Noise Management Plan

For the Central Coast Sands Quarry

Document Control

Status	Date	Prepared	Checked	Authorised
Revision 0	22 October 2014	Ryan Wakeling	Dick Godson	Dick Godson
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Revision 3	3 January 2018	Belinda Pignone	Andrew Driver	Andrew Driver
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1. Introduction

This Air Quality Management Plan (the Plan) has been prepared by Hanson Construction Materials (Hanson) and SLR Pty Ltd (SLR) for the Central Coast Sands Quarry (the Quarry). The Minister for Planning and Infrastructure has conditionally approved the continued operation of the Quarry, NSW until 30 June 2044 (Project Approval 08_0173).

The following report details monitoring locations, methods of monitoring noise as well as the correct compliance checking procedures for the subsequent reporting in accordance with the Department of Planning, Industry and Environment (DPIE) and the Environment Protection Authority (EPA) requirements.

1.1. Management Plan Requirements

Condition 2, Schedule 5 of the Project Approval (hereafter the "Approval") contains the requirements for the Quarry Management Plans and states that:

2. The proponent shall ensure that the Management Plans required under this approval are prepared in accordance with any relevant guidelines, and include:

- *a) detailed baseline data;*
- *b) a description of:*
  - *(i) the relevant statutory requirements (including any relevant approval, licence or lease conditions);*
  - *(ii) any relevant limits or performance measures/criteria; and*
  - *(iii) the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the project or any management measures;*
- *c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;*
- *d) a program to monitor and report on the:*
  - *(i) impacts and environmental performance of the project; and*
  - *(ii) effectiveness of any management measures (see (c) above);*
- *e) a contingency plan to manage any unpredicted impacts and their consequences and to ensure that ongoing impacts reduce to levels below relevant impact assessment criteria as quickly as possible;*
- *f) a program to investigate and implement ways to improve the environmental performance of the project over time;*
- *g) a protocol for managing and reporting any:*
  - *(i) incidents;*
  - *(ii) complaints;*
  - *(iii) non-compliances with statutory requirements; and*
  - *(iv) exceedances of the impact assessment criteria and/or performance criteria; and*
- *h) a protocol for periodic review of the plan.*

Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.

Table 1 provides a summary of the planned noise monitoring program and identifies the relevant sections in the Plan that contain the detailed program description.

Table 1: Summary of Planned Noise Monitoring Program

Monitoring Timing	Activity Monitored	Requirements and Program Reference
1. Undertaken when operational equipment	Noise emission level	Criteria and Program **Sections 2** and **4** respectively
2. Undertaken quarterly (B, C, D) and annually (G, R) after all components of the project are operating	Quantification of intrusive noise emissions	Program **Section 4.2** for on-site monitoring and **Section 4.3** for community monitoring
3. Undertaken when a non-compliance is identified in Item 2 above	Actions to be determined at the time of non-compliance and would be specific to the individual situation May require unattended continuous noise logging	**Section 4.3**

2. Project Noise Management Plans/Emission Limits

1.2. Noise Management Plan

Condition 12, Schedule 3 of the Approval states that:

12. The Proponent shall prepare and implement a Noise Management Plan for the project to the satisfaction of the Secretary. This plan must:

(a) be prepared in consultation with the EPA, and be submitted to the Secretary for approval prior to undertaking quarrying operations in the Quarry Extension Area or by November 2014, whichever is the sooner;

(b) describe the measures that would be implemented to ensure:

(i) compliance with the relevant conditions of this approval;
(ii) best management practice is being employed; and
(iii) the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply;

(c) describe the proposed noise management system; and

(d) include a monitoring program that:

(i) uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;
(ii) evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and
(iii) defines what constitutes a noise incident at the project, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

Table 2 of the Approval and the associated notes and references are as follows:

Table 2: Noise criteria dB(A)

	Day	Evening	Morning	Shoulder
Location	LAeq(15min)	LAeq(15min)	LAeq(15min)	LAeq(15min)
B	37		37	
C	37		38	
D	38		40	
G	36	35	38	47
R	36		38	
All other privately-owned land	35		35	

Noise generated by the project is to be measured in accordance with the relevant requirements of the NSW Industrial Noise Policy. Appendix 5 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.

However, the noise criteria in Table 2 do not apply if the Proponent has an agreement with the relevant landowner to exceed the noise criteria, and the Proponent has advised the Department in writing of the terms of the agreement.

2.1. Determination of Meteorological Conditions and Compliance Monitoring

Appendix 5 of the Approval, Noise Compliance Assessment, contains the following:

1. The noise criteria in Table 2 of the conditions are to apply under all meteorological conditions except the following:

(a) during periods of rain or hail; or

(b) wind speeds greater than 3 m/s measured at 10 m above ground level.

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions shall be that recorded by the meteorological station on or in the vicinity of the site.

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.

4. Unless otherwise agreed with the Secretary, this monitoring is to be carried out in accordance with the relevant requirements for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:

a) monitoring locations for the collection of representative noise data;
b) meteorological conditions during which collection of noise data is not appropriate;
c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

3. Noise Management Measures

Condition 12b, Schedule 3 of the Approval states that:

> *(b) describe the measures that would be implemented to ensure:*
>
> *(i) compliance with the relevant conditions of this approval;*
> *(ii) best management practice is being employed; and*
> *(iii) the noise impacts of the project are minimised during meteorological conditions under which the noise criteria in this approval do not apply;*

The following best practice construction, operational and transport noise management measures are implemented at the Quarry.

3.1. Site Procedures

- Optimise the site design and layout.
  - The construction and maintenance of the 5 m high earth bund along the extension area boundary. This bund is a permanent fixture and will remain for the duration of quarry operations.
- Raise the awareness and understanding of noise issues and the use of quite work practices via site inductions for all staff, contractors and visitors to the Quarry.
- Avoid the simultaneous use of significant noise generating equipment wherever possible. The least amount of equipment as possible will be used for each project operation.
- Where practical, locate noisy site equipment behind structures that act as barriers (noise barrier/bund), or at the greatest distance from noise-sensitive areas, or orienting the equipment so that the direction of maximum noise emissions are directed away from any sensitive areas in order to achieve the maximum attenuation of noise.
- Minimise noise impacts of the project during meteorological conditions.
  - The Quarry Manager or Quarry Supervisor will assess the risk, taking into account all variables to ultimately decide whether to continue production or delay to a later time.
  - This risk based assessment allows flexibility for the Quarry Manager or Quarry Supervisor to manage quarry staff, the unpredictability of adverse weather conditions and determine what is reasonable and feasible (EPA Noise Policy for Industy Fact Sheet F).

3.2. Plant Equipment

- All machinery and plant used on site will be regularly maintained in order to minimise excessive noise generation.
- Where applicable, maintain the effectiveness of any noise suppression equipment (e.g. high performance mufflers) on the plant to ensure that a defective plant is not operated until repaired.
- Non-tonal reversing alarms would be used for all permanent mobile plant Whilst the use of non-tonal reversing alarms is suggested to ensure noise impacts are minimised, it is noted that OH&S requirements must also be fully satisfied.
- Specify maximum noise/sound power levels when purchasing equipment.

3.3. Source and Transmission Noise Controls

- Enclosure of specific fixed plant and noise intensive areas such as hopper bins and loading bays – where equipment is enclosed, ensure that equipment and enclosure is well maintained and, if openable, kept closed at all times where practicable.

4. Noise Monitoring Program

As discussed, *Condition 12, Schedule 3* of the Approval states that:

> *(d) include a monitoring program that:*
>
> *(i) uses attended monitoring to evaluate the compliance of the project against the noise criteria in this approval;*
>
> *(ii) evaluates and reports on the effectiveness of the noise management system and the best practice noise management measures; and*
>
> *(iii) defines what constitutes a noise incident at the project, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.*

4.1. General Requirements

The noise measurement procedures employed throughout the monitoring program will be in accordance with the requirements of AS 1055 1997 "*Acoustics - Description and Measurement of Environmental Noise*" and the NSW EPA's Noise Policy for Industy, 2017 (NPfI).

4.2. Operator Attended Noise Surveys

Operator attended noise measurements and recordings will be conducted to quantify the intrusive noise emissions from quarrying and processing operations as well as the overall level of ambient noise.

The operator will quantify and characterise the maximum (L_{Amax}) and the average ($L_{Aeq(15minute)}$) intrusive noise level from quarrying and processing operations over a 15 minute measurement period. In addition, the operator shall quantify and characterise the overall levels of ambient noise (ie L_{Amax}, L_{A1}, L_{A10}, L_{A50}, L_{A90}, L_{A99}, L_{Amin}) over the 15 minute measurement interval.

4.3. Monitoring Locations and Intervals

In order to check compliance, noise measurements will be carried out at the closest monitoring locations (B, C, D, G and R) identified in **Table 2**, *Schedule 3* of the Approval. **Figure 1** (Appendix 4 of the Approval) shows the location of the closest adjoining residences identified in **Table 2.**

Figure 1: Location of the Closest Receivers to the Quarry

Quarterly attended noise monitoring at B, C, D (Keighley Avenue) will be conducted for the first three (3) years after all components of the project are operating. All other monitoring locations (G, R) will have noise measurements conducted annually after all components of the project are operating.

If non-compliance is identified, it will be addressed appropriately. This may require unattended continuous noise logging in order to quantify the overall ambient noise levels resulting from quarrying and processing operations as well as from other environmental noise sources.

Noise monitoring may be discontinued if compliance with the nominated criteria is demonstrated at all monitoring locations after three (3) consecutive years.

Table 3 details the sensitive receptors considered within this assessment, as indicated in **Figure 1**.

Table 3: Details of Closest Non-Project Related Residences

Residence Number	Easting MGA (m)	Northing MGA (m)	Distance (m) and Direction to the Residence
A	339,176	6,305,315	30 m E of project site
B	339,297	6,305,657	30 m N of project site
C	339,490	6,305,608	40 m NE of project site
D	339,545	6,305,635	60 m NE of project site
E	339,654	6,305,593	200 m NE of project site
F	339,774	6,305,568	300 m E of project site
G	339,652	6,305,507	140 m E of project site
H	339,908	6,305,290	440 m E of project site
I	339,988	6,305,293	520 m E of project site
J	339,805	6,305,226	340 m ESE of project site
K	339,860	6,305,137	430 m ESE of project site
L	339,822	6,305,045	450 m SE of project site
M	339,940	6,304,957	610 m SE of project site
N	339,766	6,304,967	705 m E of project site
O	339,483	6,304,994	450 m E of project site
P	339,501	6,304,821	480 m SE of project site
Q	339,194	6,304,818	206 m SSE of project site
R	339,015	6,304,836	130 m S of project site
S	338,933	6,304,621	360 m S of project site
T	338,863	6,304,466	520 m SSW of project site

5. Instrumentation and Measurement Parameters

5.1. Operator-Attended Surveys

All acoustic instrumentation employed throughout the monitoring program will be designed to comply with the requirements of AS 1259.2-1990, "*Sound Level Meters*" and carry current NATA or manufacturer calibration certificates.

All instrumentation will be programed to record continuously statistical noise level indices in 15 minute intervals which may include the L_{Amax}, L_{A1}, L_{A50}, L_{A10}, L_{A50}, L_{A90}, L_{A99}, L_{Amin} and the L_{Aeq}.

Instrument calibration will be checked before and after each measurement survey, with the variation in calibrated levels not to exceed ±0.5 dB.

5.2. Weather Monitoring Instrumentation

All noise measurements will be accompanied by both a qualitative description (including cloud cover) and quantitative measurements of the prevailing local weather conditions throughout the survey period.

Meteorological measurements will be guided by the requirements of AS 2923 1987 "*Ambient Air- Guide for Measurements of Horizontal Wind for Air Quality Applications*". An automatic weather station will be used to continuously record the meteorological parameters as shown in **Table 4**.

Table 4: Meteorological Measurement Parameters

Measured Parameter	Unit	Sample Interval
Mean wind speed	km/hr (or m/s)	15 minute
Mean wind direction	Degrees	15 minute
Sigma-theta	Degrees	15 minute
Aggregate rainfall	mm	15 minute
Mean air temperature	°C	15 minute
Mean relative humidity	%RH	15 minute

5.3. Plant and Equipment Observations and Log

During the attended noise measurements, the operator will record any significant quarry generated noise sources (ie haul trucks, dozers, crushers, etc) and collect information regarding the operating equipment and machinery. In addition, the operator will obtain copies of the relevant fixed plant and mobile quarrying equipment operating shift logs.

6. Documenting, Reporting and Corrective Action

6.1. Operator Attended Noise Surveys

The measured contributed noise emissions from quarrying, processing and transporting operations will be evaluated and assessed with the noise emission criteria presented in Table 2 of the Approval.

6.2. Reporting

The Quarry reporting requirements are outlined in *Condition 12, Schedule 3* of the Approval. *Condition 12* requires Hanson to report on the effectiveness of the noise management system on the site. This would, in turn, require reporting any exceedance of the goals/limits/performance criteria or an incident causing (or threatening to cause) material harm to the environment. Such a report would be submitted to the Secretary and any other relevant agencies within 7 days of the exceedances or incident (refer to *Condition 7, Schedule 5* of the Approval).

Condition 4, Schedule 5 of the Approval requires Hanson to submit an annual review of environmental performance to the satisfaction of the Secretary each March.

6.3. Excessive Noise Emissions and Corrective Action

Condition 3, Schedule 5 of the Approval details procedures to follow should a situation occur where monitored project impacts are greater than the relevant impact assessment criteria.

Condition 3 states that:

Where any exceedance of these criteria and/or performance measures has occurred, the Proponent shall, at the earliest opportunity:

(a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;

(b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measure or other course of action; and

(c) implement remediation measures as directed by the Director-Genera (now Secretary) l, to the satisfaction of the Director-General (now Secretary).

Where the noise monitoring identifies non-compliance with the relevant criteria, Hanson will plan and carry out corrective action.

The corrective action may involve supplementary monitoring in order to identify the source of the non-conformance and/or may involve modification of the quarry operations or programme to avoid any recurrence or minimise its adverse effects.

7. APPENDIX A

Consultation with EPA

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Hanson Construction Materials Pty Ltd
Locked Bag 5260
PARRAMATTA NSW 2124

By email: belinda.pignone@hanson.com.au

Attention: Belinda Pignone

29 July 2021

Dear Ms Pignone

Hanson Central Coast sand Quarry – Noise and Air Quality Management Plans
Environment Protection Licence 3751

I refer to your email dated 26 July 2021 to the Environment Protection Authority (EPA), and attached draft copies of Hanson's revised Noise and Air Quality Management Plans.

The EPA encourages the preparation of strategies, programs and plans as useful tools for industry to ensure that a licensee meets the environmental objectives specified in conditions of Environment Protection Licences and Development Approval conditions. As a regulatory authority, the EPA does not review or comment on these management plans.

If you have any questions about this matter, please contact Michael Howat on (02) 4908 6819 or by email to RegOps.MetroRegulation@epa.nsw.gov.au

Yours sincerely

PETER JAMIESON
Unit Head - Regulatory Operations - Metro North
Environment Protection Authority