

# PORT OF BRISBANE CHANNEL ENHANCEMENT PROJECT INITIAL ADVICE STATEMENT

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## Executive Summary

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### Project Background and Purpose

The Port of Brisbane (the 'Port') is a cornerstone of the Queensland economy being Australia's third largest container port and the state's largest multi-cargo port. The Port of Brisbane facilitates approximately 5,300 vessel movements annually, providing critical export and import links between Queensland and world markets. On average, approximately \$55 billion in international trade is handled annually through the Port, which includes around 50% of Queensland's agricultural exports and 95% of its motor vehicles and shipping containers.

The Port is located at the mouth of the Brisbane River and is managed and developed by Port of Brisbane Pty Ltd (PBPL) under a 99-year lease from the Queensland Government. The 96km shipping channel network starts near the intersection of Caloundra and Bribie Island, heads south to the southern tip of Moreton Island and then traverses 16km up the Brisbane River to Breakfast Creek.

Currently, the Port of Brisbane can safely accommodate vessels that transit through the region. However, as one of Australia's three major east coast container ports, PBPL has a responsibility to plan for future growth and for changing global supply chain trends, most notably in this case is the increasing size of vessels that make up the global shipping fleet. This trend over time towards larger vessels, underpinned by strong population growth leading to increasing trade and shipping movements has led PBPL to propose a long-term program of works that will deepen, widen and partially realign the existing shipping channel network that services the Port of Brisbane. The Port of Brisbane Channel Enhancement Project (hereby known as 'the Project') will involve capital dredging works to enable increasingly larger and deeper draught container vessels and bulk cargo ships to safely and efficiently transit through Moreton Bay under a wide range of conditions. In addition to the deepening and widening of existing navigational channels, a number of minor re-alignments and bend radius increases are also proposed to reduce risk whilst entering and leaving the Port.

PBPL must make long-term plans for the management of its shipping channels if it is to maintain appropriate safety standards, and along with the Queensland economy, remain competitive. The Project will involve the development of primarily a safer, but also a more efficient shipping channel over a period of approximately 25 years and will reduce the risk of trade disruption and foregone economic opportunity for Queensland. If the Project does not go ahead, it is likely that larger ships will bypass Queensland for other States, reducing its competitiveness.

Given the fact that two-way passing opportunities are extremely limited under the current channel configuration, the duplication of key sections of the existing channel to accommodate two-way passing will further enhance safety for vessels and reduce the risk of groundings that could present with larger vessels. While there have been no major shipping accidents or incidents affecting Moreton Bay in the past 15 years, there is increased focus on maritime safety worldwide following major incidents over the past decade. There are other advantages to catering for larger vessels, presenting an opportunity for improvements in supply chain efficiency and potentially contributing to emissions reductions.

## Project Description

The nature of the project will result in the need to displace approximately 96.5 million m<sup>3</sup> of material from the Bay, a significant proportion of which is clean sand, but also comprises of volumes of muds, silts and clays. The majority of these works will be conducted in or around existing channel infrastructure. Because of the scale of activity, it is proposed to stage dredging over a 20 to 25 year period, so that it can be undertaken appropriately with regard to how costs are ultimately recovered, as demand arises and in the context of managing the placement and stockpiling of material, and so as not to disrupt ongoing ship movements.

Dredging is currently envisaged to be undertaken using a medium-sized Trailer Suction Hopper Dredge, which collects material from the sea floor with a suction pipe, likened to a 'vacuum cleaner'. This is the same type of vessel that is currently used for maintenance dredging within the Bay, and the majority of Queensland ports. In terms of the additional dredging capacity required, PBPL may engage third party specialists, increase its inhouse capacity, or utilise a combination of both.

There are a number of potential placement options for the dredged material depending on geotechnical properties. Material that is sandy in nature may be suitable for re-use, in applications such as building/manufacturing, beach nourishment or land reclamation. Because there are existing sand providers operating in the local market, PBPL would look to provide sand interstate or overseas if suitable for reuse (though it would not ignore the potential need for sand in the domestic market in a period of high construction activity). To the extent reusable material is monetised, royalties would be payable to the Queensland Government.

Material that is predominantly clay, silts or muds is less suitable for re-use and may require disposal on land (potentially for reclamation) or at sea.

An early assessment of material options and alternatives has been completed by PBPL as part of preparing this IAS. The key findings of these initial investigations have found:

- There is a limited available storage volume (<8 million m<sup>3</sup>) for the placement of the muddy dredge material in the existing Future Port Expansion (FPE) area at Fisherman Islands. This is planned to be used for future maintenance material management requirements at the Port.
- PBPL has recently obtained long term permission under the Moreton Bay Marine Park Zoning Plan for the continuing placement of annual maintenance dredge material at the Mud Island DMPA. Maintaining the capacity and use of the Mud Island DMPA for maintenance material is essential to the maintenance of the existing channel network as well as accommodating future maintenance dredge requirements of the expanded channel network envisioned by the Project.
- There are no large, vacant land holdings at or near the dredge site in the Outer Bar for prospective disposal on land above HAT. If land placement was to be pursued, the prospective site would need to be situated in an area neighbouring the foreshore of Western Moreton Bay or along the lower Brisbane River given limitations of the pumping radius for hydraulic placement (generally less than <5 km) and the requirement for a very large (200 ha+) bunded area for progressive dewatering and drying.

On this basis, the most likely future placement strategy for this muddy material from the Project will be either a new reclamation site or else consideration of a new marine dredge material placement area.

In this context, four 'optimised' DMPA alternatives have been identified and are proposed for further investigation as part of the future EIS for the Project. These include (not in any order of preference at this stage) the following:

Juno Point reclamation – this option would involve beneficial re-use through incremental placement of the material at a new reclamation area at the mouth of the Brisbane River (including consideration of potential extension of Fisherman Island outward)

- A marine placement site in central Moreton Bay, located to the north and east of the current approved Mud Island DMPA.
- A marine placement site in deep water situated at the east of the entrance to the northern shipping channel offshore from the Fairway Beacon at Caloundra.

No additional port infrastructure is proposed at this time, although sand processing or land-based placement activity may require some infrastructure such as seawalls if these options are adopted. No changes to land transportation networks (i.e. road or rail) are proposed. A temporary road may be required to assist with access for the construction of the Juno Point reclamation.

### Existing Environment

Dredging will largely involve deepening and widening of the existing navigational channels for the Port of Brisbane in Moreton Bay. The bay is a relatively shallow embayment at the mouth of the Brisbane River that is sheltered by Bribie Island in the north and south by Moreton and North and South Stradbroke Islands. Large parts of Moreton Bay's marine habitats and its fauna are protected as part of the Moreton Bay Marine Park and the Moreton Bay Ramsar Wetland. No dredging is proposed within the Ramsar wetland or zones of conservation significance within the marine park; all dredging or placement of material will be within the General Use Zone, where capital dredging is permissible or outside of the Marine Park altogether.

The majority of dredging will occur within soft bottom benthic habitat which consists of unconsolidated sand habitat as well as clays and sandy muds. Other habitats within Moreton Bay include subtidal marine plants (i.e. seagrasses), subtidal reef and mangrove and saltmarsh habitats. These habitats are not expected to be directly impacted, although potential indirect impacts such as turbidity and sedimentation will be explored further. Moreton Bay provides important habitat for fauna groups including resident and migratory wading birds, seabirds, fish that are of recreational and commercial value, sharks, whales, dolphins, dugongs and marine turtles. There are a number of threatened species that are known to reside or visit Moreton Bay. Potential impacts to marine fauna from dredging will be examined in the EIS.

Northern Moreton Bay, including its entire seascape, is an important part of the indigenous cultural heritage of the region. Although no specific places of indigenous cultural significance have been identified in previous investigations of the dredge area, there is potential for finding indigenous cultural heritage sites and/or materials in the study area, particularly material from Holocene deposits that were traversed during periods of lower sea levels.

PBPL has already begun engagement with Traditional Owner groups, and these conversations will remain ongoing throughout the life of the project.

## Environmental Approvals

This Initial Advice Statement (IAS) has been prepared to support an application to the Coordinator-General for the Project to be declared a coordinated project requiring an environmental impact statement under Part 4 of the *State Development and Public Works Organisation Act 1971 (Qld)* (SDPWO Act). In accordance with Section 27 (2) of the SDPWO Act, the Project may be declared a coordinated project due to the:

- complex environmental approval requirements at local, State and Commonwealth levels;
- scale of the Project and its strategic economic significance to Queensland;
- potentially significant environmental effects of the Project; and
- extensive supporting infrastructure requirements.

The Project has also been referred under the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) and if deemed to also be a controlled action, it is anticipated that assessment of the Project will be progressed under the Bilateral Assessment Agreement between the Australian and Queensland Governments.

Should the project be declared a coordinated project, environmental and social issues to be assessed in further detail in the Environmental Impact Statement (EIS) (subject to the requirements of the Project's Terms of Reference prepared by the Coordinator-General) are expected to include:

- disturbance of indigenous cultural heritage places, objects or items;
- water quality impacts as a result of dredge plumes, mobilisation of contaminated sediment, accidental spills of contaminants or the release of fine sediments from dredge tailwater should material placed on land require dewatering;
- direct disturbance of soft bottom benthic habitats or ephemeral seagrass habitats and indirect disturbance of other habitats;
- underwater noise from dredge vessel activity causing disturbance to marine fauna;
- vessel strike or entrainment of marine fauna;
- localised or regional scale changes to waves, currents and sediment transport as a result of a new dredge channel configuration;
- visual or noise amenity impacts during dredging activity to bay users or residents, noting that dredging will occur in an area already subject to existing shipping traffic;
- disruption of social or recreational activities within Moreton Bay such as boating, diving or water-based sports;
- disruption to fishing activities within the vicinity of works; and
- economic impacts to the region as a result of the project.

## Consultation

PBPL has already undertaken significant stakeholder consultation on this Project ahead of lodgement of this IAS. Engagement has included Ministerial and Departmental meetings at Federal and State level, discussions with key customers and port users and engagement with a broader range of community representatives including local Traditional Owners. Engagement will continue throughout the development of the EIS and during the Project.

PBPL intends to establish an External Advisory Committee to provide advice throughout the life of the Project.

PBPL is also committed to working with Traditional Owner stakeholders as part of this process. It has just released its second Reconciliation Action Plan and looks forward to working with existing stakeholders and developing new relationships on this journey.

## Summary

In summary, the Project offers the opportunity to:

- Enhance maritime safety and reduce the risk of incidents occurring as vessel sizes increase over time;
- Create a more efficient passage for vessels entering and exiting the Port, potentially both reducing costs and vessel emissions (i.e. air quality and greenhouse gases); and
- Future proof the Port, and therefore the Queensland economy, by enabling it to cater for the anticipated increases in vessel size and potential supply chain disruption.

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## Abbreviations

The following abbreviations have been used in this document:

Abbreviation	Full Name
CG	Coordinator -General
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DMPA	Dredge material placement area
EIS	Environmental Impact Statement
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>
FPE	Future port expansion (reclamation on Fisherman Islands)
IAR	Impact Assessment Report
IAS	Initial Advice Statement
LAT	Lowest astronomical tide
MNES	Matters of National Environmental Significance
NAGD	National Assessment Guidelines for Dredging
PBPL	Port of Brisbane Pty Ltd
PIANC	The World Association for Waterborne Transport Infrastructure
RHM	Regional Harbour Master
SDPWO Act	<i>State Development and Public Works Organisation Act 1971 (Qld)</i>
SEQ	Southeast Queensland
TEU	Twenty-foot equivalent units
TOR	Terms of reference
TSHD	Trailer suction hopper dredge

## 1 Introduction

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### 1.1 Background

The Port of Brisbane (the 'Port') is a cornerstone of the Queensland economy being Australia's third largest container port and the state's largest multi-cargo port. It facilitates approximately 5,300 vessel movements annually, providing critical export and import links between Queensland and world markets. On average, approximately \$55 billion in international trade is handled annually through the Port, which includes around 50% of Queensland's agricultural exports and 95% of its motor vehicles and shipping containers.

The port is located at the mouth of the Brisbane River and is managed and developed by Port of Brisbane Pty Ltd (PBPL) under 99-year sub-leases from a subsidiary of the Queensland Government. The 96km shipping channel network starts near the intersection of Caloundra and Bribie Island, heads south to the southern tip of Moreton Island and then traverses 16km up the Brisbane River to Breakfast Creek.

Currently, the Port of Brisbane can safely accommodate vessels that transit through the region. However, as one of Australia's three major east coast container ports, PBPL is obligated to plan for future growth and for changing global supply chain trends, most notably in this case the increasing size of vessels that make up the global shipping fleet. This trend over time towards larger vessels, underpinned by strong population growth leading to increasing trade, and increased shipping movements has led PBPL to propose a long-term program of works that would deepen, widen and partially realign the existing shipping channel network that services the Port of Brisbane. The Port of Brisbane Channel Enhancement Project (hereby known as 'the Project') will involve capital dredging works to enable increasingly larger and deeper draught container vessels and bulk cargo ships to safely and efficiently transit through Moreton Bay under a wide range of conditions. In addition to the deepening and widening of existing navigational channels, a number of minor re-alignments and bend radius increases are also proposed to optimise vessel manoeuvring whilst entering and leaving the Port.

The Project will largely develop the existing channel, delivering primarily safety benefits but also efficiency and environmental benefits. It will future proof the channel, and its accompanying trade flows, to the benefit of the wider Queensland economy.

### 1.2 Purpose and Scope

#### 1.2.1 Purpose of the IAS

This Initial Advice Statement (IAS) has been prepared on behalf of PBPL to support an application to the Queensland Coordinator-General (CG) for a declared *Coordinated Project* under the provisions of Part 4, Division 2, Section 26(1) of the *State Development and Public Works Organisation Act 1971 (Qld)* (SDPWO Act).

The information provided in this IAS will be used to:

- Assist the CG in deciding whether to declare a project a coordinated project;
- Enable stakeholders to determine the nature and relevance of the proposal to them;

- Assist the CG to determine whether an Environmental Impact Statement (EIS) or Impact Assessment Report (IAR) process is appropriate. PBPL considers that the EIS pathway is appropriate;
- For projects declared under section 26 (1) (a) of the SDPWO Act, subsequently assist the CG to prepare draft terms of reference (TOR) for the EIS;
- Inform stakeholders and the general public about the definition, scope, value and key environmental issues to be investigated through an EIS process for the Project; and
- Identify relevant statutory approvals that may be required for the proposal to proceed under State legislation and approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act).

### 1.2.2 Scope of this Document

This IAS has been prepared to cover the entire scope of the Project. The structure of this document is provided below:

<b>Section 1:</b>	Introduction to the project and purpose
<b>Section 2:</b>	Description of the proponent
<b>Section 3:</b>	Nature of the proposal including scope, land use, project need, construction and operational processes, timeframes and other project-related requirements
<b>Section 4:</b>	Description of the existing environment including natural environment, social and economic environment and land use
<b>Section 5:</b>	Potential project impacts during construction and operation stages
<b>Section 6:</b>	Summary of proposed key environmental management and mitigation measures
<b>Section 7:</b>	Overview of environmental approvals required for the project including State, Commonwealth and local government agency approvals
<b>Section 8:</b>	Description of consultations undertaken to date and proposed community consultation and engagement as the project progresses
<b>Section 9:</b>	References and data sources used

## 2 Proponent

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The Port of Brisbane is managed and developed by Port of Brisbane Pty Ltd (PBPL) and its associated group entities under a 99-year lease from the Queensland Government. PBPL is the proponent for this Project and is responsible for gaining all relevant approvals necessary to facilitate the development of the Project.

The Port of Brisbane provides critical export and import links to world markets. On average, approximately \$55 billion in international trade is handled annually through the Port, which includes around 50% of Queensland's agricultural exports and 95% of its motor vehicles and containers. Close to 20 million tonnes of goods were imported through the port in 2022-23, covering a wide range of products such as cars, petroleum products, building materials, break bulk materials (i.e., fertiliser, chemicals, seeds for farming) and container freight. A further 14 million tonnes of goods were exported. It is also home to the new Brisbane International Cruise Terminal (BICT) – a world-class cruise facility that supports the long-term growth of the cruise tourism industry in Brisbane and Queensland.

Geographically, Brisbane is Australia's largest capital city port. The Port's approximate 1870-hectare (ha) footprint comprises 'wet and dry land' designated for industrial and commercial uses, approximately 693 ha of environmental protection areas, 8,200 metres of quay line, 30 operating berths and a 224 ha Future Port Expansion area which is being progressively developed to support future growth.

In the 2022 financial year, the Port contributed \$7.8 billion to the economy and supported more than 62,900 jobs (this includes 7,900 jobs within the Port boundaries, 28,800 jobs within the surrounding industrial precinct, 25,400 jobs associated with the production of export commodities and 800 jobs related to freight transport). By 2050, it is estimated to provide \$15.4 billion in economic value and support 124,400 jobs (Deloitte Access Economics, 2022).

The Port of Brisbane operates in an area of high environmental significance at the mouth of the Brisbane River and on the edge of Moreton Bay. It also borders Ramsar wetlands (a wetland site designated to be of international importance under the Ramsar Convention) and the Moreton Bay Marine Park. It is separated from residential areas by buffer zones, mitigating potential impacts from the Port's 24/7 operations.

PBPL is owned by the APH Group consortium, comprising four of the world's largest and most experienced infrastructure investors:

- QIC Private Capital Pty Ltd on behalf of its managed funds and clients;
- IFM Investors;
- Caisse de dépôt et placement du Québec; and
- Tawreed Investments Ltd, a wholly owned subsidiary of the Abu Dhabi Investment Authority.

PBPL has property and facilities located in the Port of Brisbane suburb as well as Lytton, Bulwer Island and Pinkenba. Its employees are based at the Port Office, Operations Base, Brisbane Multimodal Terminal, BICT, and onboard the Trailing Suction Hopper Dredge (TSHD) Brisbane. Operational 'Port Limits', which include shipping channels, berth pockets and swing basins, extend north of Caloundra, south to the southern tip of Moreton Island and 16 km up the Brisbane River to Breakfast Creek.

PBPL is an industry leader when it comes to sustainability more broadly and has a long and proud history of excellence in environmental management. This includes an ISO14001 Environmental Management System (EMS) which was initially certified in 2000 and is regularly and independently audited against the Environmental Management System ISO14001:2015 international standard, most recently in November 2023. PBPL has also recently successfully applied for a 50-year (conditional) permit to place dredge material at the Mud Island Dredge Material Placement Area, understood to be the first permit of its length issued in Queensland, and testament to PBPL's history of strong environmental management.

The organisation has a strong history of environmental compliance; it has not received any fines or licence breaches for environmental incidents in the last five years. Its primary purpose is to support and facilitate trade that underpins the Queensland economy, maintaining high quality facilities to do so. PBPL is extremely conscious of its position and endeavours to act at all times to support this purpose. The above information indicates that PBPL is capable of completing the EIS for the Project.

## 2.1 Contact Details

Contact details for PBPL are as follows:

Port of Brisbane Pty Ltd  
Locked Bag 1818  
3 Port Central Avenue  
PORT OF BRISBANE QLD 4178  
Telephone: + 61 7 3258 4888  
Email: [ChannelDevelopment@portbris.com.au](mailto:ChannelDevelopment@portbris.com.au)

All enquiries in relation to this IAS should be directed to contact details provided above.

### 3 Nature of the Proposal

#### 3.1 Scope of the Project

PBPL is proposing capital dredging works to realign and optimise its existing shipping channel network that services the Port to maximise safety and efficiency. PBPL is required to maintain the depths and extent of the navigational channels in accordance with the terms of the Port lease.

The location and dimensions of existing navigational channels, and proposed capital works as part of the Project are summarised in **Table 3.1** and illustrated in **Figure 3.1**. Note these are preliminary estimates only (primarily based on PBPL’s recent geotechnical work) and may vary as further investigation and design work is undertaken. The dredging works are to occur within the Port of Brisbane Port Limits.

**Table 3.1 Existing Channel Network and Proposed Channel Expansion**

Channel Component	Existing Width (m)	Proposed New Width (m)	Existing Depth (at Lowest Astronomical Tide (LAT)) (m)	Proposed New Depth (at LAT) (m)	Estimated Sediment Volume (m <sup>3</sup> )	Predominant Material Type
North West (Bend NW2 to Bend NW12)	280	600	15	17.3	21,600,000	Sand with indurated sand pockets, coffee rock clays
Spitfire	590	No change proposed	15	No change proposed	-	n/a
East Knoll Bypass	300	600	10-14	17.3	40,200,000	Sand
East/Main	300	600	15	17.3	200,000	Sand, muddy sands
Bay Crossing	300	600	14.7	17.3	1,600,000	Muds
Outer Bar	180	400	14	17.3	32,900,000	Muds, silts, clay and sand
<b>APPROXIMATE TOTAL VOLUME:</b>					<b>96,500,000</b>	



Expanding the dimension of currently approved channels will be coupled with a number of re-alignments and bend radius increases for optimal vessel movement whilst entering and leaving the Port. Specifically, these include:

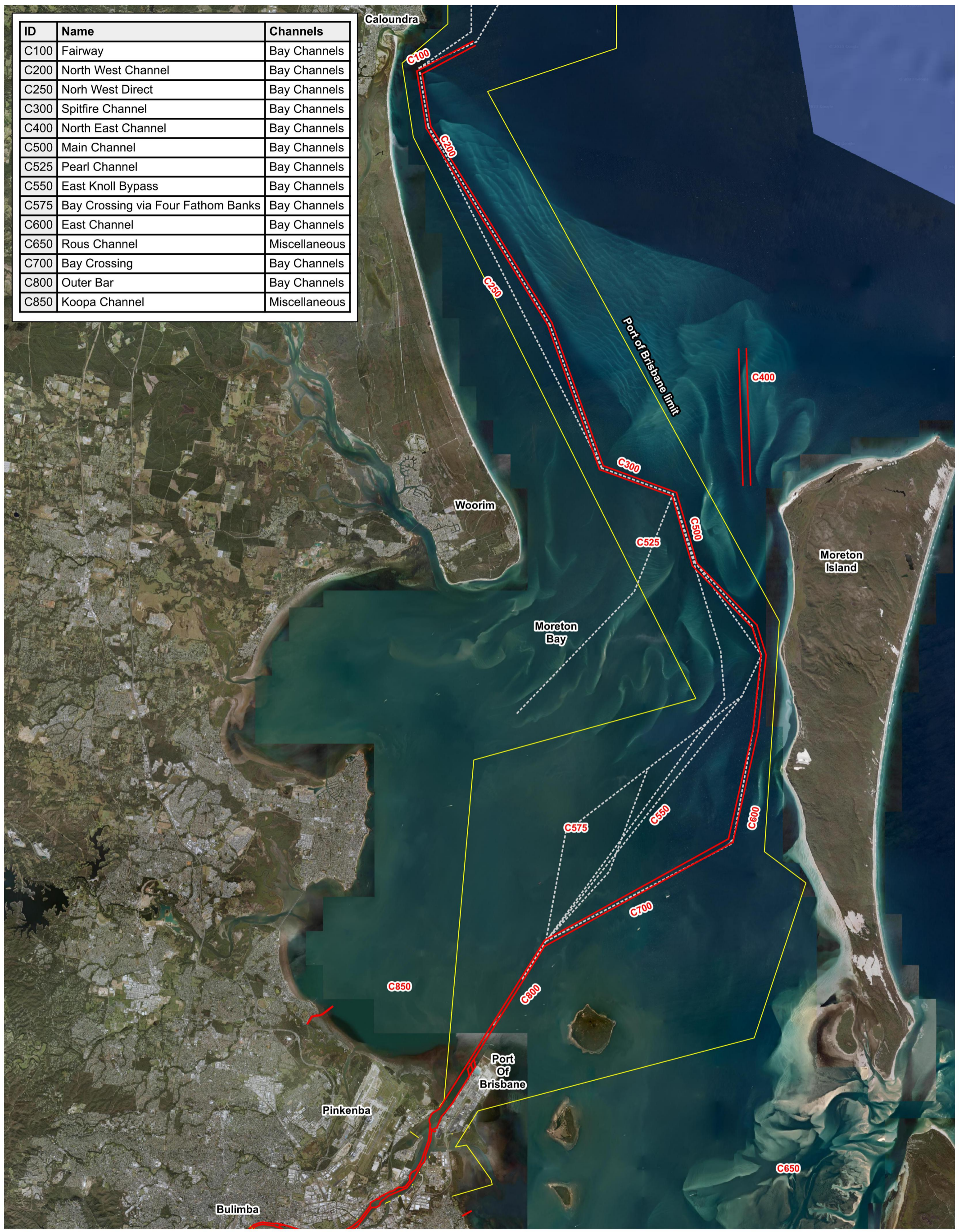
- North West Channel Bend 2 – increase bend radius to optimise route to meet PIANC (World Association for Waterborne Transport Infrastructure) channel design guidelines;
- North West Channel Bend 12 – increase bend radius to optimise route to meet Harbour Master guidance and PIANC channel design guidelines;
- Spitfire, Main and East Channel bends – increase bend radius to optimise route to meet PIANC channel design guidelines;
- North West Channel to Bay Crossing; and
- Outer Bar Bend.

It should be noted that Spitfire Channel does not form part of the Project, as the approved and underway Spitfire Channel Realignment Project already has sufficient depth and width conditions to cater for larger vessels.

It is likely that the expanded channel will require additional maintenance dredging to that already undertaken by PBPL. Regular hydrographic surveys of the existing channel indicate that significant infilling does not occur, suggesting that additional maintenance dredging requirements following capital dredging are likely to be minimal.

The impact of any additional maintenance dredging will be considered as part of further environmental assessment for this project. If any additional maintenance requirements are necessary, this will be applied for as an amendment to PBPL's existing Environmental Authority for dredging under the *Environmental Protection Act 1994 (Qld)*.

ID	Name	Channels
C100	Fairway	Bay Channels
C200	North West Channel	Bay Channels
C250	Norh West Direct	Bay Channels
C300	Spitfire Channel	Bay Channels
C400	North East Channel	Bay Channels
C500	Main Channel	Bay Channels
C525	Pearl Channel	Bay Channels
C550	East Knoll Bypass	Bay Channels
C575	Bay Crossing via Four Fathom Banks	Bay Channels
C600	East Channel	Bay Channels
C650	Rous Channel	Miscellaneous
C700	Bay Crossing	Bay Channels
C800	Outer Bar	Bay Channels
C850	Koopa Channel	Miscellaneous

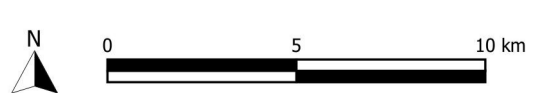


- Legend**
- Shipping Channels
  - - - Bay Channels
  - Port Limits (Maritime Safety)

Title: **Port Limits and Existing Navigational Channels**

Drawing: **3.1** Rev: **A**

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.



In total, it is estimated that a volume of 96,500,000 m<sup>3</sup> of material may be required to be dredged to support the Project. However, this sediment volume estimate will be further reviewed and refined as planning for the Project progresses and as part of the draft EIS process.

Because of the scale of the activity, it is proposed to stage dredging over a 20 to 25-year period, so that it can be undertaken incrementally depending on how costs are ultimately recovered, as demand arises and in the context of managing both the placement and stockpiling of the dredge material and so as not to disrupt ongoing ship movements in the channel. It is expected that while the project will be staged over time, dredging will most likely commence in the North West Channel.

Refer to **Section 3.5** for further detail on indicative Project timeframes.

As indicated in **Table 3.1**, a significant proportion of the material to be dredged is Holocene-aged clean sand with the exception of the North West channel, where pockets of indurated sands are also known to be present (Holocene and potentially Pleistocene aged material that is more heavily cemented and has higher organic content making it darker in colour), and in the Outer Bar where the dredged sediment will be a mix of overlying terrigenous muds and silts with underlying clay, sand and gravel material.

Geotechnical investigations (boreholes and/or geophysical surveys) have been undertaken to confirm the underlying strata that may be affected by the dredging and deepening of the channels, as further described in **Section 4.3**.

The channel enhancement scenarios presented above will require further validation and refinement using vessel simulation software, however they represent a conservative approach.

## 3.2 Land Use

All dredging will occur within Port Limits, as illustrated in **Figure 3.1**. The existing channel and surrounds are defined as Unallocated State Land (PBPL is required to maintain the depths and extent of the navigational channels in accordance with the terms of the Port sublease).

A number of temporary or permanent material placement sites are being considered, as further described in **section 3.6.2**; these are all presently either on port land or unallocated state land. The proposed site access road to Juno Point would also cross Brisbane City Council, Queensland Urban Utilities and unallocated state land.

## 3.3 Project Need, Justification and Alternatives Considered

### 3.3.1 Project Need and Justification

The Port is a key support to the Australian and Queensland economies, catering for approximately 5,300 vessel movements annually. In the 2022/23 financial year, the Port of Brisbane handled a record 1.56 million TEUs, and as the site of one of Australia's last two oil refineries, over 11 billion litres of crude and refined oil, in addition to motor vehicles, project cargoes and numerous other bulk commodities. While this was a clear sign of Queensland's broader economic recovery post-COVID, it is also another demonstration of the critical role the Port plays in supporting and enabling the region's growing population. Accordingly, trade forecasts into the future for both containers and bulk cargo that use the Port are projected to remain very strong.

The need to cater for increased container throughput has also been recognised by Infrastructure Australia, who have identified improving east coast deep water container port capacity as a priority. It is acknowledged by Infrastructure Australia that COVID-19 '*...has disrupted global freight supply chains,*

*rapidly increasing freight costs and international shipping delays. These supply chain impacts have underscored the importance of resilience in Australia's maritime supply chains'.*

In response to increasing trade, longer voyages and increasing per unit costs, global shipping has seen a significant increase in vessel size over recent years, and this pattern of growth is expected to continue. Currently, most new container ships that visit the Port are approximately 6000-8000 Twenty Foot Equivalent Units (a standard for shipping containers known as TEU's), with some larger vessels now visiting Australia and the Port, although they are unable to access the Port on all tides and in all weather conditions. This challenge is not Brisbane's alone – Ports Botany and Melbourne both have existing constraints and face challenges when it comes to catering for the vessel sizes of the future.

The need to cater for larger vessels is driving the need for additional channel capacity. It is expected that vessels of between 10,000 TEU and 14,000 TEU will be common in Australia over the next 20 years (Drewry, 2024), largely visiting the east coast markets of Brisbane, Sydney and Melbourne. This represents a significant increase in maximum vessel size using the port. Whilst maintaining safe passage, some larger vessels have had to manage load profiles (by carrying less cargo) in order to safely navigate the current shipping channels.

PBPL must make long term plans for the management of its shipping channels, which includes the consideration of future shipping vessel needs. If it fails to plan effectively, there is a risk of trade disruption or inefficiencies if larger vessels are unable to access the port easily under a full range of tidal and metocean conditions, or in a safe manner. This may also harm Queensland's economic competitiveness as shipping lines bypass Queensland for other States.

The advantage of catering for these larger vessels is that they are more efficient, presenting an opportunity to create cost reductions and improvements in supply chain efficiency, as well as decreased emissions per unit, for shipping servicing the Port.

Channel enhancement at the Port of Brisbane is also important to ensure these larger ships can call at the Port and service the State, as opposed to ships calling at southern ports and putting additional pressure on the land (surface) transport system which would likely lead to increasing costs and environmental impacts for consumers.

To determine the channel dimensions required for 14,000 TEU vessels, the feasibility assessment reviewed the World Association for Waterborne Transport Infrastructure (also known as PIANC) Guidelines for the design of harbour approach channels (2014); these are the internationally accepted standards for safe navigational channel design. In addition, the Regional Harbour Master has supported channel upgrades being undertaken to aid safe passage, which has been considered when determining upgrade needs.

An additional contingency for future-proofing has also been allowed, which is prudent given the planning timeframe (i.e. 25 years). The duplication of key sections of the channel to accommodate two-way passing is vital to improving safety for vessels as well as providing a consistent network channel width. Widening and deepening the channels will reduce the risk of increasingly larger vessel groundings because of insufficient under-keel clearance (UKC) as well as providing additional space for ship pilots to navigate channel bend angles. Maritime Safety Queensland is supportive of this project as an improvement on existing conditions.

The Port of Brisbane is currently navigable to a vessel up to a maximum of 14.2m draught with the use of a Nonlinear Channel Optimisation Simulator (NCOS) and tidal assistance. There are sharp turns that require highly skilled manoeuvres in the main channel, east channel, bay crossing and outer bar. Together, these restrictions have resulted in some bulk vessels with deep draughts, such as LR2 fuel tankers critical for fuel security, having to manage their load profiles therefore reducing their efficiency

of the shipping (by carrying less cargo). When combined with loss of propulsion and the trend towards larger vessels, these sharp turns may result in incidents such as ships grounding.

While the Channel operates within industry standards and there have not been any major shipping accidents or incidents affecting Moreton Bay for 15 years, there is an increased focus on maritime safety worldwide following a number of major accidents and incidents in the past decade in Europe (*Costa Concordia* in Italy 2012, *MSC Zoe* in the Netherlands 2019), Oceania (*KEA TRADER* in Noumea in 2017, *Shen Neng* grounding on the Douglas Shoal of the Great Barrier Reef in 2010) and the obstruction of the Suez Canal in 2021 by the 20,000 TEU *Ever Given*.

Optimising the navigational channels also provides an opportunity to shorten transit times through Moreton Bay (the 'Bay') which potentially reduces ship emissions. Other environmental features of the Project include ensuring all works are limited to the General Use Zone of the Moreton Bay Marine Park. Whilst the risk is already low, this will further reduce the risk of maritime accidents or incidents such as oil spills, cargo spills or ship groundings which could otherwise have a major impact on the Bay's water quality and ecological values, including its designation as a Wetland of International Importance under the Ramsar Convention.

Given the long lead time to prepare for and carry out a dredging project of this scale, including potential commissioning and construction of a new dredge vessel and the complexity of port supply chains, it is important to commence the approval process for the Project now, providing certainty to both the Port and shipping operators for future planning and logistics.

### 3.3.2 Alternatives Assessment

PBPL has undertaken significant investigative work to understand the key drivers, needs and potential design of an optimised channel. A Land Development Strategy in 2017 highlighted demand and supply estimates of the port land over a 30 year horizon and beyond. This report identified the need for channel dredging to maintain future access. The need for capital dredging of the channel to accommodate larger ships was investigated further in 2019 with considerations such as environmental concerns, regulations and capital expenditure explored. It was concluded that the Project is essential for the future viability of the port and its contribution to the Queensland economy.

PBPL consults closely with the Regional Harbour Master, who has been regularly involved in this Project's conception and planning.

Further economic, shipping needs and geotechnical/geophysical investigations have since been undertaken to confirm the viability and need for the project.

Whilst options and alternatives have been analysed in order to optimise channel design, three major scenarios have been investigated, as described below.

- **Option A – Do Nothing**

This option assumes a continued maintenance only dredging project with no improvements to depth or width. This scenario is expected to result in increasing ship delays as transit windows come under more demand. If Sydney and Melbourne Ports undergo expansion, there is a long-term risk that the Port is downgraded to a feeder port. This potentially becomes a limiting factor for trade, leading to loss of economic development and jobs growth. It limits the potential for growth and expansion of future trade, and the potential to garner increased safety and sustainability benefits would also be impacted.

- **Option B**

Maximise the channel width and depth to cater for the largest vessels in the soonest possible timeframe, undertaking works in one short term program with large dredging equipment.

- **Option C**

Maximising channel width to cater for the 'likeliest' vessel size, undertaking works incrementally over a longer term. Based on current information, this option is preferred, as it maximises safety and efficiency benefits, and limits disruption to existing shipping activities.

For options B and C, a number of different variations may arise, which will be explored further in the next phase of assessment, as discussed below.

### 3.3.3 Supporting Government Policies, Plans, Programs or Strategies

The key drivers for the Project are to future-proof the channel to accommodate larger vessels, enhance maritime safety now and into the future, and increase efficiency of the shipping channel network including lowering transit times and carbon emissions. The configuration and navigational safety benefits provided by the Project are in accordance with relevant international maritime standards and have been endorsed by the MSQ Regional Harbour Master. **Table 3.2** outlines policies and requirements from Federal, State and Local Government that are relevant to the project.

**Table 3.2 Relevant government policies and strategic priorities to the project**

Policy/Requirement	Relevant strategic priorities	Project's alignment with policies and outcomes
<b>Local Government Policy and Strategy</b>		
Brisbane's Economic Development Plan 2031	<ul style="list-style-type: none"> <li>• Achieve long term economic success by growing trade and investment with the Asian region</li> <li>• Facilitate future growth for Australia TradeCoast (Brisbane's global export hub)</li> </ul>	<p>The Project will enable larger ships to enter the Channel which will improve global trade competitiveness and maintain pace with industry changes to avoid 'falling behind'. In addition, subject to viability, the commercialisation of sand will support trade and investment growth for Brisbane.</p> <p>The Project will also create jobs in the local area (during development and dredging operations).</p>
<b>State Government Policy and Strategy</b>		
Queensland Ports Strategy	<ul style="list-style-type: none"> <li>• Drive economic growth through the efficient use and development of Queensland's long established major port areas, while protecting and managing Queensland's outstanding environmental assets</li> </ul>	<p>The Project will enable larger ships to enter the Channel which will improve global trade competitiveness and maintain pace with industry changes to avoid 'falling behind'. Subject to viability, the commercialisation of sand will support trade and investment growth for Brisbane.</p>
Queensland Trade and Investment Strategy 2017-22	<ul style="list-style-type: none"> <li>• Increase Queensland's share of national overseas exports and position Queensland as Australia's most innovative and dynamic trading economy</li> </ul>	<p>The Project will also create jobs in the local area (during development and dredging operations). Any sales of sand will benefit Queensland Treasury who will charge levies on increased material volumes.</p>
Queensland Freight Strategy	<ul style="list-style-type: none"> <li>• Work with customers, industry and other levels of government to build a freight system that is integrated, resilient and safe, now and into the future</li> </ul>	<p>The Project will enable larger ships to enter the Channel which will improve global trade competitiveness and maintain pace with industry changes to avoid 'falling behind'. Subject to viability, the commercialisation of sand will support trade and investment growth for Brisbane.</p>

Policy/Requirement	Relevant strategic priorities	Project's alignment with policies and outcomes
Queensland Critical Minerals Strategy (2023)	<ul style="list-style-type: none"> <li>The exploration and extraction of its critical mineral resources, while fostering domestic innovation, investment, and sustainable practices</li> </ul>	There may be an opportunity for the Project to support other projects such as a dedicated rail connection to the port by increasing opportunities for large container vessels through the Port. If shifted onto a dedicated freight rail connection this would support network integration and asset use.
<b>Federal Government Policy and Strategy</b>		
National Freight and Supply Chain Strategy	<ul style="list-style-type: none"> <li>Improve efficiency and international competitiveness.</li> <li>Enable improved supply chain efficiency</li> </ul>	<p>There may be an opportunity for the Project to support other projects such as Inland Rail by increasing opportunities for large container vessels through the Port. If shifted onto a dedicated freight rail connection this would support network integration and asset use.</p> <p>The project directly addresses the priority infrastructure improvements identified by Infrastructure Australia, being:</p> <ul style="list-style-type: none"> <li>- Infrastructure improvements that enable larger vessels access to Australian ports on the East Coast</li> <li>- Better use of existing infrastructure such as channel deepening</li> </ul>

### Project Staging

In order to minimise operational disruption and assist in the handling of forecast dredge material volumes, the project will need to be appropriately staged. Generally, the volume of material means that undertaking works in a single dredge campaign would be challenging to handle, stockpile or dispose of appropriately. It is preferable to stage works incrementally, as smaller volumes are more easily managed. Undertaking works as a 'one-off' campaign also does not allow for flexibility over time should there be a change in safety requirements or vessels using the port. Undertaking works incrementally also avoids large upfront capital costs and allows for cost recovery.

Subject to further design and investigations, it is the intention to dredge the North West channel first as this will provide the most immediate maritime benefits (in the least sheltered part of the channel) to the Project. This would be followed by the East Knoll Bypass and then the inner sections of the channel, that contain a greater volume of muds.

The Department of Transport and Main Roads 'Port Procedures and Information for Shipping – Port of Brisbane' is produced by the RHM and contains both the draught and passing restrictions based on the current channel dimensions for the current shipping profile (**section 5**), and highlights that *“greater clearances are required towards the north of the bay, where waves and swell have the greatest effect”*. The RHM also considers that if the volume of shipping at the upper end of the current vessel profile were to increase then constraints on passing in the North West channel for large vessels will affect all vessel movements.

### Dredge Material Use and/or Disposal

As described further in **Section 3.6.2**, there are a number of options available for the re-use or placement of dredge material. These will be further explored in the next assessment phase.

### Channel Dimensions

The North West Channel experiences the most weather events and increasing the depth and width of this section of the channel would have an immediate effect on existing trade and the provision of a greater range of weather conditions in which the Port is accessible. If we were to only consider this element some short-term benefits would be provided, however it does not cater for full future proofing of the channel. Other options which deepen and widen some channels (but not all) have also been

explored. The dredging of all channel sections to provide for ultimate accessibility that maximises safety and efficiency is preferred.

The existing channels will be widened, rather than a new separate channel being dredged.

### Funding Options

Future proofing the Channel will require a substantial amount of resources in terms of capital investment, as well as creating some ongoing maintenance requirement. A range of funding options have been identified, and are summarised as:

1. An increase in Harbour Dues over the life of dredging to cover the Project cost;
2. A levy charged to the shipping industry to cover the Project cost;
3. Funding in part or in whole through the commercialisation and beneficial reuse of dredged material (particularly sand), would provide a regular and reliable funding source for the project over time. It should be noted however that significant volumes of material will have no value, only cost implications. Silica sand found within the channel has applications including glass making, metal casting (e.g. for car parts), hydraulic fracturing, construction sand, filtration, solar panels and containers. Initial research conducted indicates there is an export market for the material which would avoid any impact on the local sand industry while a royalty would be paid to the state for commercial tonnages.

PBPL currently levies Harbour Dues to recover the costs of improving and maintaining its 96km shipping channel. Given the enhanced safety, efficiency and emissions benefits that will accrue from the Project to all users of the channel in the future, it will continue to do so. However, where feasible, PBPL will seek to offset the costs of the Project via direct beneficial reuse and commercialisation of the materials recovered. PBPL may elect to pursue a hybrid model of any or all the above cost recovery methods.

### 3.4 Components, Developments, Activities and Infrastructure that Constitute the Project to be Declared Coordinated

A proponent of a project with one or more of the following characteristics may apply to have it declared a 'coordinated project' under the SDPWO Act:

- complex approval requirements, involving local, state and federal governments;
- significant environmental effects;
- strategic significance to the locality, region or state, including for the infrastructure, economic and social benefits, capital investment or employment opportunities it may provide; and
- significant infrastructure requirements.

In this instance, because of the strategic significance of the Project for economic development for the State and the complexity of approvals required, the Project is considered to require 'coordinated project' status, requiring assessment under the SDPWO Act.

### 3.5 Timeframes

Following submission of this IAS and receipt of TOR for an EIS, PBPL will undertake detailed investigations to further develop the Project concept, design and timing. It is expected this will occur over a period of two years, culminating in submission of a draft EIS in approximately the first half of 2026. Following project approval, it is intended to stage dredging over a 20 to 25-year period. The staging of dredging is important for a number of reasons:



- It allows the port to dredge on an as-needs basis as vessel sizes change over time;
- Staging dredging assists in minimising impacts on operations in existing ship movements; and
- A long-term approval provides certainty to shipping operators that the port will continue to be operable for their future planning purposes.

Maintenance dredging is undertaken annually at the port, usually in summer months, but as required in the event of a flood. The average annual volume of maintenance dredging is 503,506 m<sup>3</sup> of material (the average between 2002 and 2021), which is placed at the approved placement site at Mud Island near the mouth of the Brisbane River or used for reclamation in the Future Port Expansion area. This relatively small volume takes approximately seven weeks to dredge and is not expected to interfere with the timing of capital dredging, which will be undertaken as a separate, independent campaign.

**Table 3.3** represents an indicative timeline of key Project milestones. Further details on the approvals process are provided in **Section 7** of this document.

**Table 3.3 Key Project Milestones**

Completed to Date	Initial geotechnical investigations (August-September 2022)	2022
	Preliminary customer engagement activity with key stakeholders	April-October 2023
Project Assessment and Approvals	Submission to the Queensland Coordinator General to obtain a Coordinated Project Declaration	Q2 2024
	Submission of Initial Advice Statement and EPBC Referral	Q2 2024
	Receipt of EIS Terms of Reference	Q3 2024
	Undertake detailed studies to support an EIS	2024-2026
	Progress detailed design	
	Receipt of Evaluation Report under SDPWO Act, State and EPBC Act approvals	Mid 2027
	Submission and approval of downstream approvals	Mid to late 2027
Project Implementation	Procure the services of a dredge	2027
	Dredging	2028-2052

### 3.6 Construction and Operational Processes

#### 3.6.1 Capital Dredging

Capital dredging works will likely be undertaken by a medium-sized Trailer Suction Hopper Dredge (TSHD), although this is dependent on market availability at the time of dredging and geotechnical conditions. A TSHD is equipped with suction pipes, ending in drag heads. The drag heads move slowly over the seabed, collecting dredge material like a vacuum cleaner. A mixture of sediment and seawater is pumped into the vessel’s hopper (or hold); excess water is overflowed until the hopper is filled to its capacity.

Once filled, the TSHD sails to its destination and discharges dredge material; discharge can occur by a few methods, depending on the vessel and the end destination. This can include depositing the material at sea through doors located on the bottom of the vessel, pumping the material ashore via floating or sunken pipelines or spraying (also known as ‘rainbowing’) the material at its discharge location.

Although PBPL currently operates its own dredge capability to maintain both its shipping channel, and those of the Government's Northern Queensland ports, it does not currently have the inhouse capacity for this Project. Once the outcome of the EIS process is known, PBPL will invest in either additional dredging capacity, or in third party capacity, or a combination of both.

### 3.6.2 Material Placement

There are a number of potential placement options for the dredged material, depending on the geotechnical properties of the material and other considerations, as summarised below and in **Figure 3.2**.

The National Assessment Guidelines for Dredging (NAGD) (Commonwealth of Australia, 2009), which sets out the regulatory framework and objectives for dredge material placement, recommends that the following hierarchy be used when considering placement options:

- Material is beneficially reused or recycled where it does not contain hazardous pollutants e.g. used for building purposes, beach nourishment, land reclamation, habitat enhancement;
- Material is placed onshore in an acceptably contained area (particularly if it contains hazardous substances that require containment); and
- Material is disposed at sea once other options have been evaluated and considered unfeasible.

PBPL's own dredge material disposal policy takes a sustainable approach to dredge material, with a focus on beneficial reuse to create new port land and long-term sediment reduction within the upstream catchment to minimise future dredging requirements.

There are a number of potential beneficial reuse opportunities available for the sandy material that is to be dredged from the navigational channels as part of the Project. This includes stockpiling the material onshore and reusing it for beach nourishment, building, manufacturing or reclamation purposes. Commercial sale of the material (subject to royalties payable to the Queensland Government) provides cost recovery for the Project overall, however this is not the only method available. A stockpile location within proximity to the Port (e.g. likely at suitable vacant land within the Port) would minimise the need to rehandle or transport material significant distances. As there are existing sand providers operating in the local market, PBPL would consider provision of sand to the interstate or overseas market.

There are also beneficial re-use opportunities to use or offer the use of a portion of this high-quality sand material to supplement regional beach nourishment projects undertaken by local governments. These opportunities will also be explored as part of the EIS.

As outlined in **Table 3.1**, there is also a volume of indurated sands (e.g. coffee rock) that naturally occurs in the North West Chanel that will need to be removed. Previously approved dredging trials of this material by PBPL has shown that while it has similar geotechnical qualities to sand, it has high organic content, creates greater visual plumes when dredged compared to fine sand and has a dark colour and other impurities that would mean it is not be suitable for commercial sale. On that basis the areas of indurated sand disturbed by the project are planned to be placed in the Port's FPE area.

For the material that is predominantly mud, clay and silts, this dredge material is less suitable for re-use because of its physical properties and poor engineering quality and will require disposal either on land, in tidal reclamation or at sea. While it is proposed as part of the Project that this material would be dredged progressively over the latter half of the dredge campaign, the total volume of material is 35.9 million m<sup>3</sup> and is located predominantly in the Outer Bar of the Brisbane River and Bay Crossing areas of the channel in Western Moreton Bay.

High level options and locations for placement and management of this predominantly mud material could include:

- Placement within the Port of Brisbane's existing Future Port Expansion (FPE) area;
- Expansion of the existing FPE to increase its capacity to accommodate dredge material from the Project or else creating another reclamation site at or near the mouth of the Brisbane River;
- An alternative land-based placement site (above HAT) that is suitable for progressive placement of the large volume of mud material;
- Beneficial reuse of material for potential ecological habitat creation or enhancement e.g. creating high tide migratory bird habitat or artificial islands in the Bay;
- Placement at the existing marine dredge material placement area (DMPA) adjacent to Mud Island or another marine DMPA located within Moreton Bay; and/or
- An alternative marine dredge material placement area (DMPA) in deeper waters outside of Moreton Bay.

Previous studies (KBR, 2006) in Moreton Bay have evaluated the most suitable options for long term disposal of maintenance dredge material generated from port, harbour and marina dredging in SEQ. This material is similar in character to the fine muddy material that will need to be dredged as part of the Channel Enhancement Project in the Outer Bar and Bay Crossing.

The KBR study found that using appropriate sites for unconfined bay-based marine placement remain the preferred means of disposing of the low-quality maintenance dredge material. Deeper offshore placement outside of the Bay was also assessed, but noting economic costs for these options were found to be disproportionately high for minimal environmental gain or improvement above current practices.

The EIS will need to be supported by a similar beneficial re-use and dredge material placement options study, linked to the geotechnical investigations, to examine these options and develop the preferred options and alternatives for the capital dredge material generated by the project.

An initial assessment of material options and alternatives has been completed by PBPL as part of preparing the IAS. The key findings of these initial investigations have found:

- There is a limited available storage volume (<8 million m<sup>3</sup>) for the placement of the muddy dredge material in the existing FPE. This is planned to be used for future maintenance material management requirements at the Port.
- PBPL has recently obtained long term permission under the Moreton Bay Marine Park Zoning Plan for the continuing placement of annual maintenance dredge material at the Mud Island DMPA. Maintaining the capacity and use of the Mud Island DMPA for maintenance material is essential to the maintenance of the existing channel network as well as accommodating future maintenance dredge requirements of the expanded channel network envisioned by the Project.
- There are no large, vacant land holdings at or near the dredge site in the Outer Bar for prospective disposal on land above HAT. If land placement was to be pursued, the prospective site would need to be situated in an area neighbouring the foreshore of Western Moreton Bay or along the lower Brisbane River given limitations of the pumping radius for hydraulic placement (generally less than <5 km) and the requirement for a very large (200 ha+) bunded area for progressive dewatering and drying.

On this basis, the most likely future placement strategy for this muddy material from the Project will be either a new reclamation site or else consideration of a new marine dredge material placement area.

In this context, four 'optimised' DMPA alternatives have been identified and are proposed for further investigation as part of the future EIS for the Project, all of which are shown in **Figure 4.1**. These include (not in any order of preference at this stage) the following:

**Juno Point Reclamation** – This option would involve beneficial re-use through incremental placement of the dredge material to establish a new reclamation area at the mouth of the Brisbane River adjacent to Juno Point. This area – adjacent to the existing Brisbane International Cruise Terminal (BICT) - is situated outside of the boundaries of the Moreton Bay Ramsar site and in an area zoned for 'General Use' in the Moreton Bay Marine Park. Compared to at-sea placement options, this option would result in a beneficial re-use of the muddy material favoured by the NAGD and that provides valuable commercial land to support the growth of South East Queensland. However, an adjustment to the marine park boundary would be required to reclaim from this location (similar to the process to establish the existing FPE). While outside of the boundaries of the Ramsar site, reclamation at this location would need to be carefully designed and managed to minimise potential ecological impacts to adjacent wetland habitat (particularly for migratory waterbirds) as well as manage water quality impacts, amenity impacts, potential use conflicts and potential impacts on coastal processes - all of which will be subject to further investigation as part of the EIS. It will also need to examine potential interface with the operation of the Luggage Point Wastewater Treatment Plant and the Brisbane Airport.

**Marine DMPA - Central Moreton Bay** – This option would involve incremental placement of dredge material at a marine placement site located in the central precinct of Moreton Bay that is situated to the north and east of the current approved Mud Island DMPA. This is in the 'General Use Zone' of the Moreton Bay Marine Park. Placement at this location could take advantage of predominantly muddy substrate that exists in this region of the bay (e.g. 'like for like' with the dredge material to be placed). A Central Bay DMPA site has several additional advantages in that it can be situated away from known seagrass and other important marine habitats in the eastern and southern bay and is in deeper water to limit resuspension of sediment following placement. There is also an emerging opportunity for a DMPA at this location to include placement in an existing deep area of the Main Channel that is proposed to be decommissioned following a proposed navigation rationalisation project being undertaken by the MSQ Regional Harbour Master. The main drawbacks of the Central Bay site would be its location in the marine park and associated impacts on amenity, temporary benthic habitat disturbance (following placement episodes) and potential adverse impact on commercial fishing (trawl) activities that occur in the central areas of the Bay.

**Marine DMPA - Northern Deepwater Site** – If placement outside of the marine park is necessary, incremental placement of the dredge material at a deep water marine placement site situated to the east of the entrance to the northern shipping channel offshore from the Fairway Beacon at Caloundra is preferred over other offshore locations. In particular, a DMPA at this location could take advantage of an area of existing declared port limits that sits outside (to the north) the statutory boundary of the Moreton Bay Marine Park. However, the site would be situated outside of the internal waters of the State; thus a Commonwealth Sea Dumping Permit would be required. The significant drawbacks of this site are that the placement of mud material would not be 'like for like' with the seabed which is sand at this location and likely short to medium term impacts on water quality – particularly in terms of visual plumes during placement and from ongoing wave-driven resuspension. Use and access to the deepwater site may also be impacted during poor or stormy weather conditions and this option represents the longest steaming time of the dredge vessel between the dredge location (at the mouth of the River) and the northern entrance to the shipping channel (approximately 10 hours round trip steaming time). From an environment perspective, more detailed assessment of the turbidity plumes

during placement and dispersiveness of the material would need to be considered as well as surveys to locate any ecological constraints such as deep reefs.

**Fisherman Island Expansion reclamation** – This placement option would see seaward extension of the existing FPE area towards Mud Island via tidal reclamation. This site would be located within the General Use Zone of the marine park. Recent geotechnical investigations have suggested this may be a viable option for placement of the material, allowing further expansion of port land. Further geotechnical investigations, engineering design and hydrodynamic modelling is required to understand if this option is technically feasible.

The EIS process will further investigate these options in consultation with relevant land and sea managers and regulatory agencies. A combination of options will also be explored; but with a preferred approach and option outlined in the Draft EIS for formal assessment.

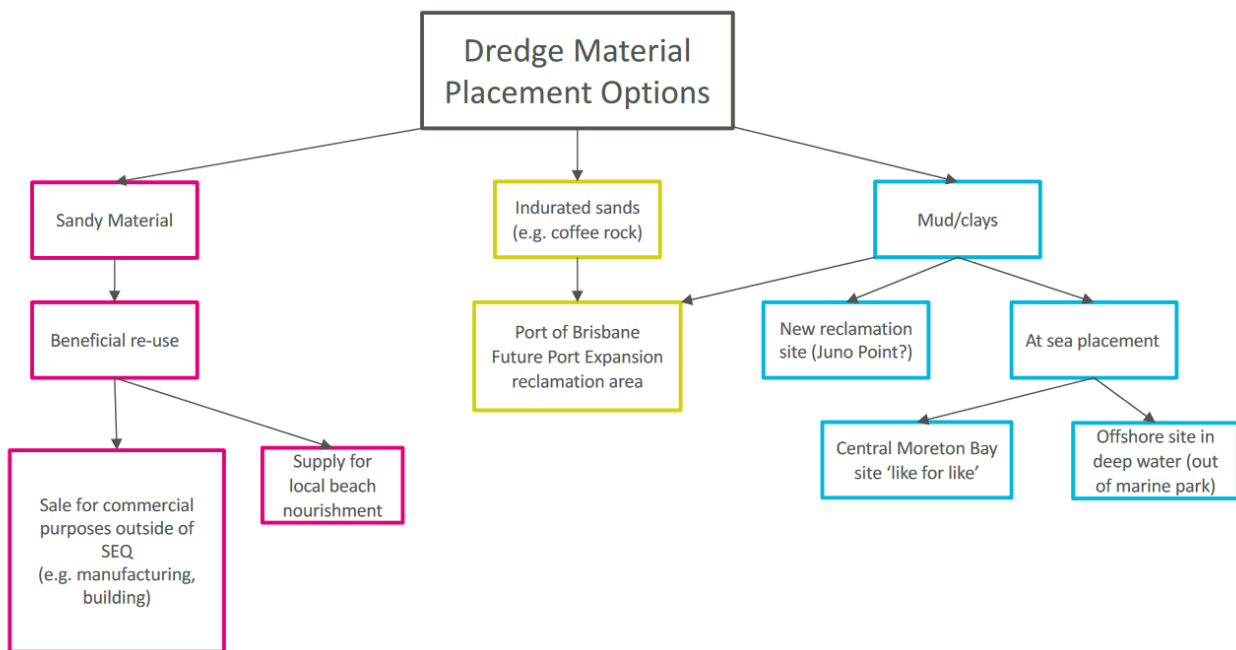


Figure 3.2 Summary of Dredge Material Placement Options

### 3.6.3 Material Storage and Transportation

Dredging would be staged over a lengthy period (20-25 years), both to cater for demand and also to minimise the volume of material stockpiled at any one time if sand material is to be beneficially reused. If material is to be re-used, it is more likely that it will be exported via vessel from the port, rather than transported by road. This would minimise additional traffic being added to the Brisbane traffic network.

### 3.6.4 Material Processing

As outlined above, there may be some additional infrastructure requirements. These may include:

- The existing Future Port Expansion Area or a new reclamation area if required for the hydraulic placement of dredge material;
- The existing DMPA at Mud Island (if needed) for marine placement of clean dredge material; and
- A managed stockpile area within the confines of the Port lands or on adjacent industrial lands and any associated loading or road infrastructure to support it.

It is considered appropriate to exclude any future potential silica processing plant (being an external infrastructure requirement) from the current proposal/action on the basis of the following:

- The need for, and timing of, establishing any silica processing plant will be dependent on the approval and staging of the project overall. If the processing plant is ultimately needed, it would not be proposed to commence in the short term (e.g. it would not occur in the next five to ten years given the long lead time required for EIS and approvals and noting the initial project staging is to commence dredging in the North West Channel before the East Knoll Bypass).
- While PBPL would be the underlying landlord or leaseholder, it is considered unlikely that PBPL would be the proponent for the future construction and operation of any required processing plant. Once there is sufficient understanding of processing requirements and plant design, a subsequent approval process would necessarily involve the proposed lessee/operator of the plant and equipment. While PBPL cannot confirm at this stage who the proposed lessee/operator would be if a processing plant is ultimately required in the future, it is unlikely that the lessee/operator would be an agent or contractor of PBPL (i.e. it is more likely the lessee/operator would be an independent third party).
- Any future processing and drying procedures that would be applied to the 'clean' sand would be expected to involve feed in, screening, attritioning, classifying, magnetic separation, screening, drying and finally stockpiling for export. As this process is largely chemical free, the environmental impacts of this processing would not be expected to result in any additional impacts on Matters of National or State Environmental Significance and general environmental and health impacts (dust, noise, water quality) would be managed through standard mitigation measures for environmentally relevant activities.
- The processing plant and stockpile area would likely be situated on a site within the FPE (e.g. reclaimed land owned and controlled by the Port) and an adjacent FPE berth will be used for future sand export. The future use would be consistent with the Port's Land Use Plan.

For the above reasons, any sand processing component – if ultimately required in the future – is best dealt with as part of a future development approval process.

### 3.6.5 Maintenance Dredging

The EIS process will quantify the extent of additional maintenance dredging that is required from the optimised, deeper channel network. However, it should be noted that most of the channels in Northern Moreton Bay have very low natural siltation rates, whereas the Outer Bar area would be expected to capture more siltation annually given its location immediately downstream of the Brisbane River mouth.






### 3.6.6 Ongoing Port Operation

No additional ongoing port operational infrastructure is proposed at this time, although sand processing or land-based placement activity may require some infrastructure if these options are ultimately required.

## 3.7 Workforce and Economic Development

The Port of Brisbane and its supply chain help power the Queensland economy. The Port of Brisbane's contribution to Queensland economy in 2022 has been assessed by Deloitte (Deloitte, 2022) to be \$7.8 billion in economic value added and supports 62,900 jobs. As shown in **Figure 3.4**, this is expected to grow over time up to \$15.4 billion and 124,400 jobs by 2050.

Additionally, it is estimated the Project will support up to 100 shore based construction jobs for the wharf and terminal, and 40 jobs for ongoing operations (comprising 30 marine and 10 shore-based jobs). A summary of other compliance, social, environmental, and economic benefits that would be provided by the Project are shown graphically in **Figure 3.3**.

Compliance Benefits		Beneficiaries
Ensure compliance with requirements of PBPL's Port Lease		
Safety and Environmental Benefits		 Industry and supply chain participants   Local businesses and workforce   Domestic and international customers
Enhance ongoing safety and mitigate environmental damage from potential incidents	Reduce passing vessel interaction and therefore increase safety and port efficiency	
Improve efficiency of ships to traverse the channel which will also reduce emissions	Greater safety margin during wind conditions above 20 knots	
Opportunity for PBPL to significantly reduce Scope 1 emissions through dredge replacement with an alternate fuel-powered dredge	Reduction in scope 3 emissions dues to shorter transit times and less turning and manoeuvring of ships	 Community   Local, State, and Federal Governments
Economic and Operational Benefits		
Economic benefits from the creation of development and operational job attributable to the project	Improve global trade competitiveness and maintain pace with industry changes to avoid 'falling behind'	
Future proofing for known changes coming in the vessel market (i.e. larger vessels can be supported)	Greater efficiency in port operations with two-way passing and reduced need to wait for tidal flows	
Potential opportunity to utilise Inland Rail (if port connection proceeds) to diversify export market to southern Australian jurisdictions (subject to demand) and support containerised freight increases through PBPL	Extra sand can expedite land development at FPE to support property growth, which is expected in the years leading up to the Brisbane Olympics in 2032	

**Figure 3.3 Summary of other benefits from the Project**

The expected maintenance and growth of these benefits to the Queensland economy are at risk without the Project and the associated navigational improvements to the channel infrastructure.

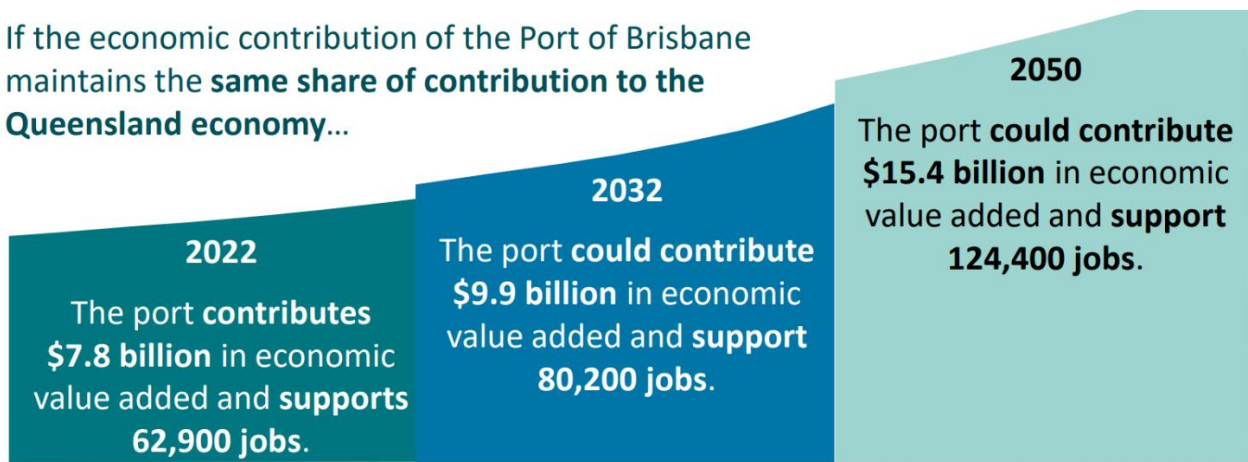
Due to the central location of the development to Brisbane City and surrounding suburbs (~24km from central business district), onsite accommodation at the Port of Brisbane is not expected to be required. Much of the construction and operational workforce will be locally based and therefore travel distances are unlikely to be conducive on onsite accommodation.

### 3.8 Financing Requirements and Implications

PBPL currently levies Harbour Dues to recover the costs of improving and maintaining its 96km shipping channel. Given the enhanced safety, efficiency and emissions benefits that will accrue from the Project to all users of the channel in the future, it will continue to do so. However, where feasible, PBPL will seek to offset the costs of the Project via direct beneficial reuse and commercialisation of the materials recovered (and which incorporate the payment of royalties to the Queensland Government). PBPL may elect to pursue a hybrid model of any or all the above cost recovery methods. The project could require investment of approximately \$3.5 billion over 25 years.

More detailed work is required to determine the exact make up of cost recovery.

If the economic contribution of the Port of Brisbane maintains the **same share of contribution to the Queensland economy...**



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Figure 3.4 Economic Contribution of the Port over time (source Deloitte, 2022)



## 4 Description of the Existing Environment

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This section briefly describes the local and regional natural, social and economic and built environment of relevance to the project.

Given the Project involves works across a broad geographic area, the baseline is generally split into two components – (i) Nearshore – which includes the port and surrounds (including the Outer Bar channel at the mouth of the Brisbane River and the Mud Island Dredge Material Placement Area [DMPA]) and (ii) Offshore which include the shipping channels in the Central, Eastern and Northern part of Moreton Bay (encompassing the East Channel, East Knoll, Spitfire Channel Area and the North West Channel and includes prospective effects from the project on Moreton Island and Bribie Island).

The study area encompasses the potential dredge footprint (a dredge channel of the nominated width may occur anywhere within the area marked in **Figure 4.1** but may not exceed the nominated dredge volumes) and the locations of potential dredged material placement areas; refer to **Section 3.6.2** for further information on the four preferred locations. The study area has been mapped with a buffer of 500m, and in areas such as the East Channel and North West channel where the dredge footprint passes close to the boundary of the Ramsar wetland, dredging will be undertaken on the opposite side to ensure the footprint does not extend into the wetland.



**Legend**

- Study Area
- DMPA Investigation Areas
- Shipping Channels
- Bay Channels
- Port Limits (Maritime Safety)

Title:  
**Proposed Study Area**

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

N

0                      5                      10 km

Drawing: <b>4.1</b>	Rev: <b>A</b>
 www.bmt.org	

## 4.2 Tenure

Dredging will occur on land that is designated as ‘Unallocated State Land’, meaning that it is owned by the State of Queensland. PBPL is required to maintain the depths and extent of the navigational channels in accordance with the terms of the Port lease, and various planning approvals from the State and does not ‘own’ the land within which the navigational channel sits.

Placement of dredge material could occur at a number of locations; tenure for these are described in **Table 4.2**.

**Table 4.1 Dredge Material Placement Sites Tenure**

Location	Land Parcel Description	Tenure
Port of Brisbane FPE	Lot 98, SP236540	Leasehold
Mud Island DMPA	N/A	Unallocated State Land
Juno Point	N/A	Unallocated State Land
Juno Point Access Road	Lot 1, SP299911; Lot 2, SP230688; Lot 8, SP268662	Leasehold
Marine DMPA – Central Moreton Bay	N/A	Unallocated State Land
Marine DMPA – Northern Deepwater	N/A	Unallocated State Land
Fisherman Island Expansion DMPA	Partially on Lot 98, SP236540, mostly N/A	Leasehold and Unallocated State Land
Beach nourishment	Unknown	Unknown, but likely to occur on Unallocated State Land

## 4.3 Natural Environment

### 4.3.1 Land

The Project will involve the dredging of the seabed both in the nearshore and offshore areas of Moreton Bay, though the majority will be aligned to the existing shipping channel. The Port has recently undertaken a baseline geotechnical study of the channel network which will further inform the project EIS and sediment characteristics. Previous investigations are summarised below.

Moreton Bay is a large 1400km<sup>2</sup> semi-enclosed embayment, which is largely protected from the ocean swell by Moreton, North Stradbroke and Bribie Islands. The bathymetry is complex, but in general can be divided into a shallow western and southern area (<10m in depth) with a deeper central area (10-25m in depth) with numerous shallow sand banks. These banks are separated by deeper tidal channels, with the deepest coinciding with the main shipping channel. Moreton Bay has a maximum semi-diurnal tidal range of 2.8m.

### Geomorphology and Geology

The geological development of the northern part of Moreton Bay has been dominated by climate-induced sea level changes in the late Quaternary period (WSP, 2023). Sea levels across the bay have varied significantly; over the last 300,000 years, sea level has been higher on at least four occasions by between 1m and 5m (resulting from glacial icecap melting and expansion), as shown in **Figure 4.2**.

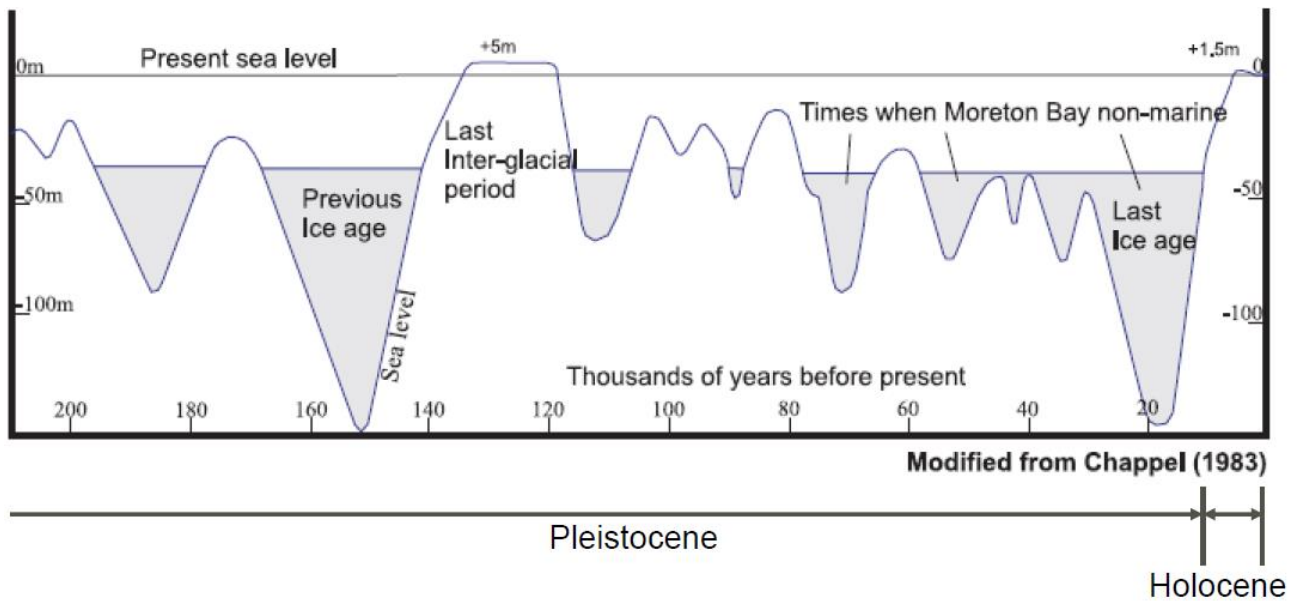


Figure 4.2 Moreton Bay sea level changes in the late Quaternary period (WSP, 2023)

During these higher sea levels, tidal delta sand banks were deposited. For the majority of this time however, the sea level was more than 30m below the present level. During these periods, the bay was dry, and comprised an alluvial plain through which the Brisbane River and tributaries flowed. The bay islands were simply areas of higher elevation on the coastal plain, as shown in **Figure 4.3**.

### Nearshore Sediments

A range of sediment investigations (Golder 2014, Golder 2017, BMT 2017) have been undertaken at the Brisbane River delta and in the outer bar area across both geotechnical (physical) characteristics of the sediment as well as sediment chemistry in terms of toxicants, nutrients and net acidity.

In the nearshore area, Holocene alluvial deposits, which are mainly estuarine and deltaic sediments, overlay Pleistocene alluvial deposits and basalt (Petrie Formation) in places.

The inferred Pleistocene sediments (older sediments that pre-date the last marine transgression) underlay inferred Holocene sediments to a depth of -17.45 m LAT. The stratigraphy from these previous studies and investigations indicate consistent findings, with the seabed in this area having:

- A layer of estuarine soft to firm silt and clays from the bed surface to a depth of between -8.5m LAT and -11.5 m LAT;
- Intermediate thin layers of muddy sand and sand from -11.5 to -16.5 m LAT; and
- Sand and gravel below -16.5 m to the maximum core depth of -21.5 m LAT.

Historical and recent sediment chemistry testing of this material in accordance with the National Assessment Guidelines for Dredging (NAGD) (Commonwealth of Australia, 2009) have also been undertaken. In general the surficial sediments typically represent the greater potential to have contaminated sediment, as a result of the influence of urban stormwater runoff and flooding from the Brisbane River catchment.

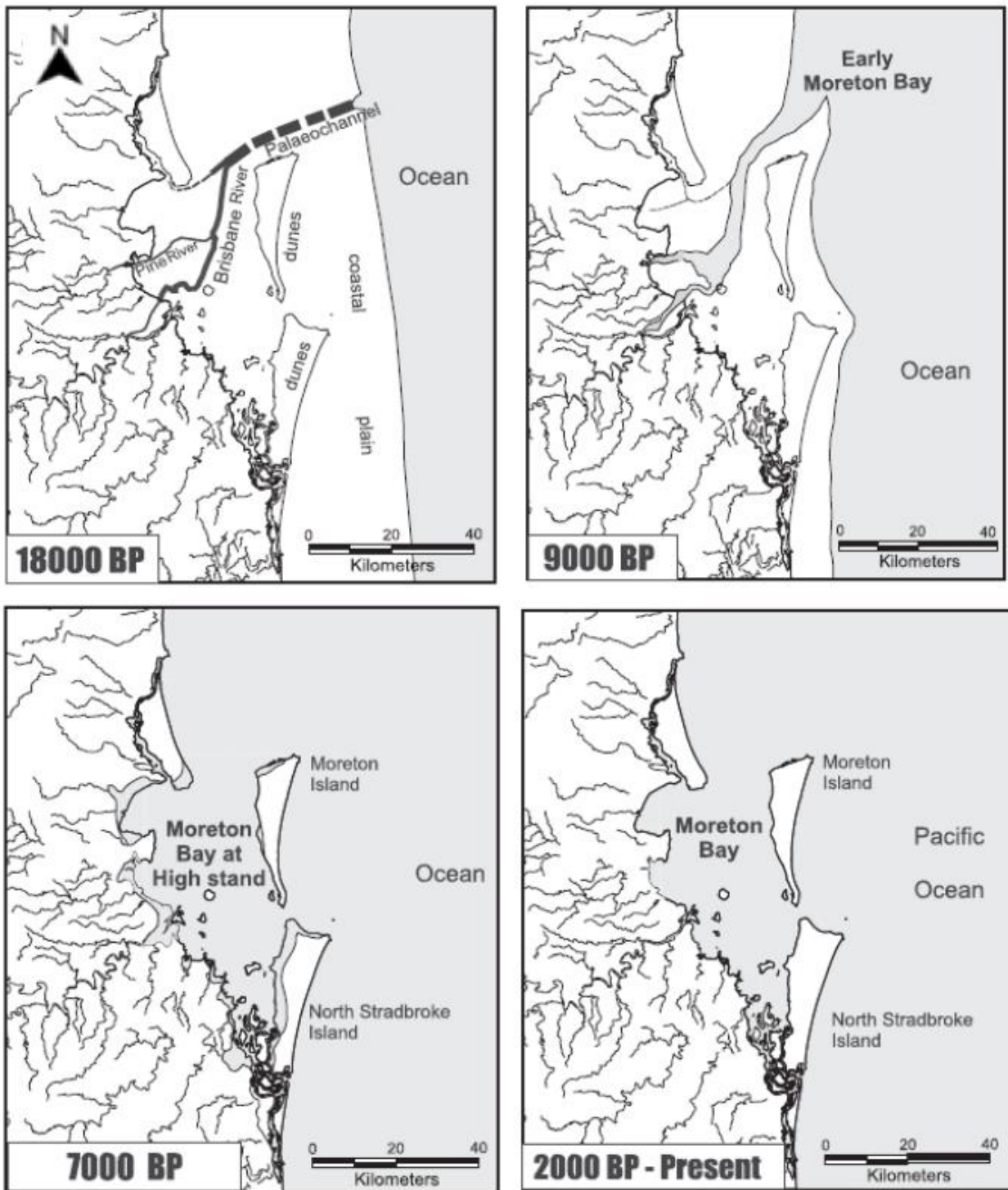


Figure 4.3 Moreton Bay Late Quaternary period showing various landforms (WSP, 2023)

Further soil testing will need to be undertaken to confirm the presence of contamination or acid sulfate soils and determine treatment requirements if applicable.

### 2022 Sampling

Between May 2022 and January 2023, a three-stage geotechnical and geophysical investigation was carried out to delineate, characterise and approximate the volume of materials which may be encountered during dredging, comprising:

- a desktop review (Stage 1) which collated and summarised available studies and data;
- A preliminary investigation (Stage 2) which involved intrusive vibrocoreing (44 in total) and non-intrusive marine geophysical survey (using sub-bottom profiling and seismic refraction, with 241km of survey lines); and
- A targeted investigation (Stage 3) involving 5 intrusive geotechnical boreholes.

The material found within the channel can be described as belonging to the Units described in **Table 4.2.**

**Table 4.2 Geological Units**

Unit ID	Unit Name	Description
0	Post dredging replenished sand	<p>Typically fine to medium grained, dark grey/brown in colour, very loose or loose and with a higher fines content than Unit 1a.</p> <p>These deposits have replenished/infilled historical dredging basins at Middle Banks and Four Fathom Banks (coinciding with southern end of East Knoll Channel and East Channel) through natural coastal geomorphological processes.</p>
1a	Holocene Tidal Delta 'White' Sands	<p>Typically fine to medium grained, pale grey to grey ("white"), clean (&lt;5% fines) and very loose or loose. The sand is quartzose with a shell content of generally less than 2%. Deeper deposits found in ancient flow paths of the Brisbane River are typically medium dense or denser and may contain a lag (gravel) deposit at the interface of the eroded underlying Pleistocene sediments.</p> <p>The Holocene tidal delta sands are either sands originating from longshore drift or reworked Pleistocene sediments that were deposited during the Holocene transgression and stillstand, and therefore can be difficult to distinguish from Unit 2a and Unit 2c.</p> <p>Holocene tidal delta sands are encountered in the northern and eastern extents of the investigation area.</p> <p>This unit was absent at the mouth of the Brisbane River and Outer Bar.</p> <p>The Holocene tidal delta sands are considered to have relatively 'easy' dredgeability. From a material resource perspective, we understand the Holocene tidal delta sands have potential for commercialisation due to having a low fines content, being free draining and having a relatively high silica content.</p>

Unit ID	Unit Name	Description
1b	Holocene Tidal Delta 'White' Sand	<p>Holocene Fluvial Sand Typically dark grey to grey, very loose or loose sand with some inter-layered medium to high plasticity, soft clays and silts, peaty inclusions and shells.</p> <p>The quantity of this Holocene fluvial sand unit in the investigation area is relatively minor, generally limited to a 'fan-shaped' veneer at the mouth of the Brisbane River and southern half of the Outer Bar, vertically thinning heading away from the river mouth into Moreton Bay. It is likely to have already been dredged (removed) within the existing shipping channels.</p>
1c	Holocene Fluvial/marine mud and silt	<p>High plasticity, dark grey very soft to firm silty clay with minor sand and shell layers.</p> <p>These deposits generally coincide with geological time periods corresponding with low velocity deposition environments in the western portion of Moreton Bay; the mouth of the Brisbane River and extending into the Outer Bar in the central portion of Moreton Bay. Deposits where Pleistocene paleochannels have been infilled with this material near the river mouth can be upwards of 25 m thick.</p> <p>Muds are historically relatively 'easy' to dredge and typically require disposal.</p>
1d	Holocene Prodelta Muddy Sand	<p>Material type is considered to be a mix of Unit1a tidal delta sands and Unit1c fluvial muds.</p> <p>These deposits are considered to be a mix of materials where the Brisbane River delta depositional environment and the Northern Entrance and South Passage tidal delta depositional environments meet, limited to the central area of Moreton Bay; a zone of minimal geological deposition.</p>
2a	Pleistocene Tidal Delta 'White' Sand (Upper)	<p>Typically fine to medium grained, pale grey to grey/brown ("white"), clean (~5% fines), medium dense or denser and may show signs of a relict soil profile. The sand is quartzose with a shell content of generally less than 2%.</p> <p>Unit 2a can be difficult to distinguish from Unit 1a and Unit 2c.</p> <p>Pleistocene tidal delta sands are encountered in the northern and eastern extents of the shipping channels investigation area. This unit was absent at the mouth of the Brisbane River and Outer Bar.</p> <p>The Pleistocene 'white' sands are considered to have relatively 'easy' dredgeability. From a resource perspective, we understand the Pleistocene tidal delta sands have potential for commercialisation due to having a low fines content, being free draining and having a relatively high silica content.</p>

Unit ID	Unit Name	Description
2b	Pleistocene Tidal Delta 'Dark' Sand	<p>Typically fine to medium grained, dark grey/brown sands, with approximately 5-10% fines, and medium dense or very dense. The same parent material as Unit 2a.</p> <p>The surface of this unit is interpreted as the top of a weathered profile developed on relict Pleistocene sands. May contain or coincide with the B- horizon - a zone of accumulation where during the Pleistocene-age groundwater percolating through the soil has leached material (e.g. organic matter) from above, facilitating the formation of stained sands sometimes called coffee sand, or cemented/indurated sands known as coffee rock. This layer can be differentiated from Unit 1a/2a/2c mainly on the basis of colour, grain size range and fines content.</p> <p>Pleistocene dark sand material was encountered in the northern and eastern extents of the shipping channel investigation area, underlying tidal sand on sand banks and at the base of channels where natural erosion or dredging has exposed this layer.</p> <p>The dredgeability of Pleistocene 'dark' sands is expected to range from 'easy' to 'difficult'. i.e. relatively easy for medium dense to dense granular sand and difficult for any cemented/indurated sand (coffee rock) horizons within the dark sand unit.</p>
2b-CR	Coffee Rock	<p>The same origin and description as Unit 2b, however has developed into cemented/indurated coffee rock, and which can be described with rock properties.</p> <p>This unit is not explicitly modelled. For modelling purposes, coffee rock is included as Unit 2b.</p> <p>This unit is expected to pose dredging difficulties. Previous investigations by others have assessed the coffee rock strength encountered during the last dredging campaign in the North West Channel in 2015 to range from very low (VL) to low (L) strength (based on 21 no. point load index test samples; including 10 no. VL strength, 9 no. L strength and two results where no strength was reported).</p>
2c	Pleistocene Tidal Delta 'White' Sand (Lower)	<p>Typically fine to medium grained, grey to grey/brown, clean (&lt;5% fines) sand, typically dense or denser and may show signs of a relict soil profile.</p> <p>The same parent material as Unit 2a and 2b.</p> <p>It is sand underlying the Unit 2b layer where leaching from above has had minimal influences on the colour (staining) or properties of the sand (cementation). Unit 2c can be difficult to differentiate visually from Unit 1a and Unit 2a except are typically deeper in the profile (&gt; RL -20 m), underlying the Unit 2b layer or at the base of</p>



Unit ID	Unit Name	Description
		<p>existing channel, and typically covered in a thin layer of loose or very loose Holocene sand.</p> <p>Pleistocene tidal delta sands are encountered in the northern and eastern extents of the investigation area underlying the Unit 2b layer or at the base of existing channel, covered by a thin layer of loose or very loose Holocene sand.</p> <p>The Pleistocene ‘white’ sands are considered to have relatively ‘easy’ dredgeability. From a material resource perspective, we understand the Holocene tidal delta sands have potential for commercialisation due to having a low fines content, being free draining and having a relatively high silica content.</p>
2d	Pleistocene Sandy Clay and Clay	Typically stiff to very stiff grey-green and brown to grey clay to sandy clay Basal unit for this study. Encountered across the entire site, however often below proposed dredge depths.

The material anticipated to be encountered during dredging for each of the shipping channels is outlined in **Table 4.2** and **Table 4.3**.

**Table 4.3 Material expected to be encountered during dredging**

Shipping Channel	Materials expected to be encountered
Outer Bar	Predominantly mud and clay with minor surficial river sand
Bay Crossing	Predominantly mud (western end). The eastern end of the channel is already below proposed dredge depth
East Knoll	Predominantly ‘white’ sand with very minor zones of ‘dark’ sand potentially including coffee rock at depth. Some minor zones of ‘muddy’ sand are present immediately sub-seabed at the southern end.
East/Main	Predominantly ‘white’ sand. Some portions of the channel are already below proposed dredge depth
North West	Predominantly ‘white’ sand with some zones of ‘dark’ sand including coffee rock

The ‘white’ sand has a low fines content with a relatively high silica content which makes it suitable for reuse. Other materials, such as muds and clays will require disposal (or onshore re-use). By volume, ‘white’ sand, ‘dark’ sand and muds/clays are expected to comprise approximately 58%, 5% and 37% respectively of the total volume to be dredged. There is potential to encounter indurated sands (known as ‘coffee’ rock) in the North West Channel and possibly East Knoll Channel which can have rock-like properties which are harder to dredge.

### 4.3.2 Water

#### Nearshore

The Brisbane River Estuary Water Quality Guidelines provide relevant environmental values and water quality objectives for the river and nearshore coastal area and is subordinate to the Queensland *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*. The lower Brisbane River and Outer Bar area are mapped as an 'enclosed coastal/lower estuary' and support a number of environmental values (EVs). These are moderately disturbed aquatic ecosystems, human consumption (except oysters), primary, secondary and visual recreation, industrial uses, and cultural and spiritual values.

Monitoring of water quality in the estuary has been undertaken since 2000 under the Ecosystem Health Monitoring Program (EHMP). Monitoring results from nearshore sites have consistently shown elevated nutrient concentrations (e.g. nitrogen, phosphorus). This is as a result of the Luggage Point WWTP discharge point located on the north bank of the River mouth as well as from broader catchment inputs. While turbidity is occasionally elevated in storm and flooding events, it typically is below the water quality objectives for the area (i.e. <6 NTU).

#### Offshore

The Eastern and Northern Bay are also monitored monthly as part of the Ecosystem Health Monitoring Program (EHMP) at several locations. Based on the annual report cards produced for the EHMP, this area has consistently received an 'A-' or 'A' rating.

Based on EHMP data, turbidity fluctuates within and across years but typically remains below 3 NTU while nutrient levels are low. The eastern and northern parts of the Bay (East Channel, East Knoll, Spitfire Channel, North West channel) are largely situated outside the influence of flooding events (and associated siltation) from the Brisbane River and other tributaries except in extraordinary flooding events.

### 4.3.3 Sensitive Receptors

The project will occur within the South East Queensland Airshed stretching from the Gold Coast to the southern Sunshine Coast and inland to the Great Dividing Range. Due to its long-standing history, the Port of Brisbane is not surrounded by a large number of sensitive receptors, with surrounding areas being predominantly industrial activities. The Environmental Protection (Air) Policy 2019 (EPP Air) and Environmental Protection (Noise) Policy 2019 (EPP Noise) set out definitions of sensitive receptors (in the case of EPP Noise) and the environmental values required to be protected to prevent environmental nuisance.

#### Air

Onshore placement activities would be the main aspect of the project that would potentially contribute to air emissions should this be chosen as the method of disposal. The potential onshore placement area is at Juno Point to the west of the Port of Brisbane. The closest sensitive receptor to this area is Myrtle town Reserve, a public park approximately 2km south of Juno Point.

## Noise

The Myrtle town Reserve is a sensitive receptor as per Schedule 1 of the EPP Noise, with community amenity being the environmental value to be protected. Marine parks are also identified as sensitive receptors, therefore Moreton Bay Marine Park is also governed by the EPP Noise (with the relevant environmental value being health and biodiversity of ecosystems).

### 4.3.4 Habitats

The project may affect a range of habitats in Moreton Bay as described below and mapped in **Figure 4.4**.

#### **Soft bottom benthic habitats**

The habitat type that will be most affected by the project will be soft bottom benthic habitat which consist of clays and sandy mud in the nearshore area and unconsolidated sand habitat in the offshore region. These habitats are characterised by both epifauna (animals living on the seabed) as well as infauna (animals living in the upper layer of sediment) as well as macroalgae such as Caulerpa and seagrass species.

#### **Subtidal Marine Plants**

Seagrass exists throughout Moreton Bay but with the most permanent meadows found in the Eastern Bay in the Eastern Banks/Rous Channel area and Southern Bay. Ephemeral seagrass can be encountered in and near the sand banks in the Central, Eastern and Northern Bay.

As the project works will largely involve deepening of the existing channel network, the extent of seagrass directly affected or removed by deepening is expected to be minimal. However, there is potential to affect seagrass as part of channel widening activities and as part of the East Knoll channel realignment. There are also some small patches of seagrass at the end of Fisherman Island, that may be impacted should it be extended.

#### **Subtidal Reef**

Subtidal coral and rocky reefs occur at several locations in the Bay including around Mud Island, Bird Island and Myora on North Stradbroke Island. There is no known coral or rocky reefs in the proposed dredge footprint/preferred placement areas and dredge plumes from dredging and placement are unlikely to affect known, mapped reef habitat (due to distance to receptors).

Formal ecological survey (soft bottom benthic, seagrass, reefs) of the proposed dredge footprint will be undertaken to validate baselines for all of these benthic habitats.

#### **Other Tidal Habitats**

Mangrove and saltmarsh environments along the coast such as Juno Point, Mud Island and other nearshore areas of Moreton Bay are mapped as High Ecological Significance Wetlands (HES Wetlands) and High Ecological Value Waters (Wetlands) (HEV Waters).

Juno Point (Lot 8 on SP268662), according to Queensland Government mapping (2024), exhibits the following remnant regional ecosystems in the area proposed to be disturbed for the access road:

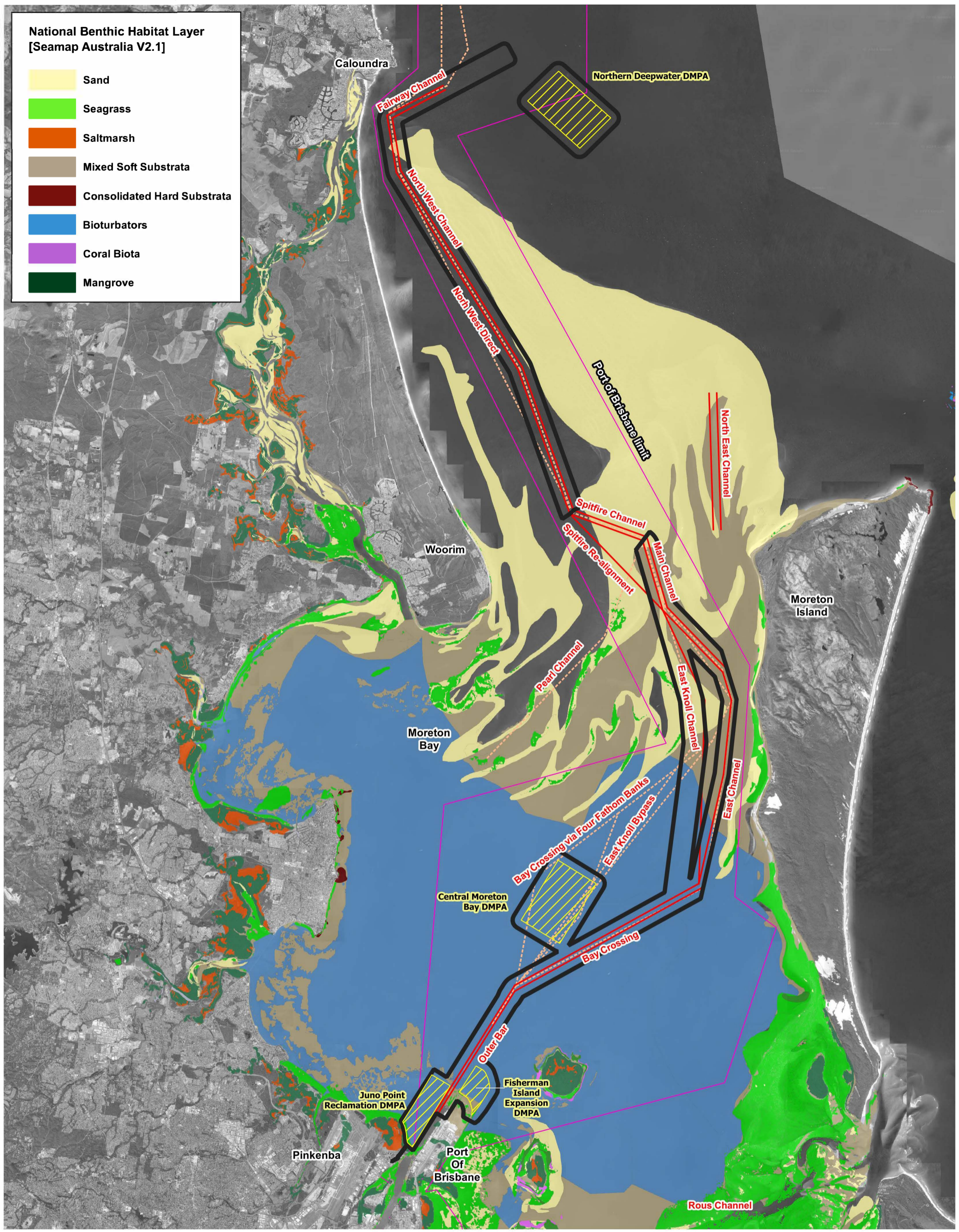
- 12.1.2 (Saltpan vegetation including grassland, herbland and sedgeland on marine clay plains)
- 12.1.3 (Mangrove shrubland to low closed forest on marine clay plains and estuaries)

Both of these regional ecosystems are Category B least concern. The expected approximate area of disturbance of the access road to these regional ecosystems is ~0.27Ha (~0.26Ha of 12.1.3 and ~0.01Ha of 12.1.2). Further ground truthing to determine the extent of the presence of these regional

ecosystems will be undertaken as part of further studies. The remaining proposed works (being offshore dredging and material placement) will not directly affect these other marine plant communities (such as mangroves or saltmarsh) or regulated vegetation declared under the *Vegetation Management Act 2009 (Qld)* and will be assessed in the context of indirect impacts on water quality (turbidity and sedimentation) and habitat for threatened or migratory species.

**National Benthic Habitat Layer  
[Seamap Australia V2.1]**

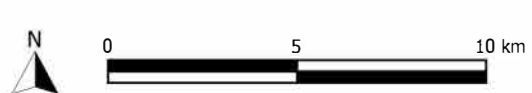
- Sand
- Seagrass
- Saltmarsh
- Mixed Soft Substrata
- Consolidated Hard Substrata
- Bioturbators
- Coral Biota
- Mangrove



- Legend**
- Study Area
  - DMPA Investigation Areas
  - Shipping Channels
  - Bay Channels
  - Port Limits (Maritime Safety)

**Benthic Habitats**

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Drawing: **4.4** Rev: **A**



#### 4.3.5 Flora and Fauna Species

A search of the EPBC Database (PMST) was undertaken for the study area, including both the dredge footprint and potential placement options. This identified 86 threatened species (44 birds, 3 fish, 1 frog, 1 insect, 11 mammals, 9 reptiles, 5 sharks and 12 plant species) and 79 migratory species (58 birds, 8 mammals, 6 reptiles and 7 sharks) which may occur in that area. Of these, 7 marine-based species are considered critically endangered:

- regent honeyeater (*Anthochaera phrygia*);
- Australian fritillary (*Argynnis hyaerbius inconstans*);
- curlew sandpiper (*Calidris ferruginea*);
- grey nurse shark (*Carcharias taurus*) (east coast population);
- Coxen’s fig parrot (*Cyclopsittia diophthalma coxen*);
- swift parrot (*Lathamus discolor*); and
- eastern curlew (*Numenius Madagascariensis*);

The search area is also a Biologically Important Area (i.e. an area that is important for the life cycle of a species) for the species identified in Table 4.4.

Table 4.4 Biologically Important Areas (BIA) within study area

Common Name	Scientific Name	EPBC Act Status	Life Cycle
Indo-Pacific humpback dolphin	<i>Sousa chinensis</i>	Migratory	Breeding
Indo-Pacific spotted bottlenose dolphin	<i>Tursiops aduncus</i>	Nil	Breeding
Loggerhead turtle	<i>Caretta caretta</i>	Endangered, Migratory, Marine	Internesting and Nesting
Green turtle	<i>Chelonia mydas</i>	Vulnerable, Migratory, Marine	Foraging
Grey nurse shark	<i>Carcharias taurus</i>	Critically Endangered	Foraging
Humpback whale	<i>Megaptera nevaengliae</i>	Migratory	Migration and resting

Important fauna groups that inhabit Moreton Bay and the associated coastal areas are briefly summarised below:

- Birds – Moreton Bay is used and visited by a range of resident and migratory wading birds as well as sea birds and wetland specialists and raptor species. In particular, the area is a BIA for the flesh-footed shearwater and black petrel (foraging). Migratory wading birds typically feed on invertebrates that live in intertidal habitats, mostly within soft sand and mud. Moreton Bay has a number of key roosting areas, which include a site adjacent to the existing reclamation ponds at the Port of Brisbane and Juno/Luggage Point. Sites that provide both feeding and roosting opportunities are important (Fuller et al, 2019). Roosting and feeding sites within Moreton Bay were recently studied by Fuller et al (2021) – see **Figure 4.5** and **Figure 4.6**. Generally, dredging would not directly disturb known roosting or feeding areas. Should reclamation at Juno Point proceed, it will need to be carefully designed to minimise disturbance of mudflats where migratory birds may feed. Fuller et

al (2021) did not identify Juno Point as supporting a significant number of migratory birds, however further surveys would be required.

- Fish – Moreton Bay has a wide variety of fish and crustacea species including species that are of commercial and recreational fishing value, such as the blue warehou (*Seriolella brama*) and southern bluefin tuna (*Thunnus maccoyii*). In terms of protected species, juvenile black rockcod are often recorded in estuaries in New South Wales but only occasionally found in southern Queensland and are unlikely to be present in areas affected by the proposal (e.g. rocky reef habitat)
- Sharks – in terms of protected shark species, the study area either does not contain the preferred coastal/offshore habitat for these species (i.e. grey nurse shark, great white shark), and in the case of green sawfish, Moreton Bay is not thought to represent the current geographic range (in recent decades only reported north of Cairns). The area is listed as a BIA for the grey nurse shark (foraging purposes). Flat Rock north-east of Point Lookout on Minjerribah (North Stradbroke Island) is a known grey nurse shark congregation, which while outside the study area may result in this species visiting Moreton Bay infrequently.
- Whales – while historically considered to only be occasional visitors to areas within the Bay, recent surveys as part of studies commissioned by the Port of Brisbane undertaken by Griffith University [GU] (Nash and Castrillon, 2017) indicate Moreton Bay can be an important ‘stop over’ resting area for humpback whales during southern migrations, especially for nursing mother and calves – see **Figure 4.7**. Other whale species that may occur in this area are expected to be only infrequent and temporary visitors.
- Dolphins – No threatened dolphin species were identified within the PMST search, however the Australian humpback and snubfin dolphins may be present in the study area as migratory visitors. The area is listed as a BIA for the Indo-Pacific humpback and Indo-Pacific spotted bottlenose dolphins (breeding area).
- Dugongs – dugong density over time in Moreton Bay was assessed by Sobotzick et al. 2017 and is shown in **Figure 4.8** The preferred seagrass feeding habitat for dugongs is not present in the proposed project dredge footprint, but there are small patches present surrounding Juno Point where reclamation may occur. This species may transit or opportunistically feed in the area if sparse seagrass is present seasonally.
- Marine turtles – six marine turtle species occur in Moreton Bay. Of these, the green turtle is the most abundant in western Moreton Bay. Marine turtle density over time in Moreton Bay was assessed by Sobotzick et al. 2017 and is shown in Figure 4.9. The preferred reefal and seagrass feeding habitat for green turtle is not found in the proposed project footprint, but there are small patches present surrounding Juno Point and the end of Fisherman Island where reclamation may occur. The green turtle, and other less common species such as hawksbill and loggerhead turtles, may transit or opportunistically feed in the area if sparse seagrass is present seasonally.

The area is mapped as ‘habitat critical to the survival of marine turtles’ for the loggerhead turtle (EPBC PMST, 2023).

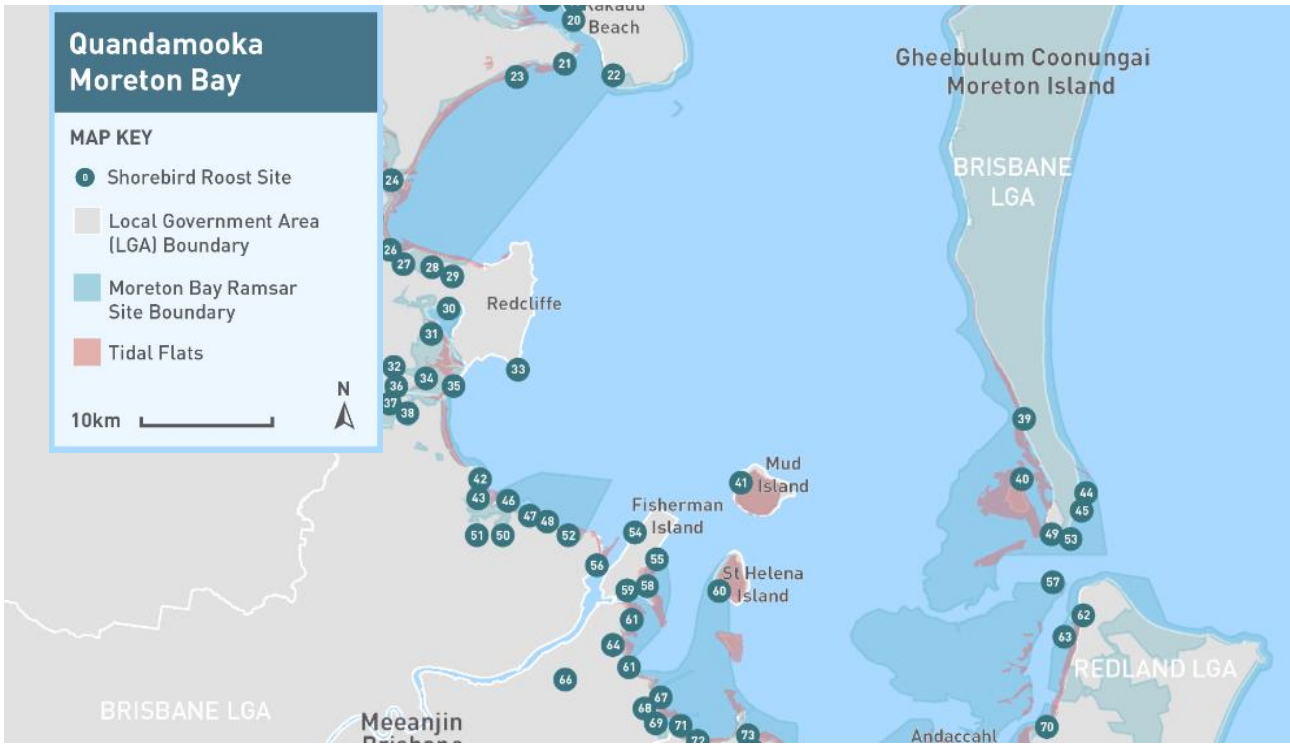


Figure 4.5 Roosting sites for migratory shorebirds in Moreton Bay, showing Ramsar Site Boundaries (Source: Fuller et al, 2021)



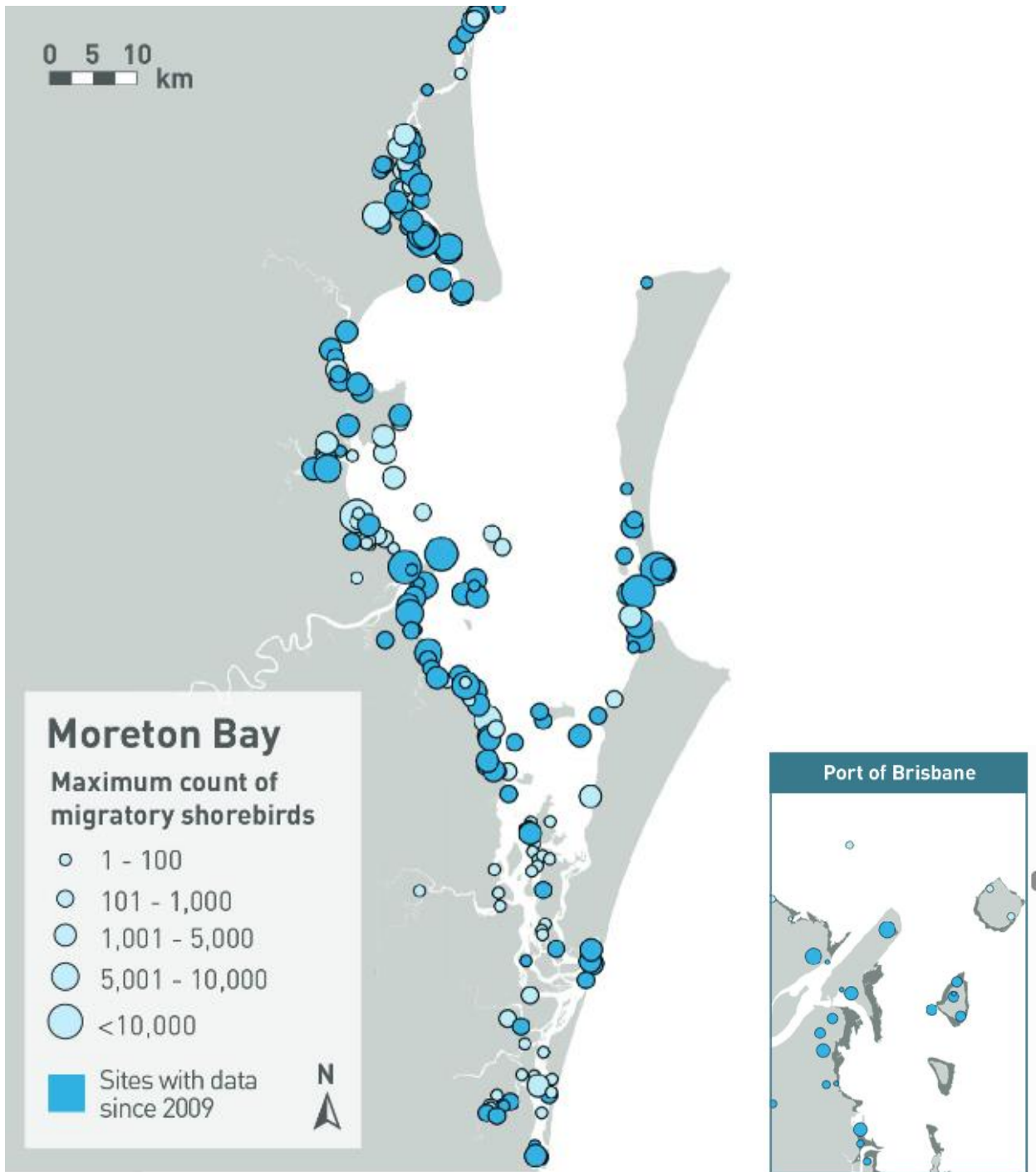
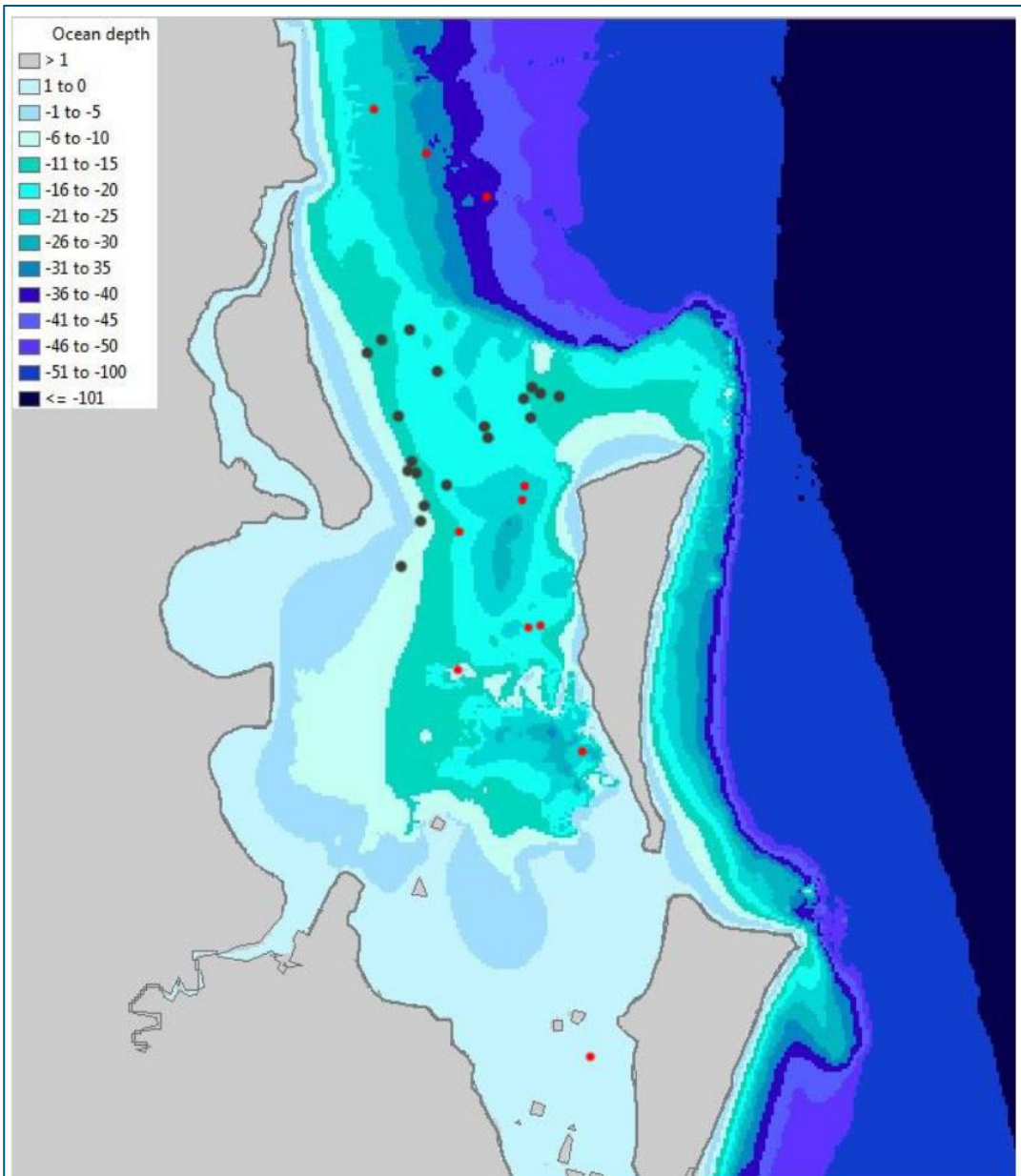


Figure 4.6 Maximum counts of migratory shorebirds at high tide roosts in Moreton Bay. Count data are from 1980 to 2018 (Source: Fuller et al, 2021)



**Figure 23:** Ocean depth and location of the resting groups with calves within Moreton Bay, from 2017 (grey markers) and 2018 (red markers).

Figure 4.7 Resting Humpback Whale Pods in Moreton Bay from 2017/2018 GU surveys (reproduced from Nash and Castrillon, 2017 and 2018)

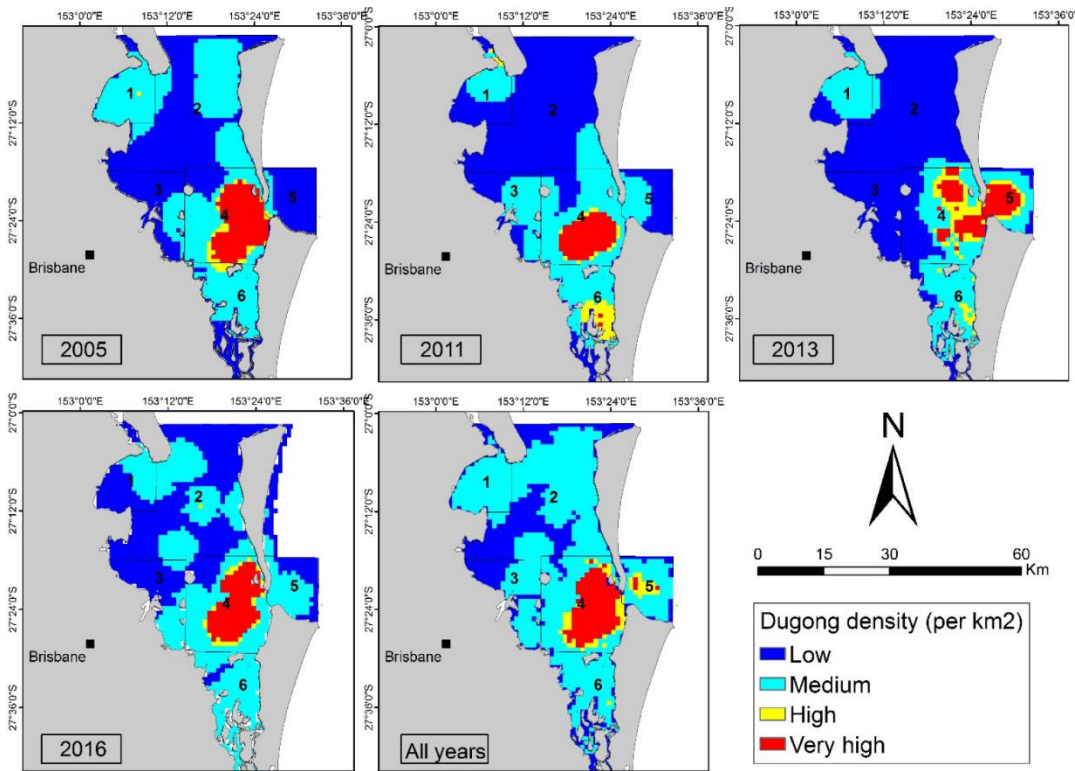


Figure 4.8 Dugong Density Over Time in Moreton Bay (direct extract from Figure 16 within Soltzick *et al.* 2017)

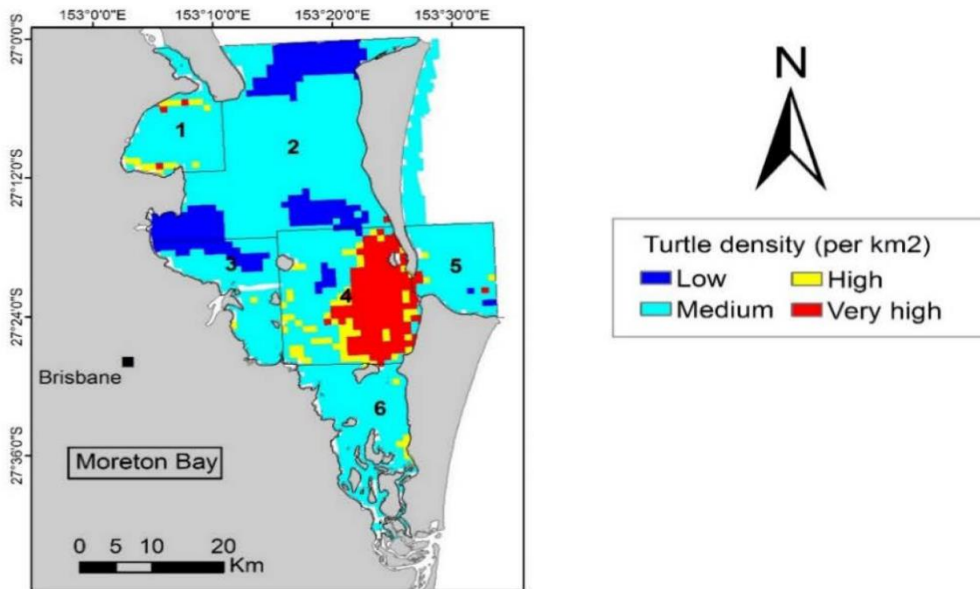


Figure 4.9 Turtle Density using 2016 aerial survey data (direct extract from Figure 19 within Soltzick *et al.* 2017)

#### 4.3.6 Coastal Processes

While the near shore planning area (Outer Bar Channel) is heavily influenced by the Brisbane River and terrigenous sediment transport, the nature and behaviour of Moreton Bay channels, sand banks and island shorelines are determined by both their geological evolutionary development and the present-day dominant forces of tidal currents, ocean swells and local wind waves.

The Northern Delta sand banks contain about 4,000 million cubic metres of coastal sand and have been formed over the longer geological Holocene and Pleistocene timeframe, most particularly during the past 6,000 to 7,000 years of the Holocene period with the input of coastal system marine sands (Stephens 1992).

The annual average rate of sand movement north from the Tweed River entrance and along the Southeast Queensland coast is often quoted as approximately 500,000 m<sup>3</sup>/year (Patterson and Patterson, 1983). A recent re-analysis of the long term average rate using hydrographic survey data between 1993 and 2020 revised the estimate to 550,000 m<sup>3</sup>/year (BMT, 2020).

Stephens (1992) suggested that approximately 200,000 m<sup>3</sup>/year of the net northerly sand transport deposits within the South Passage tidal delta, between North Stradbroke Island and Moreton Island. The remaining volume, up to approximately 350,000 m<sup>3</sup>/year, is transported further along the east and north coasts of Moreton Island and ultimately reaches the Northern Delta. The sand banks of the Northern Delta continue to receive this ongoing supply of sand and evolve their shape under the influences of waves and currents.

Moreton Island is experiencing slow but apparently persistent Holocene accretion along the northern shoreline to Comboyuro Point, from sand supplied with the longshore transport along the eastern coastline beaches. Its western shoreline has fluctuated substantially over the longer term. However, the recent geological record indicates a progressive erosion of former Holocene accretion deposits along the western shoreline of Comboyuro Point and south to at least Cowan Cowan. This pattern is likely to relate to the southward growth of the Yule Road shoals and its effects in directing strong tidal currents close to the shore.

Consistent with these observations, progressive hydrographic survey datasets of both capital dredging areas (by PBPL, BAC) and commercial sand extraction areas (at Spitfire Permit Area) show little evidence of significant infilling. The morphological response in these areas is therefore considered slow as are the processes of sand replenishment and channel infill.

### 4.4 Social and Economic Environment

#### 4.4.1 Commercial Sand Extraction

The Government's 2005 Moreton Bay Sand Extraction Strategy consolidated all the commercial (e.g. industry) marine sand extraction locations that had operated in the Bay to an area adjacent to the Spitfire Banks (the Spitfire Permit Area) and to the Middle Banks area, although the latter has not been used for several years.

Quarry material allocation notices (issued under the *Coastal Protection and Management Act 1995 (Qld)* and administered by the DESI) are the primary regulatory instrument for controlling sand extraction in the Bay. The allocation notices limit the annual amount of material that can be taken by industry as well as limiting the depth of dredging. In accordance with the 20 to 25-year strategy, total allocations to industry are targeted at an annual volumetric limit of 1 million cubic metres per year (~20 Mm<sup>3</sup> over 20 years).

Advice from the industry is that approximately 25% of sand supply for concrete manufacture in south-east Queensland (SEQ) utilises Moreton Bay sand (pers comm, CCAA, 2021). The industry, as represented by the CCAA, has indicated that projections are that there will continue to be strong demand for sand from Moreton Bay over the next 20 to 25-year timeframe at a similar rate of extraction (1 Mm<sup>3</sup> /yr).

#### 4.4.2 Commercial Fishing

There are number of commercial fisheries that operate at the mouth of the Brisbane River including:

- Beam trawl - this is a multi-species prawn fishery, but incidental by-catch is also marketed. - Trawling is undertaken year round throughout the lower Brisbane River (possibly including areas within and adjacent to the proposed swing basin) and the Mud Island DMPA (outside the shallow water Habitat Protection zone encompassing Mud Island), where water levels permit.
- Inshore netting - netting is a significant fishery in western Moreton Bay and a variety of netting methodologies, such as haul, tunnel, and mesh (or gill) netting are used, depending on site conditions and target species.
- Line fishery – typically undertaken around reefs and other hard structures.

Moreton Bay has a long history of commercial fishing (Thurstan et al. 2019). At present, the key fishery is the commercial trawl fishery followed by the bream, mullet and whiting net fisheries and the mud crab pot fishery. Together these fisheries in Moreton Bay account for 12% of the total fish catch in Queensland (Thurstan et al. 2019). In particular, the Moreton Bay commercial prawn trawl fishery, which primarily targets greasyback (*Metapenaeus bennettiae*) and school prawns (*M. macleayi*), is one of the main prawn fisheries in Queensland.

The commercial fishing area covers the existing channel area and most of Moreton Bay. The dominant fishery is the commercial trawl fishery, consistent with general trends for Moreton Bay. Within the northern bay, this commercial trawl occurs only in the more southern banks, including east Knoll, and is absent in more northern areas. This may indicate the higher productivity of southern and central areas of the bay or limitations on trawl fishery operations and/or productivity in more northern locations. The second most important fishery is the commercial pot fishery, which occurs throughout the bay.

#### 4.4.3 Cultural Heritage

##### Indigenous Cultural Heritage

PBPL is committed to working with Traditional Owner stakeholders as part of this process. It has just released its second Reconciliation Action Plan and looks forward to working with existing stakeholders and developing new relationships on this journey.

There are no current claims or determinations over the proposed area to be dredged, however the Quandamooka were granted native title over parts of Moreton Bay in 2011 by the Federal Court. The Kabi Kabi also have a claim over the onshore area adjacent to the northern part of the existing shipping channel. The Yugara/Yugarapul People and Turrbal People made an application for a determination of native title over land adjacent to parts of the shipping channel, however it was determined by the Court that native title does not exist over these areas.

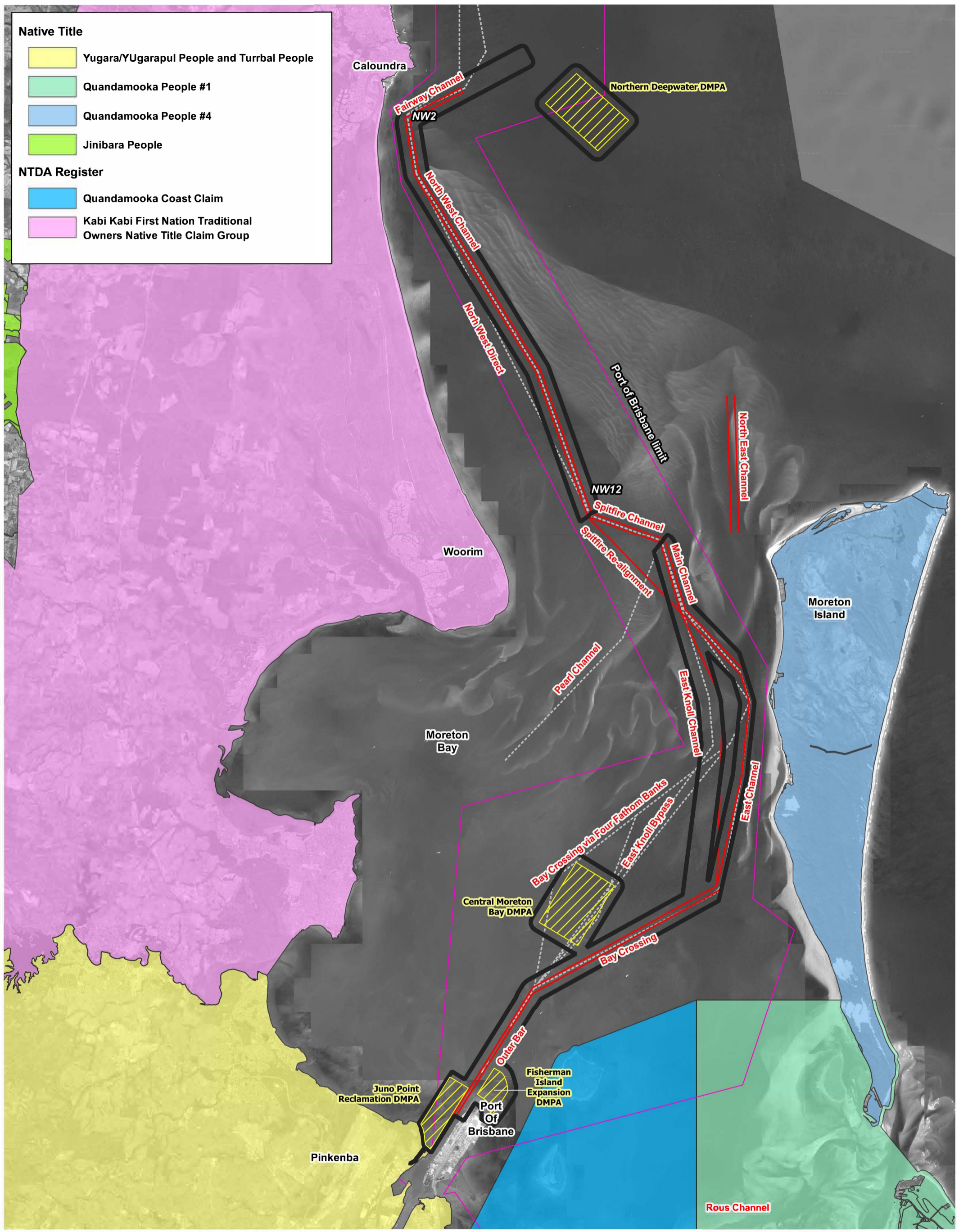
With respect to Aboriginal cultural heritage, the Moreton Bay Sand Extraction Study (MBSES) Strategy (Queensland Government, 2005) concluded that:

- Northern Moreton Bay and adjacent coastal areas are utilised in many ways for cultural, residential, commercial and recreational purposes. In particular, the areas are important to a number of Indigenous family groups and are the subject of several native title claims (both registered and unregistered).
- Previous cultural heritage work in Moreton Bay has highlighted that the entire landscape and seascape are part of the Indigenous cultural heritage of the region;
- Fesl and Davies (2004) completed a specific study of potential impacts of sand extraction in northern Moreton Bay on Indigenous cultural heritage for Phase 2 of the MBSES. A review of available information was undertaken, including the geological investigation by PPK (1998), and key findings were as follows:
  - The area proposed for sand extraction was, prior to the most recent sea level rise (the Holocene marine transgression), a terrestrial plain that was probably used and valued by the original inhabitants at the time.
  - Much of this pre-Holocene land surface is now overlain by sand deposits (typically between 5 – 10 metres thick). However, there is potential for dredging to disturb the ancient land surface and/or significant archaeological items.
  - Although no specific places of Indigenous cultural significance were identified in the course of the study, it was determined that there is potential for finding Indigenous cultural sites and/or materials in the study area.

The MBSES strategy went on to state that -

*...consultation was undertaken with potentially affected groups on several occasions and the strong conservation desires of Indigenous Traditional Owner groups were documented. In general, no representatives of Indigenous Traditional Owner groups expressed a view favouring continued or additional sand extraction in northern Moreton Bay. All involved in the discussions expressed the view that if extraction was to occur, potential impacts on artefacts below the surface must be considered. Any sand extraction that impacts upon the prior land surface of the now submerged study area has the potential to impact upon not only Indigenous archaeological and cultural sites/places that may have been present but also the cultural landscape which has continuing contemporary significance.*

The current situation and boundaries with respect to Sea Country and Native Title Determination Areas in Moreton Bay are shown in **Figure 4.10**.



- Native Title**
- Yugara/Yugarapul People and Turrbal People
  - Quandamooka People #1
  - Quandamooka People #4
  - Jinibara People
- NTDA Register**
- Quandamooka Coast Claim
  - Kabi Kabi First Nation Traditional Owners Native Title Claim Group

- Legend**
- Study Area
  - DMPA Investigation Areas
  - Shipping Channels
  - Bay Channels
  - Port Limits (Maritime Safety)

Title: **Native Title Groups**

BMT endeavours to ensure that the information provided in this map is correct at the time of publication. BMT does not warrant, guarantee or make representations regarding the currency and accuracy of information contained in this map.

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 <a href="http://www.bmt.org">www.bmt.org</a>	

If an EIS is required for the Project, a Cultural Heritage Management Plan under Part 7 of the *Aboriginal Cultural Heritage Act 2003 (Qld)* will be required. A CHMP is an agreement between PBPL and an 'endorsed' Aboriginal party for the Project area which is developed in accordance with Part 7 and sets out how works could be managed to avoid or minimise harm to Aboriginal cultural heritage.

### Non-Indigenous Cultural Heritage

There are no known items of European heritage within the dredging footprint, including shipwrecks or sunken planes.

## 4.5 Built Environment

The Project is not expected to affect the existing built environment in any material way.

## 4.6 Traffic and Transport

Some minor road works and associated land-based development on or near port-controlled land would be expected to accommodate the stockpiling and distribution of sand for commercial sale. While this will be further explored as part of the EIS the most likely option for export of the material will be by sea, removing the need for additional truck traffic on the local road network or on State controlled roads.

A temporary access road may also be required for the Juno Point reclamation; this would travel through port land, Queensland Urban Utilities land and the Brisbane International Cruise Ship terminal for a distance of approximately 1.5-2km.

## 4.7 Land Use and Tenure

### 4.7.1 Key Local and Regional Land Tenures

All the proposed dredging works are in the existing port limits as described in Schedule 2 of the *Transport Operations (Marine Safety) Regulation 2016 (Qld)* and shown in **Figure 4.1**.

### 4.7.2 Native Title

There are currently no native title claims or determinations over the area to be dredged; depending on the location of the placement site, there may be determinations or claims over that area. The absence of claims or determinations is not determinative as to whether native title exists over the dredge area. It is possible that native title rights and interests may have been extinguished in parts of the existing shipping channel and areas adjacent to the existing channel. Therefore it is assumed native title rights and interests may exist in parts of the area to be dredged, unless extinguishment can be identified.

## 4.8 Planning Instruments and Government Policies

### 4.8.1 State Development Assessment Provisions

As the Project is occurring outside of a local government area, the State Development Assessment Provisions (SDAP) version 3.0 (2022) set out the policies and requirements that State Government agencies must consider when assessing development applications under the *Planning Act 2016 (Qld)*. The relevant State Codes from SDAP that the project would need to address in applications for State approvals are set out as follows:

- Maritime safety;
- Coastal development and tidal works;
- Removal, destruction or damage of marine plants; and
- Environmentally relevant activities.



In addition to the SDAP the following declared conservation areas are relevant to the project:

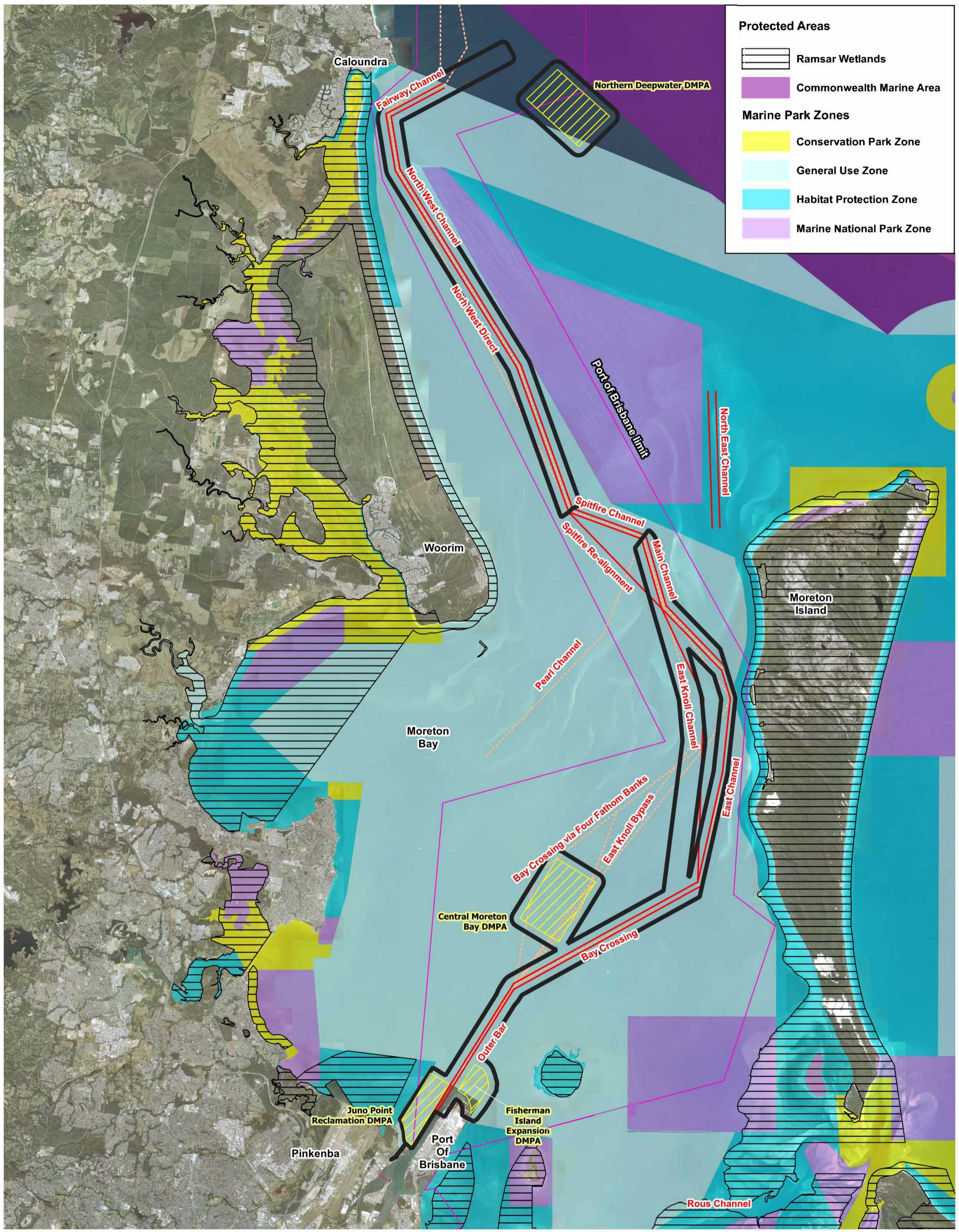
### Moreton Bay Ramsar site

Wetlands of international importance are listed as a MNES under s16 and 17B of the *Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act). Such wetlands are commonly referred to as Ramsar wetlands.

The Moreton Bay Ramsar site boundary is shown in **Figure 4.11**. No works associated with the project are proposed within the Ramsar boundary but it is adjacent to both the nearshore and offshore planning areas.

Key marine values justifying the inclusion of Moreton Bay as a Ramsar site, as identified in the 1999 Ramsar Information Sheet, include the following:

- Moreton Bay is one of the largest estuarine bays in Australia;
- Moreton Bay supports appreciable numbers of the vulnerable green and hawksbill turtles, the endangered loggerhead turtle, and is ranked among the top ten dugong habitats in Queensland. It is a significant feeding ground for green turtles and is a feeding and breeding ground for dugong, the bay also has the most significant concentration of young and mature loggerhead turtles in Australia;
- Moreton Bay supports over 355 species of marine invertebrates, 55 species of algae associated with mangroves, seven species of mangroves and seven species of seagrass; and
- in addition to these marine values, the bay is also recognised as a critical habitat for 43 shorebird species, including 30 migratory species (EPBC Act listed).



**Protected Areas**

- Ramsar Wetlands
- Commonwealth Marine Area

**Marine Park Zones**

- Conservation Park Zone
- General Use Zone
- Habitat Protection Zone
- Marine National Park Zone

**Legend**

- Study Area
- DMPA Investigation Areas
- Shipping Channels
- Bay Channels
- Port Limits (Maritime Safety)

Title: **Protected Areas and Marine Park Zones**

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### Moreton Bay Marine Park

The proposed channel expansion would be wholly contained in the Moreton Bay Marine Park (MBMP) General Use Zone (light blue) where capital dredging is permissible. The Juno Point and Moreton Bay dredge material placement options are also in the General Use Zone of the park; a site outside the MBMP has also been identified as a potential placement site.

The closest zones of conservation significance are shown in **Figure 4.11**, noting that the Zoning Plan was scheduled for review in 2023.

As part of previous projects including the construction of the Koopa Channel swing basin, capital dredge material was permitted to be placed in the approved marine dredge placement area at Mud Island (also in a General Use Zone). This material will be certified as suitable for unconfined marine placement through NAGD marine sediment testing,

### World Heritage

Moreton Bay is not declared as a World Heritage or National Heritage Place. However, it is understood from the QYAC website (<http://qyac.net.au/worldheritage.html>) that Quandamooka Country in Moreton Bay is being proposed for a World Heritage listing in recognition of its unique cultural and natural values. Accordingly, the EIS will consider these values as part of the assessment.

## 5 Potential Project Impacts

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### 5.1 Natural Environment

#### 5.1.1 Land

To the extent possible, a key design objective for the Project will be to ensure dredging avoids encountering the deeper stiff clay Pleistocene (Unit 3) layer of sediment that exists in the Bay and minimises impact on any indurated coffee sand (Unit 2) layers. Avoiding or minimising dredging into these sediments reduces impacts on water quality from dredge plumes as well as avoiding the innate cultural heritage values of this older land surface. In this context:

- PPK (1998) indicated that Holocene sand (Unit 1) deposits in the sand banks of the northern portion of the delta were much thicker (e.g. extended deep below the seabed surface), whereas the older Pleistocene units (Units 2 and 3) can be shallower (e.g. closer to the seabed surface) in the sand banks in the southern parts of the delta such as Middle Banks. To date, sand extraction in the Spitfire Channel (by the Port and as part of the Sunshine Coast Airport Expansion project) and neighbouring Spitfire Permit Area where commercial sand extraction operations have been occurring since 2006 have not encountered these older Pleistocene layers.
- There are layers of Unit 2 indurated sand material that is exposed at the surface and/or at minimal depths in the North West Channel. Previous assessments have mapped the extent of these deposits, noting that the indurated nature of the material makes it difficult to dredge with TSHD plant and the sediment itself has a darker (coffee-like) appearance leading to greater dredge plume impacts when disturbed;
- Preliminary seismic investigations and sediment sampling in the East Knoll area undertaken as part of BMT 2021) indicate that the older Pleistocene layer (unit 3) is likely situated well below the intended depth of dredging (> -30 m LAT).

Further sediment testing in line with the NAGD Guidelines and the *National Acid Sulfate Soils Guidance: Guidelines for the dredging of acid sulfate soil sediments and associated dredge spoil management* (Simpson *et al.* 2018) will be undertaken to determine the presence of contaminated or acidic soils and how these should be managed. A Sampling and Analysis Plan (SAP) will be prepared for approval from DESI prior to any sampling occurring.

#### 5.1.2 Air

There are no air quality impacts anticipated by the Project. The dredging will be undertaken progressively by modern equipment with a single or small number of vessels. Carbon dioxide and other greenhouse gas emissions from the construction phase of the Project will need to be calculated and assessed as part of the EIS. Operational emissions from the Project will also be addressed in the context of possible changes in the profile of ships that visit the Port of Brisbane and any improvements to ship emissions as a result of a shorter and more efficient channel network.

Odour from placement activities would not be expected to cause nuisance at Myrtle town Reserve. This area is surrounded by a number of industrial activities, therefore odour from placement is not likely to be noticeable. There are also a number of commercial receptors surrounding the Juno Point area, however it should be noted that between Juno Point and a majority of these commercial receptors exists the Luggage Point Wastewater Treatment Plant, which would be expected to produce greater odour than the placement activities. Particulate emissions are not expected from this project as material will be handled when wet. Upon completion of reclamation, the area will be turfed or covered to avoid

dust emissions. Emissions from the existing Port of Brisbane are regularly monitored with no exceedances at sensitive receptors experienced.

### 5.1.3 Water

Potential water quality impacts from the proposal are principally related to:

- Dredge plumes from normal operation of the dredge vessel (including overflow of the dredge hopper and propeller wash);
- Mobilisation of contaminated sediment including nutrient rich porewater during dredging;
- Accidental spills or other contaminants from the dredging operation (oil or fuel spills, grease application) ;
- Plumes and smothering of marine organisms from placement of dredge material at sea; and
- Release of fine sediments in dredge tailwater to the extent that material placed on land with reclaimed areas needs to be dewatered.

Assuming the dredge material present is predominantly Unit 1 clean Holocene sand with minimal fine component, plumes from future capital dredging will be temporary with negligible impacts on the environment.

However, as noted previously, there are two areas of potential concern in the context of water quality. These include the mud clay and silty sediments in the Outer Bar and the lenses or areas of older Unit 2 sands (darker organic coffee sands and indurated layers) present in the North West Channel. The impact assessment, mitigation and monitoring approach will be focusing on these areas of greater environmental risk.

### 5.1.4 Marine Ecology

The key potential direct impacts from the Project is dredging of, or the placement of material on, the soft bottom benthic habitats and potential direct loss of ephemeral seagrass habitats. Other marine and tidal habitats such as mangrove areas may be potentially affected by indirect water quality impacts.

Soft bottom benthic habitats will be temporarily impacted during dredging but are expected to recover post disturbance. Recolonisation of deeper habitat areas (as a result of deepening and widening) is not expected to result in a permanent change in ecosystem character noting that previous studies of Moreton Bay following dredging have indicated equivalent species abundance and diversity to more shallow environments (MBSES 2001, BAC 2007, BMT 2020). Dredge material placement at Juno Point, whilst not within the Ramsar area, may disturb mudflats that support migratory bird feeding. Underwater noise from dredging vessel activity can cause harm or avoidance behaviour in marine megafauna, including dolphin species. While this will be assessed as part of the EIS it should be noted that the additional impact of dredging needs to be contextualised with existing shipping movements in the navigational channel and it is likely that megafauna are already avoiding port channels and facilities, and there would be no additional impact to that already experienced from shipping movement.

Threatened marine species as identified above are likely occasional visitors or transiting across the shipping channels between more favourable habitats, rather than regular users. On this basis, marine ecology is not expected to be a major constraint to future channel expansion assuming the adoption of standard mitigation measures for dredging and shipping in areas with marine megafauna.

### 5.1.5 Coastal processes

The outcomes of previous regional-scale hydrodynamic and wave modelling for the MBSES (WBM 2003, 2004a, 2005) and local-scale numerical modelling and shoreline assessments completed to support sand dredging EISs at Middle Banks (BAC 2006) and Spitfire Banks as part of the Sunshine Coast Airport Expansion (SCA 2014) have indicated:

- there are no cases where current speed or direction has been significantly altered along shoreline locations at Bribie Island or Moreton Island;
- generally, impacts to current speed and direction are restricted to the vicinity of the proposed sand extraction area where some local realignment and magnitude changes are predicted to occur; and
- no changes in wave height, period, or direction of any significance at any shoreline location because of the proposed sand extraction. Also, there are no significant changes in the local sea conditions at the proposed sand extraction sites. The seabed changes forms only a minor component of the fetch for wave growth and the shorter period waves have less potential to refract and shoal as they pass over the dredged areas.

Notwithstanding, the project will undertake numerical modelling to confirm any localised and/or regional scale change to waves, currents and sediment transport as a result of the new dredge channel configuration and assess any impacts or changes anticipated to neighbouring shorelines from significant stages and/or the ultimate channel enhancement configuration. Material placement locations may also have an impact on hydrology and coastal processes that will be further investigated. The impacts this may have on larval dispersion and intertidal dependent ecosystems will also be explored further.

### 5.2 Amenity

There may be concerns with visual impacts from dredging, particularly in the North West Channel (due to its proximity to Bribie Island), East Knoll and East Channel due to its proximity to Cowan Cowan (and to a lesser extent Tangalooma) on Moreton Island and in the Outer Bar but noting that the proposed dredging operations are occurring in areas that are subject to normal shipping traffic.

As discussed in **Section 4.3**, the closest sensitive receivers to the project are the public park at Myrtle town and the Moreton Bay Marine Park. As a result of the general vicinity of the Port of Brisbane being an industrial area, noise experienced in the area would be expected to be high already and therefore additional noise from dredging and placement is unlikely to materially increase this noise profile. With regard to noise impacts on the marine park, there will be some localised effects from dredging activities however these will be short term in each area. A large majority of the dredging activities will not occur in close proximity to the marine park boundary, but in areas where it does these impacts are expected to be transient and temporary only while dredging is occurring in those particular areas. Further, any observable noise of transiting dredge vessel would be similar to existing shipping traffic using Moreton Bay shipping channels.

### 5.3 Social Environment including Cultural Heritage

Recreational activities in Moreton Bay such as diving, water-based sports and swimming are not expected to be affected by the project.

Gaining access to marine areas where dredge(s) are actively working could result in temporary suspension of recreational fishing and boating activities; but these would be of a minor and temporary nature and would be imposed to ensure safety of operations.

The principle of ensuring dredging avoids as far as practicable the older Pleistocene sediment units (Unit 2 and 3) is recommended to continue as a practical mitigation to avoiding impacting on indigenous cultural heritage places, object or items.

Consultation and engagement will take place between PBPL and QYAC and other Aboriginal parties as required to address the new project. Measures as part of these agreement could include: site visits; review of geotechnical sediment core samples, invitation for cultural heritage observers during dredging; a new cultural heritage study or survey by a suitably qualified archaeologist (if considered to be valuable); renewed awareness training for dredge operations and during placement; and continuation of the existing cultural heritage item/object discovery and management process under existing agreements and protocols.

#### 5.4 Economic Effects

Sale of the high-quality sand resource as part of the Project will focus on international and interstate clients so as to ensure the Project does not have a deleterious impact on the local commercial sand extraction industry.

Dredging will be co-ordinated with the Regional Harbour Master and Vessel Traffic Services so as to ensure safe navigation and to ensure no commercial impacts on existing shipping and ferry traffic.

Dredging could lead to temporary disruptions to fishing activities in the vicinity of the works. Furthermore, deepening of the channel could affect the capacity to undertake some fishing activities, particularly any netting of shallow channel environments. For this reason, a Fisheries Resource Assessment will be undertaken in accordance with DAF guidelines, 'Guideline on Fisheries Adjustment as a Result of Development' (DAF, 2013).

#### 5.5 MNES under the EPBC Act

Annex A outlines the protected matters search for MNES.

Based on the search, the likely controlling provisions for the project include:

- Wetlands of International Importance (Moreton Bay Ramsar site);
- Threatened Species; and
- Migratory Species.

There are no works proposed within Commonwealth Waters.

This is consistent with other large scale dredging projects by Brisbane Airport at Middle Banks and more recently by Sunshine Coast Airport at the Spitfire Channel Realignment Area which were both referred under the EPBC Act and recognised by the Commonwealth Environment Minister as a controlled action. Approvals for both projects under the EPBC Act imposed standard mitigation conditions (see section following) but found that the proposed dredging did not have a significant impact and were not subject to any environmental offsets.

A MNES report has been prepared for PBPL for the Project to support this IAS and the EPBC referral submission to DCCEEW that further discusses the above MNES potentially impacted by the proposed works and assesses the potential impacts and their significance.

## 5.6 Hazard and Risks

The Natural hazards, risk and resilience State Planning Policy outlines policies for determining risk to projects from natural hazards and how these can be mitigated in new development. Natural hazards covered in this policy are flood, bushfire, landslide and coastal hazards.

The proposed project will not be impacted by bushfire or landslide due to it occurring in the marine environment. Potential coastal hazards (i.e. storm tide inundation) will be taken into account when designing potential reclamation areas at Juno Point or Fisherman Island. The most applicable hazard, however, would be flood and the effects this would have on marine condition variability, such as tidal anomalies and weather-based impacts. As the development will be undertaken in Moreton Bay, flood and storm surge poses risk to the project in the form of dredging disruption and during poor weather. Dependent on the time of year during which activities are occurring, there is an increased risk of severe storm activity during the summer months. Flooding impacts would be concentrated close to the mouth of the Brisbane River should upper catchments receive heavy rainfall. While these risks are also present during routine maintenance dredging, the lifespan of this project sees the operations exposed for a much longer time period.

Due to the marine based nature of this project, the works proposed would not see exacerbation of the impacts of natural hazards to surrounding properties (i.e. limited land-based development seeing changes to flood characteristics of land). The key risks from the project in the event of natural hazards are to health and safety of employees working on the project and other maritime users should equipment be adversely impacted by marine conditions and severe weather.

To minimise potential impacts of coastal hazard and flood on the project, forecasting of weather events and continued monitoring of weather conditions will be crucial. In times where severe weather is forecasted that may lead to storm tides and flooding of upper catchments of the Brisbane River (taking into account previous wet weather that may exacerbate volumes of runoff), dredging activities will be paused to ensure the safety of those onboard working vessels and surrounding maritime users. Should reclamation at Juno Point or Fisherman Island be chosen as the placement method for the project, Port of Brisbane will ensure that all equipment adjacent to the chosen site is secured or removed in the event of a high storm tide being forecasted and reclamation works are paused. It will be designed to withstand potential coastal hazards.

The Port of Brisbane has an ISO14001 Environmental Management System (EMS) which was initially certified in 2000 and is regularly and independently audited against the Environmental Management System ISO14001:2015 international standard, most recently in November 2023. This EMS will be utilised to inform response to natural hazards and employ risk management strategies to protect the environment, workers and surrounding maritime users. The Port of Brisbane 's existing Health and Safety Policy also will be employed to all actions taken as part of the proposed project.



## 6 Environmental Management and Mitigation Measures

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A range of mitigation and monitoring measures embedded within management plans will need to be developed to support the project in accordance with current best practice approaches to dredging environmental management.

Consistent with other major capital dredging projects approved in Queensland under state and federal legislation, the plans required are expected to include the following:

- Sediment Sampling and Analysis Plan – this will detail sediment sampling to be undertaken for the project, including location, testing parameters, sampling depth, sample handling and QA procedures, equipment and laboratory analysis
- Dredge Management Plan – this plan will address the dredging activity as well as placement and disposal of dredge material. It will comprehensively cover logistics and methods in accordance with the approved dredge design, placement areas and logistics as well as the range of environmental management commitments related to these activities including reactive monitoring programs for water quality.
- Site based management plan (SBMP) for material placement – this plan would be developed to address the placement of the sand, management of the sand stockpile on land and the release of any dredge tailwater. This plan would only be required to the extent that placement and stockpiling occurs outside of the existing FPE precinct on the Port which is already subject to a comprehensive regulatory approval framework for the placement and management of dredge material.
- Marine Environmental Monitoring and Management Plan – this plan would address prospective impacts from the project on marine environmental values, in particular, the monitoring and management of marine species of conservation significance under the EPBC Act (threatened species, migratory species and important marine species) and marine pest species
- Vessel Management Plans – these plans required by Maritime Safety Queensland would address the movement and management of vessels during the construction phase as well as operational management of vessel traffic following the completion of channel improvements. These would be developed in consultation between PBPL and the RHM.
- Cultural Heritage Management Plan – this plan would be developed in accordance with the requirements of the *Aboriginal Cultural Heritage Act 2003 (Qld)* with the relevant Aboriginal Parties affected by the proposal.
- Environment Offset Plan – an offset management plan would be developed to address any offset commitments or requirements associated with the project across Federal and State Government requirements.
- EMP for the Dredge Vessel – the dredge vessel that undertakes the work will be subject to an operational EMP (modelled on the current EMP in place for TSHD Brisbane). This plan would be developed once the dredge vessel(s) have been selected for the work and would also include commitments and measures related to greenhouse gas and carbon management.

These plans will be developed as framework plans as part of the EIS (outlining scope, performance measures, monitoring requirements and proponent commitments to management) and then finalised as part of project statutory approvals prior to commencement of the works.

## 7 Relevant Legislation and Approvals

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### 7.1 Overview

PBPL has applied to the Queensland CG to declare the proposed development as a Coordinated Project under Part 4, Division 2 of the SDWPO Act.

PBPL to date has held discussions with the Queensland Minister of State Development, the Department of State Development, Manufacturing, Infrastructure and Planning and the CG's office, as well as a number of other important stakeholders. Subject to the CG's decision, the project will be assessed through the EIS process under the SDWPO Act and in accordance with the final CG's TOR for the Project.

This section describes the approval framework for the Project and relevant legislation to be addressed by PBPL as proponent for the project. Due to the location, scale and nature of the Project, there is a need for various approvals under Commonwealth, State and Local Governments. The following sections provides a summary of the key likely approvals required for the Project.

Note approval and permit requirements may vary depending on the final design and construction methodology and any future changes in statutory requirements prior to Project implementation. Further detailed review of legislative requirements should be undertaken as the Project progresses.

### 7.2 Commonwealth Legislation

#### 7.2.1 Environment Protection and Biodiversity Conservation Act 1999

*The Environment Protection and Biodiversity Conservation Act 1999 (Cth)* (EPBC Act) applies to those actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES). Those that are likely relevant to the current project are **bolded**.

The MNES protected under the EPBC Act are:

- world heritage properties;
- national heritage places;
- **wetlands of international importance (Ramsar wetlands);**
- **nationally threatened species and ecological communities;**
- **migratory species;**
- **Commonwealth marine areas;**
- the Great Barrier Reef Marine Park;
- nuclear actions; and
- a water resource, in relation to coal seam gas development and large coal mining development.

### 7.2.2 Environmental Protection (Sea Dumping) Act 1981

The *Environmental Protection (Sea Dumping) Act 1981 (Cth)* (Sea Dumping Act) regulates the loading and dumping of waste at sea within Australian Waters in accordance with international obligations under the *Convention on the Prevention of Marine Pollution by Dumping of Wastes and other Matter 1972* (London Convention). The Act is administered by Department of Climate Change, Energy, the Environment and Water (DCCEEW).

The National Assessment Guidelines for Dredging (NAGD) (2009) set out the assessment framework for dredging activities which informs the suitability of dredge material for offshore placement. Under the Sea Dumping Act, an approval is required for the placement of material within Commonwealth Waters. Commonly, the NAGD are also used to determine the suitability of material for placement in state waters.

If there is a need to undertake dredging then an assessment against the guidelines will be necessary; this involves consideration of the following:

- Testing and analysis of the physical and chemical properties of proposed dredged sediments;
- Determination of whether dredged sediment can be beneficially reused or recycled; and
- If unsuitable for beneficial reuse or recycling, an assessment of the suitability of dredged material for ocean disposal and/or treatment of hazardous material, taking into account environmental, social and economic factors.

### 7.3 Native Title Act 1993

Applies to the extent that the project will involve the grants of tenure or authorisations, or other works, which 'affect' native title and therefore give rise to a 'future act'. Section 24HA of the *Native Title Act 1993 (Cth)* may apply to any 'future acts' required for the project. Section 24HA applies to the grant of permits or authorities (etc.) under legislation which relates to the management or regulation of water and airspace and requires notice to be provided to relevant native title bodies of the proposed 'future act'. Further consideration of native title will be required once the dredge placement area is known. The project will not involve extinguishment of native title rights and obligations.

### 7.4 State Legislation

The standard suite of State approvals would be required for the dredging works as outlined in **Table 7.1**.

### 7.5 Local Planning Scheme

Will not apply unless sand stockpile site is located outside of strategic port land.

### 7.6 Summary of Likely Approvals

A table of respective legislation and respective administering authority for each of the likely works is provided below.

Table 7.1 Approvals Likely Required for the Project

Development Component	Approval Acts that Apply	Specific Triggers	Scope of approval
Controlled Actions	<i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>	Ramsar wetland, threatened species, migratory species	Will apply to the extent that the project will or is likely to result in a significant impact to these matters and is declared a controlled action.
Capital Dredging, Placement	<i>Planning Act 2016 (Qld)</i> and <i>Coastal Protection and Management Act 1995 (Qld)</i>	Operational works that are tidal works, sea disposal, works in a coastal management district, reclamation	Changing the approved profile of the channel (through widening and deepening) will require approval for tidal works. Placement of material at sea and on land in a coastal management district require approval Reclamation approvals will be required if a dredge material placement solution involved raising of tidal land above the high water mark. Owners Consent from the Department of Resources (DR) will also be required for tidal works.
	<i>Planning Act 2016 (Qld)</i> and <i>Fisheries Act 1994 (Qld)</i>	Operational works that damage a marine plant	Required to the extent that the dredging involves the removal or disturbance of marine plants
	<i>Environmental Protection Act 1994 (Qld)</i>	Environmental Authority for 'Dredging activities' (ERA 16)	Applies to the removal of material from the bed of waters as an environmentally relevant activity (ERA) and any associated placement.
	<i>Marine Parks Act 2004 (Qld)</i> and <i>Regulations</i>	Works in a marine park zone	The capital dredging occurs in the General Use Zone of the Marine Park Placement of material at the Mud Island DMPA is in a General Use Zone
	<i>Coastal Protection and Management Act 1995 (Qld)</i> & <i>Forestry Act 1959 (Qld)</i>	Allocation of quarry material	An allocation of quarry material under the CPM Act will be required to remove dredged material from land under tidal water. A royalty payable to the State would be required for sale of the material to a third party under the <i>Forestry Act 1959</i> (who administer quarry material royalties on state land)

## 8 Community and Stakeholder Consultation

PBPL intends to implement a community and stakeholder engagement process that facilitates early and positive engagement with all stakeholders about the purpose, objectives, benefits and potential impacts of the project from an economic, social and environmental perspective. It has already undertaken significant stakeholder consultation on this Project ahead of the lodgement of this IAS.

### 8.1 Engagement Objectives

Engagement objectives for the project include:

- Inform interested parties about the project, the EIS process and opportunities for them to engage with it;
- Identify stakeholders that have an interest in the project;
- Identify how these stakeholders should be engaged and when;
- Understand how the community feels about the project in general, and any specific concerns they may have;
- Establish positive and enduring community and stakeholder relationships; and
- Provide an opportunity for stakeholders to be engaged with the project and to encourage feedback/interaction about the impacts and opportunities it brings to Queensland.

### 8.2 Engagement Process

There will be any number of opportunities and mediums through which stakeholders may be engaged throughout the project, as summarised in **Table 8.1**.

**Table 8.1 Stakeholder Engagement Staging**

Engagement Stage	Priority
Early phase engagement (pre-IAS submission)	<ul style="list-style-type: none"> <li>• Collaborate with relevant elected officials, government departments, key stakeholders and interest groups about the need for the project and its benefits</li> <li>• Engage with key stakeholders to understand any potential issues, to ensure those are addressed in the IAS</li> </ul>
During the IAS and TOR development	<ul style="list-style-type: none"> <li>• Collaborate with relevant government departments to agree TOR</li> <li>• Continue to engage with stakeholders on key milestones</li> </ul>
During draft EIS development	<ul style="list-style-type: none"> <li>• Brief relevant government departments and agencies on progress. Engage on relevant scientific studies</li> <li>• Regularly engage with key stakeholders on the outcomes of studies as they progress and gain input into appropriate mitigation measures</li> <li>• Regular communication on progress for the general public</li> <li>• Receive, respond to, record and report any engagement feedback</li> </ul>

Engagement Stage	Priority
Upon release of the draft EIS	<ul style="list-style-type: none"> <li>Collaborate with government agencies to finalise the EIS and conditions of approval</li> <li>Actively engage with key stakeholders and the general public on the EIS outcomes. Feedback to be incorporated into the final EIS</li> </ul>
Post-EIS	<ul style="list-style-type: none"> <li>Liaise with government agencies to ensure conditions of approval are met</li> <li>Provide regular updates on project progress, compliance and any community/key stakeholder disruption</li> </ul>

### 8.3 Key Stakeholders

This engagement has included Ministerial and Departmental meetings at Federal and State level, discussions with key customers and port users, and engagement with a broader range of community representatives, including local Traditional Owners.

Key community stakeholders for engagement will include both regulator and community stakeholders outlined in **Table 8.2**.

Table 8.2 Key Community Project Stakeholders

Community Stakeholders
<ul style="list-style-type: none"> <li>Sand Extraction Industry/Cement Concrete &amp; Aggregates Australia (CCAA)</li> <li>Indigenous groups               <ul style="list-style-type: none"> <li>Quandamooka Yoolooburrabee Aboriginal Corporation (QYAC)</li> <li>Kabi Kabi</li> <li>Yugara/Yugarupul</li> <li>Turrbal</li> </ul> </li> <li>Commercial Fishers (represented by Queensland Seafood Industry Association (QSIA) and Moreton Bay Seafood Industry Association (MBSIA))</li> <li>Moreton Island Community Association</li> <li>Moreton Island Ferries</li> <li>Community Groups/Not for Profit Organisations</li> <li>Recreation groups (fishing etc)</li> <li>Technical Advisory and Consultative Committee</li> <li>Healthy Land and Water</li> <li>Save Our Bay</li> <li>Environmental groups</li> <li>General Public</li> <li>Local Port Businesses and Users (additional to those identified above)</li> <li>Affected Users/Community Stakeholders</li> </ul>

A broad Stakeholder Engagement Plan will be developed as part of the EIS process to ensure relevant stakeholders are aware and informed of the Project at all stages.

This will take the form of direct (meetings, forums, community consultation) and indirect (newsletters, websites, project updates etc) engagement.

Further, PBPL will move swiftly to establish an External Advisory Committee, Chaired by an eminent member of the community. This Committee will be a key source of oversight and advice throughout the life of the Project.

It is PBPL's intention to be open, transparent and forthcoming with relevant information to all stakeholders, ensuring they are aware of the rationale behind undertaking this Project and its importance to the future of the region.

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## Annex A EPBC Protected Matters Search

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Australian Government

Department of Climate Change, Energy,  
the Environment and Water

# EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 26-Jul-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

# Summary

## Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

<a href="#">World Heritage Properties:</a>	None
<a href="#">National Heritage Places:</a>	None
<a href="#">Wetlands of International Importance (Ramsar)</a>	1
<a href="#">Great Barrier Reef Marine Park:</a>	None
<a href="#">Commonwealth Marine Area:</a>	None
<a href="#">Listed Threatened Ecological Communities:</a>	4
<a href="#">Listed Threatened Species:</a>	86
<a href="#">Listed Migratory Species:</a>	79

## Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

<a href="#">Commonwealth Lands:</a>	None
<a href="#">Commonwealth Heritage Places:</a>	None
<a href="#">Listed Marine Species:</a>	114
<a href="#">Whales and Other Cetaceans:</a>	13
<a href="#">Critical Habitats:</a>	None
<a href="#">Commonwealth Reserves Terrestrial:</a>	None
<a href="#">Australian Marine Parks:</a>	None
<a href="#">Habitat Critical to the Survival of Marine Turtles:</a>	1

## Extra Information

This part of the report provides information that may also be relevant to the area you have

<a href="#">State and Territory Reserves:</a>	1
<a href="#">Regional Forest Agreements:</a>	None
<a href="#">Nationally Important Wetlands:</a>	1
<a href="#">EPBC Act Referrals:</a>	24
<a href="#">Key Ecological Features (Marine):</a>	None
<a href="#">Biologically Important Areas:</a>	7
<a href="#">Bioregional Assessments:</a>	None
<a href="#">Geological and Bioregional Assessments:</a>	None

# Details

## Matters of National Environmental Significance

### Wetlands of International Importance (Ramsar Wetlands) [\[ Resource Information \]](#)

Ramsar Site Name	Proximity
<a href="#">Moreton bay</a>	Within Ramsar site

### Listed Threatened Ecological Communities [\[ Resource Information \]](#)

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text
<a href="#">Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community</a>	Endangered	Community likely to occur within area
<a href="#">Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</a>	Endangered	Community may occur within area
<a href="#">Subtropical and Temperate Coastal Saltmarsh</a>	Vulnerable	Community likely to occur within area
<a href="#">Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions</a>	Endangered	Community may occur within area

### Listed Threatened Species [\[ Resource Information \]](#)

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.

Number is the current name ID.

Scientific Name	Threatened Category	Presence Text
<b>BIRD</b>		
<a href="#">Anthochaera phrygia</a> Regent Honeyeater [82338]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Ardena grisea</a> Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
<a href="#">Botaurus poiciloptilus</a> Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Vulnerable	Roosting known to occur within area
<a href="#">Calyptorhynchus lathami lathami</a> South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Climacteris picumnus victoriae</a> Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area
<a href="#">Cyclopsitta diophthalma coxeni</a> Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Diomedea antipodensis gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Erythrotriorchis radiatus</a> Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area
<a href="#">Falco hypoleucos</a> Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Fregetta grallaria grallaria</a> White-bellied Storm-Petrel (Tasman Sea), White-bellied Storm-Petrel (Australasian) [64438]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Grantiella picta</a> Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Limosa lapponica baueri</a> Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat known to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Pachyptila turtur subantarctica</a> Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]	Vulnerable	Roosting known to occur within area
<a href="#">Pterodroma neglecta neglecta</a> Kermadec Petrel (western) [64450]	Vulnerable	Foraging, feeding or related behaviour may occur within area
<a href="#">Rostratula australis</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area
<a href="#">Stagonopleura guttata</a> Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sternula nereis nereis</a> Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
<a href="#">Turnix melanogaster</a> Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area
<b>FISH</b>		
<a href="#">Epinephelus daemeli</a> Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
<a href="#">Seriolella brama</a> Blue Warehou [69374]	Conservation Dependent	Species or species habitat likely to occur within area

**FROG**

Scientific Name	Threatened Category	Presence Text
<a href="#">Litoria olongburensis</a> Wallum Sedge Frog [1821]	Vulnerable	Species or species habitat may occur within area
<b>INSECT</b>		
<a href="#">Argynnis hyperbius inconstans</a> Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area
<b>MAMMAL</b>		
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Chalinolobus dwyeri</a> Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area
<a href="#">Dasyurus hallucatus</a> Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat may occur within area
<a href="#">Dasyurus maculatus maculatus (SE mainland population)</a> Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Petauroides volans</a> Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area
<a href="#">Petaurus australis australis</a> Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)</a> Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Potorous tridactylus tridactylus</a> Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area
<a href="#">Pteropus poliocephalus</a> Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Xeromys myoides</a> Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area
<b>PLANT</b>		
<a href="#">Acronychia littoralis</a> Scented Acronychia [8582]	Endangered	Species or species habitat may occur within area
<a href="#">Arthraxon hispidus</a> Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may occur within area
<a href="#">Bosistoa transversa</a> Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area
<a href="#">Cupaniopsis shirleyana</a> Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area
<a href="#">Notelaea lloydii</a> Lloyd's Olive [15002]	Vulnerable	Species or species habitat may occur within area
<a href="#">Persicaria elatior</a> Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phaius australis</a> Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area
<a href="#">Planchonella eerwah</a> Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Rhodamnia rubescens</a> Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area
<a href="#">Rhodomyrtus psidioides</a> Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area
<a href="#">Samadera bidwillii</a> Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Thesium australe</a> Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
<b>REPTILE</b>		
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Coeranoscincus reticulatus</a> Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Delma torquata</a> Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Hemiaspis damelii</a> Grey Snake [1179]	Endangered	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

## SHARK

<a href="#">Carcharias taurus (east coast population)</a> Grey Nurse Shark (east coast population) [68751]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sphyrna lewini</a> Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area

## Listed Migratory Species

[ [Resource Information](#) ]

Scientific Name	Threatened Category	Presence Text
<b>Migratory Marine Birds</b>		
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area
<a href="#">Ardenna carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Ardenna grisea</a> Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area
<a href="#">Sternula albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
<b>Migratory Marine Species</b>		
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Carcharhinus longimanus</a> Oceanic Whitetip Shark [84108]		Species or species habitat may occur within area
<a href="#">Carcharodon carcharias</a> White Shark, Great White Shark [64470]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area



Scientific Name	Threatened Category	Presence Text
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Eubalaena australis as Balaena glacialis australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Lamna nasus</a> Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Congregation or aggregation known to occur within area
<a href="#">Mobula alfredi as Manta alfredi</a> Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area
<a href="#">Mobula birostris as Manta birostris</a> Giant Manta Ray [90034]		Species or species habitat may occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Pristis zijsron</a> Green Sawfish, Dindagubba, Narrowsnout Sawfish [68442]	Vulnerable	Breeding may occur within area
<a href="#">Rhincodon typus</a> Whale Shark [66680]	Vulnerable	Species or species habitat may occur within area
<a href="#">Sousa sahalensis as Sousa chinensis</a> Australian Humpback Dolphin [87942]		Breeding known to occur within area
<b>Migratory Terrestrial Species</b>		
<a href="#">Cuculus optatus</a> Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat likely to occur within area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat likely to occur within area
<a href="#">Symposiachrus trivirgatus as Monarcha trivirgatus</a> Spectacled Monarch [83946]		Species or species habitat known to occur within area
<b>Migratory Wetlands Species</b>		

Scientific Name	Threatened Category	Presence Text
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area
<a href="#">Calidris pugnax as Philomachus pugnax</a> Ruff [91256]		Species or species habitat known to occur within area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Vulnerable	Roosting known to occur within area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]	Endangered	Roosting known to occur within area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]	Vulnerable	Roosting known to occur within area
<a href="#">Tringa brevipes</a> Grey-tailed Tattler [851]		Roosting known to occur within area
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur within area
<a href="#">Tringa incana</a> Wandering Tattler [831]		Species or species habitat known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area

## Other Matters Protected by the EPBC Act

Listed Marine Species	[ Resource Information ]	
Scientific Name	Threatened Category	Presence Text
Bird		
<a href="#">Actitis hypoleucos</a> Common Sandpiper [59309]		Species or species habitat known to occur within area
<a href="#">Anous stolidus</a> Common Noddy [825]		Species or species habitat likely to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Anseranas semipalmata</a> Magpie Goose [978]		Species or species habitat may occur within area overfly marine area
<a href="#">Apus pacificus</a> Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
<a href="#">Ardena carneipes as Puffinus carneipes</a> Flesh-footed Shearwater, Fleshy-footed Shearwater [82404]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Ardena grisea as Puffinus griseus</a> Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area
<a href="#">Arenaria interpres</a> Ruddy Turnstone [872]	Vulnerable	Roosting known to occur within area
<a href="#">Bubulcus ibis as Ardea ibis</a> Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
<a href="#">Calidris acuminata</a> Sharp-tailed Sandpiper [874]	Vulnerable	Roosting known to occur within area
<a href="#">Calidris alba</a> Sanderling [875]		Species or species habitat known to occur within area
<a href="#">Calidris canutus</a> Red Knot, Knot [855]	Vulnerable	Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris ferruginea</a> Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
<a href="#">Calidris melanotos</a> Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris pugnax as Philomachus pugnax</a> Ruff [91256]		Species or species habitat known to occur within area overfly marine area
<a href="#">Calidris ruficollis</a> Red-necked Stint [860]		Roosting known to occur within area overfly marine area
<a href="#">Calidris tenuirostris</a> Great Knot [862]	Vulnerable	Roosting known to occur within area overfly marine area
<a href="#">Calonectris leucomelas</a> Streaked Shearwater [1077]		Species or species habitat known to occur within area
<a href="#">Charadrius bicinctus</a> Double-banded Plover [895]		Roosting known to occur within area overfly marine area
<a href="#">Charadrius leschenaultii</a> Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area
<a href="#">Charadrius mongolus</a> Lesser Sand Plover, Mongolian Plover [879]	Endangered	Roosting known to occur within area
<a href="#">Charadrius ruficapillus</a> Red-capped Plover [881]		Roosting known to occur within area overfly marine area
<a href="#">Charadrius veredus</a> Oriental Plover, Oriental Dotterel [882]		Species or species habitat known to occur within area overfly marine area
<a href="#">Diomedea antipodensis</a> Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Diomedea antipodensis gibsoni</a> as <a href="#">Diomedea gibsoni</a> Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area
<a href="#">Diomedea exulans</a> Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area
<a href="#">Fregata ariel</a> Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat likely to occur within area
<a href="#">Fregata minor</a> Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat likely to occur within area
<a href="#">Gallinago hardwickii</a> Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
<a href="#">Gallinago megala</a> Swinhoe's Snipe [864]		Roosting likely to occur within area overfly marine area
<a href="#">Gallinago stenura</a> Pin-tailed Snipe [841]		Roosting likely to occur within area overfly marine area
<a href="#">Haliaeetus leucogaster</a> White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area
<a href="#">Himantopus himantopus</a> Pied Stilt, Black-winged Stilt [870]		Roosting known to occur within area overfly marine area
<a href="#">Hirundapus caudacutus</a> White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area
<a href="#">Lathamus discolor</a> Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area



Scientific Name	Threatened Category	Presence Text
<a href="#">Limicola falcinellus</a> Broad-billed Sandpiper [842]		Roosting known to occur within area overfly marine area
<a href="#">Limnodromus semipalmatus</a> Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area
<a href="#">Limosa lapponica</a> Bar-tailed Godwit [844]		Species or species habitat known to occur within area
<a href="#">Limosa limosa</a> Black-tailed Godwit [845]	Endangered	Roosting known to occur within area overfly marine area
<a href="#">Macronectes giganteus</a> Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
<a href="#">Macronectes halli</a> Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
<a href="#">Merops ornatus</a> Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
<a href="#">Monarcha melanopsis</a> Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area
<a href="#">Myiagra cyanoleuca</a> Satin Flycatcher [612]		Species or species habitat known to occur within area overfly marine area
<a href="#">Numenius madagascariensis</a> Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Numenius minutus</a> Little Curlew, Little Whimbrel [848]		Species or species habitat known to occur within area overfly marine area
<a href="#">Numenius phaeopus</a> Whimbrel [849]		Roosting known to occur within area
<a href="#">Pachyptila turtur</a> Fairy Prion [1066]		Species or species habitat likely to occur within area
<a href="#">Pandion haliaetus</a> Osprey [952]		Breeding known to occur within area
<a href="#">Phaethon lepturus</a> White-tailed Tropicbird [1014]		Species or species habitat may occur within area
<a href="#">Pluvialis fulva</a> Pacific Golden Plover [25545]		Roosting known to occur within area
<a href="#">Pluvialis squatarola</a> Grey Plover [865]	Vulnerable	Roosting known to occur within area overfly marine area
<a href="#">Pterodroma cervicalis</a> White-necked Petrel [59642]		Species or species habitat may occur within area
<a href="#">Recurvirostra novaehollandiae</a> Red-necked Avocet [871]		Roosting known to occur within area overfly marine area
<a href="#">Rhipidura rufifrons</a> Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area
<a href="#">Rostratula australis as Rostratula benghalensis (sensu lato)</a> Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
<a href="#">Stercorarius antarcticus as Catharacta skua</a> Brown Skua [85039]		Species or species habitat may occur within area
<a href="#">Sterna striata</a> White-fronted Tern [799]		Foraging, feeding or related behaviour likely to occur within area
<a href="#">Sternula albifrons as Sterna albifrons</a> Little Tern [82849]		Species or species habitat may occur within area
<a href="#">Symposiachrus trivirgatus as Monarcha trivirgatus</a> Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area
<a href="#">Thalassarche carteri</a> Indian Yellow-nosed Albatross [64464]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche cauta</a> Shy Albatross [89224]	Endangered	Species or species habitat may occur within area
<a href="#">Thalassarche impavida</a> Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche melanophris</a> Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche salvini</a> Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area
<a href="#">Thalassarche steadi</a> White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area
<a href="#">Tringa brevipes as Heteroscelus brevipes</a> Grey-tailed Tattler [851]		Roosting known to occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Tringa glareola</a> Wood Sandpiper [829]		Species or species habitat known to occur within area overfly marine area
<a href="#">Tringa incana as Heteroscelus incanus</a> Wandering Tattler [831]		Species or species habitat known to occur within area
<a href="#">Tringa nebularia</a> Common Greenshank, Greenshank [832]	Endangered	Species or species habitat known to occur within area overfly marine area
<a href="#">Tringa stagnatilis</a> Marsh Sandpiper, Little Greenshank [833]		Roosting known to occur within area overfly marine area
<a href="#">Xenus cinereus</a> Terek Sandpiper [59300]	Vulnerable	Roosting known to occur within area overfly marine area

## Fish

<a href="#">Acentronura tentaculata</a> Shortpouch Pygmy Pipehorse [66187]		Species or species habitat may occur within area
<a href="#">Campichthys tryoni</a> Tryon's Pipefish [66193]		Species or species habitat may occur within area
<a href="#">Corythoichthys amplexus</a> Fijian Banded Pipefish, Brown-banded Pipefish [66199]		Species or species habitat may occur within area
<a href="#">Corythoichthys ocellatus</a> Orange-spotted Pipefish, Ocellated Pipefish [66203]		Species or species habitat may occur within area
<a href="#">Festucalex cinctus</a> Girdled Pipefish [66214]		Species or species habitat may occur within area
<a href="#">Filicampus tigris</a> Tiger Pipefish [66217]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Halicampus grayi</a> Mud Pipefish, Gray's Pipefish [66221]		Species or species habitat may occur within area
<a href="#">Hippichthys cyanospilos</a> Blue-speckled Pipefish, Blue-spotted Pipefish [66228]		Species or species habitat may occur within area
<a href="#">Hippichthys heptagonus</a> Madura Pipefish, Reticulated Freshwater Pipefish [66229]		Species or species habitat may occur within area
<a href="#">Hippichthys penicillus</a> Beady Pipefish, Steep-nosed Pipefish [66231]		Species or species habitat may occur within area
<a href="#">Hippocampus kelloggi</a> Kellogg's Seahorse, Great Seahorse [66723]		Species or species habitat may occur within area
<a href="#">Hippocampus kuda</a> Spotted Seahorse, Yellow Seahorse [66237]		Species or species habitat may occur within area
<a href="#">Hippocampus planifrons</a> Flat-face Seahorse [66238]		Species or species habitat may occur within area
<a href="#">Hippocampus trimaculatus</a> Three-spot Seahorse, Low-crowned Seahorse, Flat-faced Seahorse [66720]		Species or species habitat may occur within area
<a href="#">Hippocampus whitei</a> White's Seahorse, Crowned Seahorse, Sydney Seahorse [66240]	Endangered	Species or species habitat likely to occur within area
<a href="#">Lissocampus runa</a> Javelin Pipefish [66251]		Species or species habitat may occur within area
<a href="#">Maroubra perserrata</a> Sawtooth Pipefish [66252]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Micrognathus andersonii</a> Anderson's Pipefish, Shortnose Pipefish [66253]		Species or species habitat may occur within area
<a href="#">Micrognathus brevirostris</a> thorntail Pipefish, Thorn-tailed Pipefish [66254]		Species or species habitat may occur within area
<a href="#">Microphis manadensis</a> Manado Pipefish, Manado River Pipefish [66258]		Species or species habitat may occur within area
<a href="#">Solegnathus dunckeri</a> Duncker's Pipehorse [66271]		Species or species habitat may occur within area
<a href="#">Solegnathus hardwickii</a> Pallid Pipehorse, Hardwick's Pipehorse [66272]		Species or species habitat may occur within area
<a href="#">Solegnathus spinosissimus</a> Spiny Pipehorse, Australian Spiny Pipehorse [66275]		Species or species habitat may occur within area
<a href="#">Solenostomus cyanopterus</a> Robust Ghostpipefish, Blue-finned Ghost Pipefish, [66183]		Species or species habitat may occur within area
<a href="#">Solenostomus paradoxus</a> Ornate Ghostpipefish, Harlequin Ghost Pipefish, Ornate Ghost Pipefish [66184]		Species or species habitat may occur within area
<a href="#">Stigmatopora nigra</a> Widebody Pipefish, Wide-bodied Pipefish, Black Pipefish [66277]		Species or species habitat may occur within area
<a href="#">Syngnathoides biaculeatus</a> Double-end Pipehorse, Double-ended Pipehorse, Alligator Pipefish [66279]		Species or species habitat may occur within area
<a href="#">Trachyrhamphus bicoarctatus</a> Bentstick Pipefish, Bend Stick Pipefish, Short-tailed Pipefish [66280]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Urocampus carinirostris</a> Hairy Pipefish [66282]		Species or species habitat may occur within area
<a href="#">Vanacampus margaritifer</a> Mother-of-pearl Pipefish [66283]		Species or species habitat may occur within area
<b>Mammal</b>		
<a href="#">Dugong dugon</a> Dugong [28]		Species or species habitat known to occur within area
<b>Reptile</b>		
<a href="#">Aipysurus laevis</a> Olive Sea Snake, Olive-brown Sea Snake [1120]		Species or species habitat may occur within area
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Endangered	Breeding known to occur within area
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Vulnerable	Breeding known to occur within area
<a href="#">Dermochelys coriacea</a> Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Emydocephalus annulatus</a> Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area
<a href="#">Eretmochelys imbricata</a> Hawksbill Turtle [1766]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
<a href="#">Hydrophis elegans</a> Elegant Sea Snake, Bar-bellied Sea Snake [1104]		Species or species habitat may occur within area
<a href="#">Hydrophis platura as Pelamis platurus</a> Yellow-bellied Sea Snake [93746]		Species or species habitat may occur within area

Scientific Name	Threatened Category	Presence Text
<a href="#">Hydrophis stokesii</a> as <a href="#">Astrotia stokesii</a> Stokes' Sea Snake [93510]		Species or species habitat may occur within area
<a href="#">Laticauda laticaudata</a> a sea krait [1093]		Species or species habitat may occur within area
<a href="#">Lepidochelys olivacea</a> Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Foraging, feeding or related behaviour known to occur within area
<a href="#">Natator depressus</a> Flatback Turtle [59257]	Vulnerable	Foraging, feeding or related behaviour known to occur within area

## Whales and Other Cetaceans [ [Resource Information](#) ]

Current Scientific Name	Status	Type of Presence
<b>Mammal</b>		
<a href="#">Balaenoptera acutorostrata</a> Minke Whale [33]		Species or species habitat may occur within area
<a href="#">Balaenoptera edeni</a> Bryde's Whale [35]		Species or species habitat may occur within area
<a href="#">Balaenoptera musculus</a> Blue Whale [36]	Endangered	Species or species habitat may occur within area
<a href="#">Delphinus delphis</a> Common Dolphin, Short-beaked Common Dolphin [60]		Species or species habitat may occur within area
<a href="#">Eubalaena australis</a> Southern Right Whale [40]	Endangered	Species or species habitat likely to occur within area
<a href="#">Grampus griseus</a> Risso's Dolphin, Grampus [64]		Species or species habitat may occur within area



Current Scientific Name	Status	Type of Presence
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]		Congregation or aggregation known to occur within area
<a href="#">Orcaella heinsohni</a> Australian Snubfin Dolphin [81322]		Species or species habitat may occur within area
<a href="#">Orcinus orca</a> Killer Whale, Orca [46]		Species or species habitat may occur within area
<a href="#">Sousa sahalensis</a> Australian Humpback Dolphin [87942]		Breeding known to occur within area
<a href="#">Stenella attenuata</a> Spotted Dolphin, Pantropical Spotted Dolphin [51]		Species or species habitat may occur within area
<a href="#">Tursiops aduncus</a> Indian Ocean Bottlenose Dolphin, Spotted Bottlenose Dolphin [68418]		Species or species habitat likely to occur within area
<a href="#">Tursiops truncatus s. str.</a> Bottlenose Dolphin [68417]		Species or species habitat may occur within area

Habitat Critical to the Survival of Marine Turtles			[ Resource Information ]
Scientific Name	Behaviour	Presence	
Nov-Feb			
<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Nesting	Known to occur	

## Extra Information

State and Territory Reserves			[ Resource Information ]
Protected Area Name	Reserve Type	State	
Moreton Bay	Marine Park	QLD	

Nationally Important Wetlands		[ Resource Information ]
Wetland Name	State	
<a href="#">Moreton Bay</a>	QLD	

**EPBC Act Referrals** [\[ Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Controlled action</b>			
<a href="#">Brisbane Airport New Parallel Runway Project</a>	2005/2095	Controlled Action	Post-Approval
<a href="#">Moreton Bay Port Expansion</a>	2000/25	Controlled Action	Post-Approval
<a href="#">Sandgate Waste Water Treatment Plant Augmentation Works</a>	2001/262	Controlled Action	Post-Approval
<a href="#">Seacage Snapper Farming</a>	2001/318	Controlled Action	Completed
<a href="#">Sunshine Coast Airport Master Plan Implementation Project</a>	2011/5823	Controlled Action	Post-Approval
<b>Not controlled action</b>			
<a href="#">Australia TradeCoast Sewerage Pipeline</a>	2001/270	Not Controlled Action	Completed
<a href="#">Brisbane Airport Link Tunnel Project</a>	2005/2487	Not Controlled Action	Completed
<a href="#">Construction of public access road and open drain to service Nudgee Landfill rem</a>	2004/1486	Not Controlled Action	Completed
<a href="#">Crude and Bunker Pipelines from Fisherman Islands to the Caltex Refinery, Lytton</a>	2004/1743	Not Controlled Action	Completed
<a href="#">Development of a wharf and cruise ship facility, Luggage Point, Pinkenba, Qld</a>	2016/7815	Not Controlled Action	Completed
<a href="#">Gateway Motorway Upgrade</a>	2003/1297	Not Controlled Action	Completed
<a href="#">Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia</a>	2015/7522	Not Controlled Action	Completed
<a href="#">Luggage Point to Goodna Pipeline Alignment</a>	2007/3358	Not Controlled Action	Completed
<a href="#">Luggage Pt WWTP grass swale upgrade</a>	2003/1124	Not Controlled Action	Completed
<a href="#">Lytton Fuels Refinery Modification</a>	2003/1234	Not Controlled Action	Completed
<a href="#">Northern Link Parallel Road Tunnels Project</a>	2007/3824	Not Controlled Action	Completed
<a href="#">Port of Brisbane Second Swing Basin, Qld</a>	2017/8073	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
<b>Not controlled action</b>			
<a href="#">Replacement of existing composting toilets at the Boondall Interpretive Centre</a>	2003/1140	Not Controlled Action	Completed
<a href="#">Spitfire Channel Dredging</a>	2005/2247	Not Controlled Action	Completed
<a href="#">The North-South Bypass Tunnel (NSBT)</a>	2004/1741	Not Controlled Action	Completed
<a href="#">TradeCoast to Belmont Transmission Line</a>	2003/1164	Not Controlled Action	Completed
<a href="#">Western Corridor Recycled Water Project</a>	2006/3202	Not Controlled Action	Completed
<a href="#">Wynnum Wastewater Treatment Plant</a>	2005/2123	Not Controlled Action	Completed

#### Referral decision

<a href="#">Breeding program for Grey Nurse Sharks</a>	2007/3245	Referral Decision	Completed
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#### Biologically Important Areas

[ [Resource Information](#) ]

Scientific Name	Behaviour	Presence
<b>Dolphins</b>		
<a href="#">Sousa chinensis</a> Indo-Pacific Humpback Dolphin [50]	Breeding	Known to occur
<a href="#">Tursiops aduncus</a> Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Known to occur
<a href="#">Tursiops aduncus</a> Indo-Pacific/Spotted Bottlenose Dolphin [68418]	Breeding	Likely to occur

#### Marine Turtles

<a href="#">Caretta caretta</a> Loggerhead Turtle [1763]	Nesting	Known to occur
<a href="#">Chelonia mydas</a> Green Turtle [1765]	Foraging	Known to occur

#### Sharks

<a href="#">Carcharias taurus</a> Grey Nurse Shark [64469]	Foraging	Known to occur
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#### Whales

Scientific Name	Behaviour	Presence
<a href="#">Megaptera novaeangliae</a> Humpback Whale [38]	Resting on migration (southbound)	Known to occur

# Caveat

## 1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

## 2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

## 3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

## 4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

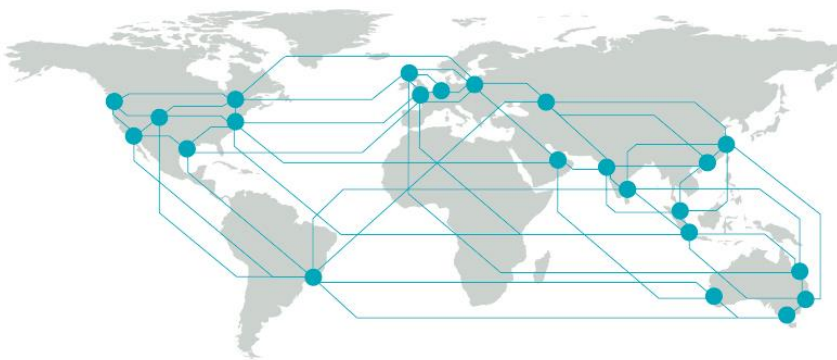
Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

# Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
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- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.



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