Port of Weipa - Long Term Environmental Management Plan (LTDMP)

Maintenance Dredging

E11/39354 (PaCE Ref 2011003 – 003 Rev 2)
25 September 2013
SYNOPSIS

North Queensland Bulk Ports (NQBP) undertakes annual maintenance dredging at the Port of Weipa. A Long Term Dredge Management Plan was developed by SKM in August 2009 to support an application to the Commonwealth for a 10 Year Sea Dumping Permit. In addition, two addendum documents developed by NQBP were provided to the Commonwealth to support the SKM Plan.

The granted Sea Dumping Permit ties to an approved Long Term Dredge Management Plan (LTDMP) for maintenance dredging activities at the Port. The LTDMP previously existed in three parts:

1. Long Term Environmental management plan for dredging and Dumping Activities – developed by SKM on 31 August 2009 – (Document reference: E10/35310);

Furthermore, a condition of the Commonwealth Sea Dumping Permit (condition 9) defines that ‘the hydrodynamic modeling of the Port of Weipa is to be validated by NQBP in the 2010 dredging campaign’, the results of which were to be provided to the Department within 12 months (being 28 June 2011).

The compilation of the current document is an opportunity for NQBP to streamline the LTDMP into a single concise document that defines clear commitments and expectations, which encompasses the results of the hydrodynamic model validation report undertaken by GHD during the 2010 maintenance dredge campaign.
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### PROJECT 2011002 - PORT OF WEIPA - LONG TERM ENVIRONMENTAL MANAGEMENT PLAN (LTEMP)

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### APPENDIX 3 - DOCUMENT AMENDMENT SUMMARIES
INTRODUCTION

This document describes the long-term management arrangements for maintenance dredging and dredge spoil disposal by North Queensland Bulk Ports Corporation Limited (NQBP) within the Port of Weipa for the period 2010 – 2019. This Long Term Dredge Management Plan (LTDMP) for dredging and disposal supports the application for a long-term Sea Dumping Permit for maintenance dredging under the Commonwealth Environment Protection (Sea Dumping) Act (1981)(Sea Dumping Act), and associated State approvals. This document also integrates with the overall environmental management framework for the Port.

The Sea Dumping Act implements Australia’s obligations under the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matter, 1972 (the London Protocol), to which Australia is a signatory. Under the Sea Dumping Act, the National Assessment Guidelines for Dredging (NAGD; Commonwealth of Australia, 2009) sets out the framework for assessment and permitting of ocean disposal of dredged material. The NAGD identifies that the Determining Authority will grant long-term permits for maintenance dredging on the following basis:

- An assessment of the applicant’s ability to meet their obligations under the Sea Dumping Act and any permit granted;
- Establishment of a Technical Advisory and Consultative Committee (TACC) for long-term management; and
- Development and implementation by the applicant of a satisfactory LTDMP for loading and dumping activities.

1.1 Port of Weipa

NQBP manages the Port of Weipa. The Port is located within Albatross Bay in the Gulf of Carpentaria, on the North West coast of Cape York Peninsula (Figure 1-1). The Port serviced 436 ships in 2007-08, carrying 2.2 million tonnes of bauxite in 2008. In addition, 73,453 tonnes of fuel and 32,640 tonnes of general cargo were also handled (PCQ 2008). The cargo handling operations at the Port of Weipa are defined within Table 1-1.

The Port of Weipa consists of a main shipping channel in Albatross Bay (South Channel) and an Inner Harbour. The Inner Harbour consists of four shipping berths, namely Lorim Point, Humbug Wharf and Evans Landing, plus an inner Approach Channel and an inner Departure Channel (see Figure 1-1). These three wharves - Lorim Point Wharf, Humbug Wharf and Evans Landing Wharf - provide four shipping berths. Lorim Point Wharf has two berths, which are dredged to 12.5 m below LAT, while Humbug and Evan’s Landing Wharves each have one berth and are dredged to depths of 8.1 m and 9.6 m below LAT respectively (URS 2002). In addition to the shipping berths, there is a tug berth behind the Lorim Point Wharf.

The South Channel is located in the centre of Albatross Bay and is the access channel for ships using the Port of Weipa (Plate 1-1). The channel was first dredged in the early 1960s, with additional capital dredging in the 1970s, 2006 (PCQ 2008, GHD 2005), and 2012 (SD2012/2162; GHD 2012). The South Channel is currently maintained to a length of approximately 17 km, a width of 105.5 m and a declared depth of a maximum of 12.0mLAT (design depth for departure channel is 11.1mLAT and that of the 2012 channel extension is 12m LAT)(PaCE, 2013).
The South Channel terminates at the junction with Jackson Channel, which is located within the natural harbour formed by the Embley-Hey estuary (Inner Harbour). Within the Inner Harbour there is a natural swing basin surrounding Cora Bank. Depths in the Inner Harbour range from 0 – 2 m at the centre of Cora Bank to 8 – 20 m in the surrounding swing basin (URS 2002).

Table 1-1 Cargo handling operations at the Port of Weipa berths (PCQ 2008)

<table>
<thead>
<tr>
<th>Berth</th>
<th>Exporting</th>
<th>Importing</th>
<th>Users</th>
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<td>Lorim Point East</td>
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<td>RTA</td>
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<td>85,000</td>
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<tr>
<td>Lorim Point West</td>
<td>Bauxite</td>
<td>Fuel oil</td>
<td>RTA</td>
<td>255m</td>
<td>85,000</td>
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<tr>
<td>Humbug Wharf</td>
<td>General cargo</td>
<td>General cargo,</td>
<td>Gulf Freight and NQBP</td>
<td>108m</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>and freight</td>
<td>vehicles, freight</td>
<td>authorised users</td>
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<tr>
<td>Evans Landing</td>
<td>Diesel fuels,</td>
<td>Gasoline and</td>
<td>NQBP authorised users</td>
<td>195m</td>
<td>25,000</td>
</tr>
<tr>
<td></td>
<td>small vessel</td>
<td>other products</td>
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<td></td>
<td>supply</td>
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Plate 1-1 Cargo freighter entering the Port of Weipa via the South Channel, heading for Humbug Wharf.
Figure 1-1 The Port of Weipa.
1.1.1 Operations and Infrastructure

The Port of Weipa, located within Albatross Bay, was established by Order in Council, which was effective as at 1 June 1965, together with the RTA mine and the township of Weipa. Rio Tinto Alcan (RTA) currently operates the majority of port facilities and maintains on-shore bauxite handling, processing and stockpiling infrastructure, including conveyors for ship loading servicing Lorim Point Wharf. The Port also handles fuel, cattle and general cargo.

1.1.2 Location and environmental setting

Albatross Bay is a large, shallow embayment, varying in depth from 0 to -20m (LAT) (GHD 2005). Tides are predominantly semi-diurnal, with a strong daily inequality that occasionally results in a fully diurnal tidal cycle. The mean spring and neap tidal ranges are 2.2 m and 0.7 m, respectively and mean tidal current velocity is 0.7 m/s (URS 2002).

There are two main seasons at Weipa, with the wet season usually commencing in October-November and finishing in late April. However, the monsoonal climate is variable, with the start, duration and intensity of rainfall varying for each wet season.

Tropical cyclones regularly form in the Gulf of Carpentaria and cyclones in the area result in strong to gale force winds and high wave action, which causes substantial resuspension and transport of seabed material within Albatross Bay (GHD 2005). Average annual rainfall in Weipa is 1,884 mm, 95% of which is received during the wet season (GHD 2005). Air temperatures range between 13 – 35 °C in winter (mean 26 °C) and 18 – 38 °C in summer (mean 28 °C) (BoM 2009). South-easterly land breezes are predominant during the dry winter season and winds are generally lighter, more variable and with more northerly and westerly components during the summer.

The catchment area for Albatross Bay consists of four relatively small river systems, the Pine River to the north, the Mission and Embley Rivers to the south, and the Hey River, which flows from the south into the Embley River before it discharges into the bay. The rivers and bay form an extensive estuarine system that supports a diversity of habitats, including seagrass beds, mangrove communities, soft bottom habitats and rocky reefs (PCQ 2008). Bordering catchments include the large Wenlock River system to the east, the Pennefarther River system to the north, and the Watson River system to the south.

1.2 Dredging and Approvals

NQBP undertakes annual maintenance dredging to maintain declared depths within the Port of Weipa channel, swing basin and berths. All dredging activities are in accordance with their obligations under the Queensland Transport Infrastructure Act 1994. Approximately 1,111,000 m³ of material is estimated to be dredged during each campaign by the Trailing Suction Hopper Dredge (TSHD) ‘Brisbane’, under contract to NQBP, and placed at sea in the approved spoil ground within Albatross Bay. However, as this figure includes contingencies for effects such as cyclones, this volume is unlikely to be realised on an annual basis.

Until 2002, maintenance dredging programs at Weipa required annual Sea Dumping Permits. In 2002, NQBP was granted a five-year Sea Dumping Permit based on the need to undertake routine
maintenance dredging operations on a regular basis. Longer term permitting arrangements (10 years under this LTDMP) provide greater certainty to proponents and assist with more effective and efficient administration of the Sea Dumping Act. This approach is also consistent with the philosophy of the NAGD, and the Environmental Quality Management Framework of the National Water Quality Management Strategy (ANZECC/ARMCANZ 2000).

In addition to a Sea Dumping Permit for disposal of the maintenance dredged material, dredging in the Port of Weipa is also captured by State approvals including:

- Operational Works Permit, ‘disposing of dredge spoil or other solid waste material in Tidal Water’, provided under the Coastal Protection and Management Act 1995, pursuant to the provisions of the Integrated Planning Act 1997 (now replaced with the Sustainable Planning Act 2009) - issued December 2005; and
- ERA 16-1(d) – dredging more than 1 million tonnes of material in a year – issued June 2010.

This LTDMP is applied in conjunction with commonwealth and state conditions of approval as outlined within Appendix A.

### 1.3 Objectives of the LTDMP

NQBP is implementing this LTDMP as part of a 10 year maintenance dredging and disposal permit, fulfilling the goals of strategic planning and operational surety for the Port, while facilitating the ongoing protection of the marine environment, and recognising the interest of associated stakeholders. The Port of Weipa LTDMP follows guidance outlined within the NAGD (Commonwealth of Australia 2009), and requirements for dredging approval outlined by the Queensland Department of Environment and Heritage Protection (DEHP). It includes the following information:

- Overall Management Framework, including:
  - Commonwealth and state legislation;
  - Purpose of the TACC;
  - Port management systems;
- Description of the dredging works, including:
  - Annual maintenance dredging requirements and dredged material disposal at the Port;
  - Location and timing of dredging activities;
- Description of the existing environment;
- Description of material for disposal, including the history of sediment contamination at the Port of Weipa;
- Description of potential impacts;
- Management strategies and actions;
- Contingency arrangements;
- Provisions for continuous improvement;
- Auditing requirements and reporting; and
- Provisions for review of the management plan.
Table 1-2 provides reference to these components within the LTDMP.

1.3.1 Implementation and Operation

Operational objectives of the LTDMP for the Port of Weipa include:

- Establishment of an agreed framework for the long-term environmental management of dredging and dredged material disposal;
- Provision of long-term financial, and operational certainty to NQBP, in relation to dredging and disposal activities;
- Facilitating a transparent process of monitoring and compliance to environmental responsibilities;
- Supporting long-term Port development and management plans; and
- Transparency to stakeholders regarding dredging and disposal management via operation of the Technical Advisory and Consultative Committee (TACC).
Table 1-2  Section reference to key components of the Weipa LTDMP

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<th>Components of the Weipa LTDMP</th>
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<td>Management framework and implementation of the LTDMP, including regulatory framework, approvals requirements and role of the TACC.</td>
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<tr>
<td>History of dredging and disposal</td>
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<tr>
<td>Describe the maintenance dredging and disposal proposal for the term of the permit (locations, schedule, equipment etc.)</td>
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<tr>
<td>Review of disposal options, including minimising dredging and reducing contamination.</td>
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<tr>
<td>Define conditions of the material for disposal</td>
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<tr>
<td>Describe the existing environment, including physical processes, water quality, biota and management areas</td>
<td>5.0</td>
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<td>Potential impacts of the dredge and disposal operation, defining both short and long-term impacts and uncertainties.</td>
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</tr>
<tr>
<td>Management strategies and actions, responsibilities for the ongoing management of maintenance dredging</td>
<td>7.0</td>
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<tr>
<td>Program to monitor potential impacts and the effectiveness of the management strategies and actions.</td>
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2 DREDGING AND DISPOSAL MANAGEMENT FRAMEWORK

Dredging and disposal in Australia is managed under both State and Commonwealth legislation. In support of these formal instruments are the management, monitoring and reporting standards outlined within the National Assessment Guidelines for Dredging (NAGD; Commonwealth of Australia 2009). The following sections detail the requirements of the NAGD, Commonwealth, and State regulatory authorities with regards to approvals. It also details the role of the Technical Advisory Consultative Committee (TACC), and outlines the broader management framework developed by NQBP in discharging their environmental commitments at the Port of Weipa.

2.1 National Assessment Guidelines for Dredging

The process by which dredge operations are managed by NQBP follow those outlined within the National Assessment Guidelines for Dredging (NAGD, Commonwealth of Australia, 2009). These guidelines replace the superseded National Ocean Disposal Guidelines for Dredged Material (NODGDM, Commonwealth of Australia, 2002).

The NAGD recognises the strong association between dredging and the economic viability of many of Australia’s port developments, and on-going trade opportunities. The coordinated and timely approach to environmental investigations, permitting, management and approvals is considered important to maximising economic opportunity, whilst maintaining sustainability of our coastal resources (Commonwealth of Australia, 2009). While the NAGD provides for the continued case-by-case assessment of individual dredging proposals, it also considers the long term management of on-going dredge and disposal requirements as a jointly valuable outcome for Port operators and the environment.

NQBP has developed this LTDMP in support of its 10 year Sea Dumping Permit, fulfilling the goals of the strategic resources planning for the Port, while facilitating the ongoing protection of the marine environment, and recognising the requirements of associated stakeholders and interested parties. Longer term permitting arrangements provide greater certainty to proponents and assist with more effective and efficient administration of the Sea Dumping Act and state processes.

2.2 Legislation and Approvals

Until 2002, maintenance dredging programs at Weipa required annual Sea Dumping Permits. In 2002, NQBP was granted a five-year Sea Dumping Permit based on the need to undertake routine maintenance dredging operations on a regular basis. In addition to a Sea Dumping Permit for disposal of the dredged material, dredging in the Port of Weipa requires a State Operational Works Permit under the Coastal Protection and Management Act 1995, pursuant to the provisions of the Sustainability Planning Act 2009, (formerly Integrated Planning Act 1997). Further, the Queensland State Government recently introduced a new Environmentally Relevant Activity, (ERA) 16 - Extractive and Screening Activities effective 1 January 2010 (previously not applied to port operators). The following sections outline the legislative framework under which dredging is managed, and relevant approvals for dredging and sea disposal of spoil as proposed by NQBP at the Port of Weipa.
2.2.1 Commonwealth

2.2.1.1 Sea Dumping Act

The Sea Dumping Act implements Australia's obligations under the 1996 Protocol to the Convention on the Prevention of Marine Pollution by Dumping Wastes and other Matter, 1972 (the London Protocol). Under the Sea Dumping Act, the National Assessment Guidelines for Dredging (NAGD; Commonwealth of Australia, 2009) sets out the framework for the assessment and permitting of the ocean disposal of dredged material. The NAGD identifies that the Determining Authority will grant long-term permits for maintenance dredging on the following basis:

- An assessment of the applicant's ability to meet their obligations under the Sea Dumping Act and any permit granted;
- Establishment of a Technical Advisory and Consultative Committee (TACC) for long-term management; and
- Development and implementation by the applicant of a satisfactory LTDMP for loading and dumping activities.

Status of Approval: NQBP have been issued a 10 year Sea Dumping Permit issued (28 June 2010), expiring (28 June 2020)(SD2009/1382). This permit and associated conditions of approval are detailed within Appendix A.

2.2.1.2 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

For all sea dumping activities that are the subject of a permit application under the Sea Dumping Act, DSEWPC will make a determination (in accordance with Section 160 of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)) whether approval is also required under the EPBC Act. The Minister will consider whether the action will have significant impact on the environment. The EPBC Act promotes the conservation of biodiversity by providing strong protection for:

- Listed species and communities in Commonwealth areas (this includes listed threatened species and ecological communities, listed migratory species and listed marine species);
- Cetaceans (all whales, dolphins and porpoises) in Commonwealth waters and outside Australian waters;
- Protected areas (World Heritage properties; Ramsar wetlands; Biosphere reserves; Commonwealth reserves; Great Barrier Reef Marine Park; and conservation zones.)
Typically, a Sea Dumping Permit application for maintenance dredging does not require referral under the *Environment Protection and Biodiversity Conservation Act* 1999. The *National Assessment Guidelines for Dredged Material* (NAGD) states the following:

“In assessing a permit application under the Sea Dumping Act, the Determining Authority must also consider advice from the Commonwealth Environment Minister (or delegate) (under section 160), if the action is likely to have a significant impact on ‘the environment’, including an impact within state or territory waters. In practice, an EPBC Act assessment is usually required for such actions, and the granting of a sea dumping permit is based on that assessment and any recommendations following from it.”

The *EPBC Act* Matters of National Environmental Significance, Significant Impact Guidelines, October 2009 states that:

“**Dredging** to maintain existing navigational channels would not normally be expected to have a significant impact on the environment where the activity is undertaken as part of normal operations and the disposal of spoil does not have a significant impact.”

**Status of Approval:** No requirement for a separate EPBC referral has been identified by DSEWPC. Matters of National Environmental Significance are considered within the Sea Dumping permit approval process, and detailed within the Existing Environment section of this LTDMP (Section 5).

**2.2.2 State Legislation**

The State legislative responsibilities relate to activities conducted within State waters. The NAGD provides a description of ‘Waters within the Limits of a State’ in its glossary. According to the NAGD:

“Waters within the limits of a State are those waters that lie within the constitutional limits of the State as determined by Letters Patent issued to the Governors of each of the States at Federation. They can include features such as bays, gulfs, estuaries, rivers, creeks, inlets, ports or harbours. Generally, the limits of the States are low water along the coastline together with bay closing lines (usually of no more than 6nm in length) and also river closing lines. In some areas of the coastline, locating the limits of the State may be difficult. This can occur particularly where islands lie very close to the coastline and in relation to certain bays. In such cases there are detailed legal principles that must be applied to determine the exact location of the State limits.”

This concept is illustrated in Figure 2-1, which was sourced from the NAGD. In relation to the Port of Weipa, the State coastal waters limit extends to the 3 nm limit from Lowest Astronomical Tide. Dredging and disposal also falls within State jurisdiction.
2.2.2.1 **Coastal Protection and Management Act 1995**

The State Coastal Management Plan, (the State Plan) has been developed under the *Coastal Protection and Management Act 1995* (the Coastal Act). The State Plan describes how the coastal zone and its resources are to be managed. The ‘Coastal Zone’ is defined as: coastal waters (s9 Coastal Act - Qld waters to the limit of the Highest Astronomical Tide – HAT, and seaward to the 3 nautical mile limit from Lowest Astronomical Tide - LAT), and all areas to the landward side of coastal waters in which there are physical features, ecological or natural process that affect, or potentially affect, the coast or coastal resources (s11 Coastal Act). Thus, the area affected by the loading and dumping of dredged material is covered under the State Plan. The State Plan outlines management policies for Extractive Industry/Dredging (2.1.6/2.1.8 State Plan). The State Coastal Plan aims to achieve the best environmental outcome for the dumping of dredge spoil.

**Status of approvals: Approved** - Approval is required under the *Coastal Protection and Management Act 1995* (Coastal Act) for Operational Work ‘disposing of dredge spoil or other solid waste material in Tidal Water’, – issued December 2005. A copy of this approval and conditions is provided within Appendix A.

2.2.2.2 **Environment Protection Act 1994**

Queensland State Government introduced a new Environmentally Relevant Activity (ERA) 16 *Extractive and Screening Activities* that came into effective on 1 January 2010, requiring NQBP to obtain this ERA Permit from the Department of Environment and Heritage Protection (DEHP; formerly DERM) to conduct maintenance dredging of existing lawful structures. Port Authorities were
previously exempt from obtaining this approval. NQBP were actively involved with DEHP alongside other Queensland Port Authorities, in developing a standard set of approval conditions for this ERA.

NQBP lodged an application for the ERA 16 approval in March 2010 and a Development Permit has since been issued. The approval conditions required proponents to compile an Integrated Environmental Management System (IEMS). The LTDMP was adopted in substitute of an IEMS, given the LTDMP includes key information required by DEHP.

- **Status of approval:** ERA 16-1(d) – dredging more than 1 million tonnes of material in a year – issued June 2010.

### 2.3 Technical Advisory and Consultative Committee

Under the NAGD, development of a Technical Advisory and Consultative Committee (TACC) is required to assist in the consultation process required for a Sea Dumping Permit application. Appendix C of the NAGD states that “The TACC is intended to assist port, other proponents and the Determining Authority to access local knowledge and reconcile various stakeholder interests”.

A Technical Advisory and Consultative Committee (TACC) has been in place for the Port of Weipa for more than 10 years. The role of the TACC is to provide:

- Continuity and direction and effort in protecting the Port of Weipa environment;
- A forum where issues and concerns can be discussed and resolved;
- Assistance in the establishment of longer term permitting arrangements, including reviewing of SAPs as well as the LTDMP to ensure it remains current;
- Review ongoing management of dredging and dumping activities, and permitting arrangements in accordance with the NAGD (2009);
- Recommendations to the proponent and the determining authority as necessary or appropriate;
- A focus for long-term planning for the port, including the coordination of multiple uses and users; and
- The principal mechanism for communication and community engagement.

Communication with the TACC is primarily through pre- and post-dredge meetings, emails and telephone discussions. As the port authority for the Port of Weipa, NQBP will also be represented on other TACCs, where other proponents intend on dredging or disposing of material within the port limits of Weipa. This involvement will assist NQBP to continue a holistic management approach to activities within the port, specifically the coordination of dredging campaigns, as, and where required.

The TACC includes representatives from:

- North Queensland Bulk Ports Corporation Limited (previously Ports Corporation of Queensland Limited);
- Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) (formerly Department of the Environment, Water, Heritage, and the Arts);
- Rio Tinto Alcan;
- Department of Environment and Heritage Protection – DEHP (formerly Queensland Department of Environmental and Resource Management);
• Department of Agriculture Fisheries and Forestry – DAFF (formerly Queensland Department of Employment, Economic Development and Innovation – DEEDI);
• Maritime Safety Queensland – MSQ; and
• Local stakeholders.

2.3.1 January 2009 meeting

The most recent meeting of the TACC took place on 15 January 2009 to provide the TACC with an overview of the results of the 2008 Sediment Sampling and Analysis Plan (SKM 2008a), the planned 2009 maintenance dredging campaign, the proposed structure of this LTDMP, and NQBPs plan to apply for a long-term permit. The TACC will continue to be an integral component in ensuring the long-term sustainability and environmental performance of the Port of Weipa.

Following the conclusion of this meeting, minutes of the meeting were prepared and circulated to attendees for comment. Allowing a 2-3 week period for comment no responses were recorded. A copy of the minutes is provided within Appendix B.

The Weipa TACC have emphasised in previous meetings that maintenance dredging at Weipa is of low risk, both environmentally and socially. The TACC approves the approaches taken by NQBP in managing each dredging campaign.

2.4 NQBP Port of Weipa - Environmental Management

The Port of Weipa LTDMP is considered the primary management tool for future maintenance dredging campaigns by NQBP. The LTDMP provides strategies for implementing maintenance dredging in a practical and considered manner. The LTDMP is also part of a family of documents and processes which define and deliver NQBPs responsibilities as port manager. The following NQBP corporate documents have been used to assist in the development of the project specific LTDMP, and form the framework for its foundation.

2.4.1 Environmental Management System

NQBP’s Environmental Management System (EMS) is certified under ISO14001:2004. The EMS details NQBP’s corporate practices, procedures and systems in place to meet the objectives and commitments outlined in NQBP’s Environment Policy. The Long Term Environmental Management Plan (LTDMP) was developed to comply with the certified EMS requirements.

The EMS outlines all aspects of environmental management across all of NQBP’s ports and activities which occur at each port. The EMS covers NQBP activities and operations only. Other port users and occupants have their own management systems and plans in place where NQBP do not have any control.

NQBP’s EMS identifies the following;
• organisation structure, accountability and responsibilities;
• environmental reporting;
• environmental incidents/corrective and preventative actions;
• environmental audits;
• environmental records;
• environmental training, development and resources;
• environmental aspects, impacts and risks;
• key performance indicators;
• EMS management reviews;
• emergency response; and
• communication.

The LTDMP will be written into the next draft of the EMS (revised annually) to provide a coordinated management and control process to enable review, reporting, auditing, monitoring of performance.

2.4.2 NQBP Environment Policy

NQBP’s Environment Policy presents NQBP’s corporate commitment to environmental management in all aspects of business and operations. This Policy forms the philosophy for environmental objectives which must be adhered to by all NQBP staff and contractors. Policy directives are incorporated with the structure of the LTDMP. It is a contract requirement with the Dredging Contractor that objectives of NQBP’s Environment Policy be adhered to at all times.

2.4.3 Port of Weipa Environmental Management Plan

NQBP has prepared a Port of Weipa Environmental Management Plan (EMP) which identifies environmental values of the Port and management measures to ensure that impacts to the natural environment are minimised over the long term. The EMP is consistent with NQBP’s Environment Policy and its ISO14001:2004 certified Environmental Management System (EMS).

The primary objective of the Port of Weipa EMP is to provide a reference document for current and future users of the Port of Weipa. The Plan was developed by NQBP and provides an overview of environmental issues and their management in the port to ultimately protect and enhance the natural port environment. The Plan is complimentary to, and consistent with, NQBP’s Environment Policy. The Plan also complements the Port of Weipa Strategic Plan, ensuring that any development within port limits is undertaken sustainably. The Plan is not statutory and is intended to provide guidance for NQBP’s land at Weipa and waters within port limits.
3 PROPOSED DREDGING AND DISPOSAL

3.1 Why Dredging and Disposal?

The need for maintenance dredging arises periodically due to sedimentation of existing channels, berths and basins within the Port. Declared operational depths are determined for various facilities, and routinely monitored via hydrographic surveys. Prevailing coastal processes lead to the continued accumulation of fine sediments within the channel, swing basin and berth pockets of the Port of Weipa. To maintain navigable depths, and discharge its requirements under the Transport Infrastructure Act (1994), these accumulations require removal via dredging. Under the present dredging regime, the dredge ‘Brisbane’ services the Port every year.

The NADG (Commonwealth of Australia, 2009) requires a proponent to define within their permit applications the estimated volumes of dredge material, as well as the proposed methods of dredging and disposal. Information regarding the location of dredging and disposal and timing/schedule of activities is also required. The following sections detail these requirements.

3.1.1 Dredge and Disposal Footprints

Dredge areas and disposal locations forming part of this LTDMP are detailed within Figure 3-1 below (they can also be found embedded within the approval documents, a copy of which is included in Appendix A). This figure also includes dredge depths and relevant coordinates.

Maintenance dredging of the fine to coarse sediments that accumulate in the South Channel and Inner Harbour is best achieved using a trailer suction hopper dredge (TSHD). The majority of annual maintenance dredging is undertaken in the South Channel, with approximately 80% of dredging occurring towards the western end of the channel and approximately 10% of dredging occurring at the Bellmouth. Each year, approximately one day of dredging will occur in the Inner Harbour, with the majority of the Inner Harbour and berth pocket work to be completed by the bed leveller.

Detailed volume estimates are generated via bathymetric survey prior to the implementation of maintenance dredging campaigns, and comparison to design depth. This information is provided to the TSHD ‘Brisbane’ to allow an automated and more efficient approach to dredging, only targeting areas as required.
3.2 Dredging

3.2.1 History

The South Channel has been regularly dredged for approximately 40 years to maintain safe access for shipping (WBM and Dames & Moore 1998). The channel was first dredged across the inner half of Albatross Bay in 1961-63 by deepening the natural South Channel to a depth of 8.2 m LWD (low water datum). During the 1980's the channel was deepened and extended to 14.5 km length (GHD 2005). Capital dredging was undertaken in 2006 and again in 2012 extending the channel length to approximately 17 km (Figure 3-1 shows the current total maintenance dredge area).

NQBP completed a combined capital and maintenance dredging campaign in 2012 to extend the existing channel (by 2.4km) and to achieve required design depths for the high-value maximum sailing draft (MSD).

Since the capital dredging campaigns, annual maintenance dredging has been required to maintain the declared depth of the South Channel of 10.8 m below LAT. The depth profile of the South Channel currently includes dredging of some areas to an insurance depth of approximately 12 m below LAT, where siltation affects are greatest (PCQ 2008; GHD 2005).

At present, maintenance dredging of the South Channel and the inner berths at the Port of Weipa is typically carried out on an annual basis. Prior to 2002, maintenance dredging was conducted approximately every two years, however due to siltation during cyclonic events, dredging has been required annually to maintain the declared depths.

Volumes of dredged material generated during past dredging campaigns (2002 – 2012) are shown in Table 3-1. Note that the 2002 campaign was conducted after a two-year gap in maintenance dredging, with previous dredging occurring in 2000. Prior to the development of a LTDMP annual maintenance dredging was conducted in 2003-2005, 2007-11; with combined capital and maintenance dredging occurring in 2006 and 2012. Dredging campaigns are typically carried out in June - August, depending on when the dredge is available.
Table 3-1  Volume of dredge material removed during previous campaigns.

<table>
<thead>
<tr>
<th>Year of Dredging</th>
<th>Type of Dredging</th>
<th>Volume of In Situ Material (m³)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>Maintenance</td>
<td>916,585</td>
</tr>
<tr>
<td>2003</td>
<td>Maintenance</td>
<td>463,513</td>
</tr>
<tr>
<td>2004</td>
<td>Maintenance</td>
<td>621,650</td>
</tr>
<tr>
<td>2005</td>
<td>Maintenance</td>
<td>803,098</td>
</tr>
<tr>
<td>2006</td>
<td>Capital and Maintenance</td>
<td>2,976,868</td>
</tr>
<tr>
<td>2007</td>
<td>Maintenance</td>
<td>796,848</td>
</tr>
<tr>
<td>2008</td>
<td>Maintenance</td>
<td>834,281</td>
</tr>
<tr>
<td>2009</td>
<td>Maintenance</td>
<td>550,457</td>
</tr>
<tr>
<td>2010</td>
<td>Maintenance</td>
<td>832,780</td>
</tr>
<tr>
<td>2011</td>
<td>Maintenance</td>
<td>460,820</td>
</tr>
<tr>
<td>2012</td>
<td>Capital and Maintenance</td>
<td>927,057</td>
</tr>
</tbody>
</table>

The volume of material removed during maintenance campaigns has increased since the capital works of 2006 (Table 3-1). This is primarily due to the channel being widened as part of the 2006 campaign, creating a larger area to be maintained. Also, the first and fourth largest recorded waves in Weipa occurred in 2008 and 2007, respectively (over approximately 30 years of DEHP (formerly EPA) wave monitoring records). In January 2008, Weipa received waves of up to seven metres (maximum wave height), causing moderate erosion damage to local beaches (EPA 2008). These events are considered to have contributed to the higher volumes being removed from the shipping channel over this period.

Although the channel length has again been increased in 2012, upon review of historical dredge volumes it is not expected that any further increases in the approved dredge volume identified in the 10 year SPD is necessary. NQBP will continue to monitor each dredge campaign to ensure annual maintenance volumes remain within the existing approval limits.

### 3.2.2 Estimated Dredging Needs – 2010-2019

The current 10 year Sea Dumping Approval covers annual maintenance dredging over the ten-year period (2010 – 2019) in the South Channel and the Inner Harbour, which includes the four shipping berths – Lorim Point Wharf (two berths), Humbug Wharf and Evans Landing Wharf, plus the tug berth located behind Lorim Point Wharf and the Inner Approach and Departure Channels ( Figure 1-1).
Given the recent history of dredging (Table 3-1), recurring impacts from cyclonic events, and the predicted increase in area to be dredged following proposed capital dredging works, a maximum total of 1,111,000 m³ per year of dredged material, averaged over the period 2010 – 2019, will be disposed of at the Albatross Bay spoil ground.

Actual dredged volumes will vary, depending on the amount of accumulated material in each area. Pre- and post-dredge bathymetric surveys will occur on an annual basis over the ten-year period (2010 – 2019). Actual dredged material volumes will be determined from the pre- and post-dredge surveys but will not exceed the permitted volumes.

### 3.2.3 Dredged Material Quality

Historically, sediment assessments have identified a range of contaminants within the material to be dredged, principally at the berth pockets (PAH, TBT, Metals). However, although several sites have recorded contaminant concentrations above the adopted screening criteria (NODGDM), overall compliance to ocean disposal criteria has been maintained (i.e. Phase 3 and ecotoxicity analysis have recorded compliant results). Detail regarding the characterisation of materials to be dredged is provided within Section 4.0.

### 3.2.4 Emergency Dredging

The passage of cyclones and flooding events has the potential to reduce navigable depths within the Port over a very short period of time. As such, the NQBP has no control over the extent or timing for emergency dredging. In these instances, for the management of vessel safety and mitigation of possible environmental and economic affects, emergency dredging may be required. Advice to DSEWPC regarding the need for emergency dredging would be provided in accordance with ocean disposal conditions as required over the permit period.

### 3.3 Disposal

The Albatross Bay spoil ground is in Commonwealth waters and disposal of dredged material is therefore governed by the Sea Dumping Act (Commonwealth) (Figure 3-2). Dredged material will continue to be disposed of at the existing Albatross Bay spoil ground, located approximately 5 km north west of the seaward end of the South Channel. Based on the detailed post-dredging bathymetric survey undertaken in 2008, the spoil ground has a depth range of 8.4 – 11.2 m below LAT with depth increasing from east to west. The disposal ground has a radius of 1.1 nautical miles (2037 m) from the centre coordinates (WGS 84):

- Lat: 12.659671°S; and
- Lon: 141.656680°E
3.3.1 History of disposal

Historically NQBP has disposed of dredged material in a number of locations within the Port area. The current Albatross Bay spoil ground was commissioned in 1998 and is located in deeper waters west of the old Albatross Bay spoil ground. The current spoil ground partially overlaps the old spoil ground, which was used for disposal of dredged material in maintenance dredging campaigns conducted between 1987 and 1996 (GHD 2005) (Figure 3-2). The spoil ground was relocated after 1996 because of the cultural significance of the old spoil ground, and not because of a lack of capacity.

Other spoil disposal sites used during previous dredging campaigns have included the Hey Point spoil ground, located in the Embley River 6 km upstream of the Lorim Point berths, and the Jackson Channel dispersion site, located to the north of the South Channel at the mouth of the Embley River (WBM 1998) (Figure 3-2). The Hey Point spoil ground was first used in 1997; however it was formally discontinued in 2000, due to its importance to Traditional Owners and concerns about the potential for
bank scouring (URS 2001). Relatively small amounts of dredged material were placed in the Jackson
Channel dispersion site during maintenance dredging from 1989 to 1994 (URS 2001) (Figure 3-2).

3.3.2 Current Spoil Ground Capacity

Accretion at the current spoil ground was estimated by GHD (2005) based on bathymetric surveys
undertaken since the pre-dredging 2002 survey. Estimates of spoil accretion at the spoil ground
calculated from the surveys are listed in Table 3-2. Survey data indicates a net accretion across the
spoil ground of approximately 600,000 m³ from 2003 to 2005 (as outlined in Table 3-2). Comparative
depth contours from pre- and post-dredging surveys indicated that the maximum difference in
elevation due to disposal within the spoil ground was approximately 300 mm (GHD 2005).

SKM has assessed the current Albatross Bay spoil ground on the basis of the 2008 post-dredging
bathymetry to determine its current capacity and estimated life, prior to the 2009 maintenance
dredging campaign.

Spoil ground capacity was determined based on filling the spoil ground from the 2008 levels to two
depths, namely -8.5 m and -9.0 m relative to LAT, on the basis that WBM and Dames & Moore (1998)
indicated this was the acceptable depth range for the 1998 Long Term Management Plan. The
calculated spoil ground capacity and predicted remaining life are shown in Table 3-3. The remaining
life of the spoil ground was estimated on the basis that the proposed maximum volume of 1,111,000
m³ of dredged material per year would be disposed at the spoil ground, and assumes no dispersion of
material from the spoil ground. Both of these are conservative assumptions, in that it is unlikely that
the maximum volume of material will be dredged in most years, and some dispersion of material from
the spoil ground is known to occur. Even with these conservative assumptions, the spoil ground is
estimated to have ample capacity over the 10-year term of the permit.

<table>
<thead>
<tr>
<th>Description</th>
<th>Survey</th>
<th>Volume (m³)</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Spoil Ground</td>
<td>Dredged</td>
</tr>
<tr>
<td>2002 Maintenance</td>
<td>2002 Pre-</td>
<td>365,357</td>
<td>Approximately 40% of volume dredged is</td>
</tr>
<tr>
<td>Dredging Campaign</td>
<td>2002 Post</td>
<td></td>
<td>apparent at the spoil ground.</td>
</tr>
<tr>
<td>2002/2003 Wet Season</td>
<td>2002 Pre-</td>
<td>-204,559</td>
<td>Net erosion of the spoil ground</td>
</tr>
<tr>
<td></td>
<td>2003 Post</td>
<td></td>
<td>between dredge events</td>
</tr>
<tr>
<td>2003 Maintenance</td>
<td>2003 Pre –</td>
<td>459,820</td>
<td>Majority of volume dredged observed at</td>
</tr>
<tr>
<td>Dredging Campaign</td>
<td>2003 Post</td>
<td></td>
<td>spoil ground.</td>
</tr>
<tr>
<td>2005 Under existing</td>
<td>2003 Post-</td>
<td>629,618</td>
<td>Includes 2 dredging</td>
</tr>
<tr>
<td>spoil permit</td>
<td>2005 Pre</td>
<td></td>
<td>campaigns and one wet season</td>
</tr>
</tbody>
</table>
Table 3-3  Calculated capacity for the existing spoil ground in Albatross Bay prior to 2009 maintenance dredging.

<table>
<thead>
<tr>
<th>Minimum Depth (Spoil Ground)</th>
<th>Present Capacity (million m³)</th>
<th>Remaining Life with a Maximum Disposal of 1,111,000 m³/year and no Dispersion Loss.</th>
</tr>
</thead>
<tbody>
<tr>
<td>-8.5m</td>
<td>20.6</td>
<td>18.5 years</td>
</tr>
<tr>
<td>-9.0m</td>
<td>14.3</td>
<td>12.9 years</td>
</tr>
</tbody>
</table>

**3.3.3 Spoil Ground Relocation Options**

Although the estimated capacity of the existing spoil ground indicates that it has ample capacity to receive dredged maintenance material from 2010 – 2019, alternative spoil ground locations were assessed as a contingency measure. It was concluded that the most viable relocation option would be to move the spoil ground to an adjacent location west of the existing spoil ground, though overlapping (Figure 3-3). Reasons for selecting this option include:

- The current spoil ground location near the outer end of the South Channel reduces vessel transit times to the disposal site during dredging campaigns, and therefore costs;
- The reduced transit times also reduce the duration of dredging campaigns, and therefore the duration of disturbance;
- In the unlikely eventuality that an alternative spoil ground is required, locating it near the present site would tend to localise disturbance, rather than disturbing new areas; and
- Benthic survey data indicate that the general area surrounding the present spoil ground lacks seagrass and is similar to the existing spoil ground in sediment and infaunal community composition. On that basis, and assuming the existing spoil ground would recover to baseline conditions after disposal there ceases, the net environmental impact would be likely to be low.

The potential alternative spoil ground location shown in Figure 3-3 is presented as a concept and does not represent a specific proposed location. The selection and approval of a new disposal site would require additional studies including surveys to characterise the sediments and benthic communities at the new site. This may be undertaken by NQBP in the future if required.
3.4 Dredge Methods and Schedule

Utilisation of the ‘Brisbane’, or similar TSHD, remains the primary dredging and disposal placement method for the Port, and is to remain for the foreseeable future. Periodic use of a bed leveller to remove high spots may also occur from time to time, maintaining declared depths of the Harbour. Annual maintenance dredging is estimated to take approximately five to seven weeks. The maintenance dredging program proposed to be undertaken in 2009 (conducted under a separate permit), is representative of maintenance dredging campaigns in Weipa although, the dates of the campaigns will vary according to the availability of the TSHD ‘Brisbane’ (Table 3-4).
### Table 3-4  Typical maintenance dredging program for the Port of Weipa

<table>
<thead>
<tr>
<th>Activity</th>
<th>Commencement</th>
<th>Completion</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dredging</td>
<td>August</td>
<td>September</td>
<td>34 – 46 days</td>
</tr>
<tr>
<td>Bed Levelling</td>
<td>One week after dredging commences</td>
<td>September (same time as dredging)</td>
<td>34 – 39 days</td>
</tr>
<tr>
<td>Bathymetric Surveys</td>
<td>Half a week before dredging commences</td>
<td>Half a week after dredging is competed</td>
<td>38 – 50 days</td>
</tr>
</tbody>
</table>

#### 3.4.1 Trailing Suction Hopper Dredge

Based on the dredging methods of the TSHD ‘Brisbane’, the following methods are typical of the proposed operations. It is recognised that other TSHDs may be used for dredging from time to time, depending on the ongoing viability and availability of the ‘Brisbane’. However, the specifications and operations of the ‘Brisbane’ will form a baseline for dredge specification and operational environmental management.

Material to be dredged is removed through two suction heads, which are lowered into position on either side of the vessel. As the vessel steams slowly at around 1 – 3 knots, large pumps draw water through the heads, which entrain the sediment and transport the water/sediment mixture aboard into a central collection hopper. Each extraction run takes approximately 1 hour to complete within about a 3 hour dredge cycle (including disposal). Whilst the suction heads are fitted with high-pressure water jets, which can be used to agitate consolidated sediment, they are rarely required for maintenance dredging.

The sediment/water ratio of material delivered to the central hopper of the ‘Brisbane’ is typically quite low. Whilst it varies depending on the type of sediment being dredged, the sediment concentration is generally in the order of 10 – 30 % solids. To maximise dredge spoil capacity, these large volumes of water are managed using a central column weir, which is incorporated into the hopper. This arrangement allows excess water to decant from the sediment and overflow to discharge. Overflow occurs only toward the very end of the dredging run as the hopper nears capacity (typically the last ten minutes of a one hour dredging run). The capacity of the hopper is dependent on the sediment type – with volumes (including both sediment and water) approximating 2,800 m³ for fine silts and 1,700 m³ for sands (of a maximum hopper capacity of 2,900m³). Considering that more water is held in the silt matrix than sands, the dry weight cubic metres of sand able to be practically collected in each load is therefore generally greater than that in silts.

Once the dredge has filled its hopper, the vessel will then relocate the material to the designated spoil ground. Spoil is discharged below keel level to minimise turbidity generation. Each spoil placement is manually logged using both satellite navigation and standard bridge equipment, and is electronically fixed using a differentially corrected global positioning system (DGPS). The electronic track plot marks the start of the placement process (hopper open), and the end of the process (hopper closed). This track usually shows an arc, which the dredge follows to ensure that all dredged material is
placed within the designated spoil ground boundary. The time taken to place material over the spoil ground is typically about 15 minutes out of the dredge cycle.

During the dredging works, electronic logs of each spoil dump event will be maintained. At the completion of each dredge campaign, these logs will be available to the relevant government agencies to demonstrate compliance with permit conditions.

TSHDs undertaking dredging works at the Port of Weipa will include the following minimum specifications to minimise environmental impact from dredging and disposal:

- Central weir discharge system;
- Below keel discharge point;
- Low wash hull design; and
- Electronic positioning system

An Environmental Management Plan (EMP) is provided by the dredging contractor, and implemented for each of the maintenance dredging campaigns. The dredge dumping procedures, any associated monitoring arrangements and corrective actions are incorporated into the EMP. Implementation of the EMP is audited by NQBP environmental staff.

3.5 Disposal Options Assessment

The following section reviews dredge disposal options applicable to the maintenance materials obtained from the Port of Weipa. This review clarifies the needs of on-shore versus offshore disposal, and outlines some of the limitations in handling this material.

3.5.1 Developing Alternative Options

As part of the assessment process under the NAGD (2009), proponents should demonstrate that appropriate consideration has been given to spoil disposal options. The NAGD states “A permit shall be refused if the determining authority finds that appropriate opportunities exist to re-use, recycle or treat material without undue risks to human health or the environment, or disproportionate costs.”

Alternatives to the ocean disposal of dredged material from the Port of Weipa have been considered in the development of this LTDMP. Potential alternatives for managing dredged material were previously examined by WBM and Dames & Moore (1998) for the Long Term Dredge Material Management Plan drafted in 1998. The potential alternatives/options identified at that time included:

- Option 1: Re-use/recycling/treatment/land disposal - this option would involve pumping or transporting dredged material to:
  - An onshore site for a beneficial use in an upland area; and/or
  - A near-shore or intertidal site for a beneficial use such as shoreline reclamation or the provision of an island or spit for wildlife;
- Option 2: Use of silt dispersal strategies – this option has been undertaken in the past by disposing of dredged material in Jackson Channel;
- Option 3: Use of subtidal near-shore disposal sites; and
- Option 4: Use of the existing spoil ground in Albatross Bay.
3.5.1.1 Option 1

WBM and Dames & Moore (1998) concluded that Option 1 was not feasible because there were no viable beneficial uses for the material onshore that justified the high costs of transporting and treating the silty material. Firstly material would require a shoreline dewatering site and then be transported to local upland area capable of the receiving the required volumes. Furthermore, transportation of the silty material to an inshore or intertidal location to develop additional wildlife habitat in Albatross Bay would require the receiving area to be protected by a rock-armoured bund to prevent rapid sediment re-mobilisation during cyclones (WBM and Dames & Moore 1998).

Such a bund would not be economically feasible, and would have its own environmental impacts. Option 1 would also have a range of potential social impacts including changes in landscape, visual amenity and increased noise. There have been no changes in the Port of Weipa since 1998 that would alter these conclusions, and Option 1 is not considered viable for 2010 – 2019.

3.5.1.2 Option 2

Silt dispersal by deliberate hopper overflow in the shipping channel was considered by WBM and Dames & Moore (1998) to be a viable option that would not cause significant environmental effects over the long-term. By enabling tidally-assisted dispersal of approximately 30 – 40 % of the silty shipping channel sediments back to their place of origin in Albatross Bay, this method was considered at that time to represent an ecologically sustainable practice that would also reduce the costs of dredging. However, given increased dredging volumes and a greater understanding of the potential impacts of increased turbidity, this practice has since discontinued at the Port of Weipa and is not considered a viable option for the period 2010 – 2019.

3.5.1.3 Option 3

The use of near-shore, sub-tidal disposal sites’ (including Hey Point) has been discouraged since 1998 and formally discontinued since 2000 due to concerns being raised from traditional owners regarding the proximity to significant sites; the potential for scour of adjacent sandbanks; and the impacts to estuarine environments, specifically the extensive seagrass communities. NQBP and members of the TACC recognise the ecological importance of seagrass communities surrounding the project area. NQBP continue to support on-going monitoring of the seagrass communities within the Port of Weipa.

3.5.1.4 Option 4

Based on this evaluation of alternative disposal options, it is concluded that Option 4, continued use of the existing spoil ground, is the best option for the disposal of dredged material from maintenance dredging over the ten-year period 2010 – 2019. Disposal of all dredged material to the existing spoil ground is the most cost-effective option, and compared to other options also minimises potential impacts on estuarine systems in the Port of Weipa.
3.6 Dredge material minimisation

Hydrodynamic studies at the Port of Weipa (WBM and Dames & Moore 1998; GHD 2005, 2009a) have confirmed that sedimentation in the South Channel are caused by widespread, wave induced mobilisation of silts in Albatross Bay during major storm and wave events, with the amount of channel infilling correlating with periods when significant wave heights in the centre of Albatross Bay exceed 1.5 m. Silts mobilised from the seabed beyond Beacons 8/9 are the main source of material accumulating in the channel, with little contribution of sediment from the catchment.

Studies prior to 2005 (reviewed in LeProvost Dames & Moore 1995 and WBM and Dames & Moore 1998) indicated a residual northward movement. More recent modelling that incorporates wave forcing on currents and sediment transport (GHD 2005, 2009a) indicates that sediment movement is generally to the southeast. The total amount of sediment naturally mobilised in a “typical” cyclonic event was conservatively estimated by LeProvost Dames & Moore 1995 at 12,500,000 m³. Such massive natural sediment mobilisation during storm events makes engineering measures to limit siltation unfeasible. In an effort to reduce the duration and cost of maintenance dredging programs, three approaches have been successful in the past, including:

- Determining the best insurance profile (i.e. controlled over-dredging in the areas most prone to siltation) to try and increase the time interval between dredging campaigns;
- Establishing a silt dispersal strategy; and
- Use of a bed leveller.

Operational activities to maximise the size of individual shipments without the need for additional dredging have also been optimised for the Port. However, it should be noted that deliberately reducing the amount of maintenance dredging to allow navigable depth in the South Channel to become shallower than 10.8 m would cause reduced, and hence more expensive, bauxite shipments, as ships which could otherwise negotiate the channel fully laden would have to depart only partially laden (WBM and Dames & Moore 1998).

Despite a range of studies undertaken at the Port of Weipa (LeProvost Dames & Moore 1995 reviewed more than 20 studies and surveys conducted between 1956 and 1992), no practical solutions have been identified to further reduce either the siltation process or current dredging requirements. It should be noted, however, that the volumes of dredged material described for maintenance dredging under this 10 year plan represent the maximum anticipated dredging volumes, including a contingency allowance for unusual events. It is highly unlikely that these maximum volumes will be dredged on an annual basis.
4 DREDGE SPOIL CHARACTERISTICS

The most recent characterization of sediments from the areas to be dredged was completed in 2012 by Ports and Coastal Environmental (PaCE). This study was based upon an approved SAP (PaCE, 2011). Reference should be made to these documents regarding detailed methodology and design. Based on the findings of this investigation sediments comprising the maintenance dredge footprint are considered suitable for unconfined ocean disposal pursuant to the issue of a Sea Dumping Permit under Section 19 of the Sea Dumping Act.

The following sections detail the identified contaminants of concern for the Port of Weipa and associated exemptions for other parameters based on historical data. Findings of the most recent assessment (2012) are also presented. Historical sediment contamination results since 2002 are also provided for reference.

4.1 Contaminants of concern

The NAGD define contaminants of potential concern (COPCs) and contaminants of concern (COCs) as follows:

- COPCs are those contaminants that exceed the background concentrations and the Screening Level (or elevated concentrations of contaminants for which guidelines do not exist).
- COCs are those contaminants which exceed the background concentrations and the Screening Level and for which the bioavailability, bioaccumulation or toxicity assessments indicate that significant effects from the contaminants are likely.

Contaminants of potential concern and their likely sources that have been identified as occurring in the Weipa region are outlined in Table 4-1. Based on the findings of sediment studies to date, none of the contaminants identified from the Port of Weipa are defined as COCs.

Table 4-1 Contaminants of potential concern and sources

<table>
<thead>
<tr>
<th>Contaminants</th>
<th>Known or likely sources</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Heavy metals</strong></td>
<td></td>
</tr>
<tr>
<td>As, Cd, Cu, Cr, Hg, Pb, Ni, Mn and Zn</td>
<td>Antifouling Paints</td>
</tr>
<tr>
<td></td>
<td>Bauxite fines</td>
</tr>
<tr>
<td></td>
<td>Metal fabrication</td>
</tr>
<tr>
<td></td>
<td>Urban runoff/stormwater (minimal input)</td>
</tr>
<tr>
<td><strong>Organotins</strong></td>
<td></td>
</tr>
<tr>
<td>TBT, DBT, MBT</td>
<td>Antifouling paints</td>
</tr>
<tr>
<td><strong>Polycyclic Aromatic Hydrocarbons (PAH)</strong></td>
<td>Fuels oils</td>
</tr>
<tr>
<td></td>
<td>Lubricants</td>
</tr>
<tr>
<td></td>
<td>Ignition by-products</td>
</tr>
</tbody>
</table>
4.1.1 Exemptions from Further Testing

The NAGD (2009) state that exemptions from some or all of the sediment testing requirements are possible under certain circumstances, subject to approval by the determining authority. Historically, the grounds for exemptions from testing for certain analytes under the previous NODGDM have been adequate data demonstrating that the sediments are not contaminated and there is so reason to suspect that the contamination status has changed, or their remains and absence of potential sources of the contaminant in the area. Exemptions from testing for the following contaminants has been granted in previous Sampling and Analysis Plans (SAP) on the grounds that prior sampling or the absence of potential sources demonstrated that there was sufficient information to suggest that sediments are uncontaminated.

- **Radionuclides:** There exists no natural source or occurrence of radionuclides near the Port of Weipa. Radionuclides are commonly associated with mineral sands or the export of their products. Such operations are not present at the Port of Weipa and testing for radionuclides has been exempted from SAPs from 2002 - 2012.

- **Polychlorinated biphenyls (PCBs):** No sources of PCBs exist within the vicinity of Port of Weipa. PCBs generally originate from transformers and capacitors, coolants, lubricants, PVC coatings and other industrial sources. Due to the small catchment area present around the Port of Weipa, the nature of mining activities which are not known to pollute PCBs and the limited size of any landfill sites, PCBs are unlikely to be present in the environment. Full testing of PCBs would be unnecessary and therefore have been exempt from all SAPs at the Port of Weipa.

- **Organochlorine pesticides (OCs):** Full testing of OCs would normally be required under the NADG (2009). The presence of OCs is normally associated with industrial or agricultural activities involving use or generation of significant amounts of OCs. Mining dominates catchment use, with agricultural activities limited to two pastoral holdings. Since there is no substantive OC source in the region and they were not detected in the 2003 SAP (Hydrobiology 2003), they have been exempted from past Port of Weipa SAPs.

- **Total Petroleum Hydrocarbons (TPH):** Petroleum hydrocarbons enter port waters via fuel spills, rainfall run-off, emissions from vessel exhausts and from incidental discharge of oily waste water or solid waste. Fuel refuelling only occurs on Evans Landing Wharf and there are no waste oil reception facilities in the port. The power station located between Lorim Point Wharf and humbug Wharf is equipped with appropriate mitigation protocols including absorbent mats and other cleanup operations to retain oil (URS 2002). Testing for TPH has been exempted from previous SAPs.

The range of parameters targeted during the 2003, 2004, 2005, 2006, 2008, and 2012 (capital)SAPs (metals, TBT, and PAHs) is proposed to be continued for the ten-year period from 2010 – 2019 based on historical contamination information. It is recognised that under the NAGD these exemptions from testing will have been approved by the Determining Authority as part of the SAP approval process.

4.1.2 Combined Capital and Maintenance Dredging SAP 2012

NQBP commissioned Ports and Coastal Environmental (PaCE) to develop a Sediment and Analysis Plan (SAP) and carry out the Sediment Characterisation Investigation for capital dredging in 2012.
(PaCE, 2011), These capital works were to extend the existing channel (by 2.4km) and to achieve required design depths to achieve a high-value maximum sailing draft (MSD). Samples were collected from 33 locations (20 within the boundaries of the channel extension, 8 within the inner harbour and 5 in the Southern Channel between Fairway and Bell Mouth).

Results of this study conclude that metals (As, Cd, Cu, Cr, Hg, Pb, Ni, and Zn) were present at background concentrations only. Organotins (TBT, DBT and MBT) were recorded below the limits of laboratory reporting. Nutrients within the sediments were determined to be almost wholly of organic origins, and unable to generate problematic increases in more readily assimilated inorganic nutrients over the short dredge duration, such as nitrate and nitrite, which drive water quality affects.

Chemical analysis of sediments within the proposed dredging footprint confirmed that all target substances remained below respective NAGD screening levels at the 95% UCL. In accordance with the NAGD (Commonwealth, 2009), the capital sediments from the proposed extension, Southern Channel and Inner Harbor were considered free of contamination, and determined as not presenting any chemical obstacles to unconfined ocean disposal.

4.1.3 Prevention of contamination

A waste prevention audit has considered potential sources of contaminants in the port and how they can be managed. Tributyltin (TBT) can enter the port via ships and other vessels as the substance was previously used as an active agent in antifouling paints. However, since 17 September 2008, ships are no longer permitted to apply or re-apply organotin (which contain TBT) in accordance with the International Convention on the Control of Harmful Antifouling Systems on Ships. As a result, the possible presence of TBT in the port will decrease. Also, international vessels are not permitted to undertake in-water hull cleaning or propeller polishing activities in the Port of Weipa.

Heavy metals can enter the port directly and indirectly. For example, through stormwater runoff, mining operations, treated sewage, discharge of industrial waste and other diffuse sources (such as from vehicles). Although NQBP are the port authority for the Port of Weipa, the majority of strategic port land is leased to Rio Tinto, who are responsible for managing the environmental aspects of their operations, though environmental monitoring, auditing, management plans and systems. NQBP work alongside Rio Tinto and other port users to achieve best environmental practices through site based environmental management plans, imposing environmental conditions on port development applications and providing environmental advice when required. Rio Tinto are represented on the Weipa TACC.

NQBP require lined drains and gross pollutant traps in stormwater systems of any future major developments of NQBP port land. Any port development application lodged to NQBP, as assessment manager under the Sustainable Planning Act 2009, undergoes assessment from all key departments within NQBP, including the environment group whereby a project Environmental Management Plan is required to address all environmental risks and appropriate management measures.

NQBP implement an Oil Spill Contingency Plan for the management of spills in the Port. Handling of hydrocarbon products adjacent to and over the wharf at Evans Landing and Lorim Point follow Australian Standards for handling and management. NQBP has entered into an agreement with Maritime Safety Queensland to provide first strike oil spill response in the Port of Weipa. NQBP
provides trained personnel, equipment and ships to clean up any hydrocarbon spills under the direction of the Regional Harbour Master.

4.2 Historical Data


4.2.1 Maintenance Dredging SAP 2002

NQBP commissioned GHD to carry out the SAP for the Port of Weipa prior to maintenance dredging in 2002 (GHD, 2002). SAP results identified normalised sediment tributyltin (TBT) concentrations above NODGDM (EA 2002) Screening Level in individual samples collected from Evans Landing Berth, Humbug Wharf and Lorim Point Wharf. The 95% Upper Confidence Limits (UCLs) for TBT were also found to exceed the Screening Level at Evans Landing Berth, Humbug Wharf and Lorim Point Berth; and was the first survey to identify 95%UCLs above Screening Level for any parameter. The 2002 testing report noted that TBT levels were not unusually elevated, but rather the organic carbon content of the samples were low, which resulted in some elevated levels when results were normalised to 1% total organic carbon. The 2002 survey included elutriate testing and limited acute toxicity testing. Acute toxicity testing indicated that the sediments from all four berths did not exhibit toxicity to the test organisms.

4.2.2 Maintenance Dredging SAP 2003

NQBP commissioned Hydrobiology to carry out the SAP for the Port of Weipa (excluding Evans Landing Berth Wharf and Humbug Berth Wharf) prior to maintenance dredging in 2003. The 2003 SAP (Hydrobiology 2003) did not identify 95% UCLs above NODGDM screening levels for any parameter in any of the dredging areas. It was therefore recommended that dredged material from the Channels of the Port of Weipa be accepted for disposal at sea to the Albatross Bay spoil ground under the Sea Dumping Permit that was valid at that time.

4.2.3 Maintenance Dredging SAP 2004

NQBP commissioned Hydrobiology to carry out the SAP for maintenance dredging in 2004 (Hydrobiology 2004). Samples were collected from 25 locations (22 within dredging areas, plus one each from the spoil ground, a reference site in Albatross Bay and an upstream reference site from Lorim Point) by vibrocoring and grab sampling. Material from all dredging areas, except for Evans Landing Wharf which was not fully investigated, was assessed as suitable for unconfined sea disposal, following additional testing. In the South Channel and Humbug Wharf, 95% UCLs did not exceed screening levels for any of the parameters analysed. The 95% UCL for TBT (normalised to 1% TOC) at Lorim Point Wharf did exceed the NODGDM screening level, and elutriate and toxicity (acute and sub-acute) testing undertaken. The 95% UCL of the TBT elutriate concentrations was calculated for comparison with the TBT trigger value in the
ANZECC/ARMCANZ (2000) guidelines, as per the NODGDM. The 95% UCL was 7.57 ng/L, which exceeded the Screening Level for TBT of 5 ng/L, however the dilution afforded at the spoil ground during initial mixing was assessed to be far greater than was required to bring TBT concentrations below the trigger value. The 95% UCL for nickel was also above screening levels at Evan’s Landing.

Sub-acute toxicity to the rock oyster (Saccostrea commercialis) was observed, but the toxicity was attributed to elevated levels of ammonia, which is not generally considered a contaminant of concern and is unlikely to have adverse impacts on the spoil ground. Dredged material from Lorim Point was therefore assessed as suitable for unconfined sea disposal.

In the Evans Landing Wharf dredging area, 95% UCLs for TBT and several PAH compounds (both normalised to 1% TOC) exceeded screening levels. Sediments from Evans Landing Wharf were not fully investigated with elutriate or toxicity follow-up testing because no dredging was required.

4.2.4 Capital Dredging Environmental Impact Statement and SAP 2005

In 2005, an Environmental Impact Statement (EIS) was prepared for the 2006/2007 capital dredging in the South Channel, and disposal of dredged material in the Albatross Bay spoil ground (GHD 2005). The capital dredging was conducted to widen and deepen the South Channel at various locations. The dredging volume estimated in the EIS was 3,750,000 m³, but the actual dredged volume was 2,976,868 m³. GHD was commissioned to carry out the SAP prior to completion of the EIS in 2005 and the subsequent capital dredging. Sediment samples were collected to a depth of one metre at 28 locations using a vacuum vibrocorer (GHD 2005).

The sediments to be dredged during capital dredging were assessed as suitable for unconfined ocean disposal, with concentrations of metals, organotins (TBT and derivatives), and PAHs below NODGDM screening levels for all samples (GHD 2005). Particle size distribution (PSD) analysis showed that, on average, 66 – 67% of the material to be dredged was in the sand fraction (0.075 – 2.36 mm), with 20 – 25% of the remaining material being in the finer silt and clay fraction (<0.075 mm) (GHD 2005).

4.2.5 Maintenance Dredging SAP 2008

SKM was commissioned by NQBP to prepare and implement the 2008 SAP for annual maintenance dredging. The plan (SKM 2008a) was submitted to the former DEWHA and approved on 25 November 2008. The report of the results of 2008 SAP implementation (SKM 2008b) was intended to support an application by NQBP for a long-term dredging permit under the Sea Dumping Act 1981. Due to delays in the approval process, a separate application was lodged for a Sea Dumping Permit for the 2009 maintenance dredging campaign, with the understanding that the 2008 SAP would also support a subsequent application for a long-term permit.

Sediment quality in Weipa was proposed to be tested every five years. A new SAP for the period 2013-2018 will be submitted prior to maintenance dredging in 2013, and another SAP will be submitted prior to maintenance dredging in 2019. The 2008 SAP involved sampling and analysis of sediments recovered by a sediment grab at 68 individual sampling locations in seven designated dredging areas from 26 November to 30 November 2008. All sampling, analysis and assessment was conducted in accordance with the NODGDM (2002), the prevailing guidelines at the time, but the methodology and conclusions were also in accordance with the NAGD.
A summary of the contaminants that were above NODGDM screening levels for individual sampling locations for the 2008 SAP results is provided below:

- TBT concentrations (normalised to 1% TOC) were above the NODGDM screening level (at two of the 68 sampling locations. These two locations were both from dredge area 4, Lorim Point Wharf. Sampling location 4(g) exceeded the screening level (5 μg Sn/kg) with a TBT concentration of 7.4 μg Sn/kg (0 – 50 cm) and sampling location 4(j) exceeded the NODGDM maximum level (70 μg Sn/kg) with a TBT concentration of 1,114 μg n/kg. This most likely represents a paint chip in the sediment sample. The previous SAP report (Hydrobiology 2004) identified TBT exceedences at 4 of 28 sampling locations at both Evans Landing and Lorim Point Wharf;

- Concentrations of most individual PAH species (normalised to 1% TOC) were recorded above the NODGDM screening and maximum levels at sampling locations 2(d) and 2(e) at Evan’s Landing Wharf. The previous SAP (Hydrobiology 2004) also reported PAH above NODGDM screening levels at Evan’s Landing; and

- The nickel concentrations were above the NODGDM screening level (of 21 mg/kg) at sampling location 3(c) (29.9 mg/kg) at humbug Wharf. The previous SAP (Hydrobiology 2004) reported nickel concentrations above the NODGDM screening level at one site at Evan’s Landing.

In accordance with the NODGDM, the 95% UCLs of the mean contaminant concentrations were compared against NODGDM screening levels, to assess whether dredged material was suitable for ocean disposal, or if further testing (including elutriate and/or toxicity assessment) was needed. The results of these comparisons were:

- The 95% UCL for TBT concentration at Lorim Point Wharf (206.6 μg Sn/kg) exceeded the NODGDM screening level (5 μg Sn/kg). The previous SAP also reported a 95% UCL for TBT above the NODGDM screening level at Lorim Point; and

- The 95% UCL for PAH concentrations exceeded the NODGDM screening levels at Evan’s Landing.

The dredge areas with exceedences of NODGDM guideline values at the 95% UCL of the mean contaminant concentration required further investigation, including elutriate and/or ecotoxicity analysis. The assessment of results obtained from these analyses concluded that the sediments of the Port of Weipa were non-toxic. On the basis of these results, SKM (2008b) recommended that dredged material from maintenance dredging in the South Channel, Evan's Landing, Humbug Wharf, Lorim Point Wharf, the Tug Berth and the Approach and Departure Channels be accepted for unconfined disposal at the existing Albatross Bay Spoil Ground, in accordance with the Sea Dumping Permit SD2009/1382 (Appendix 1).

### 4.2.6 Summary of Contaminant Issues in Past SAPs

The Inner Harbour and South Channel at the Port of Weipa have been subject to successive sediment contamination surveys for dredging operations. NQBP commissioned SAPs in preparation for the 2002, 2003, 2004, 2005, and 2009 maintenance dredging campaigns, as well as the 2006/2007 and 2012 capital dredging campaigns. These SAPs have revealed the following
contamination issues that need to be considered for long-term management purposes (see Table 4-2 for a summary):

- Normalised tributyltin (TBT) was above NODGDM screening levels at Lorim Point and Evans Landing Wharfs in 2004 (Hydrobiology 2004) due to low organic content to the samples.
- Nickel was above NODGDM screening levels at Evans Landing Wharf (Hydrobiology 2004).
- PAHs (acenaphthalene, fluorene and phenanthrene) were above NODGDM screening levels at Evans Landing Wharf and the South Channel (Hydrobiology 2004).
- TBT was above screening during 2008.

Table 4-2  Summary of exceedences observed in past SAPs

<table>
<thead>
<tr>
<th>Year</th>
<th>95% UCL Exceedences</th>
<th>Site(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>TBT</td>
<td>Evans Landing, Humbug Wharf, Lorim Pont</td>
</tr>
<tr>
<td>2003</td>
<td>Nil</td>
<td>Nil</td>
</tr>
<tr>
<td>2004</td>
<td>TBT, PAH, Nickel</td>
<td>Evans Landing and Lorim Point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evans Landing and South Channel</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evans Landing</td>
</tr>
<tr>
<td>2008</td>
<td>TBT, PAH</td>
<td>Lorim Point</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Evans Landing</td>
</tr>
</tbody>
</table>

4.2.7 Background Contamination in the Surrounding Area

Previous SAP’s conducted in the Port of Weipa have included reference or control sites for the same suite of chemicals as the study area. No SAP has detected any background contamination in these reference sites. There is no evidence that there may be background contamination within surrounding areas to the project.

4.3 Physical Characteristics

Sediment particle size descriptions were collated during each of the sediment characterisation programs as defined within each of the SAP’s. The 2008 sediment characterisation program by SKM represents the most comprehensive of these assessments. This data represents the results of 7 dredged areas and 81 total samples. Results indicate dredged sediments consist primarily of medium to fine grained sands (~51%) and a silt and clay fraction (~37%). Coarse sands and gravels provide the remainder (~13%) (Table 4-3). Material from the South Channel, where the majority of dredged material will be removed, consists mainly of sand and gravel, with only a small amount of fine silts. The approach and departure channels are comprised of a similar composition of grain sizes, having slightly more fine silts. The shipping berths have lower sand content and higher fine silt content. A summary of the grain size distribution by dredge area is shown in Figure 4-1.
4.3.1 Characterisation of the disposal ground

Surface sediments, including the Albatross Bay spoil ground are dominated by unconsolidated layers of fine sands, silts and clays overlying firmer and more compacted clay and sand layers (URS and Le Provost Dames and Moore 2001). Previous sediment and analysis testing has included the spoil ground, which has been described as silty sandy clay, fine to course sand and shells, trace fine gravels, dark grey (GHD 2002).

Table 4-3  Weighted average of sediment fractions from all dredged areas.

<table>
<thead>
<tr>
<th>Fraction</th>
<th>South Channel</th>
<th>Evans Landing</th>
<th>Humbug Wharf</th>
<th>Lorim Point</th>
<th>Approach Channel</th>
<th>Departure Channel</th>
<th>Tug Berth Berth</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;2000µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000µm - 1000µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000µm - 500µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>500µm - 250µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>250µm - 125µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>125µm - 63µm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>63µm - 38µm</td>
<td></td>
<td></td>
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<td>&lt;38µm</td>
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<tr>
<td>Gravel</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Very coarse sand</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Coarse sand</td>
<td></td>
<td></td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>Medium sand</td>
<td></td>
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<tr>
<td>Fine sand</td>
<td></td>
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<tr>
<td>Very fine sand</td>
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<td></td>
</tr>
<tr>
<td>Coarse silt</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Fine silts and clays</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>%</th>
<th>Gravel</th>
<th>Very coarse sand</th>
<th>Coarse sand</th>
<th>Medium sand</th>
<th>Fine sand</th>
<th>Very fine sand</th>
<th>Coarse silt</th>
<th>Fine silts and clays</th>
</tr>
</thead>
<tbody>
<tr>
<td>6%</td>
<td>3%</td>
<td>4%</td>
<td>11%</td>
<td>17%</td>
<td>23%</td>
<td>7%</td>
<td>30%</td>
<td></td>
</tr>
</tbody>
</table>

Figure 4-1  Summary of particle size distributions amongst the 7 nominated dredge areas for the Port of Weipa.
5 EXISTING ENVIRONMENT

The following sections provide a description of key habitats, significant species, coastal processes, water quality, environmental management areas, and elements of cultural and economic importance identified within the marine systems surround the Port of Weipa operations. This summary is based largely on the findings of previous investigations commissioned by NQBP (and its predecessor, PCQ). The key habitats described focus on those areas adjacent to port operations, dredging, and disposal activities, including seagrass, mangroves, and sub-tidal soft sand and mud substrates.

NQBP has commissioned environmental studies at the Port of Weipa and adjacent environments as part of its innovative ecologically sustainable practices program, EcoPorts, and in adherence with permit requirements for past maintenance and capital dredging campaigns. These studies have included sediment sampling and analysis, long-term seagrass monitoring, monitoring of benthic faunal communities, water quality monitoring and hydrodynamic modelling. Table 5-1 summarises the history of environmental studies conducted at the Port of Weipa.

Table 5-1 History of environmental studies in the Port of Weipa.

<table>
<thead>
<tr>
<th>Year</th>
<th>Type of monitoring</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1995</td>
<td>Water and sediment quality</td>
<td>Larcombe &amp; Taylor 1997</td>
</tr>
<tr>
<td>1996</td>
<td>Water and sediment quality</td>
<td>Larcombe &amp; Taylor 1997</td>
</tr>
<tr>
<td>1996</td>
<td>Benthic Infauna</td>
<td>WBM &amp; LeProvost Dames and Moore 1998</td>
</tr>
<tr>
<td>1998</td>
<td>Benthic Infauna</td>
<td>WBM &amp; LeProvost Dames and Moore 1998</td>
</tr>
<tr>
<td>2000</td>
<td>Benthic Infauna</td>
<td>URS &amp; LeProvost Dames and Moore 2000</td>
</tr>
<tr>
<td>2000</td>
<td>Seagrass (dry/wet)</td>
<td>Roelofs et al. 2001</td>
</tr>
<tr>
<td>2001</td>
<td>Seagrass (dry/wet)</td>
<td>Roelofs et al. 2003</td>
</tr>
<tr>
<td>2002</td>
<td>Seagrass (dry/wet)</td>
<td>Roelofs et al. 2003</td>
</tr>
<tr>
<td>2003</td>
<td>Seagrass</td>
<td>Roelofs et al. 2006</td>
</tr>
<tr>
<td>2004</td>
<td>Water and Sediment Quality</td>
<td>PCQ 2004</td>
</tr>
<tr>
<td>2004</td>
<td>Water and Sediment Quality</td>
<td>PCQ 2004</td>
</tr>
<tr>
<td>2004</td>
<td>Seagrass, Algae and Macroinvertebrates (Lorim Point Wharf)</td>
<td>Roelofs et al. 2004a</td>
</tr>
<tr>
<td>2004</td>
<td>Seagrass, Algae and Macroinvertebrates (South Channel)</td>
<td>Roelofs at al. 2004b</td>
</tr>
</tbody>
</table>
5.1 Marine Habitats

5.1.1 Sub tidal Soft sediments

By far the dominant habitat type with Albatross Bay and the Embley River estuary are the subtidal soft sediments. Surveys concluded that seagrass and reef structures are limited to the margins of the Bay (Figure 5-1), and shallow water of the adjacent estuaries (maximum depth of seagrass recorded at ~ -2mLAT).

Surveys of benthic fauna at the Albatross Bay spoil ground and adjacent areas were undertaken in 1996, 1998, 2000, 2004 and 2009 to quantify potential impacts associated with the disposal of dredged material on benthic communities. The most recent of these surveys was conducted in May 2009 (GHD 2009b). These surveys indicate that benthic infauna communities in the port are low in abundance and diversity and dominated by opportunistic species that can adapt to the highly variable sedimentary and oceanographic environments that characterise Albatross Bay (GHD 2009b). Molluscs, crustaceans and polychaetes, are the dominant taxa.

At a gross taxonomic level, the infauna communities are similar at the old and new spoils grounds, areas adjacent to the spoil grounds, and more distant control sites; but at finer taxonomic resolution there is a high level of spatial variability (WBM 2003, GHD 2009b). This spatial variability is thought to result from frequent disturbances, including not only spoil disposal but also fisheries and the dynamic oceanography and sedimentary processes as well as major events such as cyclones and major freshwater runoff events.

5.1.2 Mangroves

The Albatross Bay mangrove assemblage is extremely diverse and is the most extensive system of mangroves on the eastern Gulf of Carpentaria. Thirty-six species of mangrove have been recorded on
western Cape York and 30 of these are found in Albatross Bay (Duke, 2006). The mangrove assemblage of the Albatross Bay area is dominated by closed Rhizophora, Avicennia and Ceriops forests (Figure 5-1). The Embley River, in which the Port of Weipa is located, supports approximately 80 km² of mangroves (GHD 2005).

The mangrove communities provide habitat for various marine fauna, including nursery habitat for species of fisheries significance including barramundi (Lates calcarifer), banana prawns (Peneaus merguiensis) and mud crabs (Scylla serrata). Mangroves provide a structurally complex habitat and are a source of carbon that to other areas, contributing widely to food webs elsewhere in the region.

5.1.3 Seagrass

Significant seagrass and macroalgal communities are present within the extensive intertidal sand and mud flats and shallow subtidal areas of Albatross Bay and its associated river and estuary systems (GHD 2005) (Figure 5-1 and Figure 5-2).

Long-term seagrass monitoring has been conducted in the Weipa region by the former Queensland Department of Primary Industries and Fisheries (now DAFF) since 2000. The aims of the long-term seagrass monitoring were to:

- Measure biomass and species composition of selected seagrass monitoring meadows;
- Map the distribution and confirm the species composition of seagrasses in the Intensive Monitoring Area (IMA); and
- Map the distribution of seagrass within the entire port limits (i.e. outside the IMA) every three years.

Initial monitoring surveys conducted between 2000 and 2002 provided baseline information on species composition, distribution, abundance and seasonal variation of seagrasses within Port limits (Rasheed et al. 2008). Little seasonal variation was observed in the baseline surveys and therefore it was recommended that annual monitoring of seagrass beds would provide an appropriate temporal scale to assess the potential impacts of Port activities. However, because the area within Port limits is very large, subsequent annual monitoring has focussed on seagrass beds in the immediate vicinity of the Port and associated infrastructure or activities (designated as the Intensive Monitoring Area, or IMA) (Rasheed et al. 2008). Annual monitoring, conducted in September each year, includes mapping of seagrass beds within the IMA and measurements of species composition and biomass in selected ‘core monitoring meadows’ that were determined to be representative of seagrass communities in the area (Rasheed et al. 2008). Additional aerial surveys of the entire area within Port limits is conducted every three years (most recently in 2008), to map seagrass beds in areas outside the IMA.

The results of seagrass monitoring have been used by NQBP to assess the general health of the marine environment, on the basis that seagrass meadows are a good indicator of overall ecosystem health, and more specifically to monitor the seagrass communities themselves. Furthermore, monitoring has assisted NQBP in formulating environmental management measures for the Port (Rasheed et al. 2008).

Table 5-2 summarises the seagrass surveys that have been undertaken at the Port since 2000.
Table 5-2  Seagrass monitoring at the Port of Weipa.

<table>
<thead>
<tr>
<th>Survey</th>
<th>Survey types</th>
</tr>
</thead>
<tbody>
<tr>
<td>April 2000</td>
<td>Baseline</td>
</tr>
<tr>
<td>September 2000</td>
<td>Baseline</td>
</tr>
<tr>
<td>April 2001</td>
<td>Ongoing monitoring</td>
</tr>
<tr>
<td>September 2001</td>
<td>Ongoing monitoring</td>
</tr>
<tr>
<td>April 2002</td>
<td>Ongoing monitoring</td>
</tr>
<tr>
<td>September 2002</td>
<td>Ongoing monitoring</td>
</tr>
<tr>
<td>September 2003</td>
<td>Long-term monitoring</td>
</tr>
<tr>
<td>September 2004</td>
<td>Long-term monitoring</td>
</tr>
<tr>
<td>September 2005</td>
<td>Long-term monitoring</td>
</tr>
<tr>
<td>September 2006</td>
<td>Long-term monitoring</td>
</tr>
<tr>
<td>September 2007</td>
<td>Long-term monitoring</td>
</tr>
<tr>
<td>September 2008</td>
<td>Long-term monitoring</td>
</tr>
</tbody>
</table>

Results from the 2007 seagrass monitoring showed a reversal of a previous trend of declining seagrass densities within the Port of Weipa. While most of the monitoring sites remained below densities recorded in the initial baseline surveys (2000-2002), the stabilisation and recovery of seagrass populations was evident in the 2007 survey (Rasheed et al. 2008). However, results from the 2008 survey indicated substantial declines in the density of species for a number of seagrass meadows compared with the previous 8 years of monitoring (Chartrand and Rasheed 2009). Large declines in population densities were particularly evident for the intertidal *Enhalus acoroides* meadows within the port, and particularly at the monitoring site opposite Lorim Point where *E. acoroides* reaching a record low biomass in the 2008 survey.

The declines in seagrass densities observed in previous years (pre-2007) were attributed to natural variation in local and regional climate, including low rainfall, reduced runoff, increased air temperatures and more intense solar irradiation, and not to impacts of Port development and operation (Rasheed et al. 2008). While many of the same climatic conditions persisted in 2007, a reduction in day time solar irradiance may have explained the seagrass recovery observed. In 2008, the reduction in biomass was partly attributed to the influence of local and regional climatic conditions however; the authors could not discount anthropogenic influences as a contributing factor in biomass declines (Chartrand and Rasheed 2009).

The 2008 annual seagrass monitoring report outlined that while the recent declines in seagrasses meadows in Weipa were similar to declines observed in other areas around Queensland, the large and consistent declines in *E. acoroides* meadows warranted closer examination (Chartrand and Rasheed 2009). In examining these declines it is important to consider the ecology of *E. acoroides*
which may indicate that increases in turbidity (such as released during dredging) may not have been the major contributing factor. *Enhalus acoroides* has large flat leaves (30-100 cm long) that at low tide float on the water surface, which reduces the impact of sedimentation and light reductions from turbidity (Cabaco et al. 2008).

JCU (formerly within DAFF/ DEEDI) and NQBP continue to develop further opportunities to enhance the monitoring program into the future to enable a better understanding of the declines in this species. Techniques and additional management measures will be integrated into the whole-of-port management for Weipa. Continuing the long-term seagrass monitoring program will provide port and fisheries management with information on the status and trends of the habitat present within the Weipa region.

### 5.1.4 Rocky Reef

Fringing and nearshore rocky reefs occur on many parts of western Cape York and are represented in parts of Albatross Bay, including parts of the southern foreshore and Jantz/Duyfken Point (Baker and Sheppard 2006). Naturally high turbidity levels in the Gulf of Carpentaria mean that only small areas of fringing reefs are present in this area (GHD 2005) (Figure 5-11). Rocky reefs are located in some of the shallower areas around Albatross Bay near Duyfken Point, Mangrove Point and Kerr Point. Reef areas are also present in deeper waters offshore at Westminster Reef, Three Mile Shoals west of Pera Head and in Jackson Channel (GHD 2005). The occurrence of hard and soft coral, sponges and algae is dependant upon the prevailing turbidity, deposition and light regimes. Drop video inspections undertaken over rocky reef within waters surrounding Weipa has identified the presence of scattered algal and sponge dominated systems with turbid water systems (pers com Tom Koskela, 2011). The abundance and diversity of hard and soft coral species increases as water quality improves towards the open waters of the Gulf. Headlands to the south, between Boyd Point and Thud Point are known to present a mosaic of well established hard and soft corals, algae and sponges over lateritic/ironstone reef systems (pers com Tom Koskela, 2011).
Figure 5-1  Marine habitats of Albatross Bay and the Embley River Estuary.
Figure 5-2  Seagrass meadows present in and around the Port of Weipa (2008).
5.2 Coastal Processes

Albatross Bay grades gently from a depth of ~17m to -15m LAT along its western extents, to -10m LAT at the existing spoil disposal ground, approximately central to the Bay. The width of the Bay constricts from ~47km at its widest, between Duyfken Point and Boyd Point, to ~8km as it nears the junction of the Mission and Embley River systems and shallows to ~5m LAT. Bathymetry of the study area is provided within Figure 5-1.

5.2.1 Currents and tidal range

The mean spring and neap tidal ranges are 2.2 m and 0.7 m (Figure 5-3), the mean tidal current velocity is 0.7 m/s (URS 2002).

![Figure 5-3 Spring and neap tidal range (Humbug Wharf 2006)](image)

5.2.2 Soft sediment dynamics

Extensive hydrodynamic modelling was conducted for the Port of Weipa as part of the capital dredging EIS prepared by GHD (2004). This modelling has been extended for the preparation of this LTDMP (GHD 2009). The 2004 hydrodynamic modelling concluded that during the dry season (April to November), when conditions are generally calm relative to the wet season, currents in Albatross Bay are tidally driven and alternately move clockwise and anticlockwise with a magnitude that depends on the tidal range. Residual currents in the South Channel are dominated by the flood tide, while in Jacksons Channel currents are dominated by the ebb tide.

The modelling also indicated that a substantial change in the direction and magnitude of tidal currents results from the interaction of tides and waves during storm events. Associated resuspension and transport of unconsolidated silty seabed sediments by tidal currents and strong wind and wave action (i.e. storm events) had previously been described as a key hydrodynamic process occurring in Albatross Bay (LeProvost Dames & Moore, 1995; WBM and Dames & Moore, 1998; WBM 2003).
The 2009 modelling indicates that Albatross Bay is open to extremes in sediment movement dynamics resulting from the passage of cyclones and tropical lows, which increase wind and wave activity. Materials mobilized under these conditions tend to disperse to the southeast. For example, modelling of the passage of Tropical Cyclone Jim in 2006 simulated a loss of approximately 380,000 m$^3$ of spoil from the spoil ground alone. Under normal conditions (non cyclonic) materials tend east due to the dominant effect of the flooding tide, though forces of mobilisation are limited.

### 5.3 Wind and Waves

DEHP operates a wave buoy site in Albatross Bay. This data collection program has been in operation since 1978. Figure 5.4 presents a wave height summary prepared by the Queensland Environmental Protection Agency (2004). December to April presents a distinct elevation in wave height, coinciding with the wet season period. Mean monthly wave heights ($H_{sig}$) peak around February each year (~0.6m), maintaining a mean of 0.3m during the dry season.

The Weipa region experiences generally calm seas during the dry season (May to November). Afternoon sea breezes may generate local seas, with minor swell. Tropical cyclone and monsoonal storms drive the development of elevated wave conditions during the wet season. Wind conditions are summarised within Figure 5-5.
Figure 5-4  Monthly average wave heights (Hsig) for the Weipa wave rider bouy (1978-2004). Queensland Environmental Protection Agency (2004). (Hsig represents the mean of the top third of wave readings for a given time period).
Figure 5-5 Wind rose data from the Weipa Airport.
5.4 Water Quality

Albatross Bay has experienced minimal water quality impacts in the past due to the relatively undeveloped catchment, the inert nature of the exported material (bauxite), a low population and lack of industries with the potential to release chemical pollutants into the waterway (GHD 2005). NQBP commissioned baseline water and sediment quality monitoring for the Port of Weipa in 1995 and 1996. This resulted in a series of management actions and local guiding values for water and sediment quality for the Port (Larcombe and Taylor 1997). NQBP has conducted water quality monitoring of the Inner Harbour (Figure 5-6) as part of the EcoPorts program, the most recent water quality monitoring was conducted in 2006.

5.4.1 Temperature

Surface water temperature in Albatross Bay ranges between 24 °C and 31 °C, with a typical winter range of 24 – 29 °C (mean of 25.44 °C), and a summer range of 30 – 31 °C (mean of 30.45 °C) (URS 2002; Neale and Berkelmans 2007).

5.4.2 Turbidity

During the wet season (October to April), discharges from the surrounding estuary and river systems transport plumes of brackish, turbid water into Albatross Bay (Larcombe and Taylor 1997). Turbidity levels can also vary substantially with wind and swell as a result of local physical forcing and mobilisation of fine sediments (GHD 2005). Time-series turbidity measurements recorded at the spoil ground approximately one metre above the seabed during the 1998 dry season indicated that background turbidity was typically low, in the range of 5 – 12 NTU (nephelometric turbidity units). However, periods of elevated turbidity can occur under elevated wind and wave conditions. For example, water quality measurements taken during the wet season indicated that ambient conditions during a period of elevated sea state were generally around 30 – 40 NTU, with peaks greater than 100 NTU recorded at the seabed (GHD 2005). During calmer periods in the wet season, turbidity was approximately 10 – 15 NTU (GHD 2005). It is understood that finer sediments on the surface of the seabed contribute to background turbidity in the water column during calm conditions, being mobilised by the flood and ebb tides (WBM and Dames & Moore 1998).

The Environmental Management Plan (EMP) for the 2006/2007 capital dredging campaign included a turbidity monitoring program, which was conducted prior to dredging to determine background turbidity, and during the first two weeks of dredging works to ensure that the works did not significantly impact water quality (PCQ 2006). Turbidity monitoring demonstrated that dredging was undertaken in full accordance with NQBP’s State and Commonwealth approvals (PCQ 2006). It was therefore concluded that any impacts of turbidity on nearby seagrass meadows were likely to be minimal and of a temporary nature (PCQ 2006).

5.4.2.1 Modelled Spoil Disposal

The highest concentration of suspended sediment are returned from the disposal ground at the point of discharge. Based on the adopted assumption this represents approximately 1200 mg/L.
Concentration maps depicting the extent of the turbidity plumes generated during the process of disposal of dredged material are provided within Appendix B.

The dispersion plume is dependent on the direction and strength of tidal streams, winds, waves and the characteristics of the sediment being released. The footprint of the plume as defined by the 10 mg/L contour above background turbidity assumes various shapes - ellipsoidal oriented in the NW to SE direction or partially deflected along the coast to the south of the Embley River (Appendix B). Maximum incursions are of the order of 10-12 km. Maximum incursions of the plume as defined by the 20 mg/L contour above background turbidity rarely exceed 10 km; and under the simulated tidal, wind and wave conditions, the outer extent of the plume as defined by the 10 mg/L contour above background turbidity did not encroach on any of the environmentally sensitive areas along the coast or at the mouth of the Embley River.

Model validation comparison

Validation assessments undertaken by NQBP, pursuant to the Ocean Disposal Permit conditions of approval, concluded that predictive modelling remains sufficiently conservative as to the magnitude and distribution of the predicted disposal plumes (GHD, 2011). Spatial predictions and associated concentrations do vary between the original assessment conducted in 2008, and that reassessed using field derived data obtained during the 2010 dredge campaign (Appendix B). This is principally due to changed settling velocity and particle size details applied to the revised model. Comparison between the distribution plots demonstrates a greater footprint, with the plume tending to propagate further west and south than the initial model runs. The plume also approaches the coastline within Albatross Bay, though remains outside the distribution of seagrass communities.

It is important to note that field measurements obtained during the 2010 maintenance dredging campaign reported concentrations below that generally predicted by the model (two turbidity loggers were deployed west and southeast of the disposal ground). Time series comparison between the field data and extracts from the model at the same locations are included at the end of Appendix B. The following has been identified within these time series plots:

- Several of the spikes predicted by the model were reported within the field data;
- Sustained elevations predicted by the model were not replicated within the field data, suggesting over estimation with respect to the residual effects of the plume (perhaps a function of settling velocity and effective particle size distributions);
- The overestimation of plume residuals would potential lead to an overestimation of the plume extents; and
- While the model under predict several plume events, the general sustained turbidity of the model represents an over estimation of between 2 to 10 times that recorded in the field, and as such can be considered to provide an overly conservative estimation of the plume dispersion and concentration.
5.5 Marine fauna

The Gulf of Carpentaria is an important fish habitat; unique due to its relatively undisturbed shallow, tropical embayment (Hart 2002). Traditional, recreational and commercial fishing occurs within the tidal creeks, estuaries and open waters of Albatross Bay (GHD 2005). Weipa is also located within the Northern Prawn Fishery (NPF), which is managed by the Australian Fisheries Management Authority (AFMA) (GHD 2005). The NPF is a multi-species fishery that targets banana, tiger and endeavour prawns (Hart 2002). There is a proposed Fish Habitat Area (FHA) for Albatross Bay (see Section 5.4).

There are seven sea turtle species potentially present within the Weipa area, as outlined in Table 3-1. All of these species are listed under the Environment Protection and Biodiversity Protection Act 1999 (Commonwealth) (EPBC Act 1999).

5.5.1 EPBC Act Listed Threatened and Migratory Species

This section identifies the threatened species and migratory marine species that are Matters of National Environmental Significance (MNES) under the Environment Protection and Biodiversity Protection Act 1999 (Commonwealth) (EPBC Act 1999).
Conservation Act 1999 (Commonwealth) (EPBC Act) that occur, or potentially occur in the Project area. Reference to those species listed within the Queensland Nature Conservation Act is also provided (Table 5-3).

**Table 5-3 Threatened and migratory marine species status**

<table>
<thead>
<tr>
<th>Species name</th>
<th>EPBC Act</th>
<th>NC Act</th>
<th>Preferred habitat in the Weipa/Cape York region</th>
<th>Likelihood of occurrence within the Project area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estuarine Crocodile (<em>Crocodylus porosus</em>)</td>
<td>Migratory species</td>
<td>Vulnerable</td>
<td>Estuarine and inshore waters</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Indo-Pacific Humpback Dolphin (<em>Sousa chinensis</em>)</td>
<td>Migratory species</td>
<td>Near threatened</td>
<td>Inshore coastal waters to a depth of approximately 20 metres.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Bottlenose Dolphins (<em>Tursiops aduncus</em> and <em>Tursiops truncatus</em>)</td>
<td>—</td>
<td>—</td>
<td>Inshore and nearshore coastal waters to a depth of approximately 50 metres.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Australian Snubfin Dolphin (<em>Orcaella heinsohni</em>)</td>
<td>Migratory species</td>
<td>Near threatened</td>
<td>Inshore coastal waters to a depth of approximately 20 metres.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Bryde’s Whale (<em>Balaenoptera edeni</em>)</td>
<td>Migratory species</td>
<td>—</td>
<td>Pelagic environment including principally continental shelf waters but also extending into coastal and inshore waters</td>
<td>Possible</td>
</tr>
<tr>
<td>Humpback Whale (<em>Megaptera novaeangliae</em>)</td>
<td>Vulnerable Migratory species</td>
<td>Vulnerable</td>
<td>Pelagic environment, including but not limited to coastal waters. No feeding areas are located in the Gulf of Carpentaria and the Gulf of Carpentaria is not along the migratory path of the species.</td>
<td>Unlikely</td>
</tr>
</tbody>
</table>

*Not within the migratory path of the species.*
<table>
<thead>
<tr>
<th>Species name</th>
<th>EPBC Act</th>
<th>NC Act</th>
<th>Preferred habitat in the Weipa/Cape York region</th>
<th>Likelihood of occurrence within the Project area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Killer Whale <em>(Orcinus orca)</em></td>
<td>Migratory species</td>
<td>—</td>
<td>Pelagic environment primarily limited to the continental shelf.</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Blue Whale <em>(Balaenoptera musculus)</em></td>
<td>Endangered Migratory species</td>
<td>—</td>
<td>Pelagic environment near the edge of the continental shelf. They are unlikely to occur in the Gulf of Carpentaria, preferring the cooler waters of southern Australia.</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Dugong <em>(Dugong dugon)</em></td>
<td>Migratory species</td>
<td>Vulnerable</td>
<td>The species prefers shallow seagrass beds dominated by pioneering species of species such as <em>Halophila</em> spp.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Green Sawfish <em>(Pristis zijsron)</em></td>
<td>Vulnerable</td>
<td>—</td>
<td>Occurs in estuaries, river mouths, embayments and along sandy and muddy beaches.</td>
<td>Known to occur</td>
</tr>
<tr>
<td>Narrow Sawfish <em>(Anoxypristis cuspidata)</em></td>
<td>—</td>
<td>—</td>
<td>Occurs in estuaries, river mouths, embayments and along sandy and muddy beaches.</td>
<td>Known to occur</td>
</tr>
<tr>
<td>Dwarf Sawfish <em>(Pristis clavata)</em></td>
<td>Vulnerable</td>
<td>—</td>
<td>Occurs in estuaries, river mouths, embayments and along sandy and muddy beaches.</td>
<td>Likely</td>
</tr>
<tr>
<td>Whale Shark <em>(Rhincodon typus)</em></td>
<td>Vulnerable</td>
<td>—</td>
<td>Pelagic environment near the edge of the continental shelf. The Gulf of Carpentaria</td>
<td>Unlikely</td>
</tr>
<tr>
<td>Species name</td>
<td>EPBC Act</td>
<td>NC Act</td>
<td>Preferred habitat in the Weipa/Cape York region</td>
<td>Likelihood of occurrence within the Project area</td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
<td>--------</td>
<td>-------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Green Turtle <em>(Chelonia mydas)</em></td>
<td>Vulnerable</td>
<td>Vulnerable</td>
<td>Coastal waters, in particular seagrass beds. The Wellesley Island area in the south-western corner of the Gulf of Carpentaria is a significant nesting site.</td>
<td>Likely</td>
</tr>
<tr>
<td>Hawksbill Turtle <em>(Eretmochelys imbricata)</em></td>
<td>Vulnerable</td>
<td>Vulnerable</td>
<td>Hawksbill Turtle nesting sites occur on islands adjacent to Arnhem Land and north-eastern Cape York. The main feeding habitat for the species tends to be tidal and sub-tidal reefs.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Flatback Turtle <em>(Natator depressus)</em></td>
<td>Vulnerable</td>
<td>Vulnerable</td>
<td>Coastal waters including but not limited to shallow water habitats. Nesting is confined to Australia. The species forages in shallow inshore areas.</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Olive Ridley Turtle <em>(Lepidochelys olivacea)</em> (also known as the Pacific Ridley Turtle under the NC Act)</td>
<td>Endangered</td>
<td>Endangered</td>
<td>Coastal waters including but not limited to reefs. The species forages in benthic habitats over a range of depths from a few metres to hundreds of metres. Low density nesting has been historically</td>
<td>Known to Occur</td>
</tr>
<tr>
<td>Species name</td>
<td>EPBC Act</td>
<td>NC Act</td>
<td>Preferred habitat in the Weipa/Cape York region</td>
<td>Likelihood of occurrence within the Project area</td>
</tr>
<tr>
<td>--------------</td>
<td>----------</td>
<td>--------</td>
<td>------------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
<tr>
<td>Leatherback Turtle (<em>Dermochelys coriacea</em>)</td>
<td>Endangered</td>
<td>Migratory species</td>
<td>Pelagic environment. The Albatross Bay area is identified as a potential foraging area for the species.</td>
<td>Likely</td>
</tr>
<tr>
<td>Loggerhead Turtle (<em>Caretta caretta</em>)</td>
<td>Endangered</td>
<td>Migratory species</td>
<td>Coastal waters including subtidal and intertidal coral and rocky reefs and seagrass meadows as well as soft-bottomed habitats.</td>
<td>Likely</td>
</tr>
</tbody>
</table>

EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth)
NC Act = *Queensland Nature Conservation Act 1992* (Queensland)

### 5.6 Fisheries

#### 5.6.1 Commercial

The Gulf of Carpentaria hosts commercial fisheries that are managed independently by the Queensland Government, Commonwealth Government, and jointly by the Commonwealth and State through the Queensland Fisheries Joint Authority (QFJA). The Queensland Government manages the commercial mesh net fisheries and crab fisheries through DAFF. The Commonwealth Government manages the Northern Prawn Fishery (NPF) through the Australian Fisheries Management Authority. The line fishery is managed through the QFJA. There is also a Developmental Finfish Trawl Fishery managed through the QFJA. The recreational and charter fisheries are managed by DAFF.

The NPF is Australia’s most valuable commercial fishery, with an annual value of production averaging $95 million. The main species caught in the NPF are tiger prawns and banana prawns, targeted at different times and generally in different locations. Albatross Bay is known to be an important nursery area for the juvenile tiger and banana prawns that are the principal target species in the Northern Prawn Fishery area. Banana prawns migrate from estuarine areas into the Gulf of Carpentaria for spawning from September to November and March to May. At low tide, juvenile and sub-adult prawns are most abundant in small tidal creeks and gutters that drain from mangrove forests (Vance *et al.* 1998; Kenyon *et al.* 2004).
The brown tiger prawn (*Penaeus esculentus*) and the grooved tiger prawn (*Penaeus semisulcatus*) are abundant in the Gulf of Carpentaria. Brown tiger prawns spawn throughout the year, with peak spawning occurring from August to September (Kenyon *et al.* 2004). Grooved tiger prawns’ spawning peaks between August and October, with a minor peak in the months of January and February. Juvenile tiger prawns are generally associated with vegetated habitats (particularly large seagrass beds) in the vicinity of estuaries (Haywood *et al.* 1995; Rothilsberg *et al.* 1996). Other prawn species that occur in abundance in Albatross Bay are Endeavour prawns (*Metapenaeus endeavouri* and *Metapenaeus ensis*) and eastern king prawns (*Penaeus plebejus*). Tiger prawn fishing takes place in the western Gulf of Carpentaria from August to November, with little catch recorded in the Weipa statistical area or in the eastern Gulf of Carpentaria in general. The banana prawn season extends from April to June, with the Weipa statistical area being a significant area of production (Banana prawns are targeted in waters less than 20m deep. Trawling for prawns occurs in the outer part of Albatross Bay and to the north and south of Weipa (URS 2002).

**Figure 5-7  Prawn Catch – eastern Gulf of Carpentaria region of the Northern Prawn Fishery**

The Gulf of Carpentaria Inshore Finfish Fishery is a commercial mesh net fishery managed by the Queensland Government that extends from the Queensland – Northern Territory border to Slade Point on the north-west coast of Cape York Peninsula. The rivers flowing into Albatross Bay are closed to the fishery. The creeks and rivers that drain into Albatross Bay are the most important mud
crab harvesting areas in the Gulf of Carpentaria (Williams 2002). Mud crabbing generally focuses on areas directly adjacent to large mangrove stands, including small creeks draining such stands.

5.6.2 Recreational Fishery

Recreational fishing is a popular pastime in the Project area and a range of species including barramundi, mangrove jack, fingermark, threadfins and mackerel are caught (Baker and Sheppard 2006). It is estimated that 9% of tourists who visit Weipa do so primarily to fish (GHD 2005). The charter fishing businesses based at Weipa principally fish at the reefs in Albatross Bay, including nearby Pera Head and Thud Point, the rivers and creeks that drain into it, and the sandflats that extend from the Embley River south to Norman Creek.

5.7 Protected Areas

5.7.1 Pine River Bay declared Fish Habitat Area

NQBP was actively involved with DAFF (Fisheries Queensland) and other key stakeholders in the consultation associated with the declaration of a Fish Habitat Area near Weipa.

After extensive consultation with the traditional owners of the area, the Pine River Bay Fish Habitat Area was declared in November 2011 (http://www.nprsr.qld.gov.au/managing/areasummaries/pineriver.html).

The Pine River Bay FHA is well distanced from the existing Weipa channel and possible future extensions, and would not be affected by the continued utilisation of the spoil ground.

5.8 Introduced Marine Pests

Introduced marine species (‘exotic’ species) are species translocated to regions outside their natural range, typically by the passage of vessels nationally and internationally. Where these species present a threat to human health or environmental and economic values, they are termed a ‘pest’. Outbreaks of marine pests are an obvious possible risk at Ports trading with international clients.

Translocation of marine pests may occur via:

- Ballast water - used to control the trim and draft of a vessel;
- Fouling - encrusting organisms via fouling of vessels (e.g. hulls, propellers, intake grates etc.); and
- Other - accidental or intentional releases from the aquarium industry.

The Port of Weipa was surveyed for introduced marine pests in October 1999. This survey was conducted in accordance with the methodology established by CSIRO’s Centre for Research on Introduced Marine Pest Species (CRIMP). No designated marine pest species were detected at the Port of Weipa (Hoedt et al 2001).
One recognised introduced species, *Caulerpa racemosa*, was identified, but was not abundant, suggesting it is not impacting native biota (Hoedt et al 2001). One cryptogenic species, the barnacle *Balanus amphitrite*, that has been previously identified in Australian waters was also identified. As the area to be dredged along the South Channel does not provide suitable habitat for either of these species, there is minimal risk of translocation of these species to the spoil ground during dredging.

Following the detection of the black-stripe mussel at the Port of Darwin in 1999 and 2000, NQBP deployed artificial settling plates at two sites in the port. These plates are retrieved and checked every three months, with no pest species identified so far.

NQBP commissioned an Asian Green Mussel survey in 2006 to identify any evidence of the species at the Port of Weipa. No presence of the AGM mussel was found in any of the 118 samples taken in Weipa in the field survey. No identifiable mussel of any species was found in the survey.

In the absence of introduced marine pest species at the Port of Weipa, the translocation of pest species from the dredge area to the spoil ground is not considered to be a risk (GHD 2005).

### 5.9 Existing and potential users of the Port

There are a number of port users of Weipa, both commercial and recreational. The largest commercial user of the port is Rio Tinto, who export bauxite product to other countries, and supply local markets. Rio Tinto, who have been operating at the port for over 30 years (Comalco and Alcan), operate the onshore bauxite handling, processing and stockpiling facilities running to Lorim Point for shiploading. Exporting of fuel and general cargo also occur at the Port through private operators. No future potential port users have been identified by NQBP. Use of the port is primarily for Rio Tinto mining operations, and this is anticipated to continue into the future.

The Gulf of Carpentaria is an important fish habitat area (Hart 2002). As a result, there a number of recreational fishers and commercial fishing operators who utilise the Port waters.

Over the 40 years that dredging has occurred in the Port of Weipa, there have never been any issues with other users of the Port.

### 5.10 Cultural Heritage

#### 5.10.1 Indigenous

A large number of clans have historically occupied land in the vicinity of Albatross Bay, many of which now live within a number of Indigenous communities along the western coast of Cape York. The cultural heritage value of the areas around Albatross Bay and the port is defined by both significant sites and places and by the presence of natural resources that are culturally significant.

Traditional Owners carry out commercial fishing for prawns in Albatross Bay, which contributes to the economy of a number of local communities. They also hunt for turtle and dugong within Albatross Bay. Cultural heritage impacts have been investigated previously when the capital and maintenance dredging works occurred in 2006 at the Port of Weipa.
The area around Chwahn sandbank has been identified by Traditional Owners as an area of significance due to the location of two story sites:

- Thungganh story is located in the area around the Chwahn (Jackson) sandbank; and
- A’Ang story is located at the base of the existing Channel.

GHD (2005) noted that the capital dredging works in 2006 would not impact these cultural story sites. Consultation with Traditional Owners regarding future maintenance dredging did not identify any issues.

### 5.10.2 European

A number of exploration parties studied the Weipa area from 1845 to 1862. Cape York Peninsula covers approximately 137,200 km² and comprises of only 0.1% of the Australian population, with a population of about 18,000 people (this number includes Thursday and Horn Islands).

The Town of Weipa is a mining town developed by Rio Tinto in the late 1950’s to service the development of the bauxite mining operations. Although the town is geographically within the local government area of Cook Shire, the Town of Weipa formally remains under Rio Tinto’s management, with the Weipa Town Office performing administrative functions and representing residents.

### 5.11 Breeding periods

The maintenance dredging activities at the Port of Weipa are considered to have a low risk of potential impact to marine species and their natural behaviours, including breeding. Unlike other ports across Australia, there is no peak breeding period for key marine species where a ‘dredge window’ is required. A summary of potentially sensitive stages and their timing for key marine species are identified below.

**Table 5-4 Occurrence of reproductive strategies for species conservation and commercial significance within the Weipa region**

<table>
<thead>
<tr>
<th>Species</th>
<th>Sensitive reproductive strategy</th>
<th>Timing</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Turtles</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Flatback</td>
<td>Peak nesting season</td>
<td>Year round</td>
</tr>
<tr>
<td>Olive Ridley</td>
<td>Peak nesting season</td>
<td>April – June</td>
</tr>
<tr>
<td><strong>Prawns</strong></td>
<td>Migration of planktonic larvae onshore and juveniles offshore</td>
<td>August – April</td>
</tr>
<tr>
<td><strong>Barramundi</strong></td>
<td>Breeding season</td>
<td>November - February</td>
</tr>
</tbody>
</table>

The annual maintenance dredging campaigns are scheduled to best avoid potential impact to the breeding cycles and ensure best wind and wave climate conditions for ease and safety of operations.
6 IMPACTS OF DREDGING AND DISPOSAL

Impact assessment involves assessing the potential effects of impacting processes on the existing environment, via a risk based approach. The use of such an approach is widely adopted in environmental impact assessment and review of anthropogenic impacts on the environment in general (e.g. Fletcher, 2005; Thomas and Elliott, 2005; Astles et al., 2006). Risk assessment is the process of assigning the likelihood of occurrence of an impact against the predicted consequence. The product is the definition of a risk level being assigned to each impact. The level of risk can then be used as a guide to determine the nature and extent of environmental management required for each environmental aspect to reduce risk where possible.

The potential environmental risks associated with the Weipa maintenance dredging program are assessed herein through a method consistent with the Australian Standards Risk Assessment Methodology (AS/NZS 4360) and having regard for Standards Australia’s Handbook HB203:2006 – Environmental Risk Management, Principles and Process. An overall risk level will be determined based on the likelihood of a particular impact occurring and the consequences associated with the impact.

The following key steps have been adopted in detailing this impact assessment, and are provided to best guide the reader in explaining the derived risk assessment. The effectiveness of mitigation and management measures are based on practical experience and available information from local study. Key steps within the adopted process include:

- Definition of sensitive receptors – This step provides a summary of receptors; habitats, significant species and physical environmental values (i.e. marine water and sediment quality) which may be influenced by maintenance dredging (see Section 5.0).

- Impact identification – This step defines proposed dredging and disposal process which may result in impacts to the environment, specifically the receptors. Based on these impacting processes a range of predicted impacts are identified, these affects may be shared amongst receptors.

- Consequence – With receptors and impact defined, a number of criteria are applied in critically reviewing each impact to quantify their significance upon receptors. Considerations include the duration of affect, extent of the impacted area, present state of knowledge, proximity to impact, species habitat utilisation characteristics, available alternative habitat, rarity, and natural variations to ambient conditions, and assimilative capacity. This information may be based upon present understanding of the receptors and impacts, from literature, predictive modelling and site specific study.

- Risk assessment – The final step in the impact assessment process is the definition of applicable risks to the receptors. The potential environmental risks and impacts associated with maintenance dredging will be assessed through a method consistent with the Australian Standards Risk Assessment Methodology (AS/NZS 4360) and having regard for Standards Australia’s Handbook HB203:2004 – Environmental Risk Management, Principles and Process. An overall risk level will be determined.
Risk treatment - Opportunities for treatment of these risks are then identified, forming mitigation measures for each impact. This defines practical measures proposed to limit the magnitude and duration of such impacts. Mitigation may include design changes, or adoption of alternative operational methods. Whatever the proposed control, an approach to auditing (monitoring, reporting and defined management response) is also recommended.

The mitigation measures and approaches to monitoring and auditing are then presented within the following section, Management Strategies and Actions.

The following tables (Table 6-1, Table 6-2 and Table 6-3) outline the method of analysis used in the assessment risk assessment.

**Table 6-1 Measure of Likelihood**

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptor</th>
<th>Description</th>
</tr>
</thead>
</table>
| A     | Almost Certain | • Is expected to occur in most circumstances.  
|       |             | • 90 – 100% of the time |
| B     | Likely      | • Will probably occur in most circumstances.  
|       |             | • Over 25% of the time but not every time. |
| C     | Possible    | • Might occur at some time.  
|       |             | • Up to 25% of the time. |
| D     | Unlikely    | • Could occur at some time.  
|       |             | • Improbable. |
| E     | Rare        | • May occur only in exceptional circumstances.  
|       |             | • Less than 1% of the time |

**Table 6-2 Measure of Consequences**

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptor</th>
<th>Description</th>
</tr>
</thead>
</table>
| 1     | Extreme    | • Significant harm with widespread effect. Recovery longer than one year. Limited prospect of full recovery.  
|       |             | • Breaks in licensing approval and/or conditions and/or the law in general.  
|       |             | • Toxic pollutant release off-site with detrimental effects.  
|       |             | • Death.  
|       |             | • Extreme financial loss. |
| 2     | Major      | • Significant harm with local effect. Recovery longer than one year.  
|       |             | • Extensive injury.  
|       |             | • Does not conform to development application conditions, policy |
Table 6-3 Qualitative Risk Analysis Matrix – Risk Rating

<table>
<thead>
<tr>
<th>Level</th>
<th>Descriptor</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Negligible</td>
<td>• No impact on baseline environment. Localised to point source. No recovery required. • No injury. • Low financial loss.</td>
</tr>
<tr>
<td>4</td>
<td>Minor</td>
<td>• Localised within site boundaries. Recovery measurable within one month of impact. • On-site release immediately contained. • First aid treatment required. • Medium financial loss</td>
</tr>
<tr>
<td>3</td>
<td>Moderate</td>
<td>• Moderate harm with possible wider effect. Recovery in one year. • Off-site release contained with outside assistance. • Medical treatment required. • High financial loss.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or general practice. • Off-site release with major detrimental effects.</td>
</tr>
</tbody>
</table>

Table 6-3 determines the level of risk attributed to each environmental impact after consideration of the likelihood and consequence of each impact, and Table 6-4 can be used to determine the management required following risk classification. Risk assessment for the Port of Weipa dredging campaign is detailed within details the process and outcome of the risk assessment.
Table 6-4  Risk Rating and Required Management Level

<table>
<thead>
<tr>
<th>Risk Rating</th>
<th>Required Management Level</th>
</tr>
</thead>
</table>
| Extreme (E) | - Extremely or significantly impacting activity, which requires a high level of management.  
              - Immediate action required. |
| High (H)    | - Requires further management planning to ensure that environmental issues are addressed.  
              - Requires additional investigation to confirm the level of risk. |
| Moderate (M)| - Managed by utilising standard procedures or guidelines.  
              - May be managed as part of on-going site management. |
| Low (L)     | - Certain activities, which offer negligible impacts on an infrequent basis, may be regarded as insignificant given current levels of control.  
              - The risk of the activity is accepted without applying additional management |

6.1 Receptors and summary interaction

To assist in defining the likely impact of a disturbance or development upon the environment, key receptors have been identified. These receptors can be considered as being potentially sensitive to the proposed dredging and disposal processes, and may be subject to some form of acute interaction or long term pressure. Table 6-5 provides summary of key project receptors identified within the marine environment based on available literature, data base searches and the results of field investigations within the wider study area. From this information a concise description of the significance of this interaction is provided. The categories of impact receptor for the Port of Weipa maintenance dredging program include:

- Habitats – key marine habitats within the study area;
- Significant species – species of specific conservation concern;
- Physical alteration – potential changes resulting from the process of dredging;
- Other users/economics; and
- Cultural heritage.
Table 6-5  Key receptors at the Port of Weipa and a description of their interaction with the proposed annual maintenance dredging.

<table>
<thead>
<tr>
<th>Category</th>
<th>Interaction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Habitats</strong></td>
<td></td>
</tr>
<tr>
<td>Mangroves</td>
<td>Mangroves occur in their greatest density within the mid and upper reaches of the Embley River, Hey and Mission Rivers. Mangroves adjacent to dredging works, and nearest the disposal ground, are more typical of fringing communities. Banks of the lower reaches of the Embley River adjacent to dredging are dominated by ironstone gravel substrates, limiting the establishment of extensive mangrove systems. Outside the protection afforded by the Embley and Mission rivers, mangroves established within Albatross Bay are exposed to regular wind and wave action, limiting the colonisation by mangroves, other than within tidal inlets and creeks. Dredging results in the discharge of turbid water plumes and increased suspended sediments open for deposition. The adopted process of dredging with the inner channel and berth pocket areas allows for dredging during the ebb tide where necessary, resulting in the mobilisation of turbid water plumes out of the Embley estuary and away from key mangrove communities. The risks to mangrove community health as a result of maintenance dredging are considered low.</td>
</tr>
<tr>
<td>Seagrass</td>
<td>No physical removal of seagrass occurs during the process of annual maintenance dredging. Long-term surveys of seagrass distribution and community health have not concluded that dredging impacts sustainability of seagrass meadows. Rather, evidence indicates that naturally occurring cycles of increased solar irradiance and other seasonal variables best describe trends in decline and recovery exhibited over the period of survey. However, authors note that the role of anthropogenic stressors have not been discounted. Ongoing study is occurring. Dredging results in the discharge of turbid water plumes, reduced light availability and increased suspended sediments open for deposition. Due to the proximity to proposed dredging activities, there is the potential for plume dispersion to migrate towards and remain suspended over the seagrass meadows whilst dredging within the inner harbour and berth area. In order to preclude impacts to seagrass habitats, adopted management practices include continual monitoring of plume dispersion and, where deemed necessary, relocation and/or altering of timeframes (ie. ebbing tide only) for dredging activities within these areas. Ongoing monitoring in collaboration with DAFF provides additional confidence in identifying the status of the seagrass meadow.</td>
</tr>
<tr>
<td>Category</td>
<td>Interaction</td>
</tr>
<tr>
<td>----------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Rocky reef</td>
<td>Rocky reef habitats within the Embley estuary and those fringing Albatross Bay are adapted to high turbidity, high deposition and resultant low light conditions. Rocky reef habitats within Albatross Bay remain distant to the processes of disposal. Dredging results in the discharge of turbid water plumes, reduced light and increased suspended sediments open for deposition. The deposition of sediments within the disposal ground are distant to these habitats and unlikely to be of concern. Given the location of the shipping channel to the south of the disposal ground, it is thought that the mobilisation of sediment bed loads from the disposal ground would be captured by the channel prior to a potential broader distribution to benthic habitats. As defined for seagrass communities, scattered rocky reef habitats within the inner harbour and adjacent to berth pockets, are protected from sustained impact by the adopted management approaches of altering dredging operations where plumes remain suspended over seagrass or mangrove communities.</td>
</tr>
<tr>
<td>Soft sediments</td>
<td>Dredging removes soft sediments from the channel, approaches and berth pockets at the Port of Weipa. The recovery process between dredging events is anticipated to be rapid for the more common, opportunistic invertebrate species. While some recovery of the benthic community may occur following dredging, it may be subject to removal again within a shorter time period as necessitated by continuing minor bed levelling operations, or via operation if tugs and laden vessels exiting the port due to prop wash. The area of soft substrate removal within the port is minor in relation to the extent of similar substrates within the remainder of the Weipa region. Impacts to benthic communities are considered minor. Once dredged, these materials are transferred to the approved disposal ground and released. The process of deposition results in a smothering of infauna. Soft sediment habitats are exposed to regular perturbations during the wet season, including the passage of cyclones and tropical lows. As described via modelling, these events can mobilise significant volumes of sediments, disrupting infaunal and epifaunal communities associated with these habitats. The process of deposition during dredging mimics the impacts associated with these natural processes, though on a much smaller scale. Given an absence of sediment contamination, the impacts to soft sediment communities is considered one of acute short term physical disturbance.</td>
</tr>
<tr>
<td>Significant species</td>
<td>It is assumed that turtle, dugong, and dolphins may interact with the dredging and disposal process to some degree. The Port of Weipa maintains a relatively high level of shipping traffic associated with bauxite export, general freight and commercial and recreational fisheries. It is thought unlikely that the mere transit</td>
</tr>
</tbody>
</table>
of the dredge would significantly increase the incidence of boat strike or other unwanted physical interactions.

However, it is noted that the process of dredging has been associated with the deaths of marine turtles resting on the channel bottoms. To alleviate this risk, the dredge incorporates the use of turtle deflectors at the dredge head during operation. Outside the potential for entraining turtles, the principal interaction between the dredge and significant species would be from a shared physical presence within the operational area. Management standards of commencing work after 20 min of a sighting, or where the sighting is greater than 300 m from the dredge act to minimise any unwanted interactions with significant marine species.

### Chemical and Physical changes

| Invasive species | Surveys have confirmed that the Port of Weipa remains free of invasive marine species. The absence of these species from the survey record suggests limited impact potential for translocation to the disposal ground, or other ports via movement of shipping and operation of dredge activity. Existing monitoring programs are to be continued to ensure risks are minimised. The adopted clearance processes prior to the use of dredgers at Weipa further mitigates impact (Section 7.0). |
| Water quality | The Albatross Bay and Embley River estuary are typical of turbid water systems of northern Australia. Broad seasonal fluctuations in physical and chemical properties between the wet and dry season result in the development of marine ecological systems adapted to significant change. The absence of sediment contamination levels above those resulting in potentially acute or chronic levels of chemical exposure, confirms dredging and disposal do not present a significant risk to water quality. While the process of dredging and disposal may have the 'potential' to influence nutrient concentrations within the water column, natural processes leading to resuspension of nutrient rich sediments would have a far wider impact than that of dredging and disposal. Considering the prevailing hydrodynamics, the episodic nature of dredging, short duration of disposal, and respite between disposal events, the overall likelihood and consequence of nutrient elevations is not considered sufficient to generate problematic impacts to water quality. Plume modelling conducted from the disposal ground identified that a turbidity plume would be generated with the nature and extent of the plume dependent on the direction and strength of tidal streams, winds, waves and the characteristics of the sediment. The plume forms an ellipsoid extending north west to south east. Maximum incursions into the coastline are a distance of ~12 km at 10 mg/L, but do not enter the Embley River estuary system. Under the |
A process of model validation was undertaken at the request of DSEWPC (GHD, 2011). The results of the validation assessment concluded that the original assumptions and modelled parameters were sufficiently conservative, and that no benefit was obtained by conducting modelling at a finer resolution (see also Section 5.4.2.1). Evidence from dredge monitoring programs have confirmed minimal impact to adjacent seagrass habitats whilst operating within the inner harbour. This is supported by the shortened dredge period within the harbour, and works targeting dredging during the ebb tide.

**Sediment contamination**

The results of sediment assessments has concluded that the Port of Weipa does not presently contain any contaminants of concern. Contaminants of potential concern are being regularly assessed. Where screening levels have been exceeded subsequent testing using dilute acid extraction and elutriate testing has confirmed an absence of toxicity.

Sediments are being analysed under an approved SAP. Methods of assessment and reporting follow the NAGD. Since the inception of sediment analysis, dredging at the Port of Weipa has always been suitable for the unconfined disposal of materials at sea. Continued analysis of maintenance sediments is to be repeated every 5-years.

Sediments at the disposal ground remain unimpacted by the process of disposal.

**Sediment movement**

It is proposed to dredge a maximum of 1,111,000m³ during annual maintenance programs at the Port of Weipa. This estimate incorporates potential requirements for seasonal infilling due to cyclonic activity, and the requirements of ongoing maintenance dredging following proposed capital dredging. It is unlikely that these volumes will be required on an annual basis.

Modelling has confirmed that sediments of Albatross Bay exist in a dynamic state, open to the forces of bulk movement attributable to cyclones and the passage of elevated wind and wave conditions. The disposal ground displays both retentive and dispersive characteristics, depending upon the prevailing coastal processes, and is driven largely by wave action where significant wave heights approach 1.5m.

Modelling indicates a migration of sediments from the disposal ground in a southerly to south easterly direction. Whilst potentially adding to the recurring dredging of materials from the outer channel, no significant benthic habitats have been identified at risk from the bulk movement of deposited sediments.
Other users/Economics

Outside the RTA bauxite export operations, recreational and commercial fishers represent the primary users of the Port of Weipa. Dredging operations remain sensitive to the periods of larval transfer from the estuary to the open gulf waters of the Banana Prawn (September to November and March to May), targeting the period June-August for the completion of dredging.

Over the 40 years that dredging has occurred in the Port of Weipa, there have never been any issues with other users of the Port.

Cultural heritage

The area around Chwahn sandbank has been identified by Traditional Owners as an area of significance due to the location of two story sites:

- Thungganh story is located in the area around the Chwahn (Jackson) sandbank; and
- A'Ang story is located at the base of the existing Channel.

GHD (2005) noted that the capital dredging works in 2006 would not impact these cultural story sites. Consultation with Traditional Owners regarding future maintenance dredging did not identify any issues.

### 6.2 Impact and risk summary

Based upon the identification of key receptors, their potential interaction with dredging and disposal; and characteristics of the sediments to be dredged, the following summary of environmental risk has been prepared (Table 6-6).

The results denote a moderate potential for negative interactions upon seagrass habitat, significant marine fauna/turtles, and a potential for underwater noise affects. In all instances, the adopted mitigation strategies are considered sufficient to reduce the impacts of maintenance dredging to that of low risk.

Section 7.0 details the particular strategies to be adopted in achieving these management objectives.
Table 6-6  Impact and risk review for the annual maintenance dredging at the Port of Weipa.

<table>
<thead>
<tr>
<th>IMPACT</th>
<th>BEFORE MANAGEMENT</th>
<th>MANAGEMENT STRATEGY</th>
<th>AFTER MANAGEMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Affect on rare and threatened species</td>
<td>Rare, Moderate, Moderate</td>
<td>• Monitoring and controlling dredging to minimise impact to habitats&lt;br&gt;• Vessel operating speeds reduced over shallow water habitats&lt;br&gt;• Vessel exclusion zones based on fauna spotters</td>
<td>Rare, Minor, Low</td>
</tr>
<tr>
<td>Entertainment of turtles during dredging</td>
<td>Rare, Moderate, Moderate</td>
<td>• Application of turtle excluders to the dredge head.&lt;br&gt;• Minimise pump operation whilst off the seabed</td>
<td>Rare, Minor, Low</td>
</tr>
<tr>
<td>Marine pests and invasive species</td>
<td>Unlikely, Minor, Low</td>
<td>• Risk assessment conducted.&lt;br&gt;• At risk vessels inspected or certified clean prior to operations at the Port of Weipa&lt;br&gt;• Monitoring program for the Port continued</td>
<td>Unlikely, Negligible, Low</td>
</tr>
<tr>
<td>Prop wash from the dredge vessel increases in ambient turbidity</td>
<td>Possible, Negligible, Low</td>
<td>• Vessel operations to control vessel movement to minimise prop wash.</td>
<td>Possible, Negligible, Low</td>
</tr>
<tr>
<td>Event</td>
<td>Probability</td>
<td>Impact</td>
<td>Mitigation</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-------------</td>
<td>--------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Limit passage over or immediately adjacent to seagrass habitats</td>
<td>Possible</td>
<td>Minor</td>
<td>Utilise defined shipping routes</td>
</tr>
<tr>
<td>Decline in seagrass condition</td>
<td>Possible</td>
<td>Minor</td>
<td>Moderate</td>
</tr>
<tr>
<td>Long term seagrass monitoring program</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Dredging of the inner harbour and berth pockets on the ebb tide where plume remains suspended over seagrass community</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Relocation of the dredge should plumes remain suspended over seagrass meadows.</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Decline in mangrove condition</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Dredging of the inner harbour and berth pockets on the ebb tide where plume remains suspended over mangrove communities</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Impact on soft sediments and associated infauna</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Minimising dredge footprint</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Continue sediment quality analysis as per the SAP every 5 years</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Oil/fuel spills and chemical releases</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Hydrocarbon and spill management plan established</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
</tbody>
</table>
according to AMSA and Port Authority requirements

- Staff trained in spill notification and cleanup kits available.
- Australian standards in the handling and storage of hydrocarbons followed

### Noise and vibration

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| Unlikely | Minor | Low | Unnecessary ship movements avoided  
Vessel speeds reduced as low as practicable  
Dredge head operation only as required. |

### Water quality degradation

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Mitigation</th>
</tr>
</thead>
</table>
| Unlikely | Minor | Low | Dredging to be minimised in duration.  
Plume modelling confirms no affect from disposal.  
Sediments surveyed as appropriate for ocean disposal every 5 years. |

### Release of toxicants or problematic nutrient concentrations during dredging

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
<td>Pre dredge sediment sampling very 5 years and Sea dumping approval obtained.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Source</th>
<th>Likelihood</th>
<th>Impact</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>Negligible</td>
<td>Low</td>
<td></td>
</tr>
<tr>
<td>Sediment movements from the disposal ground</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>----------</td>
<td>------</td>
<td>-----</td>
</tr>
<tr>
<td>Other users</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
<tr>
<td>Cultural heritage</td>
<td>Unlikely</td>
<td>Minor</td>
<td>Low</td>
</tr>
</tbody>
</table>
7 MANAGEMENT STRATEGIES AND ACTIONS

The following sections detail the proposed management strategies, actions and commitments from NQBP to deliver an annual maintenance dredging campaign which minimise environmental impact, maximises dredging efficiency and minimises the potential for future sediment contamination.

Particular reference has been made to the mitigation of potential impacts to the seagrasses of the Embley River, and significant marine species, such as turtle, whale, dolphins and dugong. Section 7.0 outlines:

- Dredge management
  - Minimise dredge schedule
  - Pre and post-dredge bathymetric survey
  - Dredge specifications
  - Marine fauna and turtle management
  - Turbidity management
  - Spoil ground management
  - Operational audit
  - Reporting during dredging

- Monitoring
  - Sediment quality
  - Receiving habitats
  - Benthic infauna
  - Introduced marine pests

- Continuous improvement
- Record keeping, reporting and audits
- Roles and responsibilities

A copy of the approved Sea Dumping Permit is provided as Appendix A.
7.1 Dredge management

7.1.1 Minimise the dredge schedule

NQBP and its contractors will seek to keep dredging schedules as short as practicable. This means that the dredging campaign will be conducted so that it achieves the required engineering and navigational objectives to ensure ongoing safe shipping in Weipa, in the shortest time possible. It is in NQBP’s interests from a financial perspective to have a shorter campaign, and will also minimise impacting processes associated the plume mobilization, sediment deposition, and the potential for interactions with significant marine fauna. Maintenance dredging will occur 24 hours per day, seven-days per week to complete the campaign as quickly as possible.

7.1.2 Bathymetric surveys – volume and location

A pre-dredge bathymetric survey will be undertaken of the areas to be dredged prior to the dredging campaign, whereby an accurate volume and location of sediment removal requirements will be determined. This approach allows the dredge contractor to conduct a targeted, and more efficient, campaign.

Post dredge Bathymetric Surveys are completed on the spoil ground and the dredged areas and are submitted to DSEWPC and the Royal Australian Navy (RAN) Hydrographer following each dredge campaign in accordance with Condition 19 of the Sea Dumping Approval.

7.1.3 Dredge Vessel Specifications

Mitigation of potential turbidity and suspended solids impacts from dredging and spoil disposal by the trailing suction hopper dredge operations is also achieved through requirements for modern vessel specifications, including:

- Low wash hull-design;
- Below keel discharge;
- Central weir discharge system; and
- Electronic positioning systems.

These elements are considered the minimum standard of specification for trailing suction hopper dredges that will be selected to undertake dredging works at the Port of Weipa.

In addition, a contract deliverable item for maintenance dredging is the development and implementation of a works specific Environmental Management Plan (EMP), which reflects the commitments made within this LTDMP. Environmental staff from the Port of Brisbane have continually improved the EMP for works conducted by the ‘TSHD Brisbane’ over the past nine years to meet requirements of stakeholders, government departments and port authorities, throughout its operational range.

An EMP for dredge operation will be submitted to the TACC prior to each annual maintenance dredging campaign.
7.1.4 Marine fauna and turtle management

Turtles are mobile and can generally avoid impacted areas for the duration of dredging activities. However, maintenance dredging in 2002 and 2003 caused a small number of turtles to be killed by being hit by the dredge or captured by the dredge head. Management and operational practices during maintenance dredging to reduce the risk of impacting turtle populations include the use of turtle excluding devices on the dredge head to reduce the possibility of capture and controlling of the dredge pumps to minimise operation while the dredge head is off the sea floor (pumps need to be operated for a short time to clear sediment from the pump with clean water).

Performance Objective

- To ensure marine fauna is not adversely impacted by the dredging operation.
- No fauna mortalities will occur during the dredging campaign.

Management Actions

- The Dredging Contractor is to ensure that the dredge is fitted with turtle exclusion devices on the drag heads for the duration of works. Dredging is not permitted unless these devices are installed and operational.
- The Dredging Contractor is to implement procedural controls to minimise off-bed suction time. These controls must ensure that drag head water jets are activated at times when the drag heads are not in contact with the seabed, and pumps are in operation, to minimise the risk of turtle capture.
- The length of the campaign will be minimised as far as practicable.
- The Dredging Contractor will be required to check for the presence of turtles and other marine fauna, particularly within the path of dredging. Prior to dredging and disposal, the Dredging Contractor must check using binoculars from a high observation platform (dredgers bridge) for marine fauna within a 300 metres monitoring zone.
- Dredging and disposal activities may only commence if no marine fauna (dugongs, turtles or cetaceans) have been observed in the monitoring zone.
- If any marine animals specified above are sighted in the marine zone, dredging and dumping activities must not commence in the monitoring zone until 20 minutes after the last marine species is observed to leave the monitoring zone, or until 20 minutes after the last sighting.

Reporting

- A record of the monitoring must be established and maintained by the Dredging Contractor.
- In the event of an incident involving marine fauna, the Dredging Contractor or Superintendents Representative is to immediately contact NQBP’s Senior Environmental Coordinator on 07 4969 0700 (office hours); 07 49 558 171 (outside hours); or 0427 728 092 (outside hours).
- The Senior Environmental Co-ordinator will complete an Incident Report, noting the location, time, injury extent and GPS coordinates. The corrective actions will be entered into the NQBP Action Register and tracked accordingly.
- The TACC will be notified of any marine fauna incidents and NQBP will liaise directly with DSEWPC and DEHP regarding the matter.
7.1.5 Management of turbidity and water quality

Generation of turbid plumes and the potential for release of fuels, oils and other chemicals during dredging via spills/accidents has the potential to adversely impact water quality. In particular, increased turbidity may potentially influence the health of seagrasses, by reducing light availability and increasing deposition rates.

Performance Objective

- To minimise the migration of turbid plumes and the introduction of contaminants in the marine environment (oils and fuel) during dredging and spoil disposal operations.

Management Actions

- Following advice from the Weipa TACC, regular water quality monitoring is not required in Weipa due to the naturally turbid nature of Albatross Bay (however, as noted within Section 7.2 – Seagrass management - monitoring can be enacted should recent seagrass surveys indicated a potential risk prior to annual maintenance works).

- The Dredge Master will be required to visually monitor the extent and concentration of the plume when in operation, to ensure it does not encroach upon the seagrass meadows.

- Reduce length of dredging activities as much as practicable.

- Conduct dredging during months when weather conditions are historically calmer to reduce plume migration.

- Any plume generated from dredging activities within the inner harbor will be monitored by the Dredge Master. Where the plume appears to be moving towards and remaining suspended over the seagrass meadows, the Dredge Master is to consider relocation and/or altering of timeframes (i.e. ebbing tide only) for dredging activities within these areas.

- NQBP will continue monitoring seagrass in partnership with James Cook University (JCU)(formerly DEEDI).

- The Dredging Contractor will revise dredge strategy if dredge plumes are determined to be heavily encroaching on sensitive areas.

- Dredging Contractor is required to visually monitor any water contamination or air emissions and report any incidents in a daily dredge log and to NQBP.

- The Superintendent Representative or delegate will be continuously onboard the dredger visually checking for any water or air contamination.

Corrective Action

- If the plume appears to be moving towards and remaining suspended over the seagrass meadows (sensitive areas in the Pine River Bay, Mission River and Embley River), then the Dredge Master is to reconsider dredging the area and move away and come back to dredge as conditions improve (ebbing tide only). If this situation arises, the Captain is to discuss the matter with the Superintendent's Representative who will raise it with NQBP’s Environment Group, who will then seek advice from DAFF and JCU. The Superintendent's Representative
will be required to take photos of the plume and send them to NQBP’s Environment Group for their review.

- The dredging strategy will be reviewed with appropriate agencies if any adverse impacts are observed, and raised with the TACC.
- In the event of an environmental incident (fuel spillage), implement appropriate contingency and emergency response measures. (see Section 7.1.7 – Management of Hazardous Substances.

### Reporting

Weekly reporting from the dredging operations will be provided by the Superintendent of Dredging. These reports will summarise environmental management actions, including potential dredge relocation due to turbid water encroachment over seagrass.

#### 7.1.6 Waste Management

Incorrect handling and storage of waste materials aboard the dredge may result in the introduction of wastes into the marine environment.

### Objective

- To ensure best practice management for the handling and storage of all waste materials on board the dredge.
- No waste, other than treated sewage where permitted\(^1\), is to be released into the port waters.

### Actions

- The Dredging Contractor shall keep the dredge free of litter at all times.
- Waste materials shall be handled and stored in a safe and environmentally acceptable manner.
- Any waste transferred off the dredge is to be transported to an approved landfill site. Should recycling facilities be available at the transfer wharf, they will be utilised.
- Under no circumstances is any waste to be released into the marine environment or incinerated.
- The Dredging Contractor is to ensure that adequate toilet facilities are provided on the dredge and all wastes are handled and disposed of in accordance with all relevant port rules, legislation and industry guidelines and standards.

### Performance Indicators

- All waste materials are handled and stored in a safe and appropriate manner.
- There is no environmental impact on, and disturbance to, the surrounding marine area from waste.
- The dredge is maintained in a clean and tidy manner.

\(^1\) Refer to MSQ
Corrective Action

- Implement appropriate management and preventative measures to reduce the potential for an environmental incident.

7.1.7 Management of Hazardous Substances

Objective
To minimise the potential for environmental harm from the release of hydrocarbons and other chemicals from the dredge to the surrounding marine environment.

Actions

- Hazardous chemicals, including paint, oil, fuel and lubricants to be stored onboard the dredge must be done so in an appropriate facility that is compliant with the requirements of the relevant Australian standard (AS1940:2004 The storage and handling of flammable and combustible liquids).
- Maintain the hazardous goods storage area in a clean, safe and environmentally acceptable manner.
- The Dredging Contractor will hold MSDSs onboard for all hazardous products.
- Hazardous substances handling is to be carried out by suitably trained personnel only.
- Only essential maintenance works in the port are permitted.
- The Dredging Contractor must provide emergency spill kits to all personnel and ensure they are aware of the locations on the dredge and are trained in their use.
- All spillage will be contained to ensure there are no releases into the marine environment. (i.e. not hosed into the marine environment).
- Hazardous waste (oils, chemicals, etc) will be retained in secure containers onboard the dredge and removed to an appropriate onshore location for disposal to a DEHP licensed hazardous waste disposal site.
- The Dredging Contractor will be responsible for documenting the quantity, nature and fate of any regulated waste that is removed from the dredge in accordance with DEHP requirements.
- No chemical or hydrocarbon wastes are to be released into port waters or surrounding environs in compliance with the Environmental Protection Act 1994, Environmental Protection (Water) Policy 2009, Transport Operations (Marine Pollution) Act 1995 and Fisheries Act 1994.

Performance Indicators

No contamination of port waters from hazardous materials on the dredge.

Corrective Action

- In the event of a spill to the marine environment, the Dredging Contractor is to undertake the following procedures:
  - Stop the source of the spill.
  - Contain the spill (using plugs, booms etc) to prevent it from entering the water.
o Mop up the spill using absorbent material from an onboard spill kits. Used absorbent material is to be stored onboard until it can be properly disposed of to a licensed onshore facility.

o Notify NQBP's Senior Environmental Co-ordinator on 07 4969 0700 (office hours); 07 49 558 171 (outside hours); or 0427 728 092 (outside hours)

o Notify Maritime Safety Queensland on 07 40527470 or 1300 551 899.

o After details of the incident have been confirmed, the Senior Environmental Coordinator will complete an incident report and track corrective actions in the NQBP Actions Register and NQBP will notify the TACC.

Reporting

Any environmental incident, including spills and leaks will be reported to the TACC, following reporting commitments to regulatory authorities.

7.1.8 Noise

Objective

- To reduce or minimise the impact of noise associated with the dredging on surrounding facilities, users and visitors.

Actions

- The Dredging Contractor must ensure that all equipment is maintained and operated in a safe and efficient manner.
- No noise from dredging activities is to be above operating port background levels for the area at night and on the weekends.
- Any noise complaints received during dredging will be reported to NQBP immediately by the Dredging Contractor or the Superintendent's Representative. NQBP will investigate the complaint and determine what action can be taken in the event to minimise impact.
- NQBP and the Dredging Contractor will maintain any noise complaint in a log book or register, including the time and date of the complaint, the name of the complainant, the nature of the complaint, action taken and follow up.

Performance Indicators

- No noise complaints due to maintenance dredging activities.

Corrective Actions

- All complaints to be responded to within 24 hours of receiving the complaint.
- Maintain all equipment so that noise levels do not exceed background port operational levels.
7.1.9 Air Quality

Air emissions, including greenhouse gases, will be produced by the dredge.

Objective

- To minimise the air emissions produced during dredging operations and thereby minimize potential effects on the airshed.

Actions

- The Dredging Contractor is to ensure that plant and equipment used during the works are maintained to comply with the relevant exhaust emission guidelines.
- The Dredging Contractor is to visually monitor emissions and repair or replace equipment as required.
- There shall be no visual dark emissions from the vessels exhaust stack, this is to be monitored by the Dredging Contractor.
- Should emissions be observed, the Dredging Contractor is to repair or replace emission control devices.

Performance Indicators

- No visible emissions from the dredge.

Corrective Action

- Repair or replace emission control devices.

7.1.10 Cultural heritage

The proposed works involve maintenance dredging only and not capital works, where the likelihood of uncovering an item of cultural significance is low. However, because some sites have been identified in past surveys, there is still a potential impact.

Management Method

- The Dredging Contractor must act in full accordance with the *Aboriginal Cultural Heritage Act 2003*, ensuring ‘cultural heritage duty of care’ as defined by the Act at all times during the campaign.

Responsibility

- The Contractor is primarily responsible for ensuring no impact to cultural heritage during dredging activities.

Reporting

- Should any item be uncovered, works are to cease and NQBP Environment Group notified immediately and advised of the finding.
7.1.11 Safety and Security

Minor interruptions to commercial and recreational fishing activity are possible during dredging and spoil disposal operations. Potential risks to safety if unauthorised vessels are too close to the dredge or disposal areas.

Objective

- To prevent the access of unauthorised vessels too close to the dredge and the spoil disposal area.
- Ensure that dredging operations do not unduly interfere with vessel movements in the port or at the disposal site.

Actions

- All contractors, consultants and NQBP staff involved in the Weipa dredging campaign are required to comply with the Port of Weipa Maritime Security Plan.
- The Security Plan will be provided to the Dredging Contractor in the event of a security alert.
- If the vessel berths at a wharf within the Port of Weipa, the Ships Master shall seek the permission of the relevant Port Facility Security Officer and comply with any security requirements.
- Prior to commencement of dredging works, the Dredging Contractor is to provide NQBP with copies of their safety management plans.
- The Regional Harbour Master is to be notified of works prior to commencement in accordance with State requirements. MSQ is to provide a notice to mariners advising of the commencement of dredging and expected duration of operations. NQBP is to place a public notice prior to works commencing.
- Dredge to display appropriate day marks and navigation lights as required by the Transport Operations (Marine Safety) Act 1994.

Performance Indicators

- All vessels remain well clear of the dredging and disposal sites.
- No complaints received about shipping access to and from the port during dredging and ocean disposal.

Corrective Action

- Increase the number of signs/buoys and/or relocate them to ensure they are effective.
- Contact boat owners who approach too closely and explain the hazards.

7.1.12 Emergency Response

Environmental incidents that have the potential to result in environmental harm may occur during the dredging campaign.
Objective

- To identify and reduce the potential for an environmental incident before it occurs so as to prevent damage to the surrounding marine environment and the public.
- To respond quickly and effectively in the event of an emergency or environmental incident.

Actions

- In the event of a fire or other emergency, the Dredging Contractor is to call 000 and to advise the NQBP Port Supervisor on 0428 885 022 or 07 4069 7749.
- In the event of an oil or hazardous waste spill, the Dredging Contractor is to follow the Management of Hazardous Substances procedures.
- Where necessary, NQBP will coordinate the response to environmental incidents.
- The Dredging Contractor is to ensure that the potential for environmental incidents is prevented and reduced by the implementation of ‘best practice’ management throughout the project and by implementing the LTDMP.
- The Dredging Contractor is to take immediate action to contain and rectify the cause of any incident, if safe to do so.
- The Dredging Contractor is to notify NQBP immediately in the event of an environmental incident (Environmental Coordinator or the Port Supervisor).
- The Dredging Contractor must initiate response and corrective actions in accordance with the LTDMP and documents relevant to the dredging activities, including this report, and under NQBP’s direction.
- The Dredging Contractor must also retain a record of the incident, including details of the date, time, nature of the incident, immediate action taken, cause of the incident and reporting/notification taken (ie NQBP, MSQ, DEHP).
- The NQBP Environmental Co-ordinator will be responsible for notifying DSEWPC and the TACC of such incidents.
- NQBP will coordinate the notification of the TACC and additional stakeholders.
- An audit will be undertaken against Commonwealth approvals and the requirements of this LTDMP.

Performance Indicators

- Maintain public and navigational safety.
- The ecological integrity of the surrounding marine environment is maintained.
- Minimise the potential for an environmental incident.
- Facilitate the timely and effective implementation of the appropriate emergency response procedures in the event of an environmental incident.

Corrective Action

- The Dredging Contractor will determine the appropriate emergency response and corrective actions in consultation with NQBP to be implemented depending on the type and magnitude of the event.
7.1.13 Introduced Marine Pests

Under the National System for the Prevention and Management of Marine Pest Incursions the *Australian Marine Pest Monitoring Manual* and accompanying *Australian Marine Pest Monitoring Guidelines* have been developed. These were released in early February 2010.

With regards to dredging the impact of introduced marine pests may stem from:

- an infested dredge vessel being used at the Port of Weipa and leading to the establishment of a via marine pest population;
- a vessel becoming infected at Weipa and servicing another Port; or
- in dredging the proposed footprint introduced marine species are translocated from the Port to the disposal ground.

The Port of Weipa maintains a program of monitoring for introduced marine pests. This program is ongoing, being managed on a quarterly basis by NQBP.

**Clearance of the dredge vessel**

Australia has mandatory requirements for international vessels entering Australian waters that wish to discharge ballast water. These requirements are part of the quarantine arrangements for Australia and have been in place since 1 July 2001. See the Australian Quarantine and Inspection Service (AQIS) website: www.aqis.gov.au for more information.

Port of Brisbane has been identified as the primary contractor undertaking dredging at the Port of Weipa using the 'Brisbane'. The Brisbane provides evidence under *National Biofouling Guidance for Non-trading Vessels* (Commonwealth of Australia, 2008) to demonstrate a low risk of infestation by introduced marine pests.

- The Dredging Contractor will ensure the dredge complies with AQIS ballast water management requirements.
- The Dredging Contractor is required to ensure that the hull of the dredge is not significantly fouled and does not contain any introduced marine pests.

In addition to these standard protocols, should NQBP be required to utilise the services of an internationally sourced dredge, or an interstate dredge for works at Weipa, a risk based review of the ships work and maintenance history would be performed. Where operations or duration since last maintenance period are extended or the information not provided, certification from the dredging contractor by way of hull inspection clearance would be requested. Clearance of the vessel for fouling prior to its mobilisation to Australia would be considered as an item for contract, including diver or dry dock inspection.

The approach would follow the biofouling risk assessment framework outlined within the *National Biofouling Guidance for Non-trading Vessels* (Commonwealth of Australia, 2008). This document also outlines steps for minimising the risk of marine pest risks aboard dredge vessels, and other non-trading vessels, such as:

- Selecting and applying the correct antifouling coating based on the vessels operating profile;
Ensuring anchors, lines, pipes and cables are checked and cleaned prior to stowage and transit;
Ensuring mud and sediments are cleaned from all equipment before transit;
Undertaking inspections when appropriate, including the hull, pipes, pumps, hoppers, doors hinges, cutters and drag heads, ladders, buckets an pontoons etc; and
Applying suitable antifouling methods for internal seawater systems.

Risk assessment prior to mobilisation

A biofouling risk assessment based on the procedures described above would be prepared for each dredge. The steps in the biofouling risk assessment are:

- Hazard assessment of vessel type;
- Has the vessel a new or current antifouling coating?
- Has the vessel been inspected and cleaned prior to departing prior location?
- Has the vessel operated in a manner conducive to colonisation by biofouling species?
- Are prior locations environmentally compatible with the new location in terms of species viability and survival?
- What marine pest species of concern are present in the prior location(s) that represent risk in the new location?
- Of these species, what is the likelihood for transported as, or within biofouling?
- Are there areas of the vessel prone to biofouling?
- Does an in-water inspection enable the presence or absence of potential pest species to be determined?

Findings would be reported to the TACC established for the dredging project, DAFF (Bio Security Queensland – 13 25 23) and the Australian Quarantine and Inspection Service (AQIS – 07 3246 8600 or 1800 020 504).

Vessel inspection

Should the risk assessment conclude insufficient details regarding the suitability of the vessel, or plant, then a process of physical inspection would be required. Inspection would be undertaken by a suitably qualified marine scientist, with experience in biofouling inspection.

Inspections would include:

- Hull
  - General hull areas
  - Thrusters
  - Steering gear
  - Main propulsion unit
  - Inlets and outlets
  - Other hull penetrations
- Internal areas
  - Bilge and ballast tanks
  - Anchor cable lockers
  - Internal seawater systems used for cooling, water production or fire fighting etc
Hull surveys may be conducted in-water by the inspector, or remotely using live audio and visual communications. Surveys must be conducted within a maximum of 15 days prior to departure for the project site. Vessel or equipment failing the physical inspection would require cleaning and re-survey.

At the conclusion of the risk assessment, physical inspection, and re-inspection (if required) of all proposed vessel and submersible plant, all relevant documentation will be submitted to DAFF and AQIS before entering Australian waters. Such documentation may include:

- Findings of the risk assessment;
- Findings of physical inspection of required vessels/equipment;
- Photographs and supporting information (as required).

Should a marine pest be identified on a dredge vessel (or equipment), following its clearance into Australian waters, NQBP would immediately notify Bio-Security Queensland, the agency responsible for the management of marine pests in Queensland, and AQIS. Under this approach an appropriate course of action would be developed in consultation with Bio-Security Queensland and AQIS.

### 7.1.14 Spoil ground management

The continued use of the current spoil ground mitigates impacts from smothering through preventing the need to dispose of spoil in an area that has not been disturbed previously or may be closer to key receptors. Modelling completed in 2009 confirmed the retention of sediments is reliant upon the prevailing coastal processes; sediments remain relatively immobile during ambient states, and disperse during wind and wave events, such as the passage of tropical cyclones. Infauna studies have not defined any apparent trends with regards to the migration of sediment affects over areas adjacent to the spoil ground by way of faunal composition.

Impacts to the spoil ground and adjacent areas will be minimised through disposal of the dredge spoil in such a manner as to uniformly spread it over the spoil ground. This is achieved through deposition patterns that vary with the prevailing current direction. When currents are minimal, deposition will occur relatively uniformly over the spoil ground area in arc patterns (refer Figure 7-1 left). When currents are present, deposition will occur in arcs in the down-current portion of the spoil ground to take into account drift of sediment as it settles over the ground (refer Figure 7-1 right).

Uniform distribution of the spoil also maximises the potential capacity of the disposal area.
Figure 7-1 Example of dump plot example of deposition during periods of low current (left and high current (right))

7.1.15 Reporting during dredging

NQBP and the Dredging Contractor must maintain all environmental communications, including reports, audits, meeting minutes, records of non-conformances/incidents, inspections and corrective actions such that they are easily retrievable.

The Dredging Contractor must record the total amount of fuel used during the campaign and undertake the relevant greenhouse gas reporting in accordance with Government requirements.

NQBP must advise the Regional Harbour Master (RHM) of works prior to commencement in accordance with State requirements. The RHM is responsible for issuing a notice to mariners through Maritime Safety Queensland’s website prior to undertaking dredging.

Throughout the campaign, NQBP will update the TACC on the dredging progress and other key environmental information, including details of any incidents and monitoring and auditing outcomes. This is typically achieved through email correspondence.

NQBP will keep records comprising of weekly plotting sheets or a certified extract of the ships log which details:

- the times and dates of when each dumping run commenced and finished;
- the position (as determined by GPS) of the dredger at the beginning and end of each disposal run, with the inclusion of the path of each disposal run; and
- a means of estimating the volume of dredge material (in cubic metres) dumped and quantity in dry tonnes at the disposal site for the specified operational period.
7.1.16 Operational audit

NQBP will conduct an operational audit during dredging to ensure compliance to responsibilities identified under this LTDMP and associated Sea Dumping Permit. At least one (1) environmental audit is to be conducted during dredging activities which will involve the assessment of storage of fuels and oil onboard the dredger, in addition to other elements of the LTDMP (interactions with marine fauna, habitat encroachment by the plume, etc).

The results of this audit will be presented to the post dredging TACC, and its findings applied to continuous improvement processes for this LTDMP.

7.2 Seagrass management

Of the habitats identified within the review of impacts and risk, the seagrasses of the Embley River Estuary have been confirmed a key receiving habitat. Specific management measures have been identified for implementation as part of this LTDMP. Since 2000, DEEDI Seagrass Unit (now amalgamated into James Cook University (JCU)) have been undertaking seagrass surveys in the Port of Weipa. JCU currently undertake seagrass monitoring on an annual basis. In 2002, DEEDI (now JCU) advised the TACC that ‘seagrass in Weipa is subjected to much higher natural turbidity than that experienced during dredging and for longer periods from run-off in the wet season’. However, seagrass surveys undertaken by DEEDI (in 2008) demonstrate a steady decline in seagrass density, specifically the intertidal bank at Lorim Point. NQBP are working alongside JCU to develop a long term management approach to determine the key drivers of seagrass decline within the Port of Weipa.

Monitoring of seagrass communities, the most sensitive receptor in the Port, is conducted annually by JCU in the Intensive Monitoring Area (IMA), and seagrass beds in the entire Port of Weipa are mapped every three years. The annual seagrass monitoring events occur in September or October each year. The LTDMP proposes to continue the long-term seagrass monitoring on the existing schedule through the term of the longterm dredging permit. This will ensure that survey methodologies and sampling design will follow the existing methods, (subject to ongoing review). Additional monitoring measures will be adopted following discussions with JCU and NQBP regarding the long term management approach to determine the key drivers of seagrass decline trends. This is a reflection of NQBP’s policy of seeking continual improvement in environmental performance.

Actions

- Any plume generated from dredging activities within the inner harbor will be monitored by the Dredge Master or delegate. Where the plume appears to be moving towards and remaining suspended over the seagrass meadows (sensitive areas in the Pine River Bay, Mission River and Embley River), the Dredge Master or delegate is to consider relocation and/or altering of timeframes (ie. ebbing tide only) for dredging activities within these areas.
- Use of ‘green valve’ on the dredge will be applied to minimise turbidity.
- NQBP to contact DAFF to discuss dredging approach with regards to seagrass protection.
- The key persons responsible for visually monitoring the dredge plume are the Dredging Contractor and the Superintendents Representative, who are onboard the dredge.
- The Senior Environmental Co-ordinator is responsible for liaising with DAFF.
NQBP will work alongside JCU to enhance the existing annual seagrass monitoring program. Key improvements will include:

- NQBP will contact JCU and DAFF prior to each dredging campaign as part of the TACC, and separately as required to discuss dredging approach with regards to seagrass protection.
- The expansion of the monitoring program, which has the benefit of clearly identifying the most appropriate long term management approach for dredging activities. The monitoring program can be expanded in order to provide greater focus on areas of concern, such as observed seagrass declines; and the scope of survey can be expanded to incorporate capital dredging work areas, when required.
- Light and temperature assessments of the seagrass monitoring meadows will continue to be assessed and implemented where relevant to strengthen the capability of the existing monitoring program, particularly in the Enhalus meadow opposite Lorim Point, where long term declines have been previously observed.
- Light land temperature loggers will be deployed year round, whereby light and temperature information leading up to dredging will assist in determining if the plume has had a noticeable impact. Light and temperature loggers were installed during the 2010 seagrass monitoring event.
- Should the annual seagrass monitoring results identify the resilience of adjacent meadows is low, NQBP will implement a complementary water quality monitoring program during dredging at key sensitive seagrass areas. Water quality limits and methodology will be determined with DAFF, JCU, and the TACC prior to dredging commencing. These conditions will be related to protecting the seagrass habitats in the Port of Weipa.
- Should additional monitoring and management measures be required, these can be raised through the TACC and investigated where necessary.
- Seagrass reports are to be provided to the TACC, DSEWPC and made available to the public on NQBP’s website on an annual basis.

7.3 Reporting of Incidents and Contingency Arrangements

All NQBP Weipa staff, and any contractors involved, have the responsibility to report significant incidents and emergencies:

- In the first instance, reporting should be to the operational works supervisor, but generally, the NQBP Environment Manager will have the responsibility to initiate corrective action for environmental incidents;
- All incidents should be reported to the project superintendent, as specified by NQBP;
- In the case of an environmental emergency, after first notifying the Environment Manager, the operational works supervisor may make contact with NQBP’s nominated consultants, who would help co-ordinate and manage a response;
- Depending on the nature and magnitude of the incident, the Environment Manager may be required to notify DEHP/DSEWPC. It is the Environment Manager’s responsibility to ensure that the DEHP/DSEWPC contact number and relevant officer’s name are at hand prior to the commencement of the project;
Significant environmental incidents should be logged in writing, with all relevant details recorded, after corrective action has been completed. The log book must be made available for inspection by the Operational Works Supervisor and Environment Manager at all times.

Should an environmental incident occur during the course of dredging or dumping, NQBP will take measures to mitigate the risk or impact. NQBP would report the following information to DEHP/DSEWPC, within 24 hours:

- Nature of incident and type of risk associated with the incident, including (where possible) volume, nature and chemical composition of substances released;
- Measures taken to mitigate the risk;
- The success of the measures undertaken; and
- Proposed future measures (if required), including needs for monitoring.

7.4 Continuous improvement process

NQBP strive for continual improvement of environmental management, as stated in the corporate Environment Policy, in all aspects of port operations, including dredging. Regular communication with State and Commonwealth environmental agencies, and the TACC are important tools for obtaining up-to-date information on environmental management and best practice initiatives for NQBP to consider and adopt.

NQBP are also an active member of Ports Australia, who represent the Australian port industry on a number of matters including dredging. Ports Australia are a valuable information link between NQBP and other ports for providing information about what methods other Australian and International ports have adopted for improved dredging practices.

NQBP record and track all dredging and other incidents through an Incident Register under a certified EMS. These incidents and their corrective actions are reviewed on a weekly basis by the NQBP Environment Group. This management tool also assists NQBP to improve practices, including dredging, to reduce the number of environmental incidents.

Close out reports are completed following the completion of an existing contract with any consultants, contractors (including dredging) or others involved in the dredging campaign. These reports, which contain recommendations and ‘lessons learnt’, are circulated to NQBP’s senior management team for their review and consideration for future improvements in dredging operations.

7.4.1 Involvement of the TACC

The annual review of dredging and the LTDMP will be used to present lessons learnt, review processes and define improvements. Continuous improvement will be established as a standing agenda item for consideration by the TACC during each meeting to prompt ideas and circulate options on issues of concern.
7.4.2 Seagrass monitoring commitments

Information to-date suggests that impacts from dredging and disposal operations at the Port of Weipa are being well managed and impacts to the marine environment are not significant. Opportunities for improvement appear to be limited given the environmental management and monitoring practices currently in place. However, it is recognised that management of seagrass habitats with the Embley River Estuary are of significant importance. Amendments to the scope of seagrass monitoring, and coordination between seagrass condition and operational dredging requirements represent a significant commitment in continuous improvement by NQBP.

7.4.3 Complaints review

Complaints will be reported to NQBP. The Contractor and NQBP will coordinate an appropriate response. For all complaints (including incidents), an incident report form (refer Appendix B) shall be completed and signed off by a Senior Manager of NQBP.

Corrective actions and persons responsible will be tracked in NQBP’s Incident Register and monitored by the Environmental Co-ordinator. The complainant will be contacted and advised of the corrective actions. The TACC (which includes DSEWPC) will also be advised.

7.5 Record Keeping, Reporting and Auditing Requirements

NQBP will:

- Keep records comprising either weekly plotting sheets or a certified extract of the ship’s log which detail:
  - The times and dates of when each dumping run is commenced and finished;
  - The position of the vessel at the beginning and end of each dredging run;
  - The position (by GPS) of the vessel at the beginning and end of each dumping run with the inclusion of the path of each disposal run; and
  - The volume of dredge spoil (in cubic metres) dumped for the specific operational period.

These records will need to be retained for audit purposes for the duration of the permit.

- Undertake bathymetric surveys of the Disposal Site as follows:
  - Once prior to the commencement of the initial dumping activities approved under the DSEWPC approval SD2009/1832; and
  - Once within one month of the completion of each of the large scale dumping activities authorised under the permit.

NQBP will provide a digital copy of the final bathymetric survey to the RAN Hydrographer.

NQBP will provide an annual report on the bathymetry within two months of the final bathymetric survey being undertaken. The report must include a chart showing the change in sea floor bathymetry as a result of dumping and include written commentary on the volumes of dumped material that appear to have been retained within the spoil ground.
Areas to be dredged will also be surveyed prior to dredging to quantify volumes to be removed and their location. This information will be used to minimise the volume of material dredged, and maximise efficiency of the dredge program. These surveys will be conducted at the same period as the spoil ground surveys.

To facilitate annual reporting to the International Maritime Organisation, NQBP will report to DSEWPC each year the following:

- Permit start date;
- Permit expiry date;
- Approved dumping site;
- Nature of material;
- Permit quantity;
- Quantity dumped per calendar year; and
- Dumping method used.

- Summary of dredging and disposal monitoring activities undertaken during the year.

The responsible parties for each of these reporting requirements will be the Environmental Manager of NQBP.

An annual audit of the LTDMP will be provided by NQBP and submitted with the annual report for ocean disposal. Findings of the audit will be presented to the Port of Weipa TACC and DSEWPC. The audit will support continuous improvement of the LTDMP process and ensure management measures, as defined herein and amended from time-to-time, are undertaken by NQBP and other responsible parties.

### 7.6 Review of Management Plan

This LTDMP will be reviewed, and updated if necessary, according to the following timetable:

- Review shall be undertaken at a frequency of not more than five years within the proposed ten year permit period;
- Where monitoring or management is proposed to be changed, any proposed modifications will be discussed with the TACC and DSEWPC;
- Where applicable guidelines (e.g. NAGD, ANZECC/ARMCANZ, or Qld Water Quality Guidelines) are updated, revisions will be implemented into the LTDMP and SAP; or
- Where unanticipated environmental risks are identified and are of a nature that warrants a review of the LTDMP.
- To provide clarity around environmental commitments.

### 7.7 Roles and responsibilities

As previously identified, NQBP operates an existing Environmental Management System (EMS) which has been certified under ISO14001:2004 since 2004, which covers the Port of Weipa.
NQBP’s EMS identifies the following –

- organisation structure, accountability and responsibilities
- environmental reporting
- environmental incidents/corrective and preventative actions
- environmental audits
- environmental records
- environmental training, development and resources
- environmental aspects, impacts and risks
- key performance indicators
- EMS management reviews
- emergency response
- communication

The LTDMP will be written into the next draft of the Port of Weipa EMS (revised annually) to provide a coordinated management and control process for review, reporting, auditing, monitoring and performance assessment. To clarify key roles in implementing the LTDMP, and managing maintenance dredging processes, the following table has been developed (Table 7-1).
### Table 7-1  Implementation of the LTDMP and dredge management process

<table>
<thead>
<tr>
<th>Roles</th>
<th>Responsibility</th>
<th>When</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintain annual reporting requirements under the ocean disposal permit.</td>
<td>NQBP</td>
<td>Annually</td>
</tr>
<tr>
<td>Implement monitoring requirements defined within Section 8.0</td>
<td>NQBP, JCU Consultants</td>
<td>As detailed within Section 8.0</td>
</tr>
<tr>
<td>Manage and monitor waste minimisation and waste activities as outlined within the Port EMP.</td>
<td>NQBP</td>
<td>Ongoing</td>
</tr>
<tr>
<td>Present results of monitoring to the TACC prior to and following dredge campaigns as appropriate</td>
<td>NQBP</td>
<td>Prior to and following dredging campaigns</td>
</tr>
<tr>
<td>Dredging superintendent maintains oversight of the dredge operations and reporting requirements.</td>
<td>NQBP and Dredging Superintendent</td>
<td>During dredging</td>
</tr>
<tr>
<td>Consider dredging processes and results of monitoring and review the LTDMP as appropriate. Include consideration of reuse options periodically and capture opportunities for improvement.</td>
<td>NQBP via the TACC</td>
<td>Following dredging campaigns</td>
</tr>
<tr>
<td>Audit the dredge operator during dredging activity to ensure compliance to management measures.</td>
<td>NQBP, Consultant</td>
<td>During dredge campaigns</td>
</tr>
<tr>
<td>Review results of sediment testing as defined within Section 8.0 and confirm suitability for disposal.</td>
<td>DSEWPC</td>
<td>As defined in Section 8.0</td>
</tr>
<tr>
<td>Review sediment sampling and analysis plan in accordance with the NAGD</td>
<td>DSEWPC</td>
<td>2014</td>
</tr>
</tbody>
</table>
8 MONITORING PROGRAMS

As part of this LTDMP, and in support of the management commitments detailed within Section 7.0, NQBP proposes to undertake on-going monitoring and assessment of the marine environment for:

- Sediment quality;
- Seagrass (condition and distribution);
- Infauna at the disposal ground;
- Marine fauna interactions; and
- Introduced marine pests.

These proposed programs follow the design of existing investigations, as referenced below. Reference should be made to these documents for detailed methodology (documents are available at www.nqbp.com.au).

- NQBP Larval settling plate program.

8.1 Sediment Quality Assessment

NQBP has undertaken regular surveys of dredge sediment quality at the Port of Weipa since 2000. Most contaminant substances tested have been below NAGD screening levels and those above screening have passed second phase testing for toxicity.

The NAGD provides the framework for assessment of potential contaminants and requires that data be ‘current’, which means that data is a maximum of five years old, and where there is no reason to believe that the contamination status has changed significantly. The NAGD states that new data will be required where contamination of the site is likely to have increased or new pollution sources are present (such as a new industry or accidental spills).

In accordance with the NAGD, characterisation of sediments will be undertaken every five years, prior to the maintenance dredging campaign. A sediment characterisation report detailing sampling undertaken in accordance with the approved SAP will be provided to DSEWPC within 2 months of sampling, and prior to dredge disposal.

The methodology for sampling, analysis and reporting will follow that detailed within the current sediment sampling and analysis plan (SKM, 2008).
8.2 Seagrass Surveys

Seagrass surveys will follow the investigation methods presently applied by JCU. Periodic revision of the program will occur and include liaison with NQBP and the TACC.

8.3 Spoil Ground - Benthic Infauna Survey

The disposal of dredged material in a designated ocean spoil disposal ground will result in smothering of existing benthic communities within the spoil ground, with a minor potential for impacts beyond the spoil ground. NQBP undertook benthic infauna community monitoring in 2009 (GHD, 2009). This LTDMP will continue infauna monitoring on the existing schedule of sampling every five years in accordance with the monitoring frequency specified under the current permit. Sampling design will follow the existing design, subject to periodic review.

8.4 Marine fauna surveys during dredging

Results of marine spotters work during the dredging campaign will be reported to the TACC for discussion.

8.5 Introduced marine pests

NQBP have deployed larval monitoring plates at three sites (Evans Landing, Lorim Point Wharf east and west) in the Port of Weipa. These traps are retrieved and checked every three (3) months by port staff and no pest species identified to date.

NQBP represent Queensland ports on the Queensland Biosecurity Working Group, who also liaise with the Australian Quarantine and Inspection Service (AQIS). Weipa is considered a low risk port for marine pests and there is currently no requirement to undertake a comprehensive marine pest survey of the Port.

Should the State or Commonwealth Government require this assessment, NQBP will undertake such a survey in accordance with best practice protocols.

The screening assessment maintained by NQBP will continue.

8.6 Implementation schedule

A tabulated summary of the monitoring program implementation over the course of the 10 year disposal approval (Table 8-1).
### Table 8-1 Summary of LTDMP Monitoring Program

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</tr>
</thead>
<tbody>
<tr>
<td>Disposal of dredge spoil will not result in contaminant related impact to the marine environment</td>
<td>Disposal</td>
<td>Sediment quality assessment</td>
<td>Revise the SAP and conduct sediment assessment. Compare contaminant levels at 95%UCL of the mean to NAGD screening levels</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td>Prepare SAP and conduct analysis every 5 years prior to dredging</td>
</tr>
<tr>
<td>The dredge operations are controlled with respect to minimising impacts to turtles and other significant marine fauna</td>
<td>Dredging and Disposal</td>
<td>Marine fauna</td>
<td>Spotters allocated within the dredge crew to enable dredge management practices for significant fauna to be implemented.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Spotters reports incorporated in weekly reports by the dredging superintendent. Reports presented to TACC.</td>
</tr>
<tr>
<td>Dredging of the Port does not constitute a significant risk of marine species introduction or translocation</td>
<td>Operations</td>
<td>Marine pest monitoring program</td>
<td>Maintain larval plate program. Cooperate with agencies implementing the National System for the Prevention and Management of Marine Pest Incursions. Maintain dredge marine pest screening protocols prior to dredging</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Pre dredge risk assessment undertaken prior to works using high risk dredge vessels. Contribute to design and review of any program relevant to the Port of Weipa if required. Present findings of larval settling plate program to the TACC.</td>
</tr>
<tr>
<td>There will be no permanent impact on marine benthic infauna communities adjacent to the spoil ground resulting from sediment mobilisation</td>
<td>Disposal</td>
<td>Benthic infauna and particle size distribution</td>
<td>Compare sites within spoil ground and identify gradient of impacts radiating from spoil round using univariate and multivariate statistical analyses. Surveys pre and post dredging</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Undertake surveys pre and post dredging every 5 years</td>
</tr>
<tr>
<td>Turbidity generated during dredging and disposal does not result in long-term changes to water quality</td>
<td>Dredging and disposal</td>
<td>Turbidity monitoring</td>
<td>Survey within the harbour, spoil ground, plume dispersion path and adjacent benthic habitats.</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>TBA prior to dredging</td>
<td>Surveys only to be undertaken where seagrass conditions indicate potential for harm. Advice sought from DAFF and JCU during pre dredge TACC meeting.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Disposal of dredge spoil will not result in impact to seagrass of the Embley River estuary.</td>
<td>Dredging and disposal</td>
<td>Habitat survey</td>
<td>Annual seagrass surveys to be conducted by JCU.</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Ensure reporting is available for consideration by the TACC prior to dredging each year.</td>
<td></td>
</tr>
<tr>
<td>Health and distribution of seagrass habitat not impacted by dredging processes</td>
<td>Dredging and disposal</td>
<td>Habitat survey</td>
<td>Mapping of the distribution of seagrass every 3 years</td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td></td>
<td>✓</td>
<td>Ensure reporting is available for consideration prior to the next maintenance program.</td>
</tr>
</tbody>
</table>
9 REFERENCES


Ports and Coastal Environmental (2013), Port of Weipa: Maintenance Dredging Sediment Sampling and Analysis Plan (SAP), Ports and Coastal Environmental, Brisbane.


Appendix 1 - Approvals
ENVIRONMENT PROTECTION (SEA DUMPING) ACT 1981

VARIATION No.1 to SEA DUMPING PERMIT No. SD2009/1382

for

NORTH QUEENSLAND BULK PORTS CORPORATION LIMITED

I, DEB CALLISTER, a delegate of the Minister for Sustainability, Environment, Water, Population and Communities, acting under Sections 21 and 23 of the Environment Protection (Sea Dumping) Act 1981, hereby vary the sea dumping permit granted on 28 June 2010 to North Queensland Bulk Ports Corporation Limited, GPO Box 409, Brisbane, QLD, 4001, to load, for the purposes of dumping, and to dump up to 12 million cubic metres of maintenance dredged seabed material from the Port of Weipa, Queensland, commencing on 28 June 2010 and extending for a period of ten years, subject to conditions which are specified in Appendix 1.

DATE......................................................day of......................................................2013

[Signature]

Deb Callister
Delegate of the Minister

This permit comprises nine (9) pages, including Appendix 1, 2 & 3.
CONDITIONS FOR DUMPING AT SEA OF SEABED MATERIAL DERIVED FROM THE MAINTENANCE DREDGING OF THE PORT OF WEIPA, QUEENSLAND

Definitions
In this permit:

"the Act" means the *Environment Protection (Sea Dumping) Act 1981*;

"the Application" means the Application for a permit under the *Environment Protection (Sea Dumping) Act 1981* submitted by North Queensland Bulk Ports Corporation Limited and received by the Department on 13 November 2009 and the variation request received from the North Queensland Bulk Ports Limited dated 23 April 2012;

"the Department" means the Department of the Sustainability, Environment, Water, Population and Communities, South Australia and Permits Section, Environment and Compliance Division, GPO Box 787, Canberra ACT 2601. Telephone – 02 6274 1111 Email – seadumping@environment.gov.au or successor entities;

"dumping activities" means all activities associated with the dumping permitted under this permit, including:

(i) the excavation or dredging of the material;

(ii) the loading and carriage of dredged material for the purpose of dumping;

(iii) the dumping of the material at the prescribed disposal site;

"environmental risk" means any risk to the environment resulting from an occurrence or event associated with the dumping activities that has occurred or appears likely to occur;

"Environmental incident" any event which has the potential to, or does impact, on the environment;

"GPS" means Global Positioning System;

"LTEMP" means the revised *Port of Weipa Long Term Environmental Management Plan* dated 21 March 2013, as received by the Department on 24 April 2013;

"monitoring zone" means the area within 300 metres of any point on the dredging/dumping run about to be commenced;

"NQBP" means the North Queensland Bulk Ports Corporation Limited; and

"vessel" means any vessel or vessels used for or in connection with the loading and/or dumping activities.
1. Except so far as the contrary intention appears, terms used in these conditions to this permit have the same meaning as such terms in the Act.

Material to be Dumped

2. NQBP must ensure that the dredge material which is loaded and dumped comprises only up to 12 million cubic metres of maintenance seabed material derived from the dredging at Port of Weipa as detailed in the Application.

Disposal Site

3. NQBP must only dump within the Albatross Bay Dredged Material Grounds, which is a circle with a radius of 1.1nm centred on the position:

   WGS84  12.659671°S  141.656680°E

4. NQBP must establish by GPS that, immediately prior to dumping, the vessel is within the disposal site defined in Condition 3.

Long Term Environmental Management Plan- Maintenance Dredging

5. NQBP must undertake the dredging activity in accordance with the LTEMP.

6. NQBP may submit for the Minister's approval a revised version of the LTEMP specified under Condition 5. If the Minister approves such a revised LTEMP, that LTEMP must be implemented in place of the original LTEMP specified at Condition 5.

7. If the Minister believes that it is necessary or desirable for the better protection of the environment to do so, the Minister may request NQBP to make specified revisions to the LTEMP as specified in Condition 5 and submit the revised LTEMP for the Minister's approval. If the Minister approves a revised LTEMP pursuant to this condition, NQBP must implement that LTEMP instead of the original LTEMP specified at Condition 5.

8. The LTEMP must be made available (electronically) on the NQBP website within 3 months of the date of this permit.

Access for Observers

9. If requested by the Department, at least two nominees of the Department must be afforded access to witness, inspect, examine or audit any part of the operations, including any dumping or monitoring activity, the vessel or any other equipment, or any documented records, and must be provided with any necessary assistance in carrying out their duties.

Mitigation Measures for Protection of Marine Species

10. Before beginning dumping activities, NQBP must check, using binoculars from a high observation platform, for cetaceans, marine turtles and dugongs within the monitoring zone.

11. If any marine species specified in Condition 14 are sighted in the monitoring zone, dumping activities must not commence in the monitoring zone until 20 minutes after the last marine species is observed to leave the monitoring zone, or the dredge is to
move to another area of the dredge/disposal ground to maintain a minimum distance of 300 metres between the vessel and any marine species identified in Condition 14.

Environmental Risk and Incidents

12. If, at any time during the course of the placement activities, an environmental incident occurs or environmental risk is identified, all measures must be taken immediately by NQBP to mitigate the risk or the impact. The situation is to be reported within 24 hours, to the Department, with details of the incident or risk, the measures taken, the success of those measures in addressing the incident or risk and any additional measures proposed to be taken.

Compliance of all Parties engaged in dumping activities

13. NQBP must ensure that all persons engaged in the dumping activities under this permit, including the owner(s) and person(s) in charge of the vessel, comply with this permit and the requirements of the Act.

Monitoring and reporting

14. NQBP must keep records comprising either weekly plotting sheets or a certified extract of the ship’s log which detail:

   a. the times and dates of when each dumping run is commenced and finished;
   b. the position (as determined by GPS) of the vessel at the beginning and end of each dumping run, with the inclusion of the path of each dumping run; and
   c. the volume of dredge material (in cubic metres) dumped and quantity in dry tonnes for the specified operational period and compare these quantities with the total amount permitted under the permit on a daily basis.

   These records are to be retained by NQBP for verification and audit purposes.

15. A bathymetric survey of the disposal sites must be undertaken by NQBP:

   a. prior to the commencement of dredging under this permit; and
   b. within one month of the completion of all dumping activities authorised under this permit.

16. Within two (2) months of the final bathymetric survey being undertaken, NQBP must provide a digital copy of each of the bathymetric surveys to the RAN Hydrographer, Locked Bag 8801, South Coast Mail Centre, NSW 2521.

17. NQBP must provide a report on the bathymetry to the Department within two (2) months of the final bathymetric survey being undertaken. The report must include a chart showing the change in sea floor bathymetry as a result of dumping and include written commentary on the volumes of dumped material that appear to have been retained within the disposal site.

18. To facilitate annual reporting to the International Maritime Organization, NQBP must report to the Minister by 31 January each year, including on the day of the expiry of the permit or completion of all dredging under this permit, information at Appendix 2 to this permit, or in a format as approved by the Minister from time to time.
Appendix 2: Sea Dumping Permit International Reporting Requirements

This form must be completed and returned by email only to the Department of Sustainability, Environment, Water, Population and Communities by 31 January each year. This information is required for Australia’s international reporting obligations under the London Protocol. Email: seadumping@environment.gov.au

| Permit Holder: |
| Address: |
| Submitted by: |
| Phone: |
| Email: | Date: (dd/mm/yyyy) |

Sea Dumping Permit number:

Permit start date: (dd/mm/yyyy) Permit end date: (dd/mm/yyyy)

Approved dumping site/s:

Geographical position

<table>
<thead>
<tr>
<th>Latitude</th>
<th>Longitude</th>
</tr>
</thead>
</table>

Calendar year this report applies to:

Permit quantity:

Quantity dumped (cubic metres/number) in the preceding calendar year:

Description of material Please tick relevant box or boxes

- Capital Dredged Material
- Maintenance Dredged Material
- Fish Waste
- Vessels
- Platforms
- Sewage Sludge
- Organic Material of Natural Origin
- Bulky Waste
- CO₂
- Inert-Inorganic Geological Material

Comments:
### Appendix 3: Schedule of variations to Sea Dumping Permit SD2007/0602

<table>
<thead>
<tr>
<th>Variation number</th>
<th>Date of variation request</th>
<th>Section (permit/definitions/conditions)</th>
<th>Description of variation</th>
<th>New text (If applicable)</th>
<th>Date varied</th>
</tr>
</thead>
</table>
| 1                | 23 April 2012             | permit                                   | **ENVIRONMENT PROTECTION (SEA DUMPING) ACT 1981**  
SEA DUMPING PERMIT No. SD2009/1382  
for  
NORTH QUEENSLAND BULK PORTS CORPORATION LIMITED  
I, VICKI JANE MIDDLETON, a delegate of the Minister for Environment Protection, Heritage and the Arts, acting under Section 19 of the Environment Protection (Sea Dumping) Act 1981, hereby grant a sea dumping permit to North Queensland Bulk Ports Corporation Limited, GPO Box 409, Brisbane, QLD, 4001, to load, for the purposes of dumping, and to dump up to 12 million cubic metres of maintenance dredged seabed material from the Port of Weipa, Queensland, commencing on the date of signature of this permit and extending for a period of ten years, subject to conditions which are specified in Appendix 1. | **ENVIRONMENT PROTECTION (SEA DUMPING) ACT 1981**  
VARIATION No.1 to SEA DUMPING PERMIT No. SD2009/1382  
for  
NORTH QUEENSLAND BULK PORTS CORPORATION LIMITED  
I, DEB CALLISTER, a delegate of the Minister for Sustainability, Environment, Water, Population and Communities, acting under Sections 21 and 23 of the Environment Protection (Sea Dumping) Act 1981, hereby vary the sea dumping permit granted on 28 June 2010 to North Queensland Bulk Ports Corporation Limited, GPO Box 409, Brisbane, QLD, 4001, to load, for the purposes of dumping, and to dump up to 12 million cubic metres of maintenance dredged seabed material from the Port of Weipa, Queensland, commencing on 28 June 2010 and extending for a period of ten years, subject to conditions which are specified in Appendix 1. | 4/7/2013 |
|                  |                           | definitions                              | **"the Application"** means the Application for a permit under the Environment Protection (Sea Dumping) Act 1981 submitted by North Queensland Bulk Ports Corporation Limited and received by the Department on 13 November 2009 and further information received on 9 March 2010, 14 April 2010, | **"the Application"** means the Application for a permit under the Environment Protection (Sea Dumping) Act 1981 submitted by North Queensland Bulk Ports Corporation Limited and received by the Department on 13 November 2009 and the variation request received from the North Queensland Bulk Ports Limited dated 23 | Deb Callister  
AS EACD |
<table>
<thead>
<tr>
<th>Conditions</th>
<th>Definitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>7. If the Minister believes that it is necessary or required to revision the Long Term Environmental Management Plan as specified in Condition 5, the Minister may request a NGBP to make specified revisions to the Long Term Environmental Management Plan as required by the Minister.</td>
<td>&quot;LTEMPlan&quot; means the Long Term Environmental Management Plan as specified in Condition 5.</td>
</tr>
<tr>
<td>6. NGBP must undertake the drafting activity in accordance with the LTEMPlan.</td>
<td>New definition: &quot;Environmental Audit&quot; for success audits.</td>
</tr>
</tbody>
</table>

**Long Term Environmental Management Plan (LTEMPlan)**

- ** DEFINITIONS**
  - LTEMPlan: The Long Term Environmental Management Plan as determined by the Department on 24 April 2013.
  - Environmental Audit: A review of the implementation of the LTEMPlan.

**Definitions**

- LTEMPlan: The Long Term Environmental Management Plan as determined by the Department on 24 April 2013.
- Environmental Audit: A review of the implementation of the LTEMPlan.

**Department**

- Email: post.environment.management@gov.au
- Telephone: 08 6274 1111
- GPO Box 787, Perth, WA 6001

- South Australian and Permits Section
- Environmental Water Signal Water Management and Communities
- Department of the Environment, Water.
and submit the revised LTMMMP for the Minister’s approval. If the Minister approves a revised LTMMMP pursuant to this condition, NQBP must implement that LTMMMP instead of the original LTMMMP specified at Condition 5.

8. The LTMMMP must be made available (electronically) on the NQBP website within 3 months of the date of this permit.

desirable for the better protection of the environment to do so, the Minister may request NQBP to make specified revisions to the LTEMP as specified in Condition 5 and submit the revised LTEMP for the Minister’s approval. If the Minister approves a revised LTEMP pursuant to this condition, NQBP must implement that LTEMP instead of the original LTEMP specified at Condition 5.

8. The LTEMP must be made available (electronically) on the NQBP website within 3 months of the date of this permit.

<table>
<thead>
<tr>
<th>Old Conditions</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hydrodynamic Modelling Report</strong></td>
</tr>
<tr>
<td>9. The hydrodynamic modelling of Port of Weipa (Hydrodynamic Modelling Report March 2009) is to be validated by NQBP in the 2010 dredging campaign. The 2010 hydrodynamic monitoring results must be included in a revised version of the LTMMMP specified in Condition 5, to be approved by the Department within 12 months of the date of this permit.</td>
</tr>
<tr>
<td>10. The methodology to validate and improve the hydrodynamic modelling specified in Condition 9 must be approved by the Department prior to the 2010 dredging campaign.</td>
</tr>
<tr>
<td>11. No further dredging after the 2010 dredging campaign is to be undertaken until the revised LTMMMP specified in Condition 9 has been approved by the Department.</td>
</tr>
<tr>
<td>12. Should the 2010 hydrodynamic monitoring not validate the results of the Hydrodynamic Modelling Report March 2009, the revised LTMMMP specified in Condition 9 must include revised monitoring and</td>
</tr>
</tbody>
</table>

Old conditions removed as they were addressed and signed off in 2011 as per the conditions.

Conditions renumbered to reflect this.
| Appendix 2 | Condition | Protocol | Email: seehttps://environment.gov.au/international-reporting-obligations-under-the-london-convention-modification-and-superseding-legal-provisions-for-australia | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| New condition 9 | Condition | CEQ 13 | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. |
| New condition 10 | Condition | CEQ 14 | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. |
| New condition 11 | Condition | CEQ 15 | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. | Note: the information is required for Australia’s International Reporting Obligations under the London Convention. | Information provided on or before 31 January each year. The information is required by the Department of Environment, Water, Heritage and the Arts. | This form must be completed and returned by email. | Please fill in this form and return it by email only. |
To: North Queensland Bulk Ports Corporation
PO Box 3340
NORTH MACKAY QLD 4740

Email: kkane@nqp.com.au

Attention: Mr Kevin Kane

Our reference: 256759

Application details
I refer to the application that was received by the administering authority on 17 June, 2013.
Land description: Port of Weipa and Albatross Bay Lot 14 Plan SP120446.

Decision
Your application has been approved and your environmental authority (reference EPPR00477713) is attached.

Additional comments or advice You are advised that if you are not the owner of the land to which the environmental authority relates, you have 10 business days from receipt of this environmental authority to give each owner of the land, written notice that you have been issued this environmental authority.

Should you have any further enquiries, please contact Nathan Sirl on telephone 1300 130 372 (Option 4).

Yours sincerely

Anthony Schmid
Department of Environment and Heritage Protection
Delegate of the administering authority
Environmental Protection Act 1994

Enclosed
Permit - environmental authority (reference EPPR00477713)
Environmental authority

This environmental authority is issued by the administering authority under Chapter 5 of the Environmental Protection Act 1994.

Permit\(^1\) number: EPPR00477713

Environmental authority takes effect on 25 June, 2013.

The anniversary date of this environmental authority remains 01 July. An annual return and the payment of the annual fee which is currently $14,572.80 will be due each year on this day.

Environmental authority holder(s)

<table>
<thead>
<tr>
<th>Name</th>
<th>Registered address</th>
</tr>
</thead>
<tbody>
<tr>
<td>North Queensland Bulk Ports Corporation</td>
<td>Level 1, Wellington House</td>
</tr>
<tr>
<td></td>
<td>181 Victoria Street</td>
</tr>
<tr>
<td></td>
<td>MACKAY QLD 4740</td>
</tr>
</tbody>
</table>

Environmentally relevant activity and location details

<table>
<thead>
<tr>
<th>Environmentally relevant activity(ies)</th>
<th>Location(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>16-(1d) Dredging &gt;1000000t yr</td>
<td>Port of Weipa and Albatross Bay Lot 14 Plan SP120446</td>
</tr>
</tbody>
</table>

Additional information for applicants

Environmentally relevant activities

The description of any environmentally relevant activity (ERA) for which an environmental authority is issued is a restatement of the ERA as defined by legislation at the time the approval is issued. Where there is any inconsistency between that description of an ERA and the conditions stated by an environmental authority as to the scale, intensity or manner of carrying out an ERA, then the conditions prevail to the extent of the inconsistency.

An environmental authority authorises the carrying out of an ERA and does not authorise any environmental harm unless a condition stated by the authority specifically authorises environmental harm.

A person carrying out an ERA must also be a registered suitable operator under the Environmental Protection Act 1994 (EP Act).

\(^1\) Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation

Department of Environment and Heritage Protection

www.ehp.qld.gov.au ABN 46 640 294 485
Contaminated land

It is a requirement of the EP Act that if an owner or occupier of land becomes aware a notifiable activity (as defined in Schedule 3 and Schedule 4) is being carried out on the land, or that the land has been, or is being, contaminated by a hazardous contaminant, the owner or occupier must, within 22 business days after becoming so aware, give written notice to the chief executive.

Anthony Schmid
Delegate of the administering authority
Environmental Protection Act 1994

Enquiries:
Nathan Sirl
Permit and Licence Management
Department of Environment and Heritage Protection
GPO Box 2454
BRISBANE QLD 4001
Phone: 1300 130 372
Fax: (07) 3330 5875
Email: palm@ehp.qld.gov.au
Obligations under the *Environmental Protection Act 1994*

In addition to the requirements found in the conditions of this environmental authority, the holder must also meet their obligations under the EP Act, and the regulations made under the EP Act. For example, the holder must comply with the following provisions of the Act:

- general environmental duty (section 319)
- duty to notify environmental harm (section 320-320G)
- offence of causing serious or material environmental harm (sections 437-439)
- offence of causing environmental nuisance (section 440)
- offence of depositing prescribed water contaminants in waters and related matters (section 440ZG)
- offence to place contaminant where environmental harm or nuisance may be caused (section 443)

**Conditions of environmental authority**

**Location:** Port of Weipa and Albatross Bay  
**Lot / Plan:** Lot 14 Plan SP120446  
**Relevant activity:**  
16-(1d) Dredging >1000000t yr  

**Approved plans / Specifications:**

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Document Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NQBP2013-001</td>
<td>Port of Weipa – Maintenance Dredging Areas</td>
<td>18/01/2013</td>
</tr>
</tbody>
</table>

The environmentally relevant activity conducted at the location as described above must be conducted in accordance with the following site specific conditions of approval.

**Agency interest: General**

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>G1</td>
<td><strong>Limitations of permit:</strong> This development permit attaches to the part of the port area defined in Item 4 - &quot;Approved Plans/specifications&quot; of the Concurrence Agency Response.</td>
</tr>
<tr>
<td>G2</td>
<td>This development permit authorises ERA 16 (dredging) that is for maintenance work on lawful work as specified in Item 4 - &quot;Approved Plans/specifications&quot; of the Concurrence Agency Response.</td>
</tr>
<tr>
<td>G3</td>
<td>The port authority of the port area to which this permit attaches must maintain direction of any operator carrying out an activity authorised by this permit.</td>
</tr>
<tr>
<td>G4</td>
<td><strong>Prevent environmental harm:</strong> The operator must ensure that environmental harm is not caused by this ERA except where specifically permitted by a condition of this development permit.</td>
</tr>
</tbody>
</table>
| G5 | **Maintenance of measures, plant and equipment**: The operator must:  
(a) install all measures, plant and equipment necessary to ensure compliance with the conditions of this development permit  
(b) maintain and calibrate such measures, plant and equipment in an efficient condition and keep records of the maintenance  
(c) operate such measures, plant and equipment in an efficient manner. |
| G6 | **Integrated environmental management system (IEMS)**: The operator must implement an integrated environmental management system (IEMS) from *(the commencement of this ERA or specified date)*. The IEMS must identify all causes of environmental harm, including but not limited to the actual and potential release of any contaminants, the nature of the environmental harm and the actions that will be taken to prevent environmental harm being caused. The IEMS must be made available to the Administering Authority when requested. The IEMS must achieve the following outcomes;  
(a) material intended to be dredged under this permit is tested and analysed in accordance with the latest version of the National Assessment Guidelines for Dredging 2009.  
(b) significant and sensitive receptors (including for example wetland and ecosystem features) in the port, area are identified and mapped  
(c) environmental aspects and potential impacts are identified  
(d) control measures that minimise the potential for environmental harm are in place  
(e) contingency plans and emergency procedures are in place  
(f) organisational structures, accountability and responsibility is recorded  
(g) arrangements for effective communication are documented and undertaken  
(h) all contaminant releases are monitored  
(i) staff are trained and aware of the requirements of this permit  
(j) appropriate records are kept  
(k) reviews of environmental performance and continual improvement are undertaken periodically. |
| G7 | The IEMS must not be implemented or amended in a way that contravenes any condition of this development permit. |
| G8 | **Monitoring Plan**: The operator must implement a monitoring plan that complies with the latest version of the Administering Authority's Water Quality Sampling Manual from the commencement of this ERA. The monitoring plan must achieve the following outcomes;  
(a) long-term ecological impacts associated with dredging operations are monitored  
(b) compliance with the conditions of this development permit is monitored  
(c) operations are adjusted in response to monitoring results to ensure compliance with development permit conditions. |
| G9 | The monitoring plan must include (but not be limited to) the following:  
(a) a description of the dredge equipment to be used, including the discharge points for turbid waters  
(b) a plan for the lawful disposal of the dredged material  
(c) a list of environmental values located within and adjacent to the dredge operation  
(d) the methods for collection and analysis of the samples (including specific areas to be monitored, when monitoring is to be undertaken and duration of monitoring)  
(e) the methods of analysing the data and responding to the results. |
| G10 | The monitoring plan and monitoring results must be made available to the administering authority upon request. |
| G11 | Monitoring must be done by a competent person in accordance with methods set out in the latest version of the administering authority's water quality sampling manual. |
### Permit

**Environmental authority**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>G12</strong></td>
<td><strong>Records</strong>: The operator must maintain a record of sites where dredging is carried out (specifying the boundaries of the dredged area by GPS coordinates) and the volume of material removed from each site (to the nearest tonne), and submit these records to the port authority.</td>
</tr>
<tr>
<td><strong>G13</strong></td>
<td>The port authority must maintain a record of all documents or information provided under condition G13 and all monitoring results required by this permit.</td>
</tr>
<tr>
<td><strong>G14</strong></td>
<td>All records required by this permit must be kept for five years and be made available to the administering authority upon request.</td>
</tr>
</tbody>
</table>
| **G15**   | **Complaint response**: The port authority must record the following details for all complaints received and provide to the administering authority upon request:  
(a) time, date, name and contact details of the complainant  
(b) reasons for the complaint  
(c) details of investigations undertaken by the port authority  
(d) conclusions formed.  
(e) actions taken to resolve the complaint. |
| **G16**   | **Notification**: Any incident of environmental harm (including a reasonable suspicion that environmental harm has or is likely to have occurred) outside the lawful work as specified in condition G2 must be reported as soon as practicable to the relevant DERM regional office. |

**Agency interest: Air**

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>A1</strong></td>
<td>The release of airborne contaminants from the activity must not cause environmental nuisance.</td>
</tr>
</tbody>
</table>

**Agency interest: Water**

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>W1</strong></td>
<td><strong>Release of contaminants</strong>: Contaminants must not be directly or indirectly released to waters other than wastewater released from the discharge point during the loading and unloading of dredge spoil.</td>
</tr>
</tbody>
</table>
| **W2**           | In carrying out the ERA, the release of contaminants (including any release caused by extraction of material from the bed of waters) must:  
(a) only occur within the permitted areas specified in condition G2  
(b) not have any properties which are capable of causing environmental harm  
(c) not produce any slick or other visible evidence of oil or grease, nor contain visible floating oil, grease, scum, litter or other objectionable matter  
(d) be carried out taking practical measures necessary to minimise the concentration of suspended solids released during the loading and pump-out of the vessel |
Permit
Environmental authority

W3  **Equipment**: Any dredging must be conducted using equipment that is In survey and registered and, in relation to environmental performance, is equal to or better than the following equipment:

(a) **Trailing Suction Hopper Dredge** that is equipped, as a minimum, with:
   (i) below keel discharge of tail waters via an anti-turbidity control valve
   (ii) on-board systems for determining solids to water ratio or density of dredged material
   (iii) electronic positioning and depth control system for defining the location and depth of dredging activities
   (iv) dredge heads and depth control capable of, and where appropriate, fitted with fauna exclusion devices (e.g. turtle deflectors).

(b) **Cutter Suction Dredge** that is equipped, as a minimum, with:
   (i) electronic positioning and depth control system for defining the location and depth of dredging activities
   (ii) continuous delivery connection (e.g. floating or submerged pipeline) to an approved placement site
   (iii) a system or process to ensure the delivery system integrity is maintained at all times
   (iv) systems for determining solids to water ratio or density of dredged material during operations.

(c) **Grab Dredge** that is equipped, as a minimum, with:
   (i) electronic positioning system for defining the location and depth of dredging activities.

W4  **Placement of dredge material**: Dredging must not start until provision has been made to lawfully place or dispose of the dredge material. Evidence of applicable approvals must be made available to the administering authority when requested.

W5  **Placement of dredge material at sea**: Material dredged under this permit must not be placed at sea except at a place authorised under an authority, licence or other permit issued by either or both the Commonwealth or Queensland governments to receive the dredged material.

**Agency interest: Noise**

<table>
<thead>
<tr>
<th>Condition number</th>
<th>Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>N1</td>
<td>Noise from the activity must not cause environmental nuisance.</td>
</tr>
</tbody>
</table>
Definitions

Key terms and/or phrases used in this document are defined in this section and **bolded** throughout this document. Applicants should note that where a term is not defined, the definition in the *Environmental Protection Act 1994*, its regulations or environmental protection policies must be used. If a word remains undefined it has its ordinary meaning.

**dredging** includes extraction of mud, sand, coral, ballast, shingle, gravel, clay, earth and other material from the bed of Queensland tidal and non-tidal waters. Dredging does not include the banks of a waterway.

**lawful work** means work in accordance with a development permit. For the purposes of this guideline and model conditions, lawful work is limited to the following work:
- (I) berth pockets, and approach and departure aprons
- (II) navigation channels
- (iii) swing basins.

**Integrated environmental management system** for an environmentally relevant activity or activities, means a system for the management of the environmental impacts of the carrying out of the activity or activities.

**maintenance work on lawful work** means maintaining works in accordance with the development approval. Examples of maintenance work include excavation of material for repair or maintenance of the approved dredge basin. Examples of work not considered to be maintenance work include work to extend the boundaries of an approved dredge basin in any dimension (including depth) or any new dredging not covered by a development approval.

**operator** means any of the following:
- (i) a person having the benefit of this development permit
- (ii) the holder of a registration certificate for this development permit
- (iii) anyone undertaking the activity to which this development permit relates (Note: it is an offence to carry out work under a development permit without a relevant registration certificate).

**port area** means as defined in section 267 of the *Transport Infrastructure Act 1994*

**port authority** means as defined in schedule 2 of the *Transport Infrastructure (Ports) Regulation 2005*
### Schedules_Schedule 1—Approved plans

<table>
<thead>
<tr>
<th>Document No.</th>
<th>Document Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>NQBP2013-001</td>
<td>Port of Weipa – Maintenance Dredging Areas</td>
<td>18/01/2013</td>
</tr>
</tbody>
</table>

END OF PERMIT
Map Number: NQPR2013-001
10/03/2013

**Port of Weipa - Maintenance Dredging Area**

**Total Maintenance Dredge Area:** 622 ha

**DEPARTMENT OF ENVIRONMENT AND HERITAGE PROTECTION**

**APPROVED**

**Permit No:** 39EC0301310

**Albatross Bay Spill Ground**

**Dredge Turning Circle**

**Beacon Coordinates**

**Legend**

- Berth Areas
- Maintenance Dredging Area (approx 586ha)
- Cadastral Boundaries
- Channel Extension Maintenance Dredging Area (approx 26ha)

**Notes:**
1. Design depths are shown. An additional allowance of an average 600mm of over-dredging depth must be added to all design depths shown.
2. Coordinates listed as Easting and Northing.
Dear Ms Trimarchi

DECISION NOTICE - DEVELOPMENT APPLICATION FOR A DEVELOPMENT PERMIT
Operational Works for Capital Dredging at the port of Weipa

Reference: PM-08-320-WE004

Please find attached the Decision Notice approving, subject to conditions, the development application for Operational Works (Capital Dredging) on Strategic Port Land at the Port of Weipa.

In accordance with the Integrated Planning Act 1997 (see Division 8 Sections 4.1.27, 4.1.30, 4.1.31, 4.1.33A, 4.1.39, 4.1.41 and 4.1.42 attached) you may appeal against the PCQ’s decision. During your appeal period, you may also make written representations to PCQ about the conditions of the development approval and you may also suspend your appeal period by written notice to PCQ, for up to 20 business days if you need more time to make these representations.

Should you wish to discuss any aspect of the approval or conditions therein please do not hesitate to contact Mitchell Smith on 3224 2789.

Yours sincerely

Martin McAdam
Acting Chief Executive Officer

Enquiries: Mitchell Smith
Telephone: 3224 2789
Email: msmith@pcq.com.au

Doc Reference: ms12502.doc

cc. Ecoaccess Customer Service Unit
Environmental Protection Agency
PO Box 155
BRISBANE ALBERT STREET 4002

Captain Alan Boath
Regional Harbour Master
(Cairns)
Queensland Transport
Maritime Cairns
PO Box 1787
CAIRNS QLD 4870

Adam West
Principal Catchment Ecologist
Department of Primary Industries
and Fisheries
PO Box 5396
CAIRNS QLD 4870
**DECISION NOTICE**

*SECTION 3.5.15(1) INTEGRATED PLANNING ACT 1997*

**APPLICANT:** Ports Corporation of Queensland

**ADDRESS:** PO Box 409  
BRISBANE QLD 4001

**REAL PROPERTY DESCRIPTION:** Lot 14 on SP120446

**Referral Agencies**

1. Environmental Protection Agency  
   PO Box 155  
   BRISBANE ALBERT STREET 4002

2. Maritime Safety Queensland  
   Captain Alan Boath  
   Regional Harbour Master (Cairns)  
   Queensland Transport  
   Maritime Cairns  
   PO Box 1787  
   CAIRNS QLD 4870

3. Department of Primary Industries  
   Adam West  
   Principal Catchment Ecologist  
   Department of Primary Industries and Fisheries  
   PO Box 5396  
   CAIRNS QLD 4870

**DECISION DATE:** 7 December 2005

**DECISION:**

- Approved with conditions imposed by the Ports Corporation of Queensland, the Environmental Protection Agency and Department of Primary Industries and Fisheries and Maritime Safety Queensland (Queensland Transport).

**DECISION AUTHORITY:** Ports Corporation of Queensland

**APPROVAL DETAILS:** Development Permit for Operational Works for Capital Dredging on Strategic Port Land at the Port of Weipa

**ASSESSMENT MANAGER CONDITIONS**

1. Carry out the approved development in accordance with the application and approved drawings and documents as submitted, except as altered by any conditions of approval.

**REFERRAL AGENCY CONDITIONS**

1. The Environmental Protection Agency concurrence agency conditions are contained in their Concurrence Agency Response which is included as Attachment A to this decision notice.
2. The Department of Primary Industries concurrence agency conditions are contained in the Concurrence Agency Response which is included as Attachment B to this decision notice.

3. The Maritime Safety Queensland (Queensland Transport) concurrence agency conditions are contained in their Concurrence Agency Response which is included as Attachment c to this decision notice.
ATTACHMENT A

Environmental Protection Agency
- Concurrence Agency Response
Concurrence Agency Response

This notice is issued by the Environmental Protection Agency pursuant to Sections 3.3.16 and 3.3.18 of the Integrated Planning Act 1997 to advise of a decision or action.

Ports Corporation of Queensland
GPO Box 409
BRISBANE QLD 4001

CC: Ports Corporation of Queensland
C/- GHD Pty Ltd
PO Box 668
BRISBANE QLD 4001

Attention: Ms Julie Keane

Our reference: 256759

Attention: Brad Fish

Dear Mr Fish

Re: Referral for Concurrence Agency Response

The Environmental Protection Agency (EPA), wishes to advise that the referral for a concurrence agency response, received on 31-AUG-2005, has been assessed, and on 02-DEC-2005 it was granted with conditions.

1. Property/Location:

   Street address - Port of Weipa South Channel & Albatross Bay Spoil Ground WEIPA QLD 4874
   Lot/Plan - Lot 14 Plan SP120446 (South Channel)
   Centre position 12.661164S; 141.655557E (AGD84) radius 2,000m (Spoil Ground)

2. Details of the recommendation

   Aspect of Development
   Concurrence Response for Operational Work
   - Disposing of dredge spoil or other solid waste material in tidal water (other than under an allocation notice under the Coastal Protection and Management Act 1995)
   - Tidal work in, on, or above tidal waters

   Recommendation
   - Granted with conditions
EPA Ref Number  
- IPCC00297605D11

3. Currency period
This approval will lapse unless substantially started within the standard currency periods stated in section 3.5.21 of the Integrated Planning Act 1997 applying to each aspect of development in this approval.

4. The approved plans
The approved plans and/or documents for this approval are:

<table>
<thead>
<tr>
<th>Plan/Document No.</th>
<th>Plan/Document Name</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>41-13086-050</td>
<td>IPA Approval Application Plan</td>
<td>01.08.05</td>
</tr>
<tr>
<td>Revision B</td>
<td>GHD's Port of Weipa Capital Dredging Certification of</td>
<td>28.07.05</td>
</tr>
<tr>
<td></td>
<td>Design of Tidal Works</td>
<td></td>
</tr>
</tbody>
</table>

5. Codes for self-assessable development
Any self-assessable development for an environmentally relevant activity conducted in conjunction with this approval, must comply with the relevant code of environmental compliance.

6. Assessment Manager Responsibilities
Please note that it is a requirement under Sections 3.5.15 and 3.5.17 of the Integrated Planning Act 1997 that a copy of the final Decision Notice (which includes the EPA’s concurrence response) for this application issued by the Ports Corporation of Queensland, be forwarded to each referral agency. Therefore could you please send a signed hardcopy to the EPA’s Ecoaccess Customer Service Unit at PO Box 155, Brisbane Albert Street, 4002 and an electronic copy to eco.access@epaqld.gov.au.

In addition, the State’s Native Title Work Procedures indicate that responsibility for assessment of native title issues for an IDAS application rest with the Assessment Manager. Therefore in this instance, the EPA has not provided a notification to native title parties.
If you require more information, please contact Jenny Butler, the Project Manager, on the telephone number listed below.

Yours sincerely

Mark Cavicchiolo
District Manager
Cairns District, Northern Region
Delegate
Environmental Protection Agency

02-DEC-2005

Enquiries:
Cairns District Office (EPA)
PO Box 2066
CAIRNS QLD 4870
Phone: (07) 4046 6691
Fax: (07) 4046 6606
28 July 2005

Ports Corporation of Queensland
300 Queen Street
BRISBANE QLD 4000

Attn: Mr Steven Della Mattea

Dear Steve

Port of Weipa Capital Dredging
Certification of Design of Tidal Works

I, Sarath Optha Vithana, being an employee of GHD Pty Ltd and a holding the qualification of Registered Professional Engineer Queensland (RPEQ No. 6381), certify that GHD Pty Ltd has undertaken a design of the Weipa South Channel depths and batters and certify that the channel depths and batters are;

- Structurally adequate for the anticipated usage.
- Comply with the relevant codes, including the EPA's operational policy, “Building and engineering standards for tidal works”.

As there are no codified requirements applicable to the works the design has been conducted in accordance with accepted engineering practice and principals and the batter slopes conform to the batters established along the existing channel configuration.

Channel depths have been determined to conform to a declared depth of 11.1 mLAT (where the declared depth has been determined by Maritime Safety Queensland).

The design is detailed on Drawing 41-13086-50 Revision C.

Yours faithfully

GHD Pty Ltd

Sarath Optha Vithana
(07) 3316 3000
Concurrence Agency Response

Section 3.3.16 and 3.3.18
Integrated Planning Act 1997

EPA Permit number: IPCC00297605D11
Assessment Manager reference: IPCC00297605D11
Date application received by EPA: 31-AUG-2005
Permit Type: Concurrence Response for Operational Work
Date of Decision: 02-DEC-2005
Decision: Granted with Conditions
Relevant Laws and Policies: Coastal Protection and Management Act 1995 and any subordinate legislation
Jurisdiction: Item 9 in Table 2 of Schedule 2 of the Integrated Planning Regulation 1998

The concurrence agency response attaches to the land described below, which either connects to or receives the benefits of the structure or activity that is the tidal work.

Development Description

Property/Location

Lot/Plan:
Lot 14 Plan SP120446 (South Channel)
Centre position 12.661164S; 141.655557E (AGD84) radius 2,000m (Spoil Ground)

Street address:
Port of Weipa South Channel and Albatross Bay Spoil Ground WEIPA QLD 4874

Aspect of Development:
- Disposing of dredge spoil or other solid waste material in tidal water (other than under an allocation notice under the Coastal Protection and Management Act 1995)
- Tidal work in, on, or above tidal waters

Reasons for inclusion of development conditions

In accordance with section 3.3.18(7) of the Integrated Planning Act 1997 and section 27B of the Acts Interpretation Act 1954, the reasons for the inclusion of development conditions are:

The Environmental Protection Agency is a concurrence agency under the Integrated Planning Regulation 1998 for coastal management under the Coastal Protection and Management Act 1995, excluding amenity or aesthetic significance or value.

1 Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service.

Environmental Protection Agency
www.epa.qld.gov.au
Additional comments or advice about the application
Nil

Additional information for applicants
Nil

Contaminated Land
It is a requirement of the Environmental Protection Act 1994 that if an owner or occupier of land becomes aware a Notifiable Activity (as defined by Schedule 2 of the Environmental Protection Act 1994) is being carried out on the land or that the land has been affected by a hazardous contaminant, they must, within 30 days after becoming so aware, give notice to the Environmental Protection Agency.

Mark Cavicchiolo  
District Manager  
Cairns District, Northern Region  
Delegate  
Environmental Protection Agency  

02-DEC-2005
CONDITIONS OF APPROVAL

Agency Interest: Coastal

Coastal 1: All works are to be constructed in accordance with the attached approved drawings and specifications listed in the approved plans section in the notice attached to this concurrence agency response.

Coastal 2: The activity must be carried out in accordance with the Environmental Management Plan provided with the application, or any subsequent endorsed amendments to that plan.

Coastal 3: " A report from a Registered Professional Engineer of Queensland must be submitted to the Environmental Protection Agency within three (3) months of the date of completion of the works, certifying that:

(a) The works (including any other associated works) have been constructed in accordance with the approved drawings and these conditions;
(b) The works:- (i) are structurally adequate for anticipated usage; and
(ii) comply with all relevant codes including the Environmental Protection Agency's operational policy, Building and engineering standards for tidal works where applicable; and
(c) The bed and banks of the waterway for a distance of 15 metres around the site of the works are clear of all debris."

Coastal 4: In carrying out the approved works, you must take all reasonable and practicable measures to prevent and / or to minimise the likelihood of environmental harm being caused by the release of contaminants from any source including silt and oil, grease or other hydrocarbon spills from machinery.

Coastal 5: Dredging to be undertaken of the South Channel comprises capital dredging (including maintenance component) up to 3 750 000 cubic metres and associated future maintenance dredging.

Coastal 6: Dredge material shall only be deposited in the approved Albatross Bay Spoil Ground centre position:
12.661164S, 141.655557E (AGD84)
571 309 E, 8 600 415 N (GDA94 Zone 54)
radius 1.1 nautical mile (2000 metres).
CONDITIONS OF APPROVAL

Coastal 7: All reasonable and practicable measures shall be taken to limit potential turbidity plume from encroaching onto seagrass meadows adjacent to the proposed dredging site.

Coastal 8: The dredge material is to be disposed evenly over the Albatross BaySpoil Ground.

Coastal 9: If, as a result of removal of dredging material or any other cause attributable to the dredger, any bank outside the works at Chwahn (Jackson) Bank shown in Drawing 41-13086-050(B) is displaced the dredger shall at his cost and expense restore the bank to its original condition and take such other action as is necessary to ensure the stability of the bank to the satisfaction of the Chief Executive.

Coastal 10: Where any damage is done to any navigation aid, wharf, jetty or pontoon, or to any other fixed or floating structure, or to any oyster bank, or to any property, whether located below or partly above and partly below high water mark, by or in consequence of the operations of the dredger, the dredger shall at its cost and expense forthwith make good any such damage to the satisfaction of the Chief Executive and the Harbour Master.

Agency Interest: Social

Social 1: All complaints received must be recorded including investigations undertaken, conclusions formed and action taken. This information must be made available to the Environmental Protection Agency on request.
Attachment – Definitions

Words and phrases used throughout this permit¹ are defined below. Where a definition for a term used in this permit¹ is sought and the term is not defined within this permit¹ the definitions provided in the relevant legislation shall be used.

"approval" means 'notice of development application decision' or 'notice of concurrence agency response' under the Integrated Planning Act 1997.

"dredge spoil" means material taken from the bed or banks of waters by using dredging equipment or other equipment designed for use in extraction of earthen material.

"erosion prone area" means an area declared to be an erosion prone area under section 70(1) of the Coastal Protection and Management Act 1995.

"high water mark" means the ordinary high water mark at spring tides.

"quarry material" means material on State coastal land, other than a mineral within the meaning of any Act relating to mining. Material includes for example stone, gravel, sand, rock, clay, mud, silt and soil, unless it is removed from a culvert, stormwater drain or other drainage infrastructure as waste material.

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

"tidal water" means the sea and any part of a harbour or watercourse ordinarily within the ebb and flow of the tide at spring tides.

"watercourse" means a river, creek or stream in which water flows permanently or intermittently-
• in a natural channel, whether artificially improved or not; or
• in an artificial channel that has changed the course of the watercourse.

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

END OF CONDITIONS

¹ Permit includes licences, approvals, permits, authorisations, certificates, sanctions or equivalent/similar as required by legislation administered by the Environmental Protection Agency and the Queensland Parks and Wildlife Service

Environmental Protection Agency
www.epa.qld.gov.au

Queensland Government
Environmental Protection Agency
Queensland Parks and Wildlife Service
ATTACHMENT B

Department of Primary Industries & Fisheries
- Concurrence Agency Response
Reference: NFC/140/000(706)

11 November 2005

Ports Corporation of Queensland
PO Box 409
Brisbane Qld 4001

Att: Simona Trimarchi

Dear Ms Trimarchi

Concurrence Agency Response – Operational Works to Remove Marine Plants – Port of Weipa dredging

The Department of Primary Industries and Fisheries (DPI&F) made an oversight when assessing the above application. A change of conditions notice is enclosed per your request.

If you require any further information regarding this matter, please do not hesitate to contact Dale Harrip on telephone 07 4722 2651 or email dale.harrip@dpi.qld.gov.au.

Yours sincerely

Adam West
Principal Catchment Ecologist (North)
Delivery

Att: Notice of Changed Conditions
CC: Mr Ian Yarroll
General Manager
Fisheries and Aquaculture Development
Department of Primary Industries and Fisheries
GPO Box 46
Brisbane Qld 4001
Attention: Dr John Beumer

Mr Bob Russell
District Manager
Queensland Boating and Fisheries Patrol
PO Box 360
Weipa Qld 4874

Julie Keane
GH&D
GPO Box 668
Brisbane Qld 4001
Notice

CHANGE TO AN EXISTING APPROVAL

Integrated Planning Act 1997. S3.5.23 & 3.5.25 & 3.5.33

Reference: NFC/140/000(706)

Contact: Dale Harrip

Phone: 07 47222651

Date: 11th November 2005

Applicant: Ports Corporation of Queensland (At Simona Trimarchi)

Address: PO Box 409
Brisbane Qld 4001

RE: Application for Operational works to remove marine plants
Port of Weipa. South Channel and Albatross Bay Spoil Ground
Lot 14 on SP120446 & Lot2 on RP745166
Dear Ms Trimarchi

I wish to advise that on 11th of November 2005 the request to

☐   Extend the currency period
☐   Change the development approval (other than change a condition)
☒   Change or cancel conditions

Was:

Approved to the extent detailed below.

Condition number one is changed from:

*Works authorised under this approval is limited by the following:*

Damage to marine plants associated with the capital dredging of the Port of Weipa South Channel as detailed in drawing 41-13086-050 Rev A.

To:

*Works authorised under this approval is limited by the following:*

Damage to marine plants associated with the capital dredging of the Port of Weipa South Channel as detailed in drawing 41-13086-050 Rev A1, Part B

Attached is an extract from the *Integrated Planning Act 1997* which details your appeal rights regarding this decision.

Should you wish to discuss any of the above matters, please contact Dale Harrip of this Department on telephone number (07) 47222651.

Adam West
Principal Catchment Ecologist (North)
Delivery
Dear Ms Trimarchi

Concurrence Agency Response – Operational Works to Remove Marine Plants – Port of Weipa dredging

The Department of Primary Industries and Fisheries (DPI&F) has assessed the above application and the conditions for approval are attached.

If you require any further information regarding this matter, please do not hesitate to contact Dale Harrip on telephone 07 4722 2651 or email dale.harrip@dpi.qld.gov.au.

Yours sincerely

Adam West
Principal Catchment Ecologist (North)
Delivery

Att: Concurrence Agency Response, Drawing No 41-13086-050 dated 01/08/2005
CC: Mr Ian Yarroll
General Manager
Fisheries and Aquaculture Development
Department of Primary Industries and Fisheries
GPO Box 46
Brisbane Qld 4001
Attention: Dr John Beumer

Mr Bob Russell
District Manager
Queensland Boating and Fisheries Patrol
PO Box 360
Weipa Qld 4874

Julie Keane
GH&D
GPO Box 668
Brisbane Qld 4001
CONCURRENCE AGENCY RESPONSE

This response is issued by the Department of Primary Industries and Fisheries pursuant to sections 3.3.15, 3.3.16 and 3.3.18 of the Integrated Planning Act 1997.

Development Application details:

Applicant's name: Chief Executive Officer, Ports Corporation of Queensland
Applicant's address: Level 24, 300 Queen Street, Brisbane, QLD 4001
Proposed development: For marine plants disturbance associated with the dredging of the Port of Weipa.
Description of the land: Lot 14 on SP 120446 Weipa South Channel and Bellmouth of Port of Weipa
DPI&F ID: 2005CA0210
File number: NFC/140/000(706)

1. Response to Development Application

The Department of Primary Industries and Fisheries, acting as a concurrence agency under the Integrated Planning Act 1997, has assessed the above development application against the purposes of the Fisheries Act 1994.

It has been determined that the approval should be a development permit to which conditions in the ‘DPI&F Conditions’ attachment must apply.

2. Conditions

Conditions imposed by the Department of Primary Industries and Fisheries are the conditions listed in the ‘DPI&F conditions’ attached.

3. Additional Information to applicants:

Cultural Heritage

Under the Aboriginal Cultural Heritage Act 2003 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 “cultural heritage duty of care”). An assessment of your proposed activity against the duty of care guidelines will help you determine whether or to what extent Aboriginal cultural heritage may be disturbed.

Delegate of the
Chief Executive
Date: 19/10/05

Department of Primary Industries and Fisheries
harmed by your activity. If following an assessment of the duty of care guidelines you believe cultural heritage may be harmed by your proposed activity, you should contact the Cultural Heritage Coordination Unit for further advice on (07) 3238 3838. Further information on cultural heritage and a copy of the duty of care guidelines and cultural heritage search forms can be obtained from www.nrm.qld.gov.au.

[Enter Torres Strait Islander Cultural Heritage Act 2003 when relevant].

Acid Sulfate Soil
Any soil disturbance resulting from development works should be managed to prevent acid sulfate soil development as outlined in the current version of the Qld Acid Sulfate Soils Technical Manual Soil Management Guidelines. To obtain a copy of this document or for further information on acid sulfate soils, please contact Queensland Acid Sulfate Soils Investigation Team (QASSIT) on 3896 9819 or access the website www.nrm.qld.gov.au.
DEPARTMENT OF PRIMARY INDUSTRIES AND FISHERIES
CONDITIONS

Applicant(s)/Address: Chief Executive Officer, Ports Corporation Of Queensland of Level 24, 300 Queen Street, Brisbane, QLD 4001

Purpose: Habitat Disturbance (Marine Plants)

DPI&F Reference: 2005CA0210

File Number: 140(706)

The Department of Primary Industries and Fisheries has assessed the above development application against the purpose of the Fisheries Act 1994.

It has been determined that the approval should be a Development Permit to which the following conditions apply:

1. Works authorised under this approval is limited by the following:
   damage to marine plants associated with the capital dredging of the Port of Weipa South Channel as detailed in Drawing 41-13086-050 Rev A.

2. Written notice must be provided to the District Officer, Queensland Boating and Fisheries Patrol Fax. No. 40459338 and the Manager, Fisheries and Aquaculture Development, Department of Primary Industries and Fisheries Fax. No. 40354664, of the date of commencement of fisheries development works, at least fifteen (15) days prior to the commencement of fisheries development works.

3. A written report which details the completed fisheries development works must be provided within fifteen (15) days of the completion of the works, to the District Officer, Queensland Boating and Fisheries Patrol, PO Box 360, Weipa QLD 4874, and the Manager, Fisheries and Aquaculture Development, Department of Primary Industries and Fisheries, PO Box 5396, Cairns QLD 4870.

Basis for inclusion of conditions:

- The Department of Primary Industries and Fisheries must assess the development application against the purposes of the Fisheries Act 1994. This application can only comply with those purposes, including promoting ecological sustainable development, if compliance with the abovementioned conditions is achieved.
EXTRACT FROM THE *INTEGRATED PLANNING ACT 1997*

Division 4. Representations about conditions and other matters

3.5.16 Application of Division 4.
This division applies only during the applicant's appeal period.

3.5.17 Changing conditions and other matters during the applicant's appeal period.
(1) This section applies if the applicant makes representations to the assessment manager about a matter stated in the decision notice, other than a refusal or a matter about which a concurrence agency told the assessment manager under section 3.3.18(1)58.

(2) If the assessment manager agrees with any of the representations, the assessment manager must give a new decision notice (the "negotiated decision notice") to-
- (a) the applicant; and
- (b) each principal submitted; and
- (c) each referral agency; and
- (d) if the assessment manager is not the local government and the development is in a local government area – the local government.

(3) Only 1 negotiated decision notice may be given.

(4) The negotiated decision notice -
- (a) must be given within 5 business days after the assessment manager agrees with the representations; and
- (b) must be in the same form as the decision notice previously given; and
- (c) must state the nature of the changes; and
- (d) replaces the decision notice previously given.

(5) If the assessment manager does not agree with any of the representations, the assessment manager must, within 5 business days after the assessment manager decides not to agree with any of the representations, give a written notice to the applicant stating the decision about the representations.

(6) Before the assessment manager agrees to a change under this section, the assessment manager must reconsider the matters considered when the original decision was made, to the extend the matters are relevant.

3.5.18 Applicant may suspend applicant's appeal period.
(1) If the applicant needs more time to make the written representations, the applicant may, by written notice given to the assessment manager, suspend the applicant's appeal period.

(2) The applicant may act under subsection (1) only once.

58 Section 3.3.18 (Concurrence agency's response powers).
(3) If the written representations are not made within 20 business days after the day written notice was given to the assessment manager, the balance of the applicant’s appeal period restarts.

(4) If the written representations are made within 20 business days after the day written notice was given to the assessment manager -

(a) if the applicant gives the assessment manager a notice withdrawing the notice under subsection (1) – the balance of the applicant’s appeal period restarts the day after the assessment manager receives the notice of withdrawal; or

(b) if the assessment manager gives the applicant a notice under section 3.5.17(5) – the balance of the applicant’s appeal period restarts the day after the applicant receives the notice; or

(c) if the assessment manager gives the applicant a negotiated decision notice – the applicant’s appeal period starts again the day after the applicant receives the negotiated decision notice.

Division 8. Appeals to court relating to development applications

4.1.27 Appeals by applicants.

(1) An applicant for a development application may appeal to the court against any of the following -

(a) the refusal, or the refusal in part, of a development application;

(b) a matter stated in a development approval, including any condition applying to the development, and the identification of a code under section 3.1.6 (Preliminary approval may override local planning instrument);

(c) the decision to give a preliminary approval when a development permit was applied for;

(d) the length of a currency period;

(e) a deemed refusal.

(2) An appeal under subsection (1)(a) to (d) must be started within 20 business days (the “applicant’s appeal period”) after the day the decision notice or negotiated decision notice is given to the applicant.

(3) An appeal under subsection (1)(e) may be started at any time after the last day a decision on the matter should have been made.

4.1.28 Appeals by submitters.

(1) A submitter for a development application may appeal to the court about -

(a) the giving of a development approval, including any conditions (or lack of conditions) or other provisions of the approval; or

(b) the length of a currency period for the approval.

(2) The appeal must be started within 20 business days (the “submitter’s appeal period”) after the day decision notice or negotiated decision notice is given to the submitter.

(3) If the person withdraws a submission before the application is decided, the person may not appeal the decision.

(4) If an application involves both impact assessment and code assessment, appeal rights for submitters are available only for the part of the application involving impact assessment.

4.1.29 Appeals by advice agency submitters.

(1) An advice agency may, within the limits of its jurisdiction, appeal to the court about the giving of a development approval for a development application if -

(a) the development application involves impact assessment; and

78 Section 3.1.6 (Preliminary approval may override local planning instrument).
(b) the advice agency told the applicant and the assessment manager to retreat its response to the application as a submission for an appeal.

(2) the appeal must be started within 20 business days after the day the decision notice or negotiated notice is given to the advice agency as a submitter.

4.1.30 Appeals for matters arising after approval given (co-respondents).

(1) For a development approval given for a development application, a person to whom any of the following notices have been given may appeal to the court against the decision in the notice -.

(a) a notice giving a decision on a request for an extension of the currency period for an approval;

(b) a notice giving a decision on a request to make a minor change to an approval.

(2) The appeal must be started within 20 business days after the day the notice of the decision is given to the person.

(3) Subsection (1)(a) does not apply if the approval resulted from a development application (superseded planning scheme) that was assessed as if it were an application made under a superseded planning scheme.

(4) Also, person who has made a request mentioned in subsection (1) may appeal to the court against a deemed refusal of the request.

(5) An appeal under subsection (4) may be started at any time after the last day the decision on the matter should have been made.

Division 9. Appeals to court about other matters

4.1.31 Appeals for matters arising after approval given (no co-respondents).

(1) A person to whom any of the following notices have been given may appeal to the court against the decision in the notice -.

(a) a notice giving a decision on a request to change or cancel a condition of a development approval;

(b) a notice under 6.1.44 giving a decision to change or cancel a condition of a development approval.

(2) The appeal must be started within 20 business days after the day the notice of the decision is given to the person.

4.1.32 Appeals against enforcement notices.

(1) A person who is given an enforcement notice may appeal to the court against the giving of the notice.

(2) The appeal must be started within 20 business days after the day notice is given to the person.

4.1.33 Stay of operation of enforcement notice

(1) The lodging of a notice of appeal about an enforcement notice stays the operation of the enforcement notice until -.

(a) the court, on the application of the entity issuing the notice, decides otherwise; or

(b) the appeal is withdrawn; or

(c) the appeal is dismissed.

(2) However, subsection (1) does not apply if the enforcement notice is about -.

(a) a work, if the enforcement notice states the entity believes the work is a danger to persons or a risk to public health; or

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76 Section 6.1.44 (Conditions may be changed or cancelled by assessment manager or concurrence agency in certain circumstances).
(b) stopping the demolition of a work, or
(c) clearing vegetation on freehold land; or
(d) the removal of quarry material allocated under the Water Act 2000; or
(e) extracting clay, gravel, rock, sand or soil, not mentioned in paragraph (d), from Queensland waters.

4.1.34 Appeals against decisions on compensation claims

(1) A person who is dissatisfied with a decision under section 5.4.8 or 5.5.3\(^{80}\) for the payment of compensation may appeal to the court against -
(a) the decision; or
(b) a deemed refusal of the claim.

(2) An appeal under subsection (1)(a) must be started within 20 business days after the day notice of the decision is given to the person.

(3) An appeal under subsection (1)(b) may be started at any time after the last day a decision on the matter should have been made.

4.1.35 Appeals against decisions on request to acquire designated land under hardship

(1) A person who is dissatisfied with a designator's decision to refuse a request made by the person under section 2.6.19\(^{81}\) may appeal to the court against -
(a) the decision; or
(b) a deemed refusal of the request.

(2) An appeal under subsection (1)(a) must be started within 20 business days after the day notice of the decision is given to the person.

(3) An appeal under subsection (1)(b) may be started at any time after the last day a decision on the matter should have been made.

4.1.37 Appeals from tribunals

(1) A party to a proceeding decided by a tribunal may appeal to the court against the tribunal's decision, but only on the ground -
(a) of error or mistake in law on the part of the tribunal; or
(b) that the tribunal had no jurisdiction to make the decision or exceeded its jurisdiction in making the decision.

(2) An appeal against a tribunal's decision must be started within 20 business days after the day notice of the tribunal's decision is given to the party.

4.1.38 Court may remit matter to tribunal

If an appeal includes a matter within the jurisdiction of a tribunal and the court is satisfied the matter should be dealt with by a tribunal, the court must remit the matter to the tribunal for decision.

Division 10. Making an appeal to court

4.1.39 How appeals to the court are started

(1) An appeal is started by lodging written notice of appeal with the registrar of the court.

(2) The notice of appeal must state the grounds of the appeal.

(3) The person starting the appeal must also comply with the rules of the court applying to the appeal.

(4) However, the court may hear and decide an appeal even if the person has not complied with subsection (3).

4.1.40 Certain appellants must obtain information about submitters

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\(^{80}\) Section 5.4.8 (Deciding claims for compensation) or 5.5.3 (Compensation for loss or damage).

\(^{81}\) Section 2.6.19 (Request to acquire designated land under hardship).
(1) If the applicant or a submitter for a development application appeals about the part of the application involving impact assessment, the appellant must ask the assessment manager to give the appellant the name and address of each principal submitter who made a properly made submission about the application and has not withdrawn the submission.

(2) The assessment manager must give the information requested under subsection (1) as soon as practicable.

4.1.41 Notice of appeal to other parties (division 8)
(1) An appellant under division 8 must, within 10 business days after the day the appeal is started (or if information is requested under section 4.1.40, within 10 business days after the day the appellant is given the information) give written notice of the appeal to -.
   (a) if the appellant is an applicant – the assessment manager, any concurrence agency, any principal submitter whose submission has not been withdrawn and any advice agency treated as a submitter whose submission has not been withdrawn; or
   (b) if the appellant is a submitter or an advice agency whose response to the development application is treated as a submission of an appeal – the assessment manager, the applicant and any concurrence agency; or
   (c) if the appellant is a person to whom a notice mentioned in section 4.1.30 has been given – the assessment manager and any entity that was a concurrence agency for the development application.

(2) The notice must state -
   (a) the grounds of the appeal; and
   (b) if the person given the notice is not the respondent or a co-respondent under section 4.1.43 – that the person, within 10 business days after the day the notice is given, may elect to become a co-respondent to the appeal by filing in the court a notice of election in the approved form.

4.1.42 Notice of appeal to other parties (division 9)
(1) An appellant under division 9 must, within 10 business days after the day the appeal is started give written notice of the appeal to -.
   (a) if the appellant is a person to whom a notice mentioned in section 4.1.31 has been given – the entity that gave the notice; or
   (b) if the appellant is a person to whom an enforcement notice is given – the entity that gave the notice and if the entity is not the local government, the local government; or
   (c) if the appellant is a person dissatisfied with a decision about compensation – the local government that decided the claim; or
   (d) if the appellant is a person dissatisfied with a decision about acquiring designated land – the designator; or
   (e) if the appellant is a party to a proceeding decided by a tribunal – the other party to the proceeding.

(2) The notice must state the grounds of the appeal.

4.1.43 Respondent and co-respondent for appeals under division 8
(1) This section applies to appeals under division 8 for a development application.

(2) The assessment manager is the respondent for the appeal.

(3) If the appeal is started by a submitter, the applicant is a co-respondent for the appeal.

(4) If the appeal is about a concurrence agency response, the concurrence agency is a co-respondent for the appeal.

(5) If the appeal is only about a concurrence agency response, the assessment manager may apply to the court to withdraw from the appeal.

82 Section 4.1.31 (Appeals for matter arising after approval given (no co-responded).
(6) The respondent and any co-respondents for an appeal are entitled to be heard in the appeal as a party to the appeal.

(7) A person to whom a notice of appeal is required to be given under section 4.1.41 and who is not the respondent or a co-respondent for the appeal may elect to be a co-respondent.

4.1.44 Respondent and co-respondent for appeals under division 9

(1) This section applies if an entity is required under section 4.1.42 to be given a notice of appeal.

(2) The entity given written notice is the respondent for the appeal.

(3) However, if under a provision of the section more than 1 entity is required to be given notice, only the first entity mentioned in the provision is the respondent.

(4) The second entity mentioned in the provision may elect to be a co-respondent.

4.1.45 How a person may elect to be co-respondent

(1) An entity elects to be a co-respondent by lodging in the court, within 10 business days after the day the notice of the appeal is given to the entity, a notice of election under the rules of court.

(2) If a principal submitter is entitled to elect to become a co-respondent, any other submitter for the submission may also elect to become a co-respondent to the appeal.

4.1.46 Minister entitled to be represented in an appeal involving a State interest

If the Minister is satisfied that an appeal involves a State interest, the Minister may, by filling in the court a notice of election in the approved form, elect to be party to the appeal.

4.1.47 Lodging appeal stops certain actions

(1) If an appeal (other than an appeal under section 4.1.30) is started under division 8, the development must not be started until the appeal is decided or withdrawn.

(2) Despite subsection (1), if the court is satisfied the outcome of the appeal would not be affected if the development or part of the development is started before the appeal is decided, the court may allow the development or part of the development to start before the appeal is decided.
# NOTIFICATION REPORT

TO BE SENT **BEFORE** WORKS ARE STARTED

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<td><strong>ATTENTION:</strong> Manager (North) - Fisheries &amp; Aquaculture Development Unit</td>
<td>District Officer Queensland Boating &amp; Fisheries Patrol</td>
</tr>
<tr>
<td>ADDRESS: Northern Fisheries Centre PO Box 5396, Cairns Q 4870</td>
<td>ADDRESS: PO Box 360 Weipa Q 4874</td>
</tr>
<tr>
<td>TELPHONE: 07 4035 0112</td>
<td>TELPHONE: 07 40698114</td>
</tr>
<tr>
<td>FAX: 07 4035 4664</td>
<td>FAX: 07 40697404</td>
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|  | POST CODE: |
| **PHONE:** |  |
|  | FAX: |

| **FACILITY TYPE:** |  |
| **SITE LOCATION:** |  |
| **AREA(M²):** |  |
| **START DATE:** |  |
| **FINISH DATE:** |  |
| **PERIOD OF WORKS:** |  |
| **COMMENTS:** |  |

Signature: ____________________

**IMPORTANT:** FAILURE TO NOTIFY MAY BREACH PERMIT CONDITIONS.
## NOTIFICATION REPORT

TO BE SENT AFTER WORKS ARE COMPLETED

| DATE: | 
|-------|---|
| ATTENTION: Manager (North) - Fisheries & Aquaculture Development Unit | District Officer Queensland Boating & Fisheries Patrol |
| ADDRESS: Northern Fisheries Centre PO Box 5396, Cairns Q 4870 | ADDRESS: PO Box 360 Weipa Q 4874 |
| TELEPHONE: 07 4035 0112 | TELEPHONE: 07 40698114 |
| FAX: 07 4035 4664 | FAX: 07 40697404 |
| PERMIT NO: 2004CA0210 | 

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| START DATE: | 
| FINISH DATE: | 
| PERIOD OF WORKS: | 
| COMMENTS: | 

Signature: ____________________________

[Logo: Queensland Government]

**IMPORTANT:** FAILURE TO NOTIFY MAY BREACH PERMIT CONDITIONS.
ATTACHMENT C

Maritime Safety Queensland (Queensland Transport)
- Concurrence Agency Response
7 November 2005

Julie Keane
GHD Pty Ltd
GPO Box 668
Brisbane Qld 4001

Dear Julie

Tidal Works Application Proposed- Port of Weipa Capital Dredging operational works Weipa Channel

I refer to a letter dated 30 August 2005 regarding operational works at the location mentioned above.

As a concurrence agency, Maritime Safety Queensland has no objection to the proposal provided the following navigation and marine safety conditions are addressed.

1. The contractor must construct the works according to 41-13086-050 attached to the letter received 1 September 2005.

2. Any obstructions and debris encountered during construction must be disposed of at your own cost.

3. The applicant or his agent are responsible for the removal of the existing structure, must ensure all works, including debris containment, removal and disposal, do not compromise or impede safe navigation.


6. The contractor must construct the works within two years from the date of approval. If construction is not completed, you will need additional or amended comments from the Regional Harbour Master.

Maritime Safety Queensland does not need to be further consulted if all of the above conditions are met, and no further information is required.

We will send a copy of this letter to the applicant.

Yours sincerely

Captain Alan Boath
Regional Harbour Master (Cairns)

Cc  Mike Hartley
DLGP
PO Box 5194
Cairns Qld 4870
Appendix 2- Plume dispersion plots (2008 and 2010 scenarios) and time series extracts comparing field data (2010)
Figure D-40a Concentration maps illustrating the extent of the dump plume: At 06:00 PM on 31 July 2005 (left) and at 00:00 AM on 01 August 2005 (right). The black line in the bottom panel depicts the variation of the significant wave height at the spoil ground. The superimposed red line depicts the variation of wind direction. The floating time bar indicates the time of the prediction.
Figure E-40b Concentration maps illustrating the extent of the dump plume: At noon, 01 August 2005 (left) and at 00:00 hours on 02 August 2005 00:00 (right).
Figure E-40c Concentration maps illustrating the extent of the dump plume: At noon on 02 August 2005 (left) and at 00:00 hours on 03 August 2005 (right).
Figure E-40d Concentration maps illustrating the extent of the dump plume: At noon on 03 August 2005 (left) and at 00:00 hours on 04 August 2005 (right).
Figure E-40e  Concentration maps illustrating the extent of the dump plume: At noon on 04 August 2005 (left) and at 00:00 hours on 05 August 2005 (right).
Figure E-40f Concentration maps illustrating the extent of the dump plume: At noon on 10 August 2005 (left) and at 00:00 hours on 11 August 2005 (right).
Figure E-40g Concentration maps illustrating the extent of the dump plume: At noon on 15 August 2005 (left) and at 00:00 hours on 16 August 2005 (right).
Figure E-40h Concentration maps illustrating the extent of the dump plume: At noon on 20 August 2005 (left) and at 00:00 hours on 21 August 2005 (right).
Figure E-40i Concentration maps illustrating the extent of the dump plume: At noon on 25 August 2005 (left) and at 00:00 hours on 26 August 2005 (right).
Figure E-40j Concentration maps illustrating the extent of the dump plume: At noon on 30 August 2005 (left) and at 00:00 hours on 31 August 2005 (right).
Figure E-40k Concentration maps illustrating the extent of the dump plume: At noon on 05 Sept 2005 (left) and at 00:00 hours on 06 Sept 2005 (right).
Figure E-40l Concentration maps illustrating the extent of the dump plume: At noon on 10 Sept 2005 (left) and at 00:00 hours on 11 Sept 2005 (right).
Figure E-40m Concentration maps illustrating the extent of the dump plume: At noon on 15 Sept 2005 (left) and at 00:00 hours on 16 Sept 2005 (right).
Figure E-40n Concentration maps illustrating the extent of the dump plume: At noon on 20 Sept 2005 (left) and at 00:00 hours on 21 Sept 2005 (right).
Figure E-40o Concentration maps illustrating the extent of the dump plume: At noon on 25 Sept 2005 (left) and at 00:00 hours on 26 Sept 2005 (right).
Figure D-41a Concentration maps illustrating the predicted extent of the dump plume on 19 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41b Concentration maps illustrating the predicted extent of the dump plume on 20 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41c Concentration maps illustrating the predicted extent of the dump plume on 21 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41d Concentration maps illustrating the predicted extent of the dump plume on 22 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41e Concentration maps illustrating the predicted extent of the dump plume on 23 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41f Concentration maps illustrating the predicted extent of the dump plume on 25 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41g Concentration maps illustrating the predicted extent of the dump plume on 30 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-41h  Concentration maps illustrating the predicted extent of the dump plume on 05 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-41i Concentration maps illustrating the predicted extent of the dump plume on 10 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-41j Concentration maps illustrating the predicted extent of the dump plume on 15 August 2010: At 00:00 hours (left) and at noon (right).
**Figure D-41k** Concentration maps illustrating the predicted extent of the dump plume on 20 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-41l Concentration maps illustrating the predicted extent of the dump plume on 25 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-41m Concentration maps illustrating the predicted extent of the dump plume on 30 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-41n Concentration maps illustrating the predicted extent of the dump plume on 05 Sept 2010: At 00:00 hours (left) and at noon (right).
Figure D-41o Concentration maps illustrating the predicted extent of the dump plume on 10 September 2010: At 00:00 hours (left) and at noon (right).
Figure D-41p Concentration maps illustrating the predicted extent of the dump plume on 15 September 2010 at 00:00 hours.
Figure D-42a Concentration maps illustrating the predicted extent of the dump plume on 19 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42b Concentration maps illustrating the predicted extent of the dump plume on 20 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42c Concentration maps illustrating the predicted extent of the dump plume on 21 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42d Concentration maps illustrating the predicted extent of the dump plume on 22 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42e Concentration maps illustrating the predicted extent of the dump plume on 23 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42f Concentration maps illustrating the predicted extent of the dump plume on 25 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42g Concentration maps illustrating the predicted extent of the dump plume on 30 July 2010: At 00:00 hours (left) and at noon (right).
Figure D-42h Concentration maps illustrating the predicted extent of the dump plume on 05 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-42i Concentration maps illustrating the predicted extent of the dump plume on 10 August 2010: At 00:00 hours (left) and at noon (right).
**Figure D-42** Concentration maps illustrating the predicted extent of the dump plume on 15 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-42k Concentration maps illustrating the predicted extent of the dump plume on 20 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-42l Concentration maps illustrating the predicted extent of the dump plume on 25 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-42m Concentration maps illustrating the predicted extent of the dump plume on 30 August 2010: At 00:00 hours (left) and at noon (right).
Figure D-42n Concentration maps illustrating the predicted extent of the dump plume on 05 Sept 2010: At 00:00 hours (left) and at noon (right).
Figure D-42o Concentration maps illustrating the predicted extent of the dump plume on 10 September 2010: At 00:00 hours (left) and at noon (right).
Figure D_42p Concentration maps illustrating the predicted extent of the dump plume on 15 September 2010 at 00:00 hours.
Figure D-43a Comparison of simulated (solid red, yellow and blue lines) and measured (solid black line) suspended sediment concentration at the site of deployment of the west fixed logger (also deployment site of ADCP #1).
Figure D-43b Comparison of simulated (solid red, yellow, blue and dark red lines) and measured (solid black line) suspended sediment concentration at the site of deployment of the west fixed logger (also deployment site of ADCP #1).
Figure D-44 Comparison of simulated (solid red and blue lines) and measured (solid black line) suspended sediment concentration at the site of deployment of the southeast fixed logger (also deployment site of ADCP #2).
Appendix 3- Document Amendment Summaries
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<td>dependent dependant</td>
<td>Spelling correction</td>
</tr>
<tr>
<td>28</td>
<td>7</td>
<td>Inserted</td>
<td>Based on the findings of this investigation sediments comprising the maintenance dredge footprint are considered suitable for unconfined ocean disposal pursuant to the issue of a Sea Dumping Permit under Section 19 of the Sea Dumping Act Environmental Protection (Sea Dumping) Act 1981.</td>
<td>Shortened terminology has already been introduced and used extensively throughout report. Shortened terminology only needed here.</td>
</tr>
<tr>
<td>44</td>
<td>6</td>
<td>Inserted</td>
<td>For example, modelling of the passage of Tropical Cyclone Jim in 2006 simulated a loss of approximately 380,000 m³ of spoil from the spoil ground alone. Under normal conditions (non cyclonic) materials tend east due to the dominant effect of the flooding tide, though forces of mobilisation are limited.</td>
<td>Wording correction</td>
</tr>
<tr>
<td>48</td>
<td>30</td>
<td>Inserted</td>
<td>Sustained elevations predicted by the model were not replicated within the field data, suggesting over estimation with respect to the residual effects of the plume (perhaps a function of settling velocity and effective particle size distributions)</td>
<td>Wording correction</td>
</tr>
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<tr>
<td>58</td>
<td>2</td>
<td>Inserted</td>
<td>Impact assessment involves assessing the potential effects of impacting processes on the existing environment, via a risk based approach.</td>
<td>Wording correction</td>
</tr>
</tbody>
</table>
| 65   | 4    | Inserted | DSEWPC  
Deleted | DEWSPC | Spelling correction |
<p>| 65   | 33   | Inserted | The disposal ground displays both retentive and dispersive characteristics, depending upon the prevailing coastal processes, and is driven largely by wave action where significant wave heights approach 1.5m. | Spelling correction |
| 71   | 20   | Inserted | Benthic Infauna | Standardise – all other dot points in list use lower case for second word. |
| 72   | 13   | Inserted | This approach allows the dredge contractor to conduct a targeted, and more efficient, campaign. | Grammatical correction |
| 72   | 29   | Inserted | In addition, a contract deliverable item for maintenance dredging is the development and implementation of a works specific Environmental Management Plan (EMP), which reflects the commitments made within this LTDMP. | Acronym is used later in this section therefore recommend it be introduced here. |
| 74   | 32   | Inserted | If the plume appears to be moving towards and remaining suspended over the seagrass meadows (sensitive areas in the Pine River Bay, Mission River and Embley River), then the Dredge Master is to reconsider dredging the area and move away and come back to dredge as conditions improve (ebb tide only). | Standardise – Upper case has been used consistently throughout document. |
| 85   | 29   | Deleted | This is a reflection of NQBP’s policy of seeking continual improvement in the environmental performance of its. | Sentence structure correction (fragment). |
| 87   | 25   | Inserted | Close out reports are completed following the completion of an existing contract with any consultants, contractors (including dredging) or others involved in the dredging campaign. | Grammatical correction |</p>
<table>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>36</td>
<td>Deleted</td>
<td>The channel was first dredged in the early 1960s, with additional capital dredging in the 1970s, and</td>
<td>Referencing the 2012 dredging activity.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inserted</td>
<td>2006 (PCQ 2008, GHD 2005), and 2012 (SD2012/2162; GHD 2012).</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>37</td>
<td>Inserted</td>
<td>17</td>
<td>Updating current channel length from 2012 capital program.</td>
</tr>
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<td></td>
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</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Deleted</td>
<td>REMOVE Figure 1-1 (showing old channel length)</td>
<td>Updating current channel length from 2012 capital program.</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>Inserted</td>
<td>INSERT Figure 1-1 (showing new channel length)</td>
<td>Updating current channel length from 2012 capital program.</td>
</tr>
<tr>
<td>15</td>
<td>16</td>
<td>Inserted</td>
<td>Figure 3-1 below (they can also be found embedded within the approval documents, a copy of which is</td>
<td>New Figure showing updated dredge footprint has been inserted and referenced</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>included in Appendix A.</td>
<td>throughout document.</td>
</tr>
<tr>
<td>17</td>
<td>6</td>
<td>Deleted</td>
<td>During the 1980’s the channel was deepened and extended to its present 14.5 km length (GHD 2005).</td>
<td>Change sentence to make it flow with addition of information for the 2012 campaign.</td>
</tr>
<tr>
<td>17</td>
<td>7</td>
<td>Inserted</td>
<td>Capital dredging was undertaken in 2006 and again in 2012 extending the channel length to approximately 17 km (Figure 3-1 shows the current total maintenance dredge area). NQBP completed a combined capital and maintenance dredging campaign in 2012 to extend the existing channel (by 2.4km) and to achieve required design depths for the high-value maximum sailing draft (MSD).</td>
<td>Adding detail to reflect 2012 capital and maintenance program.</td>
</tr>
<tr>
<td>17</td>
<td>12</td>
<td>Inserted</td>
<td>Since the capital dredging campaigns than, annual maintenance dredging has been required to maintain</td>
<td>Change sentence to make it flow with the above addition (2012 campaign).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deleted</td>
<td>the declared depth of the South Channel of 10.8 m below LAT</td>
<td></td>
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</table>
Volumes of dredged material generated during past dredging campaigns (2002 – 2012) are shown in [Error! Reference source not found.].


Updated to include reference to 2012 information.

Change sentence to make it flow with the above addition (2012 campaign).

Inserted into Table 3-1 to update dredge history data.

Adding detail to reflect 2012 capital and maintenance program.

Updating Figure number after inserting new figure with current dredge footprint (i.e. 2012).

Update to reflect 2012 works

Update to reflect 2012 works

Update to reflect 2012 works

Update to reflect 2012 works
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<tr>
<td>29</td>
<td>35</td>
<td>Inserted</td>
<td>The range of parameters targeted during the 2003, 2004, 2005, 2006, <strong>and 2008</strong>, and 2012 (capital) SAPs (metals, TBT, and PAHs) is proposed to be continued for the ten-year period from 2010 – 2019 based on historical contamination information.</td>
<td>Update to reflect 2012 works</td>
</tr>
</tbody>
</table>
| 29   | 29   | Inserted | 4.1.2 Maintenance Dredging SAP and characterisation report 2012  
NQBP commissioned Ports and Coastal Environmental (PaCE) to develop a Sediment and Analysis Plan (SAP) and carry out the Sediment Characterisation Investigation for capital dredging in 2012 (PaCE, 2011). These capital works were to extend the existing channel (by 2.4km) and to achieve required design depths to achieve a high-value maximum sailing draft (MSD). Samples were collected from 33 locations (20 within the boundaries of the channel extension, 8 within the inner harbour and 5 in the Southern Channel between Fairway and Bell Mouth).  
Results of this study conclude that metals (As, Cd, Cu, Cr, Hg, Pb, Ni, and Zn) were present at background concentrations only. Organotins (TBT, DBT and MBT) were recorded below the limits of laboratory reporting. Nutrients within the sediments were determined to be almost wholly of organic origins, and unable to generate problematic increases in more readily assimilated inorganic nutrients over the short dredge duration, such as nitrate and nitrite, which drive water quality affects.  
Chemical analysis of sediments within the proposed dredging footprint confirmed that all target substances remained below respective NAGD screening levels at the 95% UCL. In accordance with the NAGD (Commonwealth, 2009), the capital sediments from the proposed extension, Southern Channel and Inner Harbor were considered free of contamination, and determined as not presenting any chemical obstacles to unconfined ocean disposal. | Section added to summarise SAP completed for 2012 capital and maintenance dredge campaign.  
As this section represents the summary of sediment characteristics at the time of submitting for the 10 year approval, this section may need to remain the same (ie. not inserting new paragraphs) until the 5 year review of the LTDMP. |
| 32   | 25   | Moved to S4.2 (from S4.1.2) | 4.2.5 Maintenance Dredging SAP and characterisation report 2008  
SKM was commissioned by NQBP to prepare and implement the 2008 SAP for annual maintenance dredging. The plan (SKM 2008a) was submitted to the former DEWHA and approved on 25 November 2008. The report of the results of 2008 SAP implementation (SKM 2008b) was intended to support an application by NQBP for a long-term dredging permit under the Sea Dumping Act 1981. Due to delays in... | Section moved to allow for addition of SAP completed for 2012 capital and maintenance dredge campaign. |
the approval process, a separate application was lodged for a Sea Dumping Permit for the 2009 maintenance dredging campaign, with the understanding that the 2008 SAP would also support a subsequent application for a long-term permit.

It is proposed that sediment quality in Weipa will be tested every five years. A new SAP for the period 2014-2018 will be submitted prior to maintenance dredging in 2014, and another SAP will be submitted prior to maintenance dredging in 2019. The 2008 SAP involved sampling and analysis of sediments recovered by a sediment grab at 68 individual sampling locations in seven designated dredging areas from 26 November to 30 November 2008. All sampling, analysis and assessment was conducted in accordance with the NODGDM (2002), the prevailing guidelines at the time, but the methodology and conclusions were also in accordance with the NADG.

A summary of the contaminants that were above NODGDM screening levels for individual sampling locations for the 2008 SAP results is provided below:

TBT concentrations (normalised to 1% TOC) were above the NODGDM screening level (at two of the 68 sampling locations. These two locations were both from dredge area 4, Lorim Point Wharf. Sampling location 4(g) exceeded the screening level (5 μg Sn/kg) with a TBT concentration of 7.4 μg Sn/kg (0 – 50 cm) and sampling location 4(j) exceeded the NODGDM maximum level (70 μg Sn/kg) with a TBT concentration of 1,114 μg n/kg. This most likely represents a paint chip in the sediment sample. The previous SAP report (Hydrobiology 2004) identified TBT exceedences at 4 of 28 sampling locations at both Evans Landing and Lorim Point Wharf;

Concentrations of most individual PAH species (normalised to 1% TOC) were recorded above the NODGDM screening and maximum levels at sampling locations 2(d) and 2(e) at Evan’s Landing Wharf. The previous SAP (Hydrobiology 2004) also reported PAH above NODGDM screening levels at Evan’s Landing; and

The nickel concentrations were above the NODGDM screening level (of 21 mg/kg) at sampling location 3(c) (29.9 mg/kg) at humbug Wharf. The previous SAP (Hydrobiology 2004) reported nickel concentrations above the NODGDM screening level at one site at Evan’s Landing.

In accordance with the NODGDM, the 95% UCLs of the mean contaminant concentrations were compared against NODGDM screening levels, to assess whether dredged material was suitable for

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<td>the approval process, a separate application was lodged for a Sea Dumping Permit for the 2009 maintenance dredging campaign, with the understanding that the 2008 SAP would also support a subsequent application for a long-term permit.</td>
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<td>It is proposed that sediment quality in Weipa will be tested every five years. A new SAP for the period 2014-2018 will be submitted prior to maintenance dredging in 2014, and another SAP will be submitted prior to maintenance dredging in 2019. The 2008 SAP involved sampling and analysis of sediments recovered by a sediment grab at 68 individual sampling locations in seven designated dredging areas from 26 November to 30 November 2008. All sampling, analysis and assessment was conducted in accordance with the NODGDM (2002), the prevailing guidelines at the time, but the methodology and conclusions were also in accordance with the NADG.</td>
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<td></td>
<td>A summary of the contaminants that were above NODGDM screening levels for individual sampling locations for the 2008 SAP results is provided below:</td>
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<td></td>
<td></td>
<td></td>
<td>TBT concentrations (normalised to 1% TOC) were above the NODGDM screening level (at two of the 68 sampling locations. These two locations were both from dredge area 4, Lorim Point Wharf. Sampling location 4(g) exceeded the screening level (5 μg Sn/kg) with a TBT concentration of 7.4 μg Sn/kg (0 – 50 cm) and sampling location 4(j) exceeded the NODGDM maximum level (70 μg Sn/kg) with a TBT concentration of 1,114 μg n/kg. This most likely represents a paint chip in the sediment sample. The previous SAP report (Hydrobiology 2004) identified TBT exceedences at 4 of 28 sampling locations at both Evans Landing and Lorim Point Wharf;</td>
</tr>
<tr>
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<td>Concentrations of most individual PAH species (normalised to 1% TOC) were recorded above the NODGDM screening and maximum levels at sampling locations 2(d) and 2(e) at Evan’s Landing Wharf. The previous SAP (Hydrobiology 2004) also reported PAH above NODGDM screening levels at Evan’s Landing; and</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>The nickel concentrations were above the NODGDM screening level (of 21 mg/kg) at sampling location 3(c) (29.9 mg/kg) at humbug Wharf. The previous SAP (Hydrobiology 2004) reported nickel concentrations above the NODGDM screening level at one site at Evan’s Landing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>In accordance with the NODGDM, the 95% UCLs of the mean contaminant concentrations were compared against NODGDM screening levels, to assess whether dredged material was suitable for</td>
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</table>

As this section represents the summary of sediment characteristics at the time of submitting for the 10 year approval, this section may need to remain the same (ie. no move these paragraphs) until the 5 year review of the LTDMP.
A succession of sediment contamination surveys for dredging operations in the Port of Weipa has been conducted between 2000 and 2012 over the last eight years.


Sediment particle size descriptions were collated during each of the sediment characterisation programs as defined within each of the SAP’s. The 2008 sediment characterisation program by SKM (2008) represents the most comprehensive of these assessments. This data represents the results of 7 dredged areas and 81 total samples.
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</table>
| 98   | 17   | Inserted | Ports and Coastal Environmental (2013), Port of Weipa: Maintenance Dredging Sediment Sampling and Analysis Plan (SAP), Ports and Coastal Environmental, Brisbane.  
Ports and Coastal Environmental (2011), Port of Weipa: Capital Dredging 2012 – Sediment Sampling and Analysis Plan (SAP), Ports and Coastal Environmental, Brisbane. | Update to reflect 2012 works |

**Noted factual errors or clarifications (from audits or TACC minutes or similar); or updating government terminology**

<p>| 1 | 39 | Inserted | The South Channel is currently maintained to a length of approximately 17 km, a width of 105.5 m and a declared depth of a maximum of 12.0mLAT (design depth for departure channel is 11.1mLAT and that of the 2012 channel extension is 12m LAT)(PaCE, 2013). | The 2013 SAP provides a summary table defining the declared depths (Table 1-2) of each element of the Southern Channel. This provides flexibility in interpretation of this sentence. |
| Various | | Inserted | Heritage Protection (DEHP) | Terminology: DERM was updated with DEHP |
| Various | | Deleted | Resource Management (DERM) | |
| Various | | Inserted | Department of Agriculture Fisheries and Forestry (DAFF) | Terminology: DEEDI was updated with DAFF |
| Various | | Deleted | Department of Employment, Economic Development and Innovation (DEEDI) | |
| Various | | Inserted | Department of Sustainability, Environment, Water, Population and Communities (DSEWPC) | Terminology: DEWHA was updated with DSEWPC |
| Various | | Deleted | Department of Environment, Water, Heritage and Arts (DEWHA) | |
| 9 | 16 | Inserted | Status of Approval: NQBP have been issued a 10 year Sea Dumping Permit issued (28 June 2010), expiring (28 June 2020) (SD2009/1382) | Included reference to current 10 year approval number. |
| 10 | 17 | Inserted | Matters of National Environmental Significance are considered within the Sea Dumping permit approval process, and detailed within the Existing Environment section of this LTDMP (Section 5). | Added comment to final 2011 word version – by KK. |
| 11 | 18 | Deleted | Queensland State Government recently introduced a new Environmentally Relevant Activity (ERA) 16 Extractive and Screening Activities that came into effective on 1 January 2010, requiring whereby NQBP are required to obtain this ERA Permit from the Department of Environment and Heritage Protection | Amended sentence to allow it to remain current in perpetuity. |</p>
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<tr>
<td>18</td>
<td>3</td>
<td>Deleted</td>
<td>976,585</td>
<td>Amount of dredging completed for 2002 was originally quoted in LTDMP as 976,585m$^3$ but confirmation with that listed within the 2012 Sea Dumping Application identified an amount of 916,585m$^3$. Table 3-1 amended.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inserted</td>
<td>916,585</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>9</td>
<td>Deleted</td>
<td>779,599</td>
<td>Amount of dredging completed for 2008 was originally quoted in LTDMP as 779,599m$^3$ but confirmation with the IMO Report for the 2008 year identified an amount of 834,281m$^3$. Table 3-1 amended.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Inserted</td>
<td>834,281</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>16</td>
<td>Inserted</td>
<td>DEHP (formerly EPA)</td>
<td>Terminology: DEHP was EPA</td>
</tr>
<tr>
<td>18</td>
<td>26</td>
<td>Inserted</td>
<td>The current 10 year Sea Dumping Approval covers annual maintenance dredging is proposed to be undertaken over the ten-year period (2010 – 2019)%…</td>
<td>Amended sentence to allow it to remain current in perpetuity.</td>
</tr>
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<td>Deleted</td>
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<tr>
<td>21</td>
<td>23</td>
<td>Inserted</td>
<td>Table Error! No text of specified style in document.</td>
<td>Calculated past spoil volumes up to 2008 evident at the Albatross Bay spoil ground</td>
</tr>
<tr>
<td>26</td>
<td>29</td>
<td>Inserted</td>
<td>The use of near-shore, sub-tidal disposal sites (including Hey Point) has been discouraged discontinued since 1998 and formally discontinued since 2000 because of due to concerns being raised from traditional owners regarding the proximity to significant sites; the potential for scour of adjacent sandbanks; and the impacts to estuarine environments, specifically the extensive seagrass communities.</td>
<td>Hey point disposal site was used up until 2000 – this is recommended wording to clarify this fact. Also suggested detail on the issues raised by traditional owners.</td>
</tr>
<tr>
<td>26</td>
<td>27</td>
<td>Inserted</td>
<td>NQBP and members of the TACC recognise the ecological importance of seagrass communities surrounding the project area.</td>
<td>Suggested addition to sentence for clarity (/flow).</td>
</tr>
<tr>
<td>30</td>
<td>18</td>
<td>Inserted</td>
<td>However, since 17 September 2008, ships are no longer permitted to apply or re-apply organotin (which contain TBT) in accordance with the International Convention on the Control of Harmful Antifouling Systems on Ships.</td>
<td>Suggested change to how date is written.</td>
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<tr>
<td>31</td>
<td>18</td>
<td>Deleted</td>
<td>The 2002 SAP was prepared to support a five-year sea dumping permit (URS 2002).</td>
<td>Suggested deletion as this does not appear to be relevant to the current document.</td>
</tr>
<tr>
<td>40</td>
<td>5</td>
<td>Inserted</td>
<td>JCU (formerly within DAFF/DEEDI) and NQBP continue to developing further opportunities to enhance the monitoring program into the future to enable a better understanding of the declines in this species.</td>
<td>Amended sentence to allow it to remain current in perpetuity and to update that JCU rather than DAFF now complete the monitoring.</td>
</tr>
<tr>
<td>55</td>
<td>12</td>
<td>Inserted</td>
<td>5.7.1 Proposed fish habitat area Pine River Bay declared Fish Habitat Area</td>
<td></td>
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<td></td>
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<td>Deleted</td>
<td>NQBP have been actively involved with DAFF (Fisheries Queensland) and other key stakeholders in the consultation associated with the declaration of a Fish Habitat Area (FHA) working group near Weipa. NQBP, Rio Tinto, Sunfish, Queensland Transport, Mines and Energy, DAFF and others have been negotiating the boundary of the proposed FHA. The current draft boundary primarily encompasses Pine River Bay, where no dredging or disposing of material occurs or is intended to occur. This area is more than 5 km from the maintenance dredging footprint. The proposed FHA is well distanced from the existing Weipa channel and possible future extensions, and would not be affected by the continued utilisation of the spoil ground. NQBP will continue to work alongside DAFF to determine the most practical area for a Fish Habitat Area within Albatross Bay. After extensive consultation with the traditional owners of the area, the Pine River Bay Fish Habitat Area was declared in November 2011. <a href="http://www.nprs.qld.gov.au/managing/area-summaries/pineriver.html">http://www.nprs.qld.gov.au/managing/area-summaries/pineriver.html</a>. The Pine River Bay FHA is well distanced from the existing Weipa channel and possible future extensions, and would not be affected by the continued utilisation of the spoil ground.</td>
<td>Sentence amended following Pre-Dredge TACC meeting on 17 May 2013.</td>
</tr>
<tr>
<td>62</td>
<td>17</td>
<td>Inserted</td>
<td>The adopted process of dredging with the inner channel and berth pocket areas allows for dredging during the ebb tide where necessary, resulting in the mobilisation of turbid water plumes out of the Embley estuary and away from key mangrove communities.</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is</td>
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<tr>
<td>62</td>
<td>31</td>
<td>Deleted</td>
<td>Whilst some affects from plume dispersion may be anticipated when dredging the inner harbour and berth areas, due to the proximity to meadows, proposed dredging activities, there is the potential for plume dispersion to migrate towards and remain suspended over the seagrass meadows whilst dredging within the inner harbour and berth area. In order to preclude impacts to seagrass habitats, adopted management practices include continual monitoring of plume dispersion and, where deemed necessary, relocation and/or altering of timeframes (i.e. ebbing tide only) for dredging activities within these areas. The adopted management practice of dredging on the ebbing tide, and relocation of dredging activities where plumes migrate over seagrass, precludes substantial impact to seagrass habitats.</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (i.e. not an ongoing management strategy).</td>
</tr>
<tr>
<td>63</td>
<td>15</td>
<td>Deleted</td>
<td>As defined for seagrass communities, scattered rocky reef habitats within the inner harbour and adjacent to berth pockets, are protected from sustained impact by the adopted management approaches of dredging on the ebbing tide, and altering dredging operations where plumes remain suspended over seagrass or mangrove communities.</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (i.e. not an ongoing management strategy).</td>
</tr>
<tr>
<td>64</td>
<td>10</td>
<td>Deleted</td>
<td>Management standards of commencing work after 320 minutes of a sighting, or where the sighting is greater than 5300 m from the dredge act to minimise any unwanted interactions with significant marine species.</td>
<td>Factual error – refer to Condition 15 of DSWEPC approval SD2009/1382.</td>
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</tbody>
</table>
| 68   | 18-23 | Inserted | Table 6-6 – Management Strategies for “Decline in Seagrass Condition”  
- Dredging of the inner harbour and berth pockets on the ebb tide where plume remains suspended over seagrass community. only  
- Relocation of the dredge should plumes remain suspended over disperse over seagrass meadows. | Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (i.e. not an ongoing management strategy). |
| 68   | 24-27 | Inserted | Table 6-6 – Management Strategies for “Decline in Mangrove Condition”  
- Dredging of the inner harbour and berth pockets on the ebb tide where plume remains suspended over mangrove communities only. | Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (i.e. not an ongoing management strategy). |
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</thead>
<tbody>
<tr>
<td>71</td>
<td>10</td>
<td>Inserted</td>
<td>Pre and post-dredge bathymetric survey</td>
<td>Clarification recommended to identify which surveys are completed pre- and which post-dredging activity.</td>
</tr>
<tr>
<td>72</td>
<td>10</td>
<td>Deleted</td>
<td>7.1.2 Pre-dredge bathymetric surveys – volume and location</td>
<td>Clarification recommended as this section identifies which surveys are completed pre- and which post-dredging activity.</td>
</tr>
<tr>
<td>72</td>
<td>11</td>
<td>Inserted</td>
<td>A pre-dredge bathymetric survey will be undertaken of the areas to be dredged prior to the dredging campaign, whereby an accurate volume and location of sediment removal requirements will be determined.</td>
<td>Clarification recommended as the pre-dredge bathymetric survey does not include the spoil ground.</td>
</tr>
<tr>
<td>72</td>
<td>15</td>
<td>Inserted</td>
<td>Post dredge Bathymetric Surveys are completed on the spoil ground and the dredged areas and are submitted to DSEWPC and the Royal Australian Navy (RAN) Hydrographer following each dredge campaign in accordance with Condition 19 of the Sea Dumping Approval.</td>
<td>Clarification recommended as the post-dredge bathymetric survey includes the spoil ground (and it is this aspect that satisfies Condition 19 of DSWEPC approval SD2009/1382).</td>
</tr>
<tr>
<td>73</td>
<td>24</td>
<td>Inserted</td>
<td>Prior to dredging and disposal, the Dredging Contractor must check using binoculars from a high observation platform (dredgers bridge) for marine fauna within a 5300 metres monitoring zone.</td>
<td>Factual error – refer to Condition 15 of DSWEPC approval SD2009/1382.</td>
</tr>
<tr>
<td>73</td>
<td>28</td>
<td>Inserted</td>
<td>If any marine animals specified above are sighted in the marine zone, dredging and dumping activities must not commence in the monitoring zone until 230 minutes after the last marine species is observed to leave the monitoring zone, or until 20 thirty minutes after the last sighting.</td>
<td>Factual error – refer to Condition 15 of DSWEPC approval SD2009/1382.</td>
</tr>
<tr>
<td>73</td>
<td>33</td>
<td>Inserted</td>
<td>In the event of an incident involving marine fauna, the Dredging Contractor or Superintendants Representative is to immediately contact NQBP's Senior Environmental Co-ordinator on 07 4969 0700 (office hours); or 07 49 558 1715 5107 (outside hours); or 0427 728 092 (outside hours).</td>
<td>Recommend updating contact details.</td>
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<tr>
<td>73</td>
<td>36</td>
<td>Inserted</td>
<td>The Senior Environmental Co-ordinator will complete an Incident Report, noting the location, time, injury extent and GPS coordinates. The corrective actions will be entered into the NQBP Action Register and tracked accordingly.</td>
<td>Recommend updating contact details.</td>
</tr>
<tr>
<td>74</td>
<td>18</td>
<td>Inserted</td>
<td>Any plume generated from dredging activities within the inner harbor will be monitored by the Dredge Master. Where the plume appears to be moving towards and remaining suspended over the seagrass meadows, the Dredge Master is to consider relocation and/or altering of timeframes (ie. ebbing tide only) for dredging activities within these areas. <strong>Dredging of the inner harbour will only occur during ebb tides</strong></td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (ie. not an ongoing management strategy).</td>
</tr>
<tr>
<td>74</td>
<td>22</td>
<td>Inserted</td>
<td>NQBP will continue monitoring seagrass in partnership with James Cook University (JCU)(formerly DEEDI).</td>
<td>Amended sentence to update that JCU rather than DAFF now complete the monitoring.</td>
</tr>
<tr>
<td>74</td>
<td>27</td>
<td>Inserted</td>
<td>The Superintendent Representative or delegate will be continuously onboard the dredger visually checking for any water or air contamination</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 3) – Superintendent Representative is not able to monitor continuously for 24 hr a day operation.</td>
</tr>
<tr>
<td>74</td>
<td>30</td>
<td>Inserted</td>
<td>If the plume appears to be moving towards and remaining suspended over the seagrass meadows (sensitive areas in the Pine River Bay, Mission River and Embley River), then the Dredge Master is to reconsider dredging the area and move away and come back to dredge as conditions improve (ebbing tide only).</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (ie. not an ongoing management strategy).</td>
</tr>
<tr>
<td>74</td>
<td>35</td>
<td>Inserted</td>
<td>If this situation arises, the Captain is to discuss the matter with the Superintendent’s Representative who will raise it with NQBP’s Environment Group, who will then seek advice from DAFF and JCU (DEEDI).</td>
<td>Amended sentence to update that JCU rather than DAFF now complete the monitoring.</td>
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| 75   | 18   | Inserted | No waste, other than treated sewage where permitted\(^1\), is to be released into the port waters.  
\(^1\) Refer to MSQ | MSQ identify certain areas within the bounds of Port of Weipa where this is permitted. Recommend clarification by referencing MSQ. |
| 76   | 29   | Inserted Deleted | No chemical or hydrocarbon wastes are to be released into port waters or surrounding environs in compliance with the *Environmental Protection Act 1994*, *Environmental Protection (Water) Policy 2009*\(^{1997}\), *Transport Operations (Marine Pollution) Act 1995* and *Fisheries Act 1994*. | Factual error |
| 77   | 4    | Inserted Deleted | Notify NQBP’s Senior Environmental Co-ordinator on 07 4969 0700 (office hours); \(\text{or}\) 07 49 558 171\(^{1547}\) (outside hours); or 0427 728 092 (outside hours).  
Notify Maritime Safety Queensland on 0427 965 406 07 40527470 or 1300 551 899.  
After details of the incident have been confirmed, the Senior Environmental Coordinator will complete an incident report and track corrective actions in the NQBP Actions Register and NQBP will notify the TACC. | Recommend updating contact details. |
<p>| 82   | 22   | Inserted Deleted | Findings would be reported to the TACC established for the dredging project, DAFF(^{\text{DEEDI}}) (Bio Security Queensland (\text{–} 13\ 25\ 23)) and the Australian Quarantine and Inspection Service (AQIS (\text{–} 07\ 3246\ 8600\ 40307852) or 1800 020 504). | Recommend updating contact details. |
| 83   | 22   | Inserted Deleted | Recent modelling completed in 2009 has confirmed the retention of sediments is reliant upon the prevailing coastal processes; sediments remain relatively immobile during ambient states, and disperse during wind and wave events, such as the passage of tropical cyclones. | Amended sentence to allow it to remain current in perpetuity |
| 85   | 12   | Inserted Deleted | Since 2000, DEEDI Seagrass Unit (now amalgamated into James Cook University (JCU)) have been undertaking seagrass surveys in the Port of Weipa. JCU(^{\text{DEEDI}}) currently undertake seagrass monitoring on an annual basis. In 2002, DEEDI (now JCU) advised the TACC that ‘seagrass in Weipa is subjected to much higher natural turbidity than that experienced during dredging and for longer periods from run-off in the wet season’. | Amended sentence to update that JCU rather than DAFF now complete the monitoring. |</p>
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<td>85</td>
<td>17</td>
<td>Inserted</td>
<td>However, recent seagrass surveys undertaken by DEEDI (in 2008) demonstrate a steady decline in seagrass density, specifically the intertidal bank at Lorim Point.</td>
<td>Amended sentence to allow it to remain current in perpetuity</td>
</tr>
<tr>
<td>85</td>
<td>18</td>
<td>Inserted</td>
<td>NQBP are working alongside JCU DEEDI to develop a long term management approach to determine the key drivers of seagrass decline within the Port of Weipa.</td>
<td>Amended sentence to update that JCU rather than DAFF now complete the monitoring. Also, note spelling correction “driver”.</td>
</tr>
<tr>
<td>85</td>
<td>22</td>
<td>Inserted</td>
<td>Monitoring of seagrass communities, the most sensitive receptor in the Port, is conducted annually by JCU DEEDI in the Intensive Monitoring Area (IMA), and seagrass beds in the entire Port of Weipa are mapped every three years.</td>
<td>Amended sentence to update that JCU rather than DAFF now complete the monitoring.</td>
</tr>
<tr>
<td>85</td>
<td>23</td>
<td>Deleted</td>
<td>The annual seagrass monitoring events occur in September or October each year. The most recent occurring in October 2008</td>
<td>Amended sentence to allow it to remain current in perpetuity</td>
</tr>
<tr>
<td>85</td>
<td>27</td>
<td>Inserted</td>
<td>Additional monitoring measures will be adopted following discussions with JCU DEEDI and NQBP regarding the long term management approach to determine the key drivers of seagrass decline trends recent declining trend of seagrass abundance in the Port of Weipa.</td>
<td>Amended sentence to allow it to remain current in perpetuity. Amended sentence to update that JCU rather than DAFF now complete the monitoring.</td>
</tr>
<tr>
<td>85</td>
<td>32</td>
<td>Inserted</td>
<td>Any plume generated from dredging activities within the inner harbor will be monitored by the Dredge Master or delegate. Where the plume appears to be moving towards and remaining suspended over the seagrass meadows (sensitive areas in the Pine River Bay, Mission River and Embley River), the Dredge Master or delegate is to consider relocation and/or altering of timeframes (i.e. ebbing tide only) for dredging activities within these areas. Dredging the inner harbour will be conducted only during the outgoing tide (ebbing) to reduce turbidity impacts on the seagrass communities within the Embley River. Superintendent Representative will be continuously onboard the dredger also visually monitoring the plume from dredging and disposal</td>
<td>Clarification recommended from Internal Audit 2012 (Recommendation 2) – dredging is only restricted to the ebb tide where this is deemed to be necessary (i.e. not an ongoing management strategy).</td>
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<tr>
<td>85</td>
<td>41</td>
<td>Inserted</td>
<td>The Senior Environmental Co-ordinator is responsible for liaising with DAFF.</td>
<td>Recommend updating contact details.</td>
</tr>
<tr>
<td>86</td>
<td>1</td>
<td>Inserted</td>
<td>NQBP will work alongside <strong>JCU DEEDI</strong> to enhance the existing annual seagrass monitoring program.</td>
<td>Amended sentence to allow it to remain current in perpetuity and to update that JCU rather than DAFF now complete the monitoring.</td>
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<td>86</td>
<td>3</td>
<td>Inserted</td>
<td>NQBP will contact <strong>JCU and DAFF DEEDI</strong> prior to each dredging campaign as part of the TACC, and separately as required to discuss dredging approach with regards to seagrass protection.</td>
<td>Amended sentence to update that JCU rather than DAFF now complete the monitoring. It is expected that any queries specifically related to regulatory obligations will continue to be through DAFF (former DEEDI).</td>
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<td>86</td>
<td>5</td>
<td>Inserted</td>
<td>The expansion of monitoring program, which has the benefit of clearly identifying the most appropriate long term management approach for dredging activities. The monitoring program can be expanded in order to provide greater focus on <strong>Additional seagrass surveys to be undertaken in areas of concern, such as observed where seagrass declines, have been observed</strong> and scope of the survey can be expanded to incorporate capital dredging work areas, when required.</td>
<td>Amended sentence to allow it to remain current in perpetuity.</td>
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<td>86</td>
<td>10</td>
<td>Inserted</td>
<td>Light and temperature assessments of the seagrass monitoring meadows will continue to be assessed and implemented where relevant **be undertaken to strengthen the capability of the existing monitoring program, particularly in the <em>Enhalus</em> meadow opposite Lorim Point, where long term declines have been previously observed.</td>
<td>Amended sentence to allow it to remain current in perpetuity.</td>
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<tr>
<td>86</td>
<td>16</td>
<td>Inserted</td>
<td>Light and temperature loggers <strong>were will be installed during the 2010 seagrass monitoring in September event.</strong></td>
<td>Amended sentence to allow it to remain current in perpetuity (and reflecting upgrade to monitoring program that occurred in 2010).</td>
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| 86   | 21   | Inserted Deleted | Water quality limits and methodology will be determined with **DEEDI**, **DAFF**, **JCU**, and the TACC prior to dredging commencing.                                                                                                                                                                                                                                                                                                                                                                                                                    | Amended sentence to reflect that JCU rather than DAFF now complete the monitoring.  
It is expected that any queries specifically related to regulatory obligations will continue to be through DAFF (former DEEDI).                                                                                                                  |
| 88   | 27   | Inserted | These records will need to be retained for audit purposes for the duration of the permit.  
- Undertake bathymetric surveys of the Disposal Site as follows:  
  - Once prior to the commencement of the **initial large-scale dumping activities approved under the DSEWPC approval SD2009/1832**; and  
  - Once within one month of the completion of **each of the large scale dumping activities authorised under the permit**.                                                                                                                                                                                                                                              | Clarification recommended as only the post-dredge bathymetric survey includes the spoil ground (Condition 19 of DSEWPC approval SD2009/1382 requires one at commencement of that satisfies the two criteria).                                                                                          |
| 91   | 6    | Inserted Deleted | Table 7-1 Under “Responsibility” for Role of “Implement monitoring requirements defined within Section 8.0:  
- NQBP  
- JCU **DEEDI**  
- Consultants                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Amended sentence to update that JCU rather than DAFF now complete the monitoring.                                                                                                                                                                                      |
<p>| 93   | 2    | Inserted | Seagrass surveys will follow the investigation methods presently applied by <strong>JCU DEEDI</strong>.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Amended sentence to update that JCU rather than DAFF now complete the |</p>
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| 94   | 10   | Inserted | Table 8-1 “Comments” for Impact Hypothesis of “Dredging of the Port does not constitute a significant risk of marine species introduction or translocation”  
- Pre dredge risk assessment undertaken on dredge prior to works for each dredge vessel. | Recommended addition to clarify that risk assessment is completed only where high risk determined for dredge vessel. |
| 94   | 23   | Inserted | Table 8-1 “Comments” for Impact Hypothesis of “Turbidity generated during dredging and disposal does not result in long-term changes to water quality”.  
- Advice sought from DAFF and JCU DEEDI during pre dredge TACC meeting. | Amended sentence to reflect that JCU rather than DAFF now complete the monitoring.  
It is expected that any queries specifically related to regulatory obligations will continue to be through DAFF (former DEEDI). |
| 94   | 26   | Inserted | Table 8-1 “Details” for Impact Hypothesis of “Disposal of dredge spoil will not result in impact to seagrass of the Embley River estuary”.  
- Annual seagrass surveys to be conducted by JCU DEEDI. | Amended sentence to update that JCU rather than DAFF now complete the monitoring. |
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<td></td>
<td><strong>Noted factual errors or clarifications (from audits or TACC minutes or similar); or updating government terminology</strong></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Inserted</td>
<td>Inserted amended Figure 3-1 to reflect correct spoil ground location</td>
<td>Incorrect reference of the spoil ground location – error occurred in conversion from decimal to degrees minutes seconds. This error was identified prior to commencement of the dredging campaign and therefore did not compromise any disposal activities.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Deleted</td>
<td>Deleted original Figure 3-1 as spoil ground location was incorrectly represented in figure</td>
<td></td>
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</table>
| 19   | 29   | Inserted   | The disposal ground has a radius of 1.1 nautical miles (2037 m) from the centre coordinates (WGS 84):  
  - Lat: 12.659671°S; and  
  - Lon: 141.656680°E  
  
  The disposal ground has a radius of 1.1 nautical miles (2037 m) from the centre coordinates (WGS 84):  
  - Lat: S12 39 30.6; and  
  - Lon: E141 39 26.3.                                                                 | Incorrect reference of the spoil ground location – error occurred in conversion from decimal to degrees minutes seconds. This error was identified prior to commencement of the dredging campaign and therefore did not compromise any disposal activities. |
|      |      | Deleted    |                                                                                                   |                                                                                                                                                                                                               |
| App 1|      | Inserted   | Inserted amended Sea Dumping Permit (2009/1382) – Variation No. 1.                                | NQBP applied for an amendment to take into account the capital dredge area previously undertaken (under capital approvals) in 2012.                                                                         |
|      |      | Deleted    | Deleted original Sea Dumping Permit (2009/1382).                                                  |                                                                                                                                                                                                               |
| App 1|      | Inserted   | Inserted updated State ERA Approval – transferred to an “Environmental Authority” under the Greentape Legislation Amendment. No conditions were amended. | DEHP converted all existing development approvals to “Environmental Authorities” in line with the Environmental Protection (Greentape Reduction) and Other Legislation Amendment Bill. 2012. There was no amendment to any conditions within the approval. |
|      |      | Deleted    | Deleted original State ERA Approval.                                                             |                                                                                                                                                                                                               |