Section 1
Introduction
INTRODUCTION

RTA Weipa Pty Ltd (RTA) and its parent company Rio Tinto Aluminium Limited (formerly named Comalco Aluminium Limited) have collectively mined and shipped bauxite from the existing Weipa operation since 1963. Weipa is located on the western side of Cape York on the Gulf of Carpentaria in northern Queensland, approximately 600km north-west of Cairns (refer Figure 1-1). RTA holds mining lease (ML) 7024 (granted 1 January 1958) pursuant to the Commonwealth Aluminium Corporation Limited Agreement Act 1957 (Qld) (Comalco Agreement Act), a Queensland "Special Agreement Act" and ML6024 (granted 25 July 1985) pursuant to the Comalco Agreement Act and Mineral Resources Act 1989 (Qld).

RTA is currently mining the East Weipa and Andoom deposits located on ML7024 north of the Embley River. RTA is also mining from the adjacent Ely bauxite deposit (on ML7031) held by Alcan South Pacific Pty Ltd (acquired by Rio Tinto in 2007) under an agreement. Mined bauxite is trucked to one of two beneficiation plants located at Lorim Point and Andoom, respectively. Product bauxite is railed from Andoom to Lorim Point and conveyed to RTA's stockpiles prior to shipment from the Port of Weipa (refer Figure 1-2).

The northern bauxite reserves are gradually depleting, and with continuing demand for bauxite RTA has undertaken extensive drilling programs on ML7024. Significant bauxite reserves have been identified on the portion of ML7024 that lies south of the Embley River which could sustain a mining operation for about 40 years, depending on annual production rate.

Due to the Embley River estuary, development of the reserves south of the Embley River poses logistical challenges to the continued use of existing Weipa infrastructure. The proposed Project, referred to as the South of Embley (SoE) Project (or “the Project”), consists of the construction and operation of a bauxite mine and associated processing facilities, barge and ferry terminals and a port. The Project involves a staged increase in production up to 50 million dry product tonnes per annum (Mdptpa). The initial installed capacity is subject to ongoing feasibility studies but is likely to be either 15Mdptpa or 22.5Mdptpa. Actual production rates and the timing and size of capacity expansions would depend on market conditions.

This Environmental Impact Statement (EIS) has been prepared to identify potential environmental and social issues associated with the Project and set out proposed management measures.

1.1 Project Proponent

The Project would be developed and operated by RTA Weipa Pty Ltd, which is a wholly-owned subsidiary of Rio Tinto Aluminium Limited. Both companies are in the Rio Tinto Alcan product group. Rio Tinto Alcan is one of five product groups operated by the global mining group, Rio Tinto. Rio Tinto Alcan supplies bauxite, alumina and primary aluminium to Australia, New Zealand and export markets. About 37% of Australia’s total production of bauxite, 36% of its alumina and 40% of its primary aluminium is produced by Rio Tinto Alcan.

Rio Tinto Alcan’s Australian head office for bauxite and alumina is based in Brisbane. Bauxite and alumina interests in Queensland include the existing Weipa mine and the Yarwun and Queensland Alumina Limited alumina refineries in Gladstone. In Queensland, Rio Tinto Alcan also operates the Boyne Smelters Limited aluminium smelter in Gladstone.

RTA Weipa Pty Ltd was registered under the Corporations Act 2001 (Cth) in 2009 and the bauxite mining assets within ML 7024 and ML 6024 and some ancillary assets were transferred to RTA Weipa Pty Ltd from Rio Tinto Aluminium Limited effective 1 March 2011. The restructure is to replicate the position which exists through the vast majority of the Rio Tinto group (and resources companies generally) where, to provide for corporate and financial flexibility, separate operations are generally held in a special purpose vehicle.

A record of responsible environmental management has been exhibited during more than 40 years of mining bauxite in the Weipa region. Whilst improvement of environmental performance...
Fig. 1-1: Locality Map

- RTA Mining Lease boundary
- South of Embley Project Area
- Oresome Australia Pty Ltd Mineral Sands Project
- Chalco Aurukun Bauxite Project
- Cape Alumina Pty Ltd's Pisolite Hills Project
- Township
- Drainage
- Road/track
- 50m Topographic contour

RTA Mining Lease boundary
South of Embley Project Area
Oresome Australia Pty Ltd Mineral Sands Project
Chalco Aurukun Bauxite Project
Cape Alumina Pty Ltd's Pisolite Hills Project
Township
Drainage
Road/track
50m Topographic contour

Datum/Projection: GDA94/AMGA Zone 54
Date: 09/05/2011
Fig. 1-2: Existing Facilities
North of the Embley River

- RTA Mining Lease boundary
- Township
- Drainage
- Road/track
- Product Bauxite Rail Line
- Water Supply Pipeline
- Beneficiation Plant

Datum/Projection: GDA94/MGA Zone 54
Date: 06/12/2009
and outcomes continues, due enquiry indicates that RTA Weipa Pty Ltd, Rio Tinto Aluminium Limited and their Executive Officers have not been the subject of any proceedings under a Commonwealth or State law for the protection of the environment.

RTA has a Health, Safety and Environment Policy that includes commitments to minimise environmental impact and continually monitor and improve the way the company works (refer Appendix 1A). As described in Section 1.9.6, mining and mining-related activities on ML7024 at Weipa have transitional authorisation under section 616B of the Environmental Protection Act 1994 (Qld) (EP Act) relating to "Special Agreement Act" mines. RTA has commenced the process to transition to an environmental authority (mining activities) (EA) under the EP Act with respect to ML7024 and ML6024, by way of an application and Environmental Management Plan submitted in February 2010. The grant of application of the EA is pending, however it is anticipated that the conditions are likely to require the current RTA Weipa operations to prepare or significantly revise and submit the following management plans as a minimum:

- Land Use Management Plan;
- Rehabilitation Management Plan;
- Erosion and Sediment Control Plan;
- Water Management Plan; and
- Waste Management Plan.

Following the Coordinator General’s assessment of the SoE Project EIS, an application would be made to amend the EA in respect to any requirements particular to the SoE Project, such that the Department of Environment and Resource Management (DERM) may issue the required amended EA under the EP Act for operations on ML7024 and ML6024. Subsequently, the required management plans would be either reviewed to ensure adequacy for the SoE Project or new management plans developed and implemented for the SoE Project, incorporating any relevant conditions of consent.

The primary contact for the Project is detailed below:

Manager—South of Embley Project
Rio Tinto Aluminium Limited
GPO Box 153, Brisbane Qld 4001
Telephone 1800 308 938 (freecall)
Facsimile + 61 7 3328 6990
Email external.affairs@riotinto.com

1.2 Project Description

The Project involves the construction and operation of a bauxite mine and associated processing and port facilities to be located near Boyd Point on the western side of Cape York Peninsula. Boyd Point is approximately 40km south-west of Weipa and 40km north of Aurukun, with the closest mining areas being 4km from Napranum, 15km from Aurukun, and 50km from the nearest cattle station homesteads. The Project area would be predominantly located on a portion of ML7024 south of the Embley River, on ML6024, on certain Strategic Port Land within the Port of Weipa, and offshore dredging and disposal areas (refer Figure 1-1).

The Project consists of the following components:

- **bauxite mining** – involving the clearing, salvage of topsoil, stripping of overburden, extraction of up to 50Mtpta of bauxite, replacement of topsoil and revegetation. Mined areas would be progressively rehabilitated. Refer to Section 2.4 for a detailed description;

- **bauxite processing** – crude bauxite would be transported using a network of internal haul roads to one of two beneficiation plants (Boyd beneficiation plant, followed by a second plant at Norman Creek). A beneficiation plant separates the bauxite and waste materials through screening, crushing, washing and dewatering. Chemicals are not
used in the process, only water. Fine waste materials would be discharged to tailings storage facilities. Refer to Section 2.5 for a detailed description;

- **product bauxite stockpiles** – product stockpiles and a stacker-reclaimer would be established adjacent to the port facilities (refer to Section 2.5.3);

- **port and ship-loading facilities** – involving the construction and operation of a new port, ship-loading and tug mooring facilities between Boyd Point and Pera Head. Works would include a jetty, berths, ship-loader and dredging of berth pockets and departure areas. Protected moorings for tugs to use during inclement weather would also be constructed alongside the existing Lorim Point east wharf. The initial phase of the new port would have a capacity of 30Mdptpa, increasing to a maximum design capacity of 63Mdptpa when demand requires. The design capacity allows for third parties following agreement on suitable commercial terms. The construction of these facilities will result in the disposal of approximately 6,500,000m³ of dredged material to sea for the initial phase of the port. Refer to Section 2.6 for a detailed description;

- **ancillary infrastructure** – involving the construction and operation of a diesel-fuelled power station, workshops, warehouse, administration facilities, package sewage treatment plant, general waste disposal and diesel storage facilities. Refer to Section 2.7 for a detailed description;

- **water infrastructure** – involving the construction of a water supply dam on a freshwater tributary of Norman Creek (Dam C), with the later construction of a water pumping station on the Ward River, plus pipelines and up to 12 artesian bores. Refer to Section 2.7.3 for a detailed description;

- **temporary on-site camp for the construction phase** – involving the construction of a facility with up to 630 beds. The existing Evans Landing camp (located on ML7024) would also be used during the construction phase as required. During the operations phase employees would be housed in the existing Weipa community and commute to site on a daily basis via ferry and a new mine access road. Refer to Section 2.7.1 for a detailed description; and

- **barge and ferry facilities** – involving the construction and operation of a new ferry terminal at Hornibrook Point, a roll on/roll off (ROK) barge facility at Humbug Wharf, and a new barge/ferry terminal on the western bank of the Hey River. These would be used to transport workforce, materials and equipment between Weipa and the Project. Dredged material derived from the construction of these facilities would also be disposed at sea. Refer to Section 2.7.2 for a detailed description.

The main infrastructure components are illustrated in Figure 1-3 and Figure 1-4 and a detailed project description is set out in Section 2. The land parcels and tenure within the Project area, including Strategic Port Land, are summarised in Table 2-1 and shown in Figure 2-1.

### 1.3 Project Rationale

RTA plans to develop a new bauxite mine capable of producing up to 50Mdptpa along an incremental expansion pathway. The EIS has been prepared to assess the impacts of several different levels of production along this pathway: a minimum rate of 15Mdptpa, a maximum rate of 50Mdptpa, and a nominal intermediate rate of 30Mdptpa. However, the actual rates and the timing of production increases are subject to market conditions. The initial production rate is subject to ongoing feasibility studies but is likely to be either 15Mdptpa or 22.5Mdptpa.

The initial phase of mining operations would involve production to substitute depleted East Weipa economic reserves as well as developing third party markets. Production capacity would expand to replace Andoom production once those economic reserves are depleted. Production capacity would thereafter be expanded to 50Mdptpa when market conditions are suitable. The
Fig. 1-3: Infrastructure and Conceptual 40 Year Mine Plan
Fig. 1-4: Infrastructure and Conceptual Mine Plan (Aerial Photo)
Project has bauxite reserves capable of sustaining a mine life of approximately 40 years, depending on annual production rate. The indicative production schedule used in the EIS is presented in Table 1-1, however, it should be noted that the timing and size of production increases are subject to market conditions.

### Table 1-1  Indicative Production Scenario for EIS

<table>
<thead>
<tr>
<th>Mining Centre / Year*</th>
<th>SoE Production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Construction</td>
</tr>
<tr>
<td>East Weipa (production)</td>
<td>-1*</td>
</tr>
<tr>
<td>Andoom (production)</td>
<td>✓</td>
</tr>
<tr>
<td>SoE (Mdtpa)</td>
<td>✓</td>
</tr>
</tbody>
</table>

* Years and production rates are nominal and subject to change due to market conditions, construction timetables and available economic reserves.

The key objectives of the Project are to:

- extend the life of RTA’s mining operations in Weipa beyond depletion of East Weipa and Andoom reserves;
- maintain continuity of bauxite supply to Gladstone refineries and third parties;
- enable increased bauxite production in the Weipa region in response to the rising world demand for this product and to enhance RTA’s competitiveness as a bauxite producer;
- continue mining-related employment in the Western Cape region;
- maintain Weipa as the main residential and commercial support base for the Project;
- operate the mine in a manner that has an acceptable impact on surrounding communities and the environment;
- develop and operate the Project in compliance with all relevant statutory requirements; and
- continue to maintain an open and honest relationship with stakeholders.

Extensive resource definition investigations and environmental surveys have taken place in the Project area. It is anticipated that construction would commence in early 2012, following receipt of relevant environmental approvals and Rio Tinto’s internal project approvals. The initial construction phase is expected to take approximately three years. The estimated capital cost to establish 15Mdtpa capacity would be approximately $1,450 million. The final cost is subject to completion of feasibility studies.

### 1.4 Relationship to Other Projects

In March 2007 the State of Queensland entered into a development agreement with the Aluminium Corporation of China Limited (Chalco) to develop the Aurukun Bauxite Project. Chalco was granted mineral development licence (MDL) 378 located immediately to the east of RTA’s ML7024 (refer Figure 1-1). A bauxite mine producing 6.5Mdtpa was proposed, with product transported by conveyor across ML7024 for shipment from a new port located close to Boyd Point. The proponent proposed to accommodate a fly-in fly-out workforce on-site. In June 2010 the Queensland Government announced that the development agreement had come to an end and there is currently some uncertainty about the future development of the Aurukun Bauxite Project.
RTA liaised with Chalco during the planning phase for their proposed project to discuss any potential for co-location and/or sharing of certain infrastructure. Where possible, and subject to commercial agreement, RTA will seek to minimise environmental and property impacts in the event that the Aurukun lease is developed in the future. Some impacts could potentially be mitigated by the following:

- establishment of a common infrastructure corridor for RTA’s water pipeline, transmission line and overland conveyor (from the Norman Creek plant) and the Aurukun Project’s overland conveyor to the port (refer Figure 1-3); and
- co-location of port and stockpile facilities.

The SoE Project’s water supply and power supply are designed to be independent of any other project.

Cape Alumina Pty Ltd holds two granted Exploration Permit – Minerals (EPMs) over the Pisolite Hills resource area (EPM14547 and EPM15278 situated 50km north-east of Weipa), with an additional EPM to cover a barge loading facility (EPM15984) (refer Figure 1-1). The Pisolite Hills project as originally proposed in 2008 would have nominally produced five to seven Mtdpta of bauxite for 10 to 15 years. Product would have been trucked across ML7024 to a barge-loading facility on the coast. RTA does not currently have mining activity or infrastructure in the vicinity of the proposed haul road. A fly-in fly-out workforce was proposed, with accommodation to be provided in a camp on-site. In July 2010 Cape Alumina announced the proposed Pisolite Hills project was no longer viable due to the declaration of the Wenlock River Basin as a Wild River area.

The potential cumulative impact from bauxite mining of clearing of regional ecosystems is assessed in Section 7.9.1. The potential cumulative impact from water supply infrastructure and potential cumulative impacts to catchment hydrology from bauxite mining is assessed in Section 5.2.3 and Section 5.2.4 respectively.

The Project is not expected to give rise to any consequential impacts that require assessment under the Environmental Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act).

1.5 Socio-economic Costs and Benefits

The Project is located in the Western Cape Region, which includes the Aurukun, Mapoon, Napranum and Weipa communities. Extensive community consultation was undertaken as part of this EIS and this information provided the basis for the social impact assessment.

Mining is the principal driver of the Weipa economy and the mining workforce is the principal driver of Weipa’s population. Based on 2006 census data mine-related employees and contractors constituted 43% of the total employed workforce in Weipa and about 29% of the town’s population of 3,096.

The Project’s construction workforce would be accommodated in an on-site camp and negligible affects on the local housing market are expected (refer Section 17.4.9).

At a Project production rate of 15Mtdpta, RTA’s overall workforce (including Andoom) would be marginally smaller than in 2007–2008 and Weipa would have a population of about 3,500, down from just over 4,000 reached in 2007–2008 (refer Section 16.2.1). At a production rate of 30Mtdpta, the overall workforce would reduce slightly (due to greater productivity in SoE operations compared to Andoom operations) and Weipa’s population is projected to be about 3,330. Future demands on infrastructure and government services are expected to be no higher than in recent years.

SoE mine production would be capable of increasing above 50Mtdpta when market conditions are suitable. Under the 50Mtdpta production scenario, the population of Weipa is projected to be approximately 400 above the peak of 2007–2008. Such a population rise would require development of more residential land and housing, and provision of expanded government services.
The area south of the Embley River is primarily the traditional lands of the Wik and Wik Way people. RTA’s existing operations are relatively remote from this area and from Aurukun, the nearest community. The Project would bring development activities much closer to the Traditional Owners and their country. RTA would continue to work with Traditional Owners to facilitate access to country, subject to mine safety requirements. RTA would also continue existing employment, training and business development programs and tailor them to the needs of the Project and community. The potential social impacts of the Project, both adverse and beneficial, and proposed mitigation measures are discussed in Section 16.

The economic impacts of the Project are evaluated in Section 17 and summarised below:

Construction Phase (for 15Mdptpa production capacity)
- Direct employment averages more than 300 people per annum over three years;
- Indirect employment of approximately 179 people in the local area, 395 people in the Far North Queensland (FNQ) region, 632 people state-wide and 705 people nationally;
- Direct financial contribution of $264 million locally, $527.9 million in the FNQ region, $989.9 million in Queensland and $1,319.8 million nationally;
- Indirect financial contribution of $201.7 million locally, $612.2 million in the FNQ region, $1,829.3 million in Queensland and $2,828.2 million nationally.

Operations Phase – 15Mdpta production scenario
- Direct employment (including contractors) of approximately 500 people in local region;
- Indirect employment of approximately 390 people locally, 788 people in the FNQ region, 1,170 people state-wide and 1,771 people nationally;
- Direct annual financial contribution of $575 million across the local, regional, Queensland and national economies;
- Indirect annual financial contribution of $96 million locally, $182 million in the FNQ region, $257 million in Queensland and $423 million nationally.

1.6 Project Alternatives
RTA has been undertaking studies to optimise the Project design. A number of options have been considered, including:
- beneficiation plant location;
- port and stockpile location;
- workforce housing;
- barge and ferry terminal locations;
- power supply;
- beneficiation plant technology
- water demand management;
- water supply;
- initial tailings storage facility establishment; and
- disposal of dredged material.

The option of not proceeding with the Project is not financially feasible as the bauxite reserves will be depleted in RTA’s current mining areas leading to the progressive closure of the Weipa mine. Without an alternative source, the Gladstone alumina refineries will lose a viable, ongoing source of bauxite and the town of Weipa will lose a major financial contributor.
Rio Tinto Alcan
Environmental Impact Statement
South of Embley Project

The Project is not sterilising other resource opportunities nor displacing existing agricultural or forestry enterprises. Section 3.7.1 discusses pre-mine land use suitability.

The alternatives considered for major project components are described below.

### 1.6.1 Beneficiation Plant Location

The continued use of the Lorim Point beneficiation plant (refer Figure 1-2) to process ore mined from the SoE orebodies was evaluated. This option would require the crude ore to be transported on average more than 50km by conveyor or rail to the existing Lorim Point beneficiation plant, including over a 3.5km bridge spanning the Embley River estuary. Irrespective of the transport method selected, the cost of this system, including bridging the Embley River, proved to be cost prohibitive.

### 1.6.2 Port and Stockpile Location

The port and stockpile alternatives evaluated were:

- use of existing facilities at Lorim Point (northern bank of Embley River, refer Figure 1-2); and
- establishment of a new port between Boyd Point and Pera Head (refer Figure 1-3).

The use of the existing Lorim Point stockpiles and ship-loader would require all crude ore or product bauxite to be transported on average more than 50km by conveyor or rail to the existing Lorim Point beneficiation plant, over a 3.5km bridge spanning the Embley River estuary.

Irrespective of the transport method selected, or whether the ore was beneficiated at a new SoE-located plant or the existing Lorim Point plant, the cost of this approach (including bridging the Embley River) proved to be cost prohibitive. It should be noted that the new port has been designed to accommodate vessels of up to 185,000 deadweight tonnage (dwt). Dredging of berth pockets and departure areas and sea disposal of dredge material would be required to accommodate these vessels at the new port. The existing Port of Weipa facilities are limited to smaller ships up to 255m in length, 12.3m draft, and 85,000dwt (PCQ 2010). If the existing port were to be upgraded to accommodate the larger vessels, then dredging in the Embley estuary and subsequent disposal of dredged material would also be required.

The proposed new port would be much closer to the centroid of bauxite reserves (refer Figure 1-3) and hence would reduce energy usage as it minimises the overall land transportation distance of crude ore and product.

The location of the proposed Port between Pera Head and Boyd point has the closest access to deep water along the coastline south of the Embley River and therefore minimises the required dredge volume.

Two port vessel capacity options were evaluated – a port capable of accepting bulk carrier vessels up to: (a) 185,000dwt and 18.1m draft; and (b) 90,000 dwt and 12.8m draft. The larger vessel capacity option has been selected in order to maximise access to markets. For the purposes of evaluation studies, it has conservatively been assumed that vessel departures are unrestricted by tides and hence the depth of dredging required has been matched to this assumption.

The 185,000dwt vessel option, compared to the smaller vessel option, would require an increased dredge footprint (1,460,062m² compared to 135,000m²), dredge depth, dredge volume (6,500,000m³ compared to 250,000m³) and dredging duration. The 185,000dwt vessel option would be likely to have the potential for greater impact on threatened and migratory marine fauna and the Commonwealth marine environment, as a result of the increased dredging. However, the use of larger vessels means that there would be fewer vessel movements during operations and more energy efficient transport of ore (i.e. less diesel used and emissions of greenhouse gases by ships). Neither vessel option would be likely to have a significant impact on threatened and migratory marine fauna and the Commonwealth marine environment.
1.6.3 Workforce Housing

The alternatives evaluated for the operation's workforce accommodation were:

- use existing residences in Weipa/Napranum (refer Figure 1-2) and commute daily to the Project site; and
- establish new workforce-only accommodation on-site with a drive-in drive-out and/or fly-in fly-out roster arrangement.

The continued use of Weipa/Napranum was selected as it maximised the use of the existing housing stock and community facilities and services, and minimised change to the social fabric of these communities. The mine's operational workforce would be bussed to and from work daily (refer to Section 2.7.2).

The construction workforce would be largely accommodated in a temporary construction camp located on ML7024 near Boyd Bay (refer Figure 1-3). This workforce would be predominantly sourced from eastern Australia and would fly-in and fly-out of Weipa when not on roster. The proposed temporary construction camp has been located in a mineralised area that would be later mined. There would be insufficient existing housing in Weipa/Napranum to accommodate the full construction workforce, therefore, additional temporary accommodation would need to be constructed in Weipa/Napranum which may also result in disturbance of existing flora and fauna habitat. Overall, the construction of temporary accommodation near Boyd Bay compared to Weipa/Napranum, would be likely to have similar potential impacts on threatened and migratory fauna and threatened flora. However, the provision of temporary worker-only accommodation on-site would minimise daily travel times and avoid locating a temporary construction workforce within an established township. Neither option would be likely to have a significant impact on threatened and migratory fauna and threatened flora.

1.6.4 Location of Barge and Ferry Terminals

The operational workforce would commute to the site daily by driving to the Hornibrook ferry terminal on the north side of the Embley River, where they would leave their vehicles and catch a ferry to the Hey River barge/ferry terminal, from where they would be bussed to site. Freight and equipment would be transported via barge from the Humbug barge terminal on the north side of the Embley River to the Hey River barge/ferry terminal (refer Figure 1-3). The trucks would then drive off the barge and travel by the sealed on-lease Mine Access Road to the site.

Three locations for barge and ferry terminals were considered on the northern side of the Embley River. These included an area adjacent to the existing Evans Landing wharf, an area adjacent to the existing Humbug Wharf, and Hornibrook Point. The location at Evans Landing
was unsuitable due to the potential for significant interference with existing commercial and recreational boating and also to increased ferry travel time.

The Humbug barge terminal would be located adjacent to the existing Humbug Wharf, which is where the regular barge service from Cairns docks. Large machinery and supplies arriving by barge from Cairns can be transported to the Project without traversing public roads. Use of public roads would be required if the barge terminal was located at Hornibrook Point.

It is proposed to locate the ferry terminal at Hornibrook Point as this has the shortest route and hence the shortest travel time to the Hey River barge/ferry terminal. This location also has the advantage of reducing interactions with vessels that support the existing operation.

The potential impacts on threatened and migratory marine and estuarine fauna would be similar for all terminal locations. None of the options are likely to have a significant impact on threatened and migratory marine fauna and the Commonwealth marine environment.

1.6.5 Power Supply

The following power supply alternatives were evaluated:

- generate power at Weipa by expanding the existing diesel-fired station and installing a high voltage transmission line to the Boyd infrastructure area; and
- generate power on-site using diesel-fired generators.

The first alternative is the least reliable and least feasible, in part because the 3.5km wide Embley River estuary would have to be traversed by a high voltage line. In addition to the higher capital cost, line losses along the length of the 50km overhead power line would result in a less efficient operating system. As a result, on-site generation is proposed.

Alternative energy supplies such as biomass, wind, solar and wave were considered. Wave power was not technically viable. Wind and solar sources were not able to supply guaranteed minimum base load power. Biomass was not technically viable for low base load demand situations (e.g. beneficiation plant not running, ship loaders not running).

The option of installing a 50km overhead power line is likely to have a greater potential impact on flora and fauna habitat, compared to generating power on site, because additional vegetation clearing would be required. Neither of the options would be likely to have a significant impact on threatened and migratory fauna and threatened flora.

1.6.6 Bauxite Beneficiation Technology

Geological characterisation of the SoE orebody has shown that the greatest economic benefit can be obtained from the crude bauxite if the high-silica fine material (nominally <0.6mm) associated with the crude ore is removed. The silica in fines consumes caustic soda at the alumina refinery and caustic consumption is the primary cost driver in the bauxite and alumina production chain.

The following bauxite beneficiation (processing) technologies for removing fines were evaluated:

- dry beneficiation; and
- wet beneficiation.

Crude bauxite in the ground is a mixture of bauxite bearing pisolites (pea-shaped particles) locked in a matrix of finer materials including fine bauxite and clay. Energy is needed to break up the crude ore into pisolites and fine matrix material. A dry screening process would break up some of the large lumps but would not remove fine material adhering to pisolites. A substantial quantity of pisolites would also remain trapped in the matrix material and be rejected as oversize material by a dry screening plant, further eroding the value of the ore body. Comalco (now RTA) has previously investigated mobile in-pit dry beneficiation but found the plant was burdened with many technical problems which could not be effectively solved.
In a wet beneficiation plant the crude bauxite is soaked with water to break-up lumps and this “pre-conditioned” ore is then washed over a screen to remove the fines. The amount of water needed to wash the fines from the bauxite pisoliths varies depending on the quantity and type of fines. A “high dispersion energy” plant uses more water than a “low dispersion energy” plant.

Wet beneficiation is an efficient and reliable technology that has been proven throughout the world and it has been adopted for the Project. As much crude ore as is practicable would be beneficiated in “low dispersion energy” plants. This would reduce overall water usage. Some ore from the Norman Creek mining area would need to be beneficiated in a “high dispersion energy” plant. Mining of this ore would be delayed until a “high dispersion energy” unit is added to the initial “low dispersion energy” plant at Norman Creek (refer Section 2.5.1).

1.6.7 Water Demand Management

The options evaluated for reducing and stabilising water demand for operations were:

- type of beneficiation plant;
- staging of significant plant expansions;
- product yield assumptions; and
- recycling of water within the beneficiation plant.

The design of the “low dispersion energy” beneficiation plants has incorporated materials handling and layout features that enable as much crude ore as is practicable to be beneficiated in these plants, thus reducing overall water usage. The plant design enables water in the circuit to be reused throughout the plant.

Tailings water recycling (refer Section 2.7.3) is crucial to reduce the proportion of water required from alternative sources. The recycling of water from tailings storage facilities commences once the floor of the tailings storage facility has been sealed through the deposition of fine tailings particles. The sealing takes two to three years during which time alternate water sources are required. The planned significant lifts in bauxite production rate are staged to follow the establishment of the recycled tailings water stream in order to eliminate high peaks in water demand.

The beneficiation process separates crude ore into product, oversized waste and tailings. Due to the characteristics of the ore body, these proportions would constantly vary and consequently the product yield would also vary. The Boyd beneficiation plant water usage is determined by the proportion coming from tailings recycling. The overall water demand has been based on the average yield of the ore body rather than minimum yield. In order to stabilise water demand, short term mine plans may need to be varied so that high or low yielding ore is mined to meet overall production plans.

The use of thickened tailings was also evaluated but not adopted. The same amount of water is used within the bauxite processing circuit regardless of whether there is a thickened or an unthickened tailings system. With a thickened tailings system, water is removed from the tailings stream for recycling before tailings are pumped in paste form to the tailings storage facility; it is difficult to recover additional water reliably from a thickened tailings storage facility. With an unthickened tailings system, all the recycled water is recovered from the tailings disposal facility. Overall, the effective water recovery is similar for both types of tailings systems; however, a thickened tailings system also requires the use of chemical flocculants and greatly increases the energy needed to pump the thickened tailings to the disposal area.

1.6.8 Water Supply

A wide range of options were considered to meet the forecast demands for water over the anticipated range of production rates up to 50Mdppta.

Following a preliminary evaluation, the following supply options were not adopted on the basis of a combination of cost, sustainability, reliability and technical considerations:

- pumping water via pipeline from Weipa;
Unlike the Weipa Peninsula, the Project area does not have a high-yielding shallow aquifer. The principal sources of supply are therefore restricted to recycled water from tailings storage facilities, surface water from streams, and deep artesian groundwater. The wide range of supply combinations utilising various proportions of these sources was investigated. Surface water supply options encompassed both dams and direct pumping from flowing streams. Nine dam site options in the Norman Creek catchment were evaluated, along with two in the Ina Creek catchment and four in the Ward River catchment. Following consideration of cost, sustainability, reliability, local community concerns, and the environment, the following principal supply sources have been adopted:

- Production rate less than 30Mdptpa – tailings water recycle, water supply dam (Dam C), and artesian; and
- Production rate 30Mdptpa to 50Mdptpa – tailings water recycle, water supply dam (Dam C), direct pumping from the Ward River, and artesian.

The water supply dam (Dam C) would have a maximum storage capacity of 29GL and could be constructed in either in two stages or a single stage (refer Figure 1-3 for location). The dam would be constructed in a single stage should expansion of production above 15Mdptpa be anticipated to occur quickly, or should an initial production capacity of 22.5Mdptpa be adopted. This is the subject of ongoing feasibility studies. This EIS has assessed the impact of the dam at minimum, intermediate and maximum production rates of 15, 30 and 50Mdptpa respectively.

One water supply sub-option considered involved constructing a smaller single stage of Dam C only and constructing a second dam on the Ward River. This sub-option involved a greater total area of disturbance and was not the preferred approach of Traditional Owners and has not been adopted.

The various water supply sources are quantified in Section 5.2.1.

The selected option of constructing one dam is likely to have less potential impact on threatened and migratory fauna and threatened flora, compared to the sub-option of constructing two dams, because one dam would require less vegetation clearing.

1.6.9 Initial Tailings Storage Facility Establishment

Two locations were considered for the construction of an initial tailings storage facility to serve the Boyd beneficiation plant. The first was located on a non-mineralised area to the north of the plant and the second on a mineralised area to the south. The first dam alternative would be simpler and quicker to establish since the second would require pre-mining and crude ore stockpiling if ore was not to be sterilised. However, the second location to the south (refer Figure 1-3) was selected in order to reduce the overall out-of-pit footprint of disturbance by about 200ha.

Construction of the initial tailings storage facility to the south of the Boyd beneficiation plant is likely to have less potential impact on threatened and migratory fauna and threatened flora.

1.6.10 Volume of Dredged Material

Two key design factors influence the volume of marine sediment required to be dredged:

- the length of the jetty and wharf structure; and
- limitation of vessel departure times.

The length of the port jetty and dredge channel has been optimised taking into consideration the trade-off between increasing the jetty length versus dredging volumes. In the case of the proposed port, constructing a longer jetty would not substantially reduce the dredging volumes. The depth increases rapidly over the first 500m from shore (between the shore and the berth pocket) and then increases more gradually (refer Figure 6-39). For example if the jetty length was to increase by 40% then the dredge volume would only decrease by approximately 10%.
As designed, the approach jetty is 568m (from the top of the cliffs), and dredging commences at the berth pocket (refer Figure 2-6). Constructing a longer jetty would significantly increase the cost of construction without significantly reducing environmental impact.

Similarly, at the ferry and barge terminals, a sheet pile structure is proposed to optimise access to deeper water at the Hey River terminal, which minimises disturbance to mangroves in this area.

The high cost of dredging provides a financial incentive to reduce dredge volumes as much as possible. Dredge volumes at the Port could be reduced through limiting vessel departure times to high tide so that ships require less than -20.2m draft from lowest astronomical tide (LAT). However, this would limit the port capacity. A feasibility study is currently being undertaken to determine the economic feasibility of limiting vessel departure time. For the purposes of the environmental impact statement, it has conservatively been assumed that vessel departures are unrestricted by tides and hence the depth of dredging and associated impact assessment has been matched to this assumption (-20.2m LAT).

Dredge volumes have also been minimised at the ferry and barge terminals as much as practicable. The passenger ferry would be required to operate on all tides in order to transport workers at shift change. However, the volume of dredging for the ferry and barge terminals has been optimised by taking into consideration vessels with the lowest draft practical for the service conditions and optimising the approach and departure paths for the vessels.

### 1.6.11 Disposal of Dredged Material

Several alternatives for disposal of sediments from dredging were considered. The following alternatives were not adopted based primarily on environmental, material suitability, construction needs and economic viability:

- re-use for beach nourishment and land creation;
- off-site recycling;
- removal of hazardous constituents for beneficial re-use;
- disposal on land;
- placement of the material from the port area at the existing Albatross Bay Spoil Ground.

The re-use of material for beach nourishment is not considered appropriate given that the beach area is a known nesting area for marine turtles. Placement of dredged material on the beach would impact turtles’ ability to nest and may reduce viability of nests through constant inundation of water through dewatering. Peer-reviewed literature documents negative impacts on turtles from beach nourishment activities. Using the material for land creation is considered inconsistent with the use of the area by turtles for nesting. There is no need to create more land for the development of the SoE Project.

The material to be dredged is not suitable for construction material. The material from the Port area is comprised of a relatively thin layer of sandy silts on at the surface overlying stiff clays and underlying siltstone, whilst the material from the barge and ferry terminals is comprised primarily of silty-clays. Material beneficial for offsite recycling typically requires relatively clean sands.

There are no hazardous constituents to be removed because the material is clean. Further, beneficial re-use opportunities do not exist.

If the material was pumped ashore, the dewatering process could adversely affect a shallow, low-yield aquifer via infiltration of saline seepage through the porous coastal soils. The shallow aquifer currently sustains baseflow in surface streams in the area. This water has very low salinity levels. Saline seepage from the marine sediment could adversely impact water quality. The disposal of dredged spoil to land would require construction of a containment facility to store the material. At the Hey River location, the construction of such a facility would require the removal of coastal vegetation. At Humbug Wharf and Hornibrook Point, the construction of
A containment facility would sterilise the site for a prohibitive period prior to development of the onshore terminal infrastructure, further the silty-clay dominated sediments would not be suitable for engineered use, especially in supporting heavy machinery. Awaiting construction of the containment facility would prevent commencement of dredging activities for some months, subsequently delaying the construction of the port, barge and ferry facilities. These facilities are on the critical path for construction of the Project. The revegetation of an elevated emplacement of marine sediments would pose difficulties and would be likely to require long-term maintenance.

Placement of the spoil from the port area at the Albatross Bay spoil ground would require the material to be barged about twice the distance than to the proposed new spoil ground. This would require at least three hopper dump barges and contractors’ dredging spreads do not typically extend to that number of barges, particularly in such a remote area. If a suitable contractor was found then the costs would be significantly greater. If three hopper dump barges could not be secured, the dredging and sea disposal timeline would increase, potentially extending persistence of turbid conditions.

Ocean disposal of marine sediments in a marine environment provides a lower environmental risk than land disposal, due to:

- using the material for beach nourishment or land disposal is inconsistent with the use of the area by marine turtles;
- disposal on land could adversely affect water quality in the shallow aquifer; and
- revegetation of marine sediments would pose difficulties.

Both land and sea disposal have negligible risk to human health.

Sea dumping of the dredge material is being proposed based on the lack of suitable alternatives for the volume of material to be disposed and the clean nature of the material.

1.7 Environmental Impact Assessment Process

1.7.1 Purpose of the EIS

This Environmental Impact Statement has been prepared to meet the assessment requirements for the Project under the State Development and Public Works Organisation Act 1971 (Qld) (SDPWO Act), the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) and the Environment Protection (Sea Dumping) Act 1981 (Cth) (Sea Dumping Act).

The EIS has been prepared to inform decision-makers, affected parties, interest groups and the public about potential environmental and social issues relating to the development and operation of the Project, and how these issues would be managed. The content of the EIS reflects the Terms of Reference (ToR) issued by the Queensland Coordinator-General (CG) and the EIS Guidelines issued by the Commonwealth Minister for Sustainability, Environment, Water, Population and Communities (the Minister).

This document will be made publicly available for comment and submissions will be sought from individuals and organisations. The EIS process allows for community consultation and ensures environmental protection by comprehensive consideration of potential impacts and management strategies. The Department of Employment, Economic Development and Innovation (DEEDI) is responsible for coordinating the impact assessment process under the auspices of the CG. The Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) fulfils a similar role for the Minister.

1.7.2 Objectives of the EIS

The objective of the EIS process is to ensure all impacts, direct and indirect – in particular environmental, social and economic impacts – are fully examined and addressed. The EIS aims to be a comprehensive document that provides:
Rio Tinto Alcan
Environmental Impact Statement
South of Embley Project

- public information regarding the project, alternatives and preferred solutions; the existing environment and values that it would affect both on and off the site; the impacts that may occur; and the measures to be taken to mitigate all adverse impacts; and

- a definitive statement of measures or actions to be undertaken to mitigate any adverse impacts occurring during construction, operation and following decommissioning of the project. This is achieved by the inclusion of a draft Environmental Management Plan (EM Plan) (refer Section 21) in the EIS, which describes acceptable impacts and environmental management strategies designed to meet specific performance criteria.

The EIS relates to the entire life of the Project including construction, operation and decommissioning. The EIS enables reasonable economic and technically achievable conditions to be developed to ensure the impact of the Project is within acceptable levels. The level of analysis and detail in this document reflects the level of significance of particular impacts.

1.7.3 EIS Process

Summary of Parallel EIS Processes

The Project is to be assessed under two separate but parallel EIS processes under State and Federal environmental law. Further detail on the relevant processes is provided below.

The EIS addresses both the State Terms of Reference (Appendix 1B) and Commonwealth Tailored Guidelines (Appendix 1C) and it will be advertised for public and advisory agency comment:

- as a final EIS for the purposes of section 33(1) of the SDPWO Act; and

- as a draft EIS for the purposes of section 103(1)(c) of the EPBC Act.

For administrative and public convenience, all submissions on the EIS are to be lodged with DEEDI (for State EIS purposes and on behalf of the project proponent for Commonwealth EIS purposes). All submissions will then be copied and forwarded to RTA and DSEWPaC to meet requirements under the SDWPO Act and the EPBC Act. Further detail on the public submission process is provided in Section 1.8.

Additions to this EIS which are required as a result of public submissions will be made as appendices so that all relevant matters relating to both EIS assessment processes are contained within the one document.

Queensland EIS Process

On 13 June 2008, RTA lodged an Initial Advice Statement (IAS) and a request for “significant project” declaration with the CG. The IAS provides an outline of the proposed project, including the project rationale and its potential impacts. The IAS was subsequently updated on 3 November 2008.

The Project was declared a “significant project” for which an EIS is required pursuant to section 26(1)(a) of the State Development and Public Works Organisation Act 1971 (Qld) (SDPWO Act) on 21 November 2008, by the CG. The declaration initiates the statutory environmental impact assessment procedure under Part 4 of the SDPWO Act.

Matters considered by the CG in making this declaration included information contained in the IAS, relevant planning schemes and policy frameworks, infrastructure impacts, employment opportunities, environmental effects, complexity of local, State and Commonwealth Government requirements, level of investment and the project’s strategic significance.

Draft Terms of Reference (ToR) were prepared and advertised for public and advisory agency comment on 16 January 2009. The CG was required to have regard to all comments received before issuing a final ToR in April 2009 (refer Appendix 1B). This EIS was prepared in response to the final ToR and applies to the whole of the Project. A table providing cross-references from the ToR to the EIS is presented in Appendix 1D.
If the CG is satisfied that the EIS responds to the ToR, this EIS may be advertised for public comment. The CG must consider all properly made submissions and any other submissions that he accepts about the EIS and any other material the CG considers is relevant to the Project.

If further information is requested by the CG, a “Supplementary EIS” will be prepared by RTA to cover outstanding matters. A final decision on the overall acceptability of the Project will be made on the basis of the information provided in the EIS and the Supplementary EIS.

At the completion of the EIS phase, the CG must prepare a report evaluating the EIS (CG’s Report). The CG Report will evaluate the environmental effects of the project and any associated mitigation measures. The CG’s Report will be publicly available.

The CG’s Report does not authorise the commencement of work associated with the Project. Instead it sets the framework within which other State approvals are to be sought and the conditions that are to be granted. Of significance for the Project:

- the CG Report may state conditions for any draft environmental authority (mining lease) under the EP Act; and
- if the Project involves development requiring an application for a development approval under the Sustainable Planning Act 2009 (Qld) (SP Act), the CG Report may, under section 39 of SDPWO Act, state for the assessment manager one or more of the following:
  - the conditions that must attach to the development approval;
  - that the development approval must be for part only of the development; and/or
  - that the approval must be preliminary approval only.

Alternatively, the report must state for the assessment manager:

- that there are no conditions or requirements for the project; or
- that the application for development approval be refused.

There is no legislative requirement for the CG’s Report to be provided to the Minister to assist in his assessment of the Project under the EPBC Act, as the Bilateral Agreement between the State of Queensland and the Commonwealth does not apply.

Commonwealth EIS Process

RTA referred the Project to the Minister for a decision as to whether the project constituted a controlled action under the provisions of the EPBC Act. On 2 October 2008, the Project was declared a “controlled action” (Referral No. 2008/4435) and was to be assessed under the Bilateral Agreement with Queensland using the EIS Process under Part 4 of the SDPWO Act.

However, following a change to the proposed port design to accommodate larger bulk carriers, RTA withdrew Referral No. 2008/4435 and submitted a new referral to the Minister. On 29 October 2010, the Project was declared a “controlled action” for which an EIS was required (Referral No. 2010/5642), and the relevant controlling provisions were:

- listed threatened species and communities (sections 18 and 18A of the EPBC Act);
- listed migratory species (sections 20 and 20A of the EPBC Act); and
- Commonwealth marine areas (sections 23 and 24A of the EPBC Act).

The change to the Project and the inclusion of Commonwealth marine areas as a controlling provision meant that the Bilateral Agreement could no longer apply. Instead, the relevant EIS process is under Part 8 of the EPBC Act. As such, the Project will be subject to two different and separate EIS processes.

Tailored Guidelines were issued by the Minister to RTA (refer Appendix 1C), and these set the framework for how the EIS is to address the potential significant impacts of the Project on Matters of National Environmental Significance (MNES). A stand-alone report addressing these matters is
provided as Section 22 of this EIS. A table providing cross-references to the Tailored Guidelines is provided in Section 22 Table 38.

If the Minister is satisfied that the draft EIS responds to the Tailored Guidelines, this EIS may be advertised for public comment as a "draft EIS". At the end of the submission period, RTA will finalise the "draft EIS", taking account of and summarising comments received within the submission period, and stating how such comments are addressed in the "final EIS". As soon as practicable after finalising the "draft EIS", RTA is to provide the finalised EIS to the Minister and will cause the finalised EIS to be published.

The Secretary of the Commonwealth Department of Sustainability, Environment, Water, Population and Communities, will review the EIS material on behalf of the Minister. The Secretary must then prepare and give to the Minister a Recommendation Report relating to the action, which states whether the taking of the action should be approved, and if so, the conditions that should be attached to the approval.

The Minister then has period of 40 business days (beginning on the first business day after the Minister receives the finalised EIS), in which to decide whether the Project should be approved.

The final approval decision of the Minister and associated conditions would be publicly notified by placing it on the DSEWPaC website.

1.7.4 Structure of the EIS

The EIS is structured as follows:

- **Executive Summary** – a comprehensive restatement of the Project's purpose, scope, methods, results, conclusions, findings and recommendations, i.e. a consolidation of the principal points of the EIS;
- **Section 1** provides an introduction to the Project and summarises applicable legislation, approvals and objectives for the Project;
- **Section 2** provides a detailed Project Description;
- **Section 3 to Section 19** covers the various elements of the environment, describing the existing environment and addressing the potential impacts of the Project and the mitigation strategies proposed to limit the impacts to acceptable levels;
- **Section 20** describes potential cumulative environmental impacts that may arise from construction and operation of the SoE Project, including those that arise from the interrelationship of residual Project impacts and in combination with other proposed mining projects;
- **Section 21** presents a draft EM Plan for the mine that describes management strategies to achieve acceptable environmental conditions and makes commitments about how impacts would be managed;
- **Section 22** presents a stand-alone EPBC Assessment Report to present MNES and a table of cross references showing where the various EIS Guidelines requirements are addressed in the EIS are presented in Table 38 of that report;
- additional parts of the EIS contain References, a Glossary, Abbreviations and Units, and Appendices;
- a copy of the Queensland ToR and the Commonwealth EIS Guidelines are presented in Appendix 1B and Appendix 1C respectively. A table of cross references showing where the various Queensland ToR requirements are addressed in the EIS are presented in Appendix 1D;
- details of the EIS study team are provided in Appendix 1E; and
- a summary of the proponent commitments is provided in Appendix 1F.
1.8 Public Consultation Process and Submissions

Prior to the commencement of consultation, a scoping study was undertaken to identify the key stakeholders who may be directly or indirectly affected by the Project (refer Section 15.1.1). A range of consultation tools have been utilised to facilitate engagement with the general public and specific stakeholders (refer Section 15.1.2).

Throughout the preparation of the EIS document members of the public and other interested parties have been encouraged to participate in the process by providing their input into public consultation programs. Newsletters providing information about the Project and promoting communication with the EIS team have been widely circulated in the Weipa region. A wide range of stakeholder meetings has been held. Responses from all parties have been considered in the design of environmental and social plans and strategies. The community consultation process and issues raised are described in Section 15.2.

DEEDI, on behalf of RTA and DSEWPaC, will advertise the release of the EIS for advisory agency and public review and comment. The document will be placed on display at nominated locations for a period to be specified by the Commonwealth Minister and Queensland Coordinator General, of at least 20 business days.

RTA will make CD ROM copies of the EIS available free to interested persons upon request. The EIS will be available in hard copy format for purchase from RTA. Persons with special needs (e.g. visually impaired, English as a second language) can contact RTA to make arrangement to access the information in the EIS.

The EIS will be available on the RTA web site for interested parties to view and download if required:


Information on the EIS and the assessment processes for the State and Commonwealth governments will also be available on the respective websites:


Any person, group or organisation may make a written submission about the EIS to the DEEDI. Such submissions do not have to relate to the whole of the Project and may relate to any aspect or section of the document. EIS submissions must be made in writing and submitted to the DEEDI within the designated comment period.

All submissions, comments and enquiries for the purposes of the SDPWO Act or EPBC Act should be addressed to:

EIS Project Manager—South of Embley Project
Significant Projects Coordination
Department of Employment, Economic Development and Innovation
PO Box 15009, Brisbane City East Qld 4002

Telephone + 61 7 3224 8351
Facsimile + 61 7 3225 8282
Email SOE@deedi.qld.gov.au

http://www.deedi.qld.gov.au (under the Coordinator-General tab)

Both the State and Commonwealth will have access to all submissions.

RTA will respond to each submission as an addendum to this EIS. The addendum will in effect represent a "Supplementary EIS" under the SDPWO Act and a "Final EIS" under the EPBC Act.
1.9 Legislative Framework and Project Approvals

In addition to the approval of the EIS under the SDPWO Act and approval of the “controlled action” under the EPBC Act (refer Section 1.9.2), the Project will require a number of other approvals, permits and licences for various components of the development (refer Table 1-2).

<table>
<thead>
<tr>
<th>Permit/Approval/Licence</th>
<th>Legislation</th>
<th>Authority</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Wide</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Controlled Action Approval</td>
<td>Environment Protection and Biodiversity Conservation Act 1999 (Cwlth) (EPBC Act)</td>
<td>Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC)</td>
<td>Project was declared a “controlled action” on 29 October 2010. Required if project has, will have or is likely to have a significant impact on matters of national environmental significance.</td>
</tr>
<tr>
<td>Environmental Authority</td>
<td>Environmental Protection Act 1994 (Qld) (EP Act)</td>
<td>Department of Environment and Natural Resources (DERM)</td>
<td>Covers mining and associated activities as per operational and environmental requirements of an environmental authority (mining activities).</td>
</tr>
<tr>
<td>Humbug and Hornibrook Terminals, Tug Berths</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Barge and ferry terminals – development approval</td>
<td>Sustainable Planning Act 2009 (Qld) (SP Act)</td>
<td>North Queensland Bulk Ports (NQBP) (assessment manager)</td>
<td>Required for operational works on land and operational works in the tidal areas of NQBP Strategic Port Land (DERM is a concurrence agency for operational works in tidal waters).</td>
</tr>
<tr>
<td>Commonwealth sea dumping permit (for dredged spoil)</td>
<td>Environmental Protection (Sea Dumping) Act 1981 (Cwlth)</td>
<td>DSEWPaC</td>
<td>Required for dredging and disposal of spoil at existing Albatross Bay spoil ground in Commonwealth waters.</td>
</tr>
<tr>
<td>Removal of marine plants – development approval for operational works</td>
<td>SP Act and Fisheries Act 1994 (Qld)</td>
<td>DEEDI</td>
<td>Required if marine plants found to be present and required to be removed. Part of combined development application to NQBP (above) although DEEDI would be concurrence agency for assessment.</td>
</tr>
<tr>
<td>Hey River Terminal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commonwealth sea dumping permit (for dredged spoil)</td>
<td>Environmental Protection (Sea Dumping) Act 1981 (Cwlth)</td>
<td>DSEWPaC</td>
<td>Required for dredging and disposal of spoil at existing Albatross Bay spoil ground in Commonwealth waters.</td>
</tr>
<tr>
<td>Port</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Port</td>
<td>Commonwealth Aluminium Corporation Limited Agreement Act 1957 (Qld) (Comalco Agreement Act)</td>
<td>DERM</td>
<td>Harbour works are authorised under the Comalco Agreement Act, which includes dredging in tidal waters for the port on ML7024. Development approval under SP Act is not required.</td>
</tr>
<tr>
<td>Approach channel dredging</td>
<td>SP Act</td>
<td>DERM</td>
<td>Required for operational works in tidal waters outside ML7024. DERM is lead agency for operational works in tidal waters.</td>
</tr>
<tr>
<td>Commonwealth sea dumping permit (for dredged spoil)</td>
<td>Environmental Protection (Sea Dumping) Act 1981 (Cwlth)</td>
<td>DSEWPaC</td>
<td>Required for dredging and disposal of spoil at proposed new spoil ground in Commonwealth waters.</td>
</tr>
<tr>
<td>SoL Mine Facilities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Licence to take water (surface water)</td>
<td>Comalco Agreement Act and Water Act 2000</td>
<td>DERM</td>
<td>Pre-existing rights to take water for the Project are held under the Comalco Agreement Act and preserved under section 1037A of the Water Act.</td>
</tr>
<tr>
<td>Permit/Approval/Licence</td>
<td>Legislation</td>
<td>Authority</td>
<td>Comments</td>
</tr>
<tr>
<td>------------------------------------------------------------</td>
<td>--------------------------------------------------</td>
<td>-----------</td>
<td>--------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Water storage dam – development approval</td>
<td>Comalco Agreement Act and Water Act 2000</td>
<td>DERM</td>
<td>Pre-existing rights to build dams for the Project are held under the Comalco Agreement Act and preserved under the Water Act 2000.</td>
</tr>
<tr>
<td>Waterway barrier (fish barrier) works approval – development approval for operational works</td>
<td>SP Act and Fisheries Act 1994 (Qld)</td>
<td>DEEDI</td>
<td>Required for a dam or water crossing that inhibits fish movement.</td>
</tr>
<tr>
<td>Failure impact assessment (of dams)</td>
<td>Water Supply (Safety and Reliability) Act 2000 (Qld)</td>
<td>DERM</td>
<td>Required for dams with a wall height &gt;8m in height and storage capacity of &gt;500ML. Dam C water storage dam shall require failure impact assessment.</td>
</tr>
<tr>
<td>Licence to take water (sub-artesian)</td>
<td>Water Act 2000</td>
<td>DERM</td>
<td>Required if taking sub-artesian water in declared sub-artesian area under section 1046 of the Water Act 2000. A declared sub-artesian area exists. Use of sub-artesian water is not currently planned.</td>
</tr>
<tr>
<td>Licence to take water (artesian)</td>
<td>Water Act 2000</td>
<td>DERM</td>
<td>The Comalco Agreement Act permits 12 artesian bores under section 32(b) (or more with Minister’s consent). A licence to take artesian water is still required.</td>
</tr>
<tr>
<td>Development approvals for artesian bores</td>
<td>SP Act and Water Act 2000</td>
<td>DERM</td>
<td>Required for installation of artesian groundwater bores.</td>
</tr>
</tbody>
</table>

### 1.9.1 State Development and Public Works Organisation Act 1971 (Qld)

The Project has been declared a “significant project” for which an EIS was required pursuant to section 26(1)(a) of the SDPWO Act. The application of the SDPWO Act is described in Section 1.7.3.

### 1.9.2 Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)

The EPBC Act prescribes the Commonwealth’s role in environmental assessment, biodiversity conservation and the management of protected matters. The Act identifies eight MNES and makes it an offence to take any action that has, or is likely to have, a significant impact on any of those matters, unless it is approved by the Minister. Such an action is a “controlled action”. It is an offence to undertake a controlled action without the approval of the Commonwealth Minister responsible for the EPBC Act.

The Project was declared a controlled action on 29 October 2010 and the controlling provisions were:

- sections 18 and 18A (listed threatened species and communities);
- sections 20 and 20A (listed migratory species); and
- sections 23 and 24 (Commonwealth marine areas).

As a consequence of this decision, the Project requires approval under the EPBC Act. The Commonwealth has determined an EIS under the EPBC Act is required. The Minister issued Tailored Guidelines for the preparation of the Draft Environmental Impact Statement (the “Tailored Guidelines”) on 21 December 2010. This EIS has been prepared to meet both the Commonwealth and State EIS requirements.

The Tailored Guidelines specifically requires a stand-alone report addressing potential impacts of the Project on MNES. An EPBC Act assessment report has been prepared to satisfy this requirement, and is presented in Section 22. This report describes the proposed action in relation to MNES, the affected environment relevant to the controlling provisions, an assessment of impacts on MNES, and mitigation measures and summarises conclusions.

In addition, section 160 of the EPBC Act requires that Commonwealth agencies seek advice from the Minister before granting certain authorisations under other Acts. A permit under the Commonwealth Environment Protection (Sea Dumping) Act 1981 to dispose of dredged material at sea is such an authorisation (refer Section 1.9.3).
The EPBC Act has the effect of allowing the Minister to require assessment of the sea dumping application as though it was a controlled action under Part 8 of the Act. In order to avoid duplication of assessment processes and to ensure that all relevant information is considered at once, DSEWPaC has requested that sufficient information be provided in this EIS to support the application for a Sea Dumping Permit for dredging and disposal associated with Stage 1 capital dredging at the proposed Port and capital dredging for the barge and ferry terminals. This information can be predominantly found in Sections 6 and 22 of this EIS.

1.9.3 Environment Protection (Sea Dumping) Act 1981 (Cwlth)

The Environment Protection (Sea Dumping) Act 1981 (Sea Dumping Act) regulates the loading and dumping of waste and other matter in the sea. The loading and dumping of spoil from dredging operations in Commonwealth waters is regulated by the Act and such disposal requires a permit.

A permit will be required for the loading and disposal of dredged spoil from the proposed port to a proposed new spoil ground west of Boyd Point. A permit will also be required for loading and disposal of dredged spoil from the Humbug barge terminal, Hornibrook ferry terminal and Hey River barge/ferry terminal at the existing Albatross Bay spoil ground.

The assessment to support the application for a Sea Dumping Permit for dredging and disposal associated with Stage 1 capital dredging at the Port and capital dredging associated with the ferry and barge terminals is predominantly included in this EIS. A sea dumping permit has been applied for and the framework for the Dredge Management Plan drafted (refer Section 6.10). Detailed sediment characterisation reports have been provided separately to DSEWPaC and the data is summarised in Section 6 of the EIS. The Tailored Guidelines required the following guidelines to be utilised in preparation of that:

- National Assessment Guidelines for Dredging (Commonwealth of Australia 2009)
- Annex 2 1996 Protocol to the Convention on the prevention of marine pollution by dumping of wastes and other matter 1972 (the London Protocol); and

A detailed description and characterization of the sediment proposed to be dredged, the proposed disposal site, and assessment of the potential effects of disposal of dredged material, in accordance with the above guidelines, are presented in Section 6 and summarised in Section 22 (EPBC Assessment Report) of this EIS. Alternative options for disposal of dredged material are presented in Section 1.6.10.

Future capital dredging and disposal for Stage 2 of the Port (which would occur subject to market demand) and maintenance dredging and disposal associated with both the Port and the ferry and barge terminals, would be subject to obtaining a subsequent sea dumping permits.

1.9.4 Agreement Acts

RTA is the holder of ML7024 granted on 1 January 1958 pursuant to the Comalco Agreement Act, a Queensland “Special Agreement Act”. ML6024 (granted 25 July 1985 and affirmed 26 August 2002) was granted pursuant to the Comalco Agreement Act and the Mineral Resources Act 1989 for the purposes of providing transport access to ML7024. The current term of ML7024 and ML6024 runs until 31 December 2041; however, there is a right of renewal until 31 December 2062.

The Comalco Agreement Act confers certain rights and obligations relating to the development of bauxite resources, including provisions relating to the taking of water and harbour works (refer Table 1-2).

Rio Tinto is also the holder of ML7031 pursuant to the Alcan Queensland Pty Limited Act 1965 (Qld) (which is also a “Special Agreement Act”). While RTA mines ore from ML7031 (known as the Ely mining lease), activities on ML7031 are not the subject of the Project.
Although the Comalco Agreement Act and the Alcan Queensland Pty Limited Act 1965 are similar in many ways, there is no relationship from a tenure perspective.

1.9.5 **Mineral Resources Act 1989 (Qld)**

RTA does not require any new mining leases in addition to ML7024 and ML6024 in order to develop the Project.

1.9.6 **Environmental Protection Act 1994 (Qld)**

Mining and mining-related activities on ML7024 at Weipa have transitional authorisation under section 616B of the EP Act relating to "Special Agreement Act" mines. RTA has commenced the process to transition to an environmental authority (mining activities) under the EP Act with respect to ML7024 and ML6024. An application will be made to amend the environmental authority (mining activities) in respect to any requirements particular to the Project. To the extent of those amendments, the amendment application is likely to trigger the requirement for an EIS for the Project. The EIS under the SDPWO Act will satisfy such a requirement for an EIS.

The environmental authority (mining activities) will authorise mining and mining-related activities throughout ML7024 and ML6024, not just in relation to the Project area. These activities shall include the following environmentally relevant activities under the *Environmental Protection Regulation 2008 (Qld)*:

- 8. Chemical storage (petroleum product storage);
- 14. Electricity generation;
- 15. Fuel burning (heavy mobile equipment);
- 16. Extractive and screening activities (includes dredging);
- 21. Motor vehicle workshop operation;
- 31. Mineral processing;
- 43. Concrete batching;
- 50. Bulk material handling;
- 56. Regulated waste storage;
- 60. Waste disposal;
- 63. Sewage treatment; and
- 64. Water treatment.

In determining the conditions of the environmental authority, DERM shall have given regard to the provisions of the:

- Existing environmental authority (mining activities) authorisations on ML7024 and ML6024;
- *Environmental Protection (Water) Policy 2009 (Qld)*;
- *Environmental Protection (Air) Policy 2008 (Qld)*;
- *Environmental Protection (Noise) Policy 2008 (Qld)*; and
- *Environmental Protection (Waste Management) Policy 2000 (Qld)*.

1.9.7 **Sustainable Planning Act 2009 (Qld)**

The SP Act and the *Sustainable Planning Regulation 2009 (Qld)* (SP Regulation) establish the framework for planning and development assessment in Queensland, including the Integrated Development Assessment System (IDAS). Under Schedule 4 of the SP Regulation, mining and mining-related development is exempt from assessment against a planning scheme. However, certain Project development activities regulated by the SP Act and other natural resource
management legislation will be assessable development against Schedule 3 of the SP Regulation. These include:

- Removing marine plants (Fisheries Act 1994);
- Constructing a waterway barrier (Fisheries Act 1994);
- Operational works in tidal waters (SP Act); and
- Operational works to take artesian water (Water Act 2000).

The clearing of native vegetation for mining and mining-related activities is not assessable development under Schedule 3.

1.9.8 **Land Act 1994 (Qld)**

The Land Act 1994 regulates land dealings relating to non-freehold land leases and permits to occupy and to the opening and closing of road reserves. The Project may require leases or modification to leases in respect of land presently held by North Queensland Bulk Ports (NQBP) for those barge and ferry terminals not located on ML7024 or ML6024. There are no proposed openings or closings of road reserves.

1.9.9 **Native Title Act 1993 (Cwlth)**

RTA has valid mining leases (ML7024 granted 1 January 1958) and ML6024 (granted 25 July 1985 and affirmed 26 August 2002) under the Native Title Act 1993.

The Western Cape Communities Co-existence Agreement (WCCCA) is a registered Indigenous Land Use Agreement (ILUA) (QIA2001/002) under the Native Title Act 1993 between RTA, the State of Queensland and relevant Aboriginal parties.

The WCCCA recognises and respects the rights of Traditional Owners and allows for consultation over future development of mining operations. The WCCCA recognises RTA’s entitlement and powers to develop the mining leases (ML7024, ML6024), property rights and other rights or interests granted under the Comalco Agreement Act. RTA will continue to engage with the Traditional Owners under the provisions of the WCCCA.

Where any proposed activities are outside the ILUA area, to the extent that native title has not been extinguished in relation to those areas, RTA will comply with the applicable process under the Native Title Act 1993. RTA does not expect this to arise.

The Federal Court of Australia determined on 29 July 2009 (Wik and Wik Way Native Title Claim Group v State of Queensland [2009] FCA 789) that the Wik and Wik Way people have native title over the land covered by the Project area. The native title rights and interests are subject to RTA’s rights under the Agreement Act, WCCCA and the terms of the mining leases.

1.9.10 **Aboriginal Cultural Heritage Act 2003 (Qld)**

The Aboriginal Cultural Heritage Act 2003 protects Aboriginal and Torres Strait Islander cultural heritage through imposing a duty of care for all persons to take reasonable and practical measures to avoid harming aboriginal cultural heritage. The Act empowers Traditional Owners to be directly involved in the assessment and management of their own cultural heritage.

The WCCCA provides for a system of cultural heritage management over the area covered by the ILUA. This area includes all land and waters on ML7024 and ML6024. Due to the operation of s86 of the Aboriginal Cultural Heritage Act 2003, this agreed cultural heritage management system satisfies the requirement of the Act and the cultural heritage assessment for granting of any new permits or approvals pursuant to an EIS that are required for development works on land or waters within the ILUA area.

1.9.11 **Queensland Heritage Act 1992 (Qld)**

The Queensland Heritage Act 1992 provides for the conservation and protection of places and items of historical and/or non-indigenous cultural heritage, i.e. all places that derive from the post-settlement history of Queensland. Under this Act, places and items must be entered into a Queensland Heritage Register in order to be protected.

Where any project impacts on an item entered on the register, all aspects of development
which affects the registered interest require a development approval under IDAS. There are no registered items within the Project area.

1.9.12 Cape York Peninsula Heritage Act 2007 (Qld)
The Cape York Peninsula Heritage Act 2007 provides for the declaration of Areas of International Conservation Significance. There have been no declarations of Areas of International Conservation Significance within the Cape York Peninsula region.

1.9.13 Water Act 2000 (Qld)
The Water Act 2000 regulates the use of surface waters and groundwater and the interference with watercourses lakes or springs. Pre-existing rights to build weirs or dams and take surface water for the Project are held under section 1037A of the Water Act 2000 due to the Comalco Agreement Act.

It is proposed to take water from the Great Artesian Basin and a licence to take artesian water will be required. The Comalco Agreement Act permits 12 artesian bores under section 32(b) (or more with the Minister's consent). RTA has an existing artesian water licence for 9GL per annum which allows abstraction from bores located on ML7024. RTA proposes to apply to increase the artesian allocation to a five-year moving average of 12GL per annum, with a peak abstraction of 15GL in any one year. A declared sub-artesian area (section 1046) exists in the Project area, however, the taking of sub-artesian water is not proposed.

Certain watercourses would be crossed by roads, pipelines and conveyors. Riverine Protection Permits are required for any activities that destroy riparian vegetation, or excavate or place material in a watercourse to the extent that such activities are not authorised under an environmental authority (mining activities) or the Water Regulation 2002 (Qld).

The Cape York Peninsula Moratorium Area has been declared under the Water Act 2000. It covers most of northern Cape York, including the Project area south of Boyd Point. The Moratorium restricts the type and volume of new water licences that can be issued under the Water Act 2000 for the taking of surface and sub-artesian water. The Moratorium recognises and does not affect the existing rights under the Comalco Agreement Act.

1.9.14 Water Supply (Safety and Reliability) Act 2008 (Qld)
The Water Supply (Safety & Reliability) Act 2008 provides a framework to regulate “referable” dams. In general terms, a dam that is more than 8m high and meets certain storage capacity criteria requires a failure impact assessment. If a dam has a category 1 or 2 failure impact rating and the assessment is accepted by the chief executive administering the Act, the dam is classified as “referable” and is an assessable development under Schedule 3 of the SP Regulation. Dam C shall require failure impact assessment.

1.9.15 Wild Rivers Act 2005 (Qld)
There are currently no rivers in the Project area that are nominated or declared under the Wild Rivers Act 2005. The State Government has previously announced an intention to nominate the Watson River as a wild river under the Act. The Watson River is located south of the southern boundary of ML7024 and while part of the river's catchment is within ML7024 (refer Figure 1-1), the proposed footprint of the Project is outside the physical catchment/basin boundary of the Watson River. Pursuant to section 17 of the Act, rights and entitlements that pre-date the introduction of the Act are not affected by a wild river nomination or declaration.

1.9.16 Fisheries Act 1994 (Qld)
Approval is required under the Fisheries Act 1994 to remove or destroy marine plants (such as mangroves and seagrass). Such activity is assessable development under Schedule 3 of the SP Regulation. An approval is likely to be required to remove some mangroves at the proposed Hey River barge/ferry terminal.

Approval is required under the Fisheries Act 1994 to construct a waterway barrier that obstructs fish movement. Such operational works are assessable development under Schedule 3 of the SP
Regulation. An approval shall be required to construct the water storage dam on a freshwater tributary of Norman Creek (Dam C).

The Department of Employment, Economic Development and Innovation (DEEDI) (formerly the Department of Primary Industries and Fisheries) is proposing to declare parts of Albatross Bay (i.e. Pine River Bay) a Fish Habitat Area (FHA) under the Fisheries Act 1994 (Qld). DEEDI has nearly concluded its public consultation and expects that the FHA will be declared in mid 2011.

The proposed Pine River Bay Fish Habitat Area is to the north of Weipa and the Embley River and is not adjacent to the Project area.

**1.9.17 Coastal Protection and Management Act 1995 (Qld)**

The objective of the Coastal Protection and Management Act 1995 includes providing for the protection, conservation, rehabilitation and management of the coastal areas including resources and biological diversity. The Act provides for the preparation of State and coastal management plans which describe how the coastal zones are to be managed. Certain works carried out in these zones can be assessable development under IDAS.

The Act also provides for coastal management districts to be declared. Coastal management districts are either:

- declared through a regional coastal management plan as being a coastal management district; or
- by virtue of transitional provisions within the Act, declared to be those coastal management control districts and erosion prone areas previously declared under the Beach Protection Act 1968 (Qld).

The Project area falls within the northernmost part of the Gulf of Carpentaria Coast district. A regional coastal management plan has yet to be prepared for this district.

The Aurukun Shire Erosion Prone Areas plan SC4077A includes all land within approximately 50km of the coast between the Embley and Holroyd Rivers. However, all land within ML7024 and ML6024 are excised from plan SC4077A.

**1.9.18 Vegetation Management Act 1999 (Qld)**

The Vegetation Management Act 1999 regulates the clearing of remnant native vegetation. Clearing of native vegetation for mining and mining-related activities is not assessable development under Schedule 3 and 24 of the SP Regulation. It is not proposed to clear native vegetation outside of ML7024 and ML6024.

**1.9.19 Nature Conservation Act 1992 (Qld)**

The Nature Conservation Act 1992 and the Nature Conservation (Wildlife) Regulation 2006 (Qld) regulate the taking or destruction, without authorisation, of certain listed flora and fauna species. The taking or destruction of wildlife in the course of authorised works associated with mining and mine related development on mining leases is allowed.

**1.9.20 Land Protection (Pest and Stock Route Management) Act 2002 (Qld)**

The Land Protection (Pest and Stock Route Management) Act 2002 provides a framework for the management of weeds, pest animals and the stock route network.

As the holder of ML6024 and ML7024, RTA is under an obligation to take reasonable steps to keep the land and watercourses on-lease free from certain classes of declared pests.

There are no stock routes in the Project area.

**1.9.21 Transport Infrastructure Act 1994 (Qld)**

The Transport Infrastructure Act 1994 provides for the management of transport infrastructure systems, including the state road network, rail, air services and ports managed by designated port authorities. RTA’s proposed Project would not require transport infrastructure that requires regulation under this Act.
1.9.22 Transport Operations (Marine Pollution) Act 1995 (Qld)

The purpose of the Transport Operations (Marine Pollution) Act 1995 is to protect Queensland’s marine and coastal environment by minimising deliberate and negligent discharges of ship-sourced pollutants into coastal waters. Vessels using the proposed port near Boyd Point, the barge, and the ferry would be subject to this Act.

1.9.23 Transport Operations (Marine Safety) Act 1994 (Qld)

The purpose of the Transport Operations (Marine Safety) Act 1994 is to regulate the maritime industry to ensure maritime safety while ensuring that operational issues are efficiently managed. Vessels using the proposed port near Boyd Point, the barge, and the ferry would be subject to this Act.

1.9.24 Civil Aviation Regulations 1988 and Civil Aviation Safety Regulations 1988 (Qld)

The purpose of the Act, the Civil Aviation Regulations 1988 and Civil Aviation Safety Regulations 1988, is to provide a regulatory framework for maintaining, enhancing and promoting the safety of civil aviation. The Weipa airport is a certified aerodrome for the purposes of the Civil Aviation Safety Regulations 1988. The Project does not include any change to the operation of the existing Weipa airport or require the construction of a new airport.