

# Gerroa Sand Resource

## Noise Management Plan

### Appendix C of Quarry Environmental Management Plan

Version 1 | Revision 4

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## Document Control

Version	Date	Reason	Reviewed	Approved
V1r1	20/6/22	Draft plan for Agency review	M Hammond	
V1r2	26/8/22	Updated plan for submission to DPE	M Hammond	
V1r3	11/11/22	Updated plan following DPE review	M Hammond	
V1r4	28/11/22	Updated plan following DPE review	M Hammond	DPE 5/12/22

## 1. Introduction

This Noise Management Plan (NMP) forms part of the Quarry Environmental Management Plan (QEMP) for the Gerroa Sand Resource (Project). This NMP has been prepared to meet the requirements of the Consolidated Approval for Project 05/0099, as modified and approved by the Minister for Planning on 10 June 2022 (the Consent). The NMP sets out the noise management measures and strategies that will be employed on the Project to meet the requirements of the Consent and Cleary Bros commits to implement this NMP as approved by the Planning Secretary.

## 2. Purpose and Objectives

The purpose of this NMP is to describe how the Project will be operated to minimise noise-related impacts to the amenity of adjoining residents and communities and demonstrate compliance with the Noise Impact Assessment Criteria. Specifically, the NMP has been prepared to address conditions 2 – 4A of Schedule 3 of the Consent. The key objectives of the NMP are to minimising noise-related community complaints and meet the Assessment Criteria.

## 3. Requirements

This Noise Management Plan has been prepared to ensure compliance of the Project with Modification 1 of Development Consent 05/0099. A summary of the requirements of the Consent addressed by this plan are described in this section, along with a link to the management measures that address these requirements.

**Table 1 – Noise Management Requirements**

Requirement	Link to Noise Management Plan
<b>Sch 3 Cond 2 – Noise Impact Assessment Criteria</b>	Section 5 – Existing Environment and Noise Impact Assessment Criteria; Section 7 – Noise Monitoring Program; Section 8 – Review, Improvement and Reporting
<b>Sch 3 Cond 3 – Hours of Operation</b>	Section 6 – Noise Mitigation Measures
<b>Sch 3 Cond 4 – Noise Operating Conditions</b>	Section 6 – Noise Mitigation Measures; Section 7 – Noise Monitoring Program; Section 8 – Review, Improvement and Reporting
<b>Sch 3 Cond 4A – Noise Management Plan</b>	This Plan

A number of common requirements of the Development Consent are addressed in the QEMP, and are not directly reproduced in this NMP. Table 2 lists these requirements and where they are addressed in the QEMP.

**Table 2 – Common Development Consent Requirements**

Reference	Requirement	Link to QEMP
<b>Schedule 4 Cond 1</b>	Notification of Landowners	Section 10.3
<b>Cond 2 - 5</b>	Independent Review	Section 10.4

Reference	Requirement	Link to QEMP
<b>Schedule 5 Cond 1</b>	Environmental Management Plan	All sections
<b>Cond 2</b>	Environmental Monitoring Program	Section 6; also see Section 7 of NMP
<b>Cond 2A</b>	Nominated Environmental Officer	Section 3; also see Section 8.1 of NMP
<b>Cond 2B</b>	Revision of Strategies, Plans & Programs	Section 1.3.3; also see Section 8.5 of NMP
<b>Cond 3 &amp; 3A</b>	Incident Notification	Section 9.3.2
<b>Cond 3B</b>	Regular Reporting	Section 9.3.3
<b>Cond 4</b>	Annual Review	Section 9.3.1; also see Section 8.2 of NMP
<b>Cond 5 - 6</b>	Independent Environmental Audit	Section 9.1; also Section 8.3 of NMP
<b>Cond 7</b>	Independent Environmental Audit	Section 9.1; also Sections 1.3.3 & 6.9.4
<b>Cond 8 - 9</b>	Community Consultative Committee	Section 10.1
<b>Cond 10 – 11</b>	Access to Information	Section 9.3.3

#### 4. Plan Development and Consultation

The Noise Management Plan has been prepared by Mark Hammond, an experienced environmental professional with over 10 years practical experience developing noise mitigation strategies and implementing noise management plans on mine and quarry sites, and who has been endorsed by the Planning Secretary as a suitably qualified and experienced person for the preparation of this plan (Department Reference: DA264/01-PA-11). Cleary Bros have also relied upon input from specialist acoustic consultants from SLR Consulting as part of the preparation of this plan.

A copy of the draft Noise Management Plan was provided to the Environment Protection Agency for their input prior to finalisation. The EPA advised that they are not in a position to review or approve the management plan, and that further advice in regards to EPA guidelines could be found on the EPA website.

#### 5. Existing Environment and Noise Impact Assessment Criteria

The Cleary Bros Gerroa Sand Quarry extracts and processes sand for inclusion in Cleary Bros concrete products produced at their Illawarra based batch plants. The site has an extensive history of operation as a sand quarry, with the quarry in operation for over 60 years under a succession of development approvals. The current approval permits the site to export 80,000 tonnes per annum of sand and related products.

The site consists of two dredge ponds (Existing and Modification), with topsoil firstly removed using a dozer or an excavator and truck. Sand is dredged using a mobile dredge, with the sand slurry pumped to a central wet processing plant where the sand is screened. Stockpiled sand is loaded onto road-going trucks using a loader, which is then transported to various sites via Beach Road and the Crooked River Road.

The typical equipment on the site and their SWLs are listed in Table 3. The Dozer has a sound power level 6 dBA greater than any other equipment, and as such is at least 4 times louder than other equipment, and is the primary contributor to noise emissions from site operations.

**Table 3 – Sound Power Levels for Equipment**

Plant Item	LA <sub>eq</sub> Sound Power Level (dBA) re 10 <sup>-12</sup> watts
Excavator 30 tonne (Cat 330B)	104
Dozer (Cat D6H)	114
Rubber Tyred Loader	107
Sand Dredge	106
Wet Sorter (Processing Plant)	99
Water Cart	108
Trucks	108

As part of the Modification 1 Environmental Assessment, various operational scenarios were modelled to reflect activities that may occur on a regular basis, including typical operation (dredge, processing plant, loader and truck deliveries), topsoil removal (excavator with 2 trucks or dozer).

The site is surrounded by:

- the Crooked River Road to the east, and beyond that Seven Mile Beach National Park
- Cleary Bros agricultural landholdings to the north and west
- Beach Road and rural residential subdivisions to the south

The nearest sensitive receivers are shown in Figure 1, and consist of the rural residential subdivisions to the south, picnic areas within the national park to the east, the rural residence of Athelstane to the north, and the Seven Mile Beach Holiday Park to the northeast. There are other closer residences on land owned by Cleary Bros, however these are considered Project-related, and include the Coralea residence.

The site is located in a flat-lying floodplain, with only low topographical features up to 50m elevation in the surrounding area. Analysis of meteorological data from the on-site weather station against the Noise Policy for Industry (Npfi 2017) criteria has indicated that there are no prevailing winds applicable to the site during the hours of operation (represented as day time conditions under the Npfi). Furthermore, as there are no night-time operations on the site, temperature inversion do not need to be considered under the Npfi. As such, noise enhancing conditions are not considered to be a feature of the area during the operational hours of the site.

The Noise Assessment undertaken as part of the Modification 1 application utilised a SoundPLAN model to predict noise levels at the nearest sensitive receivers. SoundPLAN is a software package which enables compilation of a sophisticated computer model comprising a digital ground map (containing ground contours), the location and sound power levels (SWL) of noise sources on site, and the location of sensitive receivers for assessment purposes. The computer model predicts noise propagation taking into account factors such as distance attenuation, ground hardness, air absorption and barrier shielding effects, as well as meteorological conditions.

The predicted LA<sub>eq</sub>(15minute) intrusive noise emissions from the proposed material reprocessing and delivery operations, and top soil removal, at the nearest receivers are presented in Table 4. The maximum levels expected at each receiver throughout the life of the sand extraction are presented, with scenarios modelled with the moving extraction (dredge) and overburden removal (dozer) equipment operating at the closest location of the extraction area to each receiver. Note these noise levels were predicted based on the original planned footprint of Modification 1, which was significantly larger than the revised footprint

approved under Modification 1. This is particularly the case with receivers to the north of the site, including Athelstane and Seven Mile Beach Holiday Park, where actual noise levels are likely to be less than those predicted due to exclusion of the “Northern Paddock” from the Project footprint (refer to the Modification 1 Environmental Assessment for further detail).

Previous monitoring of noise levels undertaken for operations in the existing extraction area in April 2009 identified that site operations were inaudible at all sensitive receptors. Noise levels at each receiver were therefore modelled based on the noise levels measured within the site, and are included in Table 4.

The noise criteria for the Project are presented in Table 4 and represent the maximum noise levels permissible at each of the sensitive receivers as a result of site activities.

**Table 4 – Predicted Noise Levels and Noise Criteria for Sensitive Receivers (Laeq (15-minute) dB(A))**

Receiver	Predicted Intrusive Noise Level	Historical Noise Levels	Noise Criteria
<b>670 Beach Road</b>	41	29	41
<b>11 Bangarrai Street</b>	31	30	40
<b>Seven Mile Beach Holiday Park</b>	32	27	36
<b>Athelstane</b>	43	31*	40
<b>Seven Mile Beach National Park Picnic Area 1</b>	31	38	40
<b>Seven Mile Beach National Park Picnic Area 2</b>	27	30	40
<b>Any other residential receiver</b>	N/A	N/A	40

\* Noise level shown for the adjacent Coralea residence

The predicted noise level for Athelstane when undertaking site activities adjacent to the Athelstane property is greater than the noise criteria in the Development Consent. However, there will be no Project-related activities in this area due to the reduced footprint of the Modification Area, and as such, actual noise levels at the Athelstane residence are likely to be significantly lower than those predicted in Table 4. Monitoring of noise levels as described in Section 7 will be used to verify conformance with the noise criteria, with the protocols described in Section 0 implemented for any exceedance.

No noise related complaints have been received in at least the past 15 years of operation at the site.

Cleary Bros has not entered into an agreement with any other landowner with regard to acceptable noise levels on their property, and as such the Noise Impact Assessment Criteria as listed in the Consent apply.

The location of the closest sensitive receptors and monitoring sites are shown in Figure 1.



## 6. Noise Mitigation Measures

A range of design and operational measures will be implemented on the site to minimise noise from construction and operational activities, as well as truck movements associated with the site.

The following design features have been incorporated into the Project to reduce noise levels recorded at nearby sensitive receivers:

- Siting the processing plant, truck loading area, and return water pump in the central part of the site, away from the rural residential receivers to the south.
- The modification dredge pond is acoustically protected from the nearest sensitive receivers (R4 and R5) by topographical features, including a spur to the northwest of the new dredge pond, and dune features to the east.
- Sealing the first 200 metres of the access road within the site to limit road noise closest to the rural residential area to the south.
- Equipment utilised on the Project has been specifically selected to be fit for purpose.
- Should any new equipment be introduced to the site, noise emissions from that plant will be measured and if necessary, attenuated to ensure the noise criteria are met.

Other operational controls implemented to minimise sound generation include:

- Limiting speed on site to 20 km/h to minimise truck noise.
- Limiting operating hours of the site and truck movements to 7:00am to 6:00pm Monday to Friday and 7:00am to 1:00pm Saturdays, with no operations on Sundays or public holidays.
- Maintain plant and equipment to manufacturers' specifications.
- Ensure all truck drivers leaving the site are familiar with and adhere to the requirements of Cleary Bros Drivers Code of Conduct, which includes driver behaviour training around noise minimisation measures such as:
  - Adherence to the approved operating hours of the site.
  - Utilisation of the approved truck routes only in the vicinity of the site.
  - Restricting the use of compression brakes unless required for safety reasons.
  - Turning off truck engines when parked or waiting for an extended period of time.
- Implement a noise monitoring program to ensure compliance with the noise criteria.
- Advertise the contact number at the front of the site, to provide community members with a contact point should they wish to raise concerns regarding noise.
- Cleary Bros complaints management process (refer to QEMP) ensure all community complaints are investigated and followed up as relevant to each complaint.
- Conduct regular Community Consultative Committee meetings to ensure dissemination of project information and to provide a forum for community members to raise any concerns regarding noise emissions.

Noise enhancing conditions may be encountered during the daytime period when the wind speed is between 0.5m/s and 3m/s. During these conditions, noise emissions may be greater than that predicted under the standard meteorological conditions. To minimise the noise impacts associated with these conditions, the following operational controls will be implemented:

- Weather station will be configured to send an alert to the Quarry Manager daily whenever noise-enhancing conditions (wind speeds 0.5m/s to 3m/s) are recorded at the site weather station.
- Cleary Bros will not operate the Dozer when an alert has been received, until the weather station is no longer recording noise-enhancing conditions.



## 7. Noise Monitoring Program

Source	The project approval requires preparation of a noise monitoring program for the project (schedule 3, condition 4A(c)). This section presents the noise monitoring program. A summary of the noise monitoring program is presented in Table 5
Location	Noise monitoring locations are shown on Figure 1 and are as follows: <ul style="list-style-type: none"><li>• 670 Beach Road (R1);</li><li>• 11 Bangarra Street (R2);</li><li>• the Coralea property (as proxy for R4 Athelstane);</li><li>• receivers R5 and R6 in Seven Mile Beach National Park; and</li><li>• R3 Seven Mile Beach Holiday Park.</li></ul>
Frequency	Initial noise monitoring is to be undertaken within three months of the commencement of operations in the modification area. Subsequent noise monitoring will be undertaken annually during the winter months. Winter monitoring has been selected as this is the period which was identified as having the greatest likelihood of noise enhancing conditions.
Method	<p>Noise monitoring will be undertaken in accordance with the NSW EPA's Noise Policy for Industry (2017).</p> <p>Operator attended measurements will be taken to quantify the maximum (L<sub>Amax</sub>) and the average (L<sub>Aeq15min</sub>) intrusive noise from site activities over a 15 minute measuring period. Measurements are to be taken during the daytime while the site is in normal operation.</p> <p>All measurements will be made with acoustic instrumentation carrying current NATA or manufacturer calibration certificates. Instrument calibration will be checked before and after each measurement survey.</p> <p>Noise measurements will be undertaken at the most affected point of the receptor boundary for residences, within the clearing at each recreational area, and at the southernmost boundary of the caravan park. Noise monitoring will be scheduled to target periods of calm conditions.</p> <p>Where applicable the modification factors in Fact Sheet C of the Noise Policy for Industry will be applied to the measured noise level (these factors refer to noise that is tonal, impulsive, intermittent, irregular or with dominant low frequencies).</p> <p>All noise measurements will be accompanied by qualitative and quantitative measurements of prevailing local weather conditions in line with Section B3 of the Noise Policy for Industry. The operator shall record any significant sand quarry generated noise sources and obtain the operating logs for quarry plant and equipment during the measurement period.</p>
Performance targets	The performance targets are as per the criteria listed in Table 5.

**Table 5 – Summary of Noise Monitoring Program**

Receiver	Criteria (L <sub>aeq</sub> )	Frequency	Method	Responsibility
670 Beach Road	41	Within 3 months of commencing extraction activities in Mod 1 area, then annually in Winter thereafter	15 minute operator-attended measurements as per NPfI (2017). Record L <sub>Amax</sub> and L <sub>Aeq,15min</sub>	Environmental Officer (monitoring and review)
11 Bangarra Street	40			
Seven Mile Beach Holiday Park	36			
Athelstone	40			
Seven Mile Beach National Park Picnic Area 1	40			
Seven Mile Beach National Park Picnic Area 2	40	Daytime measurements while site operating		
Any other residential receiver	40	In response to complaint or request only		

## 8. Review, Improvement and Reporting

Regular reviews of environmental monitoring data and management strategies will be undertaken to ensure the Noise Management Plan meets its objectives and that the noise-related criteria are not exceeded. This will include formal and informal checks as follows:

- Internal review of noise monitoring data following each monitoring event by the Environmental Officer.
- Annual Review completed by the Environmental Officer following the end of each financial year (reporting period).
- Independent Environmental Audits conducted on a three-yearly basis.

### 8.1 Internal Review

The Environmental Officer will review all noise monitoring data following each monitoring event. This will include a review of monitoring data against the noise criteria, and to informally assess any unexpected results. The Environmental Officer will prepare a report in line with the reporting requirements of the Noise Policy for Industry which states whether compliance has been achieved with the noise criteria.

### 8.2 Annual Review

The Annual Review will be prepared by the Environmental Officer within two months of the end of the reporting year (July to June) and will:

- describe the activities associated with the project that was carried out in the previous financial year, and the activities that are proposed to be carried out over the current financial year;
- include a comprehensive review of the noise monitoring results and complaints records over the previous financial year, which includes a comparison of these results against:
  - the noise impact assessment criteria;
  - monitoring results from previous years;

- requirements of this Noise Management Plan; and
- predictions in the environmental assessment (EA);
- identify any non-compliance or incident which occurred during the previous financial year and describe what actions were (or are being) taken to rectify the non-compliance and avoid recurrence;
- evaluate and report on the effectiveness of the noise amenity management and mitigation measures, and the compliance with the noise impact assessment criteria;
- identify any trends in the monitoring data over the life of the Project;
- identify any discrepancies between the predicted and actual impacts of the Project, and analyse the potential cause of any significant discrepancies;
- describe what measures will be implemented over the current financial year to improve the environmental performance of the project; and
- review the suitability of the Noise Management Plan.

An electronic copy of the Annual Review will be provided to the Department and members of the Community Consultative Committee, as well as uploaded to the Cleary Bros website.

### 8.3 Independent Environmental Audit

Every three years, Cleary Bros will engage a suitable qualified, experienced, and independent person(s) to undertake an independent environmental audit. The audit will be conducted in accordance with Schedule 5 Condition 5 of the Development Consent, with the auditor approved by the Planning Secretary.

### 8.4 Corrective Actions and Improvement Measures

In the event a review of monitoring data as described in Sections 8.1 to 8.3 identify an exceedance of the noise impact assessment criteria or a noise complaint is received, corrective actions will be considered as summarised below. Within 7 days of becoming aware of a non-compliance of a noise impact assessment criteria, Cleary Bros will notify the Planning Secretary (via Major Projects Portal) and EPA (via Environmental Line), providing the condition of this approval that the project is non-compliant with, why it does not comply and the reasons for the non-compliance (if known) and what actions have been, or will be, undertaken to address the non-compliance.

The actions implemented will depend on the nature of the issue following an investigation into the source of the event. Potential corrective actions that will be considered in response to a noise incident:

- Where issue relates to once off event, modify or stop operations to avoid similar event.
- Review existing mitigation measures.
- Modify or stop operations during specific weather events (eg. certain wind speed and direction).
- Verify sound power levels of equipment.
- Implement additional measures such as noise suppression kits.
- Follow up monitoring to confirm validity of any suspect results or to verify the effectiveness of corrective action(s).
- Undertake additional noise monitoring at receiver location to verify noise levels.

### 8.5 Noise Management Plan Review

The Noise Management Plan will be reviewed annually as part of the Annual Review process, as well as within three months of an Independent Environmental Audit or approval of a modification to the Development Consent. The Plan will also be reviewed following any incident related to noise management such as an exceedance of the noise impact assessment criteria. In the event the review identifies that

changes are required to the Noise Management Plan, these will be undertaken within 6 weeks of the review and submitted to the Planning Secretary for approval.