



SAND MANAGEMENT PLAN

at

TOWN BEACHES, BEACHPORT

for

WATTLE RANGE COUNCIL

Project No: 10078
Final 19 December 2013
(Exhibit B ERDC order 19 December 2013)

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1. INTRODUCTION & STATUTORY CONTEXT

This Plan is to be read in conjunction with the conditions of development plan consent imposed in respect of DA 010/U088/11.

Condition 4 provides that:

“The Council must implement at its cost the approved Sand Management Plan prepared by Magryn and Associates Pty Ltd and marked Exhibit “...”, “as amended from time to time in accordance with the procedure established under Part 17 of the Plan.”

By virtue of section 42 of the *Development Act, 1993*, conditions are binding on, and enforceable against, the person by whom the development is undertaken, any person who acquires the benefit of the decision and the owners and occupiers of the land on which the development is undertaken.

Beachport Town beaches generally face east onto Rivoli Bay. There is an existing boatramp at or adjacent to the beach known as beach 6. The boatramp is under the control and operated by the Wattle Range Council.

Incident ocean waves at the boatramp site are predominantly from the south west and push sand around Cape Martin, and around Glen Point. This sand arrives at the southern end of the town beaches. Please refer to the Attachments - Figure 1, which is an overview of the area.

The town beaches in front of Beachport have been heavily modified by human influence since the 1940's. Rock groynes have been added along the beach since this time, and they have been modified, added to and extended from time to time. These have had the effect of trapping sand on their up drift side, and realigning the beaches to more directly face the waves coming in across Rivoli Bay. The groynes have tended to realign the beaches to face south east, and the beaches are generally stepped at the rock groynes.

The beaches and groynes have been numbered to allow reference in documents, etc. These are:

Beach No	Location	Length (m)
1	adjacent the boat yard at Glen Point	100
2	north end of boat yard	85
3	opposite South Terrace	100
4	opposite French Street	120
5	between French & Blacketer Streets at the south end of the boat ramp	100
6	<i>opposite Blacketer Street. This beach has the boat ramp at its southern end</i>	<i>140</i>
7	<i>opposite Lagoon Road, at the Backpackers Hostel</i>	<i>100</i>
8	<i>at the Jetty, opposite Alfred Court</i>	<i>180</i>
9	<i>opposite the Caravan Park</i>	<i>160</i>
10	<i>opposite the Caravan Park</i>	<i>140</i>
11	<i>adjacent (south west of) the outlet to Lake George</i>	<i>210</i>

The rock groynes are numbered similarly, in that groyne 2 is between beaches 1 and 2, etc. Please refer to the Attachments - Figure 2, indicating the numbering system.

Groyne 5 was originally a rock groyne, but was extended in sand filled geotextile bags around the outside of a sand/sea grass area offshore of beaches 5 and 6. This rock/sand bag groyne now extends out 125m from the beach, and then north 240m. This groyne has trapped a large amount of sand on beach 4, south of groyne 5. The sand builds up at the north end of the beach and washes/blows over groyne 5.

The seagrass meadow inside groyne 5 is mainly *Zostera*, with some *Posidonia* along the offshore and northern ends of the bank.

Beach 5 is very protected, being inside the rock and geotextile/sand barrier extending from groyne 5, and shoreward of the shallow sand/sea grass area.

Groyne 6 is a rock groyne, extending out and north, providing protection to the boat ramp launching area. It is proposed to extend this groyne an additional 100m north, to provide additional protection to the boat ramp.

Beach 6 has a rock gabion sea wall constructed parallel with the beach.

From time to time the southern ends of beaches 7 and 8 are eroded resulting in very little sand. The southern end of beach 8 has a vertical timber wall exposed. The northern ends of these beaches have more sand present.

Beaches 9, 10 and 11 are generally fuller with sand and more even, but show erosion at times.

North of beach 11 and groyne 12, is the outlet to Lake George. The beach shows a significant step shoreward across the outlet, with erosion of the beach present east of the Lake George entrance.

Sand transport by wave action in front of the town (beaches 1 to 11) is from south to north, as seen by the realignment of the beaches, and steps in beach alignment across the groynes. No modeling has been undertaken to determine the average yearly volume of sand being transported along the beach system.

The buildup of groyne 5 at the shoreward end with rock (to enable the construction of the outer sand bag barrier) has meant that a large amount of sand has been trapped south of this groyne on beach 4. In particular, the northern end of beach 4 has built upwards in level and pushed seaward.

This sand has not been regularly managed or transported, and is now overflowing groyne 5 onto beach 5.

Sand from beach 4 washes past beach 5 and around the outer edge of groyne 6. This sand then finds its way into the boat ramp launching area, limiting the depth of water available for boat launching at low tide. Council has had to excavate/dredge out the toe of the boat ramp/boat launch areas several times per year in recent times.

From time to time, the beaches north of the boat ramp, in particular beaches 6, 7 and 8, are showing sand depletion and erosion. This is not an issue for beach 6, which is adjacent the boat fairway, but is for the southern end of beaches 7 and 8.

It is not expected that the proposal to extend groyne 6 northwards will affect the accumulation of sand on beaches 4 and 5.

2. HISTORY OF SAND MANAGEMENT IN BEACHPORT

Prior to the boat ramp being constructed in 2003, little or no sand management was undertaken in Beachport. Until this time, sand was transported naturally from south to north along the beaches, filling behind the groynes until bypassing around the ends. The beaches reached an equilibrium status, and realigned themselves to suit the wave climate, and length and position of the rock groynes.

When the boat ramp was constructed in 2003, groyne 6 was extended to the north to provide some protection from waves at the launching area.

Soon after this groyne 5 was extended in rock and sand bags to provide protection to the outer seaward submerged edge of the sand/sea grass bank from erosion. This was undertaken by Coast Protection Board (CPB).

Bypassing of sand around the end of groyne 5 was then halted, and sand started building up at the northern end of beach 4. When this beach was full, sand was blown or washed (by wave action during storms) over the top of the landward end of groyne 5, onto beach 5. In this way beach 5 began to fill.

When beach 5 was full, sand started bypassing groyne 6, and depositing in the boat launching area on beach 6. In part this is due to the original design not having been established which would have allowed water to flow between the groyne and the shore.

In recent years Council, has regularly removed sand from inside the boat launching area at beach 6 and from the seaward edge of groyne 6. Sand has generally been placed at the southern end of beach 7 or beach 8.

Records of volumes of sand relocated from time to time are incomplete.

There has not been a pro-active sand management program in Beachport since the boat ramp was built in 2003. All sand management since 2003 has been reactive in response to sedimentation of the boat ramp area. This area has been excavated as necessary to make the ramp usable. The problem of beaches 4 and 5 being overfull has not been directly addressed.

It is now proposed to establish a pro-active sand management program in association with the extension to the breakwater.

3. CLIMATE CHANGE AND PREDICTED SEA LEVELS RISE

Climate change has caused, and is predicted to cause further sea level rises. The currently accepted predications (by SA Government) are 0.3m to 2050, then an additional 0.7m to 2100. It is expected this sea level rise will cause erosion of beaches generally, with beach lines being pushed landward.

The extent of beach erosion is dependent on several factors including:

- Offshore beach slope
- Wave climate
- Onshore beach and dune topography and levels
- Extent of rock and other erosion resistant strata

A detailed assessment of the effect of rising sea levels along the length of the town beaches is beyond the scope of this Plan. However, as a general statement the sea level rise will tend to cause an increase in erosion of the town beaches and the back beach area south of Cape Martin.

4. OPERATIONAL REQUIREMENTS

To minimise the potential negative impacts on adjoining and nearby residences and business premises particularly from dust, odour and noise, the following requirements must be met during every operation to undertake maintenance or relocate sand:

- 1) Written notification is to be given to owners of land located on Beach Road between the caravan park and the commercial boatyard at least five (5) business days prior to any scheduled maintenance or sand management works being undertaken.
- 2) All machinery and equipment involved in the sand management activities must not be operated before 7:30am on any weekday, and not on weekends or public holidays. All works must conclude at or before 6pm on any given day. Work to ensure the boat ramp basin remains navigable may occur on weekends, provided that the number of such occurrences does not exceed 5 in any calendar year.
- 3) All temporary works areas and sand stockpiles within or adjacent to the boat ramp, beaches and associated coastal reserves must be appropriately managed via the erection of temporary fencing/bunting, clear signposting etc, to ensure that public access is restricted to the temporary works areas and sand stockpiles for the duration of the relevant work. The sand stockpiles and temporary works areas must be made safe at all times.
- 4) Whenever possible, sand deposited at the southern end of Beach 7 should be clean and damp (as opposed to dry or wet) so as to minimise the potential for nuisance caused by dust or odour to be experienced at the former Harbour Master's dwelling.
- 5) All contractors and council employees (including the Marine Facilities Advisory Committee) shall be made aware of and be provided with a copy of the conditions of consent and the Sand Management Plan.
- 6) Heavy vehicles and machinery must not be stored overnight or on weekends within 50m of the former Harbour Master's dwelling.

A licence must be obtained from the EPA to allow removal of sand from the bed of any marine waters. The grant of that licence may be subjected to additional conditions which must also be complied with. No license shall be sought so as to facilitate the activities beyond the hours nominated in 2) above.

5. SURVEY

It is important that historical records are kept in regard to the fullness and size of beaches either side of the development, namely, beaches 4, 5, 7, 8 and 9.

This historical record must be made at least every 12 months.

This survey should extend from above the vegetation line at the top of the beach to a depth of 1m below low water level, and should include enough information/cross-sections to fully define the beach. If cross-sections alone are used, these should be set up to be repeatable at the same locations.

All survey should relate to AHD and MGA 94, using permanent survey marks.

Survey data may be supplemented with any existing records held by the CPB, and any additional surveys it may perform from time to time.

Surveys should be conducted until such time as an adequate body of reliable data has been collected. This will be a minimum of 5 years after final completion of the breakwater extension.

6. SAND COLLECTION LOCATIONS

Sand should regularly be collected from beach 4 at least when the relevant trigger points are reached. The timing and frequency of sand bypassing will depend on seasonal variability and weather events.

Sand must also be collected from the boat ramp basin (beach 6) to keep the ramp navigable.

Appropriate sand management on Beach 4 will reduce sand build up in Beach 5. Based on annual surveys to date, regular sand removal is unlikely to be necessary on Beach 5. If sand does build up on beach 5, it may be removed as required, but only after the Council has consulted with the Department of Environment, Water and Natural Resources (DEWNR). Beach 5 will require careful management having regard to the beach monitoring pole on Beach 5 to ensure that it does not become depleted, causing erosion. Replenishment of sand in Beach 5 may ultimately be required.

Photographs shall be taken and retained on file recording the conditions/observations at the various locations.

7. TRIGGER POINTS FOR SAND CARTING BEACHES 4 & 5

Beach 4

As part of previous survey work, a monitoring pole has been installed at the north end of Beach 4. The pole consists of a circular stainless steel pole driven into the sand.

A 1 metre length of guide post has been attached to the pole. The bottom of the guide post is at AHD zero (0m AHD). The top of the guide post is +1m AHD. The pole and guide post are to be maintained.

Level zero is the level of sand on the beach in 2002 and this is considered a suitable level for the sand on Beach 4. The surveys show that the volume of sand on Beach 4 between 0m AHD and 1m AHD is 3,000 cubic metres.

The monitoring pole on Beach 4 should be inspected at least monthly. When the sand level reaches AHD +0.5 metres sand should be excavated to lower the sand level by 0.5 metre to the bottom of the marker. In any event if the sand level reaches AHD +1.0 metres sand must be excavated to lower the sand level by 1.0metres.

On occasion, due to extreme weather conditions, the sand level on beach 4 may exceed AHD +1.0 metres, in which case sand must be excavated as necessary to bring the level back to the bottom of the marker.



Existing Beach Monitoring Pole on Beach 4

Beach 5

A similar monitoring pole and guide post must be installed and maintained at the northern end of Beach 5. The location of the pole and guide post, and the relative trigger markings, are to be determined by the Council in consultation with the DEWNR, having regard to historical survey data and the desire to maintain an accessible swimming beach and to have good amenity value.

The monitoring pole on Beach 5 should be inspected at least monthly, having regard both to the risks of sand accretion and depletion. Once the monitoring pole has been installed, DEWNR and the Council will determine an appropriate trigger point to guide future sand management. It is expected that better management of beach 4 will reduce any need for sand removal from Beach 5. Because of the risk of erosion, sand will only be removed from Beach 5 after consultation with DEWNR.

8. SAND CLEARANCE BOAT RAMP BASIN AND MOUTH

The toe level of the ramp is documented at -1.5m AHD and Lowest Astronomical Tide (LAT) recorded as -0.58m AHD. When the ramp is clear of sand the minimum depth of water (at LAT) at the toe of the ramp is 0.92 metres. The design level for the toe of the rock breakwater within the basin is -3.0m AHD. The sand level within the basin should be maintained between -1.5m and -2.5m AHD.

Sand will be removed from the basin between the breakwater wall and the shore and from the toe of the ramp to the north end of the breakwater. This will be done as required to maintain the level of sand at or below RL -1.5m AHD. Sand will be removed using an excavator and or a long reach excavator working from the boatramp, the seawall on beach 6, the nib breakwater or from the breakwater wall. Sand will be removed from the seaward side of the breakwater wall if the sand builds up against the toe of the wall.

The trigger level for sand removal within the basin is -1.5 m AHD, i.e. the level of the toe of the boatramp.

When the trigger level is reached sand will be excavated to lower the sand level within the basin to -2.5m. The area of sand within the basin is approximately 3,000 m². The volume of sand to lower the level from -1.5m to -2.5 m AHD is approximately 3,000 cubic metres.

If necessary a dredge or excavator on a barge will be used to keep the entrance to the ramp basin navigable

Any work carried out under this clause can only take place as per the hours and protocols nominated in Part 4 hereof.

9. SAND CARTING VOLUMES

The volumes of sand to be carted each time will be dependent on the performance of the beaches over time, and may be adjusted to suit. The interval between carting will also vary, and this will mainly be dependent on storm activity (and hence amount of littoral sand drift) in the period before carting. Storm activity will result in erosion of sand from the beaches, and an increase in sand transport in the area.

Excessive sand removal from either Beach 4 or Beach 5 may cause erosion. It is important that each sand removal campaign be modest in volume. Under normal conditions, no more than 3,000 m³ of sand should be removed from Beach 4 per campaign. A period of time should then be allowed for the beach to adjust. A further sand removal campaign may then be required, having regard to the trigger point.

It is estimated that approximately 5,000 m³ of sand in total per year will need to be removed from Beach 4, but this will vary from year to year depending on seasonal conditions. It is likely that proper management of Beach 4 will mean that less sand will need to be removed from Beach 5, and that excavation from within the boat ramp basin will be less than has previously been the case.

10. SAND PLACEMENT LOCATIONS

It is recommended to place the sand onto beaches 7 and 8, preferably near the southern end of the beach. Some placement may also be undertaken on beach 9 or beaches further to the north, if desirable or required.

Placement areas should be:

- Well delineated
- Controlled to prevent public access during operations due to safety reasons
- Appropriate notification should be given to adjacent land owners, occupiers and businesses
- Leveled and spread as soon as reasonably possible after placement to ensure safe sand slopes for public access
- Warning signs to be erected after carting has been completed

11. SAND ASSESSMENT AT CARTING

Preference must be given to collection and carting of dry (including damp sand collected from the beach), rather than sand collected below the water line. Sand with high levels of free water present will:

- tend to flow, and will not form heaps
- be heavier to transport

- settle out, allowing salt water to drain during collection and transport
- be more expensive to cart than dry or moist sand
- likely be more odorous

Accordingly, any sand placed on any beach during the course of the sand management operations as approved must be substantially free of:

- 1.1 weed and vegetative matter including sea grass and kelp;
- 1.2 animal or fish matter;
- 1.3 rocks, gravel or stones.

Save for any sand excavated from below the water line and within the boat ramp basin to provide a navigable area for boats being launched, sand collected and carted will be wherever reasonably possible dry, although damp sand collected from the beach can be used.

The sand should be assessed by a council representative or the relevant contractor to ensure that it is clean and suitable for placement on a public beach in accordance with this consent and the Plan.

12. GENERAL ENVIRONMENTAL CONDITIONS

In addition to the above and any DAC, EPA and Coast Protection Board conditions, Council will at all times undertake the sand carting in a manner sensitive to general environmental considerations, and the surrounding town and residents to minimise the potential for nuisance.

This will include:

- Control and limitation of blown sand and dust
- Best practices in regard to trucking in a residential area
- Control of noise, in particular outside of normal working hours
- Controls on sand placement, and dispersion of sand

13. SAFETY REQUIREMENTS FOR SAND CARTING

The following should be undertaken during sand carting to ensure a safe operation.

- 1) The beach (or beaches) where the sand is collected shall be closed to the public during operations.
- 2) The trucks and other plant shall operate on approved routes only. Public roads shall be used where possible. One directional traffic shall be implemented where possible. The safety of all users of the community facilities is paramount.
- 3) Traffic control plan will be prepared and implemented.
Reversing of plant and trucks shall be avoided where possible. [The Council will give due consideration to using alternative technology that may avoid, or minimise, potential noise nuisance from reversing beepers, provided that such technology meets statutory workplace safety standards and is reasonably and economically available in the marketplace.]
- 4) Sand shall be spread and left in a safe condition at the end of each working day, (i.e. no steep slopes or overhangs). Sand piles will be monitored following sand carting to ensure that they remain in a safe condition.

14. METHODS OF SAND CARTING

Sand carting shall normally be undertaken by:

- Collection by front end loader or excavator
- Loaded into trucks

- Trucked and placed into new location
- Pushed out by loader if necessary

This is considered the most cost effective and feasible method.

Pumping may be considered if sand affecting the boatramp is out of reach of an excavator. Alternatively an excavator mounted on a barge may be an option.

Any alternative method(s) shall be operated in such a way so as to limit any nuisance to any member of the public who is or maybe in reasonable proximity to the activity and the requirements/conditions referred to in clause 12 shall apply to such alternative method(s).

15. SAND RELOCATION PLAN

A Sand Relocation Plan will be prepared each time prior to movement of sand. The plan will include:

- The locations where sand will be collected
- The volumes to be collected
- The locations where sand will be deposited
- The volumes to be deposited
- A Traffic Management Plan
- A Safety Plan
- The requirements for advising residents and business operators
- Any EPA/CPB conditions
- Requirements for photos pre and post sand movement
- Requirements for recording volumes and locations of sand collection and placement
- The dates and time of such movement
- The date when notice of the activity will be provided in accordance with 4 (1).

16. RECORDS

Records of sand management and carting should be kept. These include:

- All survey records of beaches 4, 5, 7, 8 and 9 and records of monthly monitoring of measurement poles on Beach 4 and 5.
- Photographic records taken pre and post each sand relocation at each location
- Records of the volume of sand moved, dates, where collected from and where placed at

These records will assist in planning of future works. These records will be maintained by the Council and made reasonably available to the public for inspection at no cost. If copies of documents are requested, the Council may impose reasonable copying charges. The Council may decline to provide copies where to do so would be unreasonably onerous or burdensome.

The Council will forward to DEWNR a copy of the above records by 31 December each year.

17. AMENDMENTS TO THIS SAND MANAGEMENT PLAN

Any amendments to this plan must be agreed to in writing by the DEWNR. Records of amendments must be recorded in the DOCUMENT HISTORY AND STATUS Table and will form part of the Records and therefore subject to clause 16.

Before making any material change to this Plan, the Council must follow the steps in its public consultation policy. Without necessarily limiting those steps, the Council must at least give notice of the proposed change to the persons to whom it is required to give notice under Part 4 of this Plan. The Council must have regard to any submission received during the public consultation process before deciding whether or not to vary this Plan.

18. EMERGENCIES

There may be situations in which emergency sand management work is required to protect safety or property. In such cases it may be impractical to comply with the hours and other requirements of this Plan. In those situations the Council may undertake works to the extent necessary. Where it does so, it should endeavor to obtain approval from the Coast Protection Board prior to undertaking the work. Where it is not possible or practicable to obtain prior approval, the Council must advise the Coast Protection Board as soon as practicable after completion of the work.

19. ACTION SHEET

BEACHPORT TOWN BEACHES SAND MANAGEMENT PLAN				
ACTION SHEET				
Action No.	SMP Reference	Description	Responsible Officer	Due Date
1	5. Survey	Survey of Beaches 4 and 5	DES Wattle Range Council / DEWNR	As required
2	7. Trigger Points for Sand Carting	Monitor sand levels on beaches 4 and 5, boat ramp and boat ramp channel monthly and complete written records.	DES Wattle Range Council	Monthly
3	7. Trigger Points for Sand Carting	When trigger point is reached on Beach 4 or 5, organise sand collection, transport and dumping	DES Wattle Range Council	Within a month of the Trigger Point
4	7. Trigger Points for Sand Carting	When trigger point is reached at the boat ramp or boat ramp channel, organise sand collection, transport and dumping	DES Wattle Range Council	Within 21 days of the Trigger Point

BEACHPORT TOWN BEACHES SAND MANAGEMENT PLAN

ACTION SHEET

Action No.	SMP Reference	Description	Responsible Officer	Due Date
5	4. Operational Requirements	Ensure that operational requirements are followed prior to and during sand relocation process	DES Wattle Range Council	Prior to, and during, sand relocation
6	6. Sand Collection Locations 8. Sand Carting Volumes 9. Sand Dumping Locations 10. Sand Assessment at Carting 15. Sand Relocation Plan	Prepare Sand Relocation Plan including <ul style="list-style-type: none"> • Determine collection sites and volumes • Determine dumping sites and volumes • Take and record pre work photos at collection sites and dump sites • Prepare safety plan and traffic control plan • Provide for notifications as required by SMP • Complete records 	DES Wattle Range Council	Prior to sand relocation

BEACHPORT TOWN BEACHES SAND MANAGEMENT PLAN

ACTION SHEET

Action No.	SMP Reference	Description	Responsible Officer	Due Date
7	6. Sand Collection Locations 8. Sand Carting Volumes 9. Sand Dumping Locations 10. Sand Assessment at Carting	Sand Relocation Process <ul style="list-style-type: none"> • Make notifications as per SMP • Implement safety plan and traffic control plan • Assess sand quality in accordance with SMP • Carry out sand relocation • Ensure collection sites and dump sites are left safe and that warning signs are installed as necessary • Record sand volumes for each collection site and dump site • Take and record post work photos at collection sites and dump sites Follow up inspection and removal of warning signs	DES Wattle Range Council	During sand relocation

20. ATTACHMENTS



FIGURE 1 – BEACHPORT AREA PHOTO



FIGURE 2 – TOWN BEACH AERIAL PHOTO

LEGEND
 B – DENOTES BEACH
 G – DENOTES GROYNE

DATE	PREPARED BY	DATE
12/2011	WATTLER	12/2011



MAGRYN

ENGINEERING CONSULTANTS
 267 BRIGHTON ROAD
 SCHEFFERTON PARK, SA 5084
 TELEPHONE: (08) 8259 8877
 www.magryn.com.au

MEMBERSHIP:
 + MINING
 + STRUCTURAL
 + COASTAL
 + CIVIL

CLIENT:
WATTLE RANGE COUNCIL

PROJECT:
SAND MANAGEMENT PLAN

PROJECT ADDRESS:
BEACHPORT

FIGURE:
FIGURE 2

CONTRACT NO.	DATE	SCALE
10076-F2	12/2011	A



FIGURE 3 – BEACHES 4 TO 8 AERIAL PHOTO