Document Control Sheet

Revision History

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Review History

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Document approval

Approval of the final construction Environmental Management Plan was issued on 26 February 2020.

The Construction Environmental Management Plan was published on the CU Project’s website on 11 March 2020.

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.
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

[Signature]

Full name (please print)

Marissa Wise

Organisation (please print)

Port of Townsville Limited

Date: 17 / 02 / 2020
GLOSSARY

AEIS  Townsville Port Expansion Project: Additional Information to the Environmental Impact Statement - Final (June 2017)

ASS  Acid Sulfate Soil

ASSCMP  Acid Sulfate Soil & Contamination Management Plan

Capital Dredge Material  Material (clays, silts and sands) derived from capital dredging

Capital Dredging  As defined in the NAGD, being 'dredging for navigation, to enlarge or deepen existing channels and port areas or to create new ones'

CEMP  Construction Environmental Management Plan

CU Project  Townsville Port Expansion Channel Upgrade Project

CSSPPP  Construction Ship-Sourced Pollution Prevention Plan

CVTMP  Construction Vessel Traffic Management Plan

Department / DAWE  The Australian Government Department of Agriculture, Water and Environment, or any other agency administering the Environment Protection and Biodiversity Conservation Act 1999 (Cth) from time to time

DES  Queensland Government Department of Environment and Science

DMP  Dredge Management Plan

EIS  PEP Environmental Impact Statement

EMS  Environmental Management System

EPBC Act  Environment Protection and Biodiversity Conservation Act 1999

Emergency  Any circumstance which causes, or gives rise to a risk of, serious injury or damage to a person, property or the environment

Exclusion Zone  A radius, from the centre of the pile to be driven, around pile driving operations to minimise the risks of physiological impacts to marine fauna, 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 fauna are observed within the relevant radius.

Extreme Weather Event  Includes but not limited to periods of high rainfall, strong winds, very high tides and cyclones

Fine Sediment  <15.6µm fine silt and clay

HAT  Highest Astronomical Tide

ITAC  Independent Technical Advisory Committee

LAT  Lowest Astronomical Tide

Listed Dolphin Species  Australian snubfin dolphin (Orcaella heinsohni) and Indo-Pacific humpback dolphin (Sousa chinensis)

Listed Turtle Species  Green turtle (Chelonia mydas), hawksbill turtle (Eretmochelys imbricate); flatback turtle (Natator depressus); loggerhead turtle (Caretta caretta); olive ridley turtle (Lepidochelys olivacea); and leatherback turtle (Dermochelys coriacea)
Marine Megafauna: Listed turtle species, dugong (*Dugong dugon*), listed dolphin species, and all other Cetaceans

Mechanical Dredge: A dredger that removes sediments via mechanical methods. Can include grab dredges (clamshells and buckets) or backhoe dredges.

MEMP: Marine Environmental Management Plan

Minister: The Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) and includes a delegate of the Minister

MNES: 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, *Dugong (Dugong dugon)*, Commonwealth marine area and the Great Barrier Reef Marine Park

NAGD: *National Assessment Guidelines for Dredging (2009)*, as amended or substituted

Observation Zone: The zone whereby the movement of marine fauna should be monitored to determine whether they are approaching or entering the exclusion zone. For whales, dolphins or dugongs, this includes a 2 kilometre horizontal radius from the piling equipment, and for listed turtle species, this includes a 300 metre horizontal radius from the piling equipment. An alternate distance for the observation zone may be considered, if it provides equivalent or better protection to marine fauna, in accordance with Condition 23.

OEMP: Operations Environmental Management Plan

PASS: Potential Acid Sulfate Soils

PEP: Port Expansion Project

POLREP: Marine Pollution Report

Port: The Port of Townsville

POTL: Port of Townsville Limited

RPEQ: Registered Professional Engineer of Queensland

SDS: Safety Data Sheet

Significant: An event that is important, notable or of consequence, having regard to its context or intensity, and is not temporary in nature.

Site: The new reclamation area (Lot 794 on SP308904) and the northern extent of the East Port Area at the Port of Townsville (Lot 791 on EP2348)

TOMPA: Queensland *Transport Operations (Marine Pollution) Regulation 2008*

TPAR: Townsville Port Access Road

TSHD: Trailer Suction Hopper Dredge – a self-propelled ship with a hold (hopper), and a dredging mechanism comprised of suction pipes connected to draghead(s), by which it can fill the hopper with dredge material

TSS: Total Suspended Solids

Vessel: A Ship, as defined under the TOMPA and a Domestic Commercial Vessel, as defined under the “National Law”
**TABLE OF CONTENTS**

1  Introduction .......................................................................................................................... 9
1.1 Scope .................................................................................................................................. 9
1.2 Purpose & Objectives ........................................................................................................ 11
1.3 Legislative Regime ............................................................................................................. 12
1.4 Approvals .......................................................................................................................... 13
   1.4.1 Commonwealth Approvals ......................................................................................... 13
   1.4.2 State Approvals .......................................................................................................... 13
2  Project Description ............................................................................................................. 14
   2.1.1 Construction Hours .................................................................................................... 14
   2.1.2 Construction Schedule ............................................................................................. 14
   2.1.3 Construction Design Requirements .......................................................................... 17
   2.1.4 Construction Materials ............................................................................................ 18
   2.1.5 Construction Methodology & Equipment ................................................................. 18
3  Environmental Management System ................................................................................ 23
   3.1 Environmental Policy .................................................................................................... 23
4  Governance and Management Review .............................................................................. 25
   4.1 Development of CEMP ............................................................................................... 25
   4.2 Independent Peer Review of the CEMP ....................................................................... 26
   4.3 Finalisation & Approval of CEMP ................................................................................. 26
   4.4 Implementation ............................................................................................................. 26
   4.5 Organisational Structure & Responsibilities ............................................................... 26
      4.5.1 Project Management ............................................................................................... 28
      4.5.2 Project Procurement Personnel ............................................................................... 29
      4.5.3 Project Contractors ............................................................................................... 29
   4.6 CU Project Personnel Induction, Training, Awareness & Competence ....................... 30
   4.7 Continuous Improvement ............................................................................................... 31
   4.8 Environmental Emergency Contacts and Procedures ................................................ 31
   4.9 Environmental Incidents ............................................................................................... 32
   4.10 Environmental Inspections, Non-Conformance & Preventative/Corrective Actions ...... 32
   4.11 Monitoring .................................................................................................................. 32
   4.12 Auditing ....................................................................................................................... 33
   4.13 Reporting ...................................................................................................................... 33
4.14 Records ............................................................................................................................. 34
4.15 Internal Communication ................................................................................................... 34
4.16 Community & Stakeholder Engagement ........................................................................ 35
4.17 Complaints Handling ....................................................................................................... 35
5 CEMP Activities & Elements ............................................................................................ 36
5.1 Risk Assessment of Environment Elements .................................................................... 36
5.2 Uncertainty associated with CEMP success ................................................................... 43
5.3 Structure of the Element Assessment .............................................................................. 46
5.4 Land .................................................................................................................................. 47
5.5 Marine Water & Sediment ............................................................................................... 50
  5.5.1 Stormwater, Sediment & Erosion Control ................................................................. 50
  5.5.2 Tailwater ....................................................................................................................... 53
5.6 Marine Ecology ............................................................................................................... 56
5.7 Terrestrial Ecology .......................................................................................................... 59
5.8 Weed & Animal Pest Management .................................................................................. 62
5.9 Air ..................................................................................................................................... 65
5.10 Noise & Vibration ......................................................................................................... 68
5.11 Hazardous Materials Handling & Storage ..................................................................... 72
5.12 Waste Management ....................................................................................................... 76
5.13 Greenhouse Gases ........................................................................................................ 79
5.14 Transport & Infrastructure ............................................................................................ 81
5.15 Cultural Heritage ........................................................................................................... 84
  5.15.1 Traditional Owner Cultural Heritage ........................................................................... 84
  5.15.2 General Cultural Heritage .......................................................................................... 86
5.16 Visual Amenity & Lighting ............................................................................................. 88
6 Summary of Matters of National Ecological Significance Management ................................ 91
7 Contingency Plans ............................................................................................................. 95
Appendix A .......................................................................................................................... 97
  Commonwealth & State Legislation .................................................................................... 97
Appendix B ............................................................................................................................ 102
  EPBC Approval Conditions Reference Table ..................................................................... 102
Appendix C ........................................................................................................................... 109
  Contact Details for CU Project .......................................................................................... 109
Appendix D ........................................................................................................................... 111
Environmental Incident Written Notice Form ................................................................. 111

Appendix E ...................................................................................................................... 114

Extract from POT442 – Risk Management Guidelines .................................................. 114

Appendix F ...................................................................................................................... 117

CU Project Acid Sulfate Soil and Contamination Management Plan ................................ 117

Appendix G ...................................................................................................................... 118

CU Project Reclamation Integrity Plan ........................................................................ 118

Appendix H ...................................................................................................................... 119

CU Project Tailwater Management Plan ..................................................................... 119

Appendix I ...................................................................................................................... 120

CU Project Site Monitoring Plan ............................................................................. 120

Appendix J ...................................................................................................................... 121

CU Project Stormwater, Sediment & Erosion Control Plan ....................................... 121

TABLES

Table 1: Phases of CU Project & Associated Management Plans ........................................ 11
Table 2: Risk Overview for the key Activities and Elements for the land-based construction activities .... 37
Table 3: Key uncertainties associated with Management of the CU Project .................. 43
Table 4: CEMP Element Assessment Structure ............................................................... 46
Table 5: Summary of MNES Management aspects for CU Project Rockwall Construction ................................................ 92
Table 6: CU Project Contingency Plan ........................................................................ 95

FIGURES

Figure 1: Locality Plan of the Port of Townsville & CU Project ........................................ 10
Figure 2: Lot Plan for CU Project Rock Wall Construction & Reclamation Activities .......... 15
Figure 3: Site Plan for CU Project Capital Dredging Activities ....................................... 16
Figure 4: Indicative CU Project Staging Schedule ........................................................... 17
Figure 5: Typical Rock Wall General Cross Section ...................................................... 21
Figure 6: Tailwater Outlet Weir Box Location and General Cross Section .................... 22
Figure 7: Environmental Policy .................................................................................. 24
Figure 8: CU Project Organisational Chart ................................................................. 27
1 INTRODUCTION

Port of Townsville Limited (POTL) is a Government Owned Corporation established under the Government Owned Corporations Act 1993, which manages the Port of Townsville (the Port). 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 km². 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 POTL’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; and capital dredging and placement of capital dredge material at the Port. 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 rock walls to form the reclamation area;
- Placement of capital dredge material in the reclamation area; and
- Management of capital dredge tailwater at the reclamation area.

This CEMP is only one of a number of management plans which will be implemented in the CU Project as listed in Table 1.
Figure 1: Locality Plan of the Port of Townsville & CU Project
Table 1: Phases of CU Project & Associated Management Plans

<table>
<thead>
<tr>
<th>Phase</th>
<th>Management Plan</th>
<th>Description of Content</th>
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<tr>
<td>Rock wall &amp; Reclamation</td>
<td>Offset Management Strategy (Reclamation)</td>
<td>Outlines the offset management strategy for the construction of the rock wall</td>
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<td></td>
<td>Construction Environmental Management Plan (CEMP)</td>
<td>Outlines the overview of the construction and reclamation activities and associated environmental management requirements and contingency plans for extreme weather events</td>
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<tr>
<td></td>
<td>Marine Environmental Management Plan (MEMP)</td>
<td>Outlines the environmental management requirements for Matters of National Environmental Significance (MNES) in relation to construction activities</td>
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<td></td>
<td>Construction Vessel Traffic Management Plan (CVTMP)</td>
<td>Outlines the navigational safety and environmental requirements for all vessels during the construction activities</td>
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<tr>
<td></td>
<td>Construction Ship-Sourced Pollution Prevention Plan (CSSPPP)</td>
<td>Outlines the environmental requirements to prevent pollution from vessels during the construction activities</td>
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<td></td>
<td>Inshore Dolphin Monitoring Plan</td>
<td>Outlines the monitoring program for the inshore dolphins</td>
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<tr>
<td>Capital Dredging</td>
<td>Offset Management Strategy (Dredging)</td>
<td>Outlines the offset management strategy for the capital dredging</td>
</tr>
<tr>
<td></td>
<td>Dredge Management Plan (DMP)</td>
<td>Outlines the overview of the capital dredging activities (including trigger levels) and associated environmental management requirements and contingency plans for extreme weather events</td>
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<td>Updated Marine Environmental Management Plan (MEMP)</td>
<td>Outlines the environmental management requirements for MNES in relation to the capital dredging activities</td>
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<tr>
<td></td>
<td>Updated Construction Vessel Traffic Management Plan (CVTMP)</td>
<td>Outlines the navigational safety and environmental requirements for all vessels during the capital dredging activities</td>
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</tr>
<tr>
<td>Operations</td>
<td>Operations Environmental Management Plan (OEMP)</td>
<td>Outlines the environmental requirements for operational activities associated with the expanded future outer harbour operations</td>
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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 by identifying and detailing 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 POTL 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:

- Overview and provide a description of construction activities, methodologies and timing;
- Identify potential and actual environmental aspects and impacts associated with the construction activities;
- Describe POTL’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 the air emissions produced during construction activities and thereby reduce potential effects on the natural airshed;
- 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);
- 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

Descriptions of each MNES and a summary of previous survey results for threatened and migratory marine fauna 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

2 PROJECT DESCRIPTION

The CU Project primarily involves:

- Supply and haulage of marine-grade armour rock required for rock walls and revetments at the Port;
- Creation of a ~62-hectare reclamation area (Figure 2) via the construction of rock walls and revetments forming initial settling ponds 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 (Figure 3) using predominately a mechanical dredge, involving:
  - On its western side to widen the Platypus Channel from 92 metres width to 180 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; and

Works may also require the installation of temporary unloading jetty structure to facilitate the reclamation works, this will be constructed only if required.

The capital dredging, construction activities and infrastructure development for the CU Project will occur inside the existing port limits, the designated water areas in which navigation falls under the control of the Regional Harbour Master (RHM). Land-based construction activities will occur on the new reclamation area, namely Lot 794 on SP308904 and the northern extent of the East Port area, namely Lot 791 on EP2348 (the site), which is Strategic Port Land (Figure 2). The construction site is fenced, and access controlled in accordance with safety legislation for construction sites (including signage and security controls) and POTL port security protocols, i.e. POTL is responsible for port security. Temporary trunk services (sewer, water supply and telecommunications) have been commissioned in accordance with standard procedures.

The capital dredge campaign will last approximately 2 to 3 years and dredge approximately 3.9 million cubic metres from the channels predominantly using a mechanical backhoe dredge, with support from a trailer suction hopper dredge (TSHD). All the 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.

2.1.1 Construction Hours

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

- Rock delivery/haulage hours between 6:00am and 6:00pm Monday to Saturday;
- On-site rock wall construction activities between 6:00am and 6:00pm Monday to Sunday; and
- On-site dredging and reclamation activities 24 hours per day Monday to Sunday.

2.1.2 Construction Schedule

Construction of the land-side infrastructure for the CU Project is scheduled to occur over seven years (Figure 4), noting that this schedule includes preliminary planning and site preparation activities that commenced in 2017. The CU Project requires construction of the perimeter rock walls and sheltered internal wall 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 rock walls commenced in April 2019 and will continue for approximately 24 months. Rock wall construction will commence in the first half of 2020 and take
approximately 18 months. Dredging and reclamation will commence in the first half of 2021, lasting for approximately 24 – 36 months.

Figure 2: Lot Plan for CU Project Rock Wall Construction & Reclamation Activities
Figure 3: Site Plan for CU Project Capital Dredging Activities
The basic assumptions leading to the programme of works are:

1. Approval conditions precedence for commencement of construction activities:
   a. Award of tenure over Unallocated State Land from State Government;
   b. Approval/acceptance of associated submissions to Federal/State Governments;
   c. Receipt of Tidal Works Approval from State Government; and
   d. Completion of associated environmental baseline programs.

2. Rock wall construction working hours are Monday-Sunday up to 12 hours per day dependent upon tidal ranges (may need to stand down for part of the day due to tide levels). An allowance of 30 days per year has been accommodated in the program as contingency to allow for downtime due to unfavourable weather conditions. The site will be closed for Public Holidays and short periods over Easter and Christmas to enable all staff and contractors to take leave.

3. Daily placement of up to 4,000 tons of rock material by a fleet of civil land-based and marine-based construction equipment. The equipment will all be sized appropriately to work within its safe operating limits. This includes using larger sized excavators to allow safe placement of the heavy primary armour at the toe of the wall and significant distances from the core platform. All operators will be appropriately skilled.

4. Completion of rock wall works including the installation of geotextile and primary outside armour will be completed within 18 months. Completion of the wall is to be sequenced in with the commencement of the capital dredge campaign.

5. Reclamation working hours are Monday-Sunday 24 hours per day sequenced in with the capital dredge activities.

### 2.1.3 Construction Design Requirements

The perimeter rock walls 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”. They will be constructed to retain fine sediments within the reclamation area, to avoid the uncontrolled loss of fine sediments from the capital dredge material.
through the rock walls and into Cleveland Bay (see Reclamation Integrity Plan (Appendix G)). The construction design will be 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 will be 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 G).

Further to these design requirements, POTL will ensure that the final constructed rockwall is certified by a Registered Professional Engineer of Queensland (RPEQ) as having been constructed in accordance with the approved design plans, the applicable regulations and good engineering practice.

During the first year of the capital dredge campaign, a small size TSHD will be deployed to dredge the Sea Channel (300-400,000 m$^3$). The TSHD campaign will last for 4-6 weeks and will take place only during the dry season when HAT is not predicted. It will not take place under any unfavourable weather conditions, as per AEIS recommendations and approval conditions. Every 4-6 hours (or less to avoid material settling on the bottom of the hopper), the capital dredge material will be pumped from the TSHD into the reclamation area, which has been sized to contain the volume of both the material and the pumped water quantity (tailwater).

The balance of the capital dredge campaign will be performed by a backhoe dredger. The capital dredge material will be transported in barges to an unloading area at the reclamation structure, where civil equipment will unload and distribute the material throughout the reclamation area. The rock wall will incorporate a height adjustable weir box to allow the control of tailwater releases and to facilitate the release of sea water as the reclamation area fills with time.

2.1.4 Construction Materials

Selected rock products will be required from external land sources to build rock walls 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 heavy strength filter material Geotextile (e.g. 1200R or similar), will also be installed as a rock wall filter system to ensure the capital dredge material is filtered and maintained within the reclamation area. Once constructed, the reclamation area will be reclaimed (filled) with material from the capital dredge campaign. Capping and pavement layers on the surface of the reclamation will be built with engineered fill material, again from external land sources.

POTL will use quarries and suppliers within the Townsville Region to supply the rock and fill material required for the rock walls and reclamation area. Construction materials will be transported to the site by road predominantly via the Eastern Access Corridor along Townsville Port Access Road (TPAR). All rock materials used will be of volcanic origin meeting the rock wall design requirements in terms of strength, durability and chemical composition. Testing will take 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. POTL is conducting a series of quality testing on top of the requirements from the quarry suppliers to further mitigate risks with the quarry product quality.

2.1.5 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 state of construction works, a Method Statement 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;

• 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 will be required to monitor rockwall construction quality and verification during the rockwall build against the design specification and applicable standards. This will include providing surveys of the completed works to demonstrate compliance within tolerances detailed in the design specification. The Reclamation Integrity Plan (Appendix G) details the complete integrity assessment program. These quality management arrangements will be a key part of the confirming practical completion of the rock bund wall and certification by RPEQ as fit for intended purpose of use.

**Bottom rock wall lift with containment filtering system installed**

Step 1: Approved quarry material will be transported and stockpiled on land which has been strengthened to handle the weight of the stockpiles and allow safe operation of the machinery (including road trucks). The stockpile area is next to the rock wall construction site to limit interfaces with other POTL stakeholders and reduce travel by the articulated dump trucks to and from the construction site.

Step 2: The toe lines of the rock wall will be surveyed, and markers placed in the water to allow visual reference for the construction teams. As works progress, the Surveyor will survey on the newly formed wall at regular intervals to pick up the wall profile and ensure the alignment is within the approved footprint.

Step 3: Marine megafauna observers will be trained by specialists and will monitor the construction zone to limit any potential impacts on marine fauna. Records will be kept of all daily observations, including environmental conditions and sightings and works stoppages due to marine megafauna sightings in the vicinity of the construction area.

Step 4: The eastern most wall will commence first (next to Ross River), as this wall generally fronts the prevailing swells and winds and will generate a leeward shelter as it progresses. Construction of the new rock wall will commence 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. Heavy duty geotextile will be 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.

Step 5: The Lower lift of the rock wall will then be constructed in accordance with the approved design drawings, (see Figure 5 for the general cross section). Construction teams will work to tidal window conditions throughout each day to allow the wall to be built and armour placed as required.

Step 6: In parallel, the construction teams will undertake the build of the western rock wall following the same build sequencing as for the Eastern rock wall.

Step 7: Construction of both the eastern and western walls will continue to the northern most extent of the reclamation structure. Construction of the northern wall will then proceed and meet roughly in the middle of the northern rock wall. Prior to reclamation area being closed and throughout the
works, the environmental and construction teams will check the pond for any trapped marine fauna. Relevant experts will be engaged to remove any trapped species. Small vessels and marine fauna observers will provide support to the construction teams throughout the program of works.

Step 8: The construction teams will also install the geotextile. The material will be prepared on land with a weight sewn into the base and smaller steel bars sewn in periodically along the section, effectively creating weight in the section. This weight will assist the construction teams to lay out the geotextile on the wall and hold it in place while core rock is placed over it, anchoring it to the wall.

Step 9: The prepared geotextile will be laid out over the wall with adequate overlap between each section, so that no gaps occur in the geotextile layer. Core rock will be placed over the geotextile to anchor it permanently to the wall. The geotextile will ‘wrap’ from past the toe on the inside of the structure, up onto the back end of the wall, over the access road and around the primary armour.

On completion of the bottom lift, a RPEQ will provide sign off that the structure meets design and quality specifications before capital dredging can commence.

**Top rock wall lift with containment filtering system installed**

Step 10: The upper section of wall will be installed after the bottom lift is completed to allow for reclamation material and achieve the long term 30-year design life. This includes placement of geotextile and blends of core, secondary and primary armour (Figure 5), which are designed for 50 years+ design life.

Step 11: A tailwater outlet weir box will be installed in this higher section of rock wall. The weir box is set in the northern wall towards the eastern corner during the construction with the general location and set out as shown in Figure 6.

On completion of the top lift, final quality assurance will be completed and signed off by a RPEQ, confirming that the upper lift is “fit for purpose” and built in accordance with the design.
Figure 5: Typical Rock Wall General Cross Section
**Reclamation Activities**

**Step 12:** The capital dredge material will be excavated from the barges by the unloading equipment at the dredge material offloading area. Civil equipment will distribute the material into the reclamation area, throughout the life of the reclamation stage.

During daylight hours, civil land-based equipment will spread the capital dredge material to form a construction capping layer across the reclamation area. This will enable plant and equipment to access the area above the high-water mark. Care will be taken to limit the formation of mud waves during reclamation activities. In the event a mud wave forms, the construction team will direct material to another part of the reclamation area to allow the mud wave to settle. Placement of the capital dredge material will recommence after the mud wave has settled. Should the mud wave continue to generate, it will be directed towards land; tested in accordance with the Acid Sulfate Soil & Contamination Management Plan (ASSCMP); and treated as required.

**Figure 6:** Tailwater Outlet Weir Box Location and General Cross Section
3 ENVIRONMENTAL MANAGEMENT SYSTEM

The POTL Environmental Management System (EMS) complies with all applicable requirements contained in ISO 14001:2015 and encompasses environmental operations conducted at all POTL facilities. POTL 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 POTL’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 POTL’s EMS and other integrated management documents. CU Project environmental records will be controlled in accordance with POTL’s integrated management system and will be:

- Kept as objective evidence of compliance with environmental requirements; and
- Maintained according to POTL’s Recordkeeping Procedure.

Continuous improvement is a mandatory requirement of POTL’s EMS. As part of the continuous improvement, this CEMP will be updated or amended as required. Any future amendments will take into account the scope and purpose of this document and the conditions of the existing approvals.

3.1 Environmental Policy

POTL’s Environmental Policy (Figure 7) identifies POTL’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 POTL CU Project personnel;
- Communicated to all POTL CU Project personnel during induction and training; and
- Reviewed and updated regularly.

All POTL 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.
ENVIRONMENTAL POLICY

POTL is committed to sustainable development and operation through responsible environmental management and continual improvement of environmental performance and the effectiveness of its Environmental Management System.

To achieve corporate performance consistent with this policy, POTL will:

- Integrate environmental considerations and life cycle thinking into decision making and work practices related to POTL’s core functions.
- Maintain a high level of environmental awareness throughout POTL and the wider port community.
- Require and encourage employees to work in an environmentally responsible manner.
- Implement systems which act to minimise the risk of environmental harm through the identification, reporting, assessment, monitoring and control of environmental risks.
- Establish a framework for setting and reviewing environmental objectives and targets and measuring POTL’s performance.
- Establish and maintain systems for assessing the environmental impacts associated with POTL’s activities.
- Comply with all relevant legislation, codes of practice and standards.
- Conduct 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.
- Provide adequate resources and training to facilitate the fulfilment of POTL’s environmental responsibilities.

POTL’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.

June 2017

Raneen Crosby
Chief Executive Officer
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 covering the Project area;
- POTL’s Community Liaison Group (CLG), which comprises of several community representatives;
- Environmental, engineering and modelling consultants;
- The CU Project Steering Committee, which comprises members of the POTL executive management team; and
- The Commonwealth Department of Agriculture, Water and Environment (DAWE) 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. POTL 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 POTL expertise and ERM Consultants (for established groundwater locations);
- Land Survey Plans– CRS Geomatics Pty Ltd; and
- Stormwater and Sediment and Erosion Control – GHD Pty Ltd.

It is noted, above works and plans drafted by POTL directly have undergone further independent review as part of POTL 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 rockwall footprint survey 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;
- A subsequent presentation of the draft CEMP to the nominated Traditional Owners representatives on 30 May 2019. Comments raised were noted during this meeting with the
Traditional Owners Working Group asked to provide any further comments on the CEMP within a nominated timeframe. All comments received from Traditional Owners were compiled and incorporated into a revised draft CEMP. No CEMP specific queries were raised, with related comments focusing on safety measures to minimise uncontrolled fuel and chemical releases and confirmation that POTL needs to account for sea burials and artefacts in the relevant management plans. A copy of all comments made by the Traditional Owners Working Group was provided to the Minister with the CEMP;

- An update regarding the consultation with the Traditional Owners Working Group was then presented to the CU Project Steering Committee, which formally noted that the Traditional Owners Working Group had been consulted in relation to the CEMP.

4.2 Independent Peer Review of the CEMP

In accordance with Condition 31 of EPBC Approval No. 2011/5979, the draft CEMP and associated monitoring and management plans were independently peer reviewed by GHD Pty Ltd (who have not been directly involved with either the rock wall design or construction planning) 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 POTL changes, was provided to the Minister with the CEMP.

4.3 Finalisation & Approval of CEMP

The draft CEMP was originally submitted on 16/08/2019 for the Commonwealth Minister for the Environment’s approval to meet the submission timing requirements of EPBC Approval No. 2011/5979 Condition 10.

4.4 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 Project Director CU 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.

4.5 Organisational Structure & Responsibilities

A clear organisational structure for the CU Project with reporting lines (Figure 8) is in place to achieve the over-arching objective of sound operational and environmental management at the site with the least possible impacts on the environment. 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.
Figure 8: CU Project Organisational Chart

- POTL Board
- Project Steering Committee
- POTL Board
- Chief Financial Officer
  - Industrial Relations
  - Public Relations
  - Finance
- Chief Operating Officer
  - Safety
- General Manager Infrastructure and Environment
  - Project Director CU
    - Engineering
    - Quantity Survey
    - Administration
  - Manager Environment CU
    - Environmental Advisor
    - Environmental Advisor
- Third Party Contractors
  - Stockpile Management
  - Rockwall Construction
  - Dredging
  - Reclamation
4.5.1 Project Management

The General Manager Infrastructure and Environment (GM I&E)’s key responsibilities are to:

- Represent POTL’s interests and requirements in the CU Project;
- Oversee the CU Project and its execution; and
- Provide final approval of all project documentation.

The Project Director CU’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;
- Approve all project documentation;
- Report to senior POTL management on the performance of the project and environmental non-conformances etc.; and
- Liaise with regulators, in coordination with the Environmental Advisors CU, including reporting environmental incidents and complaints to the relevant regulator(s).

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 Safety Management Plan, 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 action is taken in a timely manner;
- Take action to resolve environmental non-conformances and incidents; and
- Report to the GM I&E on the performance of the project and technical, environmental and quality non-conformances etc.

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;
- 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; and

Ensure that environmental records and files are collected and maintained.

The Project Engineer CU’s key responsibilities are to:

Oversee day-to-day the construction and reclamation activities under the direction of the Project Director CU, including providing sufficient resources to ensure the CEMP controls are implemented effectively and maintaining a site activity log;

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;

Ensure all CU Project personnel are appropriately qualified and trained;

Facilitate regular environmental inspections by the Environmental Advisors CU and on-site monitoring as required under management and monitoring plans;

Report all environmental non-conformances and incidents to the Project Director CU and facilitate any investigations; and

Coordinate the response to environmental non-conformances, incidents and complaints through implementation of corrective actions, where necessary.

4.5.2 Project Procurement Personnel

The key responsibilities of the CU Project procurement personnel are to:

Ensure the State Procurement guidelines for Government Owed Corporations are satisfied;

Select suppliers and contractors carefully based upon their ability to meet stated requirements;

Verify that purchase orders and contracts include environmental requirements as necessary; and

Select material which are “environmentally friendly”, where possible.

4.5.3 Project Contractors

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

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

Manage day-to-day the construction 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, statutory approvals and legislative requirements, Australian Standards and any relevant Code of Practice and/or Industry Standard;
4.6 CU Project Personnel Induction, Training, Awareness & Competence

All CU Project personnel including contractors must attend a compulsory induction prior to commencing work at the site, which 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 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 CU Project personnel attending the induction will be instructed that all external communication pertaining to the Project is to be conducted by the Project Director CU.

To assist with managing environmental risks associated with the works, a training plan will be developed, identifying training requirements for each position within the Project in order to support the implementation of mitigation measures and corrective actions. Specific environmental and cultural heritage training will be developed for various roles and personnel, such as marine fauna observers. A training register will be maintained to record attendance at the training sessions. 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.
4.7 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. During delivery, review and amendment will also be 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; and
- New technologies / innovation relevant to applied methods and mitigation measures that provide innovative means of executing activities in order to meet 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 maintain the approval conditions and be approved by CU Project Management, before implementation.

If the revised CEMP meets Condition 38 of EPBC Approval No. 2011/5979, DAWE 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.

4.8 Environmental Emergency Contacts and Procedures

Environmental incident and emergencies will be managed in accordance with the CU Project Emergency Response Plan. This plan will be part of the POTL Emergency Response Strategy and will address a range of emergency situations and relevant procedures. This will include 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, primarily the Project Engineer CU and Project Director CU. Additionally, the project Environmental Advisor (and Environmental Manager CU) will be notified and provide technical advice and input on the incident and the most appropriate response. As per all incidents within the port, notification to the Port Tower/Duty Officer will be made.

The General Manager Infrastructure and Environment will also be notified and provide a key role in notification and reporting to POTL Executive and relevant regulators.
4.9 Environmental Incidents

All CU Project personnel and contractors will report all environmental incidents and near misses to the Project Engineer CU, who will notify the Project Director CU and Environmental Advisor CU (Key Project contacts are listed in Appendix C). Examples of environmental incidents include:

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

An Environmental Incident Investigation Form (POT 1979) will be completed, any impacts will be assessed, and corrective actions will be implemented during the investigation of any incident. 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 Project Director CU will provide an Environmental Incident Written Notice Form (Appendix D) or Marine Pollution Report (POLREP) to the appropriate regulator within 24 hours of any significant incident.

4.10 Environmental Inspections, Non-Conformance & Preventative/Corrective Actions

Project worksite inspections will be carried out daily. These inspections will be documented, and deficiencies/non-conformances recorded. Non-conformances include:

- An incident or near miss with potential or actual environmental impact;
- Reasonable and justifiable complaints regarding the construction and reclamation activities;
- Not meeting an objective or performance criteria in the CEMP, and
- Environmental inspections not undertaken within the nominated timeframe.

The Environment Manager CU is responsible for identifying and implementing any preventative and/or corrective actions in response to any non-conformances. New preventative and corrective actions will be incorporated into the CEMP where appropriate.

4.11 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)
- Marine water and sediments (Section 5.5)
- Marine Ecology (Section 5.6)
- Terrestrial Ecology (Section 5.7)
- Weed and Animal Pest Management (Section 5.8)
- Air (Section 5.9)
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 4.14.

### 4.12 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 Commonwealth, State and Local government 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 POTL Quality Management Framework.

Audits of the requirements of the CEMP (including legislative changes) will be undertaken by a suitably qualified 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.

### 4.13 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. The report will include, but not be limited to:

- Compliance with the conditions of the EPBC Approval 2011/5979 and relevant State approvals;
- Outcomes of environmental monitoring and periodic reviews of the CEMP, particularly against any performance indicators;
- A register of any environmental incidents;
- A register of environmental complaints; and
4.14 Records

During construction activities, CEMP records will be maintained as objective evidence of compliance with environmental requirements. As discussed in Section 3, all records will be maintained according to POTL’s Record Keeping Procedures and be kept for a minimum of five (5) years after the completion of the project 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 management meeting agendas and minutes;
- 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. Records will be made available to the regulators as requested.

4.15 Internal Communication

CEMP requirements will be included in daily “toolbox” meetings, which are to be performed prior to undertaking work. 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.
4.16 Community & Stakeholder Engagement

General contact details for the CU Project are:

Telephone: 1800 531 561
Email: cugeneral@townsvilleport.com.au.
Address: PO Box 1031, Townsville QLD 4810

Contact can also be made electronically via POTL'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 POTL’s website (https://www.townsville-port.com.au/channel-upgrade/project-schedule/). Consultation on the implementation of the CEMP will be undertaken through the mechanisms established in the CSEP.

4.17 Complaints Handling

Complaints represent an opportunity for improvement and enhancement of environmental performance. All complaints relating to the construction activities of 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 Community and Stakeholder Engagement Plan. Complaints received directly by the Public Relations Officer CU must be recorded, including investigations undertaken, conclusions formed and actions taken. Complaints can be made verbally, via email or via the “Complaint Lodgment Form” http://www.townsvilleport.com.au/complaint_form on POTL's website. The Public Relations Officer CU will notify the CU Project Team Line Managers who will assign a lead (pending on nature of complaint), to investigate and insert corrective measures where required.

The Public Relations Officer CU is responsible for maintaining the Register of Complaints. Notification about the complaint and any associated response will be provided to POTL Management in a timely fashion and all outcomes of complaint(s) will be communicated to POTL 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.
5 CEMP ACTIVITIES & ELEMENTS

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

- Rock wall construction;
- Bulk earthworks;
- Placement of capital dredge material in the reclamation area;
- Release of tailwater;
- Use of vehicles 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 values, 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 (once developed). 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.

Mitigation of some potential impacts, such as the removal of marine habitat due to construction of the reclamation area, will be considered through potential offsetting opportunities rather than construction management measures, and are not included in detail in this CEMP.

5.1 Risk Assessment of Environment Elements

A number of the land-based construction 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 POTL’s Quality Management System (risk tables reproduced in Appendix E).

The residual risk level for each element has been detailed in Table 2. 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 (Stage 1) from the AEIS assessment. This residual risk level has been included to ensure that it effectively links to actual mitigation and management actions.
### Table 2: Risk Overview for the key Activities and Elements for the land-based construction activities.

<table>
<thead>
<tr>
<th>Element</th>
<th>Primary Impacting Process</th>
<th>Potential Impact</th>
<th>Risk Receptor</th>
<th>Raw Likelihood / Consequence (risk rating)</th>
<th>Mitigation Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
</table>
| Land Contamination Impacts              | Failure of integrity of the rock wall has the potential to release dredge material to the marine environment.  
PASS material if not handled correctly could result in contamination of the land and release of contaminants to the marine environment.  
Spills and leaks of dangerous goods/hazardous materials can cause soil contamination and release of contaminants to the marine environment. | Release of dredged material  
Release of contaminants to marine environment | Sensitive receptors, in close proximity to Rockwall  
Marine Megafauna | Possible / Major (Substantial)  
Unlikely/ Insignificant (broad scale) (Low)  
Likely / Minor (local scale) (Medium) | Refer to section 5.4 | Medium |
| Stormwater, Sediment and Erosion control | Sediment in stormwater run-off from construction activities leading to increased turbidity of marine waters  
Exposure and potential release of sediments and contaminants from construction activities and stormwater  
Stormwater contamination may arise due to leaks and spills of fuel/oil and other hazardous materials or dangerous goods. | 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 Rockwall  
Marine Megafauna  
Indirect on human health | Likely / Minor (local scale) (Medium)  
Likely / Minor (local scale) (Medium)  
Likely / Minor (local scale) (Medium) | Refer to section 5.5.1 | Low |
<p>| 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 5.5.2 | Medium |</p>
<table>
<thead>
<tr>
<th>Element</th>
<th>Primary Impacting Process</th>
<th>Potential Impact</th>
<th>Risk Receptor</th>
<th>Raw Likelihood / Consequence (risk rating)</th>
<th>Mitigation Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marine Ecology</td>
<td>Construction activities may cause increased turbidity and spills from construction plant and equipment</td>
<td>Release to waters may affect marine water quality, marine species or the quality of their habitats</td>
<td>Sensitive receptors, in close proximity to Rockwall Marine megafauna</td>
<td>Likely / Minor (local scale) (Medium)</td>
<td>Refer to section 5.6</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Noise emissions and vibration from construction activities</td>
<td>Noise and light disturbance may lead to disorientation, disturbance or temporary avoidance by marine megafauna.</td>
<td>Noise and light disturbance may lead to disorientation, disturbance or temporary avoidance by marine megafauna.</td>
<td>Likely / Minor (local scale) (Medium)</td>
<td></td>
<td>Low (as short duration)</td>
</tr>
<tr>
<td></td>
<td>Light spill from the construction site and plant and equipment</td>
<td>Release of waste may increase the risk of entanglement and/or ingestion by marine fauna</td>
<td>Release of waste may increase the risk of entanglement and/or ingestion by marine fauna</td>
<td>Likely / Minor (local scale) (Medium)</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Terrestrial Ecology</td>
<td>Construction activities (vehicle movements and earthworks) causing direct impact</td>
<td>Direct impacts may result in disturbance/injury/mortality of terrestrial fauna, Noise and light disturbance may lead to disorientation and behavioural disturbance to fauna and surrounding avian habitats.</td>
<td>Shorebirds</td>
<td>Possible / Serious (Medium)</td>
<td>Refer to section 5.7</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Noise emissions and vibration from construction activities</td>
<td></td>
<td>Shorebirds</td>
<td>Possible / Serious (Medium)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Light spill from the construction site and plant and equipment</td>
<td></td>
<td>Shorebirds</td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Element</td>
<td>Primary Impacting Process</td>
<td>Potential Impact</td>
<td>Risk Receptor</td>
<td>Raw Likelihood / Consequence (risk rating)</td>
<td>Mitigation Measures</td>
<td>Residual Risk</td>
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</tr>
<tr>
<td>Weed and animal pest management</td>
<td>Vehicle, plant and equipment movements via rail or road may result in the introduction and/or spread of declared weeds. Incorrect handling, storage of materials and waste and stormwater management may encourage pests and provide breeding habitats for mosquitoes.</td>
<td>Introduction and/or spread of weeds / animal pests may adversely impact on terrestrial fauna Encouraging pests and mosquitoes can lead to human health impacts</td>
<td>Shorebirds</td>
<td>Possible / Serious (Medium)</td>
<td>Refer to section 5.8</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Human comfort/ health</td>
<td>Possible / Minor (Medium)</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Air</td>
<td>Constructions activities such as earthworks and vehicle movements have the potential to increase dust emissions. Construction vehicles, plant and equipment will generate fuel combustion emissions. Trucks hauling construction material may track soils onto roads and generate dust.</td>
<td>Increased dust and fuel combustion emissions may result in: Increased risks to human health; Environmental nuisance to neighbours and the natural environment; Discolouration of buildings or structures.</td>
<td>Human health Amenity for neighbours</td>
<td>Possible / Serious (Medium)</td>
<td>Refer to section 5.9</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Almost Certain / Insignificant (Medium)</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Possible / Minor (Medium)</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Noise and vibration</td>
<td>On-site construction plant and equipment (e.g. piling works and rock wall construction) may increase noise emissions and cause vibrations. Noise and vibration generated during construction activities (particularly piling works and along haul roads) may cause nuisance.</td>
<td>Increased noise and vibration may result in environmental nuisance to neighbours and the natural environment</td>
<td>Local sensitive receptors Indirect on human health</td>
<td>Possible / Minor (Medium)</td>
<td>Refer to section 5.10</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Possible / Serious (Medium)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Possible / Minor</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Element</td>
<td>Primary Impacting Process</td>
<td>Potential Impact</td>
<td>Risk Receptor</td>
<td>Raw Likelihood / Consequence (risk rating)</td>
<td>Mitigation Measures</td>
<td>Residual Risk</td>
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</tr>
<tr>
<td></td>
<td>Heavy vehicles on transport access roads have the potential to increase noise emissions and cause vibrations.</td>
<td></td>
<td></td>
<td>(Medium)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Hazardous materials handling and storage | Incorrect storage and handling of hazardous substances may result in release to surrounding lands/ marine environment.  
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 to surrounding land and/or the marine environment. | Release to waters may affect marine water quality, marine species or the quality of their habitats  
Impact to human and environmental health from exposure to hazardous materials. | Sensitive receptors, in close proximity to Rockwall  
Marine megafauna  
Indirect to human health | Unlikely / Minor  
Unlikely / Minor  
Likely / Minor  
(Medium) | Refer to section 5.11  
Low  
Low  
Medium | Low |
| Waste Management               | Incorrect handling and storage may introduce wastes into the marine environment or surrounding lands.  
Incorrect handling and storage of waste may encourage pests and provide breeding habitats for mosquitoes.  
Incorrect handling and storage of waste may result in odours. | Release of waste may increase the risk of entanglement and/or ingestion by marine fauna  
Impact to human health from exposure to waste and pests. | Marine megafauna  
Human health | Likely / Minor  
Possible / Minor  
Possible / Insignificant (Low) | Refer to section 0  
Low  
Low  
Low | Low |
| Greenhouse gases               | Operation of plant and equipment and trucks for haulage will produce greenhouse gas emissions. | Increased greenhouse gases may then negatively impact the natural environment. | Air environment | Almost certain / Minor (Substantial) | Refer to section 5.13  
Refer to section 5.13 (noting relatively short duration) | Medium |
<table>
<thead>
<tr>
<th>Element</th>
<th>Primary Impacting Process</th>
<th>Potential Impact</th>
<th>Risk Receptor</th>
<th>Raw Likelihood / Consequence (risk rating)</th>
<th>Mitigation Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transport and Infrastructure</td>
<td>Trucks hauling construction material and construction CU Project personnel vehicles will generate additional traffic loading on existing roads. Traffic congestion may occur at some key road intersections due to construction traffic, particularly haulage trucks. Degradation of pavement may occur due to additional traffic loading on pavements from construction traffic, particularly haulage trucks. Trucks hauling construction material may track soils onto roads and generate dust.</td>
<td>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.</td>
<td>Human drivers</td>
<td>Almost certain / Minor (Substantial)</td>
<td>Refer to section 5.14</td>
<td>Medium</td>
</tr>
<tr>
<td>Human drivers</td>
<td></td>
<td></td>
<td>Marine habitats and fauna</td>
<td>Almost certain / Minor (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Marine habitats and fauna</td>
<td></td>
<td></td>
<td>Amenity for neighbours</td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Amenity for neighbours</td>
<td></td>
<td></td>
<td></td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Degradation of pavement</td>
<td></td>
<td></td>
<td></td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Degradation of pavement</td>
<td></td>
<td></td>
<td></td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Traffic congestion</td>
<td></td>
<td></td>
<td></td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Traffic congestion</td>
<td></td>
<td></td>
<td></td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Construction activities have the potential to disturb/destroy items of cultural significance. Disturbance or loss of significant Traditional Owner cultural heritage values, artefacts or places may occur. Degradation or loss of general cultural heritage items or places may occur.</td>
<td>Construction activities have the potential to disturb/destroy items of cultural significance. Disturbance or loss of significant Traditional Owner cultural heritage values, artefacts or places may occur. Degradation or loss of general cultural heritage items or places may occur.</td>
<td>Disturbance of culturally significant items Loss or diminishing of cultural values</td>
<td>Traditional owners</td>
<td>Unlikely / Serious (Medium)</td>
<td>Refer to section 0.1</td>
<td>Medium</td>
</tr>
<tr>
<td>Disturbance of culturally significant items</td>
<td></td>
<td></td>
<td>Non-traditional cultural heritage</td>
<td>Unlikely / Serious (Medium)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Loss or diminishing of cultural values</td>
<td></td>
<td></td>
<td></td>
<td>Possible / Serious (Medium)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td>Degradation or loss of general cultural heritage items or places may occur.</td>
<td></td>
<td></td>
<td></td>
<td>Rare / Minor (Low)</td>
<td></td>
<td>Low</td>
</tr>
<tr>
<td>Element</td>
<td>Primary Impacting Process</td>
<td>Potential Impact</td>
<td>Risk Receptor</td>
<td>Raw Likelihood / Consequence (risk rating)</td>
<td>Mitigation Measures</td>
<td>Residual Risk</td>
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</tr>
<tr>
<td>Visual amenity and lighting</td>
<td>Construction plant activities may impact visual amenity</td>
<td>Visual amenity of air and water may be impacted from construction plant, release of dust emissions or waste and sediment release to water. Artificial light from construction activities or port activities may impact.</td>
<td>Human amenity</td>
<td>Possible / Insignificant (Low)</td>
<td>Refer to section 5.16</td>
<td>Low</td>
</tr>
<tr>
<td></td>
<td>Dust emissions from the construction activities could cause adverse visual effects.</td>
<td></td>
<td>Marine fauna</td>
<td>Almost Certain / Minor (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>Artificial light from construction activities or port activities may impact.</td>
<td></td>
<td>Terrestrial fauna</td>
<td>Likely / Serious (Substantial)</td>
<td></td>
<td>Medium</td>
</tr>
</tbody>
</table>
5.2 Uncertainty associated with CEMP success

The CU Project will not be without uncertainties that could influence the ability of POTL 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 3. 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 3: Key uncertainties associated with Management of the CU Project.**

<table>
<thead>
<tr>
<th>Element</th>
<th>Primary Impacting Process</th>
<th>Risk Receptor</th>
<th>Raw Likelihood / Consequence</th>
<th>Mitigation Measures</th>
<th>Residual Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Uncertainty / inaccuracy</td>
<td>Failure to anticipate impacting activities due to data or information inaccuracies</td>
<td>Sensitive receptors of Cleveland Bay</td>
<td>Possible / Major (Substantial)</td>
<td>POTL will use experienced contractors to design and implement monitoring programs to ensure accuracy and rigorosity. Extensive data collection occurred prior to commencement and externally reviewed through EIS/AEIS Baseline data collected from key monitoring programs prior to commencement for comparison Expert input into ongoing monitoring programs to ensure robustness of data, through peer review and ITAC input.</td>
<td>Medium (Unlikely / Major)</td>
</tr>
<tr>
<td>Failure to deliver controls detailed in the plan</td>
<td>Management Controls not delivering mitigation measures Environmental impacts occur due to failure to implement adequate controls. Breach of approval condition</td>
<td>Sensitive Receptors of Cleveland Bay</td>
<td>Possible / Major (Substantial)</td>
<td>POTL will engage experienced contractors to deliver the key construction fronts. POTL 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 Annual compliance review against approval conditions and approved documents (management plans etc) will be undertaken to demonstrate compliance.</td>
<td>Medium (unlikely / Serious)</td>
</tr>
<tr>
<td>Element</td>
<td>Primary Impacting Process</td>
<td>Risk Receptor</td>
<td>Raw Likelihood / Consequence</td>
<td>Mitigation Measures</td>
<td>Residual Risk</td>
</tr>
<tr>
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<td>--------------</td>
</tr>
<tr>
<td>Project monitoring not delivered.</td>
<td>Monitoring programs not implemented due to lack of commitment, funding and resourcing</td>
<td>Sensitive receptors of Cleveland Bay</td>
<td>Possible / Serious (medium)</td>
<td>POTL 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. Expert input into ongoing monitoring programs to ensure robustness of data, through peer review and ITAC input. 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.</td>
<td>Low (unlikely / Minor)</td>
</tr>
<tr>
<td>Loss of funding commitment to deliver project</td>
<td>Project ceases part way through delivery, or delivery reduced due to loss of funding. Environmental impacts occur due to incomplete delivery of project and controls. Breach of approval condition</td>
<td>Workforce</td>
<td>Unlikely / Major (medium)</td>
<td>Funding arrangements established prior to the commencement of the project, including significant Government funding commitments (both Qld and Commonwealth) Regular reporting to Government to justify funding and demonstrating delivery of the project. POTL commitment to deliver project and will be responsible for any funding shortfall. Annual compliance review against approval conditions and approved documents (management plans etc) will be undertaken to demonstrate compliance</td>
<td>Low (Unlikely / Minor)</td>
</tr>
<tr>
<td>Element</td>
<td>Primary Impacting Process</td>
<td>Risk Receptor</td>
<td>Raw Likelihood/Consequence</td>
<td>Mitigation Measures</td>
<td>Residual Risk</td>
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<td>---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td>Severe / extreme weather</td>
<td>Severe and extreme weather events result in damage to partially constructed infrastructure, which in turn can impact on MNES and marine environment</td>
<td>POTL infrastructure</td>
<td>Likely / Major (high)</td>
<td>Implement POTL 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. Key construction activities to be planned to commence and be mostly completed in dry seasons where risk of severe weather is reduced. Reclamation integrity plan incorporates severe weather contingency arrangements to minimise impact. Key construction fronts designed to accommodate and withstand standard severe weather events. POTL will engage experienced contractors to deliver the key construction fronts. POTL’s Cyclone Response Plan enacted to ensure all POTL staff are safe and equipment removed where practical prior to extreme events. CU Environmental staff (Manager and Advisors) remain across all monitoring programs to ensure continuation of programs in the absence of a staff member.</td>
<td>Medium (Unlikely /Serious)</td>
</tr>
<tr>
<td></td>
<td>Severe/extreme weather events result in loss of contaminants and sediment to the marine environment</td>
<td>Sensitive Receptors of Cleveland Bay</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Damage to the constructed rockwall can result in release of dredge material to the marine environment</td>
<td>POTL employees, POTL contractors, POTL monitoring consultants</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Severe/extreme weather events personally impacting upon POTL / contractors /monitoring consultants and equipment – significantly delaying deliverables</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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 4 provides a description of what information is detailed in the individual environmental value assessments.

Table 4: CEMP Element Assessment Structure

<table>
<thead>
<tr>
<th>Component</th>
<th>Description of Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Element</td>
<td>The environmental value at the site requiring management consideration, response strategies and actions during construction activities.</td>
</tr>
<tr>
<td>Objective</td>
<td>The guiding performance objective that applies to the element.</td>
</tr>
<tr>
<td>Risk level</td>
<td>The assessed level of residual risk posed from the CU Project on the Element (based on EIS/AEIS assessment)</td>
</tr>
<tr>
<td>Aspects &amp; Impacts</td>
<td>The construction activities and potential environmental impacts that apply to the element.</td>
</tr>
<tr>
<td>Mitigation Measures</td>
<td>The mechanisms and management actions through which the objective will be achieved.</td>
</tr>
<tr>
<td>Performance Criteria</td>
<td>The measurable performance criteria (outcomes/indicators) by which the success of the achievement of the objective will be determined.</td>
</tr>
<tr>
<td>Monitoring / Auditing</td>
<td>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.</td>
</tr>
<tr>
<td>Reporting</td>
<td>The format, timing and responsibility for reporting of monitoring and audit results.</td>
</tr>
<tr>
<td>Corrective Actions</td>
<td>The actions to be implemented in the case where a performance criterion is not met.</td>
</tr>
<tr>
<td>Responsibility</td>
<td>The CU Project personnel involved in the various tasks required for each element.</td>
</tr>
</tbody>
</table>
## 5.4 Land

<table>
<thead>
<tr>
<th>Element</th>
<th>Land</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residual Risk level</strong></td>
<td><strong>Objective</strong></td>
</tr>
<tr>
<td>MEDIUM</td>
<td>To avoid environmental harm to land as a result of construction activities in relation to:</td>
</tr>
<tr>
<td></td>
<td>– Instability of rock walls;</td>
</tr>
<tr>
<td></td>
<td>– Potential Acid Sulfate Soils (PASS); and</td>
</tr>
<tr>
<td></td>
<td>– Soil Contamination.</td>
</tr>
</tbody>
</table>

### Activities

- Collapses or failures of the structural integrity of the rock walls may release dredge material and cause adverse impacts in the marine environment.
- Disturbed capital dredge material or excavated PASS material or imported soil/fill placed in the reclamation area may cause potential land contamination.
- Spills or leakage of fuel/oil and other hazardous materials or dangerous goods may cause soil contamination (Section 5.11) and release of contaminants to the marine environment.

### Performance Criteria / Indicators

A. All works are managed in accordance with the relevant management plan (CEMP), 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.

B. PASS and contamination management procedures are implemented.

C. Tailwater monitoring results are within trigger levels.

D. All rock or fill material from external sources brought into site will meet design specifications and relevant environmental standards.

E. No complaints are received from regulators or the community in relation to land contamination.

### Mitigation

- Undertake an analysis of the sediment to be dredged in capital dredge areas (against the NAGD standards) 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).

- Keep dredge material wet and saturated during transport to reclamation area to ensure compliance with holding times outlined in the Queensland Acid Sulfate Soil (ASS) Technical Manual (to meet Performance Criteria A and B).

- Place dredge material carefully to limit the extent of heaving and formation of mud waves from the existing soft soil seabed (typically <1.5 m thick) to below the mid-water level using confining pressure and encapsulation (to meet Performance Criteria A and E).

- Implement the ASSCMP (See Appendix F [POT 2100]) for monitoring and management of the reclamation area to inform the CU Project personnel of the risks and management requirements for PASS (to meet Performance Criteria B).

- Implement the Reclamation Integrity Plan (See Appendix G) for monitoring the integrity of the rock walls (to meet performance Criteria A and D).

- Implement the Tailwater Management Plan (See Appendix H [POT 2101]) including appropriate trigger levels and protocols for settling pond(s) within the reclamation area (to meet performance Criteria C).
Element | Land
--- | ---
Check incoming rock and fill materials for contamination and quality purposes (to meet performance Criteria D) | Project Engineer CU

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

Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding PASS and soil contamination management.

**Responsibility**

Manager Environment CU

**Monitoring / Auditing**

- Conduct monitoring in accordance with the POT 2100 ASSCMP (see Appendix F).
- Conduct monitoring in accordance with the Reclamation Integrity Plan (see Appendix G).
- Conduct monitoring in accordance with the POT 2101 Tailwater Management Plan (see Appendix H).
- Monitor and record sources, condition of fill and any movement on-site.
- Undertake regular site inspections to monitor land contamination to determine the effectiveness of mitigation measures.

**Responsibility**

Environmental Advisor

**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:
  - Prompt clean-up of any spills;
  - Investigation and sampling; and
  - Excavation and disposal of contaminated material at a suitable disposal facility by a licensed waste disposal contractor as required.
- Replace spill kits as soon as practicable after use or if missing.
- 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 F)
- Investigate all incidents in relation to land contamination promptly and undertaken appropriate actions.
- Investigate all complaints in relation to land contamination promptly and rectify legitimate problems.
- Revise CEMP and implement further controls where investigations show unacceptable impacts to land contamination.
- Implement any other corrective actions as directed by regulators.

**Reporting**

- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints / land contamination issues.
- All CU Project personnel will inform the Manager Environment CU and the Project Director CU as soon as possible in the event of a significant land contamination issue. The Manager Environment CU will investigate and report to the GM I&E and undertake any additional investigation(s) as required.
- The Manager Environment CU will inform the regulators in a timely manner in the event of a significant land contamination incident.
<table>
<thead>
<tr>
<th>Element</th>
<th>Land</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adaptive management program</strong></td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);</td>
<td></td>
</tr>
<tr>
<td>- 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;</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will periodically (min 6 monthly) review 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;</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;</td>
<td></td>
</tr>
<tr>
<td>- 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.</td>
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<tr>
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<tr>
<td>- The Manager Environment CU will review the plan under the following circumstances:</td>
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<tr>
<td>• performance reports indicate performance criteria are not be achieved;</td>
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<tr>
<td>• according to approved timeframes; or the impacts of significant environmental incidents.</td>
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</tbody>
</table>
5.5 Marine Water & Sediment

5.5.1 Stormwater, Sediment & Erosion Control

<table>
<thead>
<tr>
<th>Element</th>
<th>Stormwater, sediment &amp; Erosion Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
</tbody>
</table>
| LOW | To minimise turbidity impacts from construction activities and stormwater releases beyond the footprint of the development.  
To avoid the marine environment from being contaminated by construction activities.  
To implement effective sediment and erosion control measures, which avoid sediments generated by construction activities from causing a hazard or nuisance. |

**Activities**

- Earthworks activities will expose soil and may increase erosion leading to increased suspended sediment concentration in stormwater.
- Rock stockpiling activities and truck haulage may increase the suspended sediment concentration in stormwater.
- 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 5.6).
- Stormwater contamination may arise due to leaks and spills of fuel/oil and other hazardous materials or dangerous goods (Section 5.11).
- Rain events / wet season can lead to sediment-laden stormwater may then enter the marine environment, reducing water quality and negatively affecting the natural environment.

**Performance Criteria / Indicators**

A. 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) Policy 2009, best earthworks practice and any other relevant approvals, standards, guidelines and statutory requirements (such as IECA 2008).
B. No exceedance of surface water release limits stipulated in the Qld Government Approval or limits set in CU Site Monitoring Plan (see Appendix I) for suspended sediment concentrations.
C. No impact to water quality in the receiving environment as a result of contaminated stormwater or sediment and erosion issues.
D. No failure of sediment and erosion controls (i.e. controls are maintained and fit for purpose).
E. No complaints are received from regulators or the community in relation to stormwater management or sediment and erosion control issues.

**Mitigation**

- Implement the site-specific Stormwater, Sediment and Erosion Control Plan (Appendix J, 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).
- Implement the CU Site Monitoring Plan (Appendix I, POT 2103) (to meet Performance Criteria A, C and D).
- Ensure construction meets the design requirements specified in the Reclamation Integrity Plan (Appendix G), e.g. geotextile material within the rock bund to contain reclaim fill (to meet Performance Criteria A, B, D and E).

**Responsibility**

- Project Engineer CU/Environmental Advisor CU
- Environmental Advisor CU
- Project Engineer CU / Contractor
Element | Stormwater, sediment & Erosion Control
---|---
- | 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).

Training (to meet Performance Criteria A to E)
- | Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding stormwater management and sediment and erosion control.

Manager Environment CU

Monitoring / Auditing
- | Conduct monitoring and observation of weather conditions and alerts relevant to the site, including extreme weather events.
- | Conduct monitoring in accordance with the CU Site Monitoring Plan (Appendix I).
- | 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 & Sediment Erosion Control Plan (Appendix J).
- | Undertake regular site inspections to check for leaks, spillage and damage to bunded storage areas.
- | 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.
- | Undertake inspection of the stormwater system prior to the commencement of the wet season to ensure any necessary
- | Undertake inspections of the effectiveness of sediment and erosion control measures after significant rainfall events.

Responsibility
- Project Engineer CU
- Environmental Advisor CU
- Environmental Advisor CU / Project Engineer CU
- Environmental Advisor CU / Project Engineer CU
- Environmental Advisor
- Environmental Advisor CU
- Environmental Advisor

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.
- Investigate all incidents in relation to stormwater or sediment and erosion control promptly and undertaken appropriate actions.
- Investigate all complaints in relation to stormwater or sediment and erosion control promptly and rectify legitimate problems.
- Revise CEMP and associated plans (SSECP) 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.
**Element** Stormwater, sediment & Erosion Control

**Reporting**
- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and the Project Director CU 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 GM I&E with additional investigation(s) undertaken as required.
- The Manager Environment CU will inform the regulators in a timely manner in the event of a significant stormwater or sediment and erosion control incident.
- POTL will produce an annual summary of the monitoring results from the Reclamation Integrity Plan.

**Adaptive management program**
- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- 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;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.5.2 Tailwater

“Relevant to reclamation activities, not specifically rockwall construction.”

<table>
<thead>
<tr>
<th>Element</th>
<th>Tailwater</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>To ensure the release of tailwater from the reclamation area to the environment is of an acceptable standard</td>
</tr>
</tbody>
</table>

**Activities**

- The capital dredge material will be hydraulically placed into the reclamation area, with tailwater moving through the site to an ultimate tailwater outlet weir box into Cleveland Bay.
- 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.

**Performance Criteria / Indicators**

A. Tailwater meets the following limits prior to release:
   - TSS: 80th percentile <100 mg/L (or equivalent turbidity level); and
   - pH: between a range of 6.5 — 8.5.

B. 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 *Environmental Protection (Water) Policy 2009*, and any other relevant approvals, standard, guidelines and statutory requirements.

C. No exceedance of release limits stipulated in the Qld Government Approval or limits set in Tailwater Management Plan.

D. No impact to water and sediment quality in the receiving environment as a result of tailwater release.

E. No complaints are received from regulators or the community in relation to tailwater management.

**Mitigation**

- Manage ASS and PASS in accordance with the ASSCMP (Appendix F) (to meet Performance Criteria A and B).
- Control potential piping of sediment fines through the wall from 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 B, C and D).
- 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).
- Direct and control all tailwater releases through a height adjustable tailwater outlet weir box (to meet Performance Criteria A).
- Implement the Tailwater Management Plan (Appendix H), (to meet Performance Criteria A and B), comprising:
  - Turbidity/Total Suspended Solids (TSS)/pH/metals sampling at the tailwater outlet;
  - Appropriate triggers and protocols e.g. monitor water quality of standing water within the reclamation area prior to a controlled release of tailwater; and
  - Plume validation monitoring of turbidity/TSS in receiving waters adjacent to the tailwater outlet.

**Responsibility**

- Contractor
- Contractor
- Project Director CU
- Contractor
- Environmental Manager CU
Element | Tailwater
---|---
- Review the on-site control measures promptly, if turbidity/TSS in the tailwater exceeds the performance criteria, to ensure that all reasonable and practicable measures are being taken in terms of both settling pond operations and the hydrologic and sediment loading in the settling pond(s) (to meet Performance Criteria A, B, C and D).

Training (to meet Performance Criteria A to E)
Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding tailwater management.

Monitoring / Auditing
- Conduct visual observations of the settling pond(s) to check for scum formations, oil spills etc.
- Conduct monitoring in accordance with the Tailwater Management Plan (Appendix H) and analyse the results in comparison to the approval conditions.
- Conduct monitoring of the spatial extent of the mixing zone during tailwater release events.
- Conduct plume validation monitoring and analyse the results to verify modelling results.
- Conduct monitoring and observation of weather conditions and alerts relevant to the site, including extreme weather events.
- Undertake regular site inspections to check for damage to reclamation area and the effectiveness of geotextile control measures on the rock walls.
- Undertake regular inspections of the site to check for effectiveness of tailwater control measures, particularly after significant rainfall events.

Responsibility
Project Engineer CU/Manager Environment CU
Manager Environment CU
Project Engineer CU
Environmental Advisor CU
Environmental Advisor CU
Environmental Advisor CU
Project 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:

- Implement the following corrective actions if continual turbidity/TSS exceedances are observed:
  - Increase tailwater residence time in the settling pond(s);
  - Redirect tailwater through the settling pond(s) to allow further settlement before being released, installing additional internal bund walls if required;
  - Modify decanting rates via the tailwater outlet weir box and ensure hydraulic efficiency; and/or
  - Install additional controls in the settling pond(s) 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.
Element  Tailwater

Reporting

- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- The Environmental Advisor CU will maintain monitoring results in a database within one week of each monitoring event. On completion of the CU Project, the database will be stored in accordance with legal record retention requirements.
- 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.
- The Environmental Advisor CU will report tailwater performance regularly to relevant committees.
- The Environmental Advisor CU will prepare an annual report which will identify any exceedances of performance criteria, any significant changes to the quality of tailwater release and any corrective actions taken or to be implemented. The annual report will be submitted to POTL senior management and to regulators.
- The Environmental Advisor CU will prepare a final monitoring report at the end of the CU Project.
- All CU Project personnel will inform the Manager Environment and Project Director CU as soon as possible in the event of a tailwater control issue. The Manager Environment CU will investigate and report to the GM I&E 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 tailwater control incident.

Adaptive management program

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor CU will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with tailwater aspects;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 are required;
- The Manager Environment CU will address the consequences of significant environmental incidents (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
### 5.6 Marine Ecology

<table>
<thead>
<tr>
<th>Residual Risk level</th>
<th>Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEDIUM</td>
<td><strong>Minimise Impacts to Marine Ecology</strong></td>
</tr>
<tr>
<td></td>
<td>- To avoid adverse direct and indirect impacts on MNES, particularly marine megafauna and the marine ecology from construction activities.</td>
</tr>
<tr>
<td></td>
<td>- To prevent the marine environment from being contaminated by construction activities.</td>
</tr>
</tbody>
</table>

#### Activities

- 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, 5.5 and 5.11).
- Noise emissions and vibration may lead to behavioural disturbance or temporary avoidance of the affected area by marine megafauna (Section 5.10).
- Light spill from the construction site and plant and equipment may lead to disorientation of marine megafauna (Section 5.16).
- 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 0).

#### Performance Criteria / Indicators

A. 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.

B. No injury or fatality to marine megafauna as a result of construction activities.

C. No significant reduction in marine megafauna diversity or distribution, as measured in megafauna monitoring programs.

D. No permanent loss of benthic habitat beyond the development footprint, as measured by:
   - The ongoing POTL seagrass monitoring program; and
   - Undertaking construction surveys (throughout rock placement) to ensure works do not extend beyond the approved footprint or go outside POTL approved tenure boundary.

E. No significant long-term behavioural impacts to marine megafauna from construction activities, as measured/determined through the Megafauna Monitoring Plan (MEMP Appendix G, Document number POT 2155)

F. If seagrass meadows are within the reclamation footprint, they are surveyed and quantified.

G. No complaints are received from regulators or the community in relation to marine ecology issues.

#### Mitigation

- Ensure suitably trained Marine Fauna Observers for the construction activities (piling, rockwall placement) to undertake visual observation of marine megafauna around construction fronts (as per MEMP POT 2135) (to meet Performance Criteria B, C, E and G).

- Conduct daily pre-start checks for marine megafauna in the nominated observation zone prior to commencing key construction activities (to meet Performance Criteria B, C, D, E and G);

- Maintain active awareness of marine megafauna throughout daily construction activities, including within the exclusion zone (to meet Performance Criteria B, C, D, E and G)

- Cease all relevant activities (rockwall placement, vessel movement) if marine fauna enter exclusion zones as specified in the MEMP (POT 2135)

#### Responsibility

- Manager Environment CU
- Marine Fauna Observers
- All CU contractors / Marine Megafauna Observer
### Marine Ecology

- to avoid injury or loss of megafauna (to meet Performance Criteria A and B).

**Training** (to meet Performance Criteria A to G)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding marine ecology.

**Monitoring and Auditing**
- Undertake a survey of the reclamation area before the commencement of rockwall construction to determine the presence/absence and density of seagrass if found within the reclamation footprint (as per EPBC Act Approval Condition 9).
- Conduct monitoring in accordance with Inshore Dolphin and Marine Megafauna Monitoring Plans (POT 2154 and 2155) before, during, and after completion of the project, to determine if any project related impacts occur on megafauna diversity, distribution and behaviour.
- Ongoing review (throughout the project) marine stranding’s data to identify any death or injury to megafauna that could be attributed to CU construction activities.
- Conduct marine megafauna observing prior to commencing, and during, key construction activities, and cease works if marine megafauna enter exclusion zones. Daily fauna logs to be maintained by fauna observers and audited by POTL regularly for compliance action (if needed).
- Undertake regular site inspections to monitor the construction site for issues that may adversely impact on MNES or marine ecology.

### 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 as per vessel SMS 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.
- 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 48 hours).
- 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.
- The Environmental Advisor CU/Manager Environment CU will respond to all complaints in relation to marine megafauna within 2 business days and rectify legitimate problems as required.
- Any impacts identified via the marine fauna 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.
### Element: Marine Ecology

- 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.
- Implement any other corrective actions and mitigation measures as directed by the appropriate regulator.

### Reporting

- The contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Project Engineer CU as soon as possible in the event of a significant marine ecology disturbance issue and the Project Engineer CU will report to the Project Director CU. The Project Director CU will investigate and report to the GM I&E CU and Environmental Advisor CU and additional investigation(s) will occur as required.
- The Manager Environment CU will report to DAWE (or successor agency) any exceedance of the MNES performance criteria and early warning trigger levels, 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.

### Adaptive management program

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- 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;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.7 Terrestrial Ecology

<table>
<thead>
<tr>
<th>Element</th>
<th>Terrestrial Ecology</th>
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</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>MEDIUM</td>
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</tbody>
</table>

**Objectives**

- To conduct construction activities in a manner that minimises adverse impacts on terrestrial fauna and flora.
- To avoid injury to and death of 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 shorebirds.

**Activities**

- Construction activities such as vehicle movements and earthworks may result in disturbance/injury/mortality of terrestrial fauna, particularly avifauna (Section 5.4 and 5.9).
- Noise emissions and vibration may lead to behavioural disturbance in fauna (Section 5.10).
- Light spill from the construction site and plant and equipment may lead to disturbance to surrounding avian habitats (Section 5.16).
- Introduction and/or spread of declared weeds or animal pests may adversely impact on terrestrial fauna (Section 5.8).

**Performance Criteria / Indicators**

A. 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.

B. No incidents of harm or mortality to terrestrial fauna as a result of construction activities.

C. 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 H, Document number POT 2156).

D. No complaints are received from regulators or the community in relation to flora and/or fauna issues.

**Mitigation**

- Enforce site traffic management arrangements including speed restrictions to reduce terrestrial fauna collisions (to meet Performance Criteria B)
- Implement procedures on the handling and reporting of injured fauna (to meet Performance Criteria A and D).
- 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).
- Restrict haul truck movements to daylight hours to prevent disturbance to terrestrial fauna, particularly avifauna (to meet performance Criteria A, C and D).
- Ensure the CEMP and MEMP have been implemented on site (to meet Performance Criteria A).

**Training**

(to meet Performance Criteria A to D)

- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP (and MEMP) regarding terrestrial flora and fauna.

**Responsibility**

- Project Engineer CU
- Environmental Advisor CU
- Project Engineer CU
- Manager Environment CU
- Project Director CU
- Manager Environment CU
Element | Terrestrial Ecology
---|---
**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.
- Undertake regular site inspections for bird nests and/or injured wildlife and record any incident(s).
- Maintain operational log to record/report interaction with fauna on site, POTL to audit log for compliance action (if needed).

**Responsibility**
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)
- 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 for MNES (within 48 hours).
- The Manager Environment CU will respond to all complaints in relation to terrestrial fauna and/or flora promptly within 2 business days and rectify legitimate problems 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.

It is to be noted that use of POTL 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 POTL land).

**Reporting**
- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and Project Director CU 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 GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to DAWE (or successor agency) any exceedance of the MNES performance criteria and early warning trigger levels, 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.
Element: Terrestrial Ecology

**Adaptive management program**

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with terrestrial ecology and MNES;
- The Manager Environment CU will periodically (min 6 monthly) review risks associated with terrestrial ecology impacts, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance criteria are not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.8 Weed & Animal Pest Management

<table>
<thead>
<tr>
<th>Element</th>
<th>Weed &amp; Animal Pest Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
<tr>
<td>LOW</td>
<td>To implement effective weed management controls and avoid the spread of otherwise pestiferous species at the construction site.</td>
</tr>
<tr>
<td></td>
<td>To implement effective pest species management controls and avoid the increase of existing pest populations at the Port.</td>
</tr>
</tbody>
</table>

Activities
- Vehicle, plant and equipment movements via rail or road may result in the introduction and/or spread of declared weeds at the construction site.
- Incorrect handling, storage of materials and waste and stormwater management may encourage pests and/or pest animals and provide breeding habitats for mosquitoes.

Performance Criteria / Indicators
A. All works are managed in accordance with the obligations under the Land Protection (Pest and Stock Route Management) Act 2002 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.
B. No introduction of weeds or increase in their distribution as a consequence of construction activities.
C. Existing populations of introduced weeds/pests are controlled.
D. No new infestations as a consequence of construction activities.
E. No mosquito breeding habitat is created on the construction site.

Mitigation
- Implement appropriate weed management controls (to meet Performance Criteria A, B, C and D), including
  - Ensuring imported rock / fill material is weed free;
  - Removing any declared weed species on-site via mechanical means or herbicide;
  - Limiting vehicle movement through known declared weed infested areas (currently none exist) at the construction site;
  - Washing down vehicles and plant equipment entering or leaving site for the first or last time in accordance with industry standards; and
  - Using wheel wash whenever heavy vehicles move off-site.
- Avoid conditions favourable to pest species (to meet Performance Criteria A and E) by:
  - 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;
  - Keeping the construction site free of potential mosquito breeding sites;
  - Undertaking appropriate waste management measures (Section 0); and
  - Ensuring stormwater control measures do not create breeding habitat for mosquitoes.
- Implement regular weed control activities (e.g. spraying, mowing and removal) (to meet Performance Criteria A to E).

Responsibility
- Project Engineer CU / Contractor
- Project Engineer CU
- Project Engineer CU
- Project Engineer CU
**Element** | **Weed & Animal Pest Management**  
--- | ---  
- Implement appropriate pest control measures where necessary (i.e. when pest species are identified on the site).  
**Training** (to meet Performance Criteria A to E)  
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding weed and pest management.

**Monitoring and Auditing**  
- Undertake regular site inspections for declared weed infestations.  
- Monitor the presence and abundance of introduced fauna pests in the construction site.  
- Undertake regular site inspections for mosquito breeding areas prior to and during the wet season.

**Responsibility**  
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:

- Engage licensed pest control contractor(s) to control pest numbers if required.
- Implement manual or chemical control to interrupt the mosquito breeding cycle if mosquito larvae are present on CU Project site.
- Prevent water from collecting in structures or around buildings and remove standing water.
- Implement appropriate control measures where weed and/or pest infestation or their potential to spread is identified in order to prevent reoccurrences.
- Investigate all incidents in relation to weed and/or pest infestation promptly and undertaken appropriate actions.
- Investigate all complaints in relation to weed and/or pest infestation promptly and rectify legitimate problems.
- 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 a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment and Project Director CU of any weed and/or pest outbreaks or potential infestations. The Manager Environment CU will investigate and report to the GM I&E 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 weed and/or pest incident.
### Adaptive management program

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with weed and animal pest management;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.9 Air

<table>
<thead>
<tr>
<th>Element</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>LOW</td>
</tr>
<tr>
<td>Objectives</td>
<td>To prevent dust and other atmospheric emissions such as exhaust fumes generated by construction activities from causing a hazard or nuisance.</td>
</tr>
</tbody>
</table>

**Activities**
- Constructions activities such as earthworks and vehicle movements have the potential to increase dust emissions.
- Construction vehicles, plant and equipment will generate fuel combustion emissions.
- Trucks hauling construction material may track soils onto roads and generate dust.
- 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.

**Performance Criteria / Indicators**
A. All works are managed in accordance with the relevant management plans, the Environmental Protection Act 1994 and the Environmental Protection (Air) Policy 2008 and any other relevant approvals, standards, guidelines and statutory requirements.
B. No impacts to air quality in the receiving environment as a result of construction activities.
C. No complaints are received from regulators or the community in relation to air quality issues from construction activities.

**Mitigation**
- Implement the CU Site Monitoring Plan (Appendix I) with identified air quality trigger levels so that work practices can be adjusted as required based on monitoring results (to meet Performance Criteria A).
- Implement dust control measures, (to meet Performance Criteria B and C), including:
  - Using water suppression methods on stockpiles and disturbed areas;
  - Using a water truck and/or a dust sweeper to suppress dust on trafficked areas;
  - Using a wheel wash whenever heavy vehicles move off-site;
  - Implementing site speed limits on-site to reduce wheel-generated dust;
  - Erecting localised windbreak barriers on activities (to 2.4 m height), particularly to the west of works, if required;
  - 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
  - Following relevant load restraint guidelines on vehicles during transportation of construction materials to the Port.
  - 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).
- Do not permit burning or incineration of waste on-site (to meet Performance Criteria B and C).

**Responsibility**
- Environmental Advisor CU
- Project Engineer CU / Contractor
- Project Director CU Contractor
**Element** | **Air**
---|---
- Reduce fuel combustion emissions (to meet Performance Criteria A, B and C) by:
  - Establishing regular servicing schedule for all vehicles, plant and equipment, including filter and oil changes and keep records;
  - 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;
  - Turning engines off while parked on-site or when not in use; and
  - Scheduling vehicle movement to prevent queuing/idling.

**Training** (to meet Performance Criteria A to C)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding air quality and dust control.

**Monitoring / Auditing**
- Conduct visual monitoring and observation of weather conditions which may result in dust liberation and elevated particle concentration.
- Conduct monitoring in accordance with the CU Site Monitoring Plan (Appendix I) and analyse results in comparison to the identified trigger levels and the requirements of the *Environmental Protection (Air) Policy 2008*.
- Conduct regular visual monitoring to identify the need for dust suppression measures and the effectiveness of measures undertaken.
- 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.

**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 I) 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.
- Investigate all incidents in relation to air quality promptly and undertaken appropriate actions.
- Investigate all complaints in relation to air quality promptly and rectify legitimate problems.
- Revise CEMP and implement further controls where investigations show unacceptable air quality levels. Implement any other corrective actions as directed by regulators.
Reporting

- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and Project Director CU as soon as possible in the event of a significant air quality issue. The Manager Environment CU will investigate and report to the GM I&E 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 Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities associated with air impacts;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.10 Noise & Vibration

<table>
<thead>
<tr>
<th>Element</th>
<th>Noise and Vibration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Objectives</td>
<td>To meet or exceed noise and vibration standards relating to construction activities.</td>
</tr>
</tbody>
</table>

**Activities**

- On-site construction plant and equipment, particularly during piling works and rock wall construction, have the potential to increase noise emissions and cause vibrations.
- Heavy vehicles on transport access roads and near the boundary of the construction site have the potential to increase noise emissions and cause vibrations.
- 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).
- 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.

**Performance Criteria / Indicators**

A. All works are managed in accordance with the relevant management plans, the *Environmental Protection (Noise) Policy 2008* and *Environmental Protection Regulation 1998* 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:
   - the Inshore Dolphin Monitoring Plan (MEMP App F, POT 2154);
   - The Marine Megafauna Monitoring Plan (MEMP App G, POT 2155);
   - The Shorebird Monitoring Plan (MEMP App H, POT 2156).

C. No complaints are received from regulators or the community in relation to noise or vibration issues from construction activities.

**Mitigation**

Consider noise mitigation when operating construction plant and equipment, (to meet Performance Criteria A and B) including:

- Selecting low-noise plant and equipment in good working order;
- Installing high-quality mufflers and appropriate silencers that meet design specifications on plant and equipment when available;
- Keeping equipment well maintained according to manufacturer’s instructions and recommendations;
- Keeping silencers and enclosures intact, rotating plant balanced, loose bolts tightened, frictional noise reduced through lubrication and cutting noise reduced by sharpening blades;
- 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;
- Locating site compounds and noisy plant as far away from noise sensitive receptors as practicable;
- Shutting down plant and equipment which are used intermittently in the intervening periods between works or throttling down to minimum;
- Shutting down plant and equipment when not in use; and

**Responsibility**

Contractor / Project Engineer CU
<table>
<thead>
<tr>
<th>Element</th>
<th>Noise and Vibration</th>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Ensuring that only necessary power levels are used to complete construction tasks.</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>– Install an acoustic enclosure, in accordance with <em>AS 2436-2010 - Guide to noise and vibration control on demolition and maintenance sites</em>, around noisy plant and equipment if it is fixed in a stationary location for one week or longer and likely to adversely affect sensitive receptors (to meet Performance Criteria B).</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>– 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).</td>
<td>Contractor</td>
</tr>
<tr>
<td></td>
<td>– Establish a designated access route to the site and inform truck drivers of this route (to meet Performance Criteria C).</td>
<td>Project Engineer CU</td>
</tr>
<tr>
<td></td>
<td>– Restrict entry and departure of rock haulage vehicles to and from the site to standard daytime hours (i.e. 6:00 am – 6:00 pm), excluding Sundays and Public Holidays (to meet Performance Criteria C). knowing the height and weight of the impact hammer.</td>
<td>Project Engineer CU</td>
</tr>
<tr>
<td></td>
<td>– Implement Pile Driving Procedure to manage noise and vibrations risks to marine megafauna/MNES (to meet Performance Criteria B and C).</td>
<td>Project Engineer CU/Environmental Advisor CU</td>
</tr>
<tr>
<td></td>
<td>– Restrict piling activities to prescribed daytime work hours, excluding Sundays and Public Holidays (to meet Performance Criteria B and C).</td>
<td>Project Engineer CU</td>
</tr>
<tr>
<td></td>
<td>– Implement strategies to avoid megafauna interactions e.g. undertake visual monitoring during piling activities, soft starts etc to protect MNES (to meet Performance Criteria B)</td>
<td>Contractor / Manager Environment CU</td>
</tr>
<tr>
<td></td>
<td>– Notify proactively any potentially impacted residents, Port Customers and other commercial operators of planned construction activities (including timing and duration of piling and rock wall placement) (to meet Performance Criteria C).</td>
<td>Project Director CU</td>
</tr>
<tr>
<td>Training</td>
<td>Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding noise and vibration controls.</td>
<td>Manager Environment CU</td>
</tr>
</tbody>
</table>

**Monitoring and Auditing**

<table>
<thead>
<tr>
<th>Responsibility</th>
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</thead>
<tbody>
<tr>
<td>Contractor</td>
</tr>
<tr>
<td>Environmental Advisor CU</td>
</tr>
</tbody>
</table>

- Monitor and adjust where necessary, elements of piling such as reducing the height and weight of the impact hammer.
- Undertake regular inspections to identify the need for noise and vibration suppression measures and the effectiveness of measures undertaken.
- 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.
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 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.
- 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 a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment CU and Project Engineer CU 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 GM I&E with any additional investigation(s) undertaken as required.
  - The Manager Environment CU will report to DAWE (or successor agency) any exceedance of the MNES performance criteria and early warning trigger levels, 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 Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with construction noise aspects;
- The Manager Environment CU will periodically (min 6 monthly) review 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;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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.
- The Manager Environment CU will address the consequences of significant environmental incidents (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
POTL Channel Upgrade Project – EPBC Approval No. 2011/5979

Construction Environmental Management Plan
## 5.11 Hazardous Materials Handling & Storage

<table>
<thead>
<tr>
<th>Element</th>
<th>Hazardous Materials Handling &amp; Storage</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Residual Risk Level</strong></td>
<td><strong>Objective</strong></td>
</tr>
<tr>
<td>MEDIUM</td>
<td>To safely reduce 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.</td>
</tr>
</tbody>
</table>

### Activities

- 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

A. 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.

B. Fuel / chemical storage is kept in a secure area and bunded to prevent spills.

C. All spills are to be reported and adequately contained and promptly cleaned up.

D. No soil/land/water contamination from leaks and spills on-site.

E. No impact to sensitive receivers as a result of the handling and storage of hazardous materials at the site.

F. No complaints are received from regulators or the community in relation to the handling and storage of hazardous materials.

### Mitigation

- 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).
- 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 and B) including:
  - *AS1940 The Storage and Handling of Flammable and Combustible Liquids*;
  - *AS4452 The Storage and Handling of Toxic Substances*; and
  - *Dangerous Goods Safety Management Act 2001* and other legislative requirements.
- 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 B and C).
- Locate storage areas away from receiving environment (to meet Performance Criteria D).
- Manage hazardous products appropriately and dispose in accordance with Safety Data Sheets (SDS) and legislative requirements (to meet Performance Criteria A and B).

### Responsibility

<table>
<thead>
<tr>
<th>Responsibility</th>
<th>Manager Environment CU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Project Engineer CU / Contractor</td>
</tr>
<tr>
<td></td>
<td>Contractor / Project Engineer CU</td>
</tr>
<tr>
<td></td>
<td>Contractor</td>
</tr>
</tbody>
</table>
Element | Hazardous Materials Handling & Storage
--- | ---
- 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). | Contractor
- Keep SDSs for hazardous materials readily available in a prominent location on-site (to meet Performance Criteria A). | Contractor
- Minimise the use of hazardous materials and implement alternatives if feasible (to meet Performance Criteria F). | Contractor
- 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 and F). | Contractor
- Minimise the risk of fuel/oil spills by undertaking regular inspections and maintenance of plant and equipment, (to meet performance Criteria B and C) including:
  - Daily inspection of plant and equipment;
  - Maintenance of site plant and equipment in accordance with manufacturer’s recommendations; and
  - Ensuring service records are up to date and the equipment has the applicable permits, licences and insurances; and
- Inspecting for leaks prior to allowing any external vehicles or plant and equipment on-site (to meet Performance Criteria A to E). | Contractor
- Conduct plant and equipment maintenance only in designated workshop areas (to meet Performance Criteria A to E). | Contractor
- Maintain an appropriate spill kit, personal protective equipment and relevant operator instructions / emergency procedures for the management of hazardous materials at the site (to meet Performance Criteria A and C). | Project Engineer CU
- Minimise the risk of contaminant spills, (to meet Performance Criteria A, B and F) by:
  - Implementing hazardous material handling procedures;
  - Implementing emergency response procedures;
  - Installing oil and grit separators for maintenance areas on-site;
  - Undertaking spill response training for staff; and
  - Providing spill control materials including booms and absorbent materials in the event of any spills.
- 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 CU Project 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). | Contractor / Project Director CU
- Make available first aid and firefighting equipment (handheld extinguishers and fire hoses) at the site (to meet Performance Criteria A, D, E and F). | Contractor

Training (to meet Performance Criteria A to F)

- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding hazardous materials handling and storage and spill response. | Manager Environment CU
Monitoring and Auditing

- 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.
- Inspect the SDS register regularly for currency and completeness.

Responsibility

Environmental Advisor CU
Safety Officer CU

Corrective actions

Where Performance Criteria A to F are not met at any point 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 48 hours were MNES are involved.
- Investigate all complaints in relation to hazardous materials promptly and rectify legitimate problems.
- Undertake a review of the CEMP (and MEMP if necessary) to determine if further controls are needed.
- Implement any other corrective actions as directed by regulators.

Reporting

- The Contractor will maintain a site activity log, recording the type of activities occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints / land contamination issues.
- All CU Project personnel will inform the Manager Environment CU and Project Engineer CU 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 GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will provide a report to the appropriate regulators of any release of contaminants or other significant incident impacting upon MNES within 21 days of the initial notification.
Adaptive management program

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with hazardous materials handling and storage;
- The Manager Environment CU will periodically (min 6 monthly) review 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;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.12 Waste Management

<table>
<thead>
<tr>
<th>Residual Risk Level</th>
<th>Objectives</th>
</tr>
</thead>
</table>
| LOW                 | - To appropriately handle, store, recycle and dispose of all waste materials generated during construction activities.  
- To prevent litter or waste generated by the construction activities from causing a hazard or nuisance. |

Activities
- 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 5.8).
- Incorrect handling and storage of waste may result in odours and/or impacts to the health and well-being of CU 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 complaints are received from regulators or the community in relation to waste issues.

Mitigation
- Adopt the waste management hierarchy where practicable (i.e. avoid, re-use, recycle, energy recover and dispose) (to meet Performance Criteria A and B):
  - Avoid by:
    - Minimise the amount of any materials required to be brought and stored on-site; and
    - Implementing options to reduce the amount of packaging on procured goods
  - Reuse by:
    - Retaining and moving rocks from the existing revetment walls and reinstating at strategically located areas over the new walls where practicable; and
    - Reusing construction waste on-site (e.g. bricks/concrete and timber) where possible.
  - Recycle by:
    - 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
  - Energy Recover
    - Energy recover by implementing solar options to reduce fossil fuel consumption where possible
  - Dispose by:
    - 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;

Responsibility
- Project Director CU/Manager Environment CU / Contractor
Element | Waste Management
--- | ---
- Removing sewage via a temporary connection to reticulated wastewater system. 
- Provide separate stockpiles or bins for different waste streams to avoid cross contamination of waste streams, including liquid wastes (to meet Performance Criteria B). 
- Store hazardous and asphaltic wastes and empty drums and storage containers in an appropriate bunded and covered area (Section 5.11) (to meet Performance Criteria A and B). 
- Collect and remove all wastes from work sites regularly by an appropriately licensed (as required) contractor (to meet Performance Criteria B). 
- Keep waste, which has the propensity to blow away or attract pest and native fauna, in receptacles with lids (to meet Performance Criteria B). 
- 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).

Training (to meet Performance Criteria A to C)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding waste management.

Monitoring and Auditing
- Undertake regular inspections of on-site facilities to ensure all waste is being stored, handled, disposed and transported in accordance with regulations.
- Undertake inspections of the effectiveness of waste management controls after significant rainfall events.

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 control measures within 5 business days of initial notification where waste issues are identified or have the potential to occur in the future.
- Manager Environment CU / Project Director CU to Investigate all incidents in relation to waste management, including reporting to the appropriate regulators.
- Manager Environment CU to respond to complaints received, within 2 business days, relating to waste management and rectify legitimate problems as needed.
- 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 Project Director CU as soon as possible in the event of any significant waste management issue. The Manager Environment CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to the appropriate regulators within 21 days of initial notification in the event of any significant waste management incident occurs (impacting MNES).
Element: Waste Management

Adaptive management program

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with waste management;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.13 Greenhouse Gases

<table>
<thead>
<tr>
<th>Element</th>
<th>Greenhouse Gases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>To minimise greenhouse gas emission loads from construction activities.</td>
</tr>
</tbody>
</table>

Activities
- Operation of plant and equipment and trucks for haulage will produce greenhouse gas emissions.
- Increased greenhouse gases may then negatively impact the natural environment.

Performance Criteria / Indicators

A. 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.
B. The calculable greenhouse gas emissions are reduced through implementation of planning, design and management actions.
C. No complaints are received from regulators or the community in relation to greenhouse gas emissions.

Mitigation
- Track the CU Project’s energy and fuel usage via the Port’s EcoBiz system and implement efficiency measures (to meet Performance Criteria B) by:
  - Installing energy saving timers and energy efficient lighting where possible;
  - Maintaining plant and equipment to manufacturer’s standards;
  - Planning construction works to avoid double handling of materials;
  - Using fuel efficient vehicles on-site; and
  - Turning off engines when any significant delays occur.
- Reduce energy through material use and selection by:
  - Selecting appliances considering energy efficiency;
  - Considering use of materials with high recycled content or lower embodied construction materials; and
  - Reducing the quantity of required construction material by optimising design, where feasible.
- Investigate the use of renewable energy on-site, (to meet Performance Criteria A and B), through:
  - Investigating renewable energy options for generating electricity for construction site facilities; and
  - Investigating the use of solar panels for rock wall, security and road lighting during construction and powering isolated items such as pumps.
- 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).

Training (to meet Performance Criteria A to C)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding the reduction of greenhouse gas emissions and greenhouse gas awareness.

Responsibility

Environment Manager CU/Environmental Advisor CU
Project Director CU
Environment Manager CU
Environment Manager CU
Manager Environment CU
Element | Greenhouse Gases
---|---
**Monitoring and Auditing**
- Monitor energy usage and changes to efficiency on-site, primarily through monitoring fuel consumption to track construction greenhouse gas emissions, detect trends early and implement measures to address any unforeseen increases in emissions.
- Monitor energy usage and solar production to determine effectiveness of mitigation measures.

**Responsibility**
- 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:
- Implement appropriate control measures promptly where monitoring indicates inefficient energy use or excessive fuel consumption.
- Investigate all complaints in relation to implementation of mitigation measures promptly and rectify legitimate problems.
- 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 Project Director CU as soon as possible in the event of a significant greenhouse gas emission issue. The Manager Environment CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report to the appropriate regulators in a timely manner in the event of a significant greenhouse gas emission incident within 21 days.

**Adaptive management program**
- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities associated with greenhouse gas emission sources;
- The Manager Environment CU will periodically (min 6 monthly) review risks associated with greenhouse gas emissions, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;
- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- The Manager Environment CU will address the consequences of significant environmental incidents (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
## 5.14 Transport & Infrastructure

<table>
<thead>
<tr>
<th>Element</th>
<th>Transport &amp; Infrastructure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>MEDIUM</td>
</tr>
<tr>
<td><strong>Objectives</strong></td>
<td></td>
</tr>
<tr>
<td>To avoid disruption to existing road transport traffic from construction activities.</td>
<td></td>
</tr>
<tr>
<td>To avoid degradation of existing road transport infrastructure from construction activities.</td>
<td></td>
</tr>
</tbody>
</table>

**Activities**

- Trucks hauling construction material and construction CU Project personnel vehicles will generate additional traffic loading on existing roads.
- Traffic congestion may occur at some key road intersections due to construction traffic, particularly haulage trucks.
- Degradation of pavement may occur due to additional traffic loading on pavements from construction traffic, particularly haulage trucks.
- Trucks hauling construction material may track soils onto roads and generate dust.

**Performance Criteria / Indicators**

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.
B. Traffic delays from construction activities do not contribute significantly to peak traffic loads.
C. Pavement conditions meet appropriate standards.
D. No complaints are received from regulators or the community in relation to construction haulage traffic.

**Mitigation**

- Undertake Road Safety Assessment Study, including traffic operations, safety and pavement impact assessment, prior to commencement of quarry haulage (to meet Performance Criteria A and C).
- Determine the need for pavement rehabilitation and maintenance in consultation with the Department of Transport and Main Roads (to meet Performance Criteria C).
- Conduct pavement rehabilitation and maintenance to cater for the additional loadings from construction related heavy vehicles if required (to meet Performance Criteria C).
- Investigate intersection improvements at the Port to mitigate against additional traffic impacts from construction related activities (to meet Performance Criteria A, B and D).
- 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).
- Designate internal traffic routes on the construction site (to meet Performance Criteria A and B).
- Restrict entry and departure of heavy haulage vehicles to and from the site to standard daytime hours (i.e. 6:00 am – 6:00 pm) (to meet Performance Criteria B and D).
- Install a wheel wash where heavy vehicles move off-site (to meet Performance Criteria A).

**Responsibility**

- Project Director CU
### Element: Transport & Infrastructure

- Implement haulage schedule for traffic if required by Road Safety Assessment Study (to meet Performance Criteria B and D).
- Update the Port Community Liaison Group and Port Customers as required for any transport safety and infrastructure issues (to meet Performance Criteria D).

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

- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding traffic management, particularly heavy vehicle movements.

### Monitoring and Auditing

- Track heavy vehicle movements to determine the effectiveness of traffic control measures.
- Monitor road infrastructure for wear and tear and pavement degradation.
- Conduct traffic monitoring in the event of a complaint and/or at the request of the regulators.

### 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:

- Project Director CU to review traffic management requirements and engage in discussions with regulators if any adverse impacts are observed / reported.
- Project Engineer CU to review intersection performance and apply alternative improvements if any adverse impacts are observed / reported.
- Project Director CU / Project Engineer CU / to review heavy vehicle route or driver training/induction if any adverse impacts are observed / reported.
- Undertake road repairs as soon as practicable.
- Project Director CU to investigate all incidents in relation to traffic management within 2 business days and undertaken appropriate actions, including reporting to the appropriate regulatory.
- Project Director CU to respond to all complaints within 2 business days in relation to traffic management promptly and rectify legitimate problems if needed.
- 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

- The Contractor will maintain a site activity log, recording the movement of heavy vehicles occurring during various times of the day to assist with the retrospective investigation of any incidents / complaints.
- All CU Project personnel will inform the Manager Environment and Project Director CU as soon as possible in the event of a significant traffic management issue. The Project Director CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Project Director CU 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 Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with transport and infrastructure aspects;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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 (planned and unanticipated); and
- The Manager Environment CU will review the plan under the following circumstances:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
5.15 Cultural Heritage

5.15.1 Traditional Owner Cultural Heritage

<table>
<thead>
<tr>
<th>Element</th>
<th>Traditional Owner Cultural Heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>MEDIUM</td>
</tr>
<tr>
<td>Objectives</td>
<td>To conduct all construction activities in accordance with the <em>Aboriginal and Cultural Heritage Act 2003 Duty of Care Guidelines</em>.</td>
</tr>
<tr>
<td></td>
<td>To avoid disturbance of significant Traditional Owner values, artefacts or places during construction activities.</td>
</tr>
</tbody>
</table>

Activities
- 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

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.
B. No loss or disturbance of significant Traditional Owner values or artefacts resulting from construction activities.
C. 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 CHMP.
D. No complaints from the regulators or people likely to be affected by damage to Traditional Owner areas or sites.

Mitigation
- Develop and maintain a Cultural Heritage Management Plan in consultation with Traditional Owners (to meet Performance Criteria A and D).
- Engage in ongoing consultation with Traditional Owners in accordance with the Cultural Heritage Management Plan (to meet Performance Criteria B, C and D).
- Provide cultural heritage induction to relevant CU Project personnel prior to commencement of work (to meet Performance Criteria A, B and C).
- Cease work immediately if any Traditional Owner cultural heritage sites or materials are discovered during construction activities pending an inspection by Traditional Owner representative(s) (to meet Performance Criteria C).
- 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).

Responsibility
- POTL Legal Section
- Project Director CU
- Manager Environment CU
- Project Director CU/Contractor
- Project Director CU/Contractor
- Manager Environment CU

Training (to meet Performance Criteria A to D)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding cultural heritage.

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Document Type Plan

Document No. POT 2099

Revision 0
Date 17/02/2020
Page Page 84 of 122

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Element  

| Traditional Owner Cultural Heritage |

**Monitoring and Auditing**

- 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.

**Responsibility**

- 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:

- POTL Legal and Manager Environment CU 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.
- Manager Environment CU to investigate all incidents in relation to cultural heritage within 2 business days of initial notification and undertaken appropriate actions.
- POTL Legal to respond to all complaints relating to cultural heritage within 2 business days and rectify legitimate problems.
- 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**

- All CU Project personnel will notify the Manager Environment and Project Director CU immediately of any findings of potential cultural heritage significance. The Manager Environment CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will inform the Traditional Owners / DES of any suspected Traditional Owner discoveries in accordance with the Cultural Heritage Management Plan.

**Adaptive management program**

- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
### 5.15.2 General Cultural Heritage

<table>
<thead>
<tr>
<th>Element</th>
<th>General Cultural Heritage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
</tbody>
</table>
| LOW | To conduct all construction activities in accordance with the *Queensland Heritage Act 1992*.  
To avoid disturbance or degradation of significant heritage items or places during construction activities. |

#### Activities
- Construction activities have the potential to destroy items of cultural significance.
- Degradation or loss of cultural heritage items or places may occur.

#### Performance Criteria / Indicators

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.

B. No loss or disturbance of significant heritage items or places resulting from construction activities.

C. 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.

D. No complaints from regulators or people likely to be affected by damage to heritage areas or sites.

#### Mitigation
- Provide cultural heritage induction to relevant CU Project personnel prior to work commencing (to meet Performance Criteria A, B and C).
- Cease work around suspected heritage discoveries and notify DES immediately (to meet Performance Criteria C).

#### Training
(to meet Performance Criteria A to D)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding cultural heritage.

#### Responsibility
- Manager Environment CU
- Project Director CU / Contractor / Manager Environment CU
- Manager Environment CU
- Environmental Advisor CU

#### Monitoring and Auditing
- 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.

#### 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:

- Manager Environment CU to investigate all incidents to/discoveries of cultural heritage associated with works; including reporting to Qld Department of Environment and Science within 24 hours of initial notification;
- Follow advice provided by DES regarding cultural heritage discoveries.
- Manager Environment CU to respond to all complaints in relation to cultural heritage within 2 business days and rectify legitimate problems where needed.
- 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.
**Element** General Cultural Heritage

**Reporting**
- All CU Project personnel will notify the Manager Environment and Project Director CU immediately of any findings of potential cultural heritage significance. The Manager Environment CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will report any suspected cultural heritage discoveries to DES.

**Adaptive management program**
- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);
- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities;
- The Manager Environment CU will periodically (min 6 monthly) review 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 periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;
- 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:
  - performance reports indicate performance targets/indicators may not be achieved;
  - according to approved timeframes; or the impacts of significant environmental incidents.
## 5.16 Visual Amenity & Lighting

<table>
<thead>
<tr>
<th>Element</th>
<th>Visual Amenity and Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residual Risk Level</td>
<td>Objectives</td>
</tr>
<tr>
<td>MEDIUM</td>
<td>To minimise any temporary adverse visual impacts associated with construction activities.</td>
</tr>
<tr>
<td></td>
<td>To minimise the lighting requirements for construction activities.</td>
</tr>
</tbody>
</table>

### Activities
- Local scenic amenity may be affected by construction plant, waste and suspended sediment in the marine environment (Section 5.5 and 5.12).
- Dust emissions from the construction activities could cause adverse visual effects (Section 5.9).
- Scenic amenity could be adversely affected by artificial light associated with the port infrastructure used during night time construction.
- Lighting may negatively impact on marine and terrestrial fauna.

### Performance Criteria / Indicators

- 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.
- B. Minimal visual impact on water clarity from construction activities in surrounding areas.
- C. Minimal visual impact from dust clouds from construction activities in surrounding areas.
- D. Minimal light spill outside of POTL controlled areas.
- E. No complaints are received from regulators or the community in relation to visual amenity or lighting.

### Mitigation
- Fence the construction site and install controlled access structures in a similar manner to the existing Port (to meet Performance Criteria C).
- Maintain a high standard of site cleanliness and presentation (to meet Performance Criteria B and C).
- Stabilise reclaimed land progressively and limit the size of disturbed and exposed land to an operational minimum (e.g. access road verges) (to meet Performance Criteria B and C).
- Manage lighting design, installation and orientation to reduce light spill from the site as long as it is consistent with existing Operational Health and Safety and Land Use codes, (to meet Performance Criteria A and D) in order to:
  - Reduce light spill from the site onto the surrounding marine environment; and
  - Reduce light spill from the site to shorebird habitat on the spit at the mouth of Ross River.
- 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).
- .

### Training (to meet performance criteria A to E)
- Ensure that the appropriate CU Project personnel undertake environmental awareness and training covering the requirements of this CEMP regarding visual amenity and lighting issues.
## Visual Amenity and Lighting

### Monitoring and Auditing

- 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 I), augmented by the regular POTL 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.

<table>
<thead>
<tr>
<th>Responsibility</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental Advisor CU</td>
</tr>
<tr>
<td>Environmental Advisor CU / Project Engineer CU</td>
</tr>
</tbody>
</table>

### 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.
- Project Director 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 and stormwater management practices if any adverse visual impacts are observed / reported.
- Project Engineer 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.
- Investigate all incidents in relation to visual amenity or lighting control promptly and undertaken appropriate actions.
- Project Director CU to respond to all complaints relating to visual amenity or lighting control promptly and rectify legitimate problems.
- 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 Project Director CU of any incidents resulting in visual amenity or lighting complaints. The Manager Environment CU will investigate and report to the GM I&E with any additional investigation(s) undertaken as required.
- The Manager Environment CU will inform the regulators in a timely manner in the event of any significant visual amenity or lighting incident.
<table>
<thead>
<tr>
<th>Element</th>
<th>Visual Amenity and Lighting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Adaptive management program</strong></td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will ensure new data/information is collected and incorporated into this plan/CEMP, as a result of implementing this plan and new information from external sources (e.g. academic literature, EPBC policy statements);</td>
<td></td>
</tr>
<tr>
<td>- The Environmental Advisor will effectively coordinate, schedule and/or trigger monitoring, risk management, auditing and reporting activities in association with visual amenity and lighting;</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will periodically (min 6 monthly) review risks associated with construction lighting impacts, including in response to the risk level, changing circumstances or the results from implementing contingency response/corrective actions;</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will periodically (min 6 monthly) review the effectiveness of management measures with relatively long implementation timeframes, significant levels of uncertainty and upon which the plan is highly dependent;</td>
<td></td>
</tr>
<tr>
<td>- 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.</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will address the consequences of significant environmental incidents (planned and unanticipated); and</td>
<td></td>
</tr>
<tr>
<td>- The Manager Environment CU will review the plan under the following circumstances:</td>
<td></td>
</tr>
<tr>
<td>• performance reports indicate performance targets/indicators may not be achieved;</td>
<td></td>
</tr>
<tr>
<td>• according to approved timeframes; or the impacts of significant environmental incidents.</td>
<td></td>
</tr>
</tbody>
</table>
6 SUMMARY OF MATTERS OF NATIONAL ECOLOGICAL SIGNIFICANCE MANAGEMENT

For ease of reference, Table 5 summarises the project specific management controls, performance criteria, early warning triggers and corrective actions relevant to MNES for rockwall construction. This table incorporates relevant aspects from Environmental Elements tables in Section 5.
## Table 5: Summary of MNES Management aspects for CU Project Rockwall Construction

<table>
<thead>
<tr>
<th>Objective</th>
<th>Performance Criteria</th>
<th>Controls</th>
<th>Performance Indicators</th>
<th>Early-warning trigger</th>
<th>Corrective Actions</th>
</tr>
</thead>
<tbody>
<tr>
<td>To mitigate impacts to MNES from the construction of the reclamation area</td>
<td>No injury or fatality to marine megafauna as a result of rock wall construction activities.</td>
<td>Suitably trained Marine Fauna Observers undertake visual observation of marine megafauna around active construction fronts and vessel movements. Daily pre-start checks undertaken for marine megafauna in the nominated observations zone prior to commencing construction activities. Active awareness maintained of marine megafauna throughout daily construction activities, including within the exclusion zone. Activity ceased for rock wall construction activities if marine fauna enter the exclusion zones as specified in the MEMP (POT 2135) Works do not recommence 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.</td>
<td>100% of personnel undertaking marine fauna observations are suitably trained. Marine megafauna exclusions zones are maintained for the duration of the rock wall construction activities. Daily fauna logs maintained by fauna observers. Daily fauna logs audited by POTL regularly. Construction works are ceased on 100% of occasions when marine megafauna are observed within the deemed exclusion zone. Underwater noise assessments confirm the exclusion zones being implemented are appropriate. No complaints received in relation to rockwall construction impacts on marine megafauna. No marine megafauna stranding reports associated with rock wall construction activities.</td>
<td>Change in site personnel involved in activities that require marine fauna observation. Daily fauna logs missing or not present for all days of operation. Non conformance identified from audits relating to marine fauna observation. Decreased trend in recorded stop works frequency. Any reported marine megafauna stranding or deaths in Cleveland Bay. Any injured marine megafauna in the vicinity of the rock wall construction activities.</td>
<td>Refresher training for fauna observers. Review of onboarding process / training matrix. Increase frequency of audits undertaken on Marine Fauna observations to ensure no further non-conformances. Attendance Toolbox meetings with construction contractors. Escalation through contractual process if consecutive CAR / non conformances raised relating to marine fauna observation.</td>
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<td>No significant reduction in marine megafauna diversity or distribution as a result of Rockwall construction activity</td>
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<td>Suitably trained Marine Fauna Observers undertake visual observation of marine megafauna around active construction fronts and vessel movements. Activity ceased for rock wall construction activities if marine fauna enter the exclusion zones as specified in the MEMP (POT 2135). Induction package includes Megafauna awareness. General site management / cleanliness maintained to a high level to prevent discharge of rubbish or oils/chemicals entering the water. Regular reviews / audits undertaken for marine fauna observers.</td>
<td>100% of personnel undertaking marine fauna observations are suitably trained. Construction works are ceased on 100% of occasions when marine megafauna are observed within the relevant exclusion zone. No marine megafauna stranding reports associated with rock wall construction activities. Daily fauna logs maintained by fauna observers. Daily fauna logs audited by POTL regularly. No trends identified in Fauna observer daily log in megafauna presence/absence.</td>
<td>Non conformance identified from audits relating to marine fauna observation. Any change in marine megafauna diversity or distribution in known habitat areas. Any reported megafauna stranding, injury or deaths in Cleveland Bay. Any reduction in marine megafauna sightings (turtles, dolphins). Any impacts to the nature and distribution of seagrass in Cleveland Bay other than EPBC Act approved.</td>
<td>Improvement in Management practices (rubbish, sediment, chemical storage). Refresher training for fauna observers. Number of fauna observation audits increased to ensure no further non-conformances. Investigate marine megafauna stranding’s to determine cause, location. Attend Toolbox meetings with construction contractors. Consultation with ITAC / Department.</td>
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<td>No permanent loss of benthic habitat beyond the development footprint</td>
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<td>Reclamation footprint defined in contract documentation. Reclamation works will be spatially/cadastral surveyed to ensure works remain within the approved reclamation footprint (Reclamation Integrity Plan within the CEMP POT 2099). Rockwall position assessments undertaken in line with Reclamation Integrity Plan.</td>
<td>100% of reclamation works are kept within the boundary of the approved area. Rockwall position assessments undertaken in line with Reclamation Integrity Plan. Routine on site audits identifies a potential deviation in rockwall construction alignment. Rock quantities not matching those expected.</td>
<td>Revisit the construction methodology. Identification and removal of any rocks or structures outside of the development footprint.</td>
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<td>No significant long-term behavioural impacts to marine megafauna from rock wall construction activities</td>
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<td>Review observation zones, exclusion zones based on Underwater noise assessments and provide recommendation to ITAC</td>
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</table>
7 CONTINGENCY PLANS

As part of its Quality Management System, POTL 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 POTL 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 6 details the contingency plans in place for the CU Project.

Table 6: CU Project Contingency Plan

<table>
<thead>
<tr>
<th>Contingency</th>
<th>Response</th>
<th>Responsibility</th>
<th>Timeframe</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical emergency</td>
<td>Implement POTL Emergency Response Plan</td>
<td>Safety Advisor CU</td>
<td>Immediately</td>
</tr>
<tr>
<td>Personnel fall into water</td>
<td>Implement POTL Emergency Response Plan</td>
<td>Safety Advisor CU</td>
<td>Immediately</td>
</tr>
<tr>
<td>Cyclone or other extreme weather event</td>
<td>Implement POTL Cyclone Response Plan which details POTL’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.</td>
<td>Project Director CU</td>
<td>As detailed in the cyclone readiness chart</td>
</tr>
<tr>
<td>Breach in reclamation structure</td>
<td>Implement CU Reclamation Integrity Management Plan</td>
<td>Project Director CU</td>
<td>Immediately</td>
</tr>
<tr>
<td>Securing of water management systems in the event of extreme (severe) weather forecast</td>
<td>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.</td>
<td>Project Director CU</td>
<td>Prior to extreme (severe) weather (where possible)</td>
</tr>
<tr>
<td>Equipment falls into water</td>
<td>Implement Safe Work Methods as detailed in Project specific Safe Work Method Statements for rock wall construction/ reclamation activities.</td>
<td>Contractor</td>
<td>Immediately</td>
</tr>
<tr>
<td>Contingency</td>
<td>Response</td>
<td>Responsibility</td>
<td>Timeframe</td>
</tr>
<tr>
<td>------------------------------------------------</td>
<td>--------------------------------------------------------------------------</td>
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<tr>
<td>Uncontrolled tailwater release</td>
<td>Implement mitigation actions in Tailwater Management Plan</td>
<td>Manager Environment CU</td>
<td>Immediately</td>
</tr>
<tr>
<td>Marine megafauna incident</td>
<td>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.</td>
<td>Contractor / Project Director CU / Manager Environment CU</td>
<td>Immediately</td>
</tr>
<tr>
<td>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))</td>
<td>In the event of such a non-project related incident, POTL will discuss these impacts within the core and project teams, with the POTL 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, POTL will engage with the relevant regulators prior to making changes to discuss the proposed changes and the likely benefits to be achieved.</td>
<td>POTL Environmental &amp; Planning Team</td>
<td>To be determined according to the nature of the incident / impact</td>
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<tr>
<td>Level</td>
<td>Title</td>
<td>Relevance</td>
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<td><strong>Commonwealth</strong></td>
<td>Aboriginal and Torres Strait Islander Heritage Protection Act 1984</td>
<td>Regulates the preservation and protection against desecration of areas and objects that are of Aboriginal or Torres Strait Island signficance.</td>
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<td>Biosecurity Act 2015</td>
<td>Manages biosecurity threats to plant, animal and human health.</td>
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<td></td>
<td>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</td>
<td>Protects and manages nationally significant environmental and heritage matters, including the Great Barrier Reef World Heritage Area.</td>
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<td></td>
<td>Maritime Transport and Offshore Facilities Security Act 2003</td>
<td>Establishes a requirement for maritime security plans for certain port facilities, including the Port of Townsville, which establish security zones and access procedures.</td>
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<td>Native Title Act 1993</td>
<td>Requires native title notification to undertake works, including the use of Unallocated State Land.</td>
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<td></td>
<td>Protection of the Sea (Prevention of Pollution from Ships) Act 1983</td>
<td>Regulates the prevention of accidental and operational marine environment pollution from shipping.</td>
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<tr>
<td><strong>State</strong></td>
<td>Aboriginal Cultural Heritage Act 2003</td>
<td>Establishes a duty of care to take all reasonable and practicable measures to ensure activities do not harm Aboriginal cultural heritage.</td>
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<td></td>
<td>Coastal Protection and Management Act 1995</td>
<td>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.</td>
<td></td>
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<td></td>
<td>Environmental Protection Act 1994 and regulations / policies</td>
<td>Regulates relevant environmental approvals and development approvals, including for dredging-related operations and general environmental protection requirements.</td>
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<td></td>
<td>Fisheries Act 1994 and regulations</td>
<td>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 salt-marsh 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.</td>
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<td></td>
<td>Land Act 1994 / Land Title Act 1994</td>
<td>Provides for the allocation of tenure over state land, including Unallocated State Land such as land below the high water mark where dredging occurs.</td>
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</table>
### 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:

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

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 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

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.
APPENDIX B

EPBC Approval Conditions Reference Table
<table>
<thead>
<tr>
<th>Ref</th>
<th>Cond. No.</th>
<th>Condition Requirement</th>
<th>Plan Reference</th>
<th>Demonstration of how the plan addresses the condition requirement</th>
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<tbody>
<tr>
<td>1</td>
<td>8</td>
<td>The person taking the action must ensure that:</td>
<td>5.4</td>
<td>Sections 5.4 (Land) and 5.5 (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.</td>
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<td>a) the reclamation area does not exceed 110 hectares at stage 1 of the action in accordance with Appendix 8;</td>
<td>5.5</td>
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<td>b) the reclamation area does not exceed 152 hectares in total, in accordance with Appendix C; and</td>
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<td>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.</td>
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<td>2</td>
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<td>The person taking the action must ensure that a survey of the reclamation area in Appendix 8 is undertaken before the commencement of the action, and a survey of the final reclamation area shown in Appendix C is undertaken before the commencement of stage 2 of the action, to determine the presence and density of seagrass within the reclamation footprint.</td>
<td>5.6</td>
<td>Section 5.6 details the monitoring requirement to survey the reclamation area footprint for seagrass prior to commencement.</td>
</tr>
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<td>3</td>
<td>10</td>
<td>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:</td>
<td>4.3</td>
<td>Section 4.3 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.</td>
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<td>a) 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;</td>
<td>5</td>
<td>Section 5 details all environmental elements associated with the construction activity. Objectives and performance criteria for each element is detailed in the sub-sections.</td>
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<td>b) details on the design, materials, and methods to be used for constructing the reclamation area, that meet best practice and/or recognised industry standards;</td>
<td>2</td>
<td>Section 2 details the construction approach for the rockwall/reclamation area, including the design, materials and construction methods.</td>
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<th>Plan Reference</th>
<th>Demonstration of how the plan addresses the condition requirement</th>
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<tr>
<td>6</td>
<td>10c</td>
<td>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;</td>
<td>5</td>
<td>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.</td>
</tr>
<tr>
<td>7</td>
<td>10d</td>
<td>management measures for potential acid sulphate soils;</td>
<td>5.4 Appendix F</td>
<td>Section 5.4 and Appendix F detail the management measures to address potential acid sulphate soils, and corrective actions if ASS is encountered, during rockwall construction activities.</td>
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<td>8</td>
<td>10e</td>
<td>a program to monitor the integrity of the reclamation area, including monitoring locations, methods, and frequency;</td>
<td>Appendix G</td>
<td>Appendix G provides details of the design, standards and monitoring program to ensure the integrity of the reclamation area.</td>
</tr>
<tr>
<td>9</td>
<td>10f</td>
<td>a program to monitor, manage and treat tailwater before release into the marine environment;</td>
<td>Appendix H</td>
<td>Appendix H details the management and monitoring program associated with tailwater discharge from the reclamation area.</td>
</tr>
<tr>
<td>10</td>
<td>10g</td>
<td>management measures to maintain the integrity of the reclamation area in the case of extreme weather events;</td>
<td>5.4 5.5 6 Appendix G</td>
<td>Sections 5.4 and 5.5 address actions associated with reclamation integrity. Section 6 provides contingency planning that includes in the event of reclamation integrity issues. Appendix G provides details of the design, standards and monitoring program to ensure the integrity of the reclamation area.</td>
</tr>
<tr>
<td>11</td>
<td>10h</td>
<td>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;</td>
<td>4.1 4.2</td>
<td>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.</td>
</tr>
<tr>
<td>12</td>
<td>10i</td>
<td>contingency plans should undesirable or unforeseen impacts occur, including as a result of extreme weather events or any additional pressures that may impact MNES;</td>
<td>6</td>
<td>Section 6 details contingency plans for key potential emergencies and incidents associated with the construction of the rockwall that may increase the risk to MNES.</td>
</tr>
<tr>
<td>13</td>
<td>10j</td>
<td>mechanisms for the regular review of the performance of the CEMP in achieving its objectives to support continuous improvement;</td>
<td>4.7 4.12</td>
<td>Section 4.7 and 4.12 outline the approach for regular review of the CEMP, including at least annual reviews and regular auditing.</td>
</tr>
<tr>
<td>Ref</td>
<td>Cond. No.</td>
<td>Condition Requirement</td>
<td>Plan Reference</td>
<td>Demonstration of how the plan addresses the condition requirement</td>
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<tr>
<td>14</td>
<td>10k</td>
<td>procedures for reporting to the Department on outcomes of environmental monitoring, performance monitoring and periodic reviews of the CEMP;</td>
<td>4.13</td>
<td>Section 4.13 outlines the approach for reporting to the Department on the outcomes of CEMP delivery, monitoring and reviews/auditing of the CEMP.</td>
</tr>
<tr>
<td>15</td>
<td>10l</td>
<td>mechanisms for stakeholder consultation on the implementation of the CEMP; and</td>
<td>4.1, 4.7, 4.16</td>
<td>Section 4.1, 4.7 and 4.16 detail the consultation with stakeholders undertaken in the development of the CEMP, linking to stakeholder consultation/engagement mechanisms (Section 4.16) moving forwards.</td>
</tr>
<tr>
<td>16</td>
<td>10m</td>
<td>an outline of the governance structure, including roles and responsibilities for implementing the CEMP.</td>
<td>4 particularly 4.5</td>
<td>Section 4, especially section 4.5 (Organisational structural and responsibilities) provides details of the internal POTL governance structure. This includes detailing the responsibilities of key roles with implementation of the CEMP.</td>
</tr>
<tr>
<td>17</td>
<td>11</td>
<td>The approved CEMP, or subsequent version of the CEMP as provided for under Condition 38, must be implemented.</td>
<td>4.4</td>
<td>Section 4.4 details the implementation of the CEMP and the responsibility for ensuring the CEMP actions are installed, taken and maintained.</td>
</tr>
<tr>
<td>18</td>
<td>25</td>
<td>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.</td>
<td>4.1, 4.16</td>
<td>Section 4.1 and 4.16 detail the consultation with indigenous stakeholders undertaken in the development of the CEMP, linking to stakeholder consultation/engagement mechanisms (Section 4.16) moving forwards.</td>
</tr>
<tr>
<td>19</td>
<td>31</td>
<td>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.</td>
<td>4.2</td>
<td>Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans.</td>
</tr>
<tr>
<td>20</td>
<td>32</td>
<td>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.</td>
<td>4.2</td>
<td>Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans.</td>
</tr>
<tr>
<td>Ref</td>
<td>Cond. No.</td>
<td>Condition Requirement</td>
<td>Plan Reference</td>
<td>Demonstration of how the plan addresses the condition requirement</td>
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<tr>
<td>21</td>
<td>33</td>
<td>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.</td>
<td>4.2</td>
<td>Section 4.2 details the peer review undertaken for the CEMP and associated sub-plans. The peer review comments and POTL advice and response has been supplied to the Department as part of the Management Plan approval process.</td>
</tr>
<tr>
<td>22</td>
<td>35</td>
<td>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.&quot;</td>
<td>4.14</td>
<td>Section 4.14 outlines the records management system in operation for the CU Project in line with the POTL Quality Management System.</td>
</tr>
<tr>
<td>23</td>
<td>36</td>
<td>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.</td>
<td>4.13</td>
<td>Section 4.13 details the annual reporting for the project, covering a compliance review against the Approval conditions, outcomes of environmental monitoring and CEMP periodic review results.</td>
</tr>
<tr>
<td>24</td>
<td>38</td>
<td>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</td>
<td>4.7</td>
<td>Section 4.7 identifies the option of amending the CEMP without submitting it for approval and specifies the steps to be taken if this option is implemented.</td>
</tr>
</tbody>
</table>
### Condition Requirement

likely to have a new or increased impact. If the person taking the action makes this choice they must:

- notify the Department in writing that the approved plan has been revised and provide the Department with an electronic copy of the revised plan;
- implement the revised plan from the date that the plan or strategy is submitted to the Department; and
- 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.

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**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.

**4.7** Section 4.7 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.

**4.7** Section 4.7 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.

**27 41** 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:

- Condition 38 does not apply, or ceases to apply, in relation to the revised plan; and
- the person taking the action must implement the plan approved by the Minister.

**4.7** Section 4.7 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.
<table>
<thead>
<tr>
<th>Ref</th>
<th>Cond. No.</th>
<th>Condition Requirement</th>
<th>Plan Reference</th>
<th>Demonstration of how the plan addresses the condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>28</td>
<td>42</td>
<td>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.</td>
<td>4.7</td>
<td>Section 4.7 identifies the option of amending the CEMP without submitting it for approval only where condition 38 applies.</td>
</tr>
<tr>
<td>29</td>
<td>44</td>
<td>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).</td>
<td>Document Control Sheet</td>
<td>The document control sheet (pg. 2) identifies the date when the CEMP and associated sub-plans were published on the POTL website.</td>
</tr>
</tbody>
</table>
APPENDIX C

Contact Details for CU Project
<table>
<thead>
<tr>
<th>Position</th>
<th>Organisation</th>
<th>Phone Numbers</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Infrastructure Manager</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Environment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Director CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Manager Environment CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Project Engineer CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Environmental Advisor CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Environmental Advisor CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Safety Advisor CU</td>
<td>POTL</td>
<td>1800 531 561</td>
<td><a href="mailto:cugeneral@townsville-port.com.au">cugeneral@townsville-port.com.au</a></td>
</tr>
<tr>
<td>Port Tower</td>
<td>POTL Duty Officer</td>
<td>07 4781 1683</td>
<td></td>
</tr>
<tr>
<td>Regional Harbour Master</td>
<td>Maritime Safety Queensland</td>
<td>07 4421 8100</td>
<td><a href="mailto:townsville.maritime@msq.qld.gov.au">townsville.maritime@msq.qld.gov.au</a></td>
</tr>
</tbody>
</table>
APPENDIX D

Environmental Incident Written Notice Form
# ENVIRONMENTAL INCIDENT WRITTEN NOTICE

<table>
<thead>
<tr>
<th>Date of Incident</th>
<th>………/………/………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of Incident</td>
<td>………:………. am / pm</td>
</tr>
<tr>
<td>Location of Incident</td>
<td></td>
</tr>
<tr>
<td>Incident Details</td>
<td>Describe clearly and in detail the circumstances leading to the incident. As far as possible, verify the facts recorded and identify witnesses.</td>
</tr>
</tbody>
</table>

Quantity and type of substance released, if applicable.

CU Project personnel involved (operator, driver, including their approval / registration number and any others).

Vehicle and registration details, if applicable.

**Suspected Cause of Incident**

**Sampling Results** Results of any sampling performed in relation to the incident, if applicable.
## ENVIRONMENTAL INCIDENT WRITTEN NOTICE

### Corrective Actions
Actions taken to mitigate any environmental harm caused by the incident.

### Preventative Actions
Proposed actions to prevent a recurrence of the incident.

<table>
<thead>
<tr>
<th>Date of Notice</th>
<th>……../……../………</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time of Notice</td>
<td>………:………. am / pm</td>
</tr>
</tbody>
</table>

### Designated Contact Details

- **Name** ………………………………………………………………………………………………………………………
- **Ph No.** ………………………………………………………………………………………………………………………
- **Email** ………………………………………………………………………………………………………………………

Signed (Project Director CU / Manager Environment CU)

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APPENDIX E

Extract from POT442 – Risk Management Guidelines
## ANNEXURE A – QUALITATIVE MEASURES OF CONSEQUENCE OR IMPACT

<table>
<thead>
<tr>
<th>Rank</th>
<th>Operations (Trade)</th>
<th>Financial Loss</th>
<th>Asset Loss</th>
<th>Interruption to Services</th>
<th>Reputation, Image &amp; Political Implications</th>
<th>Performance</th>
<th>Criminal Penalty</th>
<th>Information Security</th>
<th>Safety</th>
<th>Health</th>
<th>ENVIRONMENT</th>
<th>Frequency, Intensity, Duration, Offensiveness of Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Insignificant</td>
<td>$0 - $50K</td>
<td>Little or no impact on assets</td>
<td>&lt; ½ day</td>
<td>Unsubstantiated, low impact, low profile or no news items. No political implications.</td>
<td>Up to 5% variation to KPI</td>
<td>Pecunary</td>
<td>Can be dealt with by routine operations.</td>
<td>Minor temporary – operation, first aid treatment required.</td>
<td>Reversible health effects of concern.</td>
<td>Environmental Nuisance resulting in insignificant impacts on the natural receiving environment, plants and/or wildlife. No impact on community or business.</td>
<td>Low frequency / intensity / duration activity (days). No substantiated offensive amenity impacts on surrounding area.</td>
</tr>
<tr>
<td>2</td>
<td>Minor</td>
<td>$50K - $500K</td>
<td>Minor loss of damage to assets</td>
<td>½ - 1 day</td>
<td>Substantiated, low impact, low news profile. Minor political implications resulting in some aspect of the infrastructure but would be dealt with internally.</td>
<td>5 -10% variation to KPI</td>
<td>Pecunary</td>
<td>May threaten the efficiency or effectiveness of some aspect of the infrastructure but would be dealt with internally.</td>
<td>Minor temporary – medical treatment required.</td>
<td>Severe reversible health effects of concern.</td>
<td>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.</td>
<td>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.</td>
</tr>
<tr>
<td>3</td>
<td>Serious</td>
<td>$500K - $5m</td>
<td>Major damage to assets</td>
<td>1 day – 1 week</td>
<td>Substantiated, public embarrassment, moderate impact, moderate (local) media attention. Political implications resulting in directions given by the shareholding Ministers.</td>
<td>10-25% variation to KPI</td>
<td>Imprisonment</td>
<td>Would not threaten the infrastructure but would mean that the program could be subject to significant review or changed ways of operating.</td>
<td>Major permanent – loss of body part or function.</td>
<td>Short term: health problems or irreversible health effects of concern.</td>
<td>Material Environmental Harm resulting in noticeable adverse or unreasonable impact on the natural environment, plants and/or wildlife within a short term (weeks). Adverse amenity impacts on community giving rise to multiply/sustained complaints.</td>
<td>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 multiply/sustained complaints.</td>
</tr>
<tr>
<td>4</td>
<td>Major</td>
<td>$5m - $10m</td>
<td>Significant loss of assets</td>
<td>1 week – 1 month</td>
<td>Substantiated, public embarrassment, high impact, high (local and national) news profile. High profile actions. Political implications resulting in state/ national inquiry.</td>
<td>25-50% variation to KPI</td>
<td>Imprisonment</td>
<td>May threaten the survival or continued effective functioning of the infrastructure or project and require top-level management intervention.</td>
<td>Major permanent – single fatality, total blindness, quadriplegia.</td>
<td>Health impacts: long term/chronic health problems or life threatening or disabling illness.</td>
<td>Material Environmental Harm resulting in significant adverse or unreasonable impact on the natural receiving environment, plants and/or wildlife within 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.</td>
<td>High frequency / intensity / duration activity carried out during most hours of the day or impact is long term (years). Significant adverse impacts on community.</td>
</tr>
<tr>
<td>5</td>
<td>Catastrophic</td>
<td>&gt;$10m</td>
<td>Complete loss of assets</td>
<td>&gt; 1 month</td>
<td>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.</td>
<td>&gt;50% variation to KPI</td>
<td>Imprisonment</td>
<td>May threaten the survival of not only the infrastructure but also the business, possibly causing major problems for clients.</td>
<td>Multiple fatalities</td>
<td>Long term: permanent or irreversible health problems. Chronic health effects affect too many people.</td>
<td>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.</td>
<td>Permanent high frequency / intensity / duration activity carried out 24/7. Significant adverse impacts on community.</td>
</tr>
</tbody>
</table>
### ANNEXURE B – QUALITATIVE MEASURE OF LIKELIHOOD

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

### ANNEXURE C – RISK EVALUATION FACTORS

<table>
<thead>
<tr>
<th>Likelihood</th>
<th>Consequence</th>
<th>Insufficient</th>
<th>Minor</th>
<th>Serious</th>
<th>Major</th>
<th>Catastrophic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rare</td>
<td>1</td>
<td>L</td>
<td>2</td>
<td>L</td>
<td>M</td>
<td>5</td>
</tr>
<tr>
<td>Unlikely</td>
<td>2</td>
<td>L</td>
<td>2</td>
<td>L</td>
<td>M</td>
<td>8</td>
</tr>
<tr>
<td>Possible</td>
<td>3</td>
<td>L</td>
<td>3</td>
<td>M</td>
<td>S</td>
<td>12</td>
</tr>
<tr>
<td>Likely</td>
<td>4</td>
<td>L</td>
<td>4</td>
<td>M</td>
<td>S</td>
<td>12</td>
</tr>
<tr>
<td>Almost Certain</td>
<td>5</td>
<td>M</td>
<td>5</td>
<td>S</td>
<td>H</td>
<td>20</td>
</tr>
</tbody>
</table>
APPENDIX F

CU Project Acid Sulfate Soil and Contamination Management Plan
APPENDIX G

CU Project Reclamation Integrity Plan
APPENDIX H

CU Project Tailwater Management Plan
APPENDIX I

CU Project Site Monitoring Plan
APPENDIX J

CU Project Stormwater, Sediment & Erosion Control Plan