

**Queensland Competition
Authority**

Report for Assessment of QR
Capital Projects 2006-07

Review of Cost

May 2008



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1. Executive Summary

This report is a commentary on the prudence of the costs of Queensland Rail's (QR's) capital projects commissioned in 2006-07 which QR is seeking to have included in its Regulatory Asset Base. The report is based on the information provided by QR to the Queensland Competition Authority (QCA).

The reasonableness of the cost of works has been assessed in accordance with the criteria outlined in QR's Access Undertaking.

Generally apart from certain specific cost element criteria, outlined in the body of the report the capital projects undertaken by QR are considered to meet the relevant cost criteria.

Particular projects where costs appear to be higher than expected include the Moura passing loop, Carborough Downs Spur and Isaac Plains spur. Clarification was received from QR during the course of the review that confirmed that particular issues lead to higher costs than would otherwise be expected in more "average" circumstances such as the topography at the location and the geographically interrupted nature of the work.



2. Purpose

The following assessment examines the prudence of the cost of capital projects commissioned by QR in 2006-07. The purpose of this assessment is to verify that the costs are reasonable for the scope and standard of the works undertaken, and that QR has appropriately managed the works with respect to environmental, service disruption and safety management

The assessment is based on the following terms of reference:

In assessing the reasonableness of the cost of works, the consultant must have regard to the assessment criteria set out in clause 2.3.4(b) of schedule FB of QR's approved Undertaking, which includes, where appropriate:

- » the level of such costs relative to the scale, nature, cost and complexity of the project;
- » the circumstances prevailing in the markets for engineering, equipment supply and construction;
- » QR's procurement policy approved by the QCA under clause 2.3.4(c) of the Undertaking.

In forming an opinion on the reasonableness of these costs, the consultant may also have regard to the manner in which QR has managed the capital works, including but not limited to the manner in which QR has balanced the needs of:

- » safety during construction and operation;
- » compliance with environmental requirements during construction and operation;
- » minimising disruption to the operation of train services during construction;
- » accommodating reasonable requests of access holders to amend the scope and sequence of works undertaken to suit their needs;
- » minimising whole of asset life costs including future maintenance and operating costs;
- » minimising total project cost which may at times not be consistent with minimising individual contract costs;
- » aligning other elements in the supply chain; and
- » meeting contractual timeframes and dealing with external factors

For each project an assessment has been undertaken on the basis of documentation (where made available) relating to:

- » Construction contracts
- » Construction method statements
- » Procurement policy
- » Completion reports and authorisation of expenditure
- » Post completion analysis



3. Reasonableness of Cost Commentary

3.1 General Comments

3.1.1 Cost Minimisation

As part of its normal procurement strategy QR routinely arranges construction of civil works through competitive tendering processes. This process is specifically evidenced in duplication works and spur construction wherever earthworks is required beyond simple maintenance activities as QR does not possess earthworks equipment or workforce. These civil works generally relate to earthworks, bridges, culverts and other structures. Yet rail works such as track and overhead electrification are carried out entirely by QR's own resources and are not subject to competitive tendering. Typically, rail works account for more than 60% of project costs. There is scope for further cost minimisation if more competitive forces were introduced to rail works. There is no evidence of QR's consideration of this other than in signalling where in some cases both signalling design and construction is tendered to the market place.

In 2000 & 2004 QR considered the supply of rail from a wide market of rail suppliers including from local and overseas suppliers. We note that since 2004 significant purchases of high quality Chinese rail is occurring in Australia with very significant cost savings, which would be difficult to ignore. Future rail contracts should consider these sources seriously. Overall, it would seem that QR is working to reduce supply costs in this area.

3.1.2 Construction Standard

QR applies a uniform standard of construction to all projects irrespective of the infrastructure's service life. Service life is not a parameter that is considered in their standards. Some of the balloon loops and rail spurs service mines with a life expectancy of just 10 or 15 years. In these circumstances lower standards may be quite satisfactory and appropriate. There is no evidence in the documentation of QR considering an easing of certain standards to lower capital costs. Potential areas in which lesser standard may be feasible include capping layer, sleeper type, and ballast depth amongst others.

3.2 Major Projects

3.2.1 Bluff to Blackwater Duplication

The Bluff to Blackwater Duplication project involves the duplication of 15.5 km of electrified track including associated civil, overhead and signalling infrastructure on the Central Line of the Blackwater System.



Table 1 Bluff to Blackwater Duplication

Requirements	Comments
Level of costs relative to scale, nature and complexity of project	The overall order of costs appears reasonable given the scale and complexity of the project when compared to benchmarks from rail projects of similar extent and the prevailing market conditions. In addition to new signalling infrastructure for the duplicated section of track, the scope includes upgrading of signalling on the existing track plus substantial bridgeworks (over 200m long). Assumed rates for bridgework and the derived rates for trackwork, signalling and overhead appear to be line with industry rates.
Prevailing market circumstances for engineering, equipment supply and construction	At the time of construction the prevailing market conditions were expensive with a high demand for construction services and construction materials and limited supply.
Safety during construction and operation	The project completion report does not specifically comment on the project's safety performance or achievement of the objectives. As there is no mention in the report of major safety incidents or injuries so it is concluded that QR managed the capital works appropriately from a safety perspective i.e. acceptably balancing the needs of safety with construction.
Environmental requirements	While the Project Plan submitted by QR points to an Environmental Plan the project completion report does not specifically comment on the achievement of the project's environmental objectives. There is no mention in the report of major environmental incidents or non-conformances, so it is assumed that QR appropriately managed the capital works from an environmental perspective, i.e. acceptably balancing environmental compliance and competing demands of construction.
Minimising disruption to train operations	There is a clear objective in the project plan to minimise track possessions. While the project completion report does not comment on the outcome of this particular goal, there is no mention in the report of major delays or disruptions. It is concluded therefore that QR appropriately managed the capital works in relation to train operations acceptably balancing the demands of construction with minimisation of rail disruptions.



Requirements	Comments
Reasonable requests of access holders to amend scope or sequence	<p>There are no hold points in the documentation relating to possible amendments by customers to either the scope or work sequence. The risk register does not include a contingency for or processes to deal with scope creep/modification by stakeholders.</p> <p>There is no evidence of consultation outcomes in the documentation other than an indication that the project scope received agreement from the Blackwater Customer Group following release of the 2006 Coal Master Plan.</p>
Minimising whole of asset life costs	<p>The assets were constructed to QR's standards and are therefore considered to achieve a reasonable balance in terms of whole of life asset costs. One area where there is an opportunity to further reduce maintenance costs is in the use of head hardened rail in lieu of standard carbon rail. Head hardened rail offers longer life and reduced wear but at higher cost. QR is aware of the benefits of head hardened rail but there is no evidence in the documentation of QR's consideration of this alternative.</p>
Minimising total project cost	<p>The project plan indicates that certain packages of construction will be undertaken by providers external to QR and that procurement of these services will be carried out in accordance with QR's Contracting Process Handbook and other relevant QR policies and procedures. It cannot be determined from the documentation supplied whether or not the nominated packages were competitively tendered.</p> <p>It is evident from the project scope that there is potential to competitively tender other works and to thus reduce costs.</p> <p>QR believes that maintaining an internal skills base is an effective strategy to cope with 'fluctuating' external supply conditions. QR claims to have informally benchmarked its costs against private suppliers.</p>
Meeting contractual timeframes and dealing with external factors	<p>The project completion report indicates that the project was delivered 4 weeks ahead of schedule even with the existence of external factors threatening to delay the project such as resource limitations and inclement weather.</p>



3.2.2 RG Tanna Terminal

The RG Tanna Terminal project involves the construction of a 3rd coal unloader loop and an extension of the existing 2nd coal unloader loop at the RG Tanna coal terminal. The works forming the 2006-07 claim are the 3rd coal unloader loop. Extension of the 2nd loop was carried out and claimed in the 2005-06 financial year.

Table 2 RG Tanna Terminal

Requirements	Comments
Level of costs relative to scale, nature and complexity of project	<p>The portion of the project relevant to the 2006-07 claim relates to the construction of the 3rd coal unloader loop. It is noted that some of the costs of the project such as design costs were expended and claimed in previous years. Greater clarity of scope around its current claim would have been beneficial had QR detailed the exact scope of works to which the current claim relates.</p> <p>Overall the cost of the project including preceding years costs appear to be within industry rates relative to the scale, nature and complexity of the project.</p>
Prevailing market circumstances for engineering, equipment supply and construction	<p>The prevailing market conditions in the rail sector for engineering, material supply and services at time of construction were difficult with high competition for labour and materials.</p>
Safety	<p>The project review report submitted by QR does not specifically deal with the project's safety performance or achievement of its safety objectives. However there is no mention in the report of major safety incidents or injuries and it is therefore assumed that QR managed the capital works appropriately from a safety perspective, balancing the needs of safety and construction.</p>
Environmental requirements	<p>The documentation submitted by QR is not explicit with respect to Environmental Planning. One of the general project implementation objectives outlined in the Project Plan is that "the works are constructed in a safe manner and with minimum harm to the environment".</p> <p>The Project review report does not specifically comment on environmental performance however, as there is no mention of major environmental incidents or non-conformances, it is assumed that QR has appropriately managed the capital works in terms of environmental requirements, balancing environmental compliance and demands of construction.</p>



Requirements	Comments
Minimising disruption to train operations	<p>The documentation submitted by QR is not explicit with respect to disruption planning. One of the general project implementation objectives outlined in the Project Plan is that “the works [are constructed] in such a manner as to minimise disruption to existing coal unloading and stockpiling operations at the RG Tanna Coal Handling Terminal”.</p> <p>The Project review report does not comment on the achievement of this particular objective and there is no mention in the report of major delays or disruptions. It is therefore concluded that QR appropriately managed the capital works in terms of service disruption, balancing construction and minimising disruption to services.</p>
Reasonable requests of access holders to amend scope or sequence	<p>The Project Plan states that “the scope of this project was accepted by the Gladstone Customer Group (export coal companies in the Blackwater and Moura Systems) as part of projects submitted in the 2006 Coal Master Plan document...” Yet the early elements of the project, namely the extension of the 2nd coal unloader was commissioned in 2005-06 and thus presumably did not have the endorsement of the customer group at that time.</p> <p>The documentation submitted by QR does not outline processes in which Customers are given an opportunity to have input to amend either the scope or work sequence. There are no hold points evident in the documentation to accommodate reasonable requests of access holders.</p>
Minimising whole of asset life costs	<p>The project review report states that the infrastructure was constructed to QR’s standards and is therefore assessed as having achieved a reasonable balance in terms of whole of life asset costs. It is noted that QR adopted the use of head hardened rail - a measure which will prolong rail life expectancy and promote reduced asset life costs on the sharply curved sections of the loop road.</p>
Minimising total project cost	<p>The project plan indicates that for expediency, certain elements of the civil scope (outside the earthworks) will be assigned directly to Central Queensland Port Authority’s civil contractor. It is not outlined in the plan how QR will ensure that it receives value for money for these components of work.</p>



Requirements	Comments
	It is evident from the project scope that there is opportunity for other works to be competitively tendered to potentially further reduce costs.
Meeting contractual timeframes and dealing with external factors	The Project Plan notes that the CQPA requested construction of the 3rd coal unloading pit and rail unloading loop by January 2006. The documentation provided indicates an anticipated commissioning date of July 2005. Commissioning of the 3 rd loop took place in October 2006.

3.2.3 Moura Passing Loop

The Moura Passing Loop project involves the extension of 7 passing loops between Stirrat and Belleen on the Moura Line. The purpose of the new loops is to allow operation of longer trains (i.e. trains with a consist length of 1685 m - similar to train lengths on the Blackwater system. Trains on the Moura line are currently 965m long).

Table 3 Moura Passing Loop

Requirements	Comments
Level of cost relative to scale, nature and complexity of project	The cost of the earthworks appears to be much higher than what would reasonably be expected for construction of 5km of open track. It is assumed that there is a level of complexity not evident in the documentation such as difficult terrain which justifies the very high rate adopted.
Prevailing market circumstances for engineering, equipment supply and construction	The prevailing market conditions in the rail sector for engineering, material supply and services at the time of construction were difficult with high competition for labour and materials. It is generally acknowledged that in the rail sector construction services are in short supply.
Safety	<p>The project plan sets out some general objectives in relation to project implementation namely completion of the works in a safe manner and nominates as project deliverables satisfactory safety validation and certifications.</p> <p>Documentation relating to project review is silent on the achievement of safety objectives. Safety statistics, incident reports and relevant documentation which should be part of a project completion report were not available for review.</p>



Requirements	Comments
Environmental requirements	<p>A general project objective outlined in the Project Plan is that “the works are constructed in a safe manner and with minimum harm to the environment”. Whether the project achieved this objective cannot be determined from the documentation provided.</p> <p>A Project Completion Report remains to be finalised. Other documentation relating to project review does not comment on environmental performance such as details of incidents or non-conformances nor does it tie these back to specific environmental requirements.</p> <p>Until a project completion report is submitted we are unable to determine how appropriately QR has managed the capital works in terms of environmental management, i.e. how well it has balanced environmental compliance and the demands of construction.</p>
Minimising disruption to train operations	<p>The Project Plan indicates that one of the general implementation objectives is to “minimise disruption to existing rail operations and services”. Whether the project achieved this objective cannot be determined from the documentation provided.</p> <p>A Project Completion Report remains to be finalised and until this report is submitted we are unable to verify how appropriately QR has managed the capital works in relation to service disruption. Other documentation relating to project review does not comment on disruption to rail services</p>
Reasonable requests of access holders to amend scope or sequence	There is no documentation as to the consultation process.
Minimising whole of asset life costs	<p>The project review report states that the infrastructure was constructed to QR’s standards and is therefore assessed as having achieved a reasonable balance in terms of whole of life asset costs. However evidence in relation to this, namely compliance certificates and other quality documentation have not been sighted and remains to be verified.</p>
Minimising total project cost	<p>The Completion Report indicates tight timeframes forced some practices that were not planned such as starting the signal construction before the design and earthworks procurement delays. These events are generally not good in getting value for money but overall the project</p>



Requirements	Comments
	was within estimates so no great problems ensued. The use of internal resources without check tenders for some items does raise the issue of internal competitiveness. But as has been noted in other documentation, external resources used for previously internal work results in higher costs. This is no doubt due to the small nature of the works, hurried procurement and also questions whether the full cost of supplying internally is being captured.
Meeting contractual timeframes and dealing with external factors	The Project Completion Report, written in two weeks of February 2008 is by far the best report this review encountered. However, the report should have been written immediately following key milestones in the project to capture the instantaneous reflections rather than an “edited” reflection. The report indicated no major issues, met timeframes and budget and overall was a successful project. Some lessons learned are noted.

3.2.4 Carborough Downs Spur (Goonyella)

The Carborough Downs Spur project involves the construction of a 4.7 km long rail spur and balloon loop off the Goonyella main line between Coppabella and Wotonga. The new loop will service two new underground coal mines at Broadlea North and Carborough Downs.

Table 4 Carborough Downs Spur

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost is much higher than what would be expected for plain track. Advice received by email from QR indicates that the terrain was very difficult with “The topography into both Carborough Downs and Isaac Plains includes a number of creek and stream crossings which required deep cuts and large fill embankments”, in which case those costs are realistic. Since the costs were incurred as a result of extraordinary factors they do not represent a benchmark for any subsequent works.
Prevailing market circumstances for engineering, equipment supply and construction	The prevailing market conditions in the rail sector for engineering, material supply and services at the time of construction were difficult with high competition for labour and



Requirements	Comments
Safety	<p>materials. It is generally acknowledged that in the rail sector construction services are in short supply.</p> <p>The project plan sets out some general objectives in relation to project implementation namely completion of the works in a safe manner and nominates as project deliverables satisfactory safety validation and certifications.</p> <p>Documentation relating to project review is silent on the achievement of safety objectives. Safety statistics, incident reports and relevant documentation which should be part of a project completion report were not available for review.</p>
Environmental requirements	<p>A general project objective outlined in the Project Plan is that “the works are constructed in a safe manner and with minimum harm to the environment”. Whether the project achieved this objective cannot be determined from the documentation provided.</p> <p>A Project Completion Report remains to be finalised. Other documentation relating to project review does not comment on environmental performance such as details of incidents or non-conformances nor does it tie these back to specific environmental requirements.</p> <p>Until a project completion report is submitted we are unable to determine how appropriately QR has managed the capital works in terms of environmental management.</p>
Minimising disruption to train operations	<p>The Project Plan indicates that one of the general implementation objectives is to “minimise disruption to existing rail operations and services”. Whether the project achieved this objective cannot be determined from the documentation provided.</p> <p>A Project Completion Report remains to be finalised and until this report is submitted we are unable to verify how appropriately QR has managed the capital works in relation to service disruption. Other documentation relating to project review does not comment on disruption to rail services</p>
Reasonable requests of access holders to amend scope or sequence	<p>Documentation provided by QR states that Customer approval of the project scope is evidenced by executed deeds and other agreements although these were not provided</p>



Requirements	Comments
	<p>for review.</p> <p>What input other access holders had into the project scope or the ability of access holders to amend scope or work sequence is not clear. There are no details of wider consultation beyond the CDJV (customer) and internal QR parties. There are no details of whether or not the scope was amended at CDJV's request during the course of construction and if so how reasonable CDJV found this process.</p>
<p>Minimising whole of asset life costs</p>	<p>The mine life is stated in the QR documentation as being 20 years. As the rail infrastructure is expected to have a greater than 20 year service expectancy¹, there is potential for some standards of construction to be eased to provide a more economic solution. Possible areas for reduced standard (and thus lower cost) include lower standards for capping, ballast and sleeper type.</p>
<p>Minimising total project cost</p>	<p>The project plan indicates that all work other than the formation works will be undertaken internally within QR. Certain elements of the project scope can be competitively tendered to minimise capital costs. However, subsequent advice indicates signalling and overhead work was subsequently provided externally with a resulting higher cost. Small work scope size and hurried procurement would lead to high costs.</p>
<p>Meeting contractual timeframes and dealing with external factors</p>	<p>Documentation indicates that the project was commissioned in July 2006. Without the customer contract agreement it is not known whether this date met QR's contractual timeframe.</p>

3.2.5 Isaac Plains Spur (Goonyella)

The Isaac Plains Spur project involves the construction of a 4.8 km long rail spur and balloon loop off the Goonyella main line between Coppabella and Wotonga. The new loop will service an underground coal mine at Isaac plains in the Central Bowen Basin

¹ Although the documents state that the track has a design life of twenty (20) years our belief is that at 1.5mtpa (and if QR applies its usual standards of track construction) the infrastructure service life is expected to be greater than 20 years



Table 5 Isaac Plains Spur (Goonyella)

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost is much higher than what would be expected for plain track. Advice received by email from QR indicates that the terrain was very difficult with "The topography into both Carborough Downs and Isaac Plains includes a number of creek and stream crossings which required deep cuts and large fill embankments", in which case those costs are realistic. Since the costs were incurred as a result of extraordinary factors they do not represent a benchmark for any subsequent works.
Prevailing market circumstances for engineering, equipment supply and construction	The prevailing market conditions in the rail sector for engineering, material supply and services at the time of construction were difficult with high competition for labour and materials from other rail infrastructure projects. It is generally acknowledged that in the rail sector construction services in 2006-07 were in short supply.
Safety	The Project Plan points to a Safety Plan but a post completion report was not provided. Therefore we are unable to report on the success of the safety plan.
Environmental requirements	<p>A Project Completion Report remains to be finalised. Other documentation relating to project review does not comment on environmental performance such as details of incidents or non-conformances nor does it tie these back to specific environmental requirements.</p> <p>Until a project completion report is submitted we are unable to determine how appropriately QR has managed the capital works in terms of environmental management, i.e. how well it has balanced environmental compliance and the demands of construction.</p>
Minimising disruption to train operations	<p>The Project Plan indicates that one of the general implementation objectives is to "minimise disruption to existing rail operations and services". Whether the project achieved this objective cannot be determined from the documentation provided.</p> <p>A Project Completion Report remains to be finalised and until this report is submitted we are unable to verify how appropriately QR has managed the capital works in relation to service</p>



Requirements	Comments
Reasonable requests of access holders to amend scope or sequence	<p>disruption. Other documentation relating to project review does not comment on disruption to rail services</p> <p>Documentation provided by QR states that Customer approval of the project scope is evidenced by executed deeds and other agreements although these were not provided for review.</p> <p>What input other access holders had into the project scope or the ability of access holders to amend scope or work sequence is not clear. There are no details of wider consultation beyond the IPJV (customer) and internal QR parties. There are no details of whether or not the scope was amended at IPJV's request during the course of construction and if so how reasonable IPJV found this process.</p>
Minimising whole of asset life costs	<p>The mine life is stated in the QR documentation as being 20 years. As the rail infrastructure is expected to have a greater than 20 year service expectancy², there is potential for some standards of construction to be eased to provide a more economic solution. Possible areas for reduced standard (and thus lower cost) include lower standards for capping, ballast and sleeper type.</p>
Minimising total project cost	<p>There no details provided of QR's procurement strategy for acquisition of products and/or services from sources external to QR. Thus no comment can be made on QR's effort at minimising total project cost except that it is noted that open tender procedures are usually followed. Whether this type of procurement gives best value for money has not been detailed.</p>
Meeting contractual timeframes and dealing with external factors	<p>QR has stated that timeframes were met. The Project Completion Report would confirm this. As this report has not been provided, we are unable to confirm if contractual timeframes were met.</p>

² Although the documents state that the track has a design life of twenty (20) years our belief is that at 1.5mtpa (and if QR applies its usual standards of track construction) the infrastructure service life is expected to be greater than 20 years



3.2.6 Minerva Spur (Blackwater)

The Minerva Spur project is not currently part of the Central Queensland Coal Region, however, QR is seeking to have the spur included in its Regulatory Asset Base.

The Minerva Coal Rail project was commissioned in December 2005 and involved the construction of a new balloon loop (3.62 km long) on the Springsure branch line. The loop serves an open-cut coal mine supplying around 2.5 mtpa of coal for the export market.

The Project also included upgrading of the existing railway from Burngrove to Wurba to allow operation of 20 tonne axle loads and to accommodate the additional rail traffic as result of the mine operation. The project scope involved upgrading of the track and strengthening of bridge and culvert structures where required. A major component of the line upgrade involved an upgrade of the Comet River Bridge.

Table 6 Minerva Spur (Blackwater)

Requirements	Comments
Level relative to scale, nature and complexity of project	The overall order of costs appears reasonable given the scale of the project and the market conditions. In addition to construction of a new loop the project included upgrading of the existing track between Burngrove and Wurba to allow operation of 20 tonne axle loads plus strengthening of a major bridge and other minor bridge and culvert structures. The rates for trackwork and earthworks agree with general industry rates.
Prevailing market circumstances for engineering, equipment supply and construction	The prevailing market conditions in the rail sector for engineering, material supply and services at the time of construction were difficult with high competition for labour and materials from other rail infrastructure projects. It is generally acknowledged that in the rail sector construction services in 2005 were in short supply.
Safety	The Project Safety Plan was not available for inspection. The post completion report does not specifically comment on the project's safety performance or includes recommended safety improvements or lessons learnt. Without further information from QR in relation to safety performance we are unable to assess QR's safety management of the project.
Environmental requirements	The Project environmental management plan was not available for inspection. The post completion report provided does not specifically comment on the project's environmental performance or includes recommended environmental improvements or lessons learnt.



Requirements	Comments
	<p>We are unable to determine from the information provided how appropriately QR has managed the capital works in terms of environmental management, i.e. how well it has balanced environmental compliance and the demands of construction.</p>
<p>Minimising disruption to train operations</p>	<p>The information provided for review makes no specific comments on the performance of the project in relation to train disruption. QR's management of the project in this area therefore cannot be assessed.</p>
<p>Reasonable requests of access holders to amend scope or sequence</p>	<p>Documentation provided by QR states that Customer approval of the project scope is evidenced by the Customer's execution of an Access Facilitation Deed although this was not provided for review.</p> <p>What input other access holders had into the project scope or the ability of access holders to amend scope or work sequence is not clear. There are no details of wider consultation beyond the mine owner and internal QR parties. There are no details of whether or not the scope was amended at the customer's request during the course of construction and if so how reasonable the customer found this process.</p>
<p>Minimising whole of asset life costs</p>	<p>The mine life is stated in the documentation as being 11 years. With this service expectancy, there is potential for some construction standards to be eased to provide a more economic solution and this has occurred for the mainline upgrade.</p>
<p>Minimising total project cost</p>	<p>Upgrading of the Comet river bridge was undertaken via competitive tendering so there has been work to minimise total project cost. There is potential to competitively tender other areas of work. It is not apparent whether QR has explored any other avenues such as track and signalling.</p> <p>The mine life is estimated at just 11 years. Use of serviceable materials particularly in the spur and lower standards for construction is another opportunity to reduce costs and while this has occurred with the mainline upgrading the spur construction detailed engineering was not inspected and therefore we are unable to conclude whether lower standards were adopted. In the overall project context, the small incremental cost saving from a relatively</p>



Requirements	Comments
Meeting contractual timeframes and dealing with external factors	minor part of the project is not material. The project completion report confirms that the client agreed timeframes for QR's component of the project were met and indicates that a 3 month delay in the original forecast completion date was due to a delay by the customer in completing its earthworks.



3.3 Minor Asset Replacement Projects

3.3.1 Coal System Turnout Upgrade Project - Stage 1

The coal system turnout upgrade project involves the replacement of existing life expired 47kg/m and 53kg/m rail bound manganese crossings with new 60kg/m swing nose crossings. The current works are a continuation of a replacement program which commenced in previous years.

Table 7 Coal System Turnout Upgrade Project

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost of the turnout replacements appears reasonable and is consistent with turnout replacement costs generally in the industry.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	A post completion report for the turnouts replaced in 2006-07 year is not available for review so an assessment of QR's safety management cannot be made. However, QR has a safety management plan in place, so it would appear that it is seeking to manage the capital works in such a way as to balance the needs of safety and construction.
Environmental requirements	It appears that QR has no environmental management plan for this project. Given its nature the environmental risk around this project is expected to be minimal.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption. QR's management in this particular area therefore cannot be assessed.
Reasonable requests of access holders to amend scope or sequence	It is not possible to determine from the documentation provided whether QR's customers agreed to or had input into the specifics of the project scope. There is also no information to indicate what ability access holders had to amend the scope.
Minimising whole of asset life costs	The standard of QR's construction is expected to deliver an efficient whole of life cost outcome.
Minimising total project cost	It is understood that this work was not subject



	to competitive tendering. It is not apparent whether QR explored this opportunity.
Meeting contractual timeframes and dealing with external factors	There is no information to indicate what QR's agreed timeframes were or whether QR met them, however QR's funding submission indicates that all turnout replacements were targeted for completion by June 2006. So it would appear that QR's customer commitment might not have been met.

3.3.2 Goonyella System Formation Strengthening (Stage 2)

The Goonyella System Formation Strengthening project involves strengthening of 3.3km of failed railway formation in various areas in the Goonyella System.

The current project is a continuation of a program commenced in earlier years.

Table 8 Goonyella System Formation Strengthening (Stage 2)

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost of formation strengthening appears reasonable.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	A post completion report for the works undertaken is not available so an assessment of QR's safety management cannot be made. There is no evidence of a safety management plan in place for this project.
Environmental requirements	It appears that QR has no environmental management plan for this project.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption. QR's management in this particular area therefore cannot be assessed.
Reasonable requests of access holders to amend scope or sequence	It is not possible to determine from the documentation provided whether QR's customers agreed to or had input into the specifics of the project scope. There is also no information to indicate what ability access holders had to amend the scope.
Minimising whole of asset life costs	The standard of QR's construction is expected to deliver an efficient whole of life cost outcome.



Requirements	Comments
Minimising total project cost	It is unclear from the documentation whether this work was subject to competitive tendering. There is no evidence to suggest that QR explored this opportunity.
Meeting contractual timeframes and dealing with external factors	There is no information to indicate what QR's agreed timeframes were or whether QR met them, however QR's project plan indicates a broad completion date of 2011 for all strengthening work.

3.3.3 Goonyella System Rail Upgrade

The Goonyella System Rail Upgrade project involves the replacement of 36.4 km of 53 kg/m track with 60 kg/m between Hay Point and Coppabella and Coppabella and Gregory Junction on the Goonyella system.

The current project is a continuation of a program commenced in the previous year.

Table 9 Goonyella System Rail Upgrade

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost of the rail upgrading work appears reasonable.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	A post completion report for the works is not available so an assessment of QR's safety management cannot be made. However, QR has a safety management plan in place, so it would appear that it is seeking to manage the capital works in such a way as to balance the needs of safety and construction.
Environmental requirements	It appears that QR has no environmental management plan for this project though environmental risk is considered to be low.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption. QR's management in this particular area therefore cannot be assessed.
Reasonable requests of access holders to amend scope or sequence	It is not possible to determine from the documentation provided whether QR's customers agreed to or had input into the



Requirements	Comments
	specifics of the project scope. There is also no information to indicate what ability access holders had to amend the scope.
Minimising whole of asset life costs	The standard of QR's construction is expected to deliver an efficient whole of life cost outcome.
Minimising total project cost	It is unclear from the documentation whether this work was subject to competitive tendering. There is no evidence to suggest that QR explored this opportunity.
Meeting contractual timeframes and dealing with external factors	QR's funding submission indicates that completion of rail replacements was planned by 2006-07. The total amount claimed to date including the current claim is around 75% of the allocation so it would appear that QR's committed timeframe has not been met.

3.3.4 Rockhampton to Burngrove: Omnibus Upgrade

The Rockhampton to Burngrove Omnibus Upgrade project involves the replacement of life expired optical fibre transmission equipment with modern equipment

Table 10 Rockhampton to Burngrove: Omnibus Upgrade

Requirements	Comments
Level relative to scale, nature and complexity of project	Based on the documentation, it is not possible to comment on the prudence of the cost. Further detailed information is required on the scope of works.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	A post completion report for the works is not available so an assessment of QR's safety management cannot be made. There is no mention of a safety management plan in the documentation provided.
Environmental requirements	It appears that QR has no environmental management plan for this project.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption. An assessment therefore cannot be made of QR's management of train disruptions.



Requirements	Comments
Reasonable requests of access holders to amend scope or sequence	It cannot be determined from the documentation provided whether QR's customers agreed to or had input into the specifics of the project scope. There is also no information to indicate what ability access holders had to amend the scope.
Minimising whole of asset life costs	The standard of QR's construction is expected to deliver an efficient whole of life cost outcome. Upgrading of life expired and outmoded equipment will deliver cost benefits in the long term.
Minimising total project cost	It is unclear from the documentation whether this work was subject to competitive tendering. There is no evidence to suggest that QR explored this opportunity.
Meeting contractual timeframes and dealing with external factors	QR's funding submission indicated a projected completion date of December 2006. So it would appear that QR's committed timeframe has been met.



3.4 Minor System Enhancement Projects

3.4.1 LED Signal Replacement (Commercial System)

The LED Signal Replacement project involves the replacement of all mainline and ground shunt incandescent signals with Light Emitting Diodes (LEDs). The project excludes Junction Route Indications (JRI) and subsidiary shunt signals.

Table 11 LED Signal Replacement (Commercial System)

Requirements	Comments
Level relative to scale, nature and complexity of project	The cost of the signal display replacement work appears reasonable.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	A post completion report for the works is not available so an assessment of QR's safety management cannot be made. However, QR has a safety management plan in place, so it would appear that it is seeking to manage the capital works in such a way as to balance the needs of safety and construction.
Environmental requirements	It appears that QR has no environmental management plan for this project. However, environmental risk on this project is considered low.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption. QR's management of train disruptions cannot be assessed.
Reasonable requests of access holders to amend scope or sequence	It cannot be determined from the documentation provided whether QR's customers agreed to or had input into the specifics of the project scope. There is also no information to indicate what ability access holders had to amend the scope.
Minimising whole of asset life costs	The standard of QR's construction is expected to deliver an efficient whole of life cost outcome. Upgrading of incandescent signals with light emitting diodes should deliver cost benefits in the long term.
Minimising total project cost	It is unclear from the documentation whether this work was subject to competitive tendering. There is no evidence to suggest that QR



Requirements	Comments
	explored this opportunity.
Meeting contractual timeframes and dealing with external factors	QR's funding submission indicated a projected completion date of June 2007. The current completion date has been revised to September 2008, so it would appear that QR's committed timeframe has not been met.

3.4.2 Windah – Grangeleigh

This project involves the duplication of track and associated infrastructure between Windah and Grangeleigh in the Blackwater system. The project was commissioned and claimed in 2005-06. The current claim relate to costs incurred post commissioning. There are no details provided on the nature of these costs.

Table 12 Windah – Grangeleigh

Requirements	Comments
Level relative to scale, nature and complexity of project	There is no detail provided on the nature of the works relating to the current claim. QR's spreadsheet showing labour, materials and other elements does not indicate the purpose of the expenditure.
Prevailing market circumstances for engineering, equipment supply and construction	Prevailing market conditions for engineering, material supply and construction services at the time of construction were considered to be tight in the rail sector.
Safety	There is no detail provided on the nature or the safety performance of the works relating to the current claim.
Environmental requirements	There is no detail provided on the nature or the environmental performance of the works relating to the current claim.
Minimising disruption to train operations	There is no detail provided on the nature of the works or their performance with respect train disruptions.
Reasonable requests of access holders to amend scope or sequence	There is no detail provided on the nature of the works relating to the current claim.
Minimising whole of asset life costs	There is no detail provided on the nature of the works relating to the current claim.
Minimising total project cost	There is no detail provided on the nature of the works relating to the current claim.
Meeting contractual timeframes and dealing with external factors	QR's contractual commitment was met in the previous year



3.4.3 Server Connectivity RC1

The Server Connectivity RC1 project involves the upgrading of QR's data communications network in the 'RC1' building. The current data communications network operates on life expired equipment, which has limited bandwidth, and is no longer supported either in hardware or software. The upgrading work involves the provision of Enterprise Gigabit switches to the core of the communications network.

The project received QR's internal approval in February 2005.

Table 13 Server Connectivity RC1 Project

Requirements	Comments
Level relative to scale, nature and complexity of project	Without access to QR's tender and other procurement documentation, we cannot make an accurate assessment of the reasonableness of the cost of this project. However, the project documentation indicates that the infrastructure upgrade was delivered through a competitively tendered contract for the supply and installation of proprietary software and hardware.
Prevailing market circumstances for engineering, equipment supply and construction	Market conditions for the supply of telecommunications equipment in 2006-07 year were considered to be normal.
Safety	Safety management requirements in the execution of this project are not considered to be significant.
Environmental requirements	Environmental management requirements in the execution of the project are not considered to be significant.
Minimising disruption to train operations	The information provided makes no specific comments on the performance of the project in relation to train disruption, thus QR's management in this respect cannot be assessed. However, it is highly unlikely that this project directly impacted train running.
Reasonable requests of access holders to amend scope or sequence	QR's customers appear to have had no input into the project scope (and it would seem no real need to) as the project deals with internal QR infrastructure facilitating QR's management of but not directly part of the CQCR network.
Minimising whole of asset life costs	The project is expected to deliver an efficient whole of life cost outcome as the upgraded infrastructure provides for improved performance, and reduced maintenance costs.



Requirements	Comments
Minimising total project cost	The project documentation indicates that QR competitively tendered the supply of switching equipment and thus aimed to minimise project cost.
Meeting contractual timeframes and dealing with external factors	QR's funding submission indicates an anticipated project completion of Feb 2006. Inclusion of the project in the 2006-07 claim would indicate that the project was not delivered to QR's initial timeframe.



4. Conclusion

Generally, QR's capital projects, although at the upper end of the comparable benchmarks in some instances, appear to be prudent in their cost. It is acknowledged that in 2006-07 demand for engineering, materials and construction services was high throughout industry.

QR appears to have systems in place to manage safety and environmental requirements.

There is no evidence to show that QR has considered competitive tendering on some of its works particularly track and telecommunication which together form a significant component of the cost on most projects.

In many cases post completion reports are absent making a determination on QR's compliance with certain criteria impossible, however it would be reasonable to assume based on the other projects for which post completion reports are available that QR's capital submission is generally compliant.

Overall, the cost of the projects commissioned in 2006-07, which QR is seeking to have included in its regulatory asset database, appear prudent and within industry expectations.



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