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Attention: Melissa Anderson

22 June 2021

EPA Advice on Response to Submissions Report

Dear Ms Anderson

Thank you for the request for advice from Public Authority Consultation (SSD-7293), requesting the review by the NSW Environment Protection Authority (EPA) of the Submissions Report for the proposed Sancrox Quarry Expansion Project (Application SSD-7293) at Sancrox Rd, Wauchope.

The EPA has reviewed the following documents:

- *Response to Submissions Report Sancrox Quarry Expansion (SSD 7293) Sancrox Road, Sancrox*, dated 20 May 2021 (the RtS)
- *Air Quality Assessment Report, Sancrox Quarry Expansion Project, prepared by ERM Consulting Pty Ltd., dated December 2020*. (The revised AQIA).
- *Air Quality and Greenhouse Gas Impact Assessment, Sancrox Quarry Expansion Project, prepared by ERM Consulting Pty Ltd., dated October 2019*. (The AQIA).
- *Noise and Vibration Impact Assessment, Sancrox Quarry Expansion Project, prepared by ERM Consulting Pty Ltd., dated 27 November 2021* (The revised NVIA).

The Environmental Impact Statement (EIS) for the proposal was publicly exhibited between 3 October 2019 until 11 December 2019. Following the submissions stage, the proposal has been revised and updated. The following Table shows the initial proposal and corresponding amendments:

	Original Exhibited Project	Proposed Amendments
Extraction rate	750,000 tpa	530,000 tpa
Construction and operation of a batching Plant	20,000 tpa	20,000 tpa
Construction and operation of a recycling facility	20,000 tpa	20,000 tpa
Construction and operation of an asphalt Plant	50,000 tpa	50,000 tpa
Hours of Operation	• Quarry: 24 hours a day, 7 days a week; • Truck movement and equipment loading: 24 hours a day, 7 days a week; • Blasting operations from 8am – 5pm Monday to Friday.	• 5am until 10pm with evening hours (6pm – 10pm) to be added in response to market demand as required. • 10pm to 5am 20 nights per year to meet the occasional customer demand.
Stages required	5	4

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Hanson currently holds Environment Protection Licence 5289 for the scheduled activities of extractive activities and crushing, grinding and separating for up to 500,000 tonnes per annum.

The EPA has reviewed the RtS and notes it has not addressed the EPA's submission on this project from 6 December 2019.

The EPA has the following additional comments and recommendations:

Matters to be addressed prior to determination:

Impacts to Air Quality

The EPA has reviewed the revised AQIA submitted for the proposal. The EPA notes that revisions to the project have been made, and the predicted impacts have been reduced. However, based on the review the EPA considers that the issues previously raised have been partially addressed and further information is required to ensure robust and transparent assessment of potential impacts. Detailed comments can be found within **Attachment A**, with an overall summary presented below:

1. Additional exceedances of the EPA's 24-hr PM₁₀ criterion are predicted at receptor R13.

Given that it is proposed that operations may be undertaken for 24 hours during 20 days a year, a 'Maximum Day (24 hours)' emissions scenario was prepared to show the potential impacts of the 24-hour on-site operations at the maximum daily proposed throughput. Results for this emissions scenario, show that there are 3 predicted additional exceedances of the EPA's 24-hr PM₁₀ criterion at receptor R13.

Further, and whilst it is acknowledged that no additional exceedances are predicted for the 'Maximum day (5am - 10pm)' emissions scenario, additional information is required to allow for a robust and transparent review of the assumptions made and input data used to estimate emissions for this emissions scenario.

2. Despite the elevated emission reduction factors used to estimate the emissions inventories, modelling results predict large project-only concentrations.

Modelling results exhibited in the revised AQIA predict large increments at various sensitive receptors. The largest predicted 24-hr PM₁₀ concentration for the 'Maximum Day (24 hours)' emissions scenario is 28.5 µg/m³.

It should be noted that failing to achieve in practice the high proposed emission reduction levels that are incorporated in the emissions inventory calculation will increase the risk of adverse air quality impacts due to the proposed operations.

3. The revised AQIA does not present cumulative impacts at future receptors located adjacent to the project boundary.

The area located to the east and adjacent to the project boundary is an approved industrial area. According to the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (The Approved Methods), potential impacts due to the proposal must be assessed at the nearest existing or likely future sensitive receptors.

Noise Impacts

The EPA has previously provided advice on this development in which several deficiencies in the Noise Impact Assessment were identified, that did not allow for noise conditions to be recommended for the licence at that time.

The proponent has responded and has addressed most of the contentions from the previous report, however there are still some outstanding items that require further clarification or information before the EPA can provide draft conditions. These are summarised below.

4. Background Noise

The EPA previously noted that the measured background noise levels are close to the existing noise levels from the operating quarry. This is likely to affect the measured background noise levels at the measurement locations, which then changes the Project Specific Noise Level (PSNL).

In response to that query, the proponent undertook operator attended measurements to determine if the quarry contributed to the long-term unattended monitoring that was adopted for this development. The RtS document reports that the noise from the quarry was occasionally audible with an estimated contribution of 35-39 dBA.

The EPA notes that these levels, which are consistent with the predicted noise levels for the existing operation in Table 7.3 of the NVIA, represent a significant contribution to the background noise. Table 3.7 of the NVIA states that the existing Rating Background Levels (RBLs) are 37, 36 and 32 dBA for day, evening and night periods, respectively.

There has not yet been enough evidence provided to show that the existing operation of the quarry did not affect the PSNLs for this development.

5. Noise Enhancing Meteorological Conditions and Noise Modelling

The EPA's previous advice made reference to the meteorological conditions selected by the proponent for a worst-case noise assessment, and how that was represented by the selected noise model. The EPA does not believe that sufficient information has been provided to clarify how the adverse meteorological conditions have been modelled using ISO 9613-2, specifically the F class inversion scenario during the night time period.

ISO 9613-2, clause 5, states the following with reference to the inversion conditions able to be modelled using the standard for adverse meteorological conditions:

"These equations also hold, equivalently, for average propagation under a well-developed moderate ground-based temperature inversion, such as commonly occurs on clear, calm nights" (emphasis added).

The EPA requires further information on how the worst-case F-class meteorological conditions stated within section 2.10 of the NVIA have been integrated into the ISO 9613 assessment, or how the ISO assessment is representative of the worst-case weather conditions on site.

6. Modifying Characteristics and Fact Sheet C of the Noise Policy for Industry (NPfI)

Page 59 of the NVIA states that no modifying factors or penalties have been applied to the noise levels at the receiver. The EPA requires that calculations be provided to show the lack of modifying characteristics in the noise emission from the development. This is specifically relevant for Fact Sheet C of the NPfI, which deals with low frequency noise. Given that the development deals with extraction activities, in our experience this can give rise to significant low frequency impacts at nearby receivers. Due to the risk this presents, the EPA requires further evidence that there are no annoying characteristics from the development, especially with regards to low frequency noise.

Other matters:

Increased Daily Truck Movements

The EPA notes the many submissions received about this issue. The EPA highlights the large number of truck movements that the project will generate. While issues like air emissions and dust from the quarry premises can be regulated by the EPA under an environment protection licence, the EPA is unable to regulate truck movements to and from the premises. DPIE will need to give this

matter careful consideration in its assessment of the application, when weighing up all relevant environmental, social and economic considerations.

Given the EPA's previous concerns regarding the air and noise assessments have not been adequately addressed, the EPA declines to provide recommended conditions of consent until the issues raised are adequately resolved.

If you have any questions about this matter, please contact Emma Coombs on (02) 4908 6831 or by email to EPA.Northopsregional@epa.nsw.gov.au

Yours sincerely

ROB HUGHES
Unit Head – Regulatory Operations Regional North
Environment protection Authority

Attachment A – EPA detailed comments on revised Air Quality Impact Assessment

The EPA provide the following comments on the revised AQIA and the RtS in the sections below. The EPA has focused comments on those issues previously identified, where additional information and/or revised assessment had been requested.

1. Expected additional exceedances at various receptors:

EPA comments on AQIA (December 2019)

Noting that the AQIA included only a modelling scenario which was based on annual throughput, it only included results at existing sensitive receptors and that there were predicted additional 24-hr PM₁₀ exceedances at 13 different receptors (R1-R4, R12-R19 and R42), the EPA requested additional information requiring the proponent to:

- Incorporate a modelling worst-case scenario based on a maximum daily material handling for each one of the plant operations.
- Present the potential impacts due to the proposal at existing and future sensitive receptors.
- Investigate additional controls strategies until compliance with the EPA criterion was predicted.

Additional information provided in the RtS report (April 2021)

The revised AQIA includes two emissions scenarios.

- ‘Typical day’ operations, based on an annual average quarry throughput of 530,000 tonnes per annum (tpa).
- ‘Maximum day’ operations, based on a daily quarry throughput of 2,600 tonnes per day (tpd).

It is also stated that “*The results analysis has taken into account an additional scenario, where the ‘Maximum day’ operations are split into operating either with the proposed (20-days per year) at 24 hours a day or by adopting the typical day operational hours of 5am to 10pm*”.

Table 7-1 in the revised AQIA presents the maximum cumulative PM₁₀ concentrations. These results indicate that for the ‘Maximum Day (24 hours)’ emissions scenario there are additional exceedances at receptor R13, which is located to the south of the project boundary. The contemporaneous assessment at this receptor presented in Table 7-2 in the revised AQIA shows that there are 3 additional exceedances predicted.

The revised AQIA concludes that although additional exceedances are predicted for the ‘Maximum Day (24 hours)’ emissions scenario, when the hours are reduced to operate between 5 am and 10 pm (with the same maximum daily throughput) compliance is demonstrated at receptor R13.

The RtS indicates that future sensitive residential receptors will be located further afield from receptors identified in the AQIA.

EPA comments on additional information

The EPA considers that the additional information included in the revised AQIA partially addresses this issue previously raised. However, additional information is required to allow for a robust and transparent review of the information included in the revised AQIA:

- Predicted cumulative impacts have not been presented at the adjacent area located to the east of the project boundary. Whilst it is acknowledged that future sensitive residential receptors will be located further afield from receptors identified in the AQIA, as noted in Figure F2.1 in the EIS¹, the area located to the east of the project boundary is an approved industrial area. Thus, and in accordance with the Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (The Approved Methods), the potential impact at these locations should be assessed.

The Approved Methods require that potential impacts to be assessed at the nearest existing or likely future sensitive receptors, which are defined as “A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area.”

It should also be noted that the annual average PM₁₀ contour plots presented in Appendix C (Figure FC.2) in the revised AQIA show significant predicted impacts in this area, including potential exceedances of the annual average PM₁₀ impact assessment criteria. Further it is noted that Figure FC.2 does not appear to align with the predicted results in Table 7-1.

- Given that it is proposed that operations may be undertaken for 24 hours during 20 days a year, the revised AQIA includes the ‘Maximum Day (24 hours)’ emissions scenario. It should be noted that results for this emission scenario predict 3 additional exceedances of the EPA’s PM₁₀ criterion. Section 7.7 in the Approved Methods requires that if the criteria are exceeded, the dispersion modelling must be revised to include various pollution control strategies until compliance is achieved.

The revised AQIA recommends that the site employs a real-time ambient air quality monitoring system, including advising the use of two real time monitors. However, no further detail is provided to describe how the monitoring system would be utilised to manage predicted exceedances.

Recommendation

In light of the above, the EPA recommends that additional information be provided to robustly and transparently demonstrate that no additional exceedances will occur for any of the proposed stages or operating hours at any of the existing and future sensitive receptors located in the vicinity of the premises. Consideration must be given but not necessarily be limited to:

- a) Presenting cumulative impacts at receptors located immediately east of the project boundary, where the approved industrial area has been identified.
- b) Further information on the proposed control strategies to manage predicted exceedances. Including further information to demonstrate that the proposed monitoring and reactive management measures can manage predicted exceedances

Additionally, the contour plots should be reviewed and revised where appropriate, given the discrepancies with tabulated results.

2. Predicted large increments

EPA comments on AQIA (December 2019)

In addition to the predicted additional exceedances for 24-hour average PM₁₀ concentrations exhibited in the AQIA, modelling results also showed large project-only increments. It was previously raised that a revised worst-case modelling scenario based on maximum daily material handling was likely to result in higher project-related increments. As such, the EPA requested that the AQIA was revised to identify the major sources contributing to the predicted large increments and additional controls measures consistent with best practice to minimise potential impacts.

Additional information provided in the RtS report (April 2021)

Section 9 in the revised AQIA presents the recommended monitoring and managements measures. It is also indicated that the major emission source is truck movements on unpaved roads. Thus, the proponent has now committed to the on-going use of chemical suppressants on unpaved roads. It is also noted that roads from the entrance of the premise to the concrete batching and asphalt plant are proposed to be paved.

Further, it is noted that it is recommended in the revised AQIA that ambient air monitoring be undertaken along the southern boundary of the site.

EPA comments on additional information

The revised AQIA has included additional mitigation measures. However, there are still additional 24-hour PM₁₀ exceedances predicted at receptor R13 for the 'Maximum Day (24 hours)' modelling scenario. This is further discussed in Item 1 above.

Whilst it is acknowledged that no additional exceedances are predicted for the 'Maximum day (5-am -10 pm)', there is still uncertainty regarding the assumptions made and input data used to estimate emissions for this modelling scenario. Detailed information is provided in Item 3 below.

Recommendation

The EPA considers that this issue has been partially addressed. As discussed in Item 1 above, further information on the implementation of the proposed control strategies measures must be provided.

3. Uncertainty in the emissions inventory estimations

EPA comments on AQIA (December 2019)

Additional information was required to allow for a robust and transparent review of the assumptions made and input data used to estimate the emissions for the proposal. As such, the EPA previously requested the following information:

- A table presenting the estimated annual emissions for the proposed activities.
- Detailed discussion regarding the assumptions and parameters used in the calculation of the emission rates and the total emission concentrations for the proposal.
- Detailed information to demonstrate how representative distances used to estimate haul road emissions are of the different stages of the proposal and future operations.

Additional information provided in the RtS report (April 2021)

As previously mentioned, the revised AQIA includes two emissions scenarios. One modelling scenario is based on an annual average quarry throughput of 530,000 tpa and the second on a daily quarry throughput of 2,600 tpd. The corresponding emissions inventories are presented in Appendix A in the revised AQIA. It is also indicated that the emissions have been based on Stage 4 and when mobile sources are closest to off-site receptors.

EPA comments on additional information

The EPA considers that the updated information in the revised AQIA has partially addressed this issue raised. However, there are new questions regarding the approach to estimate emissions for the proposal. Therefore, the EPA considers that the following information is required to allow for a robust and transparent review of the information included in the revised AQIA:

The RtS provides additional information on alterations to the project, including a reduction in operational capacities. Table 2 of the RtS provides a summary response to issues raised by Government agencies. In particular Table 2 states that the proponent is no longer seeking approval for operations to occur 24 hours per day 7 days a week. Instead the proponent is seeking approval only to operate the quarry on a regular basis during the early morning shoulder, day time and evening periods-being 5 am until 10 pm. Additionally it is stated that the processing plant, asphalt plant, and the concrete batching/recycling plant are proposed to operate during the night time period (10 pm to 5 am) for up to 20 nights per year. Based on this information the EPA understands that quarry operations (including processing plant) are now proposed from 5 am to 10 pm.

The revised AQIA presents the predicted impacts for maximum day (5 am -10 pm) and maximum days (24 hours) scenarios. However, the AQIA does not include information on the time periods in which each activity has been accounted for in the modelling. Specifically:

- It is unclear if quarry operations (including processing plant) are also included in the proposed 20 nights per year when operations can be undertaken between 10 pm and 5 am. This is relevant information as if different modelling scenarios were used to predict cumulative impacts from different operating hours, it is likely that different emissions sources were modelled for different times of the day as per the proposed operating hours.
- There is no detailed information to describe the assumptions made to estimate the emission rates (g/s) for the 'Maximum day (24 hours)' and 'Maximum day (5am -10 pm)' emissions scenarios. As such, it is unclear if:
 - these are two separate modelling scenarios;
 - the ground level concentrations for the 'Maximum day (5 am -10 pm)' are a subset of 'Maximum day (24 hours)' results; and
 - they are based on different emission rates.

Additionally, the EPA notes that is not clear if emission estimates represent a reasonable worst-case scenario. Specifically:

- The estimated emissions from truck movements on unsealed roads at the premises are based on an assumed maximum daily throughput of 2,600 tpd. When using the assumed truck capacity of 37 tonnes for the 'Rock Truck', this equates to approximately 141 daily trucks movements (in and out). However, it is unclear how this compares with the proposed maximum daily truck movements.
- Wind erosion emission estimates from the pit have been based on a total area of 8.5 ha. It is not clear if the area assumed is consistent with the proposed Stage 4 pit area or if it the assumed area represents a reasonable worst-case scenario.

Further, it is also noted that a 75% emission reduction factor has been used to estimate emissions from this source. It is indicated in the emissions inventories that only 25% of the area is susceptible to wind erosion at any one time. However, no robust information is provided to justify this assumption.

Recommendation

The EPA considers that this issue has not been sufficiently addressed and recommends that the proponent:

- a) Confirms the proposed operating hours for the concrete batching plant, the concrete recycling plant, the asphalt plant and the quarry operation are consistent with the hours modelled for each activity.
- b) Clarifies if the 'Maximum day (5 am - 10 pm)' is a separate modelling scenario from the 'Maximum day (24 hours)'.
- c) Demonstrates that the emissions rates (g/s) for each modelling scenario account for the proposed operating hours for each plant/process of the proposal and reflective of the operating capacity for the revised project.
- d) Demonstrate that the modelled emissions from unsealed haul roads represent a reasonable worst-case scenario with consideration of the maximum proposed daily truck movements. Where the proposed maximum daily number of truck movements differ from the numbers used in the preparation of the emissions inventory, detailed discussion and analysis must be provided to determine the effect on results and conclusions presented in the revised AQIA.
- e) Provides detailed information to justify the assumptions made and input data used to estimate emissions due to wind erosion from the pit.