RETURN TO CONTENTS PAGE

1. Introduction

1. Introduction

QR Limited (QR) are proposing to upgrade the existing facilities at the Jilalan Rail Yard. The project, known as the Jilalan Rail Yard Upgrade Project (JRYUP), is located 3 km south east of Sarina and 35 km south of Mackay (refer Figure 1.1).

The Jilalan Rail Yards were commissioned in 1971 for smaller head end power trains and have progressively been expanded to meet the increasing demands of coal exports. It is utilised by QR for maintaining and servicing coal trains operating on the Goonyella Rail System (refer Figure 1.2), which facilitates the transportation of coal to export terminal facilities at the Port of Hay Point.

To meet the demands of current and future industry growth within the coal market, the Goonyella Rail System will require significant infrastructure developments. The upgrade at Jilalan is proposed to ensure the Goonyella Rail System has the ability to cater for the increased number of trains expected to be operating in this system.

The Jilalan facility is proposed to be upgraded and expanded, which will include a larger rail holding yard, additional provisioning facilities and an additional maintenance workshop together with bypass lines to allow through traffic to pass without entering the servicing facility as occurs at present.

Within this Environmental Impact Statement (EIS) the term "Project" refers to all rail and road infrastructure associated with the JRYUP.

This EIS has been developed in accordance with the final Terms of Reference (ToR) (refer Appendix A1) issued by the Coordinator-General (CG) in July 2007. The EIS provides an assessment of potential impacts (both positive and negative) on the environment as a result of the construction and operation of the proposed JRYUP.

A cross-reference of the ToR requirements with the location of the EIS findings that address the requirements is provided in Appendix A2.

The EIS has been prepared to facilitate public and agency review of the Project. It is intended to provide sufficient information to facilitate a development permit approval as defined under the *Integrated Planning Act 1997* (IP Act).

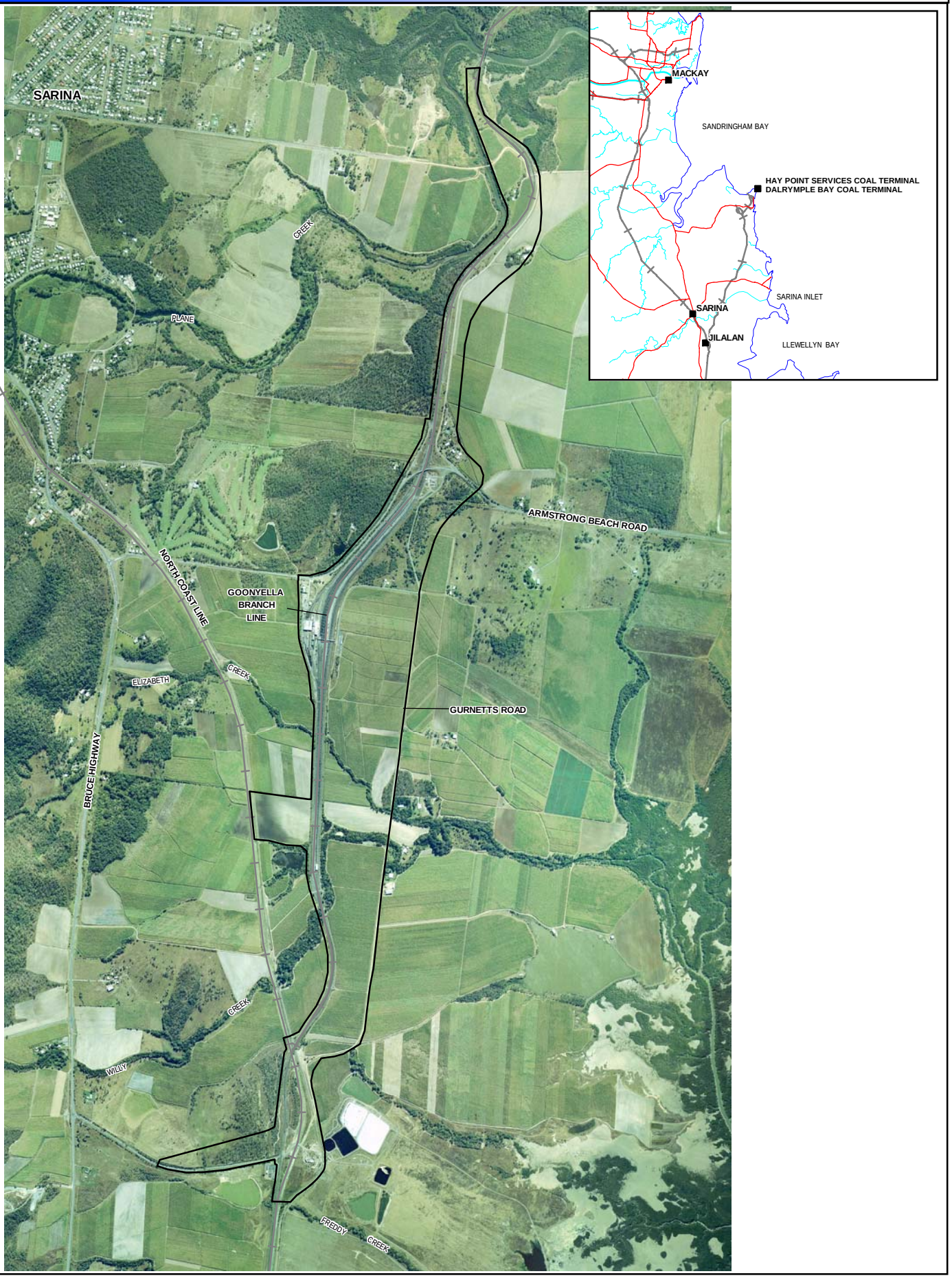
The EIS has been divided into two volumes consisting of the following sections:

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. Environmental values and management of impacts
4. Land use, planning and approvals
5. Topography, geology and soils
6. Nature conservation
7. Hydrology/hydraulics and surface water quality
8. Groundwater
9. Air environment
10. Noise and vibration
11. Waste
12. Transport

Jilalan Rail Yard Upgrade Project



V:\Projects\Qld_Rail\HR5001\GIS\Workspaces\Jilalan_04.wor By: SLG Date: 05/09/07 Version 3

N

0 1000 (m)

Scale 1:20 000 (m) (@ A3 size)

LEGEND

Rail

Project Area

LOCALITY PLAN

FIGURE 1.1

Jilalan Rail Yard Upgrade Project

Source: Queensland Rail, 2006.

V:\Projects\Qld_Rail\HR5001\GIS\Workspaces\Jilalan_28.wor By: SLG Date: 22/08/07 Version 1

N

0 50 (km)

Scale 1:1 000 000 (m) (@ A3 size)

LEGEND

Goonyella Rail System

Rail

GOONYELLA RAIL SYSTEM

FIGURE 1.2

13. Cultural heritage
14. Visual and lighting impacts
15. Social and economic environment
16. Hazard and risk

Part C: Environmental Management Plan and Conclusions
17. Environmental Management Plan
18. Findings and conclusions
Glossary
Abbreviations
References

Volume 2: Appendices A to O

The EIS Project team is summarised in Appendix B.

1.1 Project proponent

1.1.1 QR Limited

QR are the project proponent for the JRYUP. Formed in 1865, QR is a government owned organisation and is subject to the provisions of the *Transport Infrastructure Act 1994* and the *Government Owned Corporations Act 1993.* QR are responsible for the management of:

- Access to QR's national rail network
- Rail infrastructure assets
- Operations on the rail network

The contact details of the proponent are:

QR Limited
ACN 124 649 967
Level 20, 288 Edward Street
GPO Box 1429
BRISBANE QLD 4001

Telephone: + 61 7 3235 5033
Facsimile: + 61 7 3235 2361

Email: COALRAILINFO@qr.com.au

QR generates approximately $2.5 billion per year of revenue and is one of Australia's largest passenger and freight transport providers. Operating for 141 years, QR is among the nations largest serving enterprises.

Continual and increased environmental awareness among staff is an ongoing commitment of QR. The latest QR annual report 2005/2006 reveals no major environmental incidents occurred during this period, 84 minor environmental incidents were reported, which was a 21% decrease from 2004/2005. QR ensures that all reported incidents are investigated, to minimise the impact of operation on the environment.

QR has an Environmental Policy under their EMS which 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.

QR have also appointed a construction contractor for the Project whose environmental management system is accredited to ISO14000 (refer Appendix L).

1.2 Project description

The project area is located approximately 3 km south east of Sarina and approximately 35 km south of Mackay. The project is situated within the Sarina Shire (refer Figure 1.1).

The JRYUP involves the expansion of existing rail maintenance and provisioning facilities at Jilalan Station. The existing facility provides services to coal trains, which operate on QR's Goonyella Rail System. These services include:

- Locomotive provisioning
- Wagon maintenance
- Locomotive maintenance
- Crew change
- Yard rail operations
- Main Line train operations

The proposed expansion is designed to cater for imminent growth in coal exports through the Dalrymple Bay and Hay Point Coal Terminals. A corresponding increase in the capacity of QR's rail infrastructure is required to accommodate this growth (Chapter 2 of the EIS describes in detail the project description).

The key components of the development include:

- Construction of new bypass tracks and bridges to allow trains travelling to and from the coal export terminals at the Port of Hay Point to avoid entering the yard unnecessarily
- Construction of a new wagon maintenance facility and associated trackwork and bridges
- Construction of a new locomotive provisioning facility and associated trackwork and bridges
- Modifications of the existing yard and buildings to provide a new locomotive maintenance facility
- Main line diversion at the northern end of the Project
- Underpass and overpass structures at rail intersections with existing roads
- Road diversions and upgrades

1.2.1 Relationship to other projects

The Goonyella system supply chain consists of a number of components, all of which contribute to the export of coal. These components typically include:

- Coal mines
- Below rail infrastructure

- Rollingstock/rail operations
- Port facilities

To facilitate the increase in world demand for Bowen Basin coal, all elements within the Goonyella system supply chain are in the process of upgrading their throughput capacities or have already done so. In addition to the numerous mine upgrades, the two principal coal ports are also undergoing expansion.

The QR Network Access 2006 Coal Rail Infrastructure Master Plan (CRIMP) identified upgrades at Hay Point Services Coal Terminal (HPSCT) and Dalrymple Bay coal Terminal (DBCT), which will provide a combined throughput capacity of potentially 140 million tonnes per annum (Mtpa) in the future.

In addition to the port infrastructure and coal mine upgrades, the 2006 CRIMP also proposed a number of rail expansion projects to enable QR to match the port's combined estimated throughput of 130 Mtpa by 2009 and the potential to go to 140 Mtpa in the future. These projects (in the main line east of Coppabella) include:

- DBCT Rail Loop Triplication
- Mindi Substation Power System Strengthening
- Connors Range Signalling
- Coppabella Yard Upgrade
- Bolingbroke Substation Power System Strengthening
- Jilalan Bypass Roads
- Broadlea-Mallawa-Wotonga Duplication
- Passing Loops on South Goonyella Branch

These are aimed at reducing congestion between opposing trains, therefore reducing cycle times and increasing throughput capacity. Completion of all of these projects is required to achieve the proposed throughput capacities.

1.3 Project rationale

The above projects are designed to remove specific constraints within the Goonyella system supply chain. The proposed increase in coal throughput and corresponding increase in rollingstock will introduce another constraint with respect to provisioning and maintenance. The JRYUP is designed to eliminate this constraint before it becomes evident.

1.3.1 System overview and background

The Goonyella System comprises of the North Goonyella Branch and the West Goonyella Branch Lines joining at Wotonga, being joined at Coppabella by the South Goonyella Branch, as illustrated in Figures 1.2 and 1.3. The main line runs from Coppabella to the two coal terminals at DBCT and HPSCT. The main line is fully duplicated as is the line from Coppabella west to Broadlea, soon to be duplicated to Wotonga. Trains are crewed from two depots at Jilalan and Coppabella, which are also the main holding areas for trains, with scheduled traffic from Coppabella to Jilalan. A number of planned upgrades for the system were endorsed in 2006. These upgrades included intermediate signalling on the Connors Range, electrical power capability enhancement, improvement of Coppabella Yard and two new tracks to bypass the critical Jilalan yard.

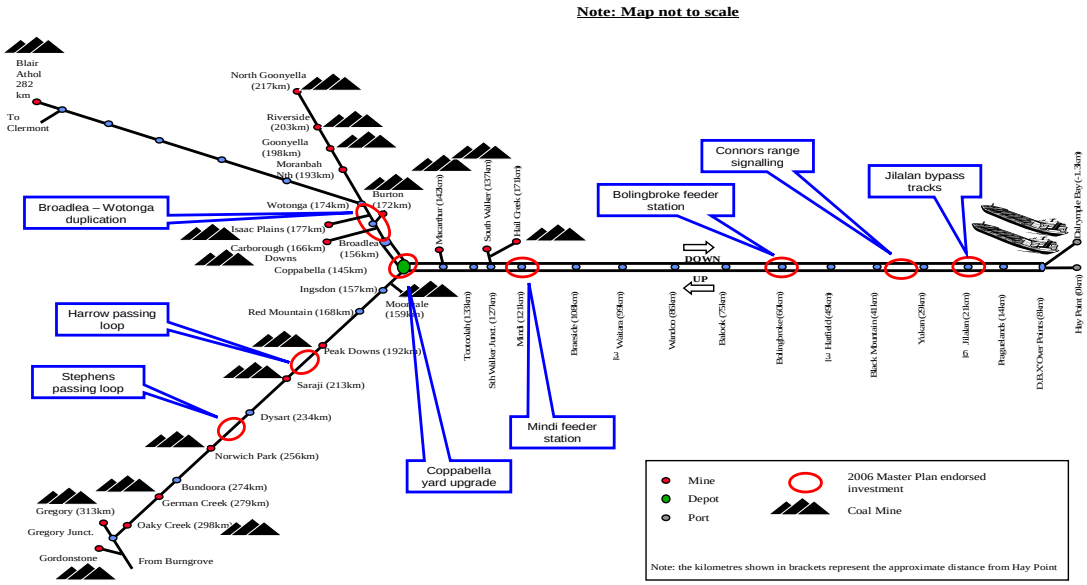


Figure 1.3 Overview of the Goonyella System

The Goonyella system is forecast to see demand increase by approximately 50% from the 88 Mtpa hauled in the 2006-07 financial year to 130 Mtpa and beyond. This demand increase will require a very substantial increase in the train fleet servicing the system from Jilalan. This in turn will significantly increase the traffic through the yard. The design of the yard is required to be capable to meet the operating plan required by the expanded coal terminals and QR's customers.

1.3.2 Background on Jilalan Yard

Jilalan yard is a critical node in the Goonyella system supply chain. The yard is currently used for the following functions:

- Queuing loaded trains pending acceptance at coal terminal unloaders
- Staging of trains
- Very limited train sequencing
- Examining trains to identify maintenance requirements
- Removing locomotives and wagons from traffic for maintenance and repairs
- Reforming train sets after servicing, maintenance and repairs
- Provisioning locomotives
- Limited stowing of empty trains when not required for service
- Scheduling empty trains back onto the mainline towards mines for loading

1.3.3 Need for the Project

This section describes the need for the proposed JRYUP, including the current needs that the Project will fulfil on a regional and state context and the expected benefits of the Project.

To facilitate the increase in world demand for Bowen Basin coal, each element of the Goonyella system supply chain is in the process of upgrading their throughput capacities. The QR Network Access 2006 Coal Rail Infrastructure Master Plan proposes a number of rail expansion projects to allow QR to match the port's combined estimated throughput of 130 Mtpa by 2009 and the potential to go to 140 Mtpa in the future.

This escalated demand will require a significant increase in the train fleet servicing the system from Jilalan and will therefore increase the traffic through the yard. Currently there is a disparity between the present design of the operating plan and the design of the yard which is required to meet the operating plan to service the expanded coal terminals and QR's customers.

Supply chain constraints

The Jilalan Rail Yard is a critical node in the Goonyella system supply chain, however a number of operational and infrastructure inefficiencies require improvement to cater for forecast growth, including:

- Current yard configuration does not allow for flexible sequencing of trains prior to arrival at port.
- Inability to provision loaded trains queuing for the port and restricted bypass ability.
- Minimum track centres not allowing efficient access to trains for examinations and minor repairs.
- Insufficient train examination tracks leading to trains having to be split, increasing the time taken for examinations.
- Outdated locomotive provisioning, rollingstock maintenance, turntable and inefficient overhead wiring isolation issues, limiting network capacity and throughput.
- Insufficient capacity of current workshop facilities to service the planned rollingstock fleet expansion required to meet future contractual obligations.
- Restrictions on main line speed due to rollingstock roll by requirements in the yard.

Of these operational and infrastructure inefficiencies, the following limitations are critical.

Re-sequencing of trains

The current yard has only two tracks in addition to the main line that can hold a full length Goonyella system train, “Number One” track and “Number Two” track. This will in future severely limit the ability of train controllers to re-sequence trains in line with requirements.

The Goonyella system is continuously operating under a cargo assembly mode of operations. In order to achieve the targeted supply chain volumes, the key requirement in the Goonyella System is the need to schedule trains on time and in sequence to the unloading facilities at DBCT in particular. The ability to re-sequence trains to maximise the utilisation of the unloading facilities is therefore paramount.

The schedule system is a “demand-pull” system, where a cargo assembly operation occurs. The supply chain planning commences with the known ship arrivals, for which a berthing plan is created at each terminal. This berthing plan dictates a ship out-loading schedule for coal loading from the terminals’ yards. The out-loading schedule drives a port yard operations schedule, which in turn, due to limited stockpile area, dictates a very tight rail un-loading plan, with the right train from the planned mine required at the right time.

The un-loading plan then is used to prepare the weekly train schedule, using estimated transit times and mine load times, together with known resources (train fleet, human resource etc) to determine realistic departure and return times to the yard.

The Goonyella coal supply chain upstream of the ports and yard is complex, with a significant number of variables at mine, on the network and in above rail operations that can, and inevitably do, lead to variances against the train schedule. This leads on many occasions to trains arriving at the yard out of planned sequence for the next un-loading slot.

In future, with a reduced stockpile area relative to throughput, this problem will increase.

Currently the configuration of the Jilalan Yard is such that trains cannot be re-sequenced without great difficulty leading to cycle time increases. This leads to the requirement to re-sequence trains at the coal terminals. This has a significant impact on the target of un-loading trains at DBCT in two hours and forty minutes, with no more than fifteen minutes between trains, as well as on maximising throughput at HPSCT. Under the current configuration of the Jilalan Yard, the supply chain will not be able to achieve the stated future export capacities of DBCT and HPSCT. The future operating mode of DBCT also puts a higher requirement to have trains not just sequenced in the right order, but also requiring these trains to present themselves on time to ensure the terminal meets its targeted throughput capacity.

The consequence of the operating mode required for the supply chain to sustainably export 85 Mtpa through DBCT and 130 Mtpa in total is that rail asset utilisation will in future have to be sub-optimal. The supply chain will operate at three different velocities based on the respective capabilities of the five un-loading pits at the two terminals. The HPSCT velocity will be approximately 6,000 tph, while the existing DBCT pits will operate at approximately 5,000 tph and the new pit at around 7,500 tph. DBCT will have linkages between un-loading and stockpiling, whereas HPSCT will have these two functions completely de-linked. These factors will reduce rail efficiency.

The upgraded Coppabella Yard will represent a staging component for the system, for 14 of the future 17 mines (Hail Creek, South Walker and Coppabella mine are to the east of the yard). Coppabella Yard is by itself insufficient to ensure the right train arrives at the ports at the right time.

The future system is expected to move from the currently scheduled 26 trains per day to approximately 41 trains per day, or 82 train movements per day in the Jilalan area, a significant traffic task regardless of requirements for re-sequencing of trains. This increase in train movements will also translate into an increase in train marshalling and shunting in preparation for operating track services, and before or after maintenance and provisioning of coal trains.

Efficiency of train examinations

The current configuration of the yard is limited by existence of only two full length tracks; all other tracks are half a train length or less. This means that trains need to be cut into two for train examinations, with significant inefficiency in train utilisation arising, with related shunting, and track utilisation, the latter limiting the ability to re-sequence trains. When a train is put back together, it has to reverse onto the mainline, taking up capacity in the most heavily utilised area of the system. This is unacceptable for running a system with a significant degree of variability in operations (peaks in demand in particular require smooth running on the mainline).

Train examinations are ideally conducted by staff in a motorised vehicle, in order to minimise the down time for the train. A further constraint on efficient train examinations is therefore the insufficient space for vehicles to pass alongside trains for examinations, due to inadequate track centres. Due to safety considerations the option of simply increasing human resources for train examinations is not possible in the current yard layout.

Stowage of trains

The yard stowage function during periods of lower demand and maintenance closures will be inadequate in the future. With two full length tracks, the yard can be used to stow only two trains during demand troughs. This approximates to 10% of the fleet. The fluctuations in demand experienced in the system, and expected to continue, are such that often much more than 10% of the fleet may need to be stowed. It is apparent there are many periods of significantly lower demand when idle trains need to be stowed somewhere on the network.

The fleet servicing the Goonyella System is expected to increase by approximately 50% to meet demand growth. With a fleet of 30 or more trains servicing the Goonyella System, in weeks where demand is up to 20% below the average, there will be a need at times to stow up to six (6) trains.

Provisioning

The current yard layout only allows empty coal trains to be provisioned. The provisioning shed is located at the Coppabella end of the existing provisioning track. This reduces flexibility in train operations, since there are times when it is appropriate to provision a loaded train to utilise time spent queuing for an unloading spot at a coal terminal. Alternatives and modifications to the provisioning arrangement in the current yard have been examined and found to be either very difficult to implement or not provide sufficient additional capacity.

Main line speed

Trains currently need to slow down on the main lines through the Jilalan Rail Yard. There is a level crossing close to entry to the yard in the loaded direction.

Demand and fleet growth

The key drivers for the proposed upgrade to the Jilalan Yard are a continuing increase in demand for additional capacity on the Goonyella coal supply chain reflected in the following:

- The DBCT port capacity is currently being expanded from 60 Mtpa to 85 Mtpa. This is expected to be complete by the end of 2008.
- The owner of the HPSCT port (BMA) is also considering expanding its capacity from 45 Mtpa to 55 Mtpa.
- The combined throughput capacity at the two Ports will be 130 Mtpa by the end of 2008 and potentially up to 140 Mtpa in the future.
- QR National is acquiring up to 50% more trains to meet demand. This increase drives the need for an upgrade of above rail infrastructure at Jilalan.
- The possibility of other operators entering the system, introducing additional traffic to that already commissioned by QR National.
- Pressure from industry at large over difficulties in meeting international obligations and delays in the existing coal delivery system which is attracting political and media attention over perceived constraints on the system.

Future required performance at Jilalan

In order to support a coal chain supplying 130 Mtpa through DBCT and HPSCT, the Jilalan Yard will be required to service an average of 37 loaded coal trains per day, with the ability to cater for peaks of approximately 41 trains per day. Increasingly since January 2005, the Goonyella system has being operating under a cargo assembly mode. The longer term peak to trough difference is approximately 15% and the future variability is not expected to be any lower than currently experienced. Therefore the Jilalan Yard must have the robustness to withstand this variability.

The CRIMP published in 2006 assumed that fortnightly reliability examinations at Jilalan Yard on provisioning tracks of on average six hours and weekly train provisioning of on average 25 minutes could be achieved in the future. This assumption regarding yard capability depends upon the proposed investment at Jilalan. Currently the reliability examinations take significantly longer due to the limitations of the infrastructure. The investment will largely address the time spent waiting for entry to the yard by many trains in the Goonyella system which has been estimated at approximately 30 minutes per train.

The JRYUP aims to increase the capacity and operational efficiency of the rail system, in line with other expansions at the DBCT and HPSCT. It is designed to eliminate a constraint in the rail system by providing full mainline tracks by extending the length of rail yard tracks to handle longer trains and extending the capacity of maintenance and provision facilities in the yard.

The current structure of the Jilalan Rail Yard is such that trains cannot be re-sequenced without great difficulty which can lead to cycle time increases and the requirement to re-sequence trains at coal terminals. Under the current configuration, the supply chain will not be able to achieve the stated future export capacities of DBCT and HPSCT.

QR Network Access believes that the proposed rail system at the Jilalan Rail Yard is a critical component of the supply chain solution for the DBCT-HPSCT-Goonyella system. The investment will enable the Goonyella system supply chain capacity to increase from current levels up to 130 Mtpa and provide the ability to handle up to approximately 41 trains per day, or 82 train movements per day.

The expected Project benefits include:

- Greater rail system robustness with capacity to withstand variations in supply chain and cargo assembly operations under a high throughput Goonyella system.
- Re-sequencing of trains in the yard and not the mainline resulting in an unimpeded passage of mainline trains and reduced occupation of the mainline.
- The ability to stow trains in periods of low demand or during maintenance closures with four tracks holding four full length trains in addition to the provisioning tracks.
- No occupation of the main line during shunting due to the proposed relocation of signals for the shunt neck.
- Removal of delays due to trains waiting to enter the yard.
- The ability to provision trains loaded or empty, thus increasing flexibility in the system.
- Reduced train time in the yard for reliability examinations and provisioning – reduction in partially mitigating overall Goonyella system cycle time increase arising from a fleet increase of 50%.
- Land available for future yard expansion and formation provided to construct a third bypass track or similar if required in the future to service even greater throughput levels.

The proposed upgrade is designed to cater for imminent growth in coal exports through the Dalrymple Bay and Hay Point Coal Terminals. A corresponding increase in the capacity of QR's rail infrastructure is required to accommodate this growth. The upgrade will significantly improve the efficiency at Jilalan as well as directly contribute to an increase in overall capacity.

The Project is consistent with QR's requirement to expand capacity in order to create sufficient available capacity in line with QR's Access Undertaking (2005). This project has been included in the CRIMP (2006).

1.3.4 Costs and benefits of the Project

The capital costs of the Project will be split according to the final allocation of project assets between QR National and QR Network Access. It is anticipated that capital cost will be in the order of $350 million for both above and below rail combined and is based on high level elemental costing at this stage.

The Sarina Shire Local Government Area is considered to be the primary catchment in terms of workforce for the proposed development and is likely to be the area subject to more direct potential project impacts and social changes. The Project benefits include the creation of approximately 350 direct jobs during design and construction. The Project will also improve local road traffic movements and vehicular road networks around the Jilalan area.

The provision of an accommodation village for the Project will result in an investment of approximately $3.8 million into the local economy.

Due to the location of the Project accommodation village, the construction phase of the Project will result in an economic benefit to Sarina Shire. The exact dollar contribution to the Shire is related to the income generated by job growth and the flow on effect of a higher employment in the Shire to areas such as property, retail and leisure expenditure. QR currently employs more than 900 people in the Mackay area and this contributes significantly to the economy. Once completed, the project will facilitate an increase of 100 operational employees.

Rail infrastructure benefits are discussed in Section 1.3.3.

Potential regional and local social impacts are discussed in Chapter 15.

1.4 Alternatives to the Project

Alternative locations for the proposed provisioning and maintenance facilities are discussed below.

1.4.1 Do nothing

This option involves maintaining the yard as it currently is and relying on other projects along the network to meet capacity demands. This option however, ignores the system constraints posed closer to the ports as the lines and trains converge, leading to a constraint situation. A policy of persistence with existing infrastructure in the area near the ports will negate any other improvements along the remainder of the network and fail to address the demand or network inefficiencies. Computer modelling of the rail system demonstrates that without improvements at Jilalan the rail system would not meet the forecast system demand and therefore would fail to address the industry requirements.

1.4.2 Complete brownfield construction within the yard

This alternative requires building over existing facilities and land that is already within the Jilalan Yard enabling the ability to develop according to a 'blank slate' but on existing land. This will reduce the cost of land acquisitions. However, this option was rejected due to the number of closures required and the considerable impact to the supply chain during the years of construction. Additionally, there could be long-term ramifications of attempting to fit too large a planned project into too small an area. The total cost of this option including new capital and business interruption costs would be much higher than other options being considered.

1.4.3 Greenfield construction elsewhere

The development of a greenfield site either downstream of Jilalan or upstream of Yukan and leaving the existing facilities as is, was considered. This would reduce the impact on existing facilities until near completion and allow for better long-term planning or the site free from existing infrastructure constraints. Nevertheless, it is considered that there is insufficient space for a greenfield project for new yard facilities such as those predicted in the Jilalan Yard proposal. Moreover the cost of constructing a new facility and integrating it into the network would likely be considerably more than upgrading existing infrastructure.

1.4.4 Upgrade of Yukan Yard

The Yukan Yard could be considered as an alternative location and was deemed close enough to the port to respond to day of operation issues. However, it is not considered long enough for the works envisaged, which is a key consideration in resolving some of the operational and infrastructure inefficiencies discussed. Also it would require the relocation of key strategic QR assets in order to facilitate the nature of yard facilities predicted in the Jilalan Yard proposal. In addition, QR Network Access would still need the by-pass tracks at Jilalan to improve the capacity of the system to the required level.

1.4.5 Upgrade of Coppabella Yard

The Coppabella Yard was another potential site for upgrade of the existing facilities. However, the further away from the coal terminals the less ability to "fine tune" the sequencing and the on time operation to these terminals required under a high throughput future scenario. The greater the distance from the terminals brings a reduced ability to react to changes. Coppabella Yard also does not capture the three mines to the east of it, which would affect its ability to effectively manage the entire throughput to the ports. The length of the existing yard can not accommodate the nature of the facilities predicted in the Jilalan Yard proposal with out substantial modifications which would have a substantial capital and business disruption costs. As well as this, there would be significant staffing challenges in relocating the main Goonyella system yard facility to this location.

1.4.6 Upgrade of Jilalan Yard

The Jilalan Yard upgrade is considered to provide the best opportunity to directly improve the system capacity of the network following an upgrade. It is located close enough to the ports to be able to respond quickly to variations in demand, while also occupying enough space and having enough suitable land around to make the necessary expansions feasible. This location would employ both greenfield construction for the new lines and brownfield construction on some of the existing infrastructure and will allow for capacity to be achieved whilst not unduly affecting ongoing throughput. Finally, the Jilalan Project is the preferred option to address the limitations identified and achieve the necessary system capacity required.

Jilalan Yard is an established rail operations depot and therefore duplicating such a facility in another location for the same operator would induce additional inefficiencies into the system thus increasing the haulage cost per tonne of coal. As well, the current operational inefficiencies that occur at Jilalan would still need to be addressed if part of the planned investment was constructed at an alternative location (eg bypass tracks).

Thus the construction of the full planned development on a predominately Jilalan greenfield site will result in the best overall economic solution for the participants in the supply chain.

1.4.7 Jilalan Yard options

The preferred project delivery strategy for the JRYUP was by way of an Alliance between QR, a designer (Connell Wagner, Hatch and Parsons Brinkerhoff) and constructor (Macmahon and MVM Rail).

The identification of alternative layout options with the potential to improve operational capacity, constructability, time and cost outcomes for the Project started during the selection process for the Alliance. At the same time, the Alliance sought to define the operational requirements for the Project. A total of three layout options (two with two variants) had the potential to meet all of these requirements and were subjected to a more detailed evaluation. It must be noted that further refinement and value engineering of the preferred option will be carried out in the project definition phase of the Alliance works.

Figures 1.4 and 1.5 illustrate the various options considered.

The criteria used to evaluate each of the options included:

- Operational requirements
- Construction schedule
- Environmental impact
- Future expansion requirements
- Health and safety
- Life cycle cost
- Operational disruption

Jilalan Rail Yard Upgrade Project

Connell HATCH
Infrastructure for Industry

OPTION 1

OPTION 2

V:\Projects\Qld_Rail\HR5021\GIS\Workspaces\Jilalan_64.wor By: RAG Date: 07/09/07 Version 2

LEGEND

Proposed Rail Alignment

RAIL ALIGNMENT
OPTION 1 AND OPTION 2

FIGURE 1.4

Jilalan Rail Yard Upgrade Project

OPTION 3A

OPTION 3B

V:\Projects\Qld_Rail\HR5011\GIS\Workspaces\Jilalan_65.wor By: RAG Date: 07/09/07 Version 2

LEGEND

Proposed Rail Alignment

RAIL ALIGNMENT
OPTION 3a AND OPTION 3b

FIGURE 1.5

- Land procurement
- Inter-disciplinary issues

For the comparative purposes of this analysis the costs for Option 1 have been set to $0 and all other options considered as a net difference. Only the areas where the scope differs have been compared.

Table 1.1 summarises the evaluation results by option against each of the criteria. Results are presented relative to Option 1. **Bold** font indicates preferred option for that particular criterion.

Table 1.1 Summary of Jilalan Rail Yard Upgrade option analysis

Evaluation criteria	Option 1*	Option 2	Option 3a	Option 3b	Option 4
Operational Requirements	Complies	Complies	Complies	Complies	**Complies**
Whole of Life Cost Differential	$ 0	Higher cost than option 1	Higher cost than option 1	**Lower cost than option 1**	**Comparably Lower cost than option 1**
Construction Schedule					
Practical Completion	5 May 2010	4 May 2010	Not Assessed	30 Dec 2009	31 May 2009
Bypass/Prov Open	17 Nov 2009	13 Mar 2010	Not Assessed	**Oct 2009**	**Oct 2009**
Wagon Open	24 Feb 2010	12 Nov 2009	Not Assessed	30 Dec 2009	30 Dec 2009
Operational Disruption	Very High	**Medium**	High	High	**High**
Environmental Impact	Impact on Elizabeth and Willy Creeks Landowner Impacts N and S	Significant impact on Elizabeth and Willy Creeks	High impact on Plane Creek Landowner Impacts N	**Impact on Elizabeth and Willy Creeks** **Landowner Impacts N**	**Impact on Elizabeth and Willy Creeks** **Landowner Impacts N**
Future Expansion Requirements	Complies	Complies	Complies	Complies	**Complies**
Inter-Disciplinary Issues	Complex OLE tie-ins N and S	Significant additional scope	Complex OLE tie-in N	Complex OLE tie-in N	**Complex OLE tie-in N**
Health and Safety (ranked in order of preference)	5	4	3	2	**1**

Table Notes:
* Base case option
N North
S South
OLE Overhead line equipment
Shading Preferred option

Option 4 is the preferred option. The comparison is similar to Option 3b, however an additional three tracks were added to the scope for Option 4, resulting in a longer construction schedule and additional impact on Willy and Elizabeth Creeks (refer Chapter 2).

Option 4 is preferred in terms of health and safety, removing a number of construction and operational related hazards present in the other options. The use of the existing level crossing to construct the embankment at the northern end of the yard is a significant residual construction hazard that will have to be carefully controlled during implementation.

1.5 The Environmental Impact Assessment process

1.5.1 Project status

The JRYUP was declared a Significant Project in May 2007 under Section 26 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act) for which an EIS is required.

Pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the delegate for the Commonwealth Minister for the Environment and Heritage decided the Project did not constitute a Controlled Action on 10 April 2007 (refer Appendix C).

This EIS has been prepared and compiled in accordance with the final ToR issued by the Department of Infrastructure in July 2007 for the Project (refer Appendix A1).

1.5.2 Methodology of the EIS

The Department of Infrastructure prepared a draft ToR, which was made available to State and local government agencies and the public, during a public display period in June 2007 to review and comment.

In accordance with the final ToR, the following environmental assessments have been undertaken to prepare the EIS:

- Flora and fauna (terrestrial and aquatic)
- Cultural heritage
- Surface and groundwater quality
- Topography, geology and soils
- Contaminated land and acid sulfate soils
- Noise and vibration
- Air quality
- Land use
- Socio-economic
- Health and safety
- Traffic impact
- Waste
- Hazard and risk

Throughout the EIS process consultation with government agencies, stakeholders, environmental groups and the public has been undertaken by QR and Connell Hatch (refer Section 1.6).

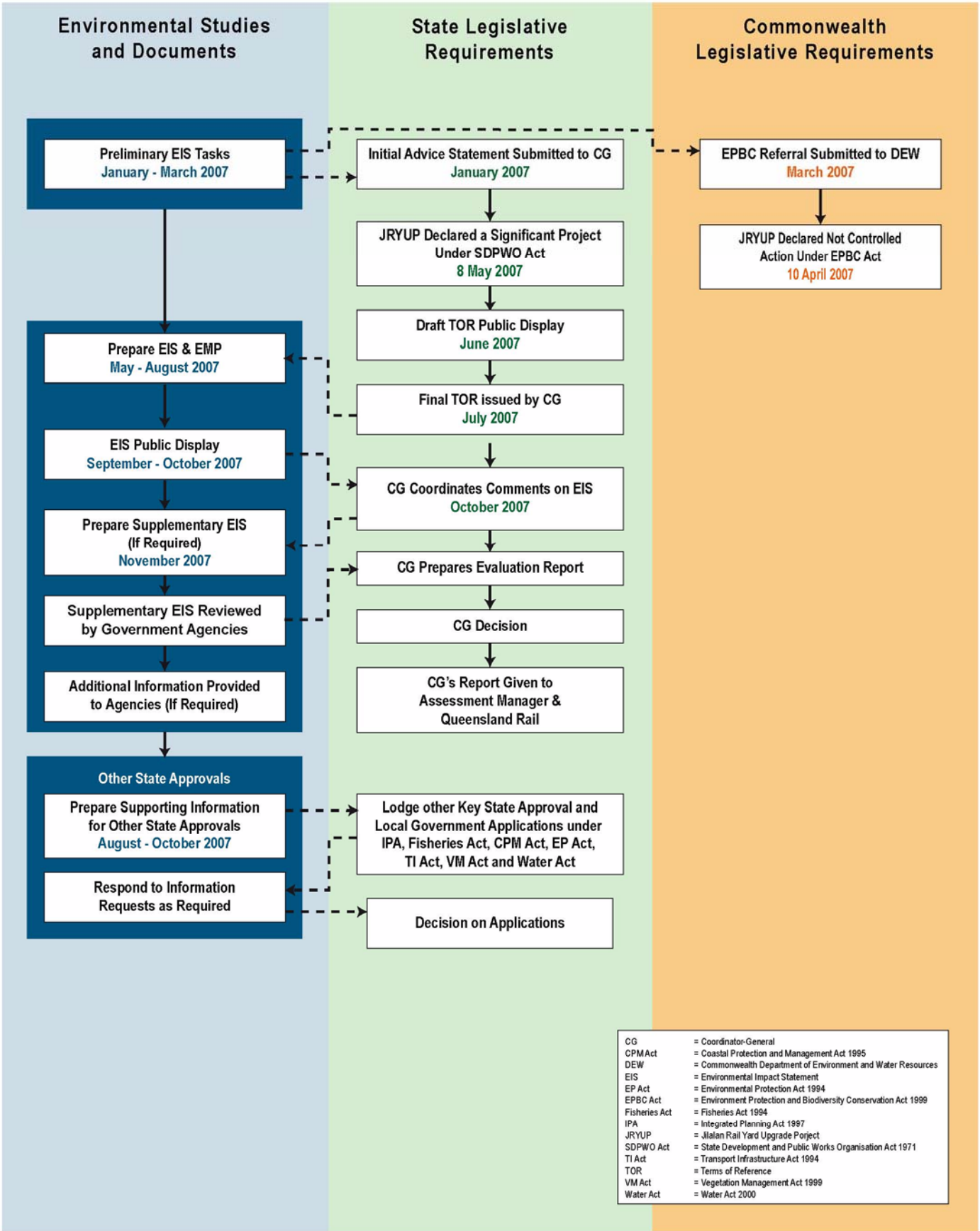
The methodology, timing and decisions for various stages in the EIS are illustrated in Figure 1.6.

1.5.3 Objectives of the EIS

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

Specifically, the EIS provides:

- A basis for understanding the JRYUP, 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 parties and persons.
- An outline of the effects of the proposed project on the area, including access for landowners or persons with rights or interests in the land.



V:\Projects\Qld_Rail\HR5001\GIS\Workspaces\Jilalan_26.wor By: SLG Date: 13/09/07 Version 3

EIS PREPARATION AND APPROVAL PROCESS CHART

FIGURE 1.6

- A framework against which decision makers can consider:
  - The environmental aspects of the project through legislative and policy provisions and decide whether the Project can proceed or not.
  - 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 for public consultation and informed consent on the Project.

As part of the EIS process an Environmental Management Plan (EMP) for the construction and operation stage, has been prepared in accordance with the QLD EPA Guideline for Preparing Environmental Management Plans (refer Chapter 17), together with input from the QR environmental advisor's and the constructor.

The EMP for the Project, details the actions and procedures to be carried out during the implementation phase of the Project in order to mitigate adverse impacts or enhance environmental or social outcomes. The EMP is a 'live document' which will continually be updated by QR, the constructor and Connell Hatch throughout the implementation of the Project.

1.5.4 Submissions

During the EIS public display stage, government agencies and the public can lodge a submission to the Coordinator-General.

The submission period set under Section 33 of the *State Development and Public Works Organisation Regulation 1999* must be at least 28 days.

Submissions will be accepted during the EIS public display period from 24 September 2007 to 22 October 2007.

Submission should be made in writing to:

The Coordinator-General
Attention: EIS Project Manager
Jilalan Rail Yard Upgrade Project
Major Projects
PO Box 15009
CITY EAST QLD 4002

The Coordinator-General will refer all submissions to the proponent of the Project (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 Coordinator-General will prepare a report evaluating the EIS, submissions and other materials at the end of the submission period. Once completed, the Coordinator-General will give a copy of the report to the proponent and publicly notify the report.

Submissions received by the close of the public display will be addressed within the Supplementary EIS, which will also be prepared by Connell Hatch and then submitted to the Coordinator-General.

1.6 Public consultation process

A project specific community consultation plan was developed during the initial EIS stage for the JRYUP to ensure a strategic and practical approach to the communications and consultations with landowners, government agencies, and the public. The communication plan also identifies the importance and strategies to ensure open communication between QR, the Design and Engineering Alliance team and the Connell Hatch EIS team.

Table 1.2 Stakeholder consultation and communication

Activity	Summary of outcome
Agency briefings (May – June 2007)	Agency's are eager to be involved in EIS process and provide comment
Newsletter No 1 (June 2007)	Surrounding community informed of Project
Project telephone line and email address (June-September 2007)	Limited response from the community
QR consultation (ongoing)	Appendix D contains outcomes
Traditional Owner consultation	Letters were issued to relevant Traditional Owner parties followed by a cultural heritage walk through
EIS Information Day (23 August 2007) Invitation issued to community through newspaper,	Appendix D contains outcomes
Newsletter No 2 (August 2007)	Surrounding community updated on Project
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 or current

The Communication Action Plan for the EIS and Project EIS Consultation Report are provided in Appendix D.

1.7 Project approvals

1.7.1 Relevant approvals legislation policy and planning requirements

Given the regional and State significance of the JRYUP and the nature of environmental elements potentially impacted by the project, there are a number of Commonwealth and State legislative requirements which need to be addressed prior to construction commencing.

The key Project approvals are summarised in the table below.

Table 1.3 Summary of key project approvals

Legislation	Administering authority	Development action	Approval/Permit
State Development and Public Works Organisation Act 1971	Coordinator-General	Initial Advice Statement	Declaration as a significant project requiring an EIS

Legislation	Administering authority	Development action	Approval/Permit
Integrated Planning Act 1997	Sarina Shire Council	Material Change of Use made Assessable Development under the Sarina Shire Planning Scheme (May 2005).	The EIS process for a significant project may be undertaken before an Integrated Development Assessment System (IDAS) application is made. The IDAS application for the Project will be made during the EIS public display period.
Aboriginal Cultural Heritage Act 2003	DNRW	Construction works	Aboriginal cultural heritage investigation and Cultural Heritage Management Plan
Environmental Protection Act 1994 and Integrated Planning Act 1997	EPA	Construction and operational activities trigger ERAs (refer Section 4.11.11)	Development permits and registration certificates QR holds an existing Development Permit and Registration Certificates (Certificate of Registration No: ENRE00307205) for Lot 101 on SP108584. This Permit will be upgraded where necessary to include the proposed new areas of the Jilalan Rail Yard.
		Removal of contaminated soil from sites listed on CLR or EMR	Disposal Permit (if required)
Fisheries Act 1994 and Integrated Planning Act 1997	DPIF	Work in areas causing removal, destruction or damage to marine plants	Development Permit (if required)
		The construction or raising of a waterway barrier	Development Permit
Nature Conservation Act 1992	EPA	Taking, using, keeping or interfering with a protected animal or plant	Permit if protected plants are affected by Project
Vegetation Management Act 1999 and Integrated Planning Act 1997	DNRW	Removal of Regional Ecosystems as defined by the EPA under the Act	Development Permit
Water Act 2000	DNRW	Destroying of vegetation, excavating or placing fill in a watercourse, lake or spring	Riverine Protection Permit or compliance with DNRW guidelines shown
		Stream diversion for Elizabeth and Willy Creeks	Water licence

Table Notes:

DNRW = Department of Natural Resources and Water
DES = Department of Emergency Services
EPA = Environmental Protection Agency
DPIF = Department of Primary Industries and Fisheries
CLR = Contaminated Land Register
EMR = Environmental Management Register
ERA = Environmentally Relevant Activity

Further details of the legislative and planning requirements for JRYUP are described in Chapter 4 of the EIS.

1.7.2 Planning processes and standards

The Project's compliance with relevant State, regional and local planning policies and plans is included in Appendix F.