QueenslandRail

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Our Ref: MCR-21-727

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

Dear Mr Millsteed

2020-21 Capital Expenditure Report — West Moreton System

Queensland Rail's Access Undertaking 2 (AU2) requires 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 2020-21 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 2020-21 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
Acting Chief Executive Officer

11 December 2021

West Moreton System
Capital Expenditure Report 2020–21

December 2021

Commercial-In-Confidence

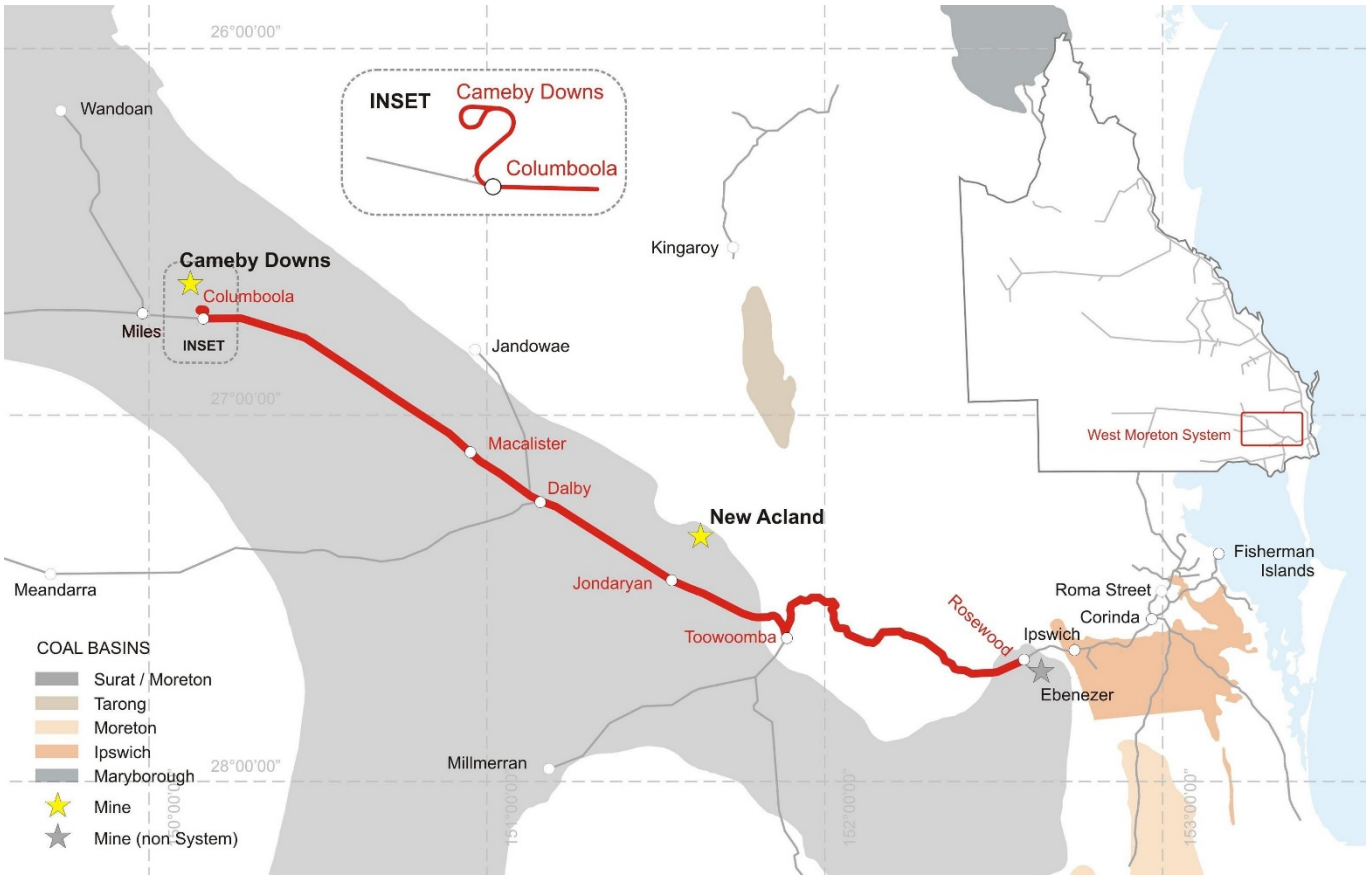
Table of Contents

Introduction

West Moreton System RAB

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

Figure 1: Map West Moreton System



Clause 1.3 of Schedule E of Queensland Rail's Access Undertaking 2 (**AU2**) requires Queensland Rail to submit an annual report (**Capital Expenditure Report**) to the QCA for the QCA to approve capital expenditure on West Moreton System that has been commissioned in the subject year (i.e. **2020-21 Capital Expenditure Report**).

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

Queensland Rail's 2020-21 Capital Expenditure Report is seeking the QCA's approval for **$37,504,755** of commissioned capital projects, excluding interest during construction (**IDC**), for inclusion in the RAB. All assets included in this total were commissioned during the 2020-21 financial year.

The purpose of this Report is to provide information to the QCA for its assessment of whether the 2020-21 capital expenditure is prudent in scope, standard of work and costs as required under Schedule E of AU2. Information being provided to the QCA to assist the Authority with their assessment includes:

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

Metropolitan (SEQ) System RAB

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

The QCA's Final Decision released in February 2020 on AU2 accepted this approach and provides for Queensland Rail to identify incremental freight-specific capital expenditure in the Metropolitan System, should such capital expenditure occur. No incremental coal/freight-specific capital expenditure has been identified for the Metropolitan System for 2020-21.

Previous Consideration by QCA

The QCA has considered several of the projects included in the 2020-21 Capital Expenditure Report as part of its earlier consideration of the AU2. These projects form part of the Capital Indicator used to calculate reference tariffs on the West Moreton System.

Queensland Rail's capital expenditure should be considered in the context of the following documents that have either been previously provided to the QCA, or are provided as part of this submission, including:

- West Moreton Asset Management Plan 2020-21, June 2020 (**AMP 2020-21**);
- West Moreton Asset Management Plan 2021-22, June 2021 (**AMP 2021-22**);
- Queensland Rail's Draft Access Undertaking 2 (**DAU2**) Explanatory Document 14 August 2018;
- Queensland Rail's Response to Industry Comments on Queensland Rail's Draft Access Undertaking 2 (DAU2)16 November 2018;
- QCA Request for Information DAU2 West Moreton System (December 2018);
- Response to industry comments on the QCA's Draft Decision on Queensland Rail's Draft Access Undertaking 2 (Collaborative Submissions) 27 September 2019;
- DAU2 West Moreton System low volume coal reference tariff 22 November 2019;
- SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019;
- SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020;
- The QCA's Final Decision on Queensland Rail 2020 draft access undertaking, February 2020;
- TTCI Evaluation of Queensland Rail West Moreton Coal Corridor (2010) Note - Queensland Rail has previously provided the QCA with a copy of the report;
- WorleyParsons Review of the West Moreton Reference Tariff Capital and Maintenance Costs (September 2013);
- 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);

- Queensland Rail: West Moreton System Toowoomba Range Slope Stabilisation Submission seeking pre-approval of capital expenditure, 2 August 2018; and
- The QCA Decision dated 18 April 2019 preapproving the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project.

Queensland Rail has indicated the specific references to these documents that should be taken into consideration in later parts of this document. However, the information is also relevant to the overall rail infrastructure related issues that have been considerations in Queensland Rail's planning of capital expenditure on the West Moreton System.

Queensland Rail 2020-21 Capital Expenditure Report

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

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

The Queensland Rail capital expenditure claim for 2020-21 includes nine capital expenditure projects. The total expenditure for 2020-21 that Queensland Rail considers should be included in the West Moreton RAB is shown in Table 1 and Table 2 below, being **$37,504,755** excluding interest during construction (**IDC**) and **$38,455,524** including IDC.

Table 1: Commissioned Assets 2020-21 — excluding interest during construction

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

[1] These numbers have been rounded.

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 the 1 January in the year of commissioning. To do this, the IDC calculation must be conducted to the mid-point in the year the project was commissioned.

Table 2: Commissioned Assets 2020-21 — including interest during construction

Project Number	Project Name	2020-21
100% West Moreton Projects		
B.04042	Toowoomba Range Slope Stabilisation	331,289
B.04703	WMS Replacement Regional	41,315
B.05085	Pedestrian Crossing Upgrades (Regional)	1,375,683
B.05460	WM Formation Strengthening 18/19 - 20/21	5,912,328
B.05561	SCS Timber Resleepering 2020/21	13,567,399
B.05577	Greasers Replacement/Upgrades	428,292
B.05650	Reconditioning West Moreton 21-23	14,873,905
B.05655	Level Crossing Upgrades West Moreton	1,375,003
	Ballast Undercutting	550,311
TOTAL		**$38,455,524**[2]

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.

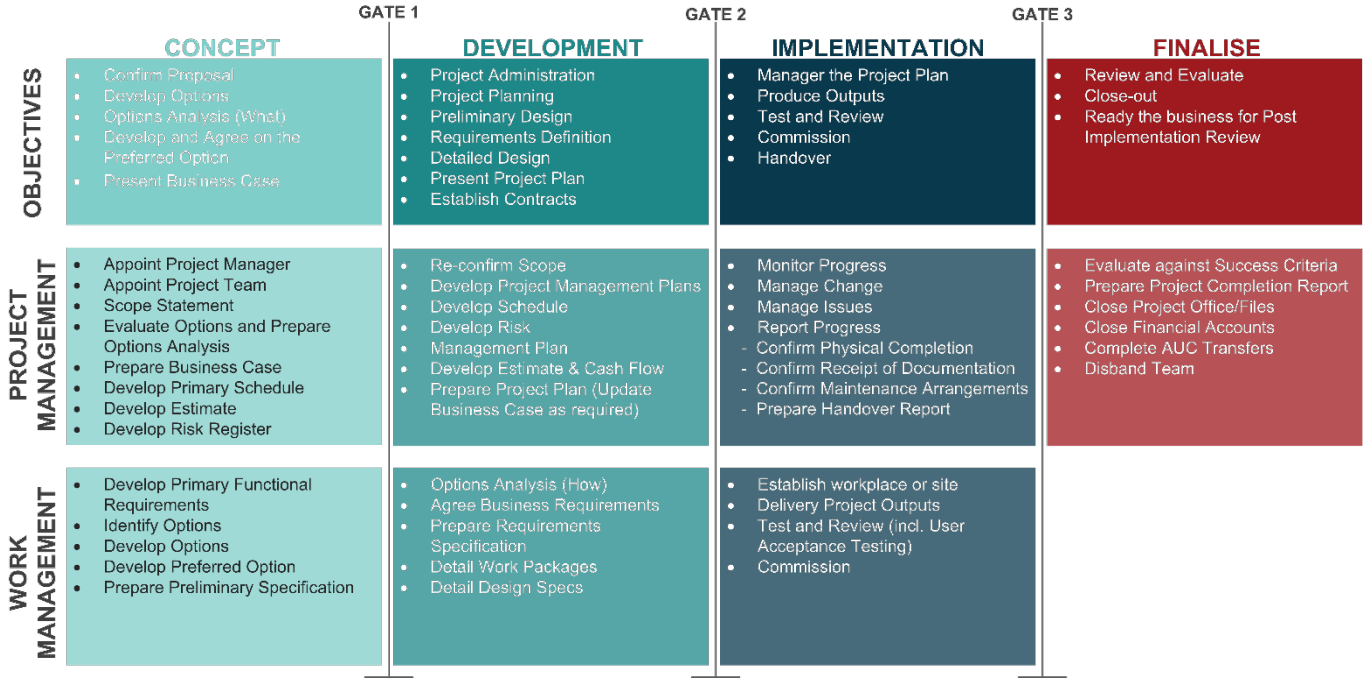
The Queensland Rail project management methodology is based on the OnQ Project Management Framework developed by the Queensland Government Department of Transport & Main Roads (**DTMR**). The OnQ Project Management Framework provides a consistent, reliable and transparent approach to the management and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

The Queensland Rail Project Management 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.

[2] These numbers have been rounded.

Figure 2: Project Life Cycle



Source: Framework – Project management methodology

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

- Operational Project Control — the day to day guidance that provides accountability for project delivery and outcomes and advises on the impacts that the project will/may have on business operations and the impacts of business operations on the project.
- Assurance — independent assessment of how a project is performing with regard to scoping, planning, resourcing, expectations and alignment with strategy.
- Governance — key decisions and direction to allow projects to progress along a defined route that achieves benefits.
- Financial — endorsement and approval at relevant stages of progressive financial commitment, that the funding and financial resources are both available and appropriate.

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

Regulatory Framework - Prudency of Scope, Standard and Cost

The QCA is required to consider the prudency of capital projects submitted in the 2020-21 Capital Expenditure Report under the requirements of Schedule E in AU2. In making its assessment, the QCA is to have regard to a range of factors as set out in Schedule F in AU2 being prudency of scope (Clause 3), prudency of standard of works (Clause 4) and prudency of cost (Clause 5).

Prudency of Scope

Access Holder Requirements

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

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

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

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

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

Demand Forecasts

AU2 was developed with considerable uncertainty around potential future coal volumes likely to be moved on the West Moreton System. New Hope is yet to receive the necessary approvals to develop its New Acland Stage 3 (**NAS3**) mine, despite commencing the approval process in 2006.

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 NAS3 is developed and produces 7 mtpa of coal for hauling from Jondaryan, in addition to the 2.1 mtpa from Cameby Downs.

[redacted] NAS3 coal production forecast has reduced from 7mtpa to 5mtpa due to operating conditions associated with the approval of NAS3 and infrastructure limitations with train loading and the capacity of the coal preparation plant. However, it was recognised that NAS3 approvals would not be granted prior to the commencement of AU2.

In the absence of the approval of NAS3, Queensland Rail proposed, and the QCA accepted, a forecast of 2.1mtpa for AU2, which will remain in place until contracted coal volumes on the West Moreton System exceed an annual forecast of 4.1mtpa during the AU2 term (to 30 June 2025).

Demand forecasts for the AU2 period are set out in the AMP 2021-22.

In May 2017, the Australian Government announced its intention to build the Melbourne to Brisbane Inland Rail project. Following the Australian Government's announcements on Inland Rail, Queensland Rail amended its standard for the West Moreton System so that all bridges would be built to 200A loading (20tal), rather than the 300A (30tal) east of Jondaryan, to avoid a potential situation that this capacity is not used in the future.

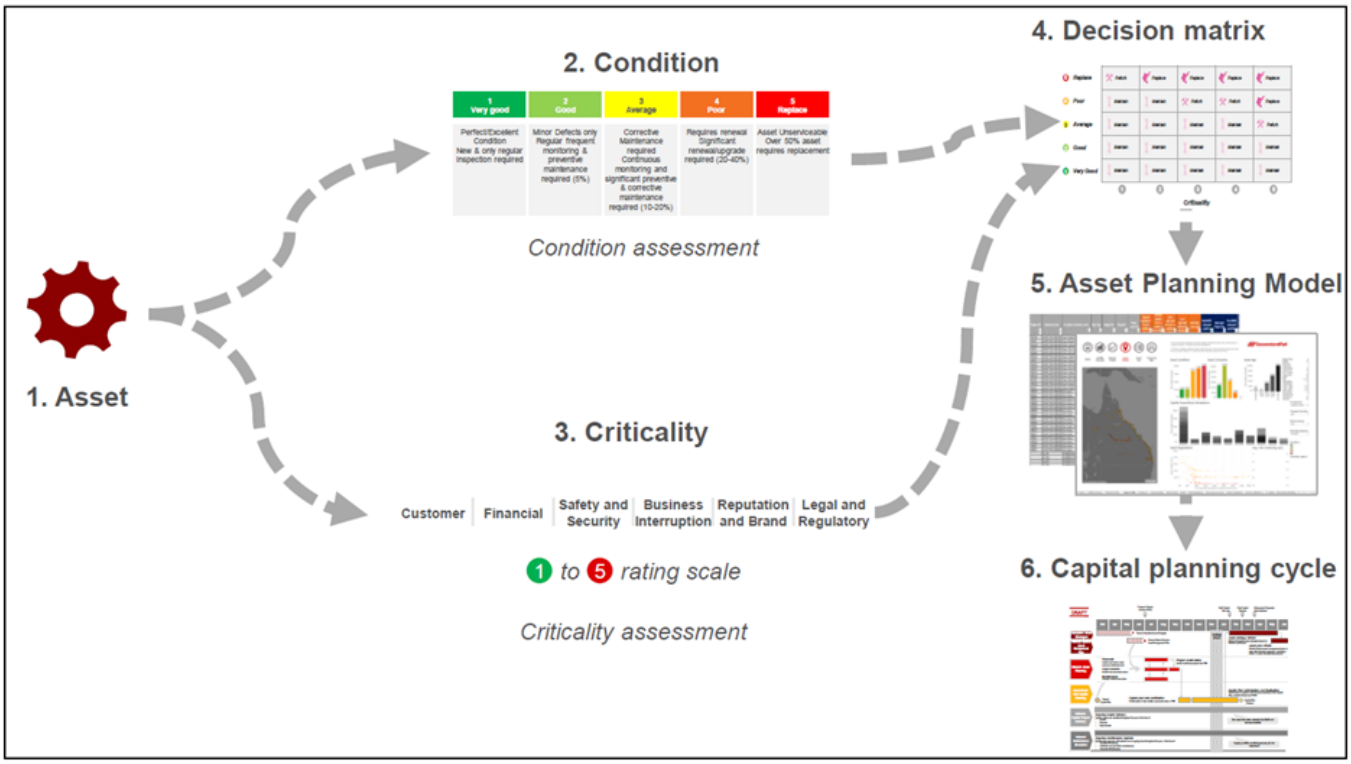
Asset Management Plans

The Asset Planning Framework (**APF**) is a key component of Queensland Rail's approach to Strategic Asset Management. The APF guides Queensland Rail's network business operations on the approach to be used to assess and prioritise renewal projects in relation to when Queensland Rail's network assets should be refurbished or replaced.

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 Network's capital renewal requirements based on an asset's condition and associated risk profile, its criticality, its typical degradation lifecycle, and current asset management strategies and plans to guide asset planning and capital spend decision making.

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

Figure 3 — Asset Planning Framework



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

An asset's condition rating is a key indicator of the health of the asset and provides an estimation of where the asset sits in its lifecycle. As shown in the figure above, 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.

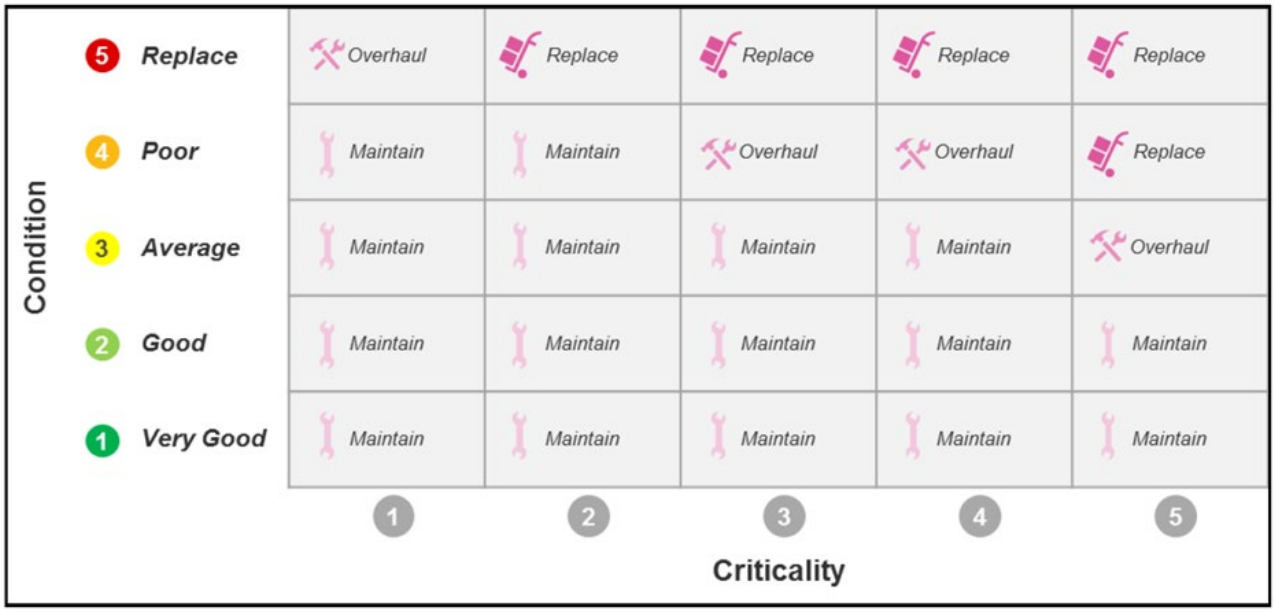
Within EAMS, asset conditions are measured using one of the following:

- 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 are 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 are used as inputs to decision matrices, which assist in establishing the preferred intervention action for an individual asset. Decision matrices provide guidance on when an asset should be inspected, maintained, replaced or renewed based on the network business's asset strategies and plans. A generic decision matrix is shown below for illustrative purposes.

Figure 4 — Decision Making Matrix



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

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

Evaluation of Options

Queensland Rail's project management methodology is 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, within Queensland Rail projects are 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. *Queensland Rail's Project Management Methodology Framework MD-14-781* provides criteria which can be used as a guide in assessing project types. Below is a high level description of the three project types.

Figure 5: Project Type Definitions

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

All projects in the 2020-21 Capital Expenditure Report would be considered Type 3 projects.

Consultation with Stakeholders

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

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

Notwithstanding the above, as part of the QCA AU2 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 Queensland Rail's capital claim. Queensland Rail also set out its capital claim for industry consultation in *Queensland Rail's Draft Access Undertaking 2 (DAU2) Explanatory Document (14 August 2018)* and its *DAU2 West Moreton System low volume coal reference tariff 22 November 2019* submission.

Prudency of Standard

The QCA is required to consider the prudency of standard of projects submitted in the 2020-21 Capital Expenditure Report under Clause 4.2(a) of Schedule E in AU2. In making this assessment, the QCA is to have regard to a range of factors as set out in Clause 4 of Schedule E in AU2.

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

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

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

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

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

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

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

Prudency of Costs

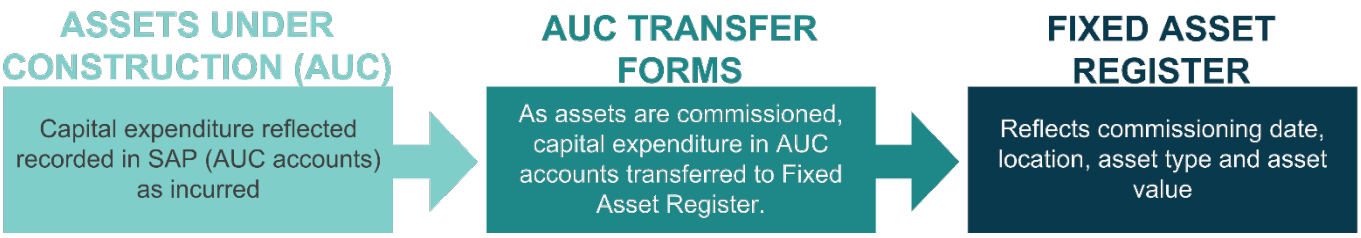
The QCA is required to consider the prudency of the costs of projects submitted in the 2020-21 Capital Expenditure Report under Clause 5.3(a) of Schedule E in AU2. In making this assessment, the QCA is to have regard to a range of factors as set out in Clause 5.3(b) and (c) of Schedule E in AU2.

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

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

Queensland Rail uses SAP as its accounting and reporting platform for projects from initial funding, budget allocation and project delivery. As projects are completed, costs transfer from AUC to the FAR. Assets which have been recognised on the FAR (commissioned assets) are included in the 2020-21 Capital Expenditure Report.

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



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

- the Queensland Rail *Project Management Methodology* and *Portfolio and Program Management Methodology*;
- 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.

Capital Projects

B.04042 Toowoomba Range Slope Stabilisation

The Toowoomba Range railway forms part of the West Moreton System and connects the south west of Queensland to Brisbane. This line is a major link for coal rail transport to the Port of Brisbane. It also services passengers from Brisbane to the West via the Westlander service.

In January 2011, the Toowoomba Range was closed for three months and again in 2013 for six weeks due to slope failure during severe weather events. In the 2013 incident, the slopes supporting the rail track on the Range encountered instability and either partially or fully failed leading to temporary closure to rail traffic. Emergency works at the time did not significantly improve the resilience of the two sites to further slips. After the 2013 incident, Queensland Rail implemented specific monitoring controls to mitigate risks and allow for the safe operations of rail traffic.

As a result of the January 2011 and January 2013 rainfall events, Queensland Rail undertook a geotechnical analysis of the Toowoomba Range Rail Corridor with the aim of identifying and prioritising geotechnical hazards. As a result of this analysis, Queensland Rail has already undertaken extensive maintenance, rectification and ongoing monitoring to ensure the continued serviceability of the rail corridor.

However, further investigation revealed the need for major remedial works at two high risk sites where slope instability places the rail structure and/or access road at risk. Historically these areas of instability have resulted in severe land slips and track closures requiring immediate and costly remediation. The two locations identified as requiring work to minimise the risk of landslips are:

- Package A (Site A) extends from the 142.630 km to the 142.810 km.
- Package B (Site B) extends from the 144.500 km to the 144.850 km.

An extensive design development and planning process was undertaken in relation to these sites. Culverts at four locations were replaced and a fifth culvert had a significant upgrade of its outlet. The embankments at these two locations underwent considerable drainage works with soil nail and shotcrete treatment used to stabilise the rock filled slope. Practical completion was achieved for Package B on 17 June 2020 and Package A on 23 June 2020. The Implementation Stage was completed one month ahead of schedule and within budget.

In its Decision dated 18 April 2019 the QCA, in accordance with the requirements of Schedule E clauses 3.1 (b) and 4.1(b) of AU1, preapproved the scope and standard of the Toowoomba Range Slope Stabilisation Project as prudent.

In Queensland Rail's *West Moreton System Capital Expenditure Report 2019-20*, which was submitted to the QCA on 19 February 2021, Queensland Rail sought QCA approval of $20,180,899 excluding interest during construction ($20,538,040 including interest during construction) for the B.04042 Toowoomba Range Slope Stabilisation (**TRSS**) Project's assets that had been commissioned in 2019-20. The QCA approved this amount as prudent.

The project program had forecast the project completion date as 30 April 2021, however, due to the need for additional works for edge protection on the maintenance access road, it was extended until 1 November 2021. This change was approved through the Handover Report provided as part of this submission. Queensland Rail is now seeking approval of the Final Costs of the project of $331,284.82. This makes a Total Project claim of $20,512,183.29, which is below Queensland Rail's proposed $22.016M in AU2, which was accepted by the QCA consultant SYSTRA Scott Lister Australia Pty Ltd[3] and included by the QCA in the AU2 Capital Indicator in its Final Decision on AU2.

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.	On 3 August 2018 Queensland Rail sought preapproval of the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project under Schedule E of AU1, clauses 3.1 (b) and 4.1 (b). AU1 allowed Queensland Rail to seek preapproval of the prudency of scope, standard and cost of a project prior to the capital expenditure being incurred to provide investment certainty for Queensland Rail and industry. The QCA approved the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project in its Decision dated 18 April 2019: https://www.qca.org.au/wp-content/uploads/2019/05/34855_QCA%C3%A2%E2%82%AC%E2%80%9DDecision-notice.pdf The QCA consultant SYSTRA agreed with QR's estimated cost of $22.016M as part of their assessment of AU2 capital for the QCA Final Decision on AU2 [4] and this amount was included in the QCA Final Decision Capital Indicator. The QCA accepted Queensland Rail's claim of $20,180,899 excluding interest during construction in their Decision on Queensland Rail's *West Moreton System Capital Expenditure Report 2019-20*: https://www.qca.org.au/wp-content/uploads/2021/06/qr-2019-20-capex-claim-decision-notice-final.pdf
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	
The age and condition of existing assets and the need for replacement capital expenditure projects.	
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	
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 extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	

[3] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, refer Table 5, p 26.
[4] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, refer Table 5, p 26.

Assessment Criteria	Queensland Rail Response
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	On 3 August 2018 Queensland Rail sought preapproval of the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project under Schedule E of AU1, clauses 3.1 (b) and 4.1 (b). AU1 allowed Queensland Rail to seek preapproval of the prudency of scope, standard and cost of a project prior to the capital expenditure being incurred to provide investment certainty for Queensland Rail and industry. The QCA approved the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project in its Decision dated 18 April 2019: https://www.qca.org.au/wp-content/uploads/2019/05/34855_QCA%C3%A2%E2%82%AC%E2%80%9DDecision-notice.pdf
Current and likely future usage levels.	
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).	

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 project have been completed and are included in Queensland Rail's FAR. The commissioning dates included in the FAR reflect the AUC transfer forms which are provided to the QCA as part of this submission.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Geological investigations of each site were initially carried out by External expert Golder Associates. External expert AECOM was engaged by Queensland Rail to prepare a preliminary options analysis and the subsequent detail designs to address the slope instabilities on the Toowoomba Range resulting in Package A and Package B discussed earlier in this submission. The TRSS project scope for 'construction only' went through a staged procurement process with prices received from five companies through an Expression of Interest which were shortlisted to two companies through a closed tender as part of the Toowoomba Range Clearance Upgrade (TRCU) project in July 2017.
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.

B.04703 WMS Replacement Regional

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

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

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

In addition to the age of the system, it does not comply with the new regulations prescribed by the Australian Communications and Media Authority (**ACMA**). The new telecommunications technology to be implemented complies with these requirements. The project will enable compliance with the ACMA's 400MHz band plan.

A range of parameters including air and rail temperature, water level, rainfall and humidity are monitored. Newer systems also add cameras for remote viewing of the site.

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

This project includes the upgrade of 65 WMS across Queensland Rail's regional network. Of these, seven WMS (six to be upgraded and one to be decommissioned) are in the West Moreton System - refer Table 3 below.

Only WMS_00092 at Forrest Hill Laidley 85.050km was completed and commissioned during the 2020-21 financial year and is, therefore, subject to this capital expenditure report.

Table 3: B.04703 WMS Replacement Regional Project: West Moreton System Locations

Functional Location	Location Description	Works to be completed
WMS_00091	WMS Yarongmulu	Replace cabinet, electronics backplane
WMS_00092	**WMS Forrest Hill Laidley 85.050km**	**Replace cabinet, electronics backplane**
WMS_00093	WMS Murphys Creek	Replace electronics backplane

Functional Location	Location Description	Works to be completed
WMS_00094	WMS Spring Bluff	Replace electronics backplane
WMS_00095	WMS Holmes	Replace cabinet, electronics backplane
WMS_00096	WMS Oakey	Decommission
WMS_00097	WMS Macalister	Check footing condition - either replace with low cost WMS or replace cabinet and electronics backplane

The WMS at Forrest Hill Laidley was completed at a cost of $39,767. The QCA approved in its AU2 Final Decision Capital Indicator an estimate of $412,000 for seven West Moreton WMS upgrades. In assessing Queensland Rail's AU2 West Moreton forecast capital claim for WMS, QCA consultant SYSTRA wrote in relation to the WMS:

> *"SYSTRA accepts that deferral of some capital works will place increasing reliance on signalling, telecommunications **and monitoring systems to ensure rail safety** and that the following are required:*
>
> - *Minor signalling renewal*
> - ***Remote monitoring systems***
> - *Digital telemetry works*
> - *Miscellaneous telecommunications works."*[5] (Queensland Rail's emphasis)

The QCA confirmed the SYSTRA findings 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**."*[6]

This project is safety related. The WMS are an important component in maintaining safety and reliability on the network by facilitating up to date information on environmental conditions that have the potential to adversely affect the network and the safety of the train services on it.

[5] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, p.28.
[6] The QCA's Decision on Queensland Rail 2020 draft access undertaking, February 2020, p. 72.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements.	The WMS upgrades are replacing life-expired WMS to ensure the continued safe operation of trains on the network.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The QCA approval process for the AU2 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 dependent upon 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 and the estimate of cost for capital for AU2 capital projects based upon this forecast. 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 WMS replacement project in its Capital Indicator. WMS replacement was a project identified in the West Moreton AMPs 2020-21 and 2021-22, provided to the QCA as part of this submission. Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[7]
The age and condition of existing assets and the need for replacement capital expenditure projects.	This project will upgrade the current WMS components to the latest technology. The existing RMS v1 weather stations are life-expired. The Telemetry and Receiver units for the RMS v1 systems are no longer available and these systems are becoming increasingly difficult to repair or replace. In addition to the age of the system, it does not comply with the new regulations prescribed by the Australian Communications and Media Authority (**ACMA**). The new telecommunications technology to be implemented complies with these requirements. The project will enable compliance with the ACMA's 400MHz band plan. This project identified six WMS upgrades and one decommissioning on the West Moreton System. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.

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

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is reasonably practicable (SFAIRP). For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 11 of this submission. This project is upgrading life expired assets. The new telecommunications technology to be implemented as part of this project will result in the WMS complying with the new regulations prescribed by the Australian Communications and Media Authority (**ACMA**).
The appropriateness of Queensland Rail's processes to evaluate and select proposed capital expenditure projects, including the extent to which alternatives are evaluated as part of the process.	WMS replacements is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) - i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission. This option supports a safe, reliable operation of the railway and aligns with the 2019-2023 Strategic Plan, by continuing to improve the safety of Queensland Rail's operations and subsequently that of our customers. An analysis of various supplier systems available on the market, able to monitor various environmental and track conditions, were investigated by the Condition Monitoring Systems team. From these investigations the most cost-effective system for recording of each environmental and track variable was selected to allow for the in-house manufacture of the RMS v2 WMS. Below is a list of components that comprise the RMS v2 system and the relevant suppliers: • Remote Terminal Unit – Schneider SCADAPack • Flood sensor – Aquamonix • Track rail temperature sensor – Muller • Camera – Mobotix • Air and humidity sensors – Novus • Rainfall sensor – Environdata
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	WMS replacement is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The Business Case and AUC form have been provided to the QCA. As this is an ongoing project, the Handover and Completion Reports are not due until the end of the project. The WMS_00092 at Forrest Hill

Assessment Criteria	Queensland Rail Response
	Laidley 85.050km on the West Moreton System was commissioned during the 2020-21 project and has 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 on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.04703 WMS Replacement Regional Project and its forecast expenditure was included in the model. This also enabled the release of the unredacted QCA SYSTRA Draft Decision report to these stakeholders which included this project.[8]
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The weather stations monitor environmental conditions that have the potential to affect the operation and safety of train movements along the network. The WMS upgrades are replacing life expired WMS to ensure the continued safe operation of trains on the network. Queensland Rail uses the South West User Group (**SWUG)** process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Current and likely future usage levels.	The B.04703 WMS Replacement Regional Project was included in the AMP 2020-21 and 2021-22 provided to the QCA with this submission. Issues related to demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[9]
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 Rail Transport Operator, Queensland Rail has a comprehensive SMS. This project will upgrade the current WMS components to the latest technology. The existing RMS v1 weather stations are life-expired. The Telemetry and Receiver units for the RMS v1 systems are no longer available and these systems are becoming increasingly difficult to repair or replace. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 11 of this submission. In addition to the age of the system, it does not comply with the new regulations prescribed by the Australian Communications and Media Authority (ACMA). The new telecommunications technology to be

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

Assessment Criteria	Queensland Rail Response
All relevant Law and the requirements of any Authority (including the Safety Regulator).	implemented complies with these requirements. The project will enable compliance with the ACMA's 400MHz band plan.
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	The assets included in this submission have been commissioned and added to the FAR. The AUC Form and business case have been provided to the QCA with this submission.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	An analysis of various supplier systems available on the market, able to monitor various environmental and track conditions, were investigated by the Condition Monitoring Systems team. From these investigations the most cost-effective system for recording of each environmental and track variable was selected to allow for the in-house manufacture of the RMS v2 WMS. Below is a list of components that comprise the RMS v2 system and the relevant suppliers: • Remote Terminal Unit – Schneider SCADAPack • Flood sensor – Aquamonix • Track rail temperature sensor – Muller • Camera – Mobotix • Air and humidity sensors – Novus • Rainfall sensor – Environdata It is intended that the work for this project will be undertaken by internal Queensland Rail resources. If resourcing becomes a major issue for project delivery, an external contractor may need to be engaged. If required, any engagement of external contractors and services will be managed in accordance with the Queensland Rail engagement of external contractor policy and the Procurement Standards MD-10-926 and the Procurement of Goods and Contracted Services to ensure that commercial value, risk mitigation and transparency are achieved.
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 11 of this submission.

B.05085 Pedestrian Crossing Upgrades (Regional)

Currently, there are several higher-risk areas on the Queensland Rail regional network where pedestrians are crossing rail tracks.

The Australian Level Crossing Assessment Model (**ALCAM**) is a risk assessment tool used to assess risk and assist with determination of an appropriate level of control at a crossing. To consider these assessments and to comply with current Australian Standards, installations and upgrades to various pedestrian crossings are required. A program of works to achieve this was commenced through project B.04073 Pedestrian Crossing Installations and Upgrades Stage 1.

This project (Stage 2 in the rolling program) will address the installation or upgrade of an additional 20 passive pedestrian mazes across five regional council locations. These works will include the provision of the necessary protection control measures that are required to satisfy an acceptable risk threshold.

The pedestrian crossings selected for installation / upgrades under this project have been assessed using ALCAM, which provides a scoring rating for level crossing hazards and risks to allow comparison of level crossing against others in a consistent manner to determine tolerability towards that risk. ALCAM also aids in the determination of proposed treatments and optimum safety improvements to address these hazard areas at individual sites. These improvements are then implemented in accordance with the appropriate standards e.g. AS1742.7 - 2016 Manual of Uniform Traffic Control Devices Part 7: Railway Crossings, Queensland Rail standard drawings and Department of Transport and Main Roads standard signage.

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

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

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

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

- Longreach Regional Council; and
- Maranoa Regional Council.

Of the above, only Pedestrian Crossing Upgrades in the West Moreton System are subject to the Annual Capital 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 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.	This project is safety related rather than demand dependant.
The age and condition of existing assets and the need for replacement capital expenditure projects.	The ALCAM is a risk assessment tool used to assess risk and assist with determination of an appropriate level of control at a crossing. To consider these assessments and to comply with current Australian Standards, installations and upgrades to various pedestrian crossings on the West Moreton System are required. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is reasonably practicable (SFAIRP). 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.	The Pedestrian Crossing Upgrades 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 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage.

Assessment Criteria	Queensland Rail Response
	For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission. Queensland Rail examined the following options: **Option 1: Grade separation:** This option is not considered viable due to the high cost and limited space to construct the necessary walkways. **Option 2: Do nothing:** This option is not considered viable due to the level of risk of pedestrian rollingstock interaction if left untreated. **Option 3: Install passive pedestrian mazes:** This option is preferred as it provides the necessary protection control measures that are required to satisfy an acceptable risk threshold. **Option 4: Install active crossing controls**: Where active controls are identified as the risk treatment, the site will be removed from scope and re-inserted into the priority modelling for pedestrian crossings under a separate program of works.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Pedestrian Crossing Upgrades 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 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	The Pedestrian Crossing Upgrades 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. Queensland Rail does not typically consult on the detail of routine capital renewal projects, such as re-railing, re sleepering and culvert replacement, with projects of this nature undertaken to ensure the continued provision of a safe rail network, consistent with Queensland Rail's obligations as an accredited Rail Infrastructure Manager (RIM) under the Rail Safety National Law (Queensland) (RSNL).

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.	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.
Current and likely future usage levels.	This project is safety related rather than demand dependant.
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 on page 11 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 Pedestrian Crossing Upgrades 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 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The pedestrian crossings selected for installation / upgrades under this project have been assessed using ALCAM, which provides a scoring rating for level crossing hazards and risks to allow comparison of level crossing against others in a consistent manner to determine tolerability towards that risk. ALCAM also aids in the determination of proposed treatments and optimum safety improvements to address these hazard areas at individual sites. These improvements are then implemented in accordance with the appropriate standards e.g. AS1742.7 - 2016 Manual of Uniform Traffic Control Devices Part 7: Railway Crossings, Queensland Rail standard drawings and Department of Transport and Main Roads standard signage.
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 11 of this submission.

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

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.

Currently within Queensland Rail's Enterprise Asset Management System (**EAMS**) there is 17.19km of formation defects in the West Moreton System requiring rectification within timeframes ranging from three months to five years. It is forecast that approximately 5km of formation replacement work per year will ensure that the defect rate of growth will not escalate significantly. 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[10] 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**)[11] 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:

> *"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."*[12] (Queensland Rail's emphasis)

[10] 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)*'.
[11] TTCI Evaluation of Queensland Rail West Moreton Coal Corridor (2010) Note - Queensland Rail has previously provided the QCA with a copy of the report.
[12] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.10.

This emphasis on the importance of the formation works was again expressed in SYSTRA's later report for the QCA AU2 Final Decision[13] where SYSTRA also supported Queensland Rail's forecast of $17.8M for the Capital Indicator for this project[14] (Queensland Rail's expenditure on this project for 2020-21 commissioned assets is $5,514,715). 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."*[15] *(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 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.

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 Formation Strengthening project was included in the West Moreton AMP 2020-21 provided to the QCA with this submission.

[13] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020 p.8.
[14] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020 p.29.
[15] QCA Final Decision on Queensland Rail 2020 draft access undertaking, February 2020, p72.

The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The estimated 5km of formation strengthening per year is the estimate of what is necessary to maintain the formation for the current volume of coal traffic on the West Moreton system. The QCA approval process for the AU2 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 dependent upon NAS3 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 in its AU2 Final Decision when considering Queensland Rail's capital program. The QCA Final Decision assessed the need for capital and the estimate of cost for capital for AU2 capital projects based upon this forecast. Both SYSTRA and the QCA Final Decision recognised the need for this safety related project. The QCA accepted Queensland Rail's proposed budget for this project in its Capital Indicator. This formation strengthening project is a project identified in the AMP 2020-21, provided to the QCA as part of this submission. 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.
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. 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 for and importance of this project. The QCA approved the prudency of scope, standard and costs for formation works in the 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 on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is 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 on page 5 of 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 included in Queensland Rail's FAR. The Business Case and AUC forms for projects completed to 30 June 2021 are provided. This project is ongoing and therefore a Handover Report and a Completion Report will be provided in a future year once the project 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 on page 5 of 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.[16] 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.
Current and likely future usage levels.	The QCA approval process for the AU2 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 dependent upon NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa for AU2 and the SYSTRA and the QCA (in its AU2 Final Decision included this project as necessary for this tonnage level. Issues related to demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[17]
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	

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

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 commissioning dates included in the FAR reflect the AUC transfer forms which are being provided to the QCA. Both the QCA consultant SYSTRA and the QCA in its AU2 Final Decision Capital Indicator accepted Queensland Rail's forecast expenditure of $17.8M for 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.05561 SCS Timber Resleepering 2020/21

The Queensland inland regional rail network includes approximately 2,500 kilometres of track which is primarily timber sleepered (with some interspersed steel patterns for gauge holding support). The total number of timber sleepers across the Queensland Rail network is just over 3 million.

Resleepering comprises the replacement of defective timber sleepers in a pattern or at random using specialised, internal resleepering teams and machines to achieve high production rates. The teams typically include resurfacing support, ensuring the integrity of the top and line is maintained.

The extent of required sleeper renewals within each cycle is determined by condition testing and analysis of deterioration rates to scope a program of works. Network requirements for resleepering in each corridor are forecasted for a 10 year period using a robust 'one pass maintenance' cyclic renewal program. The one pass maintenance approach primarily includes renewal of defective timber sleepers (like for like timber replacement), but also includes ancillary maintenance on other assets such as rail joints, turnouts, level crossings, drains and culverts, fencing and vegetation management. The major sleeper cycle typically replaces between 25% and 35% of timber sleepers in each corridor.

Track stability improvement activities were also carried out on the West Moreton System, which comprised of the introduction of Double Shoulder Sleeper Plates (**DSSP**) and anchors on all new sleeper insertions, as well as 4,505 cascaded sleepers.

This project replaced 34,672 timber sleepers between Rosewood and Columboola on the West Moreton System at the following prioritised locations:

- Rosewood – Toowoomba Up Line (59.50km – 161.40km ML); [redacted] sleepers;
- Kingsthorpe Loop (19.16km – 20.00km WL); [redacted] sleepers; and
- Jondaryan – Columboola (44.50km – 194.00km WL). [redacted] sleepers.

Project Scope for the West Moreton Coal Network:

The scope of this project has been amended subsequent to the QCA AU2 approval process. The following activities are included in the project scope for these coal corridors:

- Replacement of all life-expired (defective/ ineffective) timber sleepers with new timber sleepers (29,691);
- Replacement all un-plated timber sleepers with significant rail foot cutting damage;
- Reinstatement of all existing DSSP;
- Fastening of new timber sleepers with 16mm dog screws;
- Spot tamping of all new sleepers during insertion;

- Installation of new DSSPs for all new sleepers;
- Reinstatement of all existing rail anchors to existing patterns;
- Installation of new anchors/ box anchoring for all replaced sleepers (4 anchors per sleeper);
- Removal of 3+ steel sleeper clusters and replacement with timber sleepers;
- Spacing new timber sleepers equidistant with steel sleeper pattern;
- Resurfacing/ top and line reinstatement of all resleepered track areas;
- In compliance with the relevant standards (CETS); and
- Profiling of existing ballast to best fit profile.

The B.05561 SCS Timber Resleepering 2020/21 Project is included in the AMP 2020-21.[18]

The objective of this project is to ensure the network performs safely and reliably to a condition that meets engineering standards (CETS) for a period of five to six years without further significant maintenance being required. The project avoids increasing costs of sleeper management and other related costs if sleepers are not routinely replaced and provides a safe reliable network for train services.

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 Timber Resleepering project replaces defective timber sleepers. This project ensures that the network performs safely and reliably to a condition that meets engineering standards for a period of five to six years without further significant maintenance intervention. With the completion of this project, there will be limited requirement for timber sleeper replacement or maintenance during the next five to six years until the next timber resleepering cycle. The population of defective timber sleepers which was approaching CETS limits has now been reduced to near zero levels. 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, speed restrictions for train services.

[18] West Moreton System Asset Management Plan 2020-21, pp 24-25.

Assessment Criteria	Queensland Rail Response
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The Timber Resleepering project is included in the AMP 2020-21 provided to the QCA as part of this submission. Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[19]
The age and condition of existing assets and the need for replacement capital expenditure projects.	The extent of required sleeper renewals within each cycle is determined by expert condition testing and analysis of deterioration rates to scope a program of works. Network requirements for re-sleepering in each corridor are forecast for a 10 year period using a robust 'one pass maintenance' cyclic renewal program. The one pass maintenance approach primarily includes renewal of defective timber sleepers (like for like timber replacement), but also includes ancillary maintenance on other assets such as rail joints, turnouts, level crossings, drains and culverts, fencing and vegetation management. The major sleeper cycle typically replaces between 25% and 35% of timber sleepers in each corridor. The objective of this project is to ensure the network performs safely and reliably to a condition that meets engineering standards for a period of five to six years without further significant maintenance intervention. With the completion of this project, there will be limited requirement for timber sleeper replacement or maintenance during the next five to six years until the next timber resleepering cycle. The population of defective timber sleepers which were approaching CETS limits has now been reduced to near zero levels. Therefore, the project results in compliance with CETS and avoids increasing costs of sleeper management and other related costs if sleepers are not routinely replaced. 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.

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

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	The Timber Resleepering 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, Handover Report, Completion report and AUC forms have been provided as part of this submission. The assets were commissioned in 2020-21 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). The SEMS includes standards for timber resleepering 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.	Timber Resleepering 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 these projects, Queensland Rail does not undertake a full evaluation of alternatives for individual replacement. Instead, Queensland Rail has set out its overall strategy for the replacement of timer sleepers. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Timber Resleepering project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The project was commissioned in 2019-20. The Business Case, AUC forms, Handover Report and Completion Report have been provided to the QCA as part of this submission, and the FAR has been updated. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	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;

Assessment Criteria	Queensland Rail Response
	• 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. 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. Negotiation with Queensland Rail's operational train planning representatives enabled customers to be consulted on the proposed track closures. Delivering the full (core) scope of works within the track closure windows allocated ensured that the project was delivered without any long-term impacts on stakeholders and customers. Notwithstanding the above, Queensland Rail does not typically consult on the detail of routine capital renewal projects, such as re-railing, resleepering and culvert replacement, with projects of this nature undertaken to ensure the continued provision of a safe rail network, consistent with Queensland Rail's obligations as an accredited Rail Infrastructure Manager (**RIM**) under the Rail Safety National Law (Queensland) (**RSNL**).
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The Timber Resleepering project replaces defective timber sleepers. This project ensures that the network performs safely and reliably to a condition that meets engineering standards for a period of five to six years without further significant maintenance intervention. With the completion of this project, there will be limited requirement for timber sleeper replacement or maintenance during the next five to six years until the next timber resleepering cycle. The population of defective timber sleepers which was approaching CETS limits has now been reduced to near zero levels. 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, speed restrictions etc. Negotiation with Queensland Rail's operational train planning representatives enabled customers to be consulted on the proposed track closures. Delivering the full (core) scope of works within the track closure windows allocated ensured that the project was delivered without any long-term impacts on stakeholders and customers.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels.	Issues related to demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[20]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (RISSB) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia. The requirements of other relevant Australian design and construction standards. Queensland Rail's design standards contained within the Safety Management System. All relevant Law and the requirements of any Authority (including the Safety Regulator).	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed 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 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 for this project were commissioned in 2020-21. Queensland Rail has added them to the FAR. The Business Case, Handover Report and Completion Report are being provided to the QCA as part of this submission.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Resleepering comprises the replacement of defective timber sleepers in a pattern or at random using specialised, internal resleepering teams and machines to achieve high production rates. The infrastructure at the locations identified for upgrade was classed as being life-expired and/or in poor condition, and not meeting CETS requirements. Engineering resources were also utilised to verify and prioritise needs prior to the current work being planned. Delivery of this project was through internal resources. With the completion of this project, there will be limited requirement for timber sleeper replacement or maintenance during the next five to six years until the next timber resleepering cycle. The proportion of defective timber sleepers which was approaching CETS limits has now been reduce to near zero levels.
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.

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

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 11 of this submission.

B.05577 Greasers Replacement/Upgrades

The West Moreton System currently has 74 Portec PW37.5 lubricators installed. These lubricators are hydraulically driven and require heavy maintenance regimes to ensure they remain operational and reliable. The current lubricators rely on the train wheels to trigger a pin that pushes pressure through the hydraulic system and pumps the grease through to the rail. If there are any leaks or air in the hydraulic system it soon becomes non-operational and stops pushing lubricant onto the rail.

The current lubricators require constant checking to ensure operation. These lubricators have been installed for an average of 20 years and are becoming life-expired.

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

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

Queensland Rail civil engineering and rollingstock engineering staff advised that the track structure on the track slabs is now significantly stiffer than that of ballasted track. Slab track has a lateral movement of around 4-5mm, whereas ballasted track is around 20mm. These factors increase the amount of wear on the wheel/rail interface. The existing lubrication systems are inadequate to keep up with the demand of the new track structure.

This project is for procurement and installation of upgraded electric lubricators for the West Moreton System to mitigate the significant increase in track stiffness on the tight radius curves. These upgraded lubricators will increase efficiencies due to enhanced wheel rail interface and reduction in rail and wheel wear. These upgrades will ensure that there is adequate lubrication of the tight radius curves within the district and ensure Queensland Rail's customers are not adversely affected when utilising the network.

The Greasers Replacement/Upgrades project will procure and install upgraded electric lubricators on the West Moreton System to mitigate the impacts of a significant increase in track stiffness on the tight radius curves due to slab track installation.

Project Scope

The scope for the Implementation stage is as follows:

- Installation of 50 electric lubricators on the West Moreton System:
    - 15 lubricators along the Grandchester to Laidley section;
    - 30 lubricators along the Helidon to Toowoomba section; and

- 5 lubricators along the Toowoomba to Columboola section.

In AU2 for the 2.1mtpa coal railings scenario Queensland Rail proposed estimated expenditure of $2.655M for this project. QCA consultant SYSTRA noted that:

"SYSTRA assess due to the high number of defects, 33 defects across 71 installations, and critical nature of greasers on the Toowoomba range the replacement of greasers is appropriate."[21]

SYSTRA agreed with Queensland Rail's estimated expenditure of $2.655M for the greasers recommending that this be included in the Capital Indicator.[22] Queensland Rail's expenditure on this project for 2020-21 commissioned assets is $433,439.

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.	In May 2019 [redacted] advised Queensland Rail of a sharp increase in wheel flange wear, particularly on lead wheels of locomotives running the West Moreton corridor from around April 2019. [redacted] This project will procure and install upgraded electric lubricators on the West Moreton System to mitigate the impacts of a significant increase in track stiffness on the tight radius curves due to slab track installation.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The Greasers Replacement/Upgrades project is included in the West Moreton AMPs 2020-21 and 2021-22, provided to the QCA as part of this submission. 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.[23]

[21] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.18.
[22] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, p. 27.
[23] Queensland Rail, West Moreton Asset Management Plan 2021-22, p10.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects.	Existing rail lubrication devices are expected to become life expired within the AU2 period. In addition to this the availability of componentry for maintenance is likely to become restricted as new products are introduced and support for existing systems is phased out. As a result, a replacement program is proposed, allowing for the introduction of new, potentially more efficient, technology. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is reasonably practicable (SFAIRP). The SEMS includes standards for rail lubrication as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 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.	The Greasers Replacement/Upgrades 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 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission. Queensland Rail examined the following options: **Option 1: Do nothing:** This option is not feasible as the rail asset [redacted] experiencing heightened wear rates. **Option 2: Install additional hydraulic lubricators:** This option requires an increased maintenance effort and the procurement value of new hydraulic lubricators is significant. This option would require increased maintenance for additional labour. This is not the preferred option.

Assessment Criteria	Queensland Rail Response
	Option 3: Install upgraded electric lubricators: This option allows a reduction in lubricator numbers through increased reliability and improved lubricant application. The reduction in lubricator numbers comes from improved equipment, with better application of lubricant consequently covering more distance with one machine. This option is preferred as it is maintainable with existing resource capability.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Greasers Replacement/Upgrades 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 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	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); • 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 • SYSTRA Update to West Moreton System Costs and Investment Forecasts, 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. 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.	In May 2019 [redacted] advised Queensland Rail of a sharp increase in wheel flange wear, particularly on lead wheels of locomotives running the West Moreton corridor from around April 2019. [redacted] This project will procure and install upgraded electric lubricators on the West Moreton System to mitigate the impacts of a significant increase in track stiffness on the tight radius curves due to slab track installation.
Current and likely future usage levels.	The QCA approval process for the AU2 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 dependent upon NAS3 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. 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.[24]
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 The SEMS includes standards for rail lubrication as prescribed in CETS. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 11 of this submission

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

Assessment Criteria	Queensland Rail Response
Prudency of cost — criteria to be considered	
The level of such costs relative to the scale, nature, cost and complexity of the project.	In AU2 for the 2.1mtpa coal railings scenario Queensland Rail proposed estimated expenditure of $2.655M for this project. QCA consultant SYSTRA noted that: *"SYSTRA assess due to the high number of defects, 33 defects across 71 installations, and critical nature of greasers on the Toowoomba range the replacement of greasers is appropriate."*[25] SYSTRA agreed with Queensland Rail's estimated expenditure of $2.655M for the greasers recommending that this be included in the Capital Indicator.[26] The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2020-21 and have been added to the FAR. This project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Materials were procured via an external provider with appropriate lead times for each site. Queensland Rail internal teams will deliver all Implementation Stage works.
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.

[25] SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019, p.18.
[26] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, p. 27.

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 11 of this submission.

B.05650 Reconditioning West Moreton 21-23

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

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

This Reconditioning project is required to improve safety and reliability at priority locations by providing an improved track structure to service existing traffic. The project has been developed to address the high priority defects that have been identified during routine infrastructure inspections of the West Moreton System and in Queensland Rail's '*Derailment Reduction Strategy West Moreton System Jondaryan – Columboola Report (2019)*'.

This West Moreton System has been systematically upgraded with priority track targeted as part of an overall strategy. The B.03656 Western System Asset Replacement (**WSAR**) Project replaced 32.687km of priority track over six years and was completed in 2015-16. The B.05171 Reconditioning West Moreton 16/17 - 19/20 Project renewed 7.609km 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 37.077km 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. The locations of track sections in priority order to be upgraded are:

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

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.

Queensland Rail proposed an estimate of $11.577M for this project as part of the QCA's assessment of AU2. SYSTRA[27] and the QCA[28] supported this estimate. Queensland Rail has amended the scope and the estimated cost of this project after completing a review into derailments and track quality on the West Moreton System. The Business Case has been provided to the QCA as part of this Capital Expenditure Report. Queensland Rail will provide the QCA with any additional information that is determined as required as part of the QCA's review of this submission. Queensland Rail's expenditure on this project for 2020-21 commissioned assets is $14,657,211.

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.

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

Assessment Criteria	Queensland Rail Response
	This project ensures that the network performs safely and reliably to a condition that meets engineering standards. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System and minimises disruptions through additional track maintenance and speed restrictions for train services.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand.	The Reconditioning project is included in the West Moreton AMPs 2020-21 and 2021-22, provided to the QCA as part of this submission. 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.[29]
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. Areas where there is major weakness in the foundation the sleepers start pumping and the black soil mud soon permeates the track structure. The existing 41kg rail and timber and steel sleepers are becoming maintenance-intensive and need upgrading to improve reliability and safety. In addition, as highlighted above, there are sections of this line that are built on untreated black soil formations which contribute to the intensive maintenance requirements. This black soil formation has contaminated the existing ballast, contributing to drainage issues. This line also suffers from top and line and stress issues during the summer months. Due to the poor condition of the track structure this section of track requires increasing maintenance to conform to CETS and to support operational base service level performance. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed so far as is 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 11 of this submission

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

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 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 2020-21 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)** This option upgrades formation/ capping and the track structure to 50kg rail, full depth/ medium duty concrete sleepers, and A Grade ballast. This option will reduce the risk of service disruption and safety risks by improving the network through the replacement of deteriorating track infrastructure with new infrastructure and targeting the replacement of below rail infrastructure that is known will have an increasing operational maintenance cost. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Reconditioning project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. Type 3 projects include projects that are well defined, very low risk of any change. Work is standard repetitive process (nothing unique) — i.e. scope will not change from that detailed in the funding submission and this scope was clear and specific. The Business Case and AUC forms are provided as part of this submission. The assets were commissioned in 2020-21 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.

Assessment Criteria	Queensland Rail Response
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. As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.05650 Reconditioning West Moreton 21-23 Project and its forecast expenditure was included in the model. This also enabled the release of the unredacted QCA SYSTRA Draft Decision and Final Decision reports to these stakeholders which included this project. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	This Reconditioning project is required to improve safety and reliability at priority locations on the West Moreton System by providing an improved track structure to service existing traffic. The project has been developed to address the high priority defects. The existing track structure comprising 41kg rail and timber and steel sleepers is becoming maintenance-intensive and is in need for upgrade to improve reliability and safety. This is a critical section in the system, carrying loaded coal traffic from all mines in the system. This project ensures that the network performs safely and reliably to a condition that meets engineering standards. This project provides a reliable, safe network meeting the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System and minimises disruptions through additional track maintenance and speed restrictions for train services. Queensland Rail uses the SWUG process to discuss 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 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 dependent upon NAS3 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. 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.[30]
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 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 for this Report were commissioned in 2020-21. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2020-20 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	Work will be delivered in-house using internal and external resources. Internal Queensland Rail track and structure staff will be used for the construction labour and an external earthworks company under an existing panel arrangement will be used for machine hire and operation.

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

Assessment Criteria	Queensland Rail Response
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: 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.05655 Level Crossing Upgrades West Moreton

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

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

23 level crossings in the West Moreton System have been identified as requiring reconditioning in the five years from 2020-21 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[31] 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.

[31] 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 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 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 and road surface).
- Improved track condition and track quality as measured by the Overall Track Condition Index (**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. Five level crossings were commissioned during the 2020-21 financial year and are therefore subject to this submission: LXR_04233, LXR_00856, LXR_00906, LXR_00678, LXR_00738.

Table 4: Level Crossing Upgrades for Project B.05655

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

Functional Location	Start Point	Description
LXR_00739	85.8	LC - Dalby / Jandowae Road (Dalby)
LXR_02323	71.14	LC - Kommamurra Road (Koomi)
LXR_02324	78.25	LC - Blaxland / Irvingdale Rd (Blaxland)

QCA Assessment

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

> *"Queensland Rail does, however, have a responsibility as the accredited Rail Infrastructure Manager to ensure that it is performing the maintenance and capital expenditure necessary* ***to ensure that rail infrastructure in use is safe and reliable****, and meets the requirements of Queensland Rail's Safety Management System… After review SYSTRA concurs with Queensland Rail in regard to* ***level crossing reconditioning, transitions*** *and concrete sleepers for tight curves on the Toowoomba Range….* ***SYSTRA accepts that the level crossing reconditioning and transitions are required because of the critical safety aspect of these assets.****"*[32] (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."*[33] (emphasis)

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

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

Queensland Rail's expenditure on this project for 2020-21 commissioned assets is $1,373,087.

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 annual West Moreton System Capital Report.

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

[32] SYSTRA Update to West Moreton System Costs and Investment Forecasts, February 2020, pp.25-27.
[33] The QCA's Final Decision on Queensland Rail 2020 draft access undertaking, February 2020, p.72.

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 temporary speed restrictions 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 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 dependent upon NAS3 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 and the estimate of cost for capital for AU2 capital projects based upon this forecast. As stated above in this submission, both SYSTRA and the QCA Final Decision recognised the need for this safety related project. The QCA accepted Queensland Rail's proposed budget for the level crossing replacement project in its Capital Indicator. Issues related to demand assumption for the AU2 period are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22.[34]
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. 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.

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

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws.	As an accredited RIM, Queensland Rail has a comprehensive SEMS. The SEMS sets out the means by which Queensland Rail assesses whether risks of its railway operations are managed 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 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.	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 2020-21 and have been added to the FAR. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project and will be provided at that stage. Queensland Rail considered a 'do nothing' option, however this option was not considered as acceptable due to safety considerations. For further information on Queensland Rail's processes to evaluate and select proposed capital expenditure projects refer to Queensland Rail's Investment Framework on page 5 of this submission.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The level crossing upgrade project is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The assets included as part of this report were commissioned in 2020-21. The Business Case and AUC forms have been provided to the QCA as part of this 2020-21 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 on page 5 of this submission.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	This project combines the following two projects reviewed by the QCA as part of their approval of AU2: the Level Crossing Reconditioning Project and the Level Crossing Transitions Project. The project was included in the following documents as part of the QCA's consultation on AU2: • Queensland Rail's Draft Access Undertaking 2 (DAU2) Explanatory Document (14 August 2018); • QCA Draft Decision on Queensland Rail 2020 draft access undertaking April 2019; • SYSTRA, Review of Proposed Maintenance, Capital & Operations Expenditure Review, Draft Access Undertaking 2 (DAU2), April 2019;

Assessment Criteria	Queensland Rail Response
	• Queensland Rail's DAU2 West Moreton System low volume coal reference tariff 22 November 2019; • The QCA Final Decision on Queensland Rail 2020 draft access undertaking, February 2020. As part of the QCA AU2 approval process, Queensland Rail provided the unredacted AU2 West Moreton System reference tariff model to key West Moreton stakeholders under a deed of confidentiality, including to Aurizon, Pacific National, New Hope and Yancoal as part of the QCA AU2 consultation process, enabling stakeholders to assess the claim. The B.05655 Level Crossing Upgrades West Moreton Project and its forecast expenditure was included in the model (as Level Crossing Reconditioning and Level Crossing Transitions Projects). This also enabled the release of the unredacted QCA SYSTRA Draft Decision and Final Decision reports to these stakeholders which included this project. Consultation was undertaken in terms of closures. Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements.	The level crossing upgrade project is replacing level crossing infrastructure that is life-expired and/or in poor condition. The key benefit of this safety project is that Queensland Rail will continue to be able to provide a safe, reliable network and meet the requirements for Train Service Entitlements contained in the Access Agreements for coal services that utilise the West Moreton System. The investment in this project will ensure fit for purpose assets are provided. As a result of the proposed work there will be an avoidance of temporary speed restrictions 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 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 dependent upon NAS3 mine being approved by Government. Industry, the QCA and Queensland Rail all supported a 2.1mtpa for AU2 and the SYSTRA and the QCA (in its AU2 Final Decision included this project as necessary for this tonnage level. Issues related to demand are set out in section '*2.1.6.1 Coal Growth*' of the AMP 2021-22. 3.4 of the AMP.[35]

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

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 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.	Both the QCA consultant SYSTRA[36] and the QCA in its AU2 Final Decision Capital Indicator[37] 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 2020-21. Queensland Rail has added these assets to Queensland Rail's FAR. The Business Case and AUC forms have been provided to the QCA as part of this 2020-20 Capital Expenditure Report. The Project is ongoing. The Handover Report and Completion Reports are developed at the completion of the project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials.	The required work was identified via track recording data and subsequently verified through inspections by qualified track staff. The infrastructure at the locations identified for upgrade was classed as being life-expired and/or in poor condition. Engineering resources were also utilised to verify and prioritise needs prior to the current work being planned. The delivery strategy for this project is to deliver the scope of works using both Queensland Rail internal staff and external wet hired plant and services. With regard to materials, consultation was undertaken with supply vendors to ensure vendors were aware of the proposed program of works. Agreements for when these materials were to/will be delivered were reached with the relevant vendors.

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

Assessment Criteria	Queensland Rail Response
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy.	Not applicable.
The manner in which the capital expenditure project has been managed by Queensland Rail given the circumstances at the time when relevant management decisions and actions were made or undertaken, including Queensland Rail's balancing of: A. safety during construction and operation; B. compliance with environmental requirements during construction and operation; C. compliance with Laws and the requirements of Authorities; D. minimising disruption to the operation of Train Services during construction; E. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs; F. minimising whole of asset life costs including future maintenance and operating costs; G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs; H. aligning other elements in the supply chain; and I. meeting contractual timeframes and dealing with external factors.	Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. For greater detail refer to section refer to Design Standards and Codes – Queensland Rail Safety and Environmental Safety Systems on page 11 of this submission.

Ballast Undercutting

For AU1 and AU2, the QCA decided that the ballast undercutting (track lowering) was *track reconditioning* involving lowering of the track by removing the track and grading the ballast and that these costs should be capitalised.[38]

In 2020-21, Queensland Rail is seeking approval for $550,311 in track lowering for inclusion in the RAB, consistent with the methodology applied by the QCA, with [redacted] of work completed.

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

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'.

[38] 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.