

**Flinders Ports Pty Ltd.**

Dredging to widen the existing channel and swing basin located at Outer Harbor by approximately 40m for a distance of approximately 7km, requiring the removal of 1.55 million m<sup>3</sup> of material to be placed off-shore at a designated placement area (7km x 5km) within the middle of the Gulf St Vincent.

**Outer Harbor Swing Basin and Channel**

010/V048/17

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**OVERVIEW**

<b>Application No</b>	010/V048/17 (ID: 2302)
<b>Unique ID/KNET ID</b>	#12231950 / 2017/15652/01
<b>Applicant</b>	Flinders Ports Pty Ltd (Sponsored by DPTI)
<b>Proposal</b>	Dredging of the existing Outer Harbor channel and swing basin to widen the channel by approximately 40m (from 130m to 170m) for a distance of approximately 7km. The removal of 1.55 million m <sup>3</sup> of material to be placed off-shore at a designated placement area (7km x 5km) within the Gulf St Vincent.
<b>Subject Land</b>	Outer Harbor Channel – Gulf St Vincent
<b>Zone/Policy Area</b>	Coastal Waters
<b>Relevant Authority</b>	Minister for Planning
<b>Lodgement Date</b>	12 July 2017
<b>Council</b>	Out of Council
<b>Development Plan</b>	Land Not Within a Council Area (Metropolitan) Land Not Within a Council Area (Coastal Waters)
<b>Type of Development</b>	Crown Section 49 Development
<b>Public Notification</b>	Crown Development over \$4 million
<b>Representations</b>	Seven (7) Four (4) representations wish to be heard by the Panel
<b>Referral Agencies</b>	EPA, Coast Protection Board, Minister for Historic Shipwrecks, Native Vegetation Council (The Port Adelaide Enfield Council was also consulted)
<b>RECOMMENDATION</b>	<i>Development Approval subject to conditions</i>

**EXECUTIVE SUMMARY**

Flinders Ports Pty Ltd have lodged an application to dredge the Outer Harbor Channel and Swing Basin. The project is sponsored by the Minister for Transport and Infrastructure pursuant to Section 49(2)(c) of the *Development Act 1993*.

Flinders Ports undertook previous dredging works in 2005 which involved the deepening and widening of the channel and swing basin. This dredging project was driven by the need to accommodate for deeper draft cargo shipping trends. This application was also a Crown Development under Section 49 of the *Development Act 1993*.

Outer Harbor experienced a four-fold increase in ships in 2016 and this forecast is doubling again in 2017. In order to provide suitable infrastructure to support this increase in vessels, the Outer Harbor Channel needs to be widened to accommodate the new Post-Panamax class of vessels. The Port of Adelaide plays a significant role in South Australia's economic prosperity and opening up the port to this larger class of vessel will allow South Australia to remain a viable shipping destination.

The proposal seeks to undertake the dredging of the Outer Harbor channel and swing basin to widen them by 40m for a distance of approximately 7km. The dredging works will require the removal of approximately 1.55million m<sup>3</sup> of material, primarily consisting of shelly sand and silt, to be disposed of approximately 29km off-shore at a designated placement area (7km x 5km) in the middle of Gulf St Vincent. The proposed upgrade works expand upon the 2005 project to deepen the Outer Harbor Channel.

The proposed works are subject to the Coastal Waters policies of both the Land Not within a Council Area (Metropolitan) and the Land Not Within a Council Area (Coastal Waters). The Development Plan places a premium on the high environmental value of the metropolitan waters and the gulf and the appropriate management of hazards that may occur through development activities. The Development Plans recognise the Port as being of significant value, however also place emphasis on the retention of the natural coastal environment.

Public notification was required as the proposed works exceeded \$4 million. Seven (7) representations were received during the notification process, with four (4) wishing to be heard by SCAP. Issues raised in the representations included sedimentation impacts, loss of marine flora and fauna and placement of dredge material within the Gulf St Vincent.

The EPA, Coast Protection Board and Minister for Historic Shipwrecks were mandatory referral bodies in accordance with Schedule 8 of the *Development Regulations 2008*. In principle support is offered for the proposal, with a number of conditions recommended by the agencies to be imposed to any approval. Through discussions with the Environment Protection Authority, the dredging methodology has been amended, resulting in a 39% decrease in predicted turbidity and sedimentation impacts.

It should also be noted that further licencing via an EPA Dredging Licence and a Native Vegetation Clearance Permit will also be required before works are undertaken. The applicant is working with the agencies to satisfy these requirements.

## **BACKGROUND**

Seaborne trade is a globally competitive industry, and port operators need to ensure that the infrastructure to support global organisations that own and operate vessels is able to accommodate planned visitations efficiently. This includes the ability to operate 24 hours a day, 365 days a year to avoid delays for ships to immediately berth upon arrival (not have to wait for appropriate tidal conditions, which may result in anchoring for up to 12 hours in deeper waters), complete their cargo transfers, and depart within the shortest possible time.

In 2005 the Outer Harbor Channel Deepening Project enabled the Port to accommodate the emergence of the Panamax Class of vessel. As the global shipping owners convert more and more ships to the Post Panamax class, Flinders Ports is compelled to provide suitable infrastructure to support this activity. Outer Harbor experienced a four-fold increase in activity in 2016 and forecast this doubling again in 2017.

The Outer Harbor Channel Widening Project is responding to this change in vessel size (broader) as the key driver to ensure economic operations are maintained to support South Australian trade and avoid any decrease through use of alternative ports (or land routes). In addition, from 2018 there will be a change for visiting Cruise Liners, with a general trend towards broader ships seeking to visit South Australian waters. The risk is that the containerised trade and cruise shipping may "skip" Adelaide and utilise alternative ports that can operate without restrictions and hence be more efficient.

This would create a negative impact upon the South Australian economy through increased transport costs and the lost opportunity costs of less visitations from cruise ships, which is not consistent with key state-wide policies. In particular, *South Australia's*

*Strategic Plan* and *South Australia's Ten Economic Priorities* seek the expansion of the State's export economy. The *Integrated Transport and Land Use Plan* accounts for the need for ports to have increased capacity and efficiency. The widening of the Outer Harbor Channel will support a growing South Australian economy and strategically aligns with the current South Australian strategic policies and plans.

The application has been granted Crown Sponsorship by the Minister for Transport and Infrastructure, as the proposal is of significant economic value to the State.

## **ASSESSMENT REPORT**

### **1. DESCRIPTION OF THE PROPOSAL**

The proposal is to undertake the dredging of the Outer Harbor channel and swing basin to widen the existing channel from 130 metres to 170 metres for a distance of approximately 7km. The dredging works will require the removal of approximately 1.55 million m<sup>3</sup> of material to be placed approximately 29km off-shore at a designated placement area (7km x 5km) in the Gulf St Vincent.

The proposed development also includes relocating the existing navigational aids to reflect the new alignment of the channel. There are 16 navigational aids in total that may require works of some nature, with a total of nine currently identified as requiring physical relocation prior to any dredging.

Dredging works will be undertaken by a contractor with a current EPA dredging licence. The dredging is expected to take place over a 6-8 month period and these details will be refined within the Dredge Management Plan and dredging licence obtained through the EPA.

#### Dredging Methodology

The methodology will involve the use of a small – medium sized Trailing Suction Hopper Dredger (TSHD) of about 3000m<sup>3</sup> hopper capacity and a medium sized Cutter Suction Dredger (CSD) with no side-casting, supported by a 2000m<sup>3</sup> hopper capacity Split Hull Barges (SHB). Effectively, the TSHD will be used to dredge the sandy material on the surface and the CSD will be used for breaking up deeper seabed material. The material broken up by the CSD will be discharged into the SHB's and transported to the Dredge Material Placement Area (DMPA). The DMPA, located approximately 29km off-shore, is the same location that was used during the dredging works campaign undertaken by Flinders Ports in 2005.

Flinders Ports has worked closely with the EPA to agree to this dredging methodology. The initial proposed methodology involved the CSD that would side-cast this material (placing material on the sea bed). This process was expected to occur for a period of 4 – 6 months. Through significant discussions and modelling it was considered that this dredge methodology would result in significant seagrass loss. The methodology was refined so that both the TSHD and the CSD will use the SHB's to transport materials to the DMPA.

Application details are contained in the ATTACHMENTS.



**Figure 1:** An example of a Cutter Suction Dredger



**Figure 2:** An example of the Trailing Suction Hopper Dredge

**2. SITE AND LOCALITY**

**2.1 Site Description**

The proposed development involves two separate sites:

- The Outer Harbor Channel and swing basin.
- The Dredge Material Placement Area located approximately 29km south-west of Outer Harbor in the Gulf St Vincent.

Outer Harbor Channel

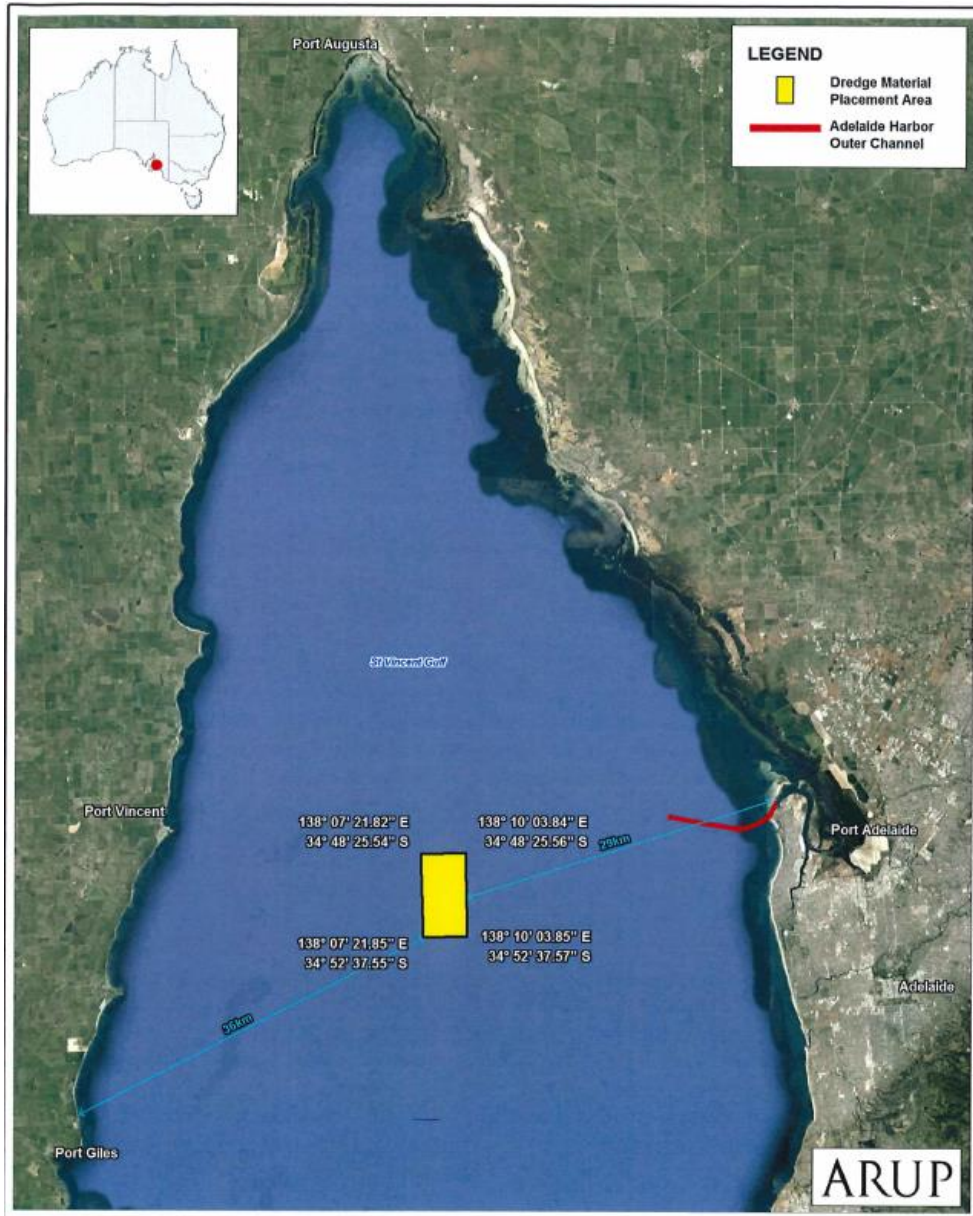
The Outer Harbor Channel includes the swing basin located adjacent the existing port facilities and continues out past the breakwater and then for a distance of approximately 5km seaward of the breakwater. Figure 3 outlines the full Outer Harbor Channel and scope of dredging works.



**Figure 3:** Project Location including Dredge Material Placement Area.

Dredge Material Placement Area

The Dredge Material Placement Area (DMPA) is located within the middle of the Gulf St Vincent – approximately 29km from the breakwater of the Outer Harbor Channel. The proposed location for the placement of dredge materials was previously used in Flinders Ports 2005 dredging campaign. During this campaign, approximately 2.7 million m<sup>3</sup> was placed within the DMPA. Flinders Ports current proposal seeks to place approximately 1.55 million m<sup>3</sup> of material within the placement area, a significantly reduced amount compared to that of the 2005 campaign. The precise location of the DMPA is identified by GPS co-ordinates set out in the Figure 4 and in the application documents.



**Figure 4:** Dredge Material Placement Area

## 2.2 Locality

### Outer Harbor Channel

The surrounding locality can be broken down into a variety of land uses and is characterised by a range of industries, recreation / boat mooring, residential and coastal land / facilities. Industrial development is primarily port related and includes the Flinders Adelaide Container Terminal, Port Adelaide Passenger Terminal and Pelican Point Power Station. The Royal South Australian Yacht Squadron and associated mooring facilities utilise the Port River inlet / channel and are located within close proximity to where the dredging works will occur.

The locality is also one that contains areas of significant natural environmental value. The site is within the Adelaide Dolphin Sanctuary and mangroves and significant tracts of native vegetation located on Torrens Island and further east to St Kilda.

Residential development is present in what can be considered the 'greater locality' of the area. The residential development contains a mix of detached and semi-detached dwellings varying between one (1) and two (2) storeys. The closest residences to the works are approximately 400m.

### **3. COUNCIL COMMENTS (Port Adelaide Enfield Council)**

The Port Adelaide Enfield Council did not comment on the proposal.

### **4. STATUTORY REFERRAL BODY COMMENTS**

Referral responses are contained in the ATTACHMENTS.

#### **4.1 Environmental Protection Authority (EPA)**

The Environmental Protection Authority (EPA) is a mandatory referral in accordance with Schedule 8 of the *Development Regulations 2008*. The SCAP must have regard to this advice.

The EPA undertook a detailed assessment of the proposal and raised concerns relating to the timing of works, dredge material placement options, long term monitoring plan (water quality and seagrass loss) and noise impacts. A majority of these concerns were addressed within the 'Outer Harbor Channel Widening Project DA Report – Addendum #1'. The EPA sought further information pertaining to the dredging methodology and advised that additional modelling be provided. The EPA also requested that the applicant consider alternative land based disposal options for dredging. The applicant provided a response to these requests within the 'Outer Harbor Channel Widening Project DA Report – Addendum #2'. The further information provided addressed the EPA concerns to their reasonable satisfaction.

The EPA recommends that the proposed dredging should be allowed to proceed subject to conditions relating to:

- Timing of the dredging works.
- The proposed alternative dredging methodology being implemented.
- An environmental monitoring program be prepared and implemented.
- The preparation of a Dredge Management Plan.
- Restrictions on the timing and methods employed for pile driving.

An EPA licence is also required.

Two EPA staff members will be available to answer any questions at the SCAP hearing.



#### **4.2 Coast Protection Board**

The Coast Protection Board (CPB) is a mandatory referral in accordance with Schedule 8 of the *Development Regulations 2008*. The SCAP must have regard to this advice.

The Coast Protection Board has no objections to the proposal in-principle. The following recommendations were provided:

- Dredging be undertaken in autumn to minimise impacts on the marine environment.
- The Department of Environment, Water and Natural Resources Coastal Management Branch be given the opportunity to provide input into the proposed environmental monitoring program.
- Notwithstanding a detailed Dredge Management Plan, there remains potential for widespread ecological impacts, both in the short and longer term, as a result of turbidity from the proposed dredging and disposal operations. Sensitive ecological systems in the wider region which may be impacted include the Section Bank, Barker Inlet – St Kilda Aquatic Reserve, St Kilda Aquatic Reserve, St Kilda – Chapman Creek Aquatic Reserve and Torrens Island Conservation Park.

The CPB's request to be given the opportunity to provide input into the proposed environmental monitoring program has been included within the conditions of approval.

#### **4.3 Minister for Historic Shipwrecks (State Heritage Unit – DEWNR)**

The Minister for Historic Shipwrecks is a mandatory referral in accordance with Schedule 8 of the *Development Regulations 2008*. The SCAP must have regard to this advice.

The Minister for Historic Shipwrecks provided a late referral response. Advice was provided regarding the identification of shipwreck locations and the undertaking of work within close proximity to shipwrecks. This advice has been included as an advisory note of the approval to make the applicant aware of their obligations under the *Historic Shipwrecks Act 1981* should any shipwrecks be discovered or disturbed during operations.

#### **4.4 Native Vegetation Council**

The Native Vegetation Council is a non-mandatory referral.

The Native Vegetation Council has no objections to the proposal in-principle. However, it advised that prior to the clearance of any native vegetation, permission must be received from the Council.

## **5. PUBLIC NOTIFICATION**

The application was notified as a Crown Development over \$4 million, pursuant to Section 49 (7d) of the *Development Act 1993*. Public notification was undertaken via public notice in the *Portside Messenger* (local paper) and *The Advertiser*. The application was on public notification for a period of 15 days commencing on 22 November 2017 and ending on 13 December 2017. Seven (7) representations were received during this period.

The following issues were raised within the public representations:

- Loss of marine flora and fauna.
- Placement of materials within the Gulf St Vincent.
- Deterioration of water quality through the spreading of sediments and turbidity.
- Economic benefits of the project with consideration to the environmental impacts and associated economic losses to fisheries.
- The environmental impacts of the 2005 dredging campaign aren't fully understood – concern over the unknown impacts.

The applicant provided a response to the issues raised in public submissions as follows:

- Mitigation responses in the Dredge Management Plan and Environmental Monitoring Plan will provide procedures and monitoring to minimise flora and fauna impacts.
- The study undertaken within the DA Report and Addendum #1 concludes that the ocean based DMPA is the most appropriate location.
- The applicant is working closely with DPTI, EPA and DEWNR to ensure that the best practice methodology is implemented to reduce environmental impacts.
- Flinders Ports is committed to implementing the best practice dredge methodology and compliance with all licenses and approvals including a Dredge Management Plan, will make sure the best practice methods are in place.

Four (4) representation, all of which were from organisations, wish to be heard by the Panel.

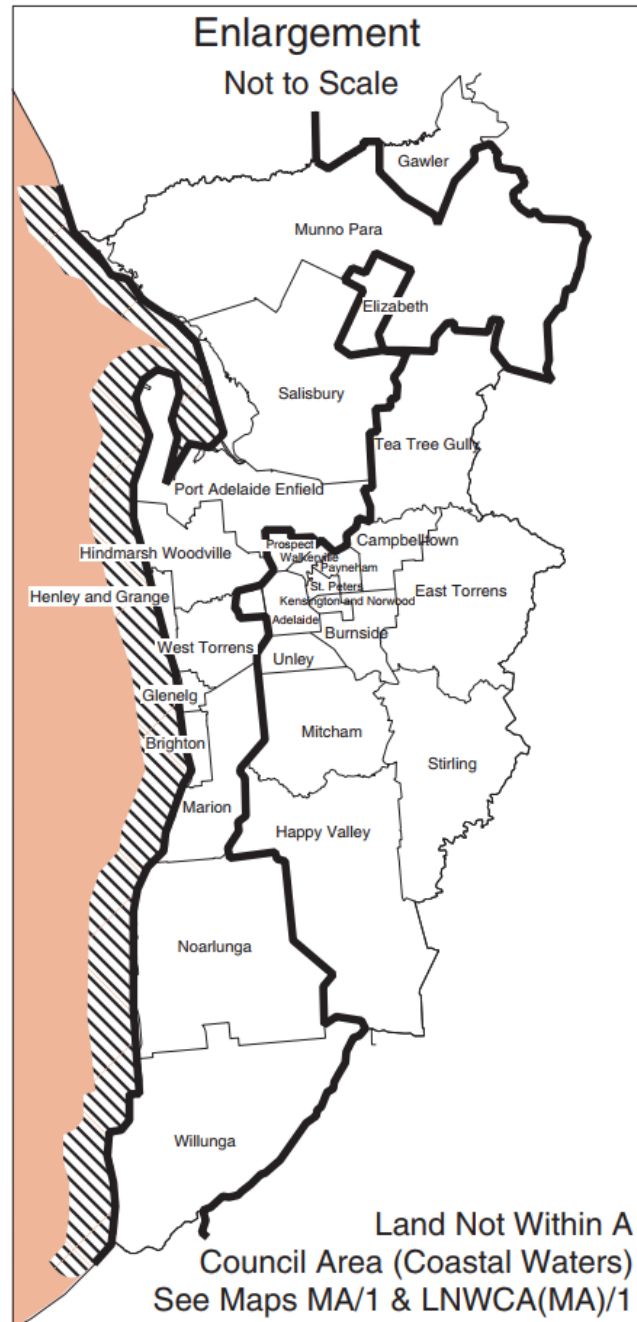
A copy of each representation and the applicant's response is contained in the ATTACHMENTS

## **6. POLICY OVERVIEW**




The Port River part of the subject site is within the Land Not Within a Council Area (Metropolitan) Development Plan (Consolidated 5 May 2016), whilst the Outer Harbor access channel parts of the site and the DMPA fall within the Land Not Within a Council Area (Coastal Waters) Development Plan (Consolidated 20 October 2016).

The Land Not Within a Council Area (Coastal Waters) Development Plan identifies the separation between the Land Not Within a Council Area (Metropolitan) and Land Not Within a Council Area (Coastal Waters). Figure 5 highlights the differentiation between the two Development Plans, while Figure 6 & 7 provide a more detailed zoning.

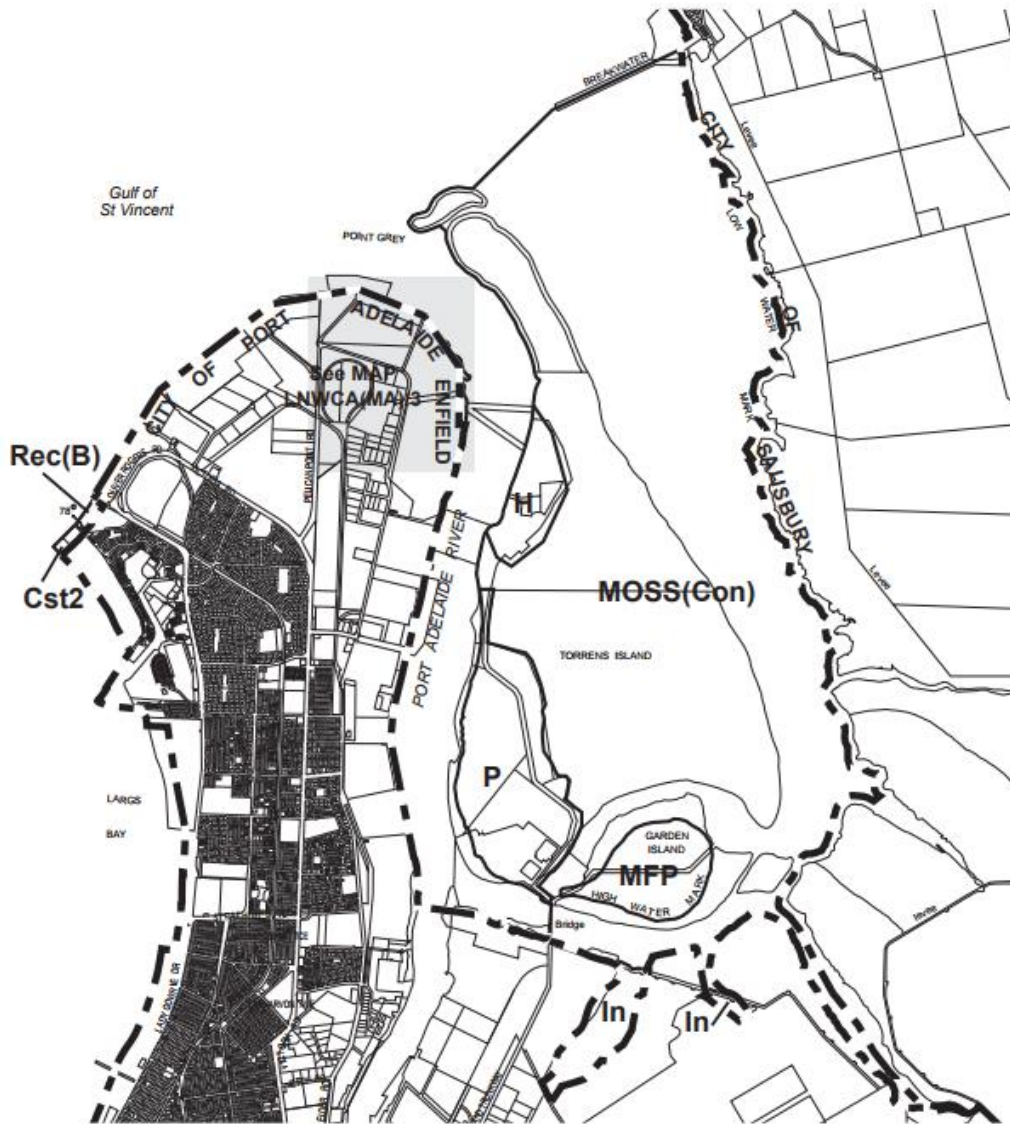
Relevant planning policies are contained in Appendix One and summarised below.



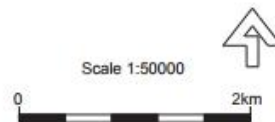
**Location Map**

-  Coastal Waters Development Plan Area  
(Located between Council Boundary and the Limit of the State as defined in the Development Act 1993)
-  Boundary of Coastal Local Government Areas
-  Land Not Within A Council Area (Metropolitan)  
(as defined on Maps MA/1 & LNWCA(MA)/1)

**Figure 5: Development Plan Boundaries**



**NOTE: For Policy Areas See MAP LNWCA(MA)/4**  
**Cst2** Coastal 2  
**H** Public Purpose (Quarantine Station)  
**In** Industry  
**MFP** Multi-function Polis  
**MOSS(Con)** Metropolitan Open Space System (Conservation)  
**P** Public Purpose (Power Station)  
**Rec(B)** Recreation (Buffer)

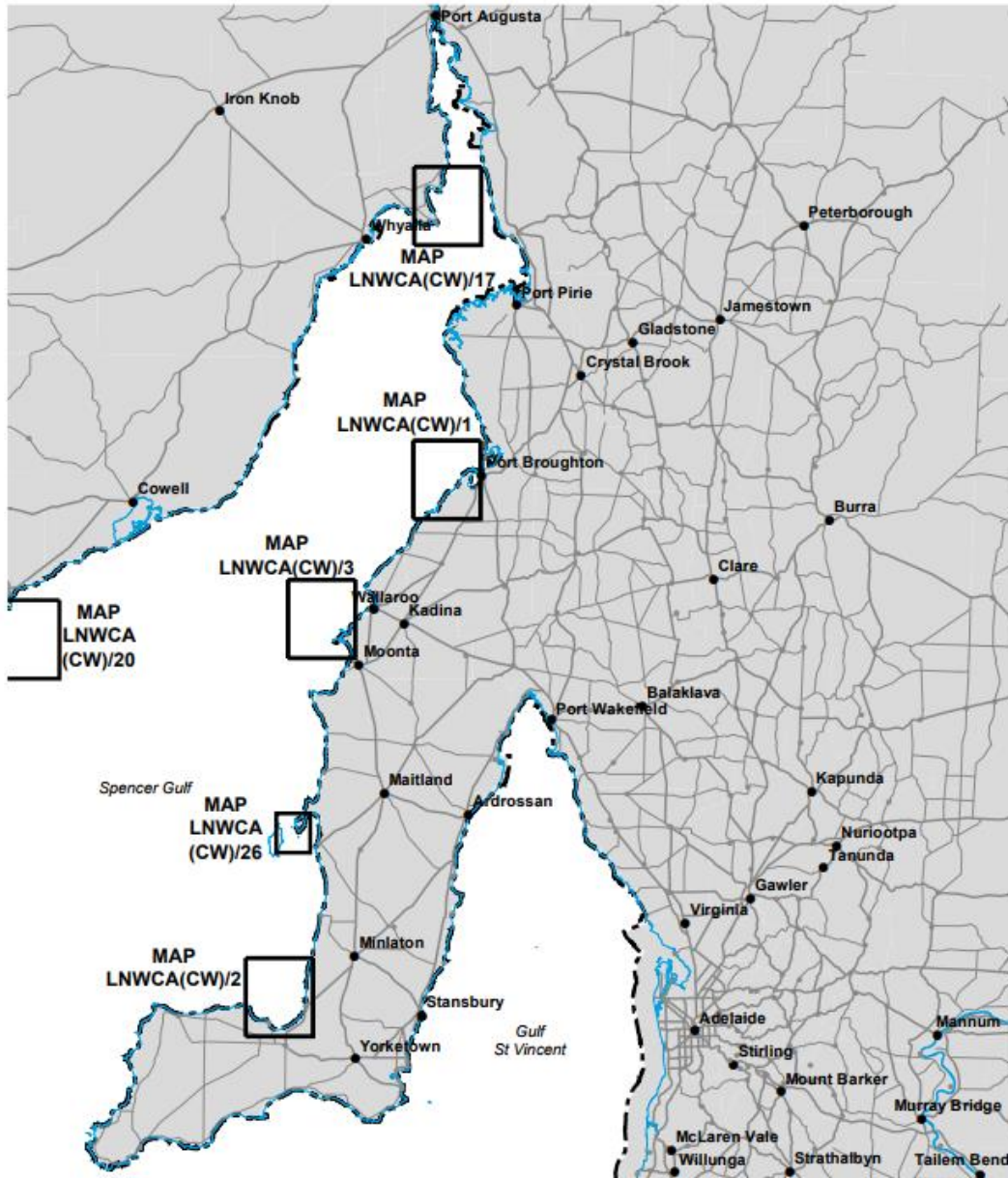


— Zone Boundary  
 - - - Development Plan Boundary

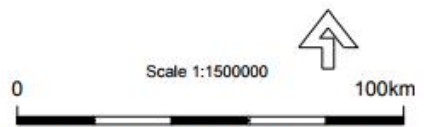
**LAND NOT WITHIN A COUNCIL AREA  
 (METROPOLITAN)  
 ZONES  
 MAP LNWCA(MA)/1**

Consolidated - 5 May 2016

**Figure 6: Land Not Within a Council Area (Metropolitan)**



For the purposes of the Development Plan unless otherwise clearly indicated, the zone/policy area boundaries depicted on or intended to be fixed by Maps LNWCA(CW)/1 to LNWCA(CW)/26 inclusive shall be read as conforming in all respects (as the case may require) to the land division boundaries, to the centre line of roads or drain reserves or to the title boundaries, or to imaginary straight lines joining the positions defined by survey or by the measurements shown on the said maps against which the said zone/policy area boundaries are shown or otherwise as indicated.



**LAND NOT WITHIN A COUNCIL AREA  
(COASTAL WATERS)  
INDEX  
MAP LNWCA(CW)/C**

— — — — — Development Plan Boundary

Consolidated - 12 December 2017

**Figure 7: Land Not Within a Council Area (Coastal Waters)**

## 6.1 Coastal Zone (Land Not Within a Council Area (Metropolitan))

The Coastal Zone of the Land Not Within a Council Area (Metropolitan) is intended to accommodate primarily public and community facilities. The zone also seeks the conservation, rehabilitation and improvement of the natural features of the coast as well as finely balancing the maintenance of existing vehicular, pedestrian and boating movements at the coast.

Development within the Port of Adelaide should also minimise the potential harm to marine, estuarine and coastal environments as well as minimising the potential harmful effects of turbidity and sedimentation and ensuring that dredged materials are disposed of in an appropriate manner.

PDC7 of the Coastal Zone seeks that:

*Development, including dredging, within the Port of Adelaide (including Outer Harbor, Pelican Point, Osborne, Inner Harbor) should:*

- (a) minimise the potential for harm to the marine, estuarine and coastal environment, such as the spreading of pest plants and/or animals, and public health posed by the disturbance and removal of material;*
- (b) minimise the potential harmful effects of turbidity and sedimentation on the marine, estuarine and coastal environment; and*
- (c) ensure dredged materials are treated and disposed of in an appropriate manner.*

The Development Plan is relatively silent on port facilities (primarily as they are land based activities that are located within the Port Adelaide Enfield Development Plan). The Objectives of the Development Plan primarily seek the protection of the coastal and marine environment, particularly the natural features and open space. Objective 5 seeks the maintenance of safe and convenient vehicular, pedestrian and boating movements at the coast. The application is not non-complying with respect to the development plan and PDC 9 states that, if the development was not Crown, would be Category 2 for notification purposes.

## 6.2 Coastal Waters (Land Not Within a Council Area (Coastal Waters))

The general policies within the Coastal Waters section of the Development Plan seek that development conserve and retain the coastal environment through the preservation of scenically attractive areas, the coastal environment and the preservation of native vegetation. The policy area also broadly seeks that development should not interfere or detract from sites of economic, environmental, cultural or ecological importance.

The policies also seek that development outside urban zones should not take place if there is potential for significant conflict with development that provides a wider community benefit.

The Development Plan is silent on port facilities, however, Objective 4 seeks the safe and efficient movement of people and goods.

### **6.3 General Section (Land Not Within a Council (Coastal Waters and Metropolitan))**

Development should be orderly and economic. Development should not be located in delicate or environmentally sensitive coastal features nor should it aggravate prevalent existing coastal issues. Where development is located in these locations, it should be undertaken in such a way that reduces the potential impacts to the ongoing ecology and stability of environmentally sensitive coastal features.

Development should not be sited to adversely affect areas of high scenic value, heritage character, or the amenity of public beaches. Activities likely to impact on natural coastal features should use best practice to reduce impacts on the sensitive coastal environment.

## **7. PLANNING ASSESSMENT**

The application has been assessed against the relevant provisions of the Land Not Within a Council Area (Metropolitan) Development Plan and the Land Not Within a Council Area (Coastal Waters) Development Plan.

### **7.1 Land Use**

The dredging of the Outer Harbor Channel is essential infrastructure for the continued use of the port as South Australia's key export location. The Port of Adelaide provides a vital link for South Australia to the rest of the world in terms of the importing/exporting of goods. The dredging is an extension / improvement of the existing land use and will facilitate the safe movement of the larger post-panamax vessels and other vessels.

It is proposed that the dredged material be placed approximately 29km from Port Adelaide within the Gulf St Vincent. The location of the Dredge Management Placement Area is a site previously used by Flinders Ports for the 2005 Outer Harbor Deepening Project, effectively making it an existing land use. It is important to note that the previous Flinders Ports dredging campaign in 2005 placed approximately 2.7 million m<sup>3</sup> of dredge material, whereas this project seeks to place approximately 1.55 million m<sup>3</sup> of material – a significantly smaller volume compared to the previous project.

Although environmental impacts are expected to occur through the placement of dredged material within the Gulf, the previously utilised site is considered to be appropriate in achieving the least environmental impact. The decision to place this material within the Gulf comes after a thorough investigation and cost / benefit analysis by Flinders Ports as detailed in Addendum #2. The EPA is satisfied with Flinders Ports reasoning for the placement of materials on the previously used DMPA and will work closely with the applicant to ensure turbidity impacts are minimised.

Various other port activities are expected to be impacted by the dredging. Minor disruptions are expected to occur while the dredging is occurring within the breakwater, however these will only be temporary. Similarly, the visual amenity of the port will be impacted while the dredging ships are working. However, these ships are small in comparison to the cruise ships and cargo ships that regularly dock at the port and the greater locality, given the Port is located within a natural backdrop of coastal environment.

## **7.2 Heritage**

The provisions within the General Section of the Development Plan speak strongly to the preservation of sites of heritage and cultural significance. The proposal involves dredging that will be undertaken within 500 metres of historic shipwrecks. The proposed dredging is considered appropriate in relation to the potential heritage impacts as works are not expected to impact on any shipwrecks. An adequate buffer from any works to shipwrecks will avoid direct disturbance and siltation so no effect to shipwrecks will occur. An advisory note has been included that, if a shipwreck is disturbed and uncovered, the applicant must stop works and seek the appropriate permit.

## **7.3 Environmental Factors**

The planning policies recognise that development should be for public benefit and should only occur after significant justification of these benefits to the community. Dredging works should not harm the marine environment (such as the spreading of pest plants) and should minimise the impacts of turbidity and sedimentation. Dredged materials would be treated and disposed in an appropriate manner.

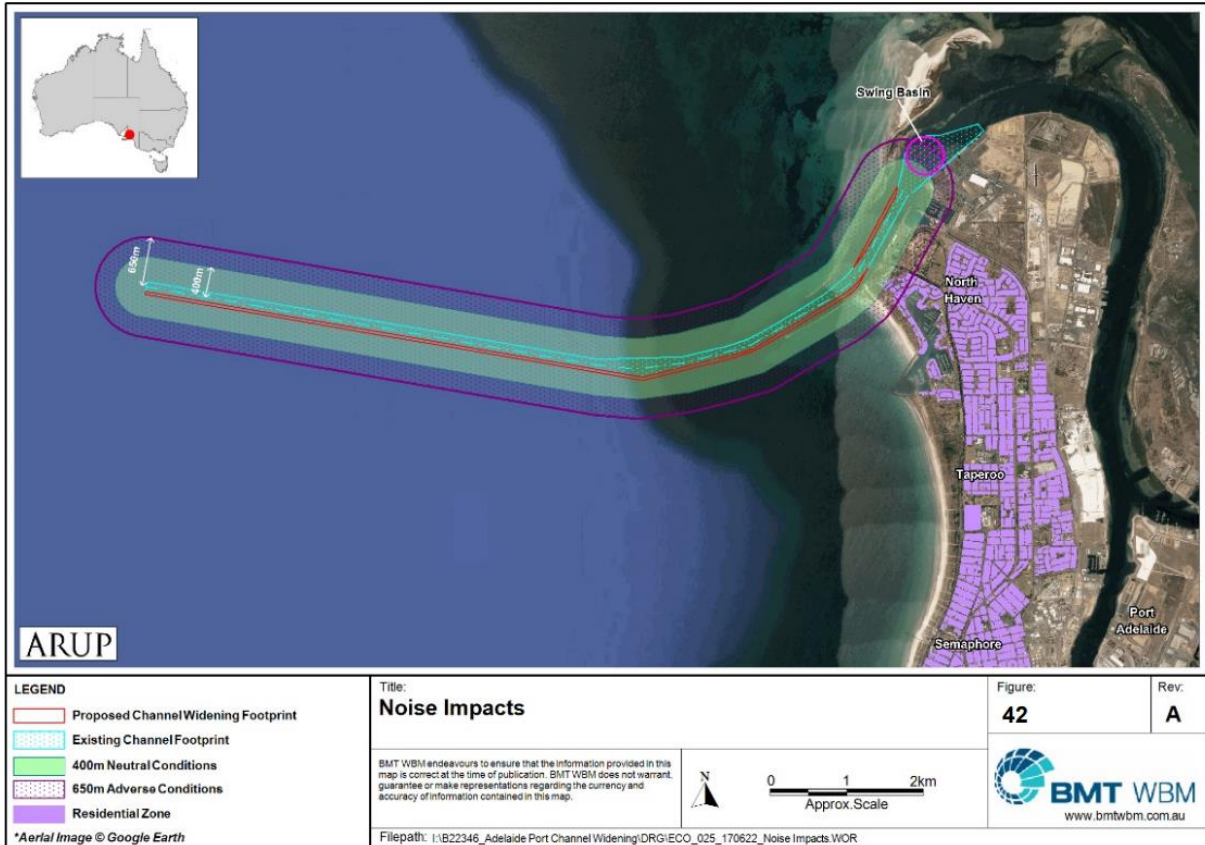
Prior to the commencement of works and as part of the EPA licencing process a Dredge Management Plan (DMP) will need to be prepared in collaboration with the EPA and other relevant agencies. The DMP will include methods for the monitoring and management of the proposed dredging works, including the real-time adaptive management of dredge plumes.

It should be noted that the timing of the proposed works is one of the most significant environmental factors associated with the dredging. Turbidity generated during the summer period would have a significantly greater impact on the marine environment and should be avoided where possible. The most ideal time to conduct dredging is during the autumn period.

### **7.3.1 Noise Emissions and Interface**

The noise impact assessment undertaken by Bassett in 2004 for the Outer Harbor Shipping Channel Deepening Project application and current supplementary research has been used to identify potential noise impacts. The advice provided identifies that the noise impacts are not expected to have a large impact on the sensitive noise receivers within the vicinity of the Outer Harbor Channel. The following was provided within the 'Outer Harbor Channel Widening Project DA Report' and details the potential sensitive receivers.





**Figure 8:** Noise impact zone

Dredging Works

The proposed dredging works are considered to have negligible noise impacts. The noise assessment within the DA Report concludes that sensitive land-based receptors and meet the *Environment Protection (Noise) Policy 2007* criteria. The timing of the dredging works within the vicinity of the port entrance / terminal during the day time is considered to reduce potential noise impacts on sensitive human noise receptors. Controls surrounding the dredging works and noise impacts have been conditioned and agreed upon by the applicant.

Pile Driving

Noise impacts on human receptors during pile driving activities are predicted to meet the EPA night-time criteria for distances greater than 1600 metres from such receivers. As a result of this, it has been conditioned that any piling works for navigational aids should only occur between 7am and 7pm. The applicant / dredging contractor are expected to abide by the *DPTI Underwater Piling Noise Guidelines (2001)* for all works. No piling works will be undertaken on a Sunday.

The EPA is satisfied that the proposed piling events and timing of works proposed are satisfactory and conditions to these effects have been included in the proposed recommendation.

### Under Water Noise

Sensitive under water noise receptors (including dolphins and cetaceans) are considered to be most affected by the dredging, especially the piling works for navigational aids. The noise impacts on sensitive underwater receptors are proposed to be managed through the adoption of the *DPTI underwater Piling Noise Guidelines (2012)*. Appropriate stop work procedures will be adopted and a trained marine mammal observer will be present at all times during dredging works.

The EPA is satisfied that the need for the applicant to conform to the *DPTI underwater Piling Noise Guidelines (2012)* is satisfactory. The applicant has agreed to implement the EPA recommendations and as a result they have been included in the proposed recommendation.

### **7.3.2 Refuelling / Waste Management**

No refuelling will occur while the dredging vessels are operational at sea. Refuelling will be undertaken utilising the existing port facilities in accordance with the standard port operating procedures and is considered appropriate to alleviate any potential environmental impact. Utilising the port facilities reduces the chance of contamination through refuelling spills and discharge. The applicant has noted that they will abide by the *Environment Protection (Water Quality) Policy 2015* and is considered satisfactory by the EPA.

### **7.3.3 Flora Impacts**

The planning policies seek to preserve and manage the environmentally important features of coastal areas, including stands of native vegetation, wildlife habitats and estuarine areas.

The proposed dredging works are expected to have a direct impact on the existing flora located within the Outer Harbor Channel, Dredge Material Placement Area and the greater Gulf St Vincent. A total of approximately 4 hectares of seagrass will be dredged as part of the project. According to the DA Report, the primary seagrass that is expected to be lost as a direct result of the dredging works is *Halophila australis*.

According to research undertaken by the EPA, the flora expected to be most significantly impacted by the dredging works are the *Posidonia* and *Amphibolis spp* seagrasses. These seagrasses are long lived species which, once lost, have limited ability to recolonise. The direct impact on seagrass as a result of the dredging works have been minimised as much as possible through the amendment of the dredging methodology. Conditions imposed by the EPA will also require the applicant to develop a Dredge Management Plan and an Environmental Monitoring Plan to reduce the impact of dredging on the seagrass and to provide an adequate monitoring plan.

The proposed dredging will impact on *Caulerpa taxifolia*, an introduced species of seagrass found extensively within the Outer Harbor shipping channel. The

dredging of the channel will distribute this invasive seagrass throughout the channel and the greater region of the Gulf St Vincent. The spread of this species is expected to have an impact on the surrounding locality and native seagrasses, including altered sediment chemistry, prevention of seagrass growth and rehabilitation, altered faunal communities and increased costs associated with clearing marine infrastructure (such as intake pipes). *Caulerpa taxifolia* has the capacity to grow from small fragments generated by the dredging process. The extent of potential impact can only be controlled through appropriate management practices. A condition has been attached to the approval which seeks the appropriate management of *Caulerpa taxifolia* to be included within the DMP.

#### **7.3.4 Fauna Impacts**

The applicant advises that due to the inquisitive nature of the Port River Dolphin, particularly within the Outer Harbor Channel, vessel strike from vessel movement is a pertinent risk. The EPA has sought that appropriately trained marine observers will be contracted at all times during the proposed works. This has been agreed to by the applicant and a condition has been provided by the EPA to this effect. The safe management of fauna – particularly the Port River Dolphin (and Southern Right Whale in the Gulf) will be addressed in detail by the Dredge Management Plan.

#### **7.3.5 Water Quality**

Turbidity and fine sediment spill within this project is unavoidable. Modelling surrounding the initial methodology estimated that approximately 433,000 tonnes of fine sediments would be discharged into nearshore waters from the dredge works (not including at the DMPA). Hydrodynamic modelling of the alternative methodology shows that the total quantity of fine sediment spill from the proposed channel dredging works was 265,000 tonnes, a 39% reduction compared to the initial proposal.

The original methodology proposed by Flinders Ports had significant water quality impacts. However, the revised methodology is expected to significantly reduce:

- The turbidity and sediment deposition.
- Size of the zones of predicted seagrass impact.

The revised methodology provides a significantly reduced environmental outcome, with the methodology representing a reasonable and practicable approach to minimising environmental harm. This is a significant improvement on the 2005 dredging project methodology and impacts, the same methodology which was initially going to be utilised for the current proposed dredging campaign.

The proposed timing of works is also a critical factor affecting the degree of marine impact associated with the development. As seagrass builds energy during the summer, it is considered by both the applicant and the relevant

agencies that a summer dredge would be significantly more detrimental than a winter and / or autumn dredge.

Significant concerns were raised during the public notification process with respect to the turbidity and sedimentation impacts likely to occur as a result of the proposed development. The representations raised concern with the potential for sedimentation to impact on fishing grounds and the surrounding beaches – citing the 2005 dredging campaign which closed surrounding beaches for a significant period of time.

Water quality impacts are a significant effect of the proposal and will be unavoidable. Planning policy seeks to retain the natural environment and native vegetation and through a coordinated approach with the EPA and CPB a comprehensive Dredge Management Plan and Environmental Management Plan (including a water quality monitoring program) the turbidity and sedimentation impacts can be minimised to a level acceptable to the responsible agencies.

### **7.3.6 Placement of Dredge Spoil**

The placement of dredge spoil in the Dredge Material Placement Area will have an environmental impact primarily, limited to the designated 7km x 5km area. It should be noted that previous 2005 dredging campaign used the same placement ground and placed approximately 2.7 million m<sup>3</sup> of material within the placement area. The proposed dredging will place approximately 1.55 million m<sup>3</sup> of material, which is significantly less than the previous channel deepening project.

The applicant has assessed the alternative DMPA locations and identified that the key constraints that limit the potential to utilise land-based DMPA sites include the ability to:

- Accommodate required volumes of material (physical land parcel size) – estimated at 1.55 million m<sup>3</sup> for this proposal.
- Meet environmental and social objectives (achieve environmental targets and minimise potential impact upon sensitive environmental receivers).
- Remain economically feasible (reasonable total capital cost comparatively to alternatives).
- Be able to be completed within project timeframes (including potential risks to the established priority for the Project to proceed).
- Meet all legislative requirements.

According to the applicant's assessment, a land based DMPA will add significant capital costs to the project as well as increase the likelihood of delays through the time required to establish land-based agreements and approvals. Further information pertaining to the justification of the Gulf St Vincent DMPA can be found within Appendix B of the DA Report.

The placement of material will cause the release of turbid plumes and the resuspension of sediments within the DMPA. Smothering of benthic fauna within the 7km x 5km area from the placement of material at the DMPA is also

expected to occur as a result of these works. Although this environment will be negatively affected, the re-use of the previous DMPA ensures that no further area of sea-bed is affected.

The placement of dredge spoil within DMPA was a primary issue raised by the public submissions. Significant concerns pertaining to the dredge spoil dumping and the impact that it has on the local fisheries and broader ecological environment were the key concerns raised via the public submissions. The applicant's response document identified the Gulf St Vincent placement zone as being the most appropriate location for placement of dredge material and spoil.

The placement zone, when compared to on-land placement, is not considered to be the most desirable environmental outcome. However, the modelling undertaken by the applicant and EPA indicate that the impacts will be manageable.

## **8. CONCLUSION**

The proposal provides a conundrum with respect to the relevant policies of the Development Plan. On the one hand the policies acknowledge and support the placement and development of port facilities recognising the significant economic and broader community benefits. On the other hand, the policies seek to protect the environmental features such as native vegetation and fauna.

The economic case for the widening of the Outer Harbor Channel is well documented, and accordingly a balance needs to be achieved between providing the essential infrastructure while minimising any potential negative environmental or other impacts. In this case, it is considered this has been achieved by three key features of the proposal:

- The dredging methodology has been changed by the applicant in consultation with the EPA to reduce the total quantity of fine sediment spill by 39%
- The re-use of the previous DMPA in the Gulf St Vincent ensures that no further area of sea-bed is affected by the proposal than has previously been disturbed
- The development and implementation of an Environment Monitoring Program and Dredge Management Plan before any dredging works commence.

The proposal aligns with the strategic objectives and goals of the State, particularly in an economic sense as it allows South Australia to remain competitive within the seaborne freight market. The widening of the swing basin and the channel will allow the port of Adelaide to remain as a modern, flexible and critical piece of infrastructure for the South Australian economy.

The proposed works will facilitate the ongoing existing land use of the area – a shipping channel for port access. The works themselves are a temporary activity that will only have a short-term impact on the area, particularly relating to the visual amenity and noise impacts.

The ability for the Outer Harbor Channel and Swing Basin to accommodate post-panamax vessels is imperative for the continued growth of South Australia's economy. Although there may be some ongoing environmental issues as a result of the dredging and

placement of materials, these can be effectively managed through the implementation of a Dredge Management Plan and Environmental Monitoring Program.

In consideration of all matters, the proposal is considered an appropriate outcome and it is recommended that the SCAP recommend the Minister for Planning grant Development Approval with conditions as proposed.

## **9. RECOMMENDATION**

It is recommended that the State Commission Assessment Panel:

- 1) RESOLVE that the proposed development is NOT seriously at variance with the policies in the Development Plan.
- 2) RESOLVE that the State Commission Assessment Panel is satisfied that the proposal generally accords with the related Objectives and Principles of Development Control of the Land Not Within a Council Area (Coastal Waters) and the Land Not Within a Council Area (Metropolitan) Development Plan.
- 3) RESOLVE to recommend Development Approval for the proposal by Flinders Ports Pty Ltd for capital dredging of the existing Outer Harbor channel and swing basin to widen the existing channel by approximately 40m (130m to 170m) for a distance of approximately 7km. The removal of 1.55 million m<sup>3</sup> of material to be placed off-shore at a designated placement area (7km x 5km) within the Gulf St Vincent at Outer Harbor Channel subject to the following conditions of consent.

## **PLANNING CONDITIONS**

1. That except where minor amendments may be required by other relevant Acts, or by conditions imposed by this application, the development shall be established in strict accordance with the details and following plans submitted in Development Application No 010/V048/17.
  - Outer Harbor Channel Widening Project Development Application Report, prepared by ARUP & BMT WBM, dated 7 July 2017.
  - Outer Harbor Channel Widening Project DA Report – Addendum #1 prepared, by ARUP, job no. 2532257-00, dated 13 September 2017.
  - Outer Harbor Channel Widening Project DA Report – Addendum #2 prepared, by ARUP, Revision A, job no. 253257-00, dated 6 November 2017.
  - Project Location, prepared by ARUP & BMT WBM, Revision A.
  - Dredge Material Placement Area location plan, prepared by ARUP & BMT WBM, Revision A.
2. The dredging methodology to be used must implement the 'no side casting of the Cutter Suction Dredger (CSD)' option presented in the Flinders Ports Pty Ltd Outer Harbor Channel Widening DA Report – Addendum #2 as prepared by ARUP Pty Ltd on 6 November 2017 or similar method that can achieve an equivalent (or better) environmental outcome.

3. Prior to the commencement of dredging works, an Environmental Monitoring Program (EMP) must be prepared (in consultation the Coast Protection Board) to the reasonable satisfaction of the EPA. The EMP must be designed to demonstrate and validate the zones of seagrass impact predicted in the hydrodynamic modelling documented in the Technical Memorandum prepared by BMT WBM on 23 October 2017 and incorporate, as a minimum, the monitoring of seagrass conditions using a 'before after control impact' (BACI) design measuring appropriate seagrass health metrics at an appropriate spatial and temporal frequency. The EMP must then be implemented.
4. Prior to the commencement of dredging works, a Dredge Management Plan (DMP) must be prepared and submitted to the reasonable satisfaction of the EPA which is designed to provide real time adaptive management of dredge plumes (incorporating 'alarm' and 'hold' triggers and management actions if triggers are exceeded) and incorporates, as a minimum, details about the following:
  - a. The use of continuous (10 minute interval or similar) turbidity and light logging (using calibrated remote and telemetered instruments with self-cleaning capability).
  - b. Water sampling (at an appropriate spatial and temporal frequency) to monitor total suspended solids (TSS) and chlorophyll to enable comprehensive seasonal calibration of relationships between other parameters.
  - c. The use of probes or similar to monitor dissolved oxygen, pH, salinity, temperature (at an appropriate spatial and temporal frequency);
  - d. Real time access to telemetered stations so that raw data can be obtained in an appropriate electronic format.
  - e. Implementation of additional mitigation measures for any dredging works undertaken between December to February.
  - f. Appropriate management of *Caulerpa taxifolia* within the Outer Harbor shipping channel to ensure that dredging near the Outer Harbor breakwater and swing basin (where *Caulerpa taxifolia* infestations are known to occur) would not spread fragments of *Caulerpa taxifolia* throughout the nearshore marine environment.
5. Dredging works conducted in the vicinity of the Outer Harbor port entrance/passenger terminal must be undertaken during the day-time and/or at times of favourable weather conditions with respect to human noise sensitive receivers (i.e. receivers upwind of dredging works).
6. Piling works within 1600 metres of noise sensitive receivers must only occur between 7am to 7pm Monday to Saturday.
7. Piling works must not be undertaken on a Sunday.
8. Any piling works must be undertaken in accordance with the Department of Planning, Transport and Infrastructure *Underwater Piling Guidelines (2012)*

## OBLIGATIONS PURSUANT TO THE DEVELOPMENT ACT 1993 AND DEVELOPMENT REGULATIONS 2008

- i. Pursuant to Section 49(14) of the *Development Act 1993* before any building work is undertaken, the building work is to be certified by a private certifier, or by some person determined by the Minister for the purposes of this provision, as complying with the provisions of the Building Rules (or the Building Rules as modified according to criteria prescribed by the Regulations).
- ii. The development must be substantially commenced within 12 months of the date of this Notification, unless this period has been extended by the Minister for Planning.
- iii. You are also advised that any act or work authorised or required by this Notification must be completed within 3 years of the date of the Notification unless this period is extended by Minister for Planning.
- iv. You will require a fresh consent before commencing or continuing the development if you are unable to satisfy these requirements.

## ADVISORY NOTES

- a. A current list of Registered Private Certifiers in South Australia is available here: <http://www.sa.gov.au/topics/property-and-land/land-and-property-development/engaging-building-industry-professionals/private-certifiers>
- b. At completion of the project all certified documents should be retained by the responsible agency for the life of the asset.
- c. For additional information relating to certification of government building projects, contact Infrastructure Delivery, Department of Planning, Transport and Infrastructure (telephone 8343 2511) Level 1, 77 Grenfell Street, Adelaide, 5000.
- d. Prior to the time period specified above, any request for an extension of time must be lodged with the Statutory Planning Branch, Department of Planning, Transport and Infrastructure, GPO Box 1815 Adelaide SA 5001.
- e. The applicant is reminded of its general environmental duty, as required by Section 25 of the *Environment Protection Act 1993*, to take all reasonable and practicable measures to ensure that the activities on the whole site, including during construction, do not pollute the environment in a way which causes or may cause environmental harm.
- f. An environmental authorisation in the form of a licence is required for the operation of this development. The applicant is required to contact the Environment Protection Authority before acting on this approval to ascertain licensing requirements. Information on applying for a licence (including licence application forms) can be accessed here: [http://www.epa.sa.gov.au/business\\_and\\_industry/applying\\_for\\_a\\_licence](http://www.epa.sa.gov.au/business_and_industry/applying_for_a_licence)



- g. EPA information sheets, guidelines documents, codes of practice, technical bulletins etc. can be accessed on the following website: <http://www.epa.sa.gov.au>
- h. Notwithstanding a detailed Dredge Management Plan, the Coast Protection Board advises there remains potential for widespread ecological impacts, both in the short and longer term, as a result of turbidity from the proposed dredging and disposal operations. Sensitive ecological systems in the wider region which may be impacted include the Section Bank, Barker Inlet – St Kilda Aquatic Reserve, St Kilda – Chapman Creek Aquatic Reserve and Torrens Island Conservation Park.
- i. The applicant is advised of the following requirements of the *Historic Shipwrecks Act 1981*, if works with the potential to impact on historic shipwreck remains are to proceed, a permit under the *Historic Shipwrecks Act 1981* will be required. Permit conditions may include a detailed recording of shipwreck remains, establishing procedures to prevent damage to the identified shipwreck remains, archaeological recovery/relocation of shipwreck remains to a location outside of the development footprint, and/or monitoring of works to determine if undetected remains have been encountered during the works.
- j. Seagrass is protected by the *Native Vegetation Act 1991* and permission must be received from the Native Vegetation Council before any clearance can occur. In this instance, it's likely that the clearance would be considered under the Native Vegetation Regulations in relation to the provision of Infrastructure. However, in order to approve clearance, it must be demonstrated that clearance has been minimised as much as practically possible and that there will be a Significant Environmental Benefit (SEB). In particular, the Native Vegetation Council will consider all the clearance that is reasonably likely to occur as a result of the development. This includes both direct clearance, such as the removal of vegetated sand through dredging and indirect impacts such as shading of seagrasses through the turbidity from the dredging. All of these impacts must be assessed and considered as part of an application to the Native Vegetation Council as well as the actions taken to avoid and minimise impacts. Such actions could include, but not limited to, dredging at an appropriate time when it will limit turbidity or the turbidity will have less impact on the seagrass, using equipment that will limit turbidity or undertaking other actions that will limit the effect of the turbidity.