

# Coordinator-General's Report

## Wiggins Island Coal Terminal Project

Report evaluating the Environmental Impact Statement,  
pursuant to Section 35 of the *State Development and  
Public Works Organisation Act 1971* (Qld)

January 2008

# Wiggins Island Coal Terminal Project

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# Coordinator-General's Report - Synopsis

This Report has been prepared pursuant to s.35 of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and provides an evaluation of the Environmental Impact Statement (EIS) process for the Wiggins Island Coal Terminal (WICT) Project (the Project).

An Initial Advice Statement was lodged with the Coordinator-General in September 2005 and the project was declared to be a "significant project for which an EIS is required", pursuant to s.26(1)(a) of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act), on 29 September 2004.

On 25 November 2005, the Project was determined to be a controlled action pursuant to s.75 of the EPBC Act (reference number EPBC 2005/2374). Under a Bilateral Agreement with the Australian Government, the Coordinator-General's Report will be used by the Australian Government Minister for the Environment, Heritage and the Arts to make an assessment of the controlled action for the purposes of the EPBC Act.

The Proponent for the Project is the Central Queensland Ports Authority (CQPA) and Queensland Rail (QR). CQPA is a Queensland Government Owned Corporation and is a Port Authority under the *Transport Infrastructure Act 1994*. CQPA is the Port Authority responsible for the management and operation of port facilities at the Port of Gladstone and Port Alma.

The proposal is to develop a new coal export terminal, rail infrastructure and supporting infrastructure to service the increasing demand for the export of coal from the Queensland coalfields. The Project scope was described in the EIS issued in December 2006. Subsequent community and stakeholder consultation and engineering studies have refined the scope, extent and location of the project components resulting in the arrangements presented in the Supplementary EIS (SEIS) document.

The major change presented in the SEIS was the relocation of QR's proposed rollingstock maintenance and provisioning yard and associated infrastructure, to a location in the north of the Gladstone State Development Area (GSDA), which will be addressed under a separate environmental approval process.

This resulted in a significant reduction in the rail infrastructure required in the WICT project area, including the removal of the proposed rail bridge crossing of the Calliope River. Most of the coal terminal scope remained unchanged except for the changes effected by the relocation of the rail yard. The project area remained the same area covered by the EIS.

The Proponent is seeking approval for the construction of six berths. This includes four berths for the coal export terminal and two berths for other products (currently expected to be utilised by Gladstone Pacific Nickel). For the two non-coal berths, CQPA will be responsible for dredging of the berth pockets, swing basin and approach/departure channel and for construction of the wharf substructure, jetty



substructure, berthing and mooring dolphins. Approvals for all above deck facilities (including spillage controls) for these two non-coal berths will be the responsibility of the user.

The nominal capacity of the coal terminal will be 70 million tonnes per annum (Mtpa) utilising three dump stations, three inloading conveyors, three outloading conveyors and shiploaders, and four coal berths. However, depending on the material handling efficiencies achieved, the actual capacity of the ultimate facility could increase by up to 20% above the nominal 70 Mtpa capacity (up to 84 Mtpa) without the need to increase the infrastructure nominated for the ultimate Stage 3 works.

Draft Terms of Reference (ToR) were advertised for public comment on 14 January 2006. Comments were accepted until close of business (cob) on 14 February 2006. A final ToR was issued to the Proponent on 24 March 2006.

The EIS was approved for release and advertised publicly on Saturday 11 November 2006 inviting submissions until cob on Monday 8 January 2007. All submissions were forwarded to the Proponent for consideration and, following discussions with the Proponent and its technical consultants, it was determined that the preparation of an SEIS was necessary to address substantive issues that were raised.

The key environmental issues raised in submissions were noise and air quality impacts on rural residential development adjacent to the existing Moura Rail Line; disturbance to the Byellee Wetlands area; water quality impacts in Port Curtis; road access to the WICT; acid sulfate soils; air quality impacts from the coal terminal; and workforce accommodation during construction and operation.

On 2 August 2007, the SEIS addressing the above issues was forwarded to Advisory Agencies requesting their specific comments or advice for consideration in preparing this Report and to other EIS respondents for their information.

In evaluating the environmental effects, I have considered: the EIS, SEIS and detailed Environmental Management Plans (EMPs) prepared by the Proponent; public submissions received on the EIS; comments on the EIS and other advice provided by State and local government authorities (Advisory Agencies); and other relevant information.

Having regard to the above, I consider that the EIS for the Project has adequately addressed the environmental and other impacts of the Project and meets the requirements of the Queensland Government for impact assessment in accordance with the provisions of Part 4 of the SDPWO Act.

Therefore, I recommend that the Project, as described in detail in the EIS and SEIS and summarised in Section 2 of this Report, can proceed, subject to the conditions contained in Appendices 1 and 2 of this Report.

*Signed Colin D Jensen*

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**Colin Jensen**  
**Coordinator-General**  
**Date: 7 January 2008**

# 1. Introduction

This Report has been prepared pursuant to s.35 of the *State Development and Public Works Organisation Act 1971* (Qld) (SDPWO Act) and provides an evaluation of the Environmental Impact Statement (EIS) for the Wiggins Island Coal Terminal (WICT) Project (the Project). The EIS was conducted by the Proponent, Central Queensland Ports Authority (CQPA) and Queensland Rail (QR) and prepared on its behalf by Connell Hatch Pty Limited.

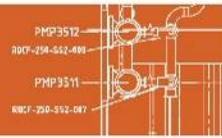
An Initial Advice Statement was lodged with the Coordinator-General in September 2005 and on 29 September 2005 the WICT Project was declared, to be a “significant project for which an EIS is required” pursuant to s.26 of the SDPWO Act.

The Project was referred by the Proponent to the Australian Government for a determination as to whether or not it constituted a “controlled action” under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (Cwth) (EPBC Act), for potential impacts to national environmentally significant matters. On 25 November 2005, the Project was determined to be a controlled action pursuant to s.75 of the EPBC Act (reference number EPBC 2005/2374).

Under a Bilateral Agreement with the Australian Government, the Coordinator-General’s Report will be used by the Australian Government Minister for the Environment, Heritage and the Arts to make an assessment of the controlled action for the purposes of the EPBC Act.

The objective of this Report is to summarise the key issues associated with the potential impacts of the Project on the physical, social and economic environments at the local, regional, state and national levels. It is not intended to record all the matters which were identified and subsequently settled. Instead, it concentrates on the substantive issues identified during the EIS process.

This Report represents the end of the State impact assessment process. Essentially, it is an evaluation of the Project, based on information contained in the EIS, Supplementary EIS (SEIS), submissions made on the EIS and information and advice from Advisory Agencies and other parties, and states conditions under which the Project may proceed.



## 2. Project Description

### 2.1 The Proponent

The Proponent for the WICT Project is the CQPA and QR. CQPA is a Queensland Government Owned Corporation and is a Port Authority under the *Transport Infrastructure Act 1994*. CQPA is the Port Authority responsible for the management and operation of port facilities within the Port of Gladstone and Port Alma, including:

- RG Tanna Coal Terminal (RGCT)
- Fishermans Landing
- Gladstone Port Central (Auckland Point and Barney Point Terminals)
- Port Alma
- Boyne Wharf

QR is also a Government Owned Corporation, with the Network Access arm being responsible for the management of the following:

- Access to QR's national rail network
- Infrastructure assets making up the rail network
- Operation on the rail network

### 2.2 The Project

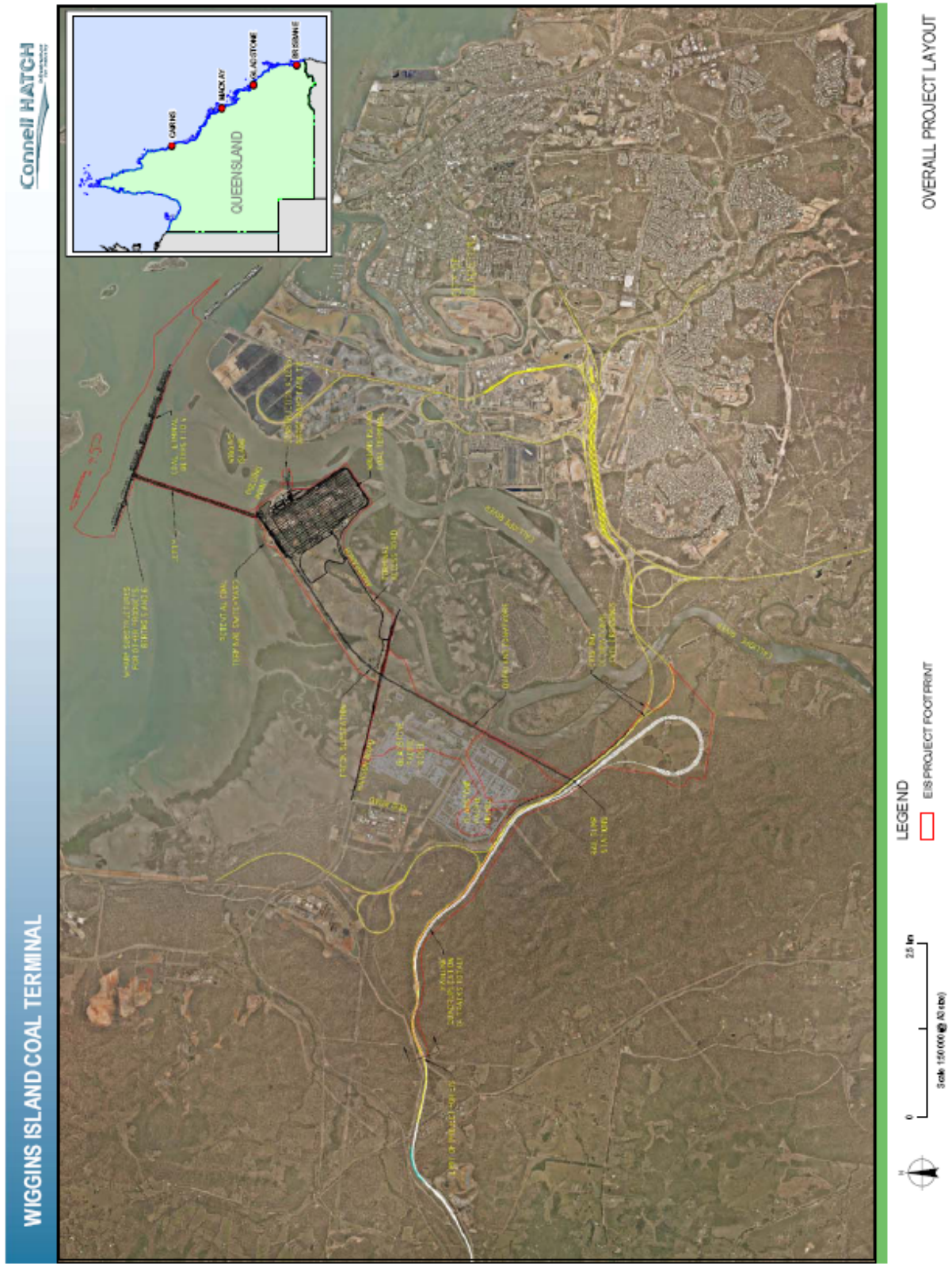
The proposal is to develop a new coal export terminal, rail infrastructure and supporting infrastructure to service the increasing demand for the export of coal from the Queensland coalfields. The WICT is to be located in the Port of Gladstone (refer Figure 1), west of the existing RGCT.

The Project scope was described in the EIS issued in December 2006. Subsequent community and stakeholder consultation and engineering studies refined the scope, extent and location of the project components resulting in the arrangements presented in the SEIS document. Most of the coal terminal scope remained unchanged except for the changes effected by the relocation of the rail yard.

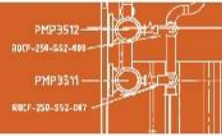
The major change to the Project was the relocation of QR's rollingstock maintenance and provisioning yard and associated infrastructure, previously located to the south west of the North Coast Line, to a location in the north of the Gladstone State Development Area (GSDA). This has resulted in a significant reduction in the rail infrastructure required in the project area, including the removal of the rail bridge crossing of the Calliope River.

The project area is the same area covered by the EIS. Rail works outside of this area (Moura Link – Aldoga Rail Project) are to be addressed under a separate environmental approval process.

The SEIS presented two (2) alternative options for delivering coal to the WICT. The Proponent's preferred option includes a rail loop and dump stations located to the south of the North Coast Line adjacent to the Calliope River Anabranh and a long overland conveyor (approximately 6 km) to the coal terminal.



**Figure 1 - Overall Project Layout**



The Proponent is seeking approval for the construction of six berths. This includes four berths for the coal export terminal and two berths for other products (currently expected to be utilised by Gladstone Pacific Nickel). For the two non-coal berths, CQPA will be responsible for dredging of the berth pockets, swing basin and approach/departure channel and for construction of the wharf substructure, jetty substructure, berthing and mooring dolphins. Approvals for all above deck facilities (including spillage controls) for these two non-coal berths will be the responsibility of the user.

The nominal capacity of the coal terminal will be 70 million tonnes per annum (Mtpa) utilising three dump stations, three inloading conveyors, three outloading conveyors and shiploaders, and four coal berths. However, depending on the material handling efficiencies achieved, the actual capacity of the ultimate facility could increase by up to 20% above the nominal 70 Mtpa capacity (up to 84 Mtpa) without the need to increase the infrastructure nominated for the ultimate Stage 3 works. The Proponent is therefore seeking approval for the infrastructure nominated in the EIS, but with a throughput variation up to 20% more than the nominal ultimate capacity, namely 84 Mtpa.

## 2.3 Project rationale

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 support the development of a new coal terminal in the Port of Gladstone.

Queensland's Bowen Basin produces high quality coking coal, pulverised coal injection coal and thermal coal that is exported to Japan, Korea, Taiwan, China, India, Europe and Brazil. The region represents a significant 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, are resulting in additional demand for coal to be exported through the Port of Gladstone.

### **Existing capacity constraints**

Upon completion of the current expansion of the RGTCT the facility will have reached its most cost effective development capacity. Whilst additional stockpiles can be added to increase the on-ground storage available at the terminal, 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. Ultimate terminal capacity is nominally rated at 69 Mtpa. It is anticipated that customer demand will exceed this increased capacity by 2009.

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



Any additional tonnage to be exported through the Port of Gladstone will require the establishment of a new terminal. The CQPA has determined that there is sufficient customer interest to initiate the WICT Project.

### **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 quality metallurgical and thermal coal in the world.

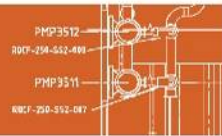
Opportunities remain for further resource development in the central and south west Bowen Basin within the Reids Dome Beds, which are known to contain vast, and as yet, undeveloped resources of high quality thermal and metallurgical coals. Recent exploration in the southern Bowen Basin has focused on 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.

Both CQPA and QR have obtained substantial support from coal users for the WICT Project. QR has obtained an independent coal demand analysis report to indicate that there is forecast sustained growth for the coal industry in Queensland and there is a requirement for the proposed WICT in the Port of Gladstone.

### **No action option**

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

In addition, the proposal has significant employment opportunities at the local, regional and State level across all spectrums of the workforce.



## 3. Impact Assessment Process

### 3.1 Review and refinement of the EIS Terms of Reference

An Initial Advice Statement was released for public information and Draft Terms of Reference (ToR) were advertised for public comment on 14 January 2006. Comments were accepted until close of business (cob) on 14 February 2006. A final ToR was issued to the Proponent on 24 March 2006. Comments on the ToR were received from:

- Department of Aboriginal and Torres Strait Islander Policy
- Department of Primary Industries and Fisheries
- Department of Main Roads
- Department of Emergency Services
- Department of Natural Resources, Mines and Water
- Environmental Protection Agency
- Queensland Health
- Calliope Shire Council
- Gladstone City Council
- BR & R Ross

### 3.2 Public review of the EIS

The EIS was approved for release and advertised publicly on Saturday 11 November 2006 inviting submissions until cob on Monday 8 January 2007. A CD-Rom copy of the EIS was available free of charge from the Proponent.

The EIS was displayed at:

- Calliope Shire Library
- Gladstone City Library
- State Library of Queensland, Info Zone, South Bank, Brisbane

Information on the Project was available via the CQPA, QR and Coordinator-General's web site and general consultation was undertaken using methods such as agency briefings, distribution of community newsletters (May and October 2006 and June 2007) and an EcoFest display in Gladstone in early June 2007.

The following Advisory Agencies were approached formally to conduct an evaluation of the EIS:

- Department of Communities
- Department of Education, Training and the Arts
- Department of Emergency Services
- Department of Housing
- Department of Industrial Relations
- Department of Local Government, Planning, Sport and Recreation
- Department of Main Roads

- Department of Mines and Energy
- Department of Natural Resources and Water
- Department of Primary Industries and Fisheries
- Department of State Development
- Environmental Protection Agency
- Queensland Health
- Queensland Police Service
- Queensland Transport
- Queensland Treasury
- Calliope Shire Council
- Gladstone City Council
- Australian Government Department of Environment and Water Resources

Following the six-week public review of the EIS a total of 25 submissions were received with the following distribution; 14 from Advisory Agencies, one from industry and ten from members of the public as follows.

### **Agencies**

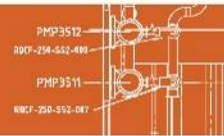
- Department of Communities
- Department of Emergency Services
- Department of Housing
- Department of Local Government, Planning, Sport and Recreation
- Department of Main Roads
- Department of Natural Resources and Water
- Department of Primary Industries and Fisheries
- Department of State Development
- Environmental Protection Agency
- Queensland Health
- Queensland Transport
- Calliope Shire Council
- Gladstone City Council
- Commonwealth Department of Environment and Water Resources

### **Industry**

- Gladstone Pacific Nickel

### **Private**

- Mr CJ Andersen
- Mrs Marie Alford
- Mr J Clark
- Mr and Mrs O'Brien
- Mr G McVean
- Mr and Mrs Tooker
- Mrs Roslyn Howse
- Mr T Goodwin
- Mr L Coward
- Mr and Mrs Blackbourn



The substantive issues raised in submissions were as follows:

- Noise and air quality impacts on rural residential development adjacent to the existing Moura Rail Line.
- Disturbance to the Byellee Wetlands area.
- Water quality impacts in Port Curtis.
- Road access to the WICT.
- Acid Sulfate Soils (ASS).
- Dust impacts from the coal terminal and rail operations.
- Workforce accommodation during construction and operation.

Submissions were forwarded to the Proponent and following discussions with the Proponent's representatives and its technical consultants it was determined that preparation of a Supplementary EIS was necessary to address issues raised.

### 3.3 Review of Supplementary EIS

On 2 August 2007, the SEIS was forwarded to Advisory Agencies and respondents to the EIS.

The following agencies advised that they were satisfied that all issues had been addressed:

- Department of Communities
- Department of Emergency Services
- Department of Mines and Energy
- Department of Local Government, Planning, Sport and Recreation
- Department of State Development
- Queensland Police Service
- Queensland Transport (QT)
- Queensland Treasury

The following agencies either provided advice or recommended conditions:

- Department of Housing
- Department of Main Roads (DMR)
- Department of Natural Resources and Water (DNRW)
- Department of Primary Industries and Fisheries (DPI&F)
- Environmental Protection Agency (EPA)
- Queensland Health
- Calliope Shire Council
- Gladstone City Council
- Australian Government Department of Environment, Water, Heritage and the Arts (DEWHA)

Substantive issues raised in submissions are discussed individually in the following section.

# 4. Evaluation of Environmental Effects

## 4.1 Introduction

The SDPWO Act defines 'environment' to include:

- (a) Ecosystems and their constituent parts, including people and communities.
- (b) All natural and physical resources.
- (c) The qualities and characteristics of locations, places and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony and sense of community.
- (d) The social, economic, aesthetic and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).

'Environmental effects' means "the effects of development on the environment, whether beneficial or detrimental". These effects can be direct or indirect, of short, medium or long-term duration and cause local or regional impacts.

This section outlines the major environmental effects identified during the EIS process, including those raised in the EIS, SEIS, in submissions on the EIS and in consultation with Advisory Agencies and other key stakeholders. I have provided comments on these matters and, where necessary, set conditions or made recommendations to mitigate adverse impacts.

This Report states conditions, collated in Appendix 1 and Appendix 2, which must attach to any Development Approval issued pursuant to the *Integrated Planning Act 1997* (IPA).

The Environmental Protection Agency will be the Assessment Manager for development approval for undertaking Environmentally Relevant Activities (ERA's) pursuant to the *Environmental Protection Act 1994*.

These approvals are obtained through the Integrated Development Assessment System (IDAS) in IPA.

## 4.2 Substantive issues

### 4.2.1 Noise and air quality impacts on rural residential development adjacent to the existing Moura Rail Line

#### EIS findings and/or key points

The rail concept design presented in the EIS showed Moura and Surat rail traffic entering the WICT precinct from the south west via the Moura Line. This would have resulted in a significant increase in rail traffic on the Moura Line. As mentioned in Section 3.1.4 of the EIS, alternative rail options were being explored and following further detailed options assessment prompted by community consultation and

stakeholder feedback arising from the EIS process a significant change has been proposed.

The SEIS presented a revised rail access proposal for Moura/Surat rail traffic to arrive at WICT via a new link line running north from the Moura Short Line and Dawson Highway to the west of the Bruce Highway, crossing the Bruce Highway into the GSDA at its southern limit and linking to the existing North Coast Line (NCL) south of Mt Larcom. This new link line would pass through rural areas to the west of the Bruce Highway, and then into the GSDA. From the northern end of the new Moura Link, Moura and Surat trains would follow the same path as Blackwater trains (along the NCL) and all trains would enter the WICT precinct from the same direction.

To present the revised rail concept, meetings were held with Gladstone City and Calliope Shire Councils, and State agencies including the EPA (with meetings in Gladstone, Rockhampton and Brisbane), DPI&F, DNRW, DMR and QT. The proposed Project changes were explained to each agency and its EIS comments discussed.

In parallel, the community was informed of the Project changes through the local press and the proposed new layout was displayed in early June 2006 at the local EcoFest display. An updated WICT newsletter was also distributed in the local area during June 2007 prior to the Proponent finalising the SEIS.

The Proponent has identified two (2) rural properties in the Byellee area that will potentially be affected by noise from operation of the overland conveyor in the revised rail/conveyor design.

The Proponent has committed to further studies and if required, through consultation with the owners, mitigation measures can be identified and incorporated within the design process. It is important to note that construction and operation activities will comply with relevant EPA regulations and/or consent conditions for noise, vibration and air quality.

## **Conclusions**

The revised rail concept presented in the SEIS has been strongly supported by a number of Advisory Agencies and has addressed the issues raised in the majority of EIS public submissions (i.e. rail noise, dust and road/rail crossing issues on the Moura Line) received during the EIS consultation period.

I am satisfied that the potential for the Project to have noise, vibration and air quality impacts on sensitive receptors during construction and operation can be adequately managed through the mitigation measures and commitments contained in the EIS documents, implementation of both the Coal Terminal Environmental Management Plan (EMP) and the Rail EMP, and the conditions contained in Schedules A, B, E and G, Appendix 1 of this Report.

### **4.2.2 Disturbance to the Byellee Wetlands area**

#### **EIS findings and/or key points**

The Byellee Wetland is a man-made freshwater wetland of local significance that incorporates a tidally influenced zone.

The rail concept design presented in the EIS showed Moura and Surat rail traffic entering the WICT precinct from the south west via the Moura Line. The infrastructure that was proposed to be constructed in this area related to the eastern approach for the new rail bridge over the Calliope River, widening of the rail corridor for passing loops, a road to provide maintenance access and direct connections to new rail infrastructure on the west side of the Calliope River.

Construction in this area would have resulted in the removal of approximately 3ha of marine plants within the wetland and lining the Calliope River.

## **Conclusions**

With the revised rail proposal to bring all WICT rail traffic through the GSDA, there are now no proposed works within the Byellee wetland area.

### **4.2.3 Water quality impacts in Port Curtis**

#### **EIS findings and/or key points**

The WICT is located to the west and directly across the Calliope River from the existing RGTCT. 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. The proposed stockyard is to be located on and around the existing elevated ground known as Golding Point.

As part of the WICT development 6.3 million m<sup>3</sup> of material is required to be dredged in two stages, the first of which, involves 3.2 million m<sup>3</sup>. The dredging is required to create berth pockets, a departure channel and swing basin to allow access to the coal terminal.

The materials within the proposed dredging area consist primarily of silty sand, sand, clayey sand and clays with gravel at depths to RL-16m, with increasing gravel content below this level. It is proposed that the entire dredged volume be contained on land within two reclamation areas located over 4km from the dredging site. These reclamation areas are to be designed to store the soil-water mix for a sufficient time so that the discharge water should not exceed 50ppm above the natural background levels of suspended sediment concentration in the Calliope River.

Shallow tidal flats and the shallow Calliope River entrance make conditions unfavourable for the use of trailer hopper suction to reach the shore, therefore two different types of dredges have been proposed.

A Trailer Suction Hopper Dredge (TSHD), if fitted with pump-out installations is suitable for sand delivery to a reclamation site, but is unsuitable for clay delivery other than bottom dumping. A Cutter Suction Dredge (CSD) with sufficient capacity in cutter and pump power assisted by additional booster pumps will also be necessary to undertake the dredging works because of the stiff clays and gravel layers to design depth and significant pumping distances to the reclamation site.

Additionally, the CSD will require one or two compatible booster pump stations in the delivery line to be able to deliver dredged gravel and clays to the reclamation sites.

The dredging methodology presented in the EIS for stage 1 involved the use of a TSHD working the eastern extremity of the Departure Channel with back-dumping of the dredged materials temporarily into a pre-prepared, partially dredged, berth pocket at the proposed wharf site for rehandling by a CSD.

This back-dumping of dredged material into the berth pocket meant a double-handling of the material and a potential risk of releasing large quantities of sediment into Port Curtis. Issues regarding this double-handling were raised by EPA and DEW in their submissions on the EIS.

The SEIS proposed a revised dredge spoil strategy that means the dredge spoil will be disposed directly to land, eliminating the need for double-handling of the material in the water.

Following its review of the SEIS, the then Department of Environment and Water Resources (DEW) provided comments predominantly focused on the need for further information regarding the mitigation measures for dredging operations and greater detail regarding the effectiveness of the sediment testing and modelling. In particular, the draft Dredge Environmental Management Plan (DEMP) was not considered adequate, particularly with regard to the performance criteria and mitigation measures.

Whilst DEW subsequently acknowledged that some of its comments concerned aspects of the project that could be addressed in the management plans which could be required under approval conditions, other comments provided with respect to the SEIS remained. These comments were central to understanding the impacts of the proposal and needed to be addressed in the assessment to allow an informed decision on whether to approve the proposal.

The two remaining issues of concern to DEW were:

- The extent of conveyor covering (two sides only) and potential for coal dust to enter the water within the Great Barrier Reef World Heritage Area.
- The need to consider possible sediment re-suspension from dredging operations, due to wind/wave activity, in the development of trigger level criteria. The response from the Proponent, to DEW comments on the Supplementary EIS, indicated that trigger level criteria would be developed upon completion of the detailed design and agreement of the Regulatory Agencies sought. Consideration of the role of wind/wave activity in sediment movement will be required in developing these criteria.

The Proponent subsequently met with DEW representatives to clarify and address these issues. As a result, the Proponent has undertaken to provide to DEW:

- A summary paper that captures the suitability and adequacy of the hydrodynamic and sediment dispersion model for this environment, addressing wave, current and sediment re-suspension. Upon receiving the summary paper, DEW will consult with GBRMPA to provide early feedback that can be considered in a peer review of the sediment modelling.
- A peer review of the model.



- An assessment of the conveyor design alternatives with respect to the impacts of dust emissions on World Heritage areas.

In relation to the trigger levels issue above for suspended sediments/turbidity levels, CQPA has now agreed with DEWHA that these will be agreed during the finalisation of the DEMP and references to these trigger levels within this document have been amended to reflect this undertaking. Dredging activities and associated impacts will be closely monitored by CQPA for compliance with the plan during construction.

The summary of the peer review undertaken by Cardno Lawson Trelor stated:

*“The essential details of the data, modelling and process rates adopted for sediment plume modelling by WBM for the WICT project have been reviewed. All relevant processes have been included. Based on my experience in other muddy sites such as Cairns and the assessment of WBM’s work, I believe that the outcomes of modelling in terms of the extent of visible plumes above background conditions are sound and the extents of these visible plumes will generally be over-estimated by the results of WBM’s analyses, particularly given that direct disposal to the water is no longer proposed.”* P.D Trelor 21/12/2007.

An assessment of the conveyor design alternatives states:

*“Shielding the conveyor system with a roof and one side will, in conjunction with the DEM and moisture measures undertaken, effectively remove most of the potential for lift off of coal dust. An estimated comparison between a 2 sided and 3 sided conveyor system showed that there is the potential for an approximate 10% reduction in overall emissions from the outloading conveyors (equating to a 0.8% overall site emission reduction). These relative emission factors (for 2 and 3 sided conveyors) are based on published figures from the USEPA and measurements of existing facilities on the east coast of Queensland”.*

The additional information provided to DEWHA on the outstanding issues will enable it to fully understand any potential impacts on matters of National Environmental Significance and assist the Australian Government Minister to make an informed decision on whether to approve the proposal.

EPA has provided conditions to be attached to a development approval for Material Change of Use for the WICT Project to address its issues. The Proponent will also need to seek assessment and conditioning pursuant to the *Coastal Protection and Management Act 1995* for matters such as discharge standards for dredge spoil tailwater.

## **Conclusions**

From the State of Queensland’s perspective, I am satisfied that the potential for the Project to impact on water quality in Port Curtis can be adequately managed through the mitigation measures and commitments contained in the EIS documents, implementation of the Coal Terminal EMP and the recommended requirements contained in Schedules A, C and G, Appendix 1 of this Report.

### **4.2.4 Road access to the WICT**

#### **EIS findings and/or key points**

Site access to the terminal is to be provided off Hanson Road between the Anabranch and the eastern leg of the rail loop. Access is required along the eastern side of the loop to provide public access. The speed environment on Hanson Road is 100kph.

The intersection proposed in the EIS was a two lane circulating roundabout with four legs, configured so as to allow future four-laning to the east. Other options investigated included a new access road north of Hanson Road off Reid Road roundabout, and left in/left out options to the immediate west of the rail loop. These options were all considered inferior, more expensive, and required a much greater travel distance from Gladstone.

With the relocation of the QR Rail Yard west to the northern GSDA, the requirement for access to the south of Hanson Road is now limited to minor movements associated with access to the Rail Dump Station. CQPA workers associated with the Dump Station will start and finish shifts at the main WICT facility and access the Dump Station via an access along the Conveyor Corridor. Larger vehicles associated with construction and major maintenance activities will access the Dump Station via Reid Road.

CQPA has stated a desire for the WICT Access to minimise travel times for WICT traffic; provide connectivity to the secure area of the WICT development, via unsecured areas of the development, without the need to cross or enter secure areas; provide for Stage 1 construction traffic and minimise impact on existing traffic during construction; minimise impacts of future Hanson Road works on the operational Services Corridor, i.e. construction over/adjacent operating conveyors; allow for the current DMR proposed Overtaking Lane Scheme between the Calliope River Anabranch and Reid Road; and minimise costs whilst providing a safe intersection in accordance with DMR Road Planning and Design Manual (RPDM).

The SEIS presented a revised WICT Access, in accordance with the above criteria, which comprised an at grade T-intersection located approximately 500m west of the Calliope River Anabranch. The proposed intersection provides for protected right and left turn movements with a through traffic design speed of 100km/hr, in accordance with the DMR RPDM.

An intersection analysis was undertaken to determine the intersection capacity through to 2030 (10 years post Stage 3 implementation). It was found that the intersection performed at a high level of service, and with delays to turning traffic well within accepted guidelines.

For the initial form of the proposed intersection, i.e. a single eastbound through traffic lane, the requirements for right turning traffic, both in and out, across the single through traffic lane is in accordance with general practice for rural roads throughout regional Queensland. The provision of the 'seagull' treatment negates any impact on the westbound traffic movements, with two through traffic lanes allowed for in the initial intersection treatment.

The future construction of a second eastbound through traffic lane within the WICT intersection was proposed by CQPA to be introduced within the context of Hanson Road functioning as an industrial arterial road with a 4 lane divided carriageway from Gladstone City to Gladstone-Mt Larcom Road. CQPA also proposed that it

may be appropriate to amend the posted speed west from Gladstone City, in line with this function, to 80km/hr.

DMR, in its comments on the SEIS, expressed concerns about the proposal to locate an at-grade intersection on Hanson Road for the project and requested the Proponent gain access via a service road from the Reid Road intersection or alternatively a grade-separated access nearer the project.

At a subsequent meeting between Department of Infrastructure and Planning (DIP) and DMR officers, DMR stated that the at-grade intersection proposal on Hanson Road was unacceptable in terms of current and future road safety, transport efficiency and functional integrity of what it considers Hanson Road to be a Gladstone-Rockhampton inter-city road link.

DIP considered Hanson Road to be an industrial arterial road servicing the industrial areas of Yarwun, Targinnie, the GSDA and future industrial areas on Curtis Island with a number of at-grade, reduced speed intersections at Reid Road, the access to the Rio Tinto Alumina Refinery and the T-intersection with Gladstone-Mt Larcom Road.

By way of assisting the parties to reach agreement on an appropriate access for the WICT, CQPA was requested by DIP to prepare a comprehensive report to further examine the impacts of the WICT access arrangements presented in the SEIS. This report (Road and Access Impacts Report) examined all aspects, including costs, of the proposed at-grade intersection, a grade-separated interchange and the DMR preferred access via a service road from Reid Road.

Following its review of the Road and Access Impacts Report, DMR subsequently advised that “analysis in the most recent traffic studies indicated the proposed 'at grade' T-intersection - Seagull type would provide acceptable performance in the short term for project traffic impacts on road safety, transport efficiency and functional integrity of this Gladstone – Rockhampton inter-city road link” and that it “accepts in principle the 'at grade' T-intersection- Seagull type as a short term solution”.

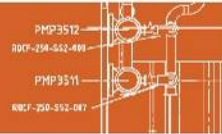
However, Main Roads has stated that “it should be noted that road safety at the access intersection is paramount and must be monitored. Should the incidence of conflicts rise to unacceptable levels, the requirement for grade-separation will need to be reviewed by the Proponent and Main Roads.

Further, the Proponent is required to reassess the road safety and transport efficiency of the interaction between port and through traffic at the port access intersection with Hanson Road every 4 years or prior to the commencement of construction of each further stage of port development.

This may require the Proponent to bring forward the upgrade of the WICT access from Hanson Road to a grade-separated standard”.

DMR believes this solution meets the project requirements and the State's longer term view to maintain Hanson Road as a higher-speed freight link for the port and the State Development Area between Rockhampton and Gladstone.

The Proponent has committed to the preparation and implementation of a Traffic Management Plan in accordance with DMR's requirements.



## Conclusions

In relation to monitoring the incidence of conflicts at the WICT access intersection at Hanson Road, I agree with the CQPA advice that this can be adequately addressed through implementation of the CQPA's Traffic Management Plan and Workplace Health and Safety system.

In order to ensure that traffic impacts are properly managed, I state the following conditions:

### Condition 1

- (a) **Prior to the completion of construction of Stage 1 of the WICT the Proponent will provide at no cost to the Department of Main Roads an 'at grade' T-intersection - Seagull type with Hanson Road for access to/from the development site generally in accordance with Connell HATCH drawing N<sup>o</sup>. HQ98 SK C 025 (rev B) and the Department of Main Roads' 'Road Planning and Design Manual'.**

The design will include the following specific requirements:

- **Construction of a minimum 50m long raised concrete median in the side road intersection to guide and control turning traffic.**
  - **Construction of the intersection to facilitate a 100 km/h speed limit, generally.**
- (b) **The Proponent will reassess the road safety and transport efficiency of the interaction between port and through traffic at the port access intersection with Hanson Road every 4 years from the commencement of operation of WICT or prior to the commencement of construction of each further stage of port development. Such report must be submitted to, and be acceptable to, the Department of Main Roads' District Director (Central).**
- (c) **The Proponent must upgrade, at no cost to the Department of Main Roads, the 'at grade' T-intersection to provide a grade-separated access to the development site generally in accordance with Connell HATCH drawing N<sup>o</sup>. HQ98 SK C 021 (rev A) once road safety/transport efficiency diminishes to levels warranting the upgrade of the intersection to a grade-separated standard in accordance with the Department of Main Roads' 'Road Planning and Design Manual' or when traffic on Hanson Road exceeds 12,000 vehicles per day,.**

The design shall include the following specific requirements:

- **Construction of a raised barrier in the median to prohibit traffic turning across the median.**
- **Construction of the intersection to facilitate a 100 km/h speed limit, generally.**

**After finalising details about the access location and any other works-related requirements to mitigate road impacts of the project, the Proponent will require written approval for the access location under section 62 *Transport***

**Infrastructure Act 1994 (TIA) and under sections 33 or 50 of the TIA for any works in the road reserve.**

#### **Condition 2**

**The Proponent will construct the road over the conveyor and services corridor to Wiggins Island Coal Terminal and wharf, generally in accordance with the "desirable parameters" of the Department of Main Roads' "Road Planning and Design Manual".**

#### **Condition 3**

**The Proponent will construct auxiliary overtaking lanes of suitable length (not less than 1.2 kilometre plus tapers) and width (3.5 metres plus 2.0 metre shoulders) at a location acceptable to the Department of Main Roads between the Calliope River Anabranh and Reid Road intersection in accordance with Department of Main Roads' 'Road Planning and Design Manual'.**

**The design will include the following specific requirement: a minimum 2,000m radius horizontal curves (not super-elevated) on the immediate road approaches.**

**After finalising details about the works required to mitigate road impacts of the project, the Proponent will require written approval under section 33, *Transport Infrastructure Act 1994*.**

#### **Condition 4**

**The Proponent must manage stormwater/drainage impacts of the project in consultation with the Department of Main Roads, near/under Hanson Road to accommodate a minimum 50 year ARI flood event. This includes managing the sediment load of stormwater following completion of the project and, if necessary, designing and providing adequately-sized culverts such that requirements for the Department of Main Roads to clear culverts of sediment build-up are not more than before the project. Any works required must be in accordance with Main Roads' "Road Drainage Design Manual".**

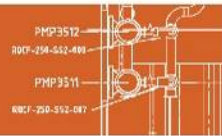
#### **Condition 5**

##### **(a) Traffic Impact Assessment**

**Prior to the commencement of use of Stage 1 of the WICT, the Proponent will pay to the Department of Main Roads a contribution for the bring-forward costs of upgrading intersections affected by project-related traffic, as assessed in the Supplementary Traffic Study, when finalised. This includes providing for project-related traffic for the proposed rail facility and coal dump station off Reid Road and mitigating other traffic-related impacts, for example at the Hanson Road/Reid Road intersection. Works must be in accordance with the "desirable parameters" of the Department of Main Roads' 'Road Planning and Design Manual.**

##### **(b) Pavement Impact Assessment**

**After the appointment of the contractor for the project and prior to the commencement of construction works on site for the project, the**



**Proponent will pay to the Department of Main Roads the amount of \$13,495 (2007 dollars, as assessed and agreed to in negotiations with the Department of Main Roads' Central District Office) to ameliorate the impacts of the construction traffic on existing road pavements.**

#### **Condition 6**

**Prior to the commencement of any works on site associated with each stage of the project:**

- (a) the Proponent will prepare a Road-use Management Plan in consultation with the Department of Main Roads' Central District Office to address all of the road use issues identified in the EIS process to be monitored and managed during the life of the project construction.**
- (b) The final Road-use Management Plan will be submitted to the Department of Main Roads' Central District Office for review and acceptance by the District Director (Central).**

#### **Condition 7**

**Prior to the commencement of any works on site associated with the project, the Proponent must:**

- (a) Amend the Coal Terminal EMP to include the requirement for a Road-use Management Plan, with sections for both construction and operational phases which adequately address transport and traffic issues, including clear identification of responsibilities for quality of discharge and siltation from dredge spoil areas upstream of Hanson Road and their impacts on the drainage under Hanson Road.**
- (b) Similarly, amend the Rail EMP to cross-reference and summarise the requirements for addressing relevant transport and traffic issues and mitigation measures outlined in the Road-use Management Plan.**

**The Department of Main Roads is the agency responsible for Conditions 1 - 7.**

### **4.2.5 Acid sulfate soils**

#### **EIS findings and/or key points**

Acid sulfate soils (ASS) are a characteristic feature of low lying coastal environments in Queensland, particularly where landform elevations are below 5m AHD. ASS are comprised of iron sulfides generally in the form of pyritic material that is a product of the natural interaction between iron rich organic matter and sulfate rich seawater present in anaerobic low energy estuarine environments. Undisturbed, these soils are generally present in an anaerobic state within the subsurface profile (below the water table) of Holocene marine muds and sands in the form of Potential acid sulfate soil (PASS). Actual acid sulfate soils (AASS) are the oxidised (disturbed) form, which may occur as the result of natural or anthropogenic disturbance from changes in groundwater levels and/or exposure to oxygen (Powell, B. & Ahern, C.R. *Nature, Origin and Distribution of Acid Sulphate Soils: Issues for Queensland* 1999).

ASS in an undisturbed environment may have a pH of neutral or slightly alkaline and no visual appearances indicating its acidic potential. However, when exposed to air either by direct excavation or by indirect changes to the surrounding water table, pyritic material inherent in the soil matrix is oxidised by sulfur oxidising bacteria leading to the formation of sulfuric acid. Following rainfall, sulfuric acid associated with soil oxidation can then be released into surface runoff and receiving waters and mobilised in groundwater, resulting in mortality of aquatic flora and fauna and deterioration in ecosystem health as well as impacts on structures and existing infrastructure.

A preliminary ASS investigation was completed as part of the preliminary geotechnical investigations undertaken by Douglas Partners for areas of proposed disturbance within both the onshore and offshore project areas.

An additional ASS investigation sampling program was developed in consultation with a DNRW representative for the purpose of delineating ASS affected material likely to be disturbed in order to adequately address the WICT EIS Terms of Reference requirements. The additional ASS investigations were undertaken by Connell HATCH's project team for areas that were inaccessible to the Douglas Partners drill team.

From the field screening and laboratory test results, it was concluded in the Douglas Partners report that all estuarine mud requires management if it is to be excavated and stockpiled onsite or removed from site. This is in order to reduce the risk of oxidation and consequent reduction of pH to produce acidic conditions potentially damaging to the environment and to buried steel and concrete.

The offshore geotechnical investigation found no AASS to be present. Bore C1 in shallow estuarine mud close to the shoreline and mangrove swamp terrain and Bore W5 on the eastern extremity of the proposed wharf alignment; both returned screening test exceedances which indicated the presence of PASS.

The presence of discontinuous deposits of "organic mud" of Holocene age, deposited in a mangrove or former mangrove environment in the shoreline shallows, indicates a high probability that such organic soils are ASS (both Actual and Potential ASS) virtually directly below ground level.

DNRW, in its advice on the SEIS, stated that its principal area of concern in relation to the proposed project involved issues surrounding the proposed management of ASS. This issue is particularly relevant for this project, given the high oxidisable sulfur levels for the ASS within the project area and the amount of ASS material to be excavated and filled.

DNRW, in its comments on the SEIS stated that the revised ASS Management Plan was not site specific and that the Acid Soil Distribution Map (Figure 3.1, SEIS) could be significantly improved by analysing the laboratory data and delineating areas containing layers with extreme levels of acid generation potential (4 to 7% oxidisable sulfur). These areas would require substantially higher liming rates for excavated ASS than those proposed.

## Conclusions

In order to ensure that the impacts of the project on acid sulfate soils are adequately managed, I state the following condition:

### **Condition 8**

- (a) **A site specific Acid Sulfate Soil Management Plan must be developed to meet standards acceptable to the Department of Natural Resources and Water prior to any disturbance occurring onsite.**
- (b) **The Acid Sulfate Soil Management Plan must be developed by consultants experienced in large scale development projects containing Acid Sulfate Soils and include a commitment to be onsite during excavation and treatment activities.**

**The Department of Natural Resources and Water is the Agency responsible for Condition 8.**

### **4.2.6 Air quality impacts from the coal terminal**

#### **EIS findings and/or key points**

Coal dust has the potential to cause annoyance due to soiling of material surfaces and reduced visibility as a result of dust particles in the atmosphere. Annoyance and nuisance caused by soiling of surfaces can be difficult to quantify due to the perceived level of annoyance which may depend on physical and social factors. Community surveys have been used to develop the annoyance thresholds that are currently recognised in Queensland.

The potential for adverse health impacts is quantified by comparing airborne concentrations of dust with air quality standards and goals. Coal dust in significant concentrations has the potential to cause adverse health effects. However, the experience at coal terminals in Queensland is that coal dust levels are relatively low. The coal dust consists primarily of coarse particles as opposed to the very fine particles that are identified in laboratory and epidemiological studies to cause adverse health impacts.

The *Environmental Protection Act 1994* (EP Act) gives the Environment Minister the power to create Environmental Protection Policies that identify and aim to protect environmental values of the atmosphere that are conducive to the health and well-being of humans and biological integrity. The *Environmental Protection (Air) Policy* (EPP(Air)) was gazetted in 1997. The administering authority must consider the requirements of the EPP(Air) when it decides an application for a development permit, amendment of a licence or approval of a Draft Environmental Management Plan. Schedule 1 of the EPP(Air) specifies air quality indicators and goals for Queensland.

The National Environment Protection Council (NEPC) defines national ambient air quality standards and goals in consultation, and with agreement from, all state governments. These were first published in 1998 in the National Environment Protection (Ambient Air Quality) Measure (NEPM(Air)). Compliance with the NEPM(Air) standards is assessed via ambient air quality monitoring undertaken at locations prescribed by the NEPM(Air) and that are representative of large urban



populations. The goal of the NEPM(Air) is for the ambient air quality standards to be achieved at these monitoring stations within ten years of commencement which will be reached in 2008.

The EPA operates one monitoring station in Gladstone for assessing compliance against the NEPM(Air). This monitoring station is located at South Gladstone.

The NEPM(Air) standard for PM<sub>10</sub> is based on studies of exposure to urban air pollutants that includes the very fine particles associated with motor vehicles. Consequently, the application of these standards to particulate matter from coal stockpiles and rail transport activities is likely to overestimate the potential for adverse impact.

The EPP(Air) goals are used to assess impacts at sensitive locations (such as residential areas and isolated dwellings) that are located near industrial sites and major traffic routes. The EPP(Air) goals and the NEPM(Air) standards are both, therefore, applicable to the Gladstone area. The NEPM(Air) standards were developed to protect against health impacts in populated areas such as in Gladstone but the standards do not apply to isolated residences in close proximity to industrial areas. The EPP(Air) Part 3 goals apply to isolated residences in close proximity to industrial activities.

Table 12.1 of the EIS shows the dust deposition standards commonly used in Queensland as a benchmark for avoiding amenity impacts due to dust. The dust deposition standard is not defined in the EPP(Air) and is therefore not enforceable by legislation, but is recommended by the EPA as a design goal.

Gladstone is highly industrialised with a number of industries reporting to the National Pollutant Inventory. For the purposes of the air quality assessment of the WICT, the focus is on particulate emissions.

A detailed analysis of the factors that affect dust in Gladstone and a summary of the existing levels of PM<sub>10</sub>, total suspended particulates (TSP) and dust deposition rates is presented in the WICT EIS and the supplementary air quality study (refer Appendix E, SEIS).

Activities that are associated with the most significant dust emissions from coal terminals are rail receipt, coal conveyors, coal stockpiles, stacking, reclaiming and shiploading. Minor amounts of wind-blown dust are also associated with vehicular activity onsite and wind erosion of dust from bare ground.

A summary of the comments received during the WICT EIS consultation process relevant to air quality issues include:

- Coal dust and release of coal dust from the trains, the conveyors and the port equipment.
- Dust nuisance and potential health problems.
- Automation of dust suppression systems, including Weather Station control of stockyard water sprays and misting systems, and moisture content analysis and water addition throughout the coal handling system.

A more detailed summary of the comments provided during the WICT EIS consultation process is included in Appendix A of the SEIS.

The air quality section of the SEIS was prepared to quantify the potential impact of the proposed WICT on ambient air quality, taking into account the amendments to the design of the railyard inloading facilities, using methodologies consistent with those described in the WICT EIS, and addressing the WICT EIS requirements as specified in Section 4.6 of the Terms of Reference.

The revised air quality assessment for the amended Project demonstrated the following:

- The amended design of the WICT will result in minor changes in dust emissions due to longer inloading conveyors and associated infrastructure.
- A dispersion modelling study was undertaken for the amended design of the WICT to estimate ground-level concentrations of TSP, PM<sub>10</sub> and dust deposition rates due to the WICT operating at 70 Mtpa and 84 Mtpa. Based on this study the following conclusions can be drawn:
  - Predicted annual average ground-level concentrations of TSP are well below the EPP (Air) goal (90µg/m<sup>3</sup>) at nearest residential locations with the WICT operating in conjunction with the existing sources of dust.
  - Ground-level concentrations of TSP are predicted to rise slightly (less than 2%) in residential areas of Gladstone due to the proposal.
  - Predicted maximum 24-hour average ground-level concentrations of PM<sub>10</sub> are well below the EPP (Air) goal (150µg/m<sup>3</sup>) at nearest residential locations with the WICT operating in conjunction with the existing and proposed future sources of dust.
  - Maximum 24-hour average ground-level concentrations of PM<sub>10</sub> are predicted to be marginally above the NEPM (Air) standard (50µg/m<sup>3</sup>) due to existing activities at some of the residences that are close to the proposed WICT. Given that the emissions from the RGTCT and the BPCT are likely to be overestimated, these exceedances are not expected to occur in practice.
  - Given the minor change in maximum 24-hour average ground-level concentrations of PM<sub>10</sub> that are predicted in this study due to the WICT, additional exceedances of the NEPM (Air) standard are not expected to occur in residential areas of Gladstone due to the operation of the WICT at 70 Mtpa or 84 Mtpa.
  - Predicted annual average ground-level concentrations of PM<sub>10</sub> are well below the EPP (Air) goal (50µg/m<sup>3</sup>) at nearest residential locations with the WICT operating in conjunction with the existing and proposed future sources of dust.
  - Maximum 24-hour average PM<sub>10</sub> concentrations are predicted to rise slightly (less than 3%) in residential areas of Gladstone due to the proposal. A 4% increase is expected at Tide Island.
  - Predicted annual average dust deposition rates are well below the EPA's recommended guideline (120mg/m<sup>2</sup>/day) at the nearest residential locations with the WICT operating in conjunction with the existing and proposed future sources of dust.
  - Dust deposition rates are predicted to rise slightly (less than 1%) in residential areas of Gladstone due to the proposal.

- Dust levels associated with coal trains are unlikely to be evident at residential locations.

The proposed WICT will utilise a range of best practice measures to minimise dust emissions including:

- Maintaining an appropriate level of moisture for each coal type from rail receipt through to ship loading.
- “Wet down” of stockpile surfaces. The final stockyard design will incorporate in excess of 100 water cannons each with a radius of throw of approximately 75m. The water cannons will wet down the surface of the stockpiles to form a surface crust that inhibits the wind erosion of dust.
- Mist curtain. In high winds water cannons become ineffective at dust suppression. A secondary suppression system will be used in these conditions that utilises a mist curtain. The mist curtain enhances deposition of dust by impaction of the dust particles.
- Extendable dust shroud for stacking. The extendable dust shroud will minimise dust emissions from stacking by reducing the effective drop height of the coal to the stockpile and by reducing the potential for fine coal particles to be entrained in the wind during stacking.
- All coal will be placed into its final location in the stockyard by the travelling gantry stackers and does not require dozers for this operation, therefore eliminating a potentially significant source of dust emissions.
- Reclaiming system designed to minimise bulldozing.
- Enclosure of all transfer points.
- Where possible partial enclosure of elevated conveyors.

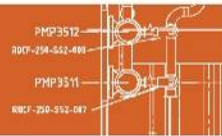
Additional measures that have been identified through the EIS process that will also be undertaken include:

- Automated dust suppression systems.
- Stockyard sprays triggered by adverse meteorological measurements.
- Moisture management to meet Dust Extinction Moisture.
- Treated/recycled water for dust suppression where appropriate.
- Expansion of dust monitoring networks.

In order that the dust levels at the boundaries of WICT can be fully monitored and exceedances reported it is intended that a network of real time monitors (RTM) be established around the perimeter of the site.

The network will be finalised during the design phase of the project, however it will typically incorporate four RTMs around the stockyard area and an additional RTM at the rail receipt facility. This would be considered as the minimum for the network.

The network of four units around the stockyard would allow the background dust levels to be determined on the up-wind RTMs and the total dust levels determined from the down-wind monitors. A single unit is considered to be adequate for rail



receiving facility due to the nature of the dust control levels being incorporated at this site and the absence of stockpiled coal.

Dust deposition gauges will be provided at further sites to determine whether adverse dust levels potentially exist. Additional monitoring would be undertaken if elevated levels of dust are indicated at other areas around the facility.

The data collected from the air quality monitoring system will be actively used on a daily basis to assist with dust management programmes.

Queensland Health and the EPA are currently undertaking a two (2) year study of the air quality in the Gladstone area. The purpose of the study is to characterise the risks to the environment and human health from industrial emissions (including coal dust and other particulate emissions). In the future, the study should result in changes to industry practices that impact on air quality.

Queensland Health in its submission on the SEIS recommended that the Proponent monitors the outcomes of this study to identify any relevant issues that may impact on the design and operation of the Project. I strongly support this recommendation.

### **Conclusions**

I find that the Project has the potential to have a minor coal dust related impact on the air quality in Gladstone. As such, adherence to the proposed dust mitigation measures, including CQPA's proposed daily use of the expanded air quality monitoring system to assist with dust management programmes, will be essential.

However, I am satisfied that the potential for the Project to impact on air quality in Gladstone can be adequately managed through the mitigation measures and commitments contained in the EIS documents, implementation of the Rail and Coal Terminal EMPs, the recommended requirements contained in Schedules A, B and G, Appendix 1 of this Report, and the following condition:

### **Condition 9**

**The Proponent is to consider the outcomes of the Queensland Health / EPA 2- year air quality study to identify any relevant issues that may impact on the design and operation of the Project.**

## 4.2.7 Workforce accommodation during construction and operation

### EIS findings and/or key points

The following table summarises anticipated peak construction workforce and operations personnel for each of the major stages of the WICT Project development.

Stage	Peak site workforce for each construction phase	Total CQPA Operations Personnel
1	500	130
2	600	225
3	480	300

Stage 1 workforce figures have reduced from 650 to 500 due to the relocation of the majority of the rail works out of the Project area. Stage 2 and 3 figures have been increased from 450 and 350 respectively due to the change in scope with the inclusion of the overland conveyor system.

The above workforce numbers cover the works required for the revised WICT Project only. Additional workforce is required for the Moura Link – Aldoga Rail Project which will need to be under construction concurrently with this project.

When the construction workforce numbers for the two projects are combined, they are highest for WICT Stage 1 at approximately 700. These numbers are similar to the current RGTCT expansion workforce which has been accommodated within the greater Gladstone area. Current indications are that Stage 1 of the WICT Project will utilise a substantial proportion of the existing construction workforce from the RGTCT expansion project or from other projects in between construction peaks to reduce the need to import new staff.

CQPA are liaising with other project proponents, and more regularly with the proponents of the Gladstone Pacific Nickel (GPN) project which is at a similar stage to the WICT Project, to determine the timing of other projects in the Gladstone area.

At this point in time, it is expected that the peak construction period for Stage 1 of the WICT Project (October 2009 to June 2011) will primarily be after the Rio Tinto Yarwun Alumina Refinery expansion project construction period (the project is expected to conclude in February 2010) and GPN Stage 1 Project is expected to have a peak construction workforce of 2,600 in April 2009 (URS 2007). It is assumed that there will be a suitably skilled existing workforce from other projects, which will have already secured accommodation in the area (e.g. Gladstone City and Calliope Shire).

In summary for housing availability, the potential adverse impacts may include:

- Increases in housing prices and cost of living as the population and therefore demand increases from greater industrial development activity.

- Low-income earners may have difficulty finding affordable accommodation, however longer-term pressure may be alleviated if further land is opened up for residential development.
- Greater pressure for housing in smaller centres surrounding Gladstone, with residents in rural areas generally more willing to commute further distances. This could have an adverse impact if development occurs in an ad hoc manner. However, some rezoning of land for residential purposes has occurred in the draft Calliope Shire Planning Scheme.
- Capacity of the residential building industry to meet demand, availability of skilled labour and capacity to secure building approvals in a timely manner.
- Oversupply of dwellings once the construction period ceases. However, with greater encouragement by key agencies to attract population to Gladstone, this potential impact may not eventuate.

The potential benefits may include:

- Enhancement of the viability for developers to build alternative forms of residential accommodation which may include smaller, multi-unit dwellings enabling the provision of more housing choice for the local community.
- The new Gladstone Planning Scheme encourages higher density development in areas near the Gladstone Central Business District, which may have benefit in assisting to revitalise the City centre.
- Greater housing choice may provide the opportunity for a better match of accommodation (i.e. lone person households being able to reside in smaller units and therefore making a separate house available for a family).

The Proponent recognises that the existing local supply for housing is unlikely to be able to cope with the increased demand from other construction projects in the area if anticipated timeframes change and other projects occur at the same time as the WICT Project. Therefore, there is an identified need for:

- Regular monitoring of timeframes of approved projects to keep abreast of any changes in timeframes which may create an overlap of projects, particularly peak workforce numbers.
- Maintaining regular liaison with other project managers to coordinate construction and minimise/avoid potential overlap and to consider collaboratively both temporary and permanent forms of additional accommodation for the construction and operational workforces if required due to overlapping projects.

The SEIS outlines a proposal by the Proponent for the development of an Accommodation Management Strategy (AMS), through the establishment of an Accommodation Working Group (AWG), to ensure the needs of the construction and operational workforces in the Gladstone Region are met and also to address the needs and/or concerns of the local community and key agencies with an interest in housing provision.

The strategy to establish the AWG and develop an AMS is discussed in SEIS sections 18.3.2 and 18.3.3 respectively and an option to develop a workers village is discussed in Section 18.3.4. Whilst this proposal is commendable, there is however no commitment currently at a State level for the implementation of such a proposal and as such, it remains the responsibility of the Proponent to mitigate any adverse impacts on accommodation resulting from the Project.

Mitigation measures in relation to workforce accommodation include:

- Development and implementation of a Community Consultation Management Plan in collaboration with the Department of Communities.
- Continued liaison with State and Local Government agencies and other project proponents.
- Specifically targeting the employment of local and regionally located professionals and technical, skilled and semi-skilled workers where possible and provision of training to enable development of the skills required.
- Sharing resources and promoting on-going employment opportunities through the movement of construction workers from other major projects as they reach completion.
- Preassembling construction materials offsite where possible, away from the Gladstone area to reduce the number of workers at the site.
- If necessary, construction of a workforce village to accommodate construction workers.
- Ensuring efficient timing and management of the construction phase of the project and where possible, coordination with other projects being undertaken in the Gladstone area.
- Encouraging single workers to share accommodation to decrease the overall demand for dwelling units.

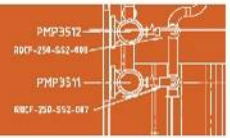
The Proponent acknowledges that actual cumulative impacts of major industrial projects will be dependent on the timing of construction. Timing of construction can depend on many factors, including timing of project approvals, project funding, international market fluctuations and favourable market conditions for construction contracting. From the information available to date, whilst the expected construction timing of some projects may overlap, the expected peak workforces are not anticipated to conflict.

Given the availability of land supply and the choice of housing location available within the region (as well as areas within Rockhampton), the proposed WICT is not expected to have significant impact on housing availability in the study area.

## **Conclusions**

The Project has the potential to have an impact on accommodation in Gladstone.

In terms of long-term accommodation for permanent workforce, I am satisfied that this impact is likely to be minor and can be adequately managed through implementation of the mitigation measures contained in the EIS and SEIS.



In relation to the construction workforce, the degree of impacts will largely depend on the timing of construction of other projects proposed for the region. However, I am satisfied that the potential for the construction workforce for the Project to impact on accommodation in Gladstone can be adequately managed through the mitigation measures and commitments contained in the EIS documents.



## 5. Environmental Management Plans

Separate draft EMPs have been prepared by the Proponent for the Coal Terminal and Rail components of the Project and are contained in the Supplementary EIS.

These draft EMPs have been prepared in order to propose environmental protection commitments to protect the environmental values potentially affected by the proposed coal terminal and rail works within the WICT project footprint. These EMPs have been refined based on submissions received during the EIS consultation period. The EMPs will be further refined and expanded following the Coordinator-General's decision on the Project; during the detailed design phase of the Project; and through consultation with the regulators.

The EMPs identify and describe the environmental values and potential impacts that may be caused by the coal terminal and rail works and define critical environmental values which are to be protected through the consent conditions of the EA. Commitments are proposed and identified including environmental protection objectives, standards, measurable indicators and control strategies (i.e. to demonstrate how the objectives will be achieved).

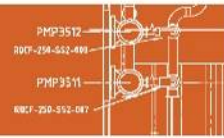
The aim or purpose of these EMPs is to detail the actions and procedures to be carried out during the implementation phase of the project in order to mitigate adverse and enhance beneficial environmental and social impacts. The environmental studies and consultation conducted as part of the EIS have identified the potential construction and operational impacts of proceeding with the project.

A range of mitigation measures have been identified from the EIS environmental studies to mitigate and manage these potential impacts and need to be implemented during the construction and operational stages of the project.

The EMPs address the proposed mitigation measures, record environmental commitments and establish the framework to ensure they are implemented during each stage of the project. In effect, the EMPs become the key reference documents in that they convert the undertakings and recommendations of the environmental studies into a set of actions and commitments to be followed by the designers, constructors and future operators of the proposed Project.

The EMPs will also serve as the benchmark for measuring the effectiveness of environmental protection and management. This can be achieved by specifying the monitoring, reporting and auditing requirements, with nominated responsibilities and timing to ensure the necessary mitigation measures are met. The EMPs also make provision, as appropriate, for unforeseen events by outlining corrective actions which may be implemented in these situations.

The effective implementation of the Coal Terminal and Rail Environmental Management Plans will serve to implement the commitments made by the Proponent in the EIS; Supplementary EIS; and in correspondence with members of the public and Advisory Agencies; and ensure the effective management of



environmental impacts of the Wiggins Island Coal Terminal Project. Therefore I state the following condition:

**Condition 10**

**The Proponent and/or its contractor(s) shall finalise the Coal Terminal and Rail Environmental Management Plans to the satisfaction of EPA at least one month prior to commencement of construction of the project.**

**The EPA is the agency responsible for Condition 10.**

## 6. Matters of National Environmental Significance

### 6.1 Project assessment and approvals

An EPBC Referral for the WICT and associated rail infrastructure was referred to the Australian Minister for the Environment and Water Resources on 28 October 2005 after being declared a “significant project” under Section 26 of the Queensland *State Development and Public Works Organisation Act 1971* (SDPWO Act). The Minister deemed the project constituted a “controlled action” under Section 75 of the EPBC Act on 25 November 2005. The controlling provisions for the decision include:

- Section 12 and 15A (World Heritage)
- Sections 18 and 18A (Listed threatened species and communities)
- Section 20 and 20A (Listed migratory species).

The controlled action may be considered for approval under Section 133 of the EPBC Act once the Minister has the Coordinator-General’s EIS Evaluation Report (CG Report) from the EIS process prepared under Section 35 of the SDPWO Act (refer Section 5.1.1).

This section of the CG Report provides an evaluation of the potential impacts of the Project on the “controlling provisions” being the matters of National Environmental Significance (NES).

A body of Australian, State and Local Government representatives and appropriate authorities were invited to participate as Advisory Agencies for the EIS process and to provide comment on the draft TOR. The EIS was advertised at a national, State and regional level for public and advisory agency review and comment. The Queensland Government Department of Infrastructure and Planning coordinated the consultation process between the Proponent, the Advisory Agencies and the public.

### 6.2 Potential impacts and mitigation measures

#### 6.2.1 World Heritage Values of the Great Barrier Reef

The project’s proposed marine structures and dredging activities will be located within the World Heritage Area, but lie outside the Marine Park. It should be noted that the Gladstone Port Limits extend into the Marine Park, incorporating four (4) habitat protection zones, including The Narrows, Seal Rocks, and two (2) zones located on the eastern side of Facing Island and Curtis Coast.

#### Potential Impacts

- The location of the proposed development within an existing modified area is such that reclamation of 300ha of intertidal wetlands is required. The development will not remove, disturb or displace any known reef or coral area. As such no interruption of the heterogeneity and connectivity of the reef assemblages will occur. Also, although the development will remove 100ha of

the marine plants through reclamation and 140ha of the subtidal area during dredging, these areas are not designated under the EPBC Act as ecologically significant, rare or scarce in relation to the Great Barrier Reef World Heritage Area (GBRWHA).

- The sediment and water flow modelling undertaken for the EIS demonstrated that the development will not alter tidal current or reduce water and/or sediment flow within the GBRWHA and as such no impact upon the interconnectivity, size and/or morphological diversity will occur.
- A significant volume of sediment (6.3 million m<sup>3</sup>) will be removed from the system. Studies (CSIRO 2004) have shown that very little sediment exchange occurs between the Port Curtis catchment and the wider marine area. As such, a short-term minimal impact on the on-going processes of accretion and erosion/depositional processes in the GBRMHA is anticipated.
- No offshore disposal of the capital dredge material will occur. Dredged material will be pumped directly to land and the material will be beneficially reused as fill in the reclamation area (after dewatering). As such, a negligible impact will occur during the capital dredge disposal.
- Offshore disposal of any maintenance dredge material will comply with the *Environment Protection (Sea Dumping) Act 1981* and associated disposal licence conditions. However, the ultimate volumes of material likely (a maximum of approximately 100,000m<sup>3</sup>) on an approximate 1 year dredge cycle mean that a minimal impact is predicted.
- There are no records of coral communities within the development and/or dredge footprint and no significant coral beds occur within the Port Curtis area. As such, no impact upon coral reefs are anticipated.
- No interruption to coral larval flow is envisaged other than that through the minimal changes to the flow regime once reclamation and dredging are complete.
- Although dredging has the potential to ‘unlock’ contaminated sediments, the sediment testing results concluded that the concentrations of those contaminants of concern are below the NEPC Guidelines. As such, the risk of mobilisation of contaminants into the water column during dredging and reclamation is minimal and will result in no long-term significant impact to the GBRWHA.
- The impacts upon the diversity of the flora and fauna relate mainly to the removal of seagrass, mangroves, intertidal and subtidal habitats. The local seagrass and mangrove communities will be directly impacted through their removal and indirectly impacted through smothering during the dredging and reclamation process. CQPA will obtain the relevant approvals pursuant to the *Queensland Fisheries Act 1994* for the removal and/or disturbance of the seagrass communities and adhere to any conditions of approval. The impact of this loss is considered to be local to the Port Curtis area and is unlikely to impact upon the floral and faunal diversity of the GBRWHA.

- Construction activities will include short-term abrasive blasting that will occur in proximity to and/or over marine waters. Potential impacts associated with abrasive blasting activities include the introduction of pollutants to the marine environment (heavy metals and other contaminants), sediment and changes to the substrate composition/structure. However, as mentioned above, the sediments within the project area do not contain elevated levels of contaminants (Douglas Partners 2006) and as such, no significant impacts are envisaged through the release of sediments during pile driving, abrasive blasting and installation of the marine infrastructure.
- An indirect short-term impact of the construction and operational activities may be water quality degradation of receiving marine and freshwater environments. This in turn may impact the floral and faunal diversity within the area.
- Stage 1 dredging works are anticipated to take place 24 hours a day over a period of approximately 6 months with the bulk of the dredging undertaken with a Cutter Suction Dredge (CSD) with connecting pipelines to the reclamation areas (removing the need for 'doubling handling'). A Trailer Suction Hopper Dredge (TSHD) would also be utilised during Stage 1 to dredge approximately 400,000m<sup>3</sup> of material from the eastern extremity of the Departure Channel and remote northern areas of the swing basin. If Stage 2 dredging is to be executed at a future time (i.e. after a number of years), it will be necessary to remobilise a suitable CSD, pipeline and boosters.
- A small area of seagrass and mangrove habitat will be removed due to the reclamation and dredging process, however this removal will not impact upon the morphological or genetic diversity of the mangrove or seagrass species.
- Approximately 7ha of seagrass will be disturbed and 1ha of seagrass removed resulting in a reduction of feeding areas for sea turtles and dugongs. These figures were based on mapping undertaken in 2005 and assumes 100% seagrass coverage along the jetty alignment. Long-term monitoring and ground-truthing undertaken as part of the EIS determined that the extent of the meadow was highly variable, with isolated patches of seagrass observed along and adjacent the jetty alignment. As such the figure for disturbance and removal of seagrass are likely to be over-stated.
- There is likely to be significant light intrusion and overspill from the night lighting. As such, there may be an impact upon marine mammals, turtles and bird species as all these species have been shown to be influenced to some extent by disturbances to natural lighting patterns. Species such as turtles have demonstrated disturbed and confused behaviour patterns (e.g. turtle hatchlings moving inland instead of swimming/moving out to sea) in the presence of artificial lighting. Also, night lighting on piles, jetty legs and marine infrastructure can act as fish attractors and subsequently attract birds to areas not usually favoured (refer Section 16 of the EIS (Volume 1)).
- Due to the removal of 100ha of intertidal habitat and freshwater areas, potential migratory bird feeding areas may be reduced and impacted during the construction process.

- Short-term aesthetic impacts will result from the generation of a turbid plume during dredging. This sediment plume is not however likely to be highly visible given the generally turbid nature of the Port Curtis waters. The sediment modelling shows that this impact will cease within a few days following cessation of works. As such, there will be no long-term aesthetic impact.
- Dredging and the release of nutrients has the potential to temporarily alter water quality. This can have a visual affect through events such as algal blooms and fish kills. It is considered unlikely that this will be of significance within the Port Curtis area as demonstrated during previous dredging campaigns at the Port of Gladstone.
- Removal of small areas of mangroves will result in a change to the 'naturalness' of the area, however given the already modified industrial landscape of the Gladstone area this impact is considered negligible.
- The Stage 1 dredging campaign is anticipated to operate 24 hours a day for 25 to 30 weeks. There is likely to be significant light intrusion and overspill from the night lighting. As such, an impact is likely upon the visual landscape, however, given the already altered landscape of Gladstone and its existing night lighting levels this is not expected to be significant.
- The areas of seagrass that will be disturbed through the reclamation and dredging process is comprised of four (4) species and equates to approximately 0.001% of the seagrass beds within the GBRWHA. Seagrass provides important habitat for a variety of biota, including species of international, national and state significance. They are also an important carbon resource for the adjoining intertidal banks. The seagrass species *Halophila ovalis* and *Halophila spinulosa* are the preferred food source for dugongs and green turtles. The meadows present within Port Curtis may provide a seasonal food source.
- The four (4) species of *Halophila* found within the project area are typical of deep-water seagrasses occurring within the region and are considered highly ephemeral and seasonal in their occurrence. According to the DPI&F (Rasheed *et al* 2005) very little is known about the dynamics of these types of deepwater seagrass and algae communities or the role they play in primary and fisheries production. It is likely that they vary significantly from year to year and between seasons and are usually considered to be ephemeral in nature. The *Zostera capricorni* (recorded within the intertidal reclamation areas in aggregated small patches) have also been shown to rapidly recover following disturbance. They are also rapid colonisers and are often the first species to occur following a disturbance (Rasheed *et al* 2004). Although mortality and/or partial smothering may occur, the seagrass is expected to recover quickly. As such, the impact upon the seagrass populations is predicted to be minor and short-term.
- In total approximately 0.045km<sup>2</sup> of mangroves will be removed through the reclamation and dredging process. This comprises 12 species and equates to approximately 0.002% of the total resources within the GBRWHA. The

majority of mangrove communities to be removed are above the low water mark and hence outside the GBRWHA.

### Mitigation Measures

- The development footprint has been kept to a minimum and mitigation measures in the Construction Environmental Management Plan will minimise encroachment on areas outside of the development and dredging locations.
- A Dredge Environmental Management Plan (DEMP) will be compiled during the design phase. This Plan will be implemented during the construction stage to minimise potential impacts on the World Heritage Area. The plan will incorporate measures so that dewatering discharge will not:
  - Enter poorly defined watercourses, as water may leave the channel, flooding adjoining land and vegetation.
  - Compromise the environmental values of any surface water or groundwater.
  - Enter watercourses or drainage lines not designated for dewatering.
  - Discharge at levels above discharge guidelines.
- Spills and wastewater will be managed under the Waste Management Plan and hazardous substances under Australian Standard AS 1940B1993.
- An Acid Sulfate Soils (ASS) Management Plan will be implemented to include measures to minimise impacts from ASS.
- A Stormwater Management Plan will be developed and implemented to identify drainage lines and water quality improvement devices.
- The dredge footprint has been minimised and kept to the existing deep water channel where possible in order to minimise maintenance dredging and further sediment disturbance. As such, impacts upon the natural sediment processes will be minor during construction reducing to negligible during maintenance of the dredged channel.
- Dredging techniques developed in the DEMP will reduce sediment deposition into the water column and should reduce sediment dispersal and disturbance to a minimum.
- The DEMP will include dewatering trigger values that will ensure any discharges meet license conditions. In this way minimal impacts to the receiving environments will occur.
- Consultation will be undertaken with Regulatory Agencies to establish trigger values for suspended solids and/or turbidity within the water column. Discharge trigger values for dredging will be agreed during finalisation of the DEMP and detailed design. CQPA and the dredging contractor will then apply the discharge trigger values. The receiving environment trigger values will be as recommended by McArthur *et al* (1994) with the 95th percentile ambient conditions regarded as appropriate threshold for the receiving habitat of Port Curtis.

- Validation sampling as detailed within the DEMP will be undertaken during the dredging programme to confirm the continued non-contamination of the sediments. Sediment sampling and analysis will be carried out in general accordance the National Ocean Disposal Guidelines for Dredged Material (2002).
- A safety zone will be created around the perimeter of the dredging activities. Dredging will not be carried out while dugongs, turtles or other marine species of conservation significance are within 150m or while migratory birds are within 25m of the dredge activities. Activities will be placed on hold for the period of time it takes the animal to leave the safety zone.
- Subject to equipment availability, a large dredge may be employed to enable the completion of the dredging program in the shortest possible timeframe. Where trailer suction dredging is carried out, turtle excluding devices are to be fitted to the drag heads of the dredger. In addition, during times when the drag head is not in contact with the seabed and pumps are in operation, pump speed shall be reduced and drag head water jets must be activated to minimise the risk of turtle capture.
- Over-water abrasive blasting will be carried out in accordance with the EPA Environmental Operations for over-water abrasive blasting in marine and other aquatic environments. Environmental factors such as wind conditions will be considered prior to blasting operations commencing. Where wind conditions affect the ability to contain over-spray, work will cease.
- Light overspill from the coal terminal during operations will be minimised by using suitable fittings and shields.
- Where possible the area of intertidal vegetation reclaimed or disturbed will be minimised in order to limit the visual impact of the development upon the natural landscape.
- Native buffer vegetation will be established where possible.
- CQPA will continue its active involvement with existing environmental monitoring activities within Port Curtis (e.g. Port Curtis Integrated Monitoring Programme, seagrass and mangrove communities within Port Curtis).
- Rehabilitation and Vegetation Management Plans will be developed and implemented.
- Appropriate water quality monitoring will be implemented during maintenance dredging activities in accordance with the DEMP.

### 6.2.2 Listed Threatened Species and Communities

An EPBC Act Protected Matters Report was obtained for the project area from the Department of Environment and Heritage website (refer Appendix A). The purpose of this was to assess the occurrence or likely occurrence of nationally threatened species pursuant to the EPBC Act. The search identified one (1) threatened community and 26 threatened species potentially inhabiting the project area. Of the 26 threatened species, only 6 species were identified during the field activities. An



additional species listed under the EPBC Act but not identified in the EPBC Act Protected Matters Report was recorded during the field activities.

#### **6.2.2.1 Threatened Communities**

##### **Existing Environment and Potential Impacts**

Semi-evergreen vine thickets (SEVT) of the Brigalow Belt (North and South) and Nandewar Bioregions are listed as an endangered ecological community under the EPBC Act.

SEVT are widely scattered with a common structure (architecture) but considerable regional variation in floristic associations. SEVT occur within Queensland, New South Wales, the Northern Territory and Western Australia (DEH 2005).

Within the Brigalow Belt Bioregions, SEVT have been fragmented, reduced in area and degraded through land clearing and agricultural/grazing practices (DEH 2005). No SEVT regional ecosystems were identified within or directly adjacent the project area.

No SEVT were identified within the project area with the nearest SEVT communities associated with Mount Larcom and a range to the south west of Yarwun. During the field activities isolated patches of notophyll and microphyll vineforests were identified on Golding Point.

The EIS concludes that the proposed Project is unlikely to have a significant impact on SEVT communities.

#### **6.2.2.2 Flora**

##### **Existing Environment and Potential Impacts**

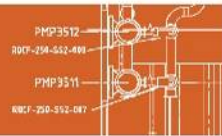
Seven (7) threatened plant species, pursuant to the EPBC Act, may potentially inhabit the project area.

*Atalaya collina* (no common name) is listed as endangered under the EPBC Act and *Nature Conservation Act 1992* (NC Act). Specific habitat for this species is unknown, however Reynolds (1991) describes the species from “hillsides of remnant dry scrub”. Known distribution is restricted to the Port Curtis area.

A search of the ecological databases (WildNet, Wildlife Online and Queensland Herbarium Records System (HERBRECS)) identified this species in the general vicinity of the project area. The HERBRECS records identified this species from Yarwun in dry rainforest (Boyle’s Road 4km south west) and vine thicket communities.

Barry and Thomas (1994) suggest that ‘unless present site management practices (existing properties with *Atalaya collina*) are altered, *Atalaya collina* is unlikely to survive in the short to medium term (<20 years).

Within the project area dry rainforest and vine thicket communities are limited to isolated patches on Golding Point. These communities will be removed during the construction activities associated with the WICT. Therefore, any populations will be lost during the clearing activities. However this species was not observed during field activities.



The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

***Bosistoa selwynii* (Heart-leaved Bosistoa)** is listed as vulnerable under the EPBC Act and is not listed under the NC Act. This small tree is often observed in nutrient rich soils in moist locations and is fairly common in softwood scrubs. This species has been absorbed into *Bosistoa transversa* (<http://www.anbg.gov.au/cgi-bin/apni>).

***Bosistoa transversa* (Three-leaved Bosistoa)** is listed as vulnerable under the EPBC Act and is not listed under the NC Act. It is a crooked tree up to 22m tall with a dense dark-green crown, which occurs within lowland subtropical rainforests up to 300m in altitude.

Threatening processes are likely to include the loss of habitat through clearing and fragmentation, habitat degradation through weed invasion and disturbance, grazing, fire regimes and forestry. This species was not observed during field surveys.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

***Bulbophyllum globuliforme* (Miniature Moss-orchid)** is listed as vulnerable under the EPBC Act and rare under the NC Act. This tiny epiphytic orchid is found on *Araucaria cunninghamii* in subtropical rainforest, dry rainforest and wet sclerophyll forest communities. Potential habitat within the project area is limited to the isolated vine thicket communities located on Golding Point.

Threatening processes include the loss of habitat through clearing and fragmentation, habitat degradation, fire regimes and forestry. This species was not observed in the vicinity of the project area (e.g. field activities and ecological databases).

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

***Cupaniopsis shirleyana* (Wedge-leaf tuckeroo)** is listed as vulnerable under the EPBC and NC Acts.

*Cupaniopsis shirleyana* is a shrub or small tree occurring in dry rainforest, vine thicket and araucarian microphyll vine forest communities where it reaches heights up to 10m. Its distribution ranges from outer Brisbane to Mt Larcom and Curtis Island (Barry and Thomas 1994). The species occupies a variety of substrate between 20m and 550m.

Desktop searches of ecological databases (WildNet, Wildlife Online and HERBRECS) identified this species as occurring or potentially occurring within the project area. There is a significant population within the Mt Larcom ranges located to the north of the project area.

There is the potential for this species to occur within the project area on Golding Point. This area will be cleared during the construction activities associated with the proposed terminal. Therefore, any populations will be lost during the clearing activities. However this species was not observed during field activities.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

***Parsonsia larcomensis*** (no common name) is listed as vulnerable under the EPBC and NC Acts. This semi-woody creeping plant grows to 5m long and has a restricted distribution between central east and south east Queensland (Rockhampton to Mt Perry).

This species is known to inhabit open heathland and shrubland at or near the summit of mountain peaks within the Port Curtis region. A search of ecological databases (WildNet, Wildlife Online and HERBRECS) identified this species as occurring or potentially occurring within the project area, specifically at three locations at or near the summits of Mt Wheeler, Mt Larcom and Mt Perry. This species was not located during field surveys.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

***Quassia bidwillii*** (no common name) is listed as vulnerable under the EPBC and NC Acts. This small tree occurs from Gympie to Mackay in lowland rainforest and rainforest margins, open forests, woodlands and mangrove communities. HERBRECS results have located this species occurring within or adjacent the project area in Brigalow woodland, closed heathland and rainforest communities.

Threatening processes include soil erosion and degradation. Other potential threats include habitat loss, inappropriate fire regimes and weed invasion.

Suitable habitat exists within the project area on Golding Point. This area will be cleared during the construction activities associated with the terminal. Therefore, any populations will be lost during the clearing activities. However this species was not observed during the EIS field activities.

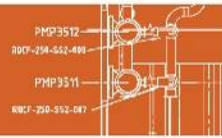
The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

Other significant species identified from ecological database searches, with the potential to inhabit the project area include:

- *Alyxia magnifolia*
- *Atalaya ridgia*
- *Dansiea elliptica*
- *Eucalyptus raveretiana*
- *Indigofera baileyi*
- *Macropteranthes fitzalanii*
- *Parsonsia lenticellata*
- *Senna acclinis*
- *Stemmacantha australis*; and
- *Zieria* spp.

With the exception of *Zieria* spp., the species are listed as significant under State legislation (NC Act) and not Commonwealth legislation (EPBC Act).

*Zieria* spp. is listed as vulnerable under the NC Act and endangered under the EPBC Act. *Zieria* spp. are shrubs or small trees occurring along rainforest fringes, rocky mountain slopes, forest margins, wallum heath, sandstone areas and sandy/rocky areas (DEH 2005).



The HERBRECS database identified this species as occurring at Mt Larcom however, there is suitable habitat within the project area to support this species other than that listed. Whilst this species was not observed during field surveys the project has the potential to adversely affect any populations within the area.

### **Mitigation Measures**

Mitigation measures, which will be implemented to minimise the potential impact on significant plant species include:

- During the detailed design phase, minimising the removal of marine and riparian plants where possible. Opportunities for buffer zone plantings (i.e. native shrubs, grasses and trees) will also be investigated and will be provided adjacent to mangroves and riparian plants where no infrastructure is needed.
- Reducing the area to be cleared or adversely impacted during the detailed design stage.
- Rehabilitation of grasslands and forests areas within the Rail Maintenance and Byellee Precincts.
- Re-allocation of approximately 120.5ha of remnant vegetation within QR land to the EPA (Mount Stowe State Forest).
- Support for local community organisations including Landcare, Coastcare and Bushcare.
- Protection of rainforest habitat from fire.
- Fencing creeksides and rainforest areas to exclude stock.
- Implementation of a Weed Management Plan.
- Implementation of a Rehabilitation Management Plan.
- Protection of remaining habitat from clearing and development.

### **6.2.2.3 Terrestrial Fauna**

#### **Existing Environment and Potential Impacts**

A total of 26 significant species, pursuant to the EPBC Act, were identified which may potentially inhabit the project area. This included six (6) bird, three (3) mammalian, and two (2) reptilian terrestrial species.

In addition to the species listed within the EPBC Matters report, an additional mammalian species, Grey-headed Flying-fox (*Pteropus poliocephalus*) was identified during the field activities. Six (6) species were also identified from the project area which are only listed as threatened under the State legislation (NC Act).

#### **Birds**

**Red goshawk (*Erythrorchis radiatus*)** is listed as vulnerable under the EPBC Act and endangered under the NC Act.

It occurs over eastern Queensland and across northern Australia, and there are also confirmed sightings from central Australia. Its distribution once extended to Sydney but it is now virtually extinct south of the New South Wales border (EPA 2005).

The red goshawk has an enormous home range covering between 50 and 220 square kilometres. It prefers a mix of vegetation types with its habitat including tall open forest, woodland, lightly treed savannah and the edge of rainforest (EPA 2005). They will only nest in trees taller than 20m, and these must be within 1km of

water. This species has been recorded in closed forests and open forest and woodlands of Port Curtis region. The species was not identified in the project area (i.e. field activities and/or from WildNet database).

Threatening processes include the loss of habitat as a result of clearing. This also impacts the predator/ prey interaction (e.g. loss of hollow bearing trees will impact prey species (i.e. population distribution and size)). Heavy grazing and frequent burning may also contribute to a reduction in available prey. It is estimated that there are now fewer than 1,000 adult goshawks left.

The proposed Project may potentially impact on local populations within the vicinity of the project area through the loss of habitat. Vegetation clearing along the Calliope River and within the Forest Precinct is the main area of concern. It is likely that this will be a short-term impact with the species being displaced during construction activities. The displacement may result in the species moving to suitable habitat within the local area and/or wider area of Port Curtis.

The loss of habitat will also impact on the future native fauna colonisation of the area (i.e. the number of hollow bearing trees within the area will take over 100 years to re-establish). Changes to the areas fire regimes may also impact on this species, including loss of habitat and prey species.

The implementation of mitigation measures during design, construction and operational phases of the Project will minimise potential impacts.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Squatter pigeon (southern) (*Geophaps scripta scripta*)** is listed as vulnerable under the EPBC and NC Acts.

The Squatter Pigeon ranges through tropical, open, dry sclerophyll woodlands and savannahs of north-eastern Australia (Higgins & Davies 1996). This species has been recorded from open forest and woodlands and grasslands of Port Curtis (DEH 1994). The species was not identified during the field activities.

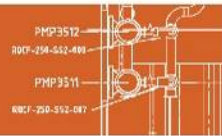
Threatening processes include predation, loss of habitat, fragmentation and agriculture (grazing). The proposed Project will result in the clearing of approximately 300ha of open, dry sclerophyll woodlands.

The fragmentation within the project area will be limited, as the majority of the existing remnant vegetation communities will be cleared. Clearing activities will also increase the area exposed to edge effects and alter the fire regimes of the area. The impacts from the Project are likely to have a short-term impact on any local populations through species displacement.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Australian painted snipe (*Rostratula australis*)** is listed as vulnerable under the EPBC and NC Acts.

This species inhabits a variety of wetland habitats and may potentially inhabit the area. Although the construction process may disturb the snipe, this is unlikely to



impact upon the species in the long term as alternative sites similar in nature to the reclamation areas exist in areas that will remain untouched by the development.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Black-breasted button-quail (*Turnix melanogaster*)** is listed as vulnerable under the EPBC and NC Acts.

The species is thought to be restricted to 14 isolated groups within South-east and Central Queensland. Its primary habitat is usually dry rainforest with canopy cover of 70-80% and permanent litter at least 25 to 35mm deep. It may also inhabit dry sclerophyll forests adjacent to dry rainforests. During drought the bird may move into adjacent wetter rainforests.

It is unlikely that the habitat within the Project area supports this species (i.e. primarily intertidal wetlands, open forests and/or woodlands and grasslands).

Threatening processes include loss of habitat, fragmentation and inappropriate grazing regimes. Other threats include fire regimes, predation and habitat degradation due to feral animals.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Southern giant petrel (*Macronectes giganteus*)** is listed as endangered under the EPBC and NC Acts.

Southern giant-petrels range widely throughout the southern oceans. In summer they occur predominantly in sub-Antarctic to Antarctic waters, usually below 60°S in the South Pacific and south-east Indian Oceans, or 53°S in the Heard Island and Macquarie Island regions (Environment Australia 2001). The dispersal is circumpolar, extending north from 50°S to the Tropic of Capricorn and sometimes beyond (mainly immature and sub-adults). This species is an occasional/infrequent visitor to Port Curtis (DEH 1994).

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Kermadec petrel (*Pterodroma neglecta neglecta*)** is listed as vulnerable under the EPBC Act.

The Kermadec Petrel is a seabird of the subtropical and tropical water of the south Pacific Ocean, dispersing to central north Pacific (Marchant & Higgins 1990). It occurs in subtropical seas between 20 and 35°S. Breeding colonies are located on atolls and rocky islets across subtropical South Pacific (latitude 25-35 °S), from Lord Howe Island to Juan Fernandez Island (Marchant & Higgins 1990). A rare visitor summer-autumn-winter months to coastal eastern Australia (Pizzey and Knight 2001).

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

## Mammals

**Large-eared Pied Bat (*Chalinolobus dwyeri*)** is listed as vulnerable under the EPBC Act and rare under the NC Act. This species is known to inhabit a variety of habitats including dry sclerophyll forests, woodland, provided there are nearby roosting sites (i.e. caves or tunnels).

The species has been identified from the Port Curtis Region (e.g. Mount Larcom Ranges) and may potentially inhabit certain areas of the Mount Stowe State Forest and Calliope Conservation Park.

The main threats to the species are destruction of roosting sites (from mining) and diminishing prey (due to habitat loss). No roosting sites or individuals were identified during the field activities. The absence of the species from the project area may reflect the absence of suitable habitat within the project area (i.e. no caves and/or tunnels identified within the project area). Hence the main threat to the species is associated with the loss of habitat during the construction activities.

The loss of habitat as a result of clearing activities may have a short term impact on the species local distribution and/or behaviour. It is unlikely that there will be any long term impacts. The implementation of mitigation measures during the design, construction and operation phases will minimise potential impacts.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Northern Quoll (*Dasyurus hallucatus*)** is listed as endangered under the EPBC Act and Near Threatened under the NC Act.

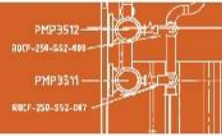
It is most common in rocky, sparsely vegetated areas and open woodlands, sometimes near human habitation, within 50 kilometres of the coast (Strahan 1995, Menkhorst and Knight 2004). Northern Quolls tend to be most successful near creeklines and often have dens in hollow creekside eucalypts. Hence the species has the potential to inhabit the project area (i.e. mix of dry sclerophyll forests and woodlands with some rocky outcrops).

This species has been sighted at Port Curtis including the Mount Stowe State Forest and Calliope Conservation Park. The proposed project area is located adjacent this area. It should be noted that recent studies did not identify this species in these areas

Threats to the species include cane toads, predation, loss of habitat and changes to the fire regimes. Within the project area the later two threats are of concern and have the potential to impact on the behavior and distribution of the local population.

It is likely that approximately 30ha of habitat will be lost in the Mount Stowe State Forest and Calliope Conservation Park as a direct result of the Project. The clearing activities will also alter fire regimes within the area through the loss of mosaic habitat and the increase in edge effects. These activities may result in the displacement of the species and/or reduction in species territory.

The implementation of appropriate mitigation measures during the design, construction and operational phases of the Project should minimise impacts.



The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**False Water-rat (*Xeromys myoides*)** is listed as vulnerable under the EPBC Act and rare under the NC Act.

False Water-rats are small nocturnal, native rodents that forage for small crabs, shellfish and worms inside mangrove forests. They build enormous mud nests, like termite mounds, usually in sedges outside the mangroves where they, and their babies, can escape above the highest of tides (Queensland Museum 2006).

Threats include feral animals through predation and resultant habitat degradation and the loss of habitat as a result of coastal developments. The proposed Project is likely to have an impact on local populations through the loss of habitat (i.e. approximately 108ha of intertidal wetlands will be reclaimed). Within Queensland species distribution is from Cape Palmerston to Moreton Bay. This species has not been recorded in the Port Curtis region.

Other construction activities, including lighting, noise and dust generation, may also impact on the behaviour of this species. Potential degradation in ecosystem health and water quality as a result of the Project would also have an impact on local populations.

The implementation of appropriate mitigation measures during the design, construction and operational phases of the Project should minimise impacts.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Grey-headed Flying-fox (*Pteropus poliocephalus*)** is listed as vulnerable under the EPBC Act and of least concern under the NC Act.

Two Essential Habitats (NC Act) for the Grey-headed flying fox were identified in close proximity to the project area. Only one colony was located in the two essential habitats, approximately 2.5km east of the terminal at the mouth of Flying Fox Creek. It is important to note that this species is listed as of Least Concern under the NC Act and hence the area is likely to be redefined (*pers comms* Steven Howell EPA).

No colonies were identified within the project area during the field surveys. The species was identified inhabiting and/or foraging within and/or adjacent the project area.

General construction activities may impact on the roosting behaviour of this species. This may include noise and dust generation and increased lighting. Lighting has the potential to have an impact on species navigation and behaviour. In addition to lighting associated with the terminal construction and operation it is anticipated that while the dredging campaign operates 24 hours a day for an extended time period, light intrusion and overspill will occur.

The impact from the terminal lighting and associated infrastructure is likely to be minimal due to the existing elevated lux levels in the Port area.

It is important to note that other flying fox colonies within Port Curtis are located in close proximity to other industrial facilities, e.g. approximately 2km from RGTCT and approximately 1.4km from the Gladstone Power Station.



The implementation of mitigation measures and environmental management during the design, construction and operational phases of the project should minimise potential impacts.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

### **Reptiles**

**Yakka skink (*Egernia rugosa*)** is listed as vulnerable under the EPBC and NC Acts. It occurs near the coast and in the sub-humid to semi-arid eastern interior of Queensland, from the St. George area in the south to Cape York Peninsula (Wilson & Knowles 1988; Cogger 2000).

Usually found in open dry sclerophyll forest or woodland (Cogger 2000). Skinks often take refuge among dense ground vegetation, hollow logs, cavities in soil-bound root systems of fallen trees and beneath rocks (Cogger 2000). Alternatively, skinks may also excavate burrow systems among low vegetation.

Habitat within the project area has the potential to support this species (i.e. open dry sclerophyll forest or woodland near the coast). However, it is important to note that this species was not identified during the field surveys and has not been recorded from the Port Curtis area.

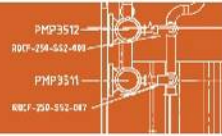
The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

**Brigalow scaly-foot (*Paradelma orientalis*)** is listed as vulnerable under the EPBC and NC Acts. This species is nocturnal and is known to occur within Central-eastern Queensland, including the Brigalow Belt and South-east Queensland Bioregions (Cogger 2000).

This species has been identified in the Port Curtis region (e.g. Boyne Island) which is situated within the ecotone between the South-east Queensland and Brigalow Belt South Bioregions. This lizard is found in a wide variety of open forest habitats on several soil types (Schultz & Eyre 1997; Tremul 2000). In some areas lizards are found in remnant Brigalow (*Acacia harpophylla*) woodland with sparse tussock grasses on grey cracking clay soils (Cogger *et al.* 1993).

Occupied habitat on Boyne Island consists of *Corymbia citriodora*, *Eucalyptus exserta*, *E. clarksoniana*, and *E. crebra* tall woodland with a sparse understorey of *Acacia falciformis*, *Pogonolobus reticulatus*, *Jacksonia scoparia* and *A. conferta*, with a sparse ground stratum of *Xanthorrhoea latifolia*, *Entolasia stricta* and *Themeda triandra*. The substrate is covered with a dense layer of dry leaf litter. Soils are shallow and very few large rock fragments occur in the area (Tremul 2000).

No Brigalow was evident within the project area, however open Eucalypt forests and/or woodlands were represented. The loss of habitat as a result of clearing activities would be the main threat to this species. Other threats may include excavation and filling activities associated with the rail infrastructure. The implementation of mitigation measures and environmental management during the design, construction and operational phases of the project should minimise potential impacts.



The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

### **Mitigation Measures**

The implementation of mitigation measures and environmental management during the design, construction and operational phases of the Project will minimise potential impacts on terrestrial fauna. The measures to be implemented include:

- During the detailed design phase, minimising the removal of marine and riparian plants where possible. Opportunities for buffer zone plantings (i.e. native shrubs, grasses and trees) will also be investigated and will be provided adjacent to mangroves and riparian plants where no infrastructure is needed.
- Putting mechanisms in place to facilitate fauna movement. This may include bridging the intertidal wetlands and culverts within the Rail Maintenance Precinct.
- Rehabilitation of grasslands and forest areas within the Rail Loop Precinct. Expanding and reconnecting smaller fragments of habitat.
- Re-allocation of approximately 120.5ha of remnant vegetation within QR land to the EPA (Mount Stowe State Forest).
- Return of approximately 34ha of intertidal wetlands including mangrove communities.
- Support for local community organisations including Landcare, Coastcare and Bushcare.
- Preparation and implementation of a Weed and Pest Management Plan.
- Preparation and implementation of a Bushfire Management Plan.
- Ensuring personnel know of the environmental risks associated with the project, including environmental spill response and what to do in case of an injured animal.
- Ensuring a qualified fauna spotter is on hand during the construction activities.
- Ensuring that any significant species and/or nesting and/or roosting sites are clearly marked and a buffer zone created. Species can then be relocated using a qualified handler.
- Encouraging community participation in compiling information on significant species within Port Curtis.
- Protection of intertidal wetlands including mangroves and adjoining sedgeland and saltmarsh.
- Maintaining adjacent high tide banks with their cover of salt-tolerant woodland plants.
- Minimising the impact on water quality of receiving environments.
- Support further studies and/or monitoring programmes within Port Curtis on significant species distribution and ecology.

#### **6.2.2.4 Marine Fauna**

##### **Existing Environment and Potential Impacts**

A total of 26 significance species, pursuant to the EPBC Act, were identified which may potentially inhabit the project area. This included one (1) marine mammal and five (5) marine reptile species.

It is important to note that previous Port expansion projects and dredging activities have resulted in no significant impact to marine fauna that frequents Port Curtis.

##### **Marine Mammals**

The **Humpback whale (*Megaptera novaeangliae*)** is listed as vulnerable under the EPBC and NC Acts.

Humpback whales have a worldwide distribution. They generally inhabit the open ocean except during the annual migration between cold water feeding areas and the warmer calving grounds. During this time they will often appear quite close to the coast and on the journey south (in the Southern Hemisphere) will congregate for short periods in sheltered bays on route. This species has been recorded in the Port Curtis region.

For cetaceans it is the sudden 'start up' noise that can have the most impact, should they be close to the construction site. Once the pile driving has reached its running level, generally the animals will show avoidance, moving away and staying at a safe distance. As such, there is not expected to be a long-term significant impact upon marine mammals and turtles after the initial disturbance.

Other marine mammals, for example dugongs and dolphins (both of which occur in the study area) are also likely to be disturbed through the construction and reclamation process. This noise disturbance will occur during pile driving, infilling and additional vessel movements during this period.

The EIS concluded that the proposed Project is unlikely to have a significant impact on this species.

##### **Marine Reptiles**

All marine turtle species occurring in Australian waters are listed under Conservation of International Trade in Endangered Species (CITES). In addition, all marine turtles occurring in the Indo-Pacific region are a priority for conservation under the Bonn Convention or CMS. In Australia, all species of marine turtles are protected under State and Territory legislation and the Australian Government's EPBC Act. Marine turtles are also of economic, cultural, and spiritual importance to coastal Indigenous Australians.

Marine turtles have high fidelity to nesting and feeding sites (DEH 2005). The Narrows and Calliope River mouth have been identified as major turtle foraging areas (DNRM 2005). As such, it is likely that some of the individuals return to these areas to feed. During the EIS fieldwork turtles were commonly observed inhabiting the intertidal banks opposite the project area. The following Table outlines the status of the marine turtles which have been known to frequent Port Curtis.

### Status of the Marine Turtles Inhabiting Port Curtis

Species	Status	Occurrence
Loggerhead turtle ( <i>Caretta caretta</i> )	Endangered EPBC Act/NC Act	Inhabits and/or frequents the project area
Leatherback turtle ( <i>Dermochelys coriacea</i> )	Vulnerable EPBC Act Endangered NC Act	Inhabits and/or frequents Port Curtis
Green turtle ( <i>Chelonia mydas</i> )	Vulnerable EPBC Act/NC Act	Inhabits and/or frequents the project area
Hawksbill turtle ( <i>Eretmochelys imbricata</i> )	Vulnerable EPBC Act/NC Act	Inhabits and/or frequents the project area
Flatback turtle ( <i>Natator depressus</i> )	Vulnerable EPBC Act/NC Act	Inhabits and/or frequents Port Curtis

**Table Notes:**

EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*

NC Act = *Nature Conservation Act 1992*

CITES = *Conservation of International Trade in Endangered Species*

CMS = *Convention on Migratory Species*

Hatchlings of all species commence life as carnivores feeding on surface zooplankton. Adult Green turtles are herbivores feeding on algae, sea grass and mangroves, while the remaining species are carnivores. Loggerhead feed on hard-bodied molluscs and crustaceans; Hawksbill turtles feed on sponges, algae, soft bodied invertebrates and soft corals; and Flatback and Leatherback turtles feed on soft-bodied invertebrates and jellyfish (DEH 2005).

Existing information and communications with EPA representatives (EPA *pers comm* 2006) indicate that female turtles do not nest within or adjacent to the project area. The closest nesting area is the seaward side of Facing Island within Port Curtis. This area is a nest site for Flatback and Green turtles (>1,000 individuals).

The construction process has the potential to cause disturbance to marine turtles. Disturbance is most likely from noise and physical disturbance through reclamation and encroachment upon the marine environment. A range of construction activities including pile driving, drilling, dredging equipment and haulage vehicles throughout the construction phase will generate noise.

Marine turtles are capable of hearing vibrations that pass through their internal ear canals and they respond mostly to sounds between 200 to 700Hz. Vibrations have been demonstrated as causing negative impacts over several stages of embryonic development (Bartol and Musick 2003).

Marine turtles are less likely to be affected as a direct result of the initial dredging operations. The main threat to these species from the construction dredge operations is collision or entanglement with dredging equipment.

The main impact of pile driving on marine turtles is the sudden 'start up' noise if they are close to the construction site. Once the pile driving has reached its running level, generally the animals will show avoidance, moving away and staying at a safe distance. As such, there is not expected to be a long-term significant impact upon marine mammals and turtles after the initial disturbance.

Turtles are frequently found within the project area and surrounding waters (The Narrows and Calliope River mouth have both been identified as major turtle foraging areas). As such there is a potential for the artificial lighting to affect marine turtle behaviour.

Artificial lighting is known to affect marine species in a variety of ways. Species such as turtles have demonstrated disturbed and confused behaviour patterns (e.g. turtle hatchlings moving inland instead of swimming/moving out to sea) in the presence of artificial lighting. The impact from the terminal lighting and associated infrastructure is likely to be minimal due to the existing elevated lux levels in the Port area.

The dredging campaign is anticipated to operate 24 hours a day for an extended time period. This is likely to result in light intrusion and overspill from night lighting. As such there may be a short term impact upon marine turtles. This impact is likely to be localised to the light footprint of the dredging vessel.

An indirect impact that could result from the construction dredging activities, if not well managed, is the loss and disturbance of local seagrass communities and fauna assemblages which occur in the near shore environments. This may impact on dugong and turtle species behaviour and distribution.

The implementation of mitigation measures during design, construction and operational phase of the Project will minimise potential impacts.

The EIS concludes that the proposed Project is unlikely to have a significant impact on these species.

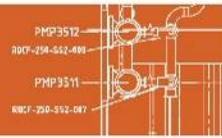
### **Sharks**

The **Whale shark (*Rhincodon typus*)** is listed as vulnerable and migratory under the EPBC Act. This species is also listed under Appendix II of the CMS and CITES.

The project area is located at approximately 23°S within the known distribution of the Whale shark (i.e. Whale sharks have a broad distribution in tropical and warm temperate seas, usually between latitudes 30°N and 35°S). This species is a filter-feeder targeting zooplankton and with movement linked to seasonal food 'pulses' (e.g. coral spawning). They are known to inhabit both deep and shallow coastal waters and the lagoons of coral atolls and reefs.

In May 2005 a Whale shark (*Rhincodon typus*) Recovery Plan 2005-2010 was published. The recovery plan identified a number of threats, in particular commercial harvest outside Australian waters. The potential future threats to whale sharks visiting Australian waters are: competition with fisheries, habitat damage, pollution and marine debris, climatic and ocean change, predation, disease, and direct disturbance from tourism, research or interference. At present none of these potential threats appear to have an impact on the numbers of Whale sharks visiting Australian waters (DEH 2005).

There is no evidence that this species visits Port Curtis, however species migration pathways, which are poorly understood, may include the GBRMP to the east of Port Curtis. Indirect pressures to the existing population as a result of the proposed Project are likely to include pollution and marine debris (i.e. from increased shipping and proximity of project to marine environments).



Based on the species distribution, ecology and behaviour, the EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

### **Mitigation Measures**

The implementation of mitigation measures and environmental management during the design, construction and operational phases of the project should minimise potential impacts. The measures to be implemented include:

- During the detailed design phase, minimisation of the removal of marine and riparian plants where possible. Opportunities for buffer zone plantings (i.e. native shrubs, grasses and trees) will also be investigated and will be provided adjacent to mangroves and riparian plants where no infrastructure is needed.
- Coal terminal lighting design to minimise visual impact on adjoining habitats.
- The depth and width of dredge channels to be designed so as to reduce future dredging.
- Ongoing monitoring of Port Curtis estuarine and marine environments including seagrass and mangrove communities.
- A large dredge vessel will be utilised in order that the dredge program is completed within the shortest possible timeframe, thereby minimising the window for potential impacts to occur.
- A water quality monitoring programme will be implemented to ensure that turbidity levels do not have the potential to impact on aquatic flora and fauna, in particular seagrass beds.
- A staged dredging programme will be implemented which may potentially allow recovery of the marine and/or estuarine environments.
- A safety zone will be created around the perimeter of the dredging activities. Dredging will not be carried out while dugongs, turtles or other marine species of conservation significance are within 150m or while migratory birds are within 25m of the dredge activities. Activities will be placed on hold for the period of time it takes the animal to leave the safety zone.
- Consultation will be undertaken with Regulatory Agencies to establish trigger values for suspended solids and/or turbidity within the water column. Discharge trigger values for dredging will be agreed during finalisation of the DEMP and detailed design. CQPA and the dredging contractor will then apply the discharge trigger value. The receiving environment trigger value will be as recommended by McArthur *et al* (1994) with the 95<sup>th</sup> percentile ambient conditions regarded as an appropriate threshold for the receiving habitat of Port Curtis.
- Over-water abrasive blasting will be carried out in accordance with the EPA Environmental Operations for Over-water abrasive blasting in marine and other aquatic environments. Environmental factors such as wind conditions should be considered prior to blasting operations commencing. Where wind conditions affect the ability to contain over-spray, work must cease.

- Materials and protective treatments will be selected with a view to minimising future maintenance blasting/recoating in the future.
- A Waste Management Plan will be prepared and implemented.
- There will be no reclamation and clearing of mangroves on Wiggins Island and Mud Island. The existing reclamation approval and marine plant clearing permit for Wiggins Island and Mud Island areas will be released.
- Community participation in compiling information on significant species within Port Curtis will be encouraged.
- A detailed DEMP will be compiled during the design phase. This Plan will be implemented during the construction stage to minimise potential impacts on marine fauna. The plan will incorporate measures so that dewatering discharge will not:
  - Enter poorly defined watercourses, as water may leave the channel, flooding adjoining land and vegetation.
  - Compromise the Environmental Values of any surface water or groundwater.
  - Enter watercourses or drainage lines not designated for dewatering.
  - Discharge at levels above discharge guidelines.
- An Acid Sulfate Soils Management Plan will include measures to minimise impacts from ASS.
- Prior to offsite discharge, water quality must meet the conditions of the licensing agreement. The conditions may include conforming to EPA's Queensland Water Quality guidelines and/or the ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters (2000). Further consultation with the EPA is required, however Best Practice Management Discharge Guidelines will be targeted.
- Spills and wastewater will be managed under the Waste Management Plan and hazardous substances Australian Standard AS 1940B1993.
- Chemical and hydrocarbon wastewater must be disposed to a liquid waste disposal facility or company, or treated to an acceptable level for discharge to the sewer with the permission of the responsible authority.
- Works within the watercourse and riparian zones will be minimised.
- Further studies and/or monitoring programmes within Port Curtis on the significant species distribution and ecology will be supported.
- The health of the intertidal wetlands, including the seagrass and mangrove communities will be regularly monitored.

### **6.2.3 Listed Migratory Species**

#### **6.2.3.1 Migratory Avian Species**

##### **Existing Environment and Potential Impacts**

A search of the EPBC matters database identified 72 migratory species.

The Narrows and Port Curtis are an important habitat along the flyway for a number of migratory birds. Within the survey area 37 species have been recorded. These species are listed under the schedules of the EPBC Act. Monitoring of bird distributions and populations during the migration cycle is still in its infancy. Therefore population sizes and trends of many species remain unknown. This limits the understanding of the value of Port Curtis and potential impacts associated with the activities.

The more frequently observed species included the White-bellied sea eagle (*Haliaeetus leucogaster*), Rufous fantail (*Rhipidura rufifrons*), Magpie goose (*Anseranas semipalmata*), Great egret (*Ardea alba*), Cattle egret (*Ardea ibis*) and the Rainbow bee-eater (*Merops ornatus*).

Many of the migratory shorebirds visiting each year feed in intertidal areas including saltmarsh wetlands. They feed during and post inundation by tides, direct rainfall or freshwater inflows.

The species richness and density of migratory waders was greatest in the March 2006 survey following rainfall in February 2006 and spring tides in early March. These events positively influenced resource availability (habitats and food) through the creation of tidal and freshwater wetland areas.

The majority of the identified species inhabiting the mudflat and saltmarsh habitats were observed in the Hanson Road Precinct (Reclamation Areas B and C) and in the Byellee Precinct. Many species were also observed foraging the intertidal areas around the Wiggins Precinct and the Calliope River. This included the Eastern curlew (*Numenius madagascariensis*) which is listed as rare under the NC Act. It is likely that Port Curtis is a staging area for this species during its annual migration from and to Siberia.

Freshwater species including the Black-necked stork (*Ephippiorhynchus asiaticus*) were observed inhabiting the Byellee wetlands and a permanent farm irrigation dam in the southern extent of the Byellee Precinct, towards Jefferis Road. The woodlands and forests of Port Curtis are important habitats for a diverse number of avian species including migratory species such as the Rainbow bee-eater and Satin flycatcher.

Comprehensive information on breeding ranges; migration routes; important staging areas; non-breeding sites; feeding requirements; quality of habitat; carrying capacity and seasonal/annual usage of habitat; and population changes is not available for many waterbirds. This limits the understanding of the value of Port Curtis and potential impacts associated with the activities. Impacts of historical operations on species behaviour within Port Curtis is limited (note that the intertidal banks are in close proximity to the RG Tanna Coal Terminal).

Construction and operational activities within the area may impact on species behaviour and the complexity and health of the habitats (e.g. introduction of pest/exotic species and “edge effects”).

The main threat is the loss/degradation of habitat within and adjacent to the project area. There is the potential that the terminal construction activities may impact on the health of the adjoining ecosystems. These areas are recognised as important feeding and roosting habitats for a diverse number of migratory species.



Potential impacts include dust, noise and light generation associated with the construction activities, contamination, reduction in the buffering capacity of the area (removal of mangroves) and changes to the drainage patterns (freshwater/tidal influx). These factors can directly and/or indirectly impact on species behaviour.

Changes to the water quality of the near shore environment as a result of overland runoff, contamination and removal of intertidal wetlands can impact on fauna assemblages (e.g. turbidity as a result of overland runoff and substrate disturbance will potentially impact on primary productivity, which may impact on higher trophic organisms). Disturbance of the near shore environments would also affect colonisation and recruitment.

Change in the landform associated with the works is likely to impact on the drainage patterns and tidal/freshwater influx. Both factors can have a negative impact on ecosystem health. The loss of habitat will also impact on the terrestrial species within the area, including the Rainbow bee-eater and raptor species.

Artificial lighting is known to effect marine species in a variety of ways. Sources of light will include the terminal construction and operation, and the Stage 1 dredging campaign which is anticipated to operate 24 hours a day for 25 to 30 weeks. There is likely to be significant light intrusion and overspill from the night lighting).

Also night lighting on piles, jetty legs and marine infrastructure can act as fish attractors and subsequently attract birds to areas not usually favoured. The terminal lighting impact is likely to be minimal due to the existing elevated lux levels in the Port area. The impact associated with the dredging activities is likely to be minimal due to the localised nature of the lighting and the work footprint (i.e. works within the subtidal area).

Changes to the ecosystems health as a result of the construction activities including abrasive blasting, pile driving, shipping matters, dredging and dewatering activities will have an impact on the areas biodiversity. This may include the displacement of species for a short and/or long term period. Birds are highly mobile and are likely to move and/or migrate to suitable habitat located at other areas within the port and/or along the flyway.

It is likely that the proposed development will impact on some of the migratory species inhabiting and/or frequenting the area. Impacts of historical operations on species behaviour within Port Curtis is also limited (note that the intertidal banks are in close proximity to the RG Tanna Coal Terminal). This information would assist in determining species recovery (time lags and population size).

The size of the population(s) impacted and the location of other suitable habitats within The Narrows and Port Curtis, in conjunction with appropriate mitigation measures, should minimise the impact. Under the EPBC Act, a migratory species is significantly impacted upon if a proposal will or is likely to:

*“Substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat of the migratory species; or*

*Result in invasive species that are impactful to the migratory species becoming established in an area of important habitat of the migratory species; or*

*Seriously disrupt the life cycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of the species)”.*

The EIS therefore concludes that the Project is unlikely to have a significant impact on migratory bird species.

### **6.2.3.2 Migratory Mammal Species**

#### **Existing Environment and Potential Impacts**

Dugongs (*Dugong dugon*) are globally listed as vulnerable to extinction under the International Union for Conservation of Nature and Natural Resources (IUCN). Internationally, Dugongs are listed on Appendix I of the Conservation of International Trade in Endangered Species (CITES), and on Appendix II of the Convention on Migratory Species (the CMS). Australia is a signatory to both these conventions. Australian Dugongs (*Dugong dugon*) constitute a significant percentage of the world population. Dugongs are also culturally significant to indigenous communities throughout their range.

Dugongs are listed as Migratory under the EPBC Act and NC Act. They are also listed as Marine and Migratory under the EPBC Act. A *Nature Conservation (Dugong) Conservation Plan* for Queensland waters was adopted in 1999.

In Australia, dugongs are not considered to be under serious threat, however recent trends have shown a decline in population size. In the southern Great Barrier Reef surveys showed localised fluctuations in population size due primarily to migration/movement (i.e. individuals are able to cover large distances to exploit resources). The surveys showed an overall decline in numbers.

There is currently no structured monitoring program of Dugongs within Port Curtis. However, within the Rodd’s Bay Dugong Protection Area population size is estimated to be 300±95. Dugongs are known to frequent and/or inhabit the waters adjacent the Calliope River and Wiggins Island. Distribution information is based on incidental sightings, strandings, mortalities and seagrass feeding trails. Information on the number of individuals frequenting the area and localised migration/movement patterns is limited.

Dugongs feed primarily on seagrass in particular *Halophila* and *Halodule* species. Adjacent to the project area is approximately 170ha of seagrass communities, which are primarily *Halophila* communities (Taylor *et al* 2006). During the long-term seagrass monitoring activities undertaken by DPI&F there is strong evidence that dugongs feed within the seagrass communities adjacent to the project area (feeding trails are evident). Dugongs may also supplement their diet with invertebrate species such as polychaetes, bivalves and echinoderms. With the exception of crustaceans these are the three (3) main macroinvertebrate assemblages recorded from Port Curtis.

The Indopacific humpback dolphin (*Sousa chinensis*) which is listed on the IUCN 2006 Red List of Threatened Species and listed as Migratory under the EPBC Act also inhabits these waters. Other cetaceans known to frequent the waters of Port Curtis, include the Irrawaddy dolphin (*Orcaella brevirostris*), Southern Right Whale (*Eubalaena australis*) and False Killer Whale (*Pseudorca crassidens*).

Marine mammals are less likely to be affected as a direct result of the initial dredging operations. However, the main threat to these species from the construction dredge operations is collision or entanglement with dredging equipment.

Artificial lighting is known to effect marine species in a variety of ways. Sources of light will include the terminal construction and operation and the dredging campaign which is anticipated to operate 24 hours a day for an extended time period. There is likely to be significant light intrusion and overspill from the night lighting.

The terminal lighting impact is likely to be minimal due to the existing elevated lux levels in the Port area. The impact associated with the dredging activities is likely to be minimal due to the localised nature of the lighting and the work footprint.

An indirect impact resulting from the construction dredging activities is the loss and disturbance of local seagrass communities and fauna assemblages which occur in the near shore environments. This may impact on dugong and turtle species behaviour and distribution.

Changes to the ecosystems health as a result of the construction activities including abrasive blasting, pile driving shipping matters, dredging and dewatering activities will have an impact on the areas biodiversity. This may include the displacement of species for a short and/or long term period. Marine mammals are highly-mobile and are likely to move and/or migrate to suitable habitat within other areas of the port.

The EIS concludes that the proposed Project is unlikely to have a significant impact on this species.

### **6.2.3.3 Migratory Marine Reptiles**

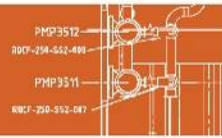
#### **Existing Environment and Potential Impacts**

##### **Sea Snakes**

A search of the EPBC Act matters identified 13 species of sea snakes which may potentially inhabit the near shore environments of Port Curtis. These species inhabit a variety of habitats, for example, *Hydrophis macdowelli* favours estuaries and inshore waters, while *Pelamis platurus* (Yellow-bellied sea snake) prefers the open ocean and *Aipysurus laevis* (Olive sea snake) prefers coral reefs.

*Laticaudidae* (Sea-kraits) morphology features terrestrial and marine adaptations allowing the species to forage in the marine environment but shelter and lay eggs on land (oviparous). Two (2) species, *Laticauda colubrina* (Yellow-lipped Sea-krait) and *Laticauda laticaudata* (Yellow-lipped Sea-krait) have been recorded from Australian waters. Both species may inhabit and/or frequent Port Curtis based on the EPBC Act database.

These species are thought to be transients from the Papua New Guinea and New Caledonia areas as resident populations of these species have not been found in Australian waters (<http://www.reef.crc.org.au/discover/plantsanimals/seasnakes/index.html>). The other major groups of sea snakes, the *Natricinae* and the *Homalopsinae*, are subfamilies of the *Colubridae* and are confined almost entirely to saltmarsh and estuarine environments. Only three (3) species (*Homalopsinae*) occur in Australian with distribution limited to northern Australian. It is likely that true



sea snakes inhabit the Port Curtis area, however information on population size and diversity is limited.

It is likely that activities associated with the proposed Project will have an impact on sea snake assemblages within the area, however the impact is likely to be short-term. These species are highly mobile and are likely to move and/or migrate to suitable habitat within the local (Port Curtis) and/or regional areas (GBRMP).

### **Crocodiles**

*Crocodylus porosus* (Saltwater or Estuarine crocodile) is listed as Vulnerable under the EPBC Act and NCA Act.

Within Queensland crocodiles inhabit mangrove wetlands, estuaries and associated wetlands (fresh and saline) from the Gulf of Carpentaria to the Fitzroy River delta in Central Queensland. This species was previously sighted (>2 years ago) within the waters of the Calliope and Boyne Rivers. There have been no recent sightings within the Calliope River catchment.

The activities within the area are unlikely to restrict the movement of this species. It is likely that activities associated with the proposed Project will have an impact on Saltwater crocodiles inhabiting the Port Curtis assemblages within the area, however the impact is likely to be short-term. These species are highly mobile and are likely to move and/or migrate to suitable habitat within the local (Port Curtis) and/or regional areas (GBRMP).

#### **6.2.3.4 Significant Fish Species**

A search of the EPBC Act matters identified 37 syngnathids (Seahorse and their relatives) which may potentially inhabit the near shore environment. No species were recorded from the area during the EIS fieldwork activities, however other studies within the area identified three (3) species, including one (1) species of seahorse *Hippocampus* and two (2) species of pipefish.

Many syngnathids inhabit shallow inshore areas and sometimes marine structures, which makes them vulnerable to human disturbance. The seagrass communities within Port Curtis are potential habitat for these species, where they feed on crustaceans and zooplankton.

Based on the suitable habitat within the near-shore environments of Port Curtis it is likely that Port Curtis supports a diverse syngnathid population. The cryptic nature of the species and incomplete information on species distribution limits information on species richness, abundance and population status.

Impacts on the intertidal wetlands within and adjacent to the project area may have an adverse impact on the areas biodiversity. These impacts will include dredging activities, pile driving, shipping matters de-watering and wastewater discharge.

Artificial lighting is known to affect marine species in a variety of ways. Sources of light will include the terminal construction and operation and the dredging campaign which is anticipated to operate 24 hours a day for an extended time period. This is likely to result in light intrusion and overspill from the night lighting. The impact associated with the dredging activities is likely to be minimal due to the localised

nature of the lighting and the work footprint (i.e. the works are within the subtidal area).

Also night lighting on piles, jetty legs and marine infrastructure can act as fish attractors subsequently attracting birds to areas not usually favoured.

The terminal lighting impact is likely to be minimal due to the existing elevated lux levels in the Port area.

Changes to the ecosystems health as a result of the construction activities including abrasive blasting, pile driving, shipping matters, dredging and dewatering activities will have an impact on the areas biodiversity. This may include the displacement of species for a short and/or long term period. However marine mammals are highly-mobile and are likely to move and/or migrate to suitable habitat within other areas of the port.

### **Mitigation Measures**

The implementation of mitigation measures and environmental management during the design, construction and operational phases of the Project should minimise potential impacts. The measures to be implemented include:

- During the detailed design phase the removal of marine and riparian plants to be minimised where possible. Opportunities for buffer zone plantings (i.e. native shrubs, grasses and trees) will also be investigated and will be provided adjacent to mangroves and riparian plants where no infrastructure is needed.
- Mechanisms to minimise risk of entanglement and mortality of migratory birds.
- Coal terminal lighting design to minimise visual impact on adjoining habitats.
- Minimising the impact on water quality of receiving environments.
- Ensuring that any significant species and/or nesting and/or roosting sites are clearly marked and a buffer zone created. Species can then be relocated using a qualified handler.
- Where possible vegetation should not be removed within 30m of a wetland, waterway or estuary.
- A large dredge vessel will be utilised in order that the dredge programme is completed within the shortest possible timeframe, thereby minimising the available window for potential impacts to occur.
- A water quality monitoring programme will be implemented to ensure that turbidity levels do not have the potential to impact on aquatic flora and fauna, particularly seagrass beds.
- A safety zone will be created around the perimeter of the dredging activities. If turtles, dolphins or dugongs are observed within this area at any time during the dredge operations, activities will be placed on hold for the period of time it takes the animal to leave the safety zone.
- Consultation will be undertaken with Regulatory Agencies to establish trigger values for suspended solids and/or turbidity within the water column. Discharge trigger values for dredging will be agreed during finalisation of the

DEMP and detailed design. CQPA and dredging contractor will then apply the discharge trigger value. The receiving environment trigger value will be as recommended by McArthur *et al* (1994) with the 95<sup>th</sup> percentile ambient conditions regarded as an appropriate threshold for the receiving habitat of Port Curtis.

- Over-water abrasive blasting will be carried out in accordance with the EPA Environmental Operations for Over-water abrasive blasting in marine and other aquatic environments. Environmental factors such as wind conditions will be considered prior to blasting operations commencing. Where wind conditions affect the ability to contain over-spray, work must cease.
- Implementation of a Construction Environmental Management Plan.
- Compliance with the conditions of the reclamation approval (Permit No. 04SADB0287).
- Return of approximately 34ha of intertidal wetlands including mangrove communities.
- Encouraging community participation in compiling information on significant species within Port Curtis.
- Protection of intertidal wetlands including mangroves and adjoining sedgeland and saltmarsh.
- Preparation of a detailed DEMD during the design phase. This Plan will be implemented during the construction stage to minimise potential impacts on migratory species. The plan will incorporate measures so that dewatering discharge will not:
  - Enter poorly defined watercourses, as water may leave the channel, flooding adjoining land and vegetation.
  - Compromise the Environmental Values of any surface water or groundwater.
  - Enter watercourses or drainage lines not designated for dewatering.
  - Discharge at levels above discharge guidelines.
- Preparation and implementation of a Stormwater Management Plan to identify drainage lines, water quality improvement devices and their location.
- Preparation of an Acid Sulfate Soils Management Plan to include measures to minimise impacts from ASS.
- Prior to offsite discharge, water quality must meet the conditions of the licensing agreement. The conditions may include conforming to EPA's Queensland Water Quality guidelines and/or the ANZECC Australian Water Quality Guidelines for Fresh and Marine Waters (2000). Further consultation with the EPA is required, however it is targeted to meet the Best Practice Management Discharge Guidelines.
- Spills and wastewater will be managed under the Waste Management Plan and hazardous substances Australian Standard AS 1940B1993.

- Chemical and hydrocarbon wastewater must be disposed to a liquid waste disposal facility or company, or treated to an acceptable level for discharge to the sewer with the permission of the responsible authority.
- Minimisation of the works within watercourses and riparian zones.
- Maintenance of adjacent high tide banks with their cover of salt-tolerant woodland plants.
- Support for further studies and or monitoring programmes within Port Curtis on the significant species distribution and ecology.

## 6.3 Findings and Conclusions

The proposed Project is located within and adjacent to Port Curtis, which is a listed wetland under the Directory of Important Wetlands in Australia. The Project is also within and in close proximity to the Great Barrier Reef World Heritage Area.

The Project is located within the Calliope River catchment, which is important to the function and health of Port Curtis (i.e. environmental flows from the Calliope River are an important source of nutrients and triggers for biota).

Freshwater ecosystems within the project area are predominantly artificial and/or have been disturbed by previous anthropogenic activities and are unlikely to be impacted significantly by the Project. Byellee Wetland is of local significance and is an important habitat for a number of species, including significant waterbirds. It is unlikely that the Project will have a significant impact on the health of this ecosystem if appropriate mitigation and management measures are implemented.

Within and adjacent to the project area are a number of intertidal wetlands which have important ecological value. Within the project area the majority of the intertidal wetlands are situated in the approved Reclamation Areas B and C. However, other small areas of intertidal communities along the Calliope River and other water courses will also be disturbed.

It is important to note that the proposed reclamation area for the Project has reduced from the approved Reclamation Areas A, B and C.

Saltmarsh/saltpan communities are the dominant intertidal wetland within Reclamation Areas B and C with the near shore environment predominantly intertidal banks overlaid with seagrass communities. Closed *Rhizophora* communities are the dominant mangrove community present. These communities are interconnected and are important in maintaining the health and value of Port Curtis.

The Project will result in the loss of approximately 300ha of intertidal communities. The majority of this area is saltpan, however it contains approximately 100ha of marine plants. CQPA has already received approval to remove approximately 76ha of marine plants for the WICT. A significant aspect of the Project is that the marine plant approval within Reclamation Area A (Wiggins and Mud Islands) will be dissolved (i.e. approximately 17ha of mangroves and 22ha of seagrass). On balance the Project requires an additional marine plant approval for approximately 32ha of mangroves and saltmarsh communities. The majority of mangrove

communities to be removed are above the low water mark and hence outside the GBRWHA.

The additional loss of marine plants will be mitigated by:

- Rehabilitation of mangrove and saltmarsh communities within the Port Curtis region. Suitable areas are to be identified during the detailed design phase of the Project in consultation with DPI&F officers
- Ongoing monitoring of seagrass and mangrove communities within Port Curtis.

No significant plant species were identified, however a number of EPBC Act listed fauna species, including marine turtles, dugong and international migratory bird species are known to inhabit and/or frequent Port Curtis. It is likely that the Project will disturb behaviour patterns due to the loss and/or degradation of ecosystem health. The degree of impact will depend on the tolerance of the species and communities to the Project activities and the effectiveness of mitigation and management measures implemented.

Dredging activities are a major component of the works with an estimated 6.3 million m<sup>3</sup> of material to be removed and translocated for use in the reclamation activities. The dredging is required to create berth pockets, a departure channel and swing basin to allow access to the coal terminal. The dredging activities will disturb approximately 140ha of subtidal environment resulting in the loss of macrobenthic communities.

The materials within the proposed dredging area consist primarily of silty sand, sand, clayey sand and clays with gravel at depths to RL-16m, with increasing gravel content below this level. It is proposed that the entire dredged volume be contained on land within two reclamation areas located over 4km from the dredging site. These reclamation areas are to be designed to store the soil-water mix for a sufficient time so that the discharge water should not exceed 50ppm above the natural background levels of suspended sediment concentration in the Calliope River.

Shallow tidal flats and the shallow Calliope River entrance make conditions unfavourable for the use of trailer hopper suction to reach the shore, therefore two different types of dredges have been proposed.

A Trailer Suction Hopper Dredge (TSHD), if fitted with pump-out installations is suitable for sand delivery to a reclamation site, but is unsuitable for clay delivery other than bottom dumping. A Cutter Suction Dredge (CSD) with sufficient capacity in cutter and pump power assisted by additional booster pumps will also be necessary to undertake the dredging works because of the stiff clays and gravel layers to design depth and significant pumping distances to the reclamation site.

Additionally, the CSD will require one or two compatible booster pump stations in the delivery line to be able to deliver dredged gravel and clays to the reclamation sites.

The dredging methodology presented in the EIS for stage 1 involved the use of a TSHD working the eastern extremity of the Departure Channel with back-dumping of the dredged materials temporarily into a pre-prepared, partially dredged, berth pocket at the proposed wharf site for rehandling by a CSD.



This back-dumping of dredged material into the berth pocket meant a double-handling of the material and a potential risk of releasing large quantities of sediment into Port Curtis. Issues regarding this double-handling were raised by EPA and the Department of Environment and Water (DEW) in their submissions on the EIS.

The SEIS proposed a revised dredge spoil strategy that means the dredge spoil will be disposed directly to land, eliminating the need for double-handling of the material in the water.

Following its review of the SEIS, DEW provided comments predominantly focused on the need for further information regarding the mitigation measures for dredging operations and greater detail regarding the effectiveness of the sediment testing and modelling. In particular, the DEMP was not considered adequate, particularly with regard to the performance criteria and mitigation measures.

Whilst DEW subsequently acknowledged that some of its comments concerned aspects of the project that could be addressed in the management plans which could be required under approval conditions, other comments provided with respect to the SEIS remained. These comments were central to understanding the impacts of the proposal and needed to be addressed in the assessment to allow an informed decision on whether to approve the proposal.

The two remaining issues of concern to DEW were:

- The extent of conveyor covering (two sides only) and potential for coal dust to enter the water within the Great Barrier Reef World Heritage Area.
- The need to consider possible sediment re-suspension from dredging operations, due to wind/wave activity, in the development of trigger level criteria. The response from the Proponent, to DEW comments on the Supplementary EIS, indicated that trigger level criteria would be developed upon completion of the detailed design and the agreement of the Regulatory Agencies sought. Consideration of the role of wind/wave activity in sediment movement will be required in developing these criteria.

The re-suspension of material into the water column during dredging may impact other estuarine and/or marine environments within Port Curtis. Of particular susceptibility to threat are the extensive seagrass communities, which have important ecological values (i.e. nursery and habitat value for fish including commercial and recreational species and also an important feeding area for significant species including dugongs and marine turtles).

The Proponent subsequently met with DEW (now Department of Environment, Water, Heritage and the Arts (DEWHA)) representatives to clarify and address these issues. As a result, the Proponent provide to DEWHA for its consideration:

- A summary paper that captures the suitability and adequacy of the hydrodynamic and sediment dispersion model for this environment, addressing wave, current and sediment re-suspension. Upon receiving the summary paper, DEWHA will consult with GBRMPA to provide early feedback that can be considered in a peer review of the sediment modelling.
- A peer review of the model.

- An assessment of the conveyor design alternatives with respect to the impacts of dust emissions on World Heritage areas.

In relation to the trigger levels issue above for suspended sediments/turbidity levels, CQPA has now agreed with DEWHA that these will be agreed during the finalisation of the DEMP and references to these trigger levels within this document have been amended to reflect this undertaking. Dredging activities and associated impacts will be closely monitored by CQPA for compliance with the plan during construction.

The summary of the peer review undertaken by Cardno Lawson Trelor stated:

*“The essential details of the data, modelling and process rates adopted for sediment plume modelling by WBM for the WICT project have been reviewed. All relevant processes have been included. Based on my experience in other muddy sites such as Cairns and the assessment of WBM’s work, I believe that the outcomes of modelling in terms of the extent of visible plumes above background conditions are sound and the extents of these visible plumes will generally be over-estimated by the results of WBM’s analyses, particularly given that direct disposal to the water is no longer proposed.”* P.D Trelor 21/12/2007.

An assessment of the conveyor design alternatives states:

*“Shielding the conveyor system with a roof and one side will, in conjunction with the DEM and moisture measures undertaken, effectively remove most of the potential for lift off of coal dust. An estimated comparison between a 2 sided and 3 sided conveyor system showed that there is the potential for an approximate 10% reduction in overall emissions from the outloading conveyors (equating to a 0.8% overall site emission reduction). These relative emission factors (for 2 and 3 sided conveyors) are based on published figures from the USEPA and measurements of existing facilities on the east coast of Queensland”.*

The additional information provided to DEWHA on the outstanding issues will enable it to fully understand any potential impacts on matters of National Environmental Significance and assist the Australian Government Minister to make an informed decision on whether to approve the proposal.

The EPA has provided conditions to be attached to a development approval for Material Change of Use for the WICT Project to address its issues. The Proponent will also need to seek assessment and conditioning pursuant to the *Coastal Management and Protection Act 1995* for matters such as discharge standards for dredge spoil tailwater.

The impacts of the project have been evaluated in accordance with the SDPWO Act and I am satisfied that the requirements of the Queensland Government for impact assessment have been met. Accordingly, from the State of Queensland’s perspective, I recommend that the project can proceed subject to the conditions contained in Appendices 1 and 2 of this Report.

## 7. Conclusion

Having regard to the documentation provided during the EIS process for the Wiggins Island Coal Terminal, I am satisfied that the requirements of the Queensland Government for impact assessment in accordance with the SDPWO Act have been met. The EIS process has provided sufficient information to government and to the community to allow an informed evaluation of potential environmental impacts which could be attributed to the Project. Careful management of the key construction and operational activities should ensure that any potential environmental impacts will be minimised or avoided.

The Proponent has made commitments throughout the EIS and SEIS which have been presented as a schedule of Project Commitments in Appendix 3 of this Report. These commitments include actions beyond those required to meet statutory approvals and their implementation will enhance the mitigation of potential adverse environmental impacts of the Project. Further, the Proponent has developed detailed EMPs to address specific environmental issues identified during the EIS process associated with each element of the Project.

In reaching a conclusion on the acceptability or otherwise of the management of potential impacts of the Project I have considered these Project Commitments and EMPs.

Thus, on the basis of the information provided, including advice from Advisory Agencies, I am satisfied that the adverse environmental impacts associated with the Project are able to be addressed through:

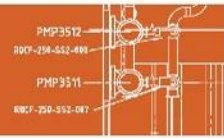
- Implementation of the project generally in accordance with the arrangements described in the EIS, SEIS and the Project Commitments nominated therein (and as listed in Appendix 3 of this Report).
- Finalisation and implementation of appropriate Environmental Management Plans as drafted in the SEIS.
- Attachment of recommended conditions listed in Appendices 1 and 2 of this Report (pursuant to s.47C of *SDPWO Act*) as conditions for development approvals under the *Environmental Protection Act 1994* (pursuant to s.49B of *SDPWO Act*)

I consider that on balance there is an overriding need for the Project to ensure the future of industrial development within the Central Queensland area. Therefore, I recommend that the Project, as described in detail in the EIS and SEIS and summarised in Section 2 of this report, can proceed, subject to the conditions contained in Appendices 1 and 2 of this Report.

In the event of any inconsistencies between the EIS documents and the recommended requirements in this Report, the recommended requirements in this Report prevail.

Copies of this Report will be issued to:

- CQPA and QR, pursuant to section 35(5)(a) of *the State Development and Public Works Organisation Act 1971* (Qld) and their Shareholding Ministers.



- The Environmental Protection Agency as Assessment Manager for Development Approval pursuant to the *Integrated Planning Act 1997*.
- The Australian Government Minister for the Environment, Heritage and the Arts to make an assessment of the controlled action for the purposes of the EPBC Act.

A copy of this Report will also be made available on the Department of Infrastructure and Planning web site at: <http://www.infrastructure.qld.gov.au/eis>

# Appendix 1 – List of Stated Conditions

## Specific Conditions that Apply to Environmentally Relevant Activities

The conditions outlined below are consistent with those that would normally be applied by the Environmental Protection Agency (EPA) under the *Integrated Planning Act 1999*. These conditions must be attached to a development approval for a material change of use for the Project.

**These conditions are separated into 2 parts.**

### **Part 1 refers to:**

Construction and operation of new rail infrastructure associated with development and servicing of the Wiggins Island Coal Terminal, Gladstone.

### **Part 2 refers to:**

Construction and operation of the rail dump stations, coal terminal and port facilities associated with the Wiggins Island Coal Terminal, Gladstone.

## Part 1

### Project Description

Construction of new rail infrastructure associated with development and servicing of the Wiggins Island Coal Terminal, Gladstone.

### Property Description

Construction activities, including possible concrete batching facility, extraction of hard rock materials and screening at various sites (possibly itinerant), on as yet unspecified section(s) of land adjacent to and including Lot 28 on CTN279.

Additional sites may include Lot 1 on SP163783, Lot 2 on SP163783, Lot 1 on RP602532, Lot 2 on RP602532, Lot 1 on RP840074, Lot 5 on SP122248, Lots 3 and 4 on SP165453, Lots 21, 22, 23, 24, 25 and 26 on SP 159091, Lot 2 on SP147891.

### Reason for Including Conditions

There are potential impacts on the land, surface and ground waters, air environment and ecological systems from contaminants and environmental harm that may result from the environmentally relevant activities. The conditions are designed to control and limit the release of contaminants and the potential for environmental harm. They are consistent with the information provided in the project EIS and the Supplementary EIS.

The conditions do not remove the need for the Proponent(s) to obtain approvals (e.g. Certificates of Registration) that may be required under the *Environmental Protection Act 1994* and other legislation administered by the Environmental Protection Agency. Approvals or permits for specific activities will be required under the *Environmental Protection Act 1994*, *Nature Conservation Act 1992*.

## Conditions for Construction and Operation of Railway Facilities associated with Wiggins Island Coal terminal Project

This section of the development approval is for carrying out the following environmentally relevant activities (ERAs) under the *Environmental Protection Regulation 1998*.

ERA	Description
20	<b>20(c) Extracting rock or other material</b> - Extracting rock (other than rock mined in block or slab form for building purposes), sand (other than foundry sand), clay (other than clay used for its ceramic properties, kaolin or bentonite), gravel, loam or other material (other than gravel, loam or other material under a mining authority) from a pit or quarry using plant or equipment having a design capacity of 100 000 t or more per year.
22	<b>22(c) Screening etc. materials</b> - Screening, washing, crushing, grinding, milling, sizing or separating material extracted from the earth (other than under a mining authority) or by dredging using plant or equipment having a

	design capacity of more than 100 000 t or more per year
<b>62</b>	<b>Concrete batching</b> – producing concrete or a concrete product by mixing cement, sand, rock, aggregate or other similar materials in works (including mobile works) having a design production capacity of more than 100 tonnes per day.

at place(s) described as;

Lots 1 and 2 on SP163783,  
 Lot 365 on FTY1160,  
 Lot 541 on NPW740,  
 Lot 51 on SP122248,  
 Lot 71 on SP122249,  
 Lots 3 and 4 on SP165453;

located at:

“Proposed rail loop”, and  
 Other sites generally west of Calliope River, Gladstone, Queensland, 4680.

### **Schedule of Conditions**

The aforementioned description of the environmentally relevant activities (ERAs) for which this authority is issued is simply a restatement of the activity as prescribed in the legislation at the time of issuing this authority. Where there is any conflict between the above description of the ERA for which this development approval is issued and the conditions as specified in this development approval as to the scale, intensity or manner of carrying out of the ERAs, then such conditions prevail to the extent of the inconsistency.

### **Schedule A – General Conditions**

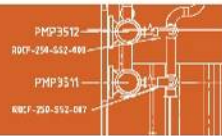
#### **Prevent and /or Minimise Likelihood of Environmental Harm**

(A1) In carrying out the environmentally relevant activities, you must take all reasonable and practicable measures to prevent and / or to minimise the likelihood of environmental harm being caused. Any environmentally relevant activity, that, if carried out incompetently, or negligently, may cause environmental harm, in a manner that could have been prevented, shall be carried out in a proper manner in accordance with the conditions of this development approval.

NOTE: This development approval does not authorise environmental harm unless a condition contained within this development approval explicitly authorises that harm. Where there is no condition or the development approval is silent on a matter, the lack of a condition or silence shall not be construed as authorising harm.

#### **Maintenance of measures, plant and equipment**

(A2) The holder must:



- (a) Install all measures, plant and equipment necessary to ensure compliance with the conditions of this development approval.
- (b) Maintain such measures, plant and equipment in a proper and efficient condition.
- (c) Operate such measures, plant and equipment in a proper and efficient manner.

### **Records**

- (A3) Record, compile and keep all monitoring results required by this document and present this information to the administering authority when requested, in a specified format.

### **Site Based Management Plan**

- (A4) From commencement of an ERA to which this approval relates, a site based management plan (SBMP) must be implemented. The SBMP must identify all sources of environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and what actions will be taken to prevent the likelihood of environmental harm being caused. The SBMP must also provide for the review and 'continual improvement' in the overall environmental performance of all ERAs that are carried out.

The SBMP must address the following matters:

- (a) Environmental commitments - a commitment by senior management to achieve specified and relevant environmental goals.
  - (b) Identification of environmental issues and potential impacts.
  - (c) Control measures for routine operations to minimise likelihood of environmental harm.
  - (d) Contingency plans and emergency procedures for non-routine situations.
  - (e) Organisational structure and responsibility.
  - (f) Effective communication.
  - (g) Monitoring of contaminant releases.
  - (h) Conducting environmental impact assessments.
  - (i) Staff training.
  - (j) Record keeping.
  - (k) Periodic review of environmental performance and continual improvement.
- (A5) The site based management plan must not be implemented or amended in a way that contravenes any condition of this development approval.

### **Third Party Environmental Auditing**

- (A6) Compliance with the conditions of this development approval and the requirements of the site based management plan must be audited within 3 months of commencement of the activities and annually until the completion of the construction activities.



- (A7) The audit(s) detailed in condition A6 must be conducted by a suitably qualified independent third party auditor, nominated by the approval holder and accepted by the administering authority.
- (A8) In relation to the audit(s) required by condition A6 the auditor must submit a final version of the auditor's report directly to the administering authority within 28 days of completing the audit.
- (A9) This condition applies to the site based management plan required by condition A4. A suitably qualified third party auditor must certify in writing that the site based management plan has been prepared:
  - (a) By a suitably qualified person with at least 5 years experience in the relevant area.
  - (b) In a manner that is consistent with the requirements of condition A4.
  - (c) By having regard to, and appropriately applying, the relevant guidelines (being those applicable on a national, state or a regional basis) which the third party auditor considers should be applied in undertaking the site based management plan including relevant Environment Australia, ANZECC and EPA guidelines where published.

### **Monitoring**

- (A10) A competent person(s) must conduct any monitoring required by this approval.

### **Equipment Calibration**

- (A11) All instruments, equipment and measuring devices used for measuring or monitoring in accordance with any condition of this approval must be calibrated, and appropriately operated and maintained.

### **Acid sulfate soils (ASS)**

- (A12) Acid sulfate soils must be managed such that contaminants are not directly or indirectly released, as a result of the activity, to any waters or the bed and banks of any waters.

END OF CONDITIONS FOR SCHEDULE A

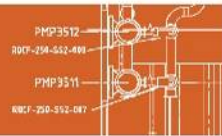
## **Schedule B – Air**

### **Nuisance**

- (B1) The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the activity must not cause a nuisance at any nuisance sensitive or commercial place.
- (B2) The release of dust and/or particulate matter resulting from the ERA must not cause an environmental nuisance at any nuisance sensitive place.

### **Dust Control**

- (B3) The holder of this development approval must implement operational procedures for the abatement of wind blown particulates generated from the



carrying out of the activity. The procedures must provide for control of dust from wagons, and routine removal of coal from within rail track areas.

- (B4) All sealed traffic areas must be cleaned as necessary to minimise the release of dust and particulate matter to the atmosphere.
- (B5) Watering of unsealed roads shall be carried out so as to minimise the release of dust and particulate matter to the atmosphere.

### **Nuisance Dust Complaints**

- (B6) In the event of a dust complaint, the holder will:
  - In the first instance alter procedures to reduce the nuisance issue.
  - Liaise with the administering authority and/or complainant over remedial action.

Where the above actions do not resolve the dust issue and when requested by the administering authority, dust and particulate monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust and/or particulate matter, and the results notified within 14 days to the administering authority following completion of monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected dust sensitive place and at upwind control sites and must include:

- (a) For a complaint alleging dust nuisance, dust deposition.
  - (b) For a complaint alleging adverse health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre ( $\mu\text{m}$ ) (PM10) suspended in the atmosphere over a 24hr averaging time.
- (B7) In relation to dust complaints, dust and particulate matter must not exceed the following levels when measured at any nuisance sensitive place:
    - (a) Dust deposition of 3 grams per square metre per month, when monitored in accordance with Australian Standard AS 3580.10.1 of 2003 (or more recent editions).
    - (b) A concentration of particulate matter with an aerodynamic diameter of less than 10 micrometre ( $\mu\text{m}$ ) (PM10) suspended in the atmosphere of 130 micrograms per cubic metre over a 24 hour averaging time, at a nuisance sensitive or commercial place downwind of the site, when monitored in accordance with Australian Standard 3580.9.8:2001 Method 9.8: Determination of suspended particulate matter-PM10 continuous direct mass method using a tapered element oscillating microbalance analyser; or any alternative method of monitoring PM10 which may be permitted by the administering authority.

END OF CONDITIONS FOR SCHEDULE B

### **Schedule C – Water**

#### **Erosion Protection Measures and Sediment Controls**

- (C1) All reasonable and practicable erosion protection measures and sediment control measures to be implemented and maintained to minimise erosion and the release of sediment. Reasonable and practicable measures are outlined in “*Soil and Erosion Control. Engineering Guidelines for Queensland Construction Sites*”, June 1996 published by the Institution of Engineers, Australia, Queensland Division.
- (C2) Erosion control and sediment control structures must be maintained at all times during the periods of site clearing, construction, plant operation, decommissioning and any necessary rehabilitation. They must be checked, repaired or replaced as required after each rain event.

**Release to Waters**

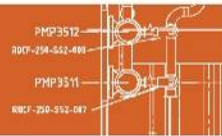
- (C3) Settled/treated stormwater runoff waters must only be released in compliance with the release limits listed in Schedule C Table 1 - Contaminant release limits to water, from the following discharge locations:  
Discharge Location “**RWP**” - namely release of treated stormwater from all railway activities, (*details of location(s) to be provided*).

**Schedule C Table 1 - Contaminant release limits**

Water Quality Characteristics	Release Point	Discharge Limit	Limit Type	Frequency
Dissolved Oxygen (mg/L)	RWP	2mg/L	Minimum	Weekly, if overflow, else monthly*
Suspended Solids (mg/L)	RWP	50	Maximum	Weekly, if overflow, else monthly*
pH	RWP	6.5 - 8.5	Range	Weekly, if overflow, else monthly*
Oil and Grease (mg/L)	RWP	10 mg/L	Maximum	Weekly, if overflow, else monthly*

Note: \* Means monitoring release RWP weekly during any overflow events. In the period when the sedimentation dam is not discharging, monthly monitoring must be undertaken of the final pond of sedimentation dam opposite the spillway.

- (C5) The release of contaminants to waters also must not:
  - (a) Produce any slick, discoloration of ambient waters or visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other objectionable matter.
  - (b) Have any other properties nor contain any other contaminants in concentrations that are likely to cause environmental harm.



- (C6) The size of any sedimentation dams must be sufficient to contain the run-off expected from a 24-hour storm with an average recurrence interval of 1 in 5 years.
- (C7) Contaminants other than settled/treated stormwater runoff must not be released from the site to surface waters or the bed or banks of surface waters.

### **Stormwater Management Plan**

- (C8) A stormwater management plan must be prepared for the site and implemented from the start of construction activities.

### **Spillage Control**

- (C9) Any spillage of wastes, contaminants or other materials must be cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such wastes, contaminants or material to any external storm water drainage system, roadside gutter or waters.

END OF CONDITIONS FOR SCHEDULE C

## **Schedule D – Land**

### **Preventing Contaminant Release to Land or Waters**

- (D1) There must be no release or likelihood of release of any contaminants to land.
- (D2) All chemicals and fuels, including any spillage thereof, must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.
- (D3) All containment systems must be designed to minimise rainfall collection therein to the greatest extent practicable.
- (D4) Prior to any release, any stormwater captured within the containment system must be free from contaminants or wastes that may cause environmental harm.

END OF CONDITIONS FOR SCHEDULE D

## **Schedule E – Noise**

### **Noise Nuisance (Construction phase activities)**

- (E1) Noise from activities must not cause an environmental nuisance at any noise sensitive place or commercial place

### **Noise Monitoring**

- (E2) In the event of a noise complaint, the holder will:

- In the first instance alter procedures to reduce the nuisance issue.
- Liaise with the administering authority and/or complainant over remedial action.

Where the above actions do not resolve the noise issue and when requested by the administering authority, noise monitoring will be undertaken to investigate any complaint of environmental nuisance caused by noise, and the results notified within 7 days to the administering authority. Monitoring must include:

- (a) LA<sub>max</sub>, adj T.
  - (b) LAN, T (where N equals statistical levels of 1, 10, and 90).
  - (c) The level and frequency of occurrence of impulsive or tonal noise.
  - (d) Atmospheric conditions including temperature, relative humidity and wind speed and direction.
  - (e) Effects due to extraneous factors such as traffic noise.
- (E3) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

## END OF CONDITIONS FOR SCHEDULE E

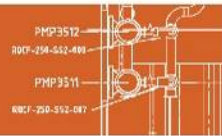
### **Schedule F – Waste**

#### **General**

- (F1) A waste management plan for the activities must be prepared for the site and implemented from the start of the activities.
- (F2) The holder must not:
- (a) Burn waste at or on the licensed place.
  - (b) Allow waste to burn or be burnt at or on the licensed place.
  - (c) Remove waste from the licensed place and burn such waste elsewhere.
- (F3) Cementitious waste in solution, slurry or liquid form, or water affected thereby (stormwater or washing water), shall be contained in a pit or receptacle whereby it cannot be released to any waters.
- (F4) Any cementitious waste in solution, slurry or liquid form shall be disposed of at a waste disposal facility licensed under the Environmental Protection Act 1994 for disposal of that waste or reused in the process.

#### **Waste Handling**

- (F5) Waste generated in the carrying out the activities must be stored, handled and transferred in a proper and efficient manner. Waste must not be released to the environment, stored, transferred or disposed contrary to any condition of this development approval.



- (F6) Regulated waste, if removed from the site, must only be reprocessed, recycled, stored, incinerated or disposed at a licensed regulated waste facility.

### **Notification of Improper Disposal of Regulated Waste**

- (F7) If the holder of this development approval becomes aware that a person has removed regulated waste from the licensed place and disposed of the regulated waste in a manner which is not authorised by this development approval or improper or unlawful, then the holder of this development approval must, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

## **END OF CONDITIONS FOR SCHEDULE F**

### **Schedule G – Monitoring**

#### **Complaint Response**

- (G1) All complaints received must be recorded including details of complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. Except in cases where the complaint is considered to be a matter for which the holder is in compliance, is frivolous, vexatious, based on a mistaken belief or not relevant to the ERAs, the holder must act as soon as practicable to investigate the cause and resolve the complaint.

#### **Notification of Emergencies and Incidents**

- (G2) As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants or mismanagement of waste not in accordance, or reasonably expected to be not in accordance with the conditions of this authority, the holder must notify the administering authority of the release by telephone, facsimile or electronic mail.
- (G2) The notification of emergencies or incidents must include but not be limited to the following:
- (a) The holder of the development approval.
  - (b) The location of the emergency or incident.
  - (c) The number of the development approval.
  - (d) The name and telephone number of the designated contact person.
  - (e) The time of the release/mismanagement incident.
  - (f) The time the holder became aware of the release/mismanagement incident.
  - (g) The suspected cause of the release/mismanagement incident.
  - (h) The environmental harm caused, threatened, or suspected to be caused by the release/mismanagement incident.

- (i) Actions taken to prevent further any release and mitigate any environmental harm caused by the release/mismanagement incident.

Note: Any relevant notification given under Section 320 or Section 350 of the Act that includes the information required by this condition is also an emergency/incident notification under this authority.

- (G3) Not more than fourteen (14) days following the initial notification of an emergency or incident, the holder of this authority must provide written advice of the information previously supplied (unless already supplied in writing) and, in addition, the following:
  - (a) Proposed actions to prevent a recurrence of the emergency or incident.
  - (b) Outcomes of actions taken at the time to prevent or minimise environmental harm and or environmental nuisance.

### **Exception Reporting**

- (G4) The holder of this development approval must notify the administering authority within twenty eight (28) days of completion of analysis of any result of a monitoring program required by a condition of this environmental authority that indicates an exceedance of any limit specified in this approval.
- (G5) The written notification must include:
  - (a) The full analysis results.
  - (b) Details of investigation or corrective actions taken.
  - (c) Any subsequent analysis.

Note: Any relevant notification given under Section 320 or Section 350 of the Act that contains the information specified in this condition is also an exception reporting notification under this authority.

### **Annual Return**

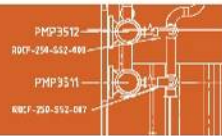
- (G6) The holder must ensure that the results of all monitoring performed in accordance with this development approval for the period covered by the Annual Return applicable to the activities is summarised and made available to the administering authority on request.

## **END OF CONDITIONS FOR SCHEDULE G**

### **Schedule H – Definitions**

Words and phrases used throughout this development approval are defined below. Where a definition for a term used in this development approval is sought and the term is not defined within this development approval the definitions provided in the Environmental Protection Act 1994, its regulations, and Environmental Protection Policies shall be used. Where a word or term is not defined, the ordinary English meaning applies, and regard should be given to the Macquarie Dictionary.

**"administering authority"** means the Environmental Protection Agency or its successor.



**"approval"** means a development approval issued under the Integrated Planning Act 1997

**"authorised place"** means the place authorised under this development approval for the carrying out of the specified environmentally relevant activities.

**"background noise level"** means LA90, T, being the A-weighted sound pressure level exceeded for 90 percent of the time period measured in the absence of the noise under investigation during a representative time period of not less than 15 minutes, using Fast response.

**"commercial place"** means a place used as an office or for business or commercial purposes.

**"competent person"** means a person or body possessing demonstrated experience and qualifications to perform these tasks.

**"dust sensitive place"** means:

- A dwelling, mobile home or caravan park, residential marina or other residential place.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- A protected area.
- A park or gardens.
- A place used as an office or for business or commercial purposes.
- And includes the curtilage of any such place.

**"dwelling"** means any of the following structures or vehicles that is principally used as a residence:

- A house, unit, motel, nursing home or other building or part of a building.
- A caravan, mobile home or other vehicle or structure on land.
- A water craft in a marina.

**"intrusive noise"** means noise that, because of its frequency, duration, level, tonal characteristics, impulsiveness or vibration: is clearly audible to, or can be felt by, an individual; and annoys the individual. In determining whether a noise annoys an individual and is unreasonably intrusive, regard must be given to Australian Standard 1055.2 - 1997 Acoustics - Description and Measurement of Environmental Noise Part 2 - Application to Specific Situations.

**"LA 90,T"** means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 90% of any 15 minute measurement period, using Fast response.

**"LA 10,T"** means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 15 minute measurement period, using Fast response.



"**LA 1,T**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 15 minute measurement period, using Fast response.

"**LA 10, adj, T**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10 minute measurement period, using Fast response.

"**LA 1, adj, 10 mins**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10 minute measurement period, using Fast response

"**LA, max adj, T**" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response. Where approximately equivalent as described in the EPA noise measurement manual, the descriptor "LA 10, adj, T" may be utilised instead.

"**land**" in the "land schedule" of this document means land excluding waters and the atmosphere.

"**licensed regulated waste facility**" means, if in Queensland, a relevant facility with lawful authority under the *Environmental Protection Act 1994* and *Integrated Planning Act 1997*:

- To receive and dispose of the regulated waste.
- To receive and recycle or reprocess or recondition regulated waste.
- As a transfer station that can receive such waste.
- To receive and store the regulated waste.
- To receive and treat the regulated waste.
- To receive and compost the regulated waste.
- To receive and incinerate the regulated waste.
- If outside Queensland, a similar place that can lawfully accept and deal with the waste.

"**maximum**" means that the measured value of the quality characteristic or contaminant must not be greater than the release limit stated.

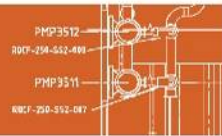
"**median**" means the middle value, where half the data are smaller, and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two middle values.

"**minimum**" means that the measured value of the quality characteristic or contaminant must not be less than the release limit stated.

"**noise affected premises**" means a "noise sensitive place" or a "commercial place".

"**Noise Measurement Manual**" means the following document or more recent additions or supplements to that document as such become available: Environmental Protection Agency. (2000). Noise Measurement Manual Third Edition, Environmental Protection Agency, Brisbane, Australia.

"**noxious**" means harmful or injurious to health or physical well-being.



**"nuisance sensitive place"** includes:

- A dwelling, residential allotment, mobile home or caravan park, residential marina or other.
- Residential premises.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- A protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area.
- A public thoroughfare, park or gardens.
- A place used as a workplace, an office or for business or commercial purposes.
- And includes a place within the curtilage of such a place reasonably used by persons at that place.

**"noise sensitive place"** means:

- A dwelling, mobile home, caravan park, residential marina or other residential premises.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- A protected area.
- A park or gardens.
- And includes the curtilage of such place.

**"odour sensitive place"** has the same meaning as a "dust sensitive place"

**"offensive"** means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.

**"protected area"** means: a protected area under the Nature Conservation Act 1992; or a marine park under the Marine Parks Act 1992; or a World Heritage Area.

**"range"** means that the measured value of the quality characteristic or contaminant must not be greater than the higher release limit stated nor lower than the lower release limit stated.

**"regulated waste"** means non-domestic waste mentioned in Schedule 7 of the Environmental Protection Regulation 1998 (whether or not it has been treated or immobilised), and includes: for an element - any chemical compound containing the element; and anything that has contained the waste.

**"site"** means the place to which this environmental authority relates or the premises to which this development approval relates.

**"this authority"** means this development approval.

**"waters"** includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and

bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and any under groundwater, any part thereof.

**"Water Quality Sampling Manual"** means the following document or more recent additions or supplements to that document as such become available: Environmental Protection Agency. (1999). *Water Quality Sampling Manual Third Edition*, Environmental Protection Agency, Brisbane, Australia.

**"you"** means the holder of this Development Approval and owner / occupier of the land which is the subject of this Development Approval and includes any person acting under the Development Approval.

END OF DEFINITIONS FOR SCHEDULE H

**END OF PART 1**

## Part Two

### Project Description

Construction and operation of the rail dump stations, coal terminal and port facilities associated with the Wiggins Island Coal Terminal, Gladstone.

### Property Description

Shiploading and associated support facilities to occupy sections of Lot 28, Lot 98, Lot 99 and Lot 100 on CTN279. Product stockpiles and stacker/reclaimer and the proposed berths for loading of coal product are to abut Lot 98 on CTN279. An overland conveyor system runs along the western side of Calliope River anabranch from the rail loop and rail dump stations which occupy sections of Lots 1 and 2 on SP163783.

### Reason for Including Conditions

There are potential impacts on the land, surface and ground waters, air environment and ecological systems from contaminants and environmental harm that may result from the environmentally relevant activities. The conditions are designed to control and limit the release of contaminants and the potential for environmental harm. They are consistent with the information provided in the project EIS and the Supplementary EIS.

These conditions do not remove the need for the Proponent(s) to obtain approvals that may be required under other legislation administered by the Environmental Protection Agency. Approvals or permits for specific activities will be required under the *Environmental Protection Act 1994*, *Nature Conservation Act 1992*, and *Coastal Protection and Management Act 1995*.

### Conditions for Construction and Operation of the Rail Dump Stations, Coal Terminal and Port Facilities associated with the Wiggins Island Coal Terminal, Gladstone.

The conditions establish the environmental requirements that apply to the conduct of Environmentally Relevant Activities in the construction, commissioning and operation phases of facilities associated with the Wiggins Island Coal Terminal. The conditions apply to all locations of this phase of the project.

This development approval is for carrying out the following environmentally relevant activities (ERAs) under the *Environmental Protection Regulation 1998*.

ERA	Description
<b>7(b)</b>	<b>Chemical storage</b> - Storing chemicals (other than crude oil, natural gas and petroleum products), including ozone depleting substances, gases or dangerous goods under the dangerous goods code in containers having a design storage volume of 1000 cubic metres or more.
<b>11(b)</b>	<b>Crude oil or petroleum product storing</b> - Storing crude oil or a petroleum product in tanks or containers having a combined total storage capacity of

	500 000 litres or more.
<b>15(b)</b>	<b>Sewage treatment</b> – Operating a standard sewage treatment works having a peak design capacity to treat sewage of 100 or more equivalent persons but less than 1500 equivalent persons.
<b>20(c)</b>	<b>Extracting rock or other material</b> - Extracting rock (other than rock mined in block or slab form for building purposes), sand (other than foundry sand), clay (other than clay used for its ceramic properties, kaolin or bentonite), gravel, loam or other material (other than gravel, loam or other material under a mining authority) from a pit or quarry using plant or equipment having a design capacity of 100 000 t or more per year.
<b>22(c)</b>	<b>Screening etc. materials</b> - Screening, washing, crushing, grinding, milling, sizing or separating material extracted from the earth (other than under a mining authority) or by dredging using plant or equipment having a design capacity of more than 100 000 t or more per year
<b>23(a)</b>	<b>Abrasive blasting</b> – Commercially cleaning equipment or structures using a stream of abrasives if the activity is carried out at a permanent location.
<b>28</b>	<b>Motor Vehicle workshop</b> – Operating a workshop or mobile workshop in the course of which motor vehicle mechanical or panel repairs are carried out in the course of a commercial or municipal enterprise (other than a farm or under a mining tenement) or on a commercial basis.
<b>62</b>	<b>Concrete batching</b> – Producing concrete or a concrete product by mixing cement, sand, rock, aggregate or other similar materials in works (including mobile works) having a design production capacity of more than 100 tonnes per day.
<b>71</b>	<b>Port</b> - Operating a port (other than an airport) under the <i>Transport Infrastructure Act 1994</i> .
<b>74</b>	<b>Stockpiling, loading or unloading goods in bulk</b> - Commercially loading, unloading or stockpiling materials or goods, in association with an activity mentioned in item 71, using a crane, conveyor, pump or other similar way at a rate of more than 100 t per day.

at place(s) described as:

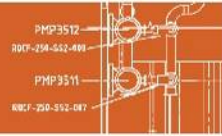
Lot 28 on CTN 279,  
 Lot 98 on CTN 279,  
 Lot 99 on CTN 279,  
 Lot 100 on CTN 279.

located at:

Wiggins Island, Gladstone, Queensland, 4680. (A map is to be provided with the application.)

and

<b>74</b>	<b>Stockpiling, loading or unloading goods in bulk</b> - Commercially loading,
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unloading or stockpiling materials or goods, in association with an activity mentioned in item 71, using a crane, conveyor, pump or other similar way at a rate of more than 100 t per day.
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at place(s) described as:

Lots 1 and 2 on SP163783,

located at:

Rail loop and dump stations.

### **Schedule of Conditions**

The aforementioned description of the environmentally relevant activities (ERAs) for which this authority is issued is simply a restatement of the activity as prescribed in the legislation at the time of issuing this authority. Where there is any conflict between the above description of the ERA for which this development approval is issued and the conditions as specified in this development approval as to the scale, intensity or manner of carrying out of the ERAs, then such conditions prevail to the extent of the inconsistency.

This development approval incorporates the following schedules of conditions relevant to various issues:

Schedule A - General conditions

Schedule B - Air

Schedule C - Water

Schedule D - Land

Schedule E - Noise

Schedule F - Waste

Schedule G - Monitoring

Schedule H – Definitions

Schedule I – Maps (to be provided with application)

1. Map of Area to which Wiggins Island Coal Terminal Development Approval relates.
2. Map of continuous dust monitoring sites
3. Map of dust deposition gauge monitoring sites
4. Map of water discharge points.

### **Schedule A – General Conditions**

#### **Prevent and /or Minimise Likelihood of Environmental Harm**

(A1) In carrying out the activities authorised by this development approval, the holder of this approval must take all reasonable and practicable measures to prevent and/or to minimise environmental harm. Any environmentally relevant activity must be carried out in a way that does not cause environmental harm.

NOTE: This development approval does not authorise environmental harm unless a condition contained within this development approval explicitly authorises that harm. Where there is no condition or the development

approval is silent on a matter, the lack of a condition or silence must not be construed as authorising environmental harm.

### **Maintenance of measures, plant and equipment**

- (A2) The holder of this approval must:
- (a) Install all measures, plant and equipment necessary to ensure compliance with the conditions of this development approval.
  - (b) Maintain such measures, plant and equipment in a proper and efficient operating condition.
  - (c) Operate such measures, plant and equipment in a competent and efficient manner.

### **Records**

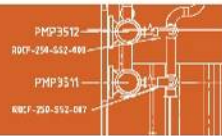
- (A3) The holder of this development approval must record, compile and keep the results of all monitoring results required by this approval and provide that information in a form specified by the administering authority, when required by the administering authority.

### **Site Based Management Plan**

- (A4) From commencement of activities authorised by this development approval, the holder of this approval must implement a site based management plan (SBMP). The SBMP must identify all sources of actual or potential environmental harm, including but not limited to the actual and potential release of all contaminants, the potential impact of these sources and the actions that must be taken to prevent the likelihood of environmental harm being caused. The SBMP must also provide for its regular review and 'continuous improvement' in the environmental performance of the activities that are carried out on the site.

The SBMP must address the following matters:

- (a) Identification of environmental issues and potential impacts.
- (b) Environmental commitments - a commitment by the holder of this approval to achieve specified and relevant environmental goals.
- (c) Control measures for routine operations to prevent or minimise environmental harm.
- (d) Contingency plans and emergency procedures for non-routine situations to prevent or minimise environmental harm.
- (e) Organisational structure showing how responsibility for environmental management is accounted for in the organisation.
- (f) An effective communication system for environmental management goals, control measures and contingency plans.
- (g) The regular and emergency monitoring of contaminant releases.
- (h) The conduct of environmental impact assessments for activities conducted on site.
- (i) Staff training in environmental management policies and practices;
- (j) Record keeping.
- (k) Periodic review of environmental performance and continuous improvement in practices.



- (A5) The site-based management plan must not be implemented or amended in a way that contravenes or is inconsistent with any condition of this approval.

### **Third Party Environmental Auditing**

- (A6) Compliance with the conditions of this development approval and with the requirements of the site based management plan required in (A4) must be independently audited within three (3) months of commencement of the activities authorised by this development approval and annually thereafter.
- (A7) The audit(s) required by condition (A6) must be conducted by a suitably qualified third party auditor, nominated in writing by the holder of the development approval and accepted by the administering authority.
- (A8) For the audit(s) required by condition (A6) the holder of this development approval must ensure that the auditor submits a final auditor's report directly to the administering authority within 28 days of completing the audit.

### **Monitoring**

- (A9) A competent person(s) must conduct any monitoring required by this development approval.

### **Equipment Calibration**

- (A10) All instruments, equipment and measuring devices used for measuring or monitoring conducted in compliance with the conditions of this development approval must be regularly calibrated, and appropriately operated and maintained.

### **Scope of Activities**

- (A11) The scale of the activities authorised by this development approval in respect of unloading and loading coal to ships is up to 84 million tonnes per annum.
- (A12) Throughput tonnages for the six month periods (July to December and January to June) are to be reported to the administering authority, in writing within one month of the completion of that period.

### **Acid sulfate soils**

- (A13) Acid sulfate soils must be managed such that contaminants are not directly or indirectly released, as a result of the activities, to any waters or the bed and banks of any waters.

END OF CONDITIONS FOR SCHEDULE A

## **Schedule B – Air**

### **Nuisance**

- (B1) The release of noxious or offensive odours or any other noxious or offensive airborne contaminants resulting from the ERA(s) must not cause an environmental nuisance at a nuisance sensitive place.



- (B2) The release of dust and/or particulate matter resulting from the activities authorised by this development approval must not cause an environmental nuisance at a nuisance sensitive place.

### **Dust Control**

- (B3) The holder of this development approval must install barriers and equipment and implement operational procedures for the minimisation and abatement of dust generated from the carrying out of the activities authorised by the approval. The operational procedures must provide for:
  - (a) Control of dust from stockpiles.
  - (b) Control of dust generated at hoppers, conveyors, transfer points, wharves and loading/unloading equipment.
  - (c) Induction training of all relevant new employees (and retraining every two years) in the methods to be applied and accountability for controlling dust emissions.
- (B4) Water sprays and/or mist curtains must be installed at all stockpiles and train unloading facilities and operated as necessary to prevent or minimise the release of dust and particulate matter to the atmosphere.
- (B5) All sealed traffic areas must be cleaned as necessary to prevent or minimise the release of dust and particulate matter to the atmosphere.
- (B6) Watering of unsealed roads must be carried out so as to prevent or minimise the release of dust and particulate matter to the atmosphere.

### **Environmental barriers**

- (B7) Vegetated barriers are to be established at sufficient height and width to provide a wind break and visual screening along the boundary(s) between stockpiles and nuisance sensitive places.

### **Materials Handling**

- (B8) Dust Extinction Moisture (DEM) levels must be identified and recorded for all types of coal being handled at the terminal using Australian Standard AS 4156.6:2000, Coal preparation Part 6: *Determination of dust/moisture relationship for coal*, or more recent versions.
- (B9) All coal, stockpiled, loaded and unloaded must be maintained at or above its DEM level from the time it leaves the train unloading area until loaded on the outgoing conveyor.
- (B10) To ensure compliance with condition (B9), the holder of this development approval must use real time monitors to determine moisture content at rail unloading area to ensure coal is deposited onto stockpiles at or above their respective DEMs. Real time monitors must be operational for a minimum of 85% of the time in any year.
- (B11) Visible coal dust events, where dust moves beyond the immediate site boundaries, must be reported to the administering authority within 24 hours, including a description of:
  - (a) The time and duration of the event.

- (b) The dust source.
  - (c) The activities occurring at the time.
  - (d) The type(s) of coal(s) being handled.
  - (e) Wind speed and direction.
  - (f) The measured dust levels at the time.
  - (g) The remedial action taken.
- (B12) All buildings, wharves, conveyors and transfer points are to be designed, constructed and operated so as to prevent or minimise the generation or release of dust to air.

### Dust Management Objectives

- (B13) Dust must not exceed the following levels:

#### Dust Deposition.

- Less than four (4) grams total insoluble solids per square metre per month at site boundaries nearest the closest nuisance sensitive place.
- Less than two (2) grams coal per square metre per month at site boundaries nearest the closest nuisance sensitive place.
- Less than three (3) grams total insoluble solids per square metre per month (total) at any nuisance sensitive place.
- Less than one (1) gram coal per square metre per month at any nuisance sensitive place.

#### Total Suspended Particulates (TSP)

- Less than 50 micrograms per cubic metre above background, expressed as a 24 hour rolling average;
- Less than 100 micrograms per cubic metre above background, expressed as a one hour rolling average.

NOTE: 'Above background' means the arithmetic difference between most upwind and most downwind monitoring points, as depicted in Map 2.

#### PM10 Particulates

- Less than 150 micrograms per cubic metre expressed as a 24-hour rolling average at the site boundary.
- Less than 50 micrograms per cubic metre expressed as an annual rolling average at the site boundary.

NOTE: In respect of the PM10 (24 hour rolling average) objective, the holder of this development approval is not in breach of this limit if it can be shown that other site(s), not impacted by activities to which this development approval relates, is also in exceedence of this (24 hour) limit.

### Dust Monitoring

- (B14) The holder of this development approval must conduct a dust monitoring program at site boundaries at the specified locations, frequency and for the parameters specified in Schedule B, Table 1.

- (B15) The determination of the chemical and physical composition of dust must be performed by a person or body possessing appropriate qualifications and experience to perform the required measurements.
- (B16) Monitoring undertaken at the locations listed in Schedule B, Table 1 must comply with:
- (i) For **dust deposition**, Australian Standard AS 3580.10.1:2003 *Determination of particulate matter - Deposited matter - Gravimetric method*.
  - (ii) For **Total Suspended Particulate**, Australian Standard AS 3580.9.3:2003 *Method for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) High volume sampler gravimetric method*; or any alternative method of monitoring TSP which may be permitted by the administering authority.
  - (iii) For health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre ( $\mu\text{m}$ ) (**PM10**), suspended in the atmosphere over a 24hr averaging time when measured using Australian Standard 3580.9.8:2001 *Method 9.8: Determination of suspended particulate matter-PM10 continuous direct mass method using a tapered element oscillating microbalance analyser*; or any alternative method of monitoring PM10 which may be permitted by the administering authority.

**Schedule B, Table 1**

Determination Required	Monitoring Location	Frequency
1. Mass deposition rate of insoluble solids 2. Mass deposition rate of ash 3. Mass deposition rate of total solids 4. Combustible matter 5. Compositional analysis (%)+ 6. Particle identification +	Points 1, 2, 3, 4,... (to be specified on Map 3, Schedule I to be provided with the application)	Monthly
1. Mass deposition rate of insoluble solids 2. Mass deposition rate of ash 3. Mass deposition rate of total solids 4. Combustible matter 5. Compositional analysis (%)+ 6. Particle identification +	At Complainant's residential premises	When requested by EPA
Total suspended particulate matter (TSP)	(to be specified) Points 1, 2, 3, 4,...	Continually (instrument availability not less than 85%)

PM10	(to be specified) Points 1, 2, 3, 4,...	Continually (instrument availability not less than 85%)
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+ denotes when dust levels are exceeded.

Note: The number, type and location of all dust monitoring equipment must be developed in consultation with the EPA.

- (B17) The holder of this development approval must submit a report to the EPA every six (6) months on the results of dust monitoring in a format requested by the administering authority, and remedial actions taken to prevent or minimise any dust emissions.

### Nuisance Dust Complaints

- (B18) In the event of a dust complaint, the holder will:
- In the first instance alter procedures to reduce the nuisance issue.
  - Liaise with the administering authority and/or complainant over remedial action.

Where the above actions do not resolve the dust issue and when requested by the administering authority, dust monitoring must be undertaken to investigate any complaint of environmental nuisance caused by dust, and the data and analysed results notified to the administering authority within 28 days of completion of the monitoring. Monitoring must be carried out at a place(s) relevant to the potentially affected nuisance sensitive place and at upwind control sites and must include:

- (i) For **dust deposition**, Australian Standard AS 3580, 10.1, 2003 *Determination of Particulates - Deposited Matter - Gravimetric Method.*
- (ii) For **Total Suspended Particulate**, Australian Standard AS 3580.9.3:2003 *Method for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) High volume sampler gravimetric method;* or any alternative method of monitoring TSP which may be permitted by the administering authority.
- (iii) For health effects caused by dust, the concentration per cubic metre of particulate matter with an aerodynamic diameter of less than 10 micrometre ( $\mu\text{m}$ ) (**PM10**), suspended in the atmosphere over a 24hr averaging time when measured using Australian Standard 3580.9.8:2001 *Method 9.8: Determination of suspended particulate matter-PM10 continuous direct mass method using a tapered element oscillating microbalance analyser;* or any alternative method of monitoring PM10 which may be permitted by the administering authority.

- (B19) If monitoring at a nuisance sensitive place indicates Condition (B13) is not being complied with then the environmental authority holder must immediately implement dust abatement measures so that emissions of dust from the activity do not result in further environmental nuisance.

### **Abrasive Blasting**

- (B20) The holder of this development approval must develop and implement an Abrasive Blasting Management Plan (ABMP) in consultation with the administering authority before the commencement of any abrasive blasting.

## END OF CONDITIONS FOR SCHEDULE B

### **Schedule C – Water**

#### **Release to Waters**

- (C1) Stormwater runoff from the site discharged to waters must be monitored at the frequencies, and be in compliance with the discharge limits, listed in Schedule C Table 1 - Contaminant release limits to water, and only released from the following discharge locations:

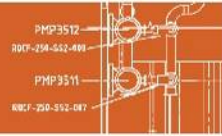
Discharge Location “**WICTP1**” - namely release of treated stormwater from Final Treatment Pond to Port Curtis (details of location(s) to be provided).

#### **Schedule C - Table 1 Contaminant release limits to water**

<b>Water Quality Characteristics</b>	<b>Discharge Location</b>	<b>Discharge Limit</b>	<b>Limit Type</b>	<b>Frequency</b>
Dissolved Oxygen (mg/L)	WICTP1	2.0	Minimum	Daily, upon discharge, else monthly*
Suspended Solids (mg/L)	WICTP1	40	Maximum	Daily, upon discharge, else quarterly*
pH	WICTP1	6.5 - 8.5	Range	Daily, upon discharge, else monthly*
Oil and Grease (mg/L)	WICTP1	10	Maximum	Daily, upon discharge, else quarterly*

Note: \* Means monitoring release point, WICTP1 daily during any overflow events. See Map4. In the periods when not discharging, monthly monitoring must be undertaken of the final sedimentation pond near the spillway.

- (C2) The release of contaminants to waters must not:



- (a) Produce any slick, discoloration of ambient waters or visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other objectionable matter.
  - (b) Have any other properties nor contain any other contaminants in concentrations that are likely to cause environmental harm.
- (C3) Prior to any release, any storm water captured within the containment system must be free from contaminants or wastes that may cause environmental harm.

### **Sewage Effluent**

- (C4) There must be no release of treated sewage effluent to waters.

### **Stormwater Management Plan**

- (C5) A stormwater management plan must be prepared and implemented for the site. The Stormwater Management Plan must address at least the following:
- Prevention of incident storm water and storm water run-off from contacting wastes or contaminants.
  - Diversion of upstream run-off away from areas where it may be contaminated by bulk products being loaded or unloaded, wastes, contaminants or other materials.
  - Collection, treatment and disposal of all contaminated storm water run-off.

### **Spillage Control**

- (C6) The spillage of bulk products being loaded or unloaded, wastes, contaminants or other materials must be cleaned up as quickly as practicable. Such spillage must not be cleaned up by hosing, sweeping or otherwise releasing such wastes, contaminants or material to any external storm water drainage system, roadside gutter or waters.

### **Monitoring of Waters**

- (C7) The holder of this environmental approval must develop an ambient water monitoring program in consultation with the administering authority and them implement the program. The ambient water monitoring program must address, as a minimum, water chemistry and biology for all of the waters impacted by port activities, and report on the data and analysed results of the monitoring program annually.

END OF CONDITIONS FOR SCHEDULE C

## **Schedule D – Land**

### **Preventing Contaminant Release to Land**

- (D1) From commencement of activities authorised by this development approval, the holder of this approval must prepare and implement an effluent irrigation

management plan that details how effluent from the sewage treatment plant(s) will be disposed of to land, and addressing the following:

- Defining the effluent irrigation area.
- The efficient application of effluent to land utilising best practice methods.
- The control of salinity and sodicity in any receiving soils.
- The minimisation of soil structure degradation.
- The control of nutrient and heavy metal build up in both soils and subsoil from effluent and other sources.
- The prevention of subterranean flows of effluent to waters.
- The prevention of effluent run-off from receiving soils by limiting application rates and/or the use of tail-water dams.
- The prevention and / or minimisation of spray-drift or overspray from effluent disposal areas.
- The prevention and / or minimisation of damage to native vegetation.
- The maximisation of health and safety protection in relation to effluent handling and irrigation.

(D2) Treated sewage effluent may only be released to land in accordance with the effluent irrigation management plan developed in accordance with condition (D1) above.

(D3) All chemicals and fuels, including any spillage thereof, must be contained within an on-site containment system and controlled in a manner that prevents environmental harm.

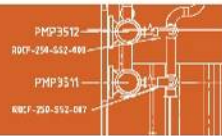
#### **Land rehabilitation**

(D4) Vacant port-controlled land must be rehabilitated and maintained in a manner such that:

- Suitable species of vegetation, preferably native are planted and established.
- Potential for erosion of the site is minimised.
- the quality of stormwater, water and seepage released from the site is such that releases of contaminants do not cause environmental harm.
- The likelihood of environmental nuisance being caused by release of dust is minimised.
- The water quality of any residual water bodies meets criteria for subsequent uses and does not have potential to cause environmental harm.
- The final landform is stable and not subject to slumping.
- Any actual and potential acid sulfate soils in or on the site are either not disturbed; or, submerged, or treated so as to not cause environmental harm.

(D5) Rehabilitation of disturbed areas must take place progressively as works are staged and new work areas are commenced.

**END OF CONDITIONS FOR SCHEDULE D**



## Schedule E – Noise

### Noise Nuisance

- (E1) Noise from activities must not cause a nuisance at any nuisance sensitive place.

### Noise Monitoring

- (E2) In the event of a complaint, the holder must:
- In the first instance change procedures to reduce the noise that is the cause of the nuisance complaint.
  - Liaise with the administering authority and/or complainant over remedial action.

Where the above actions do not resolve the noise issue and when requested by the administering authority, noise monitoring must be undertaken to investigate any complaint of environmental nuisance, and the data and analysed results notified to the administering authority within 7 days of completing the monitoring. Monitoring must include:

- (a) LA<sub>max</sub>, adj T.
  - (b) LAN, T (where N equals statistical levels of 1, 10, and 90).
  - (c) The level and frequency of occurrence of impulsive or tonal noise.
  - (d) Atmospheric conditions including temperature, relative humidity and wind speed and direction.
  - (e) Effects due to extraneous factors such as traffic noise.
- (E3) The method of measurement and reporting of noise levels must comply with the latest edition of the Environmental Protection Agency's Noise Measurement Manual.

END OF CONDITIONS FOR SCHEDULE E

## Schedule F – Waste

### General

- (F1) From the commencement of activities authorised by this development approval, the holder of this development approval must implement a waste management plan for the activities authorised by this development approval.
- (F2) The holder of this environmental authority must comply with the “*Best Practice Guidelines for Waste Reception Facilities at Ports, Marinas and Boat Harbours in Australia and New Zealand*”, (ANZECC, 1997) or more recent versions.

### Waste Handling

- (F3) Waste generated in the carrying out the activities must be stored, handled and transferred in a proper manner. Waste must not be released to the



environment, stored, transferred or disposed contrary to any condition of this development approval.

- (F4) Regulated waste, if removed from the site, must only be reprocessed, recycled, stored, incinerated or disposed at a licensed regulated waste facility.
- (F5) Records of any trade waste agreements must be kept and made available to the administering authority for inspection on request.

#### **Notification of Improper Disposal of Regulated Waste**

- (F6) If the holder of this development approval becomes aware that a person has removed regulated waste from the licensed place and disposed of the regulated waste in a manner which is not authorised by this development approval, or is improper or is unlawful, then the holder of this development approval must, as soon as practicable, notify the administering authority of all relevant facts, matters and circumstances known concerning the disposal.

### **END OF CONDITIONS FOR SCHEDULE F**

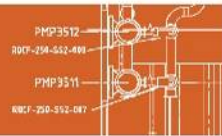
#### **Schedule G – Monitoring**

##### **Complaint Response**

- (G1) All complaints received must be recorded including details of the complainant, reasons for the complaint, investigations undertaken, conclusions formed and actions taken. Except in cases where the complaint is considered to be a matter for which the holder is in compliance, is frivolous, vexatious, based on a mistaken belief or not relevant to the ERAs, the holder must act as soon as practicable to investigate the cause and resolve the complaint.

##### **Notification of Emergencies and Incidents**

- (G2) As soon as practicable after becoming aware of any emergency or incident which results in the release of contaminants to the environment or the management of waste not in accordance, or reasonably expected to be not in accordance with the conditions of this development approval, the holder must notify the administering authority of the release by telephone, facsimile or electronic mail.
- (G3) The notification of emergencies or incidents must include but not be limited to the following:
  - (a) The holder of the development approval.
  - (b) The location of the emergency or incident.
  - (c) The number of the development approval.
  - (d) The name and telephone number of the designated contact person.
  - (e) The time of the release/mismanagement incident.
  - (f) The time the holder became aware of the release/mismanagement incident.
  - (g) The suspected cause of the release/mismanagement incident.



- (h) The environmental harm caused, threatened, or suspected to be caused by the release/mismanagement incident.
- (i) Actions taken to prevent further any release and mitigate any environmental harm caused by the release/mismanagement incident.

Note: Any relevant notification given under Section 320 or Section 350 of the *Environmental Protection Act 1994* that includes the information required by this condition is also an emergency/incident notification under this development approval.

- (G4) Not more than fourteen (14) days following the initial notification of an emergency or incident, the holder of this development approval must provide written advice of the information previously supplied (unless already supplied in writing) and, in addition, the following:
  - (a) Proposed actions to prevent a recurrence of the emergency or incident.
  - (b) A detailed report on the outcomes of actions taken at the time to prevent or minimise environmental harm and or environmental nuisance.

### Exception Reporting

- (G5) The holder of this development approval must notify the administering authority within seven (7) days of completion of analysis of any result of a monitoring program required by a condition of this development approval that indicates an exceedance of any limit specified in this development approval.
- (G6) The written notification must include:
  - (a) The full analysis results.
  - (b) Details of investigation or corrective actions taken.
  - (c) Any subsequent analysis.

Note: Any relevant notification given under Section 320 or Section 350 of the *Environmental Protection Act 1994* that contains the information specified in this condition is also an exception reporting notification under this development approval.

END OF CONDITIONS FOR SCHEDULE G

### Schedule H – Definitions

Words and phrases used throughout this development approval are defined below. Where a definition for a term used in this development approval is sought and the term is not defined within this development approval the definitions provided in the Environmental Protection Act 1994, its regulations, and Environmental Protection Policies shall be used. Where a word or term is not defined, the ordinary English meaning applies, and regard should be given to the Macquarie Dictionary.

**"administering authority"** means the Environmental Protection Agency or its successor.

**"approval"** means a development approval issued under the Integrated Planning Act 1997

**"authorised place"** means the place authorised under this development approval for the carrying out of the specified environmentally relevant activities.

**"background noise level"** means LA90, T, being the A-weighted sound pressure level exceeded for 90 percent of the time period measured in the absence of the noise under investigation during a representative time period of not less than 15 minutes, using Fast response.

**"commercial place"** means a place used as an office or for business or commercial purposes.

**"competent person"** means a person or body possessing demonstrated experience and qualifications to perform these tasks.

**"DEM"** means Dust Extinction Moisture as determined using Australian Standard AS 4156.6:2000, Coal preparation Part 6: *Determination of dust/moisture relationship for coal*.

**"dust sensitive place"** means:

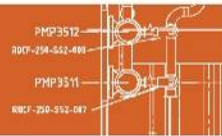
- A dwelling, mobile home or caravan park, residential marina or other residential place.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- A protected area.
- A park or gardens.
- A place used as an office or for business or commercial purposes.
- Includes the curtilage of any such place.

**"dwelling"** means any of the following structures or vehicles that is principally used as a residence:

- A house, unit, motel, nursing home or other building or part of a building.
- A caravan, mobile home or other vehicle or structure on land.
- A water craft in a marina.

**"intrusive noise"** means noise that, because of its frequency, duration, level, tonal characteristics, impulsiveness or vibration: is clearly audible to, or can be felt by, an individual; and annoys the individual. In determining whether a noise annoys an individual and is unreasonably intrusive, regard must be given to Australian Standard 1055.2 - 1997 Acoustics - Description and Measurement of Environmental Noise Part 2 - Application to Specific Situations.

**"LA 90,T"** means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 90% of any 15 minute measurement period, using Fast response.



"**LA 10,T**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 15 minute measurement period, using Fast response.

"**LA 1,T**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 15 minute measurement period, using Fast response.

"**LA 10, adj, T**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 10% of any 10 minute measurement period, using Fast response.

"**LA 1, adj, 10 mins**" means the A-weighted sound pressure level, (adjusted for tonal character and impulsiveness of the sound) exceeded for 1% of any 10 minute measurement period, using Fast response.

"**LA, max adj, T**" means the average maximum A-weighted sound pressure level, adjusted for noise character and measured over any 10 minute period, using Fast response. Where approximately equivalent as described in the EPA noise measurement manual, the descriptor "LA 10, adj, T" may be utilised instead.

"**land**" in the "land schedule" of this document means land excluding waters and the atmosphere.

"**Licensed regulated waste facility**" means, if in Queensland, a relevant facility with lawful authority under the *Environmental Protection Act 1994* and *Integrated Planning Act 1997*:

- To receive and dispose of the regulated waste.
- To receive and recycle or reprocess or recondition regulated waste.
- As a transfer station that can receive such waste.
- To receive and store the regulated waste.
- To receive and treat the regulated waste.
- To receive and compost the regulated waste.
- To receive and incinerate the regulated waste.
- If outside Queensland, a similar place that can lawfully accept and deal with the waste.

"**maximum**" means that the measured value of the quality characteristic or contaminant must not be greater than the release limit stated.

"**median**" means the middle value, where half the data are smaller, and half the data are larger. If the number of samples is even, the median is the arithmetic average of the two middle values.

"**minimum**" means that the measured value of the quality characteristic or contaminant must not be less than the release limit stated.

"**noise affected premises**" means a "noise sensitive place" or a "commercial place".

"**Noise Measurement Manual**" means the following document or more recent additions or supplements to that document as such become available:

Environmental Protection Agency, (2000); Noise Measurement Manual Third Edition, Environmental Protection Agency, Brisbane, Australia.

**"noxious"** means harmful or injurious to health or physical well-being.

**"nuisance sensitive place"** includes:

- A dwelling, residential allotment, mobile home or caravan park, residential marina.
- Residential premises.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- a protected area under the Nature Conservation Act 1992, the Marine Parks Act 1992 or a World Heritage Area.
- A public thoroughfare, park or gardens.
- A place used as a workplace, an office or for business or commercial purposes.
- Includes a place within the curtilage of such a place reasonably used by persons at that place.

**"noise sensitive place"** means:

- A dwelling, mobile home, caravan park, residential marina or other residential premises.
- A motel, hotel or hostel.
- A kindergarten, school, university or other educational institution.
- A medical centre or hospital.
- A protected area.
- A park or gardens; and includes the curtilage of such place.

**"odour sensitive place"** has the same meaning as a "dust sensitive place"

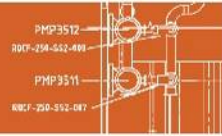
**"offensive"** means causing offence or displeasure; is disagreeable to the sense; disgusting, nauseous or repulsive.

**"protected area"** means: a protected area under the Nature Conservation Act 1992; or a marine park under the Marine Parks Act 1992; or a World Heritage Area.

**"range"** means that the measured value of the quality characteristic or contaminant must not be greater than the higher release limit stated nor lower than the lower release limit stated.

**"regulated waste"** means non-domestic waste mentioned in Schedule 7 of the Environmental Protection Regulation 1998 (whether or not it has been treated or immobilised), and includes: for an element - any chemical compound containing the element; and anything that has contained the waste.

**"riprap"** means a layer, facing or protective mound of stones randomly placed to prevent erosion, scour or sloughing of a structure or embankment, also the stone so used.



**"site"** means the place to which this environmental authority relates or the premises to which this development approval relates.

**"this authority"** means this development approval.

**"waters"** includes river, stream, lake, lagoon, pond, swamp, wetland, unconfined surface water, unconfined water natural or artificial watercourse, bed and bank of any waters, dams, non-tidal or tidal waters (including the sea), stormwater channel, stormwater drain, roadside gutter, stormwater run-off, and any under groundwater, any part thereof.

**"Water Quality Sampling Manual"** means the following document or more recent additions or supplements to that document as such become available: Environmental Protection Agency, (1999): *Water Quality Sampling Manual Third Edition*, Environmental Protection Agency, Brisbane, Australia.

**"you"** means the holder of this Development Approval and owner / occupier of the land which is the subject of this Development Approval and includes any person acting under the Development Approval.

**"24 hour rolling average"** means the average of all measurements over any consecutive 24 hours.

**"1 hour rolling average"** means the average of all measurements over any consecutive sixty minute period.

END OF DEFINITIONS FOR SCHEDULE H

END OF PART 2

END OF CONDITIONS APPENDIX 1

## Appendix 2 - Coordinator-General's Conditions

These conditions reflect the objectives stated in the EIS documentation.

### **Road Access to WICT**

#### **Condition 1**

- (a) Prior to the completion of construction of Stage 1 of the WICT the Proponent will provide at no cost to the Department of Main Roads an 'at grade' T-intersection - Seagull type with Hanson Road for access to/from the development site generally in accordance with Connell HATCH drawing N<sup>o</sup> HQ98 SK C 025 (rev B) and the Department of Main Roads' 'Road Planning and Design Manual'.

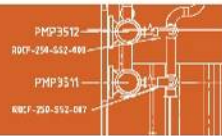
The design will include the following specific requirements:

- Construction of a minimum 50m long raised concrete median in the side road intersection to guide and control turning traffic.
  - Construction of the intersection to facilitate a 100 km/h speed limit, generally.
- (b) The Proponent will reassess the road safety and transport efficiency of the interaction between port and through traffic at the port access intersection with Hanson Road every 4 years from the commencement of operation of WICT or prior to the commencement of construction of each further stage of port development. Such report must be submitted to, and be acceptable to, the Department of Main Roads' District Director (Central).
- (c) The Proponent must upgrade, at no cost to the Department of Main Roads, the 'at grade' T-intersection to provide a grade-separated access to the development site generally in accordance with Connell HATCH drawing N<sup>o</sup> HQ98 SK C 021 (rev A) once road safety/transport efficiency diminishes to levels warranting the upgrade of the intersection to a grade-separated standard in accordance with the Department of Main Roads' 'Road Planning and Design Manual' or when traffic on Hanson Road exceeds 12,000 vehicles per day,.

The design shall include the following specific requirements:

- Construction of a raised barrier in the median to prohibit traffic turning across the median.
- Construction of the intersection to facilitate a 100 km/h speed limit, generally.

After finalising details about the access location and any other works-related requirements to mitigate road impacts of the project, the Proponent will require written approval for the access location under section 62 *Transport Infrastructure*



Act 1994 (TIA) and under sections 33 or 50 of the TIA for any works in the road reserve.

### **Condition 2**

The Proponent will construct the road over the conveyor and services corridor to Wiggins Island Coal Terminal and wharf, generally in accordance with the "desirable parameters" of the Department of Main Roads' "Road Planning and Design Manual".

### **Condition 3**

The Proponent will construct auxiliary overtaking lanes of suitable length (not less than 1.2 kilometre plus tapers) and width (3.5 metres plus 2.0 metre shoulders) at a location acceptable to the Department of Main Roads between the Calliope River Anabranche and Reid Road intersection in accordance with Department of Main Roads' 'Road Planning and Design Manual'.

The design will include the following specific requirement: a minimum 2,000m radius horizontal curves (not super-elevated) on the immediate road approaches.

After finalising details about the works required to mitigate road impacts of the project, the Proponent will require written approval under section 33, *Transport Infrastructure Act 1994*.

### **Condition 4**

The Proponent must manage stormwater/drainage impacts of the project in consultation with the Department of Main Roads, near/under Hanson Road to accommodate a minimum 50 year ARI flood event. This includes managing the sediment load of stormwater following completion of the project and, if necessary, designing and providing adequately-sized culverts such that requirements for the Department of Main Roads to clear culverts of sediment build-up are not more than before the project. Any works required must be in accordance with Main Roads' "Road Drainage Design Manual".

### **Condition 5**

#### (a) Traffic Impact Assessment

Prior to the commencement of use of Stage 1 of the WICT, the Proponent will pay to the Department of Main Roads a contribution for the bring-forward costs of upgrading intersections affected by project-related traffic, as assessed in the Supplementary Traffic Study, when finalised. This includes providing for project-related traffic for the proposed rail facility and coal dump station off Reid Road and mitigating other traffic-related impacts, for example at the Hanson Road/Reid Road intersection. Works must be in accordance with the "desirable parameters" of the Department of Main Roads' 'Road Planning and Design Manual'.

#### (b) Pavement Impact Assessment

After the appointment of the contractor for the project and prior to the commencement of construction works on site for the project, the Proponent will pay to the Department of Main Roads the amount of \$13,495 (2007 dollars, as assessed and agreed to in negotiations with the Department of Main Roads'



Central District Office) to ameliorate the impacts of the construction traffic on existing road pavements.

### **Condition 6**

Prior to the commencement of any works on site associated with each stage of the project:

- (a) The Proponent will prepare a Road-use Management Plan in consultation with the Department of Main Roads' Central District Office to address all of the road use issues identified in the EIS process to be monitored and managed during the life of the project construction.
- (b) The final Road-use Management Plan will be submitted to the Department of Main Roads' Central District Office for review and acceptance by the District Director (Central).

### **Condition 7**

Prior to the commencement of any works on site associated with the project, the Proponent must:

- (a) Amend the Coal Terminal EMP to include the requirement for a Road-use Management Plan, with sections for both construction and operational phases which adequately address transport and traffic issues, including clear identification of responsibilities for quality of discharge and siltation from dredge spoil areas upstream of Hanson Road and their impacts on the drainage under Hanson Road.
- (b) Similarly, amend the Rail EMP to cross-reference and summarise the requirements for addressing relevant transport and traffic issues and mitigation measures outlined in the Road-use Management Plan.

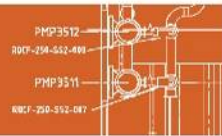
**The Department of Main Roads is the agency responsible for Conditions 1 - 7.**

### ***Acid Sulfate Soils***

### **Condition 8**

- (a) A site specific Acid Sulfate Soil Management Plan must be developed to meet standards acceptable to the Department of Natural Resources and Water prior to any disturbance occurring onsite.
- (b) The Acid Sulfate Soil Management Plan must be developed by consultants experienced in large scale development projects containing Acid Sulfate Soils and include a commitment to be onsite during excavation and treatment activities.

**The Department of Natural Resources and Water is the Agency responsible for Condition 8.**



## ***Air Quality***

### **Condition 9**

The Proponent is to consider the outcomes of the Queensland Health/EPA 2-year air quality study to identify any relevant issues that may impact on the design and operation of the Project.

**Queensland Health is the agency responsible for Condition 9.**

## ***Environmental Management Plans***

### **Condition 10**

The Proponents and/or their contractor(s) shall finalise the Coal Terminal and Rail Environmental Management Plans to the satisfaction of EPA at least one month prior to commencement of construction of the project.

**The EPA is the agency responsible for Condition 10.**

END OF CONDITIONS APPENDIX 2

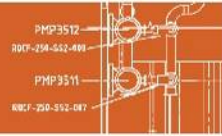
## Appendix 3 – Project Commitments

The key commitments for implementation during the design, construction and operational phases of the Wiggins Island Coal Terminal (WICT) Project are summarised in the following table.

Environmental area	Commitment	Responsibility	
		CQPA	QR
<b>General</b>	Take all reasonable and practicable measures to prevent and/or minimise the likelihood of environmental harm being caused	Y	Y
	Ensure the design minimises the environmental footprint	Y	Y
	Develop and operate the Project in accordance with the EMP for this project	Y	Y
	Continue to provide project updates and progress to the community and stakeholders	Y	Y
<b>Environmental and planning approvals</b>	Obtain all required environmental and planning approvals for the construction and operation of the coal terminal and implement the management measures and conditions	Y	
	Ensure the protection of adjoining sensitive land uses in terms of amenity (noise, visual, lighting), specifically during the planning phase of the project	Y	Y
	Obtain all required environmental and planning approvals for the construction and operation of the rail infrastructure and implement the management measures and conditions		Y
<b>Topography, geology and soils</b>	A DPI&F Approved Risk Management Plan will be prepared and implemented to minimise the risk of spreading Fire Ants	Y	Y
	Develop and implement a construction Soil Handling and Management Plan covering: Acid Sulfate Soils (ASS) Fire Ants Erosion and Sediment Control The movement of actual or potentially contaminated soil Topsoil management Dredge spoil placement/disposal	Y	Y

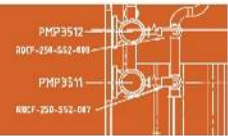
Environmental area	Commitment	Responsibility	
		CQPA	QR
	An ASS Management Plan will be required to outline affected areas, ASS management practices and the required liming rates, location and operation of treatment areas. The ASS Management Plan will be finalised during detailed design	Y	
	Develop a dredge spoil placement plan to guide dredge spoil placement during maintenance and operation	Y	
<b>Land Use</b>	Continued consultation with directly affected property owners	Y	Y
<b>Transport and traffic</b>	Develop and implement a Traffic Management Plan in accordance with DMR requirements at the appropriate stage of the Project prior to construction	Y	Y
	Access from public roads to construction sites will be managed in accordance with all State and regulatory requirements, including warning signage and transport control staff at critical intersections	Y	Y
	Enter into an infrastructure agreement with DMR with respect to the impact on the DMR road network	Y	Y
<b>Water quality</b>	All dredging and spoil disposal (initial and maintenance dredging) will be undertaken in accordance with the relevant guidelines	Y	
	All the capital dredge material will be disposed to land	Y	
	Areas of riparian vegetation and flow-dependent ecosystems will be left undisturbed wherever possible	Y	Y
	The Dredge Environmental Management Plan will be finalised and implemented during construction to minimise potential impacts on the World Heritage Area and marine species	Y	
	On-going real-time turbidity monitoring will be included in the EMP. Monitoring of turbidity levels will be conducted upstream, downstream and near field (adjacent to dredging).	Y	

Environmental area	Commitment	Responsibility	
		CQPA	QR
	Consultation with the EPA will be undertaken to finalise the trigger values for suspended solids and/or turbidity within the water column. Discharge trigger values for dredging will be determined during a validation study to be conducted during the early stages of dredging. The receiving environmental trigger values will be as recommended by McArthur <i>et al</i> (1994) with the 95 <sup>th</sup> percentile ambient conditions regarded as appropriate threshold for the receiving habitat of Port Curtis.	Y	
	Decant water will be continuously monitored for compliance with the required guidelines before being discharged through one or two locations along the Anabranh and Calliope River and Port Curtis. Careful planning will be undertaken during the detailed design phase to refine the dewatering strategy	Y	
	A Stormwater Management Plan will be prepared for the site and implemented at the commencement of construction activities	Y	
	Potential coastal management impacts will be mitigated by preparing and implementing of a Coastal Management Plan that considers the Coastal Management Overlay Codes, under the Gladstone IPA Plan	Y	
	Water discharge from the project area to the receiving environmental will be monitored in accordance with EPA licence conditions for compliance with the appropriate guidelines. Water quality must meet conditions of the licensing agreement	Y	
	Water will be discharged from the dewatering discharge locations along the Anabranh during construction and from the stormwater and settlement pond during operation	Y	
	Implement appropriate mechanisms, where possible, to slow and/or prevent overland runoff such as retaining/planting vegetation and/or installing appropriate drainage structures		Y
	Spills and wastewater will be managed under the Waste Management Plan and hazardous substances Australian Standard AS 1940B1993	Y	Y



Environmental area	Commitment	Responsibility	
		CQPA	QR
	Validation sampling of dredge material will occur during the detailed engineering stage (during additional drilling works). Environmental sampling will be undertaken in accordance with the National Ocean Disposal Guidelines for Dredged Material.	Y	
	A regular water level and water quality monitoring programme will be implemented in the design and continued until commencement of construction.	Y	
<b>Groundwater</b>	During construction water level monitoring will be continued. Deviations from seasonal baseline water levels will be assessed and if necessary mitigation measures implemented.	Y	Y
<b>Air Quality</b>	The proposed coal terminal will employ a range of best practice measures for controlling dust emissions including: <ul style="list-style-type: none"> <li>Water cannons</li> <li>Water cart</li> <li>Mist curtain</li> <li>Extendable dust shroud for stacking</li> <li>Travelling gantry stackers</li> <li>Enclosure of all transfer points</li> <li>Partial enclosure of elevated conveyers where possible</li> </ul>	Y	
	Develop and implement a Dust Management Plan during construction	Y	Y
	Dust emissions from the coal terminal will be minimised by the diligent application and maintenance of design features	Y	
	Visual monitoring of dust (dust deposition gauges will be installed at nearby residences if necessary)	Y	
<b>Waste</b>	Where possible, minimise the quantity of wastes generated and removed from the site, with wastes to be reused or segregated and recycled	Y	Y
	Preparation and implementation of a Waste Management Plan during construction and operation	Y	Y
	Regulated waste will be removed by a regulated waste contractor	Y	Y
<b>Noise</b>	Residents will be made aware of the times and duration that they are likely to be affected by construction noise	Y	Y

Environmental area	Commitment	Responsibility	
		CQPA	QR
	Implement a community awareness programme to improve understanding of noise and vibration issues and to assist in allaying potential fears and concerns. Programme may include: Active community consultation Investigation into non-compliance of noise levels Ensure use of noise reduction measures	Y	Y
	Construction and operation activities will comply with relevant EPA regulations and/or consent conditions for noise, vibration and air quality	Y	Y
<b>Vibration</b>	Underwater impacts: <ul style="list-style-type: none"> <li>In the event that the operator of the pile driver identifies marine mammals within the Impact Zone, piling should be halted until the marine mammal has departed</li> <li>Adopt a soft start to piling</li> </ul>	Y	
<b>Terrestrial Fauna and Flora</b>	Consult with DNRW, EPA and/or QPWS concerning works within the Calliope Conservation Park and Mount Stowe State Forest	Y	Y
	Consult with DNRW to identify potential offset requirements in accordance with the DNRW Policy for Vegetation Management Offsets	Y	Y
	All vegetation within the project area classified as Endangered or Of Concern REs shall be clearly marked and contractors briefed on clearing requirements and restrictions	Y	Y
	Where possible, collect seed from local native flora for propagation and use in rehabilitation works, particularly REs mapped as Endangered or Of Concern by the EPA. Local native species to be utilised in rehabilitation.	Y	Y
	Limits of clearing will be clearly marked with appropriate markers prior to commencing construction	Y	Y
	Prepare and implement a Weed and Pest Management Plan that includes details of vehicle and pedestrian wash down bays and vehicle signage and training	Y	Y
	Prepare and implement a Fauna Management Plan during the construction phase	Y	Y



Environmental area	Commitment	Responsibility	
		CQPA	QR
	Ensure a qualified fauna spotter is present during the initial clearing to relocate any fauna that is disturbed. The fauna spotter shall be the current holder of a Damage Mitigation Permit (Removal and Relocation of Wildlife) from the EPA (Queensland Parks and Wildlife Service)	Y	Y
	Prepare and implement a Vegetation Rehabilitation and Management Plan	Y	Y
	Prepare and implement a Bushfire Management Plan	Y	Y
	Additional loss of marine plants will be mitigated by: Rehabilitation of mangrove plants in the Port Curtis region. Suitable areas to be identified in consultation with DPI&F Ongoing monitoring of Port Curtis estuarine and marine environments including seagrass and mangrove communities	Y	
<b>Aquatic Ecology</b>	A water quality monitoring programme will be implemented to ensure that turbidity levels do not have the potential to impact on aquatic fauna and flora, particularly seagrass beds	Y	
	Regular monitoring of the health of the intertidal wetlands including the seagrass and mangrove communities	Y	
	A safety zone will be created around the perimeter of dredging activities to protect marine fauna. Activities will be placed on hold for the period of time it takes for the animal to leave the designated safety zone	Y	
	Over-water abrasive blasting will be carried out in accordance with the EPA QPWS Environmental Operations for Over-water abrasive blasting in marine and other environments guideline	Y	
	No filling, draining or alteration of any waterway, excluding that necessary for development	Y	
	Manage ASS affected material to prevent impacts to aquatic flora and fauna within receiving waterways	Y	
	Implement a revegetation/rehabilitation plan for the area.	Y	Y
<b>Cultural heritage</b>	Finalise and implement the Cultural Heritage Management Plan (CHMP) and obtain approval from DNRW, prior to construction works	Y	Y



Environmental area	Commitment	Responsibility	
		CQPA	QR
	Incorporate cultural heritage awareness into worker induction programmes	Y	Y
<b>Social</b>	Regularly consult with directly affected property owners to address any issues as they arise	Y	Y
	Commence discussion with State agencies to initiate a whole of government response to meet additional social facilities and services needs arising from the major projects currently planned in the region	Y	Y
	Develop and implement a Community Liaison Programme	Y	Y
	An Accommodation Strategy for the Project will be developed in consultation with Local and State Government agencies.	Y	Y
<b>Health and Safety</b>	Implement mosquito management practices	Y	Y
	Construction and installation of water storages shall be carried out in accordance with Part 8, Mosquito Prevention and Destruction of the <i>Health Regulation 1996</i> .	Y	Y
	Noise exposure for employees of future industrial uses within the Gladstone Stage Development Area will be subject to relevant Workplace Health and Safety legislation	Y	Y
	Establish a Workplace Safety Ethic and Programme	Y	Y
<b>Visual Amenity and Landscape Character</b>	Minimise the footprints of the individual elements of the development and confine vegetation clearing to that necessary to carry out construction and maintenance	Y	Y
	A vegetation buffer will be provided adjacent to the south eastern portion of the rail loop to screen the rail loop from the residential area to the south		Y
	Where possible construct infrastructure, particularly buildings in materials with a visually neutral colour (e.g. mist green)	Y	Y
	Minimise light spillage to areas outside the areas that need to be lit by using suitable fittings and shields	Y	Y

END OF REPORT