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Our Ref: MCR-20-718

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

Dear Mr Millsteed

**2019-20 Capital Expenditure Report — West Moreton System**

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

Consistent with clause 1.3 (a), Schedule E of AU2 attached is the 2019-20 Capital Expenditure Report (and supporting documentation) providing details of the assets Queensland Rail considers should be included in the West Moreton System RAB. The West Moreton System is the only part of Queensland Rail's regional network with a RAB approved by the QCA.

As required by clause 1.3 (c), Schedule E of AU2, I can confirm that the information contained in the 2019-20 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 Regulation Manager Mr Douglas Jasch by telephone on 07 3072 0544 or via email at Douglas.Jasch@qr.com.au.

Yours sincerely

[redacted]

**Nick Easy**
Chief Executive Officer

18 February 2021

# West Moreton System
# Capital Expenditure Report 2019–20

February 2021

**Commercial-In-Confidence**

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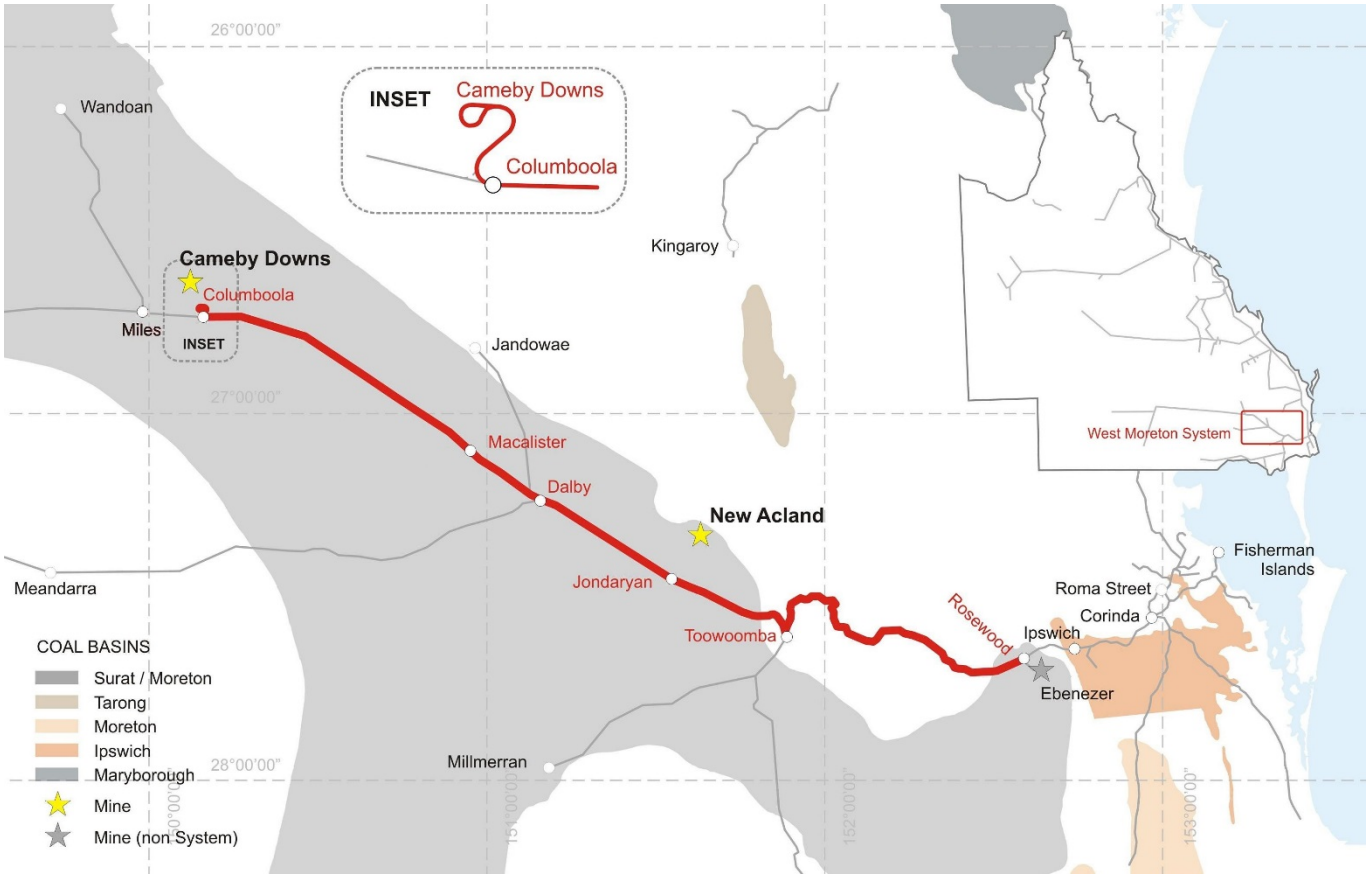
# Introduction

## 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 capital expenditure on West Moreton System assets that have been commissioned in the subject year (i.e. 2019-20 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.

For the 2019-20 Capital Expenditure Report, Queensland Rail is seeking the QCA's approval for **$40,757,841** of commissioned capital projects, excluding interest during construction (**IDC**), for inclusion in the RAB. All assets included in this total were commissioned during the 2019-20 financial year.

The purpose of this submission is to provide information for the QCA's assessment of whether the 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 in their assessment includes:

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

## Metropolitan (SEQ) System RAB

Due to the difficulties of establishing building blocks for the Brisbane Metropolitan Area, Queensland Rail proposed to apply the reference tariff derived from West Moreton 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.

The QCA's Final Decision 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 freight-specific capital expenditure has been identified for the Metropolitan System for 2019-20.

## Previous consideration by QCA

The QCA has considered several projects included in the 2019-20 Capital Expenditure Report as part of its earlier consideration of the 2013 Draft Access Undertaking (**2013 DAU**) and 2015 Draft Access Undertaking (**2015 DAU**). These projects form part of the capital indicator used to calculate reference tariffs on the West Moreton System.

Queensland Rail has provided a considerable amount of information about the West Moreton Asset Management Plan, supporting information about track quality and business cases, as part of these previous assessments. For clarity, the information provided as part of the QCA's previous consideration continues to be relevant to the current assessment of Queensland Rail's capital expenditure. Where relevant (e.g. pre approval of projects) Queensland Rail's previous access undertaking, Queensland Rail's Access Undertaking 1 (**AU1**) will be referenced.

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

- West Moreton Asset Management Plan 2015-16 (May 2015);
- West Moreton Reference Tariff 2015 DAU Capital Submission (May 2015);
- QCA West Moreton System Information Request (2015 DAU Maintenance & Capital);
- (August 2015);
- AU1 West Moreton Reference Tariff Reset Capital Submission (June 2013);
- WorleyParsons Review of the West Moreton Reference Tariff Capital and Maintenance Costs (September 2013);
- Response to QCA Information Request – QCA West Moreton System Information Request (AU1 Capital Works) (2014);
- 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 the Queensland Rail's planning of capital expenditure on the West Moreton System.

# Queensland Rail capital expenditure claim

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 2019-20 includes seven capital expenditure projects.

The total expenditure for 2019-20 that Queensland Rail considers should be included in the West Moreton RAB is shown in Table 1 and Table 2 below.

**Table 1: Commissioned Assets 2019-20 — excluding interest during construction**

| Project Number | Project Name | 2019-20 |
|---|---|---|
| **100% West Moreton projects** | | |
| B.04042 | Toowoomba Range Slope Stabilisation | 20,180,899 |
| B.04403 | Culvert/Drain Renewal | 2,269,123 |
| B.04613 | Formation Strengthening — West Moreton System | 49,682 |
| B.04636 | Timber and Steel Bridge Elimination | 14,236,641 |
| B.04794 | Lxing Upgrades, W'Moreton 16/17 - 19/20 | 793,057 |
| B.05956 | West Moreton Derailment Recovery | 2,587,439 |
| | Ballast Undercutting | 641,000 |
| **TOTAL** | | **40,757,841**[1] |

## Interest during construction

AU2 is silent on the methodology to be used for the calculation of interest during construction (**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.

[1] These numbers have been rounded.

## Table 2: Commissioned Assets 2019-20 — including interest during construction

| Project Number | Project Name | 2019-20 |
|---|---|---|
| **100% West Moreton projects** | | |
| B.04042 | Toowoomba Range Slope Stabilisation | 20,538,040 |
| B.04403 | Culvert/Drain Renewal | 2,344,710 |
| B.04613 | Formation Strengthening — West Moreton System | 49,337 |
| B.04636 | Timber and Steel Bridge Elimination | 14,799,962 |
| B.04794 | Lxing Upgrades, W'Moreton 16/17 - 19/20 | 860,651 |
| B.05956 | West Moreton Derailment Recovery | 2,545,730 |
| | Ballast Undercutting | 641,000 |
| **TOTAL** | | **41,779,430**[2] |

[2] These numbers have been rounded.

# Investment framework

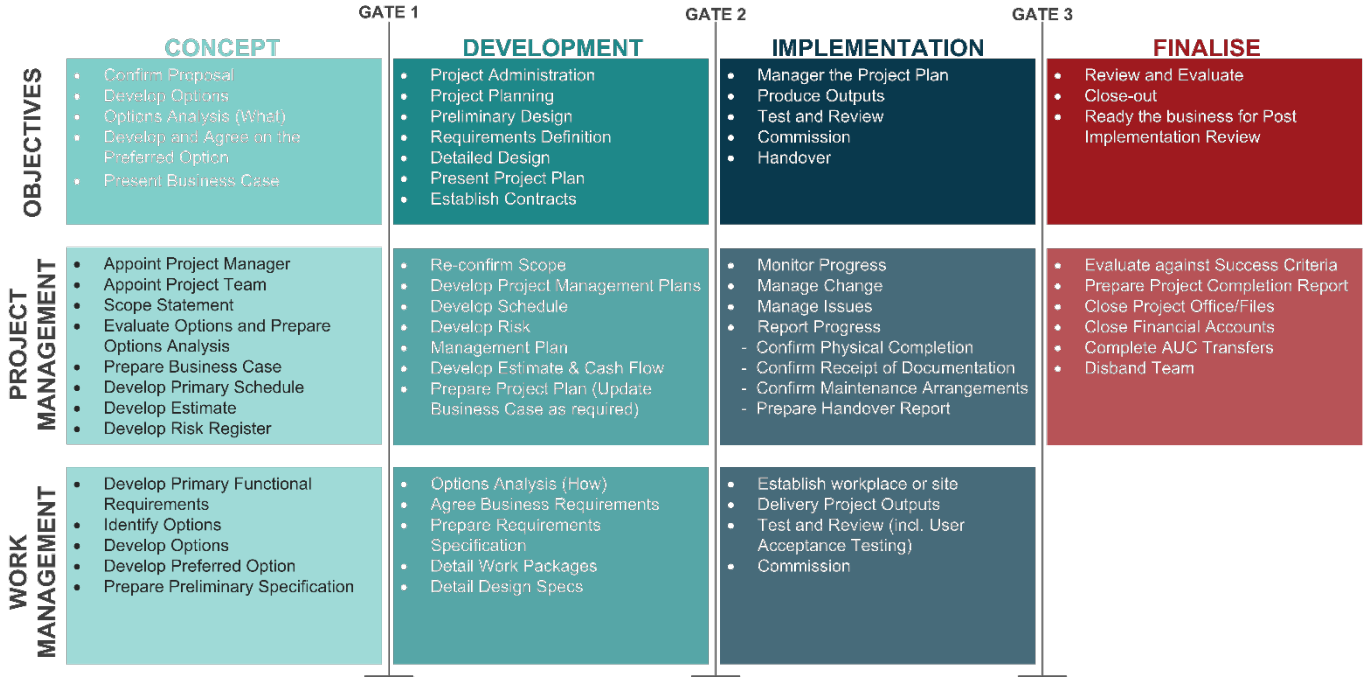
Queensland Rail is a statutory authority that undertakes numerous projects annually to ensure the safe and reliable working, and growth, of the rail network for the people of Queensland. In order to reach the above project management aims, a standard methodology is employed.

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 it to successfully deliver the right project outputs, on time and within budget, and meet quality and safety parameters. It also provides structured governance for authorising and approving projects.

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

**Figure 2: Project Life Cycle**




*Source: Framework – Project management methodology*

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

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

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

# Regulatory framework

## Prudency

The QCA is required to consider the prudency of capital projects submitted in the 2019-20 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. Since February 2019, typical coal trains have been comprised of double header 94.5t locomotives with forty-two 63t (gross) wagons at nominal 15.75 tal.

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.

## Demand forecasts

AU1 was approved by the QCA on 11 October 2016 and expired on 30 June 2020. The projects in this submission relate to, and were commissioned, during the AU1 term.

Demand forecasts for the AU1 period were set out in the West Moreton Asset Management Plan 2015-16 (**AMP**) provided to the QCA with the submission of Queensland Rail's 2015 Draft Access Undertaking. This represented Queensland Rail's best understanding at the time of the current and future usage levels on the system.

The future demand scenarios have changed since 2015-16, as a result of uncertainty about the future development of New Hope Corporation's New Acland Stage 3 mine[3] and the Australian Government's announcement to proceed with the investigation of the Inland Rail project. Queensland Rail's best estimates of current and future demand are shown in Table 3.

**Table 3: Current and future demand forecasts**

| SHORT TERM 1–5 years | MEDIUM TERM <10 years | LONG TERM >10 years |
|---|---|---|
| Coal tonnage uncertainty:<br>• AU1 planning at 6.25 mtpa (net) to 2020<br>• Either 2.1 mtpa or 9.1 mtpa possible post 2020<br>Additional agricultural volumes probable, although planning reflecting historical average | Coal tonnage uncertainty likely to have been resolved for existing mining operations.<br>• Either 2.1 mtpa or 9.1 mtpa possible post 2020<br>• Tonnage profile may reach 15 mtpa (net)<br>Asset renewals / upgrades adapted to deal with tonnage uncertainty and supporting service continuity for likely tonnage profile. | Stage 1 Inland Rail possible to be operation |

In May 2017, the Australian Government announced its intention to build the Melbourne to Brisbane Inland Rail. 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. Queensland Rail would upgrade the 200A bridges at a later stage, if required.

While Queensland Rail continues to update its demand forecasts to deal with emerging issues, it is important that the QCA take into consideration the demand forecasts at the time projects were being approved/constructed in its consideration of the prudency assessments.

## Asset management plan

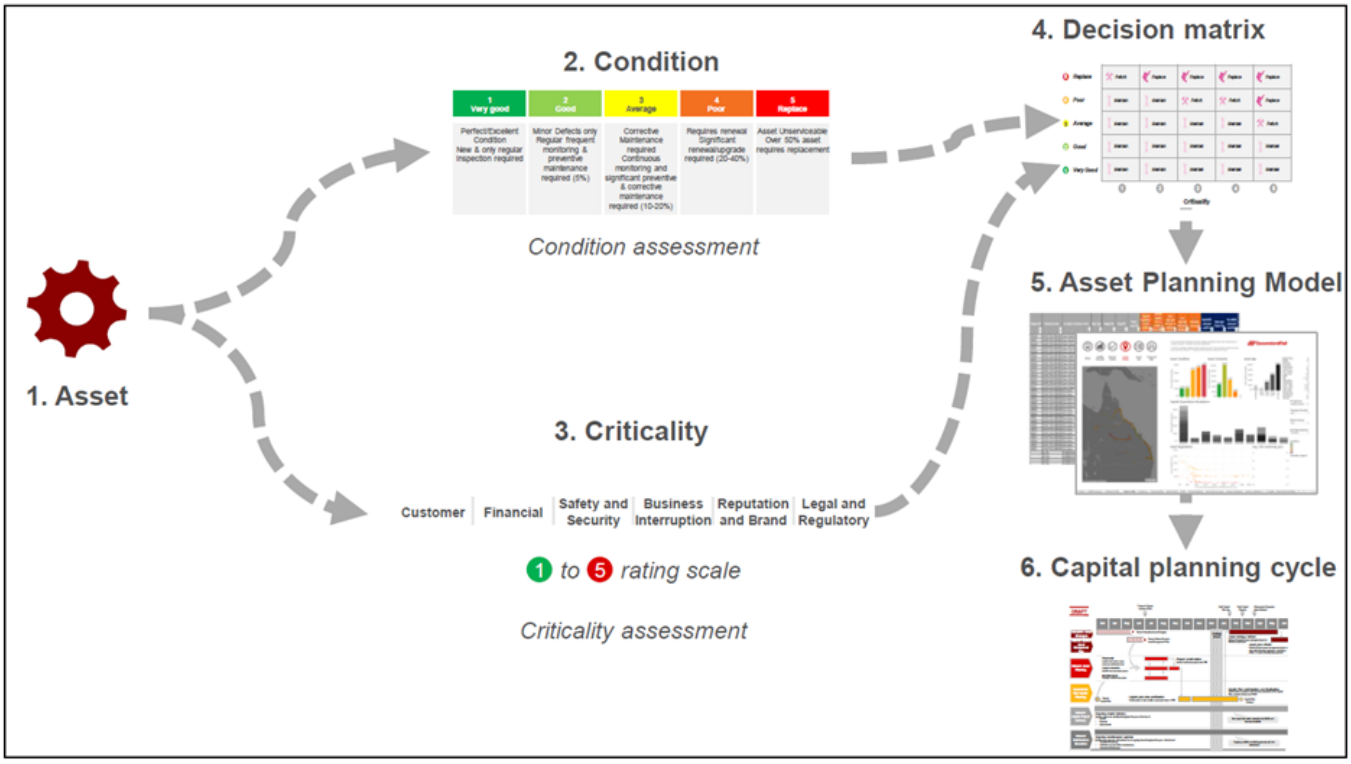
The Asset Planning Framework (**APF**) is a key component of Queensland Rail's approach to Strategic Asset Management. The APF guides Queensland Rail's network business operations on the approach to be used to assess and prioritise renewal projects in relation to when Queensland Rail's network assets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

[3] The AU1 West Moreton System coal forecast was 6.25mtpa to 1 July 2020. The expected coal tonnages between 1 July 2020 and 30 June 2025 are between 2.1mtpa to 9.1mtpa, with the higher forecast requiring New Hope Coal's New Acland Stage 3 mine (**NAS3**) being approved. As at 1 December 2020, New Hope Coal had yet to receive the approvals necessary for the development of the NAS3. New Hope continues to seek approvals and without approvals tonnages during 2020-2021 will likely move towards around 2.1mtpa. NAS3 approval could see tonnages increase to as high as 9.1mtpa during AU2. Coal is expected to be exhausted from the current New Acland Stage 2 mine reserves by early 2021.

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, 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 conditions:

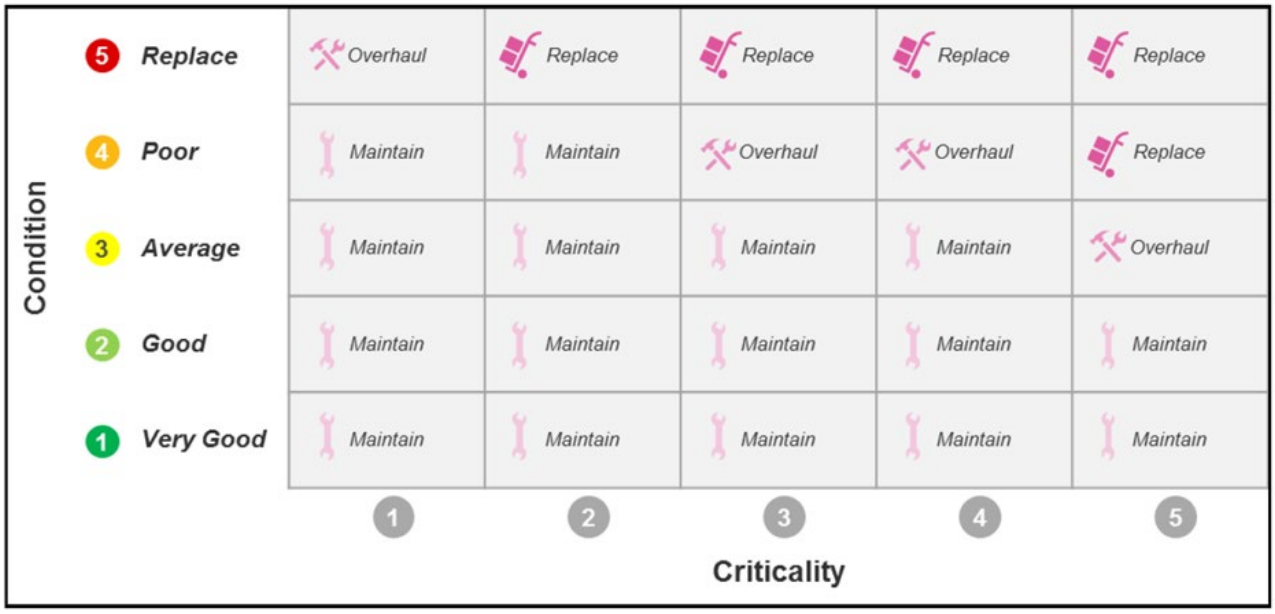
- surveyed condition: manually entered by Queensland Rail staff following observation of the assets through either visual inspections or engineering assessments; and
- calculated condition: calculated based on an asset's age, its planned service life, and the asset's typical degradation curve.

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 2019-20 Capital Expenditure Report would be considered Type 2 or 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**).

## Prudency of standard of works

The QCA is required to consider the prudency of scope of projects submitted in the 2019-20 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

As a RIM under the RSNL, Queensland Rail must ensure, so far as is reasonably practicable (**SFAIRP**), the safety of its railway operations including the movement of rollingstock on a railway track.

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 RSNL. The SEMS is the basis for Queensland Rail's accreditation.

To fulfil its obligation to manage risks, Queensland Rail must eliminate risks to safety SFAIRP. In assessing what is reasonably practicable, the cost associated with available ways of eliminating or minimising risk may be considered only after assessing the extent and available ways of doing so.

The means by which Queensland Rail assesses whether risks are managed SFAIRP is by the application of its SEMS. Queensland Rail must not contravene its SEMS without reasonable excuse. 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 and delivered in accordance with the CETS and CESS.

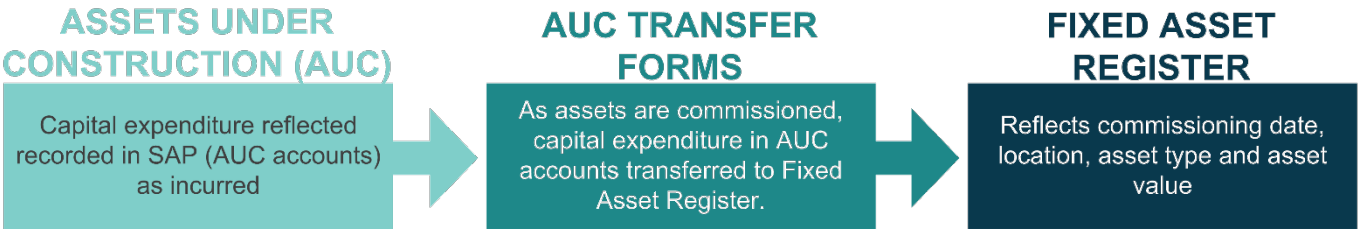
## Prudency of costs

The QCA is required to consider the prudency of the costs of projects submitted in the 2019-20 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 2019-20 Capital Expenditure Report. In relation to two projects, the projects have been commissioned and they are currently going through the process of being added to the FAR.




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 carries about 130 trains per week and is a major link for coal 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, the further investigation revealed the need for major remedial works at two high risk sites where slope instabilities place the rail structure and/or access road at risk. Historically these instabilities 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.

| 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).<br><br>AU1 allows 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.<br><br>The QCA approved the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project in its Decision dated 18 April 2019:<br><br>https://www.qca.org.au/wp-content/uploads/2019/05/34855_QCA%C3%A2%E2%82%AC%E2%80%9DDecision-notice.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. | |
| 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).<br><br>AU1 allows 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.<br><br>The QCA approved the prudency of the scope and standard of the Toowoomba Range Slope Stabilisation Project in its Decision dated 18 April 2019: |
| 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. | |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| The requirements of other relevant Australian design and construction standards.<br><br>Queensland Rail's design standards contained within the Safety Management System.<br><br>All relevant Law and the requirements of any Authority (including the Safety Regulator). | https://www.qca.org.au/wp-content/uploads/2019/05/34855_QCA%C3%A2%E2%82%AC%E2%80%9DDecision-notice.pdf |
| **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:<br><br>A. engineering, equipment supply and construction;<br>B. labour; and<br>C. materials. | Geological investigations of each site were initially carried out by External expert Golder Associates.<br><br>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.<br><br>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:<br>A. safety during construction and operation;<br>B. compliance with environmental requirements during construction and operation;<br>C. compliance with Laws and the requirements of Authorities;<br>D. minimising disruption to the operation of Train Services during construction;<br>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;<br>F. minimising whole of asset life costs including future maintenance and operating costs;<br>G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>H. aligning other elements in the supply chain; and<br>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.04403 Culvert renewals

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

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

Culverts and subways are becoming increasingly high maintenance assets as they reach their design life or are affected by route tonnage/loading increases. Culverts and subways are inspected in accordance with CETS. All defects found are allocated priority for monitoring, repair, renewal and/or temporary support. Increased monitoring regime and attention to top and line defects increases confidence in deferring expenditure and testing capabilities.

Inspections of the West Moreton culverts undertaken by the Network Regional West team have identified culverts between Gatton and Miles that are life-expired and in need of replacement. These culverts are deteriorating and incur high maintenance costs to keep them operational. They pose a risk of collapse under operations and washout in flood. Culvert replacement will maintain serviceability and reduce the eventual imposition of speed restrictions and recoverability after flooding. Queensland Rail originally planned to replace [redacted] culverts over the period 2017-18 to 2019 20, although this was subsequently increased to [redacted] culverts, within the same budget. The spend in this submission reflects the finalisation of the costs for this project.

**Table 3: Status of Culverts**

| Location | Status |
|---|---|
| Original business case | |
| [redacted] | |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| **Prudency of scope – criteria to be considered** | |
| The need to accommodate what is reasonably required to comply with Access Agreements. | Culvert renewals are required to replace life expired/deteriorated culverts to ensure the continued safe operation of trains on the network. |
| The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand. | Culvert replacement was a projected identified in the West Moreton Asset Management Plan 2015-16 AMP provided to the QCA with the submission of the 2015DAU. Issues related to demand assumption for the AU1 period were set out in section 3.4 of the AMP. |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| The age and condition of existing assets and the need for replacement capital expenditure projects. | Inspections undertaken by the Network Regional West team have identified [redacted] culverts between Gatton and Miles as life-expired and in need of replacement. The identified culverts are deteriorating and incur high maintenance costs to keep them operational. In their current condition these structures face a risk of failure under operations or washout in the event of a flood. The failure of the culverts under the track would significantly impact freight services. |
| 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 includes standards for culverts as prescribed in CESS Queensland Rail seeks to apply two standard culvert designs:<br>• Concrete Box Culverts should be designed in accordance with AS1597.1:2010 and AS1567.2:2013; and<br>• Concrete Reinforced Pipes should be designed in accordance with AS3725:2007 and manufactured in accordance with AS4508:2007. |
| 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. | Culvert replacement 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.<br>For these projects, Queensland Rail does not undertake a full evaluation of alternatives for individual replacement. Instead, Queensland Rail seeks to use one of two standard designs to minimise the overall cost of design and installation, having regard to the particular features for the culvert replacement. |
| The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects. | Culvert replacement is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The Business Case, Handover Report and AUC forms are provided. The project is commissioned, The Completion Report is currently being finalised and will be forwarded to the QCA once completed. Further, once this report is completed the project will be added to the FAR. Note: Queensland Rail included Culverts commissioned in 2018-19 in the 2018-19 Capital Expenditure Report |
| The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project. | Queensland Rail included the project in the DAU2015 submission. No other consultation has occurred with stakeholders on culvert replacement. |
| **Prudency of standard – criteria to be considered** | |
| The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements. | Queensland Rail uses the South West User Group (**SWUG)** process to discuss closure and other major maintenance and timetabling issues with rolling stock operators. Queensland Rail did not consult with rollingstock operators on culvert replacement. |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| Current and likely future usage levels. | The culvert renewal project was included in the West Moreton AMP 2015-16 provided to the QCA with the submission of the 2015DAU. Issues related to demand are set out in section 3.4 of the AMP.[4] |
| 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.<br>The requirements of other relevant Australian design and construction standards.<br>Queensland Rail's design standards contained within the Safety Management System.<br>All relevant Law and the requirements of any Authority (including the Safety Regulator). | As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes standards for bridges as prescribed in CESS. New culverts are replaced within the following policy framework:<br>• 200A loading is sufficient for new culverts in the western regional systems;<br>• designs should be simple and standardised where possible;<br>• Concrete Box Culverts should be designed in accordance with AS1597.1:2010 and AS1567.2:2013;<br>• Concrete Reinforced Pipes should be designed in accordance with AS3725:2007 and manufactured in accordance with AS4508:2007; and<br>• maintenance interventions are to be minimised starting with a performance specification and then collaboration to standardise drawings that can be utilised for contracts without the need for individual designs and design checks. Preference is for precast crown units, bases, headwalls, wing walls, with smaller in situ pours for "zipping" of bases or anchoring aprons with in-situ cut off walls.[5] |
| **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 commissioned and Queensland Rail is currently in the process of updating the FAR. The AUC Form, Business Case and Project Handover Report have been provided to the QCA with this submission.<br>Note: Queensland Rail included Culverts commissioned in 2018-19 in the 2018-19 Capital Expenditure Report. |
| The circumstances prevailing in the markets for:<br>A. engineering, equipment supply and construction;<br>B. labour; and<br>C. materials. | The culverts completed in 2019-20 were installed by private contractors engaged through a competitive tender process. |
| 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. |

[4] Queensland Rail, West Moreton Asset Management Plan 2015-16, p 6-8.
[5] Strategy – Network Track and Civil Asset Strategy p56-57

| 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:<br><br>A. safety during construction and operation;<br>B. compliance with environmental requirements during construction and operation;<br>C. compliance with Laws and the requirements of Authorities;<br>D. minimising disruption to the operation of Train Services during construction;<br>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;<br>F. minimising whole of asset life costs including future maintenance and operating costs;<br>G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>H. aligning other elements in the supply chain; and<br>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.04636 Timber bridge elimination (continuation of B.04043)

The majority of existing bridges in the West Moreton System are rated to 15.75 tal. These bridges were originally designed for 12 tal (Imperial) or dynamic loads imparted by B16 steam locomotives. The bridges from Rosewood to Miles have been assessed with respect to their suitability for the axle configuration and loading of existing traffic. Desktop assessment has shown that, under the existing loadings, these bridges are operating at the limit of their capability.

Due to the existing gross tonnages on the West Moreton System, timber bridges are incurring high maintenance costs, increased closure requirements and carry an elevated risk of derailment compared to concrete and steel replacement alternatives.

The timber bridge replacement project is part of an ongoing program to replace timber bridges across the West Moreton System. Queensland Rail is replacing timber bridges in the West Moreton System, predominantly with prestressed concrete or steel bridges. This is being undertaken to replace close-to-life-expired bridges with more durable infrastructure.

Timber bridges are prioritised for replacement based on a risk ranking. The ranking takes into inconsideration the defects in the bridge, tonnage over the bridge, temporary speed restrictions and priorities of the inspectors of the structures.

Timber bridge replacement on the West Moreton System is being completed to a 200A standard (20tal), consistent with the West Moreton System Asset Management Plan. This is a key change relative to the original AU1 proposal and followed the Australian Government's announcement to proceed with the Inland Rail project in May 2017. Until this date, bridges between Rosewood and Toowoomba were designed to a 300A (30tal) standard.

B.04636 is a four-year program to replace 18 timber bridges in the West Moreton System. The defects on these bridges include bridge/rail misalignment, termite damage, cracked girders, perishing girders, loose screws, split spans, rotten transoms and rotten headstocks. To improve the safety and reliability of the western rail line, the program of work has been underway to replace ageing timber rail bridges with stronger, low maintenance steel structures. This project will benefit operations on the West Moreton System by:

- improved asset maintainability by replacing high intensive maintenance timber bridge assets with low maintenance steel or concrete bridges;
- improved asset reliability due to the higher standard of bridging structure compared with existing timber structures; and
- reducing the likelihood of an operational safety incident occurring relating to the integrity of the bridge structures.

The new structures have been built using untreated steel girders as a cost-effective alternative to concrete and significantly stronger and more durable than the previous timber structures.

Five bridges were commissioned under this project in 2019-20 being: [redacted]

| 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 bridge elimination project is part of a longer term strategy for the West Moreton System to address bridge defects that require regular and/or intensive maintenance. |
| The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand. | Timber bridge replacement was a project identified in the West Moreton AMP provided to the QCA with the submission of the 2015DAU. Issues related to demand assumption for the AU1 period were set out in section 3.4 of the AMP. |
| The age and condition of existing assets and the need for replacement capital expenditure projects. | Timber bridges are prioritised for replacement based on a risk ranking. The ranking takes into consideration the defects in the bridge, tonnage over the bridge, temporary speed restrictions and priorities of the structure's inspectors. |
| 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 includes standards for bridges as prescribed in CESS — MD-10-586. |
| 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. | Queensland Rail considered continuation of the existing maintenance program – this option was not preferred due to the high operational costs associated with maintenance and the risks of rail downtime and derailments due to bushfires, floods etc.<br>Replacement of ageing timber structures with concrete or steel structures was the preferred option. |
| The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects. | Timber bridge elimination is a Type 3 project, as set out in Queensland Rail's Project Management Framework. The Business Case and AUC forms for projects completed to 30 June 2020 are provided as well as the Handover and Completion reports. This Project is in the FAR. Note: Queensland Rail included B.04636 Timber bridge elimination bridges commissioned in 2018-19 in the 2018-19 Capital Expenditure Report. |
| The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project. | Queensland Rail included the project in the DAU2015 submission which went to public consultation. No other consultation has occurred with stakeholders on timber bridge elimination. |

| 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. | Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators. Queensland Rail did not consult with rollingstock operators on specific timber bridge elimination options. |
| Current and likely future usage levels. | The timber bridge elimination project was included in the West Moreton AMP 2015-16 provided to the QCA with the submission of the 2015DAU. Issues related to forecast demand for AU were set out in section 3.4 of the AMP.[6] |
| 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.<br>The requirements of other relevant Australian design and construction standards.<br>Queensland Rail's design standards contained within the Safety Management System.<br>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 includes standards for bridges as prescribed in CESS |
| **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 commissioned and are included in Queensland Rail's FAR. The commissioning dates included in FAR reflect the AUC transfer forms which are being provided to the QCA. The Business Case, Handover Report and Completion Report are also provided. |
| The circumstances prevailing in the markets for:<br>A. engineering, equipment supply and construction;<br>B. labour; and<br>C. materials. | Design works for the bridges were undertaken by an external design consultants and Queensland Rail's in-house design resources. External construction contractors were engaged to undertake the replacement of the structures and all associated civil and structural works, with Queensland Rail responsible for all track removal and reinstatement works. |

[6] Queensland Rail, West Moreton Asset Management Plan 2015-16, p 6-8.

| 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:<br>A. safety during construction and operation;<br>B. compliance with environmental requirements during construction and operation;<br>C. compliance with Laws and the requirements of Authorities;<br>D. minimising disruption to the operation of Train Services during construction;<br>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;<br>F. minimising whole of asset life costs including future maintenance and operating costs;<br>G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>H. aligning other elements in the supply chain; and<br>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.04613 Formation strengthening

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.

In 2013, WorleyParsons noted that the result 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**) in 2010 following its review of the West Moreton System with concerns about derailment and increasing speed restrictions.

When the Business Case for this project was developed, there was [redacted] of formation defects on the West Moreton System that required attention within required timeframes for rectification ranging between three months and five years. The formation is deteriorating at a high rate and Queensland Rail estimated that around [redacted] of formation repairs per year would be required to ensure that the defect growth could be sustainably managed.

| 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 Formation Strengthening project was included in the West Moreton AMP provided to the QCA with the submission of the 2015DAU.<br>Queensland Rail has obligations to provide a safe rail network, which is the issue most relevant for bridge structure on the West Moreton system. |
| The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand. | The estimated [redacted] 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 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.<br>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.<br>Queensland Rail has been progressively undertaking formation strengthening to deal with these legacy issues and manage maintenance costs. |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| | The QCA approved the scope, standard and costs for formation works to the QCA in the 2018-19 Capital Expenditure Report. |
| 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 includes standards for formation as prescribed in CETS. |
| 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.<br><br>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.<br><br>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 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 2020 are provided. A Handover Report and a Completion Report has also been provided. |
| The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project. | Queensland Rail included the project in the DAU2015 submission. No other consultation has occurred with stakeholders on formation strengthening. |
| **Prudency of standard – criteria to be considered** | |
| The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements. | Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators. Queensland Rail did not consult with rollingstock operators on formation strengthening. |
| Current and likely future usage levels. | The formation strengthening project was included in the West Moreton AMP provided to the QCA with the submission of the 2015DAU. Issues related to demand are set out in section 3.4 of the AMP.[7] |

[7] Queensland Rail, West Moreton Asset Management Plan 2015-16, p 6-8.

| 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.<br>The requirements of other relevant Australian design and construction standards.<br>Queensland Rail's design standards contained within the Safety Management System.<br>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 includes standards for formation as prescribed in CETS. |
| **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 being provided to the QCA. The Business Case, Handover Report and Completion report are also provided to the QCA. |
| The circumstances prevailing in the markets for:<br>A. engineering, equipment supply and construction;<br>B. labour; and<br>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. |

| 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:<br>A. safety during construction and operation;<br>B. compliance with environmental requirements during construction and operation;<br>C. compliance with Laws and the requirements of Authorities;<br>D. minimising disruption to the operation of Train Services during construction;<br>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;<br>F. minimising whole of asset life costs including future maintenance and operating costs;<br>G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>H. aligning other elements in the supply chain; and<br>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.04794 Lxing Upgrades, W'Moreton 16/17 - 19/20

Railway level crossings represent an area of risk to safety. With the level crossing structure subject to the combination of both rail and road traffic, any deterioration of the formation affects the efficient operations and safety for both rail and road users.

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

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 project seeks to recondition the eight level crossings in the West Moreton System that require reconditioning with 50kg/m rail and concrete sleepers.

The project is a "modern equivalent type" replacement of the track and level crossing infrastructure, ensuring these components are safer than current state. The project removes existing defects within the track structure (i.e. formation/drainage/ballast/ sleeper/rail/repair of road surface etc.) and replaces this with new track compliant with CETS.

The project upgrades or reconditions rail track panels and provides new road surfaces. The Project aims to mitigate the risks associated with level crossings through:

- asphalt surface replacement when road traffic is adversely impacted;
- providing or improving drainage systems in level crossings as they are renewed or reconditioned; and
- design, install, operate and maintain level crossings in compliance with Queensland Rail standards for level crossings.

Table 3 below lists the level crossings that were upgraded as part of the B.04794 Lxing Upgrades, W'Moreton 16/17 - 19/20 Project.

### Table 4: Level Crossing Upgrades for Project B.04794

| Functional Loc. | Description | Start Point | End Point | Length | Description |
|---|---|---|---|---|---|
| LXR_02462 | Level Xing Upgrade @ 151.620km WL | 151.613 | 151.627 | 0.014 | LC - Boonarga-Inverai Road (Boonarga) |
| LXR_02480 | Level Xing Upgrade @ 193.850km WL | 193.843 | 193.857 | 0.014 | LC - Boort-Koi Road (Columboola) |
| LXR_02464 | Level Xing Upgrade @ 154.590km WL | 154.583 | 154.597 | 0.014 | LC - Hopelands Crossing (Brigalow) |
| LXR_02465 | Level Xing Upgrade @ 157.060km WL | 157.053 | 157.067 | 0.014 | LC - Ryans Crossing (Chinchilla SaleYds) |
| LXR_02448 | Level Xing Upgrade @ 128.285km WL | 128.278 | 128.292 | 0.014 | LC - Kerrs Road (Warra) |
| LXR_02461 | Level Xing Upgrade @ 148.750km WL | 148.743 | 148.757 | 0.014 | LC - Oak Park Road (Brigalow) |
| LXR_00996 | Level Xing Upgrade @ 180.580km WL | 180.573 | 180.587 | 0.014 | LC - Rywung Access Road (Rywung) |
| LXR_02477 | Recondition Xing Warrego Hwy 179.840km | 179.82 | 179.86 | 0.04 | LC - Warrego Highway (Rywung) |

| 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 was included in the West Moreton AMP provided to the QCA with the submission of the 2015DAU.<br>Queensland Rail has obligations to provide a safe rail network, which is the basis for this project on the West Moreton System.<br>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 operational performance. |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand. | The level crossing upgrade project was a project identified in the West Moreton AMP provided to the QCA with the submission of the 2015DAU. Issues related to demand assumptions for the AU1 period were set out in section 3.4 of the AMP.<br><br>The project was also included in the 2015DAU Explanatory Submission – Queensland Rail's Draft Access Undertaking 1 (2015) Volume 2 May 2015, Appendix 3 - West Moreton Reference Tariff 2015 DAU Capital Submission, p. 35. |
| 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. |
| 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 includes standards for formation as prescribed in CETS. |
| 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.<br><br>The Business Case, Handover Report, Completion Report and AUC forms are provided as part of this submission. The assets are commissioned. Queensland Rail is currently in the process of updating the FAR.<br><br>Queensland Rail considered a 'do nothing' option, however this option. This was not considered an acceptable option due to safety considerations. |
| 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 project was commissioned in 2019-20. The Business Case, AUC forms, Handover Report and Completion reports are all being provided to the QCA. The process to update the asset register is currently underway. |
| The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project. | The project was part of the DAU2015 submission, with the QCA releasing the submission for public consultation.<br><br>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. |

| 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. | Queensland Rail uses the SWUG process to discuss closure and other major maintenance and timetabling issues with rolling stock operators. Queensland Rail did not consult with rollingstock operators on relay recondition. |
| Current and likely future usage levels. | The level crossing upgrade project was included in the West Moreton AMP 2015-16 provided to the QCA with the submission of the 2015DAU. Issues related to demand are set out in section 3.4 of the AMP.[8] |
| The requirements of the codes developed by the Rail Industry Safety and Standards Board (RISSB) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia.<br>The requirements of other relevant Australian design and construction standards.<br>Queensland Rail's design standards contained within the Safety Management System.<br>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 includes standards for formation as prescribed in CETS. |
| **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 commissioned. Queensland Rail is in the process of adding them to Queensland Rail's 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:<br>A. engineering, equipment supply and construction;<br>B. labour; and<br>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. Delivery of this project was through internal resources. |

[8] Queensland Rail, West Moreton Asset Management Plan 2015-16, p 6-8.

| 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:<br>A. safety during construction and operation;<br>B. compliance with environmental requirements during construction and operation;<br>C. compliance with Laws and the requirements of Authorities;<br>D. minimising disruption to the operation of Train Services during construction;<br>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;<br>F. minimising whole of asset life costs including future maintenance and operating costs;<br>G. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>H. aligning other elements in the supply chain; and<br>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. 05956 West Moreton Derailment Recovery

The West Moreton System spans 407km of narrow-gauge track which consists of 41kg, 50kg and 60kg rail. The 41kg rail is interspersed with timber and steel sleepers. It begins on the western side of Rosewood on the Main Line and runs through Toowoomba to Miles on the Western Line.

A derailment occurred on 14 November 2019 between 59.900km and 62.350km on the Western Line at Bowenville. The derailment of Aurizon Train 9811 resulted in significant damage over a track length of approximately 2.45km and resulted in a large-scale recovery effort. The line was returned to operational service on 26 November 2019.

These capital works were emergency repairs to infrastructure required to resume coal rail traffic. They comprised:

- replacement of derailment-damaged 41kg/m rail with new 50kg/m rail;
- replacement of derailment-damaged timber and steel sleepers with new full depth concrete sleepers; and
- formation improvement and new “A-class” ballast.

The repairs undertaken were consistent with the Assets Strategy recommended in the Derailment Reduction Strategy West Moreton System Jondaryan – Columboola Report completed in the second quarter of 2019.

| 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. | Queensland Rail has obligations to provide a safe rail network, which is the basis for this project on the West Moreton System.<br>This project allowed for the reintroduction of coal traffic on the West Moreton System. There has been a decrease in the reports of track misalignments and instability. The risk of derailment on this rebuilt section of track has been reduced due to the installation of more robust track infrastructure. |
| The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand. | This project allowed for the reintroduction of coal traffic on the West Moreton System. |
| The age and condition of existing assets and the need for replacement capital expenditure projects. | These capital works were emergency repairs to infrastructure following the derailment of Aurizon Train 9811 on 14 November 2019 near Bowenville on the West Moreton System. They were required to reopen the system to coal traffics. |

| 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 includes standards for formation as prescribed in CETS. The project was undertaken in accordance with Queensland Rail's safety obligations. |
| 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. | These capital works were emergency repairs to infrastructure.<br>Three options were examined:<br>**1. Do nothing** – not feasible given the level of revenue and traffic that the West Moreton system generates/carries, and the commercial ramifications of inaction.<br>**2. Minimum derailment repair** – not feasible. The damage that resulted from the derailment on 14 November 2019 coincided with track that had previously been damaged from a derailment and repaired. The repairs for the previous derailment were able to salvage the existing 41kg/m and a portion of the timber sleepers to<br>implement repairs expediently and comply with CETS. The damage to the rails and sleepers from the subsequent derailment left the track components unsalvageable and new track components were required to construct track, comply with CETS and to resume rail operations.<br>**3. Full renewal** – Renew formation and improve track reliability by improving the formation and rail and replacing damaged timber sleepers with concrete sleepers. This would significantly reduce the risk of future derailments at the site. This was the preferred option. |
| The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects. | This Project was conducted in accordance with Queensland Rail's process. The Business Case, AUC forms are provided to the QCA. The assets have been commissioned and added to the FAR. |
| The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project. | These capital works were emergency repairs to infrastructure. All traffic was stopped by the derailment damage. Advice was provided to customers about the derailment and resultant track closure. |
| **Prudency of standard – criteria to be considered** | |
| The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements. | This project allowed for the reintroduction of coal traffic on the West Moreton System. There has been a decrease in the reports of track misalignments and instability. The risk of derailment on this rebuilt section of track has been reduced due to the installation of more robust track infrastructure.<br>These capital works were emergency repairs to infrastructure and were required for to allow for the reintroduction of coal traffic on the West Moreton System. |

| Assessment Criteria | Queensland Rail Response |
|---|---|
| Current and likely future usage levels. | These capital works were emergency repairs to infrastructure and were required for to allow for the reintroduction of coal traffic on the West Moreton System. |
| 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.<br>The requirements of other relevant Australian design and construction standards.<br>Queensland Rail's design standards contained within the Safety Management System.<br>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 includes standards for formation as prescribed in CETS. |
| **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 Fixed Asset Register reflect the AUC transfer forms which are provided to the QCA as part of this submission. |
| The circumstances prevailing in the markets for:<br>D. engineering, equipment supply and construction;<br>E. labour; and<br>F. materials. | Work was completed with Queensland Rail employees and was supplemented with external contractors. Machinery used during the recovery was a mix of internal Queensland Rail plant and external equipment. |
| 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:<br>J. safety during construction and operation;<br>K. compliance with environmental requirements during construction and operation;<br>L. compliance with Laws and the requirements of Authorities;<br>M. minimising disruption to the operation of Train Services during construction;<br>N. accommodating reasonable requests of Access Holders (and, if applicable, their Customers) to amend the scope and sequence of works undertaken to suit their needs;<br>O. minimising whole of asset life costs including future maintenance and operating costs;<br>P. minimising total project cost which may at times not be consistent with minimisation of individual contract costs;<br>Q. aligning other elements in the supply chain; and<br>R. meeting contractual timeframes and dealing with external factors. | Queensland Rail has comprehensive processes in place to manage safety and environmental compliance. Queensland Rail is happy for the QCA to request a presentation on its overall governance and compliance processes. |

## West Moreton System Ballast Undercutting (Track Lowering)

For AU1, 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.[9]

In 2019-20, Queensland Rail is seeking approval for $0.641 million 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'.

[9] 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