TENEMENT TO TERMINAL LIMITED | 3TL

GHD

Yarwun Coal Terminal Project

Initial Advice Statement

April 2012

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1. Introduction

1.1 Background

Tenement To Terminal Limited (3TL) has secured the rights to purchase waterfront land in Gladstone with the potential for the site to be developed into a new coal terminal to assist in meeting the demand for additional terminal capacity. 3TL proposes to develop the Yarwun Coal Terminal Project (the Project) which comprises rail infrastructure, coal stockyard, out-loading wharf and associated coal transport and materials handling infrastructure.

The proposed facility will provide up to 50 million tonnes per annum (Mtpa) of export capacity for thermal, PCI and coking coals. Provision of rail infrastructure will allow coal to be sourced from the Southern Bowen Basin, Surat Basin and the Galilee Basin.

Figure 1-1 shows the location of the Project centred on the proposed stockyard site (Lot 1 SP235026).

1.2 Purpose and Scope of the IAS

This Initial Advice Statement (IAS) has been prepared to:

- Support an application to the Coordinator-General for "significant project" determination under section 26(1)(a) of the *State Development and Public Works Organisation Act 1971* (SDPWO Act);
- To identify relevant legislation and the approvals necessary to allow the Project to proceed; and
- To inform stakeholders and the general public.

The key reasons for seeking significant project declaration under the SDPWO Act are:

- The Project will result in a capital investment of around $2.2 billion;
- The Project will result in individual and additional cumulative impacts on Gladstone Harbour; and
- The Project is critical in providing additional terminal capacity to meet the expected shortfall from current and proposed coal projects.

1.3 The Proponent

The Proponent for the proposed Project is Tenement To Terminal Limited.

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Managing Director

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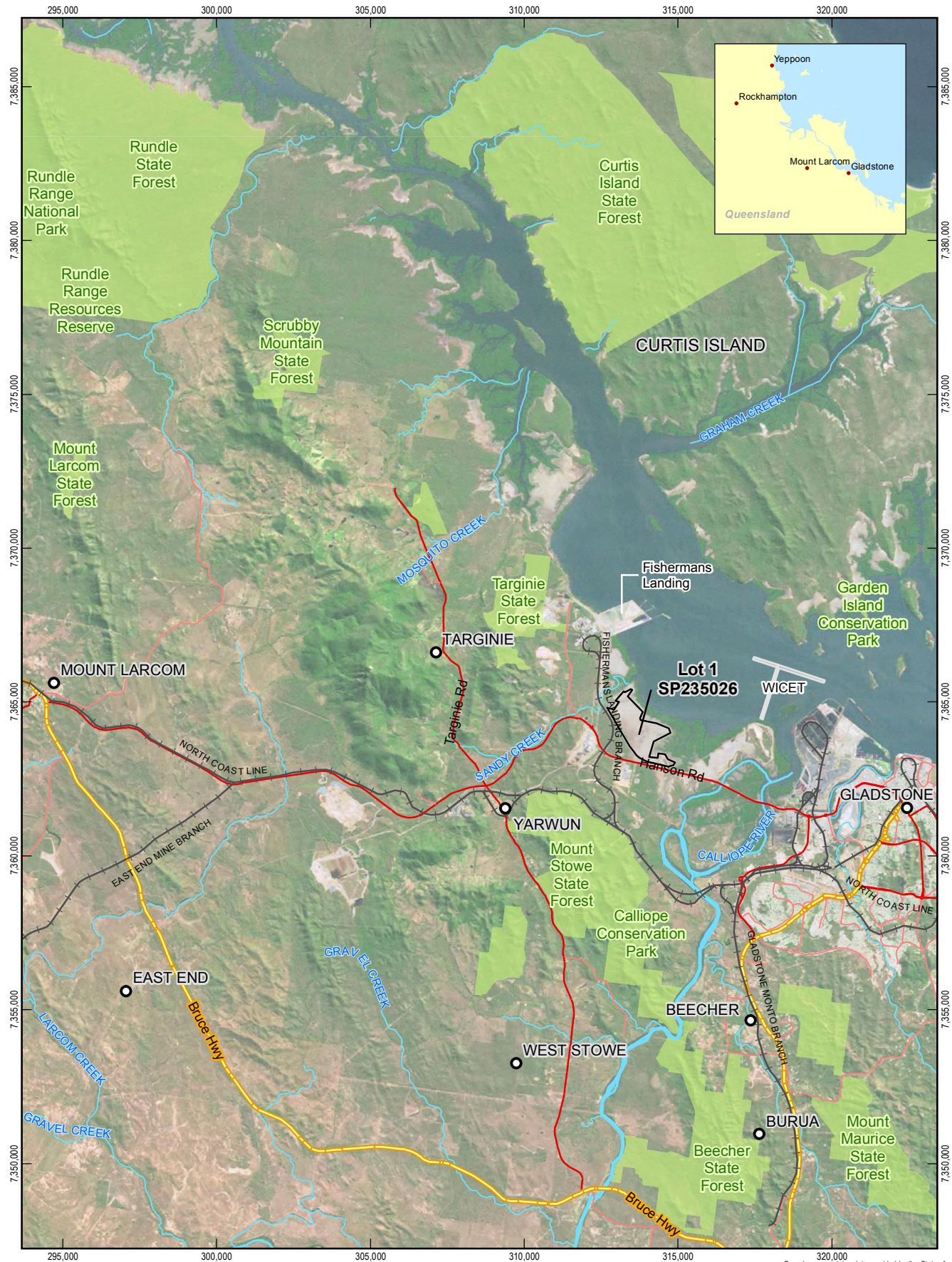

LEGEND

- Locality
- Existing Railway
- Watercourse
- Highway
- Main Road
- Secondary Road
- Protected Area Estates
- Lot 1 on SP235026

1:175,000 (at A4)

0 1 2 3 4 5

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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GHD

Tenement to Terminal Ltd
Yarwun Coal Terminal Project

Job Number 41- 24484
Revision A
Date 10/04/2012

Project Location

Figure 1-1

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Level 4, 201 Charlotte St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

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1.4 Project Overview

The coal terminal will be a common user facility exporting a mix of coal brands from a range of producers. Coal will be sourced from the Southern Bowen Basin, Surat Basin and potentially south of Alpha in the Galilee Basin. Thermal, PCI and coking coals will be catered for.

The terminal will be developed in stages. Stage 1 will see the development of a nominal 25 Mtpa facility with later stages increasing capacity to nominally 50 Mtpa.

The key components of the proposed Project covered by this IAS are (Figure 1-2):

- A new dedicated 14 km rail line;
- Rail in-loading facilities and balloon loop;
- In-loading conveyor and transfer stations;
- Civil works to provide stockyard capacity for up to 50 Mtpa;
- Stockyard and materials handling infrastructure;
- Piled trestle to an offshore piled berthing jetty;
- Out-loading conveyor and shiploaders; and
- Two new berths and associated dredging including two new berth pockets, swing basin, approach channel and shipping channel extension.

1:100,000 (at A4)

0 0.5 1 1.5 2 2.5

Kilometers

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 56

N

LEGEND

- Locality
- Highway
- Main Road
- Secondary Road
- Existing Railway
- Watercourse
- Proposed Infrastructure

Proposed Approach Jetty

- Option 1
- Option 2
- Rail Study Area
- In-loading Conveyor Study Area
- Lot 1 on SP235026
- Protected Area Estates

Tenement to Terminal Ltd
Yarwun Coal Terminal Project

Job Number	41-24484
Revision	A
Date	10/04/2012

Key Project Elements

Figure 1-2

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2. Project Need and Alternatives Considered

2.1 Project Need

Queensland is Australia's fastest growing state, with a strong emphasis on exports, particularly from the natural resources sector. Demand for coal has increased significantly over the past decade and the growth is expected to continue.

The Queensland Government's document entitled "CoalPlan 2030 – Laying the foundations for a future (Department of Infrastructure and Planning, 2010) summarises the projected increasing demand for Queensland Coal over the next 20 years from current production of 190 Mtpa to 340 Mtpa or more. In addition to the ongoing development of mines within the Bowen Basin, exploration and planning for development of mines within the Surat and Galilee Basins is a key industry focus.

The demand for terminal capacity for the export of coal from Queensland continues to push the limits of the available and planned coal export terminals within the state. Although linkages between the central Queensland rail systems have been developed to provide redundancy in the systems and to leverage off latent capacity which existed in some elements of the rail networks, it remains broadly true that the most cost effective and sustainable outcomes are those which rail to the nearest port on the coast. This has defined the catchments for each of the ports to date and will continue to do so in the future.

Building on the existing rail corridors into the Gladstone Region is the most appropriate gateway for the export of coal from the Surat Basin, southern Bowen Basin and potentially the southern Galilee Basin.

The RG Tanna Coal Terminal has reached the limit of its development capability and its capacity has been contracted fully to customers. The Wiggins Island Coal Export Terminal (WICET), with an approved capacity of approximately 80 – 85 Mtpa, has commenced construction of Stage 1 based on the capacity of 27 Mtpa being fully committed. It is also apparent that subsequent stages of WICET have received tonnage nominations from coal producers well in excess of its design capacity.

Recent proposals by coal producers and explorers to take up capacity in other proposed and approved coal terminals throughout the State have also been substantially oversubscribed. To meet demand locally in the Gladstone region, additional port sites are being pursued, such as Port Alma.

The ongoing opportunities to develop coal mines in the Surat Basin, southern Bowen Basin and potentially the southern Galilee Basin rely on having sufficient port capacity to export the coal.

3TL has briefed industry on the Project and has requested proposals to take up capacity in the terminal. Formal proposals from coal customers have resulted in the 50 Mtpa capacity being oversubscribed.

2.2 Alternatives

2.2.1 Port Site

The proposed terminal site is within the current Port of Gladstone limits and the Gladstone State Development Area which has been identified as a suitable area for this type of development. Adjacent coal export developments or terminals (existing and approved) include the R.G. Tanna Coal terminal and WICET. It is considered that co-location of the proposed development with these existing and approved coal export terminals is in line with strategic planning for the Gladstone region. The land that is being acquired for the Project is owned by the Minister for Industrial Development, Queensland and is available for a major project that will provide significant economic development for Queensland.

No other sites are currently available within the Port of Gladstone for a Project of this nature. The Fisherman's Landing port precinct is only suitable for Panamax and Post-panamax class vessels, and Curtis Island is committed to the Liquefied Natural Gas industry. Lot 1 is the only site suitable for the construction of a jetty to the existing deep water channel which is capable of accommodating Cape class vessels. The proposed berths are within the confines of the existing working port and located adjacent to the location of berths for the two other coal terminals. Dredging to provide access from the berths to the existing designated deep water shipping channels is expected to be minimal.

2.2.2 Rail

As an alternative to construction of the new 14 km rail line, consideration was given to accessing the existing QR National network to Gladstone, however, it has been determined through investigation that the existing network is fully committed with no spare capacity for additional coal trains to service the proposed 3TL terminal. As a consequence 3TL proposes to construct a rail line in a new corridor dedicated to the 3TL terminal.

The line would accommodate both Surat Basin trains arriving via the new Moura Link with crossover onto the new 3TL corridor and Blackwater trains from the North Coast Line.

It may also be possible for trains from the Goonyella system to reach the 3TL port via the Gregory Line and Blackwater system. These trains will be limited by the capacity of the Gregory / Blackwater system in terms of train length and available slots. Notwithstanding this, within the life of the terminal it is possible to consider that the upgrades could be undertaken.

A final rail corridor is yet to be determined. The broad study area within which options for the corridor will be considered is shown in Figure 1-2. Identification of a preferred corridor within this study area will present challenges, due to:

- Topography;
- Existing corridors for rail, road, linear infrastructure e.g. pipelines; and
- Multiple landowners.

2.2.3 In-loading

A final corridor for the in-loading conveyors is yet to be determined. The broad study area within which options for the corridor are being considered is shown in Figure 2-1. The study area broadly runs south east from the existing Materials Transportation and Services Corridor.

A more detailed investigation of topography, horizontal and vertical geometry of the conveyors, and landowner discussions will be undertaken to select the preferred corridor.

2.2.4 Out-loading Jetty

Two options are being considered for the alignment of the out-loading jetty (Figure 2-2):

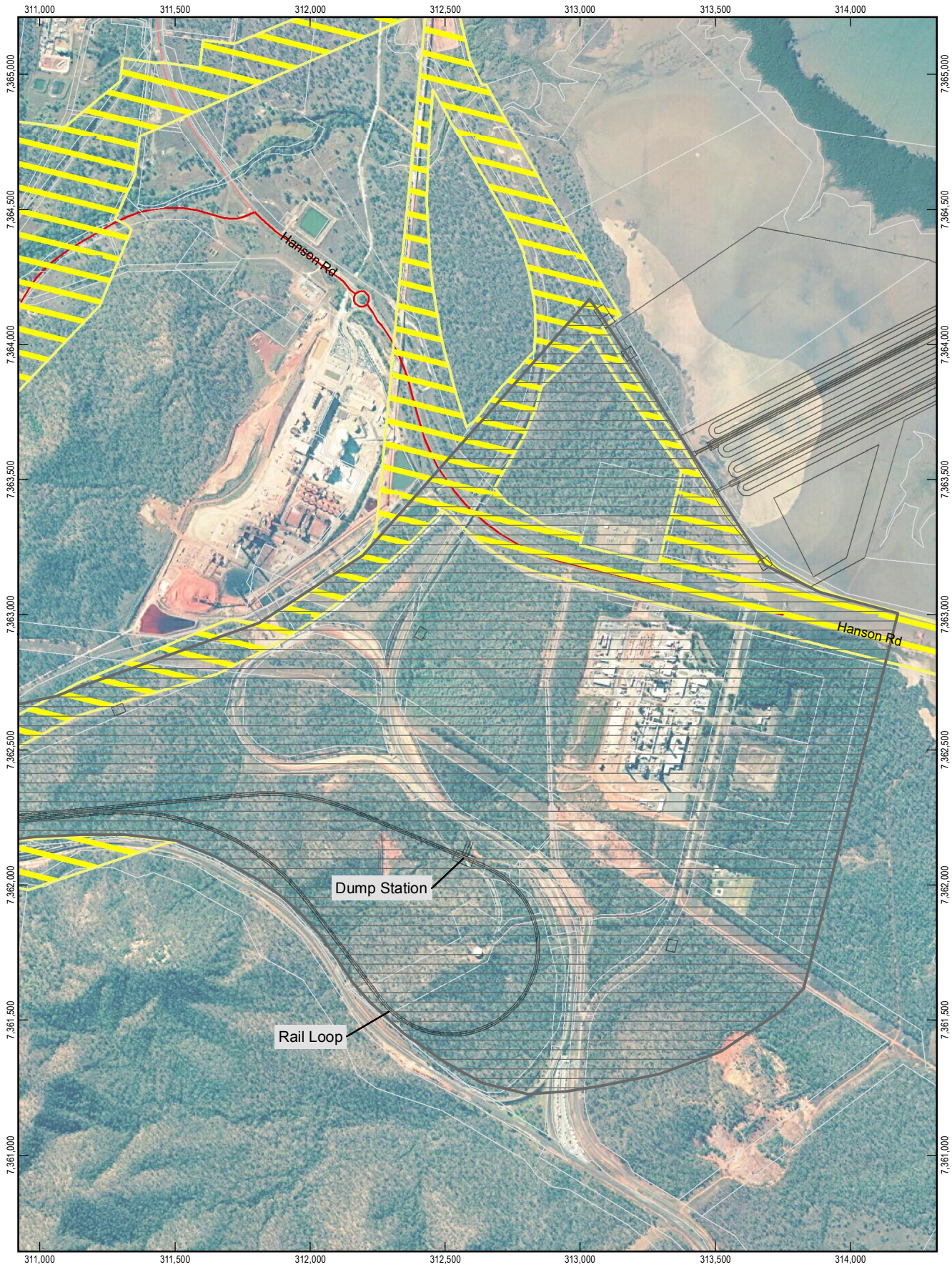
- Option 1 has the out-loading jetty running parallel, and adjacent to (and completely separate from), the existing Gladstone Pacific Nickel (GPN) Project and WICET corridor with an overland conveyor from the stockpile to the corridor. This option seeks to minimise the area of seabed disturbance through location of the jetty adjacent to an already approved structure. This option has a conveyor length of approximately 8,200 m, with 4,600 m being overland and 3,600 m over water; and
- Option 2 has the out-loading jetty running directly out to the wharf from the stockyard. This option reduces the amount of over water infrastructure required to a length of 3,300 m and reduces the number of transfer towers (and accordingly, the associated potential for dust generation at the transfers).

Option 2 is currently the preferred option.

2.2.5 Berth Alignment

The preferred alignment of the jetty and berths (Figure 2-2) considered the following:

- Alignment of the berths with the tidal streams to avoid compromising ship handling or mooring;
- Alignment of the berths to avoid compromising navigation or existing and proposed berths;
- Avoiding the location of a submarine tunnel to Curtis Island, proposed by an LNG project proponent;
- Maintaining existing Quay Line alignments and the potential for this terminal to interface with other planned berths associated with the proposed GPN Project and WICET; and
- Minimising dredging to reduce environmental impacts and associated costs.



LEGEND

- Existing Railway
- Highway
- Main Road
- Secondary Road
- Proposed Infrastructure
- Cadastral Boundary
- In-loading Conveyor Study Area

GSDA - PRECINCT

- Materials Transportation and Services Corridor - Boat Creek Corridor Sub-Precinct

1:20,000 (at A4)

0 100 200 300 400 500

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tenement to Terminal Ltd
Yarwun Coal Terminal Project

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Revision	A
Date	10/04/2012

In-loading Conveyor Study Area

Figure 2-1

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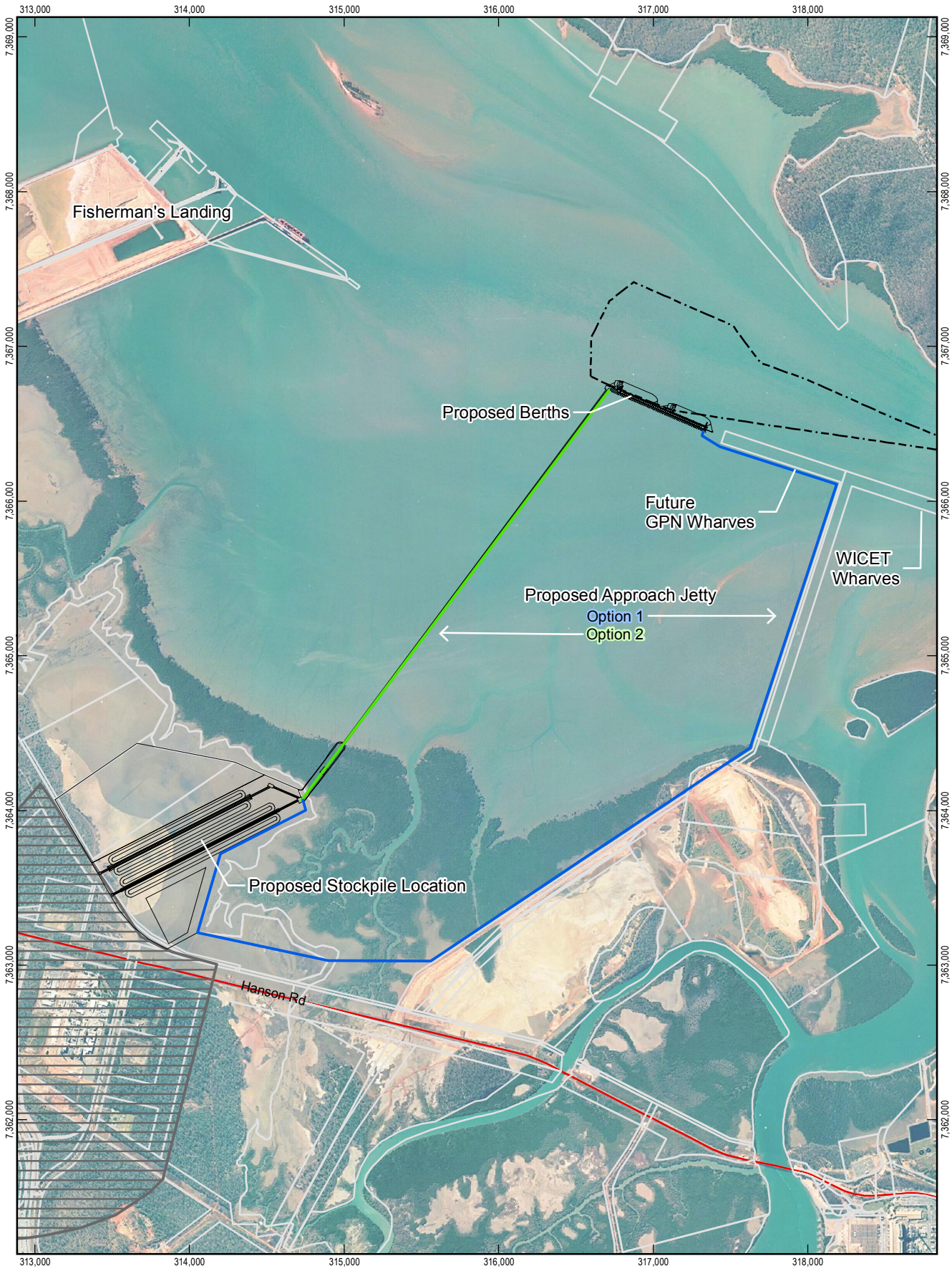

LEGEND

- Existing Railway
- Highway
- Main Road
- Secondary Road

Proposed Jetty Approach
- Option 1
- Option 2

- Proposed Infrastructure
- In-loading Conveyor
- Study Area
- Cadastral Boundary

1:35,000 (at A4)

0 0.5 1

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tenement to Terminal Ltd
Yarwun Coal Terminal Project

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Date	10/04/2012

Jetty and Berth Locations

Figure 2-2

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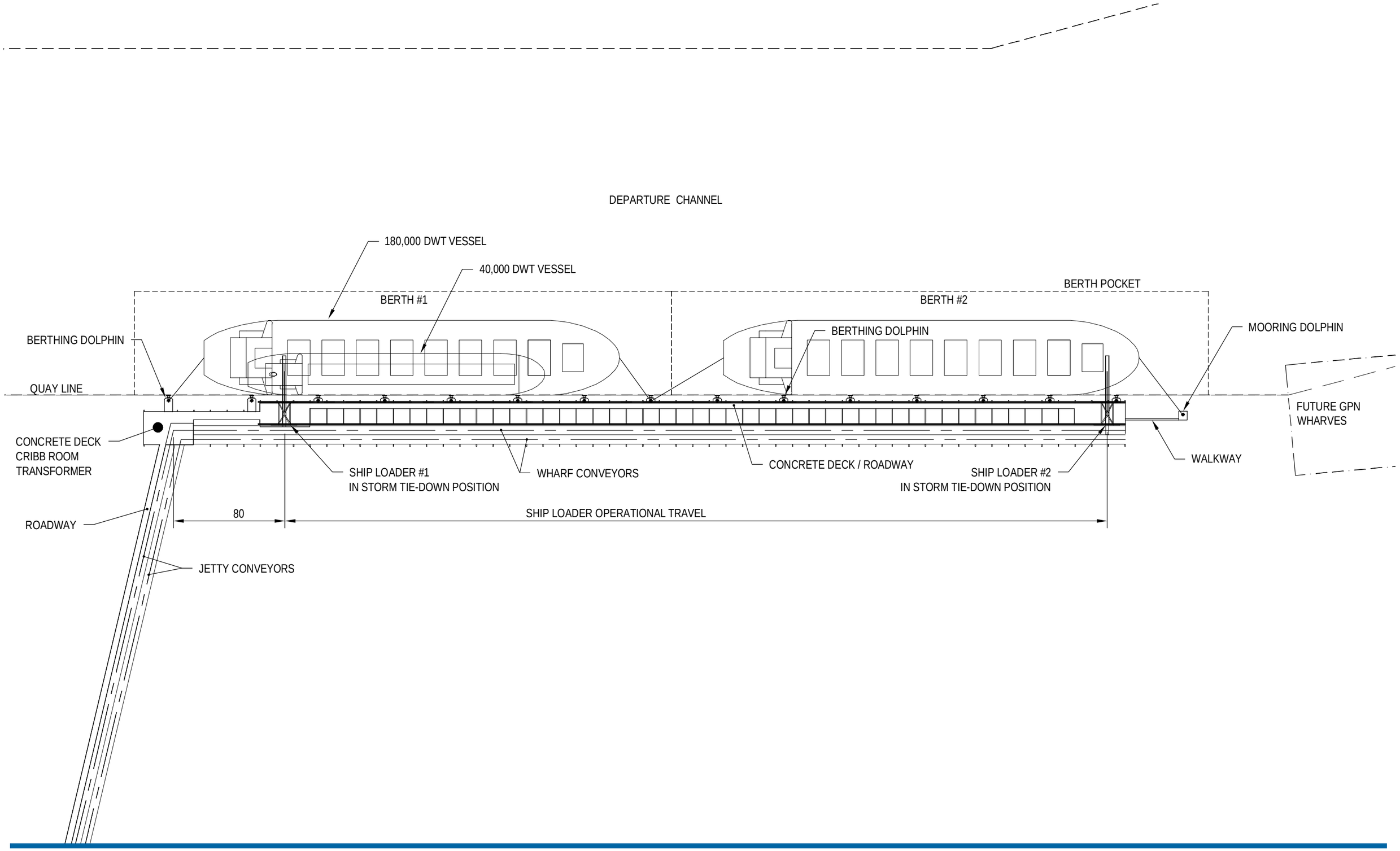
2.2.6 Shiploading

The wharf will service vessels ranging in size from Handymax to Cape class. A high capacity loading operation is proposed and, as such, options which require interruption of loading to warp a vessel along the berth have not been considered. Two shiploading options are being considered:

- Option 1 – A Long Travelling Loader with Luffing Boom (Figure 2-3) that traverses the entire length of the ship with the luffing boom reaching all ship hatches. One loader is required per berth. Key advantages of this type of loader include:
  - The loader can reach the entire vessel without the need for vessel warping; and
  - Staged expansion of the terminal can occur. From initially one berth / one loader, capacity can increase incrementally with provision of a layby berth, extension of the berth with the loader traversing two berths and, finally, installation of a second loader.
  - The disadvantages with this type of loader include:
  - Decreased efficiency from the need to stop loading and move the loader for hatch changes; and
  - The tripper system used to transfer the coal from the conveyor to the ship loader is prone to spills and dust creation. The system requires large surge bins and spill retention structures.
- Option 2 – Dual Quadrant Radial Ship Loader (Figure 2-4) where the loaders slew around a fixed point and the loader's telescopic arm runs along a rail arc. A pair of loaders (dual quadrant) will be required so that the entire vessel can be reached without the need for vessel warping. The advantages of this configuration include:
  - Increased efficiency (5% - 10%) as loading continues uninterrupted during hatch changes;
  - The possibility to substantially downsize or even remove surge bins; and
  - Substantially less "marine structure" is required. Berthing and mooring dolphins run along the quay line with infrastructure similar to the approach jetty running behind the loaders for access.

  The disadvantages with this configuration include:
  - Two ship loaders are required, resulting in higher maintenance costs;
  - Maintenance would be undertaken from floating plant as road access to all elements of the ship loader would not be available; and
  - The reduced opportunities for incremental increases in terminal capacity (i.e. Stage 1 is one berth and any capacity increase beyond Stage 1 is a quantum increment to a second berth).

Further investigation will occur during detailed design to select the preferred option.



0 25 50 75m

SCALE 1:2500 AT ORIGINAL SIZE

TENEMENT TO TERMINAL LTD
YARWUN COAL TERMINAL PROJECT

LONG TRAVELLING SHIP LOADER WITH LUFFING BOOM - PLAN

Job Number 41-24484
Revision A
Date Mar 2012

Figure 2-3

Level 4, 201 Charlotte St Brisbane QLD 4000 Australia **T** 61 7 3316 3000 **F** 61 7 3316 3333 **E** bnemail@ghd.com **W** www.ghd.com

Plot Date: 2 March 2012 - 12:00 PM Plotted by: Liam Houghton/Brisbane/GHD/AU Cad File No: G:\41\24484\Document Transfer\Outgoing\2012-03-02 Gis Figures\41-24484-FIG 2-3.dwg

DEPARTURE CHANNEL

180,000 DWT VESSEL

40,000 DWT VESSEL

BERTHING DOLPHIN

BERTH POCKET

BERTH #1

BERTH #2

QUAY LINE

FUTURE GPN WHARVES

MOORING DOLPHIN

LOADER FRONT RAIL BEAM

MOORING DOLPHIN

LOADER PIVOT PLATFORM

MAINTENANCE / TIE-DOWN PLATFORM

CONVEYOR

LOADER PIVOT PLATFORM

SERVICE / ACCESS ROADWAY

ROADWAY

JETTY CONVEYORS

0 25 50 75m

SCALE 1:2500 AT ORIGINAL SIZE

TENEMENT TO TERMINAL LTD
YARWUN COAL TERMINAL PROJECT

DUAL QUADRANT RADIAL SHIPLOADER - PLAN

Job Number 41-24484
Revision A
Date Mar 2012

Figure 2-4

Level 4, 201 Charlotte St Brisbane QLD 4000 Australia **T** 61 7 3316 3000 **F** 61 7 3316 3333 **E** bnemail@ghd.com **W** www.ghd.com

Plot Date: 2 March 2012 - 12:01 PM Plotted by: Liam Houghton/Brisbane/GHD/AU Cad File No: G:\41\24484\Document Transfer\Outgoing\2012-03-02 Gis Figures\41-24484-FIG 2-4.dwg

2.2.7 Port Access

The terminal will rely on access to the entrance channel to the port. Shipping channel capacity studies have been previously undertaken by others.

As is normally the case for new major projects requiring access to the Gladstone shipping channels, 3TL will need to carry out shipping channel simulation studies to determine the adequacy of the channel for its proposed shipping mix.

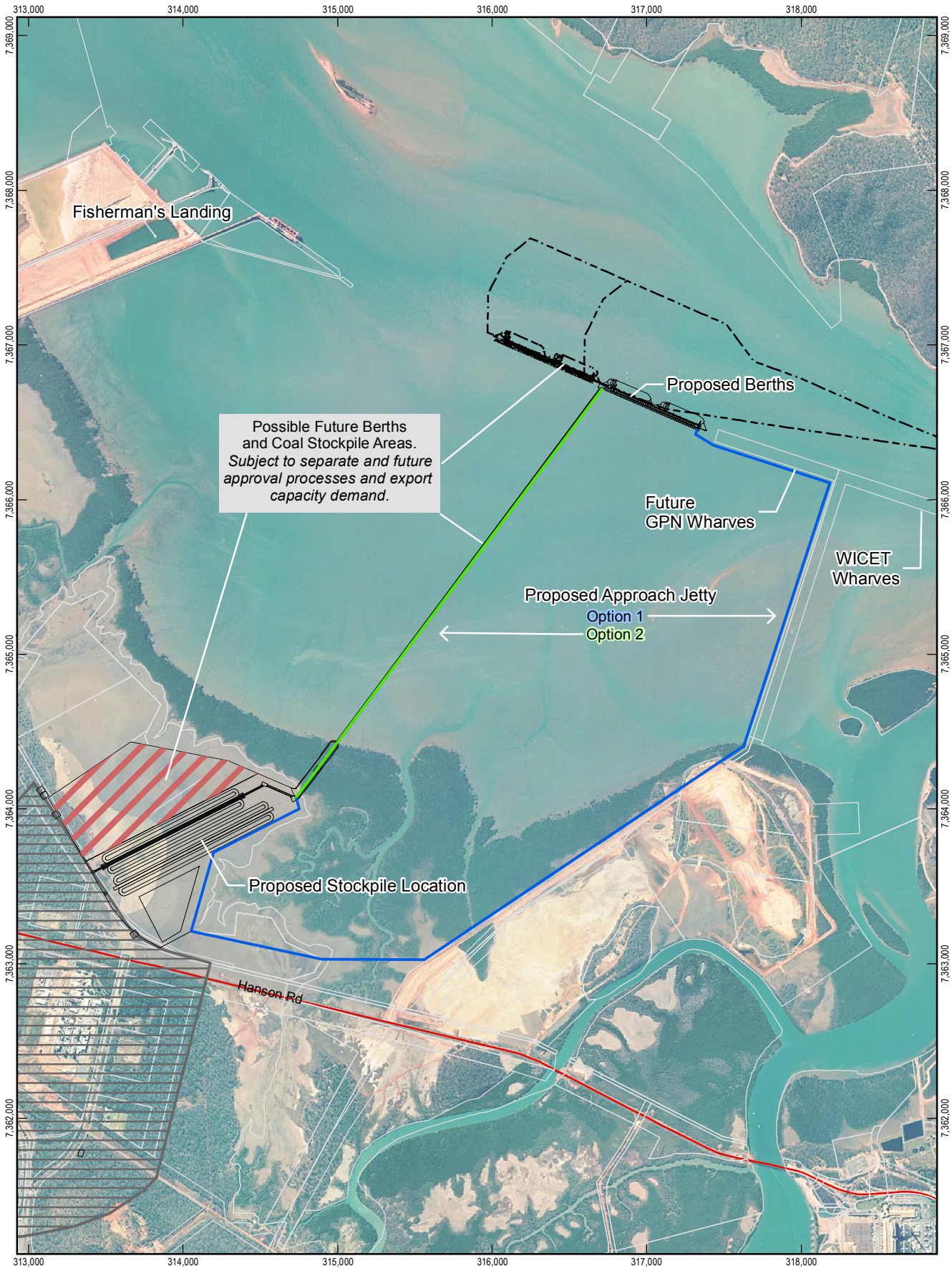
2.2.8 Future Expansion

3TL intends to consider future expansion opportunities at a later date. Expansions of the terminal beyond a capacity of 50 Mtpa will be subject to future and separate approvals processes and subject to a range of factors such as market demand for coal exports, engineering considerations around the form and function of the terminal and cost. Figure 2-5 shows how the terminal might be expanded in the future.

2.2.9 Do Nothing

The consequences of not developing the Project include:

- Continuing limitations on coal export capacity and impacts on the economy;
- Increased waiting times for vessels to access other port facilities;
- Increased demand for the construction of other port facilities elsewhere along the coast to service export demand, as evidenced by the oversubscription of 3TL's 50 Mtpa of capacity; and
- The potential loss of local economic benefits and employment opportunities.



LEGEND

- Existing Railway
- Highway
- Main Road
- Secondary Road
- Proposed Jetty Approach
  - Option 1
  - Option 2
- Proposed Infrastructure
- Cadastral Boundary
- In-loading Conveyor Study Area
- Possible Future Stockpile Area

1:35,000 (at A4)

0 0.5 1

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tenement to Terminal Ltd
Yarwun Coal Terminal Project

Job Number	41- 24484
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Possible Future Expansion

Figure 2-5

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3. The Nature of the Proposal

3.1 Scope of the Project

3.1.1 Rail and In-loading

Rail Line

The rail line, approximately 14 km in length, will run from just east of Mt Larcom, past East End Junction (and the proposed Aldoga provisioning and maintenance yard) and link to the in-loading balloon loop.

A final rail corridor is yet to be determined. The broad study area within which the corridor will be located is shown in Figure 1-2.

Rail Loop

The proposed location and configuration of the rail loop is shown in Figure 2-1.

The balloon loop will be developed in stages with multiple loops added as the Project evolves. The loops will have the capacity to accommodate up to 2,250 m long trains. There will be space for two trains to concurrently in-load on any loop (or along the rail access if appropriate) – one unloading and one queuing. Trains would be provisioned on the exit road.

Trains will unload via bottom dump to dump hoppers. Train unloading will take between 1.5 and 2 hours.

Product will be transferred via a belt feeder to the receival conveyor and then to the shuttle head for loading to the in-loading conveyor.

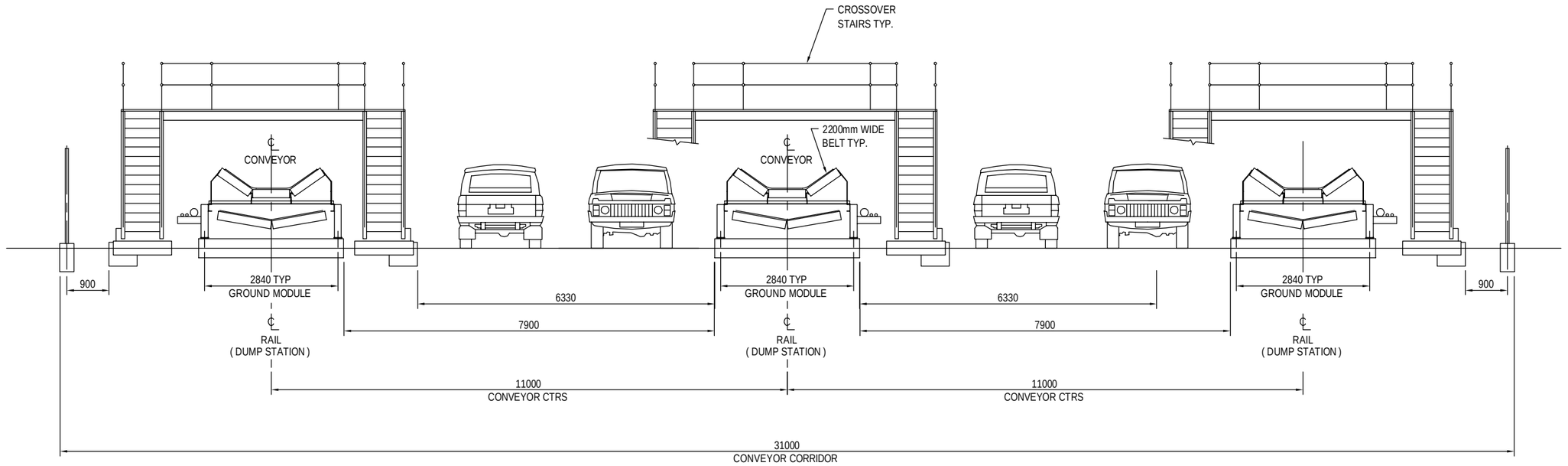
The rail receival will consist of:

- Train weigh bridge;
- Suspended dump hopper with grating and rail bridge;
- Receival conveyor with shuttle head to stockyard transfer conveyors;
- Tramp iron magnet;
- Belt weigher and moisture monitor (if required);
- Sampling station;
- Rail receival building and rail interface;
- Control room; and
- Ancillary equipment such as overhead crane, dust suppression spray systems, fire detection and protection systems, wagon wheel wash and rail dump station water management system.

In-loading Corridor

In-loading conveyors will transfer coal to the stockyard.

An indicative section of the conveyors and access roads along the corridor are shown in Figure 3-1. The corridor makes provision for up to three conveyors with a total width of approximately 31 m.



TENEMENT TO TERMINAL LTD.
YARWUN COAL TERMINAL PROJECT

Job Number 41-24484
Revision A
Date Mar 2012

INDICATIVE CROSS SECTION OF IN-LOADING CONVEYOR CORRIDOR

Figure 3-1

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Plot Date: 2 March 2012 - 11:59 AM Plotted by: Liam Houghton/Brisbane/GHD/AU Cad File No: G:\41\24484\Document Transfer\Outgoing\2012-03-02 Gis Figures\41-24484-FIG 3-1.dwg

3.1.2 Stockyard

Site Filling and Improvements

Ground improvements works will be undertaken on proposed Lot 101 (Figure 3-2) to raise the site level to +4.5 m AHD (+7.0 m LAT). There are a range of options being considered for these works including:

- Surcharge with / without stone columns;
- Excavating and replacing the soft clay layer – up to 3.5 m deep;
- Vacuum consolidation;
- Soil cement columns;
- Vibro / dynamic compacting / grouting; and
- Geogrid raft/piled raft.

As the prefeasibility phase progresses, the final fill method will be determined and investigated to identify management and mitigation methods.

It is proposed that filling works would commence and advance from the landward side of the site with lining and the placement of riprap on the final external face occurring once filling is complete. Filling works within the area of tidal influence would be scheduled during neap tidal cycles to avoid interaction with marine water. Geotextile material would be used in the areas potentially impacted by tidal movement to minimise any potential impact of filling works to water quality. Options for site access to transport the fill to the site are being investigated to identify a route that minimises impacts on State and Commonwealth matters. Current options are still being examined and include trucking in the fill or transporting it via the existing rail line which runs past the northern sector of the site.

The source of the fill is being investigated with the main options being to use fill from one of the following:

- Dredge spoil, subject to approval of the resource owner, from current approved dredging operations via trucking of dewatered sediments;
- Imported fill material from an approved quarry source; or
- A combination of the above.

3TL is seeking approval for the dredging and disposal of 4.036 Mm^3 of spoil (Section 3.1.3). It is proposed that this material will be disposed of on proposed Lots 101 and 103 (Figure 3-3) or other approved dredged spoil disposal locations.

Stockyard Operation

Blending of coal will occur on arrival in the stockyard. Coal will be stacked and reclaimed with a bucket wheel stacker / reclaimer. The stockyard will consist of a central berm equipped with two stacker / reclaimers and two yard conveyors (one per machine). Dozers will be used to provide additional dead storage outside the reach of the machines, but within each bay.

An indicative plan and cross section of the stockyard is shown in Figure 3-4 and Figure 3-5 respectively. Specific dimensions will be developed as the design progresses. Stockpiles will be approximately 1,100 m long and will become shorter as development moves north. Each stockpile will have up to 600,000 tonnes of capacity, giving storage for about 5% of the annual throughput. Ultimately the stockyard may accommodate a number of shorter stockpiles to allow for a mix of coal type and to meet coal company requirements for export. The final configuration will depend on the mix of customers using the terminal.

LEGEND

- Highway
- Main Road
- Secondary Road
- Existing Railway
- Extent of Site Filling

1:15,000 (at A4)

0 100 200 300 400 500

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tenement to Terminal Ltd

Yarwun Coal Terminal Project

Approximate Extent of
Site Filling for Early Civil Works

Job Number	41- 24484
Revision	A
Date	10/04/2012

Figure 3-2

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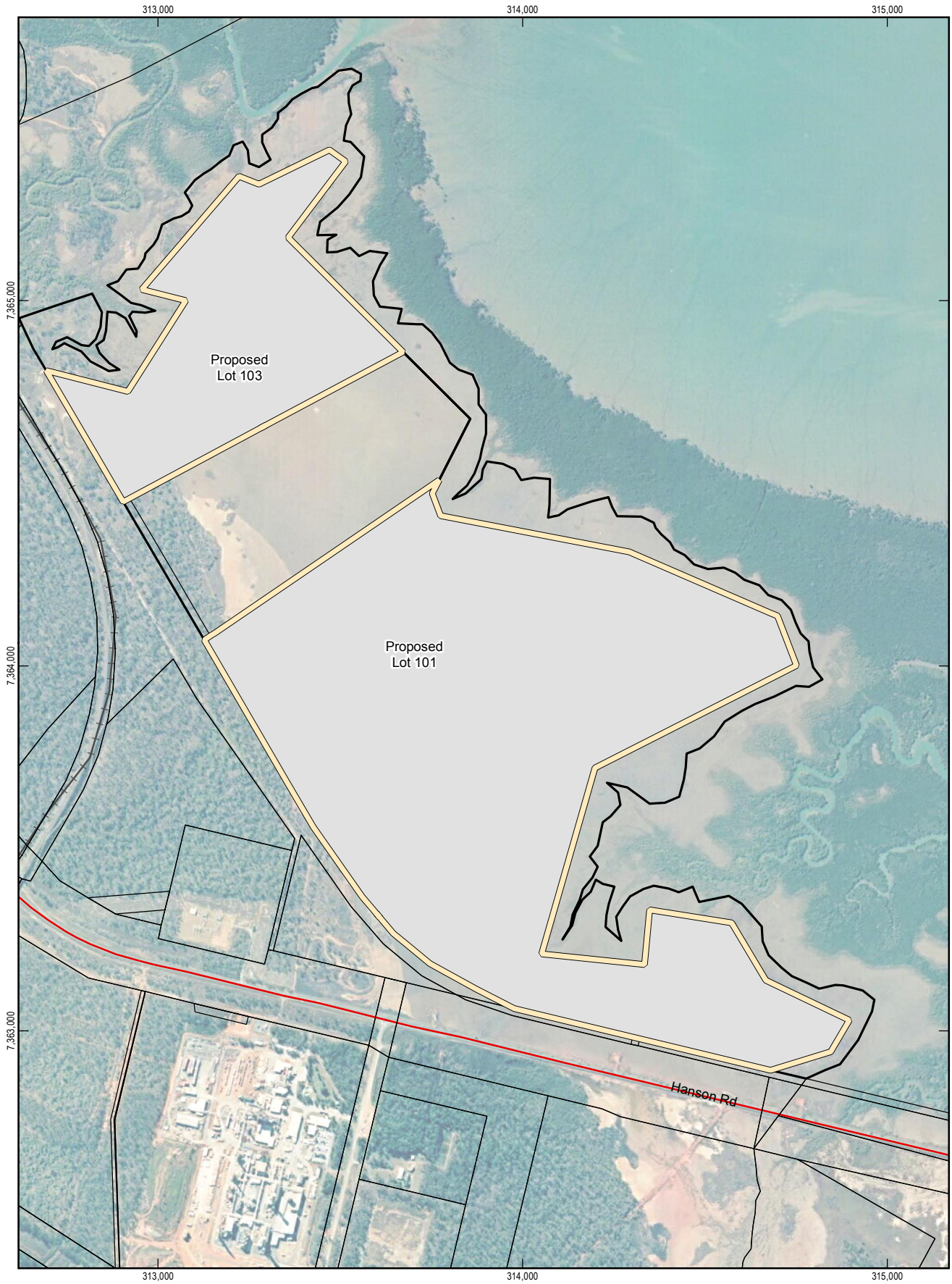

LEGEND

- Existing Railway
- Highway
- Main Road
- Secondary Road
- Extent of Site Filling
- Cadastral Boundary

1:15,000 (at A4)

0 100 200 300 400 500

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Yarwun Coal Terminal Project

Job Number	41- 24484
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Date	10/04/2012

Extent of Ultimate Site Filling

Figure 3-3

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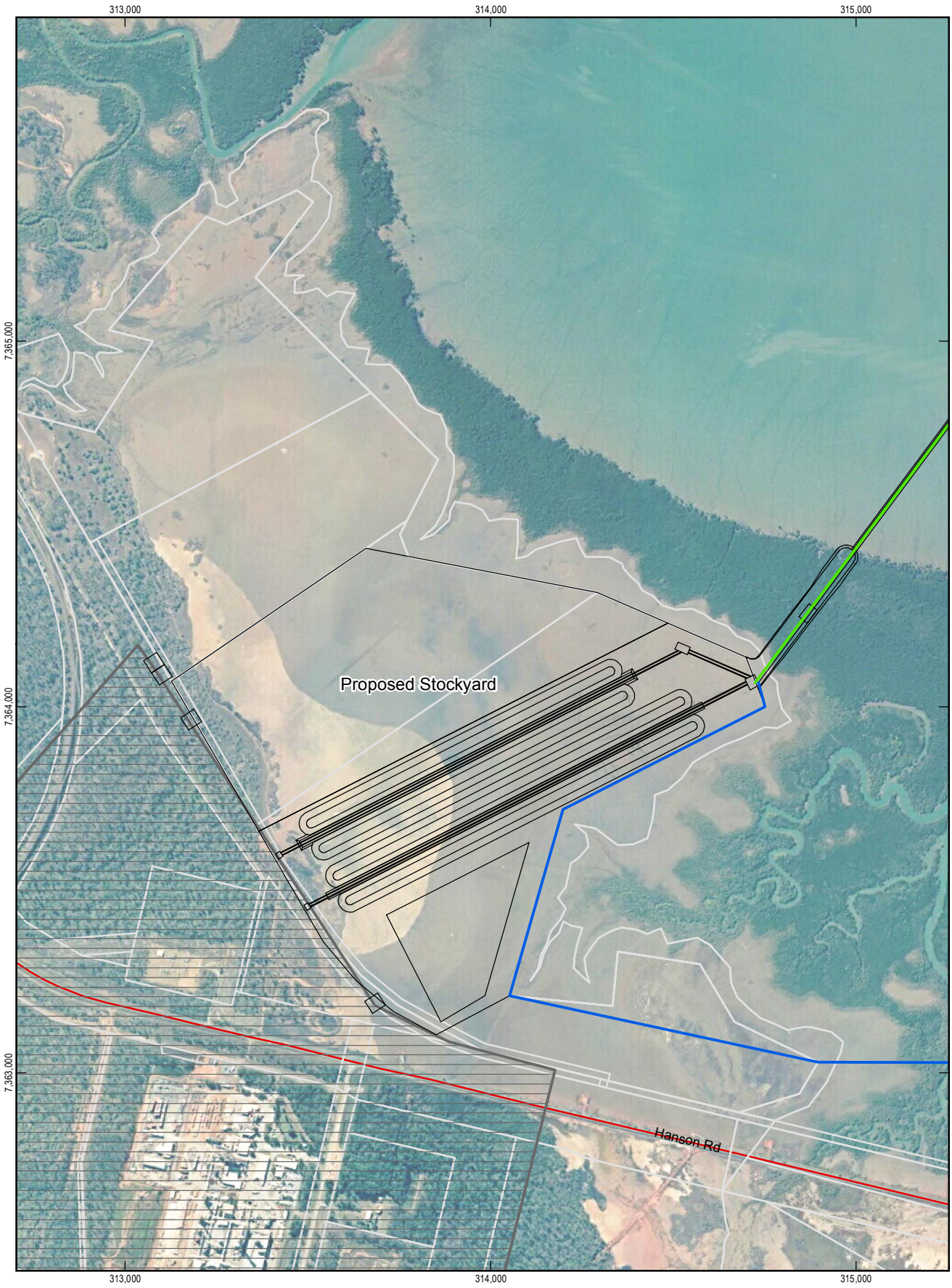
Level 4, 201 Charlotte St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com



LEGEND

- Highway
- Main Road
- Secondary Road
- Proposed Infrastructure
- Proposed Jetty Approach
  - Option 1
  - Option 2
- Cadastral Boundary
- In-loading Conveyor Study Area

1:15,000 (at A4)

0 100 200 300 400 500

Meters

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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Tenement to Terminal Ltd
Yarwun Coal Terminal Project

Job Number	41- 24484
Revision	A
Date	10/04/2012

Stockyard Arrangement

Figure 3-4

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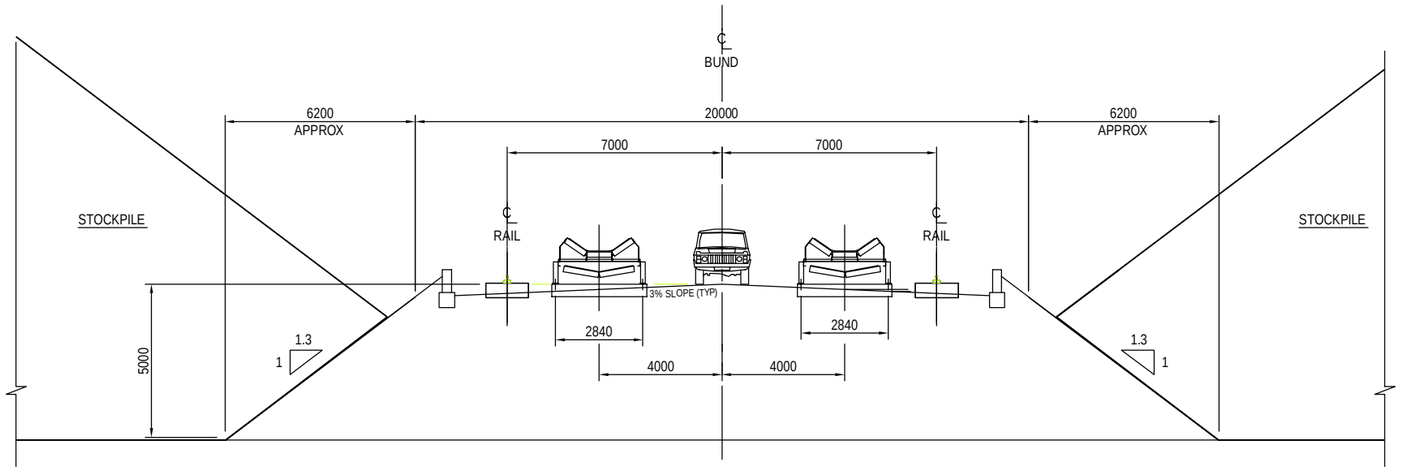
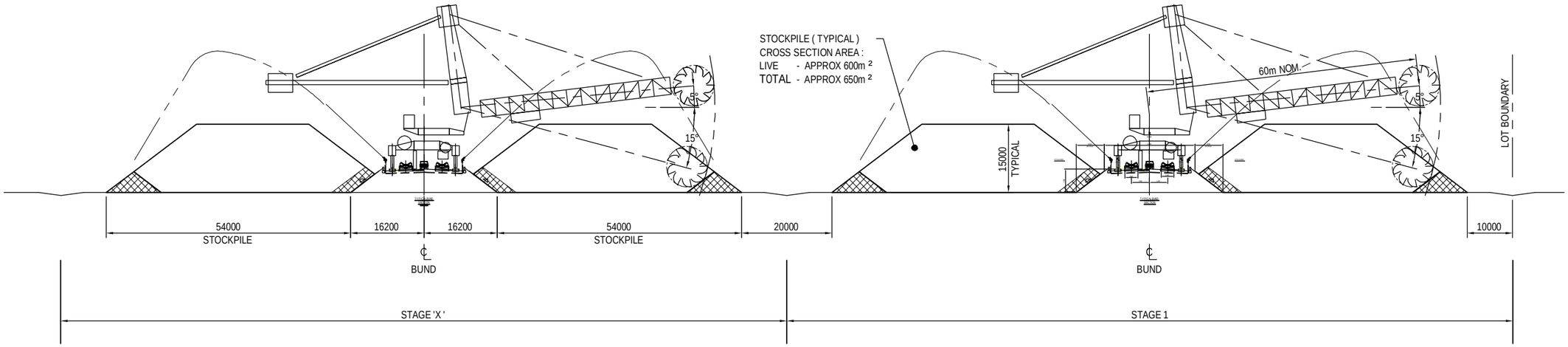


TYPICAL BUND
SECTION



TYPICAL SECTION
THROUGH STOCKYARD

TENEMENT TO TERMINAL LTD.
YARWUN COAL TERMINAL PROJECT

STOCKYARD CONFIGURATION

Job Number 41-24484
Revision A
Date Mar 2012

Figure 3-5

Level 4, 201 Charlotte St Brisbane QLD 4000 Australia **T** 61 7 3316 3000 **F** 61 7 3316 3333 **E** bnemail@ghd.com **W** www.ghd.com

Plot Date: 10 April 2012 - 3:34 PM Plotted by: Liam Houghton/Brisbane/GHD/AU Cad File No: G:\41\24484\Document Transfer\Outgoing\2012-04-10 Gis Figures\41-24484-FIG 3-5.dwg

3.1.3 Out-loading

The Facility

Out-loading will require the construction of a piled jetty from land (Figure 2-2). Two alignment options are being considered (Section 2.2.3). Further investigation will occur during detailed design to select the preferred option. The configuration of the jetty with one out-loading conveyor is illustrated in Figure 3-6. When the terminal is expanded to two out-loading streams, the jetty will be widened (additional piles driven and the headstock extended) and the second out-loading conveyor will be installed on the other side of the access road.

The wharf will be capable of servicing vessels ranging from Handymax (40,000 dead weight tonnes (DWT)) to Cape class (220,000 DWT). The out-loading conveyor will operate at up to 8,000 tph.

Two types of ship loader are being considered (Section 2.2.5). Further investigation will occur during detailed design to select the preferred option.

The facility will operate 24 hours per day, 365 days a year. A 180,000 DWT vessel would be filled over three tidal cycles. During busy periods, a vessel would depart the berth on a high tide, the next vessel would arrive in ballast as soon as practicable and be loaded ready to leave approximately 37.5 hours after the departure of the original vessel.

An initial estimate, based upon a mix of vessels, indicates that there would be around 500 vessels visiting the coal terminal each year once it reaches the 50 Mtpa export capacity.

Dredging and Spoil Disposal

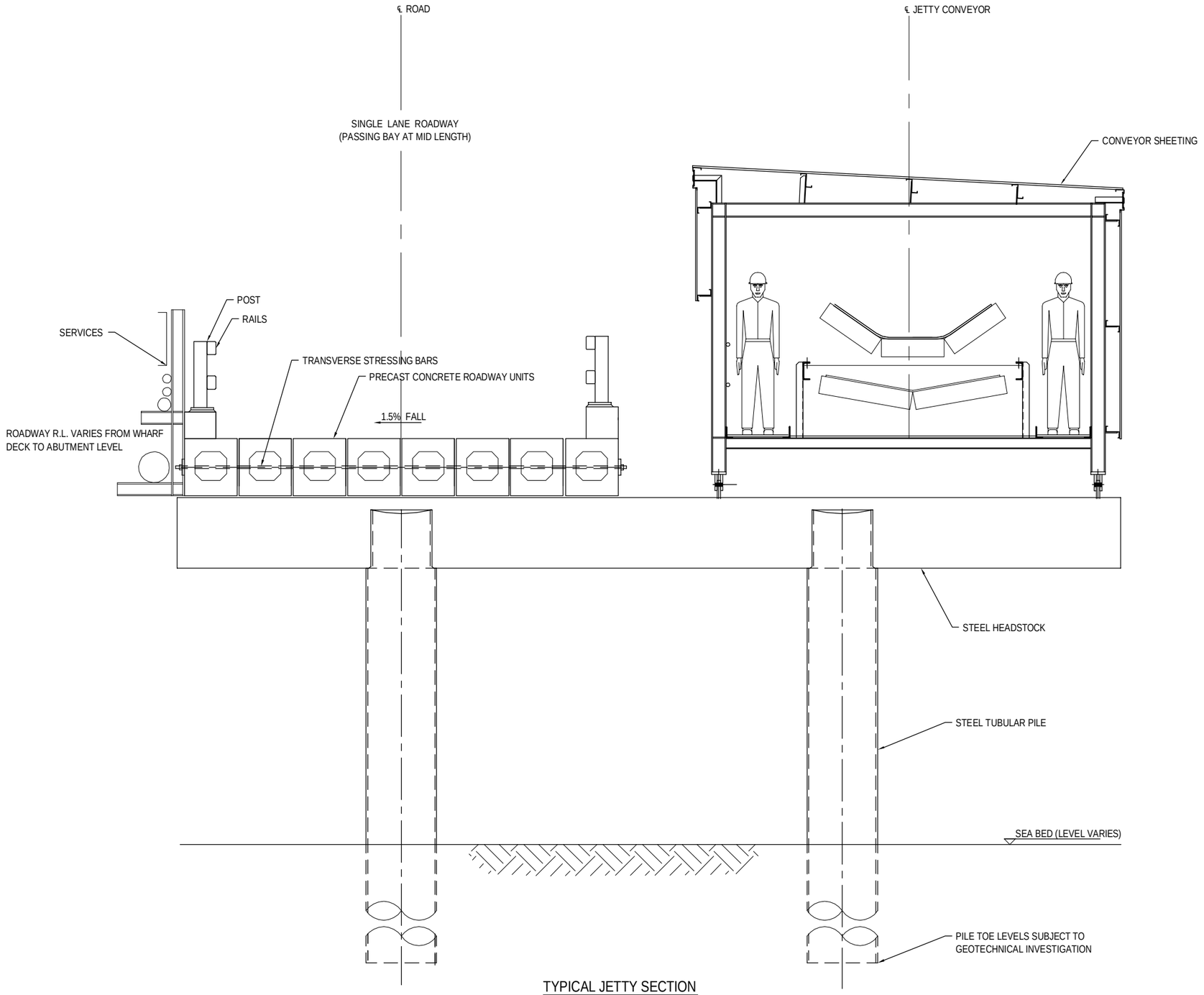
Dredging of the swing basin, approach channel, berth pockets and shipping channel extension will be to the same depths as RG Tana and WICET.

Approximately 6.64 Mm^3 of material will be dredged for the 3TL Project.

Dredging and disposal of approximately 0.54 Mm^3 of this material has been previously assessed as a component of the Western Basin EIS which covered development of the Targinie Channel. Dredging and disposal of approximately 1.554 Mm^3 and 0.51 Mm^3 of material from the proposed 3TL Berth 1 and Berth 2 areas respectively has also been assessed as a component of the EIS for the proposed Gladstone Pacific Nickel Project. Therefore, approximately 2.604 Mm^3 of material has been previously assessed for dredging and disposed elsewhere onshore within the port.

The EIS will assess the dredging and disposal of the balance of material (4.036 Mm^3) and for this material to be disposed of on proposed Lots 101 and 103 on SP235026, or other approved dredge spoil disposal locations.

3TL will be responsible for all dredging approvals, hence inclusion in this IAS. Responsibility for all dredging and spoil disposal and construction works including onshore bunding will be negotiated with GPCL if the project proceeds to the construction stage after obtaining all of its approvals.



TYPICAL JETTY SECTION
SCALE 1:25

0 0.5 1.0 1.5m
SCALE 1:50 AT ORIGINAL SIZE

TENEMENT TO TERMINAL LTD.
YARWUN COAL TERMINAL PROJECT

TYPICAL JETTY SECTION - STAGE 1

Job Number 41-24484
Revision A
Date Mar 2012

Figure 3-6

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Plot Date: 10 April 2012 - 3:35 PM Plotted by: Liam Houghton/Brisbane/GHD/AU Cad File No: G:\41\24484\Document Transfer\Outgoing\2012-04-10 Gis Figures\41-24484-FIG 3-6.dwg

3.1.4 Facilities and Utilities

Administration facilities at the coal terminal would include:

- Workshop;
- Administration building
- Central control room;
- Site road network;
- Central stores building and yard;
- Central fuel storage facility;
- Sample station building;
- Vehicle parking area and amenities on the berth;
- Amenities;
- Central workshops and yard;
- Site security office and gate;
- Customs and AQIS office;
- Conveyor belt storage yard;
- Dump station control room;
- Staff and visitor's car park; and
- Vehicle wash down facilities.

The terminal will require a new substation. Annual power use is estimated at up to 140 GW.

Raw water will be drawn from the Gladstone Area Water Board raw water distribution network. It is envisaged that up to 1500 MLpa of raw water will be used for:

- Potable water (45 ML following treatment);
- Dust control and wheel wash at rail receival area;
- Belt wash, dust suppression and wash down on conveyors;
- Dust suppression on stockpiles, stacker reclaimers and ship loaders; and
- Fire water supply.

A site water management system will harvest rainwater and recycle site water as far as is practicable.

Sewage reticulation is not available and a package sewerage treatment plant will be required.

3.2 Project Schedule

Subject to securing all necessary approvals construction is scheduled to commence during early 2015 and to be completed around the middle of 2017.

3.3 Workforce

The construction and operations workforce is estimated at 600 and 200 personnel respectively.

3.4 Project Cost

The capital cost for the Project is estimated at $2.2 billion.

4. Land Use and Tenure of Key Project Elements

4.1 Land Use

4.1.1 Stockyard Site

The proposed stockyard site is described as Lot 1 SP235026 and is located within the GSDA – Yarwun Precinct under the Development Scheme for the GSDA pursuant to the *State Development and Public Works Organisation Act 1971* (SDPWOA). Lot 1 SP235026 is in the process of being subdivided into three parcels comprising Lot 101, 102 and 103. The future coal terminal is proposed to be developed on Lot 101.

Lot 1 SP235026 is vacant and comprises a large open expanse of bare claypan habitat with occasional patches of emergent vegetation such as samphire, sand couch grass (saline grassland) and young mangroves, particularly around the edges of the claypan (Figure 4-1 and Figure 4-2).

Figure 4-1 Bare claypan comprising the majority of Lot 1 SP235026

Figure 4-2 Emerging halophytic vegetation

Lot 1 SP235026 is located on the south-western shoreline of the Port of Gladstone, west of the proposed Wiggins Island Coal Export Terminal (WICET) and south of the Fisherman's Landing precinct (Figure 1-1). The Gladstone - Mt Larcom Road (Hanson Rd) reserve and the Aldoga Materials Transportation and Services Corridor are located to the west of the site.

To the east of the study area is a mangrove fringe to Port Curtis. Boat Creek occurs to the north of Lot 1 and beyond this is another length of intertidal mudflat and the GPCL Fisherman's Landing precinct.

Surrounding existing land uses include the Orica Manufacturing Facility and Rio Tinto Alcan Yarwun (RTAY) Alumina Refinery. Orica's underground caustic pipeline and RTAY's overhead conveyor are located within bushland adjacent to the site as well as substation facilities.

Lot 1 is used for informal vehicle use. There is an existing dirt access track off the Gladstone - Mount Larcom Road that provides access. Visual inspection of the site confirmed burnt out car bodies, numerous tyre tracks, makeshift routes and a number of old tyres across the site.

4.1.2 Rail Loop

The proposed rail loop is located on Lot 3 SP235022, Lot 9 SP103894, and Lot 1 AP17216 south of Hanson Road directly southwest of the RTAY Alumina Refinery. The site is a low hilly area comprised of remnant vegetation. The rail loop is bordered on the south by the Mount Stowe state forest and below that the Calliope Conservation Park (Figure 1-2).

4.1.3 Rail Alignment

The proposed rail line corridor traverses a variety of land types and land uses including previously cleared industrial land, existing road, rail and powerline easements, mapped REs and non-remnant vegetation such as mapped high value regrowth vegetation.

4.1.4 Offshore Infrastructure Area

The proposed approach jetty and berths will be located offshore of the proposed stockpile site (Lot 1 SP235026) (Figure 1-2). The offshore area forms part of Port Curtis and will be located to the north west of the adjacent WICET facility.

4.2 Tenure and Zoning

It is proposed that Lot 1 SP235026 will be subdivided into Lots 101, 102 and 103. The stockyard is proposed for Lot 101 with Lot 103 proposed to be used for dredge spoil disposal if required.

The stockyard site is designated as part of the Yarwun Precinct as indicated in the Gladstone State Development Area (GSDA) Land Use Plan (Figure 4-3) and is freehold land owned by the Minister for Industrial Development (Figure 4-4).

The stockyard site is within the Gladstone Regional Council and is not located on Strategic Port Land. However the offshore infrastructure area is located within GPCL Port limits.

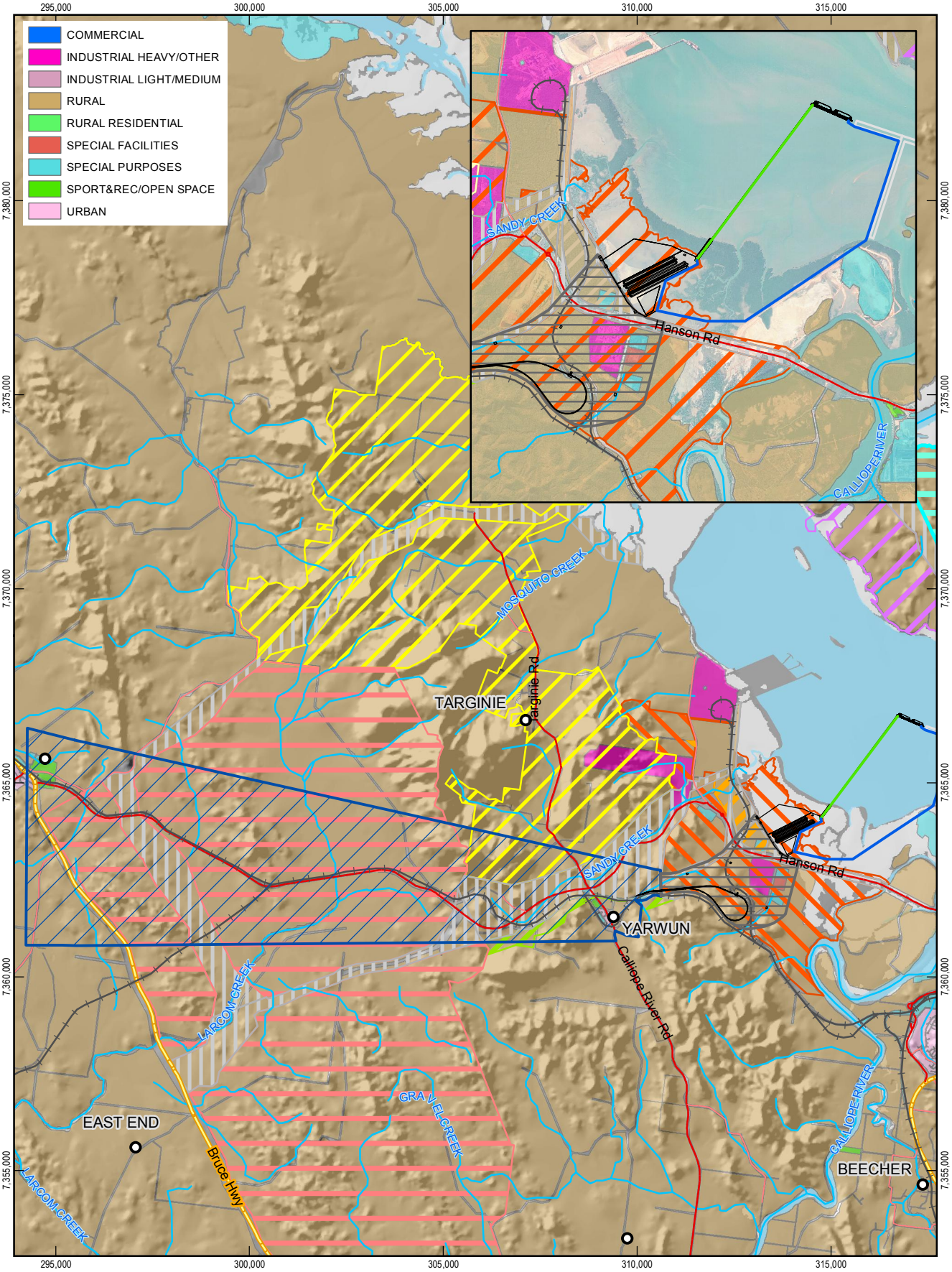
The site generally lies between -0.76 m AHD and 2.69 m AHD and is tidally influenced. The site is not currently zoned as local government areas below HAT are unzoned under the transitional planning scheme for Calliope Shire (the predecessor to the Gladstone Regional Council). There is currently a draft planning scheme for Gladstone, under which the site is zoned as Rural.

The land proposed for the rail loop is designated as part of the Yarwun Precinct under the GSDA Land Use Plan. The rail loop is predominantly unallocated state land (Figure 4-4).

Uses considered to meet the intent of the Yarwun Precinct include the following:

- Bulk stores;
- High impact industry;
- Liquid fuel depot;
- Materials transport infrastructure;
- Recycling industry;
- Heavy industry;
- Infrastructure facility;
- Local infrastructure;
- Medium industry; and
- Waste management.

The preferred corridor for rail access to the site still needs to be determined. Options for the corridor occupy land that is variously zoned within the GSDA land use plan and Gladstone Regional Council planning schemes (Figure 4-3).



LEGEND

- Locality
- Existing Railway
- Watercourse
- Proposed Infrastructure
- Highway
- Main Road
- Secondary Road

Proposed Jetty Approach

- Option 1
- Option 2
- Rail Study Area
- In-loading Conveyor Study Area

GSDA Precinct

- Aldoga Precinct
- Corridor
- Corridor Buffer Area Precinct
- Curtis Island Industry Precinct
- Curtis Island Env. Management Precinct
- Stuart Oil Shale Reserve Preservation Area
- Targinnie Precinct
- Yarwun Precinct

1:140,000 (at A4)

0 1 2 3 4 5

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

N

GHD

Tenement to Terminal Ltd
Yarwun Coal Terminal Project

GSDA and Local Government Land Use Intents

Job Number 41- 24484
Revision A
Date 10/04/2012

Figure 4-3

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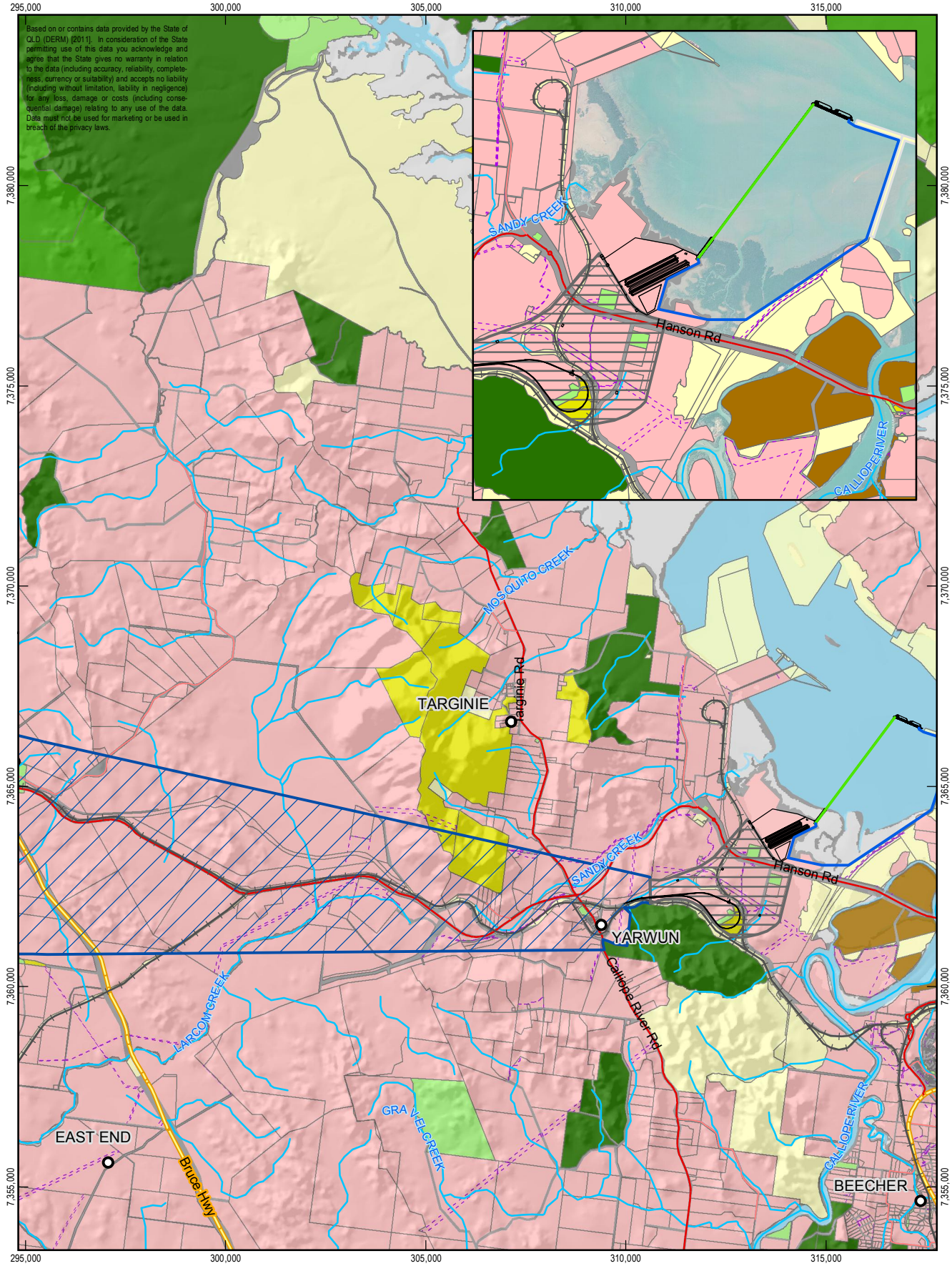

LEGEND

- Locality
- Existing Railway
- Watercourse
- Proposed Infrastructure
- Highway
- Main Road
- Secondary Road

Proposed Jetty Approach

- Option 1
- Option 2
- Rail Study Area
- In-loading Conveyor Study Area

Land Tenure

- Easement
- Freehold
- Housing Commission Lease
- Commercial / Industrial
- Leasehold
- Port and Harbour Boards
- Road/Esplanade Easement
- National Park
- Reserve
- Railway
- State Forest
- State Land

1:135,000 (at A4)

0 1 2 3 4 5

Kilometers

Map Projection: Universal Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia (GDA)
Grid: Map Grid of Australia 1994, Zone 56

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GHD

Tenement to Terminal Ltd
Yarwun Coal Terminal Project

Job Number 41- 24484
Revision A
Date 10/04/2012

Land Use and Tenure

Figure 4-4

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Level 4, 201 Charlotte St Brisbane QLD 4000 T +61 7 3316 3000 F +61 7 3316 3333 E bnemail@ghd.com W www.ghd.com

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5. Existing Environment and Potential Impacts

5.1 Overview of Impacts

Potential impacts associated with the Project may arise during the following phases:

Construction

This phase of the project consists of the construction of:

- A new 14 km rail line commencing from east of Mt Larcom;
- Rail in-loading facilities and balloon loop;
- In-loading conveyor and transfer towers;
- Civil works to provide stockyard capacity up to 50 Mtpa;
- Stockyard and materials handling infrastructure;
- Piled trestle to an offshore piled berthing jetty;
- Out-loading conveyor and shiploaders;
- Two new berths and associated dredging including two new berth pockets, swing basin, approach channel and shipping channel extension; and
- Operations and stores buildings.

Potential impacts during construction include:

- Disturbance to terrestrial and marine vegetation and habitat loss;
- Disturbance to terrestrial and marine species;
- Disturbance to sites of heritage significance;
- Modification to surface water features due to rail construction;
- Modification to coastal processes from site filling and dredging;
- Marine water quality from dredging and dredge spoil disposal;
- Marine water quality from disturbance to ASS;
- Modification to landform from rail and balloon loop construction;
- Modification to visual amenity through construction of all project elements;
- Noise and vibration including from pile installation;
- Dust emissions;
- Construction traffic; and
- Disposal of excess materials.

Operations

This phase of the project consists of:

- Train provisioning;
- Rail of coal to the in-loading facility;
- Coal unloading and transfer to the stockyard via conveyors and transfer points;
- Coal blending, stockpiling and reclaiming;
- Transfer of coal to the shiploaders;
- Shiploading; and
- Shipping of coal.

Potential impacts during operations include:

- Noise from train movements;
- Noise and dust from in-loading, materials handling and shiploading;
- Dust from coal stockpiles;
- Water discharge from the stockpile area;
- Ballast discharge;
- Increased shipping within the Port of Gladstone; and
- Visual impact from changes in the landscape.

5.2 Land Use

5.2.1 Existing Values

Stockyard Site

Lot 1 SP235026 is vacant and consists of intertidal, low-lying mudflats with minimal vegetation cover. It is used for informal vehicle use.

The site is within the Gladstone Regional Council and is not located on Strategic Port Land. The site is not currently zoned as local government areas below HAT are unzoned under the transitional planning scheme for Calliope Shire. There is currently a draft planning scheme for Gladstone under which the site is zoned as Rural.

Rail Loop Site

Lot 3 SP235022, Lot 9 SP103894 and Lot 1 AP17216 are vacant. It is a low hilly area covered in remnant vegetation. The rail loop is bordered on the south west by the Mount Stowe State Forest and below that the Calliope Conservation Park. To the east is the Orica Manufacturing Facility and to the north is the Rio Tinto Alcan Yarwun Alumina Refinery. The land proposed for the rail loop is located within the GSDA – Yarwun Precinct under the Development Scheme for the GSDA pursuant to the SDPWO Act.

Rail Alignment

The proposed rail line corridor traverses a variety of land types and land uses including previously cleared industrial land, existing road, rail and powerline easements, mapped REs and non-remnant vegetation such as mapped high value regrowth vegetation.

5.2.2 Potential Impacts and Management

Potential impacts on land use from the Project include:

- Land use fragmentation from the development of a new 14 km rail line; and
- Positive impact from locating coal infrastructure in an area already designated and used for such purposes.

Assessment of the Project against relevant local and regional land use plans will be undertaken as part of the environmental assessment.

5.3 Soils, Geology and Sediments

5.3.1 Existing Values

Contaminated Land

A search of the QLD Department of Environment and Heritage Protection (DEHP) (formally the Department of Environment and Resource Management) contaminated site database was undertaken for Lot 1 SP235026 and it was found that the site is not included on the Environmental Management Register (EMR) or the Contaminated Land Register (CLR). It is not yet known whether contaminated land occurs within the railway alignment and loop.

Acid Sulphate Soils

The stockyard is proposed to be constructed on land below 5 m AHD. This elevation is considered a marker for common occurrence of Acid Sulphate Soils (ASS). In addition, previous studies in the harbour indicate that dredging operations will encounter both actual ASS (AASS) and potential ASS (PASS).

Geology of Stockyard Site

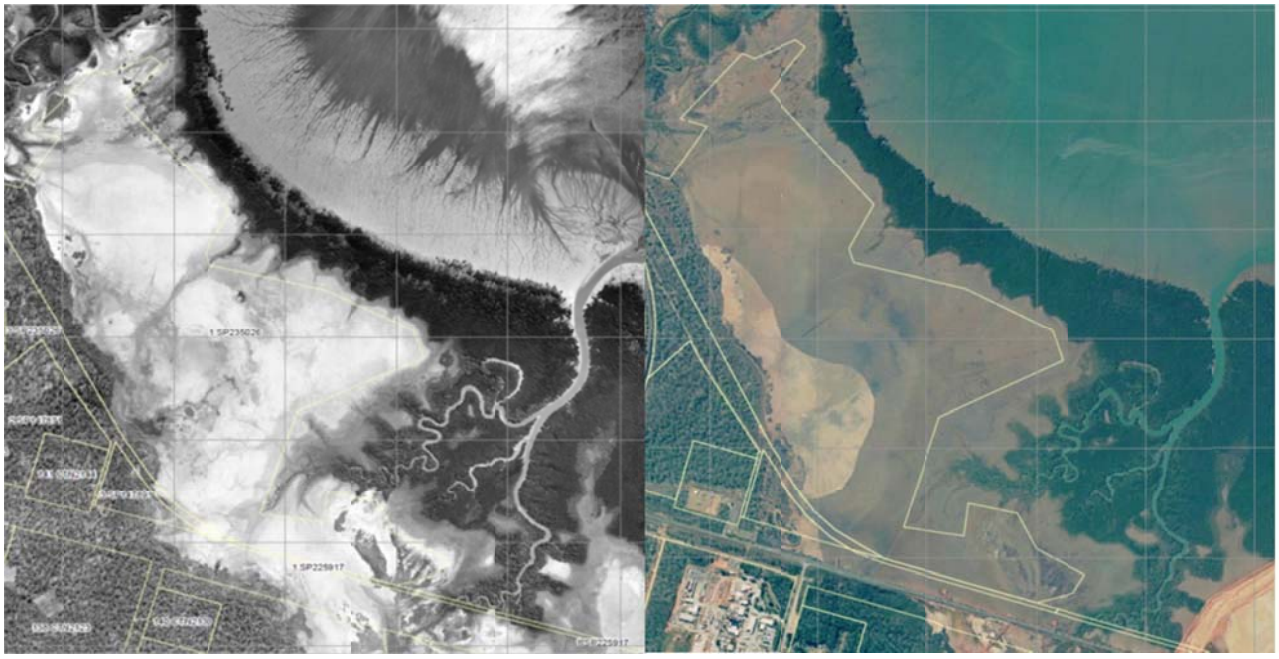
The stockyard site is composed of Quarternary mud, sandy mud, muddy sand and minor gravel; estuarine channels and banks and supratidal flats and coastal grasslands. These superficial deposits may be underlain by a weathered profile of The Narrows Group of sediments that have backfilled the main structural feature of the area “The Narrows Graben”. The mudflat lies within The Narrows Graben.

Geology of Rail Loop Site

Mapping indicates that the proposed loop lies within the Doonside Formation consisting of chert, jasper, mudstone, siltstone, limestone, tuff, altered basalt and lithic sandstone. In addition, the published map suggests that two major structural features (possibly the western margin of The Narrows Graben) trending northwest – southeast cross cut the proposed rail loop.

Morphology

Aerial photography from 1965 and 2007 of the proposed stockyard site (Figure 5-1) provides a good reference / comparison of the stability of the site. Inspection and comparison of the photographs confirms that over the 40 year period between photographs the change in the extent of the mud flats and mangroves is negligible to indiscernible and confirms that the site is stable.



1965 Photograph 2007 Photograph

Figure 5-1 Aerial Photograph Comparison of the Stockyard Site

5.3.2 Potential Impacts and Management

Potential impacts from ASS during construction of the stockyard area include oxidation of AASS and PASS displaced as a result of the "mud wave" generated from the placement of bund material, and the potential for transport of heavy metals. Placement of dredge spoil within the bunded area could also result in the production of acid leachate and increased concentrations of heavy metals from ASS previously located in anoxic conditions. Previous studies in the harbour indicate that naturally occurring neutralising capacity will result in most of the dredged material self-neutralising.

Potential impacts from dredging include the suspension of fine sediments in the water column during dredging resulting in the redistribution of PASS to other parts of the harbour and acid generation from dredged material if saturation of the material is not maintained.

The occurrence of ASS and its potential impact will be quantified and, where necessary, an ASS management plan will be developed. A component of this plan will be a program of testing to ensure that ASS material is handled and managed appropriately.

Contamination assessments will be undertaken for areas not previously surveyed.

5.4 Coastal Processes

5.4.1 Existing Values

The Port Curtis region is characterised by extensive areas of tidal flats that become exposed at low tide and large areas of mangroves fringing the estuary which act as a storage buffer for water at high tide (Connell Hatch, 2006).

The processes transporting sediments in Port Curtis are dominated by tidal currents driven by the relatively large spring tides, coupled with a mild wave climate that stirs up sediments in the shallower areas at times of low tide (GHD, 2009a; Connell Hatch, 2006).

The subject area is naturally sheltered by Curtis and Facing Islands protecting it from ocean waves to the east (GHD, 2009a). The site is further protected by a band of mangroves.

The bathymetry in the Gladstone harbour has been modified by the development of shipping channels, land reclamation and coastline armouring. Dredging of the shipping channel occurs regularly, with the spoils deposited at a location approximately 9 km south east from Facing Island (Herzfeld et al., 2004).

5.4.2 Potential Impacts and Management

The Project will result in the filling of intertidal flats to approximately +4.5 m AHD (+7.0 m LAT).

Dredging will result in the construction of a swing basin, approach channel, berth pockets and shipping channel extension.

Potential impacts relate to changes in flow patterns, water level and extent of inundation through the filling of proposed Lots 101 and 103, changes in flow patterns and sedimentation rates associated with dredging, and modification to the transport of sand and silts due to changes in circulation.

Deepening of the existing dredged channels throughout the length of the Port may increase the velocity of tidal currents and alter sedimentation and scour patterns throughout the Port.

Impacts on coastal processes resulting from the Project will be quantified. This will include hydrodynamic modelling to assess changes to water levels, tidal currents, ambient and extreme wave climates, and transport of sands and silts.

The results of the assessment will be used to develop management measures associated with site filling, capital dredging and maintenance dredging.

5.5 Surface Water

5.5.1 Existing Values

Rail Alignment

The rail alignment will traverse approximately nine named and unnamed tributaries including Sandy and Larcom Creeks. These tributaries form part of the Calliope River Catchment. The catchment is bounded by the Calliope Range to the west and the Mt Larcom Range to the north. With a relatively small catchment of 2236 square kilometres, the river's main tributaries are Oakey, Paddock, Double and Larcom creeks (DNRW, 2007).

Stockyard Site

To the south east of Lot 1, the intertidal mudflats are cut by three tributaries that join to form a creek discharging directly into Port Curtis. Aerial photography indicates that no significant flows are occurring within these creek lines. Aerial photography indicates that the foreshore and adjacent creeklines are well established, as the vegetation and morphology have altered little over time.

Sandy Creek bisects the intertidal flats to the north of Lot 1.

The present morphology of the Calliope River and the associated creeks within the Project catchment area suggest that in the Quaternary / Pleistocene / Miocene the river and its tributaries may have followed other courses, i.e. the tidal mudflats may also encompass palaeochannels.

Port Curtis Wetland

The stockyard site is located within the Port Curtis Wetland. The Port Curtis Wetland is listed on the Directory of Important Wetlands in Australia and covers some 31 232 ha. The wetland includes all tidal areas in the vicinity of Gladstone, from a line between Laird Point and Friend Point (southern end of The Narrows), to a line between Gatcombe Head and Canoe Point, including the seaward side of Facing Island and Sable Chief Rocks, and southern Curtis Island west of a line between North Point and Connor Bluff (SEWPaC, 2012).

Features of the wetland include partially enclosed embayment and shallow estuaries, including small, continental rocky islands, intertidal flats and estuarine islands; permanent, shallow estuarine and marine waters; significant freshwater input from the Calliope and Boyne rivers; elevated natural turbidity throughout the area; generally good water quality, though several point sources exist for sewage, stormwater and industrial effluents (SEWPaC, 2012).

5.5.2 Potential Impacts and Management

Potential impacts on local and regional surface waters arising during construction and operation include:

- Changes to the catchment area of local drainage lines;
- Changes to the hydrology of the Port Curtis Wetland;
- Acidification through the handling and use of materials containing ASS;
- Direct impacts due to disturbance of on-site drainage lines and drainage lines associated with the rail corridor;
- Contamination of local waterways from contaminant leaching; and
- Clearing of vegetation and exposure of soils and sub soils to erosive forces.

The main potential sources of sediment release from the Project are from disturbance to areas that are currently vegetated and from activities associated with the filling of Lot 1.

A detailed flood study will be completed to assess the risk to all construction and operations components of the Project from flood events, consistent with recommendation 6.2 of the Queensland Floods Commission of Inquiry Final Report of 16 March 2012. The assessment will also address the potential flooding impacts to surrounding areas as a result of Project components. Key focus areas will be the intertidal Lot 1 and waterway crossings within the rail corridor.

Surface water quality will also be investigated as part of the environmental assessment.

If required a Surface Water and Sediment Erosion Management Plan will be developed.

5.6 Marine Water Quality

5.6.1 Existing Values

Water quality within Port Curtis is influenced by several anthropogenic activities, including grazing, agriculture, industry and urban based activities. Previous water quality investigations undertaken within Port Curtis indicate that the bay is subject to high levels of turbidity, nutrients and bacterial levels (Connell Hatch 2006). High turbidity events are considered to be a natural process within Port Curtis resulting from freshwater inflows during rainfall and wave and tidal current induced resuspension. In addition, the resuspension of sediments during dredging can result in an increase in bioavailable metals concentrations in the water column (Anderson et al., 2007).

Marine water quality in the Project area is also variable as a result of turbidity. Existing water quality information for Port Curtis shows that tidal movements, water depth and runoff as well as wind direction and speed can all influence turbidity (GHD, 2009a). This is particularly the case in the proposed Fisherman's Landing Northern Expansion area and other intertidal areas of Port Curtis because of the shallow depths and soft sediments in these areas.

A review of turbidity for Fisherman's Landing (GHD, 2009a) showed that turbidity was higher and more variable on the tidal flats than in the adjacent deeper waters. These characteristics are also likely to apply to the Project area.

Water quality data for the Western Basin Dredging and Disposal Project (GHD, 2009b) indicate that the majority of water quality parameters were below the limit of reporting. Anthropogenic contaminant inputs are minor although nitrogen regularly exceeded guideline values.

5.6.2 Potential Impacts and Management

Potential impacts on marine water quality include increased turbidity from dredging, release of contaminants from dredged material, and sediment and contaminant release from filling of Lot 1.

The potential impacts of dredging and dredged material disposal are the generation and migration of turbid plumes and the associated sedimentation and light reduction at sensitive habitats such as seagrasses and other intertidal communities.

It is not anticipated that the plumes generated from dredging activities will have a significant impact on the GBRMP given the distance from the dredging to the GBRMP.

Past GPC capital dredging sediment studies have indicated that sediments are generally uncontaminated and suitable for onshore disposal to reclamation areas at RG Tanna Coal Terminal and Fisherman's Landing and have also met the Interim Sediment Quality Guidelines – low screening levels in the National Ocean Disposal Guidelines for Dredged Material (NODGDM, Environment Australia, 2002) (GPC, 2008c).

Detailed sediment monitoring programs for maintenance dredging have been carried out on channel sediments in 1992, 1996, 2000 (by WBM Oceanics Australia) and 2006 by GHD (GPC, 2008c). Approximately 25 – 30 grab samples were collected during each study allowing broad comparisons of results over time. Approximately 10 – 15 grabs were regularly spaced along the outer channel and 10 – 15 grabs regularly spaced along the inner channel closest to port, industrial and urban developments (GPC, 2008c).

The 1992, 1996 and 2000 sediment studies indicated that sediments were generally uncontaminated and suitable for sea disposal. In 2006, the 95% Upper Confidence Limit (UCL) for arsenic, TBT and PAHs slightly exceeded NODGDM screening levels, however evidence was provided which indicated that the risk of dredging and disposal of this material was low (GPC, 2008c).

Any sediments to be dredged as part of the 3TL Project would be analysed and compared to the Environmental and Health Investigation Levels in the Draft Guidelines for the Assessment and Management of Contaminated Lands 1998 and the Interim Sediment Quality Guidelines in the NODGDM (Environment Australia, 2002).Marine water quality impacts will be quantified and will include the establishment of a water quality monitoring program, collection of sediment samples for contaminant analysis and elutriate testing for contaminant release.

The design of the Lot 1 fill area will include measures to reduce water quality impacts from leaching of material through the bund wall, decant waters and storm water runoff.

A Dredge Management Plan will be developed for the Project.

5.7 Groundwater

5.7.1 Existing Values

The stockyard site is composed of Quarternary mud, sandy mud, muddy sand and minor gravel; estuarine channels and banks and supratidal flats and coastal grasslands. The mudflat lies within The Narrows Graben. Groundwater at the stockyard site is tidally influenced.

Seven vibrocore boreholes were performed between 14 and 20 November 2011 at the stockyard site. Groundwater was observed in all vibrocores at a depth of 0.40 mbgl. An assessment of groundwater chemistry was not undertaken but groundwater is likely to be hypersaline.

5.7.2 Potential Impacts and Management

The construction of the Project will require various civil works (cut, fill and excavations). These works have the potential to impact on the hydrogeological regime of the area including the lowering of groundwater levels in excavated areas. Resulting impacts may include:

- Lowering of the groundwater levels;
- Mobilisation of contaminated groundwater; and
- Reduction in available water for groundwater dependent ecosystems.

The effects of the Project construction and operation on groundwater and water use will be investigated further as part of the environmental assessment.

If required groundwater monitoring will be undertaken during construction and operation of the Project by installation of groundwater monitoring bores.

5.8 Terrestrial Ecology

5.8.1 Existing Values

The proposed coal stockyard, rail loop and rail line areas encompass the terrestrial portion of the Project.

Stockyard

The proposed stockyard area is made up of fringing mangrove forests and coastal saltpans bordered by Eucalyptus woodland. The area is part of the Port Curtis Wetland (QLD019), a wetland of national importance under the directory of important wetlands (Environment Australia, 2001). It is also characterised as a wetland of ecological significance, comprising a wetland management area plus a 100 m trigger area according to the DEHP map of referable wetlands. Essential habitat for four *Nature Conservation Act 1992* (NC Act) listed threatened species, the koala (listed as vulnerable within the south east Queensland bioregion, least concern elsewhere in Queensland), little pied bat, rusty monitor and wallum froglet is mapped within a 1 km boundary of the site.

Rail Loop

The proposed rail loop will be constructed on a low hilly area containing remnant Eucalyptus / Corymbia woodland mapped as an of concern regional ecosystem (RE) by the DEHP RE mapping (Version 6.0b). A small area of endangered RE 12.3.3 (*Eucalyptus tereticornis* woodland on alluvial plains*)* is mapped, and is also mapped as essential habitat for the koala. The rail loop is bordered on the south by the Mount Stowe State Forest and below that the Calliope Conservation Park. As the proposed rail loop area is connected to these two large vegetation fragments it has connectivity values and may provide a refuge for wildlife within the fragmented landscape. The DEHP biodiversity planning assessment (BPA) mapping for the south-east Queensland bioregion indicates that biodiversity values of state significance are present within this area.

Rail Line

The proposed rail line corridor traverses a variety of land types and land uses including previously cleared industrial land, existing road, rail and powerline easements, mapped REs and non-remnant vegetation such as mapped high value regrowth vegetation. Endangered, of concern and least concern REs are all mapped within the corridor and form large fragments of vegetation that the Brigalow Belt bioregion BPA mapping identifies as having biodiversity values of regional and local significance. Essential habitat for the koala and five plants is mapped adjacent to the proposed rail corridor.

Threatened Ecological Communities

The EPBC Protected Matters search tool identified four threatened ecological communities (TECs) listed under the EPBC Act as potentially occurring within the Search Area.

- Littoral Rainforest and Coastal Vine Thickets of Eastern Australia. Considered Critically Endangered under the EPBC Act and has been significantly reduced and fragmented by development. Key threatening processes include vegetation clearing, weed invasion, inappropriate fire and grazing regimes and natural disturbance associated with cyclones etc;
- Weeping Myall Woodlands. Considered Endangered under the EPBC Act and has been significantly reduced and fragmented by development. Key threatening processes include vegetation clearing, heavy grazing, lopping for drought fodder, weed invasion, fertiliser and herbicide application as well as loss of fauna from the ecological community;

- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions. Considered Endangered under the EPBC Act and has been significantly reduced and fragmented by development. Key threatening processes include vegetation clearing and fragmentation, hydrological changes and altered water flow and flooding regimes, inappropriate grazing regimes, weed invasion, mining and low level of reservation in protected areas; and
- Semi-evergreen Vine Thickets of the Brigalow Belt (North and South) and Nandewar Bioregions. Considered Endangered under the EPBC Act and has been significantly reduced and fragmented by development.

Threatened Flora Species

Database searches of the EPBC Protected Matters search tool and DEHP Wildlife Online database identified nine threatened flora species listed under the EPBC Act as potentially occurring within the search area. These species and their status are described in Appendix A, Table A1 along with the likelihood of their occurrence within the Project area. Based on desktop assessment, five of the threatened flora species could potentially be present within the Project area.

Threatened Terrestrial Fauna Species

Desktop analysis of database searches and previous studies identified 20 threatened fauna species listed under the EPBC Act that have been previously recorded in the search area, or within geographic ranges that overlap this search area (four reptiles, eight birds and four mammals).

Eighteen of these were identified only by the EPBC Protected Matters search, with no records of these species within the Project area from DEHP's Wildlife Online database, nor from the field surveys of the stockyard site (GHD, 2012).

Appendix A, Table A1 lists the threatened fauna species identified, together with their preferred habitat and an indication as to the likelihood of each species occurring within the study area. Based on the desktop habitat review, 16 of these 20 threatened species could potentially occur within the Project area.

Two Water Mouse (*Xeromys myoides*) individuals were captured within the vicinity of the proposed coal terminal site during surveys in December 2011 (GHD, 2012). The capture locations were approximately 150 m from the eastern boundary of the stockyard.

Migratory Terrestrial Species

Forty-one bird species listed as Migratory under the EPBC Act were identified as previously recorded from within the search area, or with geographic ranges that overlap the study area. One of these species is also listed as Endangered and one as Vulnerable under the EPBC Act.

These species are listed in Appendix A, Table A2, together with their preferred habitat and an indication of the likelihood of their occurrence within the study area. Based on the desktop habitat review and field surveys, 40 of these 41 listed Migratory birds are either known from or could potentially utilise habitats within the study area.

A review of migratory shorebirds in the Port Curtis area (Rohweder and Charley, 2010) identified a mangrove roost at the mouth of Flying-fox Creek, approximately 700 m from the boundary of the stockyard (Lot 1). Low numbers of migratory shorebirds were identified using this roost, including Bar-tailed Godwit, Eastern Curlew and Grey-tailed Tattler. Based on the numbers recorded, the Flying-fox Creek mangrove roost was not identified as being of National, State or Regional significance.

While the coal terminal site (including Lot 1) has not been identified as an area of National or State significance for shorebirds, the presence of shorebirds on the site indicate that the area and the adjacent mangrove area is at least of local significance.

Surveys in 2011 identified an additional four Migratory birds as present within the stockyard area: Common Tern, Rainbow Bee-eater, White-bellied Sea-Eagle and Whimbrel (GHD, 2012).

5.8.2 Potential Impacts and Management

The Project may have direct and indirect impacts to the ecology of the Project area during both the construction and operations phases. These could include:

- Loss of clay pan foraging habitat for water mouse and shorebird species;
- Compaction of soils adjacent to the stockyard – effects to woodland/mangrove root zones;
- Loss of habitat (roosting, shelter, foraging, breeding) for native fauna;
- Degradation of habitat adjacent to, and downstream of, cleared areas;
- Loss of regional ecosystems, flora habitat and vegetation community extents;
- Habitat fragmentation, reduction in connectivity and reduced capacity for fauna dispersal;
- Fauna mortality;
- Fauna behavioural disruption associated with habitat degradation; and
- Change in fire regime and risk of fire.

Ecological studies of the Project area will be undertaken. Vegetation and flora will be mapped and the extent of habitat loss quantified. Fauna surveys will be undertaken with particular focus on species of importance such as the water mouse, migratory shorebirds and species listed under the NC Act.

Measures to reduce or avoid impacts to vegetation, flora and fauna will be developed.

5.9 Marine Ecology

5.9.1 Existing Values

The proposed jetty area is within a shallow, soft sediment environment with intertidal mud flats adjacent to the shore. It is located within the Port Curtis Port Area within the Great Barrier Reef World Heritage Area (GBRWHA) and approximately 20 km from the boundary of the Great Barrier Reef Marine Park (GBRMP). The area provides a range of marine habitats and ecological values including seagrass communities and habitat for marine megafauna, benthic communities and recreational and commercial fisheries. There is an existing shipping channel through the GBRMP through which vessels will traverse to access the proposed coal terminal.

Seagrass

Seagrass communities provide nursery habitat for fisheries species and are an important food resource for threatened marine megafauna such as marine turtles and dugongs. The seagrass meadows within the Port Curtis and Rodds Bay area were characterised by Thomas *et al.,* (2010) during surveys undertaken from 2002 to 2009. The area proposed for the jetty has been previously mapped. The dominant seagrass species present is *Zostera capricorni* with other mixed species present in aggregated patches of light cover.

Threatened Marine Species

One mammal, six reptiles and two shark species were identified in a search of the EPBC Protected Matters database. Appendix A, Table A1 lists the threatened species identified along with their preferred habitat and provides an indication as to whether they are likely to occur within the study area.

Port Curtis provides suitable habitat for six of these species; however, the only species known to inhabit areas within and adjacent to the Project Area are the Flatback Turtle, Green Turtle and Loggerhead Turtle. Flatback Turtles nest on the eastern beaches of Curtis and Facing Islands. The South End area of Curtis Island is the key Flatback nesting area in the region and it is identified nationally as a medium density rookery. Nesting activity reaches a peak in late November to early December. Green turtles and loggerhead turtles are also known to occasionally nest on the beaches at South End.

Leatherback, Hawksbill and Olive Ridley turtles do not nest in the area and are unlikely to occur within or adjacent to the proposed 3TL study area. Leatherback turtles are largely pelagic species, Hawksbill turtles forage in and are associated with coral and rocky reefs, and Olive Ridley turtles are associated with shallow benthic habitats. It is considered that the Project area provides little or sub-optimal habitat for these species.

Humpback whales are known to migrate through oceanic waters east of the study area, but are unlikely to occur within the waters of Port Curtis. Similarly, the Whale Shark and Green Sawfish are considered unlikely to occur in the study area based on historical records and the Project area providing suboptimal habitat.

Migratory Marine Species

Fourteen migratory marine species (six mammals, seven reptiles and two shark species) were identified as potentially present in the search area through the EBPC protected matters search (Appendix A, Table A2). The Humpback Whale, six turtle species, and the Whale Shark have been discussed above.

Dugongs are known to occur within the adjacent Port of Gladstone. Whilst seagrass resources are mapped in areas adjacent to the proposed Project, seagrass resources located to the south of the Port in Rodds Bay are likely to be considered a more important foraging area due to the density and species of seagrass present, compared to the Port area.

The Project is located adjacent to the Port of Gladstone – Rodds Bay Dugong Protection Area “B” (DPA). There are two levels of management / protection for DPAs. DPA classified as “A” represent the most significant Dugong habitat. DPA classified as “B” are less significant but still considered important Dugong habitat. The major difference in management between these two areas is related to commercial mesh net fishing.

The search area supports suitable habitat for the Indo-Pacific Humpback Dolphin and the Australian Snubfin Dolphin. Both species inhabit shallow coastal waters of less than 20 m depth, often associated with rivers and estuarine systems, enclosed bays and coastal lagoons. It is considered likely that these species occur within the search area.

Estuarine Crocodiles infrequently inhabit waters of Port Curtis and associated creek systems. The Fitzroy River, located approximately 40 km to the north of the Project Area, is generally considered the southern-most extent of their range within Queensland. The key area for Estuarine Crocodile populations in Queensland is Cape York.

Bryde’s Whale, Killer Whale and Mackerel Shark are considered unlikely to occur within the study area as there is little or sub-optimal habitat available to them. These species are generally considered to inhabit offshore waters and are pelagic feeders.

Benthic communities

Within marine ecosystems, benthic communities are responsible for (among other things) the production of sediments, and the maintenance of water and sediment quality. Benthic communities also provide a food source for many shorebird, fish and ray species. Soft-sediment communities (fine silt and mud) dominate the proposed jetty area seabed with infauna species such as molluscs, polychaetes and ascidians (Alquezar and Small, 2006; GHD, 2010).

Fisheries

Recreational and commercial fishing enterprises occur within the surrounds of the proposed jetty area. Common species caught by recreational fishers include whiting, flat head and bream. The shoreline adjacent to the proposed jetty area is also an important crab fishing site (GHD, 2009). Six known commercial operations utilise the area; mainly for crabbing, fish netting and trawler thoroughfare (GHD, 2009). Mangrove communities along the shore line and seagrass meadows within the proposed jetty area are likely to provide nursery areas for commercial fish and crustacean species.

5.9.2 Potential Impacts and Management

The Project may result in direct and indirect impacts to the marine ecology of the area during both the construction and operations phases. These could include:

- Direct marine habitat loss from dredging;
- Indirect impacts on benthic communities from dredging such as an increase in sedimentation and light attenuation on seagrass;
- Indirect impacts on marine communities from contaminant release during dredging;
- Lighting impacts on turtles;
- Marine debris release;
- Pathogen pollution;
- Boat strike; and
- Indirect impacts associated with habitat avoidance behaviours by marine megafauna.

Dredging and disposal of dredged material results in the generation of turbid plumes, which can impact on subtidal and intertidal communities through increased sedimentation and reduction of light. While the subtidal and intertidal communities in Port Curtis are tolerant of periodic increases in turbidity associated with freshwater inflows during rainfall and wave and tidal current induced resuspension, additional turbidity and sedimentation resulting from dredging and decant activities has the capacity to present added physiological stressors (GHD, 2009c).

Ecological studies of the Project area will be undertaken. Benthic habitats, including seagrass, will be mapped and the extent of habitat loss quantified. Fauna surveys will be undertaken with particular focus on species of importance such as turtles, dugong and dolphins.

Measures to reduce or avoid impacts to vegetation, flora and fauna will be developed.

5.10 Noise and Vibration

5.10.1 Existing Values

Significant existing industrial noise sources surrounding the Project area include:

- Rio Tinto Alcan Yarwun (RTAY) Alumina Refinery;
- RTAY operations at the Fisherman's Landing Facility and overland conveyor adjacent to the site;
- Orica Manufacturing Facility; and
- RG Tanna Coal Terminal.

The Project area would also experience noise due to activities such as rail shunting, harbour dredging and road traffic.

There are no noise sensitive receptors in proximity to the stockyard site.

5.10.2 Potential Impacts and Management

Noise is likely to occur during construction of the railway and balloon loop, filling of proposed Lots 101 and 103, and development of the offshore facilities from truck movements, use of earthmoving machinery, vibratory rollers, pile driving and dredging. Noise will also occur from train movements, materials handling and use of plant and equipment.

It is considered that noise impacts of the stockyard site and load-out facilities will be mitigated by exciting noise levels and the distance to the nearest noise sensitive receptor.

The potential noise and vibration impacts of the Project, including operation of the railway, will be assessed. The baseline noise environment for the Project area will be established through monitoring and the impact of the various Project components on noise sensitive receptors quantified.

5.11 Air Quality

5.11.1 Existing Values

Industries in the airshed currently include a major coal fired power station, aluminium refinery, aluminium smelter, coal handling and port facilities and cement manufacturing plants (Connell Hatch, 2006).

Previous studies have highlighted concerns of the Gladstone community in regard to the impacts of air pollution on community health and well-being due to the high levels of industrial activity in the area (GHD, 2009a & b).

In 2007, the EPA released an air monitoring report for Queensland in accordance with the National Environment Protection (Ambient Air Quality) Measure (AAQ NEPM) (GHD, 2009b). The results of this report showed that the pollutant levels in Gladstone were below the acceptable air pollutant levels, and results achieved the goals and performance standards of the AAQ NEPM.

5.11.2 Potential Impacts and Management

Development of the Project has the potential to increase dust levels through dust lift-off from coal stockpiles and fugitive emissions from materials handling.

Potential dust impacts of the Project will be assessed. The baseline dust environment will be established through monitoring and emissions from the various Project components quantified. Measures to minimise emissions will be proposed.

The Project will generate greenhouse emissions from electricity and fuel use associated with rail operations, vehicle usage, dredging and shipping. Greenhouse gas emissions will be quantified and measures to reduce emissions recommended.

5.12 Indigenous and Non-Indigenous Heritage

5.12.1 Existing Values

The Queensland Heritage Register lists places of cultural heritage significance to Queensland that need to be protected for present and future generations. The three categories of Queensland Heritage Place in the register are State Heritage Place, Archaeological Place and Protected Area.

A search of all places of cultural heritage significance within the Gladstone Regional Council Local Government Areas identified no places of cultural heritage significance relating to the rail unloading and stockyard sites. Heritage searches will be conducted as a component of determining the final rail corridor.

Native title claims within the study area are currently being investigated.

5.12.2 Potential Impacts and Management

Formal notification of the Project under the *Aboriginal Cultural Heritage Act 2003* will occur to identify relevant Aboriginal parties for the purpose of developing a Cultural Heritage Management Plan.

Site specific indigenous and non-indigenous heritage surveys will be conducted for the Project area and management measures identified in consultation with relevant parties.

5.13 Social and Socio-economics

5.13.1 Existing Values

The Project is located within the Gladstone Regional Council local government area which comprises a total area of 10,489.2 km^2 and has an estimated resident population of 60,316 persons as at 30 June 2010 (OESR, 2011b). Gladstone LGA has experienced significant growth with an average annual growth rate of 2.9 per cent from 2003 to 2010 (OESR, 2011a). Population is expected to continue to grow at a rate higher than the State average over the next 20 years.

Gladstone City and the surrounding region have a history of strong economic growth based around industrial development, port facilities and extraction of natural resources (GHD, 2009a). Much of the local community is employed by large private industrial groups, Queensland government agencies associated with heavy industry or small / medium business providing support and service to industry.

The strong economic growth in the region has resulted in a decline in housing affordability. According to the results of a community visioning process survey, housing and accommodation is the most important social issue facing the area (GHD, 2009b).

Commercial and recreational fishing activities are prominent. The commercial fishing fleet operating out of the Gladstone harbour includes line fishers, net / crab fishers, trawl fishers and seasonal prawn fishers (GHD, 2009b). The extensive mangrove systems within and surrounding the subject site and various creek mouths are common places for recreational mud crabbing (GHD, 2009a).

5.13.2 Potential Impacts and Management

The Project will require a construction and operations workforce of up to 600 and 200 personnel respectively. This will comprise a combination of commuter and resident personnel. Accommodation for this workforce within Gladstone or the surrounding area has yet to be determined.

3TL acknowledges that there is a significant amount of construction activity in the Gladstone region as a result of the development of WICET and the LNG projects, and that this will be sustained for the foreseeable future. 3TL has undertaken to assess in detail labour force availability and associated accommodation options during the pre-feasibility and feasibility phases of the Project. 3TL will closely monitor the construction activities in Gladstone and the surrounding region during the development phase and recognises that some developments currently under construction may be completed around the time that 3TL needs to ramp up its construction workforce.

Social and socio-economic impacts potentially associated with the Project include:

- Increased employment opportunities for skilled and unskilled workers, particularly in engineering and technical trade areas. This will include workers already resident in the area;
- An increase in local population where workers and families may relocate to Gladstone;
- An increase in the temporary population of Gladstone where workers choose to work on a commuter basis;
- Relocation of workers and families from outside the region to centres such as Gladstone;
- Increased demand for local community services and facilities;
- Flow on effects in relation to accommodation in Gladstone;
- Increased business opportunities for local and regional suppliers;
- Increased revenue to the government sector from taxes and royalties; and
- Disruption to commercial and recreational fisheries through a small temporary exclusion around areas subject to construction and dredging, and reduced areas resulting from the need to maintain a safe distance from operational components of the Project (such as the berth pockets).

A social impact assessment will be undertaken. A Social Impact Management Plan will be developed that will detail the management and mitigation measures for the Project.

5.14 Traffic and Shipping

5.14.1 Existing Values

Land Based Traffic

The major road servicing the Project study area is Hanson Road which is a State Controlled Road under the jurisdiction of Transport and Main Roads (TMR). Hanson Road provides access to Gladstone CBD to the east of the study area, and transitions into Port Curtis Way and Gladstone – Mt Larcom Road west of the study area. Hanson Road will provide key access to the site during construction and operation of the Project.

Rail infrastructure in the vicinity of the Project study area comprises the North Coast Line which forms part of the Blackwater system. The Blackwater system is the largest of the four coal systems and services the Bowen Basin coal region (QR National, 2011). This system links mines to the Port of Gladstone. The Blackwater system also services a number of domestic users including Stanwell and Gladstone Power Station, Cement Australia and the Comalco Refinery (Rio Tinto Alcan). At present the two tracks into Gladstone deliver approximately 75 Mtpa of coal.

Water Based Traffic

Waterborne traffic within the Port Curtis region comprises:

- Shipping – vessels which visit the port from remote locations. The movement of shipping within the port is restricted to the declared navigation channels; and
- Port vessels and small craft – this class of vessels refers to:
  - tugs, barges, pilot boats, fishing vessels and the like which move throughout the port waters – each vessel is reliant on the masters understanding and knowledge of water depths, currents and tidal stream within the port waters; and
  - recreational vessels – including cruisers and fishing dinghies.

Based on previous studies, the bulk of the shipping movements in the Port Curtis area occur at the RG Tanna Coal Terminal (GHD, 2009b). Shipping volumes within the Project area are relatively low, with the bulk of the marine traffic comprising small crafts accessing The Narrows for recreational boating activities.

The Commonwealth marine area typically extends from three nautical miles offshore to 200 nautical miles offshore. The proposed Project is not located within a Commonwealth marine area, however, vessels operated by shipping companies would traverse the Commonwealth marine area to access the proposed coal terminal.

5.14.2 Potential Impacts and Management

A new dedicated 14 km rail line will be constructed running from the terminal past East End Junction (and the proposed Aldoga provisioning and maintenance yard), linking to the QRN network to the east of Mt Larcom.

During construction the primary method for importing materials and equipment will be via road. This will include vehicles for the transport of oversize plant and equipment, on-highway trucks and light vehicles.

The number of ships required to export 50 Mtpa of coal will depend on the fleet makeup but could be around 500 vessels per year. Further work will be undertaken on the mix and frequency of vessel movements during the prefeasibility and feasibility studies to determine the extent of additional shipping traffic likely to be generated by the Project to an already busy industrial port. The proposed berth location means that vessels will be able to transit existing deep water channels when in the port.

3TL will not control the vessels visiting the terminal however it is noted that vessel operators will be required to comply with applicable Commonwealth and State regulatory requirements regarding quarantine controls, environmental compliance, safety and navigation within the port confines and the marine park.

Some of the key traffic issues that may arise during the construction and operation of the Project include:

- The need for temporary traffic controls or diversions;
- The safe and efficient transportation of hazardous materials;
- The increased likelihood of accidents on local roads, particularly at intersections;
- The impact on network operations due to increased traffic movements on local and regional roads, particularly during the peak periods;
- The impact of increased axle loads on roads causing damage to pavement surfaces;
- Changes that affect other road users including pedestrians and cyclists;
- Impact of the rail corridor alignment on the local road network;
- Potential for boat strike and navigational hazards as part of increased vessel movements; and
- Increased shipping movements within the harbour and the approach channel.

A traffic impact assessment will be undertaken. Mitigation measures will be prepared where impacts are identified.

5.15 Landscape and Visual

5.15.1 Existing Values

The site is located approximately 11 km north west of Gladstone CBD, north of the proposed WICET and south of Fisherman's Landing. The site is located within Port Curtis region, with the landform within and immediately surrounding the stockyard site largely described as the low-lying mangrove and tidal flats of the mainland and The Narrows (GHD, 2009b).

The existing industrial development surrounding the study area dominates the visual landscape, with the foothills of Mt Larcom providing a backdrop to the west and Curtis Island dominating the visual landscape to the north/northeast (GHD, 2009b).

5.15.2 Potential Impacts and Management

The Project will result in vegetation clearing, the erection of coal and rail infrastructure and the establishment of a coal stockyard. There will be a permanent change in landform due to the filling of Lot 1 to approximately +4.5 m AHD which will permanently alter the landscape character and visual amenity of the area.

A visual impact assessment will be undertaken. Mitigation measures will be prepared where impacts are identified.

6. Environmental Management

An Environmental Management Plan (EMP) will be prepared for the Project. The EMP will be prepared with the intent of ensuring that all activities associated with the Project are conducted in a manner that protects the natural and social environment and is consistent with project approvals and legislative requirements.

The overall goal of the EMP is to:

- Provide a mechanism to minimise the potential for environmental impacts to occur during the construction, operation and decommissioning of the Project;
- Provide Local, State and Commonwealth governments (where needed) with a framework to confirm compliance with their policies and requirements;
- Provide the community with evidence that the project works are being managed in an environmentally responsible manner; and
- Provide opportunities for continual improvement in the management of environmental, social and economic environments.

7. Legislation and Approvals

7.1 Legislation

Table A identifies the Commonwealth, State and Local legislation, guidelines and policies relevant to the Project.

Table A Legislation and Approvals Relevant to the Project

Legislation	Relevance to the Project
Commonwealth Legislation	
Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Approval from the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) must be sought prior to undertaking an action which has, would have, or is likely to have, a significant impact on a Matter of National Environmental Significance (MNES). The Project has been referred to SEWPaC to determine whether it constitutes a "controlled action" under the EPBC Act (EPBC No. 2012/6348). A 'controlled action' is an action that has a significant impact on MNES as defined in Part 7 of the EPBC Act. Searches using the MNES search tool have identified the following as potentially occurring within 1.5 km of the Project site: ◗ One World Heritage Property. The proposed Project does not lie within the Great Barrier Reef Marine Park (GBRMP). The closest boundary of the Marine Park lies approximately 20 km to the east of the proposed Project area. Vessels associated with the proposed Project would traverse the GBRMP; ◗ One National Heritage Place. As well as being World Heritage listed, the Great Barrier Reef is also included on the National Heritage list as it is included on the Register of the National Estate; ◗ One Commonwealth Marine Area. The Commonwealth marine area typically extends from three nautical miles offshore to 200 nautical miles offshore. The proposed Project is not located within a Commonwealth marine area, however, vessels operated by shipping companies would traverse the Commonwealth marine area to access the proposed coal terminal; ◗ Four Threatened Ecological Communities; ◗ Nine threatened flora species; ◗ 20 threatened terrestrial fauna species; ◗ Nine threatened marine species; and ◗ 56 Migratory Species. If SEWPaC determines that the Project is likely to have a significant impact on MNES, then the Project (or an element of the Project) will be determined to be a "controlled action" requiring assessment and approval by the Commonwealth.

Legislation	Relevance to the Project
Great Barrier Reef Marine Park Act 1975 (GBRMP Act)	Activities which have direct or indirect impacts on the Great Barrier Reef Marine Park (GBRMP) are required under the GBRMP Act to obtain a Marine Parks Permit prior to undertaking development. The Great Barrier Reef Marine Park Authority (GBRMPA) considers the *Great Barrier Reef Marine Park Regulations 1983, Sea Dumping Act 1981*, *National Ocean Disposal Guidelines for Dredged Material 2002* and GBRMPA policies when assessing an application made under the GBRMP Act. Despite the proposed coal terminal being outside the GBRMP, the GBRMPA will be consulted and informed of progress throughout the planning and investigative stages of the Project.
Native Title Act 1993 (NT Act)	The NT Act recognises the rights and interests over land and water possessed by Indigenous people in Australia under their traditional laws and customs. The objects of the Act are to: ◗ Provide for the recognition and protection of native title; ◗ Establish ways in which future dealings affecting native title may proceed and to set standards for these dealings; ◗ Establish a mechanism for determining claims to native title; and ◗ Provide for, or permit, the validation of past acts and intermediate acts, invalidated because of the existence of native title. Under the NT Act the Project will be required to ensure that any claims of traditional land tenure are recognised and appropriately managed. There are a number of traditional owner groups in the Port Curtis area. There is a Native Title Claim (QC01/29) over the Gladstone region, including parts of the GSDA. Port Curtis Coral Coast Native Title Claim Group is the Claimant. Through the environmental assessment process, all claimants will be formally notified and invited to be part of a Cultural Heritage Management Plan process under the *Aboriginal Cultural Heritage Act 2003*.
Environment Protection (Sea Dumping Act) 1981 (Sea Dumping Act)	The Sea Dumping Act was enacted to fulfil Australia's international responsibilities under the London Convention of 1972 and has been amended to implement the 1996 Protocol to the London Convention (ratified by Australia in 2001). Under the protocol, Australia is obliged to prohibit ocean disposal of waste materials considered too harmful to the marine environment and regulate the permitted dumping of wastes at sea to ensure that environmental impact is minimised. The Sea Dumping Act is administered by SEWPaC and applies in respect of all Australian waters (other than waters within the limits of a State or Territory), from the low water mark out to the limits of the Exclusive Economic Zone. The Sea Dumping Act regulates the deliberate loading and dumping of waste materials and other matter at sea. It applies to all vessels, aircraft or platforms in Australian waters and to all Australian vessels or aircraft in any part of the sea.

Legislation	Relevance to the Project
	The *National Ocean Disposal Guidelines for Dredged Material* establishes a procedure to determine if material is suitable for unconfined disposal at sea. Only uncontaminated dredged material is deemed suitable for confined disposal at sea. A sea dumping permit may be required under the Sea Dumping Act if the disposal of dredge spoil at sea is required from the works associated with the construction of the Project.

Legislation	Relevance to the Project
State Legislation	
State Development and Public Works Organisation Act 1971 (SDPWO Act)	**Significant Project** The SDPWO Act establishes an environmental assessment process for projects declared to be a 'significant project.' The Coordinator-General may declare a significant project for which an EIS is required, or for which an EIS is not required. 3TL is seeking significant project declaration requiring an EIS in accordance with section (26)(1)(a) of the SDPWO Act. Under the bilateral agreement with the Commonwealth government, the significant project EIS process can be accredited as an acceptable form of assessment for decision making under the EPBC Act. Alternatively assessment could occur under a Parallel Process (co-ordinated assessment). Once the Coordinator General has completed the EIS process under the SDPWO Act, then the various Project approvals may be granted in accordance with the relevant legislation. **Gladstone State Development Area – Material Change of Use** State development areas are created under Section 77 of the Act. Their creation promotes economic development and addresses areas of market failure in the development of industrial land and multi-user infrastructure corridors. The Gladstone State Development Area (GSDA) was declared in December 1993. The Project site is designated as part of the Yarwun Precinct as indicated in the GSDA Land Use Plan. Any new use within the GSDA that changes or intensifies an existing use of the subject site requires a MCU. As the proposed works are for a new coal terminal an application for a MCU will be required. The State Development Area Development Scheme only regulates the MCU component of development and therefore other approvals will still be required under Schedule 3 of the *Sustainable Planning Act 2009* or other legislation.

Environmental Protection Act 1994 (EP Act)	The EP Act places emphasis on managing Queensland's environment within the principles of ecologically sustainable development. The EP Act is administered by the Department of Environment and Heritage Protection (DEHP) (formally the Department of Environment and Resource Management). Under the EP Act, anyone undertaking an activity that may cause environmental harm must comply with the EP Act's general duty of care and approval is required for: ◗ Activities that could cause actual or potential environmental harm via the generation of emissions or through carrying out the activity; ◗ Environmentally Relevant Activities (ERAs); ◗ Activities likely to cause land contamination (notifiable activities recorded on the Environmental Management Register); and ◗ All other notifiable activities listed in Schedule 3 of the EP Act. Sections 319 and 320 of the EP Act note that all persons have a duty of care to the environment. Therefore, it is not permissible to cause environmental harm (as defined in the EP Act) whilst undertaking any activity, unless all reasonable and practical means are taken to minimise that harm. Schedule 2 of the *Environmental Protection Regulation 2008* lists ERAs for which development approval and registration certificates are required. The ERAs that may be relevant to the project include: ◗ 16 Extractive and screening activities; ◗ 17 Abrasive Blasting; ◗ 18 Boilermaking or Engineering; ◗ 38 Surface Coating; ◗ 43 Concrete batching; ◗ 50 Bulk material handling; and ◗ 63 Sewage treatment. Activities that have been identified as likely to cause land contamination are listed in Schedule 3 of the EP Act. Under the Act, landowners and local government must inform DEHP that land has been, or is being, used for a notifiable activity. Land that has been, or is being, used for a notifiable activity is recorded on the Environmental Management Register maintained by DEHP. The Proponent will be required to advise DEHP if notifiable activities are to occur on-site. To assist in meeting this duty of care, DEHP has prepared Environmental Protection Policies (EPPs) which are subordinate legislation to the EP Act. These policies may be made with regard to the environment, or anything that affects or may affect the environment. EPPs relevant to the 3TL Project are discussed below.

Environmental Protection (Noise) Policy 2008 (EPP Noise)	The objective of the EPP Noise is to identify the environmental values to be protected and it sets the framework for decision-making. The policy seeks to protect the wellbeing of the community, including its social and economic amenity, or the well-being of the individual. The policy notes that 'beneficial assets' such as industrial estates, may be allowed a higher noise level than the acoustic air quality objective of 55 dB(A) for residential areas. Obligations under the EPP Noise will be further assessed in the environmental assessment stage of the Project.
Environmental Protection (Air) Policy 2008 (EPP Air)	The aim of this policy is to identify environmental values to be protected or enhanced, specify air quality indicators, and provide a framework for decision-making. Obligations under the EPP Air will be assessed in the environmental assessment stage of the project.
Environmental Protection (Water) Policy 2009 (EPP Water)	The policy provides a framework for making decisions on Queensland waters that promote efficient use of resources, best practice environmental management and involving the community. The EPP provides the management hierarchy for water. These include waste prevention and management, wastewater recycling and the release of waste water on land or to surface waters, stormwater management, release to ground water, construction of wetlands and Acid Sulfate Soils. Obligations under the EPP Water will be assessed in the environmental assessment stage of the project.
Environmental Protection (Waste Management) Policy 2000 (EPP Waste)	The EPP Waste provides a strategic framework for managing waste in Queensland. This is achieved by establishing a preferred waste management hierarchy and principles for achieving good waste management, which should be applied by both government and industry. The waste hierarchy ranges from the most preferred, to the least preferred method: waste avoidance – waste reuse – waste recycling – energy recovery from waste – waste disposal. The EPP also defines the required contents of waste management programs, which the Proponent may be required to implement as a condition of an environmental licence for an ERA.
Coastal Protection and Management Act 2003 (CPM Act)	The CPM Act provides for the protection, conservation, rehabilitation and management of the coast including its resources and biological diversity. The development assessment process under the CPM Act has been rolled into IDAS under the SPA. Under the CPM Act, coastal zone is defined as 'coastal waters or all areas to the landward side of coastal waters in which there are physical features, ecological or natural processes or human activities that affect, or potentially affect, the coast or coastal resources'.

	Schedule 3 of the SP Act identifies works within tidal waters as assessable development. Tidal water is defined as the sea and any part of a harbour or watercourse ordinarily within the ebb and flow of the tide at spring tides. Tidal works means work in, on or above land under tidal water, or land that would or may be under tidal water, because of development on or near land. Under SP Act, operational works that are defined as tidal works under the CPM Act are assessable development. The construction of (among other things) jetties, dockyards, seawalls, reclamations, a wharf and any work in tidal waters associated with the construction of these structures, is tidal work and must be assessed against the purposes of the CPM Act (other Acts may also be involved for non-environmental purposes – see the SP Reg Schedule 23 Table 2). An IDAS application for operational works in relation to works within tidal waters will be required.
Fisheries Act 1994 (Fisheries Act)	The Fisheries Act and *Fisheries Regulation 1995* are administered by the Department of Agriculture, Fisheries and Forestry (DAFF). Section 8 of the Fisheries Act defines marine plants as: ◗ A plant (a tidal plant) that usually grows on, or adjacent to, tidal land, whether it is living or dead, standing or fallen; ◗ Material of a tidal plant, or other plant material on tidal land and a plant; or ◗ Material of a plant described under the management plan or regulation to be a marine plant. Included in this definition are mangroves, seagrass, saltcouch and samphire vegetation species. A marine plant does not include a declared plant under the *Land Protection Act 2002*. All marine plants in Queensland are protected and a development approval for operational works involving the disturbance of marine plants must be sought for all marine plant disturbances. Under section 123 of the Act, it is an offence to unlawfully remove, damage or destroy a 'marine plant' (defined in the Act as: a plant that usually grows on, or adjacent to, tidal land, whether it is living, dead, standing or fallen). Under Schedule 8 Table 4 of the SP Act, operational work that is the removal, destruction or damage of a marine plant is assessable development and is assessed against the purposes of the Fisheries Act. Mangroves, seagrass, salt couch and other plants growing adjacent to marine areas are plants likely to be affected by this proposal. When considering applications for development affecting marine plants, DAFF considers the level of disturbance likely (both at the construction and operation stage), alternative sites (and the extent to which they are suitable) and possible mitigation measures.

	Marine plants (onshore and offshore) will be affected by the development of the Project, therefore approval to remove marine plants will be sought from DAFF.
Sustainable Planning Act 2009 (SP Act)	The purpose of the SP Act is to seek to achieve ecological sustainability by: ◗ Coordinating and integrating planning at the local, regional and State levels; ◗ Managing the process by which development occurs; and ◗ Managing the effects of development on the environment. The SP Act establishes the Integrated Development Assessment System (IDAS), which integrates a range of development approvals including, but not limited to, the EP Act, TI Act, CPM Act, Fisheries Act, Water Act and the VM Act. Approvals relevant to the Project that may be required under the SP Act include: ◗ MCU for multiple ERAs under the EP Regulations; ◗ MCU under the SP Act for any works not proposed in GSDA (e.g. in local government areas or SPL); ◗ Operational Works for tidal works under the CPM Act; ◗ Operational Works for onshore filling and excavation under SP Act; ◗ Operational Works under the Water Act for works in a watercourse; ◗ Vegetation Clearing under the VM Act; and ◗ Removal of marine plants under the Fisheries Act. This IAS has not identified other development approvals that may be required such as building work and/or plumbing and drainage work that are also aspects of 'development' as defined under the SP Act. The required development applications will be supported by a planning report or an EIS and other information required to be provided with each application. The project will be referred to Concurrence Agencies, such as DEHP, DAFF and MSQ in accordance with IDAS.
Nature Conservation Act 1992 (NC Act)	The purpose of the NC Act is to provide a comprehensive strategy for the conservation and management of Queensland's native animals and plants. The NC Act seeks to achieve ecological sustainability by declaration and management of protected areas and the protection of wildlife and wildlife habitats. The Act prohibits the taking or destruction, without authorisation, of certain listed flora and fauna species, or protected areas. The presence of listed flora and fauna species, or protected areas on site will be assessed further as part of the environmental assessment stage of the Project.
Water Act 2000 (Water Act)	The Water Act provides a regime for the licensing, regulation and management of water resources in Queensland. The Water Act requires requisite licences (and/or development approvals under the Schedule 8 of SP Act) be obtained for the purposes of all or some of the following:

	◗ Artesian bores: ◗ Water pipelines; ◗ Pumping stations; ◗ Ground level storage sites; and ◗ Treatment plants. All work that may interfere with or impact on water courses, particularly within the bed and banks, will comply with the requirements of the Water Act and as necessary or desirable, will be discussed with DEHP. Under section 266 of the Water Act, any activities involving excavation or the destruction of vegetation in a watercourse require a permit. In deciding such an application, DEHP considers the type and location of the vegetation, the effect of the activity on the watercourse and the reason for the proposal, amongst other things. Generally a watercourse includes any land between the high water marks on the opposite banks of a stream. The Project does not involve development within a watercourse. The Act also regulates the development of referrable dams, that is, dam safety is assessed under the *Water Supply (Safety and Reliability) Act 2008*. The presence of referrable dams on site will be assessed further as part of the environmental assessment stage of the Project.
Aboriginal Cultural Heritage Act 2003 (ACH Act)	The ACH Act established a 'cultural heritage duty of care', which requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage. The Act establishes a framework for the conduct of assessment of cultural heritage impact and processes to be undertaken in preparing Cultural Heritage Management Plans (CHMP). It is expected that a CHMP will be required for the Project.
Queensland Heritage Act 1992 (QH Act)	The QH Act provides for the conservation and protection of places and items of historical and/or non-indigenous cultural heritage, i.e. the post settlement history of Queensland. Under the QH Act, places and items must be entered into a Queensland Heritage Register in order to be protected. The EIS will determine whether the Project will impact on places or items recorded under the QH Act.
Queensland Land Protection (Pest and Stock Route Management) Act 2002	The purpose of this Act is to provide for pest management and for land and stock route network management. A stock route is defined as a road reserve or road corridor, generally in the width of 60-1600 m that is used for the purposes of walking and agisting or stock grazing. Stock routes do not have a separate title or tenure as does a road reserve. Once a stock route's declaration is removed it remains a road but is no longer named a stock route. Stock routes are managed by the relevant Local Government. The Project will assess any impacts on stock routes.

Queensland Dangerous Goods Safety Management Act 2001 (DGSM Act)	The purpose of the DGSM Act is to protect people, property and the environment from harm caused by hazardous materials, in particular dangerous goods. Hazardous and dangerous good are defined as: ◗ A hazardous material is a material which, in sufficient quantities, has the potential to cause harm to people, property or the environment because of its chemical, physical or biological properties; and ◗ Dangerous goods are chemicals which have the potential to present an immediate threat to people, property or the environment if not properly controlled. To achieve this, the Act creates broad safety obligations for all people involved with the storage, handling and manufacture of hazardous materials, together with specific obligations for: ◗ Occupiers and employees at locations where hazardous materials are stored or handled; ◗ Manufacturers, importers or suppliers of dangerous goods; and ◗ Designers, manufacturers, importers, suppliers or installers of storage or handling systems for Major Hazard Facilities or Dangerous Goods Locations and Large Dangerous Goods Locations. The Proponent will determine whether dangerous goods storage facilities at the Project site trigger the requirements of this Act.
Transport Infrastructure Act 1994 (TI Act)	The overall objective of this Act, consistent with the objectives of the *Transport Planning and Coordination Act 1994*, is to provide a regime that allows for, and encourages, effective integrated planning and efficient management of a system of transport infrastructure. The TI Act establishes the approach for the development and management of land use for ports. The Project is not proposed on Strategic Port Land so is therefore not subject to the GPCL Land Use Plan. However the offshore components of the Project are located within the GPCL port limits. The TI Act provides for the management of the national and State road network. A permit under the TI Act is required to work in, or interfere with, a State controlled road. If the Project traverses any State controlled roads, a permit to access this road will be required. The Department of Transport and Main Roads (TMR) approves all new crossings of a rail corridor.
Vegetation Management Act 1999 (VM Act)	The VM Act, in conjunction with the SP Act, regulates the clearing of native vegetation, excluding grasses and mangroves. Under the SP Act, operational works are defined as, in part, clearing vegetation, including vegetation to which the VM Act applies. Schedule 2, Table 2 of the SP Act Regulations requires that operational work, that is the clearing of native vegetation, be assessed against the purposes of the VM Act.

	DEHP is the assessment manager for any clearing of remnant vegetation proposed by this project, unless clearing of remnant vegetation is exempt under Schedule 8, Table 4 of the SP Act. Assessment will occur against the Regional Vegetation Management Code. Clearing of vegetation which is mapped as regulated growth, if not exempt, must be carried out in accordance with the Regrowth Vegetation Code. The Project will require clearing of remnant vegetation, and this will be assessed as part of the environmental assessment stage of this Project.
Vegetation Management (Regrowth Clearing Moratorium) Act 2009	Under the Act, clearing certain regrowth vegetation affected by the moratorium (which includes endangered regrowth in rural areas on freehold and agricultural and grazing State leasehold land) requires approval from DEHP. Some exemptions apply. The Project may require clearing of regrowth vegetation, and this will be assessed as part of the environmental assessment stage of this Project.
Strategic Cropping Land Act 2011 (SCL Act)	The SCL Act commenced on 30 January 2012. The objectives of the Act are to: ◗ protect land that is highly suitable for cropping; ◗ manage the impacts of development on that land; and ◗ preserve the productive capacity of that land for future generations. The Act will achieve these objectives by: ◗ identifying potential SCL; ◗ providing criteria to decide whether or not land is SCL; ◗ establishing protection and management areas; ◗ providing for development assessment; ◗ imposing conditions on development; ◗ preventing permanent impacts on SCL in protection areas (unless the development is in exceptional circumstances); and ◗ requiring mitigation to be paid by developers if SCL is permanently impacted in the management area, or by a development in exceptional circumstances. Preliminary work has identified that SCL occurs within the area being considered for the rail line although it is currently unknown whether SCL will be impacted. Project.
Local Legislation	
Gladstone Regional Council	Local Planning Schemes, Development Control Plans and relevant environmental guidelines and policies linked to Council's Local Environmental Plan will be reviewed during the preparation of the environmental assessments for the Project.

Policies and Regulations	
CoalPlan 2030	The Queensland Government has developed a long-term strategic infrastructure plan to identify coal infrastructure and related social infrastructure needed to support increased coal exploration, mining and export. CoalPlan will provide a medium to long-term plan for the provision of infrastructure required to meet the needs of the Queensland coal industry over the next 20 years. The plan examines: ◗ Coal demand and production forecasts; ◗ Identifies individual and regional coal infrastructure requirements; and ◗ Estimates staging of infrastructure provision across regions. Implementation of the plan is supported by a Coal Infrastructure Taskforce which provides for whole-of-government planning to ensure coal-related infrastructure meets the demands of Queensland's growing coal industry. The Project will be strategically located in an existing port and will rely largely on existing rail infrastructure, hence the proposed Project is consistent with CoalPlan.
The Queensland Government Environmental Offsets Policy (QGEOP)	Queensland has been using offsets for a number of years, and has several specific-issue offsets policies that indicate where particular environmental offsets are needed, and what form they should take. This policy guides the appropriate use of environmental offsets across terrestrial and aquatic ecosystems, based on the principles of Ecologically Sustainable Development (ESD). These principles allow for development that improves the total quality of life in a way that supports environmental protection. The policy is based on the premise that offsets should only be considered after all environmental impacts have been avoided and minimised. The QGEOP came into effect on 1 July 2008 and will be reviewed in 2013. The specific-issue offsets policies, and their regulating agencies are: ◗ Vegetation Management — Policy for Vegetation Management Offsets, September 2007, Department of Natural Resources and Mines (formally the Department of Natural Resources and Water); ◗ Marine Fish Habitat — Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss, 2002, Department of Agriculture, Fisheries and Forestry (formally the Department of Primary Industries and Fisheries); and ◗ Koala Habitat — Offsets for Net Benefit to Koalas and Koala Habitat, 2006, Environmental Protection Agency. The Offsets Policy will be investigated further as part of the environmental assessment phase of the Project.

Queensland Coastal Plan 2012	The Queensland Coastal Plan (QCP) commenced on 3 February 2012 and replaces the State Coastal Management Plan (2001) and regional coastal management plans. The QCP is the primary statutory instrument under the CPM Act. The QCP is made up of two parts: ◗ the State Policy for Coastal Management, which provides for policy direction and guidance for maintaining, rehabilitating and protecting coastal land, and managing activities undertaken on it with particular emphasis on managing public coastal land; and ◗ the State Planning Policy 3/11: Coastal Protection, which protects the coastal resources of the coastal zone by setting out criteria for land-use planning, coastal activities and development assessment, enabling Queensland to manage development within the coastal zone, including within coastal waters. The proposed Project must have regard to the QCP particularly the State Planning Policy 3/11: Coastal Protection.
SPP 2/02 – Planning and Managing Development involving Acid Sulphate Soils	The SPP for managing the development of acid sulphate soils (ASS) is concerned with the development of low-lying coastal areas containing ASS, predominately below 5 m AHD. The SPP applies to development that would result in: ◗ The excavation of, or otherwise removing, 100 m^3 or more of soil or sediment from areas below 5 m AHD; or ◗ Filling of land involving 500 m^3 or more of material with an average depth of 0.5 m or greater. The management of development on ASS occurs in the development assessment process. The Project site contains land below 5 m AHD, therefore this SPP is applicable. Having regard to the DEHP checklist and guidelines for ASS, an ASS Management Plan is likely to be required in addition to standard management procedures.
SPP 1/02 Development in the Vicinity of Certain Airports and Aviation Facilities	This SPP sets out broad principles for protecting airports and aviation facilities, which is an essential component of the State's transport infrastructure and national defence system. The Project area is in close proximity to aviation facilities or airports (i.e. located on land affected by an Obstacle Limitation Surface). Therefore this SPP is applicable.
SPP 1/03 Mitigating the adverse impacts of Flood, Bushfire and Landslide	The SPP for mitigating the adverse impacts of Flood, Bushfire and Landslide seeks to minimise the potential adverse impacts of natural hazards, by adequately considering these impacts when making decisions about specific development. Section A1.1 in Annex 1 of the SPP specifies development to which the policy applies. Generally this is related to development which increases the number of people working within a potentially hazardous area. With a construction workforce of up to 600 personnel this SPP will apply.

SPP 2/07 Protection of Extractive Resources	The purpose of SPP 2/07 for the Protection of Extractive Resources is to identify and protect extractive resource areas of State or regional significance, from activities that could potentially constrain or sterilise resources. In accordance with the policy definitions, extractive resources comprise sand, gravel, quarry rock, clay and soil. The policy identifies a number of Key Resource Areas throughout the State. A fundamental objective of the policy is to prevent conflict between extractive industry and other, incompatible land uses that have the potential to sterilise the availability of the extractive resource. The Targine Key Resource Area is situated on the corner of Gladstone - Mt Larcom Road and Targine Road but is not located in close proximity to the site. The Project area does not contain any land recognised as a Key Resource Area and thereby this SPP is not relevant to the Project.
SPP 4/11 Protecting wetlands of high ecological significance in Great Barrier Reef catchments	State Planning Policy 4/11: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments (SPP 4/11) took effect on 25 November 2011 as part of a protection package for the Great Barrier Reef catchments. The policy outcome sought by the SPP4/11 can be described as follows: *"Development in or adjacent to wetlands of high ecological significance in Great Barrier Reef catchments is planned, designed, constructed and operated to minimise or prevent the loss or degradation of the wetlands and their values, or enhances these values."* The proposed Project traverses a wetland protection area of high ecological significance therefore this SPP is applicable.
SPP 1/92 Development and the Conservation of Agricultural Land 1.0	The aim of the SPP is to protect Good Quality Agricultural Land (GQAL) from development which may lead to the alienation or loss of productivity. The policy addresses the conservation of GQAL and provides guidance to local authorities on how this issue should be addressed when carrying out their planning duties. SPP 1/92 provides that GQAL should not be developed for non-rural purposes unless there is an overriding public need. The Calliope Shire Overlay Maps identifies the potential for GQAL within the study area. As the proposed development is situated in the GSDA and is therefore determined to be in an urban area, this SPP is not applicable to this Project.

7.2 Environmental Assessment

7.2.1 Overview

The approvals required for the 3TL Project include (but are not limited to):

- Referral to SEWPaC – likely a controlled action given potential impacts on MNES;
- Significant Project Declaration under SDPWO Act for which an (EIS) is required;
- Sea Dumping Permit under EP (Sea Dumping Act) – only if dredge spoil to be disposed offshore;
- Great Barrier Reef Maine Park Authority (GBRMPA) Permit – unlikely as not within the GBRMP;
- Material Change of Use (MCU) in Gladstone State Development Area (GSDA) – likely to be defined as an MCU in GSDA as new uses are proposed as part of the Project;
- Material Change of Use (MCU) under SP Act – likely to be defined as an MCU under the Calliope Shire Planning Scheme for works not located in GSDA as new uses are proposed as part of the Project;
- Operational Works – carrying out operational work associated and not associated with an MCU under the Calliope Shire Planning Scheme. Multiple triggers depending on proposed works;
- Operational Works - removal of least concern and endangered vegetation under the VM Act – likely, especially in regards to conveyor and rail corridors;
- Operational Works – removal of marine plants – likely as marine plants in direct impact area (salt couch, mangroves and seagrass);
- Operational Works – for tidal works and works within a Coastal Management District under the CPM Act – likely required as works occur within tidal area and is within Coastal Management District;
- Environmental Relevant Activities – multiple triggers likely; and
- Vegetation Clearing Permit under the NC Act – possible if interfering with a native plant or animal.

7.2.2 Controlled Action

3TL has refered the Project to SEWPaC for a decision as to whether the Project constitutes a ‘controlled action’ under the EPBC Act due to possible impacts on MNES (EPBC No 2012/6348). If the Project is declared to be a controlled action, assessment will occur using one of the following assessment methods:

- Accredited assessment (e.g. bilateral agreement) or Parallel Process (co-ordinated assessment);
- Assessment on referral information (assessment undertaken solely on the information provided in the referral form);
- Assessment on preliminary documentation (referral form and any other relevant material identified by the Minister as being necessary to adequately assess a proposed action);
- Assessment by Environmental Impact Statement (EIS) or Public Environment Report (PER); and
- Assessment by public inquiry.

7.2.3 Significant Project Declaration

3TL has prepared this IAS to be lodged for the overall 3TL Project with the Queensland Coordinator-General to seek 'significant project' declaration under the SDPWO Act. The IAS provides an outline of the proposed project, including the project rationale and its potential impacts.

3TL is seeking declaration of the project as a 'significant project for which an environmental impact statement (EIS) is required' pursuant to section 26(1)(a) of the SDPWO Act.

The key reasons for seeking significant project declaration under the SDPWO Act are:

- The Project will result in a capital investment of around $2.2 billion;
- The Project will result in individual and additional cumulative impacts on Gladstone Harbour; and
- The Project is critical in providing additional terminal capacity to meet the expected shortfall from current and proposed coal projects.

7.2.4 State Development Area

The majority of the Project lies within the GSDA. All proposals for material changes of use (MCU) within the GSDA must comply with the Development Scheme for the GSDA. The objectives of the Development Scheme will be addressed and the purpose/s of the relevant land use precinct/s assessed in the environmental assessment stage of the Project. Development is managed through the Development Scheme for the GSDA, which is administered by the DAFFI on behalf of the Coordinator General (CG). MCU applications within the GSDA must be approved by the CG in accordance with the Development Scheme for the GSDA.

7.2.5 State Approvals

After environmental assessments have been completed and approved under the SDPWO Act and the EPBC Act development approvals are required from local authorities and relevant state government agencies before the proposed development can progress. 3TL will seek appropriate approvals through:

- Local authorities on such matters as building approvals and change of the material use of land; and
- State government agencies on such matters as vegetation clearing and works within a watercourse.

8. Cost and Benefits Summary

A detailed cost benefit analysis has not yet been undertaken for the Project. However the following positive costs and benefits will be associated with the Project:

- Direct employment of 600 personnel during construction and around 200 operations personnel per annum;
- Initial capital investment of around $2.2 billion;
- Significant revenue to the local, regional, state and Commonwealth economy; and
- Enhancement and expansion of existing port infrastructure to service both proposed and future coal resource projects.

As such the local, state and national economies will ultimately benefit from the 3TL Project.

9. Community and Stakeholder Consultation

3TL recognises that the sustainability of the Project necessitates being mindful of, and attentive to, the potential environmental and societal impacts of the Project. Accordingly, 3TL is committed to the principles and practices of community and stakeholder engagement with the Project's many stakeholders. 3TL is committed to respecting the rights and interests of relevant organisations and communities in which the Project will operate.

A key objective of the Project's engagement process is to build long term, positive relationships with stakeholders throughout all stages of the Project. 3TL has based its approach to community and stakeholder engagement upon several drivers including community expectations, legislative requirements and, most importantly, its commitment to company values and best practice stakeholder consultation.

In relation to the proposed EIS, 3TL's stakeholder consultation process will involve a range of ongoing activities to raise awareness about the Project and to seek stakeholder participation in the decision making process. Relevant stakeholders with an interest in the Project will be identified and consulted to ensure information is provided to meet their specific interests.

Relevant agencies across the three tiers of government will be consulted in order to facilitate the identification of Project approval requirements and ongoing development and operational issues. A range of inclusive communication tools will be implemented to inform stakeholders and to elicit their input into the assessment process. These include, but are not limited to:

- Public information sessions;
- One-on-one meetings;
- Brochures and / or fact sheets;
- Posters displays;
- Website updates;
- Focus groups;
- Community reference group meetings;
- Letter mail-outs; and
- Media (print, radio, TV and internet).

As the Project gains momentum, consultation will also be undertaken with other operators and industries in the area to understand potential cumulative effects and identify potential Project synergies.

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11. Glossary and Abbreviations

Abbreviation	Description
3TL	Tenement To Terminal Limited
ACH Act	*Aboriginal Cultural Heritage Act 2003*
AASS	Actual Acid Sulfate Soils
ASS	Acid Sulfate Soils
AHD	Australian Height Datum
BPA	Biodiversity Planning Assessment
CD	Chart Datum
CG	Coordinator General
CCRCP	Curtis Coast Regional Coastal Management Plan 2003
CHMP	Cultural Heritage Management Plan
CLR	Contaminated Land Register
CPM Act	*Coastal Protection and Management Act 2003*
DWT	Dead Weight Tonnes
DAFF	Department of Agriculture, Fisheries and Forestry (formerly the Department of Employment, Economic Development and Innovation)
DEHP	Department of Environment and Heritage Protection (formerly the Department of Environment and Resource Management)
DGSM Act	*Dangerous Goods Safety Management Act 2001*
EIA	Environmental Impact Assessment
EIS	Environmental Impact Statement
EMR	Environmental Management Register
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPP Air	Environmental Protection (Air) Policy 2008
EPP Noise	Environmental Protection (Noise) Policy 2008
EPP Waste	Environmental Protection (Waste Management) Policy 2000

Abbreviation	Description
EPP Water	Environmental Protection (Water) Policy 2009
ESD	Ecologically Sustainable Development
GW	Gigawatt
GQAL	Good Quality Agricultural Land
GBRMP	Great Barrier Reef Marine Park
GBRMP Act	*Great Barrier Reef Marine Park Act 1975*
GBRMPA	Great Barrier Reef Marine Park Authority
GBRWHA	Great Barrier Reef World Heritage Area
GPCL	Gladstone Ports Corporation Limited
GSDA	Gladstone State Development Area
ha	Hectares
IAS	Initial Advice Statement
IDAS	Integrated Development Assessment System
LAT	Lowest Astronomical Tide
MCU	Material Change of Use
MNES	Matter of National Environmental Significance
MHWS	Mean High Water Spring
ML	Mega litre
mbgl	Metres below ground level
Mtpa	Million tonnes per annum
NC Act	*Nature Conservation Act 1992*
NT Act	*Native Title Act 1993*
PCCC	Port Curtis Coral Coast
PASS	Potential Acid Sulfate Soils
PCI	Pulverised Coal Injection
QH Act	*Queensland Heritage Act 1992*
QRN	Queensland Rail National

Abbreviation	Description
RE	Regional Ecosystem
RTAY	Rio Tinto Alcan Yarwun
SCL	Strategic Cropping Land
SDPWO Act	*State Development and Public Works Organisation Act 1971*
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities
SP Act	*Sustainable Planning Act 2009*
SPP	State Planning Policy
TEC	Threatened Ecological Community
TMR	Transport and Main Roads
TI Act	*Transport Infrastructure Act 1994*
tph	Tonnes per hour
VM Act	*Vegetation Management Act 1999*
WICET	Wiggins Island Coal Export Terminal

Appendix A

Search Results

Table A1 Threatened flora and fauna species identified from database searches

Common Name	Scientific Name	EPBC	Mi	Preferred Habitats	Likelihood of Occurrence	Source
PLANTS						
Yarwun Whitewood	*Atalaya collina*	E		Dry rainforest and SEVT communities in dark clay soils and on hillsides in the Yarwun – Miriam Value region of C & SE QLD.	Possible	1
Large-Fruited Zamia Palm	*Cycas megacarpa*	V		Woodlands and open woodlands dominated by Lemon-scented Spotted Gum (Corymbia citriodora), Narrow-leaved Red Ironbark (Eucalyptus crebra), Gum-topped Bloodwood (C. erythrophloia), Silver-leaved Ironbark (E. melanophloia) and Brush Box (Lophostemon confertus), on rocky substrates derived from acid volcanics, ironstone and mudstone and rarely alluvium and at 40 – 680 m altitude in the Boulder combe-Woolooga of SE QLD.	Unlikely	1
Marlborough Blue Zamia Palm	*Cycas ophiolitica*	V		Dry rainforests and scrubby urbanised areas on moderate to very steep slopes, screeslope gullies and rocky stream channels at 60 – 550 m altitude in SE QLD.	Unlikely	1
Mount Larcom Monkey Rope	*Parsonsia larcomensis*	V		Open heathlands and shrublands at or near the summits of mountain peaks on cliffs or among outcrops of acid volcanic rocks and serpentinite and in shallow, loamy soils at 350 – 750 m altitude in the Rockhampton - Mt Perry region of C QLD.	Unlikely	1
Miniature Moss-Orchid	*Bulbophyllum globuliforme*	V		Epiphyte on the scaly bark of the branches and upper trunk of mature Hoop Pine (*Araucaria cunninghamii*) trees of subtropical coastal ranges in SE QLD and NE NSW at 500 - 800 m altitude.	Possible	1
Minute Orchid	*Taeniophyllum muelleri*	V		Epiphyte on branches and branchlets of rainforest trees in coastal regions.	Possible	1
Quassia	*Samadera bidwillii (syn. Quassia bidwillii)*	V		Lowland rainforests or rainforest margins and occasionally open forests, woodlands and mangroves in lithosols, skeletal soils, loamy sands, sands, silts and sands with clay subsoils at 1 - 617 m altitude in coastal regions.	Possible	1
Three-Leaved Bosistoa	*Bosistoa transversa*	V		Lowland subtropical rainforests of subtropical coastal regions to 300 m altitude.	Possible	1
Wedge-Leaf Tuckeroo	*Cupaniopsis shirleyana*	V		Dry rainforests and scrubby urbanised areas on moderate to very steep slopes, screeslope gullies and rocky stream channels at 60 – 550 m altitude in SE QLD, from Brisbane to Curtis Island.	Possible	1
BIRDS						
Black-Throated Finch (Sth)	*Poephila cincta cincta*	E		Open grasslands with sparse, tall overtopping eucalypts and paperbarks.	Unlikely	1
Southern Giant-Petrel	*Macronectes giganteus*	E	✓	Marine, over open seas and inshore waters, favours the edge of the continental shelf and edge of pack ice.	Unlikely	1
Australian Painted Snipe	*Rostratula australis*	V	✓	Muddy freshwater swamps and marshes.	Possible	1
Black-Breasted Button-Quail	*Turnix melanogaster*	V		Semi-evergreen vine-thickets with a closed canopy and deep litter layer, or lantana thickets adjacent to SEVT, in eastern Qld and northern NSW.	Possible	1
Kermadec Petrel (Western)	*Pterodroma neglecta neglecta*	V		Pelagic: forages at sea in tropical and subtropical waters of the South Pacific; nests on high islands among rocks and vegetation.	Unlikely	1
Red Goshawk	*Erythrotriorchis radiatus*	V		Tropical open woodland, edges of rainforest and dense riverine vegetation.	Possible	1
Squatter Pigeon (Sth)	*Geophaps scripta scripta*	V		Open grasslands on sandy soil with low gravel ridges and nearby water.	Likely	1

Common Name	Scientific Name	EPBC	Mi	Preferred Habitats	Likelihood of Occurrence	Source
White-Bellied Storm-Petrel (Tasman Sea)	*Fregetta grallaria grallaria*	V		Pelagic: occurs along the edge of the continental shelf and further out; nests on islands of the South Atlantic and South Pacific.	Unlikely	1
MAMMALS						
Northern Quoll	*Dasyurus hallucatus*	E		Most abundant in rocky eucalypt woodlands but occurs in a range of vegetation types, mostly within 200 km of the coast of northern Australia.	Possible	1
Brush-Tailed Rock-Wallaby	*Petrogale penicillata*	V		Rock piles and cliffs with ledges, caves and crevices in wet and dry sclerophyll forests.	Unlikely	1
Greater Long-Eared Bat	*Nyctophilus corbeni*	V		River Red Gum forest, semi-arid woodlands and savannas. Roosts in tree hollows, fissures in branches and under sheets of bark.	Possible	1
Grey-Headed Flying-Fox	*Pteropus poliocephalus*	V		Roosting sites usually in dense forest adjacent to waterbodies. Forages within 15 km of camp in flowering trees or rainforests, eucalypts, paperbarks and banksias.	Likely	1, 2
Humpback Whale	*Megaptera novaeangliae*	V	✓	East coast population migrate from Antarctic feeding grounds to breeding grounds located in the Whitsunday region. Peak migration for the region incorporating the study area is July (northward) and mid September-October (southward).	Unlikely	1
Large-Eared Pied Bat	*Chalinolobus dwyeri*	V		Dry forests and woodlands, moist eucalypt forests, caves and mines.	Possible	1
Water Mouse	*Xeromys myoides*	V		Saline grassland, saltmarsh, mangroves, margins of freshwater swamps close to fore-dunes. Forages in the mangrove on low tides at night.	Known	1, 3
REPTILES						
Leatherback Turtle	*Dermochelys coriacea*	E	✓	Tropical and temperate pelagic waters. Isolated nesting has historically occurred in southern Queensland	Unlikely	1
Loggerhead Turtle	*Caretta caretta*	E	✓	Coastal waters of intertidal and subtidal coral and rocky reefs, seagrass meadows, and unvegetated sand or mud zones.	Known	1
Olive Ridley Turtle	*Lepidochelys olivacea*	E	✓	Marine waters, generally tropical. Benthic and pelagic foraging habitats ranging from 1-100 m depth. Scattered nesting records on beaches of inshore islands in Arnhem Land and the Gulf of Carpentaria.	Possible	1
Brigalow Scaly-Foot	*Paradelma orientalis*	V		Nocturnal legless lizard found sheltering under logs and ground debris in eucalypt, Callitris and Acacia woodlands with a sparse grassy understorey.	Possible	1
Collared Delma	*Delma torquata*	V		Open rocky hillsides, with open woodland over a sparse understorey, also heavy black cracking clay soils. Shelters under surface cover such as rocks.	Possible	1
Dunmall's Snake	*Furina dunmalli*	V		Open dry sclerophyll forests and woodlands, especially brigalow, with fallen timber and ground litter on floodplains of cracking clay soils.	Possible	1
Fitzroy River Turtle	*Rheodytes leukops*	V		Riverine species dependent on shallow fast-flowing water (riffle zones). Confined to Fitzroy and Dawson Rivers and tributaries.	Unlikely	1
Flatback Turtle	*Natator depressus*	V	✓	Shallow coastal inshore rocky reef and sedimentary environments. Breeds exclusively on Australian beaches. Nests on eastern beaches of Curtis Island which are considered a medium density rookery nationally.	Known	1
Green Turtle	*Chelonia mydas*	V	✓	Marine, tropical and warm subtropical seas of northern Australia. Shallow benthic foraging habitats containing seagrass and/ or algae including inshore seagrass beds. Curtis Island and Facing Island are noted as key nesting and/or inter-nesting areas in Queensland.	Known	1

Common Name	Scientific Name	EPBC	Mi	Preferred Habitats	Likelihood of Occurrence	Source
Hawksbill Turtle	*Eretmochelys imbricata*	V	✓	Coastal tropical and sub-tropical waters, foraging in tidal and sub-tidal coral and rocky reefs. Nesting occurs in northern Australian waters from Queensland through to Western Australia.	Possible	1
Ornamental Snake	*Denisonia maculata*	V		Low-lying areas with cracking clay soils in open forests, woodlands and riparian habitats. Shelters under fallen timber and in soil cracks, and forages for frogs at night.	Unlikely	1
Yakka Skink	*Egernia rugosa*	V		Dry open forests or woodland with dense ground vegetation, rocky areas, fallen timber and other debris. Shelters in hollow logs or rock crevices.	Possible	1
SHARKS						
Green Sawfish	*Pristis zijsron*	V		Muddy bottom habitats, coastal and estuarine. Historically, from Broome WA north and down to southern NSW. No records along east coast south of Cairns since 1960s.	Unlikely	1
Whale Shark	*Rhincodon typus*	V	✓	Tropical to warm temperate oceanic and coastal waters. Feeds on small crustaceans and schooling fish. Identified from all states and territories within Australia, however most common in northern Western Australia and Queensland. Sightings have been made in the northern reef (Cairns) and there was a sighting off Stradbroke Island early 2011.	Unlikely	1

Source: 1 = EPBC Protected Matters Search, 2 = DEHP Wildlife Online and 3 = GHD (2012)

EPBC: V = vulnerable, Mi = Migratory status, EPBC Act.

Likelihood of Occurrence: Known = species has been recently recorded on or adjacent to the Study Area, **Likely** = species is known from the wider study area and preferred habitat is present on within the Study Area, **Possible** = species is known from the wider study area and suboptimal habitat is present within the Study Area, **Unlikely** = species is identified from the wider study area but suitable habitat is not present within the Study Area; database records are based on predictive modelling only (e.g. EPBC search); habitat for the species is not present; the species is considered locally extinct and/or the Study Area is well outside the species' current known range.

Table A2 Migratory fauna species identified from database searches

Common Name	Scientific Name	Preferred Habitats	Likelihood of Occurrence*	Source
BIRDS				
Australian Cotton Pygmy-Goose	*Nettapus coromandelianus albipennis*	Freshwater lakes, swamps and impoundments. Nests in tree hollows up to 10 m above the ground, usually within 20 m of water.	Possible	1
Australian Painted Snipe	*Rostratula australis*	Shallow muddy freshwater swamps and marshes.	Possible	1
Barn Swallow	*Hirundo rustica*	Forages in open country and cultivated lands. Most populations breed in Asia but some southern populations appear sedentary.	Possible	1
Bar-Tailed Godwit*	*Limosa lapponica*	Coastal tidal mudflats, estuaries, saltmarsh.	Known	1, 2, 4
Black-Faced Monarch	*Monarcha melanopsis*	Rainforests, mangroves and their fringes, wet eucalypt forests, damp gullies.	Likely	1
Cattle Egret	*Ardea ibis*	Pasture, shallows of freshwater wetlands.	Likely	1
Common Greenshank*	*Tringa nebularia*	Permanent and temporary wetlands: swamps, lakes, dams, irrigated crops, estuaries, tidal mudflats and mangroves. Summer migrant.	Likely	2
Common Sandpiper*	*Actitis hypoleucos*	Muddy edges of billabongs, waterholes, mangroves, rocky beaches.	Likely	1, 2
Common Tern	*Sterna hirundo*	Generally well offshore and pelagic, but also occurs in coastal waters, estuaries and bays, ocean beaches. Non-breeding migrant.	Known	3
Curlew Sandpiper*	*Calidris ferruginea*	Coastal mudflats, estuaries, lagoons, mangrove channels, lakes, floodwaters, flooded inland saltbush.	Likely	1, 2
Eastern Curlew*	*Numenius madagascariensis*	Estuaries, mudflats, mangroves and sandspits.	Known	1, 2, 4

Common Name	Scientific Name	Preferred Habitats	Likelihood of Occurrence*	Source
Eastern Great Egret	*Ardea modesta*	Floodwater, rivers, shallows of wetlands, intertidal mudflats.	Likely	1
Eastern Osprey	*Pandion cristatus*	Coastal waters and estuaries, follows major rivers far inland.	Likely	2
Fork-Tailed Swift	*Apus pacificus*	Varied; airspace over habitat ranging from rainforest to semi-desert.	Likely	1
Great Knot*	*Calidris tenuirostris*	Sheltered coastal mudflats of estuaries, inlets, lagoons and mangroves.	Likely	1
Greater Sand Plover*	*Charadrius leschenaultii*	Coastal: intertidal mudflats and sandbanks, rarely saltmarsh.	Likely	1
Grey Plover*	*Pluvialis squatarola*	Coastal: mudflats, beaches, rocky coasts, coastal lakes and swamps.	Likely	1, 2
Grey-Tailed Tattler*	*Heteroscelus brevipes*	Estuarine mudflats, beaches, shallows, intertidal pools, rocky coasts and reefs.	Known	1, 4
Latham's Snipe*	*Gallinago hardwickii*	Low rank vegetation around shallows of wetlands, reeds, sedges, saltmarsh. Summer migrant, breeds in Japan.	Likely	1
Lesser Sand Plover*	*Charadrius mongolus*	Non-breeding summer migrant found along coastal areas, beaches and estuaries.	Likely	1, 2
Little Curlew*	*Numenius minutus*	Bare dry subcoastal plains, floodplains, billabongs, freshwater swamps, sports fields and lawns.	Likely	1
Little Tern	*Sterna albifrons*	Ocean beaches and coral reefs from Port Headland on WA coast along N and E coasts to Bass Strait. Spreads along the coast to breed in spring and summer but returns north to breed in winter.	Possible	1
Marsh Sandpiper*	*Tringa stagnatilis*	Coastal and inland wetlands: estuaries, mudflats, mangroves, beaches, swamps, lakes, dams, floodwaters. Summer migrant.	Likely	1
Oriental Cuckoo	*Cuculus optatus*	Rainforest margins, vine thicket, wet sclerophyll forest, paperbark swamp, mangroves.	Likely	2
Pacific Golden Plover*	*Pluvialis fulva*	Beaches, estuaries, mudflats, saltmarshes, shallow inland swamps.	Likely	1
Pin-Tailed Snipe*	*Gallinago stenura*	Coastal freshwater wetlands: river pools and swamps usually with grass	Possible	1
Rainbow Bee-Eater*	*Merops ornatus*	Open country, most vegetation types, sand dunes, banks.	Known	1, 2, 3
Red Knot*	*Calidris canutus*	Sheltered coastal mudflats and sandbars of estuaries, inlets, lagoons, mangroves and swamps.	Likely	1
Red-Necked Stint*	*Calidris ruficollis*	Diverse wetlands including mudflats, saltmarshes, beaches, floodwaters, inland waters.	Likely	1, 2
Ruddy Turnstone*	*Arenaria interpres*	Rocky shores, exposed rocky reefs and platforms, mudflats.	Possible	1
Rufous Fantail	*Rhipidura rufifrons*	Rainforest, dense wet eucalypt forest, paperbark and mangrove swamps, riparian vegetation.	Likely	1
Sanderling*	*Calidris alba*	Open sandy beaches exposed to oceanic swells.	Known	2
Satin Flycatcher	*Myiagra cyanoleuca*	Tall wet eucalypt forests in gullies, plains and tablelands of coastal eastern Australia and nearby ranges.	Likely	1, 2
Sharp-Tailed Sandpiper*	*Calidris acuminata*	Fresh or salt wetlands, muddy edges of swamps, lagoons, lakes, dams, temporary floodwaters.	Likely	1
Southern Giant-Petrel	*Macronectes giganteus*	Marine, over open seas and inshore waters, shorelines south of Rockhampton. Favours the edge of the continental shelf and edge of pack ice.	Unlikely	1
Spectacled Monarch	*Monarcha trivirgatus*	Rainforests, mangroves, dense gullies in wet forests.	Likely	1
Swinhoe's Snipe*	*Gallinago megala*	Diverse wetlands including mudflats, claypan, billabongs and flooded grassland.	Likely	1
Terek Sandpiper*	*Xenus cinereus*	Coastal mudflats, estuaries, lagoons, sandbars, coastal swamps.	Likely	1
Whimbrel*	*Numenius phaeopus*	Mudflats, estuaries, lagoons, mangroves.	Known	1, 2, 3
White-Bellied Sea-Eagle	*Haliaeetus leucogaster*	Coastal seas, islands, estuaries and inlets. Follows major rivers and wetlands far inland. Huge nests of sticks, usually in tall trees.	Known	1, 3
White-Throated Needletail	*Hirundapus caudacutus*	Variety of habitats. Aerial forager. Breeds in northern hemisphere, nests in tree hollows.	Likely	1

Common Name	Scientific Name	Preferred Habitats	Likelihood of Occurrence*	Source
MAMMALS				
Bryde's Whale	*Balaenoptera edeni*	No specific breeding or feeding grounds have been identified in Australian waters. Inshore -potentially resident in waters containing suitable prey stock (pelagic shoaling fish).	Unlikely	1
Dugong	*Dugong dugon*	Sheltered coastal seas and estuaries of northern Australia from Moreton Bay in Qld to Shark Bay in WA, where extensive sea-grass beds are present.	Known	1
Humpback Whale	*Megaptera novaeangliae*	East coast population migrate from Antarctic feeding grounds to breeding grounds located in the Whitsunday region. Peak migration for the region incorporating the study area is July (northward) and mid September-October (southward).	Known	1
Indo-Pacific Humpback Dolphin	*Sousa chinensis*	Coastal and estuarine waters in northern Australia from Broome WA north and around to Brisbane, QLD. Shallow water, less than 20m depth close to the coast, river and creek mouths. Often associated with seagrass beds.	Likely	1
Australian Snubfin Dolphin	*Orcaella heinsohni*	Coastal and estuarine waters in northern Australia from Broome WA north and around to Brisbane, QLD. Shallow water, less than 20m depth close to the coast, river and creek mouths. Often associated with seagrass beds.	Likely	1
Killer Whale,	*Orcinus orca*	Oceanic, more common in temperate waters.	Unlikely	1
REPTILES				
Estuarine Crocodile	*Crocodylus porosus*	Tropical coastal rivers and swamps south to about Rockhampton, extending well inland via major rivers and billabongs.	Known	1
Flatback Turtle	*Natator depressus*	Shallow coastal inshore rocky reef and sedimentary environments. Breeds exclusively on Australian beaches. Nests on eastern beaches of Curtis Island which are considered a medium density rookery nationally.	Known	1
Green Turtle	*Chelonia mydas*	Marine, tropical and warm subtropical seas of northern Australia. Shallow benthic foraging habitats containing seagrass and/ or algae including inshore seagrass beds. Curtis Island and Facing Island are noted as key nesting and/or inter-nesting areas in Queensland.	Known	1
Leatherback Turtle	*Dermochelys coriacea*	Tropical and temperate pelagic waters. Isolated nesting has historically occurred in southern Queensland	*Possible*	
Hawksbill Turtle	*Eretmochelys imbricata*	Coastal tropical and sub-tropical waters, foraging in tidal and sub-tidal coral and rocky reefs. Nesting occurs in northern Australian waters from Queensland through to Western Australia.	Possible	1
Loggerhead Turtle	*Caretta caretta*	Coastal waters of intertidal and subtidal coral and rocky reefs, seagrass meadows, and unvegetated sand or mud zones.	Known	1
Olive Ridley Turtle	*Lepidochelys olivacea*	Marine waters, generally tropical. Benthic and pelagic foraging habitats ranging from 1-100 m depth. Scattered nesting records on beaches of inshore islands in Arnhem Land and the Gulf of Carpentaria.	Possible	1
SHARKS				
Porbeagle, Mackerel Shark	*Lamna nasus*	Subtropical to temperate waters. Favoured habitat includes offshore fishing banks, but can also be found in coastal waters.	Unlikely	1
Whale Shark	*Rhincodon typus*	Tropical to warm temperate oceanic and coastal waters. Feeds on small crustaceans and schooling fish. Identified from all states and territories within Australia, however most common in northern Western Australia and Queensland. Sightings have been made in the northern reef (Cairns) and there was a sighting off Stradbroke Island early 2011.	Unlikely	1

Source: 1 = EPBC Protected Matters Search, 2 = DEHP Wildlife Online, 3 = GHD (2012) and 4 = Rohweder and Charley 2010.

***** Species listed in the Draft EPBC Act Policy Statement 3.21 – *Significant Impact Guidelines for 36 Migratory Shorebird Species* (DEWHA 2009b).

Likelihood of Occurrence: Known = species has been recently recorded on or adjacent to the Study Area, **Likely** = species is known from the wider study area and preferred habitat is present on within the Study Area, **Possible** = species is known from the wider study area and suboptimal habitat is present within the Study Area, **Unlikely** = species is identified from the wider study area but suitable habitat is not present within the Study Area; database records are based on predictive modelling only (e.g. EPBC search); habitat for the species is not present; the species is considered locally extinct and/or the Study Area is well outside the species' current known range.