and proven products.	1
Consistent with adjacent infrastructure.	Not applicable	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Not applicable.	1
Fit for purpose for current and known future requirements.	Not applicable.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	N/A

Overall Comment	The study is evaluating proven technology and proven products and therefore is considered prudent

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are	Scale, nature and complexity	Although the costs are considered at the high end for such a study, the standard	1

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $415,799

considered reasonable considering:		of the report is good and recommendations and strategies proposed could result in significant savings.	
	Market conditions for engineering, equipment supply and construction	Not applicable	1
	Procurement processes	Not applicable (internal study)	1
The project has met contractual timeframes and project management efficiencies		Yes , project was completed by June 2014 as per schedule mentioned in MFR.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes	1
	In terms of reducing future operational costs and increasing efficiencies	Yes, the value of money of the study can be measured in regards to savings on the total cost of ownership of the equipment to be deployed in the coming years.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes, the study takes in account the total whole of life costs of ownership of train detection equipment.	1
	In terms of alignment with supply chain and operational objectives	Yes, the study took in account operational objectives and evaluated proven products.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: This study is extremely specific. No benchmark can be applied.

Overall Comment	The costs of the study are on the high end in regards of the scale, nature and complexity of the study. However due to the high standard of the report recommendations and the savings that can be implemented the overall cost can still be considered as prudent

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $2,000,502

Section 1 - Assessment Prudency of Scope

Overview	The weighbridge replacement programs commenced in 2009 and are basically a continuation of the strategic reconsideration of the commercial weighbridge agreements and QR (later Aurizon) Network's weighbridge maintenance policies which were revised in Stage 1 2007. Following the determination of Aurizon Network's Weighbridge strategy Project 2870 and this Project 4548 (Weighbridge Replacement) will rationalise remaining works from previous Weighbridge Renewal Projects and implement replacement and reparation works as required. Schedule 6 (Aurizon Submssion) references that "Under UT3 Aurizon Network made commitment to trade certify several weighbridges at mine loadouts throughout the network" however no note has been made as to whether these requirements will still need to be met for UT4. This statement appears to be in conflict with the statement made on the business case submission for Stage 2 which is as below: **Rationale** QR Network, Coal Systems has developed a Weighbridge Strategy approved by the Executive General Manager, (EGM) Network Services, to transition from the current requirements to provice trade verified weighbridges at the point of loading to a position of providing overload detection at the point of loading and initiating separate commercial arrangements with domestic coal customers to trade verify the point of unloading. The scope for this project includes completion of trade certification of weighbridges at Callide, Boundary Hill and Dawson. However Schedule 6 states "Trade certified weighing systems agreements will no longer be entered into unless under a separate commercial agreement". As this statement formed part of the weighbridge strategy in Stage 1 (2009) a question arises as to whether any commercial agreements omitting the requirements for trade-certification have been entered into. The Callide and Boundary Hill works were outstanding items from the project 2870 2010-11 submission claim but were also part of the scope of project 2870 claimed and financially completed in 2013-14. The scope and breakdowns provided in this year's submission indicate that this part of the scope should not be included in the 4548 total claim.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The information provided indicates that the claim is for works completed, however it is not clear whether some of those works were included in previous submissions.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	If there are specific needs for trade verifiable weighbridges at the point of loading for specific customers (only), it is questionable whether the costs should be funded by or included in the RAB or whether they should be part of separate commercial agreements with those customers (as they would only relate to domestic customer requirements).
That Aurizon Network had reasonable justification to proceed, given the	

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $2,000,502

circumstances relevant at the time of the decision	

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The information provided indicates an inconsistency with the weighbridge strategy and the program moving forward. It is unclear whether the costs should be funded as part of separate commercial agreements in view of the fact that there may not be a need to provide trade-certified weighbridges, only load overload detectors.	2
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		
That the appropriate Customer approvals have been sought and documented		

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not able to assess	

Overall Comment	On consideration of the additional information provided by Aurizon Network the scope is considered prudent

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	All weighbridges are required to be calibrated in accordance with the Queensland Trade Measurement Act 1990. Conformance with this act indicates the standard of works required and completed.	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.		

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $2,000,502

Overall Comment	All weighbridges are required to be calibrated in accordance with the Queensland Trade Measurement Act 1990. Conformance with this act indicates the standard of works required and completed.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity Market conditions for engineering, equipment supply and construction	Trade certification costs appear to have increased significantly from previous years	2
	Procurement processes	Works are sole sourced no evidence of competitive tendering.	2
The project has met contractual timeframes and project management efficiencies		See below:	
From the Aurizon email provided 11 February 2015 in response to a CMT information request on the confirmation of scope completed, CMT received the following in relation to all scope completed on the weighbridge program from its conception in 2007: Moura (pre-2007) Ensham – installed 08/2007 German Creek – installed 07/2008 Rolleston – installed 11/2010 Callide – installed 5/2011 faulty grout plates discovered post install Riverside – installed with re-rail 5/2013 German Creek – upgraded with re-rail 11/2013 Boundary Hill - installed 04/2014 Callide – update software, repair & recertify 04/2014 Dawson (Moura) –update software & recertify Ensham and Burton were installed and claimed in stage1 A02276 -Refer Review of QR Network 2010-11 Capital Expenditure, Evans & Peck report. Callide, Rolleston and Boundary Hill partial works completed and claimed under A2870 (Refer Review of QR Network 2010-11 Capital Expenditure, Evans & Peck report). At Boundary Hill the installation (equipment purchase and supply claimed 2010-11). Recertification and corrections to Callide remain outstanding but appear to be part of A2870 scope submitted 2013-14. Information provided indicates that German Creek installation and upgrade was included in scope of A04483 2013-14 capital expenditure submission. Thus the remaining scope completed for 4548 in 2013-14 period is: • installation of Riverside - 2013 (equipment costs claimed in 2010-11 submission) • Dawson update software, repair and recertify 04/2014 • weighbridge site document “documentation upgrade” The scope defined in the Minor Funding Request details trade certification to be completed for three weighbridges and new weighbridges to be installed at Oaky Creek, Moranbah North and Hail Creek in the next financial year. The current expenditure is at $2,000,502 against an approved funding of $4,803,000 for what appears to around 10—15% of the scope.			2
Value for money	In terms of reducing total capital costs without	In terms of delivering the scope the costs do not align with previous	2

Type of project: S&TSS System: System Wide Expenditure Claim (excluding IDC): $2,000,502

	compromising safety and quality	estimates and expenditure of similar works in previous years.	
	In terms of reducing future operational costs and increasing efficiencies	Trade-certification appears to be a costly and highly resource driven activity, which appears to require significant reworking to achieve compliance. Aurizon Network's weighbridge strategy to shift trade-certification to separate commercial arrangements appeared to be prudent, however it is not clear from the information and costs submitted that this strategy is being applied efficiently and expediently.	2
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Unit rates were not able to be calculated.					

Overall Comment	It is noted that an additional $748,178 was required for final completion and commissioning of the Callide weigher which had been installed and expenditure claimed in project A.02870. This was due to original weigher failure as a resultant of movement of grouted plates which had been re-installed and grouted in the same location as the replaced pit weigher. These reparatory works added significant additional works and scope to this project. It is noted that the implementation of the specific weighbridge equipment on a concrete slab assembly is a relatively new departure for Aurizon Network and it is accepted that there will be a learning curve associated with the introduction of new designs within the industry. Aurizon Network have confirmed that the learnings from this experience have been applied to subsequent sites with potential savings for the future weighbridge renewal program. Based on this fact and the additional information provided to the Review Team the final assessment has concluded that the project is prudent in cost.

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $2,017,880*

Section 1 - Assessment Prudency of Scope

Overview	The project includes provision of a Wheel Impact Load Detector (WILD) and the construction of a super site between Wandoo and Waitara (named Wandoo super site). The original funding request of $854,000 included only the WILD to be installed between Waitara and Braeside. The construction of the super site and associated move of the WILD position was funded though reallocation of $1,800,000 to the project.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes, the Site Acceptance Test of the WILD was completed on 30 June 2014 with some items left for subsequent attention. The construction of the super site was also completed as of 30 June 2014. Other rail systems will be installed at the super site during FY15 but these do not form part of this project.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes	1
- And that appropriate processes were implemented to evaluate alternatives	Yes for the WILD. The selection of site to install the WILD was done using an excel based selection tool. This considered 12 criteria average train speed, track formation and gradient. Regarding the super site, the justification to build a super site was not provided. Thus we cannot assess if processes were implemented to evaluate alternatives.	1
- And that the replacement strategy is consistent with asset age and composition	Not applicable	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	The project went through a major change of scope by including the construction of the super site and the alteration of the WILD position. While the relocation of	1

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $2,017,880*

	the WILD was justified, no justification was provided for the construction of the super site.	

Overall Comment	The project includes provision of a Wheel Impact Load Detector (WILD) and the construction of a super site between Wandoo and Waitara (named Wandoo super site). The scope is considered generally prudent although justification (including evaluation of alternatives to build a super site) was not provided at time of assessment

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Yes. The WILD is a well proven product supplied by Signal & System Technik.	1
Consistent with adjacent infrastructure.	Yes	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Not applicable.	
Fit for purpose for current and known future requirements.	Yes.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable.

Overall Comment	The WILD is a well proven product supplied by Signal & System Technik. The project is therefore considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The cost of the WILD is considered reasonable in regards to the solution used and the fact that there is only one location so no economy of scale. The cost of the super site is also considered reasonable given its size and technical complexity.	1
	Market conditions for engineering, equipment supply and construction	Yes	1
The project has met contractual timeframes and project management efficiencies		Yes.	1
Value for money	In terms of reducing total capital costs without	Yes	1

Type of project: S&TSS *System: System Wide* *Expenditure Claim (excluding IDC): $2,017,880*

	compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies	Yes	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Project management	11 %	10 to 15%			In line with benchmark

Note: Not enough information was provided to be able to use benchmark of specific unit rates.

Overall Comment	The cost of the WILD is considered reasonable in regards to the solution used and the fact that there is only one location so no economy of scale. The cost of the super site is also considered reasonable given its size and technical complexity.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $179,804*

Section 1 - Assessment Prudency of Scope

Overview	This project is part of an ongoing program related to the strengthening of the rail formation via either removal and replacement, re-building or injecting with lime slurry. The project involved collating critical measurement and testing data to develop a report which provides the background and essential information for developing prioritisations and the program of formation works going forward.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes
Is capital expenditure and not maintenance	The works are to undertake the appropriate testing and analysis to form a strategy and prioritisation for the formation strengthening program. The results of this study will form the basis for the next stages and ensure that works are programmed to optimal locations. The report formed its basis on the GPR measurements which included data from 1,324 kilometres of track. Data was also collected from Hi-Rail inspections, dynamic cone penetrometer (DCP) testing and soil sampling (CBR, grading and Atterberg).
Creates an asset	
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The analysis undertaken is critical in ensuring that programming of formation works covers critical and optimal locations in the future. Continued formation strengthening across the network is critical to maintain capacity integrity and reduce speed restrictions and failures associated with formation issues. Therefore the continuation of these formation strengthening works is required to meet ongoing operational requirements. The resulting asset from this project provides a means for optimising the expenditure and program moving forward.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		
That the appropriate Customer approvals have been sought and documented		

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not applicable	

Overall Comment	From the information provided the project is considered prudent in scope.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $179,804*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The report and analysis have been undertaken by qualified consultants and appear to be consistent with expected industry requirements for this level and type of work.	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.	The report is considered to provide the required information for its intent.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	From the information provided the project is considered prudent in standard.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $179,804*

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	CMT has sighted the report and it is considered that for the analysis undertaken and the quality of the report provided the costs appear reasonable.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	Considering the analysis undertaken and the final report the project is considered prudent in cost.

Type of project: TACA *System: Newlands* *Expenditure Claim (excluding IDC): $4,385,492*

Section 1 - Assessment Prudency of Scope

Overview	This project was established to strengthen identified culverts in the Newlands system where the condition of the existing structure was such that speed restrictions had been imposed on rail traffic passing over them.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	From the information provided for review this is believed to be the case.
Is capital expenditure and not maintenance	Yes, the work creates new or upgraded assets
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes, although it is considered that if action had been taken sooner a more efficient procurement outcome may have been achieved, it is noted that the program reparatory works was constrained due to the remoteness of the sites and the difficulty in obtaining contractors due to this remoteness.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The solution as described in documentation provided for review upgrades the culverts from a capacity able to handle the 20TAL previously hauled along the route to one able to handle the 26.5TAL currently hauled on this route. Anecdotal evidence collected during the review process suggests that although the project documentation cites the capacity upgrade mentioned above the culvert units as installed are designed to support of 30TAL.	1
- And that appropriate processes were implemented to evaluate alternatives	Prior to commencing culvert upgrade works a study was undertaken to determine the condition of the culvert stock and the most appropriate way forward. The alternative course was to implement permanent speed restrictions on various stretches of the line which pass over culverts deemed to be in distress.	1
- And that the replacement strategy is consistent with asset age and composition	The intervention strategy has been tailored according to the conditions at the site of each individual culvert to ensure that the works undertaken at each were appropriate.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works have been undertaken in accordance with Aurizon safe working practices.	1
That the appropriate Customer approvals have been sought and documented	No, although it is understood that the works were undertaken as a result of customer pressure.	1

Type of project: TACA *System: Newlands* *Expenditure Claim (excluding IDC): $4,385,492*

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	From the documents provided for review this is believed to be the case.	1

Overall Comment	This work is considered to be prudent in terms of scope..

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	From review of the documentation there appears to be a discrepancy in the load capacity of newly installed sleepers (28TAL) and the upgraded culverts (26.5TAL). notwithstanding this anecdotal evidence suggests that the culvert units installed are rated to 30TAL.	2
Consistent with adjacent infrastructure.	Generally, yes, but see note above.	2
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes – all distressed culverts are understood to be being upgraded to the same standard.	1
Fit for purpose for current and known future requirements.	Yes – there is no known aspiration to run axle loads greater than 26.5T in the near future.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The project is considered generally prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs are considered reasonable from this aspect.	1
	Market conditions for engineering, equipment supply and construction	It is noted that much of this work has been undertaken in relatively remote locations, away from the base depots of many contracting organisations. Considering this, the urgency of the work and the fact that Aurizon had an existing contract with one contractor who was already on site in the general area the decision was made to works for this project on a cost plus basis as an extension of the original competitively tendered contract. It is possible, therefore, that some commercial	2

Type of project: TACA *System: Newlands* *Expenditure Claim (excluding IDC): $4,385,492*

		advantage was lost from not approaching the market at that time.	
	Procurement processes	Costs are considered reasonable given the procurement process followed.	1
The project has met contractual timeframes and project management efficiencies			
Value for money	In terms of reducing total capital costs without compromising safety and quality	In general, yes, although the cost of track protection staff could have been reduced by adoption of a different management strategy.	2
	In terms of reducing future operational costs and increasing efficiencies	Strengthening of distressed culverts certainly reduces future operational costs.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	The site by site consideration of the most appropriate intervention strategy can be shown to demonstrate that whole life factors were taken into account when devising the scope for each culvert.	1
	In terms of alignment with supply chain and operational objectives	Removal of temporary speed restrictions on sections of line passing over distressed culverts increased the capacity of the route and therefore aligned with the supply chain objective to maximise the volume of product moved from pit to port.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Culvert work	Aurizon did not capture costs on a site by site basis. It has therefore not been possible to derive a unit rate for these works.				

Overall Comment	Given the overall situation, and information available to decision makers at the time, this work is considered prudent in terms of cost.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $301,519*

Section 1 - Assessment Prudency of Scope

Overview	This project is part of an ongoing program related to the strengthening of the rail formation via either removal and replacement, re-building or injecting with lime slurry. This project involved the collection of 1,234 kilometres of GPR data and other testing including dynamic cone penetrometers (DCP), soil testing (CBR, grading and Atterberg) and geotechnical analysis. From the information provided it appears that over the years the planning of formation projects has been a reactive program, targeting areas where problems already exist rather than prioritising areas at high risk of future loss of structural integrity. This is because without the appropriate geotechnical investigations and analysis it was difficult to identify areas which are experiencing loss of integrity but have not shown signs of failure yet. It is believed that through the use of a program of inspection and subsequent engineering assessment a proactive program of sites prioritised on risk can be developed. This approach is considered prudent.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes, from the information provided the total is for completed testing
Is capital expenditure and not maintenance	The works are to undertake the appropriate testing and analysis to form a strategy and prioritisation of sites for the formation strengthening program. The results of this testing and geotechnical analysis will form the basis for prioritisation of formation strengthening works across the network. Continued formation strengthening is required to reduce speed restrictions and minimise risks of formation failures. Comprehensive geotechnical testing of the formation is critical in order to ascertain the existing condition and integrity of the formation in order to program and prioritise works in the future.
Creates an asset	
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The testing is critical in ensuring that programming of formation works covers critical and optimal locations in the future. GPR is an industry recognised methodology for assessing the condition of ballast. All other testing that has been undertaken is also considered appropriate for the acquisition of the information required. The information gained from this testing program will provide invaluable knowledge to assist in decision making for future strategies of formation strengthening works.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		
That the appropriate Customer approvals have been sought and documented		

Requirements	Comments	Risk

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $301,519*

That any changes of scope from approved scope were appropriately evaluated and justified	From the information provided no changes of scope have been applied.	1

Overall Comment	The project provides a knowledge base which can aid decision makers in creating a proactive and risk based prioritisation program for formation strengthening works in the future. This will enable a move from a current "fix-on-fail" approach to a more structured and proactive risk based prioritisation approach. As such the work is considered prudent.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	From the information provided the work has been carried out by qualified engineers and geotechnical professionals	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.	The investigations being carried out are appropriate for the information required going forward.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	From the information provided the project is considered prudent in standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs to June 30, 2014 were $2,611,038 against the $2,886,000 approved budget. This represents 90.5% of the budget expended. A total of 1,324 kilometres of GPR data and other geotechnical testing was achieved. This averages to an approximate cost of $2,000 per kilometre which seems reasonable.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies			

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $301,519*

Value for money	In terms of reducing total capital costs without compromising safety and quality	Formation strengthening results in enhanced structural strength and integrity of the support for the track structure and as such will provide: • Potential reduction in speed restrictions • Reductions in risk of incidents/derailments caused by formation failures. • Reductions in costs associated with "fix-on-failure" incidents which have resulted in damage to other associated infrastructure due to formation failures	
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	Overall the costs for the extent of track tested appear reasonable and as the information may significantly reduce costs due to incidents/derailments the project is considered prudent.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $2,439,683*

Section 1 - Assessment Prudency of Scope

Overview	This was one of three ongoing projects related to the strengthening of the rail formation via either removal and replacement, re-building or injecting with lime slurry to increase rigidity of the formation. As much of the Central Queensland Coal Network was originally designed and constructed for lighter axle loads and less traffic than is currently carried, formation strengthening is a necessary activity to ensure the capacity of the formation meets the current tonnages to be hauled. Failures in formation can result in speed restrictions and/or derailments and such can cause major disruptions to operations. The works are necessary to maintain existing capacity and minimise disruptions to operations. The project scope remains consistent with previous CQCN formation strengthening projects endorsed by the QCA in previous years. Significant evaluation of options as part of the development of scope has been undertaken during the planning of the works and this year the works are supported by comprehensive testing and analysis of the formation condition across the network (refer Project 4203).

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	From the information provided the works submitted appear to have been completed within the required period.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Formation strengthening is used to reconstruct sections of track that are prone to failure or high risk locations such as areas adjacent to water courses or other areas prone to flooding. The risks of formation failure leading to derailment or losses of operational capacity due to speed restrictions provide the justification for this work to continue.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The procedures put in place for the works such as Lime Slurry Pressure Injection (LSPI) have been used successfully on the system and across industry for some years. There are several options considered for each location and requirement and from the information provided it is considered that appropriate analysis is undertaken to determine the most suitable, efficient and economical method for each location and failure mode.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The formation strengthening works increase the structural integrity of the track as a whole and reduce the risk of failures and potential derailments. As such this work aligns with regulatory and Access agreement requirements.	1
That the appropriate Customer approvals have been sought and documented		

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $2,439,683

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not applicable	

Overall Comment	From the information provided the project is considered prudent in scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	From discussions with Aurizon project management staff the works were undertaken to appropriate levels to meet industry standards for similar works. From the information provided works were completed consistent with the standard previously implemented and approved by the QCA as part of Aurizon's capital claims from 2005/06 to 2012/13.	1
Consistent with adjacent infrastructure.		1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		1
Fit for purpose for current and known future requirements.		1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	From the information provided the project is considered prudent in standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs are consistent with those from prior years for similar works in the Goonyella, Moura and Blackwater systems.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies		From the information provided the project is meeting contractual timelines. Due to the age of the asset and the effects of sustained seepage of contaminants it is envisaged that the work will continue for a number of years.	1
Value for money	In terms of reducing total capital costs without	Aurizon have undertaken considerable testing and analysis over the years to	1

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $2,439,683

	compromising safety and quality	ensure that programming of these works in the future will optimise location and risk to ensure works target areas of high traffic, poor soil quality and poor drainage.	
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	These works are considered critical to maintain the structural integrity of the track to meet its contractual requirements and minimise risks of derailment. From the information provided costs appear to remain consistent with this and scope delivered in previous years. Hence from the information provided the project is considered prudent in cost.

Type of project: TACA *System: Goonyella* *Expenditure Claim (excluding IDC): $4,499,581*

Section 1 - Assessment Prudency of Scope

Overview	This project is to upgrade and replace identified aged and below standard culverts in the Goonyella and Newlands systems. The culverts have been identified through routine track inspections as exhibiting signs of significant corrosion, degradation, concrete spalling and significant scour damage.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	From the information presented for review this is believed to be the case.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	As the number of culverts on the Goonyella system do not conform to current standards and are sensitive to overloading it is believed that there was sufficient justification to proceed with these works.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The solution does accommodate reasonable market demand estimates	1
- And that appropriate processes were implemented to evaluate alternatives	The only realistic alternative to culvert upgrades is imposition of speed and axle load restrictions. These were considered.	1
- And that the replacement strategy is consistent with asset age and composition	This is believed to be the case.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All work was undertaken in accordance with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Approval was sought to prioritise works at certain key locations.	1

Overall Comment	These works are considered prudent in terms of scope.

Type of project: TACA *System: Goonyella* *Expenditure Claim (excluding IDC): $4,499,581*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Upgrade of these culverts will facilitate unrestricted passage of normal coal traffic.	1
Consistent with adjacent infrastructure.	These works are consistent with the standard of adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes	1
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	These works are considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Insufficient data was provided to determine unit rates at each location but the overall costs are believed reasonable given the overall scale, nature and complexity of the work.	1
	Market conditions for engineering, equipment supply and construction	As with the sister Newlands culvert project (A.04145) the market was approached on a single source basis. Some commercial advantage may have been lost as a result, but the importance of completing these works in an expeditious manner is noted.	1
	Procurement processes	Given the procurement method the costs are considered reasonable.	1
The project has met contractual timeframes and project management efficiencies		The project is believed to have met this criterion.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	The option of not strengthening the affected culverts could have led to additional track quality problems. Execution of the works is therefore believed to have met this criterion.	1
	In terms of reducing future operational costs and increasing efficiencies	Meeting the criterion above also addresses this issue.	1
	- in terms of optimisation of whole of life considerations	Culvert strengthening will create a more reliable asset requiring less maintenance	1

Type of project: TACA *System: Goonyella* *Expenditure Claim (excluding IDC): $4,499,581*

	(has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	intervention so this criterion is believed to have been met.	
	In terms of alignment with supply chain and operational objectives	Avoidance of weight and speed restrictions meets the supply chain objective of maximising the throughput of product from pit to port.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Insufficient data was available to calculate unit rates for this work.					

Overall Comment	The works, overall, are considered prudent in terms of cost.

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $22,635,014

Section 1 - Assessment Prudency of Scope

Overview	This project involves the replacement of life expired and corroded fist fastened sleepers designed for 22.5TAL or 20TAL at identified sites within the coal systems with new 28TAL concrete sleepers with galvanised Pandrol 'e' clips. This upgrade will facilitate the current and future traffic task and provide an asset suitable for the corrosive elements within the coal network.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	This is believed to be the case. A sample of Track Validation Certificates has been viewed on the database administered by in house project delivery staff.
Is capital expenditure and not maintenance	Bulk resleepering works such as this are considered to be capital expenditure.
Creates an asset	Creates a renewed sleeper (and sometimes) ballast asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	This work is funded by Aurizon.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Given the age of the sleepers to be replaced, their comparatively low load capacity (20 or 22.5 TAL against typical modern train loadings of 26.5TAL) and safety issues arising from their continued use it is considered reasonable to have undertaken this work.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Improved safety, reliability and load capacity of the asset is deemed to accommodate reasonable market demand estimates.	1
- And that appropriate processes were implemented to evaluate alternatives	Alternatives were considered but replacement of the old fist type sleepers with new and heavier duty replacements is considered the most appropriate course of action. Sleeper supply is via a standing offer arrangement.	1
- And that the replacement strategy is consistent with asset age and composition	The replacement strategy replaces a previous Aurizon standard item with a modern alternative standard unit and is deemed consistent with asset age and condition.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All work was undertaken in accordance with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	No Change Requests have been sighted for this work.	1

Overall Comment	The work is considered prudent in terms of scope.

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $22,635,014

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	This is generally the case although it is noted that 28TAL sleepers are being laid when expected axle load is 26.5TAL.	1
Consistent with adjacent infrastructure.	The replacement of the previous standard fist fastening type sleeper with Pandrol e-clip units is noted as being standard across the Central Queensland Coal Network.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Use of the Pandrol e-clip sleeper is consistent with other infrastructure of a similar purpose.	1
Fit for purpose for current and known future requirements.	Give the sleeper capacity rating and expected applied axle loads these sleepers are fit for purpose as described.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The work is considered prudent in terms of standard although it is noted that there is a minor redundancy built into the load rating of the sleepers when compared with the expected applied axle loads.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Analysis of the SAP data supplied for review shows that overall the costs can be considered reasonable given the complexity of the task involved. There are, however, some examples where the costs are extremely high on a normalised per km basis but these are negated when the average costs for the whole year are considered.	1
	Market conditions for engineering, equipment supply and construction	The average rate for this work is comparable with that for the previous claim period. This is considered reasonable.	1
	Procurement processes	Sleepers are sourced via a standing offer arrangement.	1
The project has met contractual timeframes and project management efficiencies		This project was intended to form a program of work for the 2013/14 financial year. As such the expectation is that it would have been complete by 30th June with any remaining work transferred to a new project operating for 2014/5 year. It is, however, noted that	1

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $22,635,014

		the project remains ongoing so assessment of this criterion is difficult.	
Value for money	In terms of reducing total capital costs without compromising safety and quality	Bulk re-sleepering is undertaken using mechanised rather than manual methods. This is considered to reduce total capital cost while enhancing safety and quality.	1
	In terms of reducing future operational costs and increasing efficiencies	Replacement of the previous ageing sleeper asset should reduce operational costs and increase efficiency of the network.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes. For the current and reasonably foreseeable axle load task.	1
	In terms of alignment with supply chain and operational objectives	Completion of this work reduces the risk of derailment and consequent train delay.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Resleepering	Averaged at $418.30 per sleeper including disposal	Against rates used and accepted as prudent in previous claim	Similar to previous given the use of in-house staff and standing offer supply arrangements	n/a	Rate calculated using data supplied by PM and assuming 1550 sleepers per km of track

Overall Comment	This work is considered prudent in terms of cost.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $2,208,312*

Section 1 - Assessment Prudency of Scope

Overview	This is a safety and commercially driven project to upgrade life expired sleepers and rail in the Newlands system. Failure of this infrastructure would result in significant delays to the network. There is also a risk of derailment where track fails.In the past re-railing and re-sleepering activities have been undertaken independently, often resulting in teams coming back to a specific location only months after one product had been replaced. It is proposed to align these activities with sites within the re-rail program needing to be re-sleepered, and vice versa.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The sample of Track Validation Certificates reviewed all relate to works undertaken within the review period. On this basis it is believed that the submitted total is for works commissioned or in service in or before the 2013-14 claim period.
Is capital expenditure and not maintenance	System renewal of this type is considered to be capital expenditure.
Creates an asset	This work creates a renewed asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	The work is funded by Aurizon.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The age of the asset and the increase in axle load task over the life of the asset to a level in excess of the asset rating provides justification to proceed.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The solution reflects current market demands.	1
- And that appropriate processes were implemented to evaluate alternatives	These assets were installed in accordance with the relevant Aurizon engineering standards.	1
- And that the replacement strategy is consistent with asset age and composition	This replacement strategy is consistent with asset age and composition.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	This work was undertaken in accordance with Aurizon safe working requirements.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	None recorded.	

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $2,208,312

Overall Comment	The work is considered prudent in terms of scope

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	This installed works are consistent with existing standard and configuration.	1
Consistent with adjacent infrastructure.	The installed works are consistent with adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The installed works is consistent with existing infrastructure as described.	1
Fit for purpose for current and known future requirements.	The installed works are fit for purpose for both current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	This work is deemed prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs fall within a reasonable cost range for this type of work when considered from an industry wide perspective, although there is a wide variation of costs across the worksites within this project group.	1
	Market conditions for engineering, equipment supply and construction	External market conditions do not typically cause a great fluctuation in the cost of this type of work.	1
	Procurement processes	Via standing offer arrangements	1
The project has met contractual timeframes and project management efficiencies		From the information reviewed the project does appear to have met contractual timeframes and project management efficiencies.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Track upgrade before formation failure occurs reduces overall capital costs as described.	1
	In terms of reducing future operational costs and increasing efficiencies	Track upgrade increases the reliability of the network, thereby reducing future operational costs.	1

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $2,208,312*

	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Track upgrade reduces the likelihood of future formation failure, thereby optimising the whole life considerations of the overall asset.	1
	In terms of alignment with supply chain and operational objectives	A reliable system aligns with the supply chain objective of reliably transporting product from pit to port.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Per km upgrade	$1 – 2.2m	Although these figures show a broad range of costs they are believed to be comparable with other similar organisations.			

Overall Comment	Although there is a wide variation in per km rates at different project sites, the costs are considered prudent

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $6,409,698*

Section 1 - Assessment Prudency of Scope

Overview	The Powerhouse Balloon Loop track had deteriorated to the point where almost all the timber sleepers were marked as defective, the ballast was badly coal fouled, drainage was poor and some of the 47kg rail was at the end of its life. These factors made the infrastructure increasingly at risk of failure and/or derailment and as such in need of upgrade. The lengths covered for the upgrade comprised a distance of 4.8km on Powerhouse Loop 1 and 2.3km for Powerhouse Loop 2 and included replacement of the following assets: • Existing 60-3 type track (60kg/m rail, concrete sleepers, 200mm ballast) • Timber sleepers, damaged concrete fist sleepers and concrete 28TAL sleepers with Pandrol clips, galvanised shoulders & fastenings. • Fouled degraded ballast with new ballast

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The information provided indicates that the submitted total is for works completed.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	The condition of the track raised concerns due to increased risk of failure and/or derailment and hence the works were safety driven.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	There was no evidence provided that alternatives were evaluated, but in the professional experience of the reviewer the implemented solution appears reasonable.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition	The track in the location had reached the end of its life and was at high risk of failing or causing derailment.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Limited information is provided on the project compliance with regulatory requirements.	1
That the appropriate Customer approvals have been sought and documented	Not applicable	

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $6,409,698*

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Not applicable	

Overall Comment	Generally the project is considered prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The track will be upgraded to the minimum Civil Engineering Track Standards (CETS) standard applicable to yards with 28.5 tonne axle load traffic. Sleepers will be upgraded to current standard (28tal Pandrol concrete sleepers with galvanised shoulders & fastenings). Drainage work will be undertaken to the standard required to minimise future maintenance requirements. From the photographs provided the standard appears to be consistent with existing and adjacent infrastructure.	1
Consistent with adjacent infrastructure.		1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		1
Fit for purpose for current and known future requirements.		1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	Generally the project is considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The majority of scope for this project was completed in the 2013/14 year with expenditure to date of $6,409,698 against the $7,330,000 budget The project is ongoing but appears to be on budget.	1
	Market conditions for engineering, equipment supply and construction		1
	Procurement processes		1
The project has met contractual timeframes and project management efficiencies			1
Value for money	In terms of reducing total capital costs without compromising safety and quality	The work undertaken utilised 2 blocks of 9 day possessions allowing for the maximum cost & time efficiency by removing the need to remobilise, repeatedly initiate & remove possession and isolation arrangements and “cut in	1
	In terms of reducing future operational costs and increasing efficiencies		

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $6,409,698*

	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	and out" with track machinery and mobile plant.	
	In terms of alignment with supply chain and operational objectives		

Overall Comment	Generally the project is considered prudent in terms of cost.

Type of project: TACA *System: System Wide* *Expenditure Claim (excluding IDC): $4,741,463*

Section 1 - Assessment Prudency of Scope

Overview	This was one of three ongoing projects related to the strengthening of the rail formation via either removal and replacement, re-building or injecting with lime slurry to increase rigidity of the formation. As much of the Central Queensland Coal Network was originally designed and constructed for lighter axle loads and less traffic than is currently carried, formation strengthening is a necessary activity to ensure the capacity of the network meets contractual operational requirements. Failures in formation can result in speed restrictions and/or derailments and can cause major disruptions to operations. This project pertained to additional funding in order to continue formation strengthening on a prioritised basis throughout the network. The scope included the engineered repair of isolated and unspecified formation failures identified through inspections and geotechnical investigations.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	From the information provided the works submitted appear to have been completed.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes, the works enhance the structural integrity of existing formation.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes, the works are critical to minimise reduction in service levels or the event of an incident/derailment.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Formation renewal of this type enhances the ability of the network to meet reasonable market demand. It is understood that the alternative methods outlined above were considered to determine the most appropriate solution for each site of work, but this has not been demonstrated in the documentation supplied for review. This replacement strategy is, however, consistent with the age and composition of the asset.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The works were undertaken in accordance with Aurizon safe working requirements.	
That the appropriate Customer approvals have been sought and documented	Not applicable – however the consequences of not undertaking the works can lead to track geometry defects resulting in speed restrictions and/or line closures. The consequences to Customer services are higher operational costs, reduced network capacity and potential for derailments.	

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $4,741,463

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	From the information provided no changes of scope have been requested.	1

Overall Comment	The project provides a knowledge base which can aid decision makers in programming a proactive and risk based prioritisation program for formation strengthening works in the future. This will enable a move from a current "fix-on-fail" approach to a more structured risk base prioritisation proactive approach and this is considered prudent.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The reviewer has sighted the relevant standards and generally undertaken repair method for a typical formation failure. The approach developed by Aurizon appears to be consistent with existing and with industry expectations for similar type works and operational requirements.	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.	Yes	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	From the information provided the project is considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Generally the costs are considered reasonable considering the nature of the works, location and conditions. It is to be noted that due to variations in conditions at each site the actual costs incurred for each item of work may vary considerably.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies		The rate at which works were undertaken for these programs in the	

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $4,741,463

		primary stages was dependent upon climatic conditions and actual rate of formation failures occurring in each coal system. The acquisition of geotechnical data on the existing condition of the formation throughout the network and subsequent proactive planning has meant that projects are better able to meet contractual timeframes and project management efficiencies.	
Value for money	In terms of reducing total capital costs without compromising safety and quality	The works provide value for money and whole of life savings by minimising risks of catastrophic failure of formation causing damage to other infrastructure and rolling stock. Weak formation can also cause continual damage to rolling stock wheels which results in increased maintenance costs.	
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives	The project is in alignment with supply chain objectives through potentially reducing operational costs and minimising risks of speed restrictions, line closures and derailment.	

Overall Comment	From the information provided the project is considered reasonable in terms of cost.

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $1,547,959*

Section 1 - Assessment Prudency of Scope

Overview	This project involves reconstruction works to upgrade Callemondah Arrival Roads 4 & 5. The works include the reconstruction of the base slab to the provisioning shed, which has deteriorated to the extent that the rails have come loose and are deflecting into the slab.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	From the information provided it appears the works have been completed in the 2013-14 period.
Is capital expenditure and not maintenance	Yes
Creates an asset	The deteriorated slab on the arrival roads 4 &5 at Callemondah was raising safety concerns of increased likelihood of a derailment. The reconstruction of this slab creates a safe asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes, however on review of the Network Ownership Diagram there are a number of provisioning sheds located in the area. Confirmation is sought to complete the prudency review that the works are on Aurizon Network owned asset and not relating to Operating assets.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Given the risks of derailment and the importance of the rail system within the provisioning facilities to provide re-fuelling and general maintenance it is considered that these works were justified in proceeding.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The replacement strategy is consistent with the asset age and condition. The works were considered essential due to the increased risk of derailment with the deteriorating slab integrity and its reduced capacity to support to the track structure and the weight of rail traffic.	1
- And that appropriate processes were implemented to evaluate alternatives		
- And that the replacement strategy is consistent with asset age and composition		
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental		
That the appropriate Customer approvals have been sought and documented	Not applicable	

Overall Comment	Overall the works for the project were considered to be prudent in engineering scope but clarification is required as to whether the full provisioning facilities are wholly owned by Aurizon Network or partially owned by Aurizon Operations.

Type of project: TACA *System: Blackwater* *Expenditure Claim (excluding IDC): $1,547,959*

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The works appear to be consistent with existing and adjacent infrastructure.	1
Consistent with adjacent infrastructure.		
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		
Fit for purpose for current and known future requirements.	The slab only was reconstructed, drainage was considered adequate and therefore not changed,	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	Not applicable

Overall Comment	The works for the project were considered to be prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Total expenditure was $1,547,959 against the approved $1,554,000.	1
	Market conditions for engineering, equipment supply and construction		
	Procurement processes		
The project has met contractual timeframes and project management efficiencies		This project has reached a financial close. As such this will be the last claim against this project.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	The works were essential due to the significant risks of derailment due to poor strength of the track structure caused by the deteriorating slab. The works align with operational objectives by removing the requirement for speed restrictions and minimising the risks of incident/derailment and subsequent delays to operations.	1
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives		

Overall Comment	From the information provided the project is considered prudent in terms of cost.

Type of project: TACA System: Blackwater Expenditure Claim (excluding IDC): $2,121,909 revised

Section 1 - Assessment Prudency of Scope

Overview	The project was established to facilitate the early reopening of elements of the Central Queensland Coal Network rendered unusable by the January 2013 flood event.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	Yes. Works were completed during fy14.
Is capital expenditure and not maintenance	This project is only partially CAPEX, as outlined in the memo of 9th July 2013, Capitalisation of Flood Costs. During the review it was queried whether a portion of the works (ballast replacement and undercutting) were maintenance and not renewal. As a result, it was noted that the ballast undercutting may have been claimed as maintenance in the FY13 flood event claim, hence the value of this claim is expected to reduce by approximately $7m.
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	The amount claimed is funded by Aurizon, and is not the subject of an insurance claim.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes. Works had to proceed in order to reopen flood damaged sections of the network.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	n/a – this work reinstated, on a largely like for like basis, elements of the network either damaged or washed away by the January 2013 Central Queensland flood event.	1
- And that appropriate processes were implemented to evaluate alternatives	Assessment was undertaken to determine the amount of work required at each site of flood damage. Alternatives were considered, where appropriate.	1
- And that the replacement strategy is consistent with asset age and composition	The replacement strategy was consistent with the damage sustained at each site.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works were undertaken in accordance with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	Customer desire was to reopen the line at the earliest opportunity to resume product transport.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	Work at each site was the subject of a Client Requirement Brief	1

Type of project: TACA System: Blackwater Expenditure Claim (excluding IDC): $2,121,909 revised

Overall Comment	The project works are considered to be generally prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Works were consistent with the existing standard and configuration of adjacent assets.	1
Consistent with adjacent infrastructure.	As above.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes	1
Fit for purpose for current and known future requirements.	A sample of Client Requirements Briefs and Inspection and Test Plans was reviewed. In general the repaired asset was left in a state fit for purpose for current and known future requirements. It is noted that for work arising consequent to the embankment failure at ch. 82.3km near Mount Rainbow on the Moura line, Parsons Brinckerhoff (PB) were engaged to assess the embankment failure and make a recommendation for reinstatement of the line. This work involved a slew of the track. The associated Client Requirement Brief references the PB work but then suggests the track slew is reversed.	2

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The project works are considered to be generally prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The scale, nature and complexity of work was different at each site, but overall costs are considered reasonable.	1
	Market conditions for engineering, equipment supply and construction	Market conditions at the time were difficult in the affected area due to the high demand for flood reinstatement works.	1
	Procurement processes	This was not demonstrated.	1
The project has met contractual timeframes and project management efficiencies		The project objective was to reopen the line at the earliest opportunity.	1

Type of project: TACA System: Blackwater Expenditure Claim (excluding IDC): $2,121,909 revised

Value for money	In terms of reducing total capital costs without compromising safety and quality	In this case reinstatement of the line was seen to be a higher priority than reduction of total capital costs.	1
	In terms of reducing future operational costs and increasing efficiencies	n/a	
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	n/a	
	In terms of alignment with supply chain and operational objectives	Against the option of hauling product coal by road early reinstatement of the rail corridor aligned with supply chain objectives.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Not applicable					

Overall Comment	This work is comparatively 'bitty' in nature with a wide variety of scoped work to be undertaken at each site affected by the flood. In addition the SAP and supporting data supplied for review do not lend themselves to a site by site assessment of costs for benchmarking against industry standards. Further, the work was required to be undertaken on a 'short notice' to ensure the line could be reopened at the earliest opportunity and at a time when construction and remediation resources in the affected would have been thinly spread. A proportion of the work was undertaken by in-house resources, some of whom were operating away from their normal location. Other works were completed by external contractors. Having reviewed the summary sheet of work items included in the claim, and accepting that undercutting works are to be removed from this, it is deemed that the remaining claim is prudent in terms of cost.

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $1,775,691 revised

Section 1 - Assessment Prudency of Scope

Overview	This project is for the track upgrade works at Dawson River and Plum Tree Creek, also the replacement of Glued Insulated Joints (GIJs) and the renewal of formation at specified locations. The proposed works were identified through the standard Aurizon process of track inspections and defect monitoring, and highlighted as priority sites for remedial action.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No completion certificates have been provided for review but as this is a specific FY14 project and work would have been completed during track closure periods and taken into use immediately thereafter it is believed that the submitted total is for works commissioned or in service during or before the 2013-4 claim period.
Is capital expenditure and not maintenance	Yes, this is upgrade work at key sites identified by track inspections and defect monitoring.
Creates an asset	This work creates a renewed asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	This work is funded by Aurizon.
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Given the reliability implications of not undertaking this work Aurizon had reasonable justification to proceed.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The work does accommodate reasonable market demand estimates.	1
- And that appropriate processes were implemented to evaluate alternatives	Alternatives were considered but given that the reason for the upgrade was a combination of corroded rail and life expired fist fastened sleepers upgrade was the only realistic option. For Glued Insulated Joints it is Aurizon standard practice, for reliability issues, for existing 4 hole joints to be replaced with more robust 6 hole joint units.	1
- And that the replacement strategy is consistent with asset age and composition		1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	All works were undertaken in accordance with Aurizon safe working procedures.	1
That the appropriate Customer approvals have been sought and documented	n/a	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	These were priority sites and no evidence of change of scope has been sighted.	1

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $1,775,691 revised

Overall Comment	Scope identification and development followed normal Aurizon procedures. The project is therefore considered prudent in terms of scope.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The work is consistent with existing asset standard and configuration, also with adjacent infrastructure and existing infrastructure with a similar purpose.	1
Consistent with adjacent infrastructure.		1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).		1
Fit for purpose for current and known future requirements.	The asset created is fit for purpose for current and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The work was completed using standard machinery and materials, and the project is considered prudent in terms of standard.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The project is composed of three different types of work. The costs for undercutting works are considered reasonable. Those for formation upgrade, however, are considered to be comparatively high but this can be explained by the very short (50m or less) lengths of work undertaken. Assessment of the costs for GIJ replacement cannot be undertaken as there is no data to confirm how many joints were replaced.	1
	Market conditions for engineering, equipment supply and construction	This work was undertaken using in house resources and standard materials. Market conditions are therefore not considered to be a major factor in the project costs.	1
	Procurement processes	n/a	

Type of project: TACA System: System Wide Expenditure Claim (excluding IDC): $1,775,691 revised

The project has met contractual timeframes and project management efficiencies		This is a one year only project and from the documentation provided for review it is believed that all programmed undercutting and formation renewal works were completed. No documentation was available to confirm that all programmed GIJ replacements had been completed.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes, completion of this will help to minimise the transfer of excessive loads through the ballast and therefore reduce overall costs while improving quality, safety and ongoing maintenance requirements.	1
	In terms of reducing future operational costs and increasing efficiencies		
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.		
	In terms of alignment with supply chain and operational objectives	Improvements in network quality, reliability and safety align with the supply chain objective to maximise product throughput.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Undercutting	$2,630,316/km	Yes	Not material	Ongoing contractual arrangements	Within the lower end of expectations
Formation Renewal	$9,036,092/km	Yes	Not material	Ongoing contractual arrangements	Unit rate higher than generally expected but very short lengths completed
GIJ Replacement	n/a	n/a	n/a	n/a	Insufficient data provided to be able to calculate this

Overall Comment	The project contains three distinct work streams. Costs for the ballast undercutting works are considered to fall within the lower end of expectations and are considered prudent. Per km unit rate costs for formation upgrade are considered higher than would normally be expected but as the lengths of track involved are very short (58m or less) the costs are still assessed as prudent. Costs for the replacement of Glued Insulated Joints could not be assessed as no data was available to confirm the number of joints replaced. During the review process it was agreed that the claim for costs for this latter work stream would be deferred to FY15.

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $866,136

Section 1 - Assessment Prudency of Scope

Overview	The project includes a LAN WAN architecture study for a budget of $144,000 and the actual deployment of the LAN WAN network for a budget of $850,000. The scope of the project to build of a common network that can transport data for various operational systems and administration/business network traffic is considered prudent. The WAN and some LANs were deployed during the claim period but the LAN to connect the ION meters was not and the project team is currently awaiting additional funding to be able to connect the ION meters. Connection of the ION meters was one of the main justifications in the MFR.

Requirements	Comments
Is below-rail infrastructure	Yes, this network is a telecommunication infrastructure carrying data related to below rail trackside equipment.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The WAN (Wide Area Network) and some LANs were deployed during the claim period but the LAN to connect the ION meters was not and the project team is currently waiting for additional funding to be able to connect the ION meters. Connection of the ION meters was one of the main justifications in the MFR.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not applicable	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	There is no evidence of any changes from the approved scope.	

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $866,136

Overall Comment	The project includes a LAN WAN architecture study for a budget of $144,000 and the actual deployment of the LAN WAN network for a budget of $850,000. The scope of the project to build of a common network that can transport data for various operational system and administration/business network traffic is considered prudent. The WAN (Wide Area Network) was deployed by 30th June 2014. Some LANs (Local Area Network) were also deployed, but the LAN to connect the ION meters was not deployed and the project team is waiting for additional funding to facilitate connection to the ION meters. Connection of the ION meters was one of the main justifications in the MFR.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The network is using proven and widely used standards (IP, Ethernet, Fibre optic interface,...) and products (CISCO)	1
Consistent with adjacent infrastructure.	The network will include the necessary interface to adjacent infrastructure equipment.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The network is using proven and widely used standards (IP, Ethernet, Fibre optic interface)	1
Fit for purpose for current and known future requirements.	The standard used are future proven (IP, Ethernet, Fibre optic interface...),	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	Standard is considered prudent as the network is using proven and widely used standards (IP, Ethernet, Fibre optic interface) and products (CISCO)

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs are considered reasonable in regard to the scope of work and the use of best in class product (CISCO)	1
	Market conditions for engineering, equipment supply and construction	Not assessed.	
	Procurement processes	Comparison was made between HP, Juniper and CISCO products.	1
The project has met contractual timeframes and project management efficiencies		No, The WAN and some LANs were deployed during the claim period but the LAN to connect the ION meters was not and the project team is currently awaiting additional funding to be able to	1

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $866,136

		connect the ION meters. Connection of the ION meters was one of the main justifications in the MFR.	
Value for money	In terms of reducing total capital costs without compromising safety and quality	The delivered solution did not compromise quality of the works	1
	In terms of reducing future operational costs and increasing efficiencies	The delivered solution will reduce operational costs as the network is a common network that transports data for various operational systems as well as administration/business network traffic.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	As far as is reasonably possible in relation to network technologies.	
	In terms of alignment with supply chain and operational objectives	The project delivers cost and operational efficiencies hence is in line with supply chain and operational objectives	

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Project Management	12,7%	10 to 15%			In line with industry benchmark
Design	17%	15 to 20%			In line with industry benchmark

Note: It was not possible to assess the equipment part as bill of material was not available. However the costs seem in line with the network topology provided using CISCO equipment.

Overall Comment	Costs are considered reasonable in regard to the scope of work and the use of best in class products (CISCO).

3978 O/F Transmission Network Upgrade Rockhampton to Gladstone 34

Type of project: Telecoms *System: Blackwater* *Expenditure Claim (excluding IDC): $709,993*

Section 1 - Assessment Prudency of Scope

Overview	The project scope is to replace life expired old generation SDH and PDH equipment. The technology of the new equipment is SDH and PDH and not the more modern IP/Ethernet - MPLS equipment because the new telecom equipment has to interface with signalling equipment which only has PDH /SDH interfaces.

Requirements	Comments
Is below-rail infrastructure	Yes, the telecom infrastructure is built to carry data related to trackside equipment including signalling.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	The network was in operation during the claim period and can be controlled and monitored through the network management system.
Is capital expenditure and not maintenance	Yes – this is provision of new equipment to replace life expired assets
Creates an asset	Yes (telecom network asset)
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes - the new equipment is replacing life expired assets.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes.	1
- And that appropriate processes were implemented to evaluate alternatives	Yes (refer to MFR)	1
- And that the replacement strategy is consistent with asset age and composition	Yes - the old equipment was installed during the 1980's	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	n/a	1
That the appropriate Customer approvals have been sought and documented	This project does not require customer approval.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	The scope of project was not changed.	

Type of project: Telecoms *System: Blackwater* *Expenditure Claim (excluding IDC): $709,993*

Overall Comment	The scope of the project is to replace life expired SDH and PDH telecom equipment, some of which was installed in the 1980's. The new equipment also uses the mature SDH and PDH technology rather than more recent IP/Ethernet technology. This is because the new equipment is required to interface with existing signalling equipment which does not have IP/Ethernet compatibility.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Yes - SDH/PDH are mature standards.	1
Consistent with adjacent infrastructure.	The SDH/PDH equipment are designed to interface with existing signalling equipment.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The SDH/PDH equipment deployed (Nokia and Ericsson) has already been deployed on other parts of the network for similar applications.	1
Fit for purpose for current and known future requirements.	The equipment is fit for current purpose. SDH/PDH technology is a very mature technology that is now in the declining phase but is still widely deployed for time critical applications like railway control systems. The choice of this technology is imposed by the existing equipment and in particular the signalling equipment which does not have Ethernet connection. Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to an equipment life span of at least 15 years.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The equipment is fit for current purpose. SDH/PDH technology is a very mature technology that is now in the declining phase but is still widely deployed for time critical applications like railway control systems. The choice of this technology is imposed by the existing equipment and in particular the signalling equipment which does not have Ethernet connection. Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to an equipment life span of at least 15 years.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are	Scale, nature and complexity	Costs are reasonable for the scope of work.	1

Type of project: Telecoms System: Blackwater Expenditure Claim (excluding IDC): $709,993

considered reasonable considering:	Market conditions for engineering, equipment supply and construction	As the market for SDH/PDH equipment is declining prices for this technology are stable.	1
	Procurement processes	No information was provided but the selected equipment is used on other parts of the Aurizon network.	1
The project has met contractual timeframes and project management efficiencies		Yes	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	This is high quality equipment which did not compromise safety or quality.	1
	In terms of reducing future operational costs and increasing efficiencies	The renewed equipment will be more reliable and therefore reduce maintenance costs.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Taking in account the constraints (mainly to be able to interface with interlocking equipment without Ethernet connection) the project is bringing overall cost optimization.	1
	In terms of alignment with supply chain and operational objectives	The selected equipment is used on other parts of the Aurizon network.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments
Project Management	15.9%	10 to 15%			Project management slightly above benchmark.

Note: Benchmark on equipment could not be performed as detailed bill of material was not available.

Overall Comment	Taking in account the strong external constraints due to legacy equipment, the cut over operations and the location, the costs are considered prudent.

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

Section 1 - Assessment Prudency of Scope

Overview	The project consists of replacing life expired microwave transmission equipment with new generation equipment supplied by NEC. The project also includes the construction of a new transmission tower in Moranbah as the current site at Goonyella suffers from path obstacles generated by the growing stockpiles at Goonyella mine.

Requirements	Comments
Is below-rail infrastructure	Yes (transmission backbone carrying information related to infrastructure equipment).
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No. The equipment is not in service and the majority of the claim is for design and the procurement of equipment still in storage as of 30th June 2014.
Is capital expenditure and not maintenance	Yes
Creates an asset	Telecom equipment is an asset.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes, much of the old microwave transmission equipment is life expired. While it is accepted that the site of the existing tower at Goonyella suffers suffers from path obstacles generated by the growing stockpiles at the mine site, there is no evidence that consideration was given to increasing the height of this rather than developing a new site. It should, however, be noted that the construction of the new tower is not part of the current claim.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Not applicable	
- And that appropriate processes were implemented to evaluate alternatives	Yes - alternative installation of a fibre optic network and use of telco services was evaluated.	1
- And that the replacement strategy is consistent with asset age and composition	Yes, much of the old microwave transmission equipment is life expired.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	This was not demonstrated.	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	n/a	

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Overall comment	The replacement of the old Siemens SRT1-C by next generation NEC equipment is prudent, as is the search for a solution to the radio path obstacles suffered by the existing tower at the Goonyella site..

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The selected equipment (NEC 5000s) is a mature product introduced in 2007 using the existing standards and technologies. NEC is one of world leader in microwave transmission equipment.	1
Consistent with adjacent infrastructure.	Yes. Aurizon mentioned that the NEC microwave equipment is installed in other parts of the Aurizon network.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Yes.	1
Fit for purpose for current and known future requirements.	The product is fit for purpose. NEC 5000s is a mature product introduced in 2007 and will be put in service in 2015. Aurizon could have selected a newer product, but it is considered that the overall total cost of ownership may not have been considering that the NEC 5000s is deployed on other part of the Aurizon network.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	NEC 5000s is a mature product that was introduced in 2007 – the equipment procured for this project will be put into service in 2015. Although it is considered that Aurizon could have selected a newer product it is acknowledged that NEC 5000s are already deployed on other parts of the Aurizon Network, and NEC is one of the world leaders in microwave transmission equipment.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs of the purchased telecom equipment seem reasonable.	1
	Market conditions for engineering, equipment supply and construction	Yes.	1
	Procurement processes	Aurizon explain that a saving of up to 40% was secured by purchasing the equipment prior to the cessation of the price guarantee under the tender arrangement and the change in the	1

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

		international exchange rate. There is no evidence that such saving would have been higher or lower if the equipment had been purchased in 2015.	
The project has met contractual timeframes and project management efficiencies		The project is ongoing. The amount claimed for year 2012/13 and year 2013/14 is less than 50% of amount indicated in the MFR.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Yes	1
	In terms of reducing future operational costs and increasing efficiencies	Yes.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Not assessed	
	In terms of alignment with supply chain and operational objectives	NEC is one of world leader in microwave transmission equipment.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: As the project total costs at termination are not known, it was not possible to assess specific unit rates.

Overall Comment	The majority of costs included in the claim are for procurement of telecom equipment in storage in Emerald. While the costs of the purchased telecom equipment is reasonable, the project is not complete and the 80% completion threshold has not been met. The overall project costs can therefore not be assessed as prudent at this stage.

Type of project: Telecoms *System: System Wide* *Expenditure Claim (excluding IDC): $0 revised*

Section 1 - Assessment Prudency of Scope

Overview	The project consist in replacing the old RTU (Remote Terminal Unit of the SCADA) telecommunication modules (using V34 modems) with Ethernet modules and upgrading the telecommunication network to be able to connect the retrofitted RTUs to the Ethernet network.

Requirements	Comments
Is below-rail infrastructure	Yes
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No, as of June 2014, most of equipment was not in service. Most of the costs were spent on design project management and data communication/RTU modules procurement. No indication was given on when the system will be put in service.
Is capital expenditure and not maintenance	Yes
Creates an asset	Yes
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes. The project includes the replacement of life expired modules, some of them with high failure rates.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	Yes	1
That the appropriate Customer approvals have been sought and documented	Not applicable.	

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified		

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

Overall Comment	The replacement of life expired modules and replacement of V34 modems by Ethernet modules is prudent. But as of June 2014, most of equipment was not in service. Most of the costs were spent on design project management and data communication/RTU modules procurement.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	Yes, Ethernet is most commonly used telecommunication interface standard in the world and in SCADA. The selected products are mature products.	1
Consistent with adjacent infrastructure.	Yes	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	Not applicable.	
Fit for purpose for current and known future requirements.	Yes. Semaphore (Kingfisher) is a medium size supplier of RTUs.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	

Overall Comment	Ethernet is the most commonly used telecommunication interface standard in the world and in SCADA. The selected products are mature products. Semaphore (Kingfisher) is a medium size supplier of RTUs with support centre in Melbourne

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The costs of the equipment are considered reasonable. Costs of design are considered to be on the high end. It is not possible to assess the prudency of cost of the full project as the cost at completion was not provided.	1
	Market conditions for engineering, equipment supply and construction	Yes	1
	Procurement processes	Not assessed	
The project has met contractual timeframes and project management efficiencies		No, per schedule included in MFR the project was supposed to be completed by end year 2013/2014.	1
Value for money	In terms of reducing total capital costs without	Yes	1

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

	compromising safety and quality		
	In terms of reducing future operational costs and increasing efficiencies	Yes. Project includes the replacement of life expired modules, some of them having high failure rates.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Yes.	1
	In terms of alignment with supply chain and operational objectives	Not assessed	

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: As the project total costs at termination are not known and bill of material of procured items is not available, it was not possible to assess specific unit rates.

Overall Comment	The costs of the equipment are considered reasonable. Costs of design are considered to be on the high end. The project is not complete and expenditure suggests the work is below the 80% completion threshold. It is not possible to assess the cost of the full project as prudent at this time and it is recommended that this project is deferred to the next claim or when complete so that an informed assessment of cost can be undertaken.

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

Section 1 - Assessment Prudency of Scope

Overview	The scope to be delivered under this concept funding is to deliver a strategy and recommendation for the replacement of Aurizon existing radio systems. This project will allow Aurizon to complete documentation to progress through to the feasibility and implementation phases of the project.

Requirements	Comments
Is below-rail infrastructure	The study relates to below rail infrastructure (radio trackside network).
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No, the work was not completed by 30 June 2014. The document 'Concept Stage – Technology Research and Review' was delivered in December 2014 and is a significant part of the study.
Is capital expenditure and not maintenance	The study does not relate to maintenance and once finished will potentially be an asset.
Creates an asset	The two documents 'Concept phase – Existing Systems Review 05/03/14' and 'Concept Stage- Client Requirements – 29 May 2014' do not create an asset although they are documents that can potentially create an asset once the concept study is finalised and delivers a strategy and recommendations for the replacement of Aurizon existing radio systems.
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes. Aurizon is required by ACMA to reallocate some of the radio channels by December 2018. Moreover some radio equipment is life expired.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	The client requirements are based on a reasonable market demand estimate.	1
- And that appropriate processes were implemented to evaluate alternatives	The scope of the study is to evaluate alternatives. The evaluation was not completed as of 30th June 2014.	1
- And that the replacement strategy is consistent with asset age and composition	Part of the scope of the study is to evaluate the replacement strategy.	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	The study has to take in account the ACMA regulatory requirements for the use of radio spectrum.	1
That the appropriate Customer approvals have been sought and documented	Not applicable (internal study)	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	No changes of scope	

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

Overall Comment	the replacement of Aurizon existing radio systems was not delivered during the claim period. The two documents 'Concept phase – Existing Systems Review 05/03/14' and 'Concept Stage-Client Requirements – 29 May 2014' do not create an asset although they are documents that can potentially create an asset once the concept study is finalized and delivers a strategy and recommendations for the replacement of Aurizon existing radio systems.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	The study includes the review of existing standards.	1
Consistent with adjacent infrastructure.	The study has to take in account the adjacent radio networks and ensure that during migration from existing system to the new system, the radio network will be kept consistent with the adjacent infrastructure.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The study has to take in account the existing radio network infrastructure.	1
Fit for purpose for current and known future requirements.	The new radio system will have to be fit for purpose and known future requirements.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	The study has to ensure that the new radio network will use standards that will be fit for purpose and known future requirements. The review of the radio standards was not part of the two documents delivered by 30th June 2014.

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	The prudency of claimed costs cannot be assessed as the study is not finished. The costs claimed cover the preparation of the two documents released by June 2014 but also part of the preparation of documents delivered thereafter. We recommend that Prudency of costs be assessed at the end of the study.	1
	Market conditions for engineering, equipment supply and construction	Not assessed.	1

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

	Procurement processes	The study is performed by resources internal to Aurizon and consultants working at Aurizon office. The procurement of the Aurizon consultants was not assessed.	1
The project has met contractual timeframes and project management efficiencies		No, the schedule in the MFR shows that the study should have been completed in year 2012/2013.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	Study aims at reducing total capital costs without compromising safety and quality related to radio network.	1
	In terms of reducing future operational costs and increasing efficiencies	The study will recommend how to reduce operational costs and increase efficiencies. This part of the study was not included in the two documents released before 30 June 2014.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	The study will optimize the total cost of ownership and optimisation from CAPEX to OPEX. This part of the study was not included in the two documents released before 30 June 2014.	1
	In terms of alignment with supply chain and operational objectives	Not applicable at this stage of the study.	

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: The study was not complete as of June 2014, thus it is not possible to assess specific unit rates.

Overall Comment	The prudency of claimed costs cannot be assessed as the study is not finished. The costs claimed cover the preparation of the two documents released before 30th June 2014 but, probably, also part of the costs related to the preparation of the report dated 1 Dec 2014. It is recommended that prudency of costs be assessed at the end of the study.

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

Section 1 - Assessment Prudency of Scope

Overview	The project scope is to replace life expired SDH and PDH equipment, some of which dates back to the 1980's) with new generation SDH/PDH equipment.

Requirements	Comments
Is below-rail infrastructure	Yes, the telecom infrastructure is built to carry data related to trackside equipment including signalling.
The submitted total is for works completed, and the asset is commissioned or in service in or before the 2013-14 period	No, the project was completed after June 2014 with equipment brought into service as of February 2015. Most of the costs incurred during the claim period were for design, project management and procurement of equipment.
Is capital expenditure and not maintenance	Yes (deployment of new equipment to replace equipment that reached end of life)
Creates an asset	Yes (telecom network asset)
Funded by Aurizon Network, or the proportion funded by Aurizon Network is clearly stated	Yes
That Aurizon Network had reasonable justification to proceed, given the circumstances relevant at the time of the decision	Yes. The new equipment is replacing equipment that reached end of life and is required to interface with existing signalling equipment.

Requirements	Comments	Risk
That the solution accommodates reasonable market demand estimates	Yes.	1
- And that appropriate processes were implemented to evaluate alternatives	Yes	1
- And that the replacement strategy is consistent with asset age and composition	Yes, the old equipment was installed during the 1980's	1
The extent of compliance to Aurizon regulatory requirements, including WHS and environmental	NA	
That the appropriate Customer approvals have been sought and documented	This asset renewal project does not require Aurizon customer approval.	1

Requirements	Comments	Risk
That any changes of scope from approved scope were appropriately evaluated and justified	The scope of project was not changed.	1

Overall Comment	The project was completed after June 2014 (however equipment was no in service until February 2015). As of June 2014, most of the costs incurred were for design, project management and procurement of equipment. Therefore as the project was not commissioned in the 2013-14 financial year it cannot be

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

	considered prudent for the 2013-14 claim and it is recommended that this project be re-submitted in the 2014-15 claim.

Section 2 - Assessment Prudency of Standard

Requirements	Comments	Risk
Consistent with existing standard & configuration.	SDH/PDH are mature standards.	1
Consistent with adjacent infrastructure.	The SDH/PDH equipment is designed to interface with existing signalling equipment.	1
Consistent with existing infrastructure with similar purpose (where existing infrastructure has been accepted as reasonable).	The SDH/PDH equipment deployed (Nokia and Ericsson) has already been deployed on other parts of the Aurizon network for similar applications.	1
Fit for purpose for current and known future requirements.	The equipment is fit for current purpose. SDH/PDH technology is a very mature technology that is now in the declining phase but is still widely deployed for time critical applications like railway control systems. The choice of this technology is imposed by the existing equipment, and in particular, the signalling equipment that does not have Ethernet connection. Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to an equipment life span of at least 15 years.	1

In circumstances where there is a departure from existing standards, has sufficient justification been provided	n/a

Overall Comment	SDH/PDH technology is a very mature technology that is now in the declining phase but is still widely deployed in 2014 for time critical applications like railway control systems. The choice of this technology is imposed by the existing equipment (and in particular the signalling equipment that does not have Ethernet connection). Aurizon indicated that the suppliers (Ericsson and Nokia) have committed to an equipment life span of at least 15 years

Section 3 - Assessment Prudency of Cost

Requirements	Comments	Comments	Risk
The project costs are considered reasonable considering:	Scale, nature and complexity	Costs are aligned with industry benchmarks and the scope of work (purchase of equipment, installation of optical fibre patch panel and switch over from old to new equipment)	1
	Market conditions for engineering, equipment supply and construction	Market conditions for SDH/PDH equipment are very stable stable pricewise as the industry sales volumes are declining.	1

Type of project: Telecoms System: System Wide Expenditure Claim (excluding IDC): $0 revised

	Procurement processes	The selected equipment are already installed on other parts of the Aurizon network.	1
The project has met contractual timeframes and project management efficiencies		The project was completed after expiry of the claim period with equipment brought into service in February 2015. Most of the costs incurred during the claim period were for design, project management and procurement of equipment.	1
Value for money	In terms of reducing total capital costs without compromising safety and quality	This is high end equipment from Ericsson and Nokia and as such did not compromise safety or quality.	1
	In terms of reducing future operational costs and increasing efficiencies	Renewal of this equipment will reduce operational costs by offering greater reliability than would otherwise be the case.	1
	- in terms of optimisation of whole of life considerations (has adequate consideration been applied to ensure optimisation from CAPEX and OPEX perspectives.	Taking into account the technical constraints noted above the project is bringing overall cost optimization.	1
	In terms of alignment with supply chain and operational objectives	The selected equipment is already installed on other parts of the Aurizon network.	1

Assessment of specific unit rates

Item	Rate	Industry benchmarked	Prevailing market conditions	Efficient and compliant procurement processes	Comments

Note: As project is not completed and the project total costs at termination are not known, it was not possible to assess specific unit rates.

Overall Comment	The cost of equipment purchased is considered reasonable but the project work is not complete and actual expenditure against budget suggests it has not yet reached the 80% completion threshold for consideration in this claim. It is not possible to assess the overall project costs as prudent at this stage.