DOC18/900871-20 ; EF14/502

Department of Planning and Environment
GPO Box 39
SYDNEY NSW 2001

Attention: Ms Melissa Anderson

By email: melissa.anderson@planning.nsw.gov.au

1 February 2019

Dear Ms Anderson

Bobs Farm Sand Mine Project (SSD 6395)
Request for Comments and Recommended Conditions of Approval

I refer to your email to the Environment Protection Authority (EPA) received 22 November 2018 inviting the EPA to submit comments including any advice on recommended conditions of approval in relation to the Bobs Farm Sand Mine Project (SSD 6395) application. The Project seeks to:

- establish and operate a quarry to extract and process sand at a rate of 750,000 tonnes per annum, over a period of 15 years, from a total resource of 10 million tonnes;
- extract sand using both dry mining excavation and wet mining dredging methods;
- construct sand processing and transport infrastructure;
- transport sand products off-site via public roads; and
- rehabilitate the site to include approximately 12 hectares of forest and a 24.8 hectare artificial lake.

The EPA cannot recommend conditions for the proposed development in its current form because of the significant risk to water quality posed by sand extraction below the maximum predicted groundwater level.

The proposed development seeks approval to mine sand beneath the existing water table. This is inconsistent with all new sand mines in the area which have been required to only mine down to 0.7 metres of known groundwater height, with the finished ground level being reinstated to 1.0 metres above the maximum known ground water height.

Extraction below the maximum predicted groundwater level risks oxidation of the extensive Potential Acid Sulfate Soils (PASS) and other minerals identified in the soil horizons within the coastal zones. PASS generates acidic soil and water impacts including liberation of metals.

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The proposal in its current form, would also cause considerable community concern with regard to noise from trucks. The proposal includes 180 to 200 truck movements into the premises and 180 to 200 truck movements exiting the premises in a 10-hour day. This equates to around one truck movement every three to five minutes. These trucks would be within eight metres of a school. A further 24 residential and commercial premises are identified as noise sensitive receivers within 650 metres of the site, which is likely to be of significant concern for neighbouring residences.

If the proponent chooses to address these issues by modifying the proposal, it would need to address a number of significant deficiencies in the environmental assessment before the EPA could properly assess the impacts of the revised proposal. These are outlined in Attachment A of this letter.

If you require any further information regarding this matter please contact Genevieve Lorang on (02) 4908 6809.

Yours Sincerely

MITCHELL BENNETT
Head Strategic Operations Unit – Hunter Region
Environment Protection Authority

Encl: Attachment A- further information required

Attachment A: Further information required

Any environmental assessment of a revised proposal should include the following information:

Groundwater, Hydrology and Potential Acid Sulphate Soils

- 'A *detailed consideration of maintenance of an adequate buffer between all excavations and the highest predicted groundwater table'* as required by the revised SEAR's issued in April 2017 and the superseded Director General's Requirements from 2014.

- A revised hydrogeological cross section (figure 7.12 of the EIS) to allow for easy conceptual analysis of site location. A more concise and clearer cross section would help in determining groundwater behaviour across the project site.

- Details of where or how the proponent will gain the additional entitlement sought to capture the amount of predicted water taken over the life of the mine. WaterNSW data indicates that the project property currently holds a water access licence with a 40 ML share component.

- Updated baseline groundwater data, and its interpretation. Data collection should continue and more recent sampling investigations and analysis should be provided. The data provided is limited to sampling events taken from 2013 to 2015. As the baseline data is limited to a 2-year timeframe without any continuality or updating, distinguishing the natural variance in the water table is restricted to dry climate rainfall events. Despite the report of onsite data loggers, no new groundwater level or quality data was provided in the EIS submission.

- Revised groundwater flow assessment. Groundwater characteristics of the project site were determined from the sampling results mentioned above. A crude schematic diagram was provided to determine the direction of flow across the site, which reveals a hydraulic gradient with groundwater flows to the north of the proposed quarry. It was determined that the hydraulic gradient, using the standing water levels from all five on-site monitoring bores, was in fact westerly to south westerly (see above below). Further groundwater sampling events and updates from the on-site loggers would be beneficial in determining the groundwater characteristics of the project site.

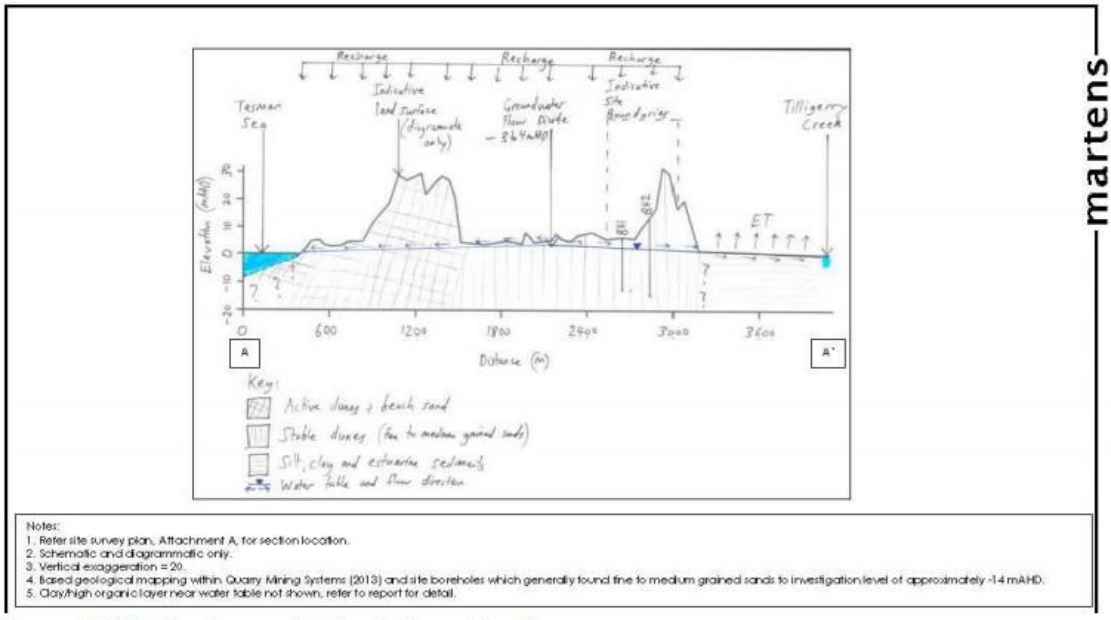

Figure 7.12 - Hydrogeological Cross Section

- Further detail regarding the offset bore planned to be installed. Of the existing network of five monitoring bores currently around the project site, four are to be removed to accommodate the mine workings.

- The locations of each new bore should be shown on a map and advice should be provided about when the new bores are to be drilled, or if an overlap between the installation and removal of bores will exist to ensure the development of each new bore, and its provided data, is adequate to capture and maintain suitable groundwater information. Given some of these bores are on the boundary of the project site, ongoing monitoring is needed to determine and capture boundary characteristics (flows in or out of the proposed quarry).

- A more comprehensive Acid Sulphate Soil Management Plan is needed. The existing plan is limited to dosing lime to supress the accumulation of acid and the oxidation of potential acid forming material. Given the hydraulic conductivity and shallow water table, the proposed management options are not adequate to efficiently mitigate the offsite dispersal of acid sulphate soils (ASS).

- Assessment of an adequate buffer between the quarry and the local water table, which has been applied to other quarries in the area, prevents the formation of ASS across the regional landscape.

- Sufficient information regarding the extent and management of Potential Acid Sulphate Soil (PASS) or ASS for the proposed dredging operation as outlined below:

    - Clear definition of the ASS/PASS sediment stockpile area (Sealed Sump etc) and provide detailed management measures including, PASS stockpile and leachate management; mechanism of lime dosing/mixing; amount/mass of lime annually and over the project life' and lime storage and contingency measures.
    - Definition of the volumes of PASS over the entire dredge footprint through further boreholes, sampling and testing.
    - Results of further testing above groundwater level around BH3 to validate the identified sample result.
    - Full details of treatment mechanics and volumes of liquid wastes should be provided. The current PASS management plan (Preliminary geotechnical and Acid Sufate Soil assessment-June 2014 (Annex G)) and (Martens- Stormwater Management Plan- June 2015) C6.1.6.4, page 151 is inadequate as it identifies a storage sump/basin for lime treatment only.
    - A significant groundwater monitoring plan including a metal assay with dedicated monitoring of the dredge pond.
    - Justification of the treatment trigger value of <pH4, given that current groundwater data shows pH at 5.2 - 6 across the site.

Noise

- Sufficient data in accordance with the Noise Policy for Industry 2017(NPfI). The current assessment provides less than a week of valid data for some monitoring locations.
- A cumulative assessment that includes noise predictions from all site equipment in each prediction scenario. The assessment divides the site into east and west noise impact scenarios. The proponent needs to provide.
- Further information on whether the proposed four metre barriers surrounding the on-site road(s) for the purpose of meeting the noise reduction goals, are feasible and reasonable. Barriers are proposed to mitigate noise from up to 150 truck movements per day. The proponent should provide
- Discussion of the role of the Voluntary Land Acquisition and Mitigation Policy (VLAMP) and the potential for property acquisition under this policy, which is advised due to the close proximity of some receivers.

- Clarification of the hours of operation is required. The proponent states in the NIA that night time operations will not occur due to the excessive predicted noise impacts in this period. However, the EIS identifies the operating hours as being from 06:00 to 18:00. The EPA notes that the period between 06:00 and 07:00hrs is classified in the NPfI as being within the night-time period.

Air Emissions

- Clarification of the discrepancy of higher production capacities with lower emission estimates.

  Section 7.3 of the Air Quality Impact Assessment (AQIA) provides annual estimated emissions for TSP, PM_{10} and $PM_{2.5}$. The annual estimated emissions are presented for various activities and for each production stage.

  There is a significant difference between the total emissions for each particulate fraction for the scenario considering the production capacity of 450,000 tpa and 700,000 tpa. That is lower emissions are estimated for a higher production capacity. The EPA understands that both dry mining and wet mining methods are proposed, hence the difference in estimated emissions could be an artefact of the proposed mining methods. Table 2-1 of the AQIA advises that the maximum annual throughput proposed for dry mining operations would be 450,000 tonnes (Production Stage 2), whilst the maximum annual throughput proposed for wet mining would be 700,000 tonnes.

  Additionally, it is noted that higher emissions for the sources grouped into '*mining activities*' are reported for an annual production capacity of 250,000 tonnes (Production Stage 1) as compared with the annual production capacity of 450,000 tonnes (Production Stage 2). Table 2-1 of the AQIA advises that dry mining methods are proposed for these two production stages. Hence it is unclear how higher emissions are estimated for mining activities with a lower production capacity, when it is understood that dry mining methods would be conducted for both these stages.

  The assessment does not include a detailed emission inventory to further understand the differences in emission estimates between production stages. In order to provide transparent information the assessment should be revised to include a more detailed emission inventory for the assessed production stages including the emission factors, activity rates used for emission estimation, and control efficiencies applied for each source. This is discussed in further in Issue 2.

- A more detailed emission inventory that includes but is not limited to the emission factors, emission factor parameters, activity data inputs and control efficiencies applied for each emission source.

  Appendix C includes some information on the approach for estimating emissions, however, it does not contain sufficient details. For example, but not limited to, Appendix C does not include:

  - The actual emission factors used for each emission source including justification
  - All parameters utilised for deriving emission factors and estimating emissions
  - Activity data utilised for estimating emissions such as vehicle, such as vehicle kilometres travelled (VKT) for haul road emissions, and exposed area for wind erosion, and
  - Activity rates applied to each source. Extraction rates are listed in C.2, however it is unclear which rate has been utilised for each source.

- Clarification of why there are no haul road emissions for stage 3, however are included for other production stages. Where haul road emissions would occur for Stage 3, they should be assessed.

  The annual emission estimates presented in Section 7.3 of the AQIA tabulate emissions from various activities. Emission estimates from haul truck movements present a significant contribution to total emissions for each particulate fraction. However, Production Stage 3, which is the scenario at the maximum proposed capacity does not include any emissions from haul truck movements. It is unclear why haul truck movements are not included for this scenario.

- Maximum predicted incremental $PM_{2.5}$ (24 hour) ground level concentrations.

  Section 8.3 of the AQIA provides the predicted maximum cumulative $PM_{2.5}$ (24 hour) ground level concentration. It is noted that no exceedances of the $PM_{2.5}$ (24 hour) impact assessment criteria are predicted.

  The assessment should include maximum cumulative 24-hour concentrations, with annotations on the contribution from the proposal to the maximum predictions. In conjunction the assessment should provide the maximum predicted incremental predictions from the proposal with annotations on the background concentrations at the time those concentrations are predicted.