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Your Ref. DA165-7-2005-MOD-3

Mr Joel Herbert
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25 February 2020

Dear Joel,

RE: EPA Response to SSD Modification - Haerses Road Quarry Mod 3 (DA165-7-2005-Mod-3)

I refer to your correspondence dated 21 January 2020 seeking advice from the NSW Environment Protection Authority (EPA) on the Modification Report in relation to the modification of DA165-7-2005-Mod-3 for Dixon Sand (No.1) Pty Limited at Haerses Road, Maroota, NSW 2756, Lot 170 DP 664766, Lot 170 DP 664767, Lots A and B DP 407341, Lots 176, 177 and 216 DP 752039.

Dixon Sand (No.1) Pty Limited (the applicant) operates the Haerses Road Quarry on land adjacent Haerses Road at Maroota, NSW (the premises). The quarry operates in accordance with Development Consent DA 165-7-2005 and current operations fall under the Environmental Protection Licence (EPL) 12513. Current operations allow for material extraction of up to 250,000 tonnes per annum (tpa), the receipt of 100,000 tpa of VENM/ENM and a maximum of 56 trucks movements a day.

The applicant is seeking to modify existing development consent (DA 165-7-2005 as modified by MOD2 presumably) to:

- increase extraction and production from 250,000 tonnes per annum (tpa) to 495,000 tpa,
- increase importation of VENM and ENM from 100,000 tpa to 250,000 tpa
- increase daily vehicle movements
- increase the disturbance footprint from 74.5ha to 75.5 ha.

Current approved activities permitted at the premises under EPL 12513 (the licence), issued by the EPA to Dixon Sand Pty Ltd (the licensee), include extractive and crushing/grinding/separating activities at the premises are each permitted up to 500,000t per year as well as receipt and processing of VENM and ENM. The existing EPL does not include a licenced discharge point (LDP). Runoff from the disturbed areas within the Quarry is contained within the Quarry Water Management System.

If the proposed increase in the amount of VENM and ENM is approved the EPL will require a variation application to update the limits of the ancillary activity 'Receipt and processing of VENM and ENM' under condition L2.1. This will restrict the amount of VENM/ENM received, as approved by any conditions of consent, and require the proponent to meet all conditions of any resource recovery order¹ at the time the ENM is received.

The EPA has reviewed the modification report and has determined that at this stage the assessment is not adequate to determine the impacts and provide recommended conditions of approval in relation to air and water impacts. Details of the EPA's assessment, recommendations and some conditions are provided in Attachments A, B and C.

Air

The EPA's Technical Advice Air unit has reviewed the *Air Quality Assessment (AQIA), Dixon Sand Haerses Road Quarry Modification, ERM Australia Pacific Pty Ltd, September 2019*. The AQIA was prepared in general accordance with the EPA's *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW (Approved Methods)*, however additional information is required to verify conclusions and assess all the potential impacts from proposed operations.

The AQIA includes one modelling scenario that assumes all activities specified in the emissions inventory occur simultaneously. It is stated in the report that this approach could be considered as a worst-case scenario, since due to equipment limitations all these activities cannot be undertaken at the same time. However, the assessment does not account for the proposed maximum number of truck movements a day.

Considering presented modelling results include large increments at various receptors in the vicinity of the project boundary and the fact that the emissions inventory only account for approximately 2/3 of the proposed truck movements, a revised worst-case modelling scenario is likely to result in higher predicted concentrations and potential additional exceedances.

It should also be noted that there are discrepancies between 24-hour PM10 and PM2.5 modelling results. Information provided in Table 7-2 and Table 7-3 in the AQIA show that PM2.5 predicted increments are the same or higher than PM10 project-only predicted contributions at some of the receptors.

The EPA has determined that at this stage additional information is required to determine impacts and provide recommended conditions of approval in relation to air impacts.

Detailed comments and recommendations are attached at **Attachment A**.

Water

The EPA's Water Technical Advice Unit has reviewed the Modification Report submitted for the proposed Modification 3 to the Haerses Road Quarry development consent. A water balance was prepared for the previous development application DA 165-7-2005. However, this water balance was not included in the support documents provided to the EPA for review as part of the Mod 3 proposal. The applicant states the results from the previous water balance are unchanged, as there is no increase in water consumption and "*no change to the Quarry catchment as a result of the very minor extension to the extraction area*". The previous water balance indicated no water will be discharged from the Quarry Site.

If the development is approved, it is recommended that as a condition of consent the applicant is required to provide an **updated** water balance to confirm that the site will continue as a nil discharge site.

Detailed comments and recommendation at **Attachment B**.

¹ made under Clause 93 of the Protection of the Environment Operations (Waste) Regulation 2019

Noise

The EPA's Noise Technical Advice Unit has reviewed the Noise Impact Assessment, Appendix 6 of the SEE. The EPA notes that the Mod 3 proposal is for an extension to the extraction area, however the rate and duration of extraction are not proposed to change.

The daytime noise limits are based on the minimum Project Noise Trigger Level (PNTL) of 40 dBA under the Noise Policy for Industry (NPfI), except where the predicted level is higher than the minimum PNTL (41 dBA at 1579 Wisemans Ferry Road, Maroota (Lot 10, DP 38294)) then it is set at the predicted level. The morning shoulder noise limits are set at the PNTL (no exceedances are predicted for the morning shoulder).

The assessment has been done in accordance with the guidance in the Noise Policy for Industry (NPfI).

The EPAs recommended noise conditions are attached at **Attachment C**. These conditions are recommended to replace the previous noise conditions on the current licence. The conditions have been provided so that if the modification is approved, consent conditions don't conflict with the recommended licence conditions.

Should you have further questions in relation to this matter, please contact Lisa Crambrook on 02 8837 6079 or email lisa.crambrook@epa.nsw.gov.au.

Yours sincerely,



25 February 2020

JAMES BOYLE
A/Unit Head – Regulatory Operations Metro
Environment Protection Authority

Attachment A – EPA review of Air Quality Impact Assessment

An AQIA was prepared for the application and is provided in Appendix 7 of the EIS. The AQIA presents a climate condition analysis based on information from the Bureau of Meteorology (BoM) site located at Peats Ridge, approximately 25.2 km northeast of the Dixon sand quarry. Meteorological data used for the dispersion modelling was locally collected at the Maroota public school, located 3 km north from the project boundary. The selected year for the meteorological modelling was 2017. Upper air data used in the modelling was calculated using TAPM and the computer-based dispersion model known as AERMOD was used to predict the potential air quality impacts of the project.

Existing air quality conditions were based on PM₁₀ concentrations recorded at Maroota public school. Given there was not available data for TSP and PM_{2.5} concentrations, the assessment included calculated concentrations based on two different ratios. TSP background levels were calculated using a PM₁₀/TSP ratio of 0.44.

A data comparison between the recorded PM₁₀ concentrations at the Maroota public school and three OEH stations (Wyong, Richmond, Vineyard) showed similar trends. Given this similarity, a PM₁₀/PM_{2.5} ratio (0.41) was calculated at the three OEH stations and applied to the available PM₁₀ concentrations.

Dust deposition levels were based on information collected between 2015 and 2018 at 5 dust deposition gauges located near the quarry and Maroota public school. The AQIA adopted a background level of 1.5 g/m²/month.

The AQIA included one modelling scenario based on the assumption that all activities specified in the emissions inventory occur simultaneously, which could be considered a worst-case scenario, since due to equipment limitations all these activities cannot be undertaken at the same time. The following are the controls used for the modelling:

Control	Efficiency
Fencing, bunding, shelterbelts	50%
Vegetative cover	70%
Level 2 Watering (Hauling on unsealed roads)	75%
Water sprays (stockpiles, transfer points)	50%

Although the emissions inventory presents calculations based on the use of chemical wetting agents, the dispersion modelling was completed assuming this control will not be applied. The report states that *“Experience has shown that this minor experience will have little to no effect on the predicted concentrations”*.

The following should be addressed before conditions of approval can be issued:

1. Uncertainty if selected modelling scenario is representative of a worst-case operational scenario

The AQIA included a modelling scenario based on the assumption that all activities specified in the emissions inventory occur simultaneously. Although the report states that this approach is conservative and could be considered as a worst-case scenario (due to equipment limitations all these activities cannot be undertaken at the same time), modelling predictions do not include the impact from expected maximum truck movements.

Proposed activities include an increment in truck movements from 56 to up to 180 movements per day (total in and out). Based on the information provided in the emissions inventory, the number of expected trucks movements are based on an annual average and do not account for peak operations. A screening review shows that the average number of truck movements included in the assessment account for up to 125 movements a day.

Control	Total material out (Tonnes/year)	Truck capacity (Tonnes)	Trucks movements a year	Assumed number of days a year	Total number of trucks movements a day (in and out)
Hauling out of site	495,000	40	12,375	300	83
VENM/ENM	250,000	40	6,250	300	42
Total					125

Given modelling results predict increments as high as 16 $\mu\text{g}/\text{m}^3$ for 24-hour PM_{10} and 13 $\mu\text{g}/\text{m}^3$ for $\text{PM}_{2.5}$, and the number of truck movements (in and out) are independent to the stated equipment limitations, the inclusion of a modelling scenario based on maximum daily peak operation including expected peak truck movements is likely to result in higher project-related increments and additional predicted exceedances.

Recommendation:

- a) ***The applicant should revise the AQIA to include a worst-case scenario representative of expected maximum daily operations, including maximum peak daily truck movements.***

2. Uncertainty in results:

Modelling predictions for 24-hour PM_{10} and $\text{PM}_{2.5}$ are presented in Table 7-2 and Table 7-3 respectively. Whilst the maximum increment concentrations at each receptor and the maximum cumulative concentration are presented in these tables, no information is provided to assess expected cumulative impacts at each receptor.

In addition, it is noted that there are discrepancies between 24-hour PM_{10} and $\text{PM}_{2.5}$ modelling results. It is unclear, why 24-hour $\text{PM}_{2.5}$ maximum project-only concentrations are the same or higher than 24-hour PM_{10} maximum project-only concentrations. Predicted increments at receptors R8, R11, R17, R18 and R20 are the same for both pollutants. Furthermore, 24-hour $\text{PM}_{2.5}$ maximum project-only concentrations at receptors R4, R5, R7, R8, R9, R14, R16 and R19 are higher than the project only maximum predicted 24-hour PM_{10} concentrations.

Recommendation:

- a) ***The AQIA be revised to include 24-hour PM_{10} and $\text{PM}_{2.5}$ cumulative concentrations at each receptor. That is, results should include the corresponding background levels on the same day the maximum increment is predicted.***
- b) ***The AQIA be revised to clarify discrepancies in the results presented in Table 7-2 and Table 7-3. In addition, all results and contour plots for all pollutants and averaging periods must be revised to confirm the predicted impacts.***
- c) ***The applicant should present a contemporaneous assessment for the three most impacted receptors.***

Attachment B – EPA review of Air Quality Impact Assessment

Pre-existing and previously approved, but not yet constructed, sediment basins have been sized to capture the 90th percentile, 5-day rainfall event for 'standard' environments. The Water Management System (WMS) (Figures 7.9 and 7.11) indicates the quarry is reliant on pumps to transfer water from the sediment basins to "Basin 4" from which it is either pumped to the processing plant, or back to the tailings storage basin. The WMS (Figure 7.9 and 7.11) indicates that each basin can also overflow into Stone Chimney Arm or Little Cattai Creek, however the frequency and volumes is unclear.

A water balance was prepared for the previous development application. However, this water balance was not provided to the EPA review as part of this request. The applicant states the results from the previous water balance are unchanged, as there is no increase in water consumption and "*no change to the Quarry catchment as a result of the very minor extension to the extraction area*". The previous water balance indicated no water will be discharged from the Quarry Site.

The EPA notes the applicant commits to monitor site water inventories as sand extraction progresses and will assess the requirement for off-site discharges and therefore an Environment Protection Licence (EPL) variation to incorporate a licensed discharge point (LDP) if required.

The current WMP includes monitoring of the receiving water quality at monitoring points in the unnamed tributary of Stone Chimney Arm, and the unnamed tributary of little Cattai Creek. It is unclear to the EPA why this monitoring is being conducted.

The applicant states that "*In the absence of site specific trigger values determined through monitoring within the tributaries of Stone Chimney Arm and a tributary to Little Cattai Creek, the 20th percentile and 80th percentile results (from the Old Northern Road site) will be adopted as interment site specific trigger values...*"

It should be noted that if site-specific guideline values are to be used for regulatory purposes, they must be derived consistent with the methodology outlined in the national Water Quality Guidelines and ANZECC (2000) guidelines. The policy in NSW is that the level of protection applied to most waterways is the one suggested for 'slightly to moderately disturbed' ecosystems. Site-specific guideline values should be derived from data from a reference site(s) representative of slightly disturbed condition consistent with the national Water Quality Guidelines.

Recommendation:

- a) If the development is approved, it is recommended that as a condition of consent the applicant is required to provide an updated water balance to confirm that the site will continue as a nil discharge site.***

Attachment C – EPA Recommended Noise EPL conditions

Noise Limit Conditions

L6.1 Noise generated at the premises must not exceed the noise limits at the times and locations in the table below.

Location	Noise Limits in dB(A)		
	Morning Shoulder		Day
	L _{Aeq} (15 minute)	L _{Amax}	L _{Aeq} (15 minute)
1710 Wisemans Ferry Road, Maroota (Lot 92, DP 594889)	38	52	40
1643 Wisemans Ferry Road, Maroota (Lot 1, DP 230742)	38	52	40
1617 Wisemans Ferry Road, Maroota (Lot 2, DP 230742)	38	52	40
1579 Wisemans Ferry Road, Maroota (Lot 10, DP 38294)	38	52	41
1543 Wisemans Ferry Road, Maroota (Lot 13, DP 38294)	38	52	40
1539 Wisemans Ferry Road, Maroota (Lot 14, DP 38294)	38	52	40
1521 Wisemans Ferry Road, Maroota (Lot 15, DP 38294)	38	52	40
1728 Wisemans Ferry Road, Maroota (Lot 91, DP 594889)	38	52	40
1638 Wisemans Ferry Road, Maroota (Lot 4, DP 530930)	38	52	40
1630 Wisemans Ferry Road, Maroota (Lot 2, DP 808816)	38	52	40

L6.2 For the purposes of condition L6.1:

- a) Morning Shoulder means the period from 6am to 7am Monday to Saturday and the period from 6am to 8am Sunday and public holidays.
- b) Day means the period from 7am to 6pm Monday to Saturday and the period from 8am to 6pm Sunday and public holidays.

L6.3 Noise-enhancing meteorological conditions

- a) The noise limits set out in condition L6.1 apply under the following meteorological conditions:

Assessment Period	Meteorological Conditions
Day	Stability Categories A, B, C, D and E with wind speeds up to and including 3m/s at 10m above ground level.
Evening	Stability Categories A, B, C, D and E with wind speeds up to and including 3m/s at 10m above ground level.
Night	Stability Categories A, B, C, D and E with wind speeds up to and including 3m/s at 10m above ground level; or Stability category F with wind speeds up to and including 2m/s at 10m above ground level.

- b) For those meteorological conditions not referred to in condition L6.3(a), the noise limits that apply are the noise limits in condition L6.1 plus 5dB.

L6.4 For the purposes of condition L6.3:

- a) The meteorological conditions are to be determined from meteorological data obtained from the meteorological weather station identified as **Weather Station at Maroota Public School**
- b) Stability category shall be determined using the following method from Fact Sheet D of the *Noise Policy for Industry* (NSW EPA, 2017):
 - i. Use of sigma-theta data (section D1.4).

L6.5 To assess compliance:

- a) with the $L_{Aeq(15\text{ minutes})}$ or the L_{Amax} noise limits in condition L6.1 and L6.3, the noise measurement equipment must be located:
 - (i) approximately on the property boundary, where any residence is situated 30 metres or less from the property boundary closest to premises; or where applicable,
 - (ii) in an area within 30 metres of a residence façade, but not closer than 3 metres where any residence on the property is situated more than 30 metres from the property boundary closest to the premises; or, where applicable,
 - (iii) in an area within 50 metres of the boundary of a National Park or Nature Reserve,
 - (iv) at any other location identified in condition L6.1
- b) with the $L_{Aeq(15\text{ minutes})}$ or the L_{Amax} noise limits in condition L6.1 and L6.3, the noise measurement equipment must be located:
 - (i) at the reasonably most affected point at a location where there is no residence at the location; or,
 - (ii) at the reasonably most affected point within an area at a location prescribed by condition L6.5 (a).

L6.6 A non-compliance of conditions L6.1 and L6.3 will still occur where noise generated from the premises is measured in excess of the noise limit at a point other than the reasonably most affected point at the locations referred to in condition L6.5 (a) or L6.5 (b).

NOTE to L6.5 and L6.6: The reasonably most affected point is a point at a location or within an area at a location experiencing or expected to experience the highest sound pressure level from the premises.

L6.7 For the purpose of determining the noise generated from the premises, the modifying factor corrections in Table C1 in Fact Sheet C of the *Noise Policy for Industry* (NSW EPA, 2017) may be applied, if appropriate, to the noise measurements by the noise monitoring equipment.

L6.8 Noise measurements must not be undertaken where rain or wind speed at microphone level will affect the acquisition of valid measurements.

Additions to Definition of Terms of the licence

- Noise Policy for Industry - the document entitled “*Noise Policy for Industry*” published by the NSW Environment Protection Authority in October 2017.
- Noise – ‘sound pressure levels’ for the purposes of conditions L6.1 to L6.8.
 - $L_{Aeq(15\text{ minute})}$ - the value of the A-weighted sound pressure level of a continuous steady sound that, over a 15 minute time interval, has the same mean square sound pressure level as a sound under consideration with a level that varies with time (Australian Standard AS 1055:2018 *Acoustics: description and measurement of environmental noise*).
 - L_{AFmax} – the maximum sound pressure level of an event measured with a sound level meter satisfying Australian Standard AS IEC 61672.1-2013 *Electroacoustics - Sound level meters - Part 1: Specifications* set to ‘A’ frequency weighting and fast time weighting.