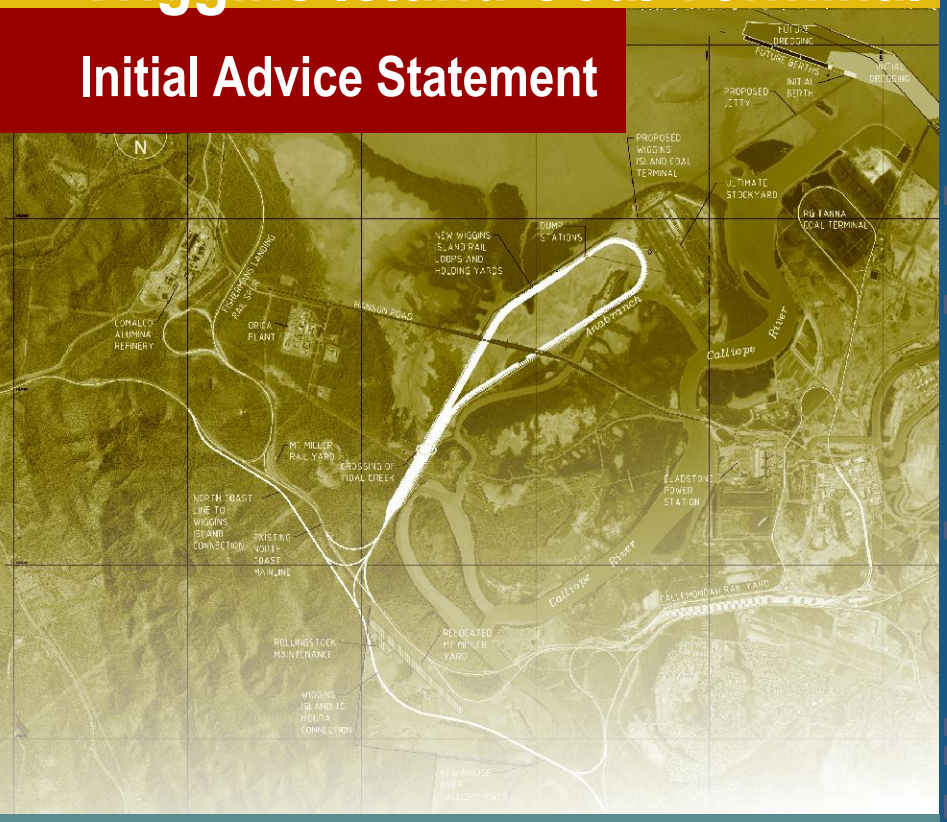
Wiggins Island Coal Terminal

Initial Advice Statement



Wiggins Island Coal Terminal

September 2005

Central Queensland Ports Authority

Connell HATCH Infrastructure for Industry

QUEENSLAND RAIL

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1. Introduction

This Initial Advice Statement (IAS) has been prepared on behalf of Central Queensland Ports Authority (CQPA) and Queensland Rail (QR) identifying the potential environmental impacts associated with the construction and operation of the Wiggins Island Coal Terminal (WICT) and associated rail infrastructure.

1.1 Background

The proposed WICT is to be located near Wiggins Island in the Port of Gladstone. The Port of Gladstone is located 525km north of Brisbane. The Port is just south of the Tropic of Capricorn at Latitude of 23°49.61'S and Longitude 151°34.6'E. Figure 1 shows the site locality.

The Gladstone Port has:

- A naturally deepwater harbour;
- Protected waters sheltered by harbour islands;
- Stable weather patterns;
- An abundance of nearby available land for industrial development;
- A nearby hinterland rich with natural resources linked by an efficient transport network;
- Abundant energy and natural resources sources, including coal, natural gas and water; and
- A short sailing time of 10 to 12 days to the Asia Pacific region.

The Port is a convenient point for the worldwide distribution of wealth of Central Queensland. Rail links to the rich hinterland to the west of the city provide access to the coal mining, agricultural and pastoral areas of the Callide/Dawson Valleys, Central Highlands and Bowen Basin.

The Port's facilities cater for the import of raw material and the export of finished product associated with major industries in the region. Multi-user facilities cater for the export of the region's coal, mineral and agricultural resources.

The Queensland Government has earmarked the Port of Gladstone as Australia's future major industrial centre for the 21st Century. The Port already plays a vital role in the economy of the region, State and Australia.

The port faces a bright future with a predicted annual throughput of 135 million tonnes of cargo by the year 2050 – more than double the 50 million plus tonnes currently handled.

The Port of Gladstone is one of the world's top five coal export ports, presently handling in excess of 45 million tonnes of coal per annum. Coal is the port's largest trade, representing over 70% of the total cargo exported through the port.

CQPA currently owns and operates two coal export terminals in the Port of Gladstone – RG Tanna Coal Terminal and Barney Point Terminal. Combined these two terminals have the capacity to handle over 50 million tonnes per annum (Mtpa).

To cater for contracted tonnages from existing coal mines, CQPA is undertaking a major expansion of the RG Tanna Coal Terminal to allow for the annual capacity to be increased from 45Mtpa to 67Mtpa. This work includes the increase in the existing shiploader rate from 4,000tph to 6,000tph; the addition of a third rail loop and rail receival facility; a third shiploader stream and fourth berth; and an additional five stockpiles. These works are scheduled for completion in the last quarter of 2006 at an estimated cost of $400 million.

1.2 Queensland Coal Transport

Queensland Rail (QR) is a major link in the Queensland coal supply chain. All of Queensland's coal exports are transported to port by QR with the interconnected coal rail network subdivided into five rail systems as shown in Figure 2.

Due to infrastructure constraints, different "Reference Trains" operate on each of the Coal Systems managed by QR. As can be seen from Figure 2, Gladstone is a critical element of the Blackwater and Moura Systems receiving both electric and diesel trains in multiple loco configurations of varying train lengths.

Table 1.1 Moura and Blackwater Systems Maximum Train Length and Payload

Route	Maximum Train Length and Payload (tonnes)
Moura System	991m, 4,800t
Blackwater System	1,660m, 6,770t

1.2.1 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 export terminals at Gladstone. It also links the three mines with domestic coal users such as QAL and the Gladstone Power Station. Trains operating on this system typically haul a payload of 4,800 tonnes of coal.

1.2.2 Blackwater System

The Blackwater rail system is an electrified line that connects coal mines in the southern Bowen Basin, from Gregory in the north to South Blackwater in the south, to the RG Tanna and Barney Point coal export terminals at Gladstone, and domestic coal users. The Blackwater System along with the Port of Gladstone is critical to the export logistics of the Bowen Basin. Trains operating on this system typically haul a payload of 6,900 tonnes of coal.

1.3 Purpose of the Initial Advice Statement

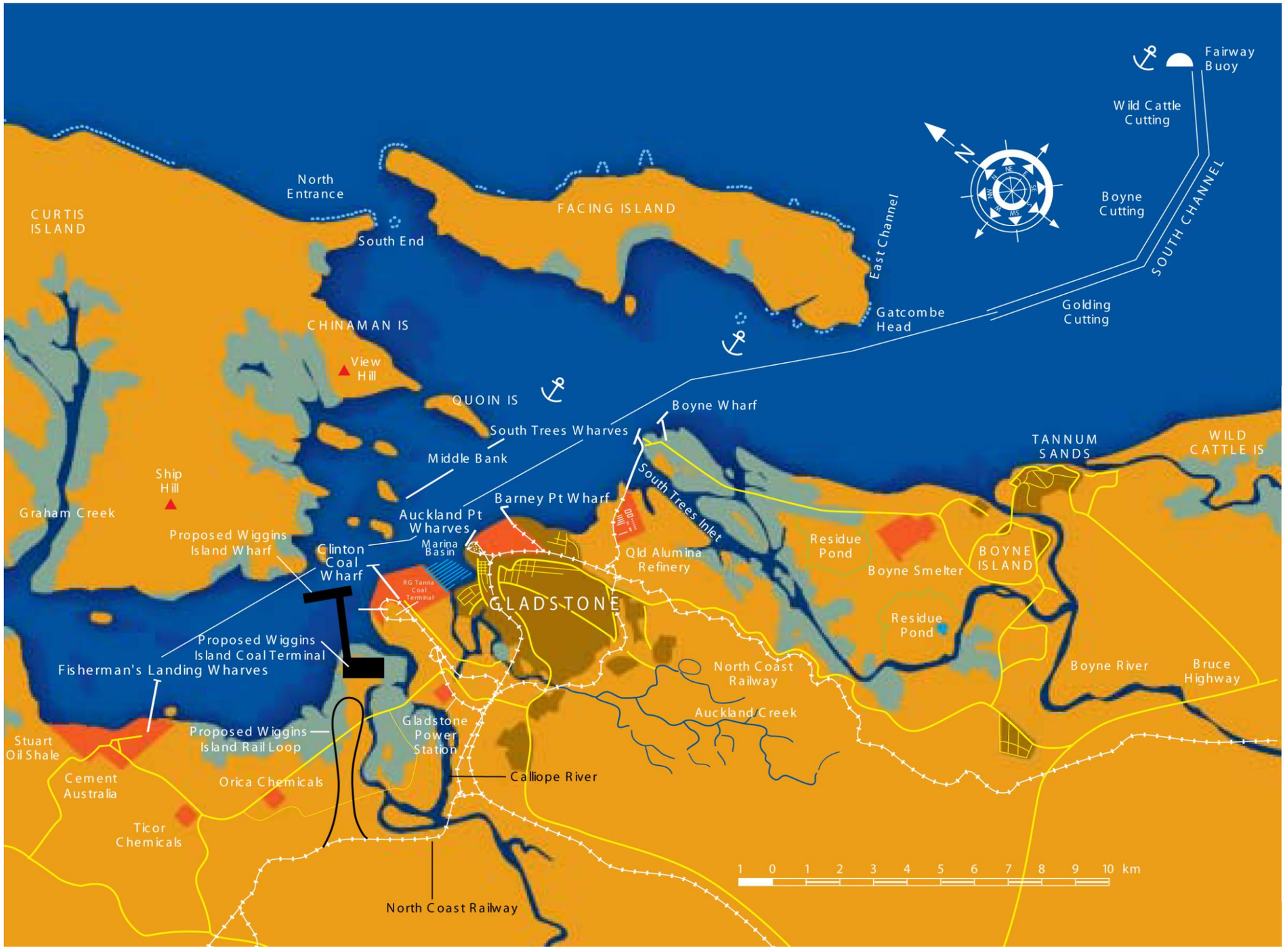
The preparation of an IAS is the first step in the process of an environmental impact assessment and assists in the initial consultation, scoping and definition of the proposal as well as enabling the Queensland Coordinator-General (CoG) to declare the project a "Significant Project". The purpose of an IAS is to provide information on the nature and extent of potential environmental impacts arising from the construction and operation of the WICT and related activities that take place concurrently to contribute to the decision making process. The IAS provides:

- Background information and historical details regarding the proposal;
- The need and justification for the project;
- A brief description of the proposed works; and
- An outline of the potential environmental effects associated with the construction, operation and decommissioning phases of the development.

1.4 The Proponents

1.4.1 Central Queensland Ports Authority

As from 1 July 1994, Gladstone Port Authority became a Government Owned Corporation under the *Government Owned Corporation Act 1993*. Previously until 30 June 1994 it was a Corporation constituted under the *Harbours Act 1955*. Both Acts stated are Queensland legislation.



Wiggins Island Coal Terminal

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Figure 1
Site Locality

HE502NZ

Wiggins Island Coal Terminal

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Central Queensland Ports Authority

Figure 2

From 1 July 2004, the Gladstone Port Authority and Rockhampton Port Authority combined to form the new CQPA. The functions of the CQPA are:

- To establish, manage and operate effective and efficient port facilities and services in the Port of Gladstone and Port Alma;
- To make land available for:
  - The establishment, management and operation of effective and efficient port facilities and services in the port by other persons; or
  - Other purposes consistent with the operation of the port;
- To provide or arrange for the provision of ancillary services or works necessary or convenient for the effective and efficient operation of the port;
- To keep appropriate levels of safety and security in the provision and operation of the facilities and services;
- To provide other services incidental to the performance of its other functions or likely to enhance the usage of the port; and
- To perform any other functions conferred on it by legislation.

CQPA is unique among Australian port authorities as it not only conducts the functions of a "landlord" port authority, but also owns and operates cargo handling facilities in the port. CQPA Port of Gladstone operations include:

- Operating bulk loading facilities at RG Tanna Coal Terminal and Gladstone Port Central (Auckland Point and Barney Point);
- Operating Gladstone Marina and Auckland Point Inlet facilities;
- Quarrying and land reclamation; and
- Leasing port lands.

The contact details of this project proponent are:

Central Queensland Ports Authority
Port of Gladstone
19 Yarroon Street
PO Box 259
GLADSTONE QLD 4680
Telephone: (07) 4976 1333
Facsimile: (07) 4972 3045

1.4.2 Queensland Rail

Within Queensland QR is the largest provider of rail transportation solutions for Australia's coal mining industry. In 2003/04 QR transported 144Mt of coal, 135Mt for export and 9Mt for domestic use.

In Queensland, QR operates over 400 services per week from over 30 coal mines. It rails coal to six export coal terminals and domestically to electricity generation and minerals processing industries. These services are operated on QR's interconnected coal network of over 2,000km of track (75% electrified).

In 2005, QR will commence its first export coal haul in NSW's Hunter Valley region after successfully tendering against other major rail operators for the transport of approximately 10Mtpa from BHP Billiton's Mt Arthur mine to the port at Newcastle for export.

The contact details of this project proponent are:

Queensland Rail
Network Access Group
Level 3
127 Creek Street
GPO Box 1429
BRISBANE QLD 4001
Telephone: (07) 3235 2624
Facsimile: (07) 3235 3930

1.5 Outline of the Proposal

The proposal is to develop a coal terminal in the Port of Gladstone near Wiggins Island with an ultimate capacity of 70Mtpa, which will potentially be staged, and with the following global design criteria:

- The terminal will handle all varieties of coal;
- The stockyard configuration would either be a stacker/reclaimer or a hybrid system utilising automated stockpiling of coal and dozers for the recovery of coal to the shiploading stream as occurs at RG Tanna Coal Terminal; and
- There will be multiple approach roads and outroads for the coal train and coal unloading stations.

The focus of this proposal and IAS, and subsequent EIS is as follows:

- The construction and operation of a staged 70Mtpa coal terminal at Wiggins Island, with the first stage in the order of 25Mtpa; and
- The construction and operation of the electrified and diesel rail access to and from the new terminal at Wiggins Island both from the north and from the west, together with supporting infrastructure, including holding yards and rollingstock maintenance and servicing facilities. This rail access will have an ultimate capacity to transport 70Mtpa to WICT, with the first stage in the order of 25Mtpa.

1.6 Site Location

The location of the proposed WICT is shown on Figure 1. It is located to the west and directly across the Calliope River from the existing RG Tanna Coal Terminal. The site is constrained by the Calliope River estuary to the south and east and by extensive seagrass beds to the north and west of Golding Point. Road access from Gladstone to WICT will be off Hanson Road to the west of the Calliope River Anabranch.

The proposed stockyard is to be located on the existing elevated ground known as Golding Point, and within the existing reclamation limits. Currently it is proposed that the rail line will connect to the North Coast line to the west of the Calliope River and will traverse primarily salt/mud flats for the entire distance of the loop. The rail crosses Hanson Road and will require grade separation (road over rail).

The jetty will run in a northeasterly direction and skirt to the north of the two outer islands (Wiggins Island and Mud Island) crossing primarily shallow depth seagrass areas. The wharf is to be located south of the Targinnie Channel approximately 1km upstream of the RG Tanna Coal Terminal.

1.7 Land Tenure

The majority of the WICT site is currently regarded as Strategic Port Land (ie owned by CQPA) and includes the following lots:

- Lot 28 on CTN279;
- Lot 98 on CTN279;
- Lot 99 on CTN279;
- Lot 100 on CTN279;
- Lot 136 on CTN2109; and
- Lot 137 on CTN2109.

The remainder of the WICT site is controlled by CQPA under a permission to reclaim and is located within the boundaries of the Gladstone City Council.

The proposed additional rail infrastructure is located on land currently owned by State Government (Department of State Development and Innovation, State Forest), Gladstone City Council and private individuals. The rail is located within both the Gladstone City Council and Calliope Shire Council jurisdictions.

1.8 Reclamation of Wiggins Island

CQPA has reclamation approval for the site of the proposed stockyard and rail loop. The reclamation of the Wiggins Island area was granted under the *Harbours Act 1995* on 3 October 1991 and published in the Queensland Government Gazette on 5 October 1991. The approval, which remains in force for a period of 20 years from 5 October 1991 (until 5 October 2011), allows the reclamation of the subject land to a level of 3.7m Australia Height Datum (AHD) 5.968m Lowest Astronomical Tide (LAT), so as to render it fit for Port Land and Industrial purposes.

2. Need for the Project

2.1 Overview

This section describes the need for the proposed project, which includes the current needs that the proposed project will fulfil the economic, social and environmental 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 in the Port of Gladstone.

Recent growth in demand for metallurgical and thermal coal has resulted in a significant supply deficit. This has been reflected in the price of metallurgical coal, which has increased from approximately US$43 per metric tonne (mt) in 2003 to US$145/mt in 2005.

In order to meet such demand, capital expenditure of approximately $A2.5 billion has already been committed to projects within the Australian coal industry that will expand production by approximately 55Mtpa over the next two years.

Queensland's Bowen Basin produces high quality coking coal, pulverised coal injection (PCI) coal and thermal coal that is exported to Japan, Korea, Taiwan, China, India, Europe 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 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.

2.2 Existing Capacity Constraints

With the completion of the current expansion of the RG Tanna Coal Terminal the facility will have reached its ultimate development capability. Whilst additional stockpiles can be added to increase the on ground storage the inloading capacity of the terminal is constrained both in the ability to construct a fourth rail receival facility and to gain rail access through the rail yards at Callemondah. The shiploading capacity is constrained in the ability to add a fourth shiploading stream or construct a fifth berth. Both the rail receival and shiploading capacity are matched at 67Mtpa. This existing capacity has been committed to contracted customers with capacity expected to be reached by the middle of 2007.

The Barney Point Coal Terminal has a limited capacity due to the constraint on the area available for stockpiling at the terminal. Environmental considerations also limit the ability to expand this terminal capacity beyond 7Mtpa. Customer contracts have been established for this tonnage.

Any additional export tonnage will require the establishment of a new terminal. Central Queensland Ports Authority (CQPA) have determined that they have sufficient committed tonnages to initiate the Wiggins Island Coal Terminal Project.

2.3 Export Coal Markets

Australia is estimated to hold 75 billion short tons (Bst) of coal reserves, the majority of which are concentrated along the country's eastern seaboard, with the Bowen Basin in Queensland containing the largest reserves. Queensland accounts for 57% of Australia's annual coal production.

As noted previously, most black coal in Queensland comes from the Bowen Basin, extending south from Collinsville to Blackwater and Moura, and at Newlands, Blair Athol and near Brisbane. Other large deposits of younger coal in the Millmerran area west of Brisbane have the potential to be developed to generate electricity.

Table 2.1 Annual Black Coal Production Figures

	Black Coal - Raw		Black Coal - Saleable	
	2003	2004	2003	2004
Queensland	197.8	215.2	156.1	169.4
Australia	352.1	377.8	279	296.7

Black coal remains Australia's largest commodity export, worth around $A13.5 billion in calendar year 2004 - an increase of almost 25% over 2003. In 2003-04 black coal represented around 13% of Australia's total commodity exports. ABARE (the Australian Bureau of Agricultural and Resource Economics) estimates this to rise to 18% in 2004-05, equating to coal exports of $A18 billion.

Total world trade in coal in 2003 was 719 million tonnes - comprising 520 Mt of thermal coal (72%) and 199 Mt of metallurgical coal (28%). Australia remains the world's largest coal exporter with exports of 208 Mt in 2003, or 29% of the total world market (down from 31% in 2002). In terms of thermal and metallurgical coal markets, Australia's share in 2003 represented 19% and 54% respectively of the total world trade.

As the world's largest coal exporter, Australia supplies markets in more than 35 countries around the world including Japan and other Asian economies (which account for over 80% of Australian exports), Europe (13%), South America and South Africa.

The International Energy Agency (UK) projects that the world will need almost 60% more energy in 2030 than in 2002 with fossil fuels (predominantly coal) still to meet most of its needs. Coal plays a crucial role in sustainable development. It is the most widely used energy source in electricity generation and an essential input to most steel production. 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.

Over the past few years, China has reversed its position from a net exporter of hard coking coal to a net importer, while at the same time China’s exports of coke to the steel industry have been subject to fluctuation. 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.

Price negotiations for the 2005 coal year (1 April 2005 – 31 March 2006), concluded at the end of 2004, reflected the tight market conditions. Substantially all hard coking coal settlements were concluded at US$125/tonne FOB for the 2005 coal year. After accounting for other lower quality product sales such as thermal and PCI coal, and as some contracts are based on time periods other than the coal year, the weighted average coal price for the 2005 coal year is expected to be approximately US$122/tonne, up about 130% from 2004 coal year prices.

During the year, the trend strengthened towards steel producers signing long-term contracts and/or purchasing equity interests in coal producers in order to secure additional supplies to meet their future needs. The higher coal prices are serving to attract new supply to the market, with major producers announcing plans for capacity increases.

Australia is ideally positioned in terms of readily accessible reserves and quality to meet the current under supply and future demand increases. WICT provides CQPA with a strategic link in the coal supply chain and is critical to ensuring reliability and continuity of supply of coal to the export market now that RG Tanna Coal Terminal has reached maximum development capacity.

2.4 Mine/Customer Requirements

Motivated by the significant growth in steel production in China and India, and long-standing demand for energy (thermal) coal, the ongoing demand for good quality coal is forecast to remain robust. The Bowen Basin (Blackwater region) and Surat Basin (Wandoan region) are expected to produce good quality coal into the foreseeable future with substantial reserves of good quality coal product. The region is currently among the lowest cost producers of high metallurgical and thermal coal in the world.

Figure 3 illustrates the Department of Natural Resources and Mines' coal industry summary.

Queensland is the world's largest exporter of seaborne coal. During the year 2003-04 Queensland produced a record 160.06 million tonnes (Mt) of saleable coal - an increase of 4.2% over the previous financial year.

Opportunities remain for further resource development in the central and south west Bowen Basin within the Reids Dome Beds, which are known to contain vast, and as yet, undeveloped resources of high quality thermal and metallurgical coals. Recent exploration in the southern Bowen Basin has focused on thermal and semi-soft coals. This has led to several new mines being developed, and has located other significant coal resource areas for possible future development.

Initial enquiries have been received from coal companies indicating the potential for the following mines to be developed together with their anticipated capacity as at 2013:

- Monto 8 to 10 Mtpa
- Belvedere 10 to 12 Mtpa
- Lake Vermont 4 to 5 Mtpa
- Ensham (expansion) 7.5 Mtpa

In addition to these new mines, existing mines are seeking to expand to cater for the increased global demand for coal.

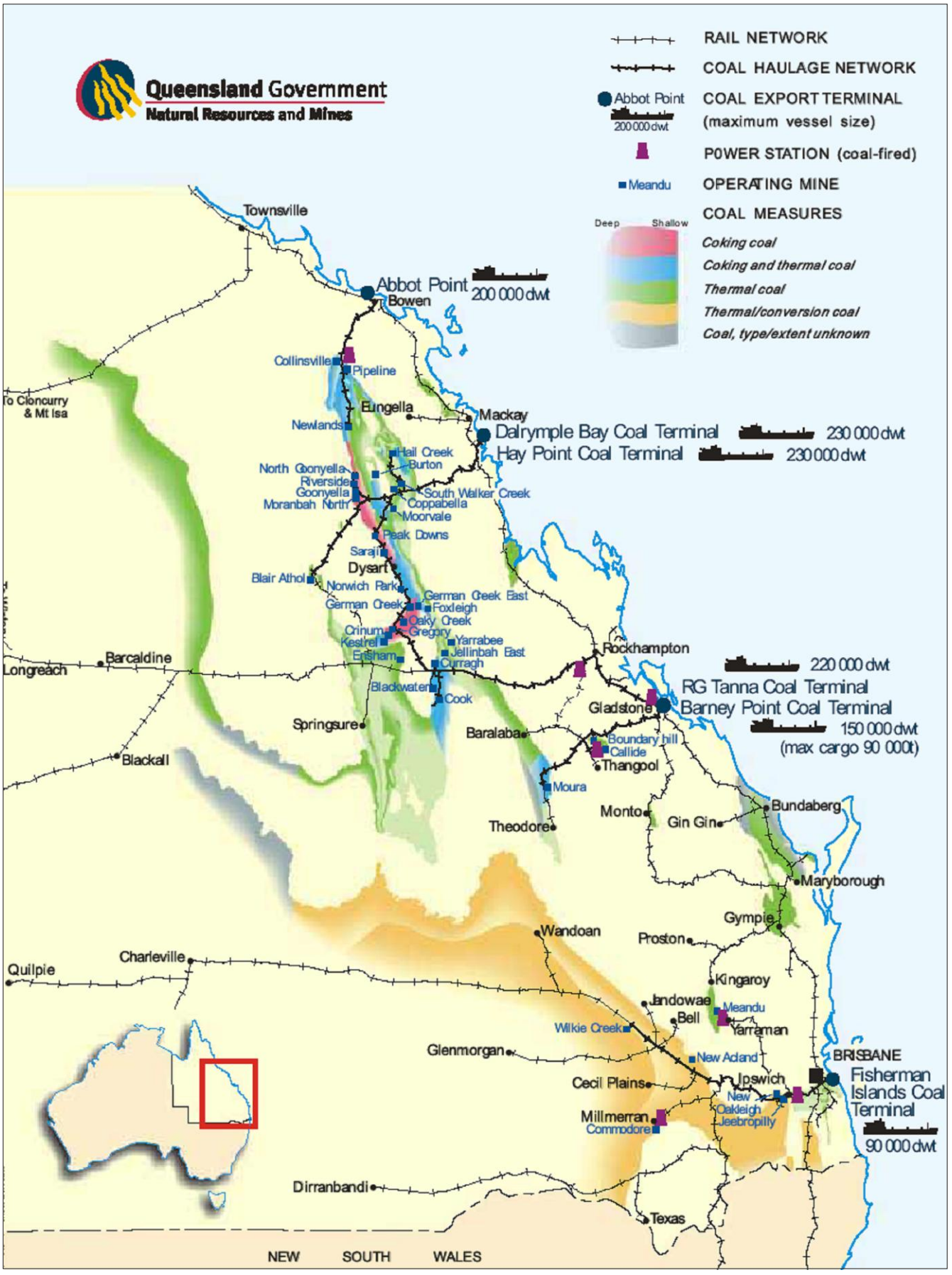
A significant and expanding world market exists for Bowen Basin coal due to its low sulphur and nitrogen levels and that it produces low $C0_2$ upon combustion.

All of Queensland's export coal is transported to port via the coal rail network operated by Queensland Rail. 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 ensuring the support of the Queensland State Government.

2.5 National Competition Principles Affecting this Development

Queensland Rail (QR) is the primary rail transport operator in the Queensland coal supply chain transporting all of Queensland's coal exports to port. QR is also a Government Owned Corporation (GOC) and hence operates under the provisions of the GOC Act and consequently National Competition Principles.



Source: Department of Natural Resources and Mines website

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.

CQPA's operations are not defined as a Regulated Asset however it is a GOC and must meet the principles of the National Competition Policy. CQPA must make reasonable efforts to meet and satisfy demand for its services.

It is thus that QR and CQPA have commenced development of the complimentary infrastructure necessary to meet the demands of users at Wiggins Island.

3. Project Alternatives

3.1 Introduction

This section describes the no action alternative and other alternatives to the proposed activity that may be considered to fulfil the need for the proposed development. There are a limited number of options available to accommodate the increased coal export requirements. These options are discussed below and are summarised in Table 3.1.

3.2 Redirect Coal through Alternate Coal Terminals

This option would involve securing export capacity of other Queensland coal terminals rather than constructing WICT. Coal terminals through which coal could be directed include:

- Hay Point Services Coal Terminal (this terminal is privately owned by BMA to export BMA coal);
- Abbot Point Coal Terminal;
- Dalrymple Bay Coal Terminal;
- RG Tanna Coal Terminal; and
- Barney Point Coal Terminal.

The first three of these coal terminals are currently seeking approvals for expansion of their facilities to meet the current demands of their existing customers and to meet the demands of proposed mines. There are major logistic/operational issues associated with the integration of the Central Queensland coal supply chains, which are currently subject to feasibility and market conditions. It is therefore considered unlikely that sufficient capacity to satisfy total demand could be secured at any one of these terminals. Similarly, the ability to access these ports would be significantly more expensive due to the extensive haulage distances and hence cost. These additional tonnages would adversely affect the ability of QR to service their existing customers due to the extra length of travel that this coal would be on the QR rail network.

The existing facilities within the Port of Gladstone are constrained in their ability to be expanded through a combination of congestion of the existing rail system, limited land for storage of coal at the terminals and the ability to expand the shiploading facilities at the two terminals.

RG Tanna Coal Terminal has a nominal design capacity of 67Mtpa while the Barney Point Coal Terminal has a nominal capacity of 7Mtpa.

3.3 Development of a New Terminal

The selection of a site for a new terminal in the Port of Gladstone is controlled by the ability to safely handle Cape-sized vessels; the ability to link to the existing rail infrastructure; and sufficient land for the storage of coal at the port together with associated rail infrastructure.

Two sites within the Port of Gladstone exist that meet the requirement for access by Cape-sized vessels and available land space; these being Wiggins Island and Hamilton Point located on Curtis Island.

Rail access to Wiggins Island is readily achieved; however the ability to provide rail access for the tonnages for the ultimate capacity cannot be achieved at Hamilton Point. The rail corridor would be required to cross the mining lease for the shale oil deposits and cross the Narrows between the mainland and Curtis Island.

As such, the option of establishing a green field terminal at Wiggins Island is the preferred option and is the subject of this proposal.

3.4 No Action Option

The inability to ship the volume of coal would have significant financial implications for Australia and Queensland. Further, inaction to meet the demands of industry would curtail further proposed investment in the coal industry. The export of additional coal through the new WICT will provide additional export revenue for Australia, increased State revenue, and additional employment opportunities.

3.5 Summary of Alternatives

Table 3.1 summarises the project alternatives.

Table 3.1 Project Alternatives Summary

Option	Location/Port/Coal Terminal	Issue
Re-direct coal through alternate coal terminal	Hay Point Coal Terminal	• Privately owned; • Capacity constraints on rail terminal; • Expensive rail haulage.
Re-direct coal through alternate coal terminal	Abbot Point Coal Terminal	• Capacity constraints on rail and terminal; • Very long rail haulage from Southern Bowen Basin mines; • Expensive rail haulage.
Re-direct coal through alternate coal terminal	Dalrymple Bay Coal Terminal	• Capacity constraints on rail and terminal; • Very long rail haulage from Southern Bowen Basin mines; • Expensive rail haulage.
Re-direct coal through alternate coal terminal	RG Tanna Coal Terminal	• Limited capacity to expand rail and coal terminal; • Some expansion possible but at very high cost.
Re-direct coal through alternate coal terminal	Barney Point Coal Terminal	• Limited capacity to expand rail and coal terminal; • Some expansion possible but at very high cost.
Development of new coal terminal	Curtis Island/Hamilton Point (Gladstone)	• Similar to Wiggins Island but requires significant extra rail infrastructure and bridge across. Narrows from mainland to Curtis Island; • Will take longer to develop than WICT; • Expensive relative to WICT.
Development of new coal terminal	Fisherman's Landing (Gladstone)	• Limited to Panamax vessels without very expensive dredging; • significant rail infrastructure required • Better suited to development other smaller volume products.
Do nothing	Not applicable	• Damage Australia's reputation as reliable exporter of coal; • Loss of export revenue and employment opportunities.

4. Project Description

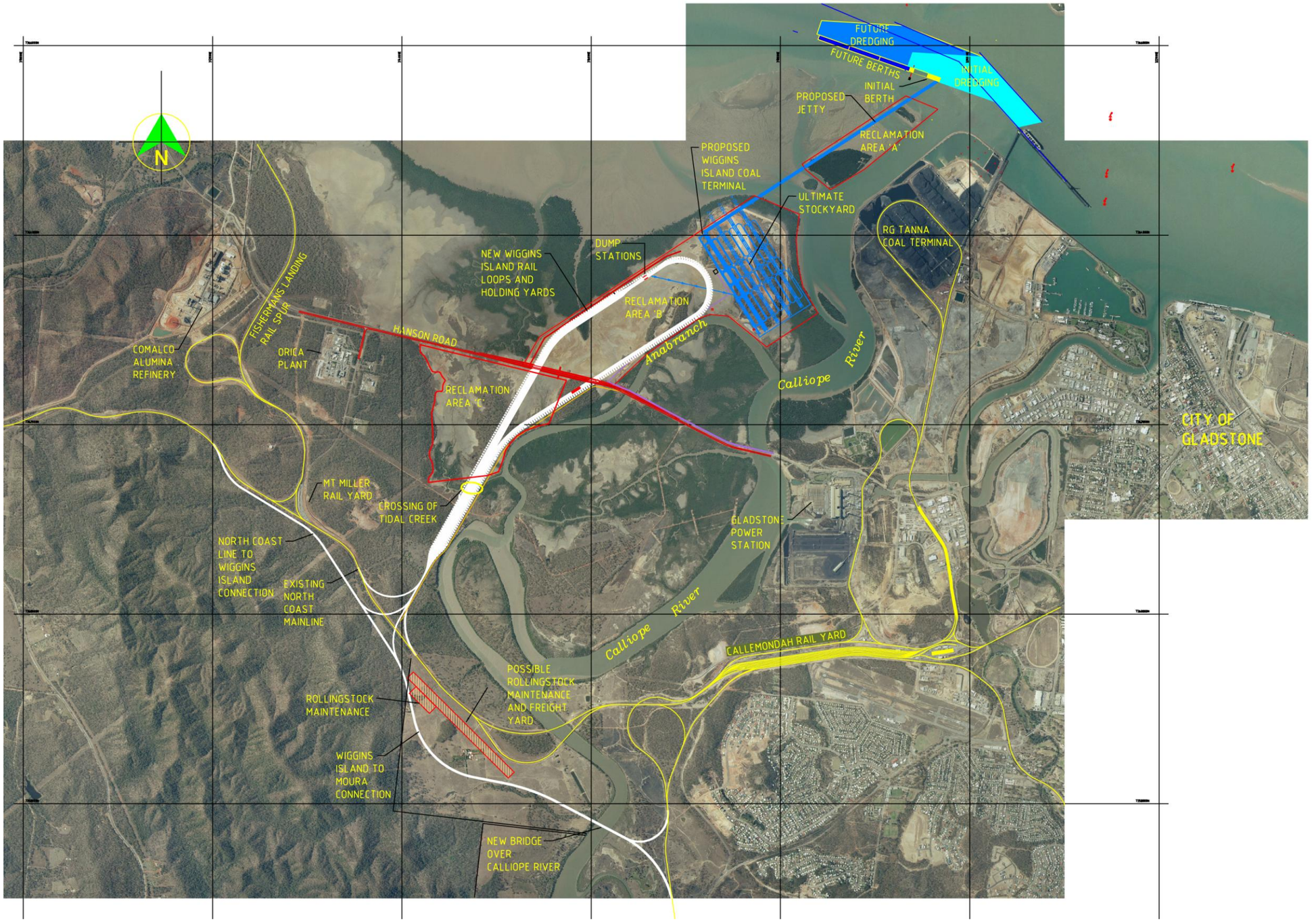
4.1 Introduction

The proposal is to develop a coal terminal in the Port of Gladstone near Wiggins Island with an ultimate capacity of 70Mtpa, which will potentially be staged, and with the following global design criteria:

- The terminal will handle all varieties of coal;
- The stockyard configuration would either be a stacker/reclaimer or a hybrid system utilising automated stockpiling of coal and dozers for the recovery of coal to the shiploading stream as occurs at RG Tanna Coal Terminal; and
- There will be multiple approach roads and outroads for the coal train and coal unloading stations.

The proposed layout of the initial facility is shown on Figure 4. The primary components of the facility include:

- Electrified rail access from the main line. Access is required from both north and south to cater for the northern mines from the Blackwater System and for the southern mines from the Moura System. The facility shall also cater for diesel trains;
- Three rail loops including multiple approach roads for holding multiple trains, and three departure roads capable of holding multiple trains. This involves significant height embankments and a crossing over a significant tidal creek;
- Rail connections from the new loop to the north linking to the North Coast line and to the south linking to the Moura System. This includes grade separated flyovers over the North Coast line. These may be bi-directional and/or dual track;
- Additional holding roads and rollingstock maintenance facilities adjacent to the rail link from the Wiggins Island to the Moura Line to improve operational flexibility on the Callemondah facilities as traffic increases;
- Provision for reliability examination of wagons and rollingstock at Wiggins Island;
- Locomotive provisioning and crew change facilities at the Wiggins Island rail loop;
- Several operational rail connections to allow direct access between the new maintenance facility, the Callemondah maintenance facility, the Moura system and the Blackwater system;
- An investigation will be undertaken to assess the value of including a general freight facility;
- Reclamation of the area between Hanson Road and the stockyard. It is proposed that this area be bunded and infilled with dredge material. This area is known as the Area B Reclamation and has current reclamation approval until 2011;
- Rail receival including dump stations, excavation and concrete works, structural steelwork, hoppers, vibratory feeders, dust extraction and conveyors;
- Inloading conveyors from rail receival to the stockyard;
- Stockyard including stacking and reclaiming conveyors and machines. This will be either a traditional stacker reclaimer arrangement or a hybrid option comprising overhead bridge gantry stacking machines combined with dozer reclaim to tunnels;
- Outloading conveyors and shiploaders. This includes all outloading conveyors from the north-western end of the stockyard, surge bins (only for stacker/reclaimer option), jetty and wharf conveyors, and shiploaders;
- Marine works including 2.4km jetty structure, wharf structure, independent mooring dolphin structures, and dredging from the RG Tanna Coal Terminal Swing Basin to the new berth;
- Internal power supplies, control systems and communications;
- Substations, workshops, administration, security, amenities and lighting for coal terminal and rail yard;



PRELIMINARY

Wiggins Island Coal Terminal

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QUEENSLAND RAIL

Central Queensland Ports Authority

Figure 4
Site Layout

- Roadworks and bridges along Hanson Road and terminal and rail yard access roads including services relocations as required. (eg Powerlink, gas, water, etc) Hanson Road will need to be raised over the new rail lines and access provided to the terminal and rail facilities. Access to land potentially isolated by the new rail lines is to be provided;
- Drainage and sedimentation ponds;
- Services and power supply to the site; and
- Landscaping and fencing.

The ultimate development of the coal facility is likely to include up to three rail loops and three inloading strings, three outloading conveyors, three shiploaders and four berths.

The storage capacity of the stockyard has not been finalised and evaluation of the required storage capacity is an expected outcome of the preliminary engineering studies.

CQPA are currently assessing two options for the WICT, a Stacker/Reclaimer Stockyard Option and a Hybrid Arrangement Option, which are described below.

4.2 Coal Terminal Works

4.2.1 The Stacker/Reclaimer Stockyard Option

The stockyard will comprise longitudinal rows located between stacker/reclaimer bunds. A possible arrangement for the facility is shown in Figure 5.

Initially, the facility may comprise two stockpile rows surrounding a stacker reclaimer bund. One stacker/reclaimer would be used to achieve the inloading rate, and another stacker/reclaimer would be used to achieve the outloading rate, as there is a high likelihood that stacking and reclaim operations will occur simultaneously. There are other stacker/reclaimer options available and the option to be developed depends upon the degree of operational flexibility required. All options would be contained within the footprint shown in Figure 6. These options will be investigated in the preliminary engineering phase. In addition to the major yard machines, a small dozer will be required to assist with clean up operations.

The stockyard conveyors would be located between the stacker/reclaimer rails. The stockyard conveyors and transfers would be configured to allow for all future inloading conveyors to load onto each stockyard conveyor and to allow loading from the stockyard conveyors onto all the future outloading conveyors.

The reclaim conveyors would discharge to a nominal 1500 tonne capacity surge bin located at the edge of the bund which will discharge to the jetty conveyor.

For the ultimate 70Mtpa facility, or intermediate stages of development, additional stockpile rows and yard machines would be added in parallel to the initial facility.

4.2.2 The Hybrid Arrangement Option

The hybrid arrangement is so called as it combines an automated stacking operation with a dozer reclaim operation. This has been successfully used previously at the Los Angeles Export Terminal (LAXT) in the USA. A possible arrangement is shown in Figure 6.

The stockpiles consist of two rows that can be divided into discrete segments. In the WICT arrangement, there are nominally four 250,000 tonne stockpiles in each row. The elevated stacking conveyor runs along the bund between the stockpile rows, and discharges to the travelling bridge stacker machine. The base case assumes two central conveyors with two double span machines.

In this arrangement the stacker machine has a total width of nominally 217m. It is fed centrally from the stacking conveyor via a tripper, and then discharges to either stockpile row using a reversing, and shuttling conveyor. The stacker can traverse to any point on either stockpile to start discharge. The machine requires four rails total, one at either end on bunds and two located centrally on the stacking conveyor support truss.

For the ultimate 70Mtpa facility, six stockpile rows in total may be required. The initial facility may only require the development of a single pair of stockpile rows. Two stacking machines for each pair of stockpile rows are proposed.

4.2.3 Reclamation Works and Stockyard Earthworks

The stockyard is proposed to be located on the existing high ground within Reclamation Area B (refer Figure 4). The majority of the stockyard will be in cut areas and excavation is required to achieve the design level. All other areas within Reclamation Area B need significant fill, most probably dredged material.

Internal bund locations (to facilitate placement of dredge material) will be planned to suit future infrastructure (eg rail loops).

The stockyard is to be drained to a settlement pond (currently proposed to be within the rail loop) and it is logical to provide steps in the stockyard floor between successive bunds to assist drainage. The settlement pond is proposed to provide treatment and retention of stormwater prior to discharge, and also for recycling and reuse of water within the facility.

The minimum level for the reclaimed area is to be RL 6.5m Lowest Astronomical Tide (LAT).

4.2.4 Marine Structures and Dredging

The following criteria have been adopted for the marine structures and dredged areas:

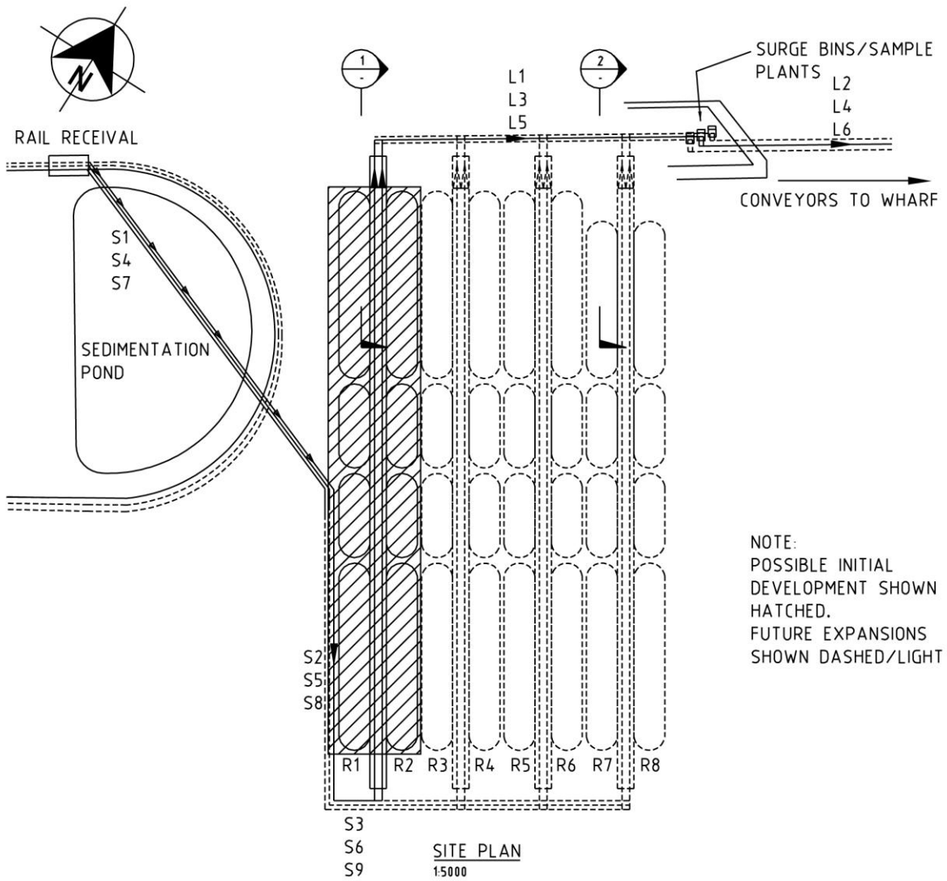
- The jetty and wharf structures may ultimately be required to cater for up to three outloading conveying streams;
- Ultimately four berths are required for the 70 Mtpa facility;
- Jetty to have single outloading conveyor but to be easily augmented for second and third conveyors and possible an inloading conveyor;
- Jetty to be aligned parallel with the north western bund of Reclamation Area B and to skirt along the western side of Wiggins Island and Mud Island;
- Berth to be capable of loading up to 220,000 dwt vessels;
- Dredged depth of approach/departure channel and swing basin assumed to be nominal RL of –16.0m LAT. Berth pocket dredged depth to nominal RL –19.0 LAT; and
- Vessel swing basin is within the existing swing basin area for RG Tanna Coal Terminal.

4.3 Rail and Other Associated Works

4.3.1 Planned Rail Operations

The railway infrastructure for the new coal terminal at Wiggins Island has been configured so that coal can be transported to the terminal from mines in the Bowen Basin without the need to move through the Byellee Junction or to utilise the facilities at Callemondah Yard. The capacity of these facilities is nearing their economic limit and to increase the current capacity of these facilities would be very disruptive.

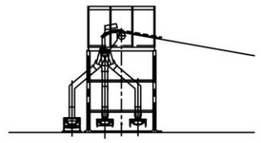
Coal trains transporting coal to WICT from the Blackwater System by way of the North Coast lines will track east directly into the loop at Wiggins Island. A separate connection will be provided to facilitate the movement of unloaded trains from Wiggins Island to the Blackwater System.



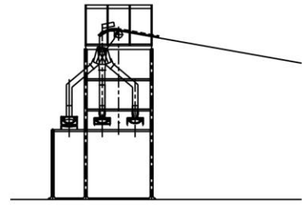
SITE PLAN
1:5000

NOTE:
POSSIBLE INITIAL DEVELOPMENT SHOWN HATCHED.
FUTURE EXPANSIONS SHOWN DASHED/LIGHT

ELEVATION CONVEYOR L1
1:2000



SECTION 1
1:500



SECTION 2
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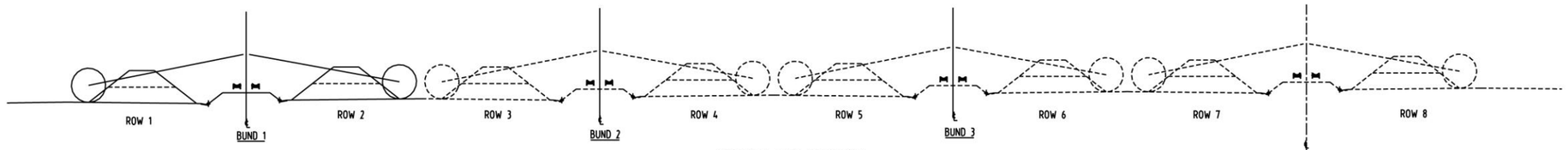


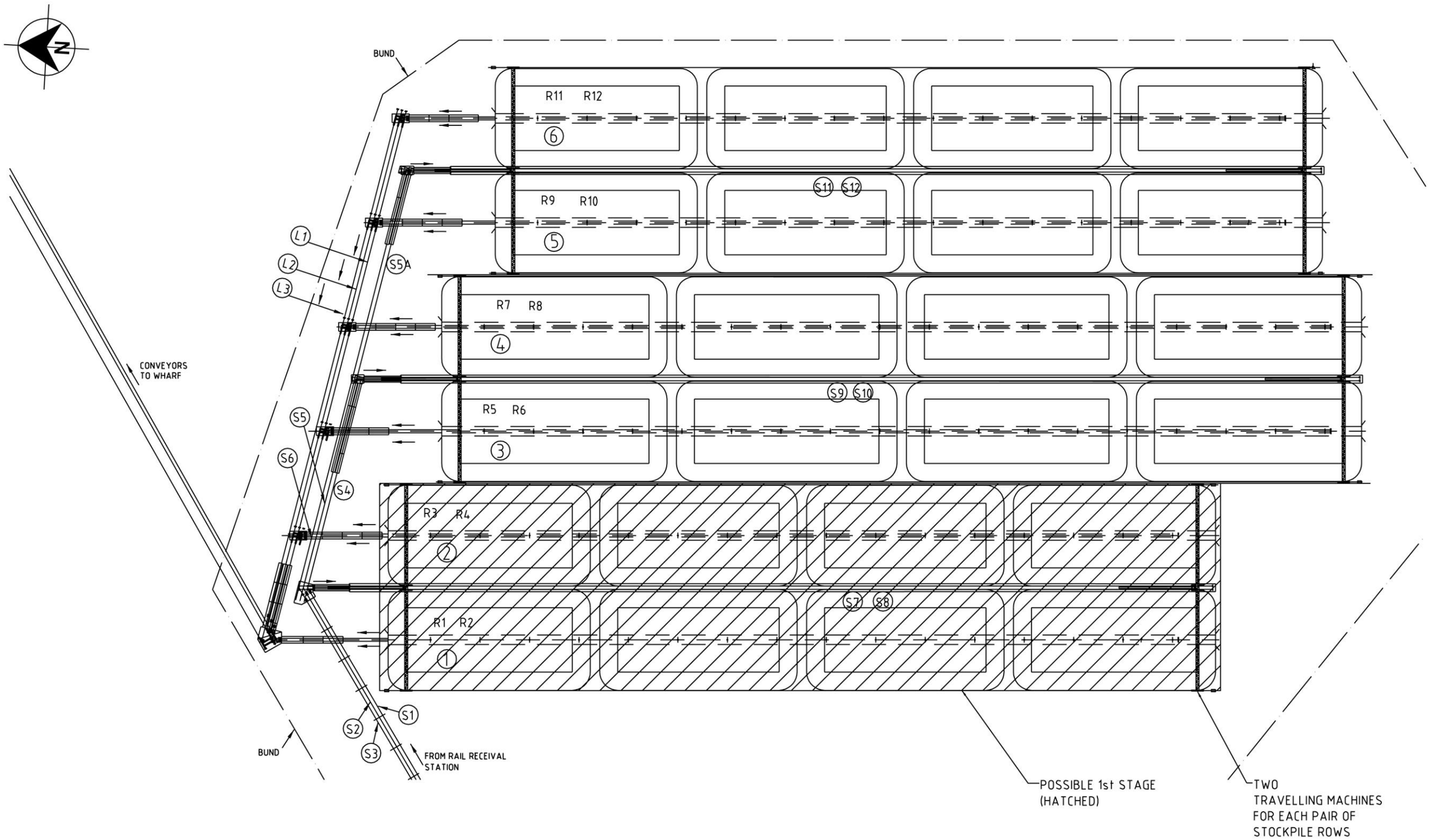
STOCKYARD SECTION
1:1000

PRELIMINARY

Wiggins Island Coal Terminal

Connell HATCH Infrastructure for Industry
QUEENSLAND RAIL
Central Queensland Ports Authority

Figure 5
Option for Stacker/Reclaimer Stockyard Arrangement



PRELIMINARY

Wiggins Island Coal Terminal

Connell HATCH Infrastructure for Industry

QUEENSLAND RAIL

Central Queensland Ports Authority

Figure 6
Option for Hybrid Stockyard Arrangement (Overhead Automated Staking with Dozer Reclaim to Longitudial Tunnels under Stockpiles)

Trains railing coal to WICT from the south on the Moura System will utilise a new diversion northwards from the Moura System along a new rail link located to the west of the North Coast line. The new rail link will connect the Moura System about 2km south of the Byellee Junction and cross the North Coast line near the Wiggins Island loop.

New rollingstock maintenance facilities, including holding roads, and maintenance roads will be provided to maintain rollingstock. The opportunity of including a general freight facility will also be investigated.

4.3.2 Scope of Railway Works

The scope of railway works included in this project comprises all of the works required to provide rail access to and from the new terminal at Wiggins Island both from the Blackwater and Goonyella Systems and from the Moura System, together with the support infrastructure, including holding roads and rollingstock maintenance facilities, necessary to operationally support the rail traffic generated by the terminal development.

The scope of railway works is for the Wiggins Island area only, and does not include any of the Main Line upgrade works necessary to support for additional rail traffic from newly developed or upgraded coal mines.

The railway works that will be provided to service the new Wiggins Island coal terminal include:

- A multiple track electrified rail loop at Wiggins Island that included a minimum of three coal unloading stations where coal will be unloaded from bottom discharge rail wagons to the material handling facilities at the new WICT;
- Rail connections from the new rail loop at Wiggins Island to the north linking to the North Coast line adjacent to the loop, to permit movement of coal trains into and out of the rail loop for trains servicing existing and new mines in the Bowen Basin;
- Rail connection from the new rail loop at Wiggins Island to the south linking to the Moura System west of the Byellee Junction, to permit coal trains into and out of the rail loop for trains servicing existing and new mines in the Moura System (and in the future potentially the Surat Basin) without the need to travel through the Byellee Junction;
- Additional holding roads and rollingstock maintenance facilities to improve operational flexibility on the Callemondah facilities as railway traffic increases;
- New locomotive provisioning facilities at the Wiggins Island rail loop to meet the requirements of the Wiggins Island diesel and electric rail traffic and to avoid the need for trains servicing the new terminal to be diverted to Callemondah Yard for provisioning purposes;
- An investigation will be undertaken to assess the value of including a general freight facility;
- Administration buildings and workshops; and
- A number of rail connections to facilitate the movement of trains in and around the south Gladstone region.

Railway works and coal terminal may be delivered in stages in line with the build up in export demand and will be designed so that future port expansion and trade through the port is not precluded.

4.3.3 Network Connections to Wiggins Island Coal Terminal Rail Loop

Wiggins Island Coal Terminal will be serviced by a loop to allow efficient offloading and return to the system for empty trains. Operationally, the loop will stable a number of trains clear of the Main Line on arrival and departure so as to reduce network conflicts. In this way, coal unloading operations can continue as multiple trains await direction to either enter the unloader or depart the loop.

To facilitate efficient operations, separate rail connections will be provided for access to the loop for trains arriving from the Blackwater System (from the north along the North Coast line) and for trains arriving from the Moura System (from the south).

Loaded trains arriving from the north from the Blackwater System will clear the North Coast line and be held at an approach signal before the discharge pits at the loop. This connection includes a grade-separated rail fly-over where it crosses the North Coast line.

Loaded trains arriving from the south from the Moura System will do so by way of a new rail link, located parallel to the North Coast line, exiting the Moura System approximately 2km south of the Byellee Junction.

This rail link includes a new railway bridge over the Calliope River.

4.3.4 Rollingstock Maintenance Facilities

Due to the scope of rail operations contemplated and especially the significantly increased number of trains accessing the network to service Wiggins Island, rollingstock maintenance facilities for wagons and locomotives (both electric and diesel) will be required in the close vicinity of the coal terminal. Hence, it is proposed to develop locomotive maintenance facilities (for electric and diesel locomotives) and wagon maintenance together with the necessary stabling roads. Along with such facilities it is considered wise to incorporate a general freight facility to service the maintenance depot and other customers in the local area. The scope and activities of the rollingstock maintenance facilities are yet to be properly investigated.

4.3.5 Operational Rail Connections

To provide the necessary operational flexibility of the rail network in the Wiggins Island/Callemondah area, a number of rail connections are considered necessary.

These include a new rail link between the proposed rollingstock maintenance facility discussed above and the existing Callemondah maintenance facility to allow direct rail access between the two facilities. This connection will be provided by way of a new link between the Moura System and the new Calliope River crossing and new alignment to Wiggins Island discussed above. This bi-directional link will allow both of the maintenance facilities to operate either independently or collectively to manage rollingstock maintenance.

4.4 General Infrastructure

4.4.1 Road Relocations and Access Roads

Road over rail bridges are proposed at each of the two locations where the Wiggins Island rail loop intersects Hanson Road. These bridges will provide adequate vertical clearance between the rail tracks and the road and incorporate a road embankment over a total road length of about 1.5km.

Due to the nature of these works a new crossing of the Calliope River Anabranch will be required.

New access roads will be provided to service the terminal, inside of the loop, rail yards and other rail facilities.

4.4.2 Onsite Infrastructure

Onsite infrastructure includes the following:

- All buildings, including offices, workshops, amenities, substations and security;
- Spares yard and warehouse;
- Site roads, comprising a combination of sealed and unsealed roads;
- Fencing around the site;
- Landscaping;
- Lighting of the stockyard, all conveyors, jetty, wharf and railyard;
- Stormwater drains;
- Settlement ponds – all potentially coal laden runoff will be directed to the settlement ponds. The settlement ponds will have a dual purpose to provide treatment of stormwater prior to discharge off-site and also as a water supply storage. It is intended to capture and recycle site runoff. One of the aims is to supply a significant proportion of the terminal's demand through recycled water;
- Infrequent discharges from the pond would be directed to the anabranch to maximise tidal flushing;
- Water and sewage treatment plants as required;
- 11kV power distribution from main incoming 66kV/11kV substation to various 11kV substations around the coal terminal site. Power distribution from main incoming substation to various substations for the rail infrastructure will also be required; and
- Industrial water and fire water pumps and reticulations.

4.4.3 Offsite Infrastructure

Offsite infrastructure includes supply of all necessary services to site including:

- The power supply would most likely be derived from a new HV switchyard to be located near the Gladstone Power Station on the east side of the Calliope River. Overhead power would run from this point to the main WICT substation to be located between the rail loop and the stockyard. It is assumed that transformers will be needed for security of supply;
- Sealed terminal access road from Hanson Road to the site including intersection with Hanson Road;
- Raw water supply connection from Gladstone Area Water Board raw water main along Hanson Road. This will provide top-up water for industrial demand and some of this water may need to be treated for potable use; and
- Telecommunications to site.

5. Existing Environment

5.1 General

The location of the proposed WICT is located to the west and directly across the Calliope River from the existing RG Tanna Coal Terminal. Road access from Gladstone to WICT will be off Hanson Road to the west of the Calliope River Anabranch. The rail loop will extend from the existing North Coast main lines located to the south west of Wiggins Island, through the Yarwun Precinct of the Gladstone State Development Area (GDSA), to the WICT.

The prevailing land uses within the broader project area are industry and agriculture. Several industries are located in close proximity to the site, including the ORICA chemical plant, Cement Australia, Comalco Alumina Refinery, NRG Gladstone Power Station and RG Tanner Coal Terminal. Also the Gladstone Nickel Project is currently seeking development approval, which will be located south of Hanson Road, and adjacent to WICT.

5.2 Climate

The region has a sub-tropical climate and experiences average annual rainfall of approximately 1,000mm. The majority of rainfall occurs during the summer months. Climate data for the region is outlined in Tables 5.1 and 5.2.

Table 5.1 Gladstone Post Office – Meteorological Records (1872-1958)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Daily Max Temp (°C)	29.9	29.7	29.1	27.8	25.1	22.8	22.2	23.1	24.8	26.7	28.3	29.6	26.6
Mean Daily Min Temp (°C)	22.2	22.1	21.0	18.2	15.0	12.6	11.4	12.2	15.0	17.9	20.1	21.6	17.4
Mean Rainfall (mm)	181.6	191.1	129.6	61.0	46.1	63.1	47.3	23.7	30.9	15.9	75.1	118.7	1,020.1
Highest Daily Rainfall (mm)	371.3	478.3	215.6	109.5	156.0	221.5	203.2	57.4	52.3	136.9	110.5	260.4	478.3

Table 5.2 Gladstone Radar – Meteorological Records (1957-2004)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
Mean Daily Max Temp (°C)	31.1	30.8	30.0	28.2	24.5	23.0	22.5	23.9	26.3	28.2	29.8	30.9	27.6
Highest Max Temp (°C)	38.3	40.1	37.0	34.1	31.3	29.3	28.7	30.4	33.8	40.0	40.1	39.8	40.1
Mean Daily Min Temp (°C)	22.4	22.3	21.4	19.6	16.9	14.1	13.2	14.1	16.3	18.6	20.5	21.8	18.5
Lowest Min Temp (°C)	12.8	18.0	16.2	13.0	8.5	6.1	4.4	7.6	9.6	10.9	15.1	12.4	4.4
Mean Rainfall (mm)	154.5	143.2	96.8	51.0	69.6	34.4	39.8	30.9	24.4	60.3	78.1	135.5	918.4
Highest Daily Rainfall (mm)	196.8	229.4	112.3	93.4	178.0	62.5	92.7	78.2	75.0	149.4	84.2	196.0	229.4
Mean Daily Evaporation (mm)	6.4	5.9	5.4	4.5	3.4	3.0	3.1	3.5	4.3	5.4	6.0	6.3	4.8

5.3 Soils and Geology

The geology of the site consists of Palaeozoic, Curtis Island Group. Doonside Formation, red green and white chert, mudstone, acid tuff, limestone and tuffaceous arenite. Holocene, alluvial deposits of gravel are present adjacent to the Calliope River, and are underlain by the Paleozoic Doonside Formation.

The major soils are red, structured gradational clay loams and uniform clays; shallow, bleached sandy and loamy surface, and red duplex soil.

There are sediments towards the lower areas of the site, adjacent to the Calliope River and the wetlands/saltflats that are potentially unconsolidated, and will require additional stabilisation work to be undertaken.

At this stage it is not known whether acid sulphate soils are present on site. Prior to construction, an investigation will need to be undertaken to determine the presence of acid sulphate soils within the site, particularly the portion of the site where reclamation works are proposed.

5.4 Water Quality

The project site is located within the estuarine reaches of the Calliope River catchment which discharges into Port Curtis Bay which extends into the Great Barrier Marine Park World Heritage Area.

Current water quality conditions within the Calliope River catchment are influenced by a number of anthropogenic activities including grazing, agriculture, industry and urban-based activities. The catchment is highly disturbed in some areas, particularly in the lower reaches where a number of industries exist and urbanisation has occurred. Given the land uses within the catchment and the associated level of disturbance, it likely that the lower reaches of the River exhibit elevated levels of hydrocarbons, nutrients and sediment. Further investigations will need to be undertaken during the planning phase of the project to determine the River's existing water quality conditions.

Previous water quality investigations undertaken in Port Curtis Bay indicate that the Bay experiences relatively high levels of nutrients, turbidity and bacterial levels (Connell Wagner 2002). Again, further investigations, including a review of contemporary water quality studies pertaining to Port Curtis Bay, will be required during the planning phase of the project.

5.5 Air Quality

The site is located within the Gladstone airshed. Major industry including NRG Gladstone Power Station, Comalco Alumina Refinery, Orica, Cement Australia Fisherman's Landing Plant and other local industries all release process gases into the local airshed.

5.6 Noise

Major industry in the immediate area, including Comalco Alumina Refinery, Orica, Cement Australia Fisherman's Landing Plant and other local industries all contribute to the local noise emissions. Hanson Road and Port Curtis Way are highly utilised roads, with high volumes of industrial traffic, with particularly high volumes during industry shift changes. No sensitive receptors have been identified in the immediate area.

5.7 Terrestrial Ecology

In September 2005, a Preliminary Ecological Assessment was undertaken for the rail component of this project. A summary of the findings is provided below:

- The project corridor is predominantly vegetated with dry schlerophyll woodland on hills, dry schleropyll woodland on flats and islands of alluvial sands, and marine vegetation;
- There are nine regional ecosystems (REs) mapped within the project corridor;

- An "endangered" vegetation community (RE 12.3.3 - *Eucalyptus tereticornis* woodland to open forest on alluvial plains) and "of concern" vegetation community (RE 12.11.14 - *Eucalyptus crebra, E. tereticornis* woodland on metamorphics +/- interbedded volcanics) under the *Vegetation Management Act 1999* (VMA) occurs within the corridor;
- Threatened species listed in the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) database searches of the corridor were not found during the preliminary terrestrial flora survey. While *Cycas megacarpa* (type of cycad listed as endangered under the EPBC Act) was not located in the EPBC database searches, suitable habitat exists in the hilly areas along the NW branch of the project corridor;
- The majority of threatened species in the EPBC database searches are associated with semi-evergreen vine thicket or dry rainforest. These communities were not observed within the rail project corridor;
- Approximately 50% of the project corridor is shown on the RE Map as State Wildlife Corridor;
- A freshwater wetland is located on a property at the southern end of the SE branch along with marine vegetation in the general vicinity. There are three bird hides constructed at various locations, mown paths through marine grasses and a wooden boardwalk;
- No rare, threatened or vulnerable terrestrial vertebrates (excluding birds) were identified during the survey;
- Sixty bird species were identified including the Powerful Owl, which is listed as vulnerable under the *Nature Conservation Act 1992* and EPBC Act; and
- The proposed development is likely to have no significant impact on EPBC listed plant species, vegetation communities and terrestrial fauna.

For the coal terminal area, WBM prepared a report on the potential significant impacts of the proposed 810ha reclamation of the area west of Calliope River and made recommendations to mitigate the impacts. The study was undertaken in Targinnie, Wiggins Island and West of the Calliope River. Flora was assessed using aerial photographs stereoscopy and ground truthing.

Six plant communities were identified in the area between Fisherman's Landing and Calliope River, East to Calliope River and west to the intertidal area of the port. These were: seagrasses, mangroves, saltmarsh/saltflats, open eucalypt forests, closed vine forest and Acacia forest. There were 14ha of vine forests detected, which is not considered to be rare. Acacia forests are located onsite although the community is not thought to be significant. There are approximately 42ha of Eucalypt forest onsite, predominantly *Eucalyptus crebra* open woodland. All terrestrial vegetation onsite is common within the Port Curtis area and is not considered significant or important in a regional context.

Avian species were rich in diversity with a total of 100 species observed onsite between September and November 1989. 17 of these are listed either on The China-Australia (CAMBA) and/or The Japan–Australia (JAMBA) Migratory Bird Agreement. Over half the bird species observed utilised the saltmarsh, mangrove and mudflat environments for foraging and roosting. Approximately one third of these were migratory and are listed on the JAMBA and CAMBA conventions, for their protection. NPWS reported a large breeding camp of flying foxes on Wiggins Island. It is stated that other breeding camps were very likely to exist in the Port Curtis Area. Fauna species richness was poor with many species observed common throughout the area. Previous survey work in the area (advised from QNPWS Rockhampton) of similar habitats indicated that no rare or endangered species would be expected to occur on the site.

5.8 Marine Ecology and World Heritage Areas

Port Curtis lies within the Gladstone Port Limits, an area where the CQPA administers shipping and harbour operations. It lies outside the Great Barrier Reef Marine Park but all of its waters below the mean low water mark lie within the Great Barrier Reef World Heritage Area (GBRWHA).

Port Curtis features a number of significant habitats that are of ecological value. The Curtis Coast Study Resource Report (1994), revealed that approximately 3,150ha of seagrass beds exist within the Port, with *Zostera capricorni*, *Halophila ovalis* and *Halodule uninervis* being the most abundant species. The distribution of these seagrass beds is mainly in the lower intertidal and subtidal zones, thus falling within the Great Barrier Reef World Heritage Area.

As well as being part of the Great Barrier Reef World Heritage Area, the seagrass beds within Port Curtis/Gladstone Harbour have been identified as areas important to the survival of several commercially important prawns including the juvenile tiger, endeavour and king prawns. Furthermore, dugongs and green turtles have been sighted within the area, suggesting that the seagrass beds within Port Curtis Bay could be important feeding sites for these animals. The waters of Port Curtis Bay also comprise the north western part of the Rodds Peninsula to the south east of the region. The Rodds Bay Dugong Sanctuary is a zone B Dugong Protection Area which stipulates and regulates legal netting practices allowed in these areas to ensure the protection of Dugongs within the sanctuary (GBRMPA 2002).

Central Queensland University undertook a seagrass monitoring program on and around the Wiggins Island mudflats during 1997. Twelve stations were established and spatial and temporal changes were monitored for 5 years. CQPA has funded a seagrass research program to determine changes in seagrass. Primary influence is light availability, sediment quantity and deposition, which are determined by local hydrographic conditions. Localised nutrient enrichment at the mouth of the Calliope River may therefore explain why seagrass standing stock is relatively higher at Wiggins Island than elsewhere in the Port. Additionally, periodic eutrophication of the water column at this location could explain the often-rapid seasonal decline in seagrass standing stock at the Wiggins Island meadow.

Likely sources for the transport of phosphates and other nutrients to the waters off Wiggins Island include point source discharges from a nearby sewage treatment plant, and agricultural run-off from pastures in the upper catchments. As an indirect result, invertebrate communities and associated demersal fish populations in the Port have been significantly reduced. In conclusion, seagrass communities at Wiggins Island are influenced by Port climate and flows from the Calliope River. However, it is not known whether these patterns of change are similar in other seagrass beds in the Port Curtis area or along the Curtis Coast area. The study illustrates the patters of spatial and temporal variation in seagrass and algae are primarily driven by seasonal influences and localised flow regimes.

Fifteen species of mangrove have also been identified within Port Curtis (DEH 1994). They are generally found within the mid-tidal to upper intertidal zone of the Port as well as in the tidal reaches of Calliope River and its anabranch. Although not directly within the World Heritage Area, they interconnect with and form a critical part of the Great Barrier Reef ecosystem.

Johnson et al (1999) studied mangrove communities west of the Calliope River mouth and adjacent to Fisherman's Landing and found that although the mangrove communities in Port Curtis have changed with season and with some natural environment influences, there is no evidence on impacts associated with anthropogenic activities. No "Endangered, Vulnerable or Rare" mangrove species listed under the *EPBC Act 1999* and *Queensland Nature Conservation (Wildlife) Regulation 1994* were recorded from this area.

There are no Ramsar wetlands in close proximity to either the plant site or TSF. There is a nationally listed wetland at Port Curtis. The Port Curtis wetland (QLD019) is with the centre located 5km northeast of Gladstone. This coastal wetland includes all the tidal areas in the vicinity of Gladstone, from a line between Laird Point and Friend Point (southern end of the Narrows), to a line between Gatcome Head and Canoe Point, including the seaward side of Facing Island and Sable Chief Rocks, and southern Curtis Island west of a line between North Point and Connor Bluff.

The Port Curtis coastal wetland has been included in the Directory of Important Wetlands due to the presence of notable flora and fauna, as well as being the preferred feeding grounds of several CAMBA, JAMBA and Convention on Migratory Species (Bonn Agreement) migratory birds. The major threat/disturbance to this coastal wetland has been described as the ongoing reclamation for port and industrial facilities. Environment Australia estimates that approximately 570ha or 15% of the original mangroves and some 25% of saltflats have been lost due to reclamation activities and that dredging of harbour channels may cause minor benthic disturbances and increased turbidity. CQPA, Queensland Parks and Wildlife Service, Queensland Department of Natural Resources and Mines, Queensland Department of Transport, Great Barrier Reef Marine Park Authority and Gladstone City Council are the management authorities of this nationally important wetland.

A total of 360ha of mangroves, and 680ha of saltflat/saltmarsh occur within, and immediately adjacent to the proposed coal terminal area. Additionally, at least 900ha of intertidal and subtidal seagrass occur on the foreshores fringing the site. All of these vegetation communities contain a diverse assemblage of plants although no endangered species have been recorded to date (all species are commonly observed along Central Queensland coastal areas). Larger areas of mangroves and saltflat/saltmarsh occur elsewhere in Port Curtis, however the seagrass areas at Targinnie represent the most extensive (approximately 40% of Port Curtis intertidal seagrass areas) and densest beds of seagrass in Port Curtis.

An assessment of the mangrove strands within the tidal area and their overall ecological and connectivity value in the broader area will be undertaken as part of the EIS process.

One hundred and forty eight species of fish from 69 families have been recorded within the Curtis Coast area, many of which are commercially important (DEH 1994). No threatened or endangered fish species have been recorded for the Curtis Coast and in the area adjacent to Fisherman's Landing.

Three whale species have been recorded in the area including the sperm whale, humpback and Curvier's Beaked Whale. Four species of dolphin and the dugong (*Dugong dugon*) have also been recorded in the area (DEH 1994). Walker et al 1999 documented that protected fauna, dolphins, turtles and dugong are commonly seen between Auckland Point and Friend Point. Bottlenose dolphins have been sighted in Rodd's Bay and in offshore waters. Estuarine Crocodiles have been reported in Port Curtis with one caught at Fisherman's Landing (EPA Gladstone, Port Watch cited by Rod Johnson CQU).

The Curtis Coast is not considered a major population area for the dugong, and although seagrass beds in the area could be important feeding locations for migratory animals only a few individuals were recorded by Walker et al 1999. CQU has more recently recorded herd of 10-15 dugong at the mouth of the Calliope River during colder months (pers comm. Alistair Meltzer, September 2002).

Four species of turtle (*Chelonia mydas* – green turtle, *Eretmochelys imbricata* – hawksbill turtles, *Natator depressus* – flatback turtles and *Caretta caretta* – loggerhead turtle) are known to occur along the Curtis Coast, and their range is expected to include Port Curtis (DEH 1994 and WBM 1990). All four species are listed as either "Endangered" or "Vulnerable" under the provisions of the EPBC Act 1999 and the *Queensland Nature Conservation (Wildlife) Regulation 1994*. There are records of what is thought to be the Green Turtle in the area (SKM 1999) although the main Green Turtle nesting habitat is on the seaward side of Curtis Island, which is over 20km from the proposed site. Flatback turtles are also known to nest on Curtis Island beaches (DEH 1994). Green turtles are commonly seen in seagrass at the mouth of the Calliope River and the Targinnie Estuary (pers comm. Alistair Meltzer, September 2002).

5.9 Visual Amenity

From the Gladstone Industrial Land Study (Connell Wagner 1992) the visual quality of the area was found to lie in the:

- Naturalness of the area;
- The contrasts in the landform and vegetation;
- Presence of views of landmark hills and ranges such as Mt Larcom; and
- The cultural landscape of open, undulating grasslands by woodlands.

The project site is visible from Hanson Road.

5.10 Traffic and Transport

There is currently an uncontrolled crossing to service Beake's property, which will be replaced with an occupational crossing.

A traffic and transport investigation will be undertaken as part of the EIS process in conjunction with the Department of Main Roads (DMR) and local councils. This investigation will identify potential issues and mitigation measures.

5.11 Cultural Heritage

There is an existing agreement between the Traditional Owner Claimants and the Minister for State Development and Innovation for Cultural Heritage Management of the GSDA. As the site will extend beyond the GSDA border, further Cultural Heritage Studies and liaison with the Traditional Owners will be required.

The rail component of this project is part of the traditional country of the Port Curtis Coral Coast People (PCCCP). The PCCCP have lodged a native title claim over the wider area and this claim (Federal Court Number Q6026/01) provides the PCCCP with native title processing rights and cultural heritage consultation rights for future developments within the PCCCP claim boundary.

A cultural heritage database and register search of known sites have shown some recorded cultural heritage sites scattered in the locality of the proposed alignment. The recorded sites include:

- Artefact scatter;
- Scarred/carved tree;
- A cultural site; and
- Shell midden.

For the purposes of the IAS it is not essential to confirm the sites location to the proposed alignment. This exercise will be done once the project proceeds to the EIS stage.

5.12 Socio-Economic

In the Gladstone Region Overview, January 2005, the estimated population in the Gladstone region was reported as 62,666.

The demographics of the region indicate that the median age in Gladstone City is 32 and in Calliope Shire is 35. Over the next 20 years the demographics of the region are forecast to change so that the median age in Gladstone City is 35 and in Calliope Shire is 38.

Table 5.3 outlines the employment by occupation in the Gladstone Region.

Table 5.3 Employment by Occupation

Occupation	Number	%
Managers and Administration	2,617	9.8%
Professionals	3,099	11.6%
Associate Professionals	2,836	10.7%
Tradepersons	4,527	17%
Clerks/sales/service workers	4,042	15.2%
Labourers and related workers	8,983	33.8%
Not stated / inadequately stated	509	1.9%
Total	26,613	100.0%

In terms of facilities the Gladstone Region provides:

- Health – the Gladstone General Hospital offers a choice of general practitioner and specialist doctors, dentists and medical services, and has 98 beds. A private hospital wind operated by the Mater hospital is also available;
- Education – there are a variety of pre-schools, primary schools, special schools, high schools and tertiary education facilities. The spectrum of tertiary education facilities in the area includes a TAFE and a branch of the Central Queensland University. Around 9,000 state and private school pupils are enrolled in the Gladstone education system; and
- Airport – Gladstone has a modern airport that offers regular services to Brisbane, Mackay, Rockhampton, Townsville and Cairns. Services are operated by Qantas Link, offering nine daily services to Brisbane.

The population growth in the Gladstone/Rockhampton Region in recent times has occurred as a result of the establishment of major industry. Australian Bureau of Census data shows manufacturing is the most important employer in Calliope Shire and manufacturing and wholesale/retail industries are the major employers in Gladstone.

6. Potential Environmental Impacts

6.1 Land Use and Tenure

The site for the WICT is within an industrial area with few sensitive receptors. The land allocated for the coal terminal is Special Purpose Port land, and the land allocated for the rail infrastructure is partially within the GSDA and State Forest area.

6.2 Soils, Geology and Topography

The site is located adjacent to the Calliope River and Port Curtis Bay. If suitable control measures are not implemented during construction and operations, there is a risk of increasing sediment and other pollutant transportation to sensitive environmental areas, such as Great Barrier Reef World Heritage Area. Sediments towards the lower areas of the site, adjacent to Calliope River and wetlands/saltflats, are also potentially unconsolidated, and will require additional stabilisation works to be undertaken. It is anticipated that potential impacts will be managed through the implementation of an appropriate Construction Environmental Management Plan.

If acid sulphate soils are present onsite, then there is the potential for exposing acid sulphate soils to the atmosphere during earthworks which may in turn produce sulphuric acid runoff and contaminate downstream waterways. An investigation will be undertaken to establish whether acid sulphate soils exist within the site and any predicted impacts will be addressed in terms of mitigation measures as necessary.

6.3 Water Quality

The potential for impacts on surface water quality can arise from activities such as clearing of vegetation, earthworks/excavation, increasing exposed areas during either construction, operation or inappropriate storage or handling of hazardous materials.

Construction and operational activities may have the potential to generate a range of pollutants which, if not managed appropriately, will have the potential to affect water quality conditions within the Calliope River and Port Curtis Bay. However, management measures will be put in place to minimise the impact of the plant on the aquatic ecological health of the River, Bay and adjoining Marine Park.

Specific measures proposed to minimise the potential impact upon the water quality of the area include but is not limited to:

- Avoid blocking of natural drainage as build up of water runoff under high rainfall conditions may create unstable near surface conditions and lead to erosion in the surrounding watercourse;
- No excessive exposed soil for a prolonged period;
- Rehabilitation of exposed areas (more than 70% vegetation cover);
- Minimise the necessity for clearing activities;
- No construction materials or debris to be allowed to accumulate within stream channels; and
- Construction within stream channels to be eliminated or minimised such that normal stream functioning is not hindered.

6.4 Air Quality

During construction, considerable earthworks will be necessary to prepare the site for construction, along with increased vehicular movement, increasing the potential for dust generation and air quality impacts. During the operational phase of the project, there is also the potential for a reduction of air quality due to emissions of coal dust.

Dust generation will be addressed in the Construction Environmental Management Plan, and minimised during construction and operational phases using appropriate dust suppression and control techniques. Specific measures proposed to minimise the potential for impact upon the air quality of the surrounding environmental include but are not limited to:

- Water sprays on yard machines and stockpiles;
- General use of water sprays for all potentially dust generating activities in windy conditions;
- The height of free fall of coal shall be minimised. Where potential for dust generation occurs shrouding of the coal stream shall be undertaken;
- Vehicles are to obey the on-site speed limit, and drivers are to adopt a driving practice where dust generation is minimised;
- Construction and road network to be wet down as necessary to minimise dust;
- Ensuring that any coal spillages during construction and operational phases are cleaned up promptly after being identified;
- Installation of belt scrapers and belt washing at all transfer points on conveyors;
- Continued use of moisture analysers on rail receival points for improved control of moisture levels in incoming coal; and
- Visual monitoring of all onshore and offshore activities.

A predictive modelling study of potential dust emissions from the WICT will be undertaken as part of the EIS process.

6.5 Noise and Vibration

During construction there will be an increase in vehicle movements to and from the site. The noise generated from the increased vehicle movements has the potential to generate noise that will be audible on occasions from nearby properties and industry. Other construction specific activities, such as excavation, filling and potentially blasting, also have the potential to increase ambient noise levels.

Once WICT is operational there will be an increase in noise levels due to the coal terminal operation and associated rail line.

The potential increase in noise levels, both during construction and operation, is to be mitigated through a combination of environmental management strategies, appropriate infrastructure design criteria and separation distances to sensitive receptors.

Specific measures proposed to minimise the potential for noise impact upon the surrounding environment include but are not limited to:

- Mechanical plant is to be fitted with mufflers and silencers;
- Terrestrial construction activities are to be restricted generally to between 6:30am to 6:30pm, Monday to Saturday; and
- Low noise idlers and drives on conveyors.

Furthermore, the potential for vibration impacts during both construction and operation are expected to be minimal, with no vibration impacts occurring as part of the operational phase. Possible vibration impacts during construction from limited blasting (if required) would be managed through appropriate design of blasting patterns and selection of blasting techniques.

6.6 Terrestrial Ecology

The construction of WICT and associated rail line and loop, will result in the removal of the majority of vegetation. However, given that the vegetation present onsite is widespread and common to the region, it is unlikely clearing activities will have a significant impact on the area's overall biological and habitat value.

6.7 Marine Ecology and World Heritage Area

The reclamation works proposed will result in the removal of mangroves and other marine plants. Potential impacts on marine ecology and GBRWHA are associated with both construction and operation of the project. Potential impacts include:

- Impacts on marine species from dredging and construction activities;
- Dredging and sea dumping during the construction of offshore works which will disturb seafloor habitats and affect water quality;
- Water discharge from site potentially containing sediments (it is expected that the impact of this will be relatively low due to sedimentation ponds retaining the majority of the sediment onsite);
- The potential introduction of new exotic species to the port by dredging equipment;
- Increased disturbance from pile driving activities/blasting during construction (noise) and increased lighting required during construction and operation and the potential impact to marine fauna species; and
- Beneficial impact provided by additional habitat associated with marine structures.

In May 2004, CQPA obtained a permit under Section 51 of the *Fisheries Act 1994* to remove marine plants for the purpose of reclamation works in the Wiggins Island development areas. Within Reclamation Area A approval has been obtained for removal of 17ha of mangroves and approximately 22ha of seagrass. For Reclamation Area B approval has been obtained for the removal of approximately 34ha of mangroves, saltmarsh and saltcouch (refer Figure 4).

However for this proposal not all the reclamation areas will be reclaimed. It is likely that part of Area B (the fringing mangroves to the north) and all of Area A will not be reclaimed as part of the proposed works.

There is also increased potential for the introduction of new exotic pest species by either dredge equipment or coal vessel ballast water. Given current CQPA compliance with Australian Quarantine and Inspection Service (AQIS) requirements, the potential for impacts are considered low.

The water quality of the marine environment could potentially be impacted upon during both the construction and operational phases of the proposed expansion. Potential impacts associated with the proposed expansion include:

- Coal spillage and smothering effects on sedentary marine organisms in the vicinity of the structure;
- Increase in turbidity levels associated with dredging operation resulting from the mobilisation of dredged sediments into the water column; and
- Release of contaminants into the water column as a result of dredging operations.

Coal appears to be generally biologically inert and contains few leachable components and therefore is unlikely to have any major impacts upon marine water quality other than reduced aesthetic amenity. The main biological effect of coal spilt in to the marine environment appears to relate to the potential smothering effect on sedentary marine organisms. Whilst coal spilled to the marine environment is not considered to have a major ecological impact, all attempts will be made to minimise spillage. Such measures would provide long-term economic benefits (eg less coal product wasted).

Increases in turbidity caused by dredging and spoil disposal are likely to be relatively localised and short-term and therefore are unlikely to have a significant impact. The potential for the migration of turbid plumes towards these sensitive habitats and the likely turbidity concentrations will be assessed using the results of hydrodynamic modelling undertaken as part of the EIS process.

Specific measures proposed to minimise the potential impact upon the marine ecology of the area include but are not limited to:

- Pile driving will not be carried out at night and will not commence before 6:30am in the morning;
- Sodium vapour lamps, which are not visible to turtles, or shielded lighting, shall be used where possible on all marine structures to minimise impact;
- Ensure that the new lighting is located and designed to minimise their visibility from a distance, that is directed downwards, where consistent with equipment safety requirements;
- Fill rocks and/or concrete blocks will be used to build the causeway revetments, to prevent the release of dispersive solvents or soluble fraction in the water column, such as clays and silts;
- A dedicated representative will be engaged to monitor the pile driving activities, to observe any harm that may occur and recommend further mitigation measures; and
- Avoid the use of reflective finishes on all new structures.

6.8 Visual Amenity

Infrastructure to be constructed as part of the WICT includes conveyors, stacker/reclaimers (or equivalent), a surge bin, and rail lines. The infrastructure required for the project has the potential to decrease the visual amenity of the site, however this will be minimised through the use of landscaping and appropriate design. The location of the WICT will diminish the visual quality views from the road to this area. Mature vegetation exists on site and has the potential, if retained in strategic locations, to act as partial screen and buffer for visually sensitive receptors. The project will remain consistent with the current use of the area as a port.

The proposed rail lines will traverse through State Forest and will impact the visual amenity of this area.

Surrounding land use for the site is industrial, with adjacent industries of ORICA and the Comalco Alumina Refinery. Also approval is being sort for the Gladstone Nickel Project adjacent to the proposed rail line.

6.9 Traffic and Transport

The development will generate an increase in traffic to and from the site, during both construction and operational phases of the project. Hanson Road and Port Curtis Way would therefore be more heavily trafficked than at present. The impact of this on the roads has not yet been determined. A traffic study will be undertaken as part of the EIS process.

A risk assessment on the potential for any level crossings will be conducted as part of the standard QR process for any new projects.

6.10 Cultural Heritage

The methodology to be employed to ensure that the project proceeds in compliance with the *Aboriginal Cultural Heritage Act 2003* (ACHA) and best practice is as follows:

- Discussion with PCCCP about the nature of the project, its location and the potential impacts on known Aboriginal cultural heritage;
- The commissioning of an Aboriginal cultural heritage survey involving nominated PCCCP traditional owners and an accredited independent archaeological consultant to conduct the survey. This systematic survey will cover the entire project area and will locate and record any items and places of Aboriginal cultural heritage value. Note that previously identified Aboriginal cultural heritage is not located in the immediate vicinity of the proposed alignment;
- The production of a report by the independent archaeologist detailing specifics and locations of cultural heritage significant to the PCCCP together with recommendations as to the preservation and mitigation of cultural heritage within the impact area;

- The survey recommendations will be discussed and agreed with PCCCP and, as required under ACHA, these procedures will be drafted into a project specific Cultural Heritage Management Plan (CHMP); and
- The procedures contained within the CHMP will be strictly adhered to during the construction and operational phases to ensure that impacts on Aboriginal cultural heritage is minimised, and where impact is unavoidable, ensure that effective management and mitigation measures are employed to preserve Aboriginal cultural heritage.

The CHMP development will follow the processes described under ACHA. This process commences with a Part 7 notice to the PCCCP, followed by an 84 day consultation period for the development of the CHMP. The project preferred outcome of the consultation period will be an agreed CHMP which will then be endorsed and registered with the Department of Natural Resources and Mines as a formal CHMP.

The nature of the Project and its intended public purpose requires that the project is advertised and notified under Section 24KA of the *Native Title Act 1993*. Section 24KA applies to developments that have a clear public purpose or benefit and as such the required notifications will be sent to PCCCP at the appropriate time.

Section 24KA also contains the non-extinguishment principle meaning that the development only suppresses any native title and interests (rather than having an extinguishing effect) for the period by which the project is in operation.

6.11 Socio-Economic

The socio-economic benefits from the development of the WICT flow across the Local, State and National levels.

The direct benefits occur primarily at the local level at both the construction phase and during the ongoing operation of the Terminal:

- During construction of the first stage, it is anticipated that the workforce will peak at approximately 500 personnel on site over a period of approximately 30 months. A major construction workforce has been based in the Gladstone region for a number of major projects. The anticipated construction program for the terminal is such that it should not coincide with known developments;
- The permanent workforce on the completion of the first stage is expected to be 125 full time employees; and
- The demographics and nature of the in-migrant workforce and the influence of the existing demographic profile will not be altered significantly considering past infrastructure expansions and the available workforce within the region. Gladstone City and Calliope Shire will be the dormitory centres for both the construction workforce and the permanent workforce.

The construction of the WICT allows for the development of further coal mines in the Southern Bowen Basin and the Surat Basin which will have a flow-on economic effect for the Queensland Coal Industry and the regional communities of these areas.

7. Environmental and Risk Management

7.1 Introduction

In accordance with CQPA's Environmental Policy and Integrated Environmental Management System (IEMS), CQPA is committed to the continual improvement of environmental performance.

7.2 CQPA Environmental Policy and Integrated Environmental Management System (EMS)

CQPA's is committed to operating in a manner that allows for sustainable development with minimal environmental harm to the port and its surrounding areas. Appendix A has a copy of CQPA's Environmental Policy.

CQPA has implemented an IEMS to guide environmental management operations. The IEMS has been approved by the Environmental Protection Agency and defines environmental risks posed by CQPA operations, documents control measures and monitoring requirements and designates responsibilities to personnel at all levels throughout the organisation.

CQPA is currently targeting certification of the EMS to ISO 14001 by March 2006.

7.3 QR Environmental Policy and Environmental Management System (EMS)

QR is committed to effective management of its environmental risks. Appendix B has a copy of QR's Environmental Policy (titled Environmental Statement).

QR is taking a proactive approach to meeting its environmental obligations and continually improving environmental performance through an EMS that is consistent with ISO1400a and AS3806 Compliance Programs. QR's EMS sits under the Governance and Management System Framework which applies risk principles to various disciplines in QR. Under this framework, QR Board approved policies are supported by management systems, which detail how the policy goals are to be achieved in QR. This gives effect to the QR Board Governance Charter including the Director's responsibility for, as well as the organisational role in, managing the interaction between economic efficiency, social obligations and environmental responsibility.

QR's EMS is designed to provide the framework for ensuring that the associated Policy is implemented, achieved, reviewed and maintained. The EMS includes standards and specifications which are mandatory and associated documents which are guidelines to assist with implementation.

QR formally issued its EMS in August 1999 recognising that the system would need to be refined over time with the benefit of experience, input from the Business Groups and changing internal and external environments. QR's EMS is currently being substantially revised to both align and integrate within QR's recently revised Governance and Management System Framework and to reflect risks identified in QR's Environmental Risk Report.

7.4 Project Environmental Management

As a subset of the CQPA IEMS and as part of the EIS process, the environmental risks associated with this project, will be managed by the development and implementation of an Environmental Management Plan for the project. This will allow necessary planning to ensure all reasonable measures are taken to protect the environmental values which may be impacted upon by the construction and operation activities and related infrastructure.

The purpose of an EMP is to detail the actions and procedures to be carried out during the implementation phase of the project in order to mitigate adverse, and enhance beneficial, environmental and social impacts. The EIS will identify the potential construction and operation effects of proceeding with the coal terminal and recommend a range of impact mitigation measures to be implemented during the design, construction and operation stages of the project.

The EMP will address proposed environmental safeguards and control measures and establish the framework to ensure they are implemented. In effect, the EMP will become the key reference document in that it converts the undertakings and recommendations in the EIS into a set of actions and commitments to be followed by designers, constructors and operators.

The EMP will serve as the framework for measuring the effectiveness of environmental protection and management. This is achieved by specifying the monitoring, reporting and auditing requirements, including responsibilities, timing and format in order to meet the necessary performance criteria. The EMP also makes provision, as appropriate, for unforseen events by outlining corrective actions which may be implemented in these situations. The EMP will be written as a stand along document, so that it may be extracted from the main body of the EIS.

7.5 Environmental Design Report

An Environmental Design Report will be undertaken in the detailed design phase of the project. The purpose of the Environmental Design Report is to review the designer's awareness of the environmental issues of the project throughout the design phase. The report will demonstrate the integration of the project's environmental issues into the design.

The report also has an auditing purpose to ensure all the issues identified in the EMP are addressed in the design and/or contract documentation.

7.6 Construction Environmental Management Plan

An important requirement for projects of this nature is to prepare a Construction Environmental Management Plan (CEMP) to ensure the environmental safeguards proposed as a result of the planning and environmental assessments associated with the project are enacted in an appropriate and timely fashion.

Design and construction measures/strategies will ensure that all reasonable measures are taken to protect the environmental values, which may otherwise be impacted during construction activities associated with the proposed project.

The CEMP details the performance objectives, actions and procedures to be carried out during the construction phase of the project to minimise potential environmental impacts. The CEMP defines the environmental issues of the proposed development by addressing the following:

- The environmental policies of CQPA and the Construction Contractor;
- Environmental responsibilities;
- Environmental site induction;
- Environmental monitoring;
- Environmental reporting;
- Environmental incidents/complaints;
- Environmental audits; and
- A management plan for each environmental element.

With the effective implementation of the developed CEMP during the construction phase and the EMP (as a subset of the IEMS) during operation, it is expected that environmental risks can be managed to meet all legislative requirements and stakeholder's expectations.

7.7 Current CQPA Environmental Approvals

Development and implementation of the IEMS was necessary to obtain the required environmental authority to operate the Port Authority.

CQPA is the holder of Environmental Authority No: CG0047 issued by the Environmental Protection Agency under the Environmental Protection Act 1994. The Authority is licensed to carry out 11 Environmentally Relevant Activities.

CQPA has reclamation approval for the site of the proposed stockyard and rail loop. Approval for the reclamation of Wiggins Island area was granted under the *Harbours Act 1955* on 3 October 1991 and published in the Queensland Government Gazette on 5 October 1991. The approval, which remains in force for a period of 20 years from 5 October 1991 (until 5 October 2011), allows the reclamation of the Areas B and C (refer Figure 4) to a level of 3.7m Australia Height Datum (AHD) 5.968m Lowest Astronomical Tide (LAT), so as to render it fit for Port Land and industrial purposes.

7.8 Current QR Environmental Approvals

QR has investigated its environmental approvals database and advises that no environmental approvals have been given or are required for its operations within the study area.

With increased operations it may arise as a result of legislative threshold triggers that approval is required to accommodate locomotive fuelling and maintenance.

Mt Miller container yard has been nominated as a Dangerous Goods area. This nomination can be readily applied to a new facility with the development of a Dangerous Goods Management Plan (as required under the *Dangerous Goods Safety Management Act 2001*).

7.9 Hazard, Risk and Health and Safety Issues

There will be a number of hazards and associated risks with both the construction and operation of coal terminal and rail loop. A hazard is a source, or a situation with a potential for harm in terms of:

- Human injury or ill health;
- Damage to property;
- Damage to the environment; or
- A combination of these.

A risk is the likelihood and consequence of an injury or harm occurring as result of a hazard. Risk management is the systematic application of management policies, procedures and practices to the tasks of establishing the context, identifying, analysing, assessing, controlling and monitoring risk.

To enable effective risk management, some form of formal risk assessment is required to identify the risks associated with the construction and operation of the plant. The formal risk assessment process follows the methodology outlined in *AS4360: Risk Assessment*. This process is based on:

- Establishing the context;
- Identifying the risks;
- Analysis of the risks;
- Evaluating the risks; and
- Treating the risks.

At various stages of the project, formal risk assessments will be conducted to ensure that effective risk management of all risks (including health and safety risks) occurs during both the construction and operation phases of the project.

7.10 Decommissioning

It is not expected that this project will require decommissioning prior to 50 years (as the minimum life expectancy of the coal terminal) and a decommissioning strategy and closure plan will be developed as part of the coal terminal operational management system, when appropriate.

However, if the site required earlier decommissioning, the site would be rehabilitated and returned to similar environment that existed prior to the construction of the plant, unless another industrial land use can be found for the site.

8. Environmental and Planning Approval Process

8.1 Overview

This section describes the project approval framework and the relevant legislation to be addressed by the proposed coal terminal, and considers the project within a broader project development process.

Given the nature, scale and location of the proposed coal terminal, and the potential impact on Port Curtis, which is adjacent to the Great Barrier Reef Marine Park, there will be a need for various approvals from Commonwealth, State and Local government.

In addition, a referral to the Department of Environment and Heritage (DEH) will need to be made under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for a determination on the Controlled Action status of the project.

Further details regarding the approvals required for the project are provided below.

8.2 Commonwealth Approvals

Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act provides the primary environmental assessment and approval legislative framework for the Commonwealth Government. The EPBC Act establishes the requirement for the approval by the Commonwealth for actions which have, will have or are likely to have a significant impact on matters of national significance.

The current list of matters of national environmental significance are:

- The world heritage values of a declared World Heritage property;
- The ecological character of a declared Ramsar wetland;
- Listed threatened species and ecological communities;
- Listed migratory species;
- Nuclear actions; and
- Commonwealth marine areas.

Based on the proximity of the proposed coal terminal to Port Curtis Bay and adjoining GBRWHA, the project will be referred to DEH for a determination on whether the project is a Controlled Action. The referral to DEH will provide detailed information indicating whether or not the project should be considered as a Controlled Action.

8.3 State Approvals

In addition to preparing an EIS, a number of other environmental approvals will need to be secured prior to construction and operation of the coal terminal: These include:

- Material Change of Use for an Environmentally Relevant Activity (ERA) under the *Environmental Protection Act 1994* (and the *Integrated Planning Act 1997*);
- Registration Certificate for ERAs under the *Environmental Protection Act 1994*;
- Approval under the *Coastal Protection and Management Act 1996* (and the *Integrated Planning Act 1997*) for areas outside the existing CQPA reclamation approval, including:
  - Operational Works within a Tidal Area or Coastal Management District;
  - Tidal works and Coastal Management (Disposal of Dredge Spoil in Tidal Waters, Reclaiming Land under Tidal Water and Tidal Work);

  - Material Change of Use Involving Operational Works Carried Out Completely and Partly Within a Coastal Management District and Assessable under a Planning Scheme;
  - Development below the high water mark and within the limits of a Port under the *Transport Infrastructure Act 1994*;
  - Tidal Works in tidal areas or Strategic Port Land; and
- Marine Plant Permit under the *Fisheries Act 1994* for areas outside the existing CQPA Marine Plant approval (ie Reclamation Area C).

A number of State approvals will be required to facilitate the construction and operation of the proposed coal terminal. The key legislative approvals include:

- *State Development and Public Works Organisation Act 1971*;
- *Integrated Planning Act 1997*; and
- *Environmental Protection Act 1994*.

These legislative requirements are summarised below.

State Development and Public Works Organisation Act 1971

Central Queensland Port Authority is seeking declaration of the proposed coal terminal as a "Significant Project" under the *State Development and Public Works Organisation Act 1971* (SDPWO Act). The SDPWO Act establishes the framework for environmental assessment of major projects in Queensland, identifying the EIS process and its relationship with the *Integrated Planning Act 1997* (IPA).

As required by the SDPWO Act, a Development Scheme has been prepared to manage the development of the GSDA. The Development Scheme applies to the land use approval being for a Material Change of Use (MCU) of premises as usually required under IPA. The application for MCU will be accompanied by the EIS.

The Development Scheme provides for a transparent and streamlined approval process with stated objectives and guidelines for land use. Under this framework there are:

- Requirements for public notification of applications and referral to government agencies;
- Processes to avoid duplication in handling applications;
- Procedures to ensure that referrals proceed within acceptable timeframes; and
- Requirements for liaison with local governments.

Matters to be addressed in an EIS prepared pursuant to the SDPWO Act are detailed in Schedule 1 of the State Development and Public Works Organisation Regulation 1999.

The EIS process includes provision for:

- Public notification and development of the EIS Terms of Reference (ToR);
- Public notification of the EIS which must address the matters detailed in the ToR;
- Consideration and review of public submissions on the EIS; and
- The evaluation of the EIS and public submissions, and the preparation of an Evaluation Report by the Coordinator-General (CoG).

The EIS process under the SDPWO Act replaces the Information and Referral Stage, and the Notification Stage under IPA (refer below).

Transport Infrastructure Act 1994

The WICT will take place on Strategic Port Land (SPL), the development of which is guided by the Port of Gladstone Land Use Plan 1995 and managed by CQPA. Under the Land Use Plan, the current and future designated land use of the impacted area is "Port Handling Activities Area" which encompasses the majority of the proposed WICT activities including the unloading and transport of commodities and transfer of goods.

Planning and development on SPL lies under the auspices of CQPA, as required under Section 284 of the *Transport Infrastructure Act 1994*, CQPA regulates development of SPL and is usually the assessment manager for all development applications. In accordance with Section 287 of the *Transport Infrastructure 1994*, development applications pertaining to SPL are assessed against the Port of Gladstone Land Use Plan 1995.

Assessable development on SPL includes:

- A material change of use that is inconsistent with the Port Authority's land use plan (Schedule 8 of *Integrated Planning Act 1997*); and
- Other development made assessable through Schedule 8 on the *Integrated Planning Act 1997*. This includes but is not limited to operational works involving clearing remnant native vegetation, taking or interfering with water, works within a coastal management district, and removal of marine plants.

Under Section 242 of the *Transport Infrastructure 1994,* the railway manager for corridor land is, for any transport infrastructure on the land or proposed to be constructed on the land, subject to the same controls and exemptions under State and local laws that an agency of the State would be if it has the manager's interest in the land.

The Chief Executive (Queensland Transport) of the *Transport Infrastructure 1994* under Section 246, is required to perform and function or exercise a power equivalent to a local government, under the *Building Act 1975* and the *Integrated Planning Act 1997*, for works carried out on corridor land that relate to rail transport infrastructure. In this section corridor land means commercial corridor land, existing rail corridor land, new corridor land, future railway land or non-corridor land.

Integrated Planning Act 1997

IPA is Queensland's principal planning legislation. It establishes a framework assessing new developments through a development approval system known as the Integrated Development Assessment System (IDAS).

As discussed above, the SDPWO Act EIS process replaces the Information and Referral Stage, and the Notification Stage of the IDAS process under IPA. At the completion of the EIS process, the CoG Report will be taken as being a Concurrence Agency response under IPA and will be provided to the Assessment Manager to issue a Decision Notice.

Environmental Protection Act 1994

The *Environmental Protection Act 1994* (EP Act) provides a licensing and approval regime for a range of Environmentally Relevant Activities (ERAs). A range of ERAs will be carried out during the construction and operation of the proposed coal terminal.

Approval for these ERAs will take the form of Development Approvals granted under IPA and Registration Certificates granted under the EP Act.

8.4 Other State Approvals

It will be necessary to secure a range of other State approvals in order to progress the project to construction and ultimately operation. These approvals will be fully identified and confirmed as part of the EIS process, however, it is likely those provided in Table 8.1 may be required.

Table 8.1 State Approvals

Legislation	Department	Trigger	Permit/Licence
Aboriginal Cultural Heritage Act 2003	Department of Natural Resources and Mines (DNRM)	Duty of care to take all reasonable and practicable measures not to harm Aboriginal cultural heritage (Section 23)	Cultural Heritage Management Plan required.
Coastal Protection and Management Act 1995	Environmental Protection Agency (EPA)	Various triggers including Operational Works in tidal waters	Development Permit for Operational Works required.
Explosives Act 1999	DNRM	Possession, storage and use of explosives	
Fisheries Act 1994	Department of Primary Industries and Fisheries	Removal of marine plants	Fisheries Development Approval required
Water Act 2000	DNRM/EPA	Vegetation removal, excavation and/or filling in a "watercourse"	Riverine Protection Permit
Transport Infrastructure Act 1994	Department of Main Roads	Hanson Road is a State Controlled Road	Development Permit required
Transport Infrastructure Act 1994	CQPA	Undertaking an activity on SPL which is inconsistent with the Port of Gladstone Land Use Plan.	Development Permit for Operational Works required.

9. Community Consultation

9.1 Introduction

This section describes the community and government consultation program, which is an integral component of the environmental impact assessment process.

9.2 Existing Consultation

CQPA provides ongoing public awareness and community sessions for both its existing operations and planned development. This process involves ongoing communication via the *Port Talk* newsletter distributed throughout the community and the public awareness sessions hosted by the Chief Executive Officer at various forums.

9.3 Preliminary Consultation

Through the existing lines of communication the general public has been made aware of the need for future expansion of the port and in particular the need to establish the Wiggins Island Coal Terminal. Communication to date has been of a general nature identifying the location for the terminal and an undertaking to provide a trestle approach structure to the wharf rather than reclamation over the existing seagrass and mangroves.

CQPA have commenced briefings for key government agencies to outline the need for the project, the timeframe for delivery and the anticipated approvals process to be adopted. To date, the following key agencies have been briefed:

- Queensland Transport
- Queensland Treasury
- Queensland Office of the Coordinator General
- Queensland Environmental Protection Agency
- Commonwealth Department of Environment and Heritage
- Gladstone City Council
- Calliope Shire Council
- Export Coal Producing Executive

An ongoing programme for communication will be developed for both the public and key agency to convey the issues throughout the EIS process. This process will involve a series of general forums focussed on overall issues and specific discussions relating to issues of direct importance to the various agencies.

10. References

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Appendix A

CQPA Environmental Policy

Appendix A

CQPA Environment Policy

Central Queensland Ports Authority (CQPA) is Queensland's largest multi-commodity port. CQPA is committed to operating in a manner that allows for sustainable development with minimal environmental harm to the port and its surrounding areas.

Our aim, through this Environmental Policy, is to achieve:

- Compliance with all environmental legal and other requirements relevant to the operation.
- Best industry practice for a bulk handling port within Australia;
- Continual improvement of our operations to minimise any environmental impacts the Port has on the surrounding environment;
- An improved level of environmental awareness and understanding by employees and throughout the wider community;
- The implementation and maintenance of an Environmental Management System independently certified to the ISO 14001:2004 Standard;
- Environmental strategies are established in association with external stakeholders;
- The implementation of an aesthetics strategy to minimise the overall visual impact the operations have on the wider community;
- The provision of "First Strike" capabilities within the Port boundaries in the event of an oil spill;
- Annual public reporting of our environmental performance to external stakeholders;
- Continual monitoring of the overall environmental health of the Port; and
- Ongoing control and improvement of our dust and noise emissions.

Appendix B

QR Environmental Policy

Environmental Statement

We want our customers and stakeholders to be impressed by our environmental performance so that they choose QR ahead of all other transport options. To achieve this we will demonstrate effective management of our environmental risks. There are ongoing opportunities for QR to enhance its environmental performance and improve its corporate reputation.

With the support of the Board, I am committed 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; and
- Providing an audit and review framework to ensure that the system is operational, effective and is meeting these requirements.

Our actions and choices reflect directly on QR's performance. QR's commitment to the environment will ensure that environmental issues are considered as part of everyday decision-making processes.

Whatever our job, each of us has a responsibility to identify environmental risks, implement suitable controls and report all incidents that have caused environmental harm or had the potential to do so.

Protecting the environment is important to QR and we have a duty to each other and to the community to manage our activities in an environmentally responsible manner. The co-operation and dedication of all QR employees and our contractors is vital to delivering on our environmental commitments.

Bob Scheuber
Chief Executive Officer

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Wiggins Island Coal Terminal