West Moreton System
Capital Expenditure Report 2018–19

18 December 2019

Commercial-In-Confidence

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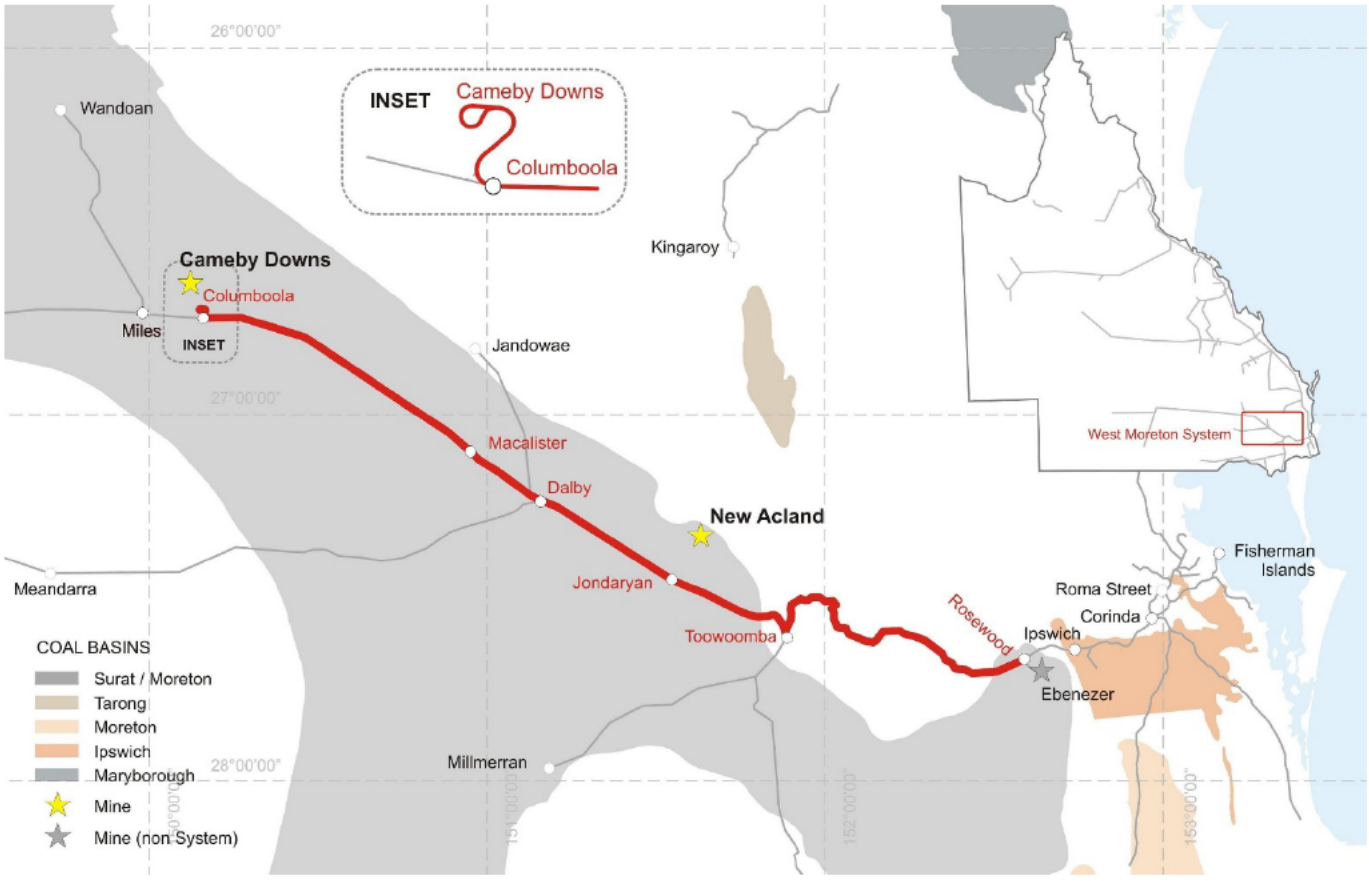
Introduction

West Moreton Network RAB

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

Figure 1: Map West Moreton Network



Clause 1.3, Schedule E of Queensland Rail's Access Undertaking 1 (AU1) requires Queensland Rail to submit an annual report to QCA for capital expenditure on assets it considers should be included in the RAB.

For the 2018-19 Capital Expenditure Report, Queensland Rail is seeking the QCA's approval for $27.237 million of commissioned capital projects, excluding interest during construction (IDC) for inclusion in the RAB. The QCA has requested evidence that assets in the capital expenditure claim have been commissioned, which means that assets added to the Fixed Asset Register, rather than capital expenditure is the measure to be used.

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 AU1.

Metropolitan Network 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 AU1 period.

The QCA's Final Decision accepted this approach and provides for Queensland Rail to identify incremental freight-specific capital expenditure in the Metropolitan Network, should such capital expenditure occur. No incremental freight-specific capital expenditure has been identified for the Metropolitan Network for 2018-19.

Previous consideration by QCA

The QCA has considered several projects included in the 2018-19 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.

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 Network 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 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 providing 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 AU1 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 2018-19 includes seven capital expenditure main projects, plus expenditure on ballast undercutting (track lowering) and the final expenditure from a completed project.

The total expenditure for 2018-19 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 2018-19 — excluding interest during construction

Project Number	Project Name	2018-19
100% West Moreton projects		
B.04291	Relaying (Rerailing) Program Rosewood — Helidon	126,648
B.04403	Culvert/Drain Renewal	1,091,393
B.04613	Formation Strengthening — West Moreton System	2,514,075
B.04636	Timber and Steel Bridge Elimination	12,012,334
B.04728	Signalling Pole Route Upgrade Grandchester to Laidley	2,538,607
B.05171	Relay/Recondition Program	6,877,736
B.05243	Davidson St (Oakey) Level Crossing CCTV	60,573
Other		
Ballast Undercutting	Ballast Undercutting	2,015,529
TOTAL		**27,236,895**

Interest during construction

AU1 is silent on the methodology to be used for the calculation of interest during construction. The QCA has advised that 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 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 2018-19 — including interest during construction

Project Number	Project Name	2018-19
100% West Moreton projects		
B.04291	Relaying (Rerailing) Program Rosewood — Helidon	130,520
B.04403	Culvert/Drain Renewal	1,125,510
B.04613	Formation Strengthening — West Moreton System	2,680,034
B.04636	Timber and Steel Bridge Elimination	12,674,859
B.04728	Signalling Pole Route Upgrade Grandchester to Laidley	2,733,178
B.05171	Relay/Recondition Program	7,258,257
B.05243	Davidson St (Oakey) Level Crossing CCTV	63,322
Other		
Ballast Undercutting	Ballast Undercutting	2,015,529
TOTAL		**28,681,209**

Investment framework

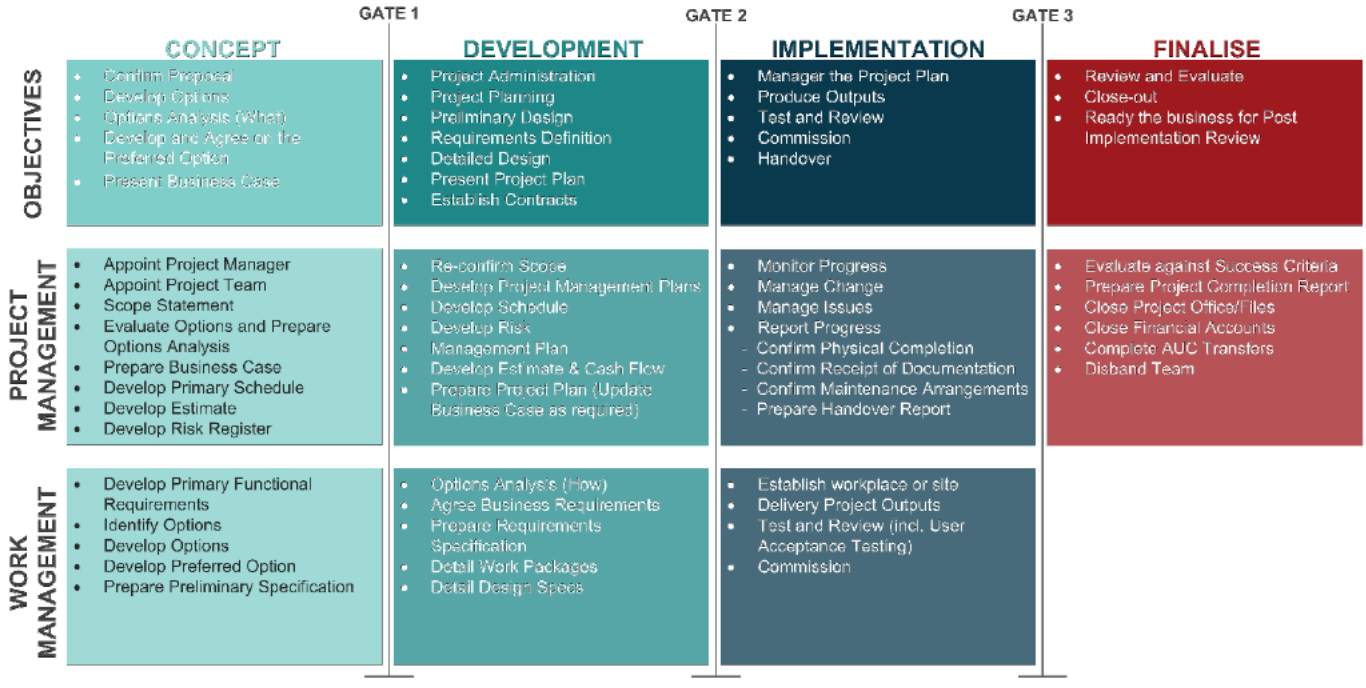
Queensland Rail is a statutory authority that undertakes numerous projects annually to ensure the safe and reliable working, and growth of the rail network for the people of Queensland. In order to reach the aims of project management outlined above, a standard methodology is employed.

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

Scope

The QCA is required to consider the prudency of scope of projects submitted in the 2018-19 Capital Expenditure Report. Clause 3.2(a), Schedule E, AU1 provides for Queensland Rail request the QCA to accept the costs of a capital expenditure project as prudent. In making this assessment, the QCA is to have regard to a range of factors as set out in 5.3(d) and (e), Schedule E, AU1.

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.[1]

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 network 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
- 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.

[1] On 22 September 2019, Queensland Rail made a submission to the QCA proposing to increase the length of the reference train on the West Moreton System from 41 wagons to 42 wagons. The proposed Draft Amending Access Undertaking notes that following in-field review of the static length of various network configurations and associated controls, Queensland Rail began successful trials of the 42-wagon consist from both Cameby Downs and Jondaryan to Fisherman Islands in December 2018 and January 2019. From February 2019, all coal carrying train services on the West Moreton system have been permitted to operate at the revised new maximum 42 wagons under extended trial conditions.

Demand forecasts

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 the 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 Acland Stage 3 mine[2] 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: • Planning at current 6.25 mtpa (net) to 2020 • Either 2.1 mtpa or 7.6 mtpa possible post 2020 Additional agricultural volumes probable, although planning reflecting historical average	Coal tonnage uncertainty to have been resolved for existing mining operations. • A range of 2.1 mtpa to 9.1 mtpa range is possible • Tonnage profile may reach 15 mtpa (net) Asset renewals / upgrades adapted to deal with tonnage uncertainty and supporting services continuity for likely tonnage profile	Stage 1 Inland Rail possible to be in 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

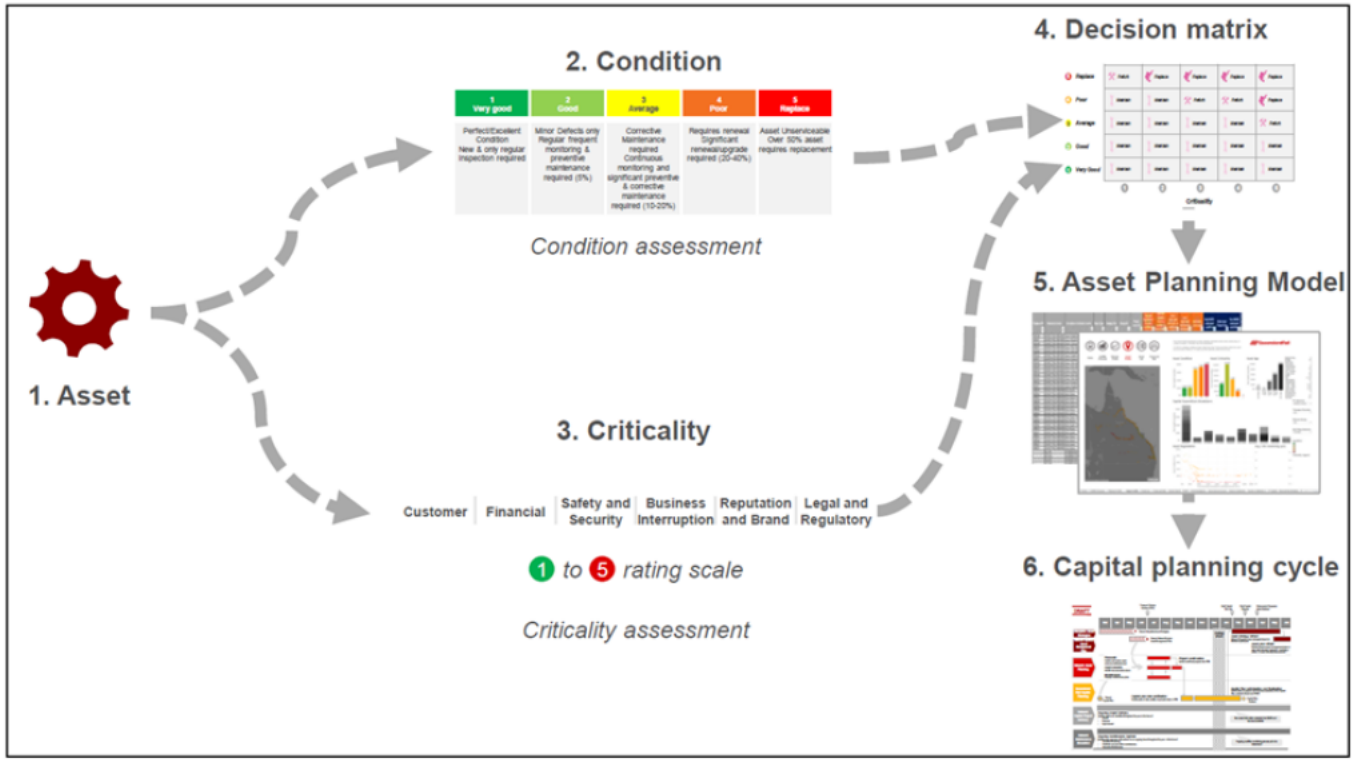
The Asset Planning Framework (APF) is a key component of Queensland Rail's approach to Strategic Asset Management. The APF guides Queensland Rail's Network business on the approach to be used to assess and prioritise renewal projects in relation to when Queensland Rail's network assets should be refurbished 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, its criticality, its typical degradation lifecycle, and current asset management strategies and plans to guide asset planning and capital spend decision making.

[2] As at 1 December 2019, New Hope Coal had yet to receive the approvals necessary for the development of the New Acland Stage 3 mine. New Hope continues to seek approvals and without approvals production during 2020 will only be 60% of the previous year's production and that coal will be exhausted from the New Acland Stage 3 reserves by early 2021.

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.

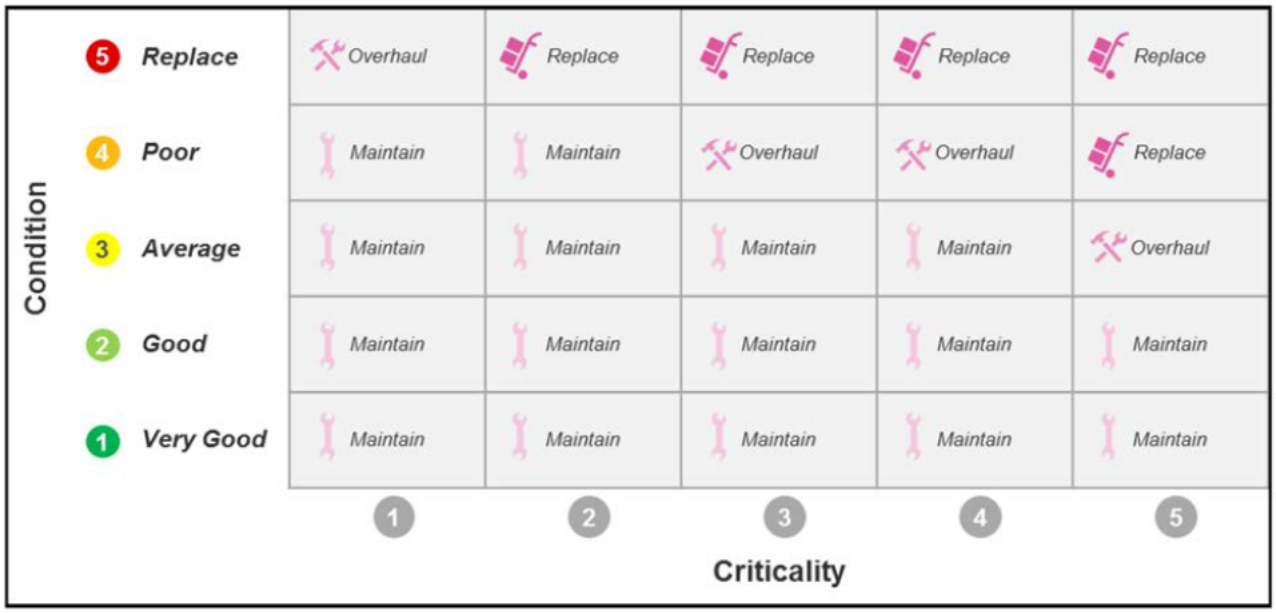
Within EAMS, asset conditions are measured using one of the following conditions:

- surveyed condition: manually entered by Queensland Rail staff following observation of the assets through either visual inspections or engineering assessments
- 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 Network'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 Network'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 Network Asset Planning Framework 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 2018-19 Capital Expenditure Report would be considered Type 2 of Type 3 projects.

Consultation with stakeholders

Where relevant, Queensland Rail consults with access holder and rollingstock about individual capital expenditure projects as set out in clauses 3.2(e)(vi), Schedule E of AU1.

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 a Rail Infrastructure Manager.

Prudency of standard of works

The QCA is required to consider the prudency of scope of projects submitted in the 2018-19 Capital Expenditure Report. Clause 4.2(a), Schedule E, AU1 provides for Queensland Rail to accept the costs of a capital expenditure project as prudent. In making this assessment, the QCA is to have regard to a range of factors as set out in 5.3(b) and (c), Schedule E, AU1.

Design standards and codes

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.

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.

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
- 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.

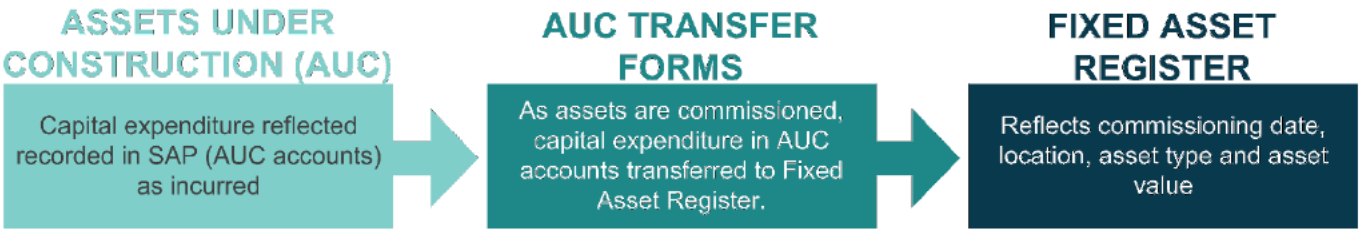
Prudency of costs

The QCA is required to consider the prudency of the costs of projects submitted in the 2018-19 Capital Expenditure Report. Clause 5.3(a), Schedule E, AU1 provides for Queensland Rail to accept the costs of a capital expenditure project as prudent. In making this assessment, the QCA is to have regard to a range of factors as set out in 5.3(b) and (c), Schedule E, AU1.

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 Assets Under Construction (AUC) to the Fixed Asset Register (FAR). Assets which have been recognised on the FAR (commissioned assets) are included in the 2018-19 Capital Expenditure Report.



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

- the Queensland Rail *Project Management Methodology* 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
- use of external contractors for projects suited to this method of procurement – including projects subject to open tenders.

Capital projects

B.04291 Re-railing

Rail condition plays an integral role in the overall track structure being fit for the traffic task required. During routine inspections of the rail infrastructure, it has been identified that specific locations on the West Moreton network require rail replacement to ensure safety standards and performance levels are maintained.

The purpose of this project was to upgrade 17.5km of deteriorated and life expired 41kg rail throughout the West Moreton System between Rosewood to Oakey with new 50kg rail. The existing 41 kg rail in this rea was displaying stress induced symptoms brought on by the carriage of increased tonnes currently being hauled. This project was largely completed in 2017-18, with a final amount of $126,648 (excluding IDC) included in the 2018-19 capital expenditure report.

The identified sites are critical sections which carry loaded coal traffic from all mines in the system, which suffered from top and line and stress issues during summer months. The project was necessary to improve the safety and reliability of the network and reduce ongoing maintenance requirements to uphold track integrity.

The re-railing project planned for the AU1 period was completed ahead of schedule and lower than the original budget, with large parts of the re-railing project completed during the longer track closure periods associated with the Toowoomba Range Clearance 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	Re-railing is routine asset renewal work to, amongst other things, ensure the safe operation of trains on the network. Upgrade of rail weight from 41kg to 50kg between Rosewood and Oakey is part of an ongoing strategy to improve the safety and reliability of the corridor.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand;	Re-railing (replacing 41 kg rail with 50 kg rail) 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.
The age and condition of existing assets and the need for replacement capital expenditure projects	The sections of track identified for relay were prioritised based on the results of asset inspections, with priority given to rail displaying stress induced symptoms due to the level of coal tonnes currently on the system and suffering from top and line and stress issues during the summer months.

Assessment Criteria	Queensland Rail Response
	The rail upgrade was required due to the observation of deteriorating conditions associated with stress related track conditions and defect identification. The existing 41 kg rail is prone to the development of rail defects. Further, alignment and rigidity values of this 41kg rail are poor for the constant passage of loaded coal trains. The existing track structure was requiring increased maintenance of top and line and general track stability. These sections of track were subject to frequent speed restrictions due to rail related defects.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes the Civil Engineering Track Standards (CETS) which sets out the primary obligations for track construction and maintenance.
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	Re-railing 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) — ie 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 to replace all remaining sections of 41kg rail on the track section between Toowoomba and Oakey to ensure track stability, noting that most of this track section is now predominantly on concrete sleepers.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	Re-railing 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 2019 are provided, as well as the completion and handover reports.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	Queensland Rail's long-term plan to replace existing 41 kg rail with heavier rail has formed part of Queensland Rail's long-term plan for the system since 2009 when the Coal Rail Infrastructure Master Plan was released. The 2015-16 AMP published on the QCA's website also set out the plan for 50kg rail to be used east of Jondaryan. No other specific consultation occurred for the re-railing project.
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.

Assessment Criteria	Queensland Rail Response
	Queensland Rail did not consult with rollingstock operators on re-railing specifications, however, the long-term objective to replace existing rail with heavier rail has formed part of Queensland Rail's long term plan for the system since 2009 when the Coal Rail Infrastructure Master Plan was released. The 2015-16 AMP published on the QCA's website also set out the plan for 50kg rail to be used east of Jondaryan.
Current and likely future usage levels	The West Moreton Asset Management Plan 2015-16 (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.[3]
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 Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes the Civil Engineering Track Standards (CETS) which sets out the primary obligations for track construction and maintenance.
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 being provided to the QCA. The final total spend for the project was $5.170 million (excluding IDC) 43% lower than budgeted for the AU1 period. The project was completed two years ahead of schedule with the opportunity for long track closures arising from the Toowoomba Range Clearance Project.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials	Due to limited local resource availability, the project was delivered using internal Queensland Rail track staff from Infrastructure Renewals production teams. Key plant, trained operators and additional labour support for welding were sourced form external providers.

[3] Queensland Rail, West Moreton Asset Management Plan 2015-16

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.

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 is planning to replace [redacted] culverts over the period 2017-18 to 2019-20. [redacted] culverts were completed in 2018-19 at a cost of $1.091 million (excluding IDC).

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.
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 22 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.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes standards for culverts as prescribed in CESS. Queensland Rail seeks to apply two standard culvert designs: • Concrete Box Culverts should be designed in accordance with AS1597.1:2010 and AS1567.2:2013. • 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) — ie 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 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 and AUC forms for projects completed to 30 June 2019 are provided. As the project is still ongoing, handover reports and a completion report are still to be prepared.
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 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.
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]

[4] 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 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 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: • 200A loading is sufficient for new culverts in the western regional systems • Designs should be simple and standardised where possible • Concrete Box Culverts should be designed in accordance with AS1597.1:2010 and AS1567.2:2013. • Concrete Reinforced Pipes should be designed in accordance with AS3725:2007 and manufactured in accordance with AS4508:2007 • 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 completed and are included in Queensland Rail's FAR. The commissioning dates included in Fixed Asset Register reflect the AUC transfer forms which are being provided to the QCA.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials	Culvert replacement by open cut undertaken internally by Network Delivery. Where internal resources not available, subcontractors used to carry out part of the 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.

[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: 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.04636 Timber bridge elimination (continuation of B.04043)

The majority of existing bridges in the West Moreton Network 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 Network, 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 Network. Queensland Rail is replacing timber bridges in the West Moreton Network, 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 structure's inspectors.

Timber bridge replacement on the West Moreton Network is being completed to a 200A standard (20tal), consistent with the West Moreton Network 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;
- 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. Bridges commissioned in 2018-19 were: [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 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 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.
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 Rail Transport Operator Queensland Rail has a SMS. The SMS includes standards for bridges as prescribed in Civil Engineering Structures Standard (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. 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 2019 are provide. As the project is still ongoing, handover reports and a completion report are still to be prepared.
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 timber bridge elimination.
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.

Assessment Criteria	Queensland Rail Response
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 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 Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS 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 completed and are included in Queensland Rail's FAR. The commissioning dates included in Fixed Asset Register reflect the AUC transfer forms which are being provided to the QCA.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and 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.
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.

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

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.04613 Formation strengthening

Formation repairs are part of a continuing program to manage formation issues on the West Moreton Network. Issues with formation on the West Moreton Network 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. 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 Network 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 Asset Management Plan 2015-16 (AMP) provided to the QCA with the submission of the 2015DAU. 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 5.5km 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 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. Queensland Rail has been progressively undertaking formation strengthening to deal with these legacy issues and manage maintenance costs.

Assessment Criteria	Queensland Rail Response
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS 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, very low risk of any change. Work is standard repetitive process (nothing unique) — ie scope will not change from that detailed in the funding submission and this scope was clear and specific. 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 business case and AUC forms for projects completed to 30 June 2019 are provide. A handover report and a completion report has still to be prepared.
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 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.[7]
The requirements of the codes developed by the Rail Industry Safety and Standards Board (RISSB) Limited ACN 105 001 465 in relation to the standards required for rail infrastructure in Australia	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes standards for formation as prescribed in CETS.

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

Assessment Criteria	Queensland Rail Response
The requirements of other relevant Australian design and construction standards Queensland Rail's design standards contained within the Safety Management System All relevant Law and the requirements of any Authority (including the Safety Regulator).	
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 being provided to the QCA.
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.

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.05171 Relay Recondition Program

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. The West Moreton System has been systematically upgraded in recent years targeting priority sections of track.

The Relay 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. The scope of works of this project includes upgrade of track structure to 50kg rail, medium duty concrete sleepers and A Grade ballast; and formation improvements comprised of construction of a new capping structure. [redacted] (recondition) was completed as part of this project at a cost of $6.878 million.

Project benefits include:

- improved safety via replacement with heavier track structure, reducing risks 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; improve top and line)
- improved track condition and track quality as measured by the Overall Track Condition Index
- track standards compliance via track realignment
- reduced future track maintenance requirements over reconditioned sections; and
- improved reliability and service delivery on the West Moreton System.

Assessment Criteria	Queensland Rail Response
Prudency of scope – criteria to be considered	
The need to accommodate what is reasonably required to comply with Access Agreements	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.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand;	Relay reconditioning was a project 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. The project is not affected by the announcement of the Inland Rail project.

Assessment Criteria	Queensland Rail Response
The age and condition of existing assets and the need for replacement capital expenditure projects	Issues with formation on the West Moreton System are longstanding and are the result of the original railway construction between 1865 and 1880. The WorleyParsons Report 2013 noted that West Moreton System formation is sub-standard even for a semi-heavy haul operation, and the track requires regular resurfacing (of the order of once every three to four months). The improvement from resurfacing in top and line soon deteriorates. 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. The scope of this project is to upgrade [redacted] defective track structure at various locations in the West Moreton System.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS 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	Relay recondition 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) — ie scope will not change from that detailed in the funding submission and this scope was clear and specific. Queensland Rail considered a 'do nothing' option, however this option risks rail wear and deformation causing derailment as well as increasing maintenance costs to remove large amounts of rail defects, wheel burn, squats, irregular wear and head rail flow. Reconditioning is the preferred option to reduce the risk of service disruption and safety risks by improving the network though the replacement of deteriorating track infrastructure with new infrastructure and targeting the replacement of below rail infrastructure that is known will have an increasing maintenance cost.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	Relay recondition 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 2019 are provide. A handover report and a completion report has still to be prepared.
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.

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 relay recondition 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 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 Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS 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 being provided to the QCA.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials	Delivery of this project is through a combination of internal and external resources. Internal Queensland Rail track and structure staff are being used for the construction labour and an external earthworks company is being used for machine hire and operation.

[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: 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.04728 Grandchester to Laidley Signal Cable

The purpose of this project was to replace life-expired aerial signal cable between Grandchester and Laidley with buried signal cable to maintain network reliability.

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	A reliable signalling system is a critical component of the provision of safe track services.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand	The Grandchester to Laidley Signal Cable replacement was a project 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.
The age and condition of existing assets and the need for replacement capital expenditure projects	The signal poles between Grandchester and Laidley are a mixture of timber and steel and the equipment in use is over 50 years old and life-expired, with assets prone to failure as: o the existing cable has many faulty cable cores o the insulation is cracked and perished in several areas o the poles are in very poor condition with major damage caused by white ants; and o the line is prone to failure in stormy weather. The project was planned to reduce maintenance hours spent repairing unreliable assets and assist in the speedy rectification of cable defects, minimising operational downtime.
Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	As an accredited Rail Transport Operator Queensland Rail has a comprehensive SMS. The SMS includes Signalling — Project Delivery Standard MD-14-40.
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	Replacement of signal cable 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) — ie scope will not change from that detailed in the funding submission and this scope was clear and specific. The option to replace like for like (aerial) cabling was not considered as it represents a major failure risk in the event of lightning strike. Suspending signalling cables from poles has been superseded by buried cables on all new works across the network. Other options considered included the installation of axle counters and Microtrax, and the direct burial of the signalling cable. Neither of these options were recommended.

Assessment Criteria	Queensland Rail Response
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The Grandchester to Laidley Signal Cable replacement 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 2019 are provide. A handover report and a completion report are also 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 specifically on the Grandchester to Laidley Signal Cable replacement.
Current and likely future usage levels	Grandchester to Laidley Signal Cable replacement 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.[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 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 Signalling — Project Delivery Standard MD-14-40.

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

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 Fixed Asset Register reflect the AUC transfer forms which are being provided to the QCA.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials	Design and delivery of this project was completed using Queensland Rail resources.
Where the QCA has approved a procurement strategy for the capital expenditure project under clause 6.1(b), the extent to which Queensland Rail has achieved compliance with that procurement strategy	Not applicable.
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.05243 Davidson Street Level Crossing CCTV

This project was to provide CCTV cameras at the level crossing to identifying boom gate issues and motorists not observing the road traffic rules.

Davidson Street/Cooyar Road Level Crossing is located on the West Moreton System on the Western Line in the Oakey central business district. The crossing is on the only road connecting the Oakey CBD to the Oakey Hospital and Oakey Army Aviation Base. These institutions generate a high level of road traffic in the morning and afternoon peak periods. The crossing is on the mine connection road through Oakey used by heavy vehicles traveling through the town. There is an active flashing light level crossing system in operation, but no CCTV coverage.

Davidson Street/Cooyar Road Level Crossing at Oakey has the highest frequency of near miss incidents for any level crossing on the West Moreton System. Despite Queensland Rail and TMR undertaking compliance work at the crossing and the Queensland Police Service (QPS) carrying out enforcement activities, there continues to be a high level of risk-taking by motorists at this crossing.

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	Not applicable, however as Rail Infrastructure Manager, Queensland Rail has a safety obligation for the operation of the rail line, so far as reasonably practical.
The extent of Reasonable Demand, and the need for new capital expenditure projects to accommodate that demand;	Davidson Street/Cooyar Road Level Crossing at Oakey has the highest frequency of near miss incidents for any level crossing on the West Moreton System. Despite Queensland Rail and TMR undertaking compliance work at the crossing and the QPS carrying out enforcement activities, there continues to be a high level of risk-taking by motorists at this crossing.
The age and condition of existing assets and the need for replacement capital expenditure projects	There is an active flashing light level crossing system, however, despite Queensland Rail and TMR undertaking compliance work at the crossing and QPS carrying out enforcement activities, there continues to be a high level of risk-taking by motorists at this crossing.

Assessment Criteria	Queensland Rail Response

Queensland Rail's obligations under any Laws, including health, safety and environmental Laws	The RSNL requires Queensland Rail, as a Rail Infrastructure Manager, to
	• identify and assess, so far as is reasonably practicable, risks to safety that may arise from railway operations carried out on or in relation to the manager's rail infrastructure because of, or partly because of—
	  ○ the existence of road infrastructure of a prescribed public road; or
	  ○ the existence or use of any rail or road crossing that is part of the road infrastructure of a public road; and
	• determine measures to manage, so far as is reasonably practicable, those risks; and
	• for the purpose of managing those risks—seek to enter into an interface agreement with the road manager of that road. (refer Safety Interface Coordination Standard MD-11-1324).
	Queensland Rail's SMS includes standards for level crossings Level Crossing Safety Standards — MD 10 115.

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 Toowoomba Regional Council, DTMR and local heavy vehicle transport companies and Queensland Rail established a joint working group to investigate ways of reducing the number of incidents at the crossing. Options considered have included road realignment and widening, crossing relocation, changes to traffic priorities and increased enforcement by the use of CCTV monitoring at the crossing. Most options were considered to be long term solutions that would take years to plan and fund. CCTV monitoring has been identified as the most cost-effective solution that can be implemented in the short term and a proven tool for identifying motorists not observing the road rules. The information will be passed on to the QPS as evidence in an investigation were a near miss has been reported by rail operators.
The extent to which the capital expenditure project was subjected to Queensland Rail's processes to evaluate and select proposed capital expenditure projects.	The installation of CCTV cameras 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 2019 are provide. A handover report and a completion report have also been completed.
The extent to which consultation has occurred with relevant stakeholders about the capital expenditure project.	The proposed capital expenditure for CCTV monitoring was the recommendation of a Toowoomba Regional Council, DTMR, local heavy vehicle transport companies and Queensland Rail joint working group to investigate ways of reducing the number of incidents at the crossing.
Prudency of standard – criteria to be considered	
The requirements of Rolling Stock Operators and what is reasonably required to comply with Access Agreements	The safety, health and wellbeing of Queensland Rail staff and train operators is at risk because of reckless behaviour on or near the tracks. A major workplace consideration is the physical injury and/or the mental trauma caused by collisions and near misses at level crossings, and the resulting impact on train drivers, their families, friends, and work colleagues.

Assessment Criteria	Queensland Rail Response
Current and likely future usage levels	Davidson Street/Cooyar Road Level Crossing at Oakey has the highest frequency of near miss incidents for any level crossing on the West Moreton System at current traffic volumes.

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).
	The RSNL requires Queensland Rail, as a Rail Infrastructure Manager, to
	• identify and assess, so far as is reasonably practicable, risks to safety that may arise from railway operations carried out on or in relation to the manager's rail infrastructure because of, or partly because of—
	  ○ the existence of road infrastructure of a prescribed public road; or
	  ○ the existence or use of any rail or road crossing that is part of the road infrastructure of a public road; and
	• determine measures to manage, so far as is reasonably practicable, those risks; and
	• for the purpose of managing those risks—seek to enter into an interface agreement with the road manager of that road. (refer *Safety Interface Coordination Standard MD-11-1324*).
	
	Queensland Rail's SMS includes standards for level crossings *Level Crossing Safety Standards — MD-10-115*.

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 being provided to the QCA.
The circumstances prevailing in the markets for: A. engineering, equipment supply and construction; B. labour; and C. materials	The project management and design work for this project were delivered internally, with a CCTV panel provider used for the installation.
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.

Other projects

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.[10]

In 2018-19, Queensland Rail is seeking approval for $2.015 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 Reports 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 no improve the service quality of the existing asset; with this maintenance undertaking to ensure the asset remains 'fit for purpose'.

10 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