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Our Ref: MCR-23-28

Mr Charles Millsteed
Chief Executive Officer
Queensland Competition Authority
Level 27 145 Ann Street
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Dear Mr Millsteed Charles

2021-22 Capital Expenditure Report — West Moreton System

Queensland Rail's Access Undertaking 2 (**AU2**) requires that the Queensland Competition Authority (**QCA**) be provided with details of capital expenditure for the subject year that Queensland Rail considers should be included in the Regulatory Asset Base (**RAB**).

Attached is the 2021-22 Capital Expenditure Report (and supporting documentation) providing details of the assets Queensland Rail considers should be included in the West Moreton System RAB.

As required by clause 1.3(c), Schedule E of AU2, I can confirm that the information contained in the 2021-22 Capital Expenditure Report is in all material respects correct.

If your officers have any questions in relation to this matter, please contact Queensland Rail's Policy and Regulations Manager Mr Douglas Jasch by telephone on 07 3072 0544 or via email at douglas.jasch@qr.com.au.

Yours sincerely

[redacted]

Kat Stapleton
Chief Executive Officer
17 January 2023

West Moreton System
Capital Expenditure Report 2021–22

Commercial-In-Confidence

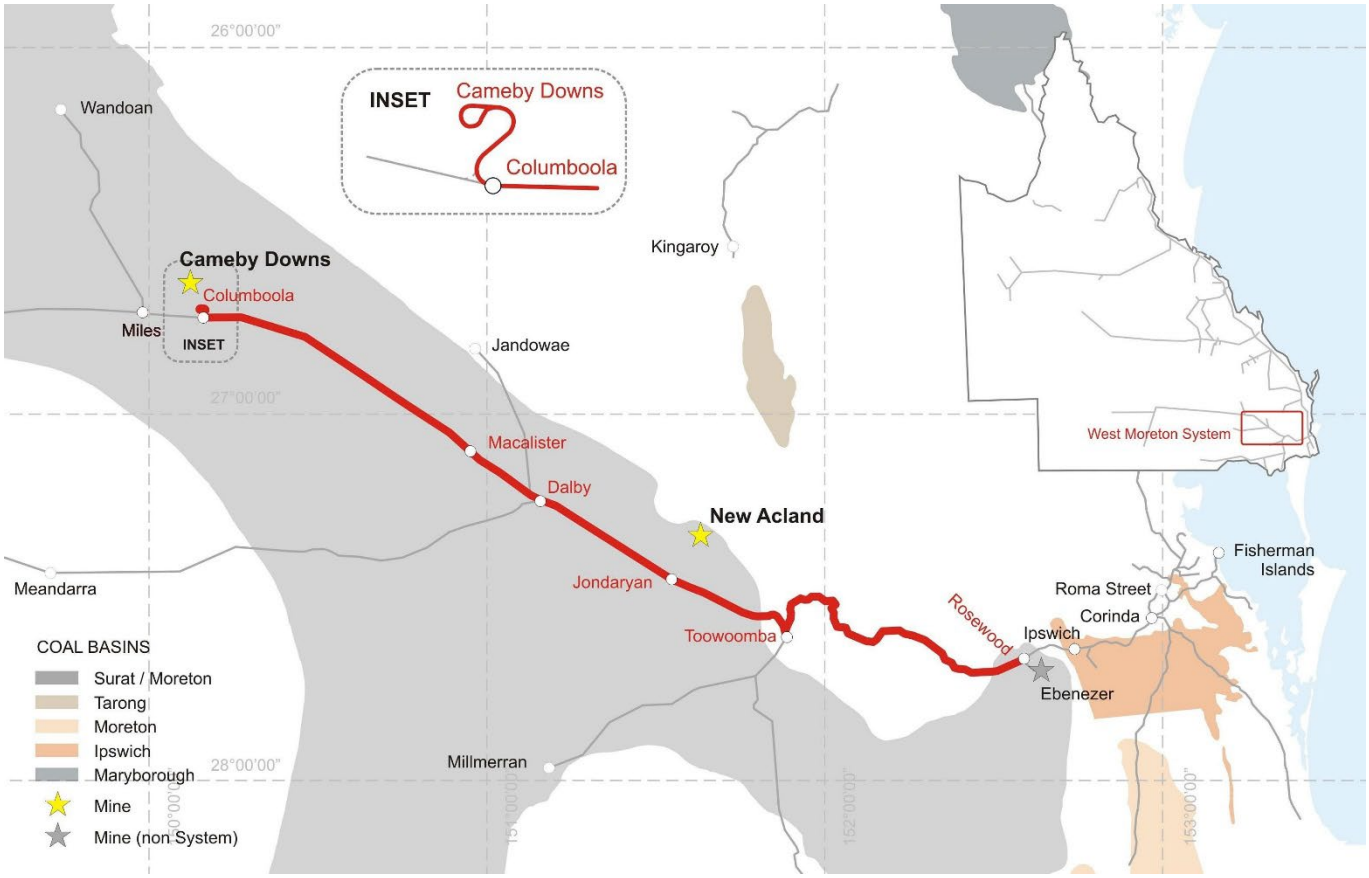
Table of Contents

Introduction

West Moreton System RAB

Queensland Rail has a Regulated Asset Base (**RAB**) for the West Moreton System approved by the Queensland Competition Authority (**QCA**). The West Moreton System is the only Queensland Rail Regional System with a QCA approved RAB.

Figure 1: Map West Moreton System



Clause 1.3 of Schedule E of Queensland Rail's Access Undertaking 2 (**AU2**) requires Queensland Rail to submit an annual report (**Capital Expenditure Report**) to the QCA for the QCA to approve capital expenditure on the West Moreton System that has been commissioned in the subject year (i.e. **2021-22 Capital Expenditure Report**).

The QCA will then assess whether the projects in the report should be included in the RAB. Schedule F of AU2 requires that a project be included in the RAB where a project is commissioned in the subject year and the QCA assesses it to be prudent in scope, standard of works and cost.

Queensland Rail's 2021-22 Capital Expenditure Report is seeking the QCA's approval for **$17,064,582** of commissioned capital projects, excluding interest during construction (**IDC**), for inclusion in the RAB. All assets included in this total were commissioned during the 2021-22 financial year.

The purpose of this Report is to provide information to the QCA for its assessment of whether the 2021-22 capital expenditure is prudent in scope, standard of work and costs as required under Schedule E of AU2. Information being provided to the QCA to assist the Authority with their assessment includes:

- Business Cases;
- Project Handover Reports;
- Project Completion Reports;
- Asset Under Construction (**AUC)** to Asset Register forms; and
- The Fixed Asset Register (**FAR**).

Metropolitan (SEQ) System RAB

Due to the difficulties of establishing RAB building blocks for the Brisbane Metropolitan Area, Queensland Rail proposed to apply the reference tariff derived from West Moreton RAB building blocks to all coal carrying services originating in the West Moreton System through to the Port of Brisbane. No separate capital expenditure was proposed to be undertaken in the Brisbane Metropolitan Area for the AU2 period at the time of AU2 approval.

The QCA's Final Decision released in February 2020 on AU2 accepted this approach and provides for Queensland Rail to identify incremental freight-specific capital expenditure in the Metropolitan System, should such capital expenditure occur. No incremental coal/freight-specific capital expenditure has been identified for the Metropolitan System for 2021-22.

Queensland Rail 2021-22 Capital Expenditure Report

Clause 1.3, Schedule E of AU2 requires Queensland Rail to submit an annual report to QCA for capital expenditure on assets it considers should be included in the RAB. Clause 2.1(a) states that:

> *"**2.1 Requirements for acceptance of capital expenditure into the Regulatory Asset Base***
>
> *a) The QCA will accept capital expenditure into a Regulatory Asset Base if that capital expenditure:*
>
> *(i) Is or has been accepted by the QCA as:*
>
> *A. prudent in scope in accordance with clause 3;*
>
> *B. prudent in standard of works in accordance with clause 4; and*
>
> *C. prudent in cost in accordance with clause 5; and*
>
> *(ii) has been incurred; and*
>
> *(iii) either:*
>
> *A. the capital expenditure project has been commissioned; or*
>
> *B. formally discontinued."*

The Queensland Rail capital expenditure claim for 2021-22 includes eight capital expenditure projects. The total expenditure for 2021-22 that Queensland Rail considers should be included in the West Moreton RAB is shown in Table 1 and Table 2 below, being **$17,064,582** excluding interest during construction (**IDC**) and **$18,690,919** including IDC.

Table 1: Commissioned Assets 2021-22 — excluding interest during construction

Project Number	Project Name	2021-22
100% WEST MORETON PROJECTS		
B.04754	West Moreton Minor Signalling Renewals	3,360,582
B.05583	Concrete Sleepers with gauge issues	1,674,064
B.05650 FY21 Claim	Reconditioning West Moreton 20/21-22/23	-
B.05650	Reconditioning West Moreton 20/21-22/23	10,350,739
B.05653	Culvert Renewal West Moreton	255,204
B.05655	Level Crossing Upgrades West Moreton	291,395
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
B.04703	WMS Replacement Regional	270,854
OTHER		
Ballast Undercutting	Ballast Undercutting	861,745
TOTAL		**17,064,582**

Interest During Construction

AU2 is silent on the methodology to be used for the calculation of IDC. The QCA has advised that it will use the S-curve methodology, consistent with the calculation methodology used by Aurizon Network.

To obtain the IDC amount, the S-curve approach uses monthly cash flow values, multiplied by the applicable interest rate. These cash flows are extracted from the financial accounting system (**SAP**). The applicable interest rate is the Weighted Average Cost of Capital (**WACC**) for the relevant regulatory period.

Approved capital expenditure is included into the RAB as at 1 January in the year of commissioning. To do this, the IDC calculation must be conducted to the mid-point in the year the project was commissioned.

Table 2: Commissioned Assets 2021-22 — including interest during construction

Project Number	Project Name	2021-22
100% WEST MORETON PROJECTS		
B.04754	West Moreton Minor Signalling Renewals	3,488,410
B.05583	Concrete Sleepers with gauge issues	1,677,511
B.05650 FY21 Claim	Reconditioning West Moreton 20/21-22/23	1,028,809
B.05650	Reconditioning West Moreton 20/21-22/23	10,791,020
B.05653	Culvert Renewal West Moreton	263,055
B.05655	Level Crossing Upgrades West Moreton	298,825
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
B.04703	WMS Replacement Regional	281,545
OTHER		
Ballast Undercutting	Ballast Undercutting	861,745
TOTAL		**18,690,919**

Queensland Rail's Investment Framework

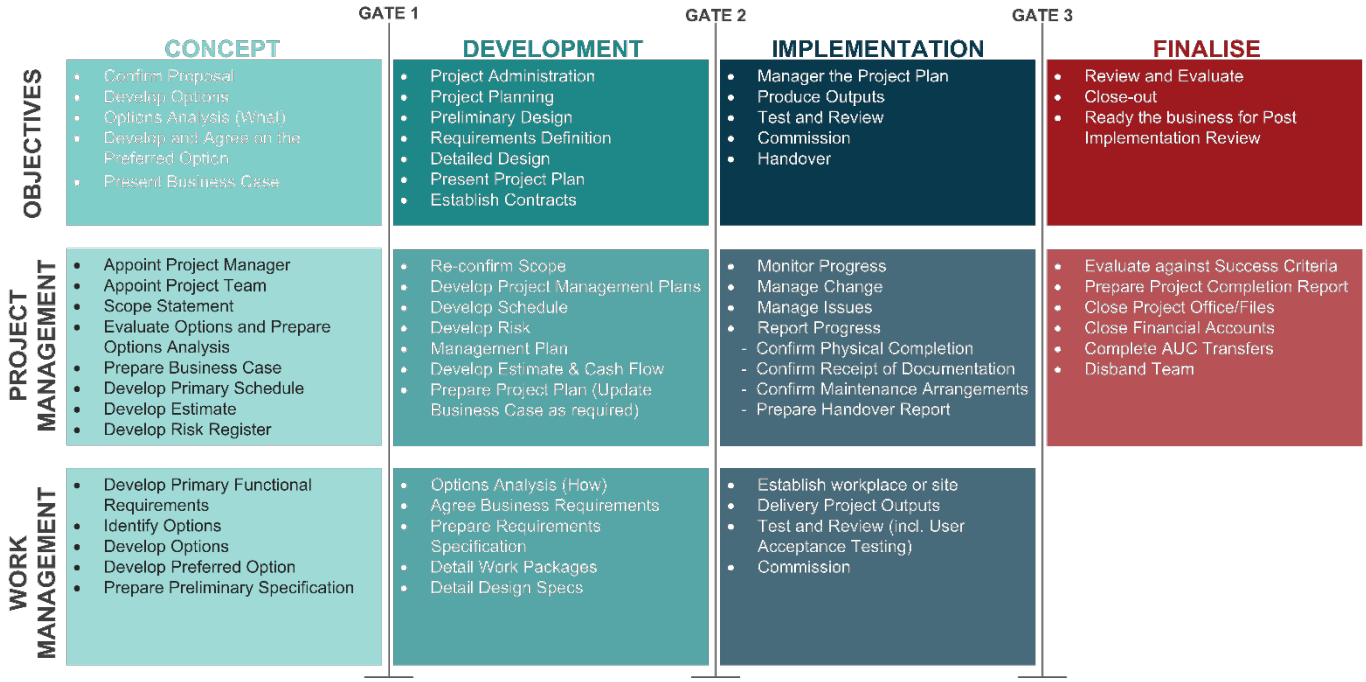
Queensland Rail is a statutory authority that undertakes numerous projects annually to ensure the safe and reliable working, and growth, of the rail network for the people of Queensland. The following processes are applicable to the 2021-22 Capital Expenditure Report. Queensland Rail has revised its processes, which will be reflected in the 2022-23 Capital Expenditure Report.

The Queensland Rail project management methodology in relation to the Capital Expenditure Report is based on the OnQ Project Management Framework developed by the Queensland Government Department of Transport & Main Roads (**DTMR**). The OnQ Project Management Framework provides a consistent, reliable and transparent approach to the management and delivery of projects across Queensland Rail and is applied to all projects undertaken by the organisation.

This methodology provides a structured and consistent approach to the management of projects and enables Queensland Rail to successfully deliver the right project outputs, on time and within budget, and meet quality and safety parameters. It also provides structured governance for authorising and approving projects.

The generic methodology is divided into four phases known as the Project Life Cycle. The Project Life Cycle provides the basic framework for managing the project, regardless of the specific work involved. Each phase has several project management and work management activities.

Figure 2: Project Life Cycle



Source: Framework – Project management methodology

Project delivery at Queensland Rail has four levels of oversight applied to it:

- Operational Project Control — the day to day guidance that provides accountability for project delivery and outcomes and advises on the impacts that the project will/may have on business operations and the impacts of business operations on the project.
- Assurance — independent assessment of how a project is performing with regard to scoping, planning, resourcing, expectations and alignment with strategy.
- Governance — key decisions and direction to allow projects to progress along a defined route that achieves benefits.

- Financial — endorsement and approval at relevant stages of progressive financial commitment, that the funding and financial resources are both available and appropriate.

These levels of oversight inform endorsement and approval, at relevant stages of progressive financial commitment, that the funding and financial resources are both available and appropriate. Financial Approvals may be subject to Assurance Reviews and Governance Decisions, or these may be used for a condition of approval.

Regulatory Framework - Prudency of Scope, Standard and Cost

The QCA is required to consider the prudency of capital projects submitted in the 2021-22 Capital Expenditure Report under the requirements of Schedule E in AU2. In making its assessment, the QCA is to have regard to a range of factors as set out in Schedule F in AU2 being prudency of scope (Clause 3), prudency of standard of works (Clause 4) and prudency of cost (Clause 5).

Prudency of Scope

Access Holder Requirements

The major business for the West Moreton System is the transportation of coal from the Surat Basin to the Port of Brisbane.

To ensure the supply chain delivers the product to the Port of Brisbane on time, the above rail operator's services are timetabled to meet the requirements of the SEQ System. Delays in coal carrying train services can result in trains waiting for a new time slot in the SEQ System and delaying delivery of product to the port.

Queensland Rail has a contractual obligation with access holders to minimise below rail transit time. However, access holders also seek:

- a known cap on the number, location and time interval between track possessions;
- best possible response times to any network disruption (including force majeure events);
- some spare capacity for peak production rates, or catch-up capacity; and
- coordinated supply chain shutdowns and track possessions.

Queensland Rail aims to meet access holder / rollingstock operator / supply chain requirements by reasonably limiting the number of speed restrictions and the total number of unavailable days for rail traffic. However, transit times can also be impacted by factors that are not within the control of Queensland Rail, including due to weather conditions and major projects not in the control of Queensland Rail.

Demand Forecasts

AU2 was developed with considerable uncertainty around potential future coal volumes likely to be moved on the West Moreton System. For this reason, Queensland Rail submitted two tonnage scenarios in its original August 2018 DAU2 submission to the QCA:

- a low tonnage 2.1 mtpa scenario - assuming that only Yancoal's mine at Cameby Downs is producing coal and hauling on the West Moreton System; and
- a high tonnage 9.1 mtpa scenario - assuming New Acland Stage 3 (**NAS3**) mine is developed and produces 7 mtpa of coal for hauling from Jondaryan, in addition to the 2.1 mtpa from Cameby Downs.

In the absence of the approval of NAS3 at the time of AU2's approval, Queensland Rail proposed, and the QCA accepted, a forecast of 2.1mtpa for AU2.

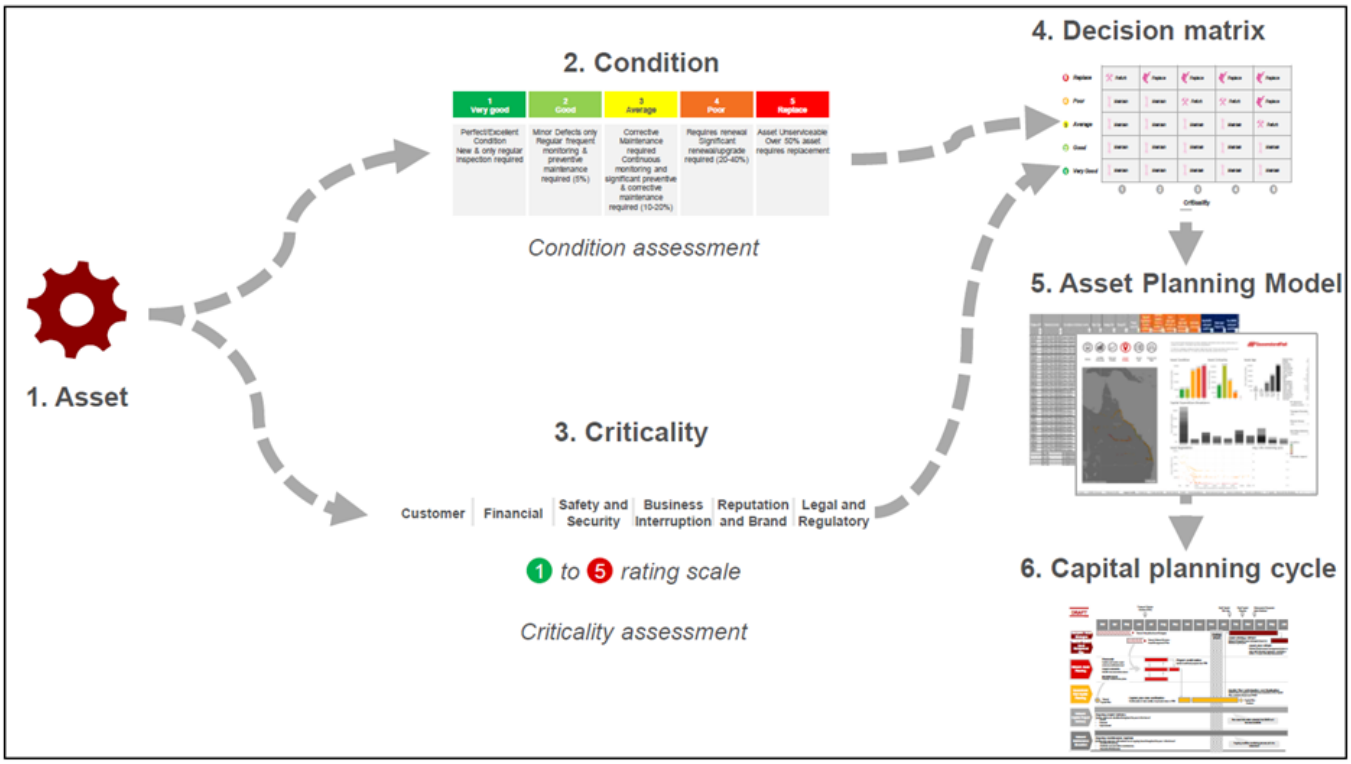
[redacted]

Asset Planning Framework

The 2021-22 Capital Expenditure Report is based upon the Asset Planning Framework (**APF**). One of the key components of asset management is understanding the type of intervention (i.e. operational, maintenance or capital investment) needed to keep an asset operating at its required level of service. The APF provides a bottom-up view of capital renewal requirements based on an asset's condition and associated risk profile, its criticality, its typical degradation lifecycle, and current asset management strategies and plans to guide asset planning and capital spend decision making.

The APF then leverages asset-specific decision matrices to aid this decision-making process. Decision matrices bring an asset's condition and criticality together to guide the typical intervention to undertake based on its current state. **Figure 3** below illustrates the functioning of the APF.

Figure 3 — Asset Planning Framework



The APF uses the asset data stored in the Queensland Rail Enterprise Asset Management System (**EAMS**) as the baseline dataset from which decisions are made, influenced by the asset's condition, criticality, design/planned service life, and replacement cost.

An asset's condition rating is a key indicator of the health of the asset and provides an estimation of where the asset sits in its lifecycle. As shown in the figure above, under the AFP the asset's condition is measured against a five point scale, tailored for each asset type. This reflects the likelihood of failure of an asset — the worse the condition rating the higher the likelihood of failure. It provides the basis on which maintenance and capital interventions can be determined.

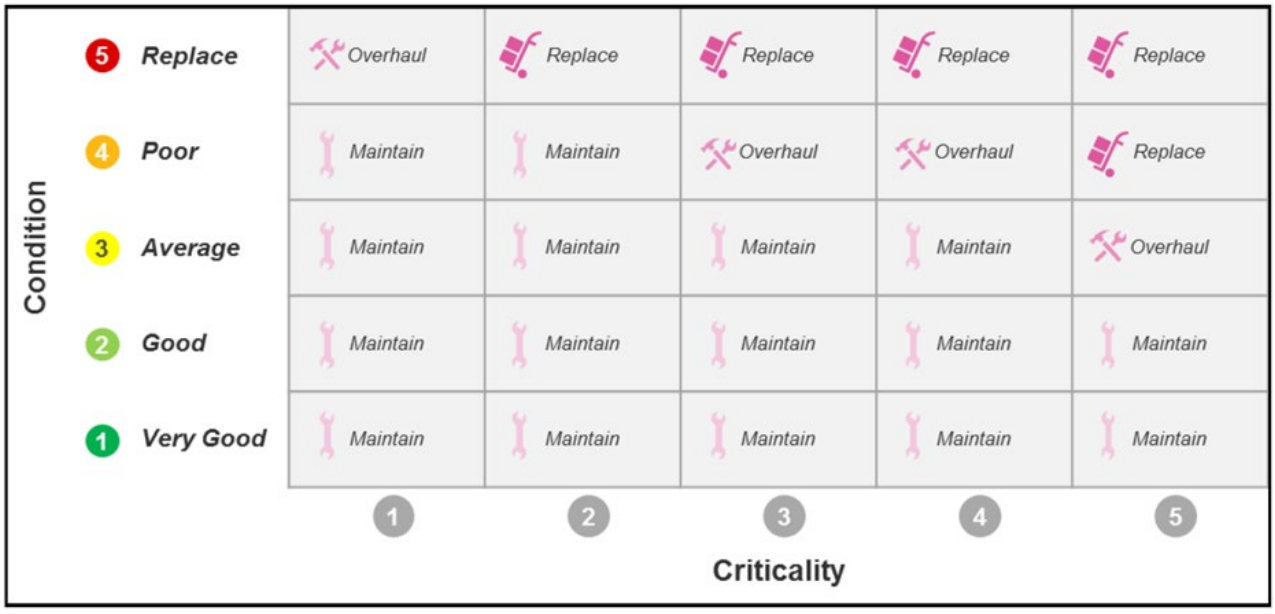
Within EAMS, asset conditions are measured using one of the following:

- surveyed condition: manually entered by Queensland Rail staff following observation of the assets through either visual inspections or engineering assessments; and
- calculated condition: calculated based on an asset's age, its planned service life, and the asset's typical degradation curve.

The next step in the framework is understanding the impact that an asset failure would have on Queensland Rail; i.e. an asset's criticality. How critical an asset is to the organisation can help determine the type of maintenance or capital intervention required. Organising assets according to criticality can identify those requiring immediate replacement or maintenance interventions and those where interventions can be postponed. Postponement may occur due to a constrained budget for that financial year or where grouping the replacement of assets aligns to the network business's overall asset management strategies and plans.

The asset criticality dimensions were based on Queensland Rail's Corporate Risk framework and have been assessed in accordance with an associated consequence of failure of an asset. Each asset criticality dimension comprises a five-point rating scale. A score of 1 means the impact of an asset failure is deemed to be insignificant to the business, whereas a score of 5 means the impact of an asset failure is deemed to be catastrophic. The asset condition and criticality rating were used as inputs to decision matrices, which assist in establishing the preferred intervention action for an individual asset. Decision matrices provide guidance on when an asset should be inspected, maintained, replaced or renewed based on the network business's asset strategies and plans. A generic decision matrix is shown below for illustrative purposes.

Figure 4 — Decision Making Matrix



The APF Model leverages EAMS asset data to form the foundational profile of the assets to be included in the capital plan for renewals. An asset's decision matrix and degradation lifecycle are then used to forecast the expected asset intervention methods and expected capital spend per year for interventions requiring asset renewal or refurbishment.

Lastly, the AFP utilises information from the sources discussed above to forecast capital spend for the next fiscal year. Ongoing project delivery and maintenance programs provide updates on existing and new asset conditions to ensure that all asset data is current.

Evaluation of Options

The 2021-22 Capital Expenditure Report was based on TMR's *OnQ Project Management Framework* which provides the basic framework for managing the project, regardless of the specific work involved. Projects range in type, size, scope, cost and time from large projects costing millions of dollars and implemented over many years, to small projects with a small budget and taking just a few weeks to complete.

Consistent with OnQ, the projects in the 2021-22 Capital Expenditure Report were classified as Type 1, 2 or 3 according to the level of risk and complexity of the project. The higher the complexity and risk, the greater the level of management and control that is required. Below is a high level description of the three project types.

Figure 5: Project Type Definitions

Project Type	Description
Type 1	Complex/extreme or high risk projects, requiring high levels of investigation, management and control.
Type 2	Straightforward/medium risk projects, requiring moderate levels of investigation, management and control
Type 3	Simple/low risk projects, requiring low levels of investigation, management and control.

All projects in the 2021-22 Capital Expenditure Report would be considered Type 3 projects.

Consultation with Stakeholders

Where relevant, Queensland Rail consults with access holders and rollingstock operators about individual capital expenditure projects as set out in Schedule E of AU2.

Queensland Rail does not typically consult on the detail of routine capital renewal projects, such as re-railing, re-sleepering and culvert replacement, with projects of this nature undertaken to ensure the continued provision of a safe rail network, consistent with Queensland Rail's obligations as an accredited Rail Infrastructure Manager (**RIM**) under the *Rail Safety National Law (Queensland)* (**RSNL**).

Notwithstanding the above, as part of the QCA AU2 consultation process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal, enabling stakeholders to assess Queensland Rail's capital claim. Queensland Rail also set out its capital claim for industry consultation in *Queensland Rail's Draft Access Undertaking 2 (DAU2) Explanatory Document (14 August 2018)* and its *DAU2 West Moreton System low volume coal reference tariff 22 November 2019* submission.

Prudency of Standard

The QCA is required to consider the prudency of standard of projects submitted in the 2021-22 Capital Expenditure Report under Clause 4.2(a) of Schedule E in AU2. In making this assessment, the QCA is to have regard to a range of factors as set out in Clause 4 of Schedule E in AU2.

Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems

As an accredited rail infrastructure manager (**RIM**) under the *Rail Safety National Law* (**RSNL**), Queensland Rail must ensure, so far as is reasonably practicable (**SFAIRP**), the safety of its railway operations including the movement of rollingstock on a railway track.[1]

Accreditation is granted by the Office of the National Rail Safety Regulator (**ONRSR**) on the basis that Queensland Rail has the competence and capacity to manage the risks to safety of persons arising, or potentially arising, from its railway operations, and to implement its safety management system (which Queensland Rail refers to as its Safety and Environmental Management System (**SEMS**)) for railway operations. The content of a safety management system is prescribed under the Rail Safety National Law. The SEMS is the basis for Queensland Rail's accreditation. Without its accreditation, Queensland Rail cannot operate its business.

To fulfil its obligation to manage risks SFAIRP, Queensland Rail must *eliminate* risks to safety so far as is reasonably practicable.[2] In assessing what is reasonably practicable, the cost associated with available ways of eliminating or minimising risk may be taken into account *only* after assessing the extent and available ways of doing so.[3]

The means by which Queensland Rail assesses whether risks are managed SFAIRP is by the application of its SEMS. Queensland Rail must not, without reasonable excuse, contravene its SEMS. In fact, to do so is an offence under the Rail Safety National Law. Queensland Rail's SEMS includes:

- Civil Engineering Track Standards (**CETS**) — MD-10-575; and
- Civil Engineering Structures Standard (**CESS**) — MD-10-586.

Queensland Rail's renewal capital program has been developed in accordance with CETS and CESS.

Prudency of Costs

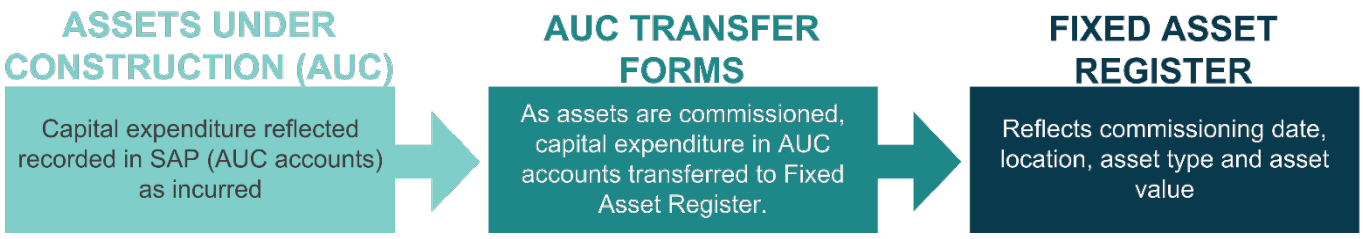
The QCA is required to consider the prudency of the costs of projects submitted in the 2021-22 Capital Expenditure Report under Clause 5.3(a) of Schedule E in AU2. In making this assessment, the QCA is to have regard to a range of factors as set out in Clause 5.3(b) and (c) of Schedule E in AU2.

Queensland Rail's *Project Management Methodology MD-14-781* sets out the framework used for the management of all Queensland Rail capital expenditure projects, including the business case and financial approval requirements for new projects.

Delegated approvals for capital projects are set out in Queensland Rail's *Delegated Authorities - Financial and Functional Specification MD-12-904*, with a tiered level of responsibility for approvals depending on the size of the project. For example, capital expenditure in excess of $50 million must be submitted to responsible Ministers for approval.

Queensland Rail uses SAP as its accounting and reporting platform for projects from initial funding, budget allocation and project delivery. As projects are completed, costs transfer from AUC to the FAR. Assets which have been recognised on the FAR (commissioned assets) are included in the 2021-22 Capital Expenditure Report.

[1] RSNL section 52
[2] RSNL section 46
[3] RSNL section 47(e)



Queensland Rail considers that its internal processes support prudency of cost for capital expenditure, having regard to:

- the Queensland Rail *Project Management Methodology (MD-14-781)* and *Portfolio and Program Management Methodology (MD-16-29)*;
- external cost benchmarks for components such as rail, sleepers and ballast – where Queensland Rail is able to use its purchasing power for the cost-effective sourcing of materials; and
- use of external contractors for projects suited to this method of procurement – including projects subject to open tenders.

Relevant Documents already with the QCA

Queensland Rail's capital expenditure should be considered in the context of the following documents that have been previously provided to the QCA:

- West Moreton Asset Management Plan 2020-21, June 2020 (**AMP 2020-21**);
- West Moreton Asset Management Plan 2021-22, June 2020 (**AMP 2021-22**);
- Queensland Rail's Draft Access Undertaking 2 (**DAU2**) Explanatory Document 14 August 2018;
- Queensland Rail's Response to Industry Comments on Queensland Rail's Draft Access Undertaking 2 (DAU2)16 November 2018;
- QCA Request for Information DAU2 West Moreton System (December 2018);
- Response to industry comments on the QCA's Draft Decision on Queensland Rail's Draft Access Undertaking 2 (Collaborative Submissions) 27 September 2019;
- DAU2 West Moreton System low volume coal reference tariff 22 November 2019;
- SYSTRA Scott Lister (**SYSTRA**), Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019;
- SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020;
- The QCA's Final Decision on Queensland Rail 2020 draft access undertaking, February 2020;
- TTCI Evaluation of Queensland Rail West Moreton Coal Corridor (2010) Note - Queensland Rail has previously provided the QCA with a copy of the report; and
- QCA Consultant Arcadis' Report '*Queensland Rail 2020 -21 Capital Expenditure Claim 18 August 2022'.*

Capital Projects

B.04703 WMS Replacement Regional

The purpose of this project was to upgrade 65 Weather Monitoring Stations (**WMS**) (reduced to 63 during the project) from Remote Monitoring System Version 1 (**RMS v1**) to Remote Monitoring System Version 2 (**RMS v2**). Of the 63 WMS across Queensland Rail's regional network, seven WMS (six to be upgraded and one to be decommissioned) are in the West Moreton System and therefore are subject to the Annual Capital Expenditure Reports.

The weather stations monitor environmental conditions that have the potential to affect the operation and safety of train movements along the network. They are used to provide air and rail temperature, water levels, rainfall and humidity information to ensure the safety of train services on Queensland Rail's network. WMS communicate information, alarms and equipment health back to network control centres and to Queensland Rail's condition monitoring systems data centre.

The weather stations being upgraded were life expired, the Telemetry and Receiver units for the RMS v1 systems are no longer available resulting in the RMS v1 systems becoming increasingly difficult to repair or replace. In addition, due to the age of the RMS v1system, it does not comply with the new regulations prescribed by the Australian Communications and Media Authority (**ACMA**) requiring compliance with the ACMA's 400MHz band plan. The project has upgraded the current WMS components to the latest technology and enabled compliance with the ACMA's 400MHz band plan. Additionally, cameras were added for remote viewing of the relevant sites.

It is important that Queensland Rail install and maintain its own weather stations as these are installed directly on 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 provide much higher level information.

This project is a safety initiative.

Previous Consideration by the QCA

During the QCA approval process for AU2 the QCA engaged independent consultants SYSTRA to assess Queensland Rail's proposed AU2 capital program for inclusion in the West Moreton System coal reference tariff Capital Indicator. The Capital Indicator is an estimate of the capital expenditure to be undertaken during an undertaking period and forms part of the coal reference tariff cost build up. In assessing Queensland Rail's AU2 West Moreton forecast capital claim for WMS, QCA consultant SYSTRA wrote:

> *"SYSTRA accepts that deferral of some capital works will place increasing reliance on signalling, telecommunications* ***and monitoring systems to ensure rail safety*** *and that the following are required:*
>
> - *Minor signalling renewal*
> - ***Remote monitoring systems***
> - *Digital telemetry works*
> - *Miscellaneous telecommunications works."*[1] (Queensland Rail's emphasis)

The QCA confirmed SYSTRA's findings in its AU2 Final Decision stating:

> *"Queensland Rail's proposed budgets for a number of works were assessed by Systra as reasonable, including formation renewal, level crossing reconditioning, minor signalling renewal and* ***remote monitoring systems roll-out****."*[2]

More recently, in 2022, QCA consultant Arcadis undertook a review of Queensland Rail's 2020-21 Capital Expenditure Report which included a claim in relation to a WMS. Arcadis[3] and the QCA[4] found that this asset was prudent in terms of scope, standard and cost. Queensland Rail undertook the work in the same manner for the assets commissioned in 2021-22 as for the assets commissioned in 2020-21.

The project has been finalised with all 63 sites having been completed.

[1] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, p.28
[2] QCA Decision on Queensland Rail 2020 draft access undertaking, February 2020, p.72
[3] Arcadis' Report 'Queensland Rail 2020 -21 Capital Expenditure Claim. 18 August 2022', p7
[4] Queensland Competition Authority Decision Notice, 29 August 2022

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	The WMS upgrades replace life-expired WMS to ensure the continued safe operation of trains on the network.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including for the WMS and supported that the WMS were required at the 2.1mtpa forecast. [redacted] WMS replacement was a project identified in the West Moreton AMPs 2020-21 and 2021-22, which have previously been provided to the QCA. Issues related to demand assumptions for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.
The age and condition of existing assets and the need for replacement capital expenditure projects.*	This project upgraded the current WMS components to the latest technology. The 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 RMS v1 system, it does not comply with the new regulations prescribed by the ACMA. The new telecommunications technology complies with these requirements. The project enables compliance with ACMA's 400MHz band plan. This project identified six WMS upgrades and one decommissioning on the West Moreton System. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is reasonably practicable (SFAIRP). For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission. This project is upgrading life expired assets. The new telecommunications technology to be implemented as part of this project will result in the WMS complying with the new regulations prescribed by ACMA.
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	WMS replacements is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission. This option supports the safe, reliable operation of the railway by continuing to improve the safety of Queensland Rail's operations and subsequently that of our customers. An analysis of various supplier systems available on the market, able to monitor various environmental and track conditions, were investigated by the Condition Monitoring Systems team. From these investigations the most cost-effective system for recording of each environmental and track variable was selected to allow for the in-house manufacture of the RMS v2 WMS. Below is a list of components that comprise the RMS v2 system and the relevant suppliers: • Remote Terminal Unit – Schneider SCADAPack • Flood sensor – Aquamonix • Track rail temperature sensor – Muller • Camera – Mobotix • Air and humidity sensors – Novus • Rainfall sensor – Environdata
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	This project has been through Queensland Rail's processes to evaluate and select proposed capital expenditure projects. WMS replacement is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The Business Case, Handover Report, Completion Report and AUC forms have been provided to the QCA. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.

Assessment Criteria	Queensland Rail Response
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.04703 WMS Replacement Regional Project and its forecast expenditure was included in the model. This also enabled the release of the unredacted QCA SYSTRA Draft Decision report to these stakeholders which included this project.[5]
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The weather stations monitor environmental conditions that have the potential to affect the operation and safety of train movements along the network. The WMS upgrades are replacing life expired WMS to ensure the continued safe operation of trains on the network. Queensland Rail uses the South West User Group (**SWUG)** process to discuss closures and other major maintenance and timetabling matters with rolling stock operators.
Current and likely future usage levels.	The B.04703 WMS Replacement Regional Project was included in the AMP 2021-22 and 2021-22 provided to the QCA with this submission. Issues related to demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[6] [redacted]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (**RISSB**) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. 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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission. In addition to the age of the system, it does not comply with the new regulations prescribed by the ACM A. The new telecommunications technology to be implemented complies with these requirements. The project will enable compliance with ACMA's 400MHz band plan.

[5] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.108.
[6] Queensland Rail, West Moreton Asset Management Plan 2021-22, p 10.

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	The assets included in this submission have been commissioned and added to the FAR. The AUC Form Business Case, Handover Report and Completion Report have been provided to the QCA with this submission.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	An analysis of various supplier systems available on the market, able to monitor various environmental and track conditions, were investigated by the Condition Monitoring Systems team. From these investigations the most cost-effective system for recording of each environmental and track variable was selected to allow for the in-house manufacture of the RMS v2 WMS. Below is a list of components that comprise the RMS v2 system and the relevant suppliers: • Remote Terminal Unit – Schneider SCADAPack • Flood sensor – Aquamonix • Track rail temperature sensor – Muller • Camera – Mobotix • Air and humidity sensors – Novus • Rainfall sensor – Environdata The work for this project was undertaken by internal Queensland Rail resources.
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.

Assessment Criteria	Queensland Rail Response
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

B.04754 West Moreton Minor Signalling Renewals

The purpose of the West Moreton Minor Signalling Renewals Project is to renew life-expired signalling infrastructure at four level crossings in the West Moreton System. In addition, the project proposes to replace Model 10 boom mechanisms and upgrade location cases containing asbestos at all four locations.

The existing signalling infrastructure in the West Moreton System is life-expired and prone to failure as well as the following issues:

- Excessive reactive maintenance required.
- Reduced maintainability due to lack of spare parts for existing equipment (no longer supported by the manufacturer / supplier due to being life expired).
- Low durability of equipment housings.
- Increasing risk of impacts on network performance and integrity due to reducing reliability of signalling equipment.

Renewal of these signalling assets is required to reduce signalling system downtime and reactive maintenance, and to ultimately maintain overall system reliability.

This project proposes to replace Model 10 boom mechanisms at the following locations in two stages:

- Jellicoe Street, Toowoomba (Stage 1)
- North Street, Toowoomba (Stage 1)
- Patrick Street, Laidley (Stage 2)
- Bridge Street, Toowoomba (Stage 2)

In addition, this project will upgrade the following sites as their location cases contain asbestos:

- 56 Location (Case B) North Street (Stage 1)
- Jellicoe Street (Stage 1)
- Bridge Street (Stage 2)
- Patrick Street (Stage 2)

Project Benefits

This project is important as it replaces life expired assets and will reduce signalling system downtime. More specifically it will provide the following benefits:

- Ongoing reliability and maintainability of signalling infrastructure on the West Moreton System, enabling Queensland Rail to meet our service commitments to our customers.
- A reduction in maintenance and associated impacts to on time running.
- Reduced impacts on road users.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	The existing signalling infrastructure in the West Moreton System is life-expired and is prone to failure. The West Moreton Minor Signalling Renewals Project replaces this life expired infrastructure. This project ensures that the network performs safely and, in particular, reliably. The reliability assists customers with the throughput of their train services. Therefore this project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including the need for the Reconditioning project and supported that the Reconditioning project was required at the 2.1mtpa forecast. [redacted]
The age and condition of existing assets and the need for replacement capital expenditure projects.	The West Moreton Minor Signalling Renewals Project replaces life expired assets which will improve network reliability. This is particularly important with the higher tonnages likely to come onto the network.

Assessment Criteria	Queensland Rail Response
	For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	The West Moreton Minor Signalling Renewals Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined and low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Report are completed at the end of the project and will be provided to the QCA at that stage. As an accredited RIM Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	The West Moreton Minor Signalling Renewals Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. **Options Analysis** **Option 1: Do nothing (not the preferred option)** This could lead to equipment failure resulting in major impacts to on time running and road users. As such, this option is not preferred. **Option 2: Replace Model 10 boom mechanisms(Preferred Option)** Replace Model 10 boom mechanisms with Ansaldo Model 95 boom. It was recommended that existing level crossing Model 10 boom mechanisms be replaced with Ansaldo Model 95 boom mechanisms and modern location cases to match design requirements are also installed. This is primarily due to the limited amount of installation that effort and materials required (specifically cabling) with this boom mechanism type. **Option 3: Replace Model 10 boom mechanisms with original type 10 mechanisms (not the preferred option)**

Assessment Criteria	Queensland Rail Response
	This would not be a preferred option due to the high cost impact, such as re-working power cables at each location, and potential compliance issues. It would also prove difficult to source supply of these type of units. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	This project has been through Queensland Rail's processes to evaluate and select proposed capital expenditure projects. The project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Report are completed at the end of the project and will be provided to the QCA at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The existing signalling infrastructure in the West Moreton System is life-expired and is prone to failure. The West Moreton Minor Signalling Renewals Project replaces this life expired infrastructure. This project ensures that the network performs safely and, in particular, reliably. The reliability assists customers with the throughput of their train services. Therefore this project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including the need for the Reconditioning project and supported that the Reconditioning project was required at the 2.1mtpa forecast. [redacted]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (RISSB) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. The SEMS includes standards for timber sleepers as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	The assets included for this 2021-22 Capital Expenditure Report were commissioned in 2021-22. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2020-20 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The project will be predominantly undertaken by Queensland Rail resources with some work being outsourced.

Assessment Criteria	Queensland Rail Response
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

B.05883 Concrete Sleepers with gauge issues

The objective of this project is the resleepering and correction of gauge issues on [redacted] identified curves on the Rosewood to Toowoomba section of the West Moreton System.

There are 337 curves in the track between Rosewood and Toowoomba in the West Moreton System. 223 of these curves have a tight radius less than 300 metres, and 135 curves have a radius less than 160 metres.

There are [redacted] curves between Rosewood and Toowoomba with radii less than 160 metres that have been identified by track geometry recoding, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with CETS and continued safe operation of rail traffic. These [redacted] curves comprise of ballasted track with full-depth concrete sleepers and 50kg/m rail. Typically, with this track structure it is expected to see wide gauge defect only when the rail is worn and approaching the wear limits, or the HDPE pad, spacers and fasteners at the rail seat, which hold the rail on the concrete sleepers are worn.

In these [redacted] particular curves, the HDPE pad, spacers, and fasteners have been replaced numerous times, and there are instances where the rail has been replaced prematurely (before it is condemned for rail wear) to return the gauge to within tolerance. In the past four years at these [redacted] curves there have been close to 50 instances where the pad and spacers have been replaced to maintain the gauge within tolerance. There have been two occasions where the rails have been replaced at curves as a necessity to maintain gauge within tolerance on the concrete sleepers in the curves. The cost of maintaining the gauge at these [redacted] curves over the past four years totalled $418,000. The rails will continue to wear under traffic, and the gauge in these curves will increase. This would require the rail to be replace prematurely, before it is condemned for rail wear, in order to maintain the gauge within tolerance, and the cost associated with this would be approximately $600,000, but this would not resolve the issue.

In the case of these [redacted] curves, the root cause of the gauge issue is the concrete sleepers themselves; accumulation of dimension tolerance in their manufacture has resulted in the persistent gauge issue being realised midway through their design life. The concrete sleepers in these curves have been in service for two decades or more. They are typically early production gauge-widened concrete sleepers for tight radius curves. Replacement of these concrete sleepers is required to resolve the ongoing issue.

Project Benefits

The benefits that will be realised by this project are:

- Gauge dimensions remain compliant with Civil Engineering Track Standard MO-10-575.
- Improved track condition and track quality as measured by the Overall Track Condition Index (OTCI).
- A whole of life cost benefit; maximise useful life of rail; minimise intervention/replacing slightly worn pad and spacers in the sleeper assembly.
- Reduced future track maintenance requirements.

- Improved reliability and service delivery on the West Moreton System.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	This project will deliver a more reliable network, improved track quality and reduced future track maintenance requirements, among other benefits. These benefit access holders and will assist in providing the transit times in the Access Agreements.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including the need for the Reconditioning project and supported that the Reconditioning project was required at the 2.1mtpa forecast. [redacted] Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[7]
The age and condition of existing assets and the need for replacement capital expenditure projects.	The condition of the assets means greater unnecessary additional expenditure and a less reliable network. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.

[7] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	The Concrete Sleepers with Gauge Issues Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Report are completed at the end of the project and will be provided to the QCA at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Concrete Sleepers with Gauge Issues Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.

Assessment Criteria	Queensland Rail Response
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	This project will deliver a more reliable network, improved track quality and reduced future track maintenance requirements, among other benefits. These benefit access holders and will assist in providing the transit times in the Access Agreements.
Current and likely future usage levels.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including the need for the Reconditioning project and supported that the Reconditioning project was required at the 2.1mtpa forecast. [redacted] Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[8]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (**RISSB**) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. The SEMS includes standards for The SEMS includes standards for rail lubrication as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission

[8] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	This project will save costs over time resulting less costs for Queensland Rail and customers and a more efficient network.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Sleepers to be procured from an external provider.
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

B.05650 Reconditioning West Moreton 21-23

The West Moreton System spans 407 track kilometres (314 route kilometres) of narrow gauge track which consists of 41kg, 50kg and 60kg rail. The 41kg rail is interspersed with timber and steel sleepers. This system has been systematically upgraded, targeting priority sections of track.

The existing 41kg rail and timber and steel sleepers are becoming maintenance-intensive and need upgrading to improve reliability and safety. In addition, there are sections of this line that are built on untreated black soil formations which contribute to the intensive maintenance requirements. This black soil formation has contaminated the existing ballast, contributing to drainage issues. This line also suffers from top and line and stress issues during the summer months. Due to the poor condition of the track structure this section of track requires increasing maintenance to conform to CETS and to support operational base service level performance.

This Reconditioning project is required to improve safety and reliability at priority locations by providing an improved track structure to service existing traffic. The project 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)*'.

This West Moreton System has been systematically upgraded with priority track targeted as part of an overall strategy. The B.03656 Western System Asset Replacement (**WSAR**) Project replaced [redacted] of priority track over six years and was completed in 2015-16. The B.05171 Reconditioning West Moreton 16/17 - 19/20 Project renewed [redacted] of track.

Continuing this work, 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 construction of a new capping structure. This B.05650 Reconditioning West Moreton 20/21-22/23 Project will upgrade the next [redacted] of priority track between [redacted] and 1[redacted] on the West Moreton System. The targeted areas are critical sections on the Line, carrying loaded coal traffic from all mines in the West Moreton System. The locations of track sections in priority order to be upgraded are:

Functional Location Description	Sections	Start	End	Length (km)
Jondaryan - Dalby	Jondaryan - Malu	[redacted]		
Jondaryan - Dalby	Malu - Bowenville			
Jondaryan - Dalby	Bowenville - Koomi			
Jondaryan - Dalby	Bowenville - Koomi			
Jondaryan - Dalby	Koomi - Blaxland			
Macalister - Miles	Warra - Brigalow			

Note: Commissioned assets that are located between Columboola and Miles are not eligible for inclusion in the Annual Capital Expenditure Report.

Project Benefits

The benefits that will be realised by delivering this project are:

- Improved safety via replacement with heavier track structure, reducing risk of buckles / misalignment.
- Reduced potential for Temporary Speed Restrictions (**TSRs**) and impacts to operations such as derailment via improved track stability and improved formation strength (eliminated risk of sleeper / rail failure; improved top and line).
- Improved track condition and track quality as measured by the Overall Track Condition Index (**OTCI**).
- Track standards compliance via track realignment. Due to the condition of the track structure this section of track requires increasing maintenance to conform to CETS.
- Reduced future track maintenance requirements over this section.
- Improved reliability and service delivery on the West Moreton System.

Previous Consideration by the QCA

Queensland Rail sought $14,657,211 for the Reconditioning West Moreton 21-23 Project in its 2020-21 Capital Expenditure Report. QCA consultant Arcadis undertook a review of Queensland Rail's 2020-21 Capital Expenditure Report which included reviewing the Reconditioning West Moreton 21-23 Project. Arcadis[9] and the QCA[10] found that these commissioned assets were prudent in terms of scope, standard and cost. The 2021-22 Capital Expenditure Report is seeking $10,350,739 (excluding IUC) for commissioned assets in this project. These works were undertaken by Queensland Rail in the same manner as for the assets commissioned in 2020-21 Capital Expenditure Report. Acardis wrote:

> *"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)'…..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".*

[9] Arcadis' Report 'Queensland Rail 2020 -21 Capital Expenditure Claim. 18 August 2022', p22
[10] Queensland Competition Authority Decision Notice, 29 August 2022

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	This Reconditioning project is required to improve safety and reliability at priority locations on the West Moreton System by providing an improved track structure to service existing traffic. The project has been developed to address the high priority defects. The existing track structure comprising 41kg rail and timber and steel sleepers is becoming maintenance-intensive and needs upgrading to improve reliability and safety. This is a critical section in the system, carrying loaded coal traffic from all mines in the system. This project ensures that the network performs safely and reliably to a condition that meets engineering standards. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System and minimises disruptions through additional track maintenance and speed restrictions for train services.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including the need for the Reconditioning project and supported that the Reconditioning project was required at the 2.1mtpa forecast. [redacted] The Reconditioning project is included in the West Moreton AMPs 2021-22 and 2021-22. Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[11]

[11] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects.	Issues with formation on the West Moreton System are longstanding and are the result of the original railway construction between 1865 and 1880. The WorleyParsons Report 2013 noted that West Moreton System formation is sub-standard even for a semi-heavy haul operation, and the track requires regular resurfacing (of the order of once every three to four months). The improvement from resurfacing in top and line soon deteriorates. In areas where there is major weakness in the foundation the sleepers start pumping and the black soil mud soon permeates the track structure. The existing 41kg rail and timber and steel sleepers are becoming maintenance-intensive and need upgrading to improve reliability and safety. In addition, as highlighted above, there are sections of this line that are built on untreated black soil formations which contribute to the intensive maintenance requirements. This black soil formation has contaminated the existing ballast, contributing to drainage issues. This line also suffers from top and line and stress issues during the summer months. Due to the poor condition of the track structure this section of track requires increasing maintenance to conform to CETS and to support operational base service level performance. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. The SEMS includes standards for conditioning as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	The Reconditioning project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Report are completed at the end of the project and will be provided to the QCA at that stage.

Assessment Criteria	Queensland Rail Response
	Queensland Rail considered the following three options in relation to this project: **Option 1: Do nothing** This option would ignore the risk of rail wear and deformation causing derailment. This would result in increasing maintenance costs to remove large amounts of rail defects such as irregular sleeper spacing, damaged joints, wheel burns, squats, irregular wear and head rail flow. **Option 2: Replace rail or ballast only** This option would only provide limited track stability, alignment improvement and operational maintenance savings. **Option 3: Recondition (Preferred option)** This option upgrades formation/ capping and the track structure to 50kg rail, full depth/ medium duty concrete sleepers, and A Grade ballast. This option will reduce the risk of service disruption and safety risks by improving the network through the replacement of deteriorating track infrastructure with new infrastructure and targeting the replacement of below rail infrastructure that is known will have an increasing operational maintenance cost. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Reconditioning project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) — i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. As the project is ongoing, the Handover Report and Completion Report are written at the completion of the project and will be provided to the QCA at that stage.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	The project was included in the following documents as part of the QCA's consultation on AU2: • Queensland Rail's Draft Access Undertaking 2 (DAU2) Explanatory Document (14 August 2018); • QCA Draft Decision on Queensland Rail 2020 draft access undertaking April 2019; • SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019; • Queensland Rail's DAU2 West Moreton System low volume coal reference tariff 22 November 2019; and • The QCA Final Decision on Queensland Rail 2020 draft access undertaking, February 2020; and

Assessment Criteria	Queensland Rail Response
	• The QCA review of Queensland Rail's 2020-21 Capital Expenditure Report. As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.05650 Reconditioning West Moreton 21-23 Project and its forecast expenditure was included in the model. This also enabled the release of the unredacted QCA SYSTRA Draft Decision and Final Decision reports to these stakeholders which included this project. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	This Reconditioning project is required to improve safety and reliability at priority locations on the West Moreton System by providing an improved track structure to service existing traffic. The project has been developed to address the high priority defects. The existing track structure comprising 41kg rail and timber and steel sleepers is becoming maintenance-intensive and is in need for upgrade to improve reliability and safety. This is a critical section in the system, carrying loaded coal traffic from all mines in the system. This project ensures that the network performs safely and reliably to a condition that meets engineering standards. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System and minimises disruptions through additional track maintenance and speed restrictions for train services. Queensland Rail uses the SWUG process to discuss closures and other major maintenance and timetabling issues with rolling stock operators.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including for the Reconditioning project and supported that the Reconditioning project were required at the 2.1mtpa forecast. [redacted] Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[12]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (**RISSB**) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is reasonably practicable (SFAIRP). The SEMS includes standards for level crossings as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission

[12] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	The assets included for this 2021-22 Capital Expenditure Report were commissioned in 2021-22. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2020-20 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Work will be delivered in-house using internal and external resources. Internal Queensland Rail track and structure staff will be used for the construction labour and an external earthworks company under an existing panel arrangement will be used for machine hire and operation.
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

B.05653 Culvert Renewal West Moreton

Inspections have identified nine culverts as requiring renewal. These drains pose an increasing risk of collapse during washout in flood (as well as under current operations). Unless replaced, serviceability will be reduced with the eventual imposition of speed restrictions, and recoverability after flooding will be more problematic and prolonged.

Culverts allow the flow of water from one side of the corridor to the other. They are typically concrete or steel pipes or concrete boxes of size generally ranging from 450mm diameter to 3m x 3m boxes. The culvert can have a single opening or multiple barrels depending on the size of the watercourse and the height of the embankment.

If the waterway provided by the culvert is inadequate for a particular flood event, the height of the upstream water will rise above the roof of its inlet. This increases the head pressure and forces more water through its outlet, but eventually the track overtops. If the downstream embankment and ballast is not protected with rock or other armouring the overtopping will wash out the ballast and embankment leaving the track unsupported.

Culverts and subways are becoming increasingly high maintenance assets as they reach their design life or are affected by route tonnage/loading increases. Culverts and subways are inspected in accordance with CETS. All defects found are allocated priority for monitoring, repair, renewal and/or temporary support. Increased monitoring regime and attention to top and line defects increases confidence in deferring expenditure and testing capabilities. Culvert replacement will maintain serviceability and reduce the eventual imposition of speed restrictions and recoverability after flooding.

Scope

Replace nine culverts considered to be a high risk of causing track failure using open trench construction:

- Laidley (78.080km);
- Helidon (110.060km);
- Murphy's Creek (143.300km);
- Spring Bluff (146.160km);
- Spring Bluff (146.760km);
- Harlaxton (4.340km);
- Harlaxton (4.635km);
- Oakey (34.810km); and
- Chinchilla (163.770km).

- Re-construction of track.

- Resurfacing of the track with spot tamper once reinstated and track certifications.

Project Benefits

Benefits that this project will deliver include:

- Improving flood resilience by providing scour protection to drain Inlets/outlets and designing the structure to withstand flood events which the existing dilapidated culverts may not.
- Improving asset reliability due to the higher standard of culvert compared with existing dilapidated culverts.
- Reduced potential for Temporary Speed Restrictions due to base asset condition, minimising section times and optimising customer revenue.
- The proposed capital replacement of the culverts in scope will avoid unplanned, urgent, temporary repairs to these dilapidated culverts. The cost of temporary repairs would be comparable to replacing the culverts with new, more resilient structures with extended design life, while still requiring replacement in <10 years.
- Reduced likelihood of train derailment caused by culverts in this projects scope.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	Culvert renewals are required to replace life expired/deteriorated culverts to ensure the continued safe operation of trains on the network.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	This project improves flood mitigation and network resilience on the West Moreton System. This is important to both Queensland Rail and its customers. [redacted]
The age and condition of existing assets and the need for replacement capital expenditure projects.	Inspections undertaken by Queensland Rail have identified nine culverts as requiring renewal. These drains pose an increasing risk of collapse during washout from flood (as well as under current train

Assessment Criteria	Queensland Rail Response
	operations). Unless replaced, serviceability will be reduced with the eventual imposition of speed restrictions, and recoverability after flooding will be more problematic and prolonged. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is SFAIRP. The SEMS includes standards for conditioning as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	The Culvert Renewal West Moreton Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Report are completed at the end of the project and will be provided to the QCA at that stage. Queensland Rail considered the following three options in relation to this project: **Option 1: Do nothing** The "Do Nothing" option does not address the desired safety, operational and business requirements. This is not the preferred option. **Option 2: Replace/ refurbish nine deteriorated culverts (Preferred Option)** Seven culverts require complete replacement with new concrete structures designed for the waterways. Two culverts that may be impacted by future Inland Rail will be upgraded to reduce the total option 2 cost by re-lining a large culvert at Helidon and upgrading the inlet of a heritage drain at Spring Bluff. **Option 3: Lower cost, shorter design life** The use of lower cost, shorter design life corrugated metal pipes was investigated for structures that may be impacted by future Inland Rail. This option is not preferred, as it only provides 3% saving for a non-standard approach.

Assessment Criteria	Queensland Rail Response
	The culvert inspections have determined the condition rating and scope required, Failure to replace/refurbish the culverts in a timely manner may increase the risk of track failure or accelerate the deterioration of the asset. Option 2 is the only solution that adequately addresses the safety, operational and business objectives. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Culvert Renewal West Moreton Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) — i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. As the project is ongoing, the Handover Report and Completion Report are written at the completion of the project and will be provided to the QCA at that stage.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	This Culvert Renewal West Moreton Project is required to improve safety and reliability at priority locations on the West Moreton System. Culvert renewals are required to replace life expired/deteriorated culverts to ensure the continued safe operation of trains on the network. This assists with train throughput. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels.	[redacted] Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[13]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (**RISSB**) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	The assets included for this Report were commissioned in 2021-22. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2021-22 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: D. engineering, equipment supply and construction; E. labour; and F. materials.	The culvert replacements are undertaken by internal resources using open trench construction.

[13] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: J. safety during construction and operation; K. compliance with environmental requirements during construction and operation; L. compliance with Laws and the requirements of Authorities; M. minimising disruption to the operation of Train Services during construction; N. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; O. minimising whole of asset life costs including future maintenance and operating costs; P. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; Q. aligning other elements in the supply chain; and R. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

B.05655 Level Crossing Upgrades West Moreton

This project has been developed to improve safety and minimise the risks associated with the interface between rail and road at level crossings. With the level crossing structure subject to the combination of both rail and road traffic, any deterioration of the formation affects efficient operations and safety for both rail and road users.

There are 127 level crossings including public level crossings, occupational and maintenance level crossings (87, 36 and 4 respectively) in the West Moreton System between Rosewood and Miles. 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.

23 level crossings in the West Moreton System have been identified as requiring reconditioning in the five years from 2021-22 to 2024-25, with the upgrading of these level crossings being the subject of this project. The level crossings were identified via track recording data and subsequently verified through inspections by qualified track staff. The infrastructure at the locations identified for upgrade was classed as being life-expired and/or in poor condition. Engineering resources were also utilised to verify and prioritise needs prior to the current work being planned.

The current version of the CETS addresses transitions between track structures at level crossings where rail breaks have occurred in the past as a result of inadequate transition. Maintaining flangeway[14] clearance at level crossings can be difficult with deteriorated or inadequate road surfaces, and inadequate flangeway clearance has caused derailments in the West Moreton System. This project is a "modern equivalent type" replacement of the track and level crossing infrastructure, ensuring these components have improved safety and are compliant with the current standards, including transitions between track structures and flangeway clearance.

This will be achieved via reconditioning rail track panels and providing new road surfaces. The purpose of the project is 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.
- Design, install, operate and maintain level crossings in compliance with Queensland Rail standards for level crossings.

[14] Flangeway: The passageway for the flange of a wheel running on rails. Flange - a projecting flat rim, collar, or rib on an object, serving for strengthening or attachment or (on a wheel) for maintaining position on a rail.

Project Scope

This project involves the reconditioning of 23 level crossings in the West Moreton System between Rosewood and Miles and includes the following tasks:

- Upgrade of track structure to 50kg rail, full depth concrete sleepers and A Grade ballast.
- Upgrade of formation, typically 600mm deep and 4 metres wide, with a layer of laminated geofabric/grid and a layer of geogrid Formation treatment to be determined from site investigation.
- Improved surface drainage and subsoil drainage.
- Designed and monumented alignment (designed alignment will typically be a regression of the existing alignment).
- Transitions between track structure complying with CETS.
- Asphalt road surface and formed flangeway complying with CETS.
- Resurfacing.
- Restressing.
- etc.

Project Benefits

The benefits of the project are:

- Improved safety for road users.
- Improved safety via replacement with heavier track structure, reducing risk of buckles / misalignment, and pavement failure.
- Transitions between track structures compliant with CETS, reducing the risk of rail breaks.
- Formed flangeway clearances compliant with CETS, reducing the risk of derailment.
- Reduced potential for TSRs and impacts to operations such as derailment via improved track stability and improved formation strength (eliminated risk of sleeper / rail failure; improved top and line and road surface).
- Improved track condition and track quality as measured by the OTCI.
- Reduced future track maintenance requirements at the 23 level crossings.
- Improved reliability and service delivery on the West Moreton System.

Level Crossings

Table 4 below lists the 23 level crossings covered by the level crossing upgrade project.

Table 4: Level Crossing Upgrades for Project B.05655

Functional Location	Start Point	Description
LXR_04233	98.37	LC-Smithfield/Burgess Road (Old Toowoomba Road Gatton)
LXR_00856	19.99	LC - Haden Road (Kingsthorpe)
LXR_02438	107.7	LC - Macalister/Bell Rd(Macalister West)
LXR_00906	209.11	LC - Dawson St / Leichhardt Hwy (Miles)
LXR_01027	160.56	LC - Bridge Street (Toowoomba)
LXR_00996	180.58	LC - Rywung Access Road (Rywung)
LXR_02485	208.17	LC - Morgan Street (Miles)
LXR_00678	57.15	LC - Irvingdale Street (Bowenville)
LXR_02467	161.61	LC - Cemetery Road (Chinchilla Wheat)
LXR_00738	83.69	LC - Condamine Street (Dalby)
LXR_02453	134.37	LC - Ehlma Boundary Road (Warra)
LXR_02319	62.15	LC - Irvingdale South Road (Bowenville)
LXR_02315	48.76	LC - Malu Quarry Access Road (Malu)
LXR_02482	197.82	LC - Warrego Hwy/Ryalls Rd (Columboola)
LXR_03482	208.95	LC - Mc Nulty Street (Miles)
LXR_03481	208.316	LC - McNulty St 1(Bulk Grain)(Miles)
LXR_02484	203.96	OC - Hillview Access Road (Miles)
LXR_01031	159.9	LC - Jellicoe Street (Toowoomba)
LXR_00736	4.68	LC - Hermitage Road (Willowburn)
LXR_02330	84.18	LC - Nicholson Street (Dalby)
LXR_00739	85.8	LC - Dalby / Jandowae Road (Dalby)

Functional Location	Start Point	Description
LXR_02323	71.14	LC - Kommamurra Road (Koomi)
LXR_02324	78.25	LC - Blaxland / Irvingdale Rd (Blaxland)

QCA Assessment

This project involves both level crossing reconditioning and level crossing transitions. In assessing Queensland Rail's AU2 West Moreton System Capital Indicator claim for the level crossing upgrades project during the QCA's AU2 approval process, QCA consultant **SYSTRA** states:

> *"Queensland Rail does, however, have a responsibility as the accredited Rail Infrastructure Manager to ensure that it is performing the maintenance and capital expenditure necessary* ***to ensure that rail infrastructure in use is safe and reliable****, and meets the requirements of Queensland Rail's Safety Management System… After review SYSTRA concurs with Queensland Rail in regard to* ***level crossing reconditioning, transitions*** *and concrete sleepers for tight curves on the Toowoomba Range….* ***SYSTRA accepts that the level crossing reconditioning and transitions are required because of the critical safety aspect of these assets.****"*[15] (emphasis)

The QCA confirmed the above findings by SYSTRA in its Final Decision stating:

> *"Queensland Rail's proposed budgets for a number of works were assessed by Systra as reasonable, including formation renewal,* ***level crossing reconditioning****, minor signalling renewal and remote monitoring systems roll-out."*[16] (emphasis)

The QCA approved a Capital Indicator of $8.082M for this project:

- The Level Crossing Reconditioning Project: $6.241M
- The Level Crossing Transitions Project: $1.841M.

In addition, as part of the QCA's review of Queensland Rail's 2020-21 Capital Expenditure Report, QCA Consultants Arcadis[17] and the QCA[18] found that the commissioned assets were prudent in terms of scope, standard and cost.

B.04794 Level Crossing Upgrades, West Moreton 16/17 - 19/20 Project is a predecessor to this project and was included in Queensland Rail's 2019-20 Capital Expenditure Report.

[15] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, pp.25-27.
[16] The QCA's Final Decision on Queensland Rail 2020 draft access undertaking, February 2020, p.72.
[17] Arcadis' Report 'Queensland Rail 2020 -21 Capital Expenditure Claim. 18 August 2022', p7
[18] Queensland Competition Authority Decision Notice, 29 August 2022

This project is safety related and is important in minimising the risks associated with the interface between rail and road at level crossings.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	The Level Crossing Upgrade Project is replacing level crossing infrastructure that is life-expired and/or in poor condition. The key benefit of this safety project is that Queensland Rail will continue to be able to provide a safe, reliable network and meet the requirements for Train Service Entitlements contained in the Access Agreements for coal and non-coal services that utilise the West Moreton System. The investment in this project will ensure fit for purpose assets are provided. The proposed work will limit the need for TSRs and reduce maintenance required, both of which will assist the operational performance of train services.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including in relation to the Level Crossing Upgrade Project and supported that the Level Crossing Upgrade Project was required at the 2.1mtpa forecast. [redacted] As stated above in this submission, both SYSTRA and the QCA Final Decision recognised the need for this safety related project. The QCA accepted Queensland Rail's proposed budget for the level crossing replacement project in its Capital Indicator. Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[19]

[19] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects.	The required work was identified via track recording data and subsequently verified through inspections by qualified track staff. The infrastructure at the locations identified for upgrade was classed as being life-expired and/or in poor condition, noting that the West Moreton System is an old system. Engineering resources were also utilised to verify and prioritise needs prior to the current work being planned. QCA consultant SYSTRA recognised the need for and importance of this project during the AU2 QCA approval process as did QCA consultant Arcadis in their assessment of Queensland Rail's 2020-21 Capital Expenditure Report. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. The SEMS includes standards for level crossings as prescribed in CETS. For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	The Level Crossing Upgrade Project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) — i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2021-22 and have been added to the FAR. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. Queensland Rail considered a 'do nothing' option, however this option was not considered as acceptable due to safety considerations. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The level crossing upgrade project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The assets included as part of this report were commissioned in 2021-22. The Business Case and AUC forms have been provided to the QCA as part of this 2021-22 Capital Expenditure Report. These assets have been added to the FAR. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage.

Assessment Criteria	Queensland Rail Response
	For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	This project combines the following two projects reviewed by the QCA as part of their approval of AU2: the Level Crossing Reconditioning Project and the Level Crossing Transitions Project. The project was included in the following documents as part of the QCA's consultation on AU2: • Queensland Rail's Draft Access Undertaking 2 (DAU2) Explanatory Document (14 August 2018); • QCA Draft Decision on Queensland Rail 2020 draft access undertaking April 2019; • SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019; • Queensland Rail's DAU2 West Moreton System low volume coal reference tariff 22 November 2019; • The QCA Final Decision on Queensland Rail 2020 draft access undertaking, February 2020. As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.05655 Level Crossing Upgrades West Moreton Project and its forecast expenditure was included in the model (as Level Crossing Reconditioning and Level Crossing Transitions Projects). This also enabled the release of the unredacted QCA SYSTRA Draft Decision and Final Decision reports to these stakeholders which included this project. Consultation was undertaken in terms of closures. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The level crossing upgrade project is replacing level crossing infrastructure that is life-expired and/or in poor condition. The key benefit of this safety project is that Queensland Rail will continue to be able to provide a safe, reliable network and meet the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System. The investment in this project will ensure fit for purpose assets are provided. As a result of the proposed work there will be an avoidance TSRs and reduced maintenance required, both of which will assist the operational performance of train services. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels.	The QCA approval process for the AU2 West Moreton System coal reference tariff was extensive with the QCA and stakeholders considering both a 9.1mtpa scenario and a 2.1mtpa scenario, the higher tonnage level being dependent upon the NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa scenario at the end of 2019 as the best forecast until/if NAS3's approval progresses, with the QCA using a 2.1mtpa forecast for contracted coal train paths in its Final Decision. The QCA Final Decision assessed the need for capital including in relation to the Level Crossing Upgrade Project and supported that the Level Crossing Upgrade Project was required at the 2.1mtpa forecast. [redacted] Issues related to AU2 demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22. 3.4 of the AMP.[20]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (**RISSB**) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed SFAIRP. The SEMS includes standards for level crossings as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

[20] Queensland Rail, West Moreton Asset Management Plan 2021-22, p 10.

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	Both the QCA consultant SYSTRA[21] and the QCA in its AU2 Final Decision Capital Indicator[22] accepted Queensland Rail's forecast expenditure of $8.082M for this project (i.e. the Level Crossing Reconditioning Project $6.241M and the Level Crossing Transitions Projects $1.841M). The assets included for this Report were commissioned in 2021-22. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2020-20 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The required work was identified via track recording data and subsequently verified through inspections by qualified track staff. The infrastructure at the locations identified for upgrade was classed as being life-expired and/or in poor condition. Engineering resources were also utilised to verify and prioritise needs prior to the current work being planned. The delivery strategy for this project is to deliver the scope of works using both Queensland Rail internal staff and external wet hired plant and services. With regard to materials, consultation was undertaken with supply vendors to ensure vendors were aware of the proposed program of works. Agreements for when these materials were to/will be delivered were reached with the relevant vendors.
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.

[21] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, p.27
[22] The QCA's Final Decision on Queensland Rail 2020 draft access undertaking, February 2020, p.73

Assessment Criteria	Queensland Rail Response
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 10 of this submission.

Ballast Undercutting

For AU1 and AU2, the QCA decided that the ballast undercutting (track lowering) was *track reconditioning* involving lowering of the track by removing the track and grading the ballast and that these costs should be capitalised.[23]

In 2021-22, Queensland Rail is seeking approval for $861,745 in track lowering for inclusion in the RAB, consistent with the methodology applied by the QCA.

However, as track lowering activities are part of Queensland Rail's normal maintenance activities, it does not have business cases, assets included on the Fixed Asset Register or a Completion/Handover Report for works undertaken. Distances have been sourced from Queensland Rail's EAMS system, with [redacted] of work completed.

Queensland Rail's track lowering maintenance activities are associated with managing excessive ballast depth, which affect track stability and poor vertical alignment. Track lowering is not a substitute for formation repairs. This activity predominantly reuses existing ballast and removes excessive ballast depth to regain stability of the track structure—it is not an extension of the ballast life, but simply a reduction in top and line and track stability issues. Track lowering includes all works involved in either undercutting of track sections or lowering of excessively ballasted sections of track.

Undercutting works are performed in the district by the use of an excavator mounted undercutter bar. Track lowering is generally carried out in large sections and is done by removing the track and grading ballast away and then replacing the track. Ballast during track lowering is generally reused, although some new ballast is required for undercutting works.

For Queensland Rail, track lowering is part of the routine maintenance required to provide safe and reliable services on the West Moreton System. Unlike track reconditioning, there is no new asset components involved, with ballast, sleepers and rail all placed back into position after the track has been lowered. Track lowering does not improve the service quality of the existing asset, with this maintenance undertaking to ensure the asset remains 'fit for purpose'.

[23] B&H Supplementary Report Master relating to submissions by stakeholders in response to the QCA's Draft Decision of Queensland Rail DAU 2015 (May 2016), p 14.