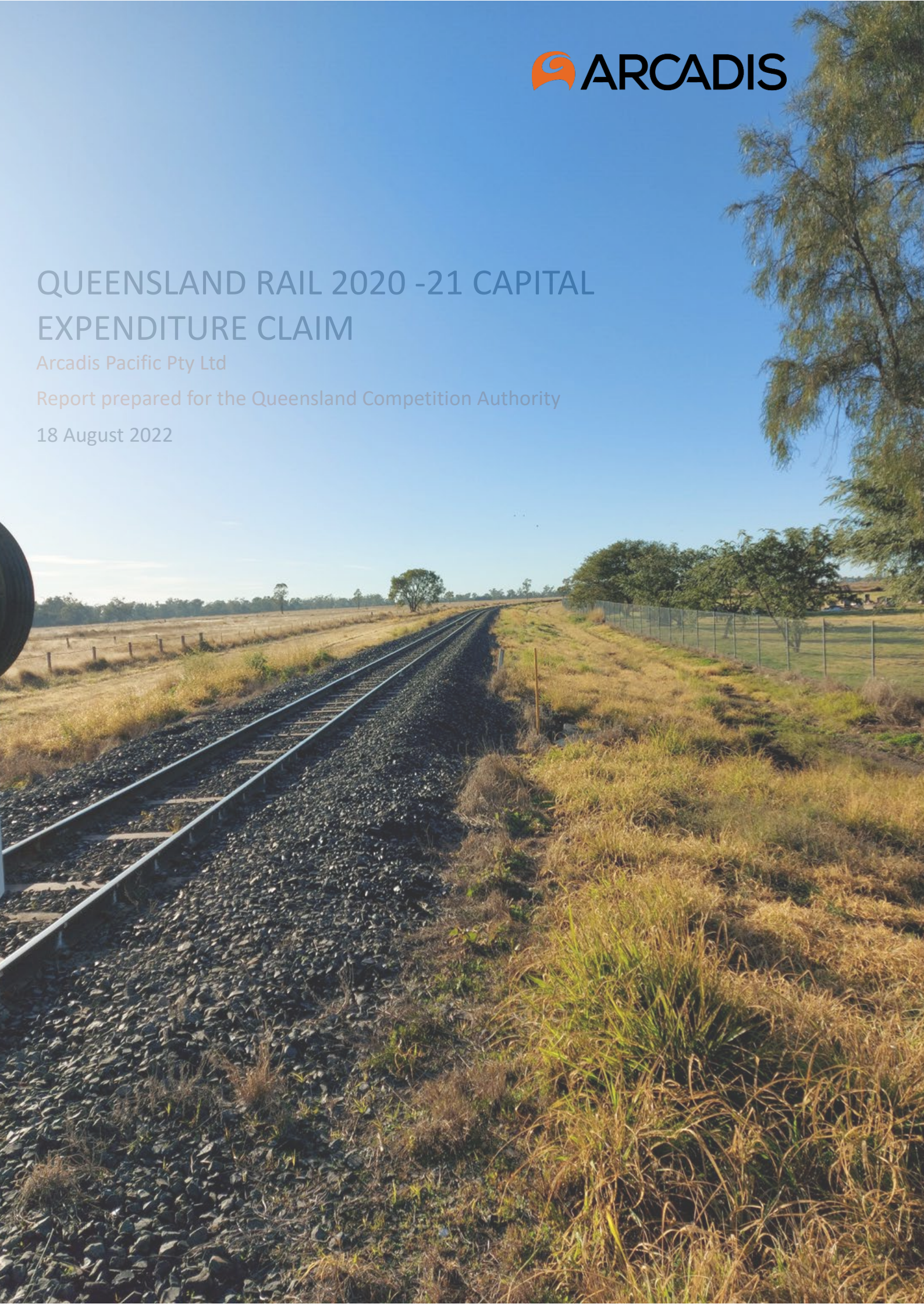

QUEENSLAND RAIL 2020 -21 CAPITAL EXPENDITURE CLAIM

Arcadis Pacific Pty Ltd

Report prepared for the Queensland Competition Authority

18 August 2022

QUEENSLAND RAIL NETWORK 2020-21
Capital Expenditure Claim

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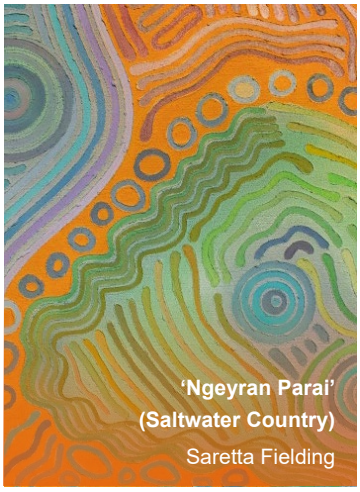
REVISIONS

Revision	Date	Details	Prepared by	Approved by	Issued to
A	31/07/2022	Draft for review	Eshan Gaindhar Pavan Dheram	C.Owen	QCA
B	17/08/2022	Final Draft	Eshan Gaindhar C.Owen	C.Owen	QCA
C	18/08/2022	Final		C.Owen	QCA



Arcadis acknowledges the Traditional Custodians of the land on which we work and live throughout Australia and recognize their continuing connection to Lands, Waters and Communities. We pay our respects Aboriginal and Torres Strait Islander Cultures and to Elders past, present and emerging.

Arcadis is committed to driving inclusion and diversity across our business. This includes specific and actionable policies that aim to make a positive impact on Aboriginal and Torres Strait Islander employment, education and a broader cultural change. Approved by Reconciliation Australia, Arcadis' Reconciliation Plan contains detailed and transparent strategies, targets and measurable actions. We continue to build respect, support education and create employment opportunities with Aboriginal and Torres Strait Island employees within our business.

Further information is available here.

CONTENTS

EXECUTIVE SUMMARY

Background

The Queensland Competition Authority (QCA) is an independent statutory body responsible for assisting with implementing competition policy in Queensland, and as part of this role regulates third party access to below-rail infrastructure operated by Queensland Rail. Arcadis was appointed by the QCA to provide an engineering assessment of the prudency and efficiency of the below rail infrastructure works on the West Moreton system undertaken in the capital claim for 2020-21.

The West Moreton System is one of seven systems within the Queensland Rail Network. It consists of 412 km of mainline and loop track between Rosewood in the East to Miles in the West. Based on variations in track configuration due to topography, soil types and traffic, the West Moreton System is split into three segments. These are:

- Rosewood to Toowoomba
- Toowoomba to Jondaryan; and
- Jondaryan to Miles.

The system comprises of two corridors:

- Rosewood to Jondaryan (combination of dual and single track with Remote Controlled Signalling (RCS) from Rosewood to Toowoomba, then Direct Train Control (DTC) From Toowoomba to Jondaryan); and
- Jondaryan to Columboola (single track with passing loops and DTC).

In terms of key customers, the West Moreton System is multi-use with coal, bulk freight and passenger train services using its track. From Rosewood to Toowoomba, coal dominates traffic on the system and is the key driver for asset strategies in the wider system. In 2020, short term forecasts for the coal tonnage were approximately 2.1 mtpa, with growth in coal tonnage expected moving forward.[1] Bulk freight are also key customers of the system, with Aurizon operating bulk coal services and Watco operating bulk grain services through the system. Additionally, as a result of clearing works through Toowoomba and Little Liverpool Ranges, containerised cotton may resume in the West Moreton System. Finally, passenger trains also utilise the system, with the Westlander travelling twice a week from Brisbane to Charleville return.

The West Moreton System is a regulated asset and Access Undertaking 2 (AU2) currently applies.

Objective

Arcadis were appointed by QCA to provide an assessment of the prudency and efficiency of the works undertaken in the capital claim for 2020-21, taking into account uncertainty in demand, and based on the scope, standard and cost of the works, as per the terms outlined in Schedule E clause 2 of the Queensland Rail The 2020 Undertaking (AU2). Arcadis assessed Queensland Rail's capital claim works against the existing asset condition and performance requirements in the context of the Rail Safety National Law, Queensland Rail's Civil Engineering Track Standards (CETS), Civil Engineering Structural Standards (CESS), industry approved approaches by similar operations and good engineering practice. The

[1] SYSTRA (2020). Update to West Moreton System Cost and Investment Forecasts, p.8.

assessment included a review of key project documentation, visual site assessment and discussions with Queensland Rail staff.

Total capital expenditure submission

Queensland Rail has advised QCA it would be seeking approval of $37,504,755 of capital expenditure excluding interest during construction (ICS), to be included in the Regulatory Asset Base (RAB). Arcadis assessed the entirety of this capital expenditure in its review of prudency and efficiency.

Assessment Summary

Overall, Arcadis assessed the projects reviewed as prudent and efficient in scope, standard and cost in relation to the terms outlined in Schedule E clause 2 of the Queensland Rail 2020 Undertaking (AU2). The West Moreton system is considered a low tonnage system, notwithstanding there is a minimum level of maintenance required to ensure safe operational performance and this is the primary driver for rail maintenance in the system. Arcadis assessed that the Queensland Rail engineering team are doing a reasonable job of maintaining the System to ensure the safe operation of traffic over what is considered a challenging section of track (due to age, design and the inclusion of difficult terrain such as the Toowoomba Range within the system). Arcadis assesses that in consideration of the prevalent investment drivers (Inland Rail) and demand uncertainty (New Hope's New Acland Stage 3 development), existing low tonnages and traffic intensity, the current approach is reasonable and prudent.

From the information provided and site visit undertaken, Arcadis assesses that the works undertaken that form the 2020-21 expenditure claim were reasonable and necessary to comply with safe operational requirements of the System and meet expected demand.

The table below summarises the output from the assessments of prudency and efficiency undertaken.

Project Number	Project Name	Brief description	2020-21 CAPEX Claim (exc. IDC)	Assessed as prudent Scope	Assessed as prudent Standard	Assessed as prudent Cost
B.04042	Slope Stabilisation Project	Completion of the slope stabilisation works; Toowoomba Range	$331,285	✓	✓	✓
B.05650	Reconditioning West Moreton 21-23	Improve track structure to service existing traffic therefore improving safety and reliability at priority locations.	$14,657,211	✓	✓	✓
B.05561 SCS	SCS Timber Resleepering	Replacement of defective timber sleepers to reduce future excess sleeper management costs and maintain safety and reliability of train services.	$13,283,884	✓	✓	✓

Project Number	Project Name	Brief description	2020-21 CAPEX Claim (exc. IDC)	Assessed as prudent Scope	Assessed as prudent Standard	Assessed as prudent Cost
B.05577	Greasers Replacement Upgrades	Procure and install upgraded electric lubricators to reduce impacts of track stiffness.	$433,439	✓	✓	✓
B.04703	WMS Replacement (Regional)	Upgrade of a weather monitoring station to comply with the new regulations prescribed by the Australian Communications and Media Authority.	$39,767	✓	✓	✓
B.05085	Pedestrian Crossing Upgrades (Regional)	Installation or upgrade of passive pedestrian mazes and protection control measures to satisfy an acceptable risk threshold.	$1,321,057	✓	✓	✓
B.05655	Level Crossing Upgrades West Moreton	Reconditioning of level crossings to improve safety and bring components are compliant with current standards.	$1,373,087	✓	✓	✓
B.05460	West Moreton System Formation Strengthening	Rectification of formation defects to ensure the defect rate of growth does not escalate significantly	$5,514,715	✓	✓	✓
SUBTOTAL			$37,504,755*			
MINUS DEDUCTIONS NOT PRUDENT				0	0	0
TOTAL			**$37,504,755***			

* **Note**: Total includes $550,311 of Ballas Undercutting. These works are not covered by the project assessment summaries below – please see review of this work discussed in section 3.2.

From the table above, in its engineering review, Arcadis assesses the Queensland Rail capital expenditure submission to be generally prudent in terms of scope, cost and quality and supports the 2020-21 capital expenditure claim of $37,504,755,

Queensland Rail provided a very comprehensive set of key documents for all projects chosen for assessment. However, throughout the assessment Arcadis sought additional information and clarification from Queensland Rail to clarify and substantiate the information originally provided. Arcadis acknowledges that Queensland Rail Network responded to all requests for information and clarifications in a prompt and efficient manner, and Arcadis would like to thank Queensland Rail for their cooperation in this respect.

1 INTRODUCTION

1.1 Background

Arcadis were appointed by the Queensland Competition Authority (QCA) to provide an engineering assessment of the prudency and efficiency of the below rail infrastructure works on the West Moreton system undertaken in the capital claim for 2020-21. The System is a regulated asset and hence this engineering prudency assessment to analyse the reasonableness and efficiency of the works included in the capital claim falls within the regulatory requirements of the QCA Act and Queensland Rail Access Undertaking (AU2).

The QCA is an independent statutory body responsible for implementing competition policy and regulating infrastructure owned by state and private entities that require third party access. As such the QCA is responsible for the regulation of third-party access to rail infrastructure operated by Queensland Rail Limited (Queensland Rail).

Queensland Rail is a wholly owned subsidiary of the Queensland Rail Statutory Authority in accordance with the *Queensland Rail Transit Authority Act 2013* (QRTA Act). Queensland Rail's rail infrastructure consists of an over 6500-kilometre multi-user track network comprising of six interconnected regional systems: Western, West Moreton, South Western, Central Western, Mount Isa and North Coast Lines. A map of the West Moreton System is provided in Figure 1-1.

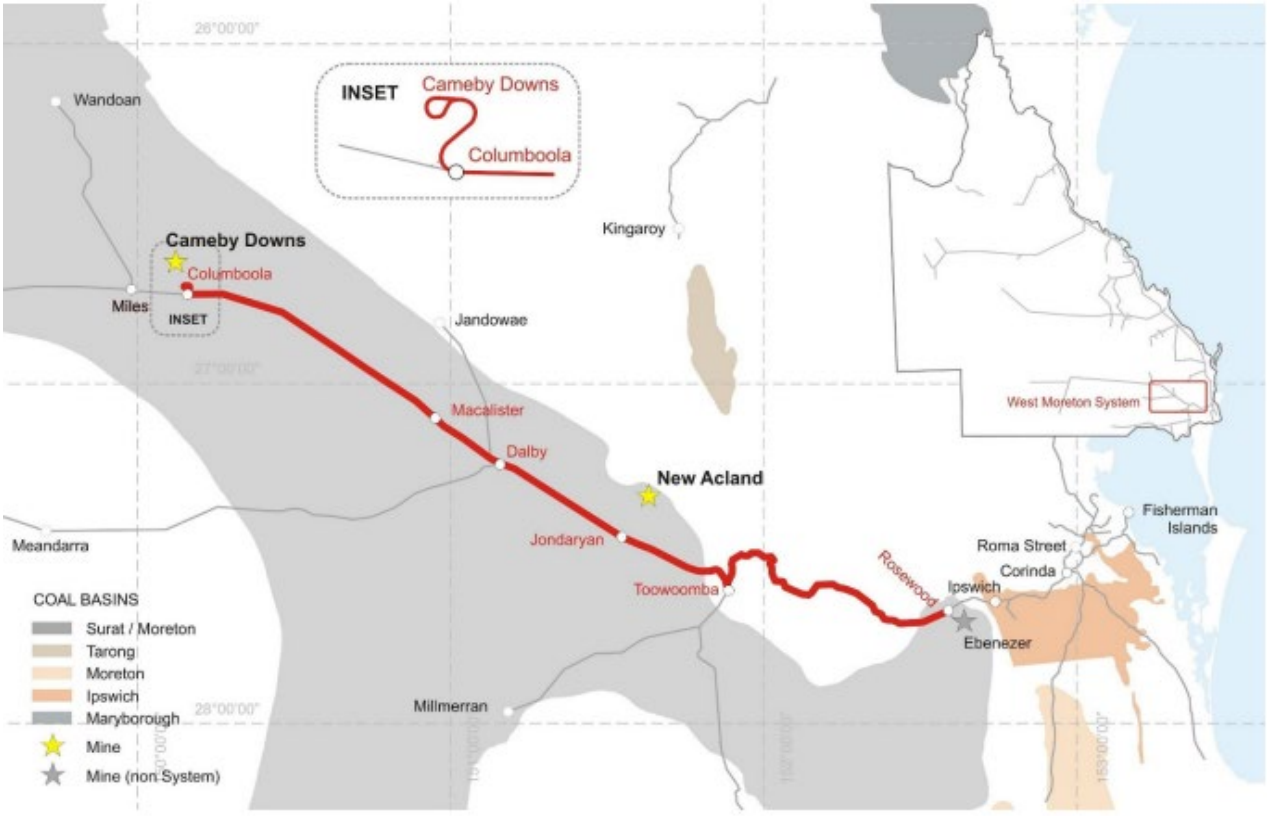


Figure 1-1 Queensland Rail – West Moreton System Map

1.2 Objective

The Queensland Competition Authority (QCA) has approved a Regulatory Asset Base (RAB) for the West Moreton System. To ensure that current and future tariffs are charged fairly and for works deemed necessary, Queensland Rail is subject to regulation from the Queensland Competition Authority Act 1997 (QCA Act) and the Queensland Competition Authority Regulation 2007 (QCA Regulation). Under the regulatory process Queensland Rail is required to submit a capital expenditure claim to the QCA, which prior to inclusion in the RAB, is subject to the QCA approval

process. An access undertaking, approved by the QCA and developed in accordance with the Act, provides a framework for the provision of access to Queensland Rail's rail network. The current undertaking agreement is the second version of this undertaking, *Queensland Rail's 2020 access undertaking (AU2)* approved by the QCA – July 2020. AU2 requires maintenance of a RAB reflecting the value of the West Moreton System infrastructure.

Queensland Rail has submitted its 2020-21 capital expenditure claim and is seeking approval for $37.505 million of capital projects (8 capital projects/programs) inclusion in the RAB.

Arcadis has been engaged by QCA to perform a prudency and efficiency assessment of the capital projects (as part of 2020-21 Capital Expenditure Claim) undertaken by Queensland Rail for the 2020-21 financial year in terms of scope, standard and cost of these works. The acceptability of this claim will predominantly be based on Schedule E of AU2; specifically, this requires a test of prudency and efficiency of scope, cost and standard.

In the assessment of this claim Arcadis acknowledges two key investment drivers and triggers; these include a) considerations and market discussions in relation to Inland Rail delivery strategy, and b) that the AU2 was developed with considerable material uncertainty around potential future coal tonnage volumes to be transported on the West Moreton System. As noted in its Asset Management Plan (AMP),[2] Queensland Rail anticipates tonnage between 2.1Mtpa and 9.1Mtpa over the medium term, with the tonnage profile potentially reaching 15Mtpa (net). The high end of this forecast is based on the approval of New Hope Coal's New Acland Stage 3 mine being approved and capital expenditure at the mine expedited.[3] Prudent asset renewals and upgrades deal with this uncertainty and support service continuity for the West Moreton System's likely tonnage profile.

The works assessed for prudency include but are not limited to track structure improvements, time sleeper replacements, reconditioning of level crossings, and weather monitoring station and passive pedestrian maze upgrades that were performed at various sections of track along the West Moreton System.

2 WEST MORETON NETWORK

2.1 General

Queensland Rail operates and manages the West Moreton Network, which runs over 314km between Brisbane to Columboola. By connecting Brisbane to the west and south-west of the state, the system serves as a major artery to the Darling Downs via the Toowoomba Ranges.

The network primarily provides passage for thermal coal, while grain originates and is also hauled through the system. Additionally, traffic connecting to and from the adjoining Western and South Western Systems – including long distance passenger services – travel through the West Moreton System.

Queensland Rail's operations are governed by the Rail Transport Service Contract with the State of Queensland. The contract is managed by Queensland Department of Transport and Main Roads on behalf of the Queensland Government and governs the funding arrangements for Queensland Rail's South East Queensland network. Access to the rail network is managed under a detailed process approved by the competition regulator, the Queensland Competition Authority.

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[2] The AMP was released August 2019 and last updated June 2021.
[3] It is noted that the mine has been approved with conditions and is expected to produce between 5.1Mtpa and 7.5Mtpa, though New Acland Coal Pty Ltd have advised they do not expect to produce above 5.1Mtpa. Production rates will be reassessed throughout the life of the project.

2.2 West Moreton System

The West Moreton System is typically comprised of three segments from an asset management perspective totalling approximately 412km of mainline and loop track between Rosewood and Miles. These three segments are:

- Rosewood to Toowoomba
- Toowoomba to Jondaryan; and
- Jondaryan to Miles

The West Moreton System is pictured in Figure 2-1 below, with the start and end points of these segments highlighted.

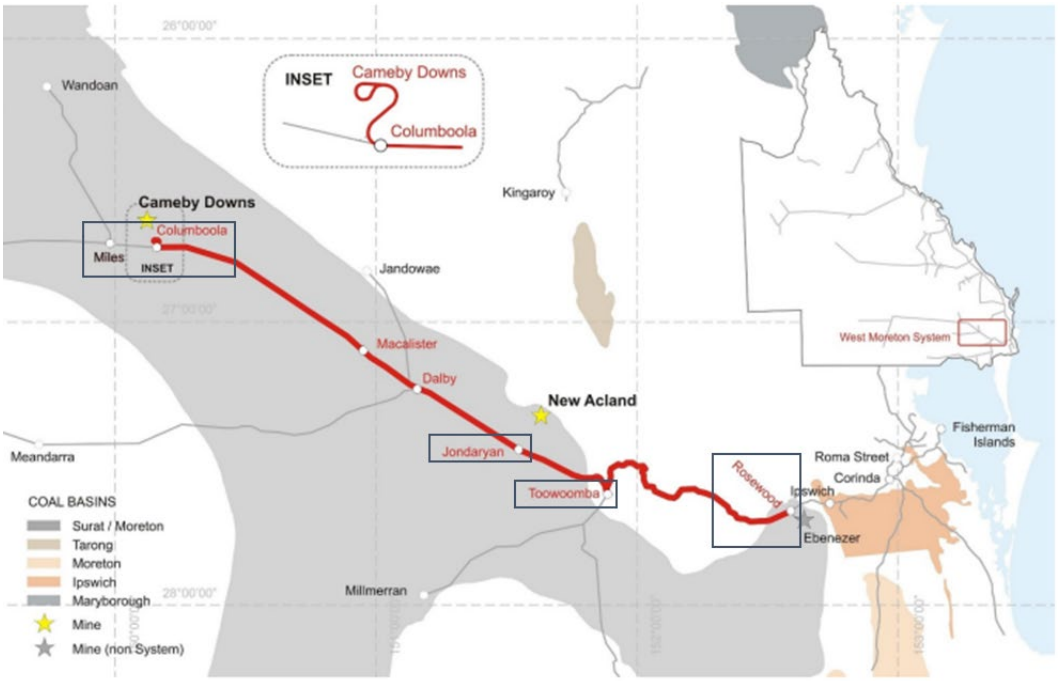


Figure 2-1 West Moreton System
Source: Queensland Rail Asset Management Plan

2.2.1 Rosewood to Toowoomba

The Rosewood to Toowoomba segment runs from Rosewood in the Fessifern valley, extending to Heildon at the base of the Great Dividing Range. Queensland Rail operates the Rosewood to Toowoomba segment via Remote Controlled Signalling (RCS). The segment is duplicated between Rosewood and Helidon, with the exception of a single track between Grandchester to Yarongmulu over the Little Liverpool Range. The concrete-sleepered track through the segment are continuously welded, while rail in non-concrete sleepered track is in 110m or 220m lengths.

2.2.2 Toowoomba to Jondaryan

The West Moreton System continues past Toowoomba toward Darling Downs and gradually dropping until reaching Jondaryan as a single-track railway. The segment is a straight line, concrete-sleepered track with less than 9km of curves. In terms of design of the track within the segment:

- From Toowoomba to Kingsthorpe the track is 50 kilogram Continuously Welded Rail (CWR)
- 41kg/m between Kingsthorpe and Oakley and finally
- 50kg/m CWR rail between Oakley and Jondaryan

2.2.3 Jondaryan to Miles

The last segment of the West Moreton System – Jondaryan to Miles – has a predominantly light track structure of 41kg/m CWR in 110 metre lengths and interspersed with 1-in-2 steel and timber sleepers. Similar to the Toowoomba to Jondaryan segment, the majority of this segment is straight track with minimal curves.

2.3 Asset configuration

All systems are predominantly designed for 15.7 tal wagons with a maximum speed of 80km/h across the West Moreton System. Table 2-1 below summarises notable characteristics of the system.

Table 2-1 Summary of system characteristics

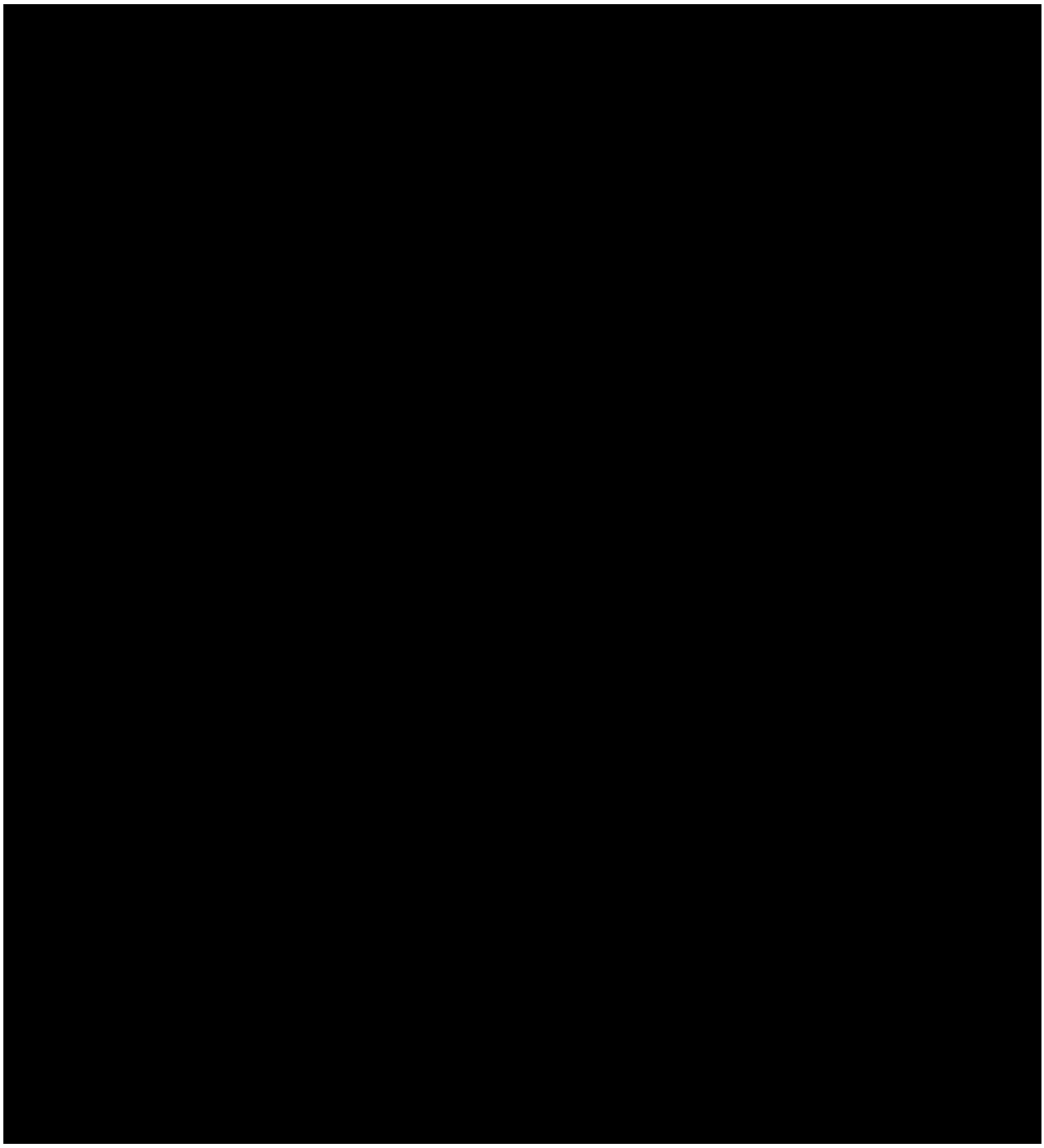
Characteristic	Summary
Total track length (km)	412km narrow gauge
Maximum axle load	15.75 tonne axle load (tal)
Maximum train length	675m
Electrified	No
Main line sleepers	Concrete, interspersed steel and timber sleeper: predominantly 1 in 2
Maximum operating speed	80km/h
Control System	RCS from Rosewood to Willowburn, then DTC. In terms of all current systems installed in the West Moreton System, these include Remote Level Crossing Monitoring Systems, Dragging Equipment Detectors, Hot Bearing Detectors, Environmental Monitoring Stations, and Overload and Imbalanced Detectors.
Telecommunication	Infrastructure supports Train Control Radio and signalling from Rosewood to Tooowoomba, as well as Train Control Radio and Signalling in the DTC area of the system. Other supporting telecommunication infrastructure includes Enhanced Radio System.
Stations and Depot Assets	Long distance passenger services are supported by eight stations in the West Moreton System. There are additionally five depots in the system that utilised for plant staff, track, structures, resurfacing and signals.

2.4 Current operational performance

A key part of ensuring that the West Moreton System is safe, reliable, on-time, efficient and customer-focussed is through the monitoring and management of Key Performance Indicators (KPIs) and system-specific reports. These KPIs and asset-specific report reflect the current performance and operation of West Moreton System and enable evidence-based decision making regarding the types and levels of investment to make in the network.

In its Asset Management Plan (AMP), Queensland Rail outlines performance with respect to its KPIs and key monitoring activity set out in system-specific asset reports, using data available as of May 2021.

2.4.1 Key performance indicators



2.4.2 System-specific asset reports

System-specific asset reports are used by Queensland Rail to monitor asset performance specific to the West Moreton System at a tactical and supervisory level. The following reports were pertinent to the West Moreton System – with explanations of their relevance reproduced from Queensland Rail's AMP in Table 2-4.

Table 2-4 System-specific asset reports

Report Type	Explanation
Temporary Speed Restrictions	TSRs and hot weather precautions are necessary to manage specific seasonal and track structure risk. Actual restrictions, and forecast restrictions for maintenance and construction works, are monitored due to the potential to cause delays and impact on paths available.
West Moreton Asset Review Report	The West Moreton Asset Review was recently completed and provides an assessment of asset condition and performance of the light track structure between Jondaryan and Miles to determine current and future maintenance and refurbishment priorities.
Vista Track Geometry Reporting	Availability of twice-weekly Vista Track Geometry using the new Vista wagon on the Westlander service commences in June 2021 and will add further capability to monitoring track condition and maintenance activity required.

3 CAPEX PRUDENCY REVIEW

3.1 Overall methodology

Arcadis has implemented a five-stage process to assess Queensland Rail Network FY21 CAPEX claim. Figure 3-1 identifies the key milestones with brief descriptions below.

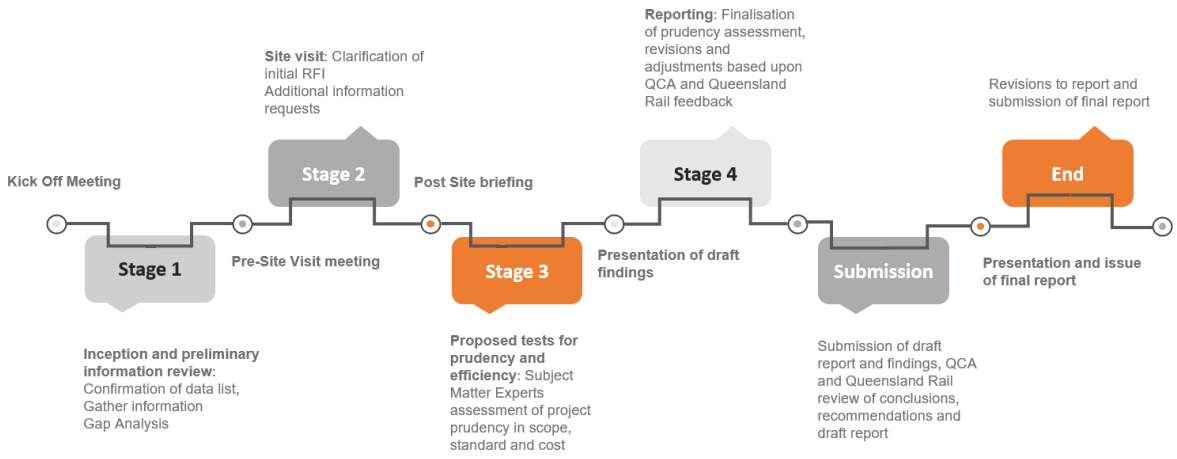


Figure 3-1 Summary of process for prudency and efficiency assessment

3.1.1 Stage 1 – Preparation

The Arcadis team conducted an internal kick off meeting to formalise hand over of information/resources required to perform the assessment. Arcadis created the framework template to help Subject Matter Expert's (SME) perform the prudency and efficiency assessment which was based on AU2 Schedule E and the criteria approved by the QCA. The team held further external inception meetings with QCA and Queensland Rail to:

- Confirm the Request for Information (RFI) process and agreement by all parties
- Finalise all contractual issues
- Formalise and agree communication channels

Enable Queensland Rail to provide a background summary of current asset management processes and relevant documentation for the prudency and efficiency review

3.1.2 Stage 2 – Information Summarisation and Site Visit

QCA and Queensland Rail provided relevant project information to Arcadis (Project Management plans, EOFY reports, Asset completion certificates etc.), C to this report provides a full list of the documentation as provided to Arcadis for this assessment.

An initial review was undertaken to confirm any obvious information gaps or identify any significant issues, this review was the basis for the first RFI's. Critical information from each project was summarised and handed over to the SMEs for review along with access to all the information provided. RFI's were raised as appropriate during this process.

3.1.3 Stage 3 – Analysis

Arcadis engineering SME's performed a desktop assessment of prudency and efficiency based upon the information provided by Queensland Rail. Arcadis used a framework template developed in alignment with the requirements of AU2 Schedule E and approved by the QCA and summarised in the flow chart depicted in Figure 3-2.

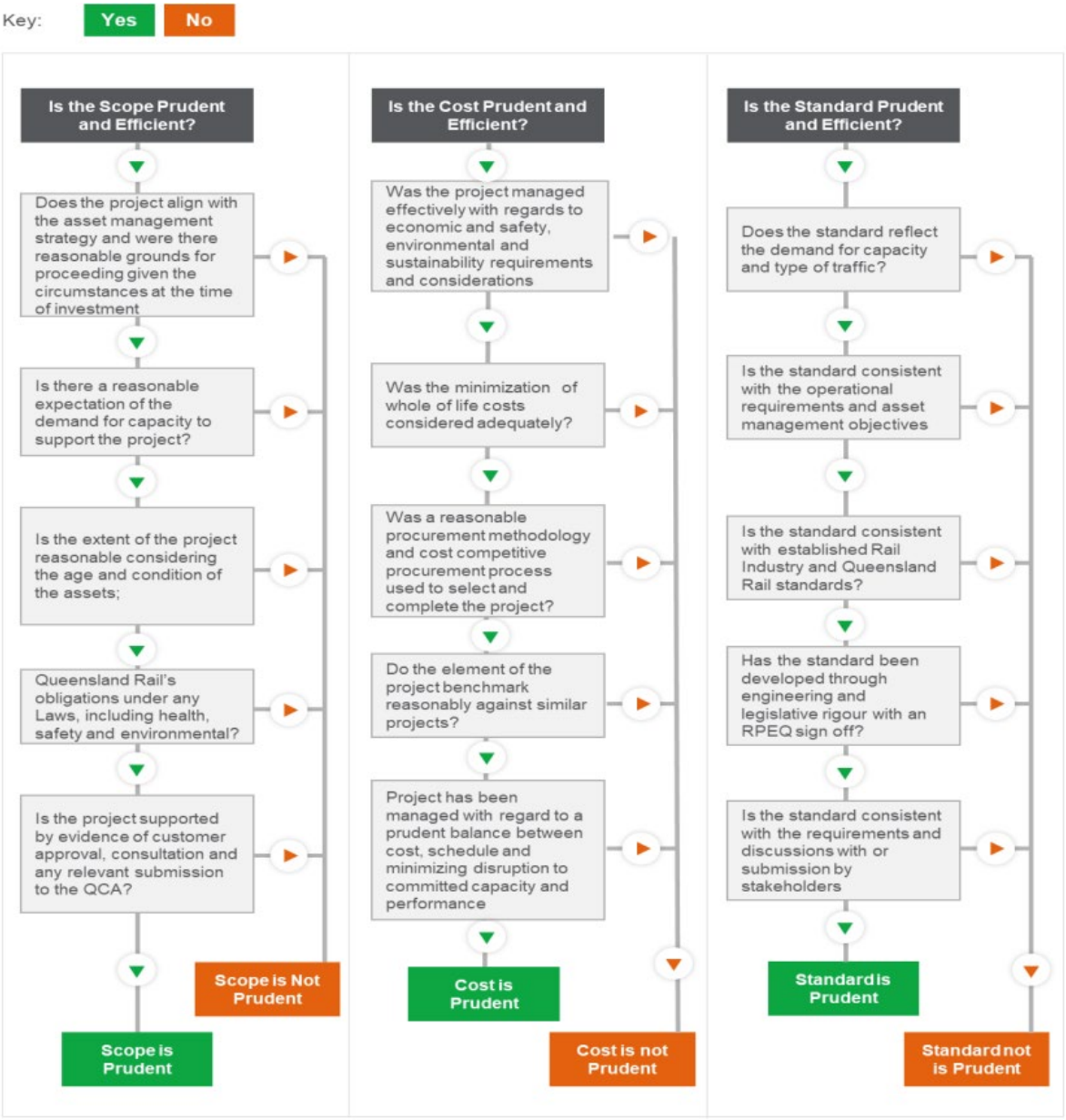


Figure 3-2 Summary of methodology for the assessment of prudency and efficiency

To confirm some of the data received and facilitate the assessment process Arcadis performed a site visit on completed projects on the system.

See section 3.3 for the list of locations visited and further information on the site visit.

3.1.4 Stage 4 and 5 – Reporting and finalisation

On completion of the site visit and assessment, Arcadis SMEs issued additional RFIs to clarify any concerns raised during the assessment process. The majority of these RFI's included clarification of cost information, scope, and confirmation of completion certification. Upon clarification of issues raised, the team made revisions accordingly and completed the prudency and efficiency assessments.

On completion of SME's assessment, Arcadis compiled and submitted a summary report to the QCA and Queensland Rail for review. On receipt of any revisions Arcadis completed the report and submitted the final report.

3.2 Extent of review

Queensland Rail advised QCA it would be seeking approval of $37,504,755 of capital expenditure to be included in the Regulatory Asset Base (RAB) for its FY21 claim. Arcadis' review of prudency and efficiency covered the entirety of this capital expenditure. This approach was taken to ensure the full diversity of project types (track, level crossings, structures etc.) and specific identified risks or known challenges associated with the type and genre of the projects were covered.

The projects analysed are summarised in the table below.

Table 3-1 Projects assessed for prudency (all projects covered)

Project Name	Project Code	Total Expenditure (excluding IDC)
Toowoomba Range Slope Stabilisation	B.04042	$ 331,285
Reconditioning West Moreton 21-23	B.05650	$14,657,211
SCS Timber Resleepering	B.05561	$13,283,884
Greasers Replacement Upgrades	B.05577	$433,439
WM Formation Strengthening	B.04460	$ 5,514,715
WMS Replacement (Regional)	B.04703	$39,767
Pedestrian Crossing Upgrades (Regional)	B.05085	$1,321,057
Level Crossing Upgrades West Moreton	B.05655	$1,373,087

It is noted that $550,311 of Ballast Undercutting also comprise part of Queensland Rail's FY21 total Capex claim. These are routine maintenance activities that has been capitalised and hence do not have business cases associated with the works. However, our review has concluded that these capital expenditure for these works is sought in a manner for inclusion in RAB consistent with the methodology applied by the QCA.

The assessment of these projects was conducted with respect to the Terms of Reference[4] as set by the QCA and the terms and criteria outlined in Schedule E (schedule E, clause 2) of the Queensland Rail's 2020 access undertaking (AU2) and summarised in the methodology outlined in Section 3.1.

3.3 SITE VISIT

Arcadis selected several sites to inspect and visit over two days between the 20th of June to the 21st of June 2022. The assessment team selected these sites based on:

- Element of complexity
- Type of works undertaken efforts were made to include each individual activity type for each discipline
- Location of project, with efforts made to maximise logistical efficiencies

The site visit covered the full length of the West Moreton System through which the capital programs were implemented and were documented to ascertain the prudency and efficiency of Queensland Rail's investment. This included developing an understanding through site visits with respect to the

[4] Queensland Competition Authority Terms of Reference – 11/03/2019

various programs' consistency with approved and established standards, the works' alignment with completion certificates and consistency with documentation on projects and their expenditure provided by Queensland Rail and the QCA.

Appendix B provides further details on the site projects selected.

4 CAPITAL EXPENDITURE CLAIM SUBMISSION

4.1 Asset Management System

4.1.1 Overview

Queensland Rail have specific asset management plans which are a key component of its approach to Strategic Asset Management. They focus on trying to effectively manage assets through the lifecycle of the project on the optimisation of cost, risk, and performance. This includes assessing if an asset it worth renewing or replacing. This is an efficient approach to the planning of asset management.

The framework applied is Queensland Rail's Asset Planning Framework (APF) underpinned by data stored in its Enterprise Asset Management System (EAMS), which drives decision making around asset maintenance and renewal. EAMS is a series of interrelated systems and activities that work together to provide a digital representation of the asset life cycle. The application of data from EAMS and the APF ensures optimum rail asset renewal investment is in line with Asset Management Strategies.

4.1.2 Scope and program prioritisation

Queensland Rail's scope identification and selection is an iterative process which determines capital investment required to ensure an asset is operating at its required level of service. This process is based on the Asset Planning Framework (APF) and assigns assets with:

- A **condition rating**, reflecting the asset's likelihood of failure and provides an estimate of where it sits in its lifecycle; and
- A **criticality rating**, reflecting the business impact associated with asset failure for the particular asset and based on Queensland Rail's Corporate Risk framework.

These ratings feed into a decision matrix which provide guidance on the preferred intervention – whether an asset should be inspected, maintained, replaced or renewed based on Queensland Rail's asset strategies and plans. An illustrative Decision Making Matrix is presented in Figure 4-1.

These metrics are stored in the Queensland Rail EAMS based on which, along with asset degradation lifecycles are used to forecast expected asset intervention methods and anticipated annual capital expenditure required for asset renewal of refurbishment. Lastly, the information is used to forecast capital spend for the next fiscal year. The overall APF through which scope identification and selection is carried out is presented in Figure 4-2.

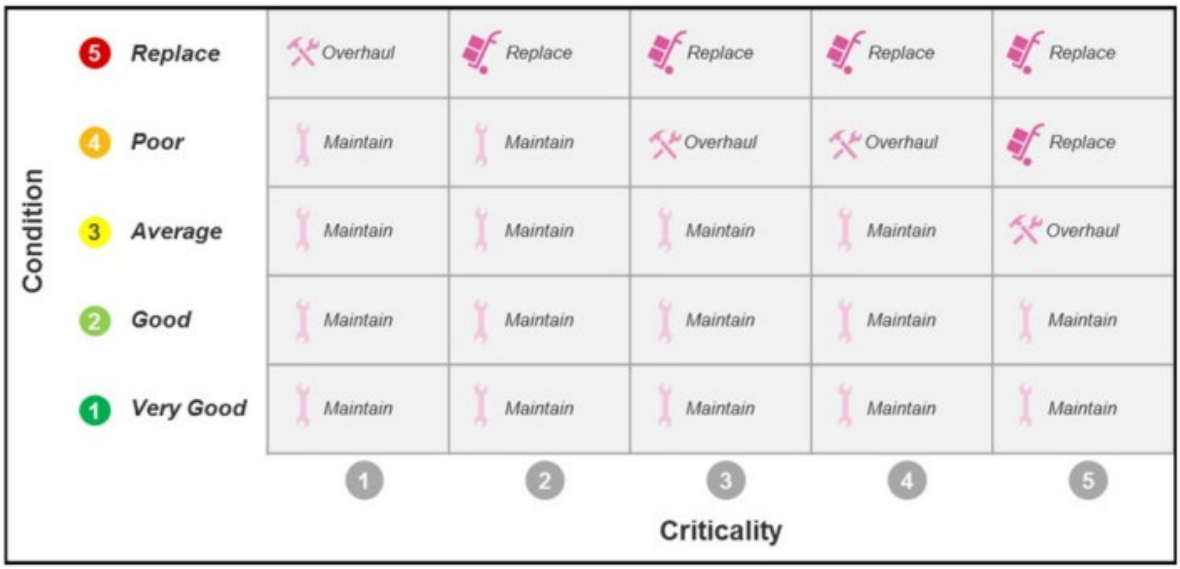


Figure 4-1 Queensland Rail Decision Making Matrix. Source Queensland Rail FY21 Capital Expenditure Report

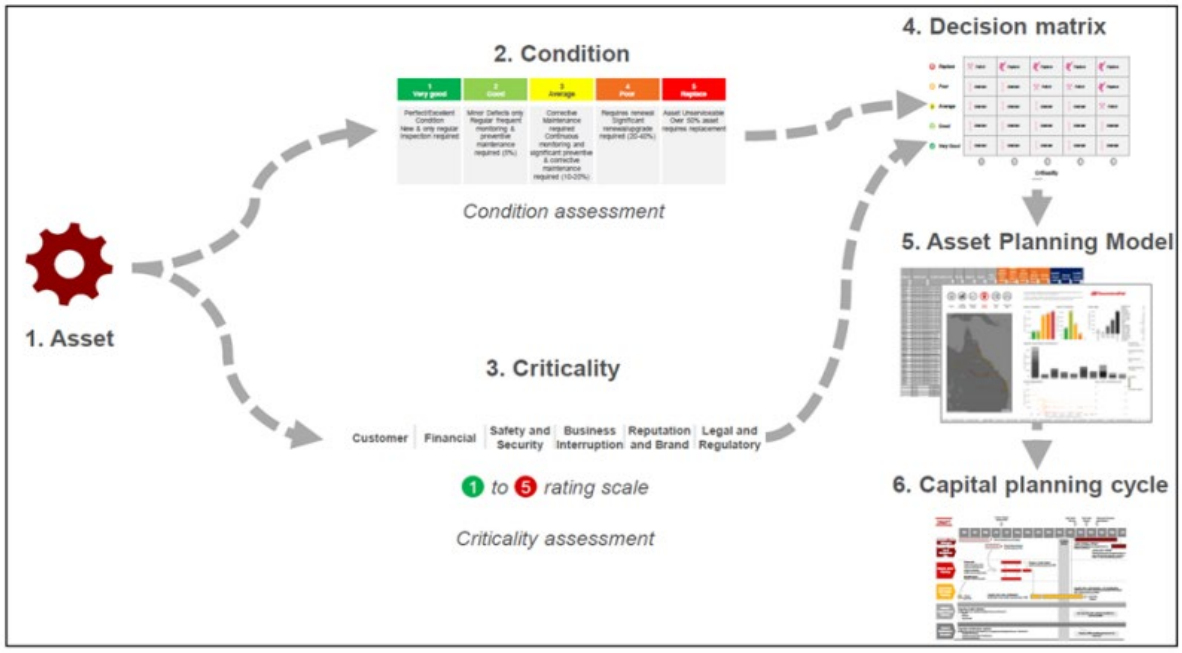


Figure 4-2 Queensland Rail Asset Planning Framework. Source Queensland Rail FY21 Capital Expenditure Report

Arcadis considers this approach to be contemporary industry best practice in asset management. Data forms the fundamental source of truth, from which Queensland Rail can make informed decisions on reparation and renewals. To maximise efficiencies throughout the network, Queensland Rail are applying the process summarised above to make informed decisions balancing cost, performance, and risk. This approach will ensure whole of life considerations are taken into account not only for the asset but for the system.

Through site discussions the assessment team noted that in practice it is noted that Queensland Rail's key strategies for the West Moreton System included:

- A push towards predictive not reactive maintenance through better collection and utilisation of asset data
- Sustainable considerations in the replacement of asset materials and assets
- A long-term sustainable approach to resourcing through maximisation of in-house capability combined with cost-effective local resourcing

5 QUEENSLAND RAIL FY21 EXPENDITURE CLAIM

5.1 Queensland Rail FY21 Capital expenditure submission claim

Queensland Rail's total FY21 capital expenditure (CAPEX) claim submission was valued at $37,504,755. The FY21 claim was submitted and assessed for prudency and efficiency under the 2020 Undertaking (AU2) framework to be included in the RAB.

The following section provides a summary of the prudency assessments for scope, standard and cost as undertaken for the sample projects in the Queensland Rail FY21 expenditure claim. Appendix C provides full details of the assessment within the template forms.

5.2 Supporting information

The following key documentation was provided by Queensland Rail to the Arcadis team to undertake the assessment:

- Project Plans/Project Completion Reports
- Investment Approval Requests/Implementation Business Case
- Change requests where appropriate
- Completion Certification/Handover Report
- End of Financial Year report (EOFY)
- SAP/Financial Reporting
- Track Recording Graphs

During the assessment the Arcadis team required additional data from that which was provided in the submission, and hence developed a Request for Information (RFI) register to capture and monitor the RFI process. In response to the RFI list Queensland Rail provided the Arcadis assessment team with a significant amount of additional data.

Appendix D provides a full list of documentation that Queensland Rail provided to the Arcadis team and Appendix E provides a copy of the RFI list.

Arcadis' assessors acknowledge the effort Queensland Rail made to provide additional requested data as quickly and efficiently as possible.

5.3 Summary of results

The following table summarises the results of the prudency assessments on all projects contained within Queensland Rail's FY21 Capex claim.

Table 5-1 Summary of prudency review

Project Number	Project Name	Brief description	2020-21 CAPEX Claim (exc. IDC)	Prudent in Scope	Prudent in Standard	Prudent in Cost
B.04042	Slope Stabilisation Project	Completion of the slope stabilisation works; Toowoomba Range	$331,285	✓	✓	✓
B.05650	Reconditioning West Moreton 21-23	Improve track structure to service existing traffic therefore improving safety and reliability at priority locations.	$14,657,211	✓	✓	✓

Project Number	Project Name	Brief description	2020-21 CAPEX Claim (exc. IDC)	Prudent in Scope	Prudent in Standard	Prudent in Cost
B.05561	SCS Timber Resleepering	Replacement of defective timber sleepers to reduce future excess sleeper management costs and maintain safety and reliability of train services.	$13,283,884	✓	✓	✓
B.05577	Greasers Replacement Upgrades	Procure and install upgraded electric lubricators to reduce impacts of track stiffness.	$433,439	✓	✓	✓
B.04703	WMS Replacement Regional	Upgrade of weather monitoring stations to comply with the new regulations prescribed by the Australian Communications and Media Authority.	$39,767	✓	✓	✓
B.05085	PED Crossing Upgrades Regional	Installation or upgrade of passive pedestrian mazes and protection control measures to satisfy an acceptable risk threshold.	$1,321,057	✓	✓	✓
B.05655	Level Crossing Upgrades West Moreton	Reconditioning of level crossings to improve safety and bring components are compliant with current standards.	$1,373,087	✓	✓	✓
B.05460	West Moreton System Formation Strengthening	Rectification of formation defects to ensure the defect rate of growth does not escalate significantly	$5,514,715	✓	✓	✓
MINUS DEDUCTIONS NOT PRUDENT				0	0	0
TOTAL			**$37,504,755***			

* **Note**: Total includes $550,311 of Ballas Undercutting. These works are not covered by the project assessment summaries below – please see review of this work discussed in section 3.2.

5.4 Overview prudency and efficiency

Arcadis' review of prudency and efficiency for Queensland Rail's CAPEX in the West Moreton System in FY21 found that in general projects were developed and implemented to ensure minimum standards were adhered to by below-rail infrastructure and to ensure safe operation.

It is acknowledged that Queensland Rail has a responsibility as the accredited Rail Infrastructure Manager to ensure that it is performing the necessary capital expenditure works to ensure that the rail infrastructure is safe and reliable and meets the requirements of Queensland Rail's Safety Management System.

Through review of reports provided by the QCA and Queensland Rail as well as extensive inspection of sites across the West Moreton System where projects were undertaken, the assessors concluded that the works undertaken were not 'gold plating' or reflective of additional unnecessary works on the network. In the professional opinion of the assessor, it is considered that the work undertaken over the 2020-21 was required to maintain a safe and operational railroad.

5.5 Project Assessment Summaries

5.5.1 B.04042 Slope Stabilisation Project

Overview

During both 2011 and during 2013, the Toowoomba Range was closed for three months and six weeks, respectively due to slope failures at the time of severe weather events. Following extensive maintenance and monitoring, the slope stabilisation program was a response to understanding that further major remedial works were needed in order to rectify residual slope instability which placed the rail structure or access road at risk.

In general, Arcadis found that Queensland Rail has implemented an effective reconditioning program based upon close monitoring and in line with the pre-approved scope and standard, as reflected in the QCA's decision regarding the program in April 2019.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-2 .04042 Slope Stabilisation Project

<table>
<tr><td rowspan="4">In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:</td><td colspan="2">Prudent and Efficiency Assessment Outcome</td></tr>
<tr><td><u>Scope</u></td><td>Yes</td><td rowspan="6">Slope stabilisation in the West Moreton System responds to an integral need for remedial actions to maintain the safety standards of the network and minimise the risk of landslips at critical locations. In line with pre-approvals of QCA in terms of scope and standard, the program is considered efficient and prudent.</td></tr>
<tr><td><u>Standard</u></td><td>Yes</td></tr>
<tr><td><u>Cost</u></td><td>Yes</td></tr>
<tr><td colspan="2">Capital Expenditure Claim (total)</td><td>$331,285</td></tr>
<tr><td colspan="2">Impact of findings on Claim</td><td>$ -</td></tr>
<tr><td colspan="2">TOTAL ACCEPTED</td><td>$331,285</td></tr>
</table>

Assessment of scope

In its Decision dated 18 April 2019 the QCA, in accordance with the requirements of Schedule E clauses 3.1 (b) and 4,1 (b) of AU, preapproved the scope of the Toowoomba Range Slope Stabilisation as prudent.

Assessment of standard

In its Decision dated 18 April 2019 the QCA, in accordance with the requirements of Schedule E clauses 3.1 (b) and 4,1 (b) of AU, preapproved standard of the Toowoomba Range Slope Stabilisation as prudent.

Assessment of cost

This claim for $331,284.82 was for additional works undertaken for edge protection on the maintenance access road and was approved through the Handover Report provided as part of the 2020-21 expenditure submission. The costs in this claim are the final costs and together with

previously claimed make the Total Project claim of $20,512,183.29, which is below the proposed total costs of $20,180,899 excluding interest approve by the QCA in their Decision on Queensland Rail's West Moreton System Capital Expenditure Report 2019-20.

Arcadis considers that unit costs are in line with the approved estimated costs and within industry expectations for similar works.

5.5.2 B.05650 Reconditioning West Moreton 21-23

Overview

The Reconditioning West Moreton project will recondition 37,007 kilometres of track on the West Moreton System requiring upgrades due to the deteriorating condition of the existing infrastructure. The project aims to replace fouled ballast ensuring the track can drain freely, transfer loads from rolling stock effectively and support the track structure.

In general, Arcadis found that Queensland Rail has implemented an effective reconditioning program based upon high priority defects regular inspections and in Queensland Rail's 'Derailment Reduction Strategy West Moreton System Jondaryan – Columboola Report (2019)'.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-3 B.05650 Reconditioning West Moreton 21-23

<table>
<tr><td rowspan="4">In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:</td><td colspan="2">Prudent and Efficiency Assessment Outcome</td><td rowspan="5">Reconditioning in the West Moreton System is part of a wider program, with priority track targeted as part of an overall strategy. The project is essential in maintaining operational performance and safety in light of future demand levels, with targeted areas critical in carrying loaded coal traffic from all mines in the West Moreton System.</td></tr>
<tr><td><u>Scope</u></td><td>Yes</td></tr>
<tr><td><u>Standard</u></td><td>Yes</td></tr>
<tr><td><u>Cost</u></td><td>Yes</td></tr>
<tr><td colspan="2">Capital Expenditure Claim (total)</td><td>$14,657,211</td></tr>
<tr><td colspan="2">Impact of findings on Claim</td><td>$ -</td></tr>
<tr><td colspan="2">TOTAL ACCEPTED</td><td>$14,657,211</td></tr>
</table>

Assessment of scope

Queensland Rail Network developed its program using the Asset Management Plan (AMP) which applies a risk-based approach to manage the asset whole of life and mitigating performance disruptions and aligns with whole of life predictive decision making.

Reconditioning scope was considered prudent in order to ensure performance and minimise risks of derailment due to poor track geometry and rail defects.

Track recording information was provided which indicated that the sites selected by Queensland Rail for track reconditioning aligned with sites exhibiting significant twist or alignment issues. Discussions with QR staff confirmed that sites selected were sites where frequent resurfacing and ballast cleaning, undercutting or lowering were found to be in ineffective and where Queensland rail stated they had no alternative other than to further reduce speed restrictions or keep on resurfacing which is not considered a sustainable solution in the longer term.

In consideration of the information provided and discussions with site staff, the team considered the project scope prudent given the reasonable operational and safety requirements of Queensland Rail and its customers. Arcadis did not identify any significant issues in the scope within this program.

Assessment of standard

Queensland Rail's approach to reconditioning is consistent with CETS and other approved rail standards, as well as with the operational requirements deemed necessary to ensure a safe operational railway. Furthermore, the standard reflects current demand, likely future capacity levels and type of traffic, being based on traffic forecasts (with approval of Stage 3 of Acland Mine), two services a week for the 'Westlander' plus several agriculture and other freight services.

From site visits (Figure 5-1) undertaken the team assessed that completed works were in alignment with established and approved standards.

Figure 5-1 Track reconditioning between km 44.570 to Km 48.202 (looking east)

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

The assessment found that Queensland Rail achieved an average cost of [redacted] per kilometre of track against an estimated [redacted].

Arcadis considers that unit costs are in line with the approved estimated costs and within industry expectations for similar works. Queensland Rail achieves this rate through maximising the use of internal resources and combining this with application of their panel of local civil contractors, providing cost effective and local resource use.

Overall, the assessment team found that the costs of the reconditioning works were prudent and efficient.

5.5.3 B.05561 SCS Timber Resleepering 2020/21

Overview

SCS Timber Resleepering 2020/21 aims to replace defective timber sleepers to reduce future excess sleeper management costs and maintain the safety and reliability of train services. Whilst this track met CETS, strengthening was required or replaced to carry the current traffic tasks. The

resleepering program addresses this observed issue and thereby complies with operational requirements.

In general, Arcadis found that Queensland Rail has implemented an effective resleepering program based upon regular inspections.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-4 B.05561 SCS Timber Resleepering FY21 Summary

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudent and Efficiency Assessment Outcome		
	Scope	Yes	**In line with engineering standards and operational requirements the project focuses on track reconditioning to reduce risk of TSR's and improve overall OTCI. Consideration of whole of life decision making optimises operational functionality of the track system minimising risks of disruption and optimising performance. Overall, the resleepering is considered prudent and efficient project.**
	Standard	Yes	
	Cost	Yes	
Capital Expenditure Claim (total)		$13,283,884	
Impact of findings on Claim		$ -	
TOTAL ACCEPTED		$13,283,884	

Assessment of scope

The resleepering program for FY21 included the 34,672 timber sleepers at various points between Rosewood and Columboola on the West Moreton System. Queensland Rail developed the project consistent with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure to minimise damage to the infrastructure and operational optimisation. This approach is considered reasonable and aligns with Queensland Rail's Asset Management Plan.

The most amount of re-sleepering work done by Queensland Rail was through Jondaryan-Columboola Section (44.5Km to 194Km) where [redacted] sleepers where replaced. This represents approximately [redacted] of re-sleepering out of [redacted] section (approximately [redacted]).

Key aspects noted from site which validated the selection of sites to be resleepered were:

- Sleepering spacing being pushed out, in the direction of loaded traffic
- Damaged sleepers
- Rail fastening that was loose or had fallen out due to operational wear and tear along the alignment

Overall, Arcadis considered the project scope prudent and efficient given the reasonable operational and safety requirements of Queensland Rail and its customers. The assessment team did not identify any key issues in the scope within this program.

Assessment of standard

The assessment identified that the technical and safety standards applied on projects within the track renewal program were in alignment with the Civil Engineering Track Standards considered industry leading in terms of achieving balanced whole of life outcome.

During the site visit the assessment team inspected several resleepered sites. The team verified that works undertaken aligned with the completion information provided. Figure 5-2 provides an example site inspected as part of Arcadis' assessment of the reconditioning project.

From site visits undertaken the team assessed that completed works were in alignment with standards applied on adjacent infrastructure and finished works were in compliance with CETs requirements.

Figure 5-2 Site selection for resleepering

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

Practical completion was achieved within schedule, with all stage gates and budget within the approved estimate.

The project delivered a [redacted]/sleeper which is considered reasonable against industry benchmarks.

Overall, the assessment team found that the costs of the track renewal program projects were prudent and efficient.

5.5.4 B.05577 Greasers Replacement/Upgrades

Overview

The Greasers Replacement/Upgrades program aims to mitigate increases in track stiffness on tight radius curves through procurement and installation of upgraded electric lubricators. The upgrades are designed to ensure that tight radius curves through the system are adequately lubricated and that Queensland Rail customers are minimally affected while making use of the network.

In general, Arcadis found that Queensland Rail has implemented an effective greasers replacement and upgrades program based upon regular inspections.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-5 B. 5.5.4 B.05577 Greasers Replacement/Upgrades FY21 Summary

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudent and Efficiency Assessment Outcome		
	Scope	Yes	**The current lubricators in the WMS are critical to operation and require heavy maintenance regimes to ensure they remain operational and reliable. They existing lubricators have installed for an average of 20 years are becoming life-expired and require increased lubrication and monitoring to ensure operational safety. The greaser replacement program addresses these needs and is considered prudent and efficient.**
	Standard	Yes	
	Cost	Yes	
Capital Expenditure Claim (total)		$433,439	
Impact of findings on Claim		$ -	
TOTAL ACCEPTED		$433,439	

Assessment of scope

The Greasers Replacement/Upgrades program for FY21 included the procurement of upgraded electric greasers on West Moreton System. Queensland Rail developed the project consistent with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure to minimise damage to the infrastructure and operational optimisation, an approach that aligns with Queensland Rail's Asset Management Plan.

A review of the supplied information in the business case indicates that these lubricators were installed over 20 years (average) ago and heavy maintenance regimes are required to keep these reliable and operational.

Overall, Arcadis considered the project scope prudent and efficient given the reasonable operational and safety requirements of Queensland Rail and its customers. The assessment team did not identify any key issues in the scope within this program.

Assessment of standard

The assessment identified that the technical and safety standards applied on projects within the track renewal program were in alignment with the Civil Engineering Track Standards considered industry leading in terms of achieving balanced whole of life outcome.

During the site visit (Figure 5-3) the assessment team inspected several sites where new greasers will implemented. The team verified that works undertaken aligned with the completion requirements as per in the completion reports provided.

It is also noted that on 3rd December 2019, both the scope and standard of the Greaser Replacements/Upgrades Project was "agreed to proceed" and "endorsed".

Figure 5-3 Greasers Replacement Upgrades 21 June 2022, Looking East

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

Practical completion of the greasers replacement program was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim). In AU2 for the 2.1 mtpa coal railing scenario Queensland Rail proposed an estimated $2.655 M for the project which was approved in the Capital Indicator, Update to West Moreton System Costs and Investment Forecasts, February 2020. The $433,439 claimed expenditure for 2020-21 is considered within range for the work undertaken.

From the information provided, achieving the benefits/outcomes by completing this project will result in minimised whole of life costs.

Overall, the assessment team found that the costs of the greasers replacement program was prudent and efficient.

5.5.5 B.04703 Weather Monitoring System Replacement (Regional)

Overview

The Weather Monitoring System Replacement (Regional) aims to upgrade weather monitoring stations to comply with new regulatory standards.

For the FY21 claim Queensland Rail upgraded six weather monitoring stations and decommissions one on the West Moreton network. This claim is part of a wider project across the Queensland ail network that in total seeks to upgrade 65 weather monitoring stations.

In general, Arcadis found that Aurizon Network has implemented an effective weather monitoring system replacement program.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-6 B.04703 WMS Replacement (Regional) FY21 Summary

<table>
<tr><td rowspan="4">In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:</td><td colspan="3">Prudent and Efficiency Assessment Outcome</td></tr>
<tr><td>Prudency of Scope</td><td>Yes</td><td rowspan="5">The upgrade of existing weather stations will bring their condition in line with current standards and new regulations prescribed by the Australian Communications and Media Authority (ACMA) and reduce the risk of redundancy particularly as Telemetry and Receiver units for existing RMS v1 weather stations have become difficult to repair or replace. Necessitated by new regulations and approaching redundancy without, the investment is considered prudent and efficient.</td></tr>
<tr><td>Prudency of Standard</td><td>Yes</td></tr>
<tr><td>Prudency of Cost</td><td>Yes</td></tr>
<tr><td colspan="2">Capital Expenditure Claim (total)</td><td>$39,767</td></tr>
<tr><td colspan="2">Impact of findings on Claim</td><td>$ -</td></tr>
<tr><td colspan="2">TOTAL ACCEPTED</td><td>$39,767</td></tr>
</table>

Assessment of scope

Queensland Rail developed its program using the in a manner consistent with its Strategic Asset Management Plan, enhancing the resilience of the infrastructure to minimise damage to the infrastructure and operational disruptions during major weather events and due to the age and maintainability of the existing weather monitoring infrastructure.

It is noted that this project is considered as safety related, with WMS being critical components in maintaining the safety and reliability across the network by providing up to date information on adverse weather conditions which may potentially affect the operations of the network and the ability of the assets to provide safe passage for trains.

From the information provided. Arcadis assessed the project scope as prudent given the reasonable operational and safety requirements of Queensland Rail and its customers. The assessment team did not identify any key concerns of significant issues in the scope within this program.

Assessment of standard

The assessment identified that the technical and safety standards applied on projects within the track renewal program were in alignment with the new regulations prescribed by the Australian Communications and Media Authority.

This was corroborated during the site visit (Figure 5-4) by the assessment team. The team inspected several weather monitoring stations and confirmed that works undertaken and system provided aligned with the requirements for a cost-effective system providing the necessary information in terms of environmental status to enable safe monitoring of key environmental conditions.

Figure 5-4 WMS Replacement (Regional). 20 June 2022, Looking North.

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

Only one WMS Forrest Hill Laidley was completed at a cost of $39,767 and claimed in this 2020-21 submission. This unit price appears reasonable against the AU2 Final Decision Capital Indicator approved estimate of $412,000 for seven West Moreton upgrades.

Overall, the assessment team found that the costs of the weather monitoring system replacement project claimed for 2020-21 is prudent and efficient.

5.5.6 B.05085 Pedestrian Crossing Upgrades (Regional)

Overview

The Pedestrian Crossing Upgrades (Regional) installs or upgrades passive pedestrian mazes and applies protection control measures across the Moreton West System. The project spanned five regional councils in the West Moreton System and involved the installation or upgrade of 20 passive pedestrian mazes.

These upgrades contribute to the reduction in the incidence of near miss occurrences and accidents involving pedestrians thereby improving site-specific safety factors. The measures also contribute to improved safety by reducing rail corridor trespass by pedestrians

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-7 B.05085 Pedestrian Crossing Upgrades (Regional) FY21 Summary

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudent and Efficiency Assessment Outcome		
	Scope	**Yes**	**The investment in this project will ensure fit for purpose assets are provided to support service delivery. As a result of this proposed work there will be an avoidance of temporary speed restrictions and reduced maintenance required, both of which will assist operational performance. Moreover, through provision of the necessary protection control measures required to satisfy an acceptable risk threshold the project is considered to be a prudent and efficient.**
	Standard	Yes	
	Cost	Yes	
Capital Expenditure Claim (total)		$1,321,057	
Impact of findings on Claim		$ -	
TOTAL ACCEPTED		$1,321,057	

Assessment of scope

Queensland Rail developed its program in a manner consistent with its Strategic Asset Management Plan and that would ensure fit for purpose assets are provided to support service delivery and assist in maintaining required operational performance.

The Business Case highlights that these works were in alignment with the Australian Level Crossing Assessment Model (ALCAM), which is the industry approved risk assessment tool used to assess risk and determine mitigation requirements and appropriate level of control at a crossing. The works undertaken were considered necessary protection control measures required to satisfy an acceptable risk threshold.

The assessment team considered the project scope prudent given the reasonable operational and safety requirements of Queensland Rail and its customers.

Assessment of standard

The assessment identified that the technical and safety standards applied on projects within the pedestrian crossing upgrade project were in alignment with current Australian standard, developed on the basis of The Australian Level Crossing Assessment Model.

During the site visits the team inspected several pedestrian crossing upgrade sites (Figure 5-5). The team confirmed that works undertaken were in alignment with the completion certification and in alignment with the required standard.

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Figure 5-5 Level Crossing Upgrades West Moreton. 20 June 2022, Looking East

Assessment of cost

It is noted that following initial confirmation and approval of scope on 3 July 2019, this was followed up by change in request to increase the scope of the program which was subsequently endorsed 3 July 2021. This change was due to identification of additional ALCAM requirements, it is noted that as an accredited RIM Queensland Rail has to abide by its Safety and Environmental Management System

Queensland Rail achieved a unit rate average cost of [redacted] per level crossing.

Overall, the assessment team found that the costs of the weather monitoring system replacement projects were prudent and efficient.

5.5.7 B.05655 Level Crossing Upgrades West Moreton

Overview

The Level Crossing Upgrade program aims to recondition level crossings to improve safety and ensure components are compliant with current standards on the West Moreton System. For these works, Queensland Rail identified 23 level crossings in the West Moreton System for reconditioning, including surface replacement, improvements to drainage and brining level crossing in line with current standards.

In general, Arcadis found that Queensland Rail has implemented an effective level crossing upgrade program.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-8 B.05655 Level Crossing Upgrades West Moreton FY21 Summary

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudent and Efficiency Assessment Outcome		
	Scope	**Yes**	**The program brings level crossings in line with current version of the CETS, replacing of the track and level crossing infrastructure. These better manage transitions at level crossings between track structures which have been the cause of derailments in the West Moreton System. Overall, the project ensures new minimum standards are met and is considered a prudent and efficient investment.**
	Standard	Yes	
	Cost	Yes	
Capital Expenditure Claim (total)		$1,373,087	
Impact of findings on Claim		$ -	
TOTAL ACCEPTED		$1,373,087	

Assessment of scope

Queensland Rail developed its program in a manner consistent with its Strategic Asset Management Plan and that would ensure fit for purpose assets are provided to support service delivery and assist in maintaining required operational performance.

Overall, the team assesses the project scope as prudent and efficient given the reasonable operational and safety requirements of Queensland Rail and its customers.

Assessment of standard

In general, Queensland Rail's standards and practices comply to all applicable requirements for access agreements and the pedestrian level crossing upgrades comply with relevant design standards and codes, with the program developed in a manner consistent with Queensland Rail's Safety and Environmental Safety Systems.

During the site visits the team inspected several level crossing upgrade sites and the team confirmed that works undertaken were in alignment with the completion certification and adjacent infrastructure. Figure 5-6 shows a site inspected for one of these upgrades in the Dalby region of the West Moreton System.

Figure 5-6 Level crossing upgrade at Nicholson Street, Dalby (km. 84.180)

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

Queensland Rail achieved a unit rate average cost of [redacted] per level crossing. Based on the sites assessed and on inspection of the work undertaken (Figure 5-7), the expenditure claim and cost were considered reasonable and aligned with industry expectations for the level of work undertaken in consideration of the safety requirements and location constraints.

It is also noted that the project is part of a broader program where a number of upgrades had already been completed and:

- No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented
- No Queensland Rail LTI's were sustained, and no major incidents reported

Overall, the assessment team found that the costs of the West Moreton level crossing upgrades were prudent and efficient.

Figure 5-7 Level Crossing Upgrade – Smithfield / Burgess Road (km 98.370)

5.5.8 B.05460 WM Formation Strengthening 18/19 - 20/21

Overview

The planned formation strengthening in the WM Formation Strengthening program 18/19 – 20/21 addresses priority formation defects and is a critical part of Queensland Rail's Network Track and Civil Asset Strategy. The overall program is designed to achieve improved network reliability and in turn reduced future maintenance, fewer speed restrictions, and assist in meeting requirements stipulated in Access Arrangements for both coal and non-coal customers.

In general, Arcadis found that Queensland Rail has implemented an effective formation strengthening program.

The table and paragraphs below summarise the results of the prudency and efficiency assessment, Appendix C provides further details.

Table 5-9 B.05460 WM Formation Strengthening 18/19 - 20/21FY21 Summary

<table>
<tr><td rowspan="4">In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:</td><td colspan="2">Prudent and Efficiency Assessment Outcome</td></tr>
<tr><td><u>Scope</u></td><td>Yes</td><td rowspan="4">The program is a key safety project for Queensland Rail, allowing it to provide a safe and reliable network and meet the requirements for Train Service Entitlements contained in Access Arrangements. It was assessed as prudent and efficient.</td></tr>
<tr><td><u>Standard</u></td><td>Yes</td></tr>
<tr><td><u>Cost</u></td><td>Yes</td></tr>
<tr><td colspan="2">Capital Expenditure Claim (total)</td><td>$5,514,715</td></tr>
<tr><td colspan="2">Impact of findings on Claim</td><td>$ -</td></tr>
<tr><td colspan="2">TOTAL ACCEPTED</td><td>$5,514,715</td></tr>
</table>

Assessment of scope

Queensland Rail developed its program in a manner consistent with its Strategic Asset Management Plan and that would ensure fit for purpose assets are provided to support service delivery and assist in maintaining required safety of the network and is in line with formation strengthening practices of approved scope in Queensland Rail's previous access undertakings.

Due to age and heritage, the West Moreton System suffers from legacy issues with capping and formation which result potentially result in poor alignment and track conditions which require operational restrictions or significant maintenance in terms of frequent resurfacing and reconstruction. These issues are exacerbated by the presence of black soil throughout the corridor. Eventually these issues result in a need rebuild the formation, generally with geogrid and geofabric layer in the new profile to provide the loading capacity and performance required for traffic operations. In cases where this can be undertaken without the need to replace the track system, this work is classified as track formation strengthening. Where the track asset is still considered in reasonable safe operational condition, this approach is prudent as it provides the opportunity to re-use and prolong the whole of life of the existing track asset.

Through the information provided and discussions on site the assessment team validated that it appeared that Queensland Rail, was proactively (where appropriate in consideration of operational requirements) using speed restrictions to minimise track reconstruction. It was noted that Queensland Rail is applying a whole of supply chain approach in its selection of sites for formation strengthening as opposed to track reconstruction, with the majority of sites being in the lower priority and lower trafficked sections.

Overall, the team assesses the project scope as prudent and efficient given the reasonable operational and safety requirements of Queensland Rail and its customers.

Assessment of standard

In general, Queensland Rail's standards and practices comply to all applicable requirements for access agreements as well as CETS track geometry limits.

The QCA approval process for the AU2 coal reference tariff considered both a 9.1mtpa scenario and a 2.1mtpa scenario. Industry, the QCA and Queensland Rail all supported a 2.1mtpa for AU2 and the QCA in its AU2 Final Decision included the proposed formation strengthening program, with an estimated 5 km a year target, as necessary for this tonnage level, especially with NAS3 approval potentially seeing tonnages increasing over the AU2 period[5].

In consideration of the information provided and sites inspected the team assessed that the standard of the works was prudent and efficient.

Assessment of cost

The QCA in its AU2 Final Decision Capital Indicator accepted Queensland Rail's forecast expenditure of $17.8 M for this project. The expenditure claim for 2020-21 commissioned assets is $5,514,715 for a total of approximately [redacted] km of formation repair and upgrade. This equates to an estimated [redacted]/km. This appears on average to be in the high range however it is noted that the majority of the works (78%) have been undertaken in sections beyond Jondaryan, which are further out and more expensive.

In consideration of the location and length of given site areas, the assessment team found that the costs of the West Moreton formation strengthening were prudent and efficient.

[5] *2.1.6.1 Coal Growth* of the Asset Management Plan 2021-22

ARCADIS Design & Consultancy for natural and built assets

APPENDICES

Queensland Rail 2020 – 21 Capital Expenditure Claim

A QUEENSLAND RAIL NETWORK F21 EXPENDITURE CLAIM

The entirety of Queensland Rail's claim by project/program and capex inclusive of interest during construction is provided below.

CLAIM		
Project Number	**Project Name**	**2020-21**
100% WEST MORETON PROJECTS		
B.04042	Toowoomba Range Slope Stabilisation	331,285
B.04703	WMS Replacement Regional	39,767
B.05085	Pedestrian Crossing Upgrades (Regional)	1,321,057
B.05460	WM Formation Strengthening 18/19 - 20/21	5,514,715
B.05561	SCS Timber Resleepering 2020/21	13,283,884
B.05577	Greasers Replacement/Upgrades	433,439
B.05650	Reconditioning West Moreton 21-23	14,657,211
B.05655	Level Crossing Upgrades West Moreton	1,373,087
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
Nil		-
OTHER		
Ballast Undercutting	Ballast Undercutting	550,311
TOTAL		**37,504,755**

Interest during construction		
Project Number	**Project Name**	**2020-21**
100% WEST MORETON PROJECTS		
B.04042	Toowoomba Range Slope Stabilisation	4
B.04703	WMS Replacement Regional	1,548
B.05085	Pedestrian Crossing Upgrades (Regional)	54,625
B.05460	WM Formation Strengthening 18/19 - 20/21	397,613
B.05561	SCS Timber Resleepering 2020/21	283,515
B.05577	Greasers Replacement/Upgrades	-5,147
B.05650	Reconditioning West Moreton 21-23	216,693
B.05655	Level Crossing Upgrades West Moreton	1,917
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
Nil		-
OTHER		
Ballast Undercutting	Ballast Undercutting	-
TOTAL		**950,768**

Capex with interest during construction		
Project Number	**Project Name**	**2020-21**
100% WEST MORETON PROJECTS		
B.04042	Toowoomba Range Slope Stabilisation	331,289
B.04703	WMS Replacement Regional	41,315
B.05085	Pedestrian Crossing Upgrades (Regional)	1,375,683
B.05460	WM Formation Strengthening 18/19 - 20/21	5,912,328
B.05561	SCS Timber Resleepering 2020/21	13,567,399
B.05577	Greasers Replacement/Upgrades	428,292
B.05650	Reconditioning West Moreton 21-23	14,873,905
B.05655	Level Crossing Upgrades West Moreton	1,375,003
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
Nil		-
OTHER		
Ballast Undercutting	Ballast Undercutting	550,311
TOTAL		**38,455,524**

B PROJECT PRUDENCY ASSESSMENTS

B.04703 WMS REPLACEMENT REGIONAL

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$39,767
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$39,767

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Yes (included in Project Plan)
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site visit
Y	Completion report	Details provided
Other documents		

Details	
Project Number	B.04703
Project Name	WMS Replacement Regional
Project Type	Rail/Civil
Pre-Approval	Yes
Asset Description	137 weather stations across the Queensland Rail network that provide network control and asset maintenance teams with real time information and alarms. The project is the upgrade of 65 WMS across Queensland Rail's regional network. Of these, seven WMS (six to be upgraded and one to be decommissioned)
Location(s)	Various
Expenditure Claimed	$39,767
Interest during Construction (IDC)	$1,548
Total Claimed	$41,315

PROJECT OVERVIEW

Scope

There are 137 weather stations across the Queensland Rail network that provide network control and asset maintenance teams with real time information and alarms. The weather stations monitor environmental conditions that have the potential to affect the operation and safety of train movements along the network.

This project includes the upgrade of 65 WMS across Queensland Rail's regional network. Of these, seven WMS (six to be upgraded and one to be decommissioned) are in the West Moreton System

Business Case

There are 65 current Weather Monitoring Stations (WMS) installed that are connected to a trackside processing unit known as the Remote Monitoring System version 1 (RMS v1) Remote Terminal Unit. They communicate information, alarms and equipment health back to network control centres and to the condition monitoring systems data centre.

This project will upgrade the current WMS components to the latest technology. The existing RMS v1 weather stations are life-expired. The Telemetry and Receiver units for the RMS v1 systems are no longer available and these systems are becoming increasingly difficult to repair or replace.

In addition to the age of the system, it does not comply with the new regulations prescribed by the Australian Communications and Media Authority (ACMA). The new telecommunications technology to be implemented complies with these requirements. The project will enable compliance with the ACMA's 400MHz band plan. A range of parameters including air and rail temperature, water level, rainfall and humidity are monitored. Newer systems also add cameras for remote viewing of the site.

It is important that Queensland Rail install and maintain its own weather stations as these are installed directly at the rail at identified locations. As such any flood and temperature information is very specific for the rail network, as opposed to information obtained from other agencies such as the Bureau of Meteorology which is much broader.

On site findings and other considerations

Example to identify photograph by Date and time taken - 20220622 – Looking West

20220620_111057 – Looking North

20220620_111059 – Looking North

20220621_092816 – Looking East (Weather station at the Western side of Bridge at km 106.520)

20220621_124455 – Looking East (Weather station at the Eastern side of Bridge at km 164.350, Chinchilla)

Completion Summary

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure. Thereby minimisig damage to the infrastructure and operational disruptions during major weather events and considering the age and maintainability of the existing infrastructure. Applying a risk-based approach to manage the asset whole of life and mitigating performance disruptions aligns with the AMP.	https://www.queenslandrail.com.au/about%20us/Right%20to%20Information/Pages/Strategic-Asset-Management.aspx *"West Moreton System Capital Expenditure Report 2020–21"*	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update to West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	On 22nd May 2019 the scope and standard of the WMS Replacement Regional, Implementation Business Case was agreed to proceed.	*Queensland Rail's West Moreton System Capital Expenditure Report 2020-21* B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil

1.4	Is there appropriate evidence to demonstrate compliance with QR Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	From the information provided there was no evidence of non-compliance with WHS and rail safety requirements. No major incidents were recorded.	*Queensland Rail's West Moreton System Capital Expenditure Report 2020-21* B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	Project Plan endorsed and agreed to proceed, 02/12/2019	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	All the documents provided to QCA are listed in the "Previous Consideration by QCA" section	*Queensland Rail's West Moreton System Capital Expenditure Report 2020-21*	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	On 22nd May 2019 the scope and standard of the WMS Replacement Regional, Implementation Business Case was agreed to proceed.	*Queensland Rail's West Moreton System Capital Expenditure Report 2019-20* B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil

2.2	Is the standard consistent with the asset management objectives?	Y	The applied standard of works aligns with current QR standards, which by the nature of being an approved standard are considered industry leading practice to achieve an optimised and balanced whole of life outcome.	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	From the information provided and visual inspection on site, the standard applied is consistent with established and approved rail standards.	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards (including RPEQ or equivalent sign off)? If not, have the appropriate risk assessments and verification processes been implemented in the development of the standard	Y	From the information provided, it is noted that the material was proposed to be procured via an external provider and QR internal teams delivered the implementation works. This is considered a prudent approach an maximises QR in house capability and knowledge.	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	
2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	From the information provided the standard and level of works applied is consistent with operational requirements in that it is deemed necessary to ensure a reliable and safe operational railway.	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil

SECTION 3 - IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements and considerations?	Y	The following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	Practical completion for the works proposed in FY2020-21 was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim)	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic asset management plan?	Y	From the information provided, achieving the benefits/outcomes by completing this project would result in minimised whole of life costs.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	From the information provided, it is noted that the material was proposed to be procured via an external provider and QR internal teams delivered the implementation works.	B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil
3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y	From the information provided it was assessed that the costs were within expected range.	Cost spreadsheet and discussions with QR relevant staff.	Nil

3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?	Y	From the information provided all the WMS replacement works were undertaken to planned/scheduled to minimise minimise disruptions to rail traffic.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.04703 WMS Replacement Regional, project Plan, agreed to proceed on 22nd May 2019	Nil

B.05085 PED CROSSING UPGRADES REGIONAL

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Aurizon Network The 2017 Undertaking (UT5), was there sufficient demonstration of prudency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$1,321,057
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$1,321,057

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Details provided
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Scope/Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site visit
Y	Completion report	Details provided
Other documents		

Details	
Project Number	**B.05085**
Project Name	Pedestrian Crossing Upgrades (Regional)
Project Type	Rail/Civil
Pre-Approval	No
Asset Description	Alignment with ALCAM requirements. This project (Stage 2 in the rolling program) will address the installation or upgrade of an additional 20 passive pedestrian mazes across five regional council locations. These works will include the provision of the necessary protection control measures that are required to satisfy an acceptable risk threshold.
Location(s)	Various
Expenditure Claimed	$1,321,057
(IDC)	$54,625
Total Claimed	$1,375,683

PROJECT OVERVIEW

Scope

This project will install/upgrade 20 passive pedestrian mazes in priority locations including:

- Western Downs Regional Council;
- Toowoomba Regional Council;
- Southern Downs Regional Council; and
- Maranoa Regional Council

Business Case

The installation / upgrade of selected pedestrian crossings will improve site-specific safety factors. The upgrade will contribute to a reduction in the number of near miss occurrences and accidents involving pedestrians and rollingstock, in addition to reducing rail corridor trespass by pedestrians. The key benefits identified as an outcome of undertaking the proposed works are:

- Improved safety of passageway for pedestrians across the rail network;
- Address recommendations proposed by the ALCAM assessments and Queensland Rail requirements;
- Increased pedestrian use of the designated crossing;
- Reduction in pedestrian access to prohibited areas (rail corridor);
- Reduction in potential for near miss occurrences; and
- Reduction in accidents / incidents involving rollingstock and pedestrians.

Example to identify photograph by Date and time taken - 20220622 – Looking West

PED X-ing (km.160.336)

- Upgraded pedestrian crossing
- New Concrete sleepers and ballast

20220620_142748 – Looking East

20220620_142815 – Looking East

20220620_142830 – Looking East

20220620_142900 – Looking West

PED X-ing (Km 160.336), Photos taken during Site Visit (Hi-Rail) 20th June 2022

20220620_164801 – Looking East

20220620_164804 – Looking East

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure. Thereby minimising damage to the infrastructure and operational disruptions during major weather events and considering the age and maintainability of the existing infrastructure. Applying a risk-based approach to manage the asset whole of life and mitigating performance disruptions aligns with the AMP.	https://www.queenslandrail.com.au/about%20us/Right%20to%20Information/Pages/Strategic-Asset-Management.aspx *"West Moreton System Capital Expenditure Report 2020–21"*	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21	Nil
1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	On 3rd July 2019 the scope and standard of the Ped Crossing Installations and Upgrades project was approved. On 2nd July 2021 a Change in Request to Increase Budget and Scope was endorsed.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil

1.4	Is there appropriate evidence to demonstrate compliance with QR Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	From the information provided there was no evidence of non-compliance with WHS and rail safety requirements. No major incidents were recorded.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	On 3rd July 2019 the scope and standard of the Ped Crossing Installations and Upgrades project was approved. On 2nd July 2021 a Change in Request to Increase Budge and Scope was endorsed.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	On 2nd July 2021 a Change in Request to Increase Budge and Scope was endorsed.	*"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil
2.2	Is the standard consistent with the asset management objectives?	Y	The applied standard of works aligns with current QR standards, which by the nature of being an approved standard are considered industry leading practice to achieve an optimised and balanced whole of life outcome.	*"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	From the information provided and visual inspection on site, the standard applied is consistent with established and approved rail standards.	*"West Moreton System, Capital Expenditure Report"* 2020-21 B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019 B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021 Photographs from the site visit during 21-23 June 2022	Nil

2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards (including RPEQ or equivalent sign off)? If not, have the appropriate risk assessments and verification processes been implemented in the development of the standard	Y	From the information provided, it is noted that the material was proposed to be procured via an external provider and QR internal teams delivered the implementation works.	B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019	Nil
2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	From the information provided the standard and level of works applied is consistent with operational requirements in that it is deemed necessary to ensure a reliable and safe operational railway.	B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019	Nil

SECTION 3 - IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements, and considerations?	Y	From the information supplied, the following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019. B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	Practical completion for the works proposed in FY2020-21 was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim)	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019.	Nil

				B.05085_HREG-21-188 Change Request CR004 – Increase Budge and Schedule, endorsed on 02nd July 2021	
3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic asset management plan?	Y	From the information provided, achieving the benefits/outcomes by completing this project would result in minimised whole of life costs.	B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019.	Nil
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	From the information provided, it is noted that all the proposed works will be delivered by QR internal teams.	B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019.	Nil
3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y	From the information provided element and total costs aligned with previous and reasonable industry expectations.		Nil
3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?	Y	From the information provided all the WMS replacement works were undertaken to planned/scheduled to improve safety and minimise disruptions to rail traffic.	B.05085 Ped Crossing Installations & Upgrades Stage 2, approved on 03/07/2019.	Nil

B.05561 SCS TIMBER RESLEEPERING

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$13,283,884
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$13,283,884

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Details provided
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Scope/Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site inspection
Y	Completion report	Details provided
Other documents		

Details	
Project Number	**B.05561**
Project Name	SCS Timber Sleepering
Project Type	Rail/Civil
Pre-Approval	No
Asset Description	This project replaced 34,672 timber sleepers between Rosewood and Columboola on the West Moreton System • Rosewood – Toowoomba Up Line (59.50km – 161.40km ML); [redacted] sleepers; • Kingsthorpe Loop (19.16km – 20.00km WL); [redacted] sleepers; and • Jondaryan – Columboola (44.50km – 194.00km WL). [redacted] sleepers • West Moreton Bridge Ends LPC Re-sleepering
Location(s)	As detailed in workbook - Appendix A Rosewood- Jondaryan 2020.xlsx - Appendix A Jondaryan – Miles.xlsx
Expenditure Claimed	$13,283,884
(IDC)	$283,515
Total Claimed	$13,567,399

PROJECT OVERVIEW

Scope

The scope of work carried out by Queensland Rail under the SCS Time Resleepering program reviewed as part of this study is mentioned covered the following:

- Replacement of all life-expired (defective/ineffective) time sleepers with new timber sleepers (29,691)
- Replacement all un-plated timber sleepers with significant rail foot cutting damage.
- Reinstatement of all existing DSSP (Double Shoulder Sleeper Plates), for track stability improvement
- Fastening of new timber sleepers with 16mm dog screws
- Spot tamping of all new sleepers during insertion
- Installation of new DSSPs for all new sleepers;
- Reinstatement of all existing rail anchors to existing patterns
- Installation of new anchors/ box anchoring for all replaced sleepers (4 anchors per sleeper)
- Removal of 3+ steel sleeper clusters and replacement with timber sleepers
- Spacing new timber sleepers equidistant with steel sleeper pattern
- Resurfacing/ top and line reinstatement of all resleepered track areas
- In compliance with the relevant standards (CETS)
  Profiling of existing ballast to best fit profie

Business Case

The extent of required sleeper renewals within each cycle is determined by condition testing and analysis of deterioration rates to scope a program of works. Typically, the scope within each cycle will comprise the replacement of approximately 25% to 35% of the total timber population. This ensures the network performs safely and reliably to a condition that meets engineering standards for a period of five to six years without further significant maintenance intervention. Achieving this cyclic maintenance program in corridors across the state typically requires replacement on average of approximately 130,000 sleepers per annum.

On site findings and other considerations

A hi-rail site visit has been carried out between Rosewood and Miles, by the Arcadis, QCA and QR representatives between 20th June 2022 and 22nd June 2022.

The most amount of re-sleepering work done by Queensland Rail was through Jondaryan-Columboola Section (44.5 Km to 194 Km) where [redacted] sleepers were replaced. This represents approximately 30% of the total number of Timber sleepers within the Rosewood – Jondaryan section, based on the Timber sleeper population provided in Annexure 2 of the Business Case document.

It was noted that this section had mix of timber and steel sleepers interspersed, which is result of the maintenance regime adopted through the asset lifecycle, where steel sleepers were used instead of timber sleepers as required at various locations.

The key issues observed during the site visit around sleeper are as follows.

1. **Sleepering spacing being pushed out, in the direction of loaded traffic movement**:

It was noted during inspections that at many locations, the sleepers were in skew rather than square to rail, specifically moving in direction of loaded traffic. This was resulting in poor track stability. This phenomenon was more pronounced, at location of fish plates joints.

The use of DSSP (Double Shoulder Sleeper Plates) and rail anchors is expected to address the issue sleeper spacing being moved out and provided additional track stability

2. **Damaged sleepers**: sleepers which had been damaged because rail foot cutting where being removed.
3. **Rail fastening** having come out, due to operational wear and tear along the alignment. Many locations, it was identified that dog spike were not available in sections where work had not been carried out.

Completion Summary

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with MD-19-222 Asset Management _West Moreton System, which highlights under Section 3.2.1.3 *"{The light track structure between Jondaryan to Miles is being impacted by significant track creep to the east under loaded coal traffic. The predominantly 41kg/m rail jointed track on 1- in-2 interspersed steel and timber sleepers is no longer a suitable asset match for the increased coal traffic task. The timber sleepers are not fully double shoulder sleeper plated and are not box-anchored with rail anchors. Whilst this track standard meets Civil Engineering Track Standards (CETS) for this type of track, the light track needs to be strengthened or replaced to carry the current traffic task. While the interspersed timber sleepers provide load bearing support, they do not provide any longitudinal rail constraint without the provision of plates and rail anchors*}," which clearly collaborates the issues observed on site during inspections	MD-19-222 Asset Management _West Moreton System	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	The extent of the project for timber re-sleepering is economically reasonable, as most of the effort has been put in the section which is 41kg/m rail jointed track on 1 in 2 interspersed steel and timber sleeper.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* MD-19-222 Asset Management _West Moreton System Appendix A Rosewood-Jondaryan 2020.xlsx Appendix A Jondaryan – Miles.xlsx *"West Moreton System, Capital Expenditure Report"* 2020-21 Track Recording Graphs – West Moreton – March 2020 and April 2022	Nil
1.4	Is there appropriate evidence to demonstrate compliance with Queensland Rail Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	On review of the reports provided by Queensland Rail, its considered that sufficient evidence has been provided by Queensland Rail on requirements to meet, rail safety, workplace health, safety, and environmental requirements.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

				Track Recording Graphs – West Moreton – March 2020 and April 2022 Project Handover Report, B.05561 SCS Timber Re-sleepering 2020/21 Appendix A Rosewood-Jondaryan 2020.xlsx Appendix A Jondaryan – Miles.xlsx	
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	Business case endorsed and agreed to proceed, 25/10/2020	B.05561 Network Operations South Timber Resleepering 2020-21	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	All the documents provided to QCA are listed in the "Previous Consideration by QCA" section	*"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.05561 Business Case, SCS Timber Resleepering 2020/21	Nil
2.2	Is the standard consistent with the asset management objectives?	Y	From the available information, the project standard is consistent with the asset management objectives, to maintain a safely operating railway.	B.05561 Project Completion Report, SCS Timber Resleepering 2020/21	Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	From the available information, the project standard is consistent with the asset management objectives, to maintain a safely operating railway.		Nil
2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards (including RPEQ or equivalent sign off)? If not, have the appropriate risk assessments and verification processes been implemented in the development of the standard	Y	Section 4.3 Design Development, of the Project Completion Report notes that these works are essentially renewal of assets and there were no specific design requirements for this work, From section 4.9 of the Project Completion Report, it is noted that final inspections were carried out by the supply chain south asset management and supervisors prior to issuing Project completion report.		Nil

2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	As outlined previously, the extent of the project for timber re-sleepering is economically reasonable, as most of the effort has been put in the section which is 41kg/m rail jointed track on 1 in 2 interspersed steel and timber sleeper. Additionally, the results from the TRC indicate that the track was in poor condition and not of a standard compliant with operational requirements – hence it is considered that the work is necessary to comply with operational requirements.		

SECTION 3 - IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements, and considerations?	Y	The following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. *"Project Handover Report B.05561 SCS Resleepering 2020/21"* B.05561 Project Completion Report, SCS Timber Resleepering 2020/21	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	The following is noted: • Practical completion was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim)		Nil
3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic asset management plan?	Y	The timber re-sleepering was carried out in line with MD-19-222 Asset Management _West Moreton System		Nil
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	The work was mostly undertaken by Queensland Rail itself, as it was Track Structure related. This is considered a prudent approach in		Nil

			consideration of the resources and skills within QR		
3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y			Nil
3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?		There were some significant wet weather events which have impacted rail corridor access at some locations along the corridor. From discussions with relevant staff QR made the appropriate effort and attempts to minimise the disruptions caused by these events. Apart from the above, no unplanned impacts to rail operations – all closures handed back on time		Nil

B.05577 GREASERS REPLACEMENT UPGRADES

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$433,439
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$433,439

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Details provided
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Scope/Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site inspection
Y	Completion report	Details provided
Other documents		

Details	
Project Number	**B.05577**
Project Name	Greasers Replacement/Upgrades
Project Type	Rail/Civil
Pre-Approval	No
Asset Description	Lubricator/Greaser
Location(s)	Various
Expenditure Claimed	$433,439
(IDC)	-$5,147
Total Claimed	$428,292

PROJECT OVERVIEW

Scope

West Moreton System currently has 74 Portec PW37.5 lubricators installed. Installation of 50 electric lubricators on the system:

- 15 lubricators along the Grandchester to Laidley section;
- 30 lubricators along the Helidon to Toowoomba section; and
- lubricators along the Toowoomba to Columboola section

Business Case

The West Moreton System currently has 74 Portec PW37 5 lubricators installed These lubricators are hydraulically driven and require heavy maintenance regimes to ensure they remain operational and reliable The current lubricators rely on the tram wheels to trigger a pm that pushes pressure through the hydraulic system and pumps the grease through to the rail If there are any leaks or air in the hydraulic system it soon becomes non-operational and stops pushing lubricant onto the rail The current lubricators require constant checking to ensure operation These lubricators have been installed for an average of 20 years and are becoming life-expired.

In May 2019 [redacted] advised Queensland Rail of a sharp increase in wheel flange wear, particularly on lead wheels of locomotives running the West Moreton corridor from around April 2019 [redacted]

Due to this increased wear, Queensland Rail increased lubricator maintenance and initiated manual lubrication of all curves on the Toowoomba Range An accelerated rail grinding run was completed to ensure all rail was ground to the required profile to assist with the harsh wear.

On site findings and other considerations

20220620_123723 – Looking East (km 106.000, Grantham)

20220621_133606 – Looking East (within the Yan coal Balloon loop, Columboola)

20220621_124703 – Looking East (near km 106.000)

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure to minimise losses and operational disruptions during major weather events. Applying a risk-based approach to manage the asset whole of life and mitigating performance disruptions aligns with the AMP	https://www.queenslandrail.com.au/about%20us/Right%20to%20Information/Pages/Strategic-Asset-Management.aspx *"Queensland Rail West Moreton System, Review of proposed maintenance, capital & Operations Expenditure"*, May 2019 "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	A review of the supplied information in the business case indicates that these lubricators were installed over 20 years (average) ago and heavy maintenance regimes are required to keep these reliable and operational.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil

1.4	Is there appropriate evidence to demonstrate compliance with QR Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	From the information provided there was no evidence of non-compliance with WHS and rail safety requirements. No major incidents were recorded.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	Business case endorsed and agreed to proceed, 02/12/2019	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*".	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	All the documents provided to QCA are listed in the "Previous Consideration by QCA" section	*"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	On 3rd December 2019, the scope and standard of the Greaser Replacements/Upgrades Project was "agreed to proceed" and "endorsed".	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
2.2	Is the standard consistent with the asset management objectives?	Y	The applied standard of works aligns with current QR standards, which by the nature of being an approved standard are considered industry leading practice to achieve an optimised and balanced whole of life outcome.	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*"	Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	From the information provided and visual inspection on site, the standard applied is consistent with established and approved rail standards.	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*"	Nil
2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards (including RPEQ or equivalent sign off)? If not, have the appropriate risk assessments and verification processes been implemented in the development of the standard	Y	From the information provided, it is noted that the material was proposed to be procured via an external provider and QR internal teams delivered the implementation works.	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*"	Nil

2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	From the information provided the standard and level of works applied is consistent with operational requirements in that it is deemed necessary to ensure a reliable and safe operational railway.	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*"	Nil

SECTION 3 – IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements and considerations?	Y	The following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	Practical completion was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim)	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic	Y	From the information provided, achieving the benefits/outcomes by completing this project would result in minimised whole of life costs.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil

	asset management plan?			"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	From the information provided, it is noted that the material was proposed to be procured via an external provider and QR internal teams delivered the implementation works.	"*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil
3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y	From the information provided cost elements aligned with previous similar range and were appropriate for the nature of the project.		Nil
3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?	Y	From the information provided all the Greasers replacement works were undertaken to planned/scheduled to minimise minimise disruptions to rail traffic.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. "*Project Scope Identification / Project Plan, B.05577 Greasers Replacement/Upgrades*", agreed to proceed and endorsed on 03rd December 2019.	Nil

B.05650 RECONDITIONING WEST MORETON 21-23

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$14,657,211
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$14,657,211

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Details provided
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Scope/Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site visit
Y	Completion report	Details provided
Other documents		

Details	
Project Number	B.05650
Project Name	Reconditioning West Moreton
Project Type	Rail/Civil
Pre-Approval	Yes - $11.6 m in 2020 paper “costs and investment forecasts”
Asset Description	37 km of track reconditioning
Location(s)	Various
Expenditure Claimed	$14,657,211
(IDC)	$216,693
Total Claimed	$14,873,905

PROJECT OVERVIEW

Scope

The project (37 km of track reconditioning to reduce risk of TSR's and improve Overall Track Condition Index (OTCI)) has been developed to address the high priority defects that have been identified during routine infrastructure inspections of the West Moreton System and in Queensland Rail's 'Derailment Reduction Strategy West Moreton System Jondaryan – Columboola Report (2019).

The scope of works for this project includes the upgrade of the track structure to 50Kg rail, full depth medium duty concrete sleepers and A Grade ballast and formation improvements comprised of a new capping structure. The scope of work to be undertaken is understood to be on similar lines as (IFC) Issued for Construction Drawings with following drawing numbers

The table below highlights the planned works to be undertaken for this section in FY21-23

Functional Location Description	Sections	Start	End	Length (km)
Jondaryan - Dalby	Jondaryan - Malu	44.570	48.202	3.632
Jondaryan - Dalby	Malu - Bowenville	49.043	56.849	7.806
Jondaryan - Dalby	Bowenville - Koomi	57.698	59.850	2.152
Jondaryan - Dalby	Bowenville - Koomi	62.321	66.778	4.457
Jondaryan - Dalby	Koomi - Blaxland	67.646	70.236	2.590
Macalister - Miles	Warra - Brigalow	128.015	144.455	16.440
				37.077

On site findings and other considerations

A hi-rail site visit has been carried out between Rosewood and Miles, by the Arcadis, QCA and QR representatives between 20th June 2022 and 22nd June 2022.

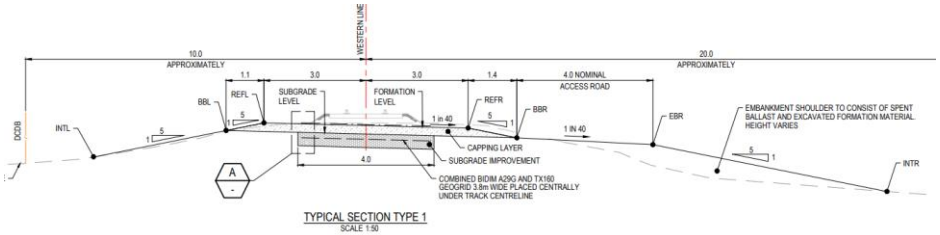
From the site visit it is evident that the following works have been completed within the following sections.

- Jondaryan to Malu : 44.570 Km to 47.780Km **(3.21Km)**
- Bowenville-Koomi : 57.698 to 59.850Km **(2.152Km)**
- Bowenville-Koomi : 62.321 Km to 66.778Km **(4.457 Km)**

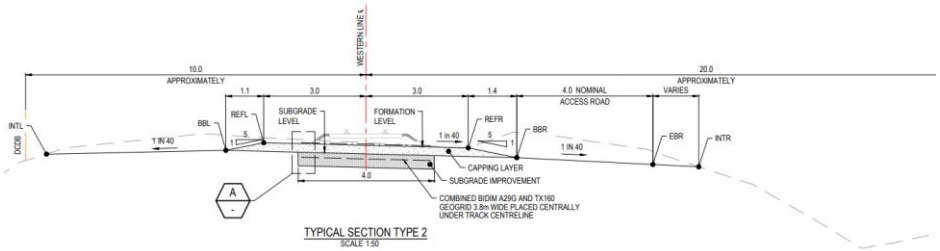
In FY21, work of 9.819Km has been completed by Queensland Rail out of the identified scope of 37.07Km.

Scoped	Total Length of work Completed	FY 21 Claim Amount	Cost per track KM.
- **Jandaryan to Malu :** [redacted] - **Bowenville-Koomi :** [redacted] - **Bowenville-Koomi :** [redacted]	[redacted] **Km**	**$14,657,211.34**	[redacted] **Km**

The works were carried out under IFC drawings created for each of these sections within Queensland Rail, which was reviewed and studied as part of this assessment. The focus of formation strengthening was to address the shrink swell issues of black soil, though which wider extent of treatment has been proposed and implemented as shown in Fig 1.



TYPICAL SECTION TYPE 1
SCALE 1:50



TYPICAL SECTION TYPE 2
SCALE 1:50

The methodology adopted is best practise to achieve maximum performance through the system and allowing for improved functionality along the section.

Note – Photos provided in the sections below don't cover all sections mentioned/identified in the **Business Case – B.05650 Reconditioning West Moreton 20/21-22/23**

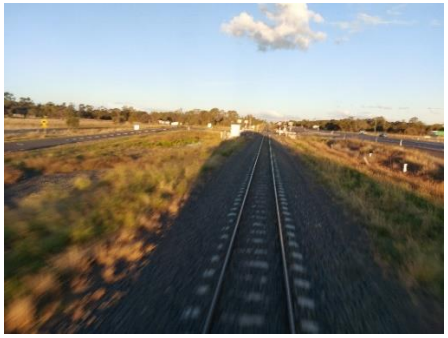
- Track structure upgrade with 50kg/m rail and full depth/medium depth concrete sleepers and new ballast.

Example to identify photograph by Date and time taken - 20220620 – Looking West

Track reconditioning between km 44.570 to Km 48.202

20220620_164741 – Looking East

20220620_164742 – Looking East



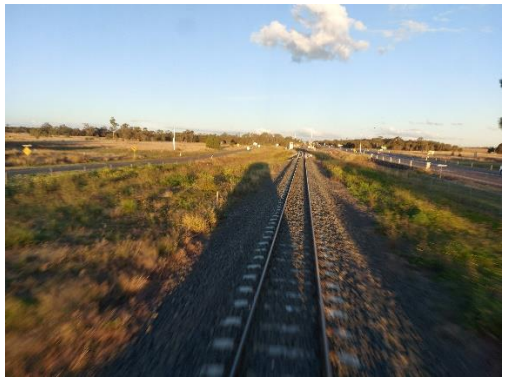
20220620_164745– Looking East

20220620_164748 – Looking East

20220620_164750 – Looking East

20220620_164752 – Looking East

20220620_164754 – Looking East



20220620_164757 – Looking East

20220620_164801 – Looking East

20220620_164804 – Looking East

20220620_164807 – Looking East

20220620_164915 – Looking East (km 45.5)

Track reconditioning between km 49.043 to Km 56.849

20220620_170933 – Looking East

20220620_170936 – Looking East

20220620_170942 – Looking East

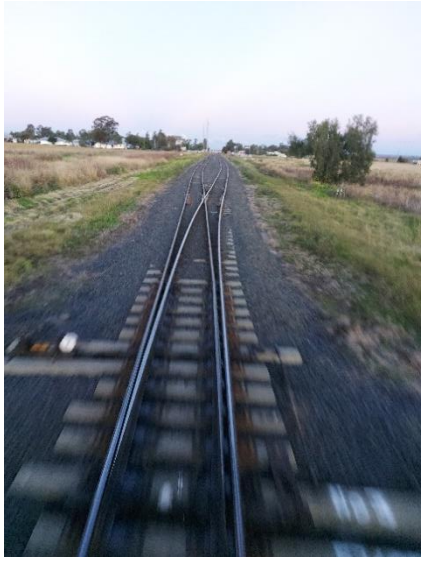
20220620_171030 – Looking East

20220620_171036 – Looking East
Irvingdale St, Bowenville

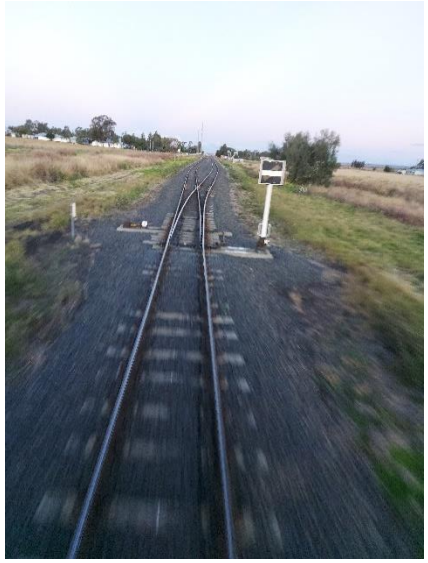
20220620_171041 – Looking East

Track reconditioning between km 57.698 to Km 59.850

20220620_171148 – Looking East



20220620_171150 – Looking East



20220620_171151 – Looking East

Track reconditioning between km 62.321 to Km 66.778

No photos available, as we crossed this section during fading light.

Track reconditioning between km 67.646 to Km 70.236

Work not commenced in this section and no site photos available at this section.

Track reconditioning between km 128.015 to Km 144.455

20220621_111152 – Looking East (km 128.050)

20220621_111203 – Looking East Bridge at km128.100

20220621_111215 – Looking East Bridge at km128.100

20220621_111217 – Looking East

20220621_111223 – Looking East

20220621_111227 – Looking East Kerrs Road L-Xing, Warra

Reconditioning works completed up to the Eastern side of the Kerrs Road level crossing. It was understood that corridor was not accessible due to severe wet weather conditions.

20220621_111324 – Looking East
Bridge at km 128.740

20220621_111341 – Looking East

20220621_111403 – Looking East

Reconditioning works completed either side of bridge at km 128.740. Based on the discussions with QR representatives, it was understood that the corridor was not accessible due to severe wet weather conditions, which is evident in the photos above. Stockpiles of new concrete sleepers can be seen along this section of the corridor.

20220621_111421 – Looking East

20220621_111756 – Looking East

20220621_111758 – Looking East

20220621_111809 – Looking East

20220621_111810 – Looking East

20220621_111826 – Looking East

20220621_111843 – Looking East

20220621_114013 – Looking East
Km 144.400, Brigalow

20220621_114029 – Looking West
Km 144.400, Brigalow

Reconditioning works between approx. km 129.000 and km 144.400 were due in some sections. Based on the discussions with QR representatives, it was understood that the corridor was not accessible due to severe wet weather conditions, which is evident in the photos above. Stockpiles of new concrete sleepers and ballast can be seen along this section of the corridor.

Completion Summary

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure. Thereby minimising damage to the infrastructure and operational disruptions during major weather events and considering the age and maintainability of the existing infrastructure. Applying a risk-based approach to manage the asset whole of life and mitigating performance disruptions aligns with the AMP.	https://www.queenslandrail.com.au/about%20us/Right%20to%20Information/Pages/Strategic-Asset-Management.aspx *"West Moreton System Capital Expenditure Report 2020–21"*	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21	Nil
1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	A review of the track recording documents provided indicates that the sections in question required works to reduce the risk of service disruption and safety risks.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil

1.4	Is there appropriate evidence to demonstrate compliance with QR Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	From the information provided there was no evidence of non-compliance with WHS and rail safety requirements. No major incidents were recorded.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts" dated 27/01/2020.* *"West Moreton System, Capital Expenditure Report"* 2020-21 B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	Business case endorsed and agreed to proceed, 17/01/2020	B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	All the documents provided to QCA are listed in the "Previous Consideration by QCA" section	*"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place. In the professional opinion of the assessor it is considered that the work undertaken is required to maintain a safe and running railway and not 'gold platting' or doing additional unnecessary works	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil
2.2	Is the standard consistent with the asset management objectives?	Y	The applied standard of works aligns with CETS and other rail standards, which by the nature of being an approved standard are considered industry leading practice to achieve an optimised and balanced whole of life outcome.		Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	From the information provided and visual inspection on site, the standard applied is consistent with established and approved rail standards.		Nil
2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards (including RPEQ or equivalent sign off)? If not, have the appropriate risk assessments and verification processes been implemented in the development of the standard	Y	Based on the Issued for Construction (IFC) drawings supplied, track reconditioning designs were reviewed and approved by the RPEQ.		Nil

2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	From the information provided the standard and level of works applied is consistent with operational requirements in that it is deemed necessary to ensure a safe operational railway.		Nil

SECTION 3 - IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Response	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements and considerations?	Y	The following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported • Wet weather has impacted progress, with water pooling in corridor not allowing access. However, in the circumstances it is considered prudent not to invest in the additional drainage expense to eliminate this	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.05650 Business Case, Reconditioning West Moreton 20/21-22/23 Site visit and discussions with QR representatives	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	The following is noted: • Practical completion was achieved in some sections within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim) • Wet weather has impacted progress	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. B.05650 Business Case, Reconditioning West Moreton 20/21-22/23 Site visit and discussions with QR representatives	Nil

3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic asset management plan?	Y	From the information provided, achieving the benefits/outcomes by completing this project would result in minimised whole of life costs.	B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	The works were predominantly undertaken in house along with external earthworks company under an existing panel agreement.	B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil
3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y	From the information provided the unit rate aligned with previous similar works and industry expectations.		Nil
3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?	Y	From the information provided all the track reconditioning works were planned/scheduled timeframes to minimise disruptions to rail traffic.	B.05650 Business Case, Reconditioning West Moreton 20/21-22/23	Nil

B.05655 LEVEL CROSSING UPGRADES WEST MORETON

The following provides detail of the project prudency assessment:

ASSESSMENT SUMMARY

In accordance with clause 2, Schedule E of the Queensland Rail The 2020 Undertaking (AU2), was there sufficient demonstration of prudency and efficiency to satisfy:	Prudency of Scope	Y
	Prudency of Standard	Y
	Prudency of Cost	Y
Capital Expenditure Claim (total)		$1,373,087
Impact of findings on Claim		$ -
TOTAL ACCEPTED		$1,373,087

Check list	Documentation Type	Name of document
Essential documents		
Y	Project Management Plan	Details provided
Y	Breakdown of costs	Details provided
Y	Business Case Justification (IAR)	Yes (Included in Project Scope/Plan)
Y	Commissioning data and completion, acceptance, and handover validations.	Site visit
Y	Completion report	Details provided
Other documents		

Details	
Project Number	**B.05655**
Project Name	Level Crossing Upgrades West Moreton
Project Type	Rail/Civil
Pre-Approval	No
Asset Description	23 level crossings in the West Moreton System have been identified as requiring reconditioning – including surface replacement, improvements to drainage, Standard requirements upgrades
Location(s)	Various
Expenditure Claimed	$1,373,087
(IDC)	$1,917
Total Claimed	$ 1,375,003

PROJECT OVERVIEW

Scope

There are 127 level crossings including public level crossings, occupational and maintenance level crossings (87, 36 and 4 respectively) in the West Moreton System from Rosewood on the Mam Line to Miles on the Western Line The service life of a level crossing will vary between 10 and 25 years depending on rail traffic, road traffic, road/rail orientations/alignment, road surface, drainage, and climatic conditions.

Twenty-three level crossings in the West Moreton System were identified as requiring reconditioning in the five years from 2020/21 - 2024/25 The level crossings were identified via field assessment through inspections by qualified track staff. Engineering resources were then utilised to verify and prioritise needs prior to the current work being planned. The identified sites are typically life-expired and/or in poor condition (as noted in Annexure 5 of the QR Project Scope and Identification / Project Plan, B.05655), which demonstrates the current condition of the EAMS assets.

Business Case

This project has been developed to improve safety and minimise the risks associated with the interface between rail and road at level crossings.

The current version of the Civil Engineering Track Standards (CETS) addresses transitions between track structures at level crossings where rail breaks have occurred in the past because of inadequate transition. Maintaining flangeway clearance at level crossings becomes difficult as elements degrade, especially with deteriorated or inadequate road surfaces and this has caused derailments in the West Moreton System. This project was classified as a “modern equivalent type” replacement of the track and level crossing infrastructure, the works focused on ensuring key components are safer than current state and compliant with the current standards, including transitions between track structures and flangeway clearance.

Increase in safety was to be achieved via reconditioning rail track panels and providing new road surfaces. The purpose of the project was to mitigate the risks associated with level crossings by focusing on:

- Asphalt surface replacement when road traffic is adversely impacted
- Providing or improving drainage systems in level crossings as they are reconditioned
- Designing, installing, operating, and maintaining level crossings in compliance with Queensland Rail standards for level crossings

The business case was agreed to proceed on the 23rd Jan 2020.

On site findings and other considerations

A hi-rail site visit has been carried out between Rosewood and Miles, by the Arcadis, QCA and QR representatives between 20th June 2022 and 22nd June 2022.

Example to identify/read photograph by Date and time taken - 20220622 – Looking West

LXR_04233 – Smithfield / Burgess Road (km 98.370)

From the site visit it is evident that the following works have been completed at this level crossing.

- Road resurfacing works
- Track structure upgrade within the level crossing with concrete sleepers
- Track structure upgrade either side the of the level crossing (along the track) with concrete sleepers

20220620_113634 – Looking West

20220620_113735– Looking East

20220620_113903– Looking South

Photos taken during the Site Visit (Hi-Rail) 20th June 2022

LXR_00856 – Haden Road (km. 19.990)

From the site visit it is evident that the following works have been completed at this level crossing.

- Road resurfacing works
- Track structure upgrade within the level crossing with concrete sleepers
- Track structure upgrade either side the of the level crossing (along the track) with concrete sleepers

20220620_152206 – Looking East

20220620_152207 – Looking East

Photos taken during the Site Visit (Hi-Rail) 20th June 2022

LXR_02319 – Irvingdale Street, Bowenville (km. 57.150)

From the site visit it is evident that the following works have been completed at this level crossing.

- Road resurfacing works
- Track structure upgrade within the level crossing with concrete sleepers
- Track structure upgrade either side the of the level crossing (along the track) with concrete sleepers

20220620_171037 – Looking East

20220620_171038 – Looking East

20220620_171041 – Looking East

Photos taken during the Site Visit (Hi-Rail) 20th June 2022

LXR_02330 – Nicholson Street, Dalby (km. 84.180)

From the site visit it is evident that the following works have been completed at this level crossing.

- Road resurfacing works
- Track structure upgrade within the level crossing with concrete sleepers
- Upgrades to Ped X-ings
- Track structure upgrade either side the of the level crossing (along the track) with concrete sleepers

20220621_083528 – Looking West

20220621_083522 – Looking West

20220621_083622 – Looking West

Photos taken during the Site Visit (Hi-Rail) 20th June 2022

Completion Summary

SECTION 1 - IS THE SCOPE PRUDENT AND EFFICIENT?

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
1.1	Does the project align with the asset management strategy and AMP and were there reasonable grounds for proceeding given the circumstances at the time of investment?	Y	The project scope aligns with whole of life predictive decision making in terms of enhancing the resilience of the infrastructure to minimise damage to the infrastructure and operational disruptions during major weather events, and considering age and maintainability of the existing infrastructure. Applying a risk-based approach to manage the asset whole of life and mitigating performance disruptions aligns with the AMP.	https://www.queenslandrail.com.au/about%20us/Right%20to%20Information/Pages/Strategic-Asset-Management.aspx *"West Moreton System Capital Expenditure Report 2020–21"*	Nil
1.2	Are project solutions based on reasonable expectation of the demand to have regard for current and future capacity levels?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
1.3	Is the extent of the project economically reasonable and efficient considering the age and condition of the Rail Infrastructure?	Y	Existing condition of some of the level crossings as shown in photographs, Annexure 2 of the *"QR Project Scope and Identification / Project Plan, B.05655"*	*Sections 3.1.1 and 3.1.2, "Update To West Moreton System Cost and Investment Forecasts", dated 27/01/2020.* *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil

1.4	Is there appropriate evidence to demonstrate compliance with QR Network's legislative and tenure requirements, specifically relating to rail safety, workplace health, safety and environmental requirements?	Y	Existing condition of some of the level crossings as shown in photographs, Annexure 2 of the *"QR Project Scope and Identification / Project Plan, B.05655"* The investment in this project will ensure fit for purpose assets are provided to support service delivery. As a result of this proposed work there will be an avoidance of temporary speed restrictions and reduced maintenance required, both of which will assist operational performance.	*Annexure 2 and Future Operational performance sections within the "QR Project Scope and Identification / Project Plan, B.05655"*	Nil
1.5	Is there evidence that the project is approved and supported and approved by Network users/ Customers	Y	*QR Project Scope and Identification / Project Plan, B.05655* - endorsed and agreed to proceed, 23/01/2020	*"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
1.6	Have there been any additional submissions, requests, or consultations to the QCA that have not been addressed appropriately?	Y	All the documents provided to QCA are listed in the "Previous Consideration by QCA" section.	*"West Moreton System, Capital Expenditure Report"* 2020-21	Nil

SECTION 2 - IS THE STANDARD PRUDENT AND EFFICIENT?

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
2.1	Does the standard reflect the current demand and likely future capacity levels and type of traffic?	Y	The traffic forecasts approached 9.1 mtpa (with approval of Stage 3 of Acland Mine) coal, plus 2 services a week for the 'Westlander' plus several agriculture and other freight services. Inland rail business case includes increase to 19.5 million tonnes with a delivery planned for 2025 – adequate capacity was considered prudent on West Moreton System to achieve these commitments without Inland Rail in place.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil

2.2	Is the standard consistent with the asset management objectives?	Y	Following sections from *"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. • Prudency of Standard • Design Standards and Codes – QR Safety and Environmental Safety Systems	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil
2.3	Is the standard consistent with the requirements of established Rail Industry and Queensland Rail standards,	Y	Following sections from *"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. • Prudency of Standard • Design Standards and Codes – QR Safety and Environmental Safety Systems	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12.	Nil
2.4	Is the standard of works consistent with having regard for the requirements of Australian design and construction standards	Y	"Key Risks identified" section of the *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	*"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
2.5	Is the standard consistent with the operational requirements and other as per discussions with or submission by stakeholders?	Y	Annexure 3 of the *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil

SECTION 3 - IS THE COST PRUDENT AND EFFICIENT

Item No.	Question	Resp	Comments/Findings	Source	Impact to claim
3.1	Was the project managed effectively with regards to the customer, economic and safety, environmental and sustainability requirements, and considerations?	Y	The project completion date is towards the end of year 2025. On locations where some of these upgrades have already been completed, the following is noted: • No major environmental incidents were reported by the principal contractor and a EMP was approved and implemented • No QR LTI's were sustained, and no major incidents reported	*"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
3.2	Was the project managed effectively with regards to schedule and cost	Y	Practical completion for the works proposed in FY2020-21 was achieved within schedule, with all stage gates and budget within approved estimate (inclusive of 20-21 claim)	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
3.3	Was the minimization of whole of life costs considered adequately and other principles defined in the strategic asset management plan?	Y	From the information provided, achieving the benefits/outcomes by completing this project would result in minimised whole of life costs.	*"West Moreton System, Capital Expenditure Report"* 2020-21, pg. 7-12. *"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil
3.4	Was a reasonable procurement methodology and cost competitive procurement process used to select and complete the project?	Y	From the information provided, it is noted that all the level crossing upgrade works will be carried out by the QR internal teams.	*"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil

3.5	Do the cost elements of the project benchmark reasonably relative to the scale, nature, cost and complexity of the project?	Y	From the information provided the element costs were in line with previous expenditure on the program and in range of industry expectations.		Nil
3.6	Have the works been scheduled and staged to minimise disruption to the operation of users?	Y	From the information provided all the level crossing upgrade works were undertaken to planned/scheduled to minimise disruptions to rail traffic and to improve safety of the road traffic.	*"QR Project Scope and Identification / Project Plan, B.05655 – Level Crossing Upgrades"*	Nil

C LIST OF DOCUMENTATION PROVIDED

The list of documentation provided and used to assess Queensland Rail's claim is outlined below.

Document Name	Brief description
General	
20200127 - QCA - Further Review of West Moreton Cost and Investment Forecasts 1.1.3	Systra (2020) Update to West Moreton System Cost and Investment Forecasts
NOT FOR PUBLICATION 20211202_2020_21 Capital Expenditure Report_FINAL_Confidential	Upgrade of weather monitoring stations to comply with the new regulations prescribed by the Australian Communications and Media Authority.
Track Recording Graphs Track Recording Graphs - West Moreton April 2022 Track Recording Graphs - West Moreton - March 2020 Track Recording Graphs - West Moreton April 2022	Various track recording graphs through the West Moreton System: 1 graph for Chinchilla to Columboola based on data retrieved in April 2022 33 graphs for the West Moreton System based on data retrieved during March 2020 16 graphs for the West Moreton System based on data retrieved during April 2022
Level crossings upgrades West Moreton	
B.05655 Level Crossing Upgrades West Moreton Approved	Approved Project Scope Identification and Project Plan for the level crossings upgrades West Moreton program
Asset transfer value: ATF2021-0327 - B.05655 - [redacted] - (KM) - CAPEX TRANSFER ATF2021-0280 - B.05655 - [redacted] - (KM) - CAPEX TRANSFER	These document the asset transfer value for assets acquired for the level crossings upgrades West Moreton program
Reconditioning West Moreton	
B.05650 Reconditioning West Moreton Implementation Approved	Approved Business Case for Reconditioning West Moreton program
West Moreton Track Reconditioning drawings: 20-12710 WMTR B2K 57k698 - 59k850 IFC Wet Signed WMTR B2K 62KM TO 66KM - IFC Set WMTR J2M 45km500 to 47km780 (Western End) IFC Set - Digitally Signed	Drawings for West Moreton Track Reconditioning program through various chainages
ATF2021-0153 - B.05650 - $14,657,211.34 - (AC) - CAPEX TRANSFER	This documents the asset transfer value for assets acquired for the Reconditioning West Moreton program
Greasers Replacements Upgrades project	

Document Name	Brief description
B.05577 Greasers ReplacementsUpgrades approved Implementation stage BC	Approved Project Scope Identification and Project Plan for the Greasers Replacements Upgrades program
ATF2021-0284 - B.05577 - $433,438.50 - (KM) - CAPEX TRANSFER	This documents the asset transfer value for assets acquired for the Greasers Replacements Upgrades program
Pedestrian Crossing Upgrades (Regional)	
B.05085_HREG-21-188 Change Request - Ped Crossing Upgrades CEO Approved	Change request form for the Pedestrian Crossing Upgrades (Regional) program
B.05085 Ped Crossing Installations_Upgrades APPROVED	Approved Project Scope Identification and Project Plan for the Pedestrian Crossing Upgrades (Regional) program
Asset transfer value: • 20211123 FY2021 WM Capex QCA V1.00b PED MAZES.xlsx • ATF2022-0008 - B.05085 - $[redacted] - (KM) - CAPEX TRANSFER • ATF2021-0228 - B.05085 - $[redacted] - (AC) - CAPEX TRANSFER	These document the asset transfer value for assets acquired for the Pedestrian Crossing Upgrades (Regional) program
SCS Timber Resleepering 202021	
B.05561 Network Operations South Timber Resleepering 2020-21	Approved Business Case for SCS Timber Resleepering program
B.05561_Project Completion Report	Project Completion Report for SCS Timber Resleepering program
Project Handover Report B.05561 - Signed MW MD GA AR	Project Handover Report for SCS Timber Resleepering program
Asset transfer value: • ATF2021-0269 - B.05561 - [redacted] - (KM) - CAPEX TRANSFER • ATF2021-0183 - B.05561 - [redacted] - (AC) - CAPEX TRANSFER	These document the asset transfer value for assets acquired for the SCS Timber Resleepering program
Slope Stabilisation Project	

Document Name	Brief description
B04042 Toowomba Range Slope Stabilisation (Implem.stg.)_Business Case_Confidential	Approved Business Case for Slope Stabilisation Project
B04042 Toowoomba Range Slope Stabilisation Project Handover Report	Project Handover Report for Slope Stabilisation Project
B04042 Slope Stabalisation Project Completion Report_Confidential	Project Completion Report for Slope Stabilisation Project
ATF2021-0227 - B.04042 - $331,284.82 - (AC) - CAPEX TRANSFER	This documents the asset transfer value for assets acquired for the Slope Stabilisation Project
WM Formation Strengthening	
B05460 WM Formation Strengthening_Implem.stg.BC_APPROVED	Approved Project Scope Identification and Project Plan for the WM Formation Strengthening program
ATF2021-0156 - B.05460 - $5,514,715.30 - (AC) - CAPEX TRANSFER	This documents the asset transfer value for assets acquired for the WM Formation Strengthening program
WMS Replacement (Regional)	
Appd B.04703 WMS Replacement Regional Implem bus case	Approved Project Plan for the WMS Replacement (Regional) program
ATF2021-0052 - B.04703 - $39,767.00 - (AC) - CAPEX TRANSFER	This documents the asset transfer value for assets acquired for the WMS Replacement (Regional) program

D RFI REGISTER

Requests for information and details of Queensland Rail's responses are documented below. All RFIs were resolved.

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
B.05085: PED Crossing upgrades	D	ALCAM assessments and assessment of life expired assets (FAR).	The assessment team notes that the nature of the work appears to be mainly maintenance (life expired) and civil related (redoing line marking, signs and pavements) rather than upgrades to align with ALCAM requirements - note also that all crossings are passive. To	25/5	KB,TN		Discussions with QR relevant staff and site investigation undertaken - works were considered necessary for safe operations.	31/07/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
			confirm the works and alignment with ALCAM requirements and/or life expired requirements.					
B.05085: PED Crossing upgrades	D	Commission/acceptance completion reports for the completed crossings for this expenditure claim	Assessing scope	25/5	KB,TN		Discussions with QR relevant staff and site investigation undertaken - works were considered necessary for safe operations.	31/07/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
B.04703: WMS Replacement	Q	The business case for WMS Replacement states that there are 137 weather stations spread across queensland with 65 WMS needing upgrade - these are are listed in Annexure 3. Note that WMS Forrest Hill Laidley 85.050km (this years project) does not appear to be listed. Can you confirm that this project was identified in this initial study, and if not what is the reasoning for it to be added at a later date.	Assessing scope	25/5	KB	17/06/2022	Identified on page 20 of 31 in the Business Case.	17/06/2022
B.04703: WMS Replacement	D	Commissioning or other completed data/acceptance for Forrest Hil Laidley WMS cabinet and backplane replacement	Assessing scope	25/5	KB	17/06/2022	As above	31/07/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
B.05460: Formation Strenghtening	D	Breakdown of SAP costs ($5.5 Million and just one entry in the spreadsheet)	Assessing cost. We need a site by site breakdown of spend that illustrates the actual cost for the total claim as the forecast doesn't align and there is no indication where this cost was expended. This will also drive the site visitation requirements	25/5	AH	17/06/2022	In folder: B.05460 Fromation Strengthening Qld Rail 2 QCA	17/06/2022
B.05460: Formation Strenghtening		The forecast in BC to be spent within the year being claimed (20/21) is $2.7 Million There is no indication where this $2.7M represents geographically or the other site locations and spend was that equals	Assessing scope	25/5	AH	17/06/2022	In folder: B.05460 Fromation Strengthening Qld Rail 2 QCA	17/06/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
		the actual claim 20/21 $5.514M. Could QR please advise which sites/locations the $5.514M represents and confirm whether this claim includes the forecast sites and/or previous years planned sites.						
B.05460: Formation Strenghtening	D	Track recording and GPR results for strenghtened portions	Assessing scope	25/5	AH	17/06/2022	In folder: B.05460 Fromation Strengthening Qld Rail 2 QCA	17/06/2022
B.05561 SCS Timber Resleepering	D	Condition test/Deterioration reports/tests to propose for replacement. Track Recording records for sections resleepered	Assessing scope	25/5	AH	17/06/2022	In folder B.05561 SCS Timber Resleepering Qld Rail 2 QCA	17/06/2022
B.05561 SCS Timber Resleepering	D	Details on scope and design drawings for the following mileages MNL 13.624, MNL 2,270, MNL 2.999, MNL 3.054, MNL 000.302	Assessing scope	25/5	AH	17/06/2022	The detailed scope is per the "Appendix A's" in folder B.05561 SCS Timber Resleepering Qld Rail 2	17/06/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
							QCA. There are no design drawing for Resleepering.	
B.05561 SCS Timber Resleepering	D	Project Handover Report incomplete - is this the latest?	Assessing scope	25/5	KB,AH	17/06/2022	Project Handover Report is in folder B.05561 SCS Timber Resleepering Qld Rail 2 QCA. I think this is the same document as previously provided, and I can't identify where it is incomplete.	17/06/2022
B.05577 Greasers Replacement Upgrades	D	Further information on the growing issue with increased [redacted] - Might be a site	Assessing scope	25/5	CO		Discussions with QR relevant staff and site investigation undertaken - Arcadis assesses	31/07/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
		visit discussion or unless Aurizon report is available?					approach prudent.	
B.05650 Reconditioning West Moreton	D	Track Recording/OTCI for reconditioned secions	Assessing scope	25/5	AH,KB		Provided TRC records for relevant sections	31/07/2022
B.05650 Reconditioning West Moreton	D	SAP Breakdown	Assessing cost	25/5	AH,KB		Provided as appropriate	31/07/2022
B.05650 Reconditioning West Moreton	D	Variation/IAR for additional $3.1 m from pre-approval	Assessing cost	25/5	AH,KB		Provided	31/07/2022
BS.05655 Level Crossing Upgrades	Q	Clarification: 23 level crossings identified yet Annexure 5 in provided information states 1 LC VP, 16 = Poor and the rest are identified as Average or Good. Can QR confirm deterioration of the nominated assets and provide some examples of rating and inspection reports for nominated assets.	Assessing scope	25/5	TN,CO		Discussions with QR relevant staff undertaken and site investigation undertaken - works were considered necessary for safe operations.	31/07/2022

Project Reference (i.e. Document name or reference)	Type of RFI D=Document request Q= Information	Arcadis' Request		Submitted date	Submitted by:	Queensland Rail Response		RFI Status and Close out details
		Documents Requested/Query	Reasoning			Date	Comment	Close out Date
BS.05655 Level Crossing Upgrades	D	Breakdown of SAP costs	Assessing cost	25/5	TN,CO	17/06/2022	In folder B.05655 Level Crossing Upgrades Qld Rail 2 QCA	17/06/2022
WM Formation strengthening and West Moreton Track reconditioning	D	IFC / As-built drawings as discussed during Site Visit for Formation Strenghting work undertaken	Assessing scope and cost.	30/06/2022	PD, KB	30/06/2022	This was discussed with QR representative during site investigation, as the formation strengthening involved wider section of treatment to obtain improved performance	30/06/2022

ARCADIS Design & Consultancy for natural and built assets

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