

30 September 2022

The General Manager
Shoalhaven City Council
PO Box 42
NOWRA NSW 2541

Attention Justin Lamerton
Senior Development Planner
City Services

REGIONAL APPLICATION – RA21/1000

**Terara Road TERARA – Lots 1 - 4 DP 11874790 and Bed of Shoalhaven River below
MHWM**

Further to council's RFI, dated 19th April 2022, we have had further specialist reports prepared and others updated to respond to it. In accordance with the items identified in the RFI our response is as follows:

1. Air Quality

The construction of the Stock Refuge Mounds will be the subject of a separate development application. The application at hand seeks planning approval for the mounds to be constructed utilising the fines from the sand dredging process.

The future development application, seeking construction certificate for the mounds, will outline the engineering requirements, vegetation cover, method of construction and mitigation methods to stabilise them.

2. Aboriginal Heritage and Cultural Impacts

A Native Title Claim under the Native Title Act 1993 (Comm) has been made by the South Coast People, Tribunal file #NC2017/003, and accepted 31/1/2018. The claim is yet to be determined. The claim is far reaching and includes the majority of the NSW South Coast east of the dividing range, south of Liverpool and down to the East Boyd State Forest. A copy of the sketch plan attached to the claim is shown below.



The current arrangement between Terara Sands and Lands Department NSW is that royalties are paid to Lands and collected on behalf of the NSW government. If Native Title (NT) is established royalty monies paid and collected will be distributed to the successful claimants.

Consultations with the Nowra Local Aboriginal Lands Council was undertaken in accordance with the document *Aboriginal cultural heritage consultation requirements for proponents 2010, Part 6 NP&WA 1974*. The NLALC is the incorporated body for this part of the NSW South Coast and its council has the requisite knowledge of the area as to Aboriginal Heritage.

The due diligence report and accompanying management plan prepared by Biosis notes that no Aboriginal Heritage items were found in its investigations on the island and sand banks. The plan of management outlines the procedures to be adhered to if any Aboriginal Heritage items are found. This plan of management forms part of DA12/1001.

Accompanying the application is a letter from the NLALC which was presented to the council and signed by the CEO on behalf of the council. The NLALC states that it has no objections to the dredging however if a successful claim is made and determined it wants to share in the royalties.

3. Bait Collection

An Assessment of Recreational Fishing and Bait Collection has been prepared by Peter Dalmazzo, Environmental Consultant, on the 17th January 2019 and is attached to this response. Also attached is a letter from Ed Lammerink, a professional fisher, who has fished the Shoalhaven River for some 32 years. Mr Lammerink's letter in his own hand has been attached as well as a typed version for ease of reading.

Both the Dalmazzo report and Lammerink letter address the issue of bait collecting from the proposed dredge area.

4. Amended Survey Plans

The survey plan prepared by Johnson Procter has been revised by removing the underlying image of the island which was not at scale with the survey coordinates.

The revised plan also reflects the most current report prepared by Peter Dalmazzo, Environmental Consultant, (Flora and Fauna Additional Information for Extension to Sand Extraction Area Shoalhaven River Estuary Terara referenced REV.1, 27th September 2022) with respect to the river and island vegetation.

The original submitted plan, showing the underlying image of the island was difficult to scale as the island's banks varied from the field survey. This plan was provided to give an indication via a visual of where the island's banks and vegetation were with respect to the proposed extension area. Unfortunately scaling errors were encountered. The revised plan removing the underlying image makes the location of the proposed expansion area easy to define by survey and co-ordinates.

A copy of the revised plan is attached.

5. Acid Sulphate Soils

The Acid Sulphate Soils Management Plan used to treat the fines which result from the processing of the sediment as approved in RA12/1001, will be maintained.

In situ the fines within the sediment are not acid sulphate however once extracted, stored and exposed to atmosphere become acid sulphate.

6. Water Quality

To provide further information on the issues raised on Water Quality, Martens has prepared 2 reports, Estuarine and Surface Water Monitoring Plan reference P1806743JR05V02 and Supplementary Water Quality Modelling referenced P2106743JC04V01.

The Estuarine and Surface Water Monitoring Plan (ESWMP) has been prepared in satisfaction of the Secretary's Environmental Assessment Requirements (SEARs) issued by the NSW Department of Planning and Environment (NSW DPE) (22 June 2018) for the proposed expansion of the existing sand extraction area in the vicinity of Burruga Island (Pig Island), Terara, NSW (the Site).

The Attached ESWMP updates the version released on 1 May 2018 in response to Shoalhaven City Council's (SCC) request for information (the RFI) (19 April 2022, ref RA21/1000).

The Supplementary Water Quality Modelling, referenced P2106743JC04V01, concludes that:

In response to concerns raised by the EPA in respect of potential discovery of lenses and paucity of data, we have further considered a range of potentially higher pollutant concentrations based on available literature. These higher pollutant concentrations were applied to the water quality modelling for a range of sensitivity analysis scenarios to investigate potential impacts on the receiving environment.

Findings were:

1. Significant changes in water chemistry are not expected, even under the higher concentrations assumed as part of the sensitivity analysis, with maximum increases over background concentrations are typically < 0.2 %. These are negligible and well within the natural variability of the daily concentrations in the Shoalhaven River.
2. Whilst it is possible that higher fines content lenses may be encountered during the

dredging operations, these in our view would be temporary and based on the modelling, are not expected to lead to any adverse immediate or long-term water quality outcomes.

Martens Supplementary Water Quality Modelling, referenced P2106743JC04V01, provides:

1. A summary of existing baseline water quality data.
2. An interim water quality monitoring plan for validating water quality modelling.
3. An operational water quality monitoring plan to be applied during extraction.

A copy of the Water Modelling prepared by Martens is attached.

It should be noted that the location of the future stock refuge mounds, as shown on the original application, have been relocated to avoid the Swamp Oaks as per the attached Flora and Fauna Additional Information Report prepared by Dalmazzo. The relocated refuge stock mounds have been remodeled by Martens and are 3% less in volume than the original submitted mounds.

7. Sediment and Waste

This application, in part, seeks planning approval for the stock refuge mounds and advice was sought from Planning NSW in 2020 for this purpose. The mounds are subsidiary to the main purpose of the development application at hand, the expansion of the dredge area on the bed of the Shoalhaven River.

Attached to our EIS is a response from Planning NSW, dated 3 March 2020 from Caleb Ferry, which confirmed that the inclusion of the stock refuge mounds does not change the intent of the application. In short, the SEARs did not alter from those supplied by the department at the start of the investigations. The addition of the stock refuge mounds, for planning approval, did not require specific investigations other than modelling within the flood plain.

As noted in point 1 above, the construction of the proposed stock refuge mounds will be subject to a separate development application.

The Martens report, Proposed Livestock Refuge Mounds dated 5th August 2020 outlined the following modelling and conclusions to be considered at Construction Certificate stage:

1. Flood behaviour after introduction of the proposed livestock refuge mounds will not impact on the existing conditions. martens Page 3 Our Ref: P1404280JC01V02 Prepared: 5 August 2020.
2. The proposed development has acceptable flood impacts.
3. The proposed development is compatible with the existing floodplain environment.
4. The proposed Livestock Flood Refuge Mounds are to be constructed and design in accordance with the Department of Primary Industries guidelines.

We recommend:

1. Detailed earthworks plans should be prepared at CC stage to confirm livestock refuge

mound design.

2. An updated flood model should simulate the detailed earthworks CC stage.

8. Flooding Afflux to Coastal Villages

Martens has investigated and prepared a response to the issues raised by council and prepared a further report titled supplementary Flood Assessment (P1806743JC03V01) in response to Shoalhaven City Council request for further information. A copy of the assessment is attached.

The Assessment indicates that:

1. The proposed increased sand extraction area and livestock fill mounds are not likely to adversely affect local flood conditions.
2. The proposed development has acceptable offsite impacts in all modelled flood events.
3. Whilst modelling indicates some localised flow velocity increases in extreme flood events, these are primarily contained within the channel and are not aligned with significant channel bank flow velocity increases. Modelling therefore supports the proposition that bank shear stresses will not be materially increased such that bank erosion will be initiated.
4. The flood specific matters raised in Council's RFI letter have been appropriately addressed by this response.

9. Bank Erosion / Scouring Impacts upon Levee Bank

In responding to this issue we asked Martens to provide supporting information to its previous report submitted with the EIS. Martens provided a detailed letter, attached to this submission (P1806743JC05V01), and note that it should be read in conjunction with the information previously provided in the MA report River Stability Assessment: Proposed Expansion of Sand Extraction Operations at Terara Shoalhaven Sand, Pig Island, Terara, NSW (March 2019, Ref: P1806743JR01V01), hereafter referred to as the MA River Stability Report.

The Report makes the following summary statements relating to the effects of the proposed dredge footprint on flow paths within Shoalhaven River and the possibility of exacerbated bank erosion:

- The modelled 10% AEP flood event was adopted as a surrogate for the effective discharge to evaluate the effects of the proposed dredge footprint on flow paths within Shoalhaven River and the possibility of exacerbated bank erosion. The effective discharge was selected for this evaluation, as the flood event is of moderate magnitude, and of sufficient size and frequency, that it typically performs the most geomorphic work within a river system.
- Review of water velocity afflux measurements derived from condition 10% AEP flood event modelling indicated:
 - No bank flow velocity induced bank erosion is anticipated to be caused by the proposal along the southern or northern Shoalhaven River banks.

- No flow velocity induced bank erosion is anticipated to be caused by the proposal along the southern bank of Pig Island.

- The northern half of the northern side of Pig Island may experience flow velocity increases of up to 0.25-0.50 m/s in a 10-year ARI event. These increases are likely to be lower in more frequent events closer to the effective discharge range of Q2-Q5. Whilst these increases are not considered to be significant in terms of inducing increased bank instability, we recommend that during the operational period that a bank stability monitoring program be implemented for the northern bank of Pig Island. Where increased rates of erosion are observed and can be attributed to the extraction operations, bank remedial and revegetation works should be implemented.

10. Clarification of Buffer to Marine Vegetation

The updated Peter Dalmazzo report, Flora and Fauna Additional Information for Extension to Sand Extraction Area Shoalhaven River Estuary Terara, referenced Rev.1, 27th September 2022 (Dalmazzo Report) addresses this issue. The report uses the most current aerial mapping to delineate vegetation located on the island and within the river system around Pig Island.

Part 2 of the Dalmazzo Report addresses the updated vegetation map and clarification of buffer.

The updated vegetation map has been remapped by interpreting the latest good quality aerial photography by nearmap (24 June 2022, 14 February 2022, 15 December 2021 and 17 August 2021).

The report states that ALL buffer distances to vegetation is to be 25 metres.

11. Impacts to Marine Vegetation

The Dalmazzo Report addresses this issue by outlining measure for avoidance of Impacts as:

1. All patches of Coastal Saltmarsh EEC and Swamp Oak Floodplain Forest EEC are to be excluded from the extraction area.
2. A 25 metre buffer is to be retained undisturbed between the extraction area and adjacent native vegetation so that Coastal Saltmarsh EEC and Swamp Oak Floodplain Forest EEC are not impacted by slumping or scouring. As shown on Figure 3, where the boundary of the original application area is within 25m of the currently mapped EECs or other protected marine vegetation, the boundary of the proposed extraction area has been relocated to be at least 25m away from the vegetation.
3. No workers or machinery are to enter the areas of Coastal Saltmarsh EEC and Swamp Oak Floodplain Forest EEC on the intertidal flat or the small islets near the western tip of Pig Island.
4. Pipelines from the dredge to processing sites are to be kept out of Coastal Saltmarsh EEC and Swamp Oak Floodplain Forest EEC. Gaps between patches of Swamp Oaks are to be utilised when pipelines cross the shoreline of the island.
4. Refuge mounds are to be relocated to avoid Swamp Oaks.

If the above measures are implemented, it is considered that there are not likely to be any direct or indirect impacts on Coastal Saltmarsh EEC or Swamp Oak Floodplain Forest EEC.

12. Impacts to Threatened Species of Migratory Shorebird

13. Biodiversity Offsets Schemes

The Dalmazzo Report also addresses both of these issues under section 3, Impacts to Threatened Species of Migratory Shorebirds & Entry to Biodiversity Offsets Scheme.

The Dalmazzo's report states that:

Provided the environmental safeguards for impact avoidance set out in Sections 4.1 and 4.2 above and the mitigation measures in the environmental impact statement (Panucci, 2021) are employed, the proposed development is not considered likely to significantly affect threatened species or their habitats and therefore entry to the biodiversity offsets scheme is not triggered and a biodiversity development assessment report is not required

14. Dredging Plan

Mitchell McCormac, the Quarry Supervisor, has prepared a dredging plan addressing the concerns raised by council in the RFI. A copy of the plan is attached to this submission. The plan is based on the technical information supplied by the consultants, via their reports, as well as the procedures used in processing the sediment won to produce coarse river sand.

15. Amended EIS

The Geomorphological aspects of the proposed extension to the dredge area have been addressed by Fluvial Systems Pty Ltd in its report titled, Terara Shoalhaven Sand – Application for Extension of Dredge Area Supplementary Information – Geomorphology, dated September 2022. A copy of the Fluvial report is attached.

The Fluvial Report addresses in detail the specific issues raised in council's RFI under section 15, dated 19 April 2022.

The report makes a number of comments and conclusions including that, to date, the available literature has not produced data linking historical dredging and sand extraction activities with erosion of the Shoalhaven River, or instability of the beaches to the north of the river mouth.

We forward the above information and attach reports to address council's request for further information so that our DA RA21/1000 can be determined.

Should further information or clarification be required please call me on 0417 144 409.

Yours faithfully,

A handwritten signature in black ink, appearing to be 'EA Panucci', with a stylized flourish at the end.

EA Panucci.

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