



1 December 2022

Rosebrook Sand and Gravel (c/o Hunter Development Brokerage Pty Ltd))

44 Church Street
Maitland NSW 2320
Australia

Attention: Mark Ihlein

Subject: Request for Additional Information – Dalswinton Sand and Gravel Quarry (SSD–9094)

Dear Mark,

Advitech assisted Hunter Development Brokerage Pty Ltd (HDB) and Rosebrook Sand and Gravel Pty Ltd prepare a Noise Impact Assessment (NIA) for a proposed expansion of the Dalswinton Quarry in 2020. This NIA was submitted as Appendix X to the Environmental Impact Statement (EIS) for the proposed development; the EIS was prepared by HDB.

Advitech understands that the NSW Department of Planning and Environment (DPE) submitted a request for further information (RFI) regarding the assessment of noise impacts in October 2022, including:

A description, and if necessary, assessment, of the activities proposed to be undertaken outside of the operating hours documented in the Noise Impact Assessment (6:00 am to 6:00 pm weekdays and 6:00 am to 1:30 pm Saturdays), noting that the proposed operational hours stated in the EIS are 5:00 am to 12:00 am weekdays and 5:00 am to 1:30 pm Saturdays.

- *Clarification of the sound power levels for all noise sources (Tables 15 and 18 of the Noise Impact Assessment, respectively), accounting for any variations in sound power levels for differing plant/equipment models or operating activities using the same plant.*
- *Clarification of the representative assessment period (i.e. day, evening, night or shoulder) used for the noise impact predictions shown in Table 16 and Appendix IV of the Noise Impact Assessment.*
- *An assessment of the predicted residual noise impacts at each of the sensitive receiver locations following application of the proposed operational mitigation measures listed in Section 6.4 of the Noise Impact Assessment, in accordance with Section 4 of the Noise Policy for Industry (NPI).*

Advitech has reviewed and responded to each of DPE's requests for further information on the following pages.

Request for Further Information #1

A description, and if necessary, assessment, of the activities proposed to be undertaken outside of the operating hours documented in the Noise Impact Assessment (6:00 am to 6:00 pm weekdays and 6:00 am to 1:30 pm Saturdays), noting that the proposed operational hours stated in the EIS are 5:00 am to 12:00 am weekdays and 5:00 am to 1:30 pm Saturdays.

Assessment presented in the NIA indicated that standard quarry operations (including truck loading and material haulage) would be achieved entirely within the day period and early morning shoulder period Project Noise Trigger Level (PNTL) of 40dBA. The assessment periods presented within the EIS cover the hours 6:00 am to 6:00 pm, and thus form the basis for statements indicating that standard quarry operations would occur during the assessed hours.

The NIA also indicated that standard quarry operations (including truck loading and material haulage) would not achieve the PTNL of 35dBA for the night period. The night period PTNL would be relevant to any activities occurring between 5:00 am to 6:00 am.

The assessment period for standard quarry operations presented in the NIA (which follows guidance in the NPfI) conflicts with the existing approval conditions for the quarry, which permit operations to occur from 5:00 am. The EIS seeks to resolve this conflict via commitments to limit standard quarrying operations to the period 6:00 am to 6:00 pm, whilst retaining allowance for some non-standard quarrying activities to occur between 5:00 am to 6:00 am.

Consultation with the quarry operator (at the time the NIA was prepared) indicated that no activities are routinely undertaken prior to 6:00 am, but in some circumstances operational requirements benefit from a pre-6:00 am start (pre-start activities). While the NIA did not specify the types of activities proposed during 5:00 am to 6:00 am, discussions with the quarry operator indicated that pre-start activities may generally include arrival of staff in light vehicles, fuelling and general maintenance of plant in preparation for commencement of daily production. The pre-start activities would not include activities that may generate significant noise like heavy maintenance, fabrication or standard quarry operations). On occasion, pre-start activities may also include the arrival of heavy vehicles prior to between 5:00 am to 6:00 am.

While the NIA and EIS state that quarrying would not be undertaken prior to 6:00 am, retention of the 5:00 am start to operating hours was sought so as to not restrict the operation by removing a right that exists under the current approval. Notwithstanding and in response to the RFI, additional review has been carried out to evaluate the permissibility of heavy vehicle access to the site between 5:00 am to 6:00 am.

Assessment of the 'truck loading and material haulage' scenario presented in the NIA indicates that heavy vehicle access to the site would have potential for marginal (1dBA) exceedance of the night period limit condition at receivers R2 and R8 under enhancing weather conditions. In considering this finding, it is noted that the scenario assessed in the NIA assumes the same intensity of loading and haulage as for other times of the day (nominally 10 heavy vehicle movements per hour and operation of front-end loaders to load trucks from material stockpiles).

Further analysis indicates that a reduction in the intensity of vehicle movements between 5:00 am to 6:00 am (and commitment to no truck loading) would enable the 35dBA night period PTNL to be achieved at receivers R2 and R8. To achieve this, no more than six (6) heavy vehicle movements on internal access roads should occur between 5:00 am to 6:00 am, and front-end loaders should not be used to load those trucks during the pre-start period. A summary of this analysis is presented in **Table 1**.

Table 1: Evaluation of heavy vehicle (HV) noise impacts prior to 6am (35dBA limit)

Prediction for Haulage and Loading Activities (Standard / worst case weather conditions), $L_{Aeq,15\text{minute}}$ dBA		
Receiver	NIA Assumption (10 HV movements / hour with truck loading)	6 HV movements / hour and no truck loading
R2	33 / 36	31 / 33
R8	33 / 36	26 / 29



This assessment indicates that, in addition to light vehicle access and operational preparation activities, limited heavy vehicle access may be permissible on occasion during the pre-start period, without expectation of adverse impact prior to commencement of standard quarrying operations from 6:00 am.

Request for Further Information #2

Clarification of the sound power levels for all noise sources (Tables 15 and 18 of the Noise Impact Assessment, respectively), accounting for any variations in sound power levels for differing plant/equipment models or operating activities using the same plant.

The Sound Power Levels (SWL) presented in Tables 15 and 18 of the NIA were based on actual measurement data of existing plant at the Dalswinton Quarry including:

- Excavators;
- Articulated dump trucks;
- Road haulage trucks;
- Front end loaders;
- Existing processing plant (washing, screening, sizing and stockpiling); and
- Ancillary equipment (diesel generator).

Advitech understands that the above listed items of plant would continue to be used as part of the ongoing and proposed operation of the site, and thus variations (or other departures) from assumed SWL are not anticipated. Notwithstanding, some additional equipment would be introduced as part of the proposed development, including:

- additional screening and processing plant;
- mobile crushing plant; and
- water cart.

Evaluation of equipment SWL for these sources was not available via direct measurement at the time the NIA was prepared. In lieu, reference was made to the information contained in the UK Department of Environment, Food and Rural Affairs (DEFRA, 2005) *noise database for prediction on construction and open cast sites*. DEFRA, 2005 is commonly referenced by acoustical consultants and NSW EPA guidelines. In this case the DEFRA 2005 guidance was used to identify representative SWL for proposed equipment on the basis of size, capacity or power descriptions provided by the proponent.

Mobile Crushing

Mobile crushing represents a transient noise source, that may only be introduced to the site for approximately one (1) week at a time, once or twice per year. Given there is no ongoing need for this equipment as part of standard quarry operations, Advitech understands that mobile crushing equipment would be brought in on an 'as needs' hire arrangement. This means that some variation in plant noise emissions *could* occur if different equipment or equipment from a different hire operator is brought to site each time it is needed.

It is expected that this uncertainty can be managed via the commitments outlined in the NIA by operating mobile crushing equipment at certain times of day, and not at an exposed location (i.e. natural surface level)). The assessment of weather effects also provides guidance on the times of year that impacts may be enhanced – and that may be used to inform decisions about when higher impact activities such as use of mobile crushing plant are scheduled.

Given the transient nature of this activity, it is expected that the site operator would be able to correlate any noise complaints to the introduction of this source and respond by planning additional mitigation for future crushing operations, if required.



Additional Screening and Processing Plant

As with the mobile crushing plant, the assumed SWL for additional screening and processing plant were sourced from the DEFRA guidance. Advitech understands that the additional screening and processing plant are ancillary and intended to provide support to the main (existing) processing plant. Despite this, the SWL adopted for the NIA is marginally higher than the SWL for the main processing plant (which was determined by direct measurement). On this basis, any uncertainty in the assumed SWL for this plant is likely to be in favour of over-estimation of impacts and so Advitech considers the approach adopted to be conservative.

Water Cart

As with the additional screening and processing plant, SWL for the water cart were conservatively adopted from the DEFRA guidance. The assumed SWL for the water cart is 113dBA; by way of comparison, this is 6dBA higher than the SWL of articulated dump trucks or heavy vehicles used to haul product from the quarry, and would be more representative of the SWL for high capacity water carts more commonly used in open cut mining environments. As noted above, any uncertainty in the assumed SWL for this plant is likely to be in favour of over-estimation of impacts.

Request for Further Information #3

Clarification of the representative assessment period (i.e. day, evening, night or shoulder) used for the noise impact predictions shown in Table 16 and Appendix IV of the Noise Impact Assessment.

Appendix IV of the NIA presents four separate tables of predicted noise levels at each of the sensitive receivers. The tables present predictions for each of the evaluated weather conditions, including:

- Standard weather conditions;
- Enhancing conditions associated with:
 - prevailing SSE winds during autumn and winter nights;
 - prevailing NW winds during winter nights (and morning shoulder);
 - F-class stability conditions during winter nights.

Each of these tables also presents predictions for each of the operational scenarios, which include:

- Truck loading at material stockpiles and haulage of product from the site (and only these activities);
- Standard quarry operations – which includes truck loading and haulage as well as excavation and processing of material from the quarry;
- Crushing and quarrying operations – which represent the cumulation of standard quarry operations (including truck loading and haulage) and processing of oversized material with mobile crushing plant which may occur for approximately a week at a time once or twice per year.

Specific operational scenarios were not assumed to occur during a specific assessment period (i.e. standard quarrying only during the day period); this analysis allows:

- evaluation of each of the operating scenarios under both standard and enhancing conditions against PTNL for all assessment periods; and thus
- can be used to inform recommendations on management and mitigation commitments in relation to operating hours.

The assessment was constructed in this way given the need to resolve potential conflicts between the existing approved operating hours for the quarry versus permissibility of activities under the NPfl.

In this case, the assessment was able to demonstrate that standard quarrying operations (including truck loading and material haulage) achieves the day and morning shoulder PTNL; this indicated that the quarry may operate without restriction at these times. Similarly, the analysis indicated that standard quarry activities may result in exceedances of the night period criteria, so quarrying operations should not take place at these times.



This assessment demonstrated which combination(s) of operating scenarios and weather conditions achieved the PTNL, and was used to inform recommendations on management and mitigation commitments relating to operating hours (e.g. recommendations that standard quarrying operations not occur during the evening or night periods, irrespective of the weather conditions).

Request for Further Information #4

An assessment of the predicted residual noise impacts at each of the sensitive receiver locations following application of the proposed operational mitigation measures listed in Section 6.4 of the Noise Impact Assessment, in accordance with Section 4 of the Noise Policy for Industry (NPfI).

Additional modelling was carried out in response to this request to evaluate predictions following implementation of the mitigation measures outlined in the NIA (and additional measures outlined in the response to question 1 above). In summary, the mitigation measures include:

- a commitment to using product stockpiles to screen noise emissions from processing plant;
 - in recognition that use of stockpile barriers as a mitigation measure is a dynamic operational response, the assessment assumes that product stockpiles would be constructed to break line of sight between processing plant and nearest affected receivers;
- a commitment to operating any mobile crushing plant at a level lower than natural surface (i.e. contained within the extraction area).

In preparing this review, a minor error in assumptions relating to water cart operation was also noted (the assumed vehicle speed was set at a level of 10km/h as opposed to the internal site speed limit of 30km/h). This assumption served to increase the duration that this noise source would be active during a transit of internal roadways, and thus over-estimate the duration of exposure for adjacent receivers. This error was corrected, and contributions from this source were found to decrease.

Analysis in Table 2 presents a comparison of unmitigated noise levels (Table 16 of the NIA) against predicted noise levels following implementation of the controls outlined above; evaluation of the reductions that are achieved following implementation of the controls is also provided.

This assessment indicates that, following implementation of these measures, noise levels are expected to decrease by 1 to 3dBA, depending on the proximity of the receivers to the operation; the greatest reductions are expected at receivers to the south of the site.

Following implementation of the controls, residual impacts (i.e. noise imissions above limit conditions) are expected to be limited to a 1dBA exceedance (down from a worst case 3dBA exceedance) at a single receiver (down from 3 impacted receivers).

Table 2: Comparison of impact predictions (standard weather / worst case weather) for unmitigated and mitigated scenarios (dBA)

Receiver	Original Predictions (Table 16 of NIA)			Predictions with Mitigation Applied			Reduction due to Mitigations		
	Haulage and Truck Loading	Standard Quarry Operations	Quarry Operation with Crusher	Haulage and Truck Loading	Standard Quarry Operations	Quarry Operation with Crusher	Haulage and Truck Loading	Standard Quarry Operations	Quarry Operation with Crusher
R1	28 / 31	29 / 32	29 / 32	28 / 31	29 / 32	29 / 32	0	0	0
R2	33 / 36	33 / 36	33 / 36	33 / 36	33 / 36	33 / 36	0	0	0
R3	<25 / 26	28 / 32	30 / 34	23 / 26	28 / 32	28 / 32	0	0	2
R4	<25 / 26	29 / 32	30 / 34	23 / 26	29 / 32	29 / 32	0	0	2
R5	29 / 32	36 / 40	38 / 42	29 / 32	36 / 40	36 / 40	0	0	2
R6	25 / 28	33 / 37	34 / 38	25 / 28	32 / 35	32 / 35	0	2	3
R7	27 / 30	36 / 40	37 / 41	27 / 30	35 / 39	35 / 39	0	1	2
R8	33 / 36	39 / 42	39 / 43	33 / 36	38 / 41	38 / 41	0	1	2
R9	30 / 33	34 / 37	34 / 37	30 / 33	34 / 37	34 / 37	0	0	0
R10	29 / 32	32 / 35	33 / 36	29 / 32	32 / 35	32 / 35	0	0	1
R11	28 / 31	31 / 34	32 / 34	28 / 31	31 / 34	31 / 34	0	0	0

Please do not hesitate to contact me if you require any further information.

Yours faithfully,

The image shows a handwritten signature in black ink, which appears to read 'Clayton Sparke', written over a stylized logo. The logo consists of a blue and green swoosh above the word 'advitech' in a sans-serif font, with the word 'environmental' in a smaller, green, lowercase sans-serif font below it.

Clayton Sparke

Lead Scientist (Digital Environments)(M.A.A.S)

Advitech Pty Limited