

TO: THE PREMIER FOR CABINET TO NOTE

RE: MURRAY MOUTH SAND PUMPING PROJECT

1. PURPOSE

- 1.1. To inform Cabinet of progress to dredge a channel between the Coorong and the Southern Ocean to prevent further detrimental effects impacting on the Coorong from prolonged restriction of the Murray Mouth.

2. BACKGROUND

- 2.1. The Murray Mouth has become severely restricted due to the deposition of sand inside the Mouth. This sand enters the Mouth during periods of low flow and is not removed until outgoing flow is available to reduce the quantity of sand entering the Mouth. Deposited sand in this area has been accumulating over the past four summer seasons as the volume of water released from the barrages has been severely restricted during this time period.
- 2.2. The barrages have remained continuously closed for a period of 11 months. With drought conditions currently occurring within the Murray-Darling Basin, it is highly unlikely that water will be available for release from the barrages this year.
- 2.3. Recent bathymetric survey data indicates that the quantity of sand inside the Mouth is at the highest that it has ever been. Consequently, tidal flow into the Goolwa and Tauwichee channels has been greatly reduced and the waters of the Coorong have risen to unseasonal levels. The mud flats that provide feeding grounds for migratory waders are now permanently inundated.

3. DISCUSSION

- 3.1 If restrictions become even more severe, or the Mouth closes, expert advice indicates that water temperatures will increase within the Coorong and oxygen levels will drop. This will create a serious negative impact on all life in the Coorong ecosystem.
- 3.2 Independent coastal engineers have been engaged to develop a strategy to improve conditions for the Mouth and Coorong that is based on removing some of the sand that has accumulated in the Mouth. It involves dredging a channel to link the sea and the Coorong. The advice has been based on information generated from a morphological model that is being developed for the Mouth.
- 3.3 Channels have been designed with the following specific aims:
 - reduction of the elevated water levels in the Coorong to typical historical levels (at +0.2m AHD compared with the present level of approximately +0.5m AHD).
 - Increase in the tidal signature within the Tauwichee and Goolwa channels to those that occur when the Mouth is not severely congested.

- Acceptable dredged channel stability, as indicated by tidal flow versus channel cross sectional area considerations.
- 3.4 It is proposed to use a cutter suction dredge to create channels to remove the deposited material and pump it to the disposal sites on both Younghusband and Sir Richard Peninsulas, where it can be redistributed by tidal processes. The material is to be deposited at least one kilometre either side of the Mouth to limit the amount of material that would be redeposited inside the Mouth by the longshore drift. Refer to Attachment A for a diagram of the channels to be dredged.
 - 3.5 There is a risk that the dredged channels will not be sustainable in the long term and some form of maintenance sand removal may be required over time. However, the channel design and location is being done using the best available data and the best available science. WBM Oceanics will provide technical assessment throughout the project and will follow the principles of adaptive management to respond to both changing conditions and advice from the dredging contractors.
 - 3.6 Approximately 375 000 tonnes of sand will be moved over a period of six months.
 - 3.7 A wide range of relevant legislation and policies have been reviewed to determine the legal context for this project. Approval under the SA *Development Act* 1993 was not required for this project on the basis that it is an emergency action. However, this Act does stipulate that approval must be obtained from the South Australian Coast Protection Board for the placement of dredged sand upon a beach. Approval was obtained from the Board on 30 August 2002 to place sand on both Younghusband and Sir Richard Peninsulas.
 - 3.8 The dredging and dumping activity requires a licence under the *Environment Protection Act* 1993. The licence stipulates that an independent monitoring program be developed for the duration of the project with a focus upon water quality in the immediate vicinity of the project. Additionally, water level and salinity monitoring will be undertaken by the Department of Water, Land and Biodiversity Conservation whilst avifauna surveys will be coordinated by National Parks and Wildlife SA. The project area is within the boundaries of the Coorong and Lakes Alexandrina and Albert Ramsar site.
 - 3.9 Other legislative requirements include a permit under the *National Parks and Wildlife Act* 1972, a licence under the *Crown Lands Act* 1929, notification under the *Native Title Act* 1993 and a referral under the *Environment Protection and Biodiversity Conservation Act* 1999.
 - 3.10 It is anticipated that the Murray-Darling Basin Commission will, on 17 September 2002, authorise this project to proceed. Pursuant to the *Murray-Darling Basin Act* 1993, the Minister for the River Murray is empowered to implement these measures.

3.11 The Department of State Aboriginal Affairs and the Ngarrindjeri people have been consulted with regard to heritage issues in the designated area.

4. SUMMARY

4.1. That Cabinet note the progress with this project.

4.2. That Cabinet note that the Murray-Darling Basin Commission will make a decision regarding approval and funding of this project on 17 September 2002.



JOHN HILL
MINISTER FOR THE RIVER MURRAY

DATE: 12-9-02

Attachment A

Notes:

1. Design will ensure the site from established land/vegetation facility on HMAS land adjacent to the Goolwa Barrage.
2. The Goolwa Channel section is to be dredged to approx. 20m wide and RL -2.0m AHD, not to exceed RL -3.0m AHD depth.
3. The Tawitchere Channel section is to be dredged to approx. 20m wide and RL -2.0m AHD, not to exceed RL -3.0m AHD depth.
4. For highest mean tides, the dredging will commence at the upstream end of the Goolwa Channel section, working towards the mouth and sloped progressively through the downstream Tawitchere Channel section, to a total width of 20m and 20m in the Goolwa and Tawitchere channels respectively. The dredger will then work back through both channels to achieve the desired dimensions.
5. It is expected that deep side slope adjustment will occur by slumping of the dredged profile to a natural stable angle.
6. Areas of over dredging either mechanisms dredging is provided inside the limits to be constructed and ensure ongoing attention in that area, and will be designed to RL -4.0m.
7. All plant and equipment to be recovered and stored to avoid impermeable harm or disturbance to sensitive native and dune system environmental values including those adjacent to the beach.
8. Dredge discharged at Location A will be placed on the beach above High Water Mark (HWM) and distributed uniformly along approximately 500m of the beach.
9. Dredge discharged at Location B will be placed on high as practicable on the beach above HWM, but not to impinge on the foreshore vegetation, and be distributed along approximately 100 - 200m of the beach.
10. It is anticipated that up to 200,000m³ of sand may be discharged to Location B with the balance approx. 175,000m³ - (undetermined) to be discharged to Location A.
11. Ongoing maintenance of the buffer and other channel areas may involve up to 100,000m³ over the period to June 2003.
12. All dredging operations are to meet specified side effects at sensitive and sensitive offshore habitats.

Channel Dredge Coordinates

A	307288.5	6084012
B	307288.4	6083991
C	307472	6083885
D	307472	6083865
E	307454.1	6083757
F	307451.3	6083661
G	307732.3	6083807
H	307733.8	6083516
I	307733.8	6083516
J	307733.8	6083516
K	307748.8	6083527
L	307748.8	6083465
M	308002.8	6083516
N	308007.3	6083526
O	308007.3	6083526
P	308289.1	6083468
Q	308353.4	6083459
R	308410.5	6083350
S	308463.8	6083362
T	308467.3	6083376
U	308467.3	6083376
V	308895.6	6083194
W	308943.7	6082985
X	309214.1	6082868
Y	309331	6082871
Z	308748.5	6083987



Drawing
B13818-01
30/06/02

Channels to be Dredged

Figure 1

Proposed Channels to be Dredged

Notes:

1. Dredger will access the site from an established launching/landing facility on Hindmarsh Island adjacent to the Goolwa Barrage.
2. The Goolwa Channel section is to be dredged to approx. 40m wide and RL - 3.0m AHD, not to exceed RL -3.5m AHD depth.
3. The Tauwitchere Channel section is to be dredged to approx. 80m wide and RL -3.0m AHD, not to exceed RL -3.5m AHD depth.
4. For logistical access reasons, the dredging will commence at the upstream end of the Goolwa Channel section, working towards the mouth and thence progressively through the downstream Tauwitchere Channel section, to an initial width of 20m and 40m in the Goolwa and Tauwitchere channels respectively. The dredger will then work back through both channels to achieve final channel dimensions.
5. It is expected that some side slope adjustment will occur by slumping of the dredged profile to a natural stable angle.
6. A zone of over dredging and/or maintenance dredging is provided inside the mouth to accommodate and remove ongoing siltation in that zone, and will be dredged to RL - 4.0m.
7. All plant and equipment to be manoeuvred and located to avoid unacceptable harm or disturbance to sensitive marine and dune system environmental values including dune vegetation and shore bird habitats.
8. Sand discharged to Location A will be placed on the beach above High Water Mark (HWM) and distributed uniformly along approximately 500m of the beach.
9. Sand discharged to Location B will be placed as high as practicable on the beach above HWM, but not to impinge on the foredune vegetation, and be distributed along approximately 500 - 800m of the beach.
10. It is anticipated that up to 200,000m³ of sand maybe discharged to Location B with the balance (approx. 175,000m³ + maintenance) to be discharged to Location A.
11. Ongoing maintenance of the siltation buffer and other channel areas may involve up to 100,000m³ over the period to June 2003.
12. All dredging operations are to meet specified noise criteria at residences and sensitive avifauna habitats.