



NOISE MANAGEMENT PLAN

CORAKI QUARRY

Date of Issue:

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Coraki Quarry Noise Management Plan

Purpose

The noise management plan is required to comply with Condition 15 of the Development Consent Schedule 3.

The Purpose of the noise management plan is to ensure that noise emissions from the activity are minimised and do not result in nuisance at a sensitive place.

Performance Targets

The relevant noise Performance Targets are specified in Table 3 (Condition 4) of the Development Consent Schedule 3, as follows:

Noise Impact Assessment Criteria

4. The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 3 at any residence on privately-owned land.

Table 3: Noise criteria dB(A)

Receiver	Day dB(A) (L _{Aeq} (15 min))	Evening dB(A) (L _{Aeq} (15 min))	Night dB(A) (L _{Aeq} (15 min))
All privately-owned residences	35	35	35

Note: Receiver locations are shown on the figure in Appendix 3.

Noise generated by the development is to be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the *NSW Industrial Noise Policy*. Appendix 4 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 3 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the EPA and the Secretary in writing of the terms of this agreement.

Condition L4.1 of the Environment Protection Licence specifies a noise limit consistent with the Development Consent, as follows:

- L4.1 Noise from the premises must not exceed an LAeq (15 minute) noise emission criterion of 35 dB(A) for receivers R1 to R9, except as expressly provided by this licence.

As allowed for by Development Consent Schedule 3 Condition 4 and EPL Condition L4.2, formal written agreements are in place with the following landowners to the effect that the land owners do not hold objections to the operation of the Coraki Quarry exceeding the noise emission criterion by up to 5 dB(A):

- R1: 200 Lagoon Road, Coraki (Lot 12 on DP6339);
- R2: 95 Spring Hill Road, Coraki (Lot 12 on DO714770);
- R3: 75 Spring Hill Road, Coraki (Lot 7 on DP702544);
- R6: 1905 Casino-Coraki Road, Coraki (Lot 1 on DP788976);
- R7: 140 Newmans Road, Coraki (Lot 401 on DP633427);

The relevant sensitive receptors are labelled on the plan included as **Attachment 1**.

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Relevant Conditions

The noise management plan is required to comply with Schedule 3, Condition 6 of the Development Consent.

Development Consent Schedule 3, Conditions 1 to 7 are relevant to the noise management plan.

Site-Specific Physical Noise Control Measures

- Construct and maintain earth bunds and/or acoustic barriers to the following locations as shown on **Attachment 2** – SSD 7036 Appendix 5: Location of Acoustic Screens (Bunds):
 - Prior to use of the Western Stockpile Area – To the northern perimeter of the Western Stockpile Area to a minimum height of 6 metres above the RL21m pad level ('Screen 1')
 - Southern perimeter of the Southern Stockpile Area to a minimum height of 4 metres above the RL40m pad level ('Screen 2')
 - Northern perimeter of the Southern Stockpile Area to a minimum height of 4 metres above the RL40m pad level ('Screen 3')
 - Northern perimeter of the Extraction Area to a minimum height of 6 metres above the natural ground level ('Screen 4')
 - Prior to utilising Seelems Road for haulage vehicles – To the south of the access road off Seelems Road for a length of 200 metres from the site entry point to a minimum height of 4 metres above the adjacent access road ('Screen 5')
 - Northeastern perimeter adjacent to internal traffic route to a minimum height of 4 metres above the adjacent traffic route ('Screen 6'), noting that:
 - shielding may be achieved by topographical cut of the traffic route; and
 - the northwestern section of 'Screen 6' is not required once the internal traffic route is directed through the extraction area (pit) as the retained topography will achieve the required shielding.

The acoustic 'Screens' may be constructed of any combination of earth bunding, acoustic barrier¹ and/or additional topographic cut to achieve the necessary total height.

- To the extent practicable, locate the processing plant at the most shielded location available (e.g. at the southeastern corner of the existing Petersons Quarry pit at the RL18m bench). If not practicable then appropriate acoustic screening shall be installed to the crushers, screens and any other processing equipment as necessary to comply with the relevant noise limits.

¹ An acoustic barrier must be constructed as gap-free (less than 1% leakage) and of materials achieving a minimum surface density of 12.5kg/m²

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- Where necessary to achieve compliance with the prescribed noise limits, trays of all dump trucks that handle shot rock² and oversize material are to be lined with an appropriate impact absorbing material.
- Construct all internal roads for road haulage and off-road trucks to a standard suitable to allow for effective maintenance to avoid excessive noise associated with uneven surfaces and potholes.
- Mobile plant (e.g. front-end loaders, dozers, haul trucks, excavators) must be fitted with broadband reversing alarms to mitigate potential nuisance from tonal characteristics of traditional beeper alarms.
- Fixed and mobile plant and equipment operated at the site shall be modern and selected to minimise noise emissions.
- Where practicable preference is to be given to using a modern trucking fleet with air bag suspension.

Site-Specific Noise Management Measures

- Hours of operation shall be restricted to:
 - 6 am to 7 pm Monday to Saturday
- Hours of blasting will be restricted to:
 - 9 am to 3 pm Monday to Friday
- Maintenance activities may be conducted at any time, provided that these activities are not audible at any privately-owned residence.
- No operations shall occur on Sundays and Public Holidays
- Wherever practicable materials will be stockpiled at locations that shield noise from internal traffic routes and truck loading areas from the nearest residences i.e.:
 - Maintain stockpiles along the northern perimeter of the Western Stockpile Area and stock / reclaim from the southern side whenever practicable
 - Maintain stockpiles along the southern and eastern perimeters of the Southern Stockpile Area and stock / reclaim from the northern and western sides whenever practicable
- Where necessary to achieve compliance with the prescribed noise limits, maintain impact absorbing linings to dump trucks that handle shot rock³ and oversize material.
- Operate the rock pick at the most shielded location practically available within the pit to provide acoustic shielding to the north and east.
- Drilling must be undertaken using a quietened drill rig.

² i.e. pit to plant haulage

³ i.e. pit to plant haulage

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- Where necessary to achieve compliance with the prescribed noise limits extraction sequencing will be designed such that the drill rig is shielded to the north by retained topography of minimum height 5 metres above the drilling pad level and, if necessary, supplemented with earth mounding and/or acoustic barriers to achieve the overall physical shielding.
- Maintain all internal roads for road haulage and off-road trucks to avoid excessive noise associated with uneven surfaces and potholes.
- Commissioning phase noise testing is to confirm acceptable siting and/or acoustic treatment of the processing plant.
- Fixed and mobile plant and equipment operated at the site shall be maintained to minimise noise emissions.
- In the event of noise monitoring identifying non-compliance or a trend towards non-compliance with the Performance Targets appropriate corrective action is to be undertaken which may include modification of operations, implementation of additional mitigation measures and/or amendment of the Noise Management Plan.
- All reasonable and feasible measures shall be implemented to minimise noise emissions from the development such as the selection of low noise machinery, appropriate maintenance of machinery and application of low noise operational practices.

General Noise Management Strategies

Strategies/mitigation measures for the management of noise emissions from the site will be implemented in accordance with the relevant conditions of development. Relevant management strategies for quarrying activities include the following:

- Enclose fixed engines, pumps and compressors where practicable.
- Maintain equipment in accordance with the original equipment manufacturer's specifications.
- Shut down equipment when not in use.
- Limit vehicle speed to 40 km/hr on internal access roads.
- Heavy mobile equipment (e.g. front-end loaders, dozers, haul trucks, excavators) shall be fitted with broadband reversing alarms to mitigate potential nuisance from tonal characteristics of traditional beeper alarms.
- Avoid unnecessary operation of plant or revving of mobile or stationary motors and engines.
- Fixed and mobile plant and equipment operated at the site must be selected and maintained to minimise noise emissions.

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Monitoring

Noise monitoring is to be undertaken in accordance with the Noise Monitoring Plan in **Attachment 3**.

Development Consent Schedule 3 Condition 7 requires a Noise Compliance Review be undertaken within 3 months of commencement of operations with a report to be submitted to the Secretary in accordance with the condition.

Quarterly (at least once every 3 months) compliance noise monitoring is required by Development Consent Schedule 3 Condition 5(c).

Noise monitoring beyond the scope of the Noise Monitoring Plan shall be undertaken at the request of the administering authority. If requested, monitoring shall be carried out at a place(s) relevant to the potentially affected sensitive place(s) and must include:

- Attended compliance monitoring using calibrated equipment at a time when:
 - The quarry is operating normally and/or in a manner specifically requested by the EPA (e.g. if specific operations are identified as a cause of complaint); and
 - Meteorological conditions are valid for the purposes of assessment against the noise emission criterion, as specified in EPL Condition L4 and Development Consent Appendix 4.

Compliance noise monitoring is to be undertaken 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) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment;
- (c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration; and
- (d) the use of an appropriate modifying factor for low frequency noise to be applied during compliance testing at any individual residence if low frequency noise is present (in accordance with the INP) and before comparison with the specified noise levels in the consent.

Complaint Response Procedure

Complaints in relation to noise shall be managed in accordance with the Incidents and Complaints Procedure included as Attachment 1 of the Environmental Management Plan.

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Corrective Action and Contingency Plan

The Quarry Manager shall take appropriate action to rectify unpredicted impacts or any identified management or equipment deficiencies in accordance with the requirements of the Incidents and Complaints Procedure included as Attachment 1 of the EMP.

The Quarry Manager may request the services of a specialist consultant to investigate and to give advice to assist in resolving the unpredicted impacts.

Auditing and Review

The Quarry Manager shall review this management plan and its management measures to confirm their effectiveness and investigate ways to improve environmental performance. The management plan shall be reviewed at least once every year at the time of completing the Annual Review as required by Schedule 5, Condition 9 of the Development Consent.

ATTACHMENT 1

Coraki Quarry Noise Management Plan



ATTACHMENT 2

ATTACHMENT 3

Coraki Quarry Noise Management Plan

Noise Monitoring Plan

Purpose

Noise monitoring is required to comply with Conditions 5(c) and 7 of the Development Consent Schedule 3.

Condition 5(c) of the Development Consent Schedule 3 requires that noise monitoring be conducted at least every 3 months.

Condition 7 of the Development Consent Schedule 3 requires that a Noise Compliance Review including compliance noise monitoring be conducted within 3 months of commencement of operations.

The purpose of the noise monitoring program is to ensure that the operation of the quarry is compliant with the relevant conditions of the Development Consent.

Quarterly Noise Monitoring

Requirement

Development Consent Schedule 3 Condition 5(c) requires compliance noise monitoring to be undertaken at least once every 3 months from commencement of operations.

The noise monitoring data will allow for compliance assessment against the criteria specified in Table 3 of the Development Consent Schedule 3.

Locations

To the extent practicable, noise monitoring locations shall be representative of the nearest noise sensitive places identified as residences R1 to R9 on **Attachment 3** – SSD 7036 Appendix 3: Location of Surrounding Residents.

Subject to permission from the landowners, noise monitoring shall be conducted at residences R1, R2, R6 and R7, as a minimum. To the extent practicable, monitoring locations shall be:

- Within 30 metres of the dwelling and considered to be the most affected by noise from the quarry;
- Free-field i.e. not within 3.5 metres of a vertical reflective surface; and
- Not unreasonably affected by extraneous noise sources.

It will be necessary to determine specific noise monitoring locations based upon on-site assessment.

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Equipment

Sound level meters and field calibrators shall hold current NATA calibration certificates.

Field calibration of the sound level meter shall be undertaken prior to and at completion of the monitoring. Measurements are invalid if deviation of greater than 0.5 dB(A) is evident between the pre- and post-measurement field calibrations.

Meteorological conditions during the compliance noise monitoring shall be taken from the weather station required to be operated in accordance with Development Consent Schedule 3 Condition 16.

Monitoring Requirements

Compliance noise monitoring shall be conducted by an appropriately qualified person.

Monitoring shall be conducted using the following sound level meter settings:

- 'Fast' time response
- 'A' frequency weighting

Monitoring shall be undertaken for a minimum period of 15 minutes at each location.

As a minimum, the following acoustical parameters shall be measured:

- L_{Aeq}
- L_{A1eq} (impulse weighted L_{Aeq} for assessment of impulse noise if the characteristic is present)
- One-third octave band L_{Aeq} (for assessment of tonality if the characteristic is present)

Extraneous noise influences shall be excluded from the monitoring data to the extent feasible through field-exclusions and/or post-processing of data. In circumstances when extraneous noise influence is significant, the use of an audio recording function and operation of the sound level meter in a logging mode with capability to 'mark' certain periods of activity and extraneous noise may assist in processing data to provide a more accurate assessment of noise from the quarry.

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Analysis and Reporting

Compliance noise monitoring data shall be analysed by an appropriately qualified person in accordance with the *NSW Industrial Noise Policy (2000)*.

A compliance noise monitoring report shall be prepared by an appropriately qualified person and shall report, as a minimum:

- Any inconsistency with the requirements of the Noise Monitoring Plan
- The noise monitoring locations
- Meteorological conditions during each measurement including wind speed, wind direction, cloud cover, rainfall
- Any extraneous noise influences (e.g. birds, insects, traffic on public roads)
- Audible noise sources from the operation of the quarry
- An assessment of whether the operational and meteorological conditions during the monitoring period are valid conditions for the assessment of compliance with the Performance Targets
- An assessment of the L_{Aeq} (15 minute) quarry noise levels at each monitoring location and compliance status against the Noise Impact Assessment Criteria
- Any applicable modifying factor adjustments related to the noise character (e.g. tonality, impulsiveness, low-frequency noise)
- If non-compliance with the Performance Targets is identified then proposed corrective actions or a proposed process for determination of corrective actions (e.g. investigation of mitigation measures)

The Quarry Manager or Delegate shall maintain records of the monitoring results to identify trends that are likely to result in non-compliance with the Performance Targets. Noise monitoring data shall be summarised in a report to be submitted to the Secretary (NSW Government Department of Planning and Environment) and the NSW EPA with the Environment Protection Licence annual return. If non-compliance with the Performance Targets is identified then the report must propose corrective actions or a process for determination of corrective actions.

Calibration and Maintenance

Sound level meters and field calibrators utilised for monitoring in accordance with this plan shall hold current NATA calibration certificates.

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Timing and Frequency

- Initial compliance noise monitoring is to be undertaken within 3 months of commencement of operations as a component of the Noise Compliance Review required by Development Consent Schedule 3 Condition 7.
- Compliance noise monitoring is to be undertaken at least every 3 months in accordance with Development Consent Schedule 3 Condition 5(c) unless otherwise approved by the Secretary (NSW Government Department of Planning and Environment).