

Title of Proposal - Port of Brisbane Second Swing Basin

Section 1 - Summary of your proposed action

Provide a summary of your proposed action, including any consultations undertaken.

1.1 Project Industry Type

Transport - Water

1.2 Provide a detailed description of the proposed action, including all proposed activities.

Approximately 570,000m3 of material will be dredged from the Brisbane River adjacent to the Port of Brisbane to create a second swing basin for vessels utilising the port. Soft surface material will be placed at the existing Mud Island Dredge Material Placement Area, consistent with historical placement of dredge material in Moreton Bay. Deeper sands, with good engineering qualities will be used as fill for future development of the port, and will be placed within the existing Future Port Expansion Area. The overall duration of works is expected to be 9 weeks, which may be staged over a longer period depending on availability of dredge equipment.

Works are to be undertaken by the Trailing Suction Hopper Dredge (TSHD) Brisbane and will be undertaken in accordance with the following methodology:

- Silty Clay and Stiff Clay layers to be dredged first (surficial layers)
- Once loaded the TSHD will sail to Mud Island DMPA and bottom dump the material
- Underlying sandy material from the dredge footprint to be placed in the FPE
- Once loaded, the TSHD will sail across the shipping channel to couple with a floating pipeline adjacent to the FPE and commence pump out operations
- The works will involve a short commissioning and decommissioning period for pump out operations
- Works will occur 24 hours per day, 7 days per week

It is not expected that any maintenance dredging will be required for the swing basin, and this activity does not form part of the this referral.

1.3 What is the extent and location of your proposed action? Use the polygon tool on the map below to mark the location of your proposed action.

Area	Point	Latitude	Longitude
second swing basin	1	-27.362895162931	153.17639825023
second swing basin	2	-27.362514025427	153.17571160472



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Area	Point	Latitude	Longitude
second swing basin	3	-27.362818935535	153.17644116557
second swing basin	4	-27.363657434002	153.17609784282
second swing basin	5	-27.36377177421	153.17566868937
second swing basin	6	-27.364152907384	153.17412373698
second swing basin	7	-27.363581207131	153.17275044597
second swing basin	8	-27.361980430717	153.17202088511
second swing basin	9	-27.361027576625	153.17232129252
second swing basin	10	-27.360303402031	153.17373749888
second swing basin	11	-27.360189058241	153.17476746715
second swing basin	12	-27.360798890423	153.17652699626
second swing basin	13	-27.361484947613	153.17674157298
second swing basin	14	-27.362895162931	153.17639825023
Future Port Expansion Area	1	-27.348106065697	153.18871495402
Future Port Expansion	2	-27.34700061571	153.18944451488
Area	0	07.040400000007	
Area	3	-27.348106065697	153.19154736674
Future Port Expansion	4	-27.349440214784	153.19382187999
Area	_		
Future Port Expansion	5	-27.34997386992	153.19463727153
Future Port Expansion	6	-27.352146582144	153.19579598582
Area	-		
Future Port Expansion	7	-27.35405243497	153.19648263133
Area	0	27 256606226220	152 10725510752
Area	0	-27.330000220339	155.19725510755
Future Port Expansion	9	-27.358588232782	153.19695470012
Area			
Future Port Expansion	10	-27.356110719186	153.19214818156
Area Euture Port Expansion	11	-27 35/020116257	153 100002/1//35
Area		-21.33-323110231	100.1000241400
Future Port Expansion	12	-27.353595033283	153.19090363658
Area			
Future Port Expansion	13	-27.350926819125	153.18609711802
Area Euturo Port Expansion	11	77 249575271477	152 10760/00576
Area	14	-27.340323371427	155.16706496570
Future Port Expansion	15	-27.348106065697	153.18871495402
Area			
Future Port Expansion	16	-27.348067946916	153.18875786937
Future Port Expansion	17	-27.348106065697	153.18871495402
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Area	Point	Latitude	Longitude
Area			
Mud Island Dredge Material Placement Area	1	-27.344065401874	153.22965619243
Mud Island Dredge Material Placement Area	2	-27.354128668401	153.24785229838
Mud Island Dredge Material Placement Area	3	-27.362818935535	153.24235913432
Mud Island Dredge Material Placement Area	4	-27.345437719321	153.2119750706
Mud Island Dredge Material Placement Area	5	-27.315242810028	153.2119750706
Mud Island Dredge Material Placement Area	6	-27.309751943116	153.21472165263
Mud Island Dredge Material Placement Area	7	-27.310972159247	153.22570798076
Mud Island Dredge Material Placement Area	8	-27.315242810028	153.22776791728
Mud Island Dredge Material Placement Area	9	-27.343912921108	153.2291412083
Mud Island Dredge Material Placement Area	10	-27.344065401874	153.22965619243

1.5 Provide a brief physical description of the property on which the proposed action will take place and the location of the proposed action (e.g. proximity to major towns, or for off-shore actions, shortest distance to mainland).

Dredging will be undertaken within and immediately adjacent to the Koopa Navigational Channel, directly opposite the Port of Brisbane. The placement of material will occur at the Future Port Expansion Area at the northern end of the Port of Brisbane and at the Mud Island Dredge Material Placement Area, immediately offshore (south and west) of Mud Island in



Moreton Bay, approximately 3.5km from the Port of Brisbane.

1.6 What is the size of the proposed action area development footprint (or work area) including disturbance footprint and avoidance footprint (if relevant)?

up to 700,000m3 of material will be removed to create the second swing basin.

1.7 Is the proposed action a street address or lot?

Lot

1.7.2 Describe the lot number and title.Unallocated State Land adjacent to Lot 99SP238079, Lot 98SP236540 and USL adjacent to Lot 534NPW4998

1.8 Primary Jurisdiction.

Queensland

1.9 Has the person proposing to take the action received any Australian Government grant funding to undertake this project?

No

1.10 Is the proposed action subject to local government planning approval?

Yes

1.10.1 Is there a local government area and council contact for the proposal?

No

1.11 Provide an estimated start and estimated end date for the proposed action.

Start date 11/2017

End date 11/2018

1.12 Provide details of the context, planning framework and State and/or Local government requirements.

A number of state approvals will be required prior to works proceeding, and applications will be submitted in conjunction with this referral. These include:

Dredging of Swing Basin



Operational Works that are tidal works, under the *Planning Act 2016* and *Coastal Protection and Management Act 1995*

Environmental Authority for carrying out an Environmentally Relevant Activity (ERA 16 - Extraction and Screening Activities) under the *Environmental Protection Act 1994*

Allocation of Quarry Material under the Coastal Protection and Management Act 1995

Works in a marine park zone under the Marine Parks Act 2004

Placement of Dredge Material

Disposing of dredge spoil or other solid waste material in tidal water under the *Planning Act* 2016 and *Coastal Protection and Management Act* 1995

Amendment to the existing permit to place material within a Marine Park under the *Marine Parks Act 2004*

Placement of material within a Coastal Management District under the *Planning Act 2016* and *Coastal Protection and Management Act 1995*

1.13 Describe any public consultation that has been, is being or will be undertaken, including with Indigenous stakeholders.

Extensive public consultation was undertaken as part of the recent Brisbane Port Land Use Plan Review in 2015 with the public, government and surrounding land users. In addition, prior to the submission of this referral, the port held engagement meetings with representatives of the Department of Environment and Energy, Department of Transport and Main Roads, Regional Harbour Master and the Department of National Parks, Sport and Recreation.

1.14 Describe any environmental impact assessments that have been or will be carried out under Commonwealth, State or Territory legislation including relevant impacts of the project.

An environmental assessment of potential impacts of the project has been undertaken (attached), and includes the following detailed technical investigations:



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- benthic fauna survey

- detailed sediment quality testing in accordance with the National Assessment Guideline for Dredging

- sediment plume and placement hydrodynamic modelling

- investigation of impacts to commercial fishing values and marine megafauna

1.15 Is this action part of a staged development (or a component of a larger project)?

No

1.16 Is the proposed action related to other actions or proposals in the region?



Section 2 - Matters of National Environmental Significance

Describe the affected area and the likely impacts of the proposal, emphasising the relevant matters protected by the EPBC Act. Refer to relevant maps as appropriate. The <u>interactive map</u> tool can help determine whether matters of national environmental significance or other matters protected by the EPBC Act are likely to occur in your area of interest. Consideration of likely impacts should include both direct and indirect impacts.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The following resources can assist you in your assessment of likely impacts:

• <u>Profiles of relevant species/communities</u> (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;

• <u>Significant Impact Guidelines 1.1 – Matters of National Environmental Significance;</u>

• <u>Significant Impact Guideline 1.2 – Actions on, or impacting upon, Commonwealth land and</u> <u>Actions by Commonwealth Agencies</u>.

2.1 Is the proposed action likely to have ANY direct or indirect impact on the values of any World Heritage properties?

No

2.2 Is the proposed action likely to have ANY direct or indirect impact on the values of any National Heritage places?

No

2.3 Is the proposed action likely to have ANY direct or indirect impact on the ecological character of a Ramsar wetland?

No

2.4 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed species or any threatened ecological community, or their habitat?

No

2.5 Is the proposed action likely to have ANY direct or indirect impact on the members of any listed migratory species, or their habitat?



2.6 Is the proposed action to be undertaken in a marine environment (outside Commonwealth marine areas)?

No

2.7 Is the proposed action to be taken on or near Commonwealth land?

No

2.8 Is the proposed action taking place in the Great Barrier Reef Marine Park?

No

2.9 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?

No

2.10 Is the proposed action a nuclear action?

No

2.11 Is the proposed action to be taken by the Commonwealth agency?

No

2.12 Is the proposed action to be undertaken in a Commonwealth Heritage Place Overseas?

No

2.13 Is the proposed action likely to have ANY direct or indirect impact on a water resource related to coal/gas/mining?



Section 3 - Description of the project area

Provide a description of the project area and the affected area, including information about the following features (where relevant to the project area and/or affected area, and to the extent not otherwise addressed in Section 2).

3.1 Describe the flora and fauna relevant to the project area.

Swing Basin

A benthic fauna assessment was undertaken in 2017 at the Swing Basin and Mud Island DMPA. Benthic fauna assemblages were comprised of small opportunistic and/or mobile taxa. A suite of a few numerically dominant taxa were typically common across the study area, however most taxa were represented by fewer than five individuals. Disturbance (e.g. by flood plumes from the Brisbane River and adjacent coastal streams, waves during storm events, and strong tidal currents) is expected to be an important driver of these patterns.

The swing basin footprint did not support a particularly diverse or abundant assemblage compared to other habitat types in the study area. Depauperate (low numbers of species and individuals) assemblages were recorded in the navigation channel which could reflect either impacts from dredging and/or operational effects from vessels (propeller wash). The Mud Island DMPA supported a more diverse and abundant macroinvertebrate assemblage. This is consistent with the hypothesis that any impacts of dredged material placement are small-scale and/or short term.

Moreton Bay Ramsar site

The closest boundary of the Moreton Bay Ramsar site (at Juno Point) is situated approximately 1.8km from the edge of the new swing basin, thereby avoiding any direct impacts from dredging. Potential indirect environmental impacts would primarily relate to sediment remobilisation, including light reduction from dredge plumes and accumulation of dredge material/sedimentation on mangroves and mudflat habitats.

The Mud Island DMPA sits immediately adjacent to the boundary of the Moreton Bay Ramsar Wetland, with the closest sections of the site located on Mud Island (intertidal and areas above HAT only), St Helena Island and the tip of Fisherman Islands to the south and south-west. Indirect impacts to areas outside the Mud Island DMPA could occur in response to transport of dredged material in plumes generated by dredging, and/or resuspension and transport of dredged material post settlement. Sediment transport is controlled mostly by tidal currents, which advect in a NW direction during ebb tides and SE during a flood tide.



Seagrass

Seagrass is distant from the dredge (loading) site, on the opposite (eastern) side of the FPE and would not directly impacted by the works. Likewise, seagrass has not been mapped in the DMPA footprint.

Mangroves and Saltmarsh

Mangroves and mudflats are well developed at Juno Point on the northern bank of the Brisbane River opposite the Port and the proposed swing basin area. This area is a known and important waterbird habitat, albeit highly modified by coastal development (Brisbane Airport, Luggage Point wastewater treatment plant, port areas). These environments could be indirectly affected by turbidity and sedimentation during dredge works but are likely highly adapted to the variable sedimentary environment that occurs in the River mouth.

Mud Island is likewise mangrove-lined and intertidal wetland communities are unlikely to be sensitive to sediment loading at levels expected to be generated by the project.

Listed Threatened Species

The PMST Report for a 1km buffer around the centre point of the Swing Basin records the possible presence of 45 listed threatened species (26 birds, 1 fish, 4 mammals, 3 plants, 7 reptiles and 4 sharks). Similarly, the PMST Report for the DMPA identifies the possible presence of 37 species, with a large cross-over with species recorded at the Swing Basin. A short description of key species and groups is provided below:

* Birds – most species were sea birds (petrels) and waders, as well as several wetland specialists and raptors. It is possible that some piscivorous waders and raptors could feed in subtidal habitats as occurs at the DMPA and the proposed swing basin, but neither area is known to be especially important to these species on a regional basis.

* Fish – Juvenile black rockcod are often recorded in estuaries in NSW, typically in reefal areas and rock pools. This species is only occasionally found in southern Queensland, and preferred reef habitat is not present in the swing basin or the DMPA.

* Sharks and whales – the study area either does not contain the preferred coastal/offshore habitat for these species (i.e. grey nurse shark, great white shark, whales), 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). These species, if present, would be considered infrequent visitors.



* Terrestrial species - all three listed plants, the three-toed snake-tooth skink and water mouse are terrestrial species and would not be affected by the project.

* Marine turtles – six marine turtle species occur in Moreton Bay, of these green turtle is the most abundant in western Moreton Bay. The preferred reefal and seagrass feeding habitat for green turtle is not found in the Swing basin or DMPA, but this species, and other less common species such as hawksbill and loggerhead turtles, may transit or opportunistically feed in these areas.

The majority of species listed in the PMST Report would be occasional visitors, rather than regular users of the Swing Basin or DMPA. The Swing Basin itself does not contain any habitat of value to listed species – these records are more likely to relate to surrounding habitat, particularly at Juno Point and the seagrass/mangrove areas to the immediate south-east of the Port. There may be some indirect, but not significant, impacts to Listed Threatened Species utilising these areas outside the immediate project footprint.

Listed Migratory Species

The PMST lists a total of 78 and 52 migratory species as possibly occurring at the Swing Basin and DMPA respectively. Similarly to above, most species (but see below for Australian humpback dolphin Sousa sahulensis) would be occasional visitors to the swing basin and DMPA, which would be unlikely to provide significant habitat for most of these species.

Australian humpback dolphin (listed migratory, and Vulnerable under state legislation) is a nearshore species that primarily feeds at and adjacent to river mouths. Based on surveys by Hale eta al. (1997), Australian humpback dolphin was the most common dolphin species in Moreton Bay, and was particularly abundant in the lower Brisbane River within and adjacent to the proposed swing basin, and was also recorded in the DMPA. The lower Brisbane River (including the proposed swing basin) is therefore considered an important habitat for this species. This species is not sensitive to sediment loading (as occurs during dredging), and is commonly found around operational port areas. On this basis, the project is unlikely to represent a key risk to this species.

3.2 Describe the hydrology relevant to the project area (including water flows).

Dredging activity will take place at the mouth of the Brisbane River, adjacent to the existing navigational channel. Placement of the material will be within the marine environment of Moreton Bay and the artifically created Future Port Expansion Area.



3.3 Describe the soil and vegetation characteristics relevant to the project area.

Approximately 240,000m3 of material to be dredged from the Swing Basin is silt or silty/clayey sands (generally at or near the surface) while approximately 330,000m3 of material is clayey sands with low fine content (located at depth under the surface layers of silts and clays). From a sediment chemistry perspective, the material has been assessed under NAGD as being suitable for unconfined ocean placement.

While there is high natural buffering capacity, the material has some residual PASS risk. Dredging and placement of the material at sea will occur in a highly dispersive, well flushed marine environment and the material would not be expected to oxidise. As such there is no ASS risk from marine operations. For placement on land, the PASS material will need to be managed either by strategic burial (kept below the water table in the FPE) or otherwise managed in accordance with the Ports approved FPE Environmental Management Plan (PoB, 2016) which provides procedures for the treatment of acidic material.

3.4 Describe any outstanding natural features and/or any other important or unique values relevant to the project area.

The dredging footprint is partially within the General Use Zone of the Moreton Bay Marine Park. Mud Island and surrounding areas are mapped as High Ecological Significance Wetlands at a state level. Mud Island is also mapped as a Protected Area Estate under the *Nature Conservation Act 1982*. Mud Island contains intertidal wetlands (mainly mangroves and saltmarsh), as described below. Mud Island also has a well-developed, albeit highly modified, fringing coral reef, which contains a mosaic of reef, rubble and soft sediment habitats (Johnson and Neil 1998). Reef environments provide habitat for a wide range of macroalgae and reef fauna species, including hard and soft coral species (albeit low abundance and richness). The structure of reef communities is strongly affected by intermittent flood events (low salinity, high sediment loading: Johnson and Neil 1998), and communities must be adapted to regular periods of high turbidity in response to wind-driven sediment resuspension events.

3.5 Describe the status of native vegetation relevant to the project area.

No native terrestrial or marine vegetation would be significantly impacted by works. Marine plants (including mangroves and seagrass) which occur in proximity to works are protected under the *Fisheries Act 1994*.



3.6 Describe the gradient (or depth range if action is to be taken in a marine area) relevant to the project area.

The swing basin makes use of the existing maintained shipping channel. As such, the bulk of the capital dredging volume for the project will be derived from 'cutting in' off the existing shipping channel into the shallow areas of the Koopa Channel (to the west). The current depths in this area range from -4 m Lowest Astronomical Tide (LAT) to -9 m LAT.

Approximately 570,000m3 of dredge material would need to be removed to create the new basin, assuming it is dredged down to the full insurance depth level of -14.5 m LAT.

3.7 Describe the current condition of the environment relevant to the project area.

The Koopa Channel, at the lower end of the Brisbane River undergoes regular maintenance dredging and disturbance from vessels berthing at the Port of Brisbane. Water quality in this section of the river and Moreton Bay overall in good condition, having been awarded a B rating in the latest Healthy Land and Waters Report Card (2016). The Future Port Expansion Area is an artifically created dredge material placement area being gradually filled with material for future land uses, and is highly disturbed. The Mud Island Dredge Material Placement ARea has been used for many years as a marine dredge placement site in Moreton Bay for uncontaminated dredged muds, silts and clays. It is located away from sensitive receptors in the bay and is a dispersive site, thus providing adequate long term capacity for dredge placement activities.

3.8 Describe any Commonwealth Heritage Places or other places recognised as having heritage values relevant to the project area.

Whilst a number of historical shipwrecks are recorded within the vicinity of works, these have been removed as part of port expansion activities.

3.9 Describe any Indigenous heritage values relevant to the project area.

There are no sites within the vicinity of works that have been recorded on the Queensland indigenous cultural heritage register.

3.10 Describe the tenure of the action area (e.g. freehold, leasehold) relevant to the project area.

Dredge Site - Unallocated State Land

Port of Brisbane Future Port Expansion Area - Special Purposes (Port), Leasehold

Mud Island Dredge Material Disposal Area - Unallocated State Land



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3.11 Describe any existing or any proposed uses relevant to the project area.

Dredge Site - partially within an existing navigational channel and intertidal lands.

Port of Brisbane Future Port Expansion Area - currently used for placement of fill material, and will be utilised for port purposes in the future.

Mus Island Dredge Material Disposal Area - marine waters, with occasional use for recreational purposes



Section 4 - Measures to avoid or reduce impacts

Provide a description of measures that will be implemented to avoid, reduce, manage or offset any relevant impacts of the action. Include, if appropriate, any relevant reports or technical advice relating to the feasibility and effectiveness of the proposed measures.

Examples of relevant measures to avoid or reduce impacts may include the timing of works, avoidance of important habitat, specific design measures, or adoption of specific work practices.

4.1 Describe the measures you will undertake to avoid or reduce impact from your proposed action.

The swing basin location takes advantage of the existing maintained navigational channel, reducing significantly the volume of material to be removed. The placement options use locations that have a history of use and are previously disturbed. The dredging will be undertaken by the TSHD Brisbane, which is used regularly to perform maintenance dredging at the Port, and has an approved Environmental Management Plan in place (attached); this addresses issues such as water quality, waste, avoidance of harm to marine mammals etc.

4.2 For matters protected by the EPBC Act that may be affected by the proposed action, describe the proposed environmental outcomes to be achieved.

As well as operating under the TSHD Brisbane Environmental Management Plan, water quality monitoring is proposed during the dredging activity associated with the swing basin. The details of this monitoring will be subject to approval conditions but will include commitments to:

1. Telemetered (NTU) water quality instruments at two locations (likely one situated near Juno Point and the other at the northern end of the reclamation) to confirm and validate plume modelling

2. This monitoring will be carried out for at least two tidal cycles (or longer as directed by permit conditions) to confirm the extent of impacts predicted as part of the current works

3. Carry out assessment of water quality monitoring data against any water quality performance limits set in the Environmental Authority for the works and implement corrective actions if limits are exceeded.



5.1.1 World Heritage Properties

Section 5 – Conclusion on the likelihood of significant impacts

A checkbox tick identifies each of the matters of National Environmental Significance you identified in section 2 of this application as likely to be a significant impact.

Review the matters you have identified below. If a matter ticked below has been incorrectly identified you will need to return to Section 2 to edit.

No
5.1.2 National Heritage Places
No
5.1.3 Wetlands of International Importance (declared Ramsar Wetlands)
No
5.1.4 Listed threatened species or any threatened ecological community
No
5.1.5 Listed migratory species
No
5.1.6 Commonwealth marine environment
No
5.1.7 Protection of the environment from actions involving Commonwealth land
No
5.1.8 Great Barrier Reef Marine Park
No
5.1.9 A water resource, in relation to coal/gas/mining
No



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5.1.10 Protection of the environment from nuclear actions

No

5.1.11 Protection of the environment from Commonwealth actions

No

5.1.12 Commonwealth Heritage places overseas

No

5.2 If no significant matters are identified, provide the key reasons why you think the proposed action is not likely to have a significant impact on a matter protected under the EPBC Act and therefore not a controlled action.

The most significant impact of the project is the creation of turbid sediment plumes during the dredging campaign. This will largely take place in and around the dredge footprint and Mud Island DMPA. Highly localised short term impacts to benthic fauna would be expected to occur the dredge footprint and at the DMPA as a result of sediment burial and high turbidity. Benthic fauna recovery expected to occur within periods measured in weeks to months.

Modelling predicts that dredge plumes will typically be advected a short distance into Moreton Bay during ebb tides, and dispersed in north-westerly direction along the foreshore of Bramble Bay. Significant impacts to marine ecology are unlikely to occur in these areas given the low intensity and short term nature of turbidity spikes.Fisherman Islands and the FPE tend to divert entrained dredged sediment in a northerly direction away from the Waterloo Bay seagrass meadows, the most significant ecological receptor near the dredge area and DMPA. Strong northerlies can advect dredged sediment into Waterloo Bay seagrass meadows, however the short duration and low intensity of turbid plumes are unlikely to cause impacts to seagrass.

Habitat

The predicted very low sediment deposition levels at the Fisherman Islands seagrass meadows are not expected to lead to detectable impacts. Modelling predicts that tidal currents would tend to advect turbid plumes away from Mud Island and St Helena Island reef environments. Mud Island reef flat is predicted to experience short term (measured in hours) spikes between 10 to 50 NTU. Given the short duration of turbidity spikes, together with low sediment deposition levels, it is unlikely that detectable changes to reef assemblages would occur.

Many marine fauna species directly depend on benthic fauna as a food resource. Given the opportunistic foraging behaviour of fish, prawns, crabs and dolphins, together with the small proportion of benthic and seagrass habitat potentially affected and otherwise available within



the vicinity, it is not expected that permanent loss or modification of habitat would lead to significant flow-on impacts to higher trophic levels.

Moreton Bay Ramsar Site

The closest boundary of the Moreton Bay Ramsar site (at Juno Point) is situated approximately 1.8km from the edge of the new swing basin, thereby avoiding any direct impacts from dredging. Potential indirect environmental impacts would primarily relate to sediment remobilisation, including light reduction from dredge plumes and accumulation of dredge material/sedimentation on intertidal sand and mud flats that exist; no reefs are known or likely to occur in this area.

The Mud Island DMPA sits immediately adjacent to the boundary of the Moreton Bay Ramsar Wetland, with the closest sections of the site located on Mud Island (intertidal and areas above HAT only), St Helena Island and the tip of Fisherman Islands to the south and south-west. Indirect impacts to areas outside the Mud Island DMPA could occur in response to transport of dredged material in plumes generated by dredging, and/or resuspension and transport of dredged material post settlement. Sediment transport is controlled mostly by tidal currents, which advect in a NW direction during ebb tides and SE during a flood tide.

These environments regularly experience high turbidity and sediment deposition as a result of wave resuspension of bed sediments and flood plumes. Benthic fauna here are comprised of small opportunistic invertebrate species that are tolerant of high ambient sediment loads, and can rapidly recolonise disturbed areas (Stephenson 1980; Skilleter 1998; BMT WBM 2014; 2017c).

Listed Threatened Species

The PMST Report for a 1km buffer around the centre point of the Swing Basin records the possible presence of 45 listed threatened species (26 birds, 1 fish, 4 mammals, 3 plants, 7 reptiles and 4 sharks). Similarly, the PMST Report for the DMPA identifies the possible presence of 37 species, with a large cross-over with species recorded at the Swing Basin. A short description of key species and groups is provided below:

Birds – most species were sea birds (petrels) and waders, as well as several wetland specialists and raptors. It is possible that some piscivorous waders and raptors could feed in subtidal habitats as occurs at the DMPA and the proposed swing basin, but neither area is known to be especially important to these species on a regional basis.Fish – Juvenile black rockcod are often recorded in estuaries in NSW, typically in reefal areas and rock pools. This species is only



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occasionally found in southern Queensland, and preferred reef habitat is not present in the swing basin or the DMPA.Sharks and whales – the study area either does not contain the preferred coastal/offshore habitat for these species (i.e. grey nurse shark, great white shark, whales), 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). These species, if present, would be considered infrequent visitors. Terrestrial species - all three listed plants, the three-toed snake-tooth skink and water mouse are terrestrial species and would not be affected by the project. Marine turtles – six marine turtle species occur in Moreton Bay, of these green turtle is the most abundant in western Moreton Bay. The preferred reefal and seagrass feeding habitat for green turtle is not found in the Swing basin or DMPA, but this species, and other less common species such as hawksbill and loggerhead turtles, may transit or opportunistically feed in these areas.

The majority of species listed in the PMST Report would be occasional visitors, rather than regular users of the Swing Basin or DMPA. The Swing Basin itself does not contain any habitat of value to listed species – these records are more likely to relate to surrounding habitat, particularly at Juno Point and the seagrass/mangrove areas to the immediate south-east of the Port There may be some indirect and temporary, but not significant, impacts to Listed Threatened Species utilising these areas outside the immediate project footprint.

For these reasons, dredging is unlikely to have a sigificant impact on a Matter of National Environmental Significance.



Section 6 – Environmental record of the person proposing to take the action

Provide details of any proceedings under Commonwealth, State or Territory law against the person proposing to take the action that pertain to the protection of the environment or the conservation and sustainable use of natural resources.

6.1 Does the person taking the action have a satisfactory record of responsible environmental management? Please explain in further detail.

The Port of Brisbane has a Certified ISO14001 Environmental Management System (EMS). The Port EMS was certified in 2000 and is regularly and independently audited against the Environmental Management System ISO14001:2004 international standard. They have never received a non-conformance.

6.2 Provide details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against either (a) the person proposing to take the action or, (b) if a permit has been applied for in relation to the action – the person making the application.

No past or present proceedings

6.3 If it is a corporation undertaking the action will the action be taken in accordance with the corporation's environmental policy and framework?

Yes

6.3.1 If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework.

See environmental policy attached.

6.4 Has the person taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?

Yes

6.4.1 EPBC Act No and/or Name of Proposal.

24 August 2000 – Future Port Expansion Bund Wall and Reclamation (EPBC Reference:



2000/25)

5 September 2005 – Port of Brisbane Corporation/Water Transport/Moreton Bay/QLD/Spitfire Channel Dredging (EPBC Reference: 2005/2247)

12 November 2012 – Port of Brisbane Pty Ltd/Water management and use/Western end of Fishermans Island at Port of Brisbane/QLD/Infilling of the Lucinda Drive stormwater retention pond (EPBC Reference: 2012/6623)

18 December 2012 – Port of Brisbane Pty Ltd Trial Dredging Project (EPBC Reference: 2012/6686)

13 December 2016 - Development of a Wharf and Cruise Ship Facility, Luggage Point, Pinkenba (EPBC Reference: 2016/7815).



Section 7 – Information sources

You are required to provide the references used in preparing the referral including the reliability of the source.

7.1 List references used in preparing the referral (please provide the reference source reliability and any uncertainties of source).

Reference Source	Reliability	Uncertainties
dredging methodology and design by Port of Brisbane	Undertaken and reviewed by Registered Professional Engineer of Queensland	Nil
Technical investigations undertaken in 2017 by BMT WBM, including hydrodynamic modelling of dredge plumes, benthic surveys and sediment testing	Undertaken to best practice standards e.g. National Assessment Guidelines for Dredging.	Nil



Section 8 – Proposed alternatives

You are required to complete this section if you have any feasible alternatives to taking the proposed action (including not taking the action) that were considered but not proposed.

8.0 Provide a description of the feasible alternative?

The swing basin must be located in close proximity to the Port, so there are limited options for its location; a location that utilises the existing navigational channel has much as possible has been chosen, to reduce the volume of material required to be dredged. The port has conducted further ship simulations which has, now with Harbour Master approval, reduced the dredging volumes from 700,000m3 to 570,000m3.

Land Placement Options

Alternatives to placement at sea have been examined, which include beneficial reuse options. Potentially, there are a range of land-based beneficial re-use options for dredge material, noting that there is a wider range of re-use options available for dredge material with a higher sand content compared to dredge material with a high fine sediment content.

Possible beneficial re-uses of dredge material include beach nourishment, habitat development, levee maintenance and rehabilitation, construction fill, construction material (e.g. brick making) and cover at existing sanitary landfills. A common form of habitat development using dredge material is the creation or restoration of tidal wetlands. However, surrounding habitats in Moreton Bay are generally in good condition with few known degraded areas where constructed tidal wetlands would be beneficial. The volume of material from the project (570,000 m3) also limits the practical options to create habitat using dredge material.

Locally, the Moreton Bay Dredge Material Placement Study (KBR, 2006) prepared for the Queensland Office of the Coordinator General evaluated the most suitable options for long term disposal of maintenance dredge material generated from port, harbour and marina dredging in western Moreton Bay. The study found that using appropriate sites for unconfined bay-based marine disposal remain the preferred means of disposing of low quality dredge material. Deeper offshore placement outside of the Bay were also assessed, but noting economic costs for these options were considerably higher. Land based placement ranked well below bay and ocean disposal options largely because of social and financial impacts and the engineering and environmental complexity and inefficiency of handling and treatment. However, the report found that some form of land based placement needs to be a component of the regional dredge material disposal strategy particularly for contaminated sediments.



The Port's Future Port Expansion Area has fulfilled this role to date, providing a controlled placement solution for contaminated sediments. In this context, it is important for both the Port and the stakeholders of the region to maximise the design life of the FPE to accept this contaminated dredge material and other untested emergency dredging material that cannot be lawfully placed offshore and is environmentally and economically undesirable to deal with on land. In this context it should be noted that Port accepts both its own as well as third party contaminated dredge material and manages it in accordance with relevant permissions.

Dredged river muds and clays are also periodically placed in the FPE, but noting these materials must be treated, dewatered and then capped with clean sand prior to future development. Accordingly, the bulk of the sand fill material used to develop the FPE has instead come from the sand allocated to the Port as part of the Spitfire Channel Re-alignment project in Northern Moreton Bay following the Moreton Bay Sand Extraction Study in 2005.

Based on these points and the geotechnical characteristics of the material to be dredged as part of the swing basin project, the preferred material management strategy would be to:

(1) use the higher quality sandy material for construction fill (either in the Future Port Expansion area [FPE] and/or nearby develop sites such as the Luggage Point Brisbane International Cruise Ship Terminal site);

(2) place the lower quality material (that is of least value for beneficial re-use as fill) at the most suitable marine disposal location in the bay to maximise the design life and capacity of the FPE consistent with the management of maintenance dredge material.

Marine Placement

For the soft, uncontaminated clays, muds and silts at the dredge site, where marine placement is identified as the preferred option, the Mud Island DMPA remains the most suitable location, consistent with historical placement of dredge material in Moreton Bay. Managed by the Department of Transport and Main Roads (DTMR), the Mud Island DMPA has been used for many years as a marine dredge material placement site in the Bay for clean, uncontaminated dredged muds, silts and clays. The site is located away from sensitive receptors in the Bay such as seagrass and is a dispersive site, thus providing adequate long term capacity for dredge placement activities.



8.1 Select the relevant alternatives related to your proposed action.

8.27 Do you have another alternative?



Section 9 – Contacts, signatures and declarations

Where applicable, you must provide the contact details of each of the following entities: Person Proposing the Action; Proposed Designated Proponent and; Person Preparing the Referral. You will also be required to provide signed declarations from each of the identified entities.

9.0 Is the person proposing to take the action an Organisation or an Individual?

Organisation

9.2 Organisation

9.2.1 Job Title

Environment Manager

9.2.2 First Name

Craig

9.2.3 Last Name

Wilson

9.2.4 E-mail

craig.wilson@portbris.com.au

9.2.5 Postal Address

Locked Mail Bag 1818 Port of Brisbane QLD 4178 Australia

9.2.6 ABN/ACN

ABN

78143384749 - PORT OF BRISBANE PTY LTD

9.2.7 Organisation Telephone

(07) 3258 4848



9.2.8 Organisation E-mail

craig.wilson@portbris.com.au

9.2.9 I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:

Not applicable

Small Business Declaration

I have read the Department of the Environment and Energy's guidance in the online form concerning the definition of a small a business entity and confirm that I qualify for a small business exemption.

Signature:..... Date:

9.2.9.2 I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations

No

9.2.9.3 Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made

Person proposing the action - Declaration

I, <u>ceace</u>, declare that to the best of my knowledge the information I have given on, or attached to the EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence. I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

I, _____, the person proposing the action, consent to the designation of ______ as the proponent of the purposes of the action describe in this EPBC Act Referral.

Signature: Date:

9.3 Is the Proposed Designated Proponent an Organisation or Individual?



Department of the Environment and Energy

Organisation

9.5 Organisation

9.5.1 Job Title

Environmental Manager

9.5.2 First Name

Craig

9.5.3 Last Name

Wilson

9.5.4 E-mail

craig.wilson@portbris.com.au

9.5.5 Postal Address

Locked Mail Bag 1818 Port of Brisbane QLD 4178 Australia

9.5.6 ABN/ACN

ABN

78143384749 - PORT OF BRISBANE PTY LTD

9.5.7 Organisation Telephone

(07) 3258 4848

9.5.8 Organisation E-mail

craig.wilson@portbris.com.au

Proposed designated proponent - Declaration

I, <u>crace</u>, the proposed designated proponent, consent to the designation of myself as the proponent for the purposes of the action described in this EPBC Act Referral.



Department of the Environment and Energy

Signature:....

9.6 Is the Referring Party an Organisation or Individual?

Organisation

9.8 Organisation

9.8.1 Job Title

Principal

9.8.2 First Name

Lisa

9.8.3 Last Name

McKinnon

9.8.4 E-mail

Lisa.mckinnon@bmtwbm.com.au

9.8.5 Postal Address

PO Box 203 Spring Hill QLD 4004 Australia

9.8.6 ABN/ACN

ABN

54010830421 - BMT WBM PTY LTD

9.8.7 Organisation Telephone

073831 6744

9.8.8 Organisation E-mail

Lisa.mckinnon@bmtwbm.com.au

Referring Party - Declaration

Department of the Environment and Energy

I, <u>*ISO MKINNON*</u>, I declare that to the best of my knowledge the information I have given on, or attached to this EPBC Act Referral is complete, current and correct. I understand that giving false or misleading information is a serious offence.



Department of the Environment and Energy

Appendix A - Attachments

The following attachments have been supplied with this EPBC Act Referral:

- 1. 2016-10-17_tshd_brisbane_general_emp_brisbane_2016_v14.pdf
- 2. eco_002_170216_project_location.jpg
- 3. r.b22494.004.01.iar_excl_appendices.pdf