

Dredging Plan for proposed extension to the dredging area on the bed of the Shoalhaven River – North & West of Pig Island

a) Further information on the material to be dredged (grain size distribution and composition).

- Please see below tables from page 8 & 9 Martens Supplementary Environmental Details report (REF#P1103077JR04V02) this is the material and particle size to be dredged in the application area.

2.3 Sub-Surface Conditions

Extruded vibracores were capped and secured so that they could be logged and sampled at the Martens Laboratory. Material properties at each vibracore site are summarised in Table 1 with detailed logs provided in Attachment G.

Broadly, sampling revealed almost uniform medium to coarse grained sand deposits with some fine gravels and minor silt content.

Table 1: Summary of soil and rock layers at the site

	VC201 ¹	VC204 ¹	VC206 ¹
SAND (VERY LOOSE)	0.0 – 2.1	0.0 – 2.0	0.0 – 1.5
SANDY SILTY	-	-	1.5 – 2.0
SAND (VERY LOOSE TO LOOSE)	2.1 -3.0	2.0 – 5.0	2.0 – 4.0
SAND (LOOSE)	3.0 – 5.3	5.0 – 6.8	4.0 – 7.25
EW – COFFEE ROCK ²	>5.30	>6.80	>7.25

2.5 Particle Size

Particle size analysis was performed on 12 soil samples by a NATA approved laboratory. Results are summarised in Table 2 with full laboratory data provided in Attachment I. Data indicates that the resource is well graded high quality sand product with minimal sand inclusions. We expect that higher silt levels may occur in the upper 0.5m bgl (As noted in a previous report P1103077JR01V03, February 2012). There is some evidence that interbedded silt banding will occur (e.g. VC 203 @ 1.5 – 2.0 mbgl). However, this is negligible.

Table 2: Lab results for particle size distribution.

Sample ID	Sample Depth Range (m)	Material Description	Fines (%)
3077/VC201	0.5-1.0	Sand: trace organic matter	1
3077/VC201	1.5-2.0	Sand	1
3077/VC201	2.5 -3.0	Sand	2
3077/VC202	0.5-1.0	Sand: with silt and organic matter	7
3077/VC202	1.5-2.0	Sand: trace silt some organic matter	4
3077/VC202	2.5-3.0	Sand: with some organic matter	3
3077/VC202	3.5-4.0	Sand	3
3077/VC202	4.5-5.0	Sand	4
3077/VC203	0.5-1.0	Sand	2
3077/VC203	1.5-2.0	Sandy clay/silt: black with organic	70
3077/VC203	2.5-3.0	Sand: with some organic matter	4
3077/VC203	3.5-4.0	Sand: with some organic matter	13

b) Method, timing, and shape of the dredged area upon completion.

- The dredging method is cutter suction. There is a cutter head with a suction pipe mounted behind. We use a spud to hold the back of the dredge in place which provides the centre of the arc, we then use slew ropes connected to anchors on either side of the dredge.
- The timing of the dredging is dependant on the extraction rate/ sale rate for the year. Our current extraction license allows for TSS to dredge a maximum of 100,000 tons of material a year. This should provide a resource to the local area for approximately 30 years.
- Upon completion the dredged area will fill up with a combination of fine sand, organic material and silt, as a result of floods within the river system. The areas previously dredged to 6m are now 2m deep at low tide.

c) Setbacks and slopes to seagrasses and banks of the island.

- Setbacks to all vegetation including but not limited to Seagrass, Salt Marsh, Mangroves, Swamp Oaks is 25m this also includes a 25m setback from the mean high-water mark of Pig Island which has been surveyed by JPS.
- The 25m figure has been provided by Martens after detailed modelling undertaken in previous reports. Please find more information in Martens Supplementary Environmental Details report (REF#P1103077JR04V02) Page 14 section 4.

d) Clarification of the monitoring and response regime to be implemented during dredging operations, to monitor for and respond to potential environmental and other impacts.

- Ongoing monitoring of the area adjacent to the approved dredge area will be undertaken. This includes:
 - o Bird surveys designed in consultation with the NSW Office of Environment and Heritage. The surveys must be undertaken by a suitably qualified environmental consultant and are to be designed to detect shorebird presence and habitat use including migratory species during October-March. Surveys are to include monitoring of threatened bird species known to occur in the locality.
 - o An assessment of threats to the shorebird habitats and Coastal Saltmarsh and recommendations for protective measures; and
 - o Monitoring of river bank erosion (both the western and southern bank of Pig/Buraga Island and the southern bank of the Shoal haven River).
- If any potential human remains/aboriginal skeletal material are discovered in, on or under the land, the operator must:
 - o a) Not further harm these remains;
 - o b) Immediately cease all work at the particular location;
 - o c) Secure the area so as to avoid further harm to the remains;
 - o d) Notify the local police and the Office of Environment and Heritage Environment (OEH) Line on 131 555 as soon as practicable and provide any available details of the remains and their location; and
 - o e) Not recommence any work at the particular location unless authorised in writing by OEH.
- If Aboriginal objects or sites of an unanticipated nature are identified at any time during the life of the project:
 - o Cease all activity in the vicinity immediately.

- Leave the material in place and protect it from harm or damage (e.g. by covering it with waterproof sheeting and fencing the area off with highly visible para-webbing).
 - Take note of the details of the material (e.g. stone artefact) and its location.
 - Contact Site Supervisor and notify them of the find.
 - Shoalhaven Sands Pty Ltd should consult a qualified and experienced person to confirm the nature of the find.
- If the find is determined to be an Aboriginal site or object:
 - Notify the OEH Environment Line on 131 555
 - Notify the Nowra Local Aboriginal Land Council on (02) 4423 3163
 - Await further advice before continuing work in the area

e) Clarification as to whether the original DA from 2012 sought approval for the larger area that is now the subject of this DA. Reasons why/why not this wasn't previously pursued.

- The original DA RA12/1001 did seek approval for the entire area. During investigations to determine the ambulatory boundaries of the Island it was discovered that the MHWL had not been surveyed since the early 1800s and that these boundaries had been altered by floods which changed the course of the river. Once the known boundary (circa 1800s) was plotted with respect to the physical banks of the island a large discrepancy was found which showed that a substantial amount of the proposed dredge area was inside the island boundaries. As such crown land could not approve the entire application area so a small portion was given so that Terara sand could remain in business whilst the boundaries were ratified. Please see below approximate staging drawing provided to council in RA12/1001. The cadastral boundaries have now been rectified and stage 2 is the subject of this DA.

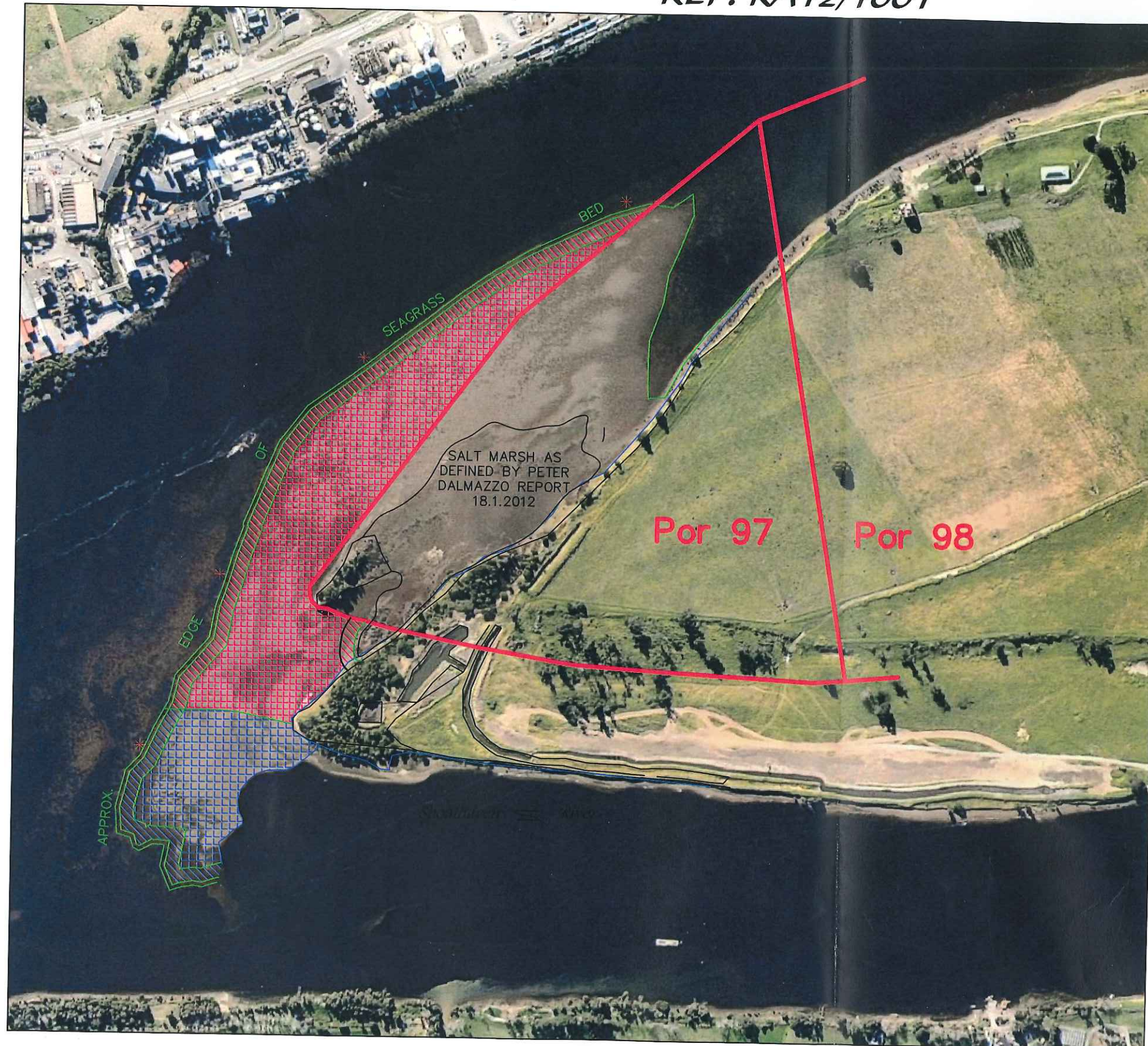
Dredging plan prepared by

Mitchell McCormac

Quarry Supervisor Terara Sand

PROPOSED STAGING OF DEVELOPMENT APPLICATION

REF. RA12/1001



NOTE:

This plan was prepared for Shoalhaven Sand as an indicative design to accompany a development application to Shoalhaven City Council.

The information shown on this plan is not suitable for any other purpose.

The areas on this plan are subject to field survey and also to the requirements of Council and any other authority which may have requirements under any relevant legislation.

In particular, no reliance should be placed on the information on this plan for any financial dealings involving the land.

Allen, Price and Associates therefore disclaims any liability for any loss or damage whatsoever or howsoever incurred, arising from any party using or relying upon this plan for any purpose other than as a document prepared for the sole purpose of accompanying an application to council for development and which may be subject to alteration for reasons beyond the control of Allen, Price and Associates.

This note is an integral part of this plan.



SKETCH PLAN SHOWING STAGING OF PROPOSED EXTENSION OF SAND DREDGING OVER BED OF THE SHOALHAVEN RIVER NEAR PIG ISLAND FOR SHOALHAVEN SAND PTY LTD (RA12/1001)

NOTES

RATIO 1: 5000 DATE 22.10.2012 REF: 21519-12 (AT A3 SIZE) REV. 2

REVISION	BY	DATE
1	EAP	13.11.12
2	EAP	19.11.12

allen, price & associates
land and development consultants
75 plunkett street, nowra, nsw. 2541
phone: (02) 4421 6544 fax: (02) 4422 1821
consultants@allenprice.com.au www.allenprice.com.au