



DOC19/336792-8; EF13/3101: SSD8795

Department of Planning and Environment  
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Attention: Anthony Barnes

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6 June 2019

Dear Mr Barnes

**Karuah South Quarry Project – SSD 8795**  
**Further Information required - Environment Protection Authority**

I refer to your email to the Environment Protection Authority (EPA) received 16 April 2019, seeking the EPA's recommended conditions of consent in relation to the proposed Karuah South Quarry. The site is located approximately 4 kilometres northeast of Karuah, in the Mid-Coast local government area.

The EPA has reviewed *Environmental Impact Statement for the Karuah South Quarry State Significant Development 17\_8795* prepared by R.W. Corkery & Co. Pty. Limited, dated March 2019 (the EIS) provided with the application, and has determined that it has insufficient information to allow the EPA to properly assess the application.

Whilst the EIS addresses many of the potential impacts, the EPA requires the information listed below prior to deciding whether it can recommend conditions of approval.

**Air Quality**

The Air Quality Impact Assessment (AQIA) predicts that minimal impacts to the surrounding receivers are likely to occur as a result of the Project. The assessment has generally been undertaken in accordance with the Approve Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods). However, to be confident that the impacts of the proposed development have been accurately assessed, the EPA requires that the AQIA be revised to include the following additional information:

- **PM<sub>10</sub> dispersion modelling of pollution control strategies to achieve compliance with the impact assessment criterion** - This is necessary because the AQIA predicts that the 24-hour PM<sub>10</sub> impact criterion of 50 µg/m<sup>3</sup> will be exceeded at sensitive receptor 16, with marginal compliance predicted at receptors 20 and 23. Section 7.7 of the Approved Methods note that if the EPA's impact assessment criteria are exceeded, the dispersion modelling must be revised to include various strategies until compliance is achieved.
- **Revised dispersion modelling to include production scenarios for the Karuah Quarry and Karuah East Quarry that reflect their maximum operating capacities** - The approach used to account for cumulative emission and background concentrations does not reflect

reasonable worst-case scenarios in that the production scenarios for Karuah Quarry and Karuah East Quarry do not reflect the maximum operating capacity of the quarries. Revised modelling to address the issues identified with the cumulative emissions and background concentrations is likely to increase predicted exceedances of the 24-hour average PM<sub>10</sub> impact assessment criterion.

- **Additional information to support the use of the equivalence background dataset** - The approach used in determining background PM<sub>10</sub> concentrations is inconsistent with the guidance provided in the Approved Methods and results in a less conservative assessment of the total impact of the proposal.

Detail of the required information is provided in **Attachment A**.

## Water Quality

The Surface Water Assessment (SWA) predicts minimal impacts to the receiving environment as a result of the Project. However, to be confident that the impacts of the proposed development have been accurately assessed, the EPA requires that the SWA be revised to include the following additional information:

- **More information on the erosion and sediment controls to be used during the site establishment and construction phase.**
- **Confirmation that the proponent can consistently meet proposed water quality limits during establishment and quarry operations** - Section 4.1.5 of the SWA notes that any water discharged would have a turbidity of 50 NTU or less. The EPA intends to regulate this quarry based on total suspended solids (TSS). In recognition of the sensitivity of the receiving environment, which includes the Port Stephens Great Lakes Marine Park and oyster leases, and to ensure consistency with nearby similar licences, the EPA intends to impose the following limits on any discharges from the premises:
  - TSS - 40 mg/L;
  - oil and grease - 5 mg/L or “none visible”; and
  - pH within the range of 6.5 to 8.5.

Whilst measuring turbidity prior to discharge is a sound approach, reliance on this value is discouraged until a TSS / turbidity correlation, specific to this site, is established and agreed by the EPA via an Environment Protection Licence.

- **Detail of the effluent management system** - Section 4.1.6 of the SWA states that a biocycle septic system will be used to manage sewage and effluent on-site. The following information is required:
  - location of the proposed irrigation area;
  - an assessment of soil depth and type to ensure the irrigation area will be suitable for effluent application;
  - clarification of whether surface or sub-surface irrigation is proposed;
  - the size of the irrigation area proposed;
  - information to demonstrate that this area will be sufficient, based on loadings and local climatic conditions; and
  - controls that will be in place to prevent discharges to surface water bodies on and off the site.

## Noise and Vibration

The Noise and Vibration Impact Assessment (NVIA) predicts minimal impacts to the surrounding receivers are likely to occur as a result of the Project. However, to be confident that the impacts of the proposed development have been accurately assessed, the EPA requires the following additional information:

- **Explanation of why acoustic monitoring was not undertaken at R22 given that it is potentially the most impacted residence** - Section 3.2 of the NVIA notes that to quantify the existing acoustic environment at the potentially most impacted receiver, a noise logger was deployed at location R21. The NVIA states that this location was the most representative of the most impacted residence (R22).
- **Explanation of why property "R2" was used in the traffic noise assessment in Section 3.6 of the NVIA.** Property "R22" would normally be used in the traffic noise assessment because it is the closest residence to the Pacific Highway.
- **Confirmation that the 4-metre high acoustic barrier/fence is incorporated into the modelling of Scenario 1 and Scenario 3.** Figures 4 and 6 show that it is present during these scenarios.

## Premises Boundary

- **Clarification of interaction between the proposed development and Karuah Quarry.** The Project boundary appears to overlap with the existing Karuah Quarry to the north. The EIS notes that Karuah Quarry, operated by Hunter Quarries Pty Ltd, operates under a licence agreement on Lot 11 DP 1024564. If the Project is approved, the occupier of Karuah South Quarry will be required to hold an Environment Protection Licence. The EPA cannot issue licences with overlapping premises boundaries. There must only be one occupier of a licensed premises. Therefore, the proponent needs to clarify where the boundary between the two quarries will lie.

If you have any questions about this matter, please contact Genevieve Lorang on (02) 4908 6869 or by email to [hunter.region@epa.nsw.gov.au](mailto:hunter.region@epa.nsw.gov.au)

Yours sincerely

**MITCHELL BENNETT**  
**Head Strategic Operations Unit - Hunter**  
**Environment Protection Authority**

Encl: **ATTACHMENT A** – Further Information Required for Air Quality Impact Assessment\_Karuah South Quarry Project – SSD 8795

## ATTACHMENT A – FURTHER INFORMATION REQUIRED FOR AIR QUALITY IMPACT ASSESSMENT

### Predicted exceedance of 24-hour Average PM<sub>10</sub> (Stage 1C)

Presented in Table 38 are dispersion model predictions of maximum cumulative 24-hour average PM<sub>10</sub> concentrations. It is predicted that the 24-hour impact criterion of 50 µg/m<sup>3</sup> will be exceeded at sensitive receptor 16 (50.8 µg/m<sup>3</sup>). Additionally, only marginal compliance is also predicted at receptors 23 (48.2 µg/m<sup>3</sup>) and 20 (46 µg/m<sup>3</sup>).

Section 7.7 of the Approved Methods states that if the EPA's impact assessment criteria are exceeded, the dispersion modelling must be revised to include various pollution control strategies until compliance is achieved.

Notwithstanding the predicted exceedance, EPA note that the predicted incremental contribution of PM<sub>10</sub> emissions from the site are significant. For example:

- During Stage 1C the maximum incremental 24-hour average PM<sub>10</sub> concentrations are predicted to be up to 23.1 µg/m<sup>3</sup> at receptor 22, which represents ~47 % of the criterion.
- During Stage 2B the maximum incremental 24-hour average PM<sub>10</sub> concentrations are predicted to be up to 21.6 µg/m<sup>3</sup> at receptor 22, which represents ~44 % of the relevant criterion.

The EPA requires the AQIA to be revised to include various pollution control strategies until dispersion modelling predicts compliance with the impact assessment criterion.

### Potential for Cumulative Impacts

The Site is located in an area of existing quarrying activity, with two Hunter Quarries Pty Ltd operations located to the north and north-west (Karuah Quarry) and north-east and east (Karuah East Quarry), with a proposed quarry (Karuah Red Quarry) to the west of Karuah Quarry. In addition, the Site is located adjacent to the Pacific Highway, a major transport corridor.

#### Karuah Quarry

The Karuah Quarry is approved to produce and despatch up to 500,000 tonnes of hard rock quarry products per year (tpa). Annual Environmental Management Reports (AEMRs) prepared by Hunter Quarries between 2002 and 2015 have reported annual production levels of between 122,181 tonnes and 494,117 tonnes of quarry products. As such, a production rate of 400,000 tpa extraction, for the Karuah Quarry has been adopted for the cumulative impact assessment.

The EPA recognises that Karuah Quarry has operated at a maximum throughput of about 400,000 tpa in the past. However, it is feasible that the Karuah Quarry may operate up to its licensed extraction rate in the future. As such, to represent a reasonable worst-case scenario, a production rate for the Karuah Quarry of 500,000 tpa would have been more appropriate for the following modelling scenarios: site establishment and construction; and Stage 1C.

#### Karuah East Quarry

Karuah East Quarry Pty Ltd was granted development consent by the Planning Assessment Commission on 17 June 2014 to develop and operate the Karuah East Quarry (Project Approval PA 09\_0175) and to produce up to 1.5 Mt of hard rock quarry products per year for a period of 20 years.

For the purposes of the cumulative impact assessments for the Project, the production operations at Karuah East have been divided into two scenarios Stages 1 and 3. Annual production rates for Stages 1 and 3 adopted in the assessment are 500,000 tpa and 1.5 Mtpa respectively. Stage 1 is assumed

for modelling scenarios: site establishment and Stage 1C and Stage 3 was assumed for modelling scenario Stage 2B, as shown in the following table;

Summary of Modelling Scenarios			
Operational Stage at Karuah South Quarry	Karuah Quarry	Karuah East Quarry	Karuah Red Quarry
Site Establishment and Construction Figure 10	Stage A 400,000 tpa	Stage 1 500,000 tpa	Not operational
Stage 1C 300,000 tpa Max: 3,000 t-day <sup>1</sup> Figure 11	Stage A 400,000 tpa	Stage 1 500,000 tpa	Not operational
Stage 2B 600,000 tpa Max: 3,000 t-day Figure 12	No extraction Processing of Karuah Red 100,000 tpa	Stage 3 1.5 Mtpa	Extraction 100,000 tpa

The EPA could not reconcile the adopted production rates for Stage 1 of the Karuah East Quarry (500,000 tpa) with the Project Approval for the Karuah East Quarry. The only limit of production capacity included in the Project Approval is in Schedule 2 (6), which states:

*'The Proponent shall not extract, process and transport more than 1.5 million tonnes of quarry products from the site in any calendar year.'*

As such, to represent a reasonable worst case scenario, the EPA considers a production rate for the Karuah East Quarry of 1.5 Mtpa would have been more appropriate for all modelling scenarios.

The EPA requires the AQIA to be revised to include production scenarios for the Karuah Quarry and Karuah East Quarry that reflect the maximum operating capacity of the quarries as follows:

- a) Karuah Quarry extract, process and transport 500,000 tonnes of hard rock quarry products per year; and
- b) Karuah East Quarry extract, process and transport 1.5 Mt of hard rock quarry products per year.

### Method used to determine background

A statistical relationship between PM<sub>10</sub> measurements from the Karuah East Quarry (collected using 1-in-6 day ambient air monitoring) to the longer-term continuous monitoring data collected at the NSW Office of Environment and Heritage (OEH) Wallsend air quality monitoring station (AQMS) was used to derive an equivalence background dataset for the Site for the assessment year (2012).

The EPA recognise that significant effort has been spent to justify the background data adopted in the assessment. Additionally, the EPA recognises that an OEH operated AQMS is not located in close proximity to the Project site and those OEH stations located closest to the Site are not influenced by the same mix of sources as at Karuah.

The approach used in the assessment is inconsistent with the guidance provided in the Approved Methods for Modelling and results in a less conservative assessment of the total impact of the proposal.

Further information should be provided to support the use of the equivalence background dataset. This information needs to establish the uncertainty introduced into the assessment as a result of the use of the equivalence background dataset. As a minimum, this should include identifying a monitoring site which would be influenced by a similar mix of sources as Karuah and comparing the equivalence background dataset to continuous monitoring data from the identified site. The results of the AQIA using the identified site as background concentration should also be presented.

The EPA requires additional information to support the use of the equivalence background dataset. This is to include, but not be limited to:

- Identifying a monitoring site which would be influenced by a similar mix of sources as Karuah;
- Comparing the equivalence background dataset to continuous monitoring data from the identified site; and
- Updated AQIA results using the identified site as background concentration.