# 1. Introduction

## 1.1 Project background

To cater for increased and new coal tonnages from existing and new coal mines, QR Limited (QR) is proposing a major expansion of its rail network in the region to the northwest of Gladstone. The Project, known as the Moura Link - Aldoga Rail Project (MLARP), will include the construction of a new rail corridor (Moura Link), new rollingstock maintenance and provisioning facility (Aldoga Rail Yard) and the expansion of the existing rail corridor (North Coast Line). Within this EIS the term "Project" refers to all rail and supporting infrastructure associated with the MLARP. These works will be developed in parallel to and service a number of facilities, including the proposed Wiggins Island Coal Terminal (WICT), located at the Port of Gladstone.

QR has examined a number of alternatives prior to adopting the proposed rail infrastructure. These initial studies identified that rail provisioning and rollingstock maintenance facilities should be located in the vicinity of the WICT to provide the lowest cost option. This option was assessed in detail during the WICT Environmental Impact Statement (EIS) process.

During the WICT EIS process (consultation phase) there was community opposition to transporting coal to the WICT through existing and growing rural residential areas along the pre-existing Moura Short Line (MSL). The WICT Supplementary EIS proposed a corresponding reduction in the scope of the WICT rail works. The WICT rail works now include only rail loops to service the terminal and the quadruplication of the North Coast Line (NCL), in the section between the new rail loops and the north-western edge of the Mount Stowe State Forest (just east of Yarwun township).

The WICT Supplementary EIS also proposed:

- Relocation of rollingstock maintenance yard and provision facilities to the Gladstone State Development Area (GSDA) at Aldoga, and
- Construction of a new rail line from the MSL to connect to the western end of the proposed rollingstock maintenance yard.

It was also decided to address the revised rail infrastructure project under a separate environmental impact assessment process.

The Gladstone Land, Port, Rail and Road Infrastructure Study (being undertaken at the same time as the WICT EIS) raised the possibility of providing a single rail provisioning and rollingstock maintenance facility south of the township of Mount Larcom to service the GSDA and existing and future developments within the Port of Gladstone.

With consideration to the outcomes of the WICT EIS and the land, port, rail and road infrastructure study, QR has revised the concept design to the rail infrastructure assessed in this EIS.

## 1.2 EIS process

On 26 September 2007 the Coordinator-General (CG) declared the Project a 'significant project' pursuant to the *State Development and Public Works Organisation 1971* for which an EIS was required.

The CG issued the draft Terms of Reference (ToR) for the EIS for community and stakeholder feedback in January 2008. The final ToR was issued in March 2008 (refer Appendix A1).

This EIS provides an assessment of potential impacts (both positive and negative) on the environment as a result of the construction and operation of the Project. A cross-reference of the ToR requirements with the EIS findings that address the requirements is included as Appendix A2.

The Project was determined "not a controlled action" under the *Environment Protection and Biodiversity Conservation Act 1999* on 7 December 2007 (refer Appendix A3).

This EIS has been prepared to facilitate public and agency review of the Project. It is intended to provide sufficient information to facilitate the following project approvals:

- EIS approval under the *State Development and Public Works Organisation Act 1971*
- Land use approval under the GSDA Development Scheme
- Development Permit for Material Change of Use for Construction and Operational Environmental Relevant Activities (ERAs)

This EIS has been divided into two volumes consisting of the following sections.

**Volume 1: EIS**

Executive summary

**Part A: Proposed development**

1. Introduction (this section)
2. Description of the Project

**Part B: Environmental values and management of impacts**

3. Land use and project approvals
4. Topography, geology and soils
5. Terrestrial flora
6. Terrestrial fauna
7. Aquatic biology
8. Surface water
9. Groundwater resources
10. Air environment
11. Noise and vibration
12. Waste
13. Transport
14. Cultural heritage
15. Visual and lighting impacts
16. Social environment
17. Economic environment
18. Hazard and risk
19. Health and safety

**Part C: Environmental management plans and conclusions**

20. Environmental management plans
21. Conclusions and recommendations

References
Glossary
Abbreviations

**Volume 2: Appendices A to K**

## 1.3 Project proponent

The Proponent for this proposal is QR. QR provides innovative rail-based transport services and in 2006/2007, annual revenue was $3.1 billion.

Within Queensland, QR is the largest provider of rail transportation solutions for Australia's coal mining industry. In 2006/07, QR transported 165 million tonnes (Mt) of coal throughout Queensland, of which approximately 10% was for domestic use and the remainder exported (QR 2007).

In Queensland, QR operates 500 coal train services on average per week from over 30 coal mines. It rails coal to six existing coal terminals and domestically to power stations and mineral processing facilities. These services are operated on QR's 2,000 km of interconnected coal network track (75% electrified) and on the general freight and passenger networks.

The project proponent contact details are as follows:

QR Limited
Level 8, 127 Creek Street
GPO Box 1429
BRISBANE QLD 4001
Telephone: (07) 3235 3707
Facsimile: (07) 3235 2560

## 1.4 QR's environmental framework

Continual and increased environmental awareness among staff is an ongoing commitment of QR. The latest QR annual report 2006/2007 reveals four major environmental incidents and 86 minor environmental incidents occurred during this period. QR ensures that all reported incidents are investigated, to minimise the impact of operation on the environment.

QR's Environmental Statement commits the organisation to:

- Applying sound environmental management practices based on the principles of Ecologically Sustainable Development.
- Protecting the environment and the prevention of pollution through all phases of our operations.
- Providing strategic direction to employees in managing environmental impacts with a focus on continual improvement.
- Creating an environmentally aware culture where responsibility is assigned and understood.
- Reporting to and communicating with government, industry and community stakeholders.
- Providing an appropriate Environmental Management System that reflects our major risks.
- Providing an audit and review framework to ensure that the system is operational, effective and is meeting these requirements.

In an effort to develop a more sustainable rail transport system, a Sustainability Alliance was formed by QR and the EPA in May 2006. The Sustainability Alliance will develop key environmental strategies that encourage a progressive, sustainable transport sector from which the broader industry, communities and customers benefit.

QRs Environmental Sustainability Policy outlines QRs commitment to managing all its operational activities and services in an environmentally responsible manner to meet legal, social and moral obligations.

QR aspires to a goal of zero harm to the natural environment and will seek to be proactive in developing means by which their business can grow in an environmentally sustainable manner.

## 1.5 Project description

The Port of Gladstone is situated approximately 525 km north of Brisbane, just south of the Tropic of Capricorn. Coal is currently transported from mines in the Bowen Basin via the Blackwater and Moura systems for export through coal terminals located within the Port of Gladstone. The Project aims to increase the efficiency and capacity of the rail systems servicing the coal industry through the Port of Gladstone.

The Project comprises the following rail infrastructure:

- New rail link (Moura Link) to carry Moura/Surat traffic arriving via the Moura Short Line from the southwest to the North Coast Line southeast of the Mount Larcom township that will connect with the proposed WICT rail loops and other rail tracks in the Gladstone region.
- A rollingstock maintenance yard and provisioning facilities at Aldoga in the northern area of the GSDA
- Quadruplication of the NCL between the township of Mount Larcom and the proposed WICT rail infrastructure
- Additional tracks along the EEMBL
- Provision for future tracks within the project area
- Provision of rail access for potential third party operators at Aldoga

The Project also includes investigating and identifying suitable construction accommodation village locations.

Figure 1.1 shows the location of the Project.

The proposed rail infrastructure effectively bypasses the Gladstone urban area which is a key strategic benefit of the proposal. It is a direct response to the community's clearly-stated preference (as expressed in submissions to the WICT EIS) that the city not be exposed to further increases in rail haulage of coal through Gladstone. The Project also aims at improving the efficiency and capacity within the Gladstone area and to enhance the ultimate system capacity at the lowest overall cost (QR Network Access 2006).

The progress of this Project is dependent on the support of the mining industry and implementation of the WICT Project.

### 1.5.1 Project rail infrastructure

The proposed rail infrastructure included in this Project comprises the works required to provide rail access to and from the proposed WICT and rail facilities in the Gladstone region from both the Blackwater and Moura/Surat systems, together with the support infrastructure. Supporting infrastructure is expected to include QR rail holding roads and rollingstock maintenance facilities, which is necessary for operational support of the increased rail traffic. The proposed rail infrastructure will also include a combination of both electrified and non-electrified tracks.

The proposed rail infrastructure is discussed below.

**Moura Link**

The Moura Link involves the construction of a new rail link between the existing MSL, NCL and the EEMBL. This link will allow trains travelling to/from the Moura/Surat system to enter the proposed WICT unloading loop and other rail facilities in the Gladstone region from the same direction as those travelling from the Blackwater system.

Multiple route options were initially investigated for the portion of the Moura Link to the south of the Bruce Highway crossing. During the preparation of this EIS, the Department of Natural Resources and Water (DNRW) was consulted. DNRW has a long term water supply option of construction of the Castle Hope Dam on the Calliope River at Castlehope (DNRW register) in its water resource planning.

Although this dam site has been ranked very low on the list of water supply options for the Gladstone area by the Gladstone Area Water Board (GAWB), the Project concept design has considered the possibility that this dam may be constructed in the future.

An options study was undertaken to assess the advantages and disadvantages of a number of alignments for the Moura Link (refer Appendix B2). The study confirmed two options for further consideration, including:

- The Moura Link Eastern Option – preferred alignment linking the MSL and NCL
- The Moura Link Western Option – alternative alignment linking the MSL and NCL

Both Moura Link alignment options have been addressed in this EIS.

**Aldoga Rail Yard and additional NCL tracks**

The Aldoga Rail Yard will be constructed to the north of the NCL adjacent to the EEMBL junction. The scope of the railway infrastructure within the yard includes:

- New locomotive provisioning facilities for electric and non-electric rail traffic
- New rollingstock maintenance facilities for wagons and locomotives. These facilities are required due to the scope of rail operations contemplated and the increased number of trains accessing the network to service the proposed WICT (both electric and non-electric) and other developments in the Gladstone region. It is therefore proposed to develop the locomotive maintenance facilities (for electric and non-electric locomotives) and wagon maintenance facilities together. The facilities will also include the necessary stabling and storage roads.
- Quadruplication of the NCL between the township of Mount Larcom and the proposed WICT rail infrastructure
- Other supporting road and rail infrastructure (eg internal road network)

Rail infrastructure may be delivered in stages in line with the increasing export and domestic demand and will be designed so that future port expansion and trade through the port is not precluded. In terms of its holding capacity, the Aldoga Rail Yard will be designed to cater for the ultimate capacity to service rail traffic in the Aldoga and Gladstone areas, as well as to provide capacity relief to the Callemondah Rail Yard.

### 1.5.2 Road infrastructure

Initial road access to the Aldoga area is proposed along Flynn Road off Gladstone-Mount Larcom Road. In addition, a number of existing local government and State controlled roads will be affected by the Project. This includes the Bruce Highway, Dawson Highway, Gladstone-Mount Larcom Road and Calliope River Road.

### 1.5.3 Relationship to other projects

The Project's staging and development will be dependent on coal industry demands in conjunction with the staging and development of the proposed WICT.

The Project may also service existing and future coal train consists which currently utilise the Callemondah Rail Yard and the existing coal terminals within the Port of Gladstone, including RG Tanna Coal Terminal (currently being expanded to accommodate 69 Mtpa). The capacity of the existing rail facility at Callemondah is approaching its limit and to increase its current capacity would be both expensive and disruptive to current operations.

The Gladstone Land, Port, Rail and Road Infrastructure Study has identified a major rail/road and pipeline/conveyor corridor through Aldoga Banks Deviation area which is located to the northeast of the project area (refer Figure 1.1).

QR has considered as an option the development of a permanent access road to the Aldoga Rail Yard from Targinie Road via the Aldoga Banks Deviation area. However, the development of this access road is dependent on the recommendations and outcomes of the Gladstone Land, Port, Road and Rail Infrastructure Study.

The Aldoga Banks Deviation area does not form part of the current scope of works, however some environmental studies (flora survey) within this area were conducted as part of this EIS.

## 1.6 Project rationale

This Project will facilitate increased coal tonnages to be transported to the Port of Gladstone from mines in the Bowen Basin and Surat Basin coal fields, while effectively bypassing the greater Gladstone region.

### 1.6.1 System overview and background

QR is the provider of major linkages in the coal supply chain. The following is an extract from the QR Coal Fact Sheet (2007):

- QR has grown its coal tonnages in Queensland from 96 Mt in 1997/98 to 164.7 Mt in 2006/07
- This is 7% more than the 2005/06 figure of 153.7 Mt

Major Queensland coal rail systems are shown in Figure 1.2. Gladstone is the hub for the Blackwater and Moura systems and accommodates both electric and non-electric locomotive haul trains. QR aims to upgrade the Moura and Blackwater systems to accommodate industry demands within a framework of community considerations. Additional information can be obtained from the Coal Rail Infrastructure Master Plan.

### 1.6.2 Moura system

The Moura rail system is a non-electrified line that connects the Moura, Callide and Boundary Hill mines to the RG Tanna and Barney Point coal terminals at Gladstone. It also links the three mines with domestic coal users such as Queensland Alumina Limited (QAL) and the Gladstone Power Station.

### 1.6.3 Blackwater system

The Blackwater rail system is an electrified line and connects coal mines in the southern Bowen Basin to the RG Tanna and Barney Point coal terminals at Gladstone. This system also connects to domestic coal users. The Blackwater system and the Port of Gladstone are crucial components in the export logistics of the Bowen Basin.

### 1.6.4 Surat Basin

The Surat Basin Rail Joint Venture, of which QR is a member, is currently investigating a possible rail link from the southern end of the Moura system to the Surat Basin. This link would serve existing and proposed mines in the southern end of the Moura system and Surat Basin to Gladstone's coal port facilities (including the proposed WICT). Currently, mines in the Surat Basin are served only by the main western line linking to the Fisherman's Island Coal Terminal in Brisbane.


**Figure 1.2 QR Coal Rail Network**

### 1.6.5 Need for the project

#### Overview

This section describes the need for the Project, the current needs that the Project will fulfil and the expected economic benefits of the Project.

Demand for coal has increased considerably in the last decade due to its low cost and stable supply compared to other fossil fuels. This growth is expected to remain strong and has seen recent surges in global demand due to accelerated world economic growth. While the recent rate of global economic growth is not expected to be sustained over the long term, there is sufficient sustainable demand to trigger the development of a new coal terminal and supporting coal rail infrastructure in the Gladstone region.

Queensland's Bowen Basin produces high quality coking coal, pulverised coal injection coal and thermal coal that is exported to many nations, including Japan, Korea, Taiwan, China, India and Brazil. The region represents a significant economic driver for the State and national economy. Continuing improvements in mining techniques at existing coal mines, as well as the expansion of existing mines and the development of new mines in the area, is resulting in growing supply to meet increasing demand for coal to be exported through the Port of Gladstone.

### Existing capacity constraints

The RG Tanna Coal Terminal and Barney Point Coal Terminal have limited development capacity in their rail receival and port facilities. Customer contracts have been established for the existing tonnage and for future tonnage to expand the facilities to the currently calculated maximum capacity. Any substantial additional export tonnage will require the establishment of a new terminal. Gladstone Ports Corporation (GPC) has determined that the port has sufficient committed tonnages to initiate the proposed WICT Project.

The existing operations at Callemondah Rail Yard are close to capacity and cannot accommodate the proposed future train lengths. Any new significant increase in tonnage will require a new facility to be constructed.

The Project will provide coal trains access to the proposed WICT and future industries within the GSDA and the greater Gladstone area. Decommissioning of the rail infrastructure is unlikely to occur in the foreseeable future, as the minimum design life for the facility is 50 years.

### Export coal markets

Australia is estimated to hold 75 billion short tonnes (Bst) of coal reserves, the majority of which are concentrated along the country's eastern seaboard. Queensland accounts for over 50% of Australia's annual coal production of which approximately 85% of the State's coal production is exported (ACA 2008).

Black coal remains Australia's largest export commodity and Australia remains the world's largest coal exporter. Total production of raw black coal in Australia 2005-2006 exceeded the 400 Mt mark for the first time (refer Table 1.1)

**Table 1.1 Annual black coal production figures**

| | Black coal – Raw (Mt) | | Black coal – Saleable (Mt) | |
|---|---|---|---|---|
| | **2004-05** | **2005-06** | **2004-05** | **2005-06** |
| Queensland | 229 | 227 | 173 | 177 |
| Australia | 398 | 405 | 307 | 319 |

**Source:** http://www.australiancoal.com.au/production.htm

In 2005-06 black coal represented around 19% of Australia's total commodity exports. Australia's black coal exports were worth around $A22.5 billion in 2006-07, a decrease of about 8% on the record $A24.5 billion figure for 2005-06.

Australia exported 233 Mt in 2005-06, or 30% of the total world market (down from 31% in 2002). Australia supplies markets in more than 35 countries around the world, including Japan and other Asian countries (which account for over 80% of Australian coal exports), Europe (12%), South America (5%) and South Africa (ACA 2008).

Coal reserves are abundant and widely distributed around the world, providing an accessible and affordable energy source. All authoritative studies, such as the International Energy Agency's "World Energy Outlook" show that coal use is set to increase over the next 20 years as the world meets its growing energy needs. For many developing countries, affordable energy from coal is vital for building internationally competitive industries, and providing basic household services such as lighting, cooking and refrigeration. Unlike oil and gas, coal is easily obtained from a large range of suppliers operating in a competitive market.

The global steel industry has responded by planning significant additions to future domestic coke production capacity to replace Chinese coke imports. This should increase global seaborne demand for hard coking coal from producers such as Australia.

Australia is ideally positioned in terms of readily accessible reserves and quality to meet the current under supply and future demand increases. The Project provides a strategic link in the coal supply chain and is critical to ensuring reliability and continuity of supply of coal to the export market. This means servicing the existing RG Tanna Coal Terminal and the proposed WICT coal facilities within the Gladstone region.

**Mine/customer requirements**

Motivated by the significant growth in steel production in China and India, complimented by a long-standing demand for good quality energy (thermal) coal, the coal market forecast is expected to remain robust.

Queensland is the world's largest exporter of black coal. Most black coal in Queensland is located in the Bowen Basin, extending south from Collinsville to Blackwater and Moura. The Bowen Basin in Queensland contains the largest coal reserves. Other large deposits of younger coal in the Millmerran area west of Brisbane have the potential to be developed along with the Surat Basin in the Wandoan and Chinchilla area, and the Galileo Basin west of Emerald.

Figure 1.3 illustrates the Queensland coal industry summary (DNRW 2007b).

QR and GPC are receiving increasing interest from mine operators in relation to increased coal output from existing and new mine expansions in the Surat Basin and Wandoan areas. In addition to new mines, existing mines are seeking to expand to cater for the increased global demand for coal.

All of Queensland's export coal is transported to port via QR's rail network. The Port of Gladstone is critical to this logistics supply chain servicing QR's Blackwater and Moura systems. The Queensland economy places a heavy reliance on revenue derived from coal industry royalties assisting the economic success of the Queensland State Government.

Mine/customers requirements and contracts with QR (above rail operator) will drive the development of the proposed Aldoga Rail Yard.

**National competition principles affecting this development**

QR is the primary rail transport operator in Queensland's coal supply chain, currently transporting all of Queensland's coal exports to port. QR is also a Company Government Owned Corporation and hence operates under the provisions of the *Government Owned Corporations Act 1993* and consequently National Competition Principles.

QR operates a "Regulated Asset" (the rail network) and is bound to provide an "Undertaking" to the Queensland Competition Authority (QCA) as to how it will provide the network to meet demand from "Operators" – both internal from its own Business Groups and from external Third Party Operators – to transport product for identified "Users".

Under the terms of its Undertaking, QR is bound to provide access to existing infrastructure and define the provision of additional infrastructure to meet the demands of bona fide access seekers (Operators and Users) (refer QR Access Undertaking 2005).

The undertaking is quite specific insofar as the triggers to such development and the mechanism and response times necessary to ensure compliance.

Demand for Queensland coal is predicted to continue increasing in concert with world demand for resources. These higher volumes are placing pressure on the capacity and performance of the coal supply chain from mine to ship (QR Network Access 2006). QR has committed to a massive investment programme that will allow it to remain the preferred rail operator for the coal industry as it moves through this "super-cycle" of demand (QR 2007).

Mine-owners negotiate individually with above-rail operators to haul coal. Above-rail operators provide rollingstock, crewing and consumables, including fuel. They also obtain access (train paths) for their trains in exchange for the payment of access charges (calculated on distance travelled).

For this reason and to support the above mentioned rail operations, QR has commenced planning for the development of the Project, and the corresponding infrastructure necessary to meet the demands of users. These works will be developed in parallel to the proposed WICT and supporting port facilities located north of greater Gladstone.

### 1.6.6 Costs and benefits of the project

The estimated cost to construct the Project (Stages 1 to 4) is $1 billion to $2 billion.

The following benefits will be derived from the Project:

- Supporting rail infrastructure for the WICT Project, GSDA and other industries in the Gladstone region
- Progress to support the Surat Basin Rail project and growth within the Blackwater and Moura rail systems
- Economic benefits during construction and operation (refer Section 17)

## 1.7 Alternatives to the Project

This section describes the alternatives to the proposed activity, including the "no action" alternative.

There are a limited number of options available to accommodate the rail links required to service the proposed WICT and to cater for the increase in rail traffic due to new and expanding coal mine developments in the southern Bowen Basin and the Surat Basin. The proposed WICT is pivotal to a number of new mine developments, mine expansions and major expansion of rail infrastructure in the Gladstone region, and conversely these projects are critical to the operation of the proposed WICT.

### 1.7.1 Alternative routes and railyard locations

QR has examined a number of alternative route options prior to adopting the scheme proposed. In particular, a number of rail options have been investigated for connecting the MSL and NCL to the proposed WICT at Golding Point (north of the Calliope River).

These initial studies identified that rail provisioning and rollingstock maintenance facilities should ideally be located in the vicinity of the proposed WICT to provide the lowest cost option. This option was assessed in detail during the WICT EIS.

However, during the WICT EIS there was significant community opposition to transporting coal to the proposed WICT through existing and growing rural residential areas along the pre-existing MSL. Furthermore, a land, port, rail and road infrastructure study (being undertaken at the same time as the WICT EIS) was identifying infrastructure corridors through the GSDA. This study together with the WICT Supplementary EIS raised the possibility of providing a rail provisioning and rollingstock maintenance facility south east of Mount Larcom township to service:

- The proposed WICT
- The GSDA precinct
- Existing and future port and industry developments in the Gladstone region

This option was developed further by QR and is now the proposed rail scheme presented in this EIS.

A summary of the alternatives identified, including the "no action" option, are given in Table 1.2.

### 1.7.2 No action option

The inability to transport coal by rail to the proposed WICT would have significant economic implications for Australia and Queensland.

Further, inaction to meet demands of the industry would inhibit future proposed investment in the coal industry. The transport of additional coal to the proposed WICT will provide additional export revenue for Australia, increased State revenue and additional employment opportunities.

**Table 1.2 Project alternatives summary**

| Option | Issue |
|---|---|
| Moura and Surat rail traffic to be directed along existing MSL and Blackwater rail traffic to be directed along existing NCL with new rollingstock maintenance and provisioning facilities near the proposed WICT (the rail option examined within the WICT EIS). | • WICT EIS process led to this option not being considered further<br>• Strong community opposition to transporting coal to the proposed WICT along the MSL between Gladstone and Calliope (which is considered to be part of the greater Gladstone region)<br>• Rollingstock maintenance and provisioning facilities located in area that was suited to the proposed WICT, but not for future port facilities |
| Expand existing facilities at the existing Callemondah Rail Yard and develop additional rail infrastructure to service the proposed WICT. | • Existing Callemondah Rail Yard is not ideally located to service the proposed WICT. Existing track geometry and adjoining land uses constrain the yard from significant expansion. The length of the Callemondah Rail Yard is not sufficient to accommodate the proposed long coal train consists<br>• Existing Callemondah Rail Yard is already operating at or near capacity |
| No action | • The inability to transport coal by rail to the proposed WICT would have significant economic implications for Australia and Queensland<br>• Further, inaction to meet demands of the industry would inhibit future proposed investment in the coal industry. The transport of additional coal to the proposed WICT will provide additional export revenue for Australia, increased State revenue and additional employment opportunities |

## 1.8 The environmental impact assessment process

### 1.8.1 Methodology of the EIS

**Environmental studies**

Environmental studies were undertaken to verify and delineate the findings of the desktop study, in addition to describing the existing environment. The studies expanded on existing environmental studies undertaken as part of the preliminary EIS tasks, including flora and fauna surveys and water quality investigations.

The studies were undertaken in accordance with relevant statutory guidelines and/or standards with the aim of achieving the objectives outlined in the final ToR for the relevant environmental element. The methodology adopted for the environmental studies is scientifically robust and replicable to ensure that the studies can be used as part of future monitoring activities, where necessary.

Environmental and engineering studies/surveys undertaken to develop the Project and prepare the EIS include:

**Engineering studies**

- Concept engineering and master planning
- Geotechnical investigations
- Flood modelling
- Rail traffic modelling

**Environmental studies**

- Baseline terrestrial flora and fauna monitoring
- Water quality monitoring (surface and groundwater)
- General soils investigation
- Groundwater sampling
- Indigenous and non-indigenous cultural heritage investigations
- Air quality assessment and modelling
- Noise assessment and modelling
- Town planning assessment
- Traffic impact assessment
- Social impact assessment
- Visual impact assessment

**Description of the Project**

This section of the EIS document describes the construction and operational phases of the Project in detail with the aim of clearly defining and describing the project's interactions with the environment. This allowed the impact assessment to be undertaken and for EIS design solutions to be integrated.

Design flexibility was "built in" to the EIS project description to ensure design innovation can be achieved in the detailed design phase of the Project.

**Environmental values and management of impacts**

A description of the existing environment, biological, physical and socio-economic, which may be impacted (both beneficial and adverse) by the Project was undertaken. Sufficient detail was given to ensure that the potential impacts during construction and operation are clearly delineated to assess the effectiveness of any proposed mitigation measures.

Aspects of the Project which are likely to cause environmental harm and/or social impacts will, in a number of instances, be able to be managed to ensure that no unacceptable impacts occur. The avenue for linking the impact assessment process to the management of these impacts will occur through the development of an Environmental Management Plan (EMP).

### 1.8.2 Objectives of the EIS

The purpose of the EIS is to provide information on the nature and extent of potential environmental, social and economic impacts (direct and indirect) arising from the construction and operation of the Project. The EIS process has and will assist the detailed engineering in avoiding potential impacts where possible and identifying appropriate management measures for unavoidable impacts.

In particular, the EIS provides:

- A basis for understanding the Project, the existing environment that it would affect, both on and off the site, the impacts that may occur and the measures to be taken to mitigate adverse impacts for interested bodies and persons.
- An outline of the effects of the Project on the area, including access for groups or persons with rights or interests in the land.
- A framework against which decision makers can consider the environmental aspects of the Project in view of legislative and policy provisions and decide whether the Project can proceed or not. Also, as appropriate, set conditions for approval to ensure environmentally sound development and, where required by legislation, recommend an environmental management and monitoring programme.
- A source of information from which interested parties may gain an understanding of the Project, the need for the Project, the alternatives, the environment which it would effect, the impacts that may occur and the measures taken to avoid and/or minimise these impacts.
- A document to allow public and stakeholder consultation comment on the Project.

### 1.8.3 Submissions

During the EIS public display period, Government agencies and the public can lodge a submission to the Coordinator-General (CG).

Submissions will be accepted during the four week public advertising period as per the public notice.

Submissions should be made in writing to:

The Coordinator-General
Attention: EIS Project Manager
Moura Link - Aldoga Rail Project
Major Projects
PO Box 15009
CITY EAST QLD 4002

The CG will refer all submissions to the proponent (QR) to provide a response in the form of a Supplementary EIS or specific submission documents (ie letter format). Responses to submissions may identify additional environmental management measures to address specific issues.

The CG will consider the EIS findings, submissions and the responses to submissions as part of the Evaluation Report prepared for the Project. Conditions may be included in the Evaluation Report to address environmental issues raised during the EIS process.

## 1.9 Public consultation process

A summary of the stakeholder and public consultation programme for the Project is provided in Table 1.3. The EIS Communication Plan is provided in Appendix A4.

**Table 1.3 Stakeholder consultation and communication plan**

| Activity | Summary of outcome |
|---|---|
| **Agency briefings** | Agency briefed on Project and key issues discussed |
| **Newsletter No.1 released to public within the vicinity of the project area (April 2008)** | Community advised of the Project<br>No formal comments received |
| **Project telephone line and email database** | Minor enquiries received |
| **QR consultation** | Consultation with directly affected property owners |
| **EIS and Engineering team discussion and consultation with key stakeholders** | Ongoing throughout the EIS process and into the detailed design phase |
| **Newsletter No. 2 released to public within the vicinity of the project area (June 2008)** | Community advised of key findings of the EIS |
| **EIS team discussion with Government officers during EIS preparation** | Assisted in preparation of EIS sections |
| EIS public display period | Outcomes to be addressed post EIS public display |
| Agency briefings | Outcomes to be addressed post EIS public display |

**Table note:**
Bold = completed activity

## 1.10 Project approvals

Given the regional and State significance of the Project and the nature of environmental elements traversed, there are a number of Commonwealth and State environmental legislative requirements which need to be addressed prior to commencing construction.

The likely approvals for the proposed MLARP are discussed in Section 3.7.