



EPBC REFERRAL

Eden Breakwater Wharf Extension



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Prepared for: NSW Department of Primary Industries - Land

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Cover Photo: Eden Breakwater Wharf, Snug Cove. NSW.

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Rev A	DS, AC	7/8/15	Draft Issued to NSW Department of Primary Industries – Lands.	
Rev B	DS, AC	25/9/15	Updated Draft Issued to NSW Department of Primary Industries – Lands.	
Rev 0	DS, AC	1/10/15	Final submitted to DPI - Lands	

Referral of proposed action

Project title: Eden Harbour – Breakwater Wharf Extension

1 Summary of proposed action

NOTE: You must also attach a map/plan(s) and associated geographic information system (GIS) vector (shapefile) dataset showing the location and approximate boundaries of the area in which the project is to occur. Maps in A4 size are preferred. You must also attach a map(s)/plan(s) showing the location and boundaries of the project area in respect to any features identified in 3.1 & 3.2, as well as the extent of any freehold, leasehold or other tenure identified in 3.3(i).

1.1 Short description

NSW Department of Primary Industries - Lands (DPI Lands) has identified the need to extend the existing Eden Breakwater Wharf and deepen the existing berth pocket, to accommodate cruise ships of up to 300 m in length. Dredge material will be disposed of offshore within an existing material disposal area previously approved by the Commonwealth Government. The action will be executed in accordance with the project's Dredging and Dredge Material Disposal Management Plan (DDMDMP) and Construction Environmental Management Plan (CEMP).

1.2 Latitude and longitude

Dredge Area	Longitude			Latitude		
	degrees	minutes	seconds	degrees	minutes	seconds
	149	54	23.51	37	4	26.62
Disposal Area	degrees			degrees		
	minutes	seconds		minutes	seconds	
	150	1	39.48	37	5	15.71
	150	1	39.48	37	4	43.33
	150	1	59.77	37	4	43.33
	150	1	59.77	37	5	15.71

The dredge area and offshore disposal area are illustrated in **Figure 1** (dredge area) and **Figure 2** (offshore disposal area) attached (see **Appendix B**).

The wharf extension location is adjacent to the Dredge Area as shown in the figures provided in **Appendix B**.

1.3 Locality and property description

The action will take place at the Eden Breakwater Wharf, which is located inside the Port of Eden, in southern NSW. The Port of Eden currently accommodates a Mooring Jetty, Multi-Purpose Jetty and the Breakwater Wharf (see **Figure 3, Appendix B**). The Breakwater Wharf is owned by NSW State Government through NSW Department of Primary Industries - Lands and is operated by the Port Authority of NSW. The port facilities currently accommodate Svitzer tugs (used for maneuvering the woodchip vessels into the Twofold Bay Naval Jetty), the local fishing fleet and tourism operators (marine mammal tours).

1.4 Size of the development footprint or work area (hectares)

The proposed dredge area is 105,161 m² in size and the coordinates have been provided above. The offshore disposal area is located within a previously approved Commonwealth Government disposal area and the boundary coordinates have been provided above. The dredge material generated from this project is 170,000 m³ of in-situ material (including contingency for over-dredge and over-design) and therefore, a small part (500,000 m²) of the previously used dredge material disposal area has been identified for receiving the proposed dredge material. The specific spatial locations of the dredge area and offshore disposal area are illustrated in **Appendix B**.

1.5 **Street address of the site**
Weecoon St, Eden NSW 2551

1.6 **Lot description**
Lot 1 DP 738477 & Lot 2 DP 747363

1.7 **Local Government Area and Council contact (if known)**
The proposed dredge area and wharf extension are both located on Crown Land (Crown Lands Act 1989).

The proposed offshore dredge material disposal site is located in Commonwealth waters.

NSW Department of Primary Industries - Lands are the proponent of the works.

Relevant contact details:

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Project Manager
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Email: Andrew.dooley@crownland.nsw.gov.au

The local government is Bega Valley Shire Council.

Relevant contact details:

Leanne Barnes
General Manager
Bega Valley Shire Council
PO Box 492
Bega NSW 2550
P: 02 6499 2222
council@begavalley.nsw.gov.au

1.8 **Time frame**

Start dates and durations of proposed action as follows:

- Site Mobilisation – February 2016 (1 month)
- Dredging – March 2016 (12-16 weeks)
- Wharf Extension – July 2016 (9-12 months)

Note that start dates are dependent on issuance of Sea Dumping Permit, EPBC Referral Decision and contractor availability.

1.9	Alternatives to proposed action Were any feasible alternatives to taking the proposed action (including not taking the action) considered but are not proposed?		No
		X	Yes, you must also complete section 2.2
1.10	Alternative time frames etc Does the proposed action include alternative time frames, locations or activities?	X	No
			Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment Is the action subject to a state or territory environmental impact assessment?		No
		X	Yes, you must also complete Section 2.5
1.12	Component of larger action Is the proposed action a component of a larger action?	X	No
			Yes, you must also complete Section 2.7
1.13	Related actions/proposals Is the proposed action related to other actions or proposals in the region (if known)?	X	No
			Yes, provide details:
1.14	Australian Government funding Has the person proposing to take the action received any Australian Government grant funding to undertake this project?		No
		X	Yes, provide details: \$10 million in project funding being provided by the Commonwealth's Department of Infrastructure under the Community Development Grants Program
1.15	Great Barrier Reef Marine Park Is the proposed action inside the Great Barrier Reef Marine Park?	X	No
			Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

NOTE: It is important that the description is complete and includes all components and activities associated with the action. If certain related components are not intended to be included within the scope of the referral, this should be clearly explained in section 2.7.

2.1 1 Description of proposed action

NSW Department of Primary Industries - Lands (DPI Lands) is responsible for the management of approximately half of the land in NSW, encompassing the dry and submerged lands, up to 5.5 km offshore from the NSW coastline. DPI Lands manage a range of built maritime assets, including 25 coastal harbours and 21 river entrances and maintains access to these assets, where appropriate.

The Eden Breakwater Wharf is located in the Port of Eden. The first wharf built for shipping was in 1860. The Port of Eden consists of three wharfs, namely the Mooring Jetty, Multi-Purpose Jetty and Breakwater Wharf (see **Figure 3, Appendix B**). The first stage of construction of the Breakwater (Unloading) Wharf was in the late 1970's, with construction completed in 1978. The second stage of the Breakwater Wharf was then completed in the late 1980's.

Eden is an active working port, a premier location for whale watching and an emerging cruise destination. DPI Lands has identified the need to extend the Eden Breakwater Wharf and deepen the adjacent berth pocket to -10.5m Chart Datum (CD), to accommodate cruise ships of up to 300 m in length. The current bathymetry north of the Breakwater Wharf is between -4 m to -10.5 m Australian Height Datum (AHD) (GBG Australia, 2014).

Currently there are a range of cruise ships that visit Eden and they are largely restricted by draft and anchor offshore to ferry passengers to shore. They include the Pacific Pearl, Volendam, Pacific Dawn, Pacific Jew, Pacific Eden, MS Marina, Nordum, Maasdam, Black Watch. The intention is that these vessels will be able to berth at the upgraded Breakwater Wharf and passengers will walk along a gangway onto the wharf. These vessels are largely in transit between other Australian ports (i.e. Sydney and Melbourne).

The proposed construction works associated with the Breakwater Wharf extension and proposed dredging campaign include:

- Extension of the existing wharf by up to 80 m;
- Installation of berthing dolphins;
- Installation of new bollards on the existing wharf;
- Dredging of up to 170,000 m³ of in-situ material; and
- Installation of minor services (lighting, power and potable water).

The design drawings for the proposed construction works are illustrated in **Figure 4 to Figure 6, Appendix B**.

Breakwater Wharf Extension

The new 80 m long wharf structure will consist of a composite concrete deck, at the same height as the existing wharf, suspended on steel tubular piles. The steel piles will be driven to a design toe level by a piling hammer lifted by a crane mounted either on a floating barge or from the existing wharf.

Rock anchors may be installed in some piles, depending on pile refusal level by drilling down through the preinstalled steel tubular pile with a drill rig, installing steel reinforcement and then pouring in-situ concrete within the pile, to ensure there is a strong connection between the pile and the bedrock.

Prefabricated headstocks shall then be installed by crane onto the piles. Three to four piles will support each of the headstocks (or bents). Prefabricated concrete deck panels will then be lifted into place, spanning across two adjacent headstocks (or bents). Once all deck panels have been installed, gaps will be filled with a gap filler product, before an in-situ concrete topping slab is installed and minor services are fitted to the deck.

New bollards will be required to restrain the bow of the ship and these will be situated on the existing wharf and will most likely require independent foundations. This shall require sections of the existing wharf to be cut away, to enable new foundations to be installed. Once the new foundations have been installed, the deck of the existing wharf shall be re-instated and the new bollards installed to the wharf deck.

Mooring and breasting dolphins will be installed at various locations along the fender line (berthing face), which will have bollards installed on each of the decks, panel fenders installed on the breasting dolphins and safety ladders and hand railing fitted to all dolphins. Each dolphin will consist of six steel tubular piles, driven into the seabed by a piling hammer, suspended from a crane mounted on a barge.

Dredge Material Characterisation

The dredge volume removed during the dredging program will be monitored by progressive surveys and confirmed at the completion of dredging by a post dredging survey. See attached **Figure 1** and **Figure 2 (Appendix B)** for further clarification of the project construction scope and dredge area.

During the dredging process, the consolidated materials are excavated from the seabed by the dredge (preferred option Backhoe Dredge) and taken through the water and placed into a split hopper barge that facilitates delivery of the dredge material to the offshore disposal area.

Air and water become entrained within the soil particles during this process, and the combined volume of water, air and dredged materials received at the offshore disposal area, or the bulked dredging volume, will be greater than *the in situ* volume. The degree of 'bulking' is highly depending on material type, with fine-grained materials (clay and silt) having the greatest potential for higher bulking rates.

The sediments for excavation during the Breakwater Wharf Extension works are dominated by the sand fraction with a mean of 83% sand with minor components of clay and silt (maximum of 11% of silt and clay) and variable percentages of gravels of up to 32%. The bulked material volume for disposal at the offshore area is expected to be no greater than 250,000 m³.

All sediments have been screened and tested in accordance with the National Assessment Guidelines for Dredging (2009). Key findings on the geochemical characteristic of the sediments are outlined below:

- The 95% upper confidence limit (UCL) concentrations of the mean for the potential contaminants of concern were below their respective National Assessment Guidelines for Dredging (NAGD, 2009) Screening Levels, with the exception of tributyltin (TBT);
- The 95% UCL of the mean concentration for tributyltin (TBT) (normalised for 1% Total Organic Carbon) was above the NADG Screening Level but below the Sediment Quality High Value.
- This was due to several elevated TBT concentrations reported in the surface sediments at sites 4, 5, 8 and 13 (total of 15 sites). The highest normalised TBT concentration of 113.5 µg/kg was reported at Site 5 located approximately 100 m from the existing multipurpose jetty and approximately 500 m from the slipway. The other sites were located closer to the existing multi purposes jetty and greater than 100 m from the slipway;
- Elutriate tests for sites 4, 5, 8 and 13 returned TBT concentrations below the

detection limit of the analytical equipment ($< 2 \text{ ng/L}$). These results confirm that the bioavailability of TBT is low and that the TBT is likely to be tightly bound to the organic material present in the sediment;

- All samples had organochlorine pesticide concentration below the Limit of Reporting;
- One individual concentration of silver exceeding the NAGD Screening Level and the 95% UCL of the mean concentration for silver was below the NAGD Screening Level;
- The 95% UCL of the mean concentrations for the potential contaminants of concern were below the General Solid Waste CT1 (contaminant threshold) and National Environment Protection Measure (NEPM) Health-based Investigation Level (HIL) A (for low density residential including a sizeable garden which represents the land-use category with the most exposure).
- All of the sediment samples (45 samples) returned a net acidity of less than 0.02% oxidisable sulfur. Australasian Marine Associates concluded that the acid production potential of the sediments is low (AMA, 2015).

Based on these findings, Australasian Marine Associates (AMA, 2015) concluded the sediments were considered suitable for dredging and either offshore or onshore disposal.

Dredging and Material Disposal

Prior to the commencement of dredging, the dredging contractor will establish temporary onshore facilities including site offices and laydown areas in a suitable location within the Port. It is proposed that a medium to large Backhoe Dredge will be used to dredge all materials.

Split hopper barge(s) will be used to receive the dredge material from the Backhoe Dredge, which will be used to transport the dredge material to the approved offshore disposal area. At the disposal area, the split hopper barges will dispose of the dredge material by opening the hull of each vessel and allowing the material to fall to the seabed. The specific location of the disposal operations will be logged using GPS and all dredging and disposal actions will be in accordance with the Dredging and Disposal Dredge Management Plan.

Prior to dredging work commencing, an ecological assessment of the approved offshore disposal area was completed. This work included:

- Seabed habitat assessment using towed video;
- Infauna characterisation; and
- Sediment grain size analysis.

The results of this work are presented in Section 3.

2.2 Alternatives to taking the proposed action

Prior to commencing the proposed early works, a number of alternative measures were considered as part of the base case design. These alternative measures included doing nothing and maintaining the existing Breakwater Wharf and considering different design options, to try and minimise any potential environment impacts. The alternatives that were considered are described below.

2.2.1 The "Do Nothing" Option

If the construction works were not commissioned, then this would prevent the development of the Breakwater Wharf and prevent access into the port by larger vessels, such as cruise ships. Businesses would benefit from the future potential of the increase in tourism. There is also the increased risk of grounding of larger vessel, which may frequent the port and the Breakwater Wharf in the future. The 'do nothing' option is not considered acceptable, given the safety and financial risks highlighted.

2.2.2 Base Case Design Options

An alternate development was considered, which excluded the provision for expanding the existing wharf. In this option, the cruise vessel was moved in a landward direction to minimise the length of the cruise vessel that may be exposed to seas/ swells.

This option uses the shallow part of the existing berth basin where rock is also shallow and would require extensive rock dredging. One of the main reasons why this option was excluded and the extension to the sheet pile wharf wall and wharf adopted from an environmental perspective, was because this alternate option required additional approval processes relating to drilling and blasting in the marine environment.

2.2.3 Final Refinement of Design

During the final design assessment process the cruise ship berthing area was moved approximately 40 m to the west, introducing a number of key advantages to the project. These included:

- Reducing the volume of dredging required by up to 17 % or 34,000 m³;
- Negating the need for drilling/blasting for rock dredging;
- Reducing disturbance of the existing wharf from construction activities including mechanical dredging and potential use of explosives to aid dredging;
- Reducing the risk of undermining or destabilisation of the existing wharf foundations, post construction;
- Reducing the risk of accelerated loss of steel section on the existing wharf piles due to ship movements (i.e. bow thruster on vessel and use of tugs);
- Reducing the need for scour protection systems;
- Increasing the separation between the dredge pocket and the Multipurpose/Police jetties, reducing the impacts on these structures and small moored vessels from ship movements;
- Improving navigation for vessels using the existing jetties, as the impeding area required by the cruise ships is reduced; and
- Reducing the impact on existing habitats along the Breakwater Wharf. The current design is illustrated in **Figures 4 to 6, Appendix B**. Of particular note is that the proposed Breakwater Wharf Extension does not encroach on the existing seawall of the Breakwater Wharf, it is free standing and provides for a very low environmental impact footprint.

2.3 Alternative locations, time frames or activities that form part of the referred action

There are no alternative locations, timeframes or activities for the proposed action in Eden. The Breakwater Wharf location will maximize the benefit to the local Eden Community and presents the most feasible option for berthing Cruise Ships in the port.

2.4 4 Context, planning framework and state/local government requirements

The Snug Cove precinct has been the focus of a broader masterplan that includes facilities for safe berthage of cruise vessels, support vessels for the offshore gas and oilfields, super yachts and ocean racing and recreation craft. The REF (see attached supporting documents) provides a detailed description of the NSW statutory requirements for the proposed action.

The table below contains a concise summary of permits, approvals and licenses to proceed with the proposed action for the Eden Breakwater Wharf Extension.

Legislation	Permit, Approval or Licence	Comment
<i>Environment Protection and Biodiversity Protection Act 1999 (Commonwealth)</i>	Decision on whether project is a Controlled Action	Required to determine if the Project is deemed to be a Controlled Action and subject to further assessment via EIS and permitting conditions.
<i>Environment Protection (Sea Dumping) Act 1981 (the Sea Dumping Act).</i>	Sea Dumping Permit	Required to allow lawful disposal of dredge material within an approved offshore disposal

(Commonwealth)		area.
NSW State Environmental Planning Policy (Infrastructure) 2007 (State)	Review of Environmental Factors (REF)	Required to ensure the appropriate level of consultation is completed and an assessment of environmental impacts
NSW Environmental Planning & Assessment Act (EP&A Act) 1979 (State)	Review of Environmental Factors (REF)	Part V of the EP&A Act requires consideration of the likely environmental impacts of the activity and to consider the appropriate level of environmental assessment that is required prior to approving the activity.
Fisheries Management Act 1994 (State)	EPA Dredging Permit & Permit to Harm Vegetation	Required to lawfully harm vegetation (i.e. kelp or seagrass) within the project footprint and also lawful dredging under NSW State Legislation.

Under SEPP (infrastructure) 2007, a public authority may carry out a range of public activities without development consent, provided consultation is performed with the relevant stakeholders and an environmental impact assessment under Part V of the Environmental Planning & Assessment (EP&A) Act, 1979 is undertaken. This was the approach taken as part of the Eden Breakwater Wharf Extension project, using a Review of Environmental Factors (REF) to facilitate the environmental impact assessment.

Furthermore, public authorities proposing to undertake said works have an obligation under Part V of the EP&A Act to consider the likely environmental impacts of the activity and to consider the appropriate level of environmental assessment that is required prior to approving the activity. To address this requirement, the REF provided a thorough assessment of the likely environmental impacts and mitigation measures for minimizing environmental harm. Importantly, the REF also drew a conclusion as to whether a formal Environmental Impact Statement was required.

Consultation with Government Authorities

Under the SEPP, a public authority is allowed to carry out dredging and coastal development in tidal waterways without development consent, provided appropriate consultation with all relevant government authorities (including local government authorities) is undertaken and consideration is given to any matters raised by those authorities. Under the SEPP, DPI Lands are required to liaise on this project with the following stakeholders:

- Office of Environment and Heritage (OEH);
- NSW Department of Planning and Environment;
- NSW Department of Primary Industries (Fisheries);
- NSW Department of Primary Industries – Lands (DPI Lands);
- NSW Environment Protection Authority (EPA); and
- Bega Valley Shire Council.

DPI Lands has engaged with the stakeholders to introduce the project scope of works and gain feedback on the REF. Additional works have been commissioned to address stakeholder comments (i.e. ecological surveys) and the REF has been updated to satisfy all stakeholders. The full REF has been submitted to support this EPBC Referral.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

An environment impact assessment of the proposed action is provided within the REF.

Based on the REF undertaken and considering the likely significance of potential

impacts, the impacts from the proposed construction works (i.e. Breakwater Wharf Extension and Capital Dredging) were assessed as minor and therefore, the activity was considered not likely to significantly affect the environment and an Environmental Impact Statement was not considered necessary. This conclusion was contingent on due consideration of the recommendations outlined in the REF.

One of the key recommendations included further evaluation of the project (beyond the scope of the REF), to examine the Humpback and Southern Right whales key habitat requirements (i.e. migration corridors and staging, plus feeding grounds) as they apply to Twofold Bay and offshore of Twofold Bay, the existing and proposed vessel routes (including shipping channels), key threatening processes and an examination of any recovery plans available for the target species etc. These key issues have been covered during the preparation of this EPBC referral, to aid in informing the current environmental assessment.

2.6 Public consultation (including with Indigenous stakeholders)

DPI Lands has liaised with the local fishing and mussel farming industry to ensure any potential impacts and mitigation measures are understood. This consultation process will continue.

More broadly, community consultation is being carried out by DPI Lands via the following:

1. Website: www.crownland.nsw.gov.au and follow the links to the project website.
2. Fact sheets - Published on the website at regular intervals (4-8 weeks approx.)
3. Community information Sessions - 1st on held on 9th December 2014, most recent 29 July 2015.
4. Community Liaison Group - Was being held in Eden every 6-8 weeks however has recently changed to every 4 weeks.
5. Eden Harbour User Group Meetings - Held every 6 months with commercial harbour users. Harbour users updated on project One held on 24th November 2014 and another on 4th June 2015 (still waiting on minutes)

A summary of the outcomes of the community consultation has been submitted to support this EPBC referral.

Eden is significant to a number of different tribes and stories attached to the area. There were two main Thawa groups: Katungal, who occupied the coastal areas from north of Merimbula down to Green Cape (and may have been further divided into the Weecoon (Snug Cove) and Nullica groups); and Baianbal (or Paienbara) 'tomahawk people', who lived in the forests bounded by the mountains to the west. The first European contact occurred in 1798, when Twofold Bay and its safe harbour, Snug Cove ("Weecoon" to the Thawa), was named and mapped by George Bass, during his initial voyage of discovery (Eden Community Website, 2012).

DPI Lands performed a native title investigation and it was established that any Native Title interest that may have existed in the lands/bed of the harbour has been extinguished via the acquisition of the land in 1988. Accordingly, no native title considerations or notifications are required in relation to Native Title legislation.

2.7 7 A staged development or component of a larger project

N/A

3 Description of environment & likely impacts

3.1 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 interactive map 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.

Your assessment of likely impacts should refer to the following resources (available from the Department's web site):

- specific values of individual World Heritage properties and National Heritage places and the ecological character of Ramsar wetlands;
- profiles of relevant species/communities (where available), that will assist in the identification of whether there is likely to be a significant impact on them if the proposal proceeds;
- *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*; and
- associated sectoral and species policy statements available on the web site, as relevant.

Your assessment of likely impacts should consider whether a bioregional plan is relevant to your proposal. The Minister has prepared four marine bioregional plans (MBP) in accordance with section 176. It is likely that the MBP's will be more commonly relevant where listed threatened species, listed migratory species or a Commonwealth marine area is considered.

Note that even if your proposal will not be taken in a World Heritage area, Ramsar wetland, Commonwealth marine area, the Great Barrier Reef Marine Park or on Commonwealth land, it could still impact upon these areas (for example, through downstream impacts). Consideration of likely impacts should include both direct and indirect impacts.

3.1 (a) World Heritage

Properties Description

N/A

3.1 (b) National Heritage

Places Description

N/A

3.1 (c) Wetlands of International Importance (declared

Ramsar wetlands) Description

N/A

3.1 (d) Listed threatened species and ecological communities

Description

In addition to the listed species previously recorded, as described in the REF, the Protected Matters Search Tool analysis (undertaken on the 26th of June 2015) has been compiled into the following tables to indicate the presence of a species/community within the proposed action area. A 5 km radius from the proposed actions (i.e. Breakwater Wharf Extension and offshore dredge disposal area) was used to capture information on relevant listed species. The information contained in the justifications section has been sourced from the DoE Species Profile and Threats Database. The proposed action will occur within the marine

environment and therefore, the tables present a summary of the marine species. The full Protected Matters Search Tool outputs can be found in **Appendix C**.

Five terms for the likelihood of occurrence of species and communities are used and are defined as follows:

- “Known” = the species has been observed within the proposed action area
- “Likely” = the species is known to occur in the broader Eden area and potential suitable habitat exists within the proposed action area.
- “Potential” = Suitable habitat for a species occurs within the proposed action area, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur.
- “Unlikely” = A very low to low probability that a species uses the proposed action area.
- “No” = Habitat within the proposed action area and in the vicinity is unsuitable for the species.

Species that are known, likely or have the potential to occur within the proposed action area are considered in more detail below.

Birds:

Scientific name	Common name	EPBC listing	Likelihood of Occurrence	Justification
<i>Diomedea epomophora epomophora</i>	Southern Royal Albatross	Vulnerable	Potential	During the non-breeding season, the Southern Royal Albatross has a wide and possibly circumpolar distribution, ranging north to about 35°S. The proposed action area is at 37°S.
<i>Diomedea epomophora sanfordi</i>	Northern Royal Albatross	Endangered	Potential	The Northern Royal Albatross ranges widely over the Southern Ocean, with individuals seen in Australian waters off south-eastern Australia. The Northern Royal Albatross feeds regularly in Tasmanian and South Australian waters, and less frequently in NSW waters
<i>Diomedea exulans antipodensis</i>	Antipodean Albatross	Vulnerable	Potential	The Antipodean Albatross is endemic to New Zealand, however forages widely in open water in the south-west Pacific Ocean, Southern Ocean and the Tasman Sea, notably off the coast of NSW
<i>Diomedea exulans exulans</i>	Tristan Albatross	Endangered	Potential	The 'at sea' distribution of this newly described species is yet to be defined. There is currently only one definitive record of the Tristan Albatross from Australian waters.
<i>Diomedea exulans gibsoni</i>	Gibson's Albatross	Vulnerable	Potential	Gibson's Albatross has been recorded foraging between Coffs Harbour, NSW, and Wilson's Promontory, Victoria. However, no specific observations have been recorded off Eden, NSW.
<i>Diomedea exulans (sensu lato)</i>	Wandering Albatross	Vulnerable	Likely	Feeding concentrations near eastern NSW has shown that birds of all age groups from all southern breeding colonies visit this area.
<i>Fregetta grallaria grallaria</i>	White-bellied Storm-Petrel (Tasman Sea), Whitebellied Storm-Petrel (Australasian)	Vulnerable	Potential	Its pelagic distribution is poorly understood, but it has been recorded north and east of its breeding islands to the tropics, in the Tasman Sea, Coral Sea, and north of New Zealand
<i>Halobaena caerulea</i>	Blue Petrel	Vulnerable	Unlikely	The Blue Petrel is rarely recorded north of 37° south on the east coast of Australia

<i>Macronectes giganteus</i>	Southern Giant-Petrel	Endangered	Potential	The Southern Giant-Petrel is widespread throughout the Southern Ocean
<i>Macronectes halli</i>	Northern Giant-Petrel	Vulnerable	Potential	Immature and some adult birds are commonly seen during this period in offshore and inshore waters from around Fremantle (WA) to around Sydney (NSW)
<i>Phoebastria fusca</i>	Sooty Albatross	Vulnerable	Unlikely	The Sooty Albatross is a rare, but probably regular migrant to Australia, mostly in the autumn-winter months, occurring north to south-east Queensland, NSW, Victoria, Tasmania and South Australia
<i>Pterodroma leucoptera leucoptera</i>	Gould's Petrel	Endangered	Potential	There are known breeding locations in NSW, one as close as Narooma in NSW. However, no specific sighting have been recorded in Eden.
<i>Sternula nereis nereis</i>	Australian Fairy Tern	Vulnerable	Unlikely	This species does not commonly frequent the southern NSW coastline.
<i>Thalassarche bulleri</i>	Buller's Albatross, Pacific Albatross	Vulnerable	Potential	They are frequently seen off the coast from Coffs Harbour, south to Tasmania and west to Eyre Peninsula
<i>Thalassarche cauta cauta</i>	Shy Albatross, Tasmanian Shy Albatross	Vulnerable	Potential	Shy Albatrosses appear to occur over all Australian coastal waters below 25° S. It is most commonly observed over the shelf waters around Tasmania and south eastern Australia
<i>Thalassarche cauta salvini</i>	Salvin's Albatross	Vulnerable	Potential	Salvin's Albatross is a non-breeding visitor to Australian waters, however it is possible that it frequents the Eden area during non-breeding periods. However, no sighting have been recorded.
<i>Thalassarche cauta steadi</i>	White-capped Albatross	Vulnerable	Potential	The White-capped Albatross is probably common off the coast of south-east Australia throughout the year
<i>Thalassarche eremita</i>	Chatham Albatross	Endangered	Unlikely	The principal foraging range for this species is in coastal waters off eastern and southern New Zealand, and Tasmania.
<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	Unlikely	Eden is not within the known distribution range of this species
<i>Thalassarche melanophris impavida</i>	Campbell Albatross	Vulnerable	Potential	Non-breeding birds are most commonly seen foraging over the oceanic continental slopes off Tasmania, Victoria and New South Wales

Fish:

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence	Justification
<i>Epinephelus daemeli</i>	Black Rockcod, Black Cod, Saddled Rockcod	Vulnerable	Unlikely	Found on coastal reefs, estuaries or in deep water offshore.
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable	Unlikely	The species is found in fresh and brackish waters of coastal lagoons. The area for the proposed action is not Australian Grayling habitat and there are no coastal lagoon nearby.

Mammals:

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence	Justification
<i>Balaenoptera musculus</i>	Blue Whale	Endangered Migratory	Potential	Blue Whale sightings in Australian waters have been widespread, and it is likely that the whales occur right around the continent at various times of the year. There are no known aggregation areas near Eden.
<i>Megaptera novaeangliae</i>	Humpback Whale	Vulnerable Migratory	Known	The Humpback Whale is known to occur within Twofold Bay and Offshore.
<i>Eubalaena australis</i>	Southern Right Whale	Endangered Migratory	Known	The Southern Right Whale is known to occur within Twofold Bay and Offshore.

Sharks:

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence	Justification
<i>Carcharodon carcharias</i>	Great White Shark	Vulnerable	Potential	Great White Sharks are widely, but not evenly, distributed in Australian waters. The area for the proposed action does offer suitable habitat for this species.
<i>Carcharias taurus</i> (east coast population)	Grey Nurse Shark (east coast population)	Critically Endangered	Unlikely	The closest known aggregation is off Narooma at Montague Island (~80km north east of Eden). The habitat within the proposed action area are not suitable for this species, and there have been no specific sighting of this species. It is therefore considered highly unlikely to occur within the near shore Eden.
<i>Rhincodon typus</i>	Whale Shark	Vulnerable	No	The Whale Shark has not previously been recorded within the waters of Abbot Point. The species is known from Queensland waters however there are no aggregation areas near to Abbot Point.

Reptiles:

Scientific name	Common name	EPBC listing status	Likelihood of Occurrence	Justification
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered Migratory	Unlikely	Loggerhead Turtles nest, forage and migrate across tropical northern Australia. They are unlikely to frequent the water where the proposed action will occur.
<i>Chelonia mydas</i>	Green Turtle	Vulnerable Migratory	Unlikely	Green Turtles nest, forage and migrate across tropical northern Australia. They are unlikely to frequent the water where the proposed action will occur.

<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Vulnerable	Unlikely	Hawksbill Turtles nest, forage and migrate across tropical northern Australia. They are unlikely to frequent the water where the proposed action will occur.
<i>Dermochelys coriacea</i>	Leatherback Turtle	Endangered	Potential	This species has a broader distribution and is known to frequent temperate water in southern Australia.

Nature and extent of likely impact

In this referral, potential impacts to listed species that are known, likely or have the potential to occur within the proposed action area have been considered further within the context of two key concepts commonly applied under the EPBC Act for threatened species (DEWHA 2009):

1. Important populations; and
2. Habitat critical to the survival of the species.

Where neither of these two features of a threatened species are present, significant impacts are generally not considered likely to occur (DEWHA 2009a).

3.1 (e) Listed migratory species

A number of the species listed as occurring within the vicinity of the project area are migratory species, listed under the Commonwealth's Environment Protection and Biodiversity Conservation Act 1999, the Japan – Australia Migratory Bird Agreement (JAMBA) and the China - Australia Migratory Bird Agreement (CAMBA). A total of 47 migratory species were previously reported within 5km of the dredge area.

Albatross

Fourteen species of Albatross have been previously recorded within the vicinity of the dredge area, including the Antipodean Albatross, *Diomedea dabbenena*, Shy Albatross, *Thalassarche cauta* and Black-browed Albatross, *Thalassarche melanophris*. These seabirds spend most of their time at sea. Construction and operational activities will not impact on important populations or critical habitat frequented by albatross.

Cetaceans

Twofold Bay and the immediate coastal offshore waters provide migration corridors and staging plus feeding resources for whales, particularly Humpback and Southern Right whales.

The Humpback Whale Recovery Plan (DEH, 2005) identifies habitat for Humpback whales, some of which is considered critically important to the survival of humpback whales and is defined as those areas known to seasonally support significant aggregations and also those areas which are relied upon for calving, resting and feeding, as well as sections of the migratory pathways. The distribution, indicative migratory pathways and recognised aggregation areas for humpback whales in Australian waters is presented in **Figure 7, Appendix B**.

The majority of humpbacks in Australian waters migrate north to tropical calving grounds from June to August and south, to the Southern Ocean feeding areas from September to November. Twofold Bay is a known resting area, which is used by cow-calf pairs and attendant males during the southern migration. These whales appear to use sheltered bays to opportunistically rest during migration to the feeding grounds (DEH, 2005a). Twofold Bay is also recognized as an aggregation area for Southern right whales (DSEWPC, 2012) and Eden is recognized as an area used intermittently (DEH, 2005b).

DEH (2005a) calls for the protection of habitat important to the survival of the Humpback whale and this includes assessing and managing physical disturbance and development activities (such as ship-strike). Vessels currently enter Twofold Bay on their way to the Port of Eden and the Naval Wharf via the Pilot Boarding Ground.

The Passage Plan used by pilots when piloting a ship into and out of the Port of Eden is provided in **Figure 8, Appendix B**. The plan enables mariners to comply with SOLAS Chapter V Reg 34 (berth to berth voyage plan) and IMO Resolution A893(21) – Guidelines for voyage planning. Whales have been previously recorded within the area between the Pilot Boarding Ground and the two routes frequented by vessels entering the Port of Eden.

The local whale watching business (Cat Balou Cruises), have been operating in Eden since 1990. Seasonal marine mammal sighting records are kept by Cat Balou Cruises and data records are available from 2012 - 2014 on their website. <http://www.catbalou.com.au/sightings.htm>.

Analysis of whale data by 'pod type' (i.e. occurrence of adults, sub-adults and mother / calf pairs over time) illustrates a peak in juvenile / sub-adult whales in September and mother / calf pods in October and November (see **Figure 9, Appendix B**). A bubble plot, which illustrates the frequency and locations of whale sightings in 2012 - 2014 around Twofold Bay

and the Port of Eden is provided in **Figure 10, Appendix B**.

There is unlikely to be any interaction (vessel strikes) between whales and the cruise ships entering Snug Cove from Two Fold Bay, as these vessels move into the area at slow speeds (8-12 knots), enabling the cetaceans sufficient time to move out of the way. There is however, the potential for the noise generated from construction activities, namely pile driving to influence the species, given that they have been sighted offshore from the Port of Eden.

Sound levels generated by piling activities will depend on the size of the pile as well as type of piling, where impact driving is an impulsive noise source, while vibro-driving is a continuous noise source. For impact driving, peak levels are 190-245 dB mostly at 100 Hz and 1kHz. For vibro-driving, the average noise level over the time of measurement (called the sound pressure level – SPL) is 160-200 dB mostly at 100 Hz and 2 kHz (Government of South Australia, 2012, as reported in Ocean Environmental Consulting, 2015).

There are a number of EPBC listed marine mammals present in either Snug Cove or in Twofold Bay throughout the year and these species are sensitive to underwater noise at the following frequencies (Government of South Australia, 2012):

- Baleen whales including humpback (*Megaptera novaeangliae*) and southern right whales (*Eubalaena australis*) may be sensitive to sound in the range of 7 Hz to 22 kHz;
- Toothed whales, including dolphins (e.g. *Delphinus sp.*, *Tursiops sp.*) and killer whales (*Orcinus orca*), may be sensitive to sound in the range of 150 Hz to 160 kHz; and
- Pinnipeds (seals and sea lions) may be sensitive to higher frequencies in the range of 75 Hz to 30 kHz.

The scale and short temporal timeframe of piling activities are unlikely to impact upon these cetaceans and pinnipeds. They have the ability to move away from the area during these activities and there are mitigation measures that can be employed to warn any nearby animals of increased noise, enabling them to swim away from the noise source (i.e. slow/soft start warning noises). An underwater noise risk assessment has been completed and is provided in the REF. Please see **Section 4** for underwater noise mitigation measures.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

The proposed dredging campaign is within Snug Cove at the Port of Eden, and the proposed dredge material disposal activities are offshore of Twofold Bay, in Commonwealth waters (see **Figure 2, Appendix B**). To characterise the contaminations status of the proposed dredge material, and in accordance with NAGD (Commonwealth of Australia, 2009), a sediment sampling and analysis plan (SAP) has been approved by DoE and implemented by DPI Lands. As previously discussed, Australasian Marine Associates (2015) reported that the sediments were clean and considered suitable for dredging and either offshore or onshore disposal.

The seabed habitat was investigated at the proposed offshore disposal area. A towed video survey and infauna investigation was performed on 8th and 9th July 2015. The results of this survey work indicate that the seabed consists primarily of bare sand, with much bioturbation and occasional sponges and bryozoans (see **Figure 11, Appendix B**).

The infauna communities in the offshore disposal ground were examined to gain an understanding about species composition prior to dredge material disposal (AMA, 2015b). The species composition in samples from sites along each of the transect lines displayed little similarity. There was however, an association reported in species composition between the West-North (0.2) transects, which may suggest some spatial similarities in this part of the dredge material ground.

The families observed to be dominant across all sites (*Spionidae*, *Orbiniidae*, *Gammaridea*, *Apseudida* and *Hydrozoa*) are each characterised by similar life history characteristics (i.e. high reproductive capacity), which are indicative of opportunistic species. Such characteristics enable them to dominate other less adaptable species within soft-sediment communities.

The particle size distribution analyses revealed that the composition of the sediment was similar among all disposal location samples. In addition, the analysis also concluded that the overall sediment composition observed is also similar to the proposed dredge area (AMA, 2015a). Both sites were found to be dominated by sand, which is considered a relatively coarse sediment.

The infauna community present within the disposal footprint will be smothered from disposal activities, but given that the sediments to be disposed of consist primarily of coarse sand material, the infauna community will likely recolonise these areas following disposal activities.

The invasive marine fan worm of the family *Sabellidae* was identified at the northern site of the soil ground. Future sampling has been recommended to be undertaken approximately 12 months following dredge material disposal, to examine recolonization of the disposal location and document any potential changes in this pest species distribution.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description

N/A

3.1 (h) The Great Barrier Reef Marine Park

Description

N/A

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description

N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

You must describe the nature and extent of likely impacts (both direct & indirect) on the [whole](#) environment if your project:

- is a nuclear action;
- will be taken by the Commonwealth or a Commonwealth agency;
- will be taken in a Commonwealth marine area;
- will be taken on Commonwealth land; or
- will be taken in the Great Barrier Reef marine Park.

Your assessment of impacts should refer to the *Significant Impact Guidelines 1.2 - Actions on, or impacting upon, Commonwealth land, and actions by Commonwealth agencies* and specifically address impacts on:

- ecosystems and their constituent parts, including people and communities;
- natural and physical resources;
- the qualities and characteristics of locations, places and areas;
- the heritage values of places; and
- the social, economic and cultural aspects of the above things.

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth	X	No
			Yes (provide details below)

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?		No
		X	Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

Further discussion on the likely nature and extent of likely impact is provided in Section 5 of the referral.

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

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 above). If at Section 2.3 you identified any alternative locations, time frames or activities for your proposed action, you must complete each of the details below (where relevant) for each alternative identified.

3.3 (a) Flora and fauna

See REF, submitted to support this EPBC referral.

3.3 (b) Hydrology, including water flows

See REF, submitted to support this EPBC referral.

3.3 (c) Soil and Vegetation characteristics

N/A

3.3 (d) Outstanding natural features

See REF, submitted to support this EPBC referral.

3.3 (e) Remnant native vegetation

See REF, submitted to support this EPBC referral.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

See REF, submitted to support this EPBC referral.

3.3 (i) Indigenous heritage values

See REF, submitted to support this EPBC referral.

3.3 (j) Other important or unique values of the environment

See REF, submitted to support this EPBC referral.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

See REF, submitted to support this EPBC referral.

3.3 (l) Existing land/marine uses of area

See REF, submitted to support this EPBC referral.

3.3 (m) Any proposed land/marine uses of area

N/A

4 Measures to avoid or reduce impacts

Note: If you have identified alternatives in relation to location, time frames or activities for the proposed action at Section 2.3 you will need to complete this section in relation to each of the alternatives identified.

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.

For any measures intended to avoid or mitigate significant impacts on matters protected under the EPBC Act, specify:

- what the measure is,
- how the measure is expected to be effective, and
- the time frame or workplan for the measure.

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.

Provide information about the level of commitment by the person proposing to take the action to implement the proposed mitigation measures. For example, if the measures are preliminary suggestions only that have not been fully researched, or are dependent on a third party's agreement (e.g. council or landowner), you should state that, that is the case.

Note, the Australian Government Environment Minister may decide that a proposed action is not likely to have significant impacts on a protected matter, as long as the action is taken in a particular manner (section 77A of the EPBC Act). The particular manner of taking the action may avoid or reduce certain impacts, in such a way that those impacts will not be 'significant'. More detail is provided on the Department's web site.

For the Minister to make such a decision (under section 77A), the proposed measures to avoid or reduce impacts must:

- clearly form part of the referred action (eg be identified in the referral and fall within the responsibility of the person proposing to take the action),
- be must be clear, unambiguous, and provide certainty in relation to reducing or avoiding impacts on the matters protected, and
- must be realistic and practical in terms of reporting, auditing and enforcement.

More general commitments (eg preparation of management plans or monitoring) and measures aimed at providing environmental offsets, compensation or off-site benefits CANNOT be taken into account in making the initial decision about whether the proposal is likely to have a significant impact on a matter protected under the EPBC Act. (But those commitments may be relevant at the later assessment and approval stages, including the appropriate level of assessment, if your proposal proceeds to these stages).

A range of measures to mitigate the potential impacts from the proposed action will be implemented as part of the activity. The measures to reduce impact and allocation of responsibilities are presented in detail within the Construction Environmental Management Plan (CEMP) and Dredging and Dredge Material Disposal Management Plan (DDMDMP).

5 Conclusion on the likelihood of significant impacts

Identify whether or not you believe the action is a controlled action (ie. whether you think that significant impacts on the matters protected under Part 3 of the EPBC Act are likely) and the reasons why.

5.1 Do you THINK your proposed action is a controlled action?

☒

No, complete section 5.2

☐

Yes, complete section 5.3

5.2 2 Proposed action IS NOT a controlled action.

Specify the key reasons why you think the proposed action is NOT LIKELY to have significant impacts on a matter protected under the EPBC Act.

The proposed Breakwater Wharf Extension is not considered a controlled action given that the activity is not a nuclear action; the proponent is not the Commonwealth or a Commonwealth agency; and the works are not being undertaken on Commonwealth Land or within the Great Barrier Reef Marine Park.

As mentioned in Section 4 of this referral the CEMP and DMMDMP provide detailed information on the controls and mitigation measures that will be adopted during the execution of the project. Once approved by DoE, DPI – Lands will be conditions to adhere to these commitments to manage and reduce the potential for environmental harm. Dredge material will be disposed of into a previously Commonwealth approved offshore disposal site, within Commonwealth waters. Australasian Marine Associates (2015) reported that the sediments were clean and are therefore considered suitable for dredging and offshore disposal. The turbidity generated from material disposal activities does not contain a high percentage of silt or fine sediments and is therefore likely to generate low intensity and short-lived turbidity plumes.

The fate and intensity of the dredge plumes during dredging has been modelled and the findings presented in WorleyParsons (2015). Simulations were for a 29-day lunar cycle (see **Figure 12** and **Figure 13**). A Back Hoe Dredge (BHD) was used as the basis for the modelling since it is considered the most likely type of equipment that will be used to perform the works.

The 50th percentiles total suspended solid (TSS) plots over the dredging period illustrate TSS concentrations < 10 mg/L for 50% of the time (see **Figure 12**). Considering these plots, there is very little interaction between the dredge plume and the mussel lease area and nearby habitats (i.e. seagrass and macroalgal reefs). Given that TSS concentrations were not reported at greater than 10 mg/L, exceedance plots were prepared for 5 mg/L in the top and bottom of the water column (see **Figure 13**). Again, the area of influence is centred directly surrounding the dredge.

ANZECC/ ARMCANZ (2000) identifies a total suspended solids water quality trigger value of 10 mg/L for managing marine aquaculture areas, which is an order of magnitude higher than any of the modelled values reported within the vicinity of the mussel lease area.

Based on the results of the suspended sediment plume simulations provided in AMA (2015c) for the offshore disposal ground, the 50th percentile of TSS concentrations was calculated for each grid cell of the modelling domain. The 50th percentile of TSS concentrations 5 m below the sea surface and 10 m above sea-bed are presented in **Figure 14** through to **Figure 17**.

The model simulation outputs suggest that, in the top 5 m water layer, the 50th percentile of TSS concentrations would decrease from a few thousand mg/L, to below 10 mg/L well within a 1 km radius of the disposal operations (see **Figure 14** and **Figure 15**). In the 10 m

above sea-bed water layer, the 50th percentile of TSS concentrations would decrease from a hundred to 10 mg/l and lower within a circle with a 3 km radius (see **Figure 16** and **Figure 17**).

The actual disposal plumes will be dynamic and occur in a pulsed fashion, with TSS peaking at the immediate disposal site, then dissipating, following by another disposal event and TSS peak 4 hours later. The actual disposal activities will be stages across the entire disposal site, not concentration within one location of the approved disposal area. This will minimise the likelihood of cumulative effects within one location.

It is important to acknowledge that the extent and duration of the disposal plumes are likely to be lowest in the surface layer (i.e. 0-10m). The waters off Twofold Bay are known migration and staging/feeding grounds for Humpback Whales and Southern Right Whales. The plumes will occur in pulses and in the event that a listed marine species does pass through the disposal area they are likely to have the ability to avoid high intensity plumes. Moreover, fauna spotter will be active during disposal activities and disposal activities will not commence if listed species are present (i.e. within 300m), further reducing the likelihood of high intensity plume interaction with list marine species. Finally, the dredge material being disposed is not contaminated so it does not introduce a chemical threat to marine species.

Twofold Bay is listed on the National Directory of Important Wetlands (Commonwealth of Australia, 2001). The proposed construction and operational activities in the Port of Eden will not affect coastal wetlands and/or the wider Twofold Bay. The plume modeling undertaken for dredging activities inside Snug Cove in which the Port of Eden is located indicated that any turbid plumes generated from dredging are localized and turbidity levels do not exceed the 10 mg/L ANZECC/ARMCANZ (2000) default trigger value for turbidity. The modelling results for the offshore disposal site suggest that suspended solids concentrations for 50% of the time will be localized within the material ground, with concentrations > 10 mg/L within 1 km for the surface water and >10 mg/L within 3 km in the lower water column.

Twofold Bay and the offshore coastal waters provide migration corridors and staging, plus feeding resources for whales and dolphins, particularly Humpback and Southern Right whales. There is unlikely to be any interaction (vessel strikes) between whales and the cruise ships entering Snug Cove from Two Fold Bay, as these vessels move into the area at slow speeds (8-12 knots), enabling the cetaceans sufficient time to move out of the way.

There is however, the potential for the noise generated from construction activities, namely pile driving to influence the species. If underwater noise mitigation measures as detailed in the CEMP are implemented during construction (piling activities), then there is unlikely to be an impact to cetaceans frequenting Twofold Bay.

5.3 3 Proposed action IS a controlled action

Type 'x' in the box for the matter(s) protected under the EPBC Act that you think are likely to be significantly impacted. (The 'sections' identified below are the relevant sections of the EPBC Act.)

Matters likely to be impacted

World Heritage values (sections 12
and 15A) National Heritage places
(sections 15B and 15C)

Wetlands of international importance (sections
16 and 17B) Listed threatened species and
communities (sections 18 and 18A) Listed
migratory species (sections 20 and 20A)
Protection of the environment from nuclear actions (sections 21 and
22A) Commonwealth marine environment (sections 23 and 24A)
Great Barrier Reef Marine Park (sections 24B and 24C)
A water resource, in relation to coal seam gas development and large coal mining
development (sections 24D and 24E)
Protection of the environment from actions involving Commonwealth land (sections 26
and 27A) Protection of the environment from Commonwealth actions (section 28)
Commonwealth Heritage places overseas (sections 27B and 27C)

Specify the key reasons why you think the proposed action is likely to have a significant adverse impact on the matters identified above.

6 Environmental record of the responsible party

NOTE: If a decision is made that a proposal needs approval under the EPBC Act, the Environment Minister will also decide the assessment approach. The EPBC Regulations provide for the environmental history of the party proposing to take the action to be taken into account when deciding the assessment approach.

	Yes	No
<p>6.1 Does the party taking the action have a satisfactory record of responsible environmental management?</p> <p>Provide details The party taking the action is the NSW Department of Primary Industries - Lands (DPI Lands). DPI Lands are responsible for the management of approximately half of the land in NSW, encompassing the dry and submerged lands, up to 5.5 km offshore from the NSW coastline. DPI lands manage a range of built maritime assets, including 25 coastal harbors and 21 river entrances, and maintains access to these assets, where appropriate. Prior to every project DPI Lands undertakes an environmental impact assessment and detailed stakeholder consultation, to ensure that the appropriate environmental management measures are identified and implemented for every project undertaken.</p>	X	
<p>6.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <p>If yes, provide details</p>		X
<p>6.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <p>If yes, provide details of environmental policy and planning framework DPI – Lands is not a Corporation.</p>	X	
<p>6.4 Provide name of proposal and EPBC reference number (if known)</p> <p>Unknown.</p>	X	

7 Information sources and attachments

(For the information provided above)

7.1 1 References

Australasian Marine Associates (2015). Review of Environmental Factors. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015a). Sediment Sampling and Analysis Plan. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015b). Infauna Survey Offshore Material Ground. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015c). Preliminary Offshore Disposal Monitoring. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Commonwealth of Australia (2009). National Assessment Guidelines for Dredging. Canberra. ACT.

Government of South Australia (2012). Underwater Piling Noise Guidelines. Department of Planning, Transport and Infrastructure. Adelaide, SA.

NEPC (1999). National Environment Protection (Assessment of Site Contamination) Measure. National Environment Protection Council. Canberra, ACT.

Eden Community Site (2012). <http://www.eden.nsw.au/index.php/historical-eden/eden-s-history>.

GBG Australia (2013). Geophysical Investigation For Proposed Improvements At Snug Harbour. Eden, New South Wales. GBG Australia. NSW.

Ocean Environmental Consulting (2014). Cattle Bay Marina - Hydrographic Mapping & Marine Mammal Risk Profiles. Prepared on behalf of Eden Resort Hotel Pty Ltd. July 2014. NSW.

Ocean Environmental Consulting (2015). Cattle Bay Marina. Responses to Agency Submissions Relating to Aquatic Ecology. FINAL REPORT. Prepared on behalf of Eden Resort Hotel Pty Ltd. 30 March 2015. NSW.

Royal Haskoning (2014a). Environmental Impact Assessment. Proposed Marina and Temporary Land Facilities, Cattle Bay Road, Eden. Lots 1, 2 And 4 of Dp 1138056 and Adjoining Waters. Prepared For Eden Resort Hotel Pty Ltd. Royal Haskoning, NSW.

Royal Haskoning (2014b). Eden Harbour Safe Boating Options Study. Royal Haskoning, NSW.

WorleyParsons (2015a). Eden Breakwater Wharf Extension Project Dredging Plan. 301020-07698 – MA-PLN-0001 5 June 2015. NSW.

WorleyParsons (2015b). Eden Breakwater Wharf Extension Value Optimisation Study Report. 301020-07698-MA-REP-0001 5 June 2015. NSW.

7.2 2 Reliability and date of information

The information contained within this referral has been based on the current information supplied by DPI Lands and recent environmental surveys of the project area in February, June and July 2015.

7.3 Attachments

Australasian Marine Associates (2015a). Review of Environmental Factors. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015b). Sediment Sampling and Analysis Plan. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015c). Sediment Sampling and Analysis Implementation Report. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015d). Infauna Survey Offshore Material Ground. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

NSW Department of Primary Industries – Lands, Consultation Documentation.

Australasian Marine Associates (2015f). Construction Environmental Management Plan. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Australasian Marine Associates (2015g). Dredging and Dredge Material Disposal Management Plan. Eden Breakwater Wharf Extension. Prepared for NSW Department of Primary Industries - Lands. NSW.

Eden Breakwater Wharf Extension Project. Protected Matters Search Tool Outputs.

NSW Department of Primary Industries – Lands GPS Data.

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figure 1.
	GIS file delineating the boundary of the referral area (section 1)	✓	GIS file (Zip files)
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	Figure 1 and 2.
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	N/A	
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	Sea Dumping Permit
	copies of any flora and fauna investigations and surveys (section 3)	✓	REF
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	REF, In-Fauna, SAP, SAP Implementation, CEMP and DDMMP, Consultation, GPS data

report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	✓	REF
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8 Contacts, signatures and declarations

NOTE: Providing false or misleading information is an offence punishable on conviction by imprisonment and fine (s 489, EPBC Act).

Under the EPBC Act a referral can only be made by:

- the person proposing to take the action (which can include a person acting on their behalf); or
- a Commonwealth, state or territory government, or agency that is aware of a proposal by a person to take an action, and that has administrative responsibilities relating to the action¹.

Project title:

8.1 Person proposing to take action

This is the individual, government agency or company that will be principally responsible for, or who will carry out, the proposed action.

If the proposed action will be taken under a contract or other arrangement, this is:

- the person for whose benefit the action will be taken; or
- the person who procured the contract or other arrangement and who will have principal control and responsibility for the taking of the proposed action.

If the proposed action requires a permit under the Great Barrier Reef Marine Park Act², this is the person requiring the grant of a GBRMP permission.

The Minister may also request relevant additional information from this person.


If further assessment and approval for the action is required, any approval which may be granted will be issued to the person proposing to take the action. This person will be responsible for complying with any conditions attached to the approval.

If the Minister decides that further assessment and approval is required, the Minister must designate a person as a proponent of the action. The proponent is responsible for meeting the requirements of the EPBC Act during the assessment process. The proponent will generally be the person proposing to take the action³.

¹ If the proposed action is to be taken by a Commonwealth, state or territory government or agency, section 8.1 of this form should be completed. However, if the government or agency is aware of, and has administrative responsibilities relating to, a proposed action that is to be taken by another person which has not otherwise been referred, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

² If your referred action, or a component of it, is to be taken in the Great Barrier Reef Marine Park the Minister is required to provide a copy of your referral to the Great Barrier Reef Marine Park Authority (GBRMPA) (see section 73A, EPBC Act). For information about how the GBRMPA may use your information, see http://www.gbrmpa.gov.au/privacy/privacy_notice_for_permits.

Name **ANDREW DOOLEY**
Title **PROJECT MANAGER**
Organisation **NSW DEPARTMENT OF PRIMARY INDUSTRIES-LANDS**
ACN / ABN (if applicable) **N/A**
Postal address **PO Box 2185. DANGAR NSW. 2309.**
Telephone **0402 725 627**
Email **andrew.dooley@crowland.nsw.gov.au**
Declaration
I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I acknowledge that I may be liable for fees related to my proposed action following the introduction of cost recovery under the EPBC Act.

Signature  Date **6/10/2015**

8.2 Person preparing the referral information (if different from 8.1)

Individual or organisation who has prepared the information contained in this referral form.

Name **As Above**
Title
Organisation **Organisation name should match entity identified in ABN/ACN search**
ACN / ABN (if applicable)
Postal address
Telephone
Email
Declaration
I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.

Signature _____ Date _____

³ If a person other than the person proposing to take action is to be nominated as the proponent, please contact the Referrals Gateway (1800 803 772) to obtain an alternative contacts, signatures and declarations page.

EXEMPTION/ WAIVER FORM

(NOTE: COMPLETE FOR AN EXEMPTION, APPLY FOR A WAIVER OR ADVISE IF NOT APPLICABLE)

PERSON PROPOSING TO TAKE ACTION

1. Name and Title: **Andrew Dooley**
2. Organisation (if applicable): **Department of Primary Industry Skill and Regional Development**
3. EPBC Referral Number (if known): **Not Known**
4. ACN/ABN (if applicable): **72 189 919 072**
5. Postal Address: **PO BOX 2185. Dangar, NSW 2309**
6. Telephone: **0402 725 627**
7. Email: **andrew.dooley@crowland.nsw.gov.au**
8. Name of designated proponent (if not the same person named at item 1 above and if applicable): **Same as Above**
9. ACN/ABN of designated proponent (if not the same person named at item 1 above): **Same as Above**

COMPLETE THIS SECTION ONLY IF YOU QUALIFY FOR EXEMPTION FROM THE FEE(S) THAT WOULD OTHERWISE BE PAYABLE.

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

- ☐ an individual; OR
- ☐ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR

If you are small business entity you must provide the Date/Income Year that you became a small business entity: _____.

☒ not applicable.

Note: You must advise the Department within 10 business days if you cease to be a small business entity. Failure to notify the Secretary of this is an offence punishable on conviction by a fine (regulation 5.23B(3) *Environment Protection and Biodiversity Conservation Regulations 2000 (Cth)*).

COMPLETE THIS SECTION ONLY IF YOU WOULD LIKE TO APPLY FOR A WAIVER

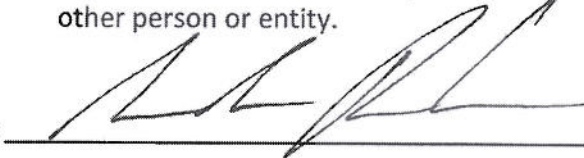
- ☐ I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the EPBC Regulations. Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made (can attached additional information): _____; OR

☒ not applicable.

Declaration:

- ☒ I declare that to the best of my knowledge the information I have given on this form is complete, current and correct.
- ☒ I understand that giving false or misleading info is a serious offence.
- ☒ I agree to be the proponent for this action.
- ☒ I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature



Date:

09/10/15

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ☒ Completed all required sections of the referral form?
- ☒ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ☒ Provided a map showing the location and approximate boundaries of the project area?
- ☒ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ☒ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ☒ Provided complete contact details and signed the form?
- ☒ Provided copies of any documents referenced in the referral form?
- ☒ Ensured that all attachments are less than three megabytes (3mb)?
- ☒ Sent the referral to DPI Lands (electronic and hard copy preferred)?

Appendix A – DoE Requirements for GIS Data

Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to DPI Landsin the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
 - If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
 - If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile.

(http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license
(<http://creativecommons.org/licenses/by/3.0/au/>)