QueenslandRail

Queensland Rail
GPO Box 1429
Brisbane QLD 4001

T 07 3072 0781
E ceoqueenslandrail@qr.com.au
www.queenslandrail.com.au

Our Ref: MCR-24-63

Mr Charles Millsteed
Chief Executive Officer
Queensland Competition Authority
Level 27 145 Ann Street
Brisbane Qld 4000

Dear Mr Millsteed

2022-23 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 2022-23 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 2022-23 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

30 January 2024

West Moreton System
Capital Expenditure Report 2022–23

Redacted

January 2024

Commercial-In-Confidence

Table of Contents

1. Structure of Submission

1.1 Queensland Rail's network

This report has been submitted to the Queensland Competition Authority (**QCA**) in accordance with Queensland Rail's Access Undertaking 2 (**AU2**) requirements. The report is structured as follows:

- **Section 1** outlines the structure of this report.
- **Section 2** summarises AU2's requirements and process for Queensland Rail producing this 2022-23 Capital Expenditure Report as well as the matters the QCA must take into account when considering the report. Additionally, Section 2 provides a summary of the financial information relevant to this report.
- **Section 3** sets out the key characteristics of the West Moreton System, which will assist in providing an understanding of Queensland Rail's fit for purpose capital program.
- **Section 4** explains Queensland Rail's Investment Framework.
- **Section 5** sets out Queensland Rail's approach and processes related to Prudency of Scope of projects.
- **Section 6** sets out Queensland Rail's approach and processes related to Prudency of Standard of projects.
- **Section 7** sets out Queensland Rail's approach and processes related to Prudency of Cost of projects.
- **Attachment 1** provides detailed information regarding each individual project contained in this capital expenditure report relating to the prudency of each project. Additional documents are provided by Queensland Rail to assist the QCA in its prudency assessments including Business Cases, Project Handover Reports, Project Completion Reports, Asset Under Construction (**AUC**) forms, the Fixed Asset Register (**FAR**) and other key documents. Additionally, where the QCA considers appropriate, a site inspection of the West Moreton System is undertaken by the QCA. This will involve visiting individual projects and relevant sites.

2. The Capital Expenditure Report Process

2.1 Capital expenditure report requirements

Clause 1.3 of Schedule E of AU2 provides that, unless otherwise agreed between Queensland Rail and the QCA Queensland Rail will, within six months after the end of each year, submit to the QCA an annual capital report (**Capital Expenditure Report**). The Capital Expenditure Report is to include details of the capital expenditure that "*Queensland Rail considers should be included in a Regulatory Asset Base*" (**RAB**). To be included in the Capital Expenditure Report the assets must have been commissioned in the '*subject financial year*', which is the previous financial year, and must wholly or partly relate to coal services.

This Capital Expenditure Report relates to assets that were commissioned in the 2022-23 financial year (**2022-23 Capital Expenditure Report**). No incremental coal related capital expenditure has been identified for the Metropolitan System for 2022-23. As such, the 2022-23 Capital Expenditure Report relates solely to coal related assets in the West Moreton System.

Clause 1.3(c), Schedule E of AU2 requires that the information provided to the QCA be accompanied by a statement signed by Queensland Rail's CEO confirming that the information is, in all material respects, correct.

2.2 Other capital

In addition to the capital expenditure included in a Capital Expenditure Report, Schedule E of AU2 provides for Queensland Rail to separately apply to have included in the RAB capital commissioned prior to the subject year (and therefore that wouldn't be included in the Capital Expenditure Report). For example, an asset commissioned in 2020-21 that hasn't been added to the RAB cannot be included in the 2022-23 Capital Expenditure Report. However, Queensland Rail can make a separate application to have this expenditure included in the relevant RAB (i.e. the West Moreton System or the Metropolitan System coal related RABs) at any time.

Queensland Rail is not seeking additional capital to be included in the RAB under these provisions (i.e. not seeking this in relation to capital that outside of the 2022-23 Capital Expenditure Report).

2.3 QCA acceptance of capital expenditure into the RAB

Clause 1.3, Schedule E of AU2 sets out the requirements that the QCA is required to consider in relation to the assessment of whether the information in the Capital Expenditure Report should be accepted into the RAB:

> *"**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." (emphasis added)*

In accordance with the above, the QCA will assess whether the commissioned projects in the 2022-23 Capital Expenditure Report should be included in the RAB including by applying the prudency tests.

Schedule E of AU2 requires that Queensland Rail provide the following details (unless otherwise agreed):

- the name of the project;

- the location of the project;
- the amount of the capital expenditure; and
- information, where applicable, to support the QCA's assessment of the prudency of the capital expenditure (except to the extent that the QCA has already accepted that capital expenditure as prudent in scope, standard or cost).

In relation to the above, Queensland Rail has provided the following documents (where relevant):

- Business Cases;
- Project Handover Reports;
- Project Completion Reports;
- Asset Under Construction (**AUC**) forms;
- The Fixed Asset Register (**FAR**); and
- Queensland Rail's Service Investment Plan (SIP) West Moreton – Rosewood to Miles.

2.4 2022-23 Capital Expenditure Report summary

Queensland Rail's 2022-23 Capital Expenditure Report includes 11 capital expenditure projects and is seeking the QCA's approval for:

- **$43,380,778** excluding interest during construction (**IDC**); and
- **$44,900,766** including IDC.

The projects in question are set out in **Table 1** and **Table 2** below. All assets were commissioned during the 2022-23 financial year.

Table 1: Commissioned Assets 2022-23 — excluding interest during construction

Project Number	Project Name	2022-23
100% WEST MORETON PROJECTS		
B.04754	West Moreton Minor Signalling Renewals	3,317,304
B.05460	WM Formation Strengthening 18/19 - 20/21	3,113,966
B.05649	Bridge Renewal West Moreton 20/21-24/25	11,933,688
B.05650	Reconditioning West Moreton 20/21-22/23	7,730,683
B.05651	West Moreton Rerail Kingsthorpe to Oakey	5,908,393
B.05653	Culvert Renewal West Moreton	2,026,553
B.05655	Level Crossing Upgrades West Moreton	1,287,306
B.06159	Sleepers with gauge issue & Range rerail	3,462,216
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
B.04075	Level Crossing Upgrades - Regional	1,673,244
B.04764	RMS2 LX System Wide	1,861,541
OTHER		
Ballast Undercutting	Ballast Undercutting	1,065,884
TOTAL		**43,380,778**

Table 2: Commissioned Assets 2022-23 — including interest during construction

Project Number	Project Name	2022-23
100% WEST MORETON PROJECTS		
B.04754	West Moreton Minor Signalling Renewals	3,368,608
B.05460	WM Formation Strengthening 18/19 - 20/21	3,361,048
B.05649	Bridge Renewal West Moreton 20/21-24/25	12,126,787
B.05650	Reconditioning West Moreton 20/21-22/23	8,357,725
B.05651	West Moreton Rerail Kingsthorpe to Oakey	5,834,501
B.05653	Culvert Renewal West Moreton	2,133,510
B.05655	Level Crossing Upgrades West Moreton	1,309,058
B.06159	Sleepers with gauge issue & Range rerail	3,444,807
SYSTEM WIDE / REGIONAL WIDE PROJECTS — INCLUDE WEST MORETON		
B.04075	Level Crossing Upgrades - Regional	1,896,417
B.04764	RMS2 LX System Wide	2,002,421
OTHER		
Ballast Undercutting	Ballast Undercutting	1,065,884
TOTAL		**44,900,766**

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.

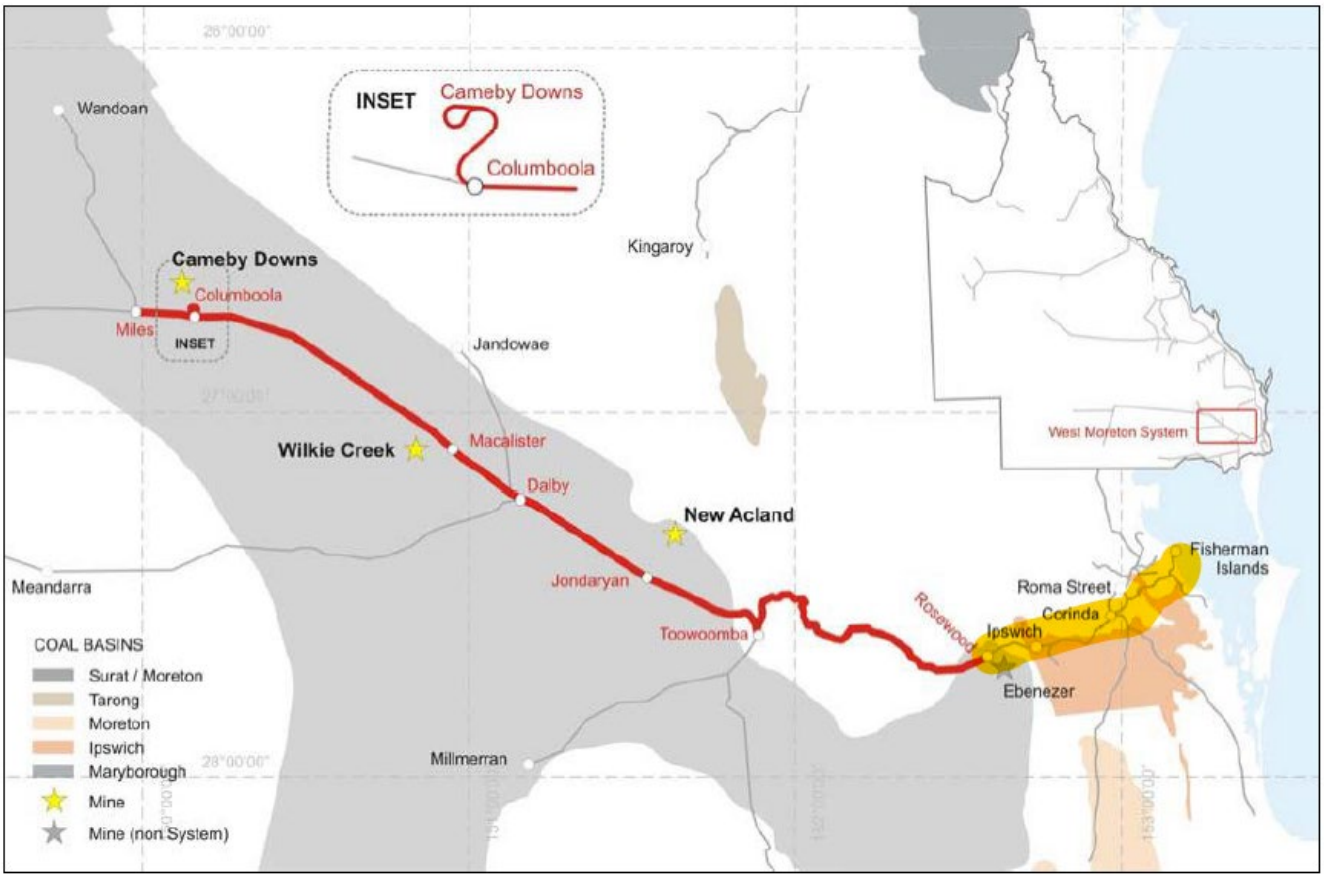
3. The West Moreton System

3.1 Introduction

Coal carrying train services traverse Queensland Rail's West Moreton System, which spans approximately 321 route kilometres from Rosewood to Miles, and through the Metropolitan System[1] along approximately 80 route kilometres from Rosewood to the Port of Brisbane (Fisherman Islands). Both the West Moreton System and the Metropolitan System have QCA approved reference tariffs for coal carrying train services.

Figure 1: Map of Miles to the Port of Brisbane

[1] The Metropolitan System means that part of the Network bounded to the north by (and including) Nambour station and to the west by (and including) Rosewood and including all branch lines comprised in that part of the Network. Coal trains travel on the System between Rosewood and the Port of Brisbane.



3.1.1 History and characteristics

Historically the West Moreton System catered for passenger, livestock, freight and agricultural products (e.g. grain and cotton) with the first section of railway line in Queensland, between Ipswich and Grandchester, opening in 1865 the railway reaching Toowoomba in 1867 and Roma in 1880.

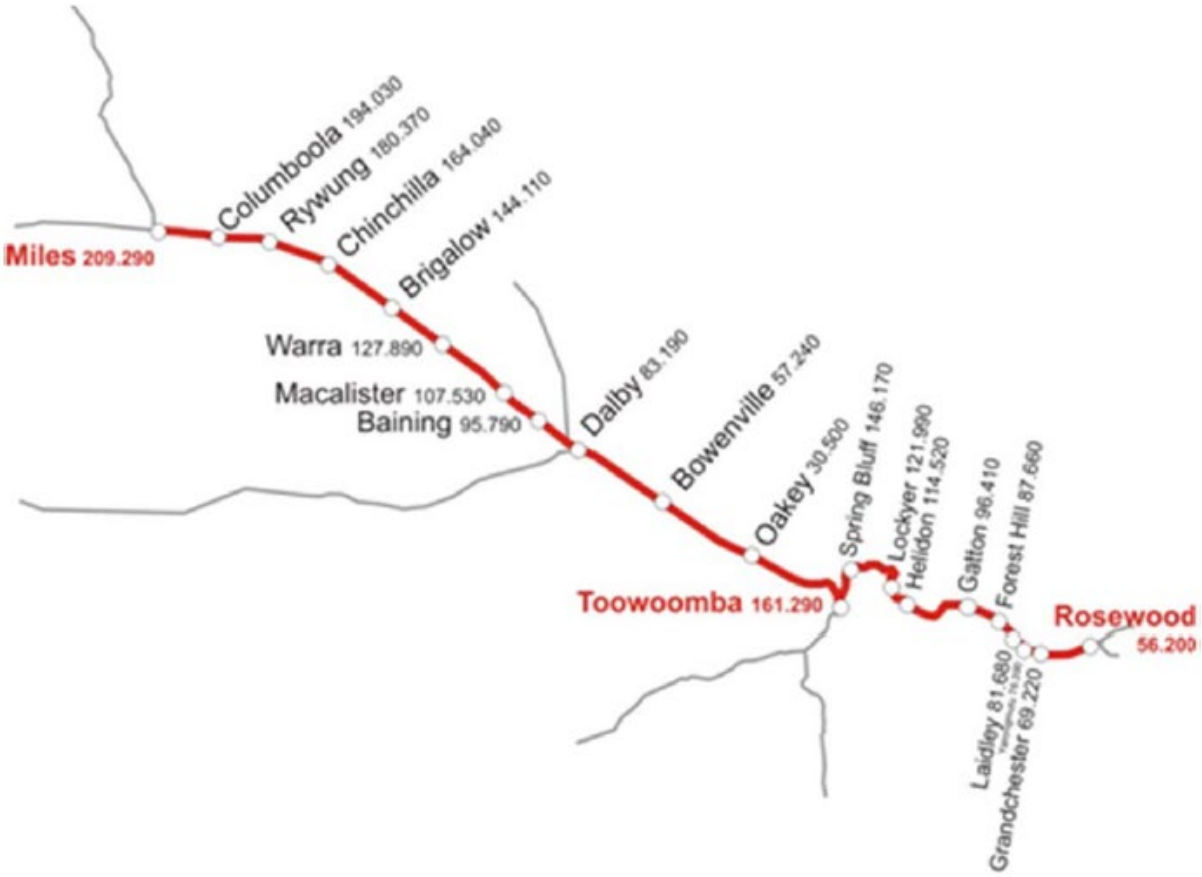
While coal carrying train services commenced in 1982 from mines located just west of Ipswich (in the Metropolitan System), heavy haul coal railings began on the West Moreton System from the Wilkie Creek mine in 1994, with Macalister as the loading point. The Wilkie Creek mine ceased railing in 2013 during a time of low international thermal coal prices but was reopened by New Wilkie Energy in 2023. Following the development of the New Acland mine, railings from Jondaryan commenced in 2002. The final Surat Basin mine utilising the West Moreton System, Cameby Downs, began operations in late 2010 transporting coal from Columboola.

The West Moreton System is unique as a coal system, with the Toowoomba Range section, originally constructed in the 1880s, and the majority of the railway from Rosewood to Columboola, being founded on expansive black clays which, if not addressed through effective maintenance and capital strategies at a time of increasing tonnages, will remain unstable requiring mitigation such as speed restrictions.

As the West Moreton System was initially designed to cater for non-coal traffics, this environment has meant that investment in infrastructure improvements, by both Queensland Rail and West Moreton System end-users, has been necessary to accommodate coal carrying train services. It also requires a substantial

maintenance effort. Queensland Rail maintains fit for purpose maintenance and capital programs that take account of the West Moreton System's unique characteristics, and tonnage levels, ensuring a safe and reliable network.

Figure 2: Map of the West Moreton System



3.2 Rail capacity

Current traffics on the West Moreton System include train services carrying thermal coal from the three mines, freight trains carrying grain (and sometimes livestock) and the Westlander long distance passenger services.

The Toowoomba Range is the capacity constraint on the West Moreton System, with a maximum capacity of 113 return train paths per week on average over a year. Of these, 14 return train paths per week are preserved for non-coal freight[2] and two return train paths per week are preserved for the Westlander[3]. The coal mines and their rail operators can contract up to 97 return train paths per week across the range (as these are not preserved) and can also run ad hoc train services for the remaining 16 return preserved paths (if they are not being used by freight and passenger train services).

[2] These train paths are preserved under section 266A of the *Transport Infrastructure Act 1994*.
[3] These train paths are preserved under section 266A of the *Transport Infrastructure Act 1994*.

The Metropolitan System is not otherwise capacity constrained and can accommodate the 113 train services as well as any coal or freight services that originate in the Metropolitan System and travel between Rosewood and the Port of Brisbane.

AU2 was developed in an environment where forecast tonnages were 2.1 million tonnes per annum (**mtpa**). In contrast, Queensland Rail's Draft Access Undertaking 3 (**DAU3**) submitted to the QCA in November 2023 had forecast West Moreton coal tonnages to reach 9.6mtpa by 2027/28. The annual West Moreton System coal tonnage forecasts in DAU3 are provided by financial year in **Table 3** below.

Table 3: West Moreton System Coal Tonnages Forecast by Financial Year (mtpa)

	2023/24	2024/25	2025/26	2026/27	2027/28	2028/29	2029/30
Annual Throughput	4.4	6.7	8.2	9.5	9.6	9.6	9.6

This submission has been developed under circumstances where coal volumes along the West Moreton System are forecast to increase to record coal tonnage levels during DAU3. Queensland Rail's purpose is to provide a safe, reliable, on-time, value for money and customer focussed rail service that benefits the community, supports industry and is integrated with the public transport system.

4. Queensland Rail's Investment Framework

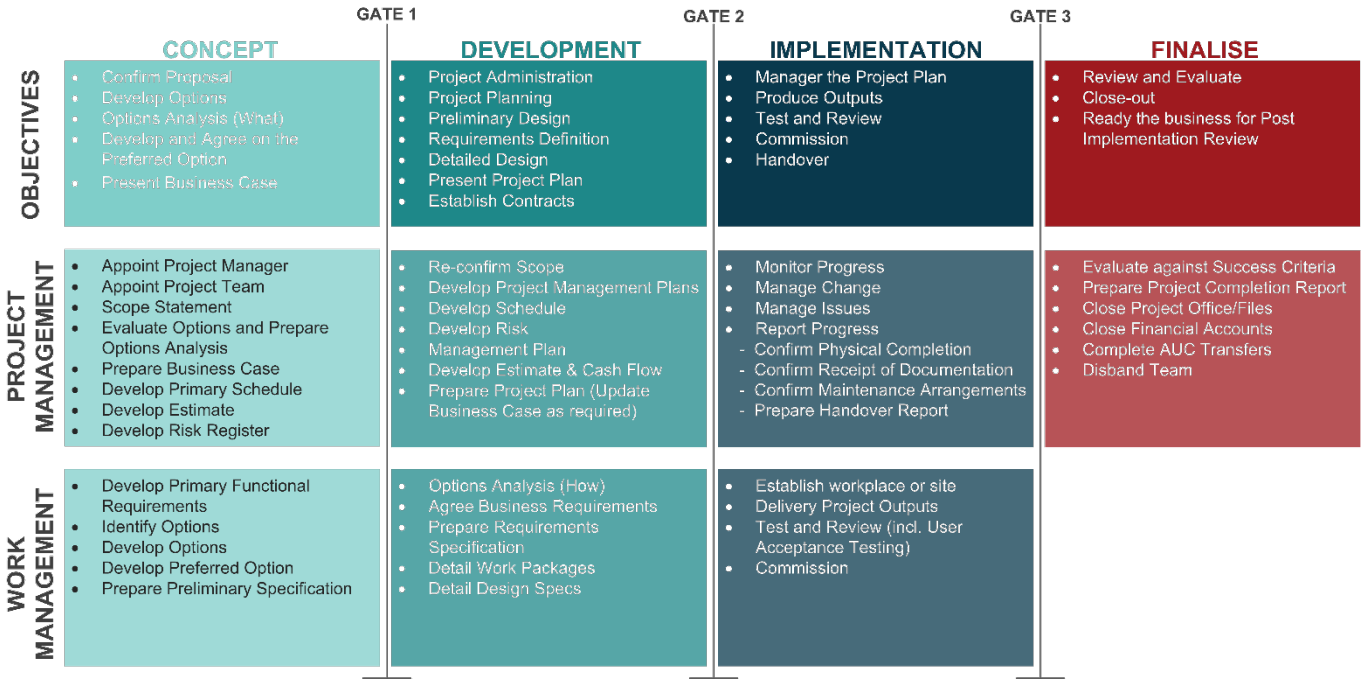
Queensland Rail is a statutory authority that undertakes numerous projects annually to ensure the safe and reliable working, and growth, of the rail network for the people of Queensland. The following processes are applicable to the 2022-23 Capital Expenditure Report. Queensland Rail has revised its processes, which will be reflected in the 2023-24 Capital Expenditure Report.

The Queensland Rail project management methodology relevant 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 has been applied to all projects undertaken by the organisation in this report.

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 3: Project Life Cycle



Source: Framework – Project management methodology

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

- **Operational Project Contro**l — 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.

The following sections set out Queensland Rail's approach to:

- Prudency of Scope;
- Prudency of Standard; and
- Prudency of Cost.

5. Prudency of Scope

The QCA is required to consider the prudency of capital projects submitted in the 2022-23 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 E in AU2 being prudency of scope (Clause 3), prudency of standard of works (Clause 4) and prudency of cost (Clause 5).

5.1 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 Metropolitan System. Delays in coal carrying train services can result in trains waiting for a new time slot in the Metropolitan System and delaying delivery of product to the port.

Queensland Rail seeks to minimise the below rail transit time including through efficient capital and maintenance expenditure. 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, major projects not in the control of Queensland Rail and above rail reasons.

5.2 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.

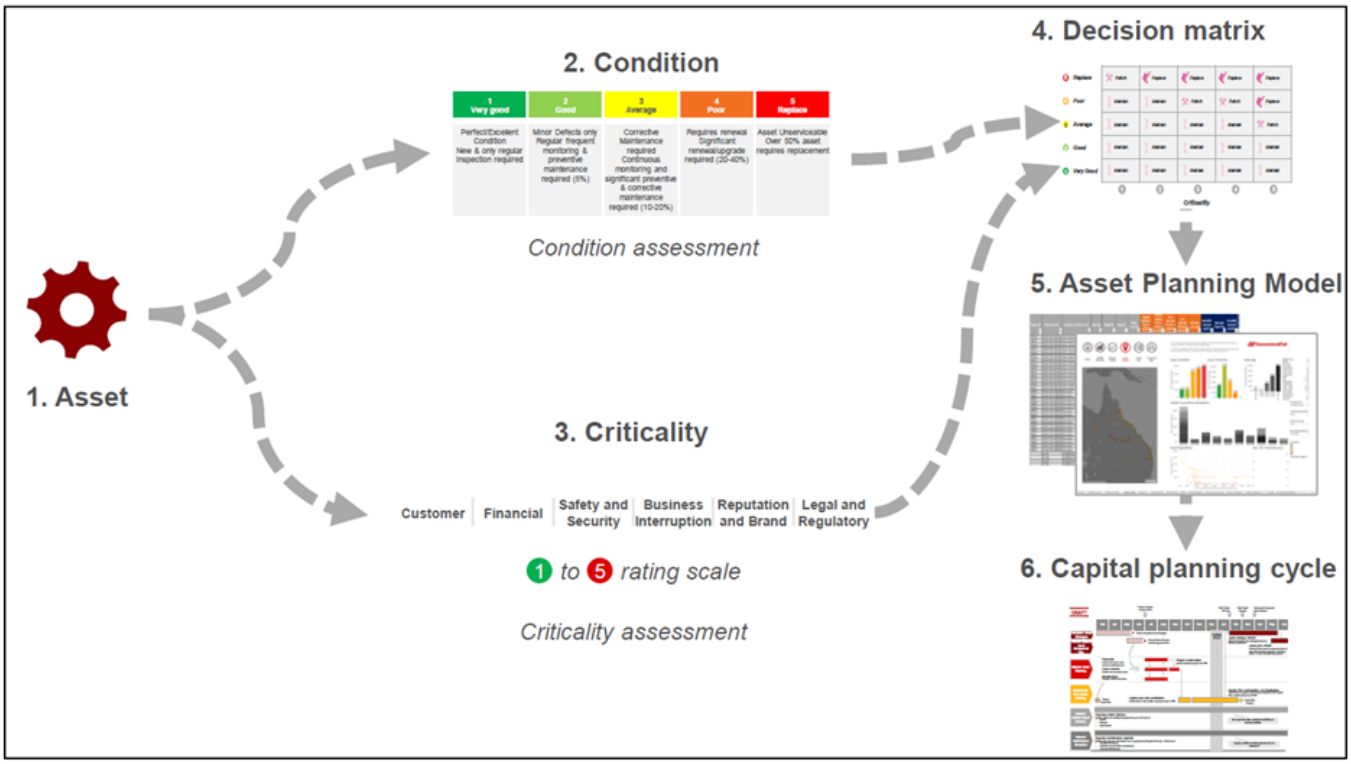
However, as highlighted earlier in this submission Queensland Rail is moving toward record tonnage levels. Queensland Rail's capital programs are developed to ensure that its infrastructure is appropriate for expected tonnages.

5.3 Asset Planning Framework

The 2022-23 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 4** below illustrates the functioning of the APF.

Figure 4 — 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.

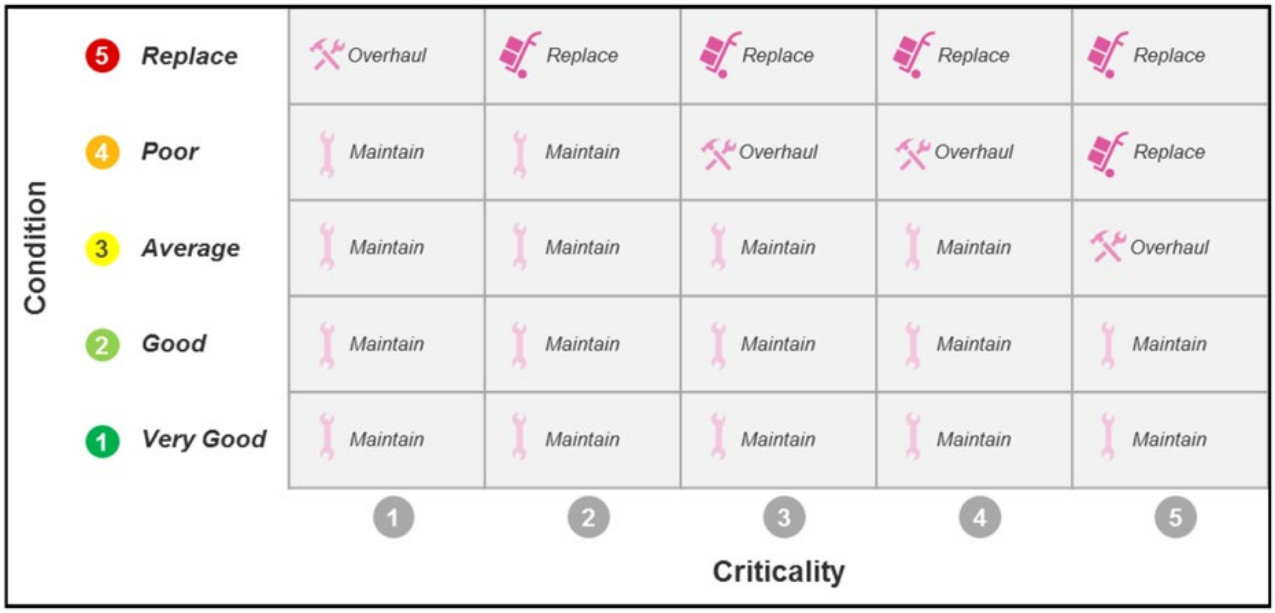
Within EAMS, asset conditions are measured using one of the following:

- **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 5 — 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.

5.4 Evaluation of Options

The 2022-23 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 2022-23 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 6: 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 2022-23 Capital Expenditure Report are considered Type 3 projects.

5.5 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* (**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, 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.

6. Prudency of Standard

The QCA is required to consider the prudency of standard of projects submitted in the 2022-23 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.

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

As an accredited RIM under the 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 RSNL. 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.

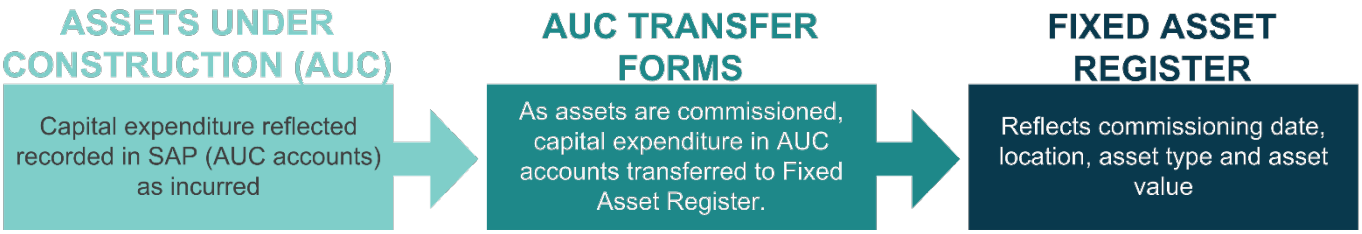
[1] RSNL section 52
[2] RSNL section 46
[3] RSNL section 47(e)

7. Prudency of Costs

The QCA is required to consider the prudency of the costs of projects submitted in the 2022-23 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.

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 2022-23 Capital Expenditure Report.



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.

Attachment 1: Detailed Capital Project Assessments

B.04075 Level Crossing Upgrades - Regional

Claim: **$1,896,417** (including IDC)

Public level crossings across Queensland have been assessed for safety risk using the Australian Level Crossing Assessment Model (**ALCAM**) and Australian Standard AS 1742 Part 7.

ALCAM is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk. ALCAM produces an overall comparative risk score for each site as well as highlighting where specific potential hazards exist. It utilises "triggers" or limits as a preliminary means of determining the potential level of likelihood of incident (High / Medium / Low) at a site. ALCAM then provides assistance in the determination of proposed treatments and optimum safety improvements to address the hazards at individual sites. These improvements are then implemented in accordance with Australian Standard AS1742.7 - 2007 Manual of Uniform Traffic Control Devices Part 7.

Based on the risk ranking assigned a list of priority works has been developed to identify crossings that require safety upgrades to active protection. This program of works will ensure priority level crossings provide a safe passage for vehicles across the rail tracks. It is also proposed to investigate the closure of a number of public level crossings throughout the state. A detailed list of sites and works is contained in the business case provided to the QCA with this 2022-23 Capital Expenditure Report.

The key benefit of the works performed at the prioritised level crossings is that it will ensure Queensland Rail continues to operate a safe rail network. The installation / upgrade works at the selected level crossing sites will:

- allow a safe passage for vehicles over the rail network;
- encourage the public to use designated crossings to prevent unauthorised access into the rail corridor;
- reduce the potential for near miss occurrences and accidents / incidents involving rollingstock and vehicles;
- assist in improving the social and economic impact (caused by level crossing incidents) as well as site specific safety factors;
- improve safety and reliability of the rail network; and
- improve trackside safety.

This is a safety critical project.

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 is safety critical providing 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 and QCA consultants SYSTRA recognised the importance of Level Crossing Upgrades with SYSTRA writing: "*SYSTRA accepts that the level crossing reconditioning and transitions are required because of the critical safety aspect of these assets.*" Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
The age and condition of existing assets and the need for replacement capital expenditure projects.	The Level Crossing Upgrades - Regional Project works will ensure priority level crossings provide a safe passage for vehicles across the rail tracks. This is particularly important with the higher tonnages forecast to come onto the network resulting in higher rail traffic. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	The Level Crossing Upgrades - Regional 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 2022-23 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 so far as is reasonably practicable (SFAIRP). For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems.
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 Upgrades - Regional 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 project is appropriate as it is a safety critical project and its works have been based on the risk ranking determined using ALCAM which is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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

Assessment Criteria	Queensland Rail Response
	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 project of works has been based on the risk ranking determined using ALCAM which is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2022-23 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 in this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the South West User Group (**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 project ensures that the network performs safely. 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 Level Crossings Upgrade – Regional project and supported that the project was required at the 2.1mtpa forecast. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 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 in this submission.

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 2022-23 Capital Expenditure Report were commissioned in 2022-23. 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 2022-23 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project. The project is safety related. The project uses both internal officers as well as external resources
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The project will be undertaken by Queensland Rail resources as well as some work being outsourced.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission. The project of works has been based on the risk ranking determined using ALCAM which is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk.

B.04754 West Moreton Minor Signalling Renewals

Claim: **$3,368,608** (including IDC)

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. Detailed project information is included in the provided business case.

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.

This project has been completed.

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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in this submission.

Assessment Criteria	Queensland Rail Response
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, AUC forms, Handover Repot and Completion Report are provided as part of this submission. The assets were commissioned in 2022-23 and have been added to the FAR. 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 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.

Assessment Criteria	Queensland Rail Response
	Option 3: Replace Model 10 boom mechanisms with original type 10 mechanisms (not the preferred option) This would not be a preferred option due to 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 in 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, AUC forms, Handover Repot and Completion Report are provided as part of this submission. The assets were commissioned in 2022-23 and have been added to the FAR. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 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.

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 2022-23 Capital Expenditure Report were commissioned in 2022-23. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case, AUC forms, Handover Repot and Completion Report are provided as part of this submission. The assets were commissioned in 2022-23 and have been added to the FAR.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The project was predominantly undertaken by Queensland Rail resources with some work being outsourced.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission.

B.04764 RMS2 LX System Wide

Claim: **$2,002,421** (including IDC)

The Level Crossing Remote Monitoring program is an Integral part of an overall Open Level Crossing Protection Strategy for Queensland Rail. At the start of the project there were approximately 390 active level crossings that are remotely monitored by the Remote Level Crossing Monitoring System. By having a remote monitoring system at active level crossings, level crossing equipment such as power supply, lamp and boom mechanism operation and health can be monitored, allowing Queensland Rail to identify faults and failures in real time and respond appropriately. This adds to the safety and reliability of the rail network.

The existing Remote Level Crossing Monitoring System version 1 (**RMS1**) technology is reaching the end of Its supportable life. The senders and receivers can no longer be manufactured, there are limited spares, and the RMS1 server has unsupported software. The field equipment communicates with the system via 400 MHz radio which Is subject to changes to the 400 MHz band plan by the Australian Communications and Media Authority (**ACMA**). Queensland Rail must narrowband or decommission the frequencies in use. This project alms to meet compliance requirements and replace life-expired equipment by adopting the following strategy:

- Replacing RMS1 with RMS2 In the higher density areas; and
- Implementing RMS1 narrowband in the outer areas.

The objective of this project Is to replace [redacted] life-expired RMS1 level crossing monitors with RMS2, and narrowband 18 RMS1 level crossing monitors, enabling the existing wideband analogue radio to be decommissioned. This project alms to:

- meet current compliance requirements.
- replace life-expired equipment.

This project will:

- Address the 400 MHz compliance Issue by moving to RMSv2 operating on the Telstra mobile network.
- Replace the life-expired RMSv1 equipment with RMSv2. The Internally developed RMSv1 systems is obsolete.
- Replace life-expired FT lamp flashers with SafeFlash. This will Improve the reliability, maintainability and visibility of the level crossings.

This is an essential project to ensure required compliance obligations as well to maintain the safety and reliability of the rail network.

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 is safety critical providing 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety and reliability. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
The age and condition of existing assets and the need for replacement capital expenditure projects.	The current RMS1 is obsolete and is required to be upgraded. The senders and receivers can no longer be manufactured, there are limited spares, and the RMS1 server has unsupported software. The RMS2 LX System Wide Project works are essential for the safety and reliability of the rail network. This is particularly important with the higher tonnages forecast to come onto the network resulting in higher rail traffic. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	The RMS2 LX System Wide 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 2022-23 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 so far as is reasonably practicable (SFAIRP). For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems.
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.	This project is replacing obsolete equipment which is required to be upgraded. This project supports the safety and reliability of Queensland Rail's network. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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 2022-23 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. The project supports the safety and reliability of the rail 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 in this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the South West User Group (**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 project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety and reliability. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 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 in this submission.

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 2022-23 Capital Expenditure Report were commissioned in 2022-23. 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 2022-23 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project. The project is safety related. The project uses both internal officers as well as external resources
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The upgraded equipment is specialised and required due to compliance obligations as well as to maintain the safety and reliability of the rail network.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission. The upgraded equipment is specialised and required due to compliance obligations as well as to maintain the safety and reliability of the rail network.

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

Claim: **$3,361,048** (including IDC)

Poor formation condition causes uneven movement of trains, which leads to increased deterioration of track and locomotive components over time, culminating in an increased probability of derailment. These defects are caused by the reactive black soil in the region. The black soil shrinks and swells with changes in moisture content, leading to failures of the formation affecting track top and line and therefore rail operations.

At the time of this project's approval there were within Queensland Rail's Enterprise Asset Management System (**EAMS**) 17.19km of formation defects in the West Moreton System requiring rectification within timeframes ranging from three months to five years. The planned formation strengthening in the West Moreton Formation Strengthening 2018/19 - 2020/21 Project addresses priority formation defects and is integral to the Network Track and Civil Asset Strategy. This will result in fewer speed restrictions, improved ability to deliver a reliable network resulting in reduced future maintenance, will assist in meeting the requirements contained in the Access Agreements for coal and non-coal customers and will reduce the overall impact on train operations.

Formation repairs are part of a continuing program to manage formation issues on the West Moreton System. Issues with formation on the West Moreton System are longstanding and are the result of the original railway construction between 1865 and 1880. Queensland Rail has been investing in prioritised programs of formation strengthening works to target the formation defects in the West Moreton System.

The 2013 WorleyParsons Report[4] noted that the result of the black soil is that the formation is sub-standard even for a semi-heavy haul operation, and the track at present requires regular resurfacing (in 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. Formation strengthening was recommended by the Transportation and Technology Centre Inc (**TTCI**)[5] in 2010 following its review of the West Moreton System with concerns about derailment and increasing speed restrictions. Formation works decrease the resurfacing task and are a safety initiative.

During the QCA's AU2 approval process, QCA consultant SYSTRA supported the need for formation strengthening highlighting that formation strengthening results in significant reductions in resurfacing and is a longer term solution than resurfacing. In SYSTRA's assessment for the QCA AU2 Draft Decision SYSTRA wrote:

[4] Queensland Rail's AU1 reference tariff submission to the QCA, 18 September 2013, '*Attachment 4 – WorleyParsons AU1 West Moreton Reference Tariff Review (5 September 2013)*'.
[5] TTCI Evaluation of Queensland Rail West Moreton Coal Corridor (2010) Note - Queensland Rail has previously provided the QCA with a copy of the report.

> *"In the assessment, **SYSTRA recommends Queensland Rail adopt a formation rebuild campaign** or alternative strategy to address specific areas where multiple resurfacing deployments are required every year. ..In terms of current asset condition the Queensland Rail engineering team are doing a good job of maintaining this challenging rail within the prescribed CETS track geometry limits."*[6] (Queensland Rail's emphasis)

This emphasis on the importance of the formation works was again expressed in SYSTRA's later report for the QCA AU2 Final Decision[7] where SYSTRA also supported Queensland Rail's forecast of [redacted] for the Capital Indicator for this project[8] The QCA agreed with SYSTRA 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."*[9] *(Queensland Rail's emphasis)*

Project B.04613 'West Moreton Formation Strengthening 2015/16 to 2017/18' is a predecessor to this project and delivered approximately 13.833km of formation works on the West Moreton System. This subsequent Project B.05460 continues the formation repairs. The QCA assessed QR's formation strengthening practices as prudent in terms of scope, standard and cost in relation to the following previous capital expenditure reports:

- Queensland Rail's 2020-21West Moreton System Capital Expenditure Report;
- Queensland Rail's 2019-20 West Moreton System Capital Expenditure Report;
- Queensland Rail's 2018-19 West Moreton System Capital Expenditure Report;
- Queensland Rail's 2015-16 West Moreton System Capital Expenditure Report;
- Queensland Rail's 2014-15 West Moreton System Capital Expenditure Report; and
- Queensland Rail's 2013-14 West Moreton System Capital Expenditure Report.

Queensland Rail continues to follow these efficient practices in relation to the B.05460 WM Formation Strengthening 18/19-20/21 Project.

[6] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.10.
[7] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020 p.8.
[8] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020 p.29.
[9] QCA Final Decision on Queensland Rail 2020 draft access undertaking, February 2020, p72.

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 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 extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The project has an estimated [redacted] of formation strengthening per year to maintain the formation for the current volume of coal traffic on the West Moreton system. 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety and reliability. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa. Both QCA consultant SYSTRA and the QCA Final Decision recognised the need for this safety related project.
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.

Assessment Criteria	Queensland Rail Response
	Queensland Rail has been progressively undertaking formation strengthening to deal with these legacy issues and manage maintenance costs. Both the QCA consultant SYSTRA and the QCA in its AU2 Final Decision recognised the need and importance of this project. The QCA approved the prudency of scope, standard and costs for formation works in the 2020-21, 2019-20, 2018-19, 2015-16, 2014-15 and 2013-14 Capital Expenditure Reports. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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 reasonably practicable (SFAIRP). The SEMS includes standards for formation 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 11 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.	Formation repair is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, with 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 in this submission. Queensland Rail considered a 'do nothing' option, however this option presents a high risk of deterioration leading to a high risk of top and line deterioration, with speed restrictions and increased risk of derailments, damage to formation as well as unnecessary damage to rail, rail joints and sleepers. Depending on the soil strengths at each location different options are considered. This includes varying depths of new formation material and the use of geogrids and geotextiles.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	Formation strengthening is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The assets included in this submission for this project have been commissioned and are

Assessment Criteria	Queensland Rail Response
	included in Queensland Rail's FAR. The Business Case, AUC forms and Handover Report are provided. A Completion Report will be provided in the future once it is complete. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in this submission.
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; • 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. 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. This B.05460 WM Formation Strengthening 18/19-20/21 Project and its forecast expenditure was included in the model. This enabled stakeholders to assess this project. The provision of the model also enabled the release of the unredacted QCA SYSTRA Draft Decision report to these stakeholders which included this project.[10] Queensland Rail additionally made detailed public submissions on its proposed capital program during the QCA AU2 assessment process.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	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 Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.

[10] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.108.

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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety and reliability. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 formation 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 11 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 in this submission for this project have been completed and are included in Queensland Rail's FAR. The Business Case, AUC forms and Handover Report are provided. The Completion Report will be provided once it is completed.

Assessment Criteria	Queensland Rail Response
	Both the QCA consultant SYSTRA and the QCA in its AU2 Final Decision Capital Indicator included this project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Formation strengthening has been undertaken by internal 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.
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 11 of this submission.

B.05649 Bridge Renewal West Moreton 20/21-24/25

Claim: **$12,126,787** (including IDC)

The objective of the Bridge Renewal West Moreton project is to undertake replacement works i.e. bridge pier replacement and full bridge structure replacement on priority timber bridges (21 In total) in the West Moreton System.

Queensland Rail has over 1,000 timber bridges across Regional Queensland requiring a major maintenance budget. These aging timber bridges have structural elements that have life-expiring components including piers and girders.

Condition inspections of all timber bridges on the West Moreton System have been carried out by Queensland Rail's inspectors to identify the existing defects. The inspection data has been used to undertake a comprehensive condition analysis which enabled a replacement priority list to be produced. In many instances speed restrictions have been put in place in order to continue operations across these bridges. These speed restrictions impact on sectional running times especially at a time where Queensland Rail is estimating record tonnages going up to 9.6mtpa. Some bridges are also prone to flooding which further affects the structural integrity of these aging structures. If a bridge were to be damaged by flooding It would close the line for a considerable period while repairs are undertaken.

The first tranche of priority timber bridge replacements commenced In 2016/17 through project B.04636, and the final bridge (18 In total) was completed In October 2019.

This project is to undertake replacement works i.e. bridge pier replacement and full bridge structure replacement on the next tranche of priority timber bridges (21 in total) in the West Moreton System over financial years 2020/21 to 2023/24. Defects on these bridges include bridge/rail misalignment, termite damage, cracked girders, perishing girders, loose screws, split spans, rotten transoms and rotten headstocks.

The benefits/outcomes of the project are:

- reducing maintenance costs, due to the lower maintenance (primarily Inspection) requirements and longer life of the new structures;
- improving asset reliability due to the higher standard of bridging structure compared with existing timber structures;
- improving flood recovery by providing flood protection to embankments and designing the structure to withstand flood events which the existing timber structures may not;
- improving asset availability due to the reduced maintenance requirements for structures on the West Moreton System; and
- improved safety.

This project is essential to maintain the reliability of 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.	Condition inspections of all timber bridges on the West Moreton System have been carried out by Queensland Rail's inspectors to identify the existing defects. The inspection data has been used to undertake a comprehensive condition analysis which enabled a replacement priority list to be produced. In many instances speed restrictions have been put in place in order to continue operations across these bridges. These speed restrictions impact on sectional running times especially at a time where Queensland Rail is estimating record tonnages going up to 9.6mtpa. Some bridges are also prone to flooding which further affects the structural integrity of these aging structures. If a bridge were to be damaged by flooding It would close the line for a considerable period while repairs are undertaken. This project ensures that the network performs safely and, in particular, reliably. The reliability assists customers with the throughput of their train services. 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects.	Condition inspections of all timber bridges on the West Moreton System have been carried out by Queensland Rail's inspectors to identify the existing defects. The inspection data has been used to undertake a comprehensive condition analysis which enabled a replacement priority list to be produced. In many instances speed restrictions have been put in place in order to continue operations across these bridges. These speed restrictions impact on sectional running times especially at a time where Queensland Rail is estimating record tonnages going up to 9.6mtpa. Some bridges are also prone to flooding which further affects the structural integrity of these aging structures. If a bridge were to be damaged by flooding It would close the line for a considerable period while repairs are undertaken. This project ensures that the network performs safely and, in particular, reliably. The reliability assists customers with the throughput of their train services. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	The Bridge Renewal West Moreton 20/21-24/25 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. Bridge renewal is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The assets included in this submission for this project have been commissioned and are included in Queensland Rail's FAR. The Business Case and AUC forms are provided. 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 Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission.

Assessment Criteria	Queensland Rail Response
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 Bridge Renewal West Moreton 20/21-24/25 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. 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 have been provided to the QCA with this submission. The assets were commissioned in 2022-23 and have been added to the FAR. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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 provides a reliable, safe network meeting the requirements for Train Service Entitlements contained 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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). For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission.

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 2022-23 Capital Expenditure Report were commissioned in 2022-23. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided as part of this submission.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The project was undertaken by both Queensland Rail resources and external contractors.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission.

B.05650 Reconditioning West Moreton 21-23

Claim: **$8,357,725** (including IDC)

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 57.698km and 145.240km 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.

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[11] and the QCA[12] found that these commissioned assets were prudent in terms of scope, standard and cost. The 2022-23 Capital Expenditure Report is seeking $7,730,683 (excluding IDC) 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:

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

"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".

The QCA also found the Reconditioning West Moreton 21-23 Project as prudent in the 2021-22 Capital Expenditure Report.

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 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.

Assessment Criteria	Queensland Rail Response
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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa. 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.[13]
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

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

Assessment Criteria	Queensland Rail Response
	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 in 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 reasonably practicable (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 2022-23 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** 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)**

Assessment Criteria	Queensland Rail Response
	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 in 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 2022-23 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 • 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.

Assessment Criteria	Queensland Rail Response
	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.
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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.

Assessment Criteria	Queensland Rail Response
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
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 2022-23 Capital Expenditure Report were commissioned in 2022-23. 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 2022-23 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.

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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission.

B.05651 West Moreton Rerail Kingsthorpe to Oakey

Claim: $5,834,501 (including IDC)

This project involves the strategic renewal of [redacted] of worn and defective rail on the mainline track between Gowrie to Oakey on the Western Line, renewal of [redacted] of yard track at Kingsthorpe (including ballast, sleeper, and rail) and a [redacted] bridge relay on the Western Line. These works include primarily the elimination 41kg/m rail for new 50kg/m rail throughout several high priority locations on the Western Line, completing the missing link between Toowoomba and Jondaryan.

This site is a legacy site of a previous investment strategy to address the immediate risk component, rather than the current approach for full reconditioning which realises greater asset value benefit. The rail asset is aging and now exhibiting a heightened occurrence of fatigue defects. Replacement of fatiguing rail aligns with the approach outlined in the 2019 West Moreton Derailment Reduction Strategy. Concurrently, West Moreton is forecasting a significant increase in traffic from 2.1 mtpa to 9.6mtpa, making asset resilience increasingly critical. The benefits of this project will begin to be realized immediately.

Scope summary

[redacted] **Bridge Relay,** [redacted] Disposal of existing ballast, steel sleepers and 41kg rail, installation of new ballast, FDC sleepers and 50kg rail.

[redacted] Disposal of existing 41kg rail, installation of new 50kg rail. A number of locations in this section have already been rerailed ([redacted] in total). These locations are: [redacted] (existing 50kg), [redacted] (existing 50kg), [redacted] (existing 50kg), [redacted] Level crossing upgrade already complete). Please see Annexure 3 for detailed scope.

[redacted] **Yard Track Relay,** [redacted] Disposal of existing ballast, timber and steel sleepers and 41kg rail, installation of new ballast, LPC sleepers and 50kg rail.

[redacted]

The project is required to replace near life-expired 41kg/m rail between [redacted] on the Western Line with 50kg/m rail, which will increase the strength of the track structure. Historical data from 2016 to 2022 recorded by the RTI car (ultrasonic inspections), shows that the section between Toowoomba and Oakey had various internal rail defects in the past, where the 41kg/m rail was or is still present. A high proportion of the rail defects exhibited are correlated with rail breaks and categorised as immediate priority under CETS, impacting operations and requiring reactive maintenance practices. In addition, given the frequency of welds in the rail, repair works are

requiring greater closure lengths to meet CETS requirements. By removing the existing 41kg rail the risk of internal defects are reduced leading to a decreased risk in rail failure.

[redacted] Bridge Relay, [redacted]

The relay is required to replace the existing life-expired steel sleepers, Grade B ballast and 41kg rail with Grade A ballast, FDC sleepers and 50kg/m rail. This will result in a more robust track structure that will be more suitable for the current traffic task, and which will require less maintenance.

[redacted] Yard Track Relay, [redacted]

Relay required to remove the existing 1 in 2 steel pattern, 41kg rail and life-expired ballast and replace it with Grade A ballast, LPC sleepers and 50kg rail.

This project seeks to:

- Implement sustainable asset management practices;
- Provide network resilience;
- Improve safety outcomes for customers, employees and contractors;
- Sustain on-time running and reliability;
- Prevent and recover from disruptive events;
- Achieve stakeholder and customer service standards and expectations; and
- Optimise asset management and investment.

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 is safety critical providing a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements. The project is required to replace near life-expired 41kg/m rail between [redacted] on the Western Line with 50kg/m rail, which will increase the strength of the track structure. Historical data from 2016 to 2022 recorded by the RTI car (ultrasonic inspections), shows that the section between Toowoomba and Oakey had various internal rail defects in the past, where the 41kg/m rail was or is still present. A high proportion of the rail defects exhibited are correlated with rail breaks and categorised as immediate priority under CETS, impacting operations and requiring reactive maintenance practices. In addition, given the frequency of welds in the rail, repair works are requiring greater closure lengths to meet CETS requirements. By removing the existing 41kg rail the risk of internal defects are reduced leading to a decreased risk in rail failure.
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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects.	The project is required to replace near life-expired 41kg/m rail between [redacted] on the Western Line with 50kg/m rail, which will increase the strength of the track structure. Historical data from 2016 to 2022 recorded by the RTI car (ultrasonic inspections), shows that the section between Toowoomba and Oakey had various internal rail defects in the past, where the 41kg/m rail was or is still present. A high proportion of the rail defects exhibited are correlated with rail breaks and categorised as immediate priority under CETS, impacting operations and requiring reactive maintenance practices. In addition, given the frequency of welds in the rail, repair works are requiring greater closure lengths to meet CETS requirements. By removing the existing 41kg rail the risk of internal defects are reduced leading to a decreased risk in rail failure. This stability is particularly important with the higher tonnages forecast to come onto the network resulting in higher rail traffic. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	This 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 2022-23 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 so far as is reasonably practicable (SFAIRP). For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems.
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.	This 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

Assessment Criteria	Queensland Rail Response
	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 project is appropriate as it is a safety critical project which will replace near life-expired 41kg/m rail between [redacted] on the Western Line with 50kg/m rail, which will increase the strength of the track structure. The analysis is based on historical data from 2016 to 2022 recorded by the RTI car (ultrasonic inspections). A high proportion of the rail defects exhibited are correlated with rail breaks and categorised as immediate priority under CETS, impacting operations and requiring reactive maintenance practices. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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 project is appropriate as it is a safety critical project which will replace near life-expired 41kg/m rail between [redacted] on the Western Line with 50kg/m rail, which will increase the strength of the track structure. The analysis is based on historical data from 2016 to 2022 recorded by the RTI car (ultrasonic inspections). A high proportion of the rail defects exhibited are correlated with rail breaks and categorised as immediate priority under CETS, impacting operations and requiring reactive maintenance practices. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2022-23 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
	For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the South West User Group (**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 project ensures that the network performs safely and reliantly. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained 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 Level Crossings Upgrade – Regional project and supported that the project was required at the 2.1mtpa forecast. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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.	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 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 in this submission.

Assessment Criteria	Queensland Rail Response
All relevant Law and the requirements of any Authority (including the Safety Regulator).	
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 2022-23 Capital Expenditure Report were commissioned in 2022-23. 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 2022-23 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project. The project is safety related. The project uses both internal officers as well as external resources
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The delivery stage for this project comprises the utilisation of primarily internal Queensland Rail resources. All works will be managed and delivered under the direction and control of Queensland Rail management and construction team supervisors. External resources such as plant and labour hire will be contracted when sufficient Queensland Rail resources are not available or where specialised equipment is required and cannot be sourced internally. This project will utilise current Queensland Rail Panel Arrangements to procure external contractors, as required. These Panel Arrangements have agreed terms and conditions and therefore should not require further contract departure.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission. The project of works has been based on the risk ranking determined using ALCAM which is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk.

B.05653 Culvert Renewal West Moreton

Claim: **$ 2,133,510** (including IDC)

The objective of this project is to replace seven culverts and upgrade two culverts between Laidley and Chinchilla on the West Moreton System that are considered to be a high risk of causing track failure.

Inspections have identified nine culverts as requiring renewal due to their poor condition. These drains are deteriorating and pose and increasing risk of collapse under operations and of being washedout in flood. Unless replaced, serviceability will be reduced with the eventual imposition of speed restrictions, and recoverability after flooding will be more problematic and prolonged. The failure of a culvert under the track and resulting track buckle would impact on Queensland Rail's ability to meet our customer requirements, therefore the replacement of these life-expired culverts is recommended.

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 pressure and forces more water through its outlet, and 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 and attention to top and line defects increase 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).

Undertake the re-construction of track.

Undertake the resurfacing of the track with spot tamper once reinstated and track certifications.

Project Benefits

Benefits that this project will deliver include:

- Improved 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.
- Improved 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 that are 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 the culverts in this project's 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. 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 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 in 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 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 2022-23 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 in 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 2022-23 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 which is particularly important with record coal tonnages forecast. 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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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

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 Report were commissioned in 2022-23. 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 2022-23 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 culvert replacements are undertaken by internal resources using open trench construction.
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.05655 Level Crossing Upgrades West Moreton

Claim: $**1,309,058** (including IDC)

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

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)

[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.

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. The QCA also found the works undertaken through this project to be prudent in its assessment of the 2021-22 Capital Expenditure Report. Queensland Rail has continued to use prudent practices.

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.

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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings

[17] Arcadis' Report 'Queensland Rail 2020 -21 Capital Expenditure Claim. 18 August 2022', p7
[18] Queensland Competition Authority Decision Notice, 29 August 2022

Assessment Criteria	Queensland Rail Response
	will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa. 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.
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 in 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 2022-23 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.

Assessment Criteria	Queensland Rail Response
	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 in 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 2022-23. The Business Case and AUC forms have been provided to the QCA as part of this 2022-23 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. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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.

Assessment Criteria	Queensland Rail Response
	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.
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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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.	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.

Assessment Criteria	Queensland Rail Response
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).	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 level of such costs relative to the scale, nature, cost and complexity of the project.	Both the QCA consultant SYSTRA[19] and the QCA in its AU2 Final Decision Capital Indicator[20] 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 2022-23. 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 2022-23 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.

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

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
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.06159 Sleepers with gauge issue & Range rerail

Claim: $**3,444,807** (including IDC)

Project description

This project will replace all full-depth concrete sleepers and tighten gauge in [redacted] nominated curves over a track length of [redacted] in the West Moreton System between Rosewood and Toowoomba.

Asset condition

There are 337 curves in the track between Rosewood and Toowoomba on the West Moreton System with 135 of these curves having a very tight radius of less than 160 metres.

There are [redacted] tight radius curves between Rosewood and Toowoomba that have been identified by track geometry recording, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with Civil Engineering Track Standards (CETS) and continued safe operation of rail traffic.

In these [redacted] particular curves, the High Density Poly Ethylene (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. The rails will continue to wear under traffic, and the gauge in these curves will further increase.

The root cause of the gauge issue is the concrete sleepers; 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 in excess of two decades and are typically early production gauge-widened concrete sleepers for tight radius curves. Replacement of these concrete sleepers is required to resolve the ongoing issue.

The [redacted] curves in scope of this project have a radius less than [redacted], with a corresponding design gauge of [redacted]. As the rails, sleepers and fasteners wear under traffic, the gauge dimension increases. The critical dimension for wide gauge defects is [redacted] which is the maximum safe width for rollingstock. CETS MD-10-575 requires immediate action for continued operation of rail traffic when this defect level is exceeded. This low tolerance for wear (15mm) in combination with the persistent wide-gauge defects due to sleeper inadequacies requires high levels of reactive repair to maintain track safety.

Scope summary

The scope of this project is to replace all full-depth concrete sleepers in the [redacted] nominated curves, over a track length of [redacted] in the West Moreton System between Rosewood and Toowoomba. The project activities include:

- Replacing new full-depth concrete sleepers with a reduced spacing of 550mm (normally 685mm). This will result in the required design gauge complying with construction tolerance.
- Replacing rail on six of the [redacted] nominated curves with new 50kg HH rail due to the existing rail wear approaching defect limits.
- Installing concrete checkrail sleepers on three of the [redacted] nominated curves.
- Installing new A grade ballast on all [redacted] nominated curves.
- Site clean-up works including dismantling, relocation and/or scrapping. The rails will be sold to SIMS Metal under current scrap contract. SIMS Metal will remove rails from the corridor.
- Resurfacing and restressing.
- Monumented alignment survey and design.
- Erecting and removing temporary speed restrictions (TSRs).
- Job plans, project planning. Site safety planning and management.
- Environmental approvals as required.

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 is safety related providing a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements.

Assessment Criteria	Queensland Rail Response
	There are [redacted] tight radius curves between Rosewood and Toowoomba that have been identified by track geometry recording, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with Civil Engineering Track Standards (CETS) and continued safe operation of rail traffic.
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. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
The age and condition of existing assets and the need for replacement capital expenditure projects.	There are [redacted] tight radius curves between Rosewood and Toowoomba that have been identified by track geometry recording, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with Civil Engineering Track Standards (CETS) and continued safe operation of rail traffic. In these [redacted] particular curves, the High Density Poly Ethylene (**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. The rails will continue to wear under traffic, and the gauge in these curves will further increase. The root cause of the gauge issue is the concrete sleepers; 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 in excess of two decades and are typically early production gauge-widened concrete sleepers for tight radius curves. Replacement of these concrete sleepers is required to resolve the ongoing issue. The [redacted] curves in scope of this project have a radius less than [redacted], with a corresponding design gauge of [redacted]. As the rails, sleepers and fasteners wear under traffic, the gauge

Assessment Criteria	Queensland Rail Response
	dimension increases. The critical dimension for wide gauge defects is 1,095mm which is the maximum safe width for rollingstock. CETS MD-10-575 requires immediate action for continued operation of rail traffic when this defect level is exceeded. This low tolerance for wear (15mm) in combination with the persistent wide-gauge defects due to sleeper inadequacies requires high levels of reactive repair to maintain track safety. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	This 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 2022-23 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 so far as is reasonably practicable (**SFAIRP**). For greater detail refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems.
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.	This 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.

Assessment Criteria	Queensland Rail Response
	The project is appropriate as it is a safety critical project which there are [redacted] tight radius curves between Rosewood and Toowoomba that have been identified by track geometry recording, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with Civil Engineering Track Standards (CETS) and continued safe operation of rail traffic. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework in 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 project is appropriate as it is a safety critical project which there are [redacted] radius curves between Rosewood and Toowoomba that have been identified by track geometry recording, track inspection and engineering staff as having recurring and persistent wide gauge defects which have required frequent intervention to ensure compliance with Civil Engineering Track Standards (CETS) and continued safe operation of rail traffic. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2022-23 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 in this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail uses the South West User Group (**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 ensures that the network performs safely and reliantly. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained 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 Level Crossings Upgrade – Regional project and supported that the project was required at the 2.1mtpa forecast. Since that assessment NAS3 has been approved and the Wilkie Creek Mine has been reopened and is operational. This has resulted in increased coal railings in DAU2 with Queensland Rail forecasting railings will increase to 9.6mtpa during AU3 (refer to Rail capacity). These upcoming increased tonnages will require safe and reliable infrastructure. This project improves this safety. This is ever more important with the increase in tonnages from 2.1mtpa 9.6mtpa.
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 practical (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 in this submission.

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 2022-23 Capital Expenditure Report were commissioned in 2022-23. 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 2022-23 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project. The project is safety related. The project uses both internal officers as well as external resources
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The delivery stage for this project comprises the utilisation of primarily internal Queensland Rail resources. All works will be managed and delivered under the direction and control of Queensland Rail management and construction team supervisors. External resources such as plant and labour hire will be contracted when sufficient Queensland Rail resources are not available or where specialised equipment is required and cannot be sourced internally. This project will utilise current Queensland Rail Panel Arrangements to procure external contractors, as required. These Panel Arrangements have agreed terms and conditions and therefore should not require further contract departure.
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. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems in this submission. The project of works has been based on the risk ranking determined using ALCAM which is a transport industry accepted safety assessment tool used to assist in the prioritisation of safety control upgrades at level crossings according to their comparative safety risk.

Ballast Undercutting

For AU1 and AU2, the QCA final decisions 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.[21]

In 2022-23 Queensland Rail is seeking approval for $1,065,884 in track lowering for inclusion in the RAB, consistent with the methodology applied by the QCA.

As a note, 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'.

Notwithstanding this Queensland Rail has respected the QCA's Decisions.

[21] 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.