



Plan

Clinton Vessel Interaction Project Environmental Management Plan

Endorsed: 15 January 2020

Brief description

This Environmental Management Plan has been developed to document Gladstone Ports Corporation's systems and controls for minimising the risk of environmental impacts associated with the Clinton Vessel Interaction Project (the Project) in the Port of Gladstone. Specifically, this plan applies to the capital dredging to widen the Clinton Channel.

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Document accountability

Role	Position
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Custodian	Port Infrastructure Asset Manager

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Terms, definitions and abbreviations

The following key terms, definitions and abbreviations apply to this Plan:

Term	Definition
Owner	Under the GPC governance structure, the Owner is accountable for approval and has the authorised discretion to implement or significantly change the system



Term	Definition
Custodian	Under the GPC governance structure, the Custodian is accountable for monitoring the application of the system and advising the owner of the monitoring outcomes, and is also accountable for proposing system design or redesign and facilitation of conformance
ANC _E	Excess Acid neutralising capacity
ASS	acid sulphate soil
ASSMP	Acid Sulphate Soil Management Plan
BPAR	benthic photosynthetically active radiation
CSD	cutter suction dredger
Cth	Commonwealth
DES	Department of Environment and Science
DoEE	Department of Environment and Energy
EMP	Environmental Management Plan
EP Act	<i>Environmental Protection Act 1994 (Qld)</i>
EP Reg	<i>Environmental Protection Regulation 2019 (Qld)</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
ERA	Environmentally Relevant Activity
ESCP	Erosion and Sediment Control Plan
FNPBC	First Nations Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People Aboriginal Corporation
GHG	greenhouse gas
GPC	Gladstone Ports Corporation Limited
ILUA	Indigenous Land Use Agreement
IMO	International Maritime Organisation
LAT	lowest astronomical tide
LNG	liquefied natural gas
MNES	matters of national environmental significance



Term	Definition
Monitoring Procedure	Environmental Monitoring Procedure
MSES	matters of state environmental significance
MSQ	Maritime Safety Queensland
NAGD	National Assessment Guidelines for Dredging
NC Act	<i>Nature Conservation Act 1992 (Qld)</i>
NEPM	National Environment Protection Measures
NGER Act	<i>National Greenhouse and Energy Reporting Act 2007 (Cth)</i>
PCCC	Port Curtis Coral Coast
Port	Port of Gladstone
Project	Clinton Vessel Interaction Project
QH Act	<i>Queensland Heritage Act 1992 (Qld)</i>
RG TCT	RG Tanna Coal Terminal
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Qld)</i>
TSHD	trailing suction hopper dredger
WBRA	Western Basin reclamation area
WHA	World Heritage Area
WICT	Wiggins Island Coal Terminal
km	kilometres
m	Metres
m ³	cubic metre
mg/L	milligrams per litre



1 Introduction

The development of Liquefied Natural Gas (LNG) facilities and other industries in the Western Basin area has led to increased vessel traffic in the Port of Gladstone (the Port), particularly around the RG Tanna Coal Terminal (RGCT). Wiggins Island Coal Terminal (WICT) was the first development in the Western Basin area to use Cape-size vessels upstream of the RGCT. Loaded drafts for these vessels exceed that available for navigation through Clinton Bypass Channel.

Gladstone Ports Corporation Limited (GPC) propose to undertake the Clinton Vessel Interaction Project (the Project) which seeks to prevent vessel interaction with moored vessels at the RGCT wharf, by performing capital dredging to widen the Clinton Channel. Dredged material will be transported and placed within the existing Western Basin reclamation area (WBRA). Tailwater will be discharged from a licenced discharge point into the Port. The widening of the Clinton Channel will also require the removal and re-installation of navigational aids. The dredging methodology proposed to be implemented may include, a combination of Cutter Suction Dredger (CSD) and Trailing Suction Hopper Dredger (TSHD), a combination of a TSHD and a backhoe dredge (BHD) or only a BHD.

Impact assessment for the project was based on the dredging scenario of a CSD cutting the seabed material and a TSHD loading and transporting the material to the WBRA. Impacts from the combination of TSHD and BHD and the BHD only methodologies were also modelled and found to have a lesser impact. Modelled suspended sediment concentrations and sediment deposition rates predicted that sensitive ecological receptors (seagrass meadows and reefs) adjacent to the channel are unlikely to be significantly affected by sediment generated by dredging and reclamation area tailwater released from the Project. A BHD operating for 25 weeks has been selected as the preferred option for dredging. This method will not lead to any tailwater discharge.

The Project impact assessment concluded that the implementation of the proposed mitigation measures (Section 6) will result in the Project not having a significant impact on the environmental values, including Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES).

1.1 Purpose

This Environmental Management Plan (EMP) has been developed to address the Project approvals highlighted in Section 2 and should be read in conjunction with the Project Environmental Monitoring Procedure (Edoc 1501407) hereafter being referred to as The Monitoring Procedure and the contractor's EMP (to be developed prior to the commencement of dredging activities). The EMP includes the following sections:

- Scope
- Objectives
- Environmental approvals
- Implementation
- Environmental Management System
- Activity Description
- Environmental Management Measures

1.2 Scope

The scope of this EMP covers the following activities associated with the dredging of Clinton Channel:

- Capital dredging to widen the Clinton Channel
- Removal and replacement of two navigational aids for the Clinton Channel
- Placement of dredged material and dewatering in the existing WBRA
- Management of tailwater discharge from the WBRA.



The EMP specifies performance objectives, actions and procedures to minimise and mitigate potential environmental impacts of dredging activities and address the Commonwealth and State Government's approval requirements.

1.3 Objectives

This EMP forms part of GPC's Environmental Management System (EMS) and is intended to be a working management document to be implemented for the Project to ensure legislative compliance and best practice environmental management. This EMP also provides a structured program for the management of the works to ensure that all reasonable and practicable measures will be implemented within an adaptive management framework, to prevent and/or minimise the likelihood of environmental harm being caused during the works.

The objectives of this EMP are to ensure that:

- Dredging activities do not adversely affect the Outstanding Universal Value of the Great Barrier Reef World Heritage Area (GBRWHA).
- There are no significant long-term changes in the health of (and no net loss of) high ecological value sensitive receptors such as seagrass meadows and reefs.
- Scheduled Water Quality Objectives (WQOs) are met in order to sustain the particular environmental value that they support.
- Appropriate marine ecological condition monitoring is undertaken in accordance with the Monitoring Procedure to inform adaptive management actions that aim to minimise or avoid impacts to marine ecological components, process and services.
- Direct impacts are confined to the dredge loading site (dredged footprint), and that impacts outside of the lawful footprint are short-term and reversible.
- Ensure the Project is undertaken in accordance with relevant permits and approvals mentioned in Table 1.
- Record organisational structures, accountability and responsibility.
- Facilitate arrangements for effective communication.
- Ensure all staff and contractors are trained and aware of legislative requirements pertaining to the works as well as commitments made in this EMP.
- Ensure appropriate records are kept.
- Ensure that reviews of environmental performance and project risk assessment are undertaken periodically for the duration of the project.

2 Environmental Approvals

The project has received approval under the following Commonwealth legislation:

- Environment Protection and Biodiversity Conservation Act 1999

The project has received approval under the following State legislation:

- *Coastal Protection and Management Act 1995* (Qld)
- *Environmental Protection Act 1994* (Qld) (EP Act), environmental protection policies and regulation
- *Planning Act 2016* (Qld) and regulation

A summary of the Project statutory approvals is provided Table 1.



Table 1 Statutory approvals and documents for the Project

Approval/permit	Legislation	Approval No./ date received	Edoc
Development Permit for a Material Change of Use for Environmentally Relevant Activity (ERA) 16 (Extractive Activities) and Operational Works that is Tidal Works	The Planning Act 2016	1901-9347 SDA approved 21 March 2019	1525246
Environmental Authority for ERA 16 (Extractive Activities)	Environmental Protection Act 1994	EA0001683 approved 21 March 2019	1491774
GPC Referral Agency Response	The Planning Act 2016	DA2017-05 approved 21 February 2019	1525246
Quarry Material Allocation Notice	The Coastal Protection and Management Act 1995	AQM0006 approved 16 October 2017 AQM0051 approved on 16 October 2019	1369220 1546640
EPBC Act Controlled Action Approval	Environment Protection and Biodiversity Conservation Act 1999 (Cth).	EPBC 2017/7976 approved on 15 July 219	1526583

3 Implementation

The EMP will be implemented in accordance with relevant permit conditions (Table 2). The Dredge Management Plan (DMP) mentioned in Condition G13 (Table 2) refers to the following documents:

- This EMP
- The Monitoring Procedure

Once approved the DMP will be filed in GPC's document management system and published on the Project webpage. All relevant project staff and contractors will be introduced to and made familiar with the provisions of the DMP which will achieve the objectives relevant to this Plan.

Any changes to the DMP (excluding minor administrative changes) will be communicated with the Department of Environment and Science (DES) the Department of Environment and Energy (DoEE) in accordance with the requirements of relevant approval conditions highlighted in Table2.

In addition to the above document the Dredging contractor and the Navigational Aids contractor will be required to prepare activity specific Environmental Management plans taking into consideration obligations under the Project Permits, Approvals and conditions and the Project DMP. These management plans will have to be approved by GPC Project manager prior to implementation.



Table 2 Approval conditions related to the approval, revision and implementation of the Dredge Management Plan

Department of Environment and Science (DES) Environmental Authority EA0001683	
Condition No.	Condition
G13	<p>Prior to the commencement of the dredging activity, a Dredge Management Plan (DMP)¹ for the activity must be developed and implemented, and the DMP must contain the following:</p> <ol style="list-style-type: none"> 1. Clearly stated aims and objectives; 2. Description of dredging operation including¹: <ol style="list-style-type: none"> a) type of equipment to be used in dredging; b) volume of dredged material to be removed, and duration and timing of the dredging campaign; c) methods to be utilised for transporting dredged material; and d) dredged material disposal methods. 3. Maps or plans showing: <ol style="list-style-type: none"> a) legend, north arrow and scale; b) boundaries of dredging operation; c) estimated or modelled zone of influence of sediment plumes; d) location of designated disposal sites; e) location of sensitive receptors; f) all monitoring locations. 4. A detailed description of sediment plume-associated monitoring program including: <ol style="list-style-type: none"> a) sampling regime and methods; and b) monitoring sites. 5. A detailed description of the assessment methodology to provide data in relation to trigger values that will define alert levels. 6. Clearly set out data handling and evaluation procedures that demonstrate how exceedance of alert levels will be determined. 7. Management actions to be initiated if alert levels are exceeded. <p>¹Note: The Dredge Management Plan is subject to review and amendment as required by changing regulation, monitoring results or administering authority recommendations</p>
G14	The Dredge Management Plan must not be implemented or amended in a way that contravenes or is inconsistent with any condition of this authority.
G15	<p>The Dredge Management Plan must be provided to the administering authority at either of the addresses below:</p> <p>palm@des.qld .gov.au ;</p> <p>or</p> <p>Department of Environment and Science Permit and Licence Management Implementation and Support Unit GPO Box 2454 Brisbane Qld 4001</p>
G16	The Dredge Management Plan must be submitted to the administering authority at least 30 business days prior to the commencement of dredging and, amended in accordance with any comments made by the administering authority prior to the commencement of dredging.



G17	Condition G15 applies each time the Dredge Management Plan is amended.
G18	The dredging activity must be undertaken in accordance with the Dredge Management Plan required in condition G13.
Department of Environment and Energy (DoEE) Approval EPBC 2017/7976	
Condition No.	Condition
3	If the approval holder revises the Dredge Management Plan approved under the approval holder's state Environmental Authority EA000168:
a	any revision must not result in a new or increased impact; and
b	within five (5) business days of the revised plan being approved by the State Government, the approval holder must provide to the Department an electronic copy of the revised Dredge Management Plan with all changes from the previous version marked in track changes mode, evidence that the revised plan is published on the website and an explanation as to why implementation of the revised plan will not result in a new or increased impact.
Gladstone Ports Corporation DA2017-05-GPC	
5	<p>Prior to operational works commencing on site, a Dredge Management Plan (DMP) specific to these operational works, must be submitted to GPC for approval.</p> <p>The operational works must be undertaken in accordance with the approved DMP that ensures:</p> <p>(a) environmental risks are identified, managed and continually assessed;</p> <p>(b) that staff are trained and aware of their obligations under the EMP; and</p> <p>(c) any amendments to the EMP are to be submitted to GPC for review and approval</p>

4 Environmental Management System

Activities carried out by GPC conform to GPC's ISO14001:2015 certified EMS. This EMP and its associated documents form part of GPC's EMS.

The EMS Plan Edoc 146256 is the overarching directory of the EMS for all GPC sites and activities, and allows easy access to the documents contained within it. The EMS Plan is a concise overview of the framework used to manage environmental risk. The aim of the plan is to be a user friendly tool in the form of a directory to quickly guide the user to the desired area of the EMS.

The EMS is an evolving system and is constantly being evaluated and improved when required. Figure 1 is a schematic showing how an EMS operates.

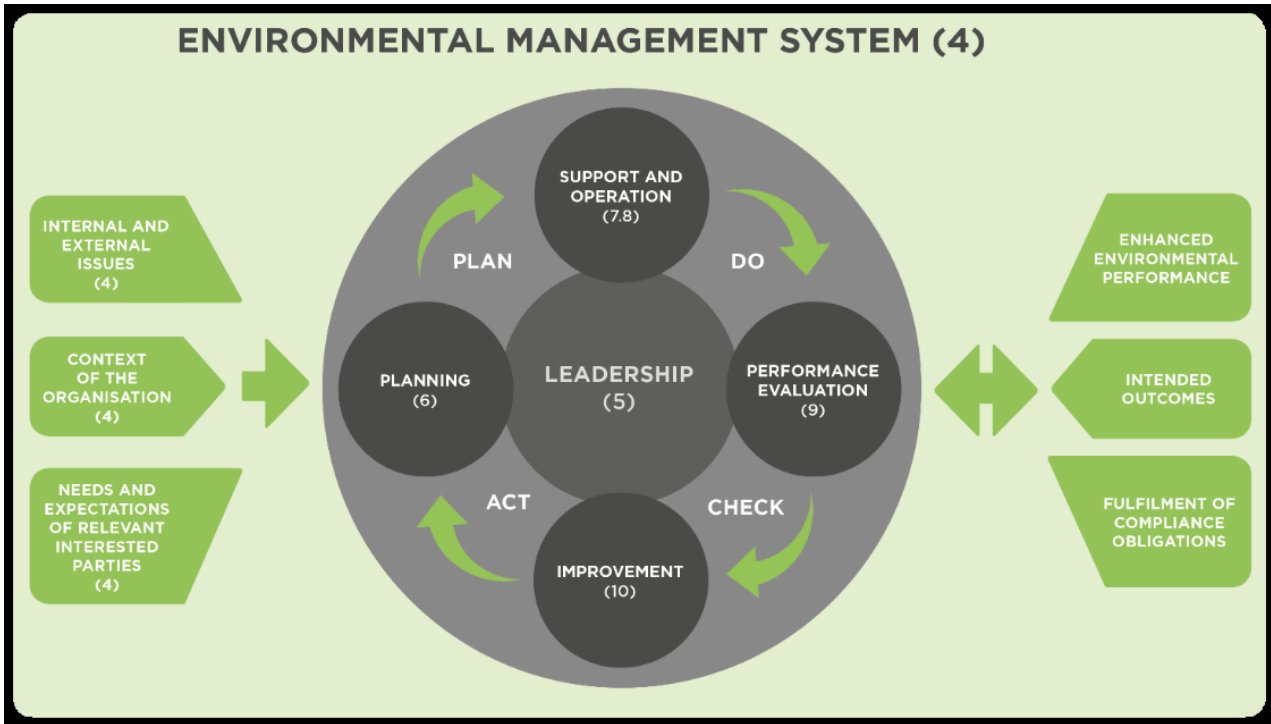


Figure 1 EMS schematic

The provision of services by the dredging contractor will be underpinned by the implementation and continual improvement of a management system consistent with the elements of:

- AS/NZS ISO 9001 Quality Management Systems
- AS/NZS ISO 14001 Environmental Management Systems
- AS/NZS 4801 Occupational Health and Safety Management Systems.

4.1 Environment Policy

GPC’s Environment Policy Edoc 366016 defines the overall aims and direction of GPC towards the environmental management of its activities and commitments to continual improvement. It also describes the direction and responsibilities of GPC in relation to its environmental performance.

4.2 EMS legislation

Environmental management of port operations has numerous and varied legislative controls which govern the way GPC conducts its business. To be aware and understand all of GPC’s compliance obligations, GPC has developed the two registers below.

1. Legal Register Edoc 1007885 describes firstly, what the legislation is and means, and secondly, how it affects GPC activities. The register is regularly updated to ensure that it captures relevant legislative changes and incorporates new development approvals, permits and registrations applicable to GPC operations.
2. Project Conditions Register Edoc 1492485 identifies the project’s existing approvals (Table 1), each condition and how GPC meets the condition requirements.

4.3 Environmental risks

GPC’s Risk Management Framework provides the processes to ensure the EMS suitably identifies, analyses, evaluates, manages and monitors all aspects under the control or influence of GPC. The risk assessment process ensures that risks are effectively managed and that appropriate management techniques are implemented. Adequate management measures minimise the likelihood of the risk occurring and reduces the consequences to acceptable levels.



A project risk assessment (Edoc 1528760) has been prepared through relevant stakeholder engagement. Key project risks identified are:

- Delay in project approvals
- Delay in project completion
- Costs to deliver project greater than estimated
- Vessel Interaction
- Environmental incident
- Negative public perception

The project risk assessment document will be reviewed periodically and updated as the project progresses.

4.4 GPC Environmental Strategy

The GPC Environment Strategy Edoc 801782 establishes the overall approach and priorities for environmental management and documents initiatives proposed to be undertaken to enable GPC's environmental objectives and targets. The Strategy has been developed taking into account GPC's Environmental Policy, its environmental impacts and relevant compliance obligations. Project environmental objectives have been identified for each potential impact in Section 6 of this Plan.

4.5 GPC Environment Standards

GPC has implemented the following standards to provide clarity of obligations, responsibilities and expectations for environmental management:

- GPC Environmental Management Standard Edoc 809151
- GPC Safety, Environment and Security Standard for Contractors and Port Users Edoc 995910.

All activities must be conducted in accordance with these standards.

4.6 Environmental roles and responsibilities

GPC staff and contractors are responsible for the environmental performance of their activities and compliance with the approvals relevant to the Project. GPC staff and contractors are also responsible for complying with the general environmental duty as set out in Section 319 (1) of the EP Act which states:

'A person must not carry out any activity that causes, or is likely to cause, environmental harm unless the person takes all reasonable and practicable measures to minimise the harm.'

Table 3 provides a summary of the responsibilities and accountabilities associated with the implementation of this EMP, including GPC staff and contractors.

Table 3 Environmental roles and responsibilities

Position (GPC)	Responsibility	Reporting to
Chief Executive Officer (CEO)	Ensure that systems are in place to manage environmental aspects and impacts at GPC.	GPC Board of Directors
Port Infrastructure Asset Manager	Responsible for ensuring the department operates within the EMS and is compliant with legislation.	CEO
Project Manager	Responsible for coordination and oversight of Project activities, approval and implementation of this document and associated management plans.	Port Infrastructure Asset Manager
Civil/Structural Supervisor	Coordination and oversight of Project dredging activities in the Port including adaptive management required by this document.	Project Manager



Position (GPC)	Responsibility	Reporting to
Navigational Aid Contractor Manager	Oversight and implementation of contractor (GPC approved) EMP. Adhere to contractual arrangement and relevant conditions of GPC permits, this document and associated management plans.	Project Manager
Dredge Contractor Manager	Oversight and implementation of contractor (GPC approved) EMP. Adhere to contractual arrangement and relevant conditions of GPC permits, this document and associated management plans.	Project Manager
Environment Specialist – Monitoring and Measurement	Responsible for coordination of environmental monitoring and measurement in accordance with this document including adaptive management processes.	Environment Superintendent
Environment Specialist – Compliance	Provide assistance to the Project Manager to ensure compliance with Project EMP, this document and conditions of GPC permits, including reporting.	Environment Superintendent
Environment Superintendent	Operational line manager for Environmental Specialists. GPC operational interface for environmental monitoring and compliance matters.	Manager Planning and Development (Acting)
Environment Emergency Hotline (49761 617)	General and afterhours contact for the GPC environment team	Calls Environment Superintendent



4.7 Contractor management

GPC will engage contractors to undertake Navigational Aid removal and construction, dredging and dredged material placement on its behalf. GPC has obligations to ensure that the activities undertaken by, or on its behalf, do not present unacceptable risks to the environment. To ensure the activities of contractors are identified, assessed and managed the following contractor management controls are in place:

- Pre-qualification evaluation
- Procurement policy
- Environmental standards
- Induction
- Regular communication between GPC and the contractor
- Audits and inspections
- Incident investigations
- Performance evaluations

4.8 Environmental monitoring

GPC will implement environmental monitoring outlined in this EMP (refer Section 6) and the Procedure in order to achieve the following outcomes:

- Compliance with the Project environmental approval conditions
- Ensure an adaptive management framework is implemented by adjusting operations in response to environmental monitoring results.

GPC has a monitoring schedule which records monitoring obligations and ensures that they are implemented Edoc 1499792.

4.9 Measures, plant and monitoring equipment

GPC and all relevant contractors will install, maintain and operate all relevant measures, plant and monitoring equipment in a way which ensures compliance with the conditions of this EMP and relevant Project approvals. There will be no change, replacement, alteration or operation of any plant or equipment if the change, replacement, alteration or operation will increase or is likely to substantially increase the risk of environmental harm during works.

It is the contractor's responsibility to ensure that they install, maintain and operate all relevant measures, plant and equipment utilised in their scope of works in order to ensure compliance with the conditions of this EMP, associated plans and relevant approvals.

4.10 Environmental training

GPC will ensure that Project employees and contractors working on the Project receive the following training:

- Appropriate site induction
- Relevant briefing on the Project permits and Approvals
- Requirements of the project DMP
- GPC's Record keeping requirements
- GPC's incident management requirements

Copies of the project approvals and the DMP will be made available to all project personnel. The Project Manager will be responsible for maintaining all records of training including that of the sub-contractors engaged by the Dredging and Navigational Aid Contractors.



4.11 Environmental audits and inspections

Internal auditing may be undertaken to confirm that activities are carried out in accordance with the defined requirements set out in this EMP and relevant approvals. Audits are initiated and completed by the Project team. Audit reports may be provided to GPC regulators as and when required.

Upon request, GPC staff will be afforded access to witness, inspect, examine or audit any part of the contractor's operations. If requested by a regulatory agency, nominees of the relevant agency will be afforded access to witness, inspect, examine or audit any part of the operations.

GPC will carry out periodical inspections. Records of these inspections along with any corrective or improvement actions arising from inspections or audits will be entered into GPC's systems.

4.12 Independent environmental auditing

Within the first four weeks of commencement of dredging an independent environmental audit of compliance with Project approval conditions and requirements of the Project DMP (Table 1) will be undertaken by a certified Environmental Auditor. A close-out audit will be conducted upon completion of the Project.

4.13 Complaints

There are several ways that GPC can become aware of environmental complaints, this includes notification from terminal customers, employees, contractors, community members and regulators.

The Environmental Complaints Management Procedure Edoc1044716 details how to notify, identify, escalate, respond and review complaints ensuring effective complaints handling. Complaints received will be recorded in GPC's systems including all relevant details and any immediate corrective actions, investigations and/or monitoring undertaken, conclusions formed and improvement actions identified to reduce the risk of reoccurrences.

The Project Manager must be notified by GPC staff and/or the engaged contractor on receipt of a complaint regarding perceived or real environmental nuisance or harm as a result of an activity specific to the works covered by the scope of this EMP and any other associated works immediately.

The following details must be collated for all complaints received. GPC will provide this and any other relevant information to DoEE and/or DES in accordance with permit requirements:

- Time, date, name and contact details of the complainant
- Reasons for the complaint
- Any investigations undertaken
- Conclusions formed
- Any actions taken.

4.14 Non compliances and incidents

The Project Manager must be notified as soon as practical after GPC and/or engaged contractor has become aware of any non-compliance specific to activities covered by the scope of this EMP and any other associated works. Incident reporting must be carried out in accordance with permit reporting obligations detailed in Section 4.19 of this plan.

This notification is to take place in accordance with the following methods and timeframes:

- Verbal notification immediately after occurrence of incident to the Project Manager
- Written notification within 24 hours of occurrence of incident to the Project Manager.
- Full investigation report within 10 business days from the date of the incident.
- GPC must notify DES and DoEE and GPC's Environment's Hotline of any incident resulting from activities undertaken as part of the works which:
 - Causes or has the potential to cause environmental harm, or



- Is unlawful, or
- Involves the release of a contaminant, or
- Marine megafauna injury or death, or
- Identifies a new environmental risk, or
- Is not in accordance with the relevant approvals and/or permits.

GPC (or the contractor) must telephone DES's Pollution Hotline (1300 130 372) immediately after becoming aware of any incident involving injury, fatality or other harm to any species of turtle or marine mammal during dredging activities.

Incidents are recorded in GPC's systems and hold all relevant details of the incident, including immediate corrective actions, investigations and/or monitoring undertaken, conclusions formed and improvement actions identified to reduce the risk of reoccurrences.

Written advice will be provided by GPC (or the contractor) to the relevant administering authorities in accordance with the conditions of the appropriate approval. The following details may be required:

- Name of the registered operator, including development approval number
- The name and telephone number of a designated contact person
- The location of the release/event
- The time of the release/event
- The time you became aware of the release/event
- The suspected cause of the release/event
- The sensitive receptor(s) that may have been impacted
- A description of the resulting effects of the release/event
- The results of any sampling performed in relation to the release/event
- Actions taken to mitigate any environmental harm and or environmental nuisance caused by the release/event
- Proposed actions to prevent a recurrence of the release/event.

GPC's Incident Management and Investigation Procedure Edoc1075526 is used to guide incident reporting, external notifications, investigations and corrective actions, including record keeping requirements. The contractor's incident reporting procedure will be included in the Contractor's EMP and must include the requirements outlined in this EMP.

GPC also records and communicates the number and type of incidents internally through weekly, monthly and annual reports.

4.15 Emergency preparedness

4.15.1 General requirements

GPC has documented policies, standards and procedures which provide a framework for ensuring GPC develops and maintains capacity to efficiently prepare for, respond to, and recover from, an emergency, major business disruption and/or crisis event.

GPC is responsible for first-strike response to oil spills, within the boundaries of the Port, in accordance with the MSQ First-strike Oil Response Plan attached in Appendix 2 of this EMP.

All emergencies and incidents must be reported, however in the event of an oil/hazardous substance spill to water, the Harbour Master (07 4973 1200) is to be contacted immediately. Secondary contact is to then be made with the First Strike Oil Response Team Leader on 0409 629 413.

The Contractor's Emergency Procedures and Marine Execution Plan (Table 4) should be included in their EMP.

4.15.2 Contingency planning

Although management measures cover most potential impacts, contingency arrangements are required in the event of emergency or abnormal operations. These may include but are not limited to:



- Operations in adverse weather conditions (e.g. cyclones)
- Marine incident.

In abnormal operating circumstances, the Project Manager will be contacted to formulate and advise the Vessel Master of GPC's preferred course of action to minimise environmental harm. It is noted that the Vessel Master has ultimate responsibility for the vessel and crew, so will make decisions based on risk with consideration to GPC's advice. The Vessel Master is also responsible for consulting with Maritime Safety Queensland (MSQ) and ensuring their requirements are met.

4.16 Records

All records required by this EMP, associated documents and the relevant approvals must be kept for at least 5 years. Records will be kept in either of the following secure repositories:

- GPC's Risk Management System
- GPC's Electronic Document Management System

This will include as a minimum:

- Daily records of the area (s) dredged in relation to the approved footprint of works (using a verifiable method), the volume of material removed (to the nearest tonne) and where these volumes are placed
- Conformances and non-conformances in relation to the requirements of this EMP
- Monitoring, incident and complaints records
- Correspondence with the administering authority as per approval requirements
- All monitoring records described in this EMP and the Monitoring Procedure.

All records required by this EMP and associated permits must be provided by the contractor to GPC upon request and/or at the completion of the Project activities.

4.17 Communication

A Communications Strategy has been developed for the Project (Edoc 1528762) to provide direction on the tools and tactics to be used during the preparation, delivery and close-out phases and will be adhered to for the life of the Project. The key objectives of the Communications Strategy are:

- Establish and maintain relationships.
- Reach out and build trust through community and key stakeholder engagement and education.
- Own the conversation about the Project.
- Influence key stakeholder opinion and establish a clear position within the community.
- Be seen and heard in the right places, via the right channels, at the right times.
- Leverage the focus on safety and project scope (i.e. small size) to reinforce our project positioning.
- Assist facilitate a smooth Project delivery process.
- Identify and manage potential and real issues and crises.
- The Project Manager will be the single point of contact for all project communications.



4.18 Review

The project DMP, its operation and implementation, and its associated documents, will be reviewed following the findings of internal and external audits and/or in the event that a performance indicator is not met. Revisions are to be kept as a new version in GPC's document management system and if commitments are added or changed, must be communicated to and approved when necessary by all relevant GPC staff, engaged contractors and administering authorities. Changes of a minor nature will not require resubmission to administering authorities.

4.19 Reporting

Reporting to stakeholders will be conducted in accordance with the Communications Strategy. Compliance reporting will be conducted in accordance with the approval conditions highlighted in Table 4.

Table 4 Approval conditions pertaining to reporting

Department of Environment and Energy (DoEE) Approval EPBC 2017/7976	
Condition No.	Condition
4	Within 20 business days after the completion of capital dredging , the approval holder must notify the Department of the actual date of completion of capital dredging .
5	The approval holder must submit a Dredging Completion Report (OCR) to the Department within six (6) months of the completion of capital dredging. The DCR must include, but is not limited to:
8	The approval holder must notify the Department in writing of the date of commencement of the action within 10 business days after the date of commencement of the action.
11 a	Submit the OP required under condition 7 electronically to the Department for approval by the Minister;
13	The approval holder must prepare a compliance report for each 12 month period following the date of commencement of the action, until completion of the action, or as otherwise agreed to in writing by the Minister.
14	The approval holder must notify the Department in writing of any: incident; non-compliance with the conditions; or non-compliance with the commitments made in plans. The notification must be given as soon as practicable, and no later than two (2) business days after becoming aware of the incident or non-compliance.
15	The approval holder must provide to the Department the details of any incident or non-compliance with the conditions or commitments made in plans as soon as practicable and no later than 10 business days after becoming aware of the incident or non-compliance.
19	Within 30 days after the completion of the action, the approval holder must notify the Department in writing and provide completion data.
Department of Environment and Science- AQM0006	
PMG030	Commencing one (1) year after the commencement of quarry material removed, the Allocation Holder must submit to the chief executive: <ol style="list-style-type: none"> 1. an annual return of the volume of quarry material removed from the Allocation Area, even if no material has been extracted during that period. The volume of quarry material removed from the Allocation Area must be measured in cubic metres (m3) using a verifiable methodology (hydrographic surveys - pre and post dredging); and 2. payment of the royalty stated in Table 4 per cubic metre (m3) of quarry material removed. The return is due within 20 business days after the end of each annual return period.
Gladstone Ports Corporation -DA2017/05	
2	The proponent must supply the Port with "As constructed" plans in both hard and electronic format which illustrates all infrastructure within port limits which is associated with the activity (e.g. Shipping channel, navigational aids etc.).
4	The proponent must inform the GPC of completion of works within 14 days of practical completion and certify that the site is fit for purpose.



6	<p>Gladstone Ports Corporation Environment Hotline (07) 4976 1617 is to be notified of the occurrence of any:</p> <ul style="list-style-type: none">(a) release spill of contaminants (e.g. fuels chemicals sewerage) greater than 250L to land;(b) release spill of contaminants (e.g. fuels chemicals sewerage) of any amount to water;(c) any environmental complaints received by the holder of this approval; and(d) non-compliance with conditions of this approval or any other environmental approval obtained in relation to the approved activity.
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Department of State Development, manufacturing, Infrastructure and Planning-1901-9347SDA-DSDMIP	
2	<p>(a) An erosion and sediment control plan must be prepared by a suitably qualified person, in accordance with the Best Practice Erosion and Sediment Control (BPESC) guidelines for Australia (International Erosion Control Association).</p> <p>(b) Provide the erosion and sediment control plan to the palm@ehp.qld.gov.au or mailed to: Department of Environment and Heritage Protection Permit and License Management Implementation and Support Unit GPO Box 2454 Brisbane Qld 4001</p> <p>(c) Undertake the development generally in accordance with the erosion and sediment control plan.</p> <p>(d) Provide written evidence from a suitably qualified person that all elements of this condition have been complied with.</p>
5	<p>(a) Provide written notice to the Regional Harbour Master (Gladstone) via email to Gladstone.rhm@msq.qld.gov.au, when the development authorised under this approval is scheduled to commence.</p> <p>(b) Provide written notice to the Regional Harbour Master (Gladstone) via email to Gladstone.rhm@msq.qld.gov.au, when the development authorised under this approval has been completed.</p> <p>Each notice must state this application number, the location and name of registered place and the condition number under which the notice is being given.</p>
6	<p>Hydrographic survey(s) of the authorised dredging area must be conducted, and a copy of the resulting plan(s) must be provided to the Regional Harbour Master (Gladstone) via email to Gladstone.rhm@msq.qld.gov.au.</p>
8	<p>(a) Prepare a Marine Execution Plan (MEP), which includes the following:</p> <ul style="list-style-type: none"> i. Forecasted start and end dates ii. Hours of work iii. General methodology overview iv. Name of principal marine equipment involved v. Extreme weather contingency plans vi. 24/7 point of contact to ensure timely communication with Vessel Traffic Services during extreme weather and other maritime emergencies. vii. Vessel traffic management plan to allow safe passage of passing traffic viii. Any other information to support the safe management of the marine works as identified by the applicant. <p>(b) Provide a copy of the MEP to the Regional Harbour Master (Gladstone) via email to Gladstone.rhm@msq.qld.gov.au.</p> <p>(c) The dredging must be undertaken in accordance with the MEP required in part (a) of this condition.</p>
Department of Environment and Science (DES) EA0001683	
G3	<p>Any breach of a condition of this environmental authority must be reported to the administering authority as soon as practicable within 24 hours of becoming aware of the breach. Records must be kept including full details of the breach and any subsequent actions taken.</p>
G8	<p>When required by the administering authority, monitoring must be undertaken in the manner prescribed by the administering authority to investigate a complaint of environmental nuisance arising from the activity. The monitoring results must be provided within 10 business days to the administering authority upon its request.</p>
G9	<p>Written notification of the commencement date must be provided to the administering authority at least five (5) business days prior to establishing a new dredging activity.</p>
G16	<p>The Dredge Management Plan must be submitted to the administering authority at least 30 business days prior to the commencement of dredging and, amended in accordance with any comments made by the administering authority prior to the commencement of dredging.</p>



5 Activity description

5.1 Overview

The key Project activities are summarised below.

- Capital dredging of 800,000 cubic metres (m³) of seabed material and batters (which includes an over dredging allowance)
- Dredged material transportation and placement within the WBRA
- Extract existing of two navigational aids; C3 (West Cardinal) and C1, HP2 pile beacon. Install two navigational to replace C3 and new A8.

The duration of the Project dredging campaign is proposed to be approximately 25 weeks.

5.2 Dredging of Clinton Channel

The existing Clinton Channel will be widened by 100m to a depth of -16m LAT with an over dredging allowance of 0.3m. The dredging footprint will also be extended to include a small wedge between the proposed dredging and the Clinton Bypass Channel which will be dredged to -13m LAT with an over dredging allowance of 0.3m. This additional area will enhance the safe navigation for outbound vessels as they negotiate the transition from the Targinnie Channel into the Clinton Bypass Channel. The location of the Project area to be dredged is provided in Figure 2.

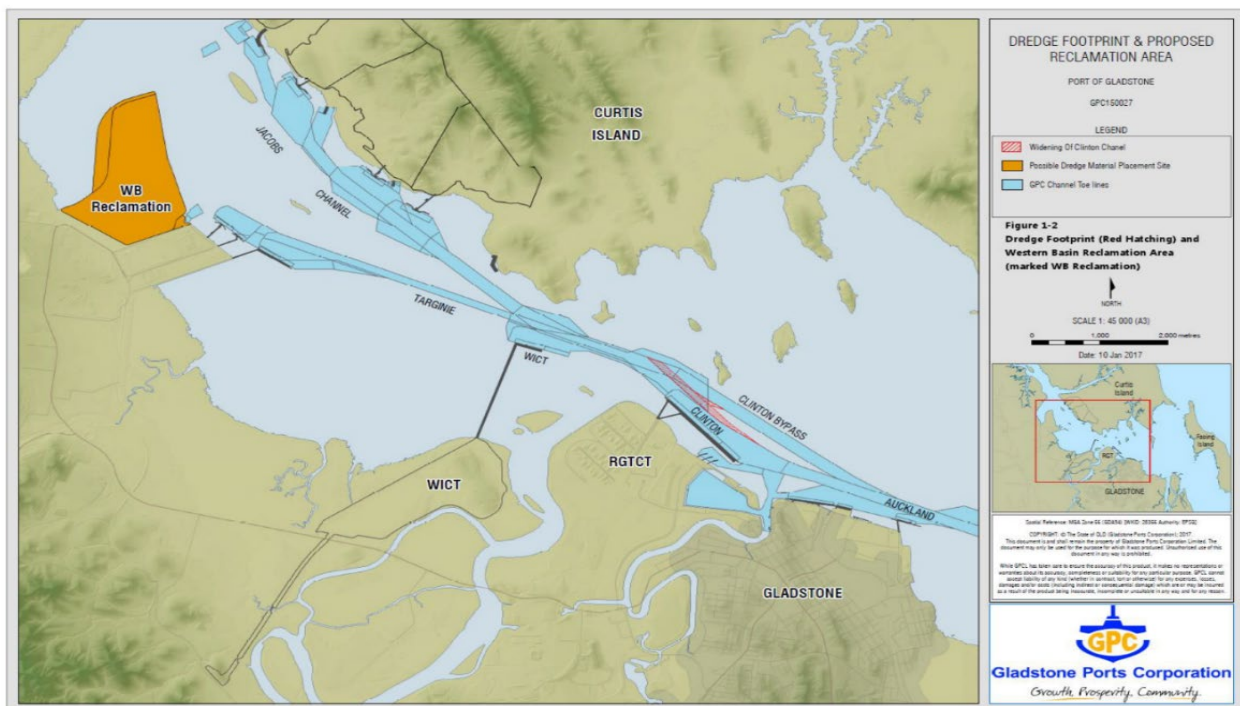


Figure 2 Location of Project dredging footprint and Western Basin reclamation area

Dredged material will be transported and placed within the existing WBRA, located approximately 10km to the north-west of the dredge footprint.

GPC will initiate the tender process for dredging contractors after environmental approvals for the Project have been finalised. This will ensure that the contractors consider all approval conditions in the development of their works methodology.



5.3 Dredging methodology

The dredging plant and approach adopted for the Project will be finalised upon completion of the tendering process. As such, there are a number of different dredging methodology approaches which could be adopted, including:

- Approach 1: Medium Cutter Suction Dredger (CSD) to break up rock and stiff clay and a Trailing Suction Hopper Dredger (TSHD) having a capacity of 6000 m³ to remove the sediment and pump it into the WBRA (BMT 2018). The dredging program duration is estimated to be 17 weeks. There will be a tailwater discharge from the WBRA which will commence 7.5 weeks after dredging has commenced and will continue until four weeks after dredging is completed.
- Approach 2: TSHD to dredge as much sediment as possible (estimated to be approximately 85%) and pump it into the WBRA. A Backhoe Dredger (BHD) to then dredge the remaining sediment/rock and load it onto barges, where it will be transported to the WBRA. The dredging program duration is estimated to be 32 weeks in total, with 24 weeks for the TSHD and 8 weeks for the BHD. There will be a tailwater discharge from the WBRA which will commence 7.5 weeks after dredging commenced and continue until four weeks after dredging is completed.
- Approach 3: BHD to dredge all sediment/rock and load it onto barges from where it will be transported to the WBRA. No tailwater discharge is envisaged for this methodology. The dredging program duration is estimated to be 14 weeks.

A BHD operating for 25 weeks has been selected as the preferred option for the current dredging campaign. No tailwater will be discharged for the duration of the project. A temporary barge unloading facility will be placed adjacent to the WBRA. The barge unloading facility will be positioned on spuds and will not trigger any additional environmental approval.

5.4 Placement of dredged material and Tailwater discharge

The WBRA can readily accommodate the estimated Project dredged material volume (i.e. 800,000m³ insitu). Due to the large area of the WBRA and the choice of backhoe dredging, no tailwater discharge will occur from this activity. Water quality monitoring at the discharge location will only be conducted if stormwater needs to be released from the WBRA. This is highly unlikely as only rainfall events higher than 1m may trigger the release of stormwater from the WBRA.

5.5 Navigational aids

MSQ requires navigational aids to be located in the Clinton Channel to ensure safe boating and passage for commercial vessels. The proposed location and configuration of the navigational aids are in accordance with the recommendations of the International Association of Marine Aids to Navigation and Lighthouse Authorities and were developed in consultation with the Regional Harbour Master (Figure 3).

To meet this requirement the Project shall include the complete extraction of existing C3 (West Cardinal) 1200 diameter steel pile/column tower beacon and extraction of C1, HP2 pile beacon. Works to then manufacture and construct of new C3, 1200 diameter West Cardinal mark steel pile beacon new A8 combined 1200 diameter pile beacon and lattice tower. Some met-ocean / weather equipment installed on exciting C3 beacon which will need to be removed and relocated to new C3 beacon. GPC will engage MSQ to prepare a project plan and formalise scope and TMR Marine Engineering (M.E.) will deliver the infrastructure works.

The main body of works to extract existing beacons and construct new beacon has an expected total duration of 5 days and will be merged into the dredging schedule, with advice from MSQ.

MSQ will be preparing an EMP for the proposed works, inclusive of relevant permit conditions and requirements of the Project DMP. This EMP will be approved by GPC prior to work initiation.



Figure 3 Location of relocated and new navigational aids



6 Environmental Management Measures

This section contains the environmental management measures to be implemented by the Project to effectively manage any environmental impacts from the project. Table B-1 (Appendix 1) summarises the locally expressed outstanding universal value (OUV) and attributes within the Port of Gladstone and surrounding areas, and their classification relative to the overall OUV of the Great Barrier Reef World Heritage Area (GBRWHA). The DMP documentation will be implemented in order to ensure that activities associated with the Project do not negatively impact on the identified sensitive receptors, including MNES and MSES.

The dredging methodology generating the largest plume (combination of a medium sized CSD and a 6000m³ TSHD) was considered for modelling potential impacts from the Project activities (BMT WBM 2018). The abovementioned analysis and modelling was undertaken with a series of values and assumptions relevant to TSHD dredging and Approach 1 (Section 5.3). The modelling related to TSHD and Approach 1 is the most conservative one as it generates the highest levels of turbidity. The potential impacts from modelling can be summarised as:

- Disturbance to sediment and reef communities within the proposed area to be dredged will result in a temporary loss of epibenthic biota and long term changes to:
 - Physical habitat conditions (i.e. increased depth) and hydrodynamic conditions within the channel
 - Long term changes in benthic fauna communities due to altered habitat conditions and ongoing disturbance associated with maintenance dredging
- Short term changes to water quality from dredging activities and the associated potential impacts to nearby sensitive receptors such as seagrass and corals, and their habitat value for marine fauna
- Potential impacts to marine megafauna from underwater noise generation and vessel strike
- Potential impacts to MNES (i.e. World Heritage properties, National Heritage places (Great Barrier Reef World Heritage Area), listed threatened species and communities, and listed migratory species) and MSES (e.g. wetlands and watercourses, protected wildlife habitat, fish habitat areas and highly protected zone of state marine parks).

The methodology (BHD) selected for CVIP leads to a very small zone of impact (only within the dredge footprint) (BMT 2019). Transient, temporary visual plume may be observed in the vicinity of the dredging operations but they will not cause any impacts to the ecological receptors. Visual plume monitoring will be conducted to observe the extent of the plume.

Possible impacts to each of the key receptors and associated controls have been outlined in this section.

6.1 Sediment quality

The sediments of the Project area were sampled from a number of boreholes within the proposed Clinton Channel widening area to analyse the sediments to be dredged. The assessment of sediment quality was conducted in accordance with the National Assessment Guidelines for Dredging (NAGD) 2009 and the National Environment Protection (Assessment of Site Contamination) Measure 1999 Ecological Screening Level D (Commercial and Industrial) (NEPM 2013).

Results from the sediment quality assessment demonstrated that all the areas included in the investigation and assessment were demonstrated as 'clean' as per NAGD (2009) and is therefore chemically suitable for placement within the WBRA. No contaminants were detected above the NEPM (2013) commercial/industrial guideline levels.

6.2 Acid sulphate soils

While acid sulphate soil (ASS) material was generally absent from the sediments within the dredging footprint, there were discrete locations where acidity was detected. However, the levels of ANC_E (Excess Acid neutralising capacity) were substantially higher than the net acidity in the sediments, likely due to the presence of shell material (Aurecon 2016). As dredging activities are likely to result in the breakdown of shell material into finer material (creating higher reactive



surfaces for the acid neutralising agent), the existing presence of shell material throughout the Clinton Channel widening footprint will provide the sediments with sufficient self-neutralising capacity which removes the risk of acid being produced during dredging and dredged material placement.

The dredging contractor will be required to prepare an Acid Sulphate Soil Management Plan (ASSMP) as required under Condition L3 of the Project Environmental Authority EA0001683.

Condition L3 of The Environmental Authority EA0001683 states that “treatment and management of acid sulfate soils must comply with the latest edition of the *Queensland Acid Sulfate Soil Technical Manual*.”

The objective of the Contractor’s ASSMP will be to ensure that no untreated Potential ASS (PASS) material is deposited in the WBRA. The ASSMP has to be approved by the Project Manager prior to implementation. Daily PASS logs, PASS testing and treatment records need to be submitted to GPC.

The existing WBRA ASSMP will remain in place in the “maintenance phase” (section 6.2.1 of Edoc 1485083) during the Project dredging to manage the pre-existing PASS at the WBRA in line with expert technical Advice provided by Gilbert and Sutherland (Edoc 1519238).

6.3 Air quality

Minor emissions will be generated from vessels used in dredging and the installation of navigational aids. No dust will be created from dredging activities. Impacts from dust may occur during placement of dredge material and associated truck movements at the WBRA. Air quality and emissions management associated with the Project is provided below.

Objectives	<ul style="list-style-type: none"> • Prevent air quality impacts at nearby sensitive receptors. <ul style="list-style-type: none"> • Compliance with approval conditions and management plans requirements, specifically Condition A1 of the Environmental Authority EA0001683 which states: <i>Other than as permitted within this environmental authority, odours or airborne contaminants must not cause environmental nuisance at a sensitive place or commercial place.</i>
Potential impacts	<ul style="list-style-type: none"> • Increased dust and particulate matter impacting on adjacent ecological communities and/or sensitive receptors. • The release of toxic, noxious or offensive odours, airborne contaminants and particulate matter resulting from the works may cause an environmental nuisance sensitive place. • Unmitigated energy consumption and greenhouse gas (GHG) emissions.
Actions	<ul style="list-style-type: none"> • Watering of haul roads for the haulage of material within the WBRA • Watering to ensure material being dozed or graded is damp or applying suppressants to reduce emissions from completed sections of the reclamation area • Speed limits will be enforced to minimise dust generation • Vehicle movement will be restricted to existing roads and tracks, wherever practicable • Measures to reduce fuel consumption and GHG emissions include the following: <ul style="list-style-type: none"> – Selection of fuel efficient machinery and vehicles matched to the delivery requirements where possible – Optimisation of transport of materials through load optimisation and delivery scheduling • All marine plant and equipment will be maintained to minimise the discharge of noxious fumes and pollutants • Vessels will be registered and in survey as required by Australian law and to the International Maritime Organisation (IMO) guidelines.
Performance indicators	<ul style="list-style-type: none"> • No air quality related complaints • No noxious or offensive odours or fumes that impede works being completed safely and/or that causes environmental nuisance at a nuisance sensitive place.



Monitoring	<ul style="list-style-type: none"> Log books are maintained by the contractor and are available for viewing by GPC Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12) Air quality monitoring will be conducted as required, in response to air quality complaints
Reporting	<ul style="list-style-type: none"> GPC will maintain records of all inspections in accordance with this EMP All complaints or incidents that are received by the contractor will be documented and reported to GPC (refer Sections 4.13, 4.14 and 4.19). Air quality monitoring results will be documented as required, in response to air quality complaints All records required by this plan and associated permits will be provided by the contractor to GPC upon request and/or at the completion of construction activities.
Corrective action/s	<ul style="list-style-type: none"> The contractor will schedule maintenance and/or corrective actions as required for equipment issues In consultation with GPC, the contractor will identify cause of any incident or nuisance, and institute preventative actions to prevent a re-occurrence GPC to review this EMP (refer Section 4.18).

6.4 Aboriginal cultural heritage

An Indigenous Land Use Agreement (ILUA) is in place between GPC and the First Nations Bailai, Gurang, Gooreng Gooreng, Taribelang Bunda People Aboriginal Corporation (FNPBC) (formerly the Port Curtis Coral Coast (PCCC) native title claimant group) and the state of Queensland. In addition to this ILUA, a Cultural Heritage Protocol (the Protocol) was entered into by the ILUA parties on 23 March 2014, to ensure the protection and management of all Aboriginal cultural heritage in the ILUA area in relation to all port related operations (proposed or undertaken).

As a minimum, the controls below will be implemented to manage the potential risk to Aboriginal cultural heritage in the vicinity of the Project.

Objectives	<ul style="list-style-type: none"> Ensure Aboriginal Heritage items/areas are not impacted. Compliance with relevant legislation, approval conditions, the Protocol and management plan requirements.
Potential impacts	<ul style="list-style-type: none"> The Project does not have potential to impact on known Aboriginal cultural heritage. There are known Aboriginal cultural heritage sites within the vicinity of the WBRA.
Actions	<p>All works will remain within the approved footprint and seek to minimise all disturbance associated with the Project.</p> <ul style="list-style-type: none"> Should an item or object of historical Aboriginal cultural heritage significance be found during Project activities, GPC will implement the New Discoveries provision for incidental finds of Aboriginal cultural heritage found during Project activities provided in Section 10.2 of the Protocol, including the following: <ul style="list-style-type: none"> All work at the location of the potential find should be ceased and the contractor will notify GPC's Project Manager. Follow the directions of the regulatory authority agency which will be provided by GPC to the contractor.
Performance indicators	<ul style="list-style-type: none"> All works associated with the Project are conducted within the Project footprint. No heritage complaints or incidents associated Project works.
Monitoring	<ul style="list-style-type: none"> All staff and contractors to remain vigilant for cultural heritage objects during the dredging activity. Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12)



Reporting	<ul style="list-style-type: none"> • All complaints or incidents that are received by the contractor will be documented and reported to GPC (refer Sections 4.13, 4.14 and 4.19) • All records required by this plan and associated permits will be provided by the contractor to GPC upon request and/or at the completion of construction activities.
Corrective action/s	<ul style="list-style-type: none"> • GPC to review this this EMP (refer Section 4.18) • In consultation with GPC, the contractor will identify cause of the incident or nuisance, and institute preventative actions to prevent a re-occurrence.

6.5 Non-Aboriginal cultural heritage

Activities associated with the Project have the potential to directly and indirectly impact on items of non-Aboriginal cultural heritage within the vicinity of the Project. The Great Barrier Reef is a listed cultural heritage item that has the potential to be impacted by the Project, however the area's heritage listing relates to the size and diversity of ecosystems. The heritage values of the Great Barrier Reef will be protected through other management measures which protect ecological values within the vicinity of the Project.

A number of listed sites/places of historic heritage importance and recorded shipwreck sites are located within the Port of Gladstone. Sites/places above high water and within the Gladstone and Targinnie areas will not be indirectly impacted by Project activities due to the separation distance between the heritage sites/places and the Project impact area.

Heritage items that may be impacted by the Project include items below the high-water mark such as some of the recorded shipwrecks within the vicinity of the Project and any other unexpected heritage finds.

As a minimum, the controls below will be implemented during Project activities to manage the potential risk items of Non-Aboriginal cultural heritage in the vicinity of the Project.

Objectives	<ul style="list-style-type: none"> • Ensure non-Aboriginal cultural heritage items/areas are not impacted. • Compliance with relevant legislation, approval conditions and management plan requirements.
Potential impacts	<ul style="list-style-type: none"> • The Project does not have potential to impact on known Aboriginal cultural heritage.
Actions	<ul style="list-style-type: none"> • Known shipwreck locations to be avoided by Project activities. • Ensure that all employees are suitably trained to identify cultural heritage sites or objects and report the finds to GPC's Project Manager. • Inform all employees of their obligations to notify GPC's Project Manager of any cultural finds. • Should an item or object of historical non-Aboriginal cultural heritage significance be found during Project activities the following measures will be adopted: <ul style="list-style-type: none"> – All work at the location of the potential find should be ceased and the GPC's Project Manager will be notified – The GPC's Project Manager will undertake appropriate actions and provide management recommendations to the contractor. • GPC's Project Manager will notify the DES of any relevant finds in accordance with Section 89 of the <i>Queensland Heritage Act 1992</i>.
Performance indicators	<ul style="list-style-type: none"> • No heritage complaints or incidents associated with the Project. • No works conducted outside approved bounds.
Monitoring	<ul style="list-style-type: none"> • Monitoring of cultural heritage will be managed through the actions outlined above and reporting requirements should an item of cultural heritage be found during the Project. • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12)



Reporting	<ul style="list-style-type: none"> All complaints or incidents that are received by the contractor will be documented and reported to the GPC Project Manager (refer Sections 4.13, 4.14 and 4.19) All records and associated permits will be provided to the relevant authority upon request and/or at the completion of construction activities.
Corrective action/s	<ul style="list-style-type: none"> GPC to review this EMP (refer Section 4.18) In consultation with GPC, the contractor will identify cause of the incident or nuisance, and institute preventative actions to prevent a re-occurrence.

6.6 Fauna

Dredging activities, as well as the installation of new navigational aids and associated piling activities have the potential to directly and/or indirectly impact on both fauna species and fauna habitat values in the area surrounding the Project. Potential impacts of the Project on ecological values in the area, including fauna and fauna habitats (intertidal and coastal areas, coral reef and seagrass meadows). Conservation significant marine fauna species that have the potential to be impacted by Project activities include:

- Green turtle (listed as vulnerable, migratory marine and listed marine under the EPBC Act, and vulnerable under the NC Act)
- Loggerhead turtle (listed as endangered, migratory marine and listed marine under the EPBC Act, and endangered under the NC Act)
- Flatback turtle (listed as vulnerable, migratory marine and listed marine under the EPBC Act, and vulnerable under the NC Act)
- Dugong (listed as migratory marine and listed marine under the EPBC Act, and vulnerable under the NC Act)
- Australian humpback dolphin and Australian snubfin dolphin (listed as migratory marine under the EPBC Act, and vulnerable under the NC Act)
- Humpback whale (listed as vulnerable and migratory marine under the EPBC Act, and vulnerable under the NC Act).

As a minimum, the controls below will be implemented to manage the potential risk to fauna.

Objectives	<ul style="list-style-type: none"> Minimise indirect impacts to native terrestrial, intertidal and marine fauna (including conservation significant species) Minimise direct impacts to fauna resulting from dredging and placement activities. Compliance with permit conditions and management plans.
Potential impacts	<ul style="list-style-type: none"> Potential vessel strike leading to injury or death Direct loss of habitat and food source as a result of seabed removal at the area to be dredged Decline in water quality in marine areas through dredging activities disrupting behaviour Generation of underwater noise from dredging and piling vessels leading to injury or impacting behaviour Disturbance of fauna behaviour from lighting impacts Harm to marine megafauna may affect the sustainability and diversity of their populations in the Port and the broader area.
Actions	<ul style="list-style-type: none"> Schedule dredging to occur outside of Flatback turtle nesting period (November to February) where practical Schedule dredging to occur outside coral spawning period (October-November) where practical Dredging vessels and equipment will include noise attenuation measures for all pumps, motors and noise generating sources on deck wherever practicable to reduce potential disturbance to native fauna



- All vessel operators will be made aware of the potential for native fauna species, including conservation significant species, to occur within the Project direct and indirect impact areas, prior to dredging commencing
- Immediately prior to the commencement of dredging activities, a search for marine megafauna will be conducted by a marine fauna spotter, in accordance with the relevant management plans and permit approval requirements
- If an animal is injured during construction activities, works in the immediate area of the animal will cease immediately and will not recommence until rescue actions have been taken and a review of appropriate management actions is undertaken to ensure the risk of reoccurrence is minimised
- DES will be contacted to manage any stranded fauna within areas that have the potential to be impacted by Project activities. DES stranding hotline: 1300 130 372
- An exclusion/safety zone will be created around the perimeter of the pile driving activities. During the works, a marine fauna spotter will be present to ensure that pile driving will not be carried out while dugongs, turtles or other protected marine species are within 300m
- Activities will be placed on hold for the period of time it takes the animal to leave the safety zone of its own accord

- The fauna safety shut-down zones below will be also be implemented for continuous impact piling durations using the fauna spotter

Noise exposure threshold based on cumulative SEL (within a 24-hour period)		Observation zone	Shut-down zone
Duration with continuous piling @ 100 strikes / min	Cumulative SEL < 198 dB re 1 $\mu\text{Pa}^2\text{-S}$		
≤ 1 min	≤ 50 m	1.0 km	50 m
10 min	310 m	1.0 km	310 m
60 min	1.4 km	2.0 km	1.4 km

(Source: SLR 2019)

- Where practicable, avoid conducting impact piling during the following times:
 - When marine mammals are likely to be breeding, calving, feeding or resting in biologically important habitats nearby
 - Humpback whale migration season from June to September
 - During marine turtle (Green turtle and Flatback turtle) peak nesting activity period from November to December
- Standard operating procedures to be undertaken by contractors during piling activities include pre-start, soft start, normal operation, stand-by operation, and shut-down procedures
- Where noise related incidents occur while implementing standard operating procedures, investigate and validate (via site acoustic testing) the effectiveness of noise mitigation measures, including lowering piling duration/piling strike number per day and the use of piling noise attenuation measures.
- Where practicable, lighting solutions will be implemented to reduce potential marine fauna attraction to the Project direct impact area, and to avoid potential habitat fragmentation and fauna disturbance
- The Project activities will remain free of plastic shopping bags to reduce detrimental impacts to marine and migratory species that occur within the areas that have the potential to be impacted by the Project activities



	<ul style="list-style-type: none"> • Hazardous substances with the potential to impact fauna and associated habitat will be stored within suitably contained and bunded areas at a suitable distance from waterbodies and/or sensitive habitats • Dredger heads to be fitted with fauna exclusion devices, including but not limited to, turtle deflectors. This equipment will be appropriately serviced and inspected throughout dredging • Where TSHD dredging is carried out, during times when the drag head is not in contact with the seabed, and pumps are in operation, pump speed will be reduced and drag head water jets must be activated to minimise the risk of turtle capture • “Go slow zones” for contractor vessels will be established in shallow areas, less than 5m in depth, to prevent injuries to marine fauna. Contractor vessels travelling in these areas will not travel on the plane. • If megafauna is spotted within 300 m of operations then the contractor will wait 15 minutes for the animal to move away or until it is no longer sighted after a 15 minute period • In the event that two or more of any endangered or vulnerable species of marine megafauna are fatally injured on any two out of three consecutive days, the dredging operation must stop and not re-commence until consultation with DES has occurred and direction has been given by DES to allow re-commencement • Where practical and safe all turtle carcasses and/or parts of turtle carcasses (of any species) that are observed will be retrieved and appropriately stored
Performance indicators	<ul style="list-style-type: none"> • No fatalities to marine fauna associated with Project activities • No fauna related complaints or incidents associated with the dredging or placement works • Disturbance to marine habitat will be restricted to the minimum required to enable the safe operation of the Project, in accordance with approval conditions. • No avoidable environmental harm is caused within areas that have the potential to be impacted by dredging activities
Monitoring	<ul style="list-style-type: none"> • Marine fauna monitoring will be conducted on board all dredging vessels by a fauna spotter • Environmental monitoring will be carried out in accordance with the Monitoring Procedure • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12)
Reporting	<ul style="list-style-type: none"> • All complaints or incidents that are received by the contractor will be documented and reported to GPC (refer Sections 4.13, 4.14 and 4.19 of this this EMP) • GPC will keep a register of all monitoring results and maintain the records in accordance with Section 4.16 of this EMP • Records of marine fauna encountered will be kept by the marine fauna spotters, indicating the sighting of each animal and action/s taken • A Fauna Incident Register will be maintained to log any injury or death of native fauna during Project activities • Retrieved turtle carcasses (and parts of) will be immediately notified on the RSPCA Hotline 1300 264 625 (1300 ANIMAL), to allow prompt collection by DES for analysis
Corrective action/s	<ul style="list-style-type: none"> • If marine fauna habitat is removed/disturbed, the contractor will contact the GPC’s Project Manager immediately to advice of the breach. GPC’s Project Manager will coordinate with the relevant authority to confirm measures to be implemented to address the non-conformance • In the event that fauna exclusion devices are removed or damaged in a way that could decrease their effectiveness, the contractor will contact the GPC’s Project Manager and dredging will cease until devices are replaced/repared



- Death or injury to megafauna will be reported as an incident, and will be reported immediately, in accordance with the relevant incident response procedures and Project approval requirements
- GPC to review this EMP as per Section 4.18.

6.7 Flora/Vegetation

Dredging activities have the potential to directly and indirectly impact on marine flora species and communities, through direct impacts such as removal of vegetation (e.g. seagrass) and also through increased turbidity and changes to water flows and sedimentation rates. As a minimum, the control measures below will be implemented to manage the potential risk to flora in the vicinity of the Project.

Objectives	<ul style="list-style-type: none"> • No direct or indirect impacts on marine flora outside of the lawful works footprint • Compliance with permit conditions and management plan requirements.
Potential impacts	<ul style="list-style-type: none"> • No seagrass meadow is located in the dredge footprint. The dredged material will be deposited in an existing reclamation area, so no direct impact to seagrass is envisaged. Indirect short term impact to seagrass may result from changes to water quality and light availability
Actions	<ul style="list-style-type: none"> • Schedule dredging outside seagrass growing period (July to November) where practical • Obtain all necessary permits and approvals, under the relevant environmental legislation, and ensure that any removal of marine plants, is carried out in accordance with approval conditions • Implement the adaptive management actions for water quality, BPAR and seagrass contained in the Monitoring Procedure • All dredged material dewatering tailwater will meet discharge criteria prior to discharge at the licenced discharge point
Performance indicators	<ul style="list-style-type: none"> • Dredging does not exceed triggers levels for turbidity and BPAR provided in the Procedure • No works are undertaken outside approved footprint.
Monitoring	<ul style="list-style-type: none"> • All environmental monitoring is to be executed in accordance with the Monitoring Procedure • Monitoring/inspections to ensure that all management measures required by this EMP are being implemented • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12).
Reporting	<ul style="list-style-type: none"> • All records required by this EMP and associated permits will be provided by the contractor to GPC upon request and/or at the completion of Project activities • All complaints or incidents that are received by the contractor will be documented and reported to the Project manager (refer Sections 4.13, 4.14 and 4.19 of this EMP) • All records and associated permits will be kept in accordance with Section 4.16 of this EMP and provided to the relevant authority upon request and/or at the completion of construction activities.
Corrective action/s	<ul style="list-style-type: none"> • The contractor will schedule maintenance and/or corrective actions as required for equipment issues. • Dredging contractor will adjust dredging program in consultation with GPC to manage turbidity and light levels in accordance with triggers • All non-conformances will be corrected and reported to the GPC's Project Manager in accordance with Sections 4.14 and 4.16 of this EMP • The cause of the incident will be investigated, and mitigation measures will be revised, if required, to prevent a re-occurrence • GPC to review this EMP as per Section 4.18.



6.8 Biosecurity

Introduction of marine pests have the ability to adversely affect the biodiversity of the Port of Gladstone. Biosecurity Queensland are responsible for managing known marine pests in Queensland and GPC has obligations and responsibilities to Biosecurity Queensland under the *Biosecurity Act 2014*. The Department of Agriculture and Water Resources administer the *Biosecurity Act 2015*, which deals with new pest incursions, and places obligations and responsibilities on First Ports of Entry, such as the Port of Gladstone.

The management of biosecurity risks associated with dredging and dredged material placement area is described below. The management of biosecurity risks associated with the dredging operation is addressed in the contractor's EMP. As a minimum, the controls below will be implemented to prevent or minimise biosecurity impacts of pest and weed incursion in the vicinity of the Project.

Objectives	<ul style="list-style-type: none"> • Ensure there is no material or perceived harm from biosecurity risks. • Compliance with Regulations and management plan requirements.
Potential impacts	<ul style="list-style-type: none"> • The introduction of new marine pests into the Port and increased competition, predation or disease will affect existing flora and fauna within the Port.
Actions	<ul style="list-style-type: none"> • The dredging contractor will comply with the Australian Quarantine and Inspection Service and Biosecurity Queensland requirements in relation to ballast water and marine pest management, including <ul style="list-style-type: none"> – National System for the Prevention and Management of Marine Pest Incursions – National Biofouling Management Guidance for Non-Trading Vessels • Where a vessel is to provide dredging services from international origins or high risk ports within Australia, GPC will request details of recent inspection, dry docking and antifouling and recent dredging history • Should a marine pest invasion be noticed by the contractor, GPC is to be notified as per the incident procedure in Section 6.14. GPC's Environment team will notify regulatory authorities and follow directions given. • The contractor is to comply with all applicable State and Federal biosecurity requirements.
Performance indicators	<ul style="list-style-type: none"> • No environmental harm is caused by introduction of marine pest from Project activities • Appropriate response is implemented by the dredging contractor in the event that a marine pest incursion is detected from the dredging activity.
Monitoring	<ul style="list-style-type: none"> • GPC undertakes a marine pest survey as part of ongoing Port operational requirements • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12).
Reporting	<ul style="list-style-type: none"> • Gladstone Regional Council is required to be notified in the event that a Category 2 restricted matter (as defined by the <i>Biosecurity Act 2014</i>) is detected within the WBRA, enabling them the opportunity to investigate the matter, and respond as per their Biosecurity Plan, if required • All complaints or incidents that are received by the contractor will be reported to the GPC's Project Manager as outlined in Sections 4.13, 4.14 and 4.19 of this EMP • Should a marine pest invasion be detected by the contractor, GPC is to be notified and they will notify the regulatory authorities • All records and associated permits will be provided to the relevant authority upon request and/or at the completion of Project activities.
Corrective action/s	<ul style="list-style-type: none"> • GPC and the contractor will follow instructions from regulatory authorities with regards to biosecurity issues • Follow through with any complaint or incident investigation • GPC to review this EMP as per Section .18.



6.9 Noise and vibration

Project activities include the use of powered equipment operating at variable hours throughout the course of dredging activities and the installation of new navigational aids. This has the potential to create noise and vibration impacts on the surrounding environment, including terrestrial noise and vibration, and underwater noise impacts.

As a minimum, the controls below will be implemented to manage potential noise and vibration impacts.

Objectives	<ul style="list-style-type: none"> To prevent adverse noise and vibration impacts at sensitive receptors Compliance with permit conditions and management plan requirements specifically Condition N1 of the Environmental Authority EA0001683 which states: “Noise generated by the activity must not cause environmental nuisance to any sensitive place or commercial place.”
Potential impacts	<ul style="list-style-type: none"> Noise and vibration from activities may cause environmental nuisance as described in the EP Act Behavioural and physiological impacts to marine fauna in response to underwater noise.
Actions	<ul style="list-style-type: none"> The Dredge Contractor will be required to submit a Noise management Plan addressing the <i>Environmental Protection (Noise) Policy 2019</i> criteria. The Noise Management Plan need to be approved by the Project manager prior to implementation. All equipment will be turned off when not in use Prior to using the impact piling rig undertake impact trials to determine the minimum required drop height to install the piles. Additional noise control measures adopted with respect to the control of underwater noise. Consider the use piling ‘cushions’ installed at the point of impact to reduce the energy (sound emission) during each impact event Dredging vessels and equipment will include noise attenuation measures for all pumps, motors and noise generating sources on deck wherever practicable Utilise on deck structures to screen noise emissions wherever practical.
Performance indicators	<ul style="list-style-type: none"> No noise complaints or related incidents associated with the Project activities No exceedances of <i>Environmental Protection (Noise) Policy 2019</i> criteria.
Monitoring	<ul style="list-style-type: none"> Noise or vibration monitoring will be conducted by the dredging Contractor in accordance with the Noise Management Plan C at nearby sensitive receptors in response to complaints received or reported. Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12) The number of complains/incidents will be monitored by GPC Vessel log books are maintained by the contractor and are available for viewing by GPC.
Reporting	<ul style="list-style-type: none"> GPC will maintain records of all inspections in accordance with Section 6.16 of this EMP All complaints or incidents that are received by the contractor will be documented and reported to GPC (refer Sections 4.13, 4.14 and 4.19 of this EMP) All records required by this plan and associated permits will be provided by the contractor to GPC upon request and/or at the completion of Project activities
Corrective action/s	<ul style="list-style-type: none"> The contractor will schedule maintenance and/or corrective actions as required for equipment issues In consultation with GPC, the contractor will identify the cause of any incident or nuisance, and institute preventative actions to prevent a re-occurrence GPC to review this EMP as per Section 4.18 Other corrective actions to be determined by the incident or complaint investigation.



6.10 Hazardous substance and waste

Objectives	<ul style="list-style-type: none"> • Minimise the amount of waste generated by the Project • Ensure no waste is released into the environment • Ensure best practice management is adopted for the handling and storage of all waste materials • Manage wastes and spills to prevent environmental harm • Compliance with permit conditions, regulations and management plan requirements specifically with Condition W1 of the Environmental Authority WE0001683 <p>“All waste generated in carrying out the activity must be reused, recycled or removed to a facility or designated onsite location(s) that can lawfully accept the waste.”</p> <ul style="list-style-type: none"> • Ensure all waste material is appropriately managed and disposed.
Potential impacts	<ul style="list-style-type: none"> • Contamination of soil and sediment through leaching • Contamination of water • Toxicity to marine and/or intertidal flora and fauna • Odour.
Actions	<ul style="list-style-type: none"> • The Dredging contractor shall submit a waste management plan. The Waste management plan must be submitted to the Project manager for approval. • The contractor will ensure that spill equipment is available and staff are familiar with its use • The contractor will implement procedures for waste avoidance, reuse, recycling, treatment and disposal, with regard to best practice waste management strategies • The contractor will ensure that the collection and disposal of waste material will be conducted by a licenced contractor, and disposed of at a licenced waste disposal facility, using appropriate tracking documentation • The contractor will install and maintain temporary toilet facilities at the WBRA site compound for the duration of Project dredging and dewatering activities. A licensed contractor will regularly collect waste from the temporary toilet facility for disposal offsite. • The contractor will ensure dredger waste management will be provided by a licenced waste removal contractor for the collection of tank washing slops, oily bilge water, chemicals, oil sludge and sewerage • Refuelling of the dredger will occur at existing Port facilities • Refuelling at the WBRA for plant utilised onsite will occur by mobile fuel truck in a bunded area appropriate sized for the application • Regulated wastes and other waste materials will be contained and controlled in a manner that prevents environmental harm • Absorbent material used to clean up hydrocarbon spills will be stored in an appropriate container marked ‘regulated waste’ • No waste, other than reclamation decant water, is to be released into the marine environment • Temporary storage of hydrocarbons will occur in bunded areas that are appropriately sized for the application and capacity maintained (i.e. kept free of rain water) • The contractor will maintain a register of hazardous substances stored/used on the dredger and Safety Data sheets will be available • The contractor will undertake appropriate checks and preventative maintenance of plants and equipment to minimise leaks and spills • Wash bilges with biodegradable degreasers or detergents and dispose of cleaning residue ashore <hr/> <ul style="list-style-type: none"> • Regular maintenance of work areas, storage areas, transfer equipment and spill equipment will occur • In the event of a spill or non-conformance, the contractor will notify the GPC’s Project Manager as soon as practicable



Performance indicators	<ul style="list-style-type: none"> • Operations will cease immediately if a waste management incident occurs that may be aggravated by continued construction operations.
	<ul style="list-style-type: none"> • No incidents or complaints will be received regarding waste management by the Project causing environmental harm or nuisance • Ecological integrity of the surrounding environments will be maintained • All waste materials will be handled and stored in a safe and appropriate manner • There is no environmental impact on, and disturbance to, the adjoining terrestrial and/or marine areas from waste • Correct storage, transport and disposal of waste products, including tracking for regulated wastes • Efficient clean-up of all spills and removal of contamination.
Monitoring	<ul style="list-style-type: none"> • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12)
Reporting	<ul style="list-style-type: none"> • All complaints or incidents that are received by the contractor will be documented and reported to GPC (refer Sections 4.13, 4.14 and 4.19 of this EMP) • Records must be kept by the contractor when regulated waste is removed from site as per Section 4.16 of this EMP
Corrective action/s	<ul style="list-style-type: none"> • All records required by this EMP and associated permits will be provided by the contractor to GPC upon request and/or at the completion of construction activities. GPC may be requested to provide the contractor's waste tracking certificates to DES. • In consultation with GPC, the contractor will identify cause of any incident or nuisance, and institute preventative actions to prevent a re-occurrence • The contractor must dispose of contaminants (including clean up material) from hydrocarbon and hazardous chemical spills as regulated wastes • GPC to review this EMP as per Section 4.18.

6.11 Water quality

Dredging, dredged material placement and decant water discharge have the potential to impact on water quality in the Port of Gladstone, however appropriate management controls will be in place to ensure that these potential impacts do not affect sensitive receptors.

Activities associated with Project dredging have the potential to increase turbidity resulting in increased sedimentation and impacting on the amount of available light (BPAR) for seagrass. No tail water discharge will occur as a result of the dredging operations.

Numerical models were used to simulate the physical processes and to assess the potential impacts of the Project dredging and dredged material placement activities. Based on the outcomes of these models and the known tolerances of seagrass and coral communities within Port Curtis, water quality zones of predicted impact have been established surrounding the Project impact areas (BMT WBM 2018; BMT WBM 2019).

The release of fine sediments (defined by DoEE as sediment finer than 15.6 µm) predicted to be released during dredging and tailwater discharge will be validated through field measurements. The field measurements will be conducted in accordance with the Fine-grained Sediment Validation Monitoring Plan approved by DoEE under the EPBC approval 2017/7976.

Continuous real-time monitoring of turbidity and BPAR at locations throughout Port Curtis have been selected to monitor the impacts to sensitive receivers within and adjacent to the zones of influence of the Project (the Monitoring Procedure) for background information on monitoring locations and modelling information).



As a minimum, the controls below will be implemented to manage the potential risk to water quality. In addition, management measures will be in accordance with monitoring strategies outlined in the Monitoring Procedure.

As an ongoing operational requirement, annual monitoring of seagrass will be conducted at long term seagrass meadows in December 2019 and 2020.

6.11.1 Dredging activity

Objectives	<ul style="list-style-type: none"> Limit sediment (turbid plume) mobilisation to an extent consistent with protecting the viability of ecological communities in the Port of Gladstone Protect nearby sensitive receptors from excess turbidity Compliance with permit conditions and management plan requirements.
Potential impacts	<ul style="list-style-type: none"> Increased turbidity, impacting on sedimentation in intertidal areas and ecological communities in the Port Decreased availability of BPAR, impacting on ecological communities that depend on it, including seagrass communities occurring in the Port of Gladstone.
Actions	<ul style="list-style-type: none"> Implement the Monitoring Procedure GPC will monitor real time turbidity and BPAR data and if trigger levels are exceeded and related to dredging activities, GPC will contact the dredging contractor and implement adaptive management action outlined in the Monitoring Procedure and contractor's EMP. Annual monitoring of seagrass at long-term seagrass meadows to assess condition of the meadows with respect to biomass, species diversity and meadow extent.
Performance indicators	<ul style="list-style-type: none"> No exceedance of seagrass light thresholds outlined in the Monitoring Procedure Limited changes to visual inspections of turbidity plumes adjacent to the dredging operations No decline in seagrass community health within Port Curtis as a result of dredging activities
Monitoring	<ul style="list-style-type: none"> Water quality and BPAR monitoring in accordance with the Monitoring Procedure Implementation of adaptive management in accordance with the Monitoring procedure. Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12).
Reporting	<ul style="list-style-type: none"> GPC will maintain records of all inspections in accordance with Section 4.16 of this EMP All complaints or incidents that are received by the contractor will be reported to GPC (refer Sections 4.13, 4.14 and 4.19 of this EMP). All records required by this plan and associated permits must be provided by the contractor to GPC upon request and/or at the completion of Project activities.
Corrective action/s	<ul style="list-style-type: none"> All non-conformances will be corrected and reported to GPC's Project Manager in accordance with Sections 4.14 and 4.16 of this EMP The cause of the incident will be investigated, and mitigation measures will be revised, if required, to prevent a re-occurrence GPC to review this EMP as per Section 4.18.

6.11.2 Decant water: Note these conditions will remain latent for this project as no tailwater will be discharged from the dredging operations. These controls will only be activated if stormwater needs to be released from the WBRA in the unlikely event of rainfall higher than 1m.

Objectives	<ul style="list-style-type: none"> Limit sediment (turbid plume) mobilisation and decreases in water quality to an extent consistent with protecting the viability of ecological communities in the Port of Gladstone. Limit the impact of dewatering operations on marine life and water quality to an extent consistent with protecting the viability of specified communities Compliance with permit conditions (WT1, WT2, WT3, WT4, WT5 of the Environmental Authority EA0001683) , management plan and Monitoring Procedure requirements.
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Potential impacts	<p>Decant water that does not comply with the licenced water quality discharge limits prior to being discharged into the Port has the potential to adversely impact on the receiving environment in the vicinity of the WBRA, including impacts to:</p> <ul style="list-style-type: none"> • Water quality • Marine flora and fauna.
Actions	<ul style="list-style-type: none"> • Decant water will be managed within the existing WBRA dewatering ponds. All decant water will be managed to meet the water quality levels outlined in the Monitoring Procedure prior to being released at the licenced discharge point • No decant water is to be discharged prior to water monitoring in accordance with the Monitoring Procedure
Performance indicators	<ul style="list-style-type: none"> • All decant water achieves the water quality levels outlined in the Monitoring Procedure prior to discharge.
Monitoring	<ul style="list-style-type: none"> • The dredging contractor will implement a decant water monitoring program which is detailed in the Monitoring Procedure • Audits and inspections are conducted by GPC and an independent auditor in accordance with this EMP (refer Sections 4.11 and 4.12).
Reporting	<ul style="list-style-type: none"> • The dredging contractor will keep a register of results of water quality monitoring and other measures implemented, and maintain the records in accordance with Section 6.15 of this EMP and provide a copy of register to GPC • GPC will report monitoring results to DoEE and DES as per Section 4.19 • All complaints or incidents that are received by the dredging contractor will be reported to GPC. GPC will report these as per Sections 4.13 and 4.14 and 4.19 of this EMP.
Corrective action/s	<ul style="list-style-type: none"> • In the event of a non-conformance with water quality trigger values, GPC's Project Manager will be notified. The water may be subject to appropriate treatment and testing before any discharge. • In consultation with GPC, the dredging contractor will identify the cause of the incident or nuisance, and implement preventative actions to prevent a re-occurrence • GPC will review the dredging schedule in consultation with the dredging contractor to manage turbidity and light levels in the Port • GPC to review this EMP as per Section 4.18.



7 References

Acid Sulfate Soil Management Plan - Western Basin Dredging and offshore/onshore Disposal Project. Gladstone, Queensland (May 2018)

Aurecon 2016, Clinton Vessel Interaction Project: Sampling and Analysis Plan Implementation Report, September 2016. Prepared for the Gladstone Ports Corporation, Pty. Ltd.

Aurecon 2017, Priority Port of Gladstone Master Planning in Local Expression of the OUV of the GBRWHA.

BMT WBM 2018, *Clinton Vessel Interaction Project Revised Impact Assessment*, September 2018.

BMT WBM 2019, *Clinton Channel Capital Dredging – Additional Modelling Scenarios – Results (Rev 1)*, May 2019.

National Assessment Guidelines for Dredging (NAGD) 2009, Department of the Environment, Water, Heritage and the Arts, Australian Government.

NEPM 2013, *National Environment Protection (Assessment of Site Contamination) Measure 1999* (amendment 1, 2013), National Environment Protection Council, Canberra

SLR 2019, Port Of Gladstone Gatcombe and Golding Cutting Channel Duplication Project Underwater Noise Impact Assessment

8 More information

This Plan will be available to all personnel, vendors and consultants.

This document is uncontrolled when printed. The current version of this Procedure is available on GPC's Intranet and website.

If you require any further information, please contact the Custodian, listed under Document Accountability on the cover page.



9 Appendices

9.1 Appendix 1 – Summary of environmental values within the Port of Gladstone

Table 5 Matters of national environmental significance relevant to the Port of Gladstone

Category	Local attribute	Relevant OUV criteria and contribution classifications ¹				Summary of the key environmental values
		vii ²	viii ³	ix ⁴	x ⁵	
Coral reefs	Fringing reefs	Min	Min	Min	Min	Fringing coral reefs
	Inshore turbid reefs	-	Min	Min	Min	Inshore turbid coral reefs
	Coral species diversity and extent	Min	Min	Min	Min	Various coral species
Marine water quality	Marine water quality	-	-	Mod	Mod	Marine water quality
Fish	Fish species and diversity	Min	-	Min	Min	Colosseum Inlet Fish Habitat Area De-rā-l-lī (Calliope River) Fish Habitat Area Coral reefs, seagrass meadows, mangrove communities, hard and soft benthic substrates, beach habitats, estuaries, creeks and rivers
Marine megafauna	Dugong	-	-	-	Mod	Dugong species Seagrass meadows
	Species of whales	-	-	-	Min	Minke whales Sperm whales Humpback whales
	Migrating whales	Min	-	-	-	Humpback whales and calving habitat
	Species of dolphins	Min	-	-	Sig	Australian humpback dolphins
Marine turtles	Breeding colonies of marine turtles	Mod	-	-	Mod	Flatback turtle rookery on Curtis Island Nesting beaches on Facing, Curtis and Wild Cattle Islands, Boyne Island Beach and Tannum Sands
	Green turtle breeding	Min	-	-	Min	
	Marine turtle rookeries	Mod	-	-	Mod	
	Nesting turtles	Min	-	-	-	
Seagrass and macroalgae	Seagrass	Min	Min	Mod	Mod	Seagrass meadows
	Beds of <i>Halimeda</i> algae	-	-	Min	-	Beds of <i>Halimeda</i> algae
Shorebirds and migratory seabirds	Seabirds	Min	-	Min	Min	Potential foraging habitat
	Shorebirds and migratory birds	-	-	-	Sig	Threatened migratory shorebird species Shorebird habitat and important roost sites (note these vary from year to year)
Flora, fauna and ecological communities	Threatened and endangered flora and fauna species (including threatened ecological communities)	Min	-	-	Mod	Coastal Saltmarsh Threatened Ecological Community
	Vegetated mountains	Min	-	-	-	Mount Larcom landform
	Mangroves	Min	Min	Min	Min	Various mangrove species
	Mangrove species diversity	-	-	-	Min	Various mangrove species
	Vast mangrove forests	Mod	-	-	-	Mangrove sequences at The Narrows



Category	Local attribute	Relevant OUV criteria and contribution classifications ¹				Summary of the key environmental values
		vii ²	viii ³	ix ⁴	x ⁵	
Continental islands	Continental islands and green vegetated islands	Mod	Mod	-	-	Curtis Island
	Plant species diversity and endemism (species being unique to a defined geographic location)	-	-	-	Sig	Curtis Island
	Vegetation of the continental islands	-	-	Sig	Sig	Curtis Island
Geomorphology	Beaches	Min	-	-	-	Curtis Island beaches Facing Island beaches Boyne Island Beach
	Dune systems	Min	Min	-	-	Parabolic dunes Curtis Island
	River deltas	Min	Min	Min	Min	Marine tidal sand deltas (Curtis Island, Boyne River, Colosseum Inlet)
	Connectivity: cross-shelf, longshore and vertical	-	Min	Min	Min	The Narrows tidal passage
Cultural heritage values	Traditional Owner interaction with the natural environment	-	-	Mod	-	Indigenous cultural heritage sites and values
Marine fauna	Diversity supporting marine fauna species (global conservation significance)	Min	-	Min	Mod	A diverse range of marine fauna species
Total species diversity	Total species diversity	Mod	-	Mod	Mod	A diverse range of marine, intertidal and terrestrial flora and fauna species

Source: Aurecon (2017)

Table notes:

- | | | |
|---|------|--|
| 1 | Min | Minor |
| | Mod | Moderate |
| | Sig | Significant |
| 2 | vii | Aesthetic values and superlative natural phenomena |
| 3 | viii | Ongoing geological processes |
| 4 | ix | Ecological and biological processes |
| 5 | x | Biodiversity conservation |

Reference: Priority Port of Gladstone Master Planning – Local Expression of the OUV of the GBRWHA (Aurecon 2017)



9.2 Appendix 2 – MSQ First Strike Oil Spill Response Plan

