

# **TOWNSVILLE PORT EXPANSION CHANNEL UPGRADE PROJECT**

## **CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN**



## DOCUMENT CONTROL SHEET

### Revision history

Revision No.	Date	Changed by	Nature of amendment
0	17/02/2020	T Smith	Submitted version
1	17/11/2020	M Louden	Submitted version
2	16/09/2021	T Smith	Updated to incorporate reclamation activities
3	21/02/2023	T Smith	Update to tailwater management arrangements and minor administrative changes.
4	02/11/2023	T Smith	Revised to incorporate Eastern Entrance Widening, and remove Diagonal Breakwater works from the plan and other minor amendments
5	17/11/2023	T Smith	Revised Appendix G – Tailwater Management Plan

### DOCUMENT APPROVAL

Approval of the Construction Environmental Management Plan R4 via condition 38 notification to DCCEEW occurred on 6 November 2023.

The Construction Environmental Management Plan (R4) was published on the CU Project's website on 6 November 2023.

This document has been prepared to meet the Commonwealth Government's EPBC Approval No. 2011/5979 Conditions and the Queensland's Coordinator General's Conditions for the Port of Townsville Limited's Port Expansion Project.

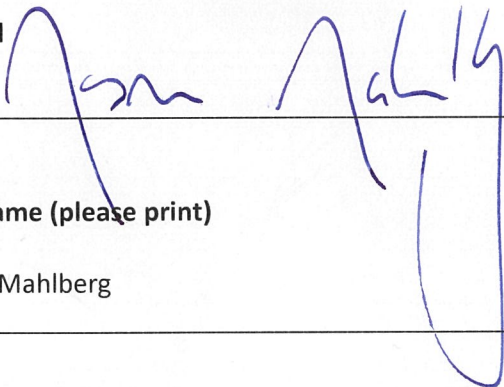
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## DECLARATION OF ACCURACY

**EPBC Number** 2011/5979  
**Project Name** Port of Townsville Port Expansion Project  
**Approval Holder** Port of Townsville Limited  
**ACN / ABN** 130 077 673 / 44 411 774 236  
**Approved Action** To expand the Port of Townsville, in Townsville Queensland. The action is for dredging, land reclamation and construction of infrastructure.  
**Location of the Action** Townsville, Queensland

In making this declaration, I am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed



Full name (please print)

Jason Mahlberg

Organisation (please print)

Port of Townsville Limited

Date 17 / 11 / 2023

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## GLOSSARY

<b>AEIS</b>	Townsville Port Expansion Project: Additional Information to the Environmental Impact Statement - Final (June 2017)
<b>ASS</b>	Acid Sulfate Soil
<b>ASSCMP</b>	Acid Sulfate Soil & Contamination Management Plan
<b>Capital Dredge Material</b>	Material (clays, silts and sands) derived from capital dredging
<b>Capital Dredging</b>	As defined in the NAGD, being 'dredging for navigation, to enlarge or deepen existing channels and port areas or to create new ones'
<b>CEMP</b>	Construction Environmental Management Plan
<b>CU Project</b>	Townsville Port Expansion Channel Upgrade Project
<b>CSEP</b>	The Community and Stakeholder Engagement Plan developed for the CU Project
<b>CSSPPP</b>	Construction Ship-Sourced Pollution Prevention Plan
<b>CVTMP</b>	Construction Vessel Traffic Management Plan
<b>Department / DCCEEW</b>	The Australian Government Department of Climate Change, Energy, the Environment and Water, or any other agency administering the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) from time to time
<b>DES</b>	The Queensland Government Department of Environment and Science, or any other state agency regulating coastal developments and dredging from time to time
<b>DMP</b>	Dredge Management Plan
<b>EIS</b>	Port Expansion Project Environmental Impact Statement (March 2013)
<b>EMS</b>	Environmental Management System
<b>EPBC Act</b>	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
<b>Emergency</b>	Any circumstance which causes, or gives rise to a risk of, serious injury or damage to a person, property or the environment
<b>Exclusion Zone</b>	For pile driving activities, a radius, from the centre of the pile to be driven, around pile driving operations to minimise the risks of physiological impacts to marine megafauna, based on current scientific evidence. The zone must be visually observed at all times during piling driving operations, and where pile driving operations must cease if marine megafauna are observed within the relevant radius.  For general construction activities, a radius from the active workforce or the furthest extent of the construction equipment (e.g. extended dredge arm/bucket).
<b>Extreme Weather Event</b>	Includes but not limited to periods of high rainfall, strong winds, very high tides and cyclones
<b>Fine Sediment</b>	<15.6µm fine silt and clay
<b>HAT</b>	Highest Astronomical Tide
<b>ITAC</b>	Independent Technical Advisory Committee
<b>LAT</b>	Lowest Astronomical Tide
<b>Listed Dolphin Species</b>	Australian snubfin dolphin ( <i>Orcaella heinsohni</i> ) and Australian humpback dolphin ( <i>Sousa sahulensis</i> ). Note definition amended to replace Indo-Pacific humpback dolphin

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(*Sousa chinensis*) with *Sousa sahalensis* based on revised speciation and listing - [https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon\\_id=87942](https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=87942)

<b>Listed Turtle Species</b>	Green turtle ( <i>Chelonia mydas</i> ), hawksbill turtle ( <i>Eretmochelys imbricate</i> ); flatback turtle ( <i>Natator depressus</i> ); loggerhead turtle ( <i>Caretta caretta</i> ); olive ridley turtle ( <i>Lepidochelys olivacea</i> ); and leatherback turtle ( <i>Dermochelys coriacea</i> )
<b>Marine Megafauna</b>	Listed turtle species, dugongs ( <i>Dugong dugon</i> ), listed dolphin species, and all other Cetaceans
<b>Marine Megafauna Observer</b>	Members of the Port or contractor construction team who are suitably trained in marine megafauna observation techniques for key construction activities to observe and identify when megafauna are within set exclusion distances from work fronts.
<b>Mechanical Dredge</b>	A dredger that removes sediments via mechanical methods. Can include grab dredges (clamshells and buckets) or backhoe dredges.
<b>MEMP</b>	Marine Environmental Management Plan
<b>Minister</b>	The Minister administering the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (Cth) and includes a delegate of the Minister
<b>MNES</b>	Matters of National Environmental Significance: In the context of this approval: Great Barrier Reef World Heritage Area, Great Barrier Reef National Heritage place, listed turtle species, listed dolphin species and all other Cetaceans, Dugongs ( <i>Dugong dugon</i> ), Commonwealth marine area and the Great Barrier Reef Marine Park
<b>NAGD</b>	<i>National Assessment Guidelines for Dredging (2009)</i> , as amended or substituted
<b>Observation Zone</b>	The zone whereby the movement of marine megafauna should be monitored to determine whether they are approaching or entering the exclusion zone around construction works.
<b>OEMP</b>	Operations Environmental Management Plan
<b>PASS</b>	Potential Acid Sulfate Soils
<b>PEP</b>	Port Expansion Project
<b>POLREP</b>	Marine Pollution Report
<b>Port</b>	The Port of Townsville
<b>RPEQ</b>	Registered Professional Engineer of Queensland
<b>SDS</b>	Safety Data Sheet
<b>Significant</b>	An event that is important, notable or of consequence, having regard to its context or intensity, and is not temporary in nature.
<b>TOMPA</b>	Queensland <i>Transport Operations (Marine Pollution) Regulation 2008</i>
<b>TPAR</b>	Townsville Port Access Road
<b>TSS</b>	Total Suspended Solids
<b>Vessel</b>	A Ship, as defined under the <i>Transport Operations (Marine Pollution) Act 1995</i> (TOMPA) and a Domestic Commercial Vessel, as defined under the “National Law”

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# 1 INTRODUCTION

Port of Townsville Limited (the Port) is a Government Owned Corporation established under the *Government Owned Corporations Act 1993*, which manages the Port of Townsville. The Port is located on Cleveland Bay, approximately three kilometres east of the Townsville city centre in North Queensland (Figure 1). It is a multi-purpose port that handles predominantly bulk and general cargo with a land and sea jurisdiction in excess of 450 km<sup>2</sup>. The Port is situated in the Great Barrier Reef World Heritage Area but is outside of the Great Barrier Reef Marine Park. Townsville is a long-established township with a history of urbanisation and industrial activities in the Ross River and Ross Creek drainage system.

The Townsville Port Expansion Channel Upgrade Project (**CU Project**) is Stage 1 of the Port's long-term Port Expansion Project (**PEP**). The PEP aims to create a series of strategic assets that will address current capacity constraints and accommodate future growth in trade over a planning horizon to 2040. It includes development of port infrastructure, namely work to "top of wharf" facilities, capital dredging; reclamation; breakwaters and revetments; berths; access roads; rail loop; and trunk services and utilities. It does not include the development of "above wharf" infrastructure such as terminal pavements; ship-loaders and unloaders; product conveyors; storage buildings for products; rail loaders and unloaders; stacking and reclaiming equipment; storage tanks; and pipelines, which will be subject to separate statutory assessment and approval requirements prior to the start of their operations.

## 1.1 SCOPE

The CU Project involves the supply and haulage of marine-grade armour rock; the construction of a reclamation area; realignment of the existing Breakwater; the construction of a temporary offloading facility; capital dredging and placement of capital dredge material in the reclamation area; and movement and installation of navigation aids. This Construction Environmental Management Plan (**CEMP**) outlines the environmental management requirements for the land-based construction phase of the CU Project only, including:

- Construction of the rockwalls to form the reclamation area;
- Construction and use of a temporary offloading facility, including piling works;
- Realignment of the Inner Harbour Entrance, including realignment of an existing breakwater, to cater for the Platypus Channel widening at the Inner Harbour entrance; and
- Placement of capital dredge material in the reclamation area; and
- Management of capital dredge tailwater at the reclamation area.

Preparation and implementation of this CEMP is a requirement of Condition 10 of Controlled Activity Approval EPBC 2011/5979.

This CEMP is only one of a number of management plans which will be implemented in the CU Project as listed in Table 1 and shown in Figure 2. The CEMP is also supported by a series of specialist sub-plans, which are attached as appendices, and an Environmental Procedure for Pile Driving (Appendix I to the Marine Environmental Management Plan).

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FIGURE 1: LOCALITY PLAN OF THE PORT OF TOWNSVILLE & CU PROJECT



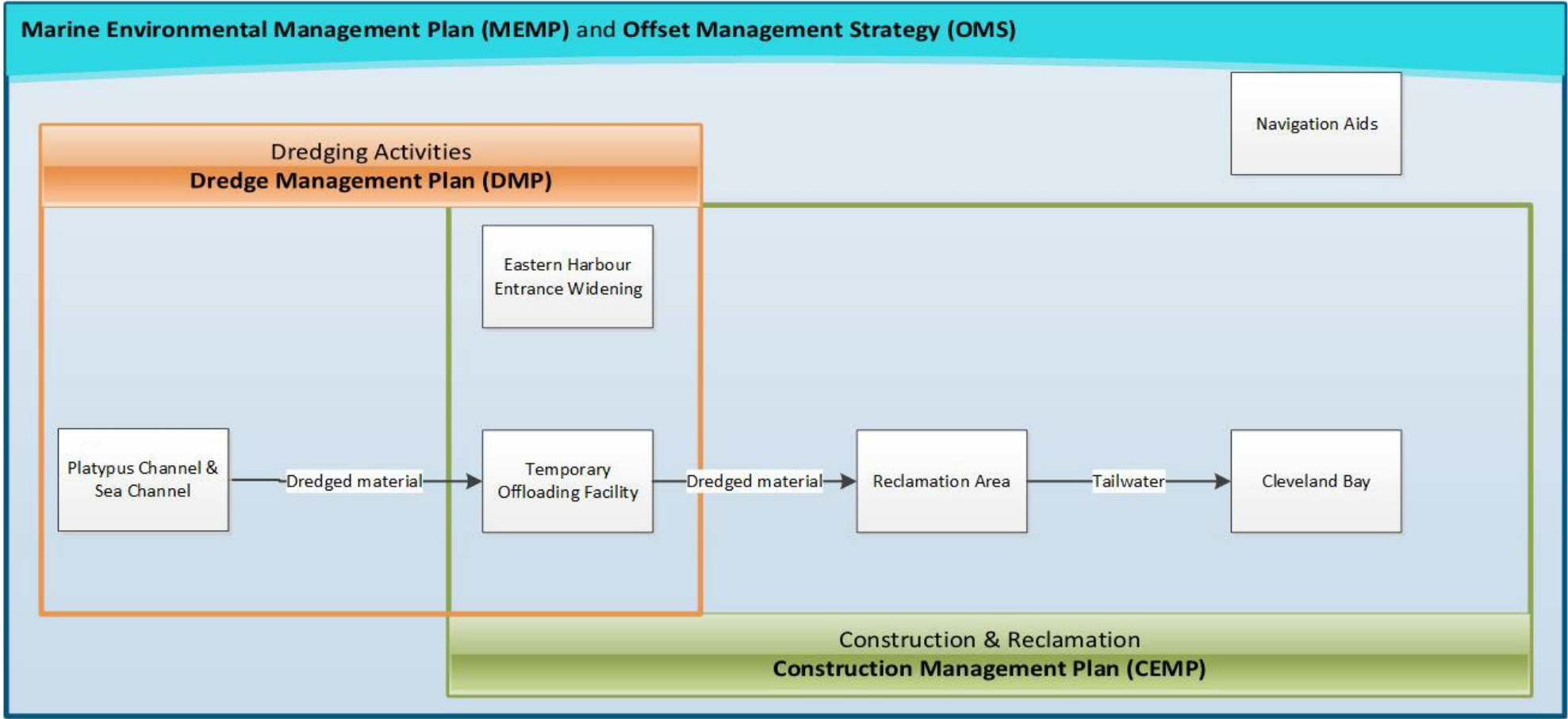
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**TABLE 1: PHASES OF CU PROJECT & ASSOCIATED MANAGEMENT PLANS**

PHASE	MANAGEMENT PLAN	DESCRIPTION OF CONTENT
Rockwall & Reclamation	Offset Management Strategy (APPROVED)	Outlines the offset management strategy for the construction of the rockwall
	Construction Environmental Management Plan ( <b>CEMP</b> ) (APPROVED)	Outlines the overview of the rockwall construction and reclamation activities and associated environmental management requirements and contingency plans for extreme weather events
	Marine Environmental Management Plan ( <b>MEMP</b> ) (APPROVED)	Outlines the environmental management requirements for MNES in relation to construction activities
	Construction Vessel Traffic Management Plan ( <b>CVTMP</b> ) incorporating the Construction Ship-Sourced Pollution Prevention Plan ( <b>CSSPPP</b> ) (APPROVED)	Outlines the navigational safety and environmental requirements for all vessels during the construction activities.  Outlines the environmental requirements to prevent pollution from vessels during the construction activities
	Construction Ship-Sourced Pollution Prevention Plan ( <b>CSSPPP</b> )	Outlines the environmental requirements to prevent pollution from vessels during the construction activities
	Inshore Dolphin Monitoring Plan (APPROVED)	Outlines the monitoring program for the inshore dolphins
Capital Dredging	Updated Offset Management Strategy ( <b>OMS</b> )	Outlines the offset management strategy for the capital dredging
	Updated Construction Environmental Management Plan ( <b>CEMP</b> )	Outlines the overview of construction and reclamation activities for the rockwalls, Breakwater modification and temporary offloading facility construction and associated environmental management requirements and contingency plans for extreme weather events
	Dredge Management Plan ( <b>DMP</b> ) (APPROVED)	Outlines the overview of the capital dredging activities (including trigger levels) and associated environmental management requirements and contingency plans for extreme weather events
	Updated Marine Environmental Management Plan ( <b>MEMP</b> )	Outlines the environmental management requirements for MNES in relation to the capital dredging activities
	Inshore Dolphin Monitoring Plan (APPROVED)	Outlines the monitoring program for the inshore dolphins
Operations	Operations Environmental Management Plan ( <b>OEMP</b> )	Outlines the environmental requirements for operational activities associated with the expanded future outer harbour operations (to be completed)

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FIGURE 2: STRUCTURE OF MANAGEMENT PLANS COMPARED TO CU PROJECT ACTIVITIES



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## 1.2 PURPOSE & OBJECTIVES

The purpose of this CEMP is to manage risk and reduce the potential for negative impacts on the environment associated with the CU Project's construction activities. This will be achieved through the identification and detailing of appropriate and preferred environmental management controls. The key environmental values likely to be affected by the land-based construction activities associated with the CU Project were identified in the PEP Environmental Impact Statement (**EIS**) and re-assessed in the PEP Additional Information to the Environmental Impact Statement (**AEIS**). For each key value identified, the environmental management controls to address potential risks and impacts have been provided in this CEMP.

This CEMP reflects and/or provides a greater level of detail to mitigation and monitoring commitments discussed in the PEP EIS / AEIS and sets out the framework for management, mitigation and monitoring of relevant impacts affiliated with construction activities. It has been developed to include measures that the Port believes are necessary for protection of sensitive environmental receptors and to incorporate additional actions/controls as required by approvals/permits/licences that relate to the CU Project.

The principal objectives of this CEMP are to:

- Outline and provide a description of construction activities, methodologies and timing;
- Identify potential and actual environmental aspects and impacts associated with the construction activities;
- Describe the Port's commitments regarding environmental performance, the reduction of adverse impacts and the appropriate mitigation measures to prevent, monitor and manage all possible impacts;
- Provide an action program to enable delivery of the environmental commitments and achievement of the performance criteria;
- Protect environmental values from long term adverse effects due to construction-related impacts;
- Reduce impacts to marine flora and fauna and their habitats during construction activities;
- Reduce air emissions produced during construction activities to impact on surrounding sensitive receptors from construction activities;
- Reduce nuisance noise on surrounding sensitive receptors from the construction activities;
- Indicate the corrective action(s) to be undertaken if an undesirable impact or unforeseen level of impact occurs;
- Adopt best practice management for the handling and storage of waste materials on the construction site; and
- Reduce the risk of an environmental incident occurring during the construction activities, such as an oil spill, plant collision or similar to prevent damage to the surrounding marine environment and the public.

## 1.3 LEGISLATIVE REGIME

Environmental assessment for the proposed PEP was undertaken in accordance with the requirements of the *Queensland State Development and Public Works Organisation Act 1971* and the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)* as it was considered likely to have impacts on the following MNES:

- World Heritage properties (EPBC Act sections 12 and 15A);
- National Heritage places (EPBC Act sections 15B and 15C);
- Wetlands of international importance (EPBC Act sections 16 and 17B);

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- Listed threatened species and communities (EPBC Act sections 18 and 18A);
- Listed migratory species (EPBC Act sections 20 and 20A);
- Commonwealth marine areas (EPBC Act sections 23 and 24A); and
- Great Barrier Reef Marine Park (EPBC Act sections 24B and 24C).

Descriptions of each MNES and a summary of previous survey results for threatened and migratory marine megafauna species and their habitats are provided in the EIS / AEIS.

This CEMP has been developed cognisant of legislative requirements set out in Commonwealth and State Government Acts and Regulations, including Acts implementing relevant international conventions where relevant. Port Notices and the Port Land Use Plan have also been considered. An overview of the relevant legislation is provided in Appendix A.

## 1.4 APPROVALS

The following approvals have been obtained for PEP and the CU Project.

### 1.4.1 Commonwealth Approvals

- EPBC Approval No. 2011/5979 issued 5 February 2018

Appendix B lists the conditions from this approval relevant to this CEMP.

### 1.4.2 State Approvals

- Coordinator-General's Evaluation Report on the Environmental Impact Statement for the Townsville Port Expansion Project issued September 2017 (and all associated development approval / permits and environmental authorities); and
- Development Permit 2103-21775 SDA for MCU for ERA 16 and Operational Works – Tidal Works within a Coastal Management District (for the purpose of capital dredging) and Marine plant disturbance, issued June 2021.
- Development Permit DA0190 POTL/CU / 1905-11091 SRA for Operational Work for Tidal Works (Townsville Port Expansion Project Rock Wall and Reclamation Works), issued June 2019.
- Development Permit DA0197 POTL/CU / 03-21840 SRA for Operational Work for Tidal Works for Temporary Unloading Facility, issued May 2021.
- Development Permit 2103-21834 SDA for Operational Work for Tidal Works for Diagonal Breakwater issued June 2021.
- Environmental Authority (EA) SDA EA0002890 for capital dredging and placement activities, issued June 2021; amended on 7 November 2023.
- Development Permit 2306-35238SRA/DA0208 for Tidal Works for Partial Demolition of Eastern Breakwater, issued August 2023.
- Development Approval 2308-36219 SDA – Operational Works – Tidal Works dredging of Eastern Harbour Entrance widening area issued October 2023).

## 1.5 REVISIONS

The first version (R0) of this CEMP was approved on 26 February 2020 to provide management of the construction of the rockwall to create the reclamation area. This CEMP (R0) was prepared to cover the rockwall

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only as at the time the CU project commenced, capital dredging was more than 12 months from commencing and the final arrangements for reclamation had not been resolved. A minor amendment was made to the plan in November 2020 (R1).

Version three (R2) incorporated updates to include all relevant constructions works associated with the CU Project – including construction works associated with the temporary offloading facility, repositioning of channel navigational aids, as well as the works associated with the construction of the diagonal breakwater / western breakwater realignment.

Version four (R3) incorporated updates associated with tailwater management and discharge in line with how this is implemented. These changes did not change the overall management and approach for tailwater, but provided more detail around the operational controls and tailwater discharge monitoring program following finalisation of those elements. This amendment also incorporated minor administrative updates to incorporate the project status current at that time.

Version five (R4) incorporated the realignment of the Inner Harbour entrance widening, including Eastern breakwater partial demolition; and removes the breakwater works proposed for the Western side (Diagonal Breakwater). Primarily this amendment updated the project description only, as the environmental risk and management controls apply equally between the Diagonal Breakwater works and the Eastern Breakwater works. It should be noted that this shift included a reduction in the amount of dredging and rockwall demolition and construction works required – resulting in a lower risk with the change in approach. Other minor amendments were also made through this amendment, primarily updates to program and revisions to align with activities undertaken.

Version six (R5) – this document – incorporates minor amendments to update references to the Tailwater Management Plan (Appendix G) which has been updated to align with the amended Environmental Authority conditions associated with tailwater release (condition WT1). This EA was amended on 7 November 2023 and included an update of the tailwater discharge criteria limit for Dissolved Oxygen – the Tailwater Management Plan has been updated in line with the EA changes.

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## 2 PROJECT DESCRIPTION

### 2.1 KEY ELEMENTS

The CU Project primarily involves:

- Supply and haulage of marine-grade armour rock required for rockwalls and revetments at the Port;
- Creation of a 62-hectare reclamation area via the construction of rockwalls forming a receival pond for beneficial re-use of all capital dredge material from the channel widening works;
- Capital dredging works of approximately 3.9 million cubic metres from the channels using a mechanical dredge, involving:
  - On its western side to widen the Platypus Channel from 92 metres width to 180 metres for the main section of the channel and 248 metres at the harbour entrance tapering to 135 metres (at the seaward end);
  - On its eastern side to widen the Sea Channel from 92 metres to 120 metres along its length;
- Installation and operation of a temporary offloading facility to allow transfer of dredged material from the dredge barges to the reclamation area;
- Reclamation activities, including the placement of dredged material within the reclamation area and discharge of tailwater into Cleveland Bay;
- Realignment of the Inner Harbour Entrance, including realignment of an existing breakwater, to allow for widening of the Platypus Channel at the harbour entrance; and
- Installation of navigation aids in alignment with the new channel configuration.

The construction, reclamation and dredging will occur inside the existing port limits, the designated water areas in which navigation falls under the control of the Regional Harbour Master (RHM). The reclamation area forms part of Lot 794 on SP308904 adjacent to the northern extern of the East Port area (Lot 791 on EP2348, which is Strategic Port Land), while the temporary offloading facility and activities are adjacent to Lot 794.

The layout of the reclamation area, including the boundaries of Lot 794, is shown in Figure 3. This area and the channel widening footprint are also shown in Figure 4. The layouts of the temporary unloading facility (shown in Figure 5) and the Eastern Harbour Entrance Widening works (shown in Figure 6) identify location and works involved in these aspects of the project.

The capital dredge campaign will last approximately 2 – 2.5 years and dredge approximately 3.9 million cubic metres of material from the channels using a mechanical backhoe dredge. Dredging is intended to be undertaken by mechanical BHD only. Capital dredge material will be placed within the new reclamation area as part of land reclamation activities. Dewatering and ground improvement of emplaced sediments within this area will be undertaken.

Whilst the majority of dredging will occur in the Platypus Channel, the initial phase of dredging undertaken was to create the approach channel to the temporary offloading facility to allow access for the barges to unload dredge material. Where necessary, early dredging works required the use of existing offloading facilities at the Townsville Marine Precinct within the port. This was only necessary prior to the completion of the Temporary Offloading Facility.

Construction of the unloading facility required piling works which were undertaken as per POT2157 Environmental Procedure for Pile Driving (Appendix I of MEMP) which reflects Conditions 15 to 22 of EPBC 2011/5979.

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Repositioning of the navigation aids in alignment with the new channels will be completed in conjunction with Maritime Safety Queensland. These works would also be completed under EPBC 2011/5979, including adoption of the Environmental Procedure for Pile Driving.

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FIGURE 3: LOT PLAN FOR CU PROJECT ROCKWALL CONSTRUCTION & RECLAMATION ACTIVITIES



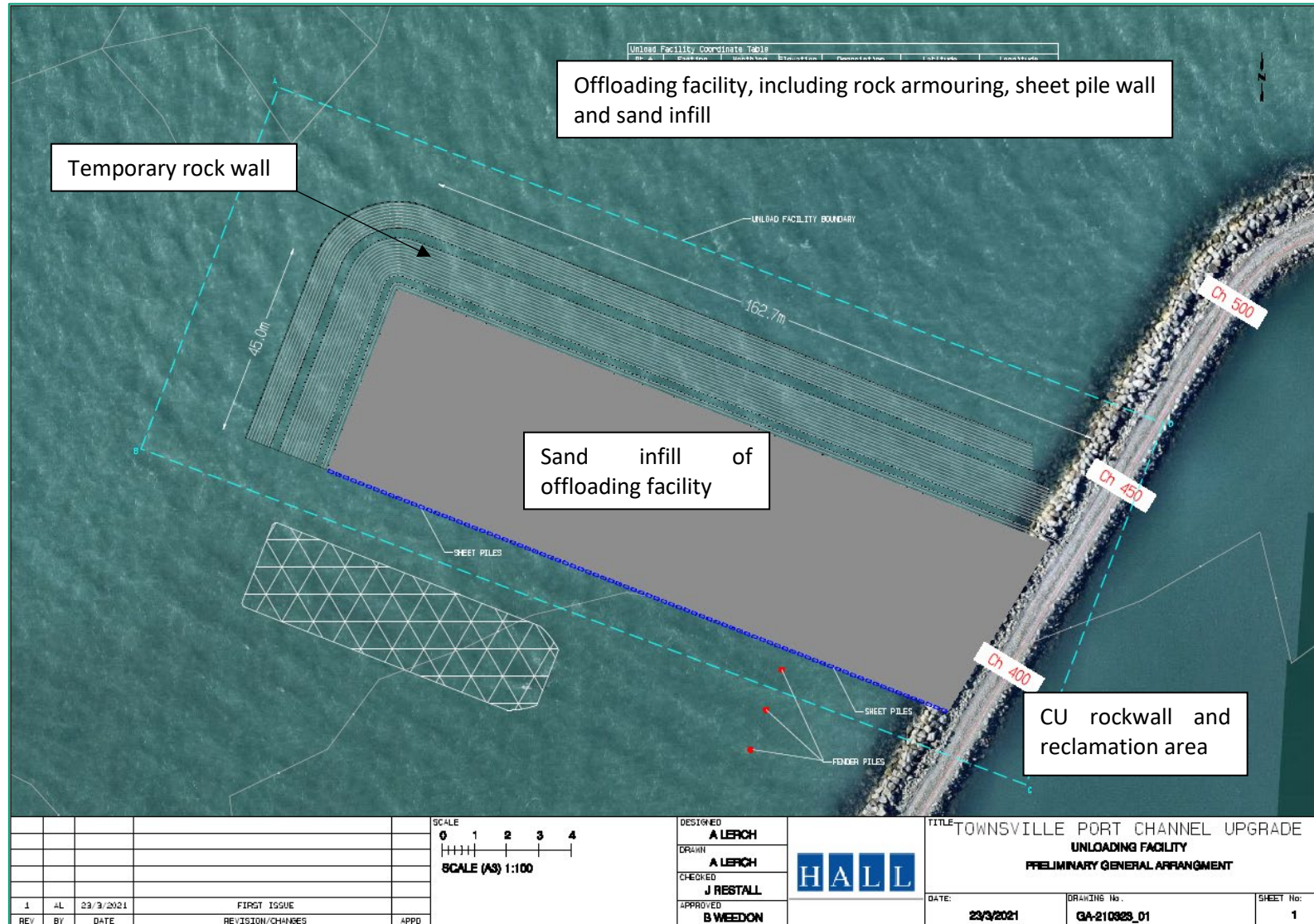
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FIGURE 4: SITE PLAN FOR CU PROJECT CAPITAL DREDGING ACTIVITIES



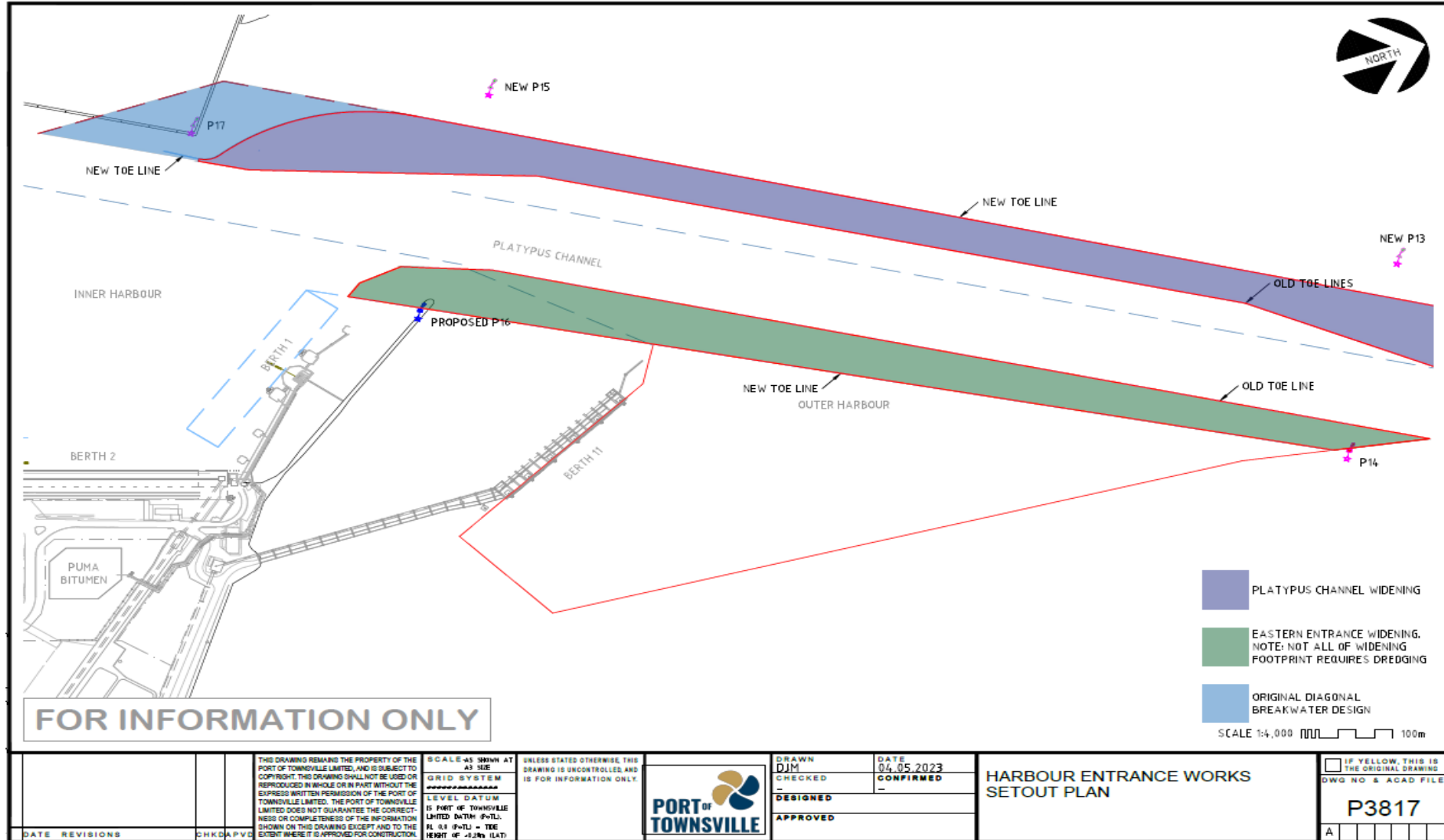
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FIGURE 5: SITE PLAN FOR TEMPORARY OFFLOADING FACILITY (ADJACENT TO NEW ROCKWALL)

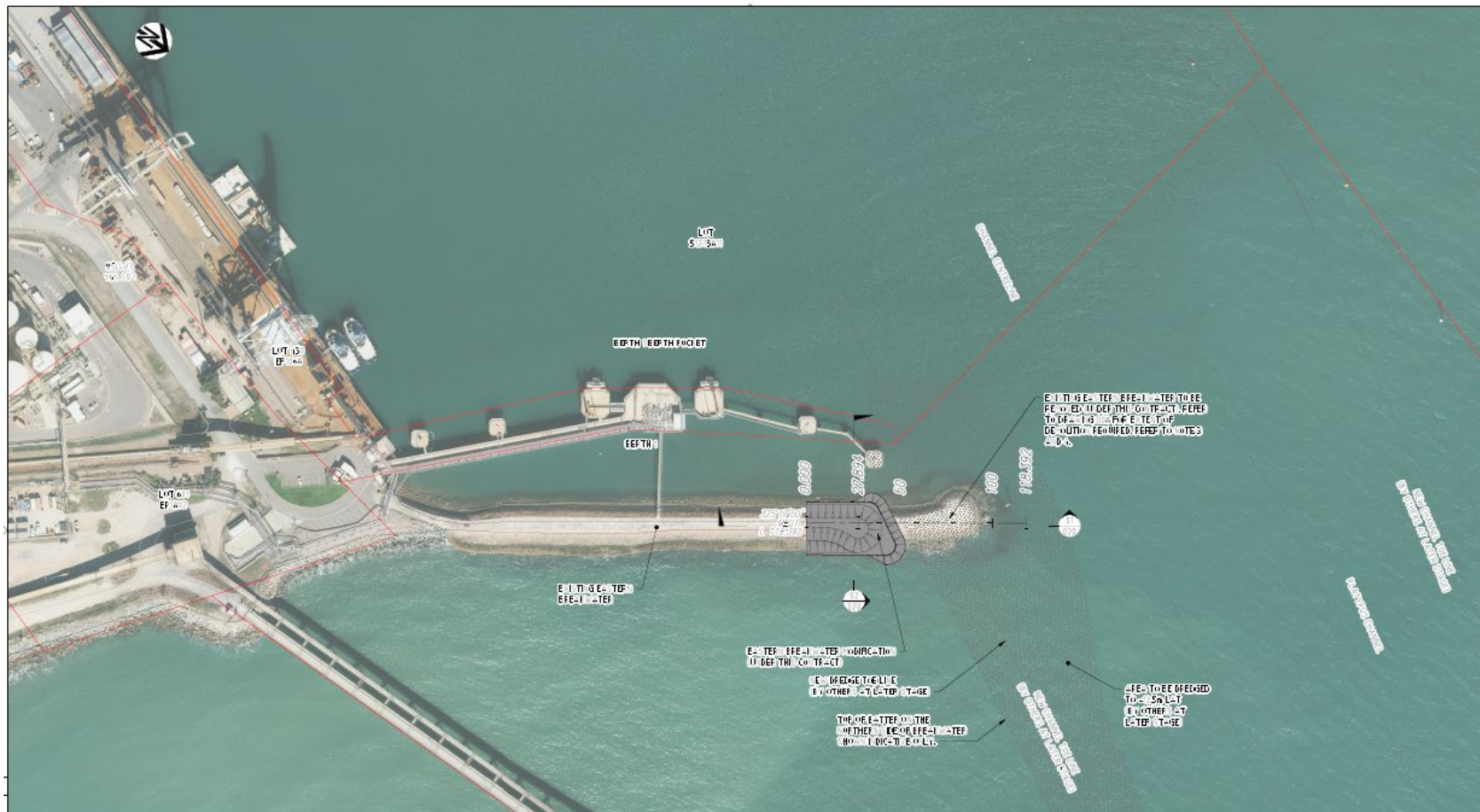


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FIGURE 6: EASTERN HARBOUR ENTRANCE WIDENING



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## NOTES

2. REFER TO PRINCIPAL OF CHANNEL WIDENING DESIGN (DRAWINGS),
- OR LINE OF EXISTING STRUCTURE HAS BEEN INTERPRETED BASED ON SITE SURVEY AND ORIGINAL DESIGN DRAWINGS, CONTRACTOR TO REFER TO EXISTING STRUCTURE ON SITE.
3. CONTRACTOR TO ALLOWED TO MODIFY EXCAVATIONS SPECIFICALLY TO ENSURE THE PORT'S EXISTING NAUTICAL MARKER REMAINS IN PLACE AND IS FUNCTIONAL FOR DURATION OF WORKS.
4. JUST-BEFORE THE PORT'S NAUTICAL MARKER ON EASTERN BREECHWATER FOUNDED IN ACCORDANCE WITH HARBOUR MASTER REQUIREMENTS AT COMPLETION OF WORKS, OR SOONER AS FOR HARBOUR MASTER REQUIREMENTS.

PLAN  
SCALE 1/8"=1'-0"

LEGEND:

C = C = S T F = L R O M P = P Y

[illegible]

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## 2.2 CONSTRUCTION ELEMENTS AND METHODOLOGY

### 2.2.1 Construction Hours

Construction activities at the site will occur during the following times:

- Rock delivery/haulage to site during daylight hours Monday to Saturday;
- On-site rockwall construction activities generally occur during daylight hours Monday to Sunday; noting minor works may be required outside of these times for short periods; and
- On-site dredging and reclamation activities 24 hours per day, Monday to Sunday.

### 2.2.2 Construction Schedule

Construction of the land-side infrastructure for the CU Project is scheduled to occur over seven years (Figure 7), noting that this schedule includes preliminary planning and site preparation activities that commenced in 2017. The CU Project requires construction of the perimeter rockwalls for the initial outer harbour reclamation area prior to capital dredging work associated with the widening of the Channels. The supply and haulage of rock for the rockwalls commenced in April 2019 and will continue for approximately 24 months. Rockwall construction commenced in the first half of 2020 and will take approximately 18 months. Construction of the temporary offloading platform will occur in the first half of 2021, prior to dredging. Dredging and reclamation works that will last for approximately 26 months. Eastern Breakwater demolition and construction works will occur during 2023/2024.

FIGURE 7: INDICATIVE CU PROJECT STAGING SCHEDULE

Project Stage	Calendar Year							Expected Duration
	2017	2018	2019	2020	2021	2022	2023	2024
Approvals/ Procurement / Site Preparation and Preliminary Works								
Rock Haulage								
Construction of Rockwall Structure								
Capital Dredging								
Reclamation								
Navigational aids repositioning								
Eastern Harbour Entrance Widening								
Post Completion Works								

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### 2.2.3 Construction Design Requirements

The perimeter rockwalls of the reclamation area which will be exposed to the sea have been designed to withstand extreme metocean conditions with limited overtopping. The design phase included numerical modelling, utilising a ~10,000 years synthetic cyclone track database, and 2D and 3D physical modelling to ensure the design is robust and “fit for purpose” (see Reclamation Integrity Plan (Appendix F)). The construction design was subject to multiple design criteria assessments, covering a range of factors including design life, geotechnical and rock stability and settlement design. The outcomes of these assessments were compared to relevant Australian Standards or design guidelines, to confirm the basis for design. These requirements and standards are detailed in the Reclamation Integrity Plan (Appendix F).

Further to these design requirements, the Port will ensure that the final constructed rockwall is certified by a Registered Professional Engineer of Queensland (RPEQ) confirming that the rockwall is “fit for purpose” and built in accordance with the design.

The capital dredge campaign, including dredging to support the temporary offloading facility, will be performed by a backhoe dredger. The capital dredge material is transported in barges to an unloading area at the reclamation structure, where civil equipment unloads and distributes the material throughout the reclamation area. The rockwall incorporates tailwater pipes to allow the control of tailwater releases and to facilitate the release of sea water as the reclamation area fills with material over time.

### 2.2.4 Construction Materials

Selected rock products were required from external land sources to build rockwalls to construct and protect the reclamation area from erosion and wave attack; and provide settlement areas for the management and treatment of the capital dredge material and tailwater. A filter material geotextile was also installed as a rockwall filter system to ensure the capital dredge material is filtered and maintained within the reclamation area. All material from the capital dredge campaign will be placed in the reclamation area.

The Port used quarries and suppliers within the Townsville Region to supply the rock and fill material required for the rockwalls and reclamation area, including any rock required for the temporary unloading facility construction. Construction materials were transported to the site by road predominantly via the Eastern Access Corridor along Townsville Port Access Road. All rock materials used met rockwall design requirements in terms of strength, durability and chemical composition. Testing took place for every 5,000 tons or at the Registered Professional Engineer of Queensland (RPEQ) designer’s discretion for quality control at the quarry site and only already approved materials will be transported to the construction site. The Port conducted a series of quality testing on top of the requirements from the quarry suppliers to further mitigate risks with the quarry product quality.

### 2.2.5 Construction Methodology & Equipment

Construction methodology and equipment will vary over the different stages of the CU Project. A range of both civil and marine plant and equipment will be used for the land-based construction as well as for reclamation activities. For each stage of construction works, detailed works methodology will be prepared outlining the scope of works, methodology and equipment to be employed. At a minimum, the method statement will include:

- Introduction;
- Description of the scope of works;
- References to relevant legislation, company standards (such as quality, occupational health and safety and environment management systems), engineering standards and best practice approaches, how they apply to the current project and any other project specific document;

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- Responsibilities of the key project personnel;
- A clear map of the areas where the construction and reclamation activities are to take place consistent with regulatory approvals; and
- A description of the construction process and the specifics of the plant and equipment to be used including the construction methods and controls.

To ensure quality of the construction activities, the construction contractor monitors rockwall construction quality and verification during the rockwall build against the design specification and applicable standards. This includes providing surveys of the completed works to demonstrate compliance within tolerances detailed in the design specification. The Reclamation Integrity Plan (Appendix F) details the complete integrity assessment program. These quality management arrangements form a key part of the confirming practical completion of the rock bund wall and certification by RPEQ as fit for intended purpose of use.

## 2.2.6 Construction Activities

### Rockwall and Reclamation Area

The CU Project involved the construction of approximately 2.2km of external rockwall on the North Eastern side of the existing port area. This construction commenced in March 2020 and was completed in the first half of 2021, prior to commencement of capital dredging.

Rockwall construction occurred from the land side, with articulated vehicles moving material into the leading area of the wall construction where bulldozers and excavators placed the rockwall material into the sea. Construction of the rockwall featured the following:

- Construction of the new rockwall commenced perpendicular to the existing reclamation wall with the interface being prepared by removing the existing primary armour only and retaining the existing core and secondary armour.
- The eastern most wall commenced first (next to Ross River), as this wall generally fronts the prevailing swells and winds and generated a leeward shelter as it progresses. In parallel, the construction teams commenced the western wall, with wall construction meeting along the Northern wall.
- Heavy duty geotextile was placed at the interface and wrapped on the inside between the new and existing walls to ensure continuity in the sedimentation control system for the new reclamation.
- Completion of rockwall including the installation of geotextile and primary outside armour was completed by June 2021. Completion of the wall was sequenced in with commencement of the capital dredge campaign – no capital dredging occurred until the rockwall was finalised.
- On-site rockwall construction activities generally occurred during daylight hours Monday to Sunday; noting minor works were required outside of these times for short periods.

The rockwall construction design was subject to multiple design criteria assessments, covering a range of factors including design life, geotechnical and rock stability and settlement design. The outcomes of these assessments then compared to relevant Australian Standards or design guidelines, to confirm the basis for design. These requirements and standards are detailed in the Reclamation Integrity Plan (Appendix F). Further, the final constructed rockwall will be certified by a Registered Professional Engineer of Queensland (RPEQ).

Once dredge materials have been brought to the reclamation area by barge, civil equipment unloads the capital dredge material and places it in the reclamation area. Dewatering and ground improvement of emplaced sediments within the reclamation area is undertaken. Dewatering is covered as part of the Tailwater Management Plan as included in Appendix G of the CEMP.

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### **Temporary Unloading Facility**

The CU Project required the development of a temporary facility for the unloading of capital dredge material from the barges to the reclamation area. The facility consists of an unloading platform constructed perpendicular to the CU reclamation area and an access channel and swing basin to allow for all-tide safe access by tugs and barges. The facility incorporates a rock breakwater on the ocean side (including geofabric layer), sheet piling to create the unloading area and infill of the facility with sand and gravel to create a working platform. These facilities are temporary and will be removed.

The unloading facility was constructed from the land side using articulated vehicles and excavators for the breakwater, with marine-based plant to install piling. Construction used stockpiled rock, with new material imported to site from local quarries as required. Sand infill was sourced from the existing Port stockpiles.

Sheetpiles and cylinder piles (for tieback and mooring arrangements) were installed in accordance with the Environmental Procedure for Pile Driving (Appendix I of MEMP).

The design of the facility and breakwater was subject to design criteria assessments, based primarily on weather and tidal conditions and geotechnical and rock stability. All design work was in accordance with relevant Australian Standards or design guidelines. Note that these works are separate to the rockwall construction, are temporary in nature and therefore are not addressed in the Reclamation Integrity Plan.

For the dredging undertaken before the completion of the unloading facility (e.g. undertaken for the waterside facility access of the unloading facility), dredge material was unloaded at existing barge ramps / offloading facilities within the port, which is used for similar barge loading and unloading. From these facilities, the dredged material was transported to the new reclamation area for placement by articulated dump trucks. Additional management controls were implemented to minimise loss of material to waters at the unloading location, and to address any spillage from the dump trucks during transit to the placement area within the new reclamation.

### **Eastern Harbour Entrance Widening**

The Eastern Harbour Entrance Widening works under the CU project involves dredging to widen the eastern side of the entrance to the Inner Harbour, rather than the proposed Diagonal Breakwater works on the western side of the Harbour entrance (See Figure 6). To accommodate this widening, these works involve:

- Shortening of the Eastern Breakwater by approximately 70m, with a round head structure to be constructed at the terminal end of the breakwater to ensure integrity of the wall; and
- Dredging to move the eastern toe of the Platypus Channel a distance of approximately 60m to the East, from Berth 11 to the Berth 1 berth pocket; and
- Relocation of lateral beacon P16.

The Eastern Harbour Entrance Widening works will be completed using land based plant for the rockwall works and the BHD Woomera for the dredging component. Re-use of the rock removed from the breakwater will be prioritised where possible, or stockpiled on Port land for future use on Port infrastructure. All land based works will be completed in accordance with this CEMP and relevant components of the MEMP.

All dredging will be completed using the same dredge (Woomera) and vessel fleet used for the CU Project with application of the same management controls as detailed in the DMP and MEMP.

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### **Diagonal Breakwater Construction**

Earlier Management plans outlined details for the diagonal breakwater works. These works are no longer intended to be delivered under the CU Project with the Eastern Harbour Entrance Widening works being undertaken as detailed above. Reclamation Activities

### **Placement and Management of Capital Dredged Material**

All capital dredged material is being placed in the reclamation area. The general sequence of placement consists of the following:

- Placement of dredged material in barges moored alongside backacter dredge;
- Movement of barges to temporary offloading facility;
- Removal of material from barges to articulated dump trucks by excavator at the offloading facility;
- Movement of dump trucks from unloading facility to placement locations within the reclamation;
- Placement of material; and
- Movement of material by bulldozer.

Geotechnically competent material (e.g. stiff clays) was preferentially placed against the rockwall, while material containing potential acid sulfate soils (PASS) will be placed / treated as required by the ASS Management Plan (Appendix E). All other material will be placed as part of a general sequence of filling. The exact placement sequence will be determined on a day-by-day basis based on the nature of the dredged material and the state of the reclamation.

During reclamation, it will be necessary to discharge tailwater to ensure appropriate freeboard is maintained in the reclamation. Tailwater discharges will be through tailwater pipes, located at the north eastern end of the reclamation. Discharges will be managed in accordance with performance limits, with releases only occurring where tailwater meets the relevant criteria as detailed in the Tailwater Management Plan (Appendix G).

Where reclamation adjacent to the new rockwall is at final height, crest protection for the constructed rockwalls will be undertaken. This will involve the placement of a geotextile layer, ballast rock and armour stone on the reclamation side of the wall. As part of these works, some of the dredged material placed along the wall may need to be excavated to allow access to install the geotextile layer. These works are to be undertaken by land-based excavator and machinery.

#### **2.2.7 Navigational aids re-positioning**

As a consequence of the capital dredging to widen both channels, the lateral beacons and lead lights that support ship movement through the channels need to be re-positioned to support safe navigation. Approximately half of the channel lateral beacons need to be removed and reinstalled outside of the toe of the widened channel. Some rationalisation of the number of beacons requiring re-positioning has occurred. Lead lights at the land end and sea end of the channels will also need to be re-positioned to identify the centreline of the new channels. The beacons are piled into the seabed, and therefore the old beacons will require vibration to remove and piling to re-position them. The beacons are owned by Maritime Safety Queensland (MSQ), the Port will work in collaboration with MSQ to facilitate this work. The re-positioning works require piling, to be undertaken in accordance with the Environmental Procedure for Pile Driving (Appendix I of MEMP).

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### 3 ENVIRONMENTAL MANAGEMENT SYSTEM

The Port Environmental Management System (**EMS**) complies with all applicable requirements contained in ISO 14001:2015 and encompasses environmental operations conducted at all Port facilities. Port Management are committed to the development and implementation of the EMS and to the facilitation of the continual improvement of environmental performance by:

- Integrating environmental considerations and risk-based thinking into decision making and work practices;
- Providing an effective mix of resources to achieve sustainable development and outcomes;
- Utilising systems which act to minimise the risk of environmental impacts through the identification reporting, assessment, monitoring and control of environmental risks; and
- Maintaining a high level of environmental awareness throughout the Corporation and the wider port Community.

This CEMP includes the work elements necessary to satisfy environmental requirements in the construction phase of the CU Project and generally complies with applicable elements of the Port's EMS. Executive management responsibilities, incident management, emergency response, non-conformances, environmental training, monitoring, reporting, auditing and complaint handling for the CU Project will be controlled in accordance with the Port's EMS and other integrated management documents. CU Project environmental records will be controlled in accordance with the Port's integrated management system and will be:

- Kept as objective evidence of compliance with environmental requirements; and
- Maintained according to the Port's Recordkeeping Procedure.

Continuous improvement is a mandatory requirement of the Port's EMS. As part of the continuous improvement, this CEMP will be reviewed at least annually by the CU Environment Manager and/or Environment Advisor, and amended where necessary to ensure the Plan remains relevant and achieves the required objectives. This is inclusive of identification and implementation of any new or changing environmental risks and mitigation actions. Future amendments will take into account the scope and purpose of this document and the conditions of the existing approvals.

#### 3.1 ENVIRONMENTAL POLICY

The Port's Environmental Policy (Figure 8) identifies the Port's key environmental objectives and sets the direction of the EMS and environmental management within the organisation, including at the construction site. The Environmental Policy is:

- Displayed at prominent locations in the workplace of Port CU Project personnel;
- Communicated to all Port CU Project personnel during induction and training; and
- Reviewed and updated regularly.

All Port CU Project personnel, contractors and visitors must comply with the spirit and intent of the policy and with the requirements stated below from the *Environmental Protection Act 1994*.

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FIGURE 8: ENVIRONMENTAL POLICY



## ENVIRONMENTAL POLICY

Port of Townsville Limited operates the Ports of Townsville and Lucinda in North Queensland, which sit within the Great Barrier Reef World Heritage Area. Our vision is to be Australia's Port for the future, creating prosperity for our communities and value for our customers and shareholders, through world-leading sustainable operations.

We will do this by:

- Building meaningful and lasting relationships with our stakeholders
- Driving change and innovation to continuously improve
- Respecting each other and the community we live in
- Operating with the highest standards of integrity, transparency and fairness

Adopting an integrated and systematic approach we are committed to:

- Integrating environmental considerations and life cycle thinking into decision making and work practices related to the Port's core functions.
- Maintaining a high level of environmental awareness throughout the Port and the wider port community.
- Requiring and encouraging employees to work in an environmentally responsible manner.
- Implementing systems which act to minimise the risk of environmental harm through the identification, reporting, assessment, monitoring and control of environmental risks.
- Maintain a framework for setting and reviewing environmental objectives and targets and measuring the Port's performance.
- Maintain systems for assessing the environmental impacts associated with the Port's activities.
- Complying with all relevant legislation, codes of practice and standards.
- Conducting core functions in a manner that will minimise waste, prevent pollution, promote efficient use of resources through life cycle thinking, reduce environmental impacts, and continually improve environmental and management system performance.
- Providing adequate resources and training to facilitate the fulfilment of the Port's environmental responsibilities and ecosystem protection.

The Port's Board, Executive and management are responsible for providing the leadership to support the development and implementation of this Policy and for ensuring it is effectively applied.

This policy will be regularly reviewed following legislative or organisational changes, or as a minimum, every three years.



**RANEE CROSBY**  
CHIEF EXECUTIVE OFFICER  
12 June 2023



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## 4 GOVERNANCE AND MANAGEMENT REVIEW

### 4.1 DEVELOPMENT OF CEMP

The CEMP has been developed in consultation with key stakeholders including:

- Construction teams and works designers.
- Representatives of the Traditional Owners, the Gurambilbarra Wulgurukaba people who are identified as the Native Title claimants of the land/sea covering the Project area;
- The Port's Community Liaison Group (**CLG**), which comprises of several community representatives;
- Environmental, engineering and modelling consultants;
- The CU Project ITAC, which comprises scientific and technical experts engaged to provide oversight on the scientific and technical aspects of the project (See Section 4.2); and
- The Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) and Queensland State Department of Environment and Science (DES).

Scientific and technical experts have been engaged for specialist input throughout the development of the CEMP and associated monitoring plans. The Port has strong experience and technical capability in the construction of rockwall and reclamation areas, including the development and implementation of monitoring plans for key environmental risks associated with these activities. As a result, expert input has been obtained for relevant aspects of the CEMP.

The following outlines the input from experts that has been obtained throughout the development of the CEMP:

- Traffic Management Assessment and Plan – GHD Pty Ltd;
- Reclamation Integrity Plan – SMEC Engineering Consultants;
- Site monitoring plan – internal Port expertise and ERM Consultants (for established groundwater locations);
- Land Survey Plans– CRS Geomatics Pty Ltd;
- General environmental advice and input – BMT Commercial Australia Pty Ltd; and
- Stormwater and Sediment and Erosion Control – GHD Pty Ltd.

It is noted, the above works and plans drafted by the Port directly have undergone further independent review as part of Port quality process (as required), and as stipulated under approval conditions.

Further to the above, several monitoring programs required under the EPBC Act approval (directly or through the management plans) are being implemented by leading experts in the relevant field. This includes the seagrass dredging and rockwall footprint surveys and overall seagrass monitoring program by TropWATER (James Cook University), Marine Water Monitoring Program by GHD Pty Ltd, and Inshore Dolphins by Flinders University.

As the CEMP is revised and new aspects incorporated, the relevant technical and scientific expert will be engaged to ensure the plan and any related monitoring requirements remain relevant and accurate.

Traditional Owners were consulted in accordance with Condition 25 of EPBC Approval No. 2011/5979 during the development. This consultation involved the following:

- An initial presentation to Traditional Owners on the CU Project on 20 February 2018;

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- The original CEMP was presented to the nominated Traditional Owners representatives on 30 May 2019. Comments raised were noted during this meeting, with all comments received incorporated into a revised CEMP where required. A copy of all comments made by the Traditional Owners Working Group was provided to the Minister with the CEMP in early 2020;
- Further consultation with Traditional Owners in regards to the broader scope including the Dredging and related activities occurred on 9 December 2020 and 31 March 2021.

## 4.2 INDEPENDENT TECHNICAL ADVISORY COMMITTEE (ITAC)

Under the Queensland Coordinator General's Evaluation Report (CGER) stated conditions, an Independent Technical Advisory Committee (ITAC) is required to be established to form part of the governance structure of the CU's Capital dredge campaign at the Port of Townsville. As per Table 2, the ITAC's role is to provide:

- independent, expert-based input into the scientific basis underlying the REMP and the contingency measures in the DMP;
- to provide advice regarding the scopes of work for the ecological surveys and the development of water quality and ecological trigger levels with consideration of the current condition and tolerances of coral and seagrasses;
- to review and endorse the REMP, particularly the control and impact monitoring locations, the monitoring design and trigger levels for corrective actions; and the contingency measures in the DMP;
- to provide independent oversight of the implementation of the REMP; and
- to review the environmental performance of the CU Project's capital dredge campaign against trigger levels and to evaluate corrective actions implemented.

**TABLE 2: ITAC ROLES AND RESPONSIBILITIES**

POSITION	RESPONSIBILITY
ITAC Chair	<ul style="list-style-type: none"> <li>• Facilitate ITAC meetings</li> <li>• Review incoming correspondence</li> <li>• Provide correspondence on behalf of the ITAC</li> <li>• Present at community forums as required</li> <li>• On advice from the ITAC or in the event of a serious complaint, advising the Dredging Inference Assessment Team on mitigation actions, including weather dredging should cease.</li> </ul>
Seagrass Specialist	<ul style="list-style-type: none"> <li>• Provide expert technical input on Seagrass and expert input into ITAC feedback in accordance with the objectives of the ITAC</li> <li>• Involvement in DIAT meetings as required.</li> </ul>
Coral Specialist	<ul style="list-style-type: none"> <li>• Provide expert technical input on Corals and expert input into ITAC feedback in accordance with the objectives of the ITAC</li> <li>• Involvement in DIAT meetings as required.</li> </ul>
Marine Megafauna Specialist	<ul style="list-style-type: none"> <li>• Provide technical input on marine megafauna and expert input into ITAC feedback in accordance with the objectives of the ITAC</li> <li>• Involvement in DIAT meetings as required.</li> </ul>
Marine Water Quality Specialist	<ul style="list-style-type: none"> <li>• Provide technical input on marine water quality and expert input into ITAC feedback in accordance with the objectives of the ITAC</li> <li>• Involvement in DIAT meetings as required.</li> </ul>
Dredging Specialist	<ul style="list-style-type: none"> <li>• Provide input on water quality contingency measures and appropriate responses in case of trigger levels being reached and provide expert input into ITAC feedback in accordance with the objectives of the ITAC</li> <li>• Involvement in DIAT meetings as required.</li> </ul>
Hydrodynamic specialist	<ul style="list-style-type: none"> <li>• Provide technical input into hydrodynamic modelling and expert input into ITAC feedback in accordance with the objectives of the ITAC</li> </ul>

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- Involvement in DIAT meetings as required.

### 4.3 INDEPENDENT PEER REVIEW OF THE CEMP

In accordance with Condition 31 of EPBC Approval No. 2011/5979, the original CEMP and associated monitoring and management plans were independently peer reviewed by GHD Pty Ltd (who have not been directly involved with either the rockwall design or construction planning) on 19 July 2019 before submission to the Minister for approval. This review included an analysis of the effectiveness of the outcomes, targets or management measures identified in the CEMP (Condition 32). A copy of all advice and recommendations made by the independent peer review, including feedback on the Port changes, was provided to the Minister with the CEMP at time of submission of Revision 0 (Condition 33). The CEMP was also provided to ITAC on 15 January 2020.

Version three (R2) of the CEMP was peer reviewed by Dr Rick Morton from Rick Morton Consulting. All advice and recommendations made by the independent peer reviewer, including feedback on the changes made by the Port, was provided to the Minister with the CEMP at time of submission (per Condition 33). The CU Project ITAC was also supplied with a copy of the CEMP R2 on 22 April 2021 for comment.

### 4.4 FINALISATION & APPROVAL OF CEMP

The revised CEMP (R2) incorporating dredging and reclamation activities was submitted on 17 September 2021 for the Commonwealth Minister for the Environment's approval to meet the submission timing requirements of EPBC Approval No. 2011/5979 Condition 10. This was formally approved on 25 October 2021.

The current version of the CEMP (R3) included minor updates and was submitted to the Department under condition 38.

This version of the CEMP is submitted to the Department under condition 38.

### 4.5 IMPLEMENTATION

A copy of the approved CEMP (or revised CEMP in compliance with EPBC Approval Condition 38), will be kept on-site and implemented for the duration of the works and be easily accessible. This CEMP will not be implemented or amended in any way that contravenes any conditions of any development approval / permit, EPBC Approval or environmental authority.

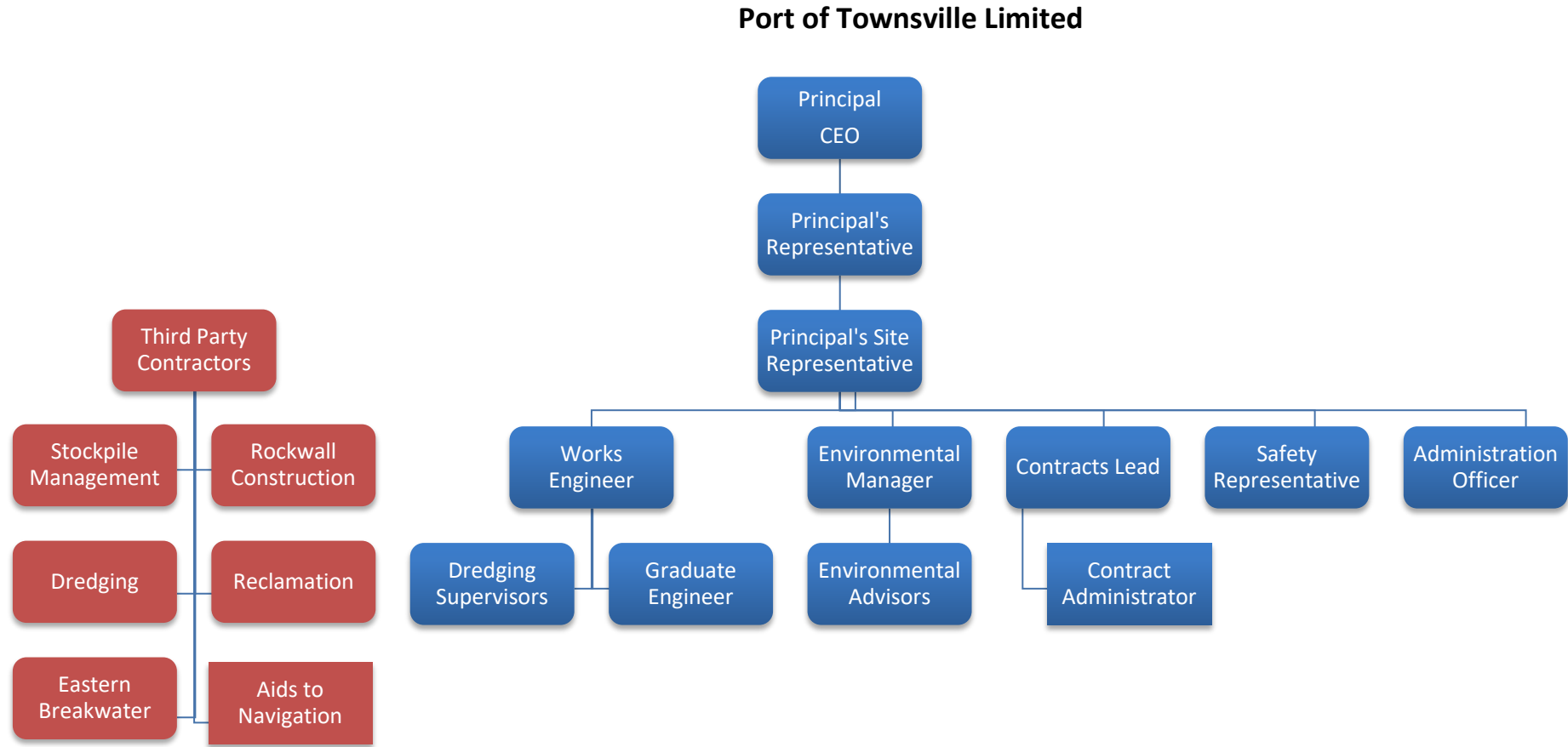
The Principal's Site Representative must ensure that all work procedures and measures necessary to ensure compliance with any conditions of any development approval / permit or environmental authority are taken / installed / maintained and operated.

### 4.6 ORGANISATIONAL STRUCTURE & RESPONSIBILITIES

A clear organisational structure for the CU Project including key responsibilities and reporting lines is presented in Figure 9. Authorities and responsibilities for the environmental management of the land-based construction and reclamation activities are defined and communicated in Position Descriptions and CU Project documentation with the key responsibilities and authorities included below. Appendix C lists contact details relevant for the Project.

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FIGURE 9: CU PROJECT ORGANISATIONAL CHART



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#### 4.6.1 Project Management

The Principal's Representative, has key responsibilities to:

- Represent the Port's interests and requirements in the CU Project;
- Oversee the CU Project and its execution; and
- Provide final approval of all project documentation, including this CEMP.

The Principal's Site Representative's key responsibilities are to:

- Manage the CU Project and its execution, including providing adequate resources for environmental management requirements;
- Ensure that project responsibilities and authorities are defined and communicated;
- Ensure all actions and responsibilities are completed as per Project documentation;
- Report to senior Port management on the performance of the project;
- Ensure that all CU Project personnel operate in accordance with the Safety Management Plan, this CEMP, statutory approvals and legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard; and
- Ensure all CU Project personnel are appropriately qualified and trained.

The Manager Environment CU's key responsibilities are to:

- Ensure that all licenses / permits / approvals are in place prior to any works being undertaken;
- Ensure that all CU Project personnel including contractors are familiar with the environmental management arrangements, this CEMP, statutory approvals and legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard and are aware of all requirements and their responsibilities;
- Monitor and review technical, environmental and quality performance of the project including the implementation of this CEMP, refining procedures as necessary to ensure relevant management measures are implemented effectively and adaptive management / corrective actions are taken in a timely manner;
- Facilitate regular environmental inspections by the Environmental Advisors CU and on-site monitoring as required under management and monitoring plans;
- Take action to resolve environmental non-conformances and incidents;
- Lead engagement and collaboration with CU Environmental Advisors (two-way information flow etc), followed by review, collation and integration of recommendations from Environmental Advisors (and /or ITAC) for action and reporting;
- Report to the Principal's Site Representative on the performance of the project and technical, environmental and quality non-conformances etc; and
- Liaise with regulators including reporting environmental incidents and complaints to the relevant regulator(s).

The Environmental Advisor CU's key responsibilities are to:

- Support the CU Project Team in day-to-day management of environmental performance;
- Review compliance with all environmental legislative requirements, approvals, permits and management plans and liaise with relevant regulators;
- Ensure that all CU Project personnel receive appropriate environmental induction and training and are aware of their environmental responsibilities;

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- Ensure environmental monitoring is completed in accordance with approved management and monitoring plans;
- Monitor, investigate and report on environmental performance, environmental incidents, environmental complaints and environmental non-conformances and ensure corrective actions are implemented within reasonable timeframes;
- Conduct environmental inspections and audits and report to the Environment Manager CU on the environmental performance and improvement opportunities;
- Review contractor environmental management plans;
- Verify that environmental non-conformances, incidents and complaints are recorded, and written reports provided and liaise with the Principal's Site Representative and Manager Environment CU to confirm the nature and adequacy of any corrective actions required; and
- Ensure that environmental records and files are collected and maintained.

The Works Engineer CU's key responsibilities are to:

- Oversee day-to-day construction, reclamation and dredging activities under the direction of the Principal's Site Representative, including providing sufficient resources to ensure the CEMP controls are implemented effectively and maintaining a site activity log as required;
- Ensure all CU Project personnel under their direction are appropriately qualified and trained;
- Report all environmental non-conformances and incidents to the Manager Environment CU and facilitate any investigations; and
- Coordinate the response to environmental non-conformances, incidents and complaints through implementation of corrective actions, where necessary.
- Select material which are "environmentally friendly", where possible.

#### 4.6.2 Project Contractors

All contractors will report to the CU Project management and have management systems in place to meet or exceed the Port's requirements.

The key environmental responsibilities of all CU Project Contractors, including sub-contractors, are to:

- Manage day-to-day the construction, dredging and reclamation activities, including providing sufficient resources to ensure the CEMP controls are implemented effectively;
- Ensure that all personnel operate in accordance with the Safety Management Plan, this CEMP (including relevant appendices), statutory approvals and legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard;
- Ensure all staff are appropriately inducted and trained;
- Comply with the Port environmental policy;
- Maintain appropriate qualifications;
- Seek necessary guidance and advice with regard to environmental requirements;
- Ensure that all equipment is maintained and "fit for purpose" of the required task;
- Implement Contractor management plans that include the undertaking of site and / or operational monitoring (where required) and conducting environmental inspections and audits of the site and relevant works;
- Facilitate regular environmental inspections by the Environmental Advisors CU and Port on-site monitoring as required under management and monitoring plans;

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- Report environmental non-conformances, incidents, complaints and any corrective actions taken to the Construction Team CU and/or Environment Team CU; and
- Coordinate the response to environmental non-conformances, incidents and complaints through implementation of corrective actions, where necessary; and
- Be trained and competent in emergency and incident response processes for likely environmental emergencies and incidents.

#### **4.7 CU PROJECT PERSONNEL INDUCTION, TRAINING, AWARENESS & COMPETENCE**

All personnel engage with the CU Project will have appropriate qualifications and experience to undertake their works. Additionally, all project personnel including contractors must complete compulsory induction prior to commencing work at the site. This covers general environmental management requirements, site-specific and work-specific risks, and site-wide controls and mitigation measures. The environmental component of the induction will include, but not be limited to:

- Relevant legislation and approvals, General Environmental Duty and Duty to Notify, General Biosecurity Duty and Cultural Heritage Duty of Care responsibilities and the implications of failing to fulfil these duties;
- Key sensitive areas, Great Barrier Reef World Heritage Area and MNES;
- Environmental values and management requirements and responsibilities under the CEMP;
- Implementation of mitigation measures and corrective actions and reporting of environmental incidents and complaints;
- Environmental emergency response procedures (i.e. spill kit locations) and training in the use of this equipment; and
- Staff code of conduct and behaviour.

An induction register will be maintained to record induction attendance for all staff, contractors and visitors. All project personnel attending the induction will be instructed that all external communication pertaining to the Project is to be conducted by the Contractor's Representative or the Principal's Site Representative for Dredging and Reclamation Works, communication by others is only on consultation with and authorisation by the Port of Townsville Chief Infrastructure Officer.

To assist with managing environmental risks associated with the works, understanding the required mitigation measures and corrective actions, certain roles require specific training. Training records will be maintained and kept on site for the duration of the CU project, up to and including the post works completion report.

All CU Project personnel will attend regular toolbox talks which will include raising environmental awareness and educating personnel on environmental issues related to all aspects of construction.

#### **4.8 CONTINUOUS IMPROVEMENT**

This CEMP will be subject to regular review.

This CEMP is a "living document" which requires review at least annually during the construction phase (in association with the Annual Compliance Reporting function). The CEMP review will be conducted by the CU Environment Manager and/or Environment Advisor. During delivery, review and amendment will also be

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completed as necessary to ensure the Plan remains relevant and achieves the required objectives, inclusive of identification and implementation of any new or changing environmental risks and mitigation actions. Recommendations on improvements or amendments will be reported as part of the annual reporting process.

Feedback mechanisms will be in place for the duration of the CU Project to enable this CEMP to be updated and responsive to learning from any incidents, complaints and ongoing monitoring results.

A key trigger for review of the CEMP and associated management actions will be as a result of the adaptive management arrangements associated with the key monitoring activities that will be implemented to support the project. As noted in all monitoring and sub-management plans, where the monitoring undertaken identifies the need for revised management actions, the CEMP will be revised to incorporate the adaptive management arrangements.

Other triggers for CEMP review may include:

- Changes to organisational structure, roles and responsibilities;
- Changes in environmental legislation and/or policies;
- New technologies / innovation relevant to applied methods and mitigation measures that provide innovative means of executing activities in order to meet performance criteria;
- Complaints;
- failure to meet deliverables, e.g., through equipment failure, technical difficulties, extreme weather events; or
- failure to meet Project performance criteria.

Changes to the CEMP may be developed and implemented in consultation with relevant regulators and other stakeholders over time. All changes are to ensure the approval conditions are met and be approved by CU Project Management, prior to implementation and provided to or approved by relevant regulatory agencies as per the project approval conditions.

If the revised CEMP meets Condition 38 of EPBC Approval No. 2011/5979, DCCEE will be notified in writing and provided with an electronic copy of the revised plan. Otherwise, revised CEMPs will be submitted to the Minister for approval.

## **4.9 ENVIRONMENTAL EMERGENCY CONTACTS AND PROCEDURES**

Environmental incident and emergencies will be managed in accordance with the CU Project and Contractor Emergency Response Plans (including vessel SMS). The Port plan will be part of the Port Emergency Response Strategy and will address a range of emergency situations and relevant procedures, including Cyclone preparedness and response.

Specific response activities are also identified in the relevant element within this CEMP.

Key Project contacts are listed in Appendix C. Environmental emergencies will be reported to the relevant line manager in the first instance for initial response. The CU Environment Team (Environment Manager CU, Environmental Advisor CU) will be notified and provide technical advice and input on the incident and the response. As per all emergencies within the port, notification to the Port Tower/Duty Officer will be made.

The Principal's Representative will also be notified and provide a key role in notification and reporting to Port Executive and relevant regulators.

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## 4.10 ENVIRONMENTAL INCIDENTS

All CU Project personnel and contractors will report all environmental incidents and near misses (i.e. events that occur that could have negatively affected the environment) to the CU Environment Team (Environment Manager CU, Environmental Advisors CU) (Key Project contacts are listed in Appendix C). Examples of environmental incidents include:

- Fuel/Chemical spills;
- Fire and/or explosions;
- Unearthing of historical heritage items;
- Major sediment and erosion control failure; and
- Uncontrolled release of stormwater/tailwater from the reclamation area.

Near misses will be reported to the Port as these are pre-cursors to incidents and provide an avenue to proactively mitigate potential incidents before environmental harm is caused.

The Dredge and Reclamation contractor and the Eastern Harbour Entrance widening land based contractor are required to report all environmental incidents to the Port of Townsville as soon as practicable and no later than 12 hours after occurrence.

An Environmental Incident Investigation will be completed, where any impacts will be assessed and corrective actions will be implemented. An Environmental Incident Investigation Form (POT1979) may be used or format as per the relevant contractor's processes. The Environmental Advisor CU is responsible for maintaining a Register of Incidents; investigating incidents and near misses; maintaining records of incident and near miss investigations, including corrective actions undertaken and persons/regulators notified.

The Manager Environment CU will report significant environmental incidents to the appropriate regulator within statutory timeframes. Any marine megafauna interactions (marine animal strike, marine stranding or an injured, sick or dead turtle, dugong, dolphin or whale) will be reported to the Qld Department of Environment and Sciences (on 1300 130 372). The Manager Environment CU will liaise with DES or GBRMPA immediately to identify rescue options, with all project staff (Port and Contractors) to assist in the capture of injured animals following advice from regulators.

The Manager Environment CU will also inform the ITAC of environment incidents as part of regular ITAC reporting activities.

Note that issue-specific corrective actions are also provided in Section 5 in relation to individual environmental management elements.

## 4.11 ENVIRONMENTAL INSPECTIONS, NON-CONFORMANCE & PREVENTATIVE/CORRECTIVE ACTIONS

Project worksite inspections will be carried out routinely by the Contractors, with verification checks undertaken by the port. These inspections will be documented, and deficiencies/non-conformances recorded. Non-conformances/deficiencies include:

- An incident or near miss with actual or potential environmental impact;
- Substantiated complaints regarding the construction and reclamation activities;
- Not meeting an objective or performance criteria in the CEMP, and

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- Environmental inspections not undertaken within the nominated timeframe.

The Contractors will be responsible for identifying and implementing any preventative and/or corrective actions in response to any non-conformances/deficiencies. This will be completed in collaboration with Port, overseen and endorsed by the Environment Manager CU and/or Principal's Site Representative. New preventative and corrective actions will be incorporated into the CEMP where appropriate.

## 4.12 MONITORING

There are a number of construction activities associated with the CU Project which have the potential to impact on the environment. Monitoring relevant to each element that may be impacted is detailed in Section 5. These elements are:

- Land (Section 5.4.1)
- Marine water and sediments (Section 5.4.2 and 5.4.3)
- Marine Ecology (Section 5.4.4)
- Terrestrial Ecology (Section 5.4.5)
- Weed and Animal Pest Management (Section 5.4.6)
- Air (Section 5.4.7)
- Noise and Vibration (Section 5.4.8)
- Hazardous Material Handling and Storage (Section 5.4.9)
- Waste Management (Section 5.4.10)
- Greenhouse gasses (Section 5.4.11)
- Transport and Infrastructure (Section 5.4.12)
- Cultural Heritage (Section 5.4.13 and 5.4.14)
- Visual Amenity and Lighting (Section 5.4.15)

This monitoring will enable:

- Development of baseline environmental information from which trends and changes in the environmental quality of the Port during the CU Project can be detected; and
- Early detection of environmental management issues during construction activities.

All monitoring equipment will be maintained and calibrated in accordance with the manufacturer's instructions and operated by an appropriately qualified person.

Records of all monitoring will be maintained as per section 4.15.

## 4.13 AUDITING

Environmental audits of the construction activities of the CU Project will be scheduled and conducted in accordance with the Port's EMS requirements. The audit's objectives will be to verify compliance with this CEMP, applicable environmental permits, approvals and regulations. Auditing will occur as a minimum annually, with specific aspects of the construction activity to be audited as required in response to specific risks, incidents of concerns being identified. Audits will be undertaken within the Port Quality Management Framework.

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Audits of the requirements of the CEMP (including legislative changes) will be undertaken by a suitably qualified or experienced person. This is to ensure that the measures, responsibilities and corrective actions remain achievable, effective and suitable to the construction activities at all times.

Records of on-going site monitoring, inspections etc. will be maintained for review by regulators. Permanent records will be kept on-site and updated regularly, to enable audit/review.

#### **4.14 REPORTING**

As required in legislative conditions, an annual report will be produced by the Environmental Advisor CU within three months of every 12 month anniversary of commencement of the action on 4 March 2020. The report will provide detail of the compliance with the conditions of the EPBC Approval 2011/5979 including an overview of environmental incidents, complaints or impacts related to MNES and corrective actions as needed, noting exception reporting occurs throughout the year.

Copies of this annual report(s) will be kept on-site, will be published on the CU Project website in accordance with Condition 36 of EPBC Approval No. 2011/5979 and will be available for regulatory inspection.

If requested by the regulators, all survey data and information related to this CEMP will be submitted within 30 business days of the request, or within a timeframe agreed by the relevant regulator in writing.

The Port will report to DCCEEW (or successor agency) any exceedance of performance criteria, along with the implemented risk management, adaptive management strategies, corrective actions or emergency response measures, within 21 days of an exceedance or action/response.

#### **4.15 RECORDS**

During construction activities, CEMP records will be maintained as objective evidence of compliance with environmental requirements. All records will be maintained according to the Port's Record Keeping Procedures or as required by the legislative conditions. All CEMP records will be retained electronically, including but not limited to:

- Induction and any specific environmental training records;
- CEMP reviews and version control;
- Monitoring data sheets, calibration records, results and internal and external environmental reports;
- Environmental incidents, complaints and non-conformance and corrective action reports; and
- "Issued for Construction" and "As Constructed" drawings and specifications signed off by a suitably qualified person (RPEQ where applicable).

Records will allow auditing and encourage the use of preventative action, as well as corrective action following any non-conformances or early warning triggers. Records will be made available to the regulators as requested.

#### **4.16 INTERNAL COMMUNICATION**

CEMP requirements will be included in contractor toolbox and pre-start meetings where relevant. As part of this meeting, the proposed activities will be reviewed with consideration given to changes in conditions such as weather, which may increase the potential for environmental impacts.

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## 4.17 COMMUNITY & STAKEHOLDER ENGAGEMENT

General contact details for the CU Project are:

Telephone: 1800 531 561

Email: [cugeneral@townsvilleport.com.au](mailto:cugeneral@townsvilleport.com.au).

Address: PO Box 1031, Townsville QLD 4810

Contact can also be made electronically via the Port’s website “Contact Us” page (<https://www.townsville-port.com.au/contact/>).

A Community and Stakeholder Engagement Plan (CSEP) has been developed which details the engagement methods which will be used during the CU Project. This document is published on the Port’s website (<https://www.townsville-port.com.au/projects-development/channel-upgrade/management-monitoring-plans/>). Relevant information on the implementation of the CEMP will be communicated through the mechanisms established in the CSEP.

## 4.18 COMPLAINTS HANDLING

Complaints represent an opportunity for improvement and enhancement of environmental performance. All complaints relating to the CU Project, including those from members of the public, stakeholder groups and regulators, will be investigated and responded to in accordance with the complaints process detailed in the CU Project’s CSEP. Complaints received directly by the Corporate Affairs and Capital Works PR Officer must be recorded, including investigations undertaken, conclusions formed and actions taken. Complaints can be made verbally, via email or via the “Complaint Lodgement Page” <https://www.townsville-port.com.au/community/lodge-a-complaint/> on the Port’s website. Corporate Affairs and Capital Works PR Officer will notify the CU Project Team Line Managers who will assign a lead (pending on nature of complaint), to investigate and implement corrective measures where required.

The Corporate Affairs and Capital Works PR Officer is responsible for maintaining the Register of Complaints. Notification about the complaint and any associated response will be provided to Port Management in a timely fashion and all outcomes of complaint(s) will be communicated to Port Management for further review. The outcome of the investigation and corrective actions, where required, will be communicated to the complainant to close out the issues raised.

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## 5 CEMP ACTIVITIES & ELEMENTS

This CEMP relates to the management of impacts associated with construction and reclamation activities, including land-based and marine works. It does not include dredging activities, which will be managed through the DMP.

There are a number of construction and reclamation activities taking place during the CU Project which have the potential to impact on the environment, including but not limited to:

- Land-based and marine rockwall construction, including construction of reclamation area perimeter bund, the Eastern breakwater works and the temporary offloading facility;
- Bulk earthworks and rock stockpiling;
- Placement and movement of capital dredge material into and around the reclamation area;
- Piling for the re-positioning of navigational aids;
- Management of capital dredge tailwater at the reclamation area;
- Use of vehicles, vessels and equipment on-site;
- Operation of workshop and re-fuelling operations;
- Operation of site office(s); and
- Use and maintenance of haulage roads.

This section of the CEMP comprises thirteen environmental elements, as identified in the EIS / AEIS, with potential environmental issues, risks and impacts associated with these construction activities.

Where relevant this CEMP makes reference to where other documents may also be relevant for the activity, such as the DMP (POT2095) and Offset Management Strategy (POT 2094). This CEMP will be revised in line with any amendments to relevant aspects of the other management plans to ensure consistency across the suite of management plans relevant to the project.

### 5.1 RISK ASSESSMENT OF ENVIRONMENT ELEMENTS

A number of the construction and reclamation activities have the potential to impact on environmental values and MNES to varying levels. The risk posed to key elements has been assessed for the CU Project, based on the risk management guidelines within the Port's Quality Management System (risk tables reproduced in Appendix D).

The residual risk level for each element has been detailed in Table 3. These elements have been subject to detailed analysis in the EIS and AEIS, with key issues to be addressed by the CEMP also identified in the EPBC Approval conditions.

The residual risk level identified for each element is in relation to the CU Project specifically, and therefore may be refined in the context of scope of works being delivered in CU Project from the AEIS assessment. This residual risk level has been included to ensure that it effectively links to actual mitigation and management actions.

Management measures for these risks are set out in Chapter 5.

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**TABLE 3: RISK OVERVIEW FOR THE KEY ACTIVITIES AND ELEMENTS FOR THE LAND-BASED CONSTRUCTION ACTIVITIES.**

ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
Land Contamination Impacts	Failure of integrity of the rockwall has the potential to release dredge material to the marine environment.	Release of dredged material.	Sensitive receptors, in close proximity to rockwall and construction areas	Possible / Major (Substantial)	Refer to section 5.4.1	Substantial (Possible/ Major)
	PASS material if not handled correctly could result in contamination of the land and release of contaminants to the marine environment.	Release of contaminants to marine environment.		Possible/ Insignificant (broad scale) (Low)		Low (Possible/ Insignificant)
	Spills and leaks of dangerous goods/hazardous materials can cause soil contamination and release of contaminants to the marine environment.		Marine megafauna	Likely / Minor (local scale) (Medium)		Low Unlikely/ Insignificant)
Stormwater, Sediment and Erosion control	Sediment in stormwater run-off from construction activities leading to increased turbidity of marine waters.	Release of contaminants to marine environment leading to impacts on: marine water and marine sediments indirect impacts on marine life, indirect potential impacts to human health.	Sensitive receptors, in close proximity to construction areas	Likely / Minor (local scale) (Medium)	Refer to section 5.4.2	Low (Possible / Insignificant)
	Exposure and potential release of sediments and contaminants from construction activities and stormwater.			Likely / Minor (local scale) (Medium)		Low (Likely / Insignificant)
	Stormwater contamination may arise due to leaks and spills of fuel/oil and other hazardous materials or dangerous goods.		Marine Megafauna	Likely / Minor (local scale) (Medium)		Low (Likely / Insignificant)
Tailwater	Discharge of tailwater may create turbid plumes potentially immediately adjacent to the tailwater discharge point.	Tailwater may adversely impact on the adjacent marine water and sediment quality.	Sensitive receptors, in close proximity to rockwall	Possible / Minor (local scale) (Medium)	Refer to section 5.4.3	Medium (Possible/ Minor)
Marine Ecology	Construction activities may cause increased turbidity and spills from construction plant and equipment.	Release to waters may affect marine water quality, marine species or the quality of their habitats	Sensitive receptors, in close proximity to construction areas	Likely / Minor (local scale) (Medium)	Refer to section 5.4.4	Low (Likely/ Insignificant)

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**Construction Environmental Management Plan**

ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
	Construction activities (vessel and vehicle movements, rock placement etc.) causing direct impact.	Direct impacts may result in disturbance/ injury/ mortality of marine megafauna	Marine megafauna	Possible / Major (Substantial)		Medium (Unlikely/ Serious)
	Noise emissions and vibration from construction activities.	Noise and light disturbance may lead to disorientation, disturbance or temporary avoidance by marine megafauna.		Possible / Major (Substantial)		Low (unlikely/ Minor) (as short duration)
	Light spill from the construction site and plant and equipment.			Possible / Serious (local scale) (Medium)		Medium (Possible/ Minor)
	Incorrect handling and storage of waste may result in the introduction of wastes into the marine environment.			Release of waste may increase the risk of entanglement and/or ingestion by marine megafauna.		Possible / Minor (Medium)
Terrestrial Ecology	Construction activities (vehicle movements and earthworks) causing direct impact.	Direct impacts may result in disturbance/ injury/ mortality of terrestrial fauna.	Shorebirds	Possible / Serious (Medium)	Refer to section 5.4.5	Low (Rare/Serious)
	Noise emissions and vibration from construction activities.	Noise and light disturbance may lead to disorientation and behavioural disturbance to fauna and surrounding avian habitats.		Possible / Serious (Medium)		Low (Unlikely/ Minor)
	Light spill from the construction site and plant and equipment.			Likely / Serious (Substantial)		Medium (Possible/ Minor)
Weed and animal pest management	Vehicle, vessel, plant and equipment movements via road or sea may result in the introduction and/or spread of declared weeds	Introduction and/or spread of weeds / pests may adversely impact on	Marine megafauna	Possible / Serious (Medium)	Refer to section 5.4.6	Low (Rare/Serious)

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ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
<b>(including Invasive Marine Pests)</b>	and pests or may potentially carry marine pests in their ballast water or hulls	terrestrial and marine fauna				
	Incorrect handling, storage of materials and waste and stormwater management may encourage pests and provide breeding habitats for mosquitos.	Encouraging pests and mosquitos can lead to human health impacts	Human comfort/ health	Possible / Minor (Medium)		Low (Possible/ Insignificant)
<b>Air</b>	Construction activities such as earthworks and vehicle movements have the potential to increase dust emissions.	Increased dust and fuel combustion emissions may result in: Increased risks to human health; Environmental nuisance to neighbours and the natural environment; and Discolouration of buildings or structures.	Human health  Amenity for neighbours	Almost Certain / Minor (Substantial)	Refer to section 5.4.7	Medium Possible/ Minor)
	Construction vehicles, plant and equipment will generate fuel combustion emissions.			Almost Certain / Insignificant (Medium)		Low (Likely/ Insignificant) (noting relatively short duration)
	Trucks hauling construction material may track soils onto roads and generate dust.			Likely/Serious (Substantial)		Medium (Possible/ Minor)
<b>Noise and vibration</b>	On-site construction plant and equipment may increase noise emissions and cause vibrations.	Increased noise and vibration may result in environmental nuisance to neighbours and the natural environment.	Local sensitive receptors	Possible / Minor (Medium)	Refer to section 5.4.8	Low (Unlikely/ Minor)
	Noise and vibration generated during construction activities (particularly piling works and along haul roads) may cause nuisance.		Indirect on human health	Possible / Serious (Medium)		Low (Unlikely/ Minor)
	Heavy vehicles on transport access roads have the potential to increase noise emissions and cause vibrations.			Possible / Minor (Medium)		Low (Unlikely/ Minor)
	On-site construction plant and equipment (e.g. piling works) may increase noise emissions.	Increased noise and vibration resulting in marine megafauna	Marine Megafauna in close proximity to	Likely / Minor (Medium)	Refer to section 5.4.8	Low (Unlikely/ Minor)

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**Construction Environmental Management Plan**

ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
		temporarily avoiding the area	construction footprints.			
	Noise and vibration generated during construction activities (particularly piling works)	Increased noise and vibration resulting in injury or mortality to marine megafauna	Marine megafauna in close proximity to construction footprints.	Possible / Serious (Medium)	Refer to section 5.4.8	Medium (Unlikely/ Serious)
<b>Hazardous materials handling and storage</b>	Incorrect storage and handling of hazardous substances may result in release to surrounding lands/ marine environment.	Release to waters may affect marine water quality, marine species or the quality of their habitats.	Sensitive receptors, in close proximity to construction area  Marine megafauna	Unlikely / Minor (Low)	Refer to section 5.4.9	Low (Unlikely/ Insignificant)
	Spills or leakage of fuel/oil and other hazardous materials or dangerous goods may cause soil contamination.			Unlikely / Minor (Low)		Low (likely/ Insignificant)
	Incidents may occur whereby contaminants are accidentally released to surrounding land and/or the marine environment.	Impact to human health from exposure to hazardous materials.	Indirect to human health	Likely / Minor (Medium)		Low (Likely/ Insignificant)
<b>Waste Management</b>	Incorrect handling and storage may introduce wastes into the marine environment or surrounding lands.	Release of waste may increase the risk of entanglement and/or ingestion by marine megafauna.	Marine megafauna	Likely / Minor (Medium)	Refer to section 5.4.10	Low (Unlikely/ Minor)
	Incorrect handling and storage of waste may encourage pests and provide breeding habitats for mosquitoes.	Impact to human health from exposure to waste and pests.	Human health	Possible / Minor (Medium)		Low (Unlikely/ Minor)
	Incorrect handling and storage of waste may result in odours.			Possible / Insignificant (Low)		Low (Unlikely/ Insignificant)
<b>Greenhouse gases</b>	Operation of plant and equipment and trucks for haulage will produce greenhouse gas emissions.	Increased greenhouse gases may then	Air environment	Almost certain / Minor (Substantial)	Refer to section 5.4.11	Medium (Likely/Minor)

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ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
		negatively impact the natural environment.				(noting relatively short duration)
Transport and Infrastructure	Trucks hauling construction material and construction CU Project personnel vehicles will generate additional traffic loading on existing roads.	Increased truck and vehicle movement on haul roads, port access roads and internal port roads will add to congestion, degradation of pavement and potential for incidents.  Material tracked onto roads can add to air emissions and discharges to stormwater.	Human drivers  Amenity for neighbours	Almost certain / Minor (Substantial)	Refer to section 5.4.12	Medium (Possible/ Minor)
	Traffic congestion may occur at some key road intersections due to construction traffic, particularly haulage trucks.			Almost certain / Minor (Substantial)		Low (Likely/ Insignificant)
	Degradation of pavement may occur due to additional traffic loading on pavements from construction traffic, particularly haulage trucks.			Likely / Serious (Substantial)		Medium Likely/Minor)
	Trucks hauling construction material may track soils onto roads and generate dust.			Likely / Serious (Substantial)		Medium (Possible/ Minor)
Cultural Heritage (Indigenous and General)	Construction activities have the potential to disturb/ destroy items of cultural significance.	Disturbance of culturally significant items.  Loss or diminishing of cultural values.	Traditional owners	Unlikely / Serious (Medium)	Refer to section 5.4.13	Medium (Unlikely/ Minor)
	Possible / Serious (Medium)			Medium (Unlikely/ Minor)		
	Degradation or loss of general cultural heritage items or places may occur.		Non-traditional cultural heritage	Rare / Minor (Low)	Refer to section 5.4.14	Low (Rare/Minor)
Visual amenity and lighting	Construction plant activities may impact visual amenity.	Visual amenity of air and water may be impacted from construction plant, release of dust emissions or waste and sediment release to water.	Human amenity	Possible / Insignificant (Low)	Refer to section 5.4.15	Low (Unlikely/ Insignificant)
	Dust emissions from the construction activities could cause adverse visual effects.		Marine megafauna  Terrestrial fauna	Almost Certain / Minor (Substantial)		Medium (Possible/ Minor)

ELEMENT	PRIMARY IMPACTING PROCESS	POTENTIAL IMPACT	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE (RISK RATING)	MITIGATION MEASURES	RESIDUAL RISK (LIKELIHOOD/ CONSEQUENCE)
	Artificial light from construction activities or port activities may impact.	Artificial light may adversely affect scenic amenity or marine and terrestrial fauna.		Likely / Serious (Substantial)		Medium (Possible /Minor)

## 5.2 UNCERTAINTY ASSOCIATED WITH CEMP SUCCESS

The CU Project will not be without uncertainties that could influence the ability of the Port to fully implement the CEMP and associated actions. These uncertainties are varied, with the key risks to the achievement of the plan detailed in Table 4. Control measures and risk ratings are also presented. It should be noted that these uncertainties are associated with project management arrangements, whereas the Contingency Plans detailed in Section 6 are focused on activity risks and response plans.

**TABLE 4: KEY UNCERTAINTIES ASSOCIATED WITH MANAGEMENT OF THE CU PROJECT.**

ELEMENT	PRIMARY IMPACTING PROCESS	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE	MITIGATION MEASURES	RESIDUAL RISK
<b>Data Uncertainty / inaccuracy</b>	<p>Failure to anticipate impacting activities due to data or information inaccuracies.</p> <p>Environmental impacts occur due to misunderstanding of impacts.</p>	Sensitive receptors of Cleveland Bay	Likely / Major (High)	<p>The Port will use experienced contractors to design and implement monitoring programs to ensure accuracy and rigorousness.</p> <p>Extensive data collection occurred prior to commencement and externally reviewed through EIS/AEIS.</p> <p>Baseline data collected from key monitoring programs prior to commencement for comparison.</p> <p>Adaptive framework to inform ongoing review of appropriate triggers and baselines during the program as new information is collected.</p>	Low (Rare/Serious)

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ELEMENT	PRIMARY IMPACTING PROCESS	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE	MITIGATION MEASURES	RESIDUAL RISK
				Expert input into ongoing monitoring programs to ensure robustness of data, through peer review and ITAC input.	
<b>Failure to deliver controls detailed in the plan</b>	Management Controls not delivering mitigation measures  Environmental impacts occur due to failure to implement adequate controls.	Sensitive Receptors of Cleveland Bay	Likely / Major (Substantial)	The Port will engage experienced contractors to deliver the key construction fronts.  The Port will implement a comprehensive monitoring and auditing program to review and confirm compliance with implementation of the controls in the plan.  Implementation of key monitoring programs of sensitive receptors to monitor for any potential environmental impacts from the project.	Medium (Possible / Serious)
	Breach of approval condition.	Compliance record / Corporation reputation		Annual compliance review against approval conditions and approved documents (management plans etc) will be undertaken to demonstrate compliance.  Dedicated environmental resources on the Project, by contractors and Port. CU Environmental staff (Manager and Advisors) remain across all approval requirements to ensure continuation in the absence of a staff member.  Oversight by Port, ITAC and Project regulatory committee	
<b>Project monitoring not delivered.</b>	Monitoring programs not implemented due to lack of commitment, funding and resourcing.	Sensitive receptors of Cleveland Bay	Likely / Serious (Medium)	The Port will use experienced contractors to design and implement monitoring programs to ensure accuracy and rigorousness.  Baseline data collected from key monitoring programs prior to commencement for comparison.	Low (Rare/Serious))
	Monitoring program not conducted due to failure to engage contractors or contractor poor performance.	Consultant responsibilities		Expert input into ongoing monitoring programs to ensure robustness of data, through peer review and ITAC input.	

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ELEMENT	PRIMARY IMPACTING PROCESS	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE	MITIGATION MEASURES	RESIDUAL RISK
	Environmental impacts occur due to incomplete understanding of impact.	Compliance & complaints record		Detailed contract management process for key monitoring programs to ensure delivery of the program and identification of any limitations early.  CU Environmental staff (Manager and Advisors) remain across all monitoring programs to ensure continuation of programs in the absence of a staff member.	
<b>Loss of funding commitment to deliver project</b>	Project ceases part way through delivery, or delivery reduced due to loss of funding.	Workforce	Unlikely / Major (Medium)	Funding arrangements established prior to the commencement of the project, including significant Government funding commitments (both Qld and Commonwealth)	Low (Unlikely / Minor)
	Environmental impacts occur due to incomplete delivery of project and controls.	Sensitive receptors of Cleveland Bay		Regular reporting to Government to justify funding and demonstrating delivery of the project.  The Port commitment to deliver project and will be responsible for any funding shortfall.	
	Breach of approval condition.	Compliance record / Corporation reputation		Annual compliance review against approval conditions and approved documents (management plans etc) will be undertaken to demonstrate compliance.  Dedicated environmental resources on the Project, by contractors and Port. CU Environmental staff (Manager and Advisors) remain across all approval requirements to ensure continuation in the absence of a staff member.  Oversight by Port, ITAC and Project regulatory committee	
<b>Severe / extreme weather</b>	Severe and extreme weather events result in damage to partially constructed infrastructure, which in turn can impact on	Port infrastructure	Likely / Major (High)	Implement the Port Cyclone Response Plan which establishes clear actions and steps to be taken in the preparation for, response to and recovery from a cyclone event for the Port of Townsville.	Medium (Unlikely / Serious)

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ELEMENT	PRIMARY IMPACTING PROCESS	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE	MITIGATION MEASURES	RESIDUAL RISK
	MNES and marine environment.			Where possible, key construction activities to be planned to commence and be mostly completed in dry seasons where risk of severe weather is reduced.	
	Severe/extreme weather results in loss of contaminants and sediment to the marine environment	Sensitive Receptors of Cleveland Bay		Reclamation integrity plan incorporates severe weather contingency arrangements to minimise impact.	
	Damage to the constructed rockwall can result in release of dredge material to the marine environment.			Key construction fronts designed to accommodate and withstand standard severe weather events.	
	Severe/extreme weather results in reduced resilience in the coral/seagrass community in Cleveland Bay			Experienced contractors engaged to deliver the key construction fronts.	
	Severe/extreme weather events impacting upon Port /contractors /monitoring consultants and equipment – significantly delaying deliverables.	Port employees, Port contractors, Port monitoring consultants		The Port’s Cyclone Response Plan enacted to ensure all Port staff are safe and equipment removed where practical prior to extreme events.  Contingency monitoring events for sensitive receptors (seagrass/ coral)  CU Environmental staff (Manager and Advisors) remain across all monitoring programs to ensure continuation of programs in the absence of a staff member.	
Pandemic outbreak (e.g. Covid 19)	Management controls not delivered due to lack of access to site/ personnel movement controlled.	Port employees, Port contractors, Port monitoring consultants	Likely / Serious (Medium)	The Port will engage experienced contractors to deliver the key construction fronts, with locally based staff during works.	Low (Rare/Serious)

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ELEMENT	PRIMARY IMPACTING PROCESS	RISK RECEPTOR	RAW LIKELIHOOD / CONSEQUENCE	MITIGATION MEASURES	RESIDUAL RISK
	Environmental impacts occur due to incomplete delivery of project and controls.	Sensitive receptors of Cleveland Bay		Contractors develop Covid 19 response plans to provide contingency and continuity should border restrictions apply.  Implementation of key monitoring programs of sensitive receptors to monitor for any potential environmental impacts from the project.	
	Monitoring program not conducted due to failure to be able to access site/personnel movement controlled	Sensitive receptors of Cleveland Bay	Likely / Serious (Medium)	Contractors develop Covid 19 response plans to provide contingency and continuity should border restrictions apply.  Detailed contract management process for key monitoring programs to ensure delivery of the program and identification of any limitations early.  CU Environmental staff (Manager and Advisors) remain across all monitoring programs to ensure continuation of programs in the absence of a staff member.	Low (Rare/Serious)
	Breach of approval condition	Compliance record/ Public reputation	Likely / Serious (Medium)	Annual compliance review against approval conditions and approved documents (Management Plans etc) will be undertaken to demonstrate compliance.  Dedicated environmental resources on the Project, by contractors and Port.  Oversight by Port, ITAC and Project regulatory committee	Low (Rare/Serious)

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### 5.3 STRUCTURE OF THE ELEMENT ASSESSMENT

For each environmental value, environmental management and mitigation measures to address these activities are documented along with overall associated performance objective, performance criteria, monitoring, reporting, corrective actions and emergency response measures. Table 5 provides a description of what information is detailed in the individual environmental value assessments.

**TABLE 5: CEMP ELEMENT ASSESSMENT STRUCTURE**

COMPONENT	DESCRIPTION OF CONTENT
Element	The environmental value at the site requiring management consideration, response strategies and actions during construction activities.
Objective	The guiding performance objective that applies to the element.
Residual Risk level	The assessed level of residual risk posed from the CU Project on the Element (based on EIS/AEIS assessment). Note: Only the highest residual risk rating from Table 3 is included in the following element tables; recognising that it is more precautionary to identify the highest risk for each element.
Aspects & Impacts	The construction activities and potential environmental impacts that apply to the element.
Performance Criteria / Indicators	The measurable performance criteria (outcomes/indicators) by which the success of the achievement of the objective will be determined.
Mitigation Measures (including training)	The mechanisms and management actions through which the objective will be achieved.
Monitoring / Auditing	The process of measuring actual performance, or how well the objective has been achieved, including the format, timing and responsibility for auditing of the monitoring results.
Corrective Actions	The actions to be implemented in the case where a performance criterion is not met. Note: The contractor will lead implementation of corrective actions unless responsibility is noted as an alternate responsible party.
Reporting	The format, timing and responsibility for reporting of monitoring and audit results.
Responsibility	The Project personnel involved in the various tasks required for each element.
Adaptive Management Program	The process for systemic changes to management arrangements in response to listed events (non-conformances, incidents, periodic reviews etc).

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## 5.4 MANAGEMENT ACTIONS

### 5.4.1 Minimise Impacts from Land Contamination

ELEMENT	LAND
<b>Residual Risk level</b>	<b>Objective</b>
SUBSTANTIAL	To avoid environmental harm to land as a result of construction activities in relation to: <ul style="list-style-type: none"> <li>– Instability of reclamation rockwalls;</li> <li>– Potential Acid Sulfate Soils (PASS); and</li> <li>– Soil contamination.</li> </ul>
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>– Collapses or failures of the structural integrity of the reclamation rockwalls may release dredge material and cause adverse impacts in the marine environment.</li> <li>– Disturbed capital dredge material or excavated PASS material or imported soil/fill placed in the reclamation area may cause potential land contamination.</li> </ul>	

#### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plan (CEMP, ASSCMP), the applicable Commonwealth and State legislation and standards and any other relevant approvals, standards, guidelines (NAGD, NEPM, Queensland Acid Sulfate Soil Technical Manual) and statutory requirements.
- PASS and contamination management procedures are implemented.
- Tailwater monitoring results are within release levels.
- All rock or fill material from external sources brought into site will meet design specifications and relevant environmental standards.
- No substantiated complaints are received from regulators or the community in relation to land contamination.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>– Undertake an analysis of the sediment to be dredged in capital dredge areas (against relevant standards/guidelines) before commencement of dredging, to determine contamination status/management requirements including the Holocene soils to confirm PASS status/management requirements (to meet Performance Criteria A and B).</li> </ul>	Manager Environment CU
<ul style="list-style-type: none"> <li>– The movement of PASS material (if found) during the dredging works, will be loading into Hopper Barges, unloaded at the Temporary Unloading Facility and then transported and placed by trucks within the reclamation (back underwater) within 12 hours. By placing the material into the reclamation area within this time frame, PASS material, will remain saturated, preventing oxidisation for occurring (to meet Performance Criteria A and B).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Ensure preferential placement and treatment of PASS/ASS, to minimise exposure and risk, including but not limited to: <ul style="list-style-type: none"> <li>o potentially in dedicated storage areas within reclamation;</li> <li>o Careful placement of dredge material to limit the extent of heaving and formation of mud waves from the existing soft soil seabed (typically &lt;1.5 m thick), retaining to below the mid-water level using confining pressure and encapsulation (to meet Performance Criteria A, B and E).</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Implement the ASSCMP (See Appendix E [POT 2100]) for monitoring and management of the reclamation area to inform the CU Project personnel</li> </ul>	Contractors Construction Team CU

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ELEMENT	LAND	
	of the risks and management requirements for PASS (to meet Performance Criteria B).	Environmental Advisor CU
–	Implement the Reclamation Integrity Plan (See Appendix F) for monitoring the integrity of the rockwalls (to meet performance Criteria A and D).	Principal's Site Representative
–	Implement the Tailwater Management Plan (See Appendix G [POT 2101]) including appropriate trigger levels and protocols for discharge of tailwater (to meet performance Criteria C).	Contractors Environmental Advisor CU
–	Check incoming rock and fill materials for contamination and quality purposes (to meet performance Criteria D)	Works Engineer CU

**Training** (to meet performance Criteria A to E)

- Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding PASS and soil contamination management.
- Contractors  
Manager Environment CU

Monitoring / Auditing	Responsibility
– Conduct monitoring in accordance with the POT 2100 ASSCMP (see Appendix E).	Contractors Environmental Advisor CU Works Engineer CU
– Conduct monitoring in accordance with the Reclamation Integrity Plan (see Appendix F).	
– Conduct monitoring in accordance with the POT 2101 Tailwater Management Plan (see Appendix G).	Contractors Environmental Advisor CU
– Monitor and record sources, condition of fill and any movement on-site.	Contractors
– Undertake regular site inspections to monitor land contamination to determine the effectiveness of mitigation measures.	Environmental Advisor CU
– Review/audit toolbox/pre-start records for discussions on ASS and Tailwater monitoring and management where issues arise	Environmental Advisor CU

**Corrective Actions**

Where Performance Criteria A to E are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Manage any material impacted by spills and/or contamination through Contractor spill responses procedures.
- Review reclamation management practices if pH and/or dissolved oxygen drops in tailwater within the reclamation area.
- Review reclamation management practices if adverse impacts are observed.
- Treat any PASS impacted areas in accordance with the mitigation actions outlined in the ASSCMP (Appendix E).
- The Manager Environment CU will commence an investigation into all incidents in relation to land contamination within five business days, including reporting to the appropriate regulator, where MNES are involved, within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to land contamination within five business days and address valid concerns as required.
- Revise CEMP and implement further controls where investigations show unacceptable impacts to land contamination.
- Implement any other corrective actions as directed by regulators.

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ELEMENT	LAND
<b>Reporting</b>	
<ul style="list-style-type: none"> <li>– The Contractor will maintain a log of placement location of barge loads, particularly barge loads with PASS material, for specific management and monitoring as per the ASSCMP.</li> <li>– The Contractor will maintain an activity log, recording the type of activities occurring at different times to assist with the retrospective investigation of any incidents / complaints / land contamination issues.</li> <li>– All CU Project personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant land contamination issue. The Manager Environment CU will investigate and report to the Principal's Representative and undertake any additional investigation(s) as required.</li> <li>– Reporting of tailwater release, monitoring and management as established in the Tailwater Management Plan.</li> <li>– The Manager Environment CU will inform the regulators in a timely manner in the event of a significant land contamination incident.</li> </ul>	

#### **Adaptive management program**

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with the CEMP Land aspects, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with land contamination from construction activities and reclamation integrity, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring programs specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.2 Minimise Impacts to Marine Water from Sediment – Stormwater, Sediment & Erosion Control

ELEMENT	STORMWATER, SEDIMENT & EROSION CONTROL
<b>Residual Risk Level</b>	<b>Objectives</b>
LOW	<p>To minimise turbidity impacts from construction activities and stormwater releases beyond the footprint of the development.</p> <p>To avoid the marine environment from being contaminated by construction activities.</p> <p>To implement effective sediment and erosion control measures, which avoid sediments generated by construction activities from causing a hazard or nuisance.</p>
<b>Aspects and Impacts</b>	
<ul style="list-style-type: none"> <li>Earthworks activities will expose soil and may increase erosion leading to increased suspended sediment concentration in stormwater.</li> <li>Rock stockpiling activities and rock truck haulage may increase the suspended sediment concentration in stormwater.</li> <li>Marine placement and removal of rock material may increase the localised suspended sediment concentration in marine water.</li> <li>Shortening of the eastern breakwater may expose a small amount of fines within the breakwater which may increase the localised suspended sediment concentration in marine water.</li> <li>Exposure and potential release of sediments and contaminants from construction activities and stormwater to marine water and marine sediments may have adverse direct or indirect impacts on marine life, as well as indirect potential impacts to human health (Section 5.4.4).</li> <li>Stormwater contamination may arise due to leaks and spills of fuel/oil and other hazardous materials or dangerous goods (Section 5.4.9).</li> <li>Rain events / wet season can lead to sediment-laden stormwater leaving the construction site and entering the marine environment, reducing water quality and negatively affecting the natural environment.</li> </ul>	

#### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans (CEMP), the *Soil Erosion and Sediment Control – Engineering Guidelines for Queensland Construction Sites* (The Institution of Engineers, Australia (Qld), the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*, best earthworks practice and any other relevant approvals, standards, guidelines and statutory requirements (such as IECA 2008).
- No exceedance of surface water release limits stipulated in the Qld Government Approval or limits set in CU Site Monitoring Plan (see Appendix H, POT 2103) for suspended sediment concentrations caused by Project activities.
- No impact to water quality in the receiving environment as a result of contaminated stormwater, sediment plumes or sediment and erosion issues.
- No failure of sediment and erosion controls (i.e. controls are maintained and fit for purpose or rectified before the next event) in normal wet season conditions/events.
- No substantiated complaints are received from regulators or the community in relation to stormwater management or sediment and erosion control issues.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>Implement the site-specific Stormwater, Sediment and Erosion Control Plan (Appendix E, POT 2137), in accordance with the International Erosion Control Association's "Best Practice Erosion and Sediment Control" guidelines (to meet Performance Criteria A, B, C and D).</li> </ul>	<p>Contractors</p> <p>Construction Team CU</p> <p>Environmental Advisor CU</p>
<ul style="list-style-type: none"> <li>Implement the CU Site Monitoring Plan (Appendix H, POT 2103) (to meet Performance Criteria A, C and D).</li> </ul>	Environmental Advisor CU

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ELEMENT	STORMWATER, SEDIMENT & EROSION CONTROL	
<ul style="list-style-type: none"> <li>– Ensure construction meets the design requirements specified in the Reclamation Integrity Plan (Appendix F), e.g. geotextile material within the rock bund to contain reclaim fill (to meet Performance Criteria A, B, D and E).</li> </ul>	Construction Team CU Contractors	
<ul style="list-style-type: none"> <li>– Cease operation of the construction site and move equipment to a safe location in the event of extreme weather conditions (e.g. cyclone) (to meet Performance Criteria A, B, C and E).</li> </ul>	Contractors	
<ul style="list-style-type: none"> <li>– Standard mitigation measures related to sediment plume from works involving the placement or removal of rock and other material from the marine environment are to be implemented, including (to meet Performance Criteria C): <ul style="list-style-type: none"> <li>○ Minimising fines contents in rock prior to being placed (where practical);</li> <li>○ Rock materials to be placed/pushed by excavators rather than end dumped into the water;</li> <li>○ Operators will undertake visual monitoring of the surrounding environment for any extensive visible plumes created by the in water works and modify works accordingly;</li> <li>○ Other sediment plume mitigations as required by regulators.</li> </ul> </li> </ul>	Contractors	
<b>Training</b> (to meet Performance Criteria A to E)		
<ul style="list-style-type: none"> <li>– Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding stormwater management and sediment and erosion control.</li> </ul>	Contractors Manager Environment CU	
<b>Monitoring / Auditing</b>		<b>Responsibility</b>
<ul style="list-style-type: none"> <li>– Conduct monitoring and observation of weather conditions and alerts relevant to the site, including extreme weather events.</li> </ul>	Contractors Construction Team CU	
<ul style="list-style-type: none"> <li>– Conduct monitoring in accordance with the CU Site Monitoring Plan (Appendix H).</li> </ul>	Environmental Advisor CU	
<ul style="list-style-type: none"> <li>– Undertake regular site inspections to check for damage to sediment and erosion controls and the effectiveness of sediment and erosion control measures in accordance with the CU Stormwater &amp; Sediment Erosion Control Plan (Appendix E).</li> </ul>	Environmental Advisor CU Construction Team CU	
<ul style="list-style-type: none"> <li>– Undertake regular site inspections to check for leaks, spillage and damage to bunded storage areas.</li> </ul>	Environmental Advisor CU Construction Team CU	
<ul style="list-style-type: none"> <li>– Undertake regular inspections of stormwater run-off areas to check for cleanliness and potential for contaminants to impact on water quality and effectiveness of stormwater and sediment and erosion control measures, particularly after significant rainfall events.</li> </ul>	Environmental Advisor CU	
<ul style="list-style-type: none"> <li>– Undertake inspection of the stormwater system prior to the commencement of the wet season to ensure any necessary repairs are identified and rectified.</li> </ul>	Environmental Advisor CU	
<ul style="list-style-type: none"> <li>– Undertake inspections of the effectiveness of sediment and erosion control measures after significant rainfall events.</li> </ul>	Environmental Advisor CU	

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ELEMENT	STORMWATER, SEDIMENT & EROSION CONTROL
<ul style="list-style-type: none"> <li>Undertake inspections of the marine environment surrounding the in water construction for any extensive visible plumes created by the in water works;</li> </ul>	Contractors Environmental Advisor CU
<ul style="list-style-type: none"> <li>Review/audit toolbox/pre-start records for discussions on stormwater contamination and management where issues arise</li> </ul>	Environmental Advisor CU

#### Corrective actions

Where Performance Criteria A to E are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Implement additional control measures in a timely manner where stormwater or sediment and erosion control issues are identified or have the potential to occur in the future.
- Implement additional control measures (i.e. silt curtain, tidal windows etc) if operationally viable where in water works create excessive sediment plumes.
- The Manager Environment CU will commence an investigation into all incidents in relation to stormwater or sediment and erosion control within five business days, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to stormwater or sediment and erosion control within five business days and address valid concerns, as required.
- Revise CEMP and associated plans (e.g. Stormwater and Sediment and Erosion Control Plan Appendix E) and implement further controls where investigations show unacceptable impacts to stormwater quality or failure of sediment and erosion controls.
- Implement any other corrective actions as directed by regulators.

#### Reporting

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and/or the Principal's Site Representative as soon as possible in the event of a stormwater or sediment and erosion control issue, an uncontrolled stormwater release and/or uncontained spill. The Manager Environment CU will investigate and report to the Principal's Representative with additional investigation(s) undertaken as required.
- The Environmental Advisor CU will maintain monitoring results in a database for each monitoring event.
- The Manager Environment CU will inform the regulators within statutory timeframes in the event of a significant stormwater or sediment and erosion control incident.

#### Adaptive management program

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with stormwater, sediment and erosion control, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with stormwater contamination and sediment and erosion control, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring programs specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and

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ELEMENT	STORMWATER, SEDIMENT & EROSION CONTROL
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The Manager Environment CU will review the plan under the following circumstances:	
•	
where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);	
•	
performance reports indicate performance criteria are not be achieved;	
•	
according to approved timeframes; or the impacts of significant environmental incidents.	

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### 5.4.3 Minimise Impacts on Marine Water & Sediment – Tailwater

ELEMENT	TAILWATER
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To ensure the release of tailwater from the reclamation area to the environment is of an acceptable standard
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>The capital dredge material will be mechanically placed into the reclamation area, with tailwater moving through the site to the approved tailwater discharge location into Cleveland Bay.</li> <li>The release of tailwater has the potential to adversely impact on the adjacent marine water and sediment quality immediately adjacent to the tailwater discharge point.</li> </ul>	
<b>Performance Criteria / Indicators</b> <ol style="list-style-type: none"> <li>All works are managed in accordance with the relevant management plans (including Tailwater Management Plan POT 2101 and Acid Sulfate Soil and Contamination Management Plan POT 2100), the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i>, and any other relevant approvals, standard, guidelines and statutory requirements.</li> <li>No exceedance of release limits stipulated in the Queensland Government Approval or limits set in Tailwater Management Plan (POT 2101).</li> <li>No impact to water and sediment quality in the receiving environment as a result of tailwater release.</li> <li>No substantiated complaints are received from regulators or the community in relation to tailwater management.</li> </ol>	
<b>Mitigation</b>	<b>Responsibility</b>
<ul style="list-style-type: none"> <li>Direct and control all active tailwater releases through the approved tailwater discharge release location, only when tailwater is within release limits (to meet Performance Criteria A).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>Implement the Tailwater Management Plan (Appendix G– POT 2101), (to meet Performance Criteria A and B), comprising: <ul style="list-style-type: none"> <li>Turbidity/Total Suspended Solids (TSS)/pH/Dissolved Oxygen (DO) sampling at the tailwater pipe;</li> <li>Appropriate triggers and protocols e.g. monitor water quality of standing water within the reclamation area prior to a controlled release of tailwater; and</li> <li>Plume validation monitoring of turbidity/TSS/metals in receiving waters adjacent to the tailwater outlet.</li> </ul> </li> </ul>	Contractors Environmental Advisor CU
<ul style="list-style-type: none"> <li>Manage ASS and PASS in accordance with the ASSCMP (Appendix E) (to meet Performance Criteria A and B).</li> </ul>	Contractors Construction Team CU
<ul style="list-style-type: none"> <li>For seepage, prevent potential piping of sediment fines through the suitability designed wall of the reclamation area with appropriate site management (i.e. tailwater prevented from entering the sea by use of rock geotextile fabric filter layer on bund walls or other control measures) (to meet Performance Criteria A to D).</li> </ul>	Contractors Construction Team CU
<ul style="list-style-type: none"> <li>Make available sufficient materials to enable required geotechnical controls to be implemented, before commencing capital dredging related activities (to meet Performance Criteria B, C and D).</li> </ul>	Principal's Site Representative
<ul style="list-style-type: none"> <li>Review the on-site control measures promptly, if turbidity/TSS/pH/DO in the tailwater exceeds the performance criteria, to ensure that all reasonable and practicable measures are being taken in terms of both reclamation operations and the hydrologic and sediment loading in the reclamation pond(s) (to meet Performance Criteria A, B, C and D).</li> </ul>	Contractors Construction Team CU Environmental Advisor CU

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ELEMENT	TAILWATER
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**Training** (to meet Performance Criteria A to E)

- Ensure that relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding tailwater management.
- Contractors  
 Manager Environment CU

Monitoring / Auditing	Responsibility
<ul style="list-style-type: none"> <li>– Conduct monitoring in accordance with the Tailwater Management Plan (Appendix G) and analyse the results in comparison to the approval conditions.</li> </ul>	Contractors (within reclamation) Environmental Advisor CU (receiving environment)
<ul style="list-style-type: none"> <li>– Conduct monitoring of the spatial extent of the mixing zone during tailwater release events for plume validation (i.e. within first 40 business days of discharge commencing only).</li> </ul>	Environmental Advisor CU
<ul style="list-style-type: none"> <li>– Conduct plume validation monitoring and analyse the results to verify modelling results (i.e. within first 40 business days of discharge commencing only).</li> </ul>	Environmental Advisor CU
<ul style="list-style-type: none"> <li>– Conduct monitoring and observation of weather conditions and alerts relevant to the site, including extreme weather events.</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Undertake regular site inspections to check for damage to reclamation area and the effectiveness of geotextile control measures on the rockwalls.</li> </ul>	Contractors Environmental Advisor CU
<ul style="list-style-type: none"> <li>– Undertake regular inspections of the site to check for effectiveness of tailwater control measures, particularly after significant rainfall events.</li> </ul>	Contractors Environmental Advisor CU
<ul style="list-style-type: none"> <li>– Review/audit toolbox/pre-start records for discussions on tailwater monitoring and management where issues arise</li> </ul>	Environmental Advisor CU

**Corrective actions**

Where Performance Criteria A to E are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- The Environmental Advisor CU/Manager Environment CU will investigate all incidents in relating to or tailwater management issues within five business days of an exceedance, including reporting to the appropriate regulator within statutory timeframes.
- The Environmental Advisor CU/Manager Environment CU will respond to all complaints in relation to tailwater management issues within five business days and address valid concerns, as required.
- Undertake a review of the CEMP, DMP and associated plans, to determine if further controls or mitigation measures are needed where investigations show unacceptable impacts from tailwater management.
- Implement the following corrective actions if continual turbidity/TSS/pH/DO exceedances are observed:
  - Increase tailwater residence time in the reclamation pond;
  - Install of additional tailwater settling pond(s) to allow further settlement before being released, or install internal bund walls if required;
  - Modify decanting rates via the tailwater release pipes and ensure hydraulic efficiency; and/or
  - Install additional controls in the reclamation pond or other controls that can regulate wind and wave action in the settling pond(s).
- Implement the following corrective actions if pH of tailwater is outside of the specified range:
  - Add lime or other mechanism to increase pH and monitor pH during dosing to limit risk of over dosing; and/or
  - Review implementation of ASS/PASS treatment measures to ensure effectiveness.
- Implement any other corrective actions as directed by regulators.

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ELEMENT	TAILWATER
<b>Reporting</b>	
<ul style="list-style-type: none"> <li>- The Contractor will maintain an activity log, recording the type of activities occurring at different times, especially tailwater pump operating times, to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.</li> <li>- The Environmental Advisor CU will maintain monitoring results in a database for each monitoring event.</li> <li>- The Environmental Manager CU will develop a report within 40 Business days of commencing tailwater releases to identify and describe any adverse impacts to receiving water environmental values (including suitability of tailwater release limits) due to authorised tailwater releases.</li> <li>- The Environmental Advisor CU will report tailwater performance regularly to relevant committees (e.g. ITAC).</li> <li>- Reporting of tailwater release, monitoring and management as established in the Tailwater Management Plan.</li> <li>- All CU Project personnel will inform the Manager Environment and/or the Principal's Site Representative as soon as possible in the event of a tailwater control issue. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.</li> <li>- The Manager Environment CU will inform the regulators in a timely manner in the event of a significant tailwater management incident.</li> </ul>	

#### **Adaptive management program**

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with tailwater aspects, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly following tailwater release) review the effectiveness of management measures and risks associated with tailwater management, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the tailwater monitoring specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the outcomes of the plume validation monitoring and propose amendments to the tailwater management plan if identified as required;
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.4 Minimise Impacts on Marine Ecology

ELEMENT	MARINE ECOLOGY
<b>Residual Risk level</b> MEDIUM	<b>Objectives</b> <b>Minimise Impacts to Marine Ecology</b> <ul style="list-style-type: none"> <li>- To avoid adverse direct and indirect impacts on MNES, particularly marine megafauna and the marine ecology from construction activities.</li> <li>- To prevent the marine environment from being contaminated by construction activities.</li> </ul>

##### Aspects and Impacts

- Construction activities may cause increased turbidity and spills from construction plant and equipment may lead to contamination potentially affecting marine water quality, marine species or the quality of their habitats (Sections 5.4.1, 5.4.2 and 5.4.9).
- Construction activities may cause direct strike of marine megafauna, either through vessel and vehicle movements or through the placement of rock and other materials within the water.
- Noise emissions and vibration may lead to behavioural disturbance or temporary avoidance of the affected area by marine megafauna (Section 5.4.8).
- Light spill from the construction site and plant and equipment may lead to disorientation of marine megafauna (Section 5.4.15).
- Incorrect handling and storage of waste may result in the introduction of wastes into the marine environment increasing the risk of entanglement and/or ingestion of marine debris by marine megafauna (Section 5.4.10).

##### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans (including POT 2135 Marine Environmental Management Plan), the *Environmental Protection Act 1994* and any other relevant approvals, standards, guidelines and statutory requirements.
- No injury or fatality to marine megafauna as a result of construction activities.
- No significant reduction in marine megafauna diversity or distribution, as measured in megafauna monitoring programs.
- No permanent loss of benthic habitat beyond the development footprint, as measured by:
  - o The Port footprint seagrass monitoring programs; and
  - o Undertaking construction surveys (throughout rock placement) to ensure works do not extend beyond the approved footprint or go outside the Port approved tenure boundary.
- No significant long-term behavioural impacts to marine megafauna from construction activities, as measured/determined through the Megafauna Monitoring Plan (MEMP Appendix F, POT 2155).
- If seagrass meadows are within the reclamation footprint, survey and quantify any seagrass in the direct footprint.
- No substantiated complaints are received from regulators or the community in relation to marine ecology issues.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>- Ensure construction crews are suitably trained in Marine Megafauna Observation and mitigation techniques for key construction activities (e.g. rock placement) to identify where megafauna are within set distances from construction fronts (as per MEMP POT 2135) (to meet Performance Criteria A, B, C, E and G).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>- Conduct daily pre-start checks for marine megafauna in the nominated observation zone prior to commencing key construction activities each day or are recommenced after breaks. Pre-commencement checks to also be conducted prior to new work activities in the water commence; (to meet Performance Criteria A, B, C, D, E and G).</li> </ul>	Contractors Marine Megafauna Observers
<ul style="list-style-type: none"> <li>- Maintain active awareness of marine megafauna throughout daily construction activities, including within the exclusion zone, noting observations for megafauna in low light/night time or during rough</li> </ul>	Contractors Marine Megafauna Observer

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ELEMENT	MARINE ECOLOGY
	conditions will be restricted* (to meet Performance Criteria A, B, C, D, E and G).
– Applying the following observation zone during construction activities:	Contractors
▪ For whales: 300m;	
▪ For dolphins, dugongs and turtles: 150m.	
– Cease all relevant activities (rock placement, vessel movement) when marine megafauna are observed within the exclusion zone of 100m (for whales) and 50m (for dolphins, dugongs and turtles) of the work front; until the animals have moved further than 100m/50m from the work front, are travelling away from the workfront or have not been sighted for 30 minutes to avoid injury or loss of megafauna (to meet Performance Criteria A and B).	Contractors Construction Team CU Environmental Advisor CU

#### Training (to meet Performance Criteria A to G)

- |  |                                       |
|--|---------------------------------------|
| – Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding marine ecology. | Contractors<br>Manager Environment CU |
|--|---------------------------------------|

Monitoring and Auditing	Responsibility
– Undertake a survey of the reclamation area and breakwater footprints before the commencement of construction to determine the presence/absence and density of seagrass if found within the reclamation footprint (as per EPBC Act Approval Condition 9).	Manager Environment CU
– Conduct monitoring in accordance with Inshore Dolphin (POT2154) and Marine Megafauna Monitoring Plans (POT 2155) before, during, and after completion of the project, to determine if any project related impacts occur on megafauna diversity, distribution and behaviour.	Environmental Advisor CU
– Review marine strandings data quarterly (where available) to identify any death or injury to megafauna that could be attributed to CU construction activities.	Manager Environment CU
– Conduct marine megafauna observing prior to commencing, and during, key construction activities, and pause works if marine megafauna enter exclusion zones. Continue to monitor the megafauna presence until they have exited the exclusion zone.	Contractors Marine Megafauna Observer
– Daily megafauna logs to be maintained by megafauna observers and audited by the Port regularly for compliance action (if needed). The log should include observations on conditions, time of day and distance and height from observer.	Environmental Advisor CU Principal's Site Representative Manager Environment CU
– Undertake regular site inspections to monitor the construction site for issues that may adversely impact on MNES or marine ecology.	Environmental Advisor CU/ Contractors
– Review/audit toolbox/pre-start records for discussions on construction impacts and marine megafauna interaction	Environmental Advisor CU

#### Corrective actions

Where Performance Criteria A to G are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Implement emergency response measures in the event of a marine megafauna injury or incident; and:
  - Liaise with DES or other relevant body (i.e. GBRMPA) immediately to identify rescue options and develop future corrective actions if injury to marine megafauna occurs.
  - Assist in capture of injured animals following advice from regulators.

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ELEMENT	MARINE ECOLOGY
	<ul style="list-style-type: none"> <li>– The Manager Environment CU will commence an investigation into incidents relating to marine megafauna incident within 24 hours of initial notification, including reporting to the appropriate regulator within statutory timeframes.</li> <li>– Implement revised control measures (modified observation process and/or further exclusion zones) immediately where performance criteria are not met, or marine megafauna issues are identified or have the potential to occur in the future.</li> <li>– The Environmental Advisor CU/Manager Environment CU will respond to all complaints in relation to marine megafauna within five business days and address concerns as required.</li> <li>– Any impacts identified via the marine megafauna and inshore dolphins monitoring plans as a result of construction activities will be reported via the specific monitoring plans and inform reviews of the relevant management plans.</li> <li>– Undertake a review of the CEMP and MEMP and associated plans, to determine if further controls or mitigation measures are needed where investigations show unacceptable impacts to marine megafauna.</li> <li>– Implement any other corrective actions and mitigation measures as directed by the appropriate regulator.</li> </ul>

#### Reporting

- The contractor will maintain an activity log, recording the type of activities occurring at different times to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.
- All CU Project Personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant marine megafauna disturbance issue. The Manager Environment CU will investigate and report to the Principal's Representative.
- Maintain a record of sighted animals indicating the sighting of each individual animal and actions taken.
- Report down-time due to marine megafauna interactions in the construction log.
- Record and report immediately any incident involving marine megafauna interactions (marine animal strike, marine stranding or an injured, sick or dead turtle, dugong, dolphin or whale) will be reported to the Qld DES (on 1300 130 372). This reporting requirement is irrespective of whether the megafauna is dead or alive.
- Compile an incident report of all the details of any incident or near miss involving marine megafauna.
- The Manager Environment CU will report to DCCEEW (or successor agency) any exceedance of the MNES performance criteria, including any implementation of MNES risk management, adaptive management strategies, corrective actions and emergency response measures implemented within 21 days of the initial incident/exceedance notification.
- Any impacts identified via the Inshore dolphin and Marine Megafauna monitoring plans as a result of construction activities will be reported via those monitoring plans and inform reviews of the CEMP and MEMP.

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ELEMENT	MARINE ECOLOGY
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**Adaptive management program**

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with marine ecology and MNES, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with marine ecology impacts from construction activities, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring programs specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

\* while the ability to observe megafauna at night or in rough conditions may be limited, this is offset by the reduced risk of interaction through the use of a backhoe dredge only (stationary, slow and steady movement) and no TSHD.

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#### 5.4.5 Minimise Impacts on Terrestrial Ecology

ELEMENT	TERRESTRIAL ECOLOGY
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To conduct construction activities in a manner that minimises adverse impacts on terrestrial fauna and flora. To avoid injury to and death of terrestrial fauna, particularly avifauna from construction activities. To avoid or minimise the level of noise and light spill during construction activities on adjacent habitat areas used by avifauna.
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>Construction activities such as vehicle movements and earthworks may result in disturbance/injury/mortality of terrestrial fauna, particularly avifauna (Section 5.4.1 and 5.4.7).</li> <li>Noise emissions and vibration may lead to behavioural disturbance in terrestrial fauna (Section 5.4.8).</li> <li>Light spill from the construction site and plant and equipment may lead to disturbance to surrounding avian habitats (Section 5.4.15).</li> <li>Introduction and/or spread of declared weeds or animal pests may adversely impact on terrestrial fauna (Section 5.4.6).</li> </ul>	

#### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans (CEMP and MEMP), the *Environmental Protection Act 1994*, and any other relevant approvals, standards, guidelines and statutory requirements.
- No incidents of harm or mortality to terrestrial fauna as a result of construction activities.
- No significant long-term distribution or diversity impacts to terrestrial fauna or flora as a result of construction activities, as measured by the Shorebird Monitoring Program (MEMP Appendix G, POT 2156).
- No substantiated complaints are received from regulators or the community in relation to terrestrial flora and/or fauna issues.

It is to be noted that use of Port land by shorebirds is opportunistic given it is to be developed and therefore this trigger is for diversity and abundance across the study area (not just Port land).

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>Enforce site traffic management arrangements including speed restrictions to reduce terrestrial fauna collisions (to meet Performance Criteria B)</li> </ul>	Works Engineer CU Contractors
<ul style="list-style-type: none"> <li>Implement procedures on the handling and reporting of injured fauna (to meet Performance Criteria A and D).</li> </ul>	Environmental Advisor CU
<ul style="list-style-type: none"> <li>Limit disturbance of existing port lands for the project so as to maintain opportunistic habitat for avifauna; noting the reclamation works once completed will create more opportunistic avifauna habitat (to meet Performance Criteria C and D).</li> </ul>	Works Engineer CU
<ul style="list-style-type: none"> <li>Restrict rock haul truck movements delivering rock to stockpile area to daylight hours to prevent disturbance to terrestrial fauna, particularly avifauna (to meet performance Criteria A, C and D).</li> </ul>	Works Engineer CU
<ul style="list-style-type: none"> <li>Ensure the CEMP and MEMP have been implemented on site (to meet Performance Criteria A).</li> </ul>	Environmental Advisor CU
<ul style="list-style-type: none"> <li>Review the results of each monitoring survey to capture any potentially negative trends forming in behavioural patterns associated with the construction works (to meet Performance Criteria C).</li> </ul>	Environmental Advisor CU

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ELEMENT	TERRESTRIAL ECOLOGY
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**Training** (to meet Performance Criteria A to D)

- |  |                                       |
|--|---------------------------------------|
| – Ensure that the relevant Project personnel undertake environmental awareness training covering the requirements of this CEMP (and MEMP) regarding terrestrial flora and fauna. | Contractors<br>Manager Environment CU |
|--|---------------------------------------|

**Monitoring and Auditing**

- |  |   |
|--|---|
| – Conduct monitoring in accordance with Shorebird Monitoring Plan (POT 2156) before and during construction, to determine if any project related impacts occur on avifauna distribution and diversity. | <b>Responsibility</b><br>Environmental Advisor CU |
| – Undertake regular site inspections for bird nests and/or injured wildlife and record any incident(s).  | Contractors<br>Environmental Advisor CU           |
| – Maintain operational log to record/report interaction with fauna on site, the Port to audit log for compliance action (if needed).   | Contractors                                       |
| – Review/audit toolbox/pre-start records for discussions on construction impacts on terrestrial fauna where issues arise   | Environmental Advisor CU                          |

**Corrective actions**

Where Performance Criteria A to D are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Implement revised control measures where criteria are exceeded or potential terrestrial fauna disturbance issues are identified. (e.g. by way of further training, exclusion zones, further speed restrictions – depending upon exceedance locations and details of the issue).
- The Environmental Advisor CU / Manager Environment CU will commence investigation of all incidents in relation to terrestrial fauna and/or flora within five business days and undertake appropriate actions, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to terrestrial fauna and/or flora within five business days and address valid concerns as required.
- Undertake a review of the CEMP to determine if further controls or mitigation measures are needed where investigations show unacceptable impacts to terrestrial fauna and/or flora.
- Implement any other corrective actions or mitigations as directed by the appropriate regulators.

**Reporting**

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.
- All CU Project Personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant terrestrial fauna and/or flora disturbance issue. The Manager Environment CU will investigate and report to the Principal's Representative.
- The Manager Environment CU will report to DCCEEW (or successor agency) any exceedance of the MNES performance criteria, including any implementation of MNES risk management, adaptive management strategies, corrective actions and emergency response measures implemented within 21 days of the initial incident/exceedance notification.
- Any impacts identified via the shorebirds monitoring plan as a result of construction activities will be reported via that monitoring plan and inform reviews of the CEMP and MEMP.

**Adaptive management program**

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with terrestrial ecology and MNES, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with terrestrial ecology impacts, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;

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ELEMENT	TERRESTRIAL ECOLOGY
	<ul style="list-style-type: none"> <li>- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring programs specified in this element demonstrate a risk to the environment or MNES.</li> <li>- The Manager Environment CU will address the consequences of significant environmental incidents; and</li> <li>- The Manager Environment CU will review the plan under the following circumstances: <ul style="list-style-type: none"> <li>• where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);</li> <li>• performance reports indicate performance criteria are not be achieved;</li> <li>• according to approved timeframes; or the impacts of significant environmental incidents.</li> </ul> </li> </ul>

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#### 5.4.6 Minimise Impacts through Weed & Pest Management

ELEMENT	WEED & PEST MANAGEMENT
<b>Residual Risk Level</b>	<b>Objectives</b>
LOW	<p>To implement effective weed management controls and avoid the spread of otherwise pest species at the construction site.</p> <p>To implement effective pest species management controls and avoid the increase of existing pest populations at the Port.</p>
<b>Aspects and Impacts</b>	
<ul style="list-style-type: none"> <li>Vehicle, vessel, plant and equipment movements via rail, road or sea may result in the introduction and/or spread of declared weeds or pests at the construction site.</li> <li>Incorrect handling, storage of materials and waste and stormwater management may encourage pests and/or pest animals and provide breeding habitats for mosquitos.</li> </ul>	

#### Performance Criteria / Indicators

- All works are managed in accordance with the obligations under *Biosecurity Act 2014* to prevent the movement of declared pest plants to and from the site, the relevant management plans and any other relevant approvals, standards, guidelines and statutory requirements.
- All ballast water exchange is undertaken in accordance with legislative and requirements of the Regional Harbour Master and the relevant project management plans (MEMP and DMP).
- No introduction of weeds or increase in their distribution as a consequence of construction activities.
- No new infestations as a consequence of construction activities.
- No mosquito breeding habitat is created on the construction site.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>Implement appropriate weed management controls (to meet Performance Criteria A, C and D), including <ul style="list-style-type: none"> <li>Ensuring imported rock / fill material is weed free;</li> <li>Removing any declared weed species on-site via mechanical means or herbicide;</li> <li>Limiting vehicle movement through known declared weed infested areas (currently none exist) at the construction site;</li> <li>Washing down vehicles and plant equipment entering or leaving site for the first or last time in accordance with industry standards; and</li> <li>Using wheel wash whenever heavy vehicles move off-site.</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>Implement ballast water exchange and vessel biosecurity measures set out in the MEMP and DMP (to meet Performance Criteria B).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>Avoid conditions favourable to pest species (to meet Performance Criteria A and E) by: <ul style="list-style-type: none"> <li>Keeping the construction site area free of food waste or other attractants to pests such as mice, rats, dogs, cats, foxes, cane toads and birds;</li> <li>Keeping the construction site free of potential mosquito breeding sites; and</li> <li>Undertaking appropriate waste management measures (Section 5.4.10).</li> </ul> </li> </ul>	Contractors Works Engineer CU
<ul style="list-style-type: none"> <li>Implement regular weed control activities (e.g. spraying, mowing and removal) (to meet Performance Criteria A to E).</li> </ul>	Contractors Works Engineer CU
<ul style="list-style-type: none"> <li>Implement appropriate pest control measures where necessary (i.e. when pest species are identified on the site).</li> </ul>	Contractors Works Engineer CU
<ul style="list-style-type: none"> <li>Contractors to be notified of any biosecurity detections or incursions in the area reported to the Port that may move to the site areas.</li> </ul>	Environmental Advisor CU

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ELEMENT	WEED & PEST MANAGEMENT
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**Training** (to meet Performance Criteria A to E)

- |  |                                       |
|--|---------------------------------------|
| <ul style="list-style-type: none"> <li>Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding weed and pest management.</li> </ul> | Contractors<br>Manager Environment CU |
|--|---------------------------------------|

**Monitoring and Auditing**

- |  | Responsibility                          |
|--|---|
| <ul style="list-style-type: none"> <li>Undertake regular site inspections for declared weed and pest infestations.</li> </ul>  | Environmental Advisor CU<br>Contractors |
| <ul style="list-style-type: none"> <li>Note the presence and abundance of introduced pests in the construction site.</li> </ul>  | Environmental Advisor CU<br>Contractors |
| <ul style="list-style-type: none"> <li>Undertake regular site inspections for mosquito breeding areas prior to and during the wet season.</li> </ul>   | Environmental Advisor CU<br>Contractors |
| <ul style="list-style-type: none"> <li>Implement the Invasive Marine Species Monitoring Plan for the CU Project.</li> </ul>  | Environmental Advisor CU                |
| <ul style="list-style-type: none"> <li>Monitor NIMPIS database and DAF detections information bulletins to stay informed in regards to recent detections (emerging pests) within Qld.</li> </ul> | Environmental Advisor<br>CU/ Contractor |
| <ul style="list-style-type: none"> <li>Review/audit toolbox/pre-start records for discussions on Weeds and Pests</li> </ul>  | Environmental Advisor CU                |

**Corrective actions**

Where Performance Criteria A to E are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Contractors to engage licensed pest control contractor(s) to control pest numbers if required.
- Contractors to engage with the Port and Biosecurity regulatory agencies to respond to any introduction or spread of invasive marine species.
- Prevent water from collecting in structures or around buildings and remove standing water.
- Implement manual or chemical control to interrupt the mosquito breeding cycle if mosquito larvae are present on CU Project site.
- Contractors to implement appropriate control measures where weed and/or pest infestation or their potential to spread is identified in order to prevent reoccurrences.
- The Manager Environment CU will commence an investigation into all incidents in relation to weed and/or pest infestation within five business days, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to weed and/or pest infestation within five business days and address valid concerns as required.
- Revise CEMP and implement further controls where investigations show weed and/or pest infestation.
- Implement any other corrective actions as directed by regulators.

**Reporting**

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.
- All CU Project Personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of any weed and/or pest outbreaks or potential infestations. The Manager Environment CU will investigate and report to the CIO.
- Identification of detections of invasive marine pests, including through the Invasive Marine Pest Monitoring Plan, NIMPIS database and DAF detections information bulletins, to be reported to the Project Manager and the Principal's Site Representative.
- The Manager Environment CU will inform the regulators in a timely manner in the event of a significant weed and/or pest incident.

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ELEMENT	WEED & PEST MANAGEMENT
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**Adaptive management program**

- The Environmental Advisor will effectively coordinate, schedule and/or trigger auditing and reporting activities in association with weed and animal pest management, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with weeds and pests, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should monitoring and auditing specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.7 Minimise Impacts to Air

ELEMENT	AIR
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To prevent dust and other atmospheric emissions such as exhaust fumes generated by construction activities from causing a hazard or nuisance.
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>Construction activities such as earthworks and vehicle movements have the potential to increase dust emissions.</li> <li>Construction vehicles, vessels, plant and equipment will generate fuel combustion emissions.</li> <li>Trucks hauling construction material may track soils onto roads and generate dust.</li> <li>Increased dust and fuel combustion emissions may result in: <ul style="list-style-type: none"> <li>Increased risks to human health;</li> <li>Environmental nuisance to neighbours and the natural environment; and</li> <li>Discolouration of buildings or structures.</li> </ul> </li> </ul>	
<b>Performance Criteria / Indicators</b> <ol style="list-style-type: none"> <li>All works are managed in accordance with the relevant management plans, the <i>Environmental Protection Act 1994</i> and the <i>Environmental Protection (Air) Policy 2019</i> and any other relevant approvals, standards, guidelines and statutory requirements.</li> <li>No impacts to air quality in the receiving environment as a result of construction activities.</li> <li>No substantiated complaints are received from regulators or the community in relation to air quality issues from construction activities.</li> </ol>	
<b>Mitigation</b>	<b>Responsibility</b>
<ul style="list-style-type: none"> <li>Implement the CU Site Monitoring Plan (Appendix H) with identified air quality trigger levels so that work practices can be adjusted as required based on monitoring results (to meet Performance Criteria A).</li> </ul>	Environmental Advisor CU
<ul style="list-style-type: none"> <li>Implement dust control measures, (to meet Performance Criteria B and C), including some or all of: <ul style="list-style-type: none"> <li>Using water suppression methods on stockpiles and disturbed areas;</li> <li>Using a water truck and/or a dust sweeper to suppress dust on trafficked areas;</li> <li>Using a wheel wash or shaker grid where heavy vehicles move off stockpile site;</li> <li>Implementing site speed limits on-site to reduce wheel-generated dust;</li> <li>Erecting localised windbreak barriers on activities (to 2.4 m height), if required;</li> <li>Adjusting work practices as required based on wind observations (e.g. ceasing dust generating works under extreme windy conditions or when excessive dust is observed to leave the site); and</li> <li>Following relevant load restraint guidelines on vehicles during transportation of construction materials to the Port.</li> <li>Ensuring reclaimed areas are appropriately profiled after reaching final levels and support natural vegetation of reclaimed land until prepared for development (as per other port reclamation areas).</li> </ul> </li> </ul>	Contractors Construction Team CU Environmental Advisor CU
<ul style="list-style-type: none"> <li>Do not permit burning or incineration of waste on-site (to meet Performance Criteria B and C).</li> </ul>	Principal's Site Representative Contractors
<ul style="list-style-type: none"> <li>Reduce fuel combustion emissions (to meet Performance Criteria A, B and C) by:</li> </ul>	Contractors

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ELEMENT	AIR
	<ul style="list-style-type: none"> <li>Establishing regular servicing schedule for all vehicles, plant and equipment, including filter and oil changes and keep records;</li> <li>Removing vehicles, plant and equipment from operation as soon as practically possible and undertake maintenance, repairs or modifications, if excessive visible smoke and emissions are observed;</li> <li>Turning engines off while parked on-site or when not in use; and</li> <li>Scheduling vehicle movement to prevent queuing/idling.</li> </ul>

**Training** (to meet Performance Criteria A to C)

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding air quality and dust control.</li> </ul> | <p>Contractors<br/>Manager Environment CU</p> |
|--|---|

Monitoring / Auditing	Responsibility
<ul style="list-style-type: none"> <li>Conduct visual monitoring and observation of weather conditions which may result in dust liberation and elevated particle concentration.</li> </ul>	<p>Contractors Works Engineer CU Environmental Advisor CU</p>
<ul style="list-style-type: none"> <li>Conduct monitoring in accordance with the CU Site Monitoring Plan (Appendix H) and analyse results in comparison to the identified trigger levels and the requirements of the <i>Environmental Protection (Air) Policy 2019</i>.</li> </ul>	<p>Environmental Advisor CU</p>
<ul style="list-style-type: none"> <li>Conduct regular visual monitoring to identify the need for dust suppression measures and the effectiveness of measures undertaken.</li> </ul>	<p>Contractors Environmental Advisor CU</p>
<ul style="list-style-type: none"> <li>Undertake additional dust deposition monitoring at the nearest sensitive receiver in the event of a complaint and/or at the request of the regulators, assessing results against the limits stipulated in the Qld Government Approval.</li> </ul>	<p>Environmental Advisor CU</p>
<ul style="list-style-type: none"> <li>Review/audit toolbox/pre-start records for discussions on construction impacts on air where issues arise</li> </ul>	<p>Environmental Advisor CU</p>

**Corrective actions**

Where Performance Criteria A to C are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Implement corrective measures outlined in the CU Site Monitoring Plan (CEMP Appendix H) which includes trigger levels against a staged approach:
  - Investigate: identify the issue, the likely reasons and formulate a response should the Action stage be reached.
  - Action: implement those measures formulated in the Investigate stage and review their effectiveness.
  - Stop Work: stop works when there is a high likelihood that the pollutant criterion may be reached and resume only when the measured pollutant levels are below the Action level.
- Amend construction program for modifying or scheduling works that mobilise particulates depending on ambient conditions that may cause wind re-suspension.
- Increase frequency of inspection of vacant areas and undertake identified maintenance actions if adverse impacts are observed/reported.
- Implement appropriate control measures in a timely manner where nuisance dust and other air quality issues are identified or have the potential to occur in the future.
- The Manager Environment CU will commence an investigation into all incidents in relation to air quality within five business days, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to air quality within five business days and address valid concerns as required.
- Revise CEMP and implement further controls where investigations show unacceptable air quality levels.

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ELEMENT	AIR
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Implement any other corrective actions as directed by regulators.

#### Reporting

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant air quality issue. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU will inform the regulators in a timely manner in the event of a significant air quality incident.

#### Adaptive management program

- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities associated with air impacts, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with air contamination from construction activities, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring programs specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.8 Minimise Impacts from Noise & Vibration

ELEMENT	NOISE AND VIBRATION
<b>Residual Risk Level</b>	<b>Objectives</b>
MEDIUM	To meet all noise and vibration standards relating to construction activities.
<b>Aspects and Impacts</b>	
<ul style="list-style-type: none"> <li>On-site construction plant and equipment during construction works, particularly during piling works, have the potential to increase noise emissions and cause vibrations.</li> <li>Heavy vehicles on transport access roads and near the boundary of the construction site have the potential to increase noise emissions and cause vibrations.</li> <li>Noise generated during construction activities, particularly during piling works and along the haul roads, may cause environmental nuisance to neighbours and the surrounding natural environment / marine megafauna (MNES).</li> <li>Vibrations generated during construction activities, particularly during piling works and along the haul roads, may cause environmental nuisance to neighbours and the surrounding natural environment.</li> </ul>	

### Performance Criteria / Indicators

- A. All works are managed in accordance with the relevant management plans, the *Environmental Protection and Biodiversity Conservation Act* approval, the *Environmental Protection (Noise) Policy 2019* and *Environmental Protection Regulation 2019* and any other relevant approvals, standards, guidelines and statutory requirements.
- B. No direct or residual impacts to sensitive receivers as a result of noise and/or vibration from construction activities, as measured through: -
  - o the Inshore Dolphin Monitoring Plan (MEMP Appendix E, POT 2154);
  - o the Shorebird Monitoring Plan (MEMP Appendix G, POT 2156); and
  - o the CU Site Monitoring Plan (Appendix H, POT 2103).
- C. No substantiated complaints are received from regulators or the community in relation to noise or vibration issues from construction activities.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>- Consider noise mitigation when operating construction plant and equipment, (to meet Performance Criteria A and B) including:               <ul style="list-style-type: none"> <li>Selecting low-noise plant and equipment in good working order;</li> <li>Locating site compounds and noisy plant as far away from noise sensitive receptors as practicable;</li> <li>Installing high-quality mufflers and appropriate silencers that meet design specifications on plant and equipment when available;</li> <li>Keeping equipment well maintained according to manufacturer's instructions and recommendations;</li> <li>Keeping silencers and enclosures intact, rotating plant balanced, loose bolts tightened, frictional noise reduced through lubrication and cutting noise reduced by sharpening blades;</li> <li>Orientating plant and equipment known to emit noise strongly in one direction (i.e. manifolds on compressors) so that noise is directed away from noise sensitive receptors;</li> <li>Shutting down plant and equipment which are used intermittently in the intervening periods between works or throttling down to minimum;</li> <li>Shutting down plant and equipment when not in use; and</li> <li>Ensuring that only necessary power levels are used to complete construction tasks.</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>- Stopping construction/rock placement when marine megafauna are observed within the exclusion zone of 100m (for whales) and 50 m (for dolphins, dugongs and turtles) of the work front: until the animals have</li> </ul>	Contractors Construction Team CU

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ELEMENT	NOISE AND VIBRATION	
	moved further than 100m/50m from the work front or have not been sighted for 30 minutes.	Environmental Advisor CU
	– Orientate noise emitting equipment away from foreshore whilst ensuring that Health and Safety requirements including Navigation Safety are maintained to minimise impacts on shorebirds (to meet Performance Criteria B).	Contractors
	– Establish a designated access route to the site and inform truck drivers of this route (to meet Performance Criteria C).	Construction Team CU
	– Restrict entry and departure of rock haulage vehicles to and from the site (non-dredging and reclamation vehicles) to standard daytime hours Monday to Saturday (to meet Performance Criteria C).	Construction Team CU

**Piling:**

- |   |  |
|---|--|
| <ul style="list-style-type: none"> <li>– Implement the Environmental Procedure for Pile Driving to manage noise and vibrations risks to marine megafauna/MNES (to meet Performance Criteria A, B and C).</li> </ul>   | <p>Contractors<br/>Construction Team CU<br/>Environmental Advisor CU</p> |
| <ul style="list-style-type: none"> <li>– Pile driving activities to occur predominantly from Monday to Saturday; no impact piling to occur on Sundays and Public Holidays.</li> </ul>   | <p>Contractors<br/>Construction Team CU</p>                              |
| <ul style="list-style-type: none"> <li>– Vibratory piling may occur on Sundays or public holidays; only on the completion of an assessment detailing the proposed activity, risks and relevant monitoring and controls to mitigate any potential noise impact in the community (to meet Performance Criteria A, B and C).</li> </ul>  | <p>Environmental Advisor CU</p>  |
| <ul style="list-style-type: none"> <li>– Implement strategies to avoid megafauna interactions e.g. Implementing the defined Observation Zone for pile driving operations, undertake visual monitoring during piling activities, soft starts etc to protect MNES (to meet Performance Criteria A and B)</li> </ul>   | <p>Contractors<br/>Manager Environment CU</p>                            |
| <ul style="list-style-type: none"> <li>– The requirements of the Environmental Procedure for Pile Driving (as detailed above) must also be applied to re-strike testing activities. A maximum of 15 full force blows of the pile hammer may be applied to each test pile on a maximum of two re-strike test events per test pile (to meet Performance Criteria D).</li> </ul> | <p>Contractors<br/>Environmental Advisor CU</p>                          |
| <ul style="list-style-type: none"> <li>– Consider alternative piling methods, e.g. screw-type piling in place of impact piling if these alternative methods are available and feasible and provide equivalent or better protection to marine megafauna (to meet Performance Criteria D).</li> </ul>   | <p>Contractors /<br/>Environmental Advisor CU</p>                        |
| <ul style="list-style-type: none"> <li>– Notify proactively any potentially impacted residents, Port Customers and other commercial operators of planned construction activities (including timing and duration of piling and rock placement) (to meet Performance Criteria C).</li> </ul>  | <p>Principal's Site<br/>Representative</p>                               |

**Training (to meet Performance Criteria A to C)**

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>– Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding noise and vibration controls, particularly: <ul style="list-style-type: none"> <li>• appropriate training to construction crews in relation to noise and vibration.</li> <li>• appropriate training to construction crew responsible for marine megafauna spotting prior to commencement of construction activities.</li> </ul> </li> </ul> | <p>Contractors<br/>Manager Environment CU</p> |
| <ul style="list-style-type: none"> <li>– Ensure Suitably Qualified Marine Observers engaged for piling work observations are fully trained in conducting observations</li> </ul>  | <p>Contractor<br/>Manager Environment CU</p>  |

**Monitoring and Auditing**

**Responsibility**

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ELEMENT	NOISE AND VIBRATION	
–	Monitor and adjust where necessary, elements of piling such as reducing the height and weight of the impact hammer.	Contractors
–	Undertake regular inspections to identify the need for noise and vibration suppression measures and the effectiveness of measures undertaken.	Environmental Advisor CU/ Contractors
–	Conduct noise and/or vibration monitoring as required in approvals or in response to requests from regulators, assessing results against the limits stipulated in the Qld Government Approval.	Environmental Advisor CU
–	Conduct observations for marine megafauna by marine megafauna observers prior to commencing, after recommencement following breaks and when starting new work activities, and during construction activities and cease works if marine megafauna enter exclusion zones.	Contractors
–	For piling, continue observations for marine megafauna across the observation zone by a suitably qualified marine observer before and during pile driving operations.	Contractors
–	Review/audit toolbox/pre-start records for discussions on construction impacts from noise and vibration where issues arise	Environmental Advisor CU

#### Corrective actions

Where Performance Criteria A to C are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- For acute/direct impacts to marine megafauna from noise or vibration, the Manager Environment CU will liaise with DES immediately to identify rescue options and develop future corrective actions if injury to marine megafauna occurs; and assist in capture of injured animals where required following advice from regulators.
- The Manager Environment CU will commence an investigation into all incidents or complaints relating to potential noise/vibration impacts on marine megafauna within five business days including reporting to the appropriate regulator within statutory timeframes.
- Undertake a review of the CEMP and associated plans, to determine if further controls or mitigation measures are needed where investigations show unacceptable impacts to marine megafauna.
- Implement additional control measures (i.e. revised exclusion zones) where noise related performance criteria are exceeded or potential MNES / marine ecology issues are indicated.
- Review and modifying plant, equipment and construction practices, where noise or vibration issues are identified or have the potential to occur in the future.
- Revise notification procedures and times to allow adequate consideration of potential noise impacts by the community if issues are reported.
- Implement any other corrective actions as directed by the appropriate regulators.

#### Reporting

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to demonstrate undertaking of observations and to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant noise or vibration management issue. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to DCCEW (or successor agency) any exceedance of the MNES performance criteria, including any implementation of MNES risk management, adaptive management strategies, corrective actions and emergency response measures implemented within 21 days of the initial incident/exceedance notification.

#### Adaptive management program

- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with construction noise aspects, additional to any activities the contractor implements;

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ELEMENT	NOISE AND VIBRATION
	<ul style="list-style-type: none"> <li>- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with noise impacts from construction activities, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;</li> <li>- The Manager Environment CU will implement corrective actions and amended mitigation measures should monitoring programs specified in this element demonstrate a risk to the environment or MNES.</li> <li>- The Manager Environment CU will address the consequences of significant environmental incidents; and</li> <li>- The Manager Environment CU will review the plan under the following circumstances: <ul style="list-style-type: none"> <li>• where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);</li> <li>• performance reports indicate performance targets/indicators may not be achieved;</li> <li>• according to approved timeframes; or the impacts of significant environmental incidents.</li> </ul> </li> </ul>

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#### 5.4.9 Minimise Impacts from Hazardous Materials Handling & Storage

ELEMENT	HAZARDOUS MATERIALS HANDLING & STORAGE
<b>Residual Risk Level</b>	<b>Objectives</b>
LOW	To minimise the risks associated with the handling and storage of hazardous materials used in construction activities from causing a hazard or nuisance to surrounding land uses.

##### Aspects and Impacts

- Potential impacts to human and environmental health from exposure to hazards and hazardous materials.
- Incorrect storage and handling of hazardous substances may result in environmental nuisance and/or harm.
- Spills or leakage of fuel/oil and other hazardous materials or dangerous goods may cause soil contamination.
- Incidents may occur whereby contaminants are accidentally released which may adversely impact surrounding land.

##### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans, the *Environmental Protection Act 1994* and any other relevant approvals, standards, guidelines and statutory requirements.
- Fuel / chemical storage is kept in a secure area and bunded to prevent spills.
- All spills are reported to Port and adequately contained and promptly cleaned up.
- No soil/land/water contamination from leaks and spills on-site.
- No impact to sensitive receivers as a result of the handling and storage of hazardous materials.
- No substantiated complaints are received from regulators or the community in relation to the handling and storage of hazardous materials.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>– Hold and maintain relevant statutory licenses, permits and/or approvals prior to the storage and use of hazardous goods (particularly licensed dangerous goods) if required (to meet Performance Criteria A and F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Undertake storage and transport of chemicals, fuel/oil, hazardous/dangerous goods in accordance with relevant manufacturer's instructions, Australian standards, guidelines and legislation, (to meet Performance Criteria A, B, C, D, E and F) including: <ul style="list-style-type: none"> <li>• <i>AS1940 The Storage and Handling of Flammable and Combustible Liquids</i>;</li> <li>• <i>AS4452 The Storage and Handling of Toxic Substances</i>; and</li> <li>• <i>Dangerous Goods Safety Management Act 2001</i> and other legislative requirements.</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Ensure storage areas consist of a compacted base and appropriate bunding to contain spillages in accordance with applicable standards and are covered to prevent stormwater infiltration (to meet Performance Criteria A, B and C).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Locate storage areas as far away from receiving environment as possible (to meet Performance Criteria D and E).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Manage hazardous products appropriately and dispose in accordance with Safety Data Sheets (<b>SDS</b>) and legislative requirements (to meet Performance Criteria A, B, C, D, E and F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Maintain records on chemicals, fuel, dangerous goods and hazardous materials used during construction activities as required by SDSs (to meet Performance Criteria A and B).</li> </ul>	Contractors

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HAZARDOUS MATERIALS HANDLING & STORAGE	
<ul style="list-style-type: none"> <li>– Keep SDSs for hazardous materials readily available in a prominent location on-site (to meet Performance Criteria A, C, E and F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Minimise the use of hazardous materials and implement alternatives if feasible (to meet Performance Criteria F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Plan the delivery of hazardous materials to site in line with construction requirements to avoid the need to store significant quantities of hazardous materials on-site (to meet Performance Criteria A, D, E and F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Minimise the risk of fuel/oil spills by undertaking regular inspections and maintenance of plant and equipment, (to meet performance Criteria B, C and D) including: <ul style="list-style-type: none"> <li>• Daily inspection of plant and equipment;</li> <li>• Maintenance of site plant and equipment in accordance with manufacturer's recommendations; and</li> <li>• Ensuring service records are up to date and the equipment has the applicable permits, licences and insurances; and</li> <li>• Inspecting for leaks prior to allowing any external vehicles or plant and equipment on-site (to meet Performance Criteria A to E).</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Conduct plant and equipment maintenance only in designated areas (to meet Performance Criteria A to E).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Maintain appropriate spill kits, personal protective equipment and relevant operator instructions / emergency procedures for the management of hazardous materials at the site (to meet Performance Criteria A, C, D and E).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Minimise the risk of contaminant spills, (to meet Performance Criteria A, B and F) by: <ul style="list-style-type: none"> <li>• Implementing hazardous material handling procedures;</li> <li>• Implementing emergency response procedures;</li> <li>• Installing oil and grit separators for maintenance areas on-site;</li> <li>• Undertaking spill response training for staff; and</li> <li>• Providing spill control materials including booms and absorbent materials in the event of any spills.</li> </ul> </li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Implement emergency response procedures for fuel, oil and chemical use including as a minimum the use of appropriate spill response kits, the involvement of adequately trained personnel and the incorporation of a contact protocol for emergency services and the notification of regulators (to meet Performance Criteria A, D, E and F).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>– Make available first aid and firefighting equipment at the site (to meet Performance Criteria A, D, E and F).</li> </ul>	Contractors
<b>Training</b> (to meet Performance Criteria A to F)	
<ul style="list-style-type: none"> <li>– Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding hazardous materials handling and storage and spill response.</li> </ul>	Contractors Manager Environment CU
<ul style="list-style-type: none"> <li>– Ensure that relevant personnel are trained in spill response, including the use of spill kits and spill control materials.</li> </ul>	Contractors
<b>Monitoring and Auditing</b>	<b>Responsibility</b>
<ul style="list-style-type: none"> <li>– Undertake inspections to monitor construction site for compliance with hazardous material handling and storage requirements, including maintenance of spill kits, checking for leaks, spillage and damage to bunded/storage/refuelling areas and plant and equipment.</li> </ul>	Contractors Environmental Advisor CU

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ELEMENT	HAZARDOUS MATERIALS HANDLING & STORAGE	
- Undertake regular visual inspections of hazardous waste storage containers to determine their integrity and identify if any spills or leakage has or is occurring.	Contractors	Environmental Advisor CU
- Inspect the SDS register regularly for currency and completeness.	Contractors	Safety Officer CU
- Undertake visual inspections of fuel transferring equipment and surrounding water during and after fuel transfer.	Contractors	
- Undertake checks of compliance against the relevant management plan through auditing processes (Section 4.13).	Environmental Advisor CU	
- Review/audit toolbox/pre-start records for discussions on construction impacts from hazardous materials handling and storage where issues arise	Environmental Advisor CU	

### Corrective actions

Where Performance Criteria A to F are not met throughout construction and reclamation, the following corrective actions must be undertaken:

- Maintain and repair any damage to storage areas and/or bunds promptly.
- Implement appropriate control measures in a timely manner where hazardous materials issues are identified or have the potential to occur in the future.
- Investigate all incidents in relation to hazardous materials promptly and undertaken appropriate corrective or remedial actions, to render the area safe and avoid or minimise environmental harm, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints in relation to hazardous materials within five business days and address concerns as required.
- Undertake a review of the CEMP (and MEMP if necessary) to determine if further controls are needed.
- Contractor to review procedures, if procedures breakdown or a spill occurs and train staff about appropriate responses.
- Implement any other corrective actions and mitigation measures as directed by the appropriate regulators.

### Reporting

- The Contractor will maintain an activity log, recording the type of activities occurring at different times to assist with the retrospective investigation of any incidents / complaints / land contamination issues.
- All CU Project personnel will inform the Manager Environment CU and/or Principal's Site Representative immediately of any incidents caused by the handling and storage of hazardous materials resulting in potential or actual environmental harm. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to the appropriate regulators any release of contaminants or other significant incident (if not reported directly by Contractors), including any follow up actions/remediation/adaptive management undertaken.
- The Manager Environment CU will report to DCCEEW (or successor agency) of any release of contaminants or other significant incident impacting upon MNES or exceedance of the MNES performance criteria, including any implementation of MNES risk management, adaptive management strategies, corrective actions and emergency response measures implemented within 21 days of the initial incident/exceedance notification
- Provide incident reports detailing any spills or incidents involving hazardous waste and clean-up operations as per Environmental Incident procedures.

### Adaptive management program

- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger auditing and reporting activities in association with hazardous materials handling and storage, additional to any activities the contractor implements;

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ELEMENT	HAZARDOUS MATERIALS HANDLING & STORAGE
	<ul style="list-style-type: none"> <li>- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with hazardous materials on site, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;</li> <li>- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES.</li> <li>- The Manager Environment CU will address the consequences of significant environmental incidents; and</li> <li>- The Manager Environment CU will review the plan under the following circumstances: <ul style="list-style-type: none"> <li>• where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);</li> <li>• performance reports indicate performance targets/indicators may not be achieved;</li> <li>• according to approved timeframes; or the impacts of significant environmental incidents.</li> </ul> </li> </ul>

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#### 5.4.10 Minimise Impacts from Waste Generation and Management

ELEMENT	WASTE MANAGEMENT
<b>Residual Risk Level</b>	<b>Objectives</b>
LOW	<p>To appropriately handle, store, recycle and dispose of all waste materials generated during construction activities.</p> <p>To prevent litter or waste generated by the construction activities from causing a hazard or nuisance.</p>

##### Aspects and Impacts

- Construction activities will generate waste (i.e. packaging, general waste, effluent).
- Incorrect handling and storage of waste may result in the introduction of wastes into the marine environment or surrounding lands.
- Incorrect handling and storage of waste may encourage pests and provide breeding habitats for mosquitoes (Section 5.4.6).
- Incorrect handling and storage of waste may result in odours and/or impacts to the health and well-being of Project personnel.

##### Performance Criteria / Indicators

- A. All waste is managed in accordance with the relevant management plans, the *Environmental Protection Act 1994* and any other relevant approvals, standards, guidelines and statutory requirements.
- B. No impact to the surrounding environment or sensitive receivers as a result of waste generated from construction activities.
- C. No substantiated complaints are received from regulators or the community in relation to waste issues.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>– Adopt the waste management hierarchy where practicable (i.e. avoid, re-use, recycle, energy recover and dispose) (to meet Performance Criteria A and B): - <ul style="list-style-type: none"> <li>○ Avoid by: <ul style="list-style-type: none"> <li>▪ Minimise the amount of any materials required to be brought and stored on-site; and</li> <li>▪ Implementing options to reduce the amount of packaging on procured goods</li> </ul> </li> <li>○ Reuse by: <ul style="list-style-type: none"> <li>▪ Retaining and moving rocks from the existing revetment walls and reinstating at strategically located areas over the new walls where practicable; and</li> <li>▪ Reusing construction waste on-site (e.g. bricks/concrete and timber) where possible.</li> </ul> </li> <li>○ Recycle by: <ul style="list-style-type: none"> <li>▪ Recycle by storing recyclable wastes in separate bins or areas, for collection by a licensed waste contractor and recycling off-site in a licensed recycling facility</li> </ul> </li> <li>○ Energy Recover <ul style="list-style-type: none"> <li>▪ Energy recover by implementing solar options to reduce fossil fuel consumption where possible</li> </ul> </li> <li>○ Dispose by: <ul style="list-style-type: none"> <li>▪ Storing non-recyclable materials/wastes (including foods, regulated and hazardous wastes) in appropriate areas and disposing of at licensed landfill sites according to legislative requirements;</li> <li>▪ Removing sewage via a temporary connection to reticulated wastewater system.</li> </ul> </li> </ul> </li> </ul>	Contractors

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ELEMENT	WASTE MANAGEMENT	
-	Provide separate stockpiles or bins for different waste streams to avoid cross contamination of waste streams, including liquid wastes (to meet Performance Criteria B).	Contractors
-	Store hazardous wastes in suitable storage containers in an appropriate bunded and covered area (Section 5.4.9) (to meet Performance Criteria A and B).	Contractors
-	Collect and remove all wastes from work sites regularly by an appropriately licensed contractor where required (to meet Performance Criteria B).	Contractors
-	Keep waste, which has the propensity to blow away or attract pest and fauna, in receptacles with lids (to meet Performance Criteria B).	Contractors
-	Conduct general waste transport in a manner that does not cause littering or unlawful waste disposal or generate excessive odours (to meet Performance Criteria C).	Contractors

**Training** (to meet Performance Criteria A to C)

- |   |  |                                       |
|---|--|---------------------------------------|
| - | Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding waste management. | Contractors<br>Manager Environment CU |
|---|--|---------------------------------------|

Monitoring and Auditing	Responsibility
- Undertake regular inspections of on-site facilities to ensure all waste is being stored, handled, disposed and transported in accordance with regulations.	Environmental Advisor CU Contractors
- Undertake inspections of the effectiveness of waste management controls after significant rainfall events.	Environmental Advisor CU Contractors
- Undertake regular visual inspections of waste storage containers to determine their integrity and identify if any spills or leaks have occurred, particularly before and after Extreme Weather Events or significant rainfall events.	Environmental Advisor CU Contractors
- Review/audit toolbox/pre-start records for discussions on construction impacts from waste management where issues arise	Environmental Advisor CU

**Corrective actions**

Where Performance Criteria A to C are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Retrieve any waste material lost to stormwater or the marine environment, if practicable.
- Review waste management practices causing material loss and take immediate action to rectify.
- Implement additional waste management control measures and training where performance criteria are exceeded or waste issues are identified.
- Manager Environment CU to Investigate all incidents in relation to waste management, within five business days, including reporting to the appropriate regulator within statutory timeframes.
- Manager Environment CU to respond to complaints received within five business days relating to waste management and address valid concerns as required.
- Undertake a review of the CEMP to determine if further controls are needed, where investigations show unacceptable waste issues.
- Implement any other corrective actions as directed by the appropriate regulators.

**Reporting**

- The Contractor will maintain a waste tracking system, recording the movement of waste to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment and/or Principal's Site Representative as soon as possible in the event of any significant waste management issue. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to the appropriate regulators any release of wastes or waste management incident, including any follow up actions/remediation/adaptive management undertaken.

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ELEMENT	WASTE MANAGEMENT
	<ul style="list-style-type: none"> <li>- The Manager Environment CU report to DCCEEW (or successor agency) any exceedance of the MNES performance criteria, including any implementation of MNES risk management, adaptive management strategies, corrective actions and emergency response measures implemented, within 21 days of the initial incident/exceedance notification.</li> </ul>

#### **Adaptive management program**

- The Environmental Advisor will effectively coordinate, schedule and/or trigger auditing and reporting activities in association with waste management, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with construction related wastes, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES.
- The Manager Environment CU will address the consequences of significant environmental incidents; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.11 Minimise Creation of Greenhouse Gases

ELEMENT GREENHOUSE GASES	
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To minimise greenhouse gas emission loads from construction activities.
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>Operation of plant and equipment, trucks for haulage and vessels will produce greenhouse gas emissions.</li> <li>Increased greenhouse gases may then negatively impact the natural environment.</li> </ul>	
<b>Performance Criteria / Indicators</b> <ol style="list-style-type: none"> <li>All works are managed in accordance with the relevant management plans, the applicable Commonwealth and State legislation and standards for greenhouse gas emissions release and any other relevant approvals, standards, guidelines and statutory requirements.</li> <li>The calculable greenhouse gas emissions are reduced through implementation of planning, design and management actions.</li> <li>No substantiated complaints are received from regulators or the community in relation to greenhouse gas emissions.</li> </ol>	
<b>Mitigation</b> <ul style="list-style-type: none"> <li>Track the CU Project's energy and fuel usage and implement efficiency measures (to meet Performance Criteria B) by: <ul style="list-style-type: none"> <li>Installing energy saving timers and energy efficient lighting where possible;</li> <li>Maintaining plant and equipment to manufacturer's standards;</li> <li>Planning construction works to avoid double handling of materials;</li> <li>Using fuel efficient vehicles on-site; and</li> <li>Turning off engines when any significant delays occur.</li> </ul> </li> <li>Reduce energy through material use and selection by: <ul style="list-style-type: none"> <li>Selecting appliances considering energy efficiency;</li> <li>Considering use of materials with high recycled content or lower embodied construction materials; and</li> <li>Reducing the quantity of required construction material by optimising design, where feasible.</li> </ul> </li> <li>Investigate the use of renewable energy on-site, (to meet Performance Criteria A and B), through: <ul style="list-style-type: none"> <li>Investigating renewable energy options for generating electricity for construction site facilities; and</li> <li>Investigating the use of solar panels for construction area, security and road lighting during construction and powering isolated items such as pumps.</li> </ul> </li> <li>Increase awareness by keeping informed of best practice industry standards, research and trials into new technology / approaches to energy efficiency (to meet Performance Criteria A).</li> </ul>	<b>Responsibility</b> Environment Manager CU Environmental Advisor CU Contractors  Construction Team CU  Construction Team CU  Environment Manager CU
<b>Training</b> (to meet Performance Criteria A to C) <ul style="list-style-type: none"> <li>Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding the reduction of greenhouse gas emissions and greenhouse gas awareness.</li> </ul>	Contractors Environment Manager CU
<b>Monitoring and Auditing</b> <ul style="list-style-type: none"> <li>Monitor energy usage and changes to efficiency on-site, primarily through monitoring fuel consumption to track construction greenhouse</li> </ul>	<b>Responsibility</b> Environmental Advisor CU

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ELEMENT	GREENHOUSE GASES
	gas emissions, detect trends early and implement measures to address any unforeseen increases in emissions.

#### Corrective actions

Where Performance Criteria A to C are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Implement appropriate control measures promptly where monitoring indicates inefficient energy use or excessive fuel consumption.
- The Manager Environment CU will respond to all complaints in relation to implementation of mitigation measures with five business days and address valid concerns as required.
- Revise CEMP and implement further controls, including reviewing and modifying equipment, where investigations show unacceptable levels of greenhouse gas emissions.
- Implement any other corrective actions as directed by regulators.

#### Reporting

- The Environment Manager CU will review and report facilities, greenhouse gas emissions and conduct of audits, as required to continue to meet ongoing legislative requirements.
- All CU Project personnel will inform the Manager Environment CU and/or Principal's Site Representative as soon as possible in the event of a significant greenhouse gas emission issue. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.

#### Adaptive management program

- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities associated with greenhouse gas emission sources, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with greenhouse gas emissions, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.12 Minimise Impacts to Transport & Infrastructure

ELEMENT		TRANSPORT & INFRASTRUCTURE
<b>Residual Risk Level</b>	<b>Objectives</b>	
MEDIUM	To avoid disruption to existing road transport traffic from construction activities. To avoid degradation of existing road transport infrastructure from construction activities.	
<b>Aspects and Impacts</b>		
<ul style="list-style-type: none"><li>Trucks hauling construction material and construction CU Project personnel vehicles will generate additional traffic loading on existing roads.</li><li>Traffic congestion may occur at some key road intersections due to construction traffic, particularly haulage trucks.</li><li>Degradation of pavement may occur due to additional traffic loading on pavements from construction traffic, particularly haulage trucks.</li><li>Trucks hauling construction material may track soils onto roads and generate dust, reducing visibility.</li></ul>		
<b>Performance Criteria / Indicators</b>		
<ul style="list-style-type: none"><li>A. All works are managed in accordance with the relevant management plans, the applicable Commonwealth and State legislation and standards and any other relevant approvals, standards, guidelines and statutory requirements.</li><li>B. Traffic delays from construction activities do not contribute significantly to peak traffic loads.</li><li>C. Pavement conditions meet appropriate standards.</li><li>D. No substantiated complaints are received from regulators or the community in relation to construction haulage traffic.</li></ul>		
<b>Mitigation</b>		<b>Responsibility</b>
<ul style="list-style-type: none"><li>Designate haul routes and heavy vehicle routes for haulage trucks and heavy construction vehicles and inform drivers of these routes (to performance Criteria A, B and D).</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Consult and engage with Department of Transport and Main Roads (where appropriate) for road and transport aspects of the Project. This includes road improvement requirements or traffic management restrictions.</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Designate internal traffic routes on the construction site (to meet Performance Criteria A and B).</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Restrict entry and departure of heavy haulage vehicles to and from the site to standard daylight hours (to meet Performance Criteria B and D).</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Install a wheel wash where heavy vehicles move off-site (to meet Performance Criteria A).</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Implement haulage schedule for traffic if required by Road Safety Assessment Study (to meet Performance Criteria B and D).</li></ul>		Principal's Site Representative
<b>Training</b> (to meet Performance Criteria A to D)		
<ul style="list-style-type: none"><li>Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding traffic management, particularly heavy vehicle movements.</li></ul>		Principal's Site Representative
<b>Monitoring and Auditing</b>		<b>Responsibility</b>
<ul style="list-style-type: none"><li>Track heavy vehicle movements to the Project site to determine the effectiveness of traffic control measures.</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Monitor road infrastructure for haulage of rock to the Port for wear and tear and pavement degradation</li></ul>		Principal's Site Representative
<ul style="list-style-type: none"><li>Conduct traffic monitoring in the event of a complaint and/or at the request of the regulators.</li></ul>		Principal's Site Representative

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**ELEMENT TRANSPORT & INFRASTRUCTURE**

**Corrective actions**

Where Performance Criteria A to D are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Principal's Site Representative to review traffic management requirements and engage in discussions with regulators if any adverse impacts are observed / reported.
- Works Engineer CU to review intersection performance and apply alternative improvements if any adverse impacts are observed / reported.
- Principal's Site Representative to review heavy vehicle route or driver training/induction if any adverse impacts are observed / reported.
- Undertake road repairs as soon as practicable.
- Principal's Site Representative to investigate all incidents in relation to traffic management within five business days and undertake appropriate actions, including reporting to the appropriate regulator.
- Principal's Site Representative to respond to all complaints within five business days in relation to traffic management promptly and address valid concerns as required.
- Undertake a review of the CEMP to determine if further controls are needed
- Implement any other corrective actions as directed by the appropriate regulators.

**Reporting**

- All CU Project personnel will inform the Principal's Site Representative as soon as possible in the event of a significant traffic management issue. The Principal's Site Representative will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Principal's Site Representative will provide a report to the appropriate regulators within 21 days of initial notification in the event of a significant traffic management incident associated with the project.

**Adaptive management program**

- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with transport and infrastructure aspects, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with transport and infrastructure, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES. and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.13 Minimise Impacts to Cultural Heritage – Traditional Owner Cultural Heritage

ELEMENT	TRADITIONAL OWNER CULTURAL HERITAGE
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To conduct all construction activities in accordance with the <i>Aboriginal and Cultural Heritage Act 2003 Duty of Care Guidelines</i> . To avoid disturbance of significant Traditional Owner values, artefacts or places during construction activities.

##### Aspects and Impacts

- Construction activities have the potential to disturb items of cultural significance.
- Disturbance or loss of significant Traditional Owner cultural heritage values, artefacts or places may occur.

##### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans, the applicable Commonwealth and State legislation and standards and any other relevant approvals, standards, guidelines and statutory requirements.
- No loss or disturbance of significant Traditional Owner values or artefacts resulting from construction activities.
- All Traditional Owner archaeological items found during the construction activities are managed in accordance with Aboriginal and Cultural Heritage Act 2003 Duty of Care Guidelines and any requirements stated in the Cultural Heritage Management Plan (CHMP).
- No substantiated complaints from the regulators or people likely to be affected by damage to Traditional Owner areas or sites.

Mitigation	Responsibility
– Implement the existing Cultural Heritage Management Plan in consultation with Traditional Owners (to meet Performance Criteria A and D).	Port Legal Section
– Engage in ongoing consultation with Traditional Owners in accordance with the Cultural Heritage Management Plan (to meet Performance Criteria B, C and D).	Construction Team CU Contractor
– Provide cultural heritage induction to relevant CU Project personnel prior to commencement of work (to meet Performance Criteria A, B and C).	Port Legal Section
– Where Traditional Owner cultural heritage values are impacted during construction activities, works are to cease immediately in the vicinity (minimum radius of 20m) of the location pending an inspection by Traditional Owner representative(s) (to meet Performance Criteria C).	Contractors Construction Team CU
– Cease work immediately (within 100 m of the remains) if human skeletal material is discovered during construction activities. Contact immediately the Queensland Police, Cultural Heritage Coordination Unit (Department of Environment and Science (DES)) and Traditional Owner representative(s) (to meet Performance Criteria B and C).	Contractors Construction Team CU
– Works in the area are not to recommence in the vicinity of the location until agreed actions are implemented or Traditional Owner representative/s confirm issue is resolved (to meet Performance Criteria A, B and C).	Contractors Construction Team CU

##### Training (to meet Performance Criteria A to D)

- Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding cultural heritage.
- Contractors  
Manager Environment CU

Monitoring and Auditing	Responsibility
	Environmental Advisor CU

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ELEMENT	TRADITIONAL OWNER CULTURAL HERITAGE
	<ul style="list-style-type: none"> <li>– Undertake site inspections to assess the implementation of the mitigation measures to confirm that specific controls and work practices are employed and effective.</li> <li>– Review/audit toolbox/pre-start records for discussions on traditional Environmental Advisor CU owner cultural heritage aspects where issues arise</li> </ul>

#### Corrective actions

Where Performance Criteria A to D are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Port Legal to review the Cultural Heritage Management Plan and consultation protocol if there are risks of unexpected adverse impacts or in response to complaints.
- All staff to follow advice provided after site inspections by a representative from the Traditional Owners.
- Follow advice provided by Queensland Police, DES and a representative from the Traditional Owners regarding established policy and procedures for dealing with human remains.
- Port legal Section to investigate all incidents in relation to cultural heritage within five business days of initial notification and undertaken appropriate actions.
- Port Legal to respond to all complaints relating to cultural heritage within five business days and address valid concerns as required.
- Undertake a review of the CEMP and implement further controls where investigations show non-conformances in relation to cultural heritage or cultural heritage issues are identified or have the potential to occur in the future and rectify in an appropriate manner and in consultation with the Traditional Owners / DES.
- Implement any other corrective actions as directed by the appropriate regulators.

#### Reporting

- As per the requirements outlined in the CHMP or as directed following a discovery or an item or object.
- All CU Project personnel will notify the Manager Environment CU and Principal's Site Representative immediately of any findings of potential cultural heritage significance. The Port Legal Section will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU and the Port Legal Unit will inform the Traditional Owners / DES of any suspected Traditional Owner discoveries in accordance with the Cultural Heritage Management Plan.

#### Adaptive management program

- The Environmental Advisor will effectively coordinate, schedule and/or trigger risk management, auditing and reporting activities, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with Traditional owner cultural heritage, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - based on engagement or advice from Traditional Owners; and
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.14 Minimise Impacts to Cultural Heritage – General

ELEMENT	GENERAL CULTURAL HERITAGE
<b>Residual Risk Level</b>	<b>Objectives</b>
LOW	To conduct all construction activities in accordance with the <i>Queensland Heritage Act 1992</i> .  To avoid disturbance or degradation of significant heritage items or places during construction activities.
<b>Aspects and Impacts</b>	
<ul style="list-style-type: none"> <li>Construction activities have the potential to destroy items of cultural significance.</li> <li>Degradation or loss of cultural heritage items or places may occur.</li> </ul>	

##### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans, the applicable Commonwealth and State legislation and standards and any other relevant approvals, standards, guidelines and statutory requirements.
- No loss or disturbance of significant heritage items or places resulting from construction activities.
- All discoveries of potentially significant archaeological artefacts under section 89 of the Queensland Heritage Act 1992 found during the construction activities are managed in accordance with the Archaeological Investigations guideline.
- No substantiated complaints from regulators or people likely to be affected by damage to heritage areas or sites.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>Provide cultural heritage induction to relevant CU Project personnel prior to work commencing (to meet Performance Criteria A, B and C).</li> <li>Cease work around suspected heritage discoveries and notify DES immediately (to meet Performance Criteria C).</li> </ul>	Port Legal Section  Contractors Manager Environment CU

##### Training (to meet Performance Criteria A to D)

- Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding cultural heritage.

Contractors  
Manager Environment CU

Monitoring and Auditing	Responsibility
<ul style="list-style-type: none"> <li>Undertake regular site inspections to assess the effectiveness of implementation of the mitigation measures to confirm that specific controls and work practices are employed and effective.</li> <li>Review/audit toolbox/pre-start records for discussions on general cultural heritage aspects where issues arise</li> </ul>	Environmental Advisor CU Contractor  Environmental Advisor CU

##### Corrective actions

Where Performance Criteria A to D are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Port Legal Section to investigate all incidents to/discoveries of cultural heritage associated with works; including reporting to Qld Department of Environment and Science within five business days of initial notification;
- Follow advice provided by DES regarding cultural heritage discoveries.
- Port Legal Section to respond to all complaints in relation to cultural heritage within five business days and address valid concerns as required.
- Revise CEMP and implement further controls where investigations show non-conformances in relation to cultural heritage or cultural heritage issues are identified or have the potential to occur in the future and rectify in an appropriate manner and in consultation with DES.
- Implement any other corrective actions as directed by regulators.

##### Reporting

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ELEMENT	GENERAL CULTURAL HERITAGE
	<ul style="list-style-type: none"> <li>- All CU Project personnel will notify the Manager Environment and Principal's Site Representative immediately of any findings of potential cultural heritage significance. The Port Legal Section will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.</li> <li>- The Manager Environment CU will report any suspected cultural heritage discoveries to DES.</li> </ul>

#### **Adaptive management program**

- The Environmental Advisor will effectively coordinate, schedule and/or trigger risk management, auditing and reporting activities, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with Traditional owner cultural heritage, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES; and
- The Manager Environment CU will review the plan under the following circumstances:
  - where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);
  - performance reports indicate performance targets/indicators may not be achieved;
  - based on engagement or advice from local heritage experts; and
  - according to approved timeframes; or the impacts of significant environmental incidents.

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#### 5.4.15 Minimise Impacts from Visual Amenity & Lighting

ELEMENT	VISUAL AMENITY AND LIGHTING
<b>Residual Risk Level</b> MEDIUM	<b>Objectives</b> To minimise any temporary adverse visual impacts associated with construction activities. To minimise the lighting requirements for construction activities.
<b>Aspects and Impacts</b> <ul style="list-style-type: none"> <li>Local scenic amenity may be affected by construction plant, waste and suspended sediment in the marine environment (Section 5.4.2 and 5.4.10).</li> <li>Dust emissions from the construction activities could cause adverse visual effects (Section 5.4.7).</li> <li>Scenic amenity could be adversely affected by artificial light associated with the port infrastructure used during night time construction.</li> <li>Lighting may negatively impact on marine and terrestrial fauna.</li> </ul>	

#### Performance Criteria / Indicators

- All works are managed in accordance with the relevant management plans, the applicable Commonwealth and State legislation and standards and any other relevant approvals, standards, guidelines and statutory requirements.
- Minimal visual impact from dust clouds from construction activities in surrounding areas.
- Minimal light spill outside of the Port controlled areas, whilst maintaining suitable and safe navigational lighting throughout construction and reclamation.
- No substantiated complaints are received from regulators or the community in relation to visual amenity or lighting.

Mitigation	Responsibility
<ul style="list-style-type: none"> <li>Fence the construction site and install controlled access structures in a similar manner to the existing Port (to meet Performance Criteria B).</li> </ul>	Works Engineer CU
<ul style="list-style-type: none"> <li>Maintain a high standard of site cleanliness and presentation (to meet Performance Criteria B).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>Manage lighting design, installation and orientation to reduce light spill from the site ensuring it remains compliant with Operational Health and Safety, Maritime Safety and Land Use codes, (to meet Performance Criteria A and C) in order to: <ul style="list-style-type: none"> <li>Reduce light spill from the site onto the surrounding marine environment; and</li> <li>Reduce light spill from the site to shorebird habitat on the spit at the mouth of Ross River.</li> </ul> </li> </ul>	Contractors Construction Team CU
<ul style="list-style-type: none"> <li>Comply with relevant guidelines for exterior lighting, such as AS4282: Control of the Obtrusive Effects of Outdoor Lighting to minimise light spill (to meet Performance Criteria A).</li> </ul>	Contractor
<ul style="list-style-type: none"> <li>Apply light spill control measures where it is determined there is a high risk to marine and / or terrestrial fauna (to meet Performance Criteria A, C and D).</li> </ul>	Contractors
<ul style="list-style-type: none"> <li>Rockwall construction activities will be primarily daylight operations, noting reclamation works will be conducted 24 hours a day, 7 days a week (to meet Performance Criteria A, C and D).</li> </ul>	Contractors Environment Manager CU
<ul style="list-style-type: none"> <li>For operations occurring at night, ensure direction of light is away from sensitive areas (e.g. shorebird roosting sites) where possible (A, C and D).</li> </ul>	Contractors Environment Manager CU
<ul style="list-style-type: none"> <li>Review the results of each monitoring survey to capture any potentially negative trends forming in behavioural patterns (particularly shorebirds)</li> </ul>	Environmental Advisor CU

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ELEMENT	VISUAL AMENITY AND LIGHTING
	associated with the construction works lighting (to meet Performance Criteria A)

**Training** (to meet performance criteria A to E)

Contractors

- Ensure that the relevant Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding visual amenity and lighting issues.

Manager Environment CU

**Monitoring and Auditing**

**Responsibility**

- Undertake regular site inspections to monitor for water pollution, rubbish and dust associated with the construction activities.
- Conduct monitoring in accordance with the CU Site Monitoring Plan (CEMP Appendix H), augmented by the regular Port air monitoring at the boundary of the Port.
- Undertake regular inspection of areas surrounding the port development area, particularly following changed lighting conditions e.g. at different phases of the CU Project.
- Review/audit toolbox/pre-start records for discussions on construction impacts to visual amenity and lighting where issues arise

Environmental Advisor CU/  
Works Engineer CU

Environmental Advisor CU

Environmental Advisor CU  
/ Works Engineer CU

Environmental Advisor CU

**Corrective actions**

Where Performance Criteria A to E are not met at any point throughout construction and reclamation, the following corrective actions must be undertaken:

- Inspect and repair damaged fencing.
- Construction Team CU to review and modify site house-keeping practices and waste management if any adverse impacts are observed / reported.
- Manager Environment CU to review and modify dust management practices if any adverse visual impacts are observed / reported.
- Construction Team CU to review and modify lighting management practices if any adverse impacts are observed / reported.
- Vegetate or treat with dust suppression materials any reclamation land as appropriate as soon as practical after reaching final levels.
- The Manager Environment CU will commence an investigation into all incidents in relation to visual amenity or lighting control within five business days, including reporting to the appropriate regulator within statutory timeframes.
- The Manager Environment CU will respond to all complaints relating to visual amenity or lighting control within five business days and address valid concerns as required.
- Revise CEMP and implement further controls where investigations show unacceptable impacts to visual amenity or lighting.
- Implement any other corrective actions as directed by the appropriate regulators.

**Reporting**

- All CU Project personnel will inform the Manager Environment CU and Principal's Site Representative of any incidents resulting in visual amenity or lighting complaints. The Manager Environment CU will investigate and report to the Principal's Representative with any additional investigation(s) undertaken as required.
- The Manager Environment CU will inform the regulators within statutory timeframes in the event of any significant visual amenity or lighting incident.

**Adaptive management program**

- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with visual amenity and lighting, additional to any activities the contractor implements;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures and risks associated with construction lighting impacts, including in response to

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ELEMENT	VISUAL AMENITY AND LIGHTING
	<p>the risk level, changing circumstances or the results from implementing contingency response/corrective actions;</p> <ul style="list-style-type: none"> <li>- The Manager Environment CU will implement corrective actions and amended mitigation measures should the monitoring and auditing specified in this element demonstrate a risk to the environment or MNES.</li> <li>- The Manager Environment CU will address the consequences of significant environmental incidents; and</li> <li>- The Manager Environment CU will review the plan under the following circumstances: <ul style="list-style-type: none"> <li>• where new data/information is collected, as a result of implementing this plan and from new information from external sources (e.g. academic literature, EPBC policy statements);</li> <li>• performance reports indicate performance targets/indicators may not be achieved;</li> <li>• according to approved timeframes; or the impacts of significant environmental incidents.</li> </ul> </li> </ul>

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## 6 SUMMARY OF MATTERS OF NATIONAL ECOLOGICAL SIGNIFICANCE MANAGEMENT

For ease of reference, Table 6 summarises the project specific management controls, performance criteria, early warning triggers and corrective actions relevant to MNES for construction and reclamation activities. This table incorporates relevant aspects from Environmental Elements tables in Section 5.

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TABLE 6: SUMMARY OF MNES MANAGEMENT ASPECTS FOR CU PROJECT CONSTRUCTION AND RECLAMATION ACTIVITIES

OBJECTIVE	PERFORMANCE CRITERIA	CONTROLS	PERFORMANCE INDICATORS	EARLY-WARNING TRIGGER LEVELS	CORRECTIVE ACTIONS
<i>To mitigate impacts to <b>MNES</b> from the construction of the reclamation area</i>	No injury or fatality to marine megafauna as a result of rockwall construction activities.	<p>Suitably trained Marine megafauna Observers undertake visual observation of marine megafauna around active construction fronts and vessel movements</p> <p>Conduct daily pre-start checks or pre-start checks following breaks or changed activities, for marine megafauna in the nominated observations zone prior to commencing construction activities.</p> <p>Active awareness maintained of marine megafauna throughout daily construction activities, including within the exclusion zone.</p> <p>Activity ceased for rockwall construction activities if marine megafauna enter the exclusion zones as specified in the MEMP (POT 2135)</p> <p>Works do not recommence until the marine megafauna has exited the exclusion zone, or a period of 30 minutes has</p>	<p>100% of personnel undertaking marine megafauna observations are suitably trained.</p> <p>Marine megafauna exclusions zones are maintained for the duration of the rockwall construction activities</p> <p>Daily megafauna logs maintained by megafauna observers</p> <p>Daily megafauna logs audited by the Port regularly</p> <p>Construction works are ceased on 100% of occasions when marine megafauna are observed within the deemed exclusion zone.</p> <p>Underwater noise assessments confirm the exclusion zones being implemented are appropriate.</p> <p>No complaints received in relation to rockwall construction impacts on marine megafauna</p> <p>No marine megafauna stranding reports associated with rockwall construction activities</p>	<p>Change in site personnel involved in activities that require marine megafauna observation</p> <p>Daily megafauna logs missing or not present for all days of operation</p> <p>Non conformance identified from audits relating to marine megafauna observation</p> <p>Abrupt changes/ decreases in recorded stop works frequency</p> <p>Any reported marine megafauna stranding or deaths in Cleveland Bay.</p> <p>Any injured marine megafauna in the vicinity of the rockwall construction activities</p> <p>Annual results of CU megafauna monitoring</p>	<p>Refresher training for megafauna observers.</p> <p>Review of onboarding process / training matrix</p> <p>Increase frequency of audits undertaken on Marine megafauna observations to ensure no further non-conformances.</p> <p>Attendance Toolbox meetings with construction contractors</p> <p>Escalation through contractual process if consecutive CAR / non-conformances raised relating to marine megafauna observation</p> <p>Engagement of relevant marine megafauna experts to review best approach to removing trapped megafauna.</p>

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OBJECTIVE	PERFORMANCE CRITERIA	CONTROLS	PERFORMANCE INDICATORS	EARLY-WARNING TRIGGER LEVELS	CORRECTIVE ACTIONS
		elapsed since the last sighting of the animal in the exclusion zone.		programs (i.e. Inshore Dolphins, Shorebirds etc).	
	No significant reduction in marine megafauna diversity or distribution as a result of Rockwall construction activity	<p>Suitably trained Marine Megafauna Observers undertake visual observation of marine megafauna around active construction fronts and vessel movements</p> <p>Activity ceased for rockwall construction activities if marine megafauna enter the Exclusion Zones as specified in the MEMP (POT 2135)</p> <p>Induction package includes Megafauna awareness</p> <p>General site management / cleanliness maintained to a high level to prevent discharge of rubbish or oils/chemicals entering the water</p> <p>Regular reviews / audits undertaken for marine megafauna observers.</p>	<p>100% of personnel undertaking marine megafauna observations are suitably trained.</p> <p>Underwater noise assessments confirm the exclusion zones being implemented are appropriate.</p> <p>Construction works are ceased on 100% of occasions when marine megafauna are observed within the relevant exclusion zone.</p> <p>No marine megafauna stranding reports associated with rockwall construction activities.</p> <p>Pile driving procedure implemented 100% of the time.</p> <p>Daily megafauna logs maintained by megafauna observers</p> <p>Daily megafauna logs audited by the Port regularly</p> <p>No trends identified in megafauna observer daily log in megafauna presence/absence.</p>	<p>Piling operations are placed in stand-by to shut down if marine megafauna are sighted in the observation zone.</p> <p>Non conformance identified from audits relating to marine megafauna observation.</p> <p>Any change in marine megafauna diversity or distribution in known habitat areas.</p> <p>Any reported megafauna stranding, injury or deaths in Cleveland Bay</p> <p>Any reduction in marine megafauna sightings (turtles, dolphins).</p> <p>Any impacts to the nature and distribution of seagrass in Cleveland Bay other than EPBC Act approved.</p>	<p>Improvement in Management practices (rubbish, sediment, chemical storage)</p> <p>Refresher training for megafauna observers.</p> <p>Number of megafauna observation audits increased to ensure no further non-conformances.</p> <p>Investigate marine megafauna stranding's to determine cause, location</p> <p>Attend Toolbox meetings with construction contractors</p> <p>Consultation with ITAC / Department</p> <p>Review observation zones, exclusion zones based on Underwater noise assessments and provide recommendation to ITAC</p>

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OBJECTIVE	PERFORMANCE CRITERIA	CONTROLS	PERFORMANCE INDICATORS	EARLY-WARNING TRIGGER LEVELS	CORRECTIVE ACTIONS
				Annual results of CU megafauna monitoring programs (i.e. Inshore Dolphins, Shorebirds etc).	
	No permanent loss of benthic habitat beyond the development footprint	<p>Reclamation and Breakwater footprints defined in contract documentation</p> <p>Rockwall and Reclamation works will be spatially/cadastral surveyed to ensure works remain within the approved reclamation footprint (Reclamation Integrity Plan within the CEMP POT 2099).</p>	<p>100% of rockwall and reclamation works are kept within the boundary of the approved area.</p> <p>All rockwall position assessments under the Reclamation Integrity Plan confirm rockwall rocks are within the development footprint.</p>	<p>Routine on site audits identifies a potential deviation in rockwall construction alignment.</p> <p>Rock quantities not matching those expected.</p> <p>Contractor Toolbox meetings identifies concerns with placement or construction methodologies.</p>	<p>Revisit the construction methodology</p> <p>Increased frequency of review / audit/ surveys</p> <p>Identification and removal of any rocks or structures outside of the development footprint</p> <p>Escalation through contractual process</p>
	No significant long-term behavioural impacts to marine megafauna from rockwall construction activities	<p>Suitably trained Marine Megafauna Observers undertake visual observation of marine megafauna around active construction fronts and vessel movements</p> <p>Active awareness maintained of marine megafauna throughout daily construction activities, including within the exclusion zone.</p>	<p>100% of personnel undertaking marine megafauna observations are suitably trained.</p> <p>Underwater noise assessments confirm the exclusion zones being implemented are appropriate.</p> <p>Construction works are ceased on 100% of occasions when marine megafauna are observed within the exclusion zone.</p>	<p>Piling operations are placed in stand-by to shut down if marine megafauna are sighted in the observation zone.</p> <p>Rockwall Construction works or Piling do not cease when marine megafauna are observed in the exclusion zone.</p>	<p>Revisit the construction methodology</p> <p>Consultation with ITAC / Department</p> <p>Number of megafauna observation audits increased to ensure no further non-conformances.</p> <p>Review observation zones, exclusion zones based on</p>

OBJECTIVE	PERFORMANCE CRITERIA	CONTROLS	PERFORMANCE INDICATORS	EARLY-WARNING TRIGGER LEVELS	CORRECTIVE ACTIONS
		<p>Activity ceased for rockwall construction activities if marine megafauna enter the exclusion zones as specified in the MEMP (POT 2135)</p> <p>Works do not commence until the marine megafauna has exited the exclusion zone, or a period of 30 minutes has elapsed since the last sighting of the animal in the exclusion zone</p> <p>Underwater noise monitoring for rock dumping and piling noise</p>	<p>Pile driving procedure implemented 100% of the time.</p> <p>Audits of marine megafauna observers and pile driving procedure do not identify any non-conformances.</p> <p>Daily megafauna logs maintained by megafauna observers</p> <p>Daily megafauna logs audited by the Port regularly</p>	<p>Non conformance identified from audits relating to marine megafauna observation</p> <p>Any reduction in the sightings of marine megafauna (turtles, dolphins) in Cleveland Bay.</p> <p>Any change in dolphin behaviour and/or reduced presence in known habitat areas.</p> <p>Annual results of CU megafauna monitoring programs (i.e. Inshore Dolphins, Shorebirds etc).</p>	<p>Underwater noise assessments and provide recommendation to ITAC</p>

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## 7 CONTINGENCY PLANS

As part of its Quality Management System, the Port has established contingency and emergency response plans for a range of emergencies and incidents, including marine and land incidents and natural disasters. Relevant considerations and contingency actions associated with the CU Project are incorporated into these broader Port contingency and emergency response plans. Additionally, a number of the CU Project specific management plans address specific contingency procedures for specific emergencies / incidents where they have been identified as a key requirement. Table 7 details the contingency plans in place for the CU Project.

**TABLE 7: CU PROJECT CONTINGENCY PLAN**

CONTINGENCY	RESPONSE	RESPONSIBILITY	TIMEFRAME
Medical emergency	Implement Contractor's and/or the Port Emergency Response Plan	Contractor Safety Advisor CU	Immediately
Personnel fall into water	Implement Contractor's and/or the Port Emergency Response Plan	Contractor Safety Advisor CU	Immediately
Cyclone or other extreme weather event	Implement the Contractor's and/or the Port Cyclone Response Plan which details the Port's authorities and responsibilities for the management of infrastructure, vessels, port users, tenants and personnel during a cyclone or other extreme weather event. This plan establishes clear actions and steps to be taken in the preparation for, response to and recovery from a cyclone event for the Port of Townsville. Specific requirements for the CU Project equipment, including monitoring equipment deployed as part of the project, will be incorporated into this document.  In addition, the RHM has established requirements for all vessels in the event of a cyclone that will be applicable to any construction and reclamation vessels.	Contractor  Principal's Site Representative	As detailed in the cyclone readiness chart
Breach in reclamation structure	Implement CU Reclamation Integrity Management Plan	Principal's Site Representative	Immediately
Securing of water management systems in the event of extreme (severe) weather forecast	Implementation of the CU Tailwater Management Plan and the Stormwater and Erosion Control Plan; including preparatory maintenance of management systems and drains prior to wet season commencement,  Water management systems (bunds, stormwater drains) will be fit for purpose designed to withstand moderate weather conditions.	Contractor  Principal's Site Representative	Prior to extreme (severe) weather (where possible)

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Equipment falls into water	Implement Safe Work Methods as detailed in Project specific Safe Work Method Statements for rockwall construction/ reclamation activities.	Contractor	Immediately
Uncontrolled tailwater release	Implement mitigation actions in Tailwater Management Plan	Contractor Manager Environment CU	Immediately
Marine megafauna incident	In all situations, should a marine megafauna interaction or incident occur, the activity will be ceased while the animal and its injuries are assessed. Where it is safe to do, reasonable efforts will be made by the construction and reclamation crews to assist any marine megafauna following any incident. An incident report will be completed, with corrective actions to be considered and implemented, to minimise the risk of the incident being repeated. All interactions will be recorded and reported immediately.	Contractor Principal's Site Representative Manager Environment CU	Immediately
Non-CU Project related impacts on MNES (Given the length of this project, it is possible an environmental incident or impact on MNES could occur that is not directly associated with the project activities (i.e. megafauna mortality, seagrass dieback from a cyclone event etc)	In the event of such a non-project related incident, the Port will discuss these impacts within the core and project teams, with the Port ITAC and other relevant parties (i.e. monitoring contractors) to review known information of the cause and extent of the incident and impact. As part of the adaptive management of the project, consideration will be made of any relevant modifications that could be made to the project activities which may assist in minimising the pressure on and providing significant improvement to the recovery and response of the relevant MNES.  Any changes to the project activities to address non-project impacts will have a financial or program impact to the project. Should such changes be proposed, the Port will engage with the relevant regulators prior to making changes to discuss the proposed changes and the likely benefits to be achieved.	Port Environmental & Planning Team	To be determined according to the nature of the incident / impact

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## APPENDIX A

### COMMONWEALTH & STATE LEGISLATION

Level	Title	Relevance
Commonwealth	<i>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</i>	Regulates the preservation and protection against desecration of areas and objects that are of Aboriginal or Torres Strait Island significance.
	<i>Biosecurity Act 2015</i>	Manages biosecurity threats to plant, animal and human health.
	<i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	Protects and manages nationally significant environmental and heritage matters, including the Great Barrier Reef World Heritage Area.
	<i>Great Barrier Reef Marine Park Act 1975 and regulations / zoning plans</i>	Establishes a framework for the establishment, control, management and development of the Great Barrier Reef Marine Park Authority.
	<i>Maritime Transport and Offshore Facilities Security Act 2003</i>	Establishes a requirement for maritime security plans for certain port facilities, including the Port of Townsville, which establish security zones and access procedures.
	<i>Native Title Act 1993</i>	Requires native title notification to undertake works, including the use of Unallocated State Land.
	<i>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</i>	Regulates the prevention of accidental and operational marine environment pollution from shipping.
State	<i>Aboriginal Cultural Heritage Act 2003</i>	Establishes a duty of care to take all reasonable and practicable measures to ensure activities do not harm Aboriginal cultural heritage.
	<i>Coastal Protection and Management Act 1995</i>	Provides the framework for integrated management of the coastal zone, including the assessment and approval of tidal works structures and operational works under tidal water. All methods of land placement of dredge material remove sediments from the active marine system and consequently are assessed in the light of coastal processes and management requirements.
	<i>Environmental Protection Act 1994 and regulations / policies</i>	Regulates relevant environmental approvals and development approvals, including for dredging-related operations and general environmental protection requirements.
	<i>Fisheries Act 1994 and regulations</i>	Protects commercial and recreational fisheries resources and their habitats, including assessment and approval of disturbance or removal of protected marine and tidal plant species, including seagrasses, mangroves and saltmarsh from the Queensland Department of Agriculture, Fisheries and Forestry. It also prohibits work in a declared Fish Habitat Area without approval and declares Dugong Protection Areas. A declared Fish Habitat Area (Cleveland Bay FHA-071) exists within Townsville port limits but outside the dredge areas and Dredge Material Placement Areas. The whole of Cleveland Bay is a declared Dugong Protection Area.

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	<i>Land Act 1994 / Land Title Act 1994</i>	Provides for the allocation of tenure over state land, including Unallocated State Land such as land below the high water mark where dredging occurs.
	<i>Marine Parks Act 2004 and Marine Parks (Great Barrier Reef) Zoning Plan</i>	Provides for the State's management of the coastal marine area along the Great Barrier Reef coast, including the state marine park.
	<i>Native Title (Qld) Act 1993</i>	Requires native title notification to undertake works, including the use of Unallocated State Land.
State	<i>Nature Conservation Act 1992</i>	Declares and manages protected areas, including the Great Barrier Reef World Heritage Area and provides for the protection of certain flora and fauna.
	<i>Planning Act 2016 and the State Planning Policy and assessment provisions</i>	Requires certain developments within the port limits to be assessed for their environment effects and to be approved through the associated State Assessment and Referral Agency system.
	<i>Queensland Heritage Act 1992</i>	Provides for the conservation of Queensland's historical cultural heritage.
	<i>State Development and Public Works Organisation Act 1971</i>	Defines "significant projects" as coordinated projects and allows the Coordinator General to decide whether such projects require a formal EIS or a more simplified Impact Assessment Report.
	<i>Sustainable Ports Development Act 2015</i>	Aims to provide for the protection of the Great Barrier Reef World Heritage Area, through management port-related development in and adjacent to the area
	<i>Transport Infrastructure Act 1994</i>	Requires the Port to establish, manage and operate efficient port facilities and services, including the provision of safe navigational channels and to prepare land use plans for management and development in port areas.
	<i>Transport Operations (Marine Pollution) Act 1995</i>	Outlines the requirements for ship-sourced pollution management in Queensland.
	<i>Transport Operations (Marine Safety) Act 1994</i>	Regulates the operation of commercial vessels in Queensland waters.

## OBLIGATIONS UNDER THE ENVIRONMENTAL PROTECTION ACT 1994

### General Environmental Duty

Section 319 of the *Environmental Protection Act 1994* states that every person has a general environmental duty, which requires that 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 prevent or minimise the harm. The following must be considered when deciding measures to be taken to fulfil the general environmental duty:

- The nature of the harm or potential harm;
- The sensitivity of the receiving environment;
- The current state of technical knowledge for the activity;
- The likelihood of successful application of the different measures that might be taken; and
- The financial implications of the different measures as they would relate to the type of activity.

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The general environmental duty is a defence to offences related to causing unlawful environmental harm. If defendants can show that the harm happened while a lawful activity, apart from this Act, was being carried out and they fulfilled their general environmental duty, then they cannot be found guilty of causing unlawful environmental harm. A person is not prosecuted for failing to fulfil their general environmental duty. However, an environmental protection order can be issued to secure compliance with the general environmental duty and if this is not complied with, the person can be prosecuted.

### **Duty to Notify**

Section 320 of the *Environmental Protection Act 1994* states a person must report the event, no later than 24 hours after becoming aware of serious or material environmental harm being caused or threatened by an activity that they are involved in, unless the harm is authorised by the regulator. Failure to fulfil this duty to notify of environmental harm is an offence and can lead to prosecution.

### **Offence to Cause Serious or Material Environmental Harm**

Sections 437 to 439 of the *Environmental Protection Act 1994* state that a person must not wilfully and/or unlawfully cause serious environmental harm or material environmental harm. Serious environmental harm is environmental harm (other than environmental nuisance):

- a) that is irreversible, of a high impact or widespread; or
- b) caused to:
  - (i) an area of high conservation value; or
  - (ii) an area of special significance, such as the Great Barrier Reef World Heritage Area; or
- c) that causes actual or potential loss or damage to property of an amount of, or amounts totalling, more than the threshold amount; or
- d) that results in costs of more than the threshold amount being incurred in taking appropriate action to:
  - (i) prevent or minimise the harm; and
  - (ii) rehabilitate or restore the environment to its condition before the harm.

Material environmental harm is environmental harm (other than environmental nuisance):

- a) that is not trivial or negligible in nature, extent or context; or
- b) that causes actual or potential loss or damage to property of an amount of, or amounts totalling, more than the threshold amount but less than the maximum amount; or
- c) that results in costs of more than the threshold amount but less than the maximum amount being incurred in taking appropriate action to:
  - (i) prevent or minimise the harm; and
  - (ii) rehabilitate or restore the environment to its condition before the harm.

### **Offence to Cause Environmental Nuisance**

Section 440 of the *Environmental Protection Act 1994* states that that a person must not wilfully and/or unlawfully cause environmental nuisance. Environmental nuisance is unreasonable interference or likely interference with an environmental value caused by—

- a) aerosols, fumes, light, noise, odour, particles or smoke; or

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- b) an unhealthy, offensive or unsightly condition because of contamination; or
- c) another way prescribed by regulation.

### **Offence to Contaminate Water**

Section 440ZG of the *Environmental Protection Act 1994* states that a person must not unlawfully deposit a prescribed water contaminant in waters or unlawfully release stormwater run-off into waters, including stormwater drains. Prescribed water contaminants include sand, soil, silt or mud and a contaminant which is likely to cause environmental harm if it enters waters.

### **Offence to Cause Environmental Harm or Nuisance with Contaminant**

Section 443 of the *Environmental Protection Act 1994* states that a person must not cause or allow a contaminant to be placed in a position where it could reasonably be expected to cause serious or material environmental harm or to cause environmental nuisance. A contaminant can be:

- a) A gas, liquid or solid; or
- b) An odour; or
- c) An organism (whether alive or dead), including a virus; or
- d) Energy, including noise, heat, radioactivity and electromagnetic radiation; or
- e) A combination of contaminants.

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## APPENDIX B

### EPBC APPROVAL CONDITIONS REFERENCE TABLE

REF	COND. NO.	CONDITION REQUIREMENT	PLAN REFERENCE	DEMONSTRATION OF HOW THE PLAN ADDRESSES THE CONDITION REQUIREMENT
1	8	The person taking the action must ensure that: <ul style="list-style-type: none"> <li>a) the reclamation area does not exceed 110 hectares at <b>stage 1</b> of the action in accordance with Appendix 8;</li> <li>b) the reclamation area does not exceed 152 hectares in total, in accordance with Appendix C; and</li> <li>c) the design, materials and methods of construction for the reclamation area must prevent water quality impacts from leaching material through the bund wall, release of tailwater and storm-water run-off.</li> </ul>	5.4.1 5.4.2	Sections 5.4.1 (Land) and 5.4.2 (Marine Water and Sediment) address actions associated with reclamation integrity. This includes monitoring to ensure the reclamation area does not exceed the planned area and design and monitoring arrangements to ensure the constructed reclamation area is fit for purpose.
2	9	The person taking the action must ensure that a survey of the reclamation area in Appendix 8 is undertaken before the <b>commencement</b> of the action, and a survey of the final reclamation area shown in Appendix C is undertaken before the <b>commencement of stage 2</b> of the action, to determine the presence and density of seagrass within the reclamation footprint.	5.4.1	Section 5.4.1 details the monitoring requirement to survey the reclamation area footprint for seagrass prior to commencement.
3	10	The person taking the action must submit a Construction Environmental Management Plan (CEMP) for the Minister's approval, which includes measures to mitigate impacts to MNES from the construction of the reclamation area before the commencement of the action. The person taking the action must not commence the action unless the Minister has approved the CEMP. The CEMP must be prepared in accordance with the Department's Environmental Management Plan Guidelines and include at least the following:	4.4  Document Control Sheet	Section 4.4 and the document approval page details the submitting and approval of the CEMP to the Department.  The action is not commenced until the CEMP is approved.
4	10a	clearly defined objectives and performance criteria to mitigate impacts to MNES from the construction of the reclamation area and the placement of dredge material in the reclamation area;	5	Section 5 details all environmental elements associated with the construction activity. Objectives and performance criteria for each element is detailed in the sub-sections.

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5	10b	details on the design, materials, and methods to be used for constructing the reclamation area, that meet best practice and/or recognised industry standards;	2	Section 2 details the construction approach for the rockwall/ reclamation area, including the design, materials and construction methods.
6	10c	specific and auditable mitigation and management measures to avoid and minimise impacts to MNES, including: controls, performance indicators, early-warning trigger levels, risk management, adaptive management strategies, corrective actions, and emergency response measures;	5	Section 5 details all environmental elements associated with the construction activity, with mitigation and management measures for each element detailed in the individual sub-sections.
7	10d	management measures for potential acid sulphate soils;	5.4.1 Appendix E	Section 5.4.1 and Appendix E detail the management measures to address potential acid sulphate soils, and corrective actions if ASS is encountered, during rockwall construction activities.
8	10e	a program to monitor the integrity of the reclamation area, including monitoring locations, methods, and frequency;	Appendix F	Appendix F provides details of the design, standards and monitoring program to ensure the integrity of the reclamation area.
9	10f	a program to monitor, manage and treat tailwater before release into the marine environment;	Appendix G	Appendix G details the management and monitoring program associated with tailwater discharge from the reclamation area.
10	10g	management measures to maintain the integrity of the reclamation area in the case of extreme weather events;	5.4.1 5.4.2 5.4.3 7 Appendix F	Sections 5.4.1, 5.4.2 and 5.4.3 address actions associated with reclamation integrity. Section 7 provides contingency planning that includes in the event of reclamation integrity issues.  Appendix F provides details of the design, standards and monitoring program to ensure the integrity of the reclamation area.
11	10h	an outline of the involvement of scientific and technical experts in the development of the CEMP, and procedures for the involvement of scientific and technical experts in the development of associated monitoring programs;	4.1 4.2	Section 4.1 details the involvement of scientific and technical experts in the development of the CEMP and associated sub-plans.  Section 4.2 details the peer review of the CEMP, which includes review by technical experts.
12	10i	contingency plans should undesirable or unforeseen impacts occur, including as a result of extreme weather events or any additional pressures that may impact MNES;	7	Section 7 details contingency plans for key potential emergencies and incidents associated with the construction of the rockwall that may increase the risk to MNES.

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13	10j	mechanisms for the regular review of the performance of the CEMP in achieving its objectives to support continuous improvement;	4.8 4.13	Section 4.8 and 4.13 outline the approach for regular review of the CEMP, including at least annual reviews and regular auditing.
14	10k	procedures for reporting to the Department on outcomes of environmental monitoring, performance monitoring and periodic reviews of the CEMP;	4.14	Section 4.14 outlines the approach for reporting to the Department on the outcomes of CEMP delivery, monitoring and reviews/auditing of the CEMP.
15	10l	mechanisms for stakeholder consultation on the implementation of the CEMP; and	4.1 4.8 4.17	Section 4.1, 4.8 and 4.17 detail the consultation with stakeholders undertaken in the development of the CEMP, linking to stakeholder consultation/engagement mechanisms (Section 4.16) moving forwards.
16	10m	an outline of the governance structure, including roles and responsibilities for implementing the CEMP.	4 particularly 4.6	Section 4, especially section 4.6 (Organisational structural and responsibilities) provides details of the internal Port governance structure. This includes detailing the responsibilities of key roles with implementation of the CEMP.
17	11	The approved CEMP, or subsequent version of the CEMP as provided for under Condition 38, must be implemented.	4.5	Section 4.5 details the implementation of the CEMP and the responsibility for ensuring the CEMP actions are installed, taken and maintained.
18	25	The person taking the action must provide an opportunity for Indigenous people to comment on the management plans and strategies specified in this approval during their preparation. The person taking the action must provide to the Minister a copy of the outcomes of consultation with Indigenous people, and an explanation of how any comments have been addressed in the management plans and strategies.	4.1 4.17	Section 4.1 and 4.17 detail the consultation with indigenous stakeholders undertaken in the development of the CEMP, linking to stakeholder consultation/engagement mechanisms (Section 4.16) moving forwards.
19	31	Unless otherwise agreed in writing by the Minister, each plan or strategy specified in the conditions must be independently peer reviewed before submission to the Minister for approval.	4.2	Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans.
20	32	The reviews undertaken for Condition 31 must include an analysis of the effectiveness of the avoidance and mitigation measures in meeting the outcomes, targets or management measures identified in the plan/s or strategies being reviewed.	4.2	Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans.

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21	33	Unless otherwise specified in these conditions or notified in writing by the Minister, the person taking the action must provide to the Minister a copy of all advice and recommendations made by the independent peer reviewer(s) with the plan or strategy, and an explanation of how the advice and recommendations will be implemented, or an explanation of why the person taking the action does not propose to implement certain recommendations.	4.2	Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans.  The peer review comments and Port advice and response has been supplied to the Department as part of the Management Plan approval process.
22	35	The person taking the action must maintain accurate records substantiating all activities associated with, or relevant to, the conditions of approval, including measures taken to implement the management plans and strategy required by this approval, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act or used to verify compliance with the conditions of approval.  Note: Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media."	4.15	Section 4.15 outlines the records management system in operation for the CU Project in line with the Port Quality Management System.
23	36	Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of any management plans as specified in the conditions. Documentary evidence providing proof of the date of publication and non-compliance with any of the conditions of this approval must be provided to the Department at the same time as the compliance report is published.	4.14	Section 4.14 details the annual reporting for the project, covering a compliance review against the Approval conditions, outcomes of environmental monitoring and CEMP periodic review results.
24	38	The person taking the action may choose to revise a management plan approved by the Minister under Conditions 5, 10 and 12 without submitting it for approval under section 143A of the EPBC Act, if the taking of the action in accordance with the revised plan would not be likely to have a new or increased impact. If the person taking the action makes this choice they must:	4.8	Section 4.8 identifies the option of amending the CEMP without submitting it for approval and specifies the steps to be taken if this option is implemented.

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		<ul style="list-style-type: none"> <li>a. notify the Department in writing that the approved plan has been revised and provide the Department with an electronic copy of the revised plan;</li> <li>b. implement the revised plan from the date that the plan or strategy is submitted to the Department; and</li> <li>c. for the life of this approval, maintain a record of the reasons the approval holder considers that taking the action in accordance with the revised plan would not be likely to have a new or increased impact.</li> </ul>		
25	39	The person taking the action may revoke their choice under Condition 38 at any time by notice to the Department. If the person taking the action revokes the choice to implement a revised plan, without approval under section 143A of the Act, the plan approved by the Minister must be implemented.	4.8	Section 4.8 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.
26	40	Condition 38 does not apply if the revisions to the approved plan or strategy include changes to environmental offsets provided under the plan or strategy in relation to a matter protected by a controlling provision for the action, unless otherwise agreed in writing by the Minister. This does not otherwise limit the circumstances in which the taking of the action in accordance with a revised plan or strategy would, or would not, be likely to have new or increased impacts.	4.8	Section 4.8 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.
27	41	<p>If the Minister gives a notice to the person taking the action that the Minister is satisfied that the taking of the action in accordance with the revised plan would be likely to have a new or increased impact, then:</p> <ul style="list-style-type: none"> <li>a. Condition 38 does not apply, or ceases to apply, in relation to the revised plan; and</li> <li>b. the person taking the action must implement the plan approved by the Minister.</li> </ul>	4.8	Section 4.8 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.
28	42	Conditions 38, 39, 40 and 41 are not intended to limit the operation of section 143A of the EPBC Act which allows the person taking the action to submit a revised plan to the Minister for approval.	4.8	Section 4.8 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.

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29	44	Unless otherwise agreed to in writing by the Minister, the person taking the action must publish all management plans, reports and strategies referred to in these conditions of approval on their website. Each management plan, report and strategy must be published on the website within 1 month of being approved by the Minister or being submitted under Condition 38a).	Document Control Sheet	The document control sheet (pg. 2) identifies the date when the CEMP and associated sub-plans were published on the Port website.
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## APPENDIX C

### CONTACT DETAILS FOR CU PROJECT

Position	Organisation	Phone Numbers	Email
Principal's Representative	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Principal's Site Representative	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Manager Environment CU	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Works Engineer CU	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Environmental Advisor CU	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Environmental Advisor CU	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Safety Advisor CU	Port	1800 531 561	<a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a>
Port Tower	Port Duty Officer	07 4781 1683	
Regional Harbour Master	Maritime Safety Queensland	07 4421 8100	<a href="mailto:townsville.maritime@msq.qld.gov.au">townsville.maritime@msq.qld.gov.au</a>

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## APPENDIX D

### EXTRACT FROM POT442 – RISK MANAGEMENT GUIDELINES

#### ANNEXURE A – QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

Rank		Operations (Trade)	Financial Loss	Asset Loss	Interruption to Services	Reputation, Image & Political Implications	Performance	Criminal Penalty	Information Security	Safety	Health	ENVIRONMENT	
												Nature & Extent of Potential / Actual Environmental Harm	Frequency, Intensity, Duration, Offensiveness of Activity
1	Insignificant	Insignificant impacts on operations and trade. No navigation closure. Insignificant delays.	\$0 - \$50K	Little or no impact on assets	< ½ day	Unsubstantiated, low impact, low profile or no news items. No political implications.	Up to 5% variation to KPI	Pecuniary	Can be dealt with by routine operations.	Minor temporary – irritation, first aid treatment required.	Reversible health effects of concern.	Environmental Nuisance resulting in insignificant impacts on the natural receiving environment, plants and/or wildlife. No impact on community or business.	Low frequency / intensity / duration activity (days). No substantiated offensive amenity impacts on surrounding area.
2	Minor	Minor impact on operations and trade. No navigation closure but minor revenue loss due to loading or unloading delays.	\$50K - \$500K	Minor loss or damage to assets	½ - 1 day	Substantiated, low impact, low news profile. Minor political implications resulting in minor local media attention.	5 -10% variation to KPI	Pecuniary	May threaten the efficiency or effectiveness of some aspect of the infrastructure but would be dealt with internally.	Minor temporary – medical treatment required.	Severe reversible health effects of concern.	Environmental Nuisance resulting in minor adverse impacts on or unreasonable interference with the natural receiving environment, plants and/or wildlife, but noticeable effect on amenity. Minimal impact on community or businesses.	Minor frequency / intensity / duration activity carried out during normal operating hours over a short term (weeks). Minor amenity impacts experienced within surrounding area with potential to trigger complaints.
3	Serious	Temporary navigation closure or prolonged restriction of navigation.	\$500K - \$5m	Major damage to assets	1 day – 1 week	Substantiated, public embarrassment, moderate impact, moderate (local) media attention. Political implications resulting in directions given by the shareholding Ministers.	10-25% variation to KPI	Imprisonment	Would not threaten the infrastructure but would mean that the program could be subject to significant review or changed ways of operating.	Major permanent – loss of body part or function.	Short term health problems or irreversible health effects of concern.	Actual or potential Material Environmental Harm resulting in noticeable adverse or unreasonable impact on the natural environment, plants and/or wildlife within surrounding area. Noticeable impact on community or businesses.	Medium frequency / intensity / duration activity carried out for a significant period of time on most days or over a period of months. Adverse amenity impacts on community giving rise to multiple/sustained substantiated complaints.
4	Major	Temporary closure of a navigation channel affecting movements to the port for several days. Ensuing loss of trade.	\$5m - \$10m	Significant loss of assets	1 week – 1 month	Substantiated, public embarrassment, high impact, high (local and national) news profile, third party actions. Political implications resulting in state/ national inquiry.	25-50% variation to KPI	Imprisonment	May threaten the survival or continued effective functioning of the infrastructure or project and require top-level management intervention.	Major permanent– single fatality, total blindness, quadriplegia.	Health impacts, long term/chronic health problems or life threatening or disabling illness.	Material Environmental Harm resulting in significant adverse or unreasonable impact on the natural receiving environment, plants and/or wildlife over an extensive area as a result of the duration or magnitude or nature of impact. Extended disruption/impact to community or businesses. Potential exists to remedy the impact if the activity is ceased or impact is reversible.	High frequency / intensity / duration activity carried out during most hours of the day or impact is long term (years). Significant adverse impacts on community.
5	Catastrophic	Port closes, navigation seriously disrupted for an extended period. Serious and long term loss of trade.	>\$10m	Complete loss of assets	> 1 month	Substantiated, public embarrassment, very high multiple impacts, high widespread (national and international) news profile, third party actions. Political implications resulting in state/ national inquiry. Significant national and worldwide attention from governments and media condemning activity.	>50% variation to KPI	Imprisonment	May threaten the survival of not only the infrastructure but also the business, possibly causing major problems for clients.	Multiple fatalities	Long term, permanent or irreversible health problems. Chronic health affects too many people.	Serious Environmental Harm resulting in irreversible, high or widespread adverse impact on the natural receiving environment/high conservation or special significance area. Severe and protracted disruption/impact to community or businesses. Irreversible loss of amenity experienced.	Permanent high frequency / intensity / duration activity carried out 24/7. Serious adverse impacts on community.

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## ANNEXURE B – QUALITATIVE MEASURE OF LIKELIHOOD

Level	Descriptor	Description	Ongoing Activities	Projects
1	Rare	May only occur in exceptional circumstances	Unlikely in the life of the facility	0.1% chance
2	Unlikely	Could occur at some time	Once in 20 years	1% chance
3	Possible	Might occur at some time	Once in 5 years	10% chance
4	Likely	Will probably occur in most circumstances	Once per year	50% chance
5	Almost Certain	Expected to occur in most circumstances	Many times per year, continuous	99% chance

## ANNEXURE C – RISK EVALUATION FACTORS

	Consequence	Insignificant	Minor	Serious	Major	Catastrophic
Likelihood	Score	1	2	3	4	5
Rare	1	L 1	L 2	L 3	L 4	M 5
Unlikely	2	L 2	L 4	M 6	M 8	S 10
Possible	3	L 3	M 6	M 9	S 12	H 15
Likely	4	L 4	M 8	S 12	H 16	E 20
Almost Certain	5	M 5	S 10	H 15	E 20	E 25

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## APPENDIX E

### CU PROJECT ACID SULFATE SOIL AND CONTAMINATION MANAGEMENT PLAN

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APPENDIX F

CU PROJECT RECLAMATION INTEGRITY PLAN

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## APPENDIX G

### CU PROJECT TAILWATER MANAGEMENT PLAN

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APPENDIX H

CU PROJECT SITE MONITORING PLAN

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## APPENDIX I

### CU PROJECT STORMWATER, SEDIMENT & EROSION CONTROL PLAN

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