Marulan South Limestone Mine | SSD 7009

Noise Management Plan

Prepared for Boral Cement Limited | 23 March 2022

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23 March 2022

PR163

	Prepared by	Reviewed by
Name	Rod Linnett	Oliver Muller
Company	Muller Acoustic Consulting Pty Ltd	Muller Acoustic Consulting Pty Ltd
Position	Senior Consultant	Principal Consultant
Signature		
Date	23 March 2022	23 March 2022

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DOCUMENT CONTROL

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1 INTRODUCTION

1.1 Background

Boral Cement Limited (Boral) owns and operates the Marulan South Limestone Mine (the mine), an open cut mine located in Marulan South, New South Wales (NSW). Limestone mining north of Bungonia Gorge began around 1830 with major developments emerging in the 1920s to supply limestone for cement manufacturing and steel making.

The limestone mine was opened in 1929 to supply limestone for cement, manufacturing and steel making. By 1953 two main pits (northern mine pit and southern mine pit) were well established and by the early 1970s the facets of the business included limestone for cement, steel making, agriculture, glass making, lime manufacturing, quicklime and hydrated lime.

The mine produces up to 3.38 million tonnes (Mt) of limestone based products per year for the cement, steel, agricultural, construction and commercial markets.

Due to changes in the *NSW Mining Act 1992* (Mining Act) and the NSW *Environmental Planning & Assessment Act 1979* (EP&A Act), a State significant development (SSD) consent under the EP&A Act was required to move mining operations beyond the area covered by the mining operations plan (MOP).

Two approvals are required for the mine:

- a consent for the Project (SSD 7009) under Part 4, Division 4.7 of the EP&A Act; and
- controlled action approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for impacts on listed threatened species and communities (sections 18 and 18A of the Act).

An environmental impact statement (EIS) was prepared to accompany the application for SSD 7009 and addresses the requirements of State agencies under the EP&A Act and the Commonwealth Department of Agriculture, Water and the Environment. A response to submissions (RTS) report was subsequently prepared to consider and respond to agency and public submissions and provide clarification of project components where relevant.

Development consent (the consent) was granted by the Department of Planning, Industry and Environment (DPIE) on 19 August 2021, to continue mining limestone at a rate of up to 4 million tonnes per annum (Mtpa) for a period of up to 30 years (the Project).

To satisfy Condition of Consent (CoC) D5(i), the EIS, RTS, development consent and other publicly available information related to the assessment and determination of SSD 7009 can be accessed on DPIE's Major Projects Planning Portal (https://www.planningportal.nsw.gov.au/major-projects/project/9691).

The consent requires the preparation and implementation of a number of management plans, strategies, protocols and procedures detailing environmental commitments, controls and performance objectives at the mine throughout its operational life. A Noise Management Plan (NMP) is required in accordance with CoC B8.

This plan incorporates the relevant management measures presented in the EIS, RTS and conditions of consent relating to noise**.** The NMP will continue to remain a dynamic document which will be updated as required over the life of mining operations until 31 August 2051.

This NMP has been prepared by Muller Acoustic Consulting Pty Ltd (MAC) on behalf of Boral. MAC are a member firm of the Association of Australasian Acoustic Consultants (AAAC). The author and reviewer are both members of the Australian Acoustical Society and hence, are considered suitably qualified and experienced and have been endorsed by the Planning Secretary.

1.2 Overview of Operations

1.2.1 Site Description

The Project site is in Marulan South, 10 km south-east of Marulan village and 35 km east of Goulburn. It is in the Goulburn Mulwaree Local Government Area (LGA).

The mine is separated from the Bungonia National Park (NP) and State Conservation Area to the south by Bungonia Creek and is separated from the Shoalhaven River and Morton NP to the east by Barbers Creek.

The Project site and surrounds are characterised by rolling hills of pasture interspersed with forest to the west, contrasting with the heavily wooded, deep gorges that begin abruptly to the east of the mine, forming part of the Great Escarpment and catchment of the Shoalhaven River.

Access is via Marulan South Road, which connects the mine and Boral's Peppertree Quarry with the Hume Highway approximately 9 km to the north-west. Boral's private rail line connects the mine and Peppertree Quarry with the Main Southern Railway approximately 6 km to the north.

The Project site covers historical and proposed future areas of disturbance and comprises two geographically separate areas:

- the existing mine including the proposed 30-year mine footprint and associated infrastructure; and
- the proposed Marulan Creek dam to be on Marulan Creek, within Boral landholdings approximately 2.5 km north of the mine entrance.

The Project site covers an area of 846.4 ha. The existing pre SSD disturbance footprint is 341.5 ha with 256.5 ha of new disturbance associated with the proposed 30-year mine plan.

Most of the Project site is zoned RU1 - Primary Production under the Goulburn Mulwaree Local Environmental Plan (LEP) 2009. Mining and extractive industries are permissible in this zone with consent. The remaining area is zoned E3 - Environmental Management. Mining and extractive industries are prohibited in this zone. However, as agriculture is permitted in the E3 zone with consent, mining is also permitted in this zone under the Mining Sate Environmental Planning Policy with consent.

1.2.2 Overview of existing mining

The mine is sited on a high grade limestone resource. Subject to market demand the mine has typically produced up to 3.38 Mt of limestone and up to 200,000 t of shale per annum.

The mine currently produces a range of limestone products for internal and external customers in the Southern Highlands/Tablelands, the Illawarra and Metropolitan Sydney markets for use primarily in cement and lime manufacture, steel making, agriculture and other commercial uses. Products produced at the mine are despatched by road and rail, with the majority despatched by rail.

Historically limestone mining was focused on the approximately 200-300 m wide Eastern Limestone and was split between a north pit and a south pit. A limestone wall (referred to by the mine as the 'centre ridge') rising almost to the original land surface, divided the two pits. The north and south pits were joined in 2016/2017 by mining the centre ridge to form a single contiguous pit, approximately 2 kilometres (km) in length. However, the north pit/south pit nomenclature remains important as current mining operation locations continue to be reported with respect to one or other of the old pits.

Limestone and shale are extracted using open-cut hard rock drill and blast techniques. Limestone is loaded using front end loaders and hauled either to stockpiles or the processing plant using haul trucks. Oversized material is stockpiled and reduced in size using a hydraulic hammer attached to an excavator.

Limestone processing facilities including primary and secondary crushing, screening, conveying and stockpiling plant and equipment are in the northern end of the north pit. Kiln stone grade limestone is also processed on site through the existing lime plant comprising kiln stone stockpiles, rotary lime kiln, hydration plant and associated auxiliary conveying, processing, storage, despatch plant and equipment. Overburden from stripping operations is emplaced in the Western Overburden Emplacement (WOE), west of the open cut pits.

1.2.3 Overview of approved project

Consent was granted for a 30-year mine plan accessing approximately 120 Mt of limestone down to a depth of 335 m. The mine footprint focuses on an expansion of the pit westwards to mine the Middle Limestone and to mine deeper into the Eastern Limestone. As the Middle Limestone lies approximately 70-150 m west of the Eastern Limestone, the 30-year mine plan avoids mining where practical the interburden between these two limestone units thereby creating a smaller second, north-south oriented west pit with a ridge remaining between. The north pit will also be expanded southwards, encompassing part of the south pit, leaving the remainder of the south pit for overburden emplacement and a visual barrier.

Limestone will be extracted at up to 4 Mtpa for 30 years until 31 August 2051. Clay shale will also continue to be extracted at up to 200,000 tonnes per annum (tpa). The limestone will be processed to create limestone and lime products including limestone aggregates and sand, hydrated lime and quick lime.

Existing infrastructure is being retained along with the following changes:

- relocation of a section of high voltage power line to accommodate a proposed overburden emplacement;
- realignment of a section of Marulan South Road, to accommodate a proposed overburden emplacement;
- relocation of the processing infrastructure and the stockpile and reclaim area at the northern end of the north pit to allow the northward expansion of the pit;
- development of a shared Road Sales Stockpile Area including a weighbridge and wheel wash to service both the mine and Peppertree Quarry; and
- construction of a 118 megalitre (ML) in-stream water supply dam on Marulan Creek.

Boral will transport up to 600,000 tpa of limestone and hard rock products along Marulan South Road to the Hume Highway, as well as 120,000 tpa of limestone products to the agricultural lime manufacturing facility.

The Project provides continued direct employment for 118 people on the mine site and 73 offsite. It will operate 24-hours per day, 7 days per week.

1.3 Environmental management framework

The mine operates in accordance with the Boral integrated Health Safety, Environment and Quality Management System (HSEQ MS) which establishes a strategic platform for regulatory compliance and continual improvement in environmental management. This framework is documented in GRP-HSEQ-1-01 Management System Framework and Operational Control. The Boral HSEQ MS is aligned with the international standard ISO-14001.

1.3.1 Environmental Management System

CoC D1 requires the preparation of an Environmental Management Strategy (EMS) for the mine. The EMS provides the mine's strategic framework for environmental management under which the NMP operates.

1.3.2 Alignment with other plans

This NMP incorporates the findings of a Noise Impact Assessment Report (Wilkinson Murray Pty Limited, 2019 Report No. 14099-A Version F) that was undertaken as part of the Environmental Impact Statement (EIS) for the Marulan South Continued Operations State Significant Development (SSD) application to the Department of Planning, Industry and Environment (DPI&E), which included the determination of Project Noise Trigger Levels (criteria) for the Project, as per the NSW Environment Protection Authority's (EPA) (2017) Noise Policy for Industry (NPI, 2017).

This NMP also interacts with the Peppertree Quarry Noise and Blasting Management Plan for meteorological monitoring forecasting.

1.4 Purpose and Objectives

This NMP describes how Boral will manage and control noise emissions when operating the mine and applies to all activities undertaken by the mine including extraction (drilling and blasting), loading and haulage of materials, stockpiling, processing (crushing, screening and conveying) and operation of the lime plant. Specific objectives of the NMP are to:

- Describe the noise management system and the measures that will be implemented to ensure noise from mining operations comply with the criteria in Table 1 of the consent and associated conditions
- Identify potential noise sources and their relative contribution to noise impacts from the development.
- Outline the monitoring requirements for both operator attended and unattended noise monitoring including the means for determining the noise levels emitted by the mine.
- Evaluate noise emissions and reporting on compliance with the relevant CoC.
- Outline procedures associated with noise management and associated community consultation.
- Provide data suitable to demonstrate compliance with the CoC.

The NMP is prepared for a mixed audience of consent authorities, environmental regulators and site personal; the latter of which are responsible for implementing this plan as part of day-to-day operations.

1.5 Responsibility for Implementation

The Site Manager carries ultimate responsibility for the implementation of this NMP. The site Environmental Coordinator is responsible for ensuring that the management and control measures outlined in this plan are implemented on site, investigating and responding to complaints associated with noise emissions, and carrying out and/or coordinating the monitoring and reporting requirements of this plan.

The site Environmental Coordinator is responsible for reporting exceedances of the noise criteria and complaints to the site Technical and Production Managers.

Operations personnel (Technical Manager and Mine Production Manager) are responsible for adjusting mine operations as appropriate to minimise noise impacts on neighbouring properties. The site specific responsibilities are detailed in Table 1.1.

Table 1.1 Roles and Responsibilities

Role	Responsibility
Environmental Coordinator	• Assist in the development of the NMP. • Ensuring that the management and control measures outlined in this plan are implemented on site. • Co-ordinate all noise monitoring. • Liaison with specialists to understand compliance. • Key point of contact for all NMP related communications and reporting. • Investigating and responding to complaints associated with noise emissions. • Reporting exceedances of the noise criteria and complaints to the Site, Technical and Production managers. • Assist implementing training, auditing and review of the NMP.
Technical Manager and Production Manager	• Implement the NMP. • Adjusting mine operations as appropriate to minimise noise impacts on site and neighbouring properties. • Implementing the NMP. • Modifying operations to ensure compliance with the consent criteria • Ensure all monitoring required under regulatory and environmental licences is undertaken.
Site Manager	• Accountability for compliance with the noise criteria and this NMP.

1.6 Document Structure

The structure of the NMP is outlined in Table 1.2.

Table 1.2 Structure of the Noise Management Plan

Section	Content
1	Provides an overview of the project and objectives of the plan.
2	Outlines statutory requirements associated with the consent, Environmental Protection Licence (EPL) and consultation undertaken to develop the plan.
3	Describes the existing acoustic environment (baseline).
4	Outlines the noise criteria the mine is required to meet, and the performance criteria used to assess the success of the management actions.
5	Outlines the noise management protocols in place for mining operations throughout the life of the consent.
6	Outlines the procedures and requirements of the noise monitoring program and system.
7	Outlines the procedures for responding to incidents or impacts identified by the monitoring program, investigation of incidents, possible responsive actions.
8	Outlines the procedures for evaluating the performance of the NMP review of procedures, and to facilitate improvement where required.
9	Outlines the procedures for reporting, notification and complaints handling.
10	Reference documents

2 STATUTORY REQUIREMENTS

2.1 Development consent

This NMP has been prepared in accordance with the consent. Table 2.1 and Table 2.2 presents the consent conditions relevant to the NMP and identifies where each condition has been addressed in this plan.

Table 2.1 General management plan requirements

Condition No.		Condition requirement	Section reference
C5		If a landowner considers the development to be exceeding any relevant noise, blasting or air quality criterion in PART B of this consent, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land.	8.9
C6		If the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.	8.9
C7		If the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or other timeframe agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, the Applicant must	8.9
	(a)	commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to	8.9
	(a)(i)	consult with the landowner to determine their concerns	8.9
	(a)(ii)	conduct monitoring to determine whether the development is complying with the relevant criterion in PART B of this consent; and	8.9
	(a)(iii)	if the development is not complying with the relevant criterion, identify measures that could be implemented to ensure compliance with the relevant criterion; and	8.9
	(b)	give the Planning Secretary and landowner a copy of the independent review; and	8.9
	(c)	comply with any written requests made by the Planning Secretary to implement any findings of the review	8.9
D5		Management plans required under this consent must be prepared in accordance with relevant guidelines, and include:	
	(a)	Summary of relevant background or baseline data;	3
	(b)	Details of:	
	(b)(i)	The relevant statutory requirements (including any relevant approval, licence or lease conditions);	2.2
	(b)(ii)	Any relevant limits or performance measures and criteria; and	4.1 4.2
	(b)(iii)	The specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures;	4.3
	(c)	Any relevant commitments or recommendations identified in the document/s listed in condition A2(c);	5.1
	(d)	A description of the measures to be implemented to comply with the relevant statutory requirements, limits, or performance measures and criteria;	5.1
	(e)	A program to monitor and report on the:	

	(e)(i)	Impacts and environmental performance of the development; and	6
	(e)(ii)	Effectiveness of the management measures set out pursuant to condition D4(c);	8.9
	(f)	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;	8.7
	(g)	A program to investigate and implement ways to improve the environmental performance of the development over time;	7.3
	(h)	A protocol for managing and reporting any:	
	(h)(i)	Incident, non compliance or exceedance of any impact assessment criterion or performance criterion	8.3
	(h)(ii)	Complaint; or	8.8
	(h)ii)	Failure to comply with other statutory requirements;	8
	(i)	Public sources of information and data to assist stakeholders in understanding environmental impacts of the development; and	8.8
	(j)	A protocol for periodic review of the plan.	7.2
D6		The Applicant must ensure that management plans prepared for the development are consistent with the conditions of this consent and any EPL issued for the site.	2.2

Table 2.2 Noise management plan specific requirements

Condition No.		Condition requirement	Section reference
B	1	The Applicant must ensure that the noise generated by the development does not exceed the criteria in Table 1 at any residence on privately-owned land. *Table 1: Noise criteria dB(A)* Noise Assessment Location[a] / Day $L_{Aeq\ (15\ min)}$ / Evening $L_{Aeq\ (15\ min)}$ / Night $L_{Aeq\ (15\ min)}$ / Night L_{AFmax} R9: 40 / 36 / 36 / 52 Other privately-owned residences: 40 / 35 / 35 / 52 [a]The Noise Assessment Locations referred to in Table 1, are shown in Appendix 3.	4.1
	2	Noise generated by the development must be monitored and measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry (EPA, 2017).	6
	3	The noise criteria in Table 1 do not apply if the Applicant has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement	4.1
	4	Temporary Construction Noise Limits With the written agreement of the Planning Secretary, the Applicant may seek temporary construction noise limits above the noise criteria in Table 1, including for construction works outside of standard hours. In order to seek a temporary construction noise limit, the Applicant must develop a Construction Noise Protocol to the satisfaction of the Planning Secretary. This protocol must: (a) be prepared in consultation with the EPA and any residents who may be affected by the noise generated by these works; (b) specify the construction works to which the temporary construction noise limits would apply and provide justification for these limits; and (c) address the relevant requirements of the Interim Construction Noise Guideline (DECC, 2009).	4.2

Condition No.		Condition requirement	Section reference
	5	The Applicant must continue to operate in accordance with the noise criteria in Table 1 until and unless a Construction Noise Protocol for the specified construction works is approved by the Planning Secretary	5.2.1
	6	The Applicant must implement any Construction Noise Protocol approved by the Planning Secretary.	5.2.1
	7	The Applicant must:	
		(a) take all reasonable steps to minimise noise from construction and operational activities, including low frequency noise and other audible characteristics, as well as road and on-site rail noise associated with the development	4.2 4.1 6.3.4 5.1.3 5.1.4
		(b) implement reasonable and feasible noise attenuation measures on all plant and equipment that will operate in noise sensitive areas	5.1
		c) take all reasonable steps to minimise the noise impacts of the development in noise sensitive areas during the evening and night	5 6 7 8
		(d) operate a noise management system to guide the day to day planning of mining operations, and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of this consent	6.2.1 6.3
		(e) take all reasonable steps to minimise the noise impacts of the development during noise-enhancing meteorological conditions	5.1.5 5.1.6 5.1.7
		(f) only use locomotives and rolling stock that are approved to operate on the NSW rail network in accordance with the noise limits in any relevant rolling stock operator's EPL and use reasonable endeavours to ensure that rolling stock is selected to minimise noise;	5.1.4
		(g) carry out regular attended noise monitoring (at least once a month, unless otherwise agreed by the Planning Secretary) to determine whether the development is complying with the relevant conditions of this consent; and	6.3
		(h) regularly assess the noise monitoring data and modify operations on the site to ensure compliance with the relevant conditions of this consent	8.1
B	8	The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:	This document
		(a) be prepared by a suitably qualified and experienced person/s whose appointment has been endorsed by the Planning Secretary;	1
		(b) describe the measures to be implemented to ensure: (i) compliance with the noise criteria and operating conditions of this consent; (ii) best practice management is being employed; and (iii) noise impacts of the development are minimised during noise-enhancing meteorological conditions;	 2 4.1 4.2 5.1 5.1 5.1.6 5.1.5
		(c) describe the measures to minimise development related road traffic noise generated on public roads;	5.1.3
		(d) describe the noise management system in detail; and	5 6

Condition No.		Condition requirement	Section reference
		(e) include a monitoring program that: (i) uses a combination of attended and unattended monitoring to evaluate the performance of the development; (ii) monitors noise at locations representative of the most affected residences; (iii) adequately supports the noise management system; (iv) includes a protocol for distinguishing noise emissions of the development from any neighbouring developments; and (v) includes a protocol for identifying any noise-related exceedance, incident or non-compliance and for notifying the Department and relevant stakeholders of any such event	6.3 5.1.5 5.1.6 5.1.6 6 6.3.3 6.3.4 6.3.3 6.3.4
B	9	The Noise Management Plan must be approved by the Planning Secretary within 3 months of the date of this consent, unless otherwise agreed by the Planning Secretary	1.5
B	10	The Applicant must implement the Noise Management Plan as approved by the Planning Secretary	1.5

2.2 Environment Protection Licence

Boral is the licensee of EPL 944 for the “Marulan South Limestone Mine and Lime Plant” for 100,000-250,000 tpa of lime production and 2-5 Mtpa of minerals obtained by mining. EPL 944 will be amended to align with the development consent, after which this plan will be updated in accordance with any relevant requirements of the EPL.

3 EXISTING ACOUSTIC ENVIRONMENT

3.1 Background noise levels

Rating Background Levels (RBL) determined by the EIS NIA are presented in Table 3.1.

Table 3.1 Rating Background Levels

Location	Day RBL dB L_{A90}	Evening RBL dB L_{A90}	Night RBL dB L_{A90}
R1	34	34	34
R2	34	34	34
R3	34	34	34
R4	34	33	33
R5	34	33	33
R6	34	33	33
R7	34	33	33
R8	35	34	33
R9	35	34	33
R10	35	34	33
R11	35	34	33
R12	35	34	33
R13	31	31	30
R14	31	31	30
R15	31	31	30
R16	31	31	30
R17	31	31	30

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

4 NOISE CRITERIA AND PERFORMANCE INDICATORS

4.1 Operational noise criteria

The operational noise criteria defined in Section B1 of the consent are shown in Table 4.1.

Table 4.1 Operational noise criteria

Assessment Location	Day	Evening	Night	
	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{AF(max)}$
R9	40	36	36	52
Other privately owned residences	40	35	35	52

Note 1: Receiver locations are shown in Figure 4.1 Receiver Locations

The Project is required to meet the noise criteria in Table 4.1 for standard meteorological conditions as defined in the NPI[1]. For very noise-enhancing conditions[2] the Project is required to meet the noise criteria in Table 4.1 plus 5 dBA.

Noise generated by the Project is to be measured in accordance with the relevant requirements of the NPI as outlined in Section 6. It should also be noted that the noise criteria outlined above does not apply if Boral has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria, and Boral has advised the Department in writing of the terms of this agreement.

4.2 Temporary construction noise limits

CoC B4 outlines that Boral may seek temporary construction noise limits above those shown in Table 4.2**.** These limits would apply to construction works carried out during and outside standard hours. For these temporary noise limits to apply, Boral must complete a Construction Noise Protocol (CNP) to the satisfaction of the Planning Secretary. The CNP must:

- be prepared in consultation with the EPA and any potentially affected residents;
- specify the works to which the temporary construction noise limits would apply and provide justification for the limits; and
- address the relevant requirements of the Interim Construction Noise Guideline (ICNG, DECC, 2009).

All construction works must comply with the temporary construction noise limits shown in Table 4.2 which are derived in accordance with the ICNG.

1 Stability categories A-D with wind speeds up to 0.5m/s at 10m above ground level.
2 Meteorological conditions outside of the range of either standard or noise enhancing meteorological conditions as adopted in the noise impact assessment following the procedures in Fact Sheet D.

Table 4.2 Temporary construction noise limits

Assessment Location[1]	Day	Evening	Night	
	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{AF(max)}$
R9	45	36	36	52
Other privately owned residences	45	35	35	52
Industrial Premises	75 (all periods)			
Commercial	70 (all periods)			

Note 1:Refer to ICNG for criteria for other receiver types.

4.3 Noise management objectives and performance criteria

The NMP provides the noise management framework and control measures to ensure the Project meets the noise criteria and other relevant CoC.

The performance criteria outlined in Table 4.3 will be used to assess the success of the noise management controls.

Table 4.3 Noise management objectives and performance criteria

Objective	Performance Criteria
Compliance with regulatory requirements including development consent and EPL	No non compliances
Implement best reasonable and feasible noise management practices to minimise noise levels emitted by the Project	All noise management controls in the NMP are in place
Identify potential noise sources and their relative contribution to noise impacts from the development	Review of regular noise monitoring data
Provided data suitable to demonstrate compliance with the development consent	Monitoring undertaken as per the NMP
Ensure noise levels are below relevant criteria at the nearest residences	Review of regular noise monitoring data including complaints All noise management controls in the NMP are in place

To reasonably manage and minimise potential cumulative noise impacts generated by the mine and Peppertree Quarry the mine's Environmental Coordinator will communicate regularly and work closely with Peppertree Quarry's operational team to reduce occurrences of simultaneously loud activities from both sites, that increase the potential for noise levels at receivers that exceed each project's noise limits.

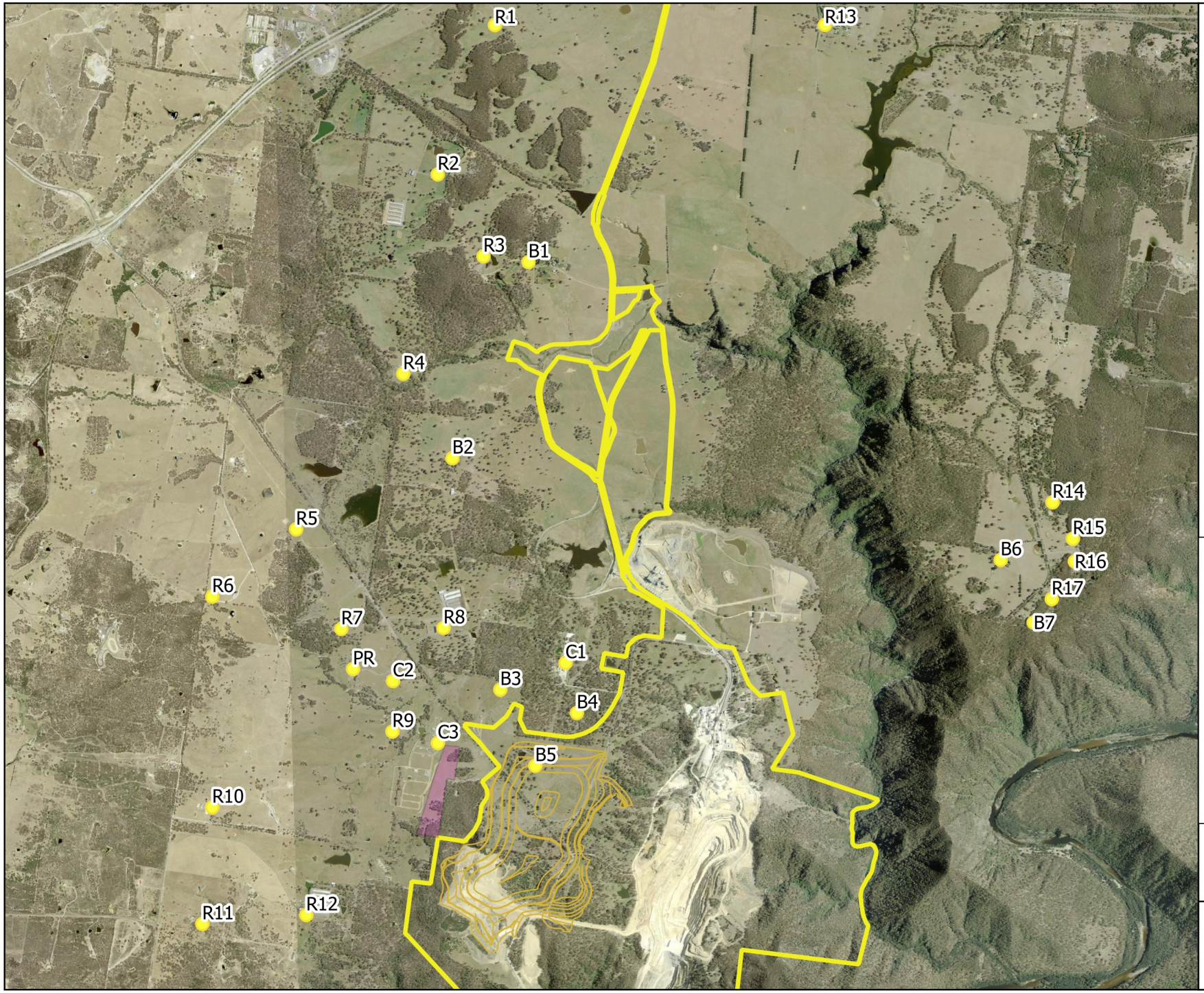


FIGURE 4.1

Receiver Locations

MAC211367-01

Noise Management Plan

KEY

Receivers

Western OB Emplacement

Project_boundary

0 300 600 900 1200 1500 m

N

MAC
Muller Acoustic Consulting

5 NOISE MANAGEMENT CONTROLS

5.1 Noise management controls

The EIS NIA did not identify any specific noise management measures for the mine to operate within the consent criteria. The primary objective of the following noise management controls is to minimise noise impacts on the surrounding community. The following hierarchical approach is used to ensure that operations comply with the relevant conditions of the consent:

- Mine operations will be managed to meet the criteria presented in Table 1 of the consent (Table 4.1 of this plan) and EPL noise criteria, through operational practices and the implementation of reasonable and feasible noise controls as outlined in Sections 5.1.1, 5.1.2, and 5.1.5.
- Where noise levels exceed noise criteria or verified noise complaints are received, ensure all noise controls are in place or determine the need to reduce operations and point of source noise.
- Liaise with the local community regarding scheduled works which are predicted to have increased noise impacts.

5.1.1 General noise management measures

The mine is committed to minimising impact on neighbour's amenity from noise with the following management controls being implemented throughout the life of the operation:

- Implement a combination of predictive meteorological forecasting and noise monitoring to guide the day to day planning of mining operations and the implementation of both proactive and reactive noise mitigation measures to ensure compliance with the relevant conditions of the consent– refer Section 5.1.5 and 5.1.6.
- Minimise noise impacts during noise enhancing weather conditions. Where it is deemed necessary, operations may be restricted. This may include:
    - reducing the number of trucks being loaded and hauling;
    - change locations where trucks are hauling and placing overburden to those that offer greater topographical shielding or are further from receivers;
    - precise actions will need to be assessed on an individual basis depending on the weather conditions and the activities occurring at the time.
- From time to time, operations and activities vary onsite. These changes in activities can result in unplanned noise. A system is in place to assist in identifying the potential for environmental impacts including noise. This allows the change in activity to be planned to minimise any possible impacts. Should excessive noise be generated the activity is to cease or the noise mitigated by such minimisation means as referred to above.
- During site inductions outline the site culture of best operational practice including:
    - Avoid dropping materials from height, where practicable.
    - Avoid metal-to-metal contact on equipment.
    - Avoid mobile plant clustering near residences.
    - Close openings where appropriate on processing plant.
    - Ensure all covers are in place and closed at all times when fixed and mobile plant is in operation.

5.1.2 Management of plant and equipment

Site activities that are likely to generate the most noise include:

- Drilling of rock to be blasted.
- In-pit extraction and processing operations.
- Haulage of overburden material to the overburden emplacements, spreading of material on the emplacements and shaping/contouring the emplacements.
- Haulage of limestone to stockpiles and processing plant;
- Rail loading and product transportation.
- Loading and unloading of material to crushers, stockpiles, trains and trucks.

The following additional noise controls, where reasonably practical, will be adopted to minimise the potential of exceeding the noise criteria:

- Select the most effective mufflers, enclosures and low-noise tools and equipment where possible.
- Orientate fans and stacks where possible in the opposite direction to identified sensitive receivers.
- Select suitable equipment (dozers, drill rigs) with the lowest possible sound power level emissions.
- Less annoying alternatives to audible reversing alarms (such as broadband noise emitting models i.e. 'squashed duck', or 'smart' alarms) are used on site.
- Use alternatives to diesel and petrol engines and pneumatic units, such as hydraulic or electric-controlled units, where feasible and reasonable.
- Reduce throttle settings where feasible and turn off equipment and plant when not being used.
- Regularly inspect and maintain equipment to ensure it is in good working order.
- Regular check noise control equipment and devices such as exhaust mufflers, attenuators, enclosures, insulation/cladding and barriers/bunds. Equipment must not be operated until it is maintained or repaired, where maintenance or repair would address the annoying character of noise identified.
- Fit for purpose and pre start checks are required on all mobile equipment which includes ensuring effective mufflers and reversing alarms are installed and in good working order.
- For machines with fitted enclosures, check that doors and door seals are in good working order and that the doors close properly against the seals.
- Utilise site topography or structures to shield noise emission sources from local receivers, where practicable.

5.1.3 Road transport

All road trucks are required to operate in accordance with Boral's Driver Code of Conduct (Appendix A) and should not cause unnecessary noise emissions to minimise the potential of exceeding the noise criteria.

5.1.4 Rail transport

Rail operations are managed by Pacific National who are obligated to comply with the operational noise limits of the EPL 3142 (held by ARTC) for the operation of rail vehicles on the network.

5.1.5 Monitoring of meteorological conditions

Weather conditions have the potential to increase noise levels at the residential receivers in the vicinity of the mine. Routine monitoring of meteorological conditions is conducted using data from the on-site meteorological station and local weather forecasts.

This noise management strategy is of particular importance during operations at the western overburden emplacement, which is the mining activity closest to receivers, where equipment is elevated and more exposed compared to other noise sources on site and as such are more susceptible to the effects of prevailing winds and temperature inversions.

Meteorological data is monitored and evaluated to plan onsite activities potentially associated with high noise level generating activities, prior to and as close as possible to the work being undertaken. The expected weather conditions and their effect on the noise generated, is considered and timing of planned activities altered if necessary. Meteorological conditions considered are:

- prevailing wind direction and velocity;
- temperature inversions;
- time of day;
- seasonal effects on weather patterns; and
- cloud cover.

A weather station has been installed on the western boundary of the mine site to provide real-time monitoring of meteorological conditions via a remote telemetry to transmit data directly to a computer at the site office/control room (refer 5.1).

In addition to the mine's on-site weather station, the Peppertree Quarry weather forecasting dashboard which uses local weather data from the quarry's on site weather station may also be utilised to provide predictions of noise enhancing meteorological conditions which increases the potential for elevated noise levels at off-site receivers (refer 5.1).

Forecasts of the predictions of noise enhancing meteorological conditions will be discussed with the mine operations team on a regular basis at the site start-up meetings.

5.1.6 Proactive noise management – real time noise monitoring

To supplement the operator attended monitoring program (refer to Section 6.3), continuous unattended noise monitoring will be undertaken via a permanent Noise Monitoring Terminal (NMT) to quantify overall ambient noise levels from mining operations and other noise sources in the area. The NMT will be installed in proximity to the western Project boundary to provide real time noise monitoring data (refer Figure 5.1).

Data from the NMT will allow trends to be identified in ambient noise levels surrounding the mine and the assessment of cumulative noise impacts from all industrial related noise sources in the area.

The NMT will be programmed to alarm when at predetermined Noise Monitoring Trigger Levels (NMTL) to provide warning of potential exceedances, continued exceedances as well as returning to lower MNTL and/or compliance levels.

As the NMT is situated between the mine and the nearest receiver, R9, to be representative of the criteria at R9, the NMTL is adjusted to account for the difference in distance between R9, the NMT and the mine noise sources – refer Figure 5.1.

The NMTLs will work on a hierarchical system as follows:

- Compliant (green)
  Noise levels are below the NMTL - ie compliance with criteria at R9
- Warning (yellow)
  Noise levels are within -2dB (below) of the NMTL;
- Potential Exceedance (orange)
  Noise levels are up to +2dB (above) of the NMTL;
- Exceedance (blue)
  Noise levels are more than 2dB (above) the NMTL

- Continued exceedance (red)
  Noise levels are more than 2dB (above) the NMTL for at least 4 consecutive 15 min periods.

As an interim measure, Table 5.1 presents the preliminary Noise Monitoring Trigger Levels (NMTL). It is envisaged that the preliminary trigger levels will be calibrated in the field by operator attended monitoring or a calibrated noise model. This method would account for real world operational noise levels as well as to account for other extraneous noise sources in the area during commissioning of the noise monitor. As a result, the trigger levels presented in Table 5.1 will be updated within 6 months of the commencement of mining operations under the consent. Where required, the triggers will be reviewed progressively throughout the life of the mine to reflect findings from attended noise monitoring results and operational changes.

Table 5.1 Preliminary noise monitoring trigger levels - dB $L_{Aeq(15min)}$

Period	R9 Noise Criteria	Equivalent Level at NMT	NMTL[1,2]				
			Green (Compliant)	Warning (Yellow)	Potential Exceedence (Orange)	Exceedence (Blue)	Continued Exceedance (Red)
Day	40	45	<43	43 - 45	45 - 47	>47	>47
Evening	36	41	<39	39 - 41	41 - 43	>43	>43
Night	36	41	<39	39 - 41	41 - 43	>43	>43
Night dB L_{Amax}	52	57	<55	55 - 57	57 - 59	>59	>59

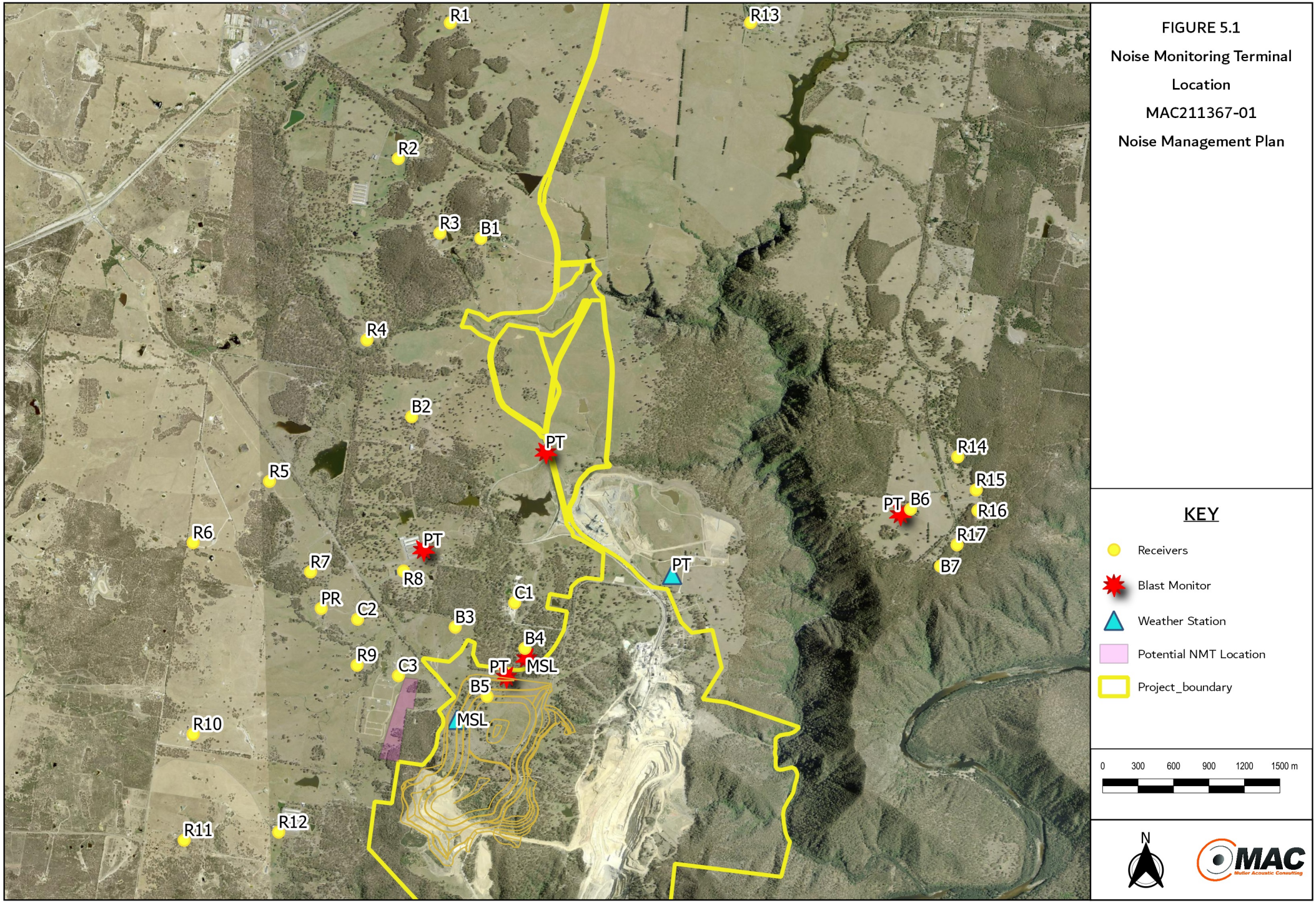
Note 1: To be updated progressively throughout the life of the mine

Note 2: Adopts a 5dB adjustment to account for the distance between NMT1 and R9.

The NMT will be capable of recording audio during triggered events to allow identification of noise sources and confirmation of mine noise sources where required.

5.1.7 NMT triggers

In the event that a trigger is detected, an alert will be sent automatically to the Environmental Coordinator or their delegate who will implement the corrective actions identified in Section 5.1.7. The Environmental Coordinator will continually monitor noise levels to ensure noise from the mine remains below the noise criteria.


R1
R13
R2
R3
B1
R4
B2
PT
R5
R14
R15
PT
B6
R16
R6
PT
R17
R7
PT
B7
R8
C1
PR
C2
B3
B4
R9
C3
PT
MSL
B5
MSL
R10
R11
R12
FIGURE 5.1
Noise Monitoring Terminal Location
MAC211367-01
Noise Management Plan
KEY
Receivers
Blast Monitor
Weather Station
Potential NMT Location
Project_boundary
0
300
600
900
1200
1500 m
N
MAC
Muller Acoustic Consulting

5.2 Construction noise protocol

The following construction projects will be required to support the operation of the mine:

- Marulan Creek Dam Wall and access track
- Relocation of the Stockpile Reclaim Area
- Road Sales Stockpile and associated intersection
- Re-alignment of a section of Marulan South Road and relocation of HV powerline

The EIS predicted that noise levels from these construction activities would comply with the relevant construction noise criteria during standard construction hours at all identified receivers.

To adopt the temporary construction noise limits shown in Table 4.2**,** Boral must complete a Construction Noise Protocol (CNP) to the satisfaction of the Planning Secretary. The CNP must:

- be prepared in consultation with the EPA and any potentially affected residents;
- specify the works to which the temporary construction noise limits would apply and provide justification for the limits; and
- address the relevant requirements of the Interim Construction Noise Guideline (ICNG, DECC, 2009).

5.2.1 Construction works adopting temporary construction noise limits

Wherever construction works are required to be undertaken during or outside standard construction hours, a Construction Noise Protocol (CNP) is required.

The CNP will need to consider the following factors for the proposed construction works:

- Potential noise emissions from activities and equipment;
- Potentially annoying characteristics of the noise that may be emitted – ie tonal, intermittent, low frequency;
- Duration of the works;
- Duration of specific activities;
- The period that it will occur – ie evening, night, weekends;
- Justification of the need for the works, particularly if it is to be completed outside standard hours;
- The requirements of the ICNG;
- Consultation with the community regarding possible mitigation measures where noise levels are predicted to exceed the temporary construction noise limits; and
- Possible mitigation measures available.

The CNP must be completed by a suitably qualified, experienced acoustic consultant.

A series of construction-related noise management measures will be implemented on site, for all construction works to minimise noise emissions to sensitive receivers, and to comply with the Temporary Construction Noise Limits. The following measures should be implemented in conjunction with the mitigation measures outlined in Section 5.1.

- Provide acoustic enclosures for site compressors and generators, and other noisy plant and equipment used on site during construction.
- Select and locate centralised site activities and material stores as far from noise sensitive receivers as possible.
- Ensure plant and equipment is selected and maintained with due regard to the management measures provided in Section 5.1.

6 NOISE MONITORING

6.1 Introduction

Noise monitoring will comprise the following components:

- a permanent real time Noise Monitoring Terminal (NMT) capable of facilitating adaptive management of noise within the mine (refer Section 5.1.6 and 6.2.1);
- an operator attended monitoring program (refer Section 6.3) capable of determining compliance with the noise criteria; and
- a permanent real-time meteorological monitoring program capable of detecting and forecasting noise enhancing meteorological conditions (refer Section 5.1.5 and 5.1.6).

Noise monitoring shall be undertaken with due regard to and in accordance with the procedures outlined in the NPI and Standards Australia AS 1055:2018 (AS 1055) – Acoustics – Description and Measurement of Environmental Noise.

The findings of noise monitoring will guide the general planning of mining operations and the implementation of both proactive and reactive noise mitigation and management measures to ensure compliance with the noise criteria in the consent.

6.2 Instrumentation requirements

All acoustic instrumentation shall meet the requirements of Standards Australia AS/NZS IEC 61672.1:2019 Electroacoustics - Sound level meters (AS61672.1) as applicable to the device.

Operator attended monitoring should be conducted using a Type 1 or Type 2 'integrating-averaging' Sound Level Meter (SLM) capable of measuring in third octaves with A, C and Z weightings and Fast and Slow time weightings. SLMs shall be able to continuously record statistical noise level parameters in 15 minute intervals which may include the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{Amin} and L_{Aeq}.

Instrument calibration (all devices) shall be checked before and after each measurement survey, with the variation in calibrated levels not exceeding ±0.5 dB(A). A hand held acoustic calibrator will be used to do these field checks and will comply with the requirements of Standards Australia AS/IEC 60942:2004 (IEC60942) – Australian Standard – *Electroacoustics – Sound Calibrators*.

6.2.1 Permanent noise monitoring terminal

To supplement the operator attended monitoring program, continuous unattended noise monitoring will be undertaken via a permanent Noise Monitoring Terminal (NMT) to quantify overall ambient noise levels from mining operations and other noise sources in the area.

The NMT will be installed at a location between the potentially most affected receiver identified in the EIS (R9) and the western overburden emplacement as shown in Figure 5.1.Figure 5.1 Noise Monitoring Terminal Location

The monitor will be required to meet the following technical specifications:

- capable of measuring and storing Leq, Lmin, Lmax and statistical parameters (L1 - L99);
- A, C and Z weighting filters
- 1/1 and 1/3 octaves;
- capable of recording and storing high quality, high resolution audio files that can be used to identify noise sources; and
- connectivity to the mine environmental and/or operational personnel systems to enable access to real time noise metrics and audio.

6.3 Operator attended noise monitoring

6.3.1 Noise monitoring locations

Operator attended noise monitoring will be undertaken by an independent, suitably qualified acoustic consultant.

Operator attended noise monitoring shall be conducted at suitable publicly accessible locations representative of receivers R6, R8, R9, R12 and R17. The representative monitoring locations will be selected by the acoustic consultant during the initial attended monitoring program.

The SLM shall be programmed to record statistical noise levels including the L_{Amax}, L_{A1}, L_{A10}, L_{A90}, L_{Amin} and the L_{Aeq} parameters, for each measurement conducted. The SLM microphone must be placed between 1.2 and 1.5 metres above the ground and be at least 3.5m from any reflecting structure other than the ground.

The operator shall quantify site noise emissions and estimate the $L_{Aeq(15min)}$ noise contribution from the operation (i.e. haul trucks, dozers, etc.) as well as the overall level of ambient noise. Information to be recorded for all operator attended monitoring will include:

- date and time, location and operator;
- meteorological conditions (i.e. temperature, humidity, cloud cover, and wind speed and direction);
- statistical noise level descriptors together with notes identifying the dominant noise sources;
- instrument make, model, serial number and calibration details;
- a brief description of activities at the mine wherever possible; and
- identify mine related noise sources and their relative contribution to overall ambient noise levels; and
- where possible, identify other extraneous and non-mining noise sources.

Any significant mine generated noise sources (i.e. haul trucks, bulldozers, front-end loaders, etc) will be recorded, together with any extraneous noise sources. In addition, Boral will maintain copies of the relevant fixed plant and mobile equipment mine operating shift logs and mining locations for inclusion in the noise monitoring report.

In the event of an exceedance of the noise criteria attributable to the mine, identified during operator attended monitoring, the operator will promptly contact the Environmental Coordinator, advising of the exceedance and informing location, the degree of exceedance and the source of emission where possible.

6.3.2 Frequency of monitoring

Operator attended noise monitoring will be undertaken by an independent, suitably qualified acoustic consultant on a quarterly basis as a minimum. Monitoring will be undertaken during the daytime, evening and night time at each of the nominated representative receiver locations.

6.3.3 Data analysis and determining compliance

The noise measurements shall be guided by the requirements of AS1055 and the NPI. The site noise level contribution ($L_{Aeq(15min)}$ and/or L_{Amax}) for the mine shall be determined in the absence of any influential, extraneous or erroneous sound that is audibly distinguishable to that of the mine, and compared to the operational noise assessment criteria to determine compliance.

The $L_{Aeq(15min)}$ noise level contributions from the operations as well as the overall ambient noise levels together with the weather and mine operating conditions shall be compiled and reported on a quarterly basis.

It should be noted that in instances where monitoring may not be conducted at residential receivers due to access limitations, noise levels may be measured at the nearest accessible point and extrapolated via calculation to the nearest residential receiver location for comparison to noise assessment criteria.

It should be noted that the ambient noise levels do not necessarily reflect the contributed level of noise emissions from mine operations. The ambient noise level data quantifies the overall noise level at a given location independent of its source or character. The ambient noise monitoring data will provide indications of the cumulative noise emissions from all industrial noise sources and amenity levels.

6.3.4 Accounting for annoying noise characteristics – low frequency noise

The NPI states that a noise source may exhibit a range of characteristics that increase annoyance, such as tones, irregularity, low frequency noise and intermittent noise. Where this is the case, an adjustment ("modifying factor" penalty) is applied to the source noise level received at an assessment point before it is compared with criteria to account for the additional annoyance caused by the particular characteristic.

Application of these modifying factors is described in Fact Sheet C of the NPI. It also provides the following definitions to support the modifying factor corrections:

- Tonal Noise – containing a prominent frequency and characterised by a definite pitch.
- Low Frequency Noise – noise with an unbalanced spectrum and containing major components within the low-frequency range (10–160 Hz) of the frequency spectrum – refer Table 6.1.
- Intermittent Noise – noise where the level suddenly drops/increases several times during the assessment period, with a noticeable change in source noise level of at least 5 dB(A); for example, equipment cycling on and off.

Table C1 of NPI Fact Sheet C sets out the corrections to be applied and is reproduced below in Table 6.2 The corrections specified for tonal, intermittent and low-frequency noise are to be added to the measured or predicted noise levels at the receiver before comparison with the project noise trigger levels. The adjustments for duration are to be applied to the criterion.

All noise levels generated by the mine will be assessed with due regard to these modifying factor penalties, and in accordance with the requirements presented in the CoC and EPL. Tonal noise and low frequency noise are most relevant to the mine and those modifying corrections are reproduced in Table 6.2.

In accordance with the NPI, a maximum correction (considering other factors of intermittent noise and duration) of up to 10 dBA will be applied where two or more modifying factors are present. Where a source emits tonal and low frequency noise, only one 5 dBA correction will be applied if the tone is in the low frequency range.

One-third octave low-frequency noise thresholds referenced in Table C2 of the NPI, are identified in Table 6.1.

Table 6.1 One-third octave low-frequency noise thresholds

Hz/dB(Z)	One-third octave LZeq,15min threshold level												
Frequency (Hz)	10	12.5	16	20	25	31.5	40	50	63	80	100	125	160
dB(Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

Table 6.2 NPI modifying factors

Factor	Assessment / Measurement	When to Apply	Correction[1]	Comments
Tonal Noise	One-third octave band analysis using the objective method for assessing the audibility of tones in noise – simplified method (ISO1996.2-2007 – Annex D).	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: • 5dB or more if the centre frequency of the band containing the tone is in the range 500–10,000 Hz • 8dB or more if the centre frequency of the band containing the tone is in the range 160–400 Hz • 15dB or more if the centre frequency of the band containing the tone is in the range 25–125 Hz.	5dB[2,3]	Third octave measurements should be undertaken using unweighted or Z-weighted measurements. Note: Narrow-band analysis using the reference method in ISO1996-2:2007, Annex C may be required by the consent/regulatory authority where it appears that a tone is not being adequately identified, e.g. where it appears that the tonal energy is at or close to the third octave band limits of contiguous bands.
Low-frequency Noise	Measurement of source contribution C-weighted and A-weighted level and one-third octave measurements in the range 10– 160 Hz	Measure/assess source contribution C and A-weighted Leq,T levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and: • where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5dB and cannot be mitigated, a 2dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period • where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2dB(A) positive adjustment applies for the daytime period.	2dB or 5dB[2]	A difference of 15 dB or more between C-and A-weighted measurements identifies the potential for an unbalance spectrum and potential increased annoyance. The values in Table C2 are derived from Moorhouse (2011) for DEFRA fluctuating low-frequency noise criteria with corrections to reflect external assessment locations.
Intermittent noise	Subjectively assessed but should be assisted with measurement to gauge the extent of change in noise level.	The source noise heard at the receiver varies by more than 5dB(A) and the intermittent nature of the noise is clearly audible.	5dB	Adjustment to be applied for night-time only.

Factor	Assessment / Measurement	When to Apply	Correction[1]	Comments
Duration	Single-event noise duration may range from 1.5 min to 2.5 h.	One event in any assessment period.	0 to 20dB(A)	The project noise trigger level may be increased by an adjustment depending on duration of noise (see Table C3).
Maximum adjustment	Refer to individual modifying factors.	Where two or more modifying factors are indicated.	Maximum correction of 10dB(A)[2] (excluding duration correction).	

1. *Corrections to be added to the measured or predicted levels, except in the case of duration where the adjustment is to be made to the criterion.*
2. *Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.*
3. *Where narrow-band analysis using the reference method is required, as outlined in column 5, the correction will be determined by the ISO1996-2:2007 standard.*

6.4 Summary of noise monitoring locations

A summary of the unattended/permanent and operator attended noise monitoring locations is provided in Table 6.3.

Table 6.3 Summary of noise monitoring locations

ID	Description	Type of Monitoring	Frequency of Monitoring	Criteria dB $L_{Aeq(15min)}$			Criteria dB $L_{AF(max)}$
				Day	**Evening**	**Night**	**Night**
NMT	Noise Monitoring Terminal	Unattended	Continuous	45[1]	41[1]	41[1]	57[1]
R6	Residential Receiver	Operator attended	Quarterly	40	35	35	52
R8	Residential Receiver	Operator attended	Quarterly	40	35	35	52
R9	Residential Receiver	Operator attended	Quarterly	40	36	36	52
R12	Residential Receiver	Operator attended	Quarterly	40	35	35	52
R17	Residential Receiver	Operator attended	Quarterly	40	35	35	52

Note 1: Equivalent to consent criteria at R9

6.5 Noise monitoring reports

All routine noise monitoring results are documented and reported on a quarterly basis.

Quarterly reports consist of the following information:

- Summary of all operator attended and unattended noise monitoring results;
- Contributed noise levels from the mine operation;
- Statement of compliance/ non-compliance; and
- Meteorological conditions should also be reported in accordance with the NSW NPI.

7 ENVIRONMENTAL PERFORMANCE REVIEW AND IMPROVEMENT PROGRAM

7.1 Performance evaluation

The performance of the Project is to be evaluated against the key performance criteria outlined in Section 4 . Table 7.1 indicates the evaluation schedule for each key performance criteria.

Where performance criteria are not being met, the contingency plan in Section 8.7 is to be implemented.

Table 7.1 Key performance criteria

Key performance indicator	Performance evaluation schedule
No non compliances	Annual
All noise management controls in the NMP are in place	Continuous
Review of regular noise monitoring data and complaints	Continuous
Monitoring undertaken as per the NMP	Quarterly

7.2 Annual review and compliance reporting

In accordance with CoC D11, by the end of July each year after the commencement of development, or other timeframe agreed by the Planning Secretary, a report must be submitted to the Department reviewing the environmental performance of the development, to the satisfaction of the Planning Secretary. The review must:

- Include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, including a comparison of these records against the:
    - Relevant statutory requirements, limits or performance measures/ criteria;
    - Requirements of any plan or program required under this consent; and,
    - Monitoring results of previous years;
- Evaluate and report on:
    - The effectiveness of the noise management systems; and
    - Compliance with the performance measures, criteria and operating conditions of the CoC
- Identify trends in the monitoring data over the life of the development;
- Identify any discrepancies between the predicted and actual impacts of the development and, analyse the potential cause of any significant discrepancies.

The findings of the annual review will confirm the noise performance of the mine and identify any areas of improvement to ensure the mine can operate with minimal noise impacts to the surrounding area.

7.3 Continuous improvement

The NMP is to be reviewed in terms of Condition D5(j) of the development consent.

To improve the environmental performance of the Project, cater for future modifications or comply with regulator direction, it may be necessary to revise this NMP to the satisfaction of DPIE. Boral will continue to apply the approved NMP until the approval of the revised NMP.

Each year following the annual review outlined in Section 7.2 and every three years after the independent environmental audit detailed in CoC D13, Boral will review this NMP and update it if necessary, with findings of the annual review and independent environmental audit, to promote continuous improvement. This review includes:

- A description of any changes to site operations with potential for noise impacts;
- A review of noise monitoring data trends;
- A review of incidents and non-compliances;
- A review of noise complaint records for the year;
- Identification of any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies;
- A description of measures to be implemented to improve the noise performance of the mine.

If changes are required to the NMP it will be resubmitted to the Planning Secretary for approval within six weeks of the review. The most recent version of this NMP as approved by the Planning Secretary is to be implemented.

7.4 Training and awareness

All employees and contractors working on-site will undergo training relating to noise management including:

- General environmental awareness;
- The requirements of this NMP;
- Relevant legislation;
- Roles and responsibilities for noise management and monitoring;
- Noise mitigation, management and monitoring measures; and
- Procedure to be implemented in the event of a noise exceedance, incident and/or complaint.

8 INCIDENTS, NON-COMPLIANCE, COMPLAINT MANAGEMENT AND REPORTING PROTOCOL

8.1 Introduction

The objective of this section is to provide procedures for responding to impacts identified by the noise monitoring program and by routine monitoring of the noise management controls. It is also addresses the CoC D5(f) to provide a contingency plan for taking action in the unlikely event that an unforeseen incident occurs at the site (e.g. failure of noise control equipment or procedures). Responding to identified impacts will be the responsibility of the Site Manager or delegate.

8.2 Regulatory compliance

Boral will undertake the following to achieve compliance with all noise criteria and management requirements detailed in the consent, the EPL and this NMP:

- inspection and maintenance of noise mitigation controls;
- regular review of noise management measures and associated procedures;
- regular review of weather forecasting as necessary to predict noise-enhancing meteorological conditions and schedule operations to minimise noise impacts on receivers; and
- regular review of noise monitoring results.

8.3 Incident reporting

In accordance with CoC D9 Boral will immediately notify the Department and any other relevant agencies after it becomes aware of an incident resulting in unauthorised noise impacts. The notification will be in writing through the Department's Major Projects Website and identify the development (including the development application number and name) and set out the location and nature of the incident.

The development consent defines an 'incident' as:

"An occurrence or set of circumstances that causes or threatens to cause material harm and which may or may not be or cause a non-compliance".

Material harm is defined as:

"*harm to the environment that:*

involves actual or potential harm to the health or safety of human beings or to the environment that is not trivial, or

results in actual or potential loss or property damage of an amount, or amounts in aggregate, exceeding $10,000 (such loss includes the reasonable costs and expenses that would be incurred in taking all reasonable and practicable measures to prevent, mitigate or make good harm to the environment)

This definition excludes "harm" that is authorised under either this consent or any other statutory approval"

In accordance with EPL 944, notifications of environmental harm must be made by telephoning the Environment Line service on 131 555. Boral must provide written details of the notification to the EPA within 7 days of the date on which the incident occurred. Boral or its employees must notify all relevant authorities of incidents causing or threatening material harm to the environment immediately after the person becomes aware of the incident in accordance with the requirements of Part 5.7 of the *Protection of the Environment Operations Act 1997*.

8.4 Non-compliance reporting

The consent defines a 'non-compliance' as:

"An occurrence, set of circumstances or development that is a breach of this consent".

In accordance with CoC D10 Boral will, within seven days of becoming aware of a noise non-compliance, notify DPIE of the non-compliance. The notification will be in writing through the Department's Major Projects Website and identify the development (including the development application number and name), set out the condition of this consent that the development 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 Site Manager (or delegate) is responsible for reporting noise exceedances or incidents to the DPIE.

Note that a non-compliance which has been notified as an incident does not need to also be notified as a non-compliance.

8.5 Noise incident response

Adverse noise impacts are likely to be associated with a malfunction of the mine's noise control equipment, noise mitigation measures or operational procedures.

Once it is identified that a noise incident has occurred, the following actions will be taken:

- Operations that caused the noise incident are to be stopped if necessary until appropriate control systems can be implemented or repaired.
- DPIE and EPA will be notified of the incident/impact/potential impact immediately once an incident has been identified (as outlined in Section 8.3).
- An investigation will be undertaken to establish the root cause.
- Subject to the findings of the investigation actions will be taken to repair, replace or change the identified cause of the incident. These actions will be completed by appropriately qualified personnel or consultants.
- The identified cause of the incident and the selected response will be formally documented in an incident response report.
- Training will be undertaken if changes are required to procedures or operations.

8.6 Notification of exceedances

In accordance with CoC C3, as soon as practicable and no longer than 7 days after obtaining monitoring results showing an exceedance of any noise criterion in Table 4.1, Boral must provide the details of the exceedance to any affected landowners, tenants and the CCC.

8.7 Contingency Plan

Exceedances of the noise criteria may occur due to activities at the mine or due to the surrounding environmental conditions and other activities. Exceedances are identified from results of either unattended monitoring (ie NMT – refer Section 5.1.7) or attended operator monitoring and verified to be as a result of the mine operation activity.

Should an exceedance be identified, the following actions will be taken:

- An investigation will be undertaken to establish the root cause of the exceedance. This will include checking weather conditions at the time of the exceedance / non-compliance, mine operations, Peppertree Quarry operations and any other possible factors.
- Subject to the findings of the investigation, actions will be taken to minimise any reoccurrence of the exceedance.
- The identified cause of the impact and the selected response will be formally documented in an incident response report.
- Additional noise management training will be provided to educate relevant personnel of changes to existing noise controls to minimise the reoccurrence of activities that have potential to result in an exceedance of the noise criteria.

Should low frequency noise (as outlined in Section 6.3.4) be identified through a complaint and verified by measurement (exceeding the criteria in Table 6.1), it will be treated as an operational noise exceedance.

Should an exceedance result in a non-compliance the Department, affected residents and EPA will be notified within seven days of its verification.

8.8 Complaints protocol

After receiving a noise complaint, the Environment Coordinator will:

- check the noise measurement results from the noise monitoring system;
- obtain operations records and weather conditions at the time of the complaint;
- attend the location of the complaint to verify and obtain additional details.

It may be identified that additional noise monitoring is required. Depending on the type and location of the complaint, several measurement methods can be utilised to identify the noise source causing the complaint. Such methods may include:

- operator attended measurement at the affected location combined with audio recordings or at an alternate representative location;
- unattended noise monitoring;
- real-time noise monitoring combined with audio recordings;
- calculation from near field measurements; and
- a combination of any or all of these methods.

Where further investigations into the complaint are undertaken, the findings and any corrective action will be discussed with the complainant.

Noise complaints received by Boral will be recorded in a Complaints Register (Sequence) which will include the following details where available:

- The date and time of the complaint;
- The method by which the complaint was made;
- Any personal details of the complainant which were provided by the complainants or, if no such details were provided, a note to that effect;

- The nature of the complaint;
- The action taken by Boral in relation to the complaint, including any follow-up contact with the complainant; and,
- If no action was taken by Boral, the reasons why no action was taken.

The overarching complaints protocol for the mine, which provides further details on how all complaints will be received, recorded, handled and responded to is described in the EMS.

8.9 Independent review

In accordance with CoC C5, if a landowner considers the development to be exceeding any relevant noise criterion, they may ask the Planning Secretary in writing for an independent review of the impacts of the development on their residence or land.

In accordance with CoC C6, if the Planning Secretary is not satisfied that an independent review is warranted, the Planning Secretary will notify the landowner in writing of that decision, and the reasons for that decision, within 21 days of the request for a review.

In accordance with CoC C7, if the Planning Secretary is satisfied that an independent review is warranted, within 3 months, or other timeframe agreed by the Planning Secretary and the landowner, of the Planning Secretary's decision, Boral must:

(a) commission a suitably qualified, experienced and independent person, whose appointment has been approved by the Planning Secretary, to:

(i) consult with the landowner to determine their concerns;

(ii) conduct monitoring to determine whether the development is complying with the relevant noise criterion; and

(iii) if the development is not complying with the relevant noise criterion, identify measures that could be implemented to ensure compliance with the relevant criterion; and

(b) give the Planning Secretary and landowner a copy of the independent review; and

(c) comply with any written requests made by the Planning Secretary to implement any findings of the review.

9 REFERENCES

Environmental Protection Licence (EPL No. 944) version dated 24-Dec-2020.

The Marulan South Limestone Mine Continued Operations Project - Environmental Impact Statement prepared by Element Environment, dated March 2019. (EIS 2019).

The Development Consent for SSD 7009 issued 19 August 2021 for the Marulan South Limestone Mine Continued Operations Project.

NSW Environment Protection Authority - Noise Policy for Industry (NPI, 2017), October 2017.

NSW Department of Environment and Conservation (DECC) - NSW Environmental Noise Management – Assessing Vibration: a Technical Guideline (the guideline), February 2006.

NSW Department of Environment and Climate Change – NSW Interim Construction Noise Guideline (ICNG, 2009), July 2009.

Standards Australia AS1055–2018 (AS1055, 2018) - Description and Measurement of Environmental Noise.

Standards Australia AS2187.2-2006 (AS2187.2, 2006) - Explosives - Storage and Use Part 2: Use of Explosives.

Standards Australia AS 2436–2010: R2016 (AS2436, 2016) - Guide to Noise and Vibration Control on Construction, Demolition and Maintenance Sites.

Standards Australia AS IEC 61672.1–2019 (AS61672) - Electro Acoustics - Sound Level Meters Specifications.

International Organisation for Standardisation (ISO) 9613-2:1996 (ISO9613:2) - Acoustics - Attenuation of Sound During Propagation Outdoors - Part 2: General Method of Calculation.

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APPENDIX A

Driver Code of Conduct

DRIVER CODE OF CONDUCT

This driver code of conduct applies to all personnel conducting business for Boral, whether a direct employee of Boral, transport subcontractor or customer truck.

We are all members of the general community, so you are expected to comply with all the relevant legal requirements and accepted community standards whilst conducting your business. Whether you are an employee of Boral or operate any service to the company, your behaviour on the road reflects upon the community reputation of the Project and in this regard your full compliance with this driver code of conduct is required.

CORRECTIVE ACTION

Failure to comply with this driver code of conduct will lead to corrective action being taken against the offender. In the event that this person is not a Boral employee, the service rendered to Boral may be reviewed or terminated.

Investigation into breaches of this road user code of conduct will involve investigation by Boral Logistics, and will utilise telematics tracking and any on-board camera footage from the offending vehicle, or any vehicle if in the vicinity at the time of the breach as evidence.

RELEVANT LEGISLATION

As a driver you are required to be cognisant of, and comply with, all road rules pertaining to your vehicle (whether standard passenger car, utility or heavy transport vehicle).

DRIVING LICENCE

You must hold a current and valid driving licence for the class of vehicle that you operate. Additionally, you must always carry your current driver's licence with you while you are on duty. If your licence is cancelled or suspended, you must inform your supervisor immediately, who will in turn inform site management immediately.

VEHICLE MINIMUM MAINTENANCE AND OPERATING CONDITION

All vehicles must be maintained and operated in accordance with the vehicle manufacturer’s maintenance specifications (refer to vehicle manufacturer's handbook) and be fit for purpose.

ENVIRONMENT

Boral is committed to protecting the environment and preventing air, water and noise pollution. As the operator of your vehicle, you are subject to environmental regulations relating to vehicle emission and product spill.

You must understand and appreciate the seriousness of polluting the environment and the consequences of such events. If you are careless or neglect your responsibilities, you can cause personal injury, loss of life, property damage, damage to the environment, and cause adverse publicity for Boral.

NOISE CONTROL

Using engine brakes can be extremely noisy. If possible, limit the use of engine brakes near residences and built-up areas. Generating excessive noise is an offence governed by relevant legislation.

Limit unnecessary high revving during driving or pulling off from a stationary position.

The following noise management measures must be implemented where possible when delivering, loading or offloading materials on site to minimise noise:

- Limit use of engine or compression brakes.
- Minimise idling of trucks.
- Avoid reversing.

GENERAL COURTESY

The on-going reputation of Boral may be impacted by the way you drive your vehicle and courtesy that you extend to the community on the access routes to Marulan South. The road is there to share, it is a requirement that you display courtesy and restraint towards other road users.

SPEED RESTRICTIONS

As a competent driver, you must always adjust your driving to the existing conditions. Speeding is the leading behavioural factor in deaths and serious injury on NSW roads. Speeding is not just driving faster than the posted speed limit, it includes driving too fast for the weather, light, traffic and road conditions.

Always follow posted signs as they provide vital clues to road conditions and characteristics. You should always apply the following rules:

- Always reduce your speed in wet conditions.
- Drive cautiously in low visibility.
- Be cautious and vigilant of wildlife on the road – particularly prevalent from dusk to dawn (be aware that headlights may blind animals and prevent them from moving away from the road).
- Always observe the special limits that apply for road works etc.
- **DO NOT** exceed the posted maximum speed.
- Always comply with school zone time speed limits and reduce speed when approaching a school bus stopping/stopped with flashing lights.

SPECIFIED ACCESS ROUTES

The mine is only accessible via Marulan South Road. All trucks must travel to and from the site along Marulan South Road and must enter and exit the site via the dedicated heavy vehicle access point. Product transport trucks will be required to the use the weighbridge.

SITE SPEED LIMITS

The mine has a general speed limit of 40 km/h to ensure the interaction between personnel and vehicles are managed to minimise the risk of injury to all personnel.

Drivers are required to observe the posted speed limits and other traffic signage on all private and public roads at all times.

DEFENSIVE DRIVING

You should always drive in a manner that will help you to avoid an accident, despite incorrect/inappropriate actions of others or poor driving conditions. Defensive driving requires a high degree of anticipation.

VEHICLE BRAKING

One of the most important single skills that a professional and competent driver possesses is bringing a loaded vehicle to a controlled stop both in the city and in open road conditions. You may need to brake heavily but you must also be aware of the possible consequences. As a rule, you should always be aware of traffic conditions 1 to 2 km in front of you. In doing so, you are adjusting your own driving conditions to avoid the need for heavy braking.

Always brake with care, remembering that the truck will react differently according to the weight of the load, weight distribution of the load and road surface condition.

It is Boral's expectation that prior to operating any heavy vehicle, a pre-start inspection is carried out to ensure all operating systems are in order before commencement of work using such vehicle for the shift. You should never, under any conditions, drive a vehicle with faulty or suspect brakes. You must always immediately report the fault to your supervisor to be repaired.

Engine brakes are auxiliary to the main service brakes. In general, the following should be observed regarding engine brakes:

DO NOT use the engine brake on slippery or wet surfaces.

DO NOT use engine brakes in or near residences and built-up areas, as this causes excessive noise and is a public disturbance.

TAILGATING

By law, you are required to maintain a gap between yourself and the vehicle directly in front of you, so that heavy braking will not be required. The gap is based on several factors including speed, vehicle weight, traffic congestion and road condition. During wet weather or other adverse conditions, the gap distance should be doubled.

The safe distance for heavy vehicles in 80 km/h zones (such as Marulan South Road) is 90 metres, or four (4) seconds behind the vehicle in front.

Always remember, appropriate gap distance between other road users is a key defensive driving tool.

OVERTAKING/PASSING

Overtaking and passing should be done so only when necessary, where legally allowed and in a careful and safe manner. There is to be no overtaking or passing within residential areas.

It is Boral's recommendation that no overtaking of another moving vehicle is carried out on Marulan South Road.

MOBILE PHONES

Using a mobile phone while driving is strictly prohibited for all drivers operating a motor vehicle unless a blue tooth hands-free kit is installed and utilised in the vehicles.

Use of mobile phones whilst driving on site is strongly discouraged, unless absolutely urgent and with appropriate hands-free kits in the vehicles and the vehicle is brought to a standstill.

ROAD HAZARDS

During most journeys that you take, there will be hazards on and near roadways. Always be alert for these hazards and make your adjustments as necessary.

Examples of hazards are:

- Rough/slippery surfaces.
- Flooded roads.
- High winds.
- Fog and smoke haze.
- Sunset and sunrise.
- Narrow or winding roads.
- Low wires or awnings.
- Low bridges, tunnels etc.
- Crossings, rail/people.
- Animals, pedestrians and cyclists.
- Underpasses and trees.

Be aware that your vehicle itself may become a road hazard when it is parked on a roadway, broken down or otherwise. In this circumstance, use portable warning signals, placing them 50-150 metres in front of and behind the vehicle, as well as at the side.

PARKING

Do not park on Marulan South Road. Heavy vehicles are to park on shoulder lanes on the entrance road and in loading areas.

REVERSING

Avoid reversing whenever possible. If you cannot avoid it, use extreme caution. If you need to reverse while on the site:

- Always use a spotter.
- Maintain visual contact with the spotter.
- Maintain clear communications with the spotter.

If you need to reverse when not on the Project site:

- Get out of your vehicle and check the rear surrounding area.
- Check clearances at sides, top and bottom.
- Constantly monitor mirrors for pedestrians or other traffic when reversing.

MATERIAL TRANSPORT

Drivers are responsible for ensuring that all tail and side gates are properly secured and that there are no ropes, straps or chains dangling from the trailer.

Drivers are responsible for ensuring that all loads are properly secured and/or covered and that there is no spillage or leakage of the load from the vehicle to the road surface.

Drivers are responsible to ensure the cleanliness of their vehicle and must inspect for the following:

- Loose material, including but not limited to packing material, gravel, dirt, dust etc, may spill from the trailer platform and become a hazard to other drivers on the road.
- Loose material (gravel, dirt or caked mud) may become dislodged from the underside of the vehicle, including wheel arches and tyres, and become a hazard to other drivers on the road.

SCHOOL BUSES AND LIVESTOCK

Drivers must implement the following when driving near school buses and livestock along Marulan South Road:

- Drivers will keep at least 100 m distance behind school buses (about 4 seconds behind the bus) and will pass school buses stopped on either side of the road at not more than 20 kmh.
- Drivers will give way to buses that are merging back on to the road from bus stops.
- Drivers will stop at least 50 m from stock crossing Marulan South Road.
- Drivers will pass livestock adjacent to Marulan South Road at not more than 20 kmh, except when there is a fence between the livestock and road.

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Boral Cement Limited

5 Hume Street
Marulan South
NSW 2579

www.boral.com.au