

Balranald Mineral Sands Mine

Environmental noise monitoring - Q4 2024

Prepared for Iluka Resources Limited

December 2024

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Iluka Resources Limited

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December 2024

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Jesse Tribby

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19 March 2025

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Abbreviations and terminology

Term/descriptor	Definition
dB(A)	Noise level measurement units are decibels (dB). The “A” weighting scale is used to approximate how humans hear noise.
L_{Amax}	The maximum root mean squared A-weighted noise level over a time period.
L_{A1}	The A-weighted noise level which is exceeded for 1% of the time.
$L_{A1,1minute}$	The A-weighted noise level which is exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The A-weighted noise level which is exceeded for 10% of the time.
L_{Aeq}	The energy average A-weighted noise level.
L_{A50}	The A-weighted noise level which is exceeded for 50% of the time, also the median noise level during a measurement period.
L_{A90}	The A-weighted noise level exceeded for 90% of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
L_{Amin}	The minimum A-weighted noise level over a time period.
L_{Ceq}	The energy average C-weighted noise energy during a measurement period. The “C” weighting scale is used to take into account low-frequency components of noise within the audibility range of humans.
SPL	Sound pressure level. Fluctuations in pressure measured as 10 times a logarithmic scale, with the reference pressure being 20 micropascals.
Hertz (Hz)	The frequency of fluctuations in pressure, measured in cycles per second. Most sounds are a combination of many frequencies together.
AWS	Automatic weather station used to collect meteorological data, typically at an altitude of 10 metres
VTG	Vertical temperature gradient in degrees Celsius per 100 metres altitude.
Sigma-theta	The standard deviation of the horizontal wind direction over a period of time.
IA	Inaudible. When site noise is noted as IA then there was no site noise at the monitoring location.
NM	Not Measurable. If site noise is noted as NM, this means some noise was audible but could not be quantified.
Day	Monday–Saturday: 7:00 am to 6:00 pm, on Sundays and public holidays: 8:00 am to 6:00 pm.
Evening	Monday–Saturday: 6:00 pm to 10:00 pm, on Sundays and public holidays: 6:00 pm to 10:00 pm.
Night	Monday–Saturday: 10:00 pm to 7:00 am, on Sundays and public holidays: 10:00 pm to 8:00 am.

Appendix A provides further information that gives an indication as to how an average person perceives changes in noise level, and examples of common noise levels.

1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Iluka Resources Limited to conduct a quarterly noise survey of construction at Balranald Mineral Sands Mine (BMS, the site) located near Balranald, NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 10 December 2024 at three monitoring locations.

1.2 Attended monitoring locations

Site monitoring locations are detailed in Table 1.1 and shown on Figure 1.1. It should be noted that Figure 1.1 shows actual monitoring positions, not necessarily the location of residences.

Table 1.1 Attended noise monitoring locations

Location descriptor	Description	Coordinates (MGA 54)	
		Easting	Northing
BN1	Adjacent Balranald-Ivanhoe Road	737482	6172117
BN2	Burke and Wills Road	726679	6196614
BN3	Cringadale/Karra boundary	716208	6187677

1.3 Construction activities

Construction activities only occur during the day period and no works occur during the evening or night periods. Therefore, monitoring was only conducted during the day period in accordance with the BMS provisional noise monitoring program.

BMS has advised the following construction activities were occurring during the day period of the Quarter 4 2024 noise monitoring survey:

- civil construction works at processing plant area (including scrapers, graders, compactors, water trucks and bulldozers)
- drilling of two monitoring bores using two drill rigs simultaneously
- road construction works
- camp construction works
- external deliveries (18 to 20 trucks per day).

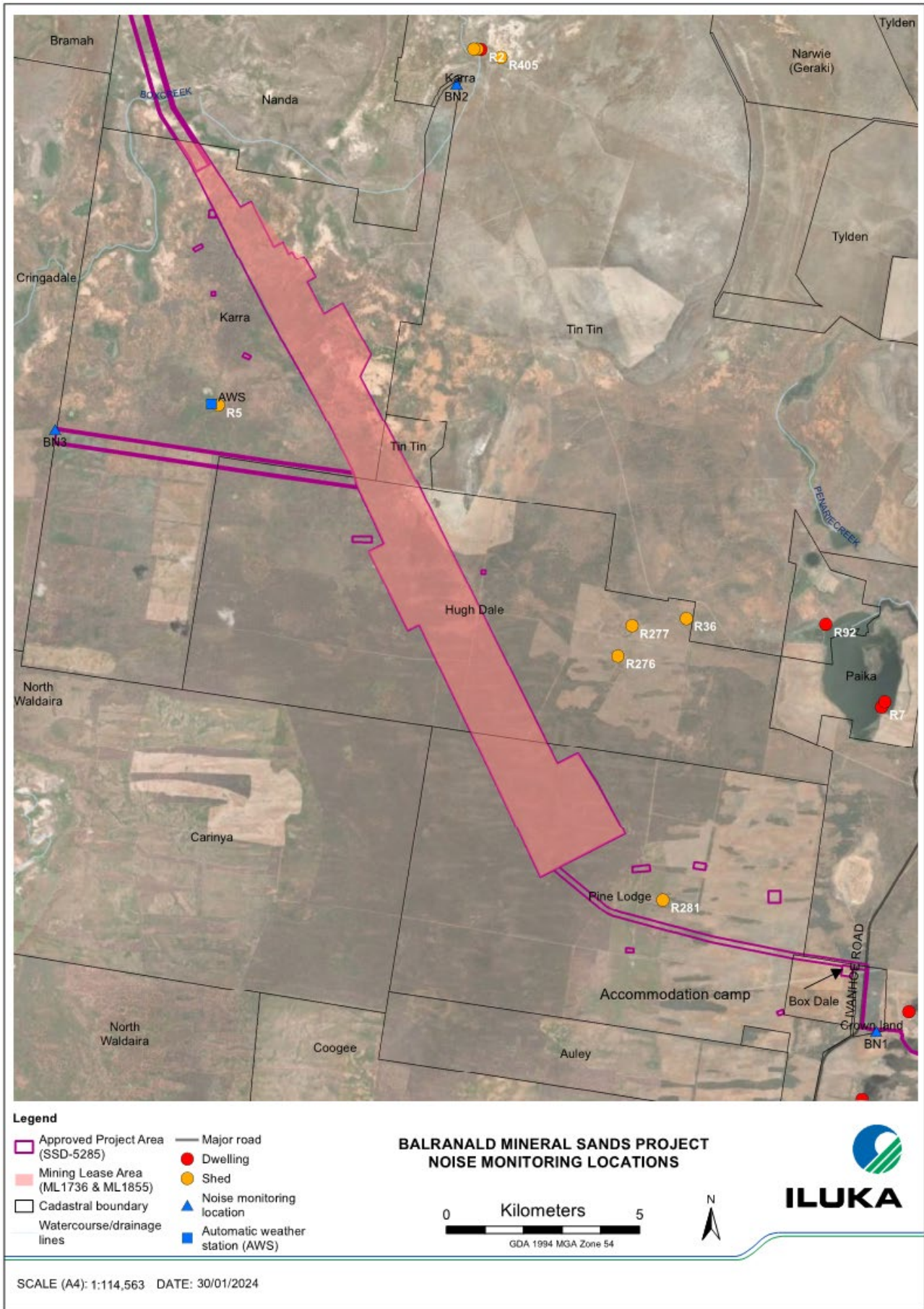


Figure 1.1 Attended noise monitoring locations

2 Noise limits

2.1 Development consent

The current development consent for BMS is the consolidated development consent SSD-5285 (MOD 2, August 2023). Relevant sections of the development consent are reproduced in Appendix B.1.

2.2 Environment protection licence

BMS holds Environmental Protection License (EPL) No. 20795 issued by the Environment Protection Authority (EPA) on 5 July 2023. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

Noise monitoring requirements are detailed in BMS Noise Management Plan (NMP). The most recent version of the NMP was prepared in February 2023. Relevant sections of the NMP are reproduced in Appendix B.3.

A post-approval provision was submitted in December 2024 to allow for quarterly monitoring to occur during the day period only, as no site works currently occur during the evening or night period. This request was approved 17 January 2025.

A new version of the NMP is currently being developed ahead of 24/7 operations and will be provided to the Department of Planning, Housing and Infrastructure (DPHI) once finalised.

2.4 Noise limits

Noise limits based on both the development consent and EPL are provided in Table 2.1.

Table 2.1 Noise limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
BN1	35	35	35	45
BN2	35	35	35	45
BN3	35	35	35	45

These limits relate to operational noise from the site but have also been adopted for the construction phase of the project as a conservative measure.

2.5 Meteorological conditions

Meteorological conditions required for noise limits to be applicable are not consistent between the development consent, EPL, and NMP. Modification 1 of the development consent removed Appendix 5 and replaced with a reference to meteorological condition exemptions in the NPfI.

The NMP should be updated to reflect changes to the development consent.

EPL noise limits apply under all meteorological conditions except:

- a) during rain and wind speeds (at 10m height) greater than 3m/s; and
- b) under “non-significant weather conditions”.

Based on the initial noise impact assessment prepared for SSD-5285, it has been assumed as a conservative measure that noise limits apply under all meteorological conditions except rainfall and/or wind speeds greater than 3 metres/second at 10 metres above ground level.

2.6 Additional requirements

Monitoring and reporting have been done in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017 and the 'Approved methods for the measurement and analysis of environmental noise in NSW' (Approved Methods) issued in January 2022.

2.7 Very noise-enhancing meteorological conditions

In accordance with the Approved Methods, monthly noise monitoring for the site is scheduled to occur during forecasted meteorological conditions where noise limits in Table 2.1 will be applicable. However, in cases where actual meteorological conditions do not align with forecasts and noise limits are subsequently not directly applicable, it is the expectation of regulators that noise impact still be managed.

The NPfI states that:

Noise limits derived for consents and licences will apply under the meteorological conditions used in the environmental assessment process, that is, standard or noise-enhancing meteorological conditions. For 'very noise-enhancing meteorological conditions' ... a limit is set based on the limit derived under standard or noise-enhancing conditions (whichever is adopted in the assessment) plus 5 dB. In this way a development is subject to noise limits under all meteorological conditions.

Therefore, if monthly noise monitoring occurs during meteorological conditions outside of those specified in Section 0, then site limits shall be adjusted based on Table 2.1 plus 5 dB.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS 1055 *Acoustics, Description and Measurement of Environmental Noise* and relevant NSW EPA requirements. Meteorological data was obtained from the site automatic weather station (AWS) which allowed correlation of atmospheric parameters with measured site noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the day period at each location. The duration of each measurement was 15 minutes. Atmospheric conditions were measured at each monitoring location.

Measured sound levels from various sources were noted during each measurement and particular attention was paid to the extent of site's contribution (if any) to measured levels. At each monitoring location, the site-only $L_{Aeq,15\text{minute}}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, it was inaudible at the monitoring location. When site noise is noted as NM, this means it was audible but could not be quantified. All results noted as IA or NM in this report were due to one or more of the following:

- Site noise levels were very low, typically more than 10 dB below the measured background (L_{A90}), and unlikely to be noticed.
- Site noise levels were masked by more dominant sources that are characteristic of the environment (such as breeze in foliage or continuous road traffic noise) that cannot be eliminated by monitoring at an alternate or intermediate location.
- It was not feasible or reasonable to employ methods such as to move closer and back calculate. Cases may include rough terrain preventing closer measurement, addition/removal of significant source to receiver shielding caused by moving closer, and meteorological conditions where back calculation may not be accurate.

If exact noise levels from site could not be established due to masking by other noise sources in a similar frequency range but were determined to be at least 5 dB lower than relevant limits, then a maximum estimate of site may be provided. This is expressed as a 'less than' quantity, such as <20 dB or <30 dB.

For this assessment, the measured L_{Amax} has been used as a conservative estimate of $L_{A1,1\text{minute}}$. The EPA accepts sleep disturbance analysis based on either the $L_{A1,1\text{minute}}$ or L_{Amax} metrics, with the L_{Amax} representing a more conservative assessment of site noise emissions.

3.3 Modifying factors

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Assessment of modifying factors is undertaken at the time of measurement if the site was audible and directly quantifiable. If applicable, modifying factor penalties have been reported and added to measured site-only L_{Aeq} .

Low-frequency modifying factor penalties have only been applied to site-only L_{Aeq} levels if the site was the only contributing low-frequency noise source. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.4 Instrumentation and personnel

Attended noise monitoring was conducted by Jesse Tribby. Qualifications, experience, and/or demonstration of competence is in accordance with the Approved Methods and evidence of this is available upon request.

Equipment used to measure environmental noise levels is detailed in Table 3.1. Calibration certificates are provided in Appendix C.

Table 3.1 Measurement equipment

Item	Serial number	Calibration due date	Relevant standard
Rion NA-28 sound level meter	30131882	23/01/2025	IEC 61672-1:2002
SV-36 calibrator	138014	07/08/2025	IEC 60942:2003

4 Results

4.1 Total measured noise levels and atmospheric conditions

Total noise levels measured during each 15-minute attended measurement are provided in Table 4.1.

Table 4.1 Total measured noise levels, dB – Quarter 4 2024 ¹

Location	Start date and time	L _{Amax}	L _{A1}	L _{A10}	L _{Aeq}	L _{A50}	L _{A90}	L _{Amin}
BN1	10/12/2024 12:32	59	53	44	42	38	32	26
BN2	10/12/2024 11:36	51	45	39	35	31	26	24
BN3	10/12/2024 10:28	50	43	38	35	34	31	26

Notes: 1. Levels in this table are not necessarily the result of activity at site.

Atmospheric condition data measured by the operator during each measurement using a hand-held weather meter is shown in Table 4.2. The wind speed, direction and temperature were measured at approximately 1.5 metres above ground. Attended noise monitoring is not done during rain, hail, or wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Quarter 4 2024

Location	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° magnetic north ¹	Cloud cover 1/8s
BN1	10/12/2024 12:32	31	1.5	175	0
BN2	10/12/2024 11:36	28	2.8	0	0
BN3	10/12/2024 10:28	26	2.0	140	0

Notes: 1. “-” indicates calm conditions at monitoring location.

4.2 Site only noise levels

4.2.1 Modifying factors

There were no modifying factors, as defined in the NPfI, applicable during the survey.

4.2.2 Monitoring results

Table 4.3 provides site noise levels in the absence of other sources, where possible, and includes weather data from the site AWS. Noise limits are applicable under all weather conditions but are adjusted during very noise-enhancing weather conditions as defined by the NPfl.

Table 4.3 Site noise levels and limits – Quarter 4 2024

Location	Start date and time	Wind		Stability class	Very enhancing?	Limits, dB ¹		Site levels, dB		Exceedances, dB ¹	
		Speed m/s	Direction ³			L _{Aeq,15minute}	L _{Amax}	L _{Aeq,15minute} ²	L _{Amax}	L _{Aeq,15minute}	L _{Amax}
BN1	10/12/2024 12:32	3.6	256	A	Yes	40	-	<25	-	Nil	-
BN2	10/12/2024 11:36	3.5	210	B	Yes	40	-	IA	-	Nil	-
BN3	10/12/2024 10:28	4.7	207	C	Yes	40	-	IA	-	Nil	-

- Notes:
1. Noise limits are adjusted by +5 dB during 'very noise-enhancing meteorological conditions' in accordance with the NPfl.
 2. Site-only L_{Aeq,15minute} includes modifying factor penalties, if applicable.
 3. Degrees magnetic north, "-" indicates calm conditions.

5 Conclusion

EMM was engaged by Iluka Resources Limited to conduct a quarterly noise survey during construction at the site. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

Attended environmental noise monitoring described in this report was done during the day period of 10 December 2024 at three monitoring locations.

A post-approval provision was submitted in December 2024 to allow for quarterly monitoring to occur during the day period only, as no site works currently occur during the evening or night period. A new version of the NMP is currently being developed ahead of 24/7 operations and will be provided to DPHI once finalised.

Very noise-enhancing meteorological conditions were present during the day period of the monitoring survey. Noise limits have been adjusted by +5 dB(A) due to very noise-enhancing meteorological conditions, in accordance with the NPfI.

Noise levels from site complied with noise limits at all monitoring locations during the Quarter 4 2024 survey. There were no modifying factors applicable to site noise levels during the survey.

Appendix A

Noise perception and examples

A.1 Noise levels

Table A.1 gives an indication as to how an average person perceives changes in noise level. Examples of common noise levels are provided in Figure A.1.

Table A.1 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise
Up to 2	Not perceptible
3	Just perceptible
5	Noticeable difference
10	Twice (or half) as loud
15	Large change
20	Four times (or quarter) as loud

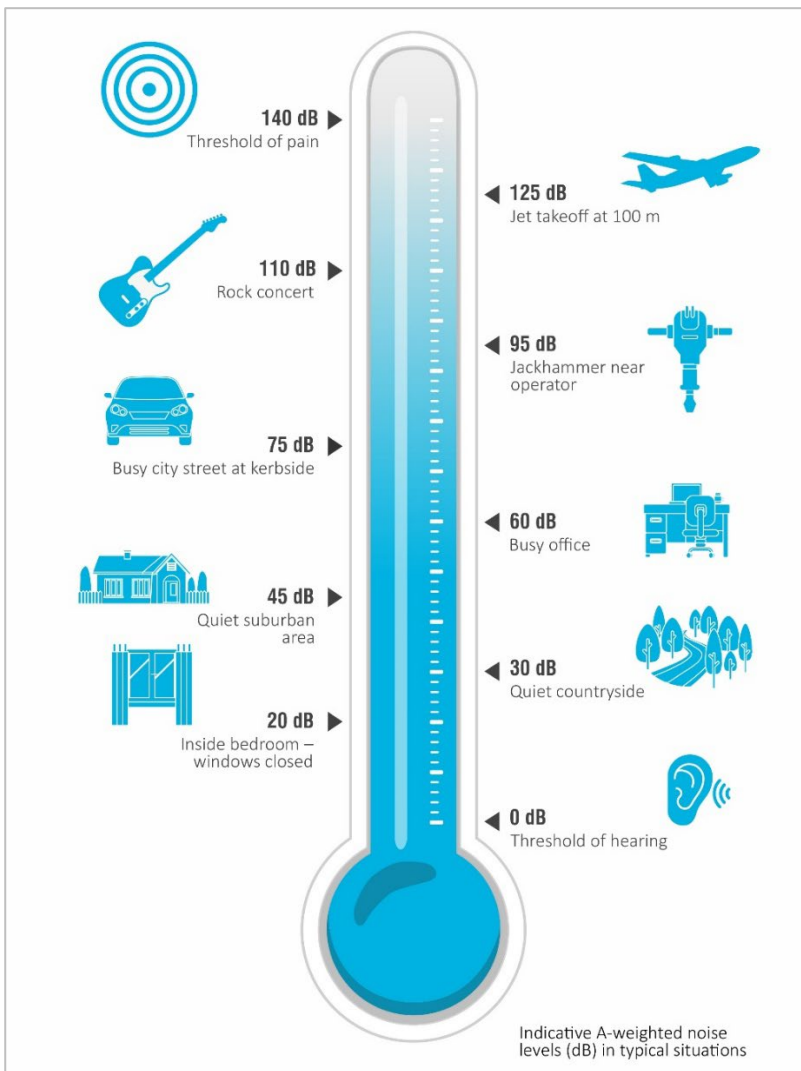


Figure A.1 Common noise levels

Appendix B

Regulator documents

B.1 Development Consent SSD-5285 (MOD 2, August 2023)

NOISE

Operational Noise Criteria

3. Except for the noise-affected land in Table 1, the Applicant **must** ensure that the noise generated by the development does not exceed the noise criteria in Table 2.

Table 2: Noise criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{Aeq(15min)}$	$L_{A1(1min)}$
Any residence on privately-owned land	35	35	35	45
Mungo National Park and Mungo State Conservation Area (when in use)	50	50	50	-

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).

However, these noise criteria do not apply if the Applicant has an agreement with the owner/s or leaseholders of the residence to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

4. The Applicant must:
 - (a) implement all reasonable and feasible measures to minimise the construction, operational and road noise of the development;
 - (b) minimise the noise impacts of the development during adverse meteorological conditions; and
 - (c) undertake regular attended monitoring of the noise of the development, to ensure compliance with the relevant conditions of this consent.

Noise Management Plan

5. The Applicant **must** prepare a Noise Management Plan for the development to the satisfaction of the Secretary. This plan must:
 - (a) be prepared in consultation with the EPA;
 - (b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions of this consent;
 - (c) include a noise monitoring program for evaluating and reporting on:
 - compliance against the noise criteria in this consent; and
 - compliance against the noise operating conditions; and
 - (d) defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

5A. The Applicant must not commence construction until the Noise Management Plan is approved by the Secretary.

5B. The Applicant must implement the Noise Management Plan as approved by the Secretary.

B.2 Environmental protection licence No. 20795

P1 Location of monitoring/discharge points and areas

P1.3 The following points referred to in the table below are identified in this licence for the purposes of weather and/or noise monitoring and/or setting limits for the emission of noise from the premises.

Noise/Weather

EPA identification no.	Type of monitoring point	Location description
14	Noise monitoring	Noise monitoring point labelled "BN1" identified in Table 5 and Figure 8 of the document titled 'Noise Management Plan' dated January 2023 and kept on EPA file DOC23/531325.
15	Noise monitoring	Noise monitoring point labelled "BN2" identified in Table 5 and Figure 8 of the document titled 'Noise Management Plan' dated January 2023 and kept on EPA file DOC23/531325.
16	Noise monitoring	Noise monitoring point labelled "BN3" identified in Table 5 and Figure 8 of the document titled 'Noise Management Plan' dated January 2023 and kept on EPA file DOC23/531325.

L3 Noise limits

L3.1 Noise from the premises must not exceed the limits specified in the following table:

Location	Day [dB(A) LAeq 15 minute]	Evening [dB(A) LAeq 15 minute]	Night [dB(A) LAeq 15 minute]	Night [dB(A) LA1 1 minute]
All dwellings on privately-owned land not assigned acquisition or mitigation rights	35	35	35	45
Any National Park or Conservation Area	50	50	50	

L3.2 The noise emission limits identified in this licence apply under all meteorological conditions except:
a) during rain and wind speeds (at 10m height) greater than 3m/s; and
b) under "non-significant weather conditions".

M6 Noise monitoring

M6.1 To assess compliance with the noise limits specified within this licence, the licensee must undertake operator

attended noise monitoring at each specified noise monitoring point in accordance with the table below.

POINT 14,15,16

Assessment period	Minimum frequency in a reporting period	Minimum duration within assessment period	Minimum number of assessment period
Day, Evening, Night	Quarterly	15 minutes	1 operation day

B.3 Noise management plan

<p><i>Sc.3(C.3) Except for the noise-affected land in Table 1, the Applicant must ensure that the noise generated by the development does not exceed the noise criteria in Table 2.</i></p> <p><i>Table 2: Noise criteria dB(A)</i></p> <table border="1"> <thead> <tr> <th rowspan="2">Location</th> <th>Day</th> <th>Evening</th> <th colspan="2">Night</th> </tr> <tr> <th><i>L_{Aeq(15min)}</i></th> <th><i>L_{Aeq(15min)}</i></th> <th><i>L_{Aeq(15min)}</i></th> <th><i>L_{A1(1min)}</i></th> </tr> </thead> <tbody> <tr> <td>Any residence on privately-owned land</td> <td>35</td> <td>35</td> <td>35</td> <td>45</td> </tr> <tr> <td>Mungo National Park and Mungo State Conservation Area (when in use)</td> <td>50</td> <td>50</td> <td>50</td> <td>-</td> </tr> </tbody> </table> <p><i>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).</i></p> <p><i>However, these noise criteria do not apply if the Applicant has an agreement with the owner/s or leaseholders of the residence to generate higher noise levels, and the Applicant has advised the Department in writing of the terms of this agreement.</i></p>					Location	Day	Evening	Night		<i>L_{Aeq(15min)}</i>	<i>L_{Aeq(15min)}</i>	<i>L_{Aeq(15min)}</i>	<i>L_{A1(1min)}</i>	Any residence on privately-owned land	35	35	35	45	Mungo National Park and Mungo State Conservation Area (when in use)	50	50	50	-	Section 4.7
Location	Day	Evening	Night																					
	<i>L_{Aeq(15min)}</i>	<i>L_{Aeq(15min)}</i>	<i>L_{Aeq(15min)}</i>	<i>L_{A1(1min)}</i>																				
Any residence on privately-owned land	35	35	35	45																				
Mungo National Park and Mungo State Conservation Area (when in use)	50	50	50	-																				

The noise criteria in Table 2 apply under all meteorological conditions except the following:

- wind speeds greater than 3 m/s at 10 metres above ground level; or
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
- temperature inversion conditions greater than 8°C/100m.

Mungo National Park is located some 65km north of the west Balranald mine site and some 26km north of the Nepean deposit. The Balranald Mineral Sands Noise Assessment (EMM, 2015) did not identify any predicated noise impacts to Mungo National Park, therefore it is not proposed that any compliance monitoring will be undertaken to assess compliance with criteria for Mungo National Park as specified in Table 2.

4.7. Noise monitoring program

The noise monitoring program will comprise attended noise monitoring representative of the privately owned receivers most likely to be affected by noise generated by Project construction, mining operations and transport. Irrespective of land ownership these locations will be used to assess compliance with noise criteria specified in Table 2.

Noise monitoring will be undertaken in accordance with the relevant requirements for reviewing performance set out in the *NSW Noise Policy for Industry (NPI)* (EPA, 2017).

Meteorological monitoring will be conducted at Iluka’s Automatic Weather Station (AWS) which complies with the requirements in the *Approved Methods for Sampling of Air Pollutants in New South Wales* (NSW EPA, 2022) guideline.

4.7.2. Attended noise monitoring

An overview of the noise monitoring program is provided in Table 5. Figure 8 below shows the location of noise monitoring locations and sensitive receiver locations relevant to the Project area.

Table 5- Noise monitoring program

Site ID	Location	Frequency/Assessment period	Units of measure
BN1	Adjacent Balranald-Ivanhoe Rd (R54 & R57)	Quarterly during construction and quarterly during operations (first 12 months) *Day/Evening/Night	LAeq(15min)
BN2	Burke and Wills Rd (R2)		
BN3	Cringadale/Karra boundary (R362)		

* Assessment period is defined as: day (7am to 6pm); evening (6pm to 10pm); or night (10pm to 7am)

Attended noise monitoring at the sites will occur on a quarterly basis (i.e. at least 4 times in each calendar year) and in accordance with AS 1055:2018 *Acoustics- Description and Measurement of Environmental Noise* and the NPI (EPA, 2017).

Appendix C

Calibration certificates

C.1 Calibration certificates



Sound Level Meter
IEC 61672-3:2013
Calibration Certificate
Calibration Number C23032

Client Details	EMM Consulting Level 3/175 Scott Street Newcastle NSW 2300		
Equipment Tested/ Model Number :	Rion NA-28		
Instrument Serial Number :	30131882		
Microphone Serial Number :	04739		
Pre-amplifier Serial Number :	11942		
Firmware Version :	2.0		
Pre-Test Atmospheric Conditions	Post-Test Atmospheric Conditions		
Ambient Temperature : 24°C	Ambient Temperature : 23.5°C		
Relative Humidity : 47.3%	Relative Humidity : 46.1%		
Barometric Pressure : 100.14kPa	Barometric Pressure : 100.16kPa		
Calibration Technician : Shaheen Boaz	Secondary Check: Dylan Selge		
Calibration Date : 23 Jan 2023	Report Issue Date : 25 Jan 2023		
Approved Signatory :			Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed.

However, no general statement or conclusion can be made about conformance of the sound level meter to the full requirements of IEC 61672-1:2013 because evidence was not publicly available, from an independent testing organisation responsible for pattern approvals, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2013 and because the periodic tests of IEC 61672-3:2013 cover only a limited subset of the specifications in IEC 61672-1:2013.

Uncertainties of Measurement -			
Acoustic Tests		Environmental Conditions	
125Hz	±0.13dB	Temperature	±0.1°C
1kHz	±0.13dB	Relative Humidity	±1.9%
8kHz	±0.14dB	Barometric Pressure	±0.014kPa
Electrical Tests	±0.13dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.



This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172. Accredited for compliance with ISO/IEC 17025 - Calibration.

The results of the tests, calibrations and/or measurements included in this document are traceable to SI units.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.

CERTIFICATE OF CALIBRATION

CERTIFICATE No: **C50817**

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 138014
Class: 1
Owner: EMM Consulting
Suite 01, 20 Chandos St
St Leonards NSW 2065

Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	1013 hPa ± 1 hPa	Date of Receipt :	05/08/2024
Temperature	22 °C ± 1 °C	Date of Calibration :	07/08/2024
Relative Humidity	41 % ± 5 %	Date of Issue :	07/08/2024

Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017

CHECKED BY: *RS* **AUTHORISED SIGNATURE:** *[Signature]*
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Accredited for compliance with ISO/IEC 17025 - Calibration
Results of the tests, calibration and/or measurements included in this document are traceable to SI units through reference equipment that has been calibrated by the Australian National Measurement Institute or other NATA accredited laboratories demonstrating traceability.

This report applies only to the item identified in the report and may not be reproduced in part.
The uncertainties quoted are calculated in accordance with the methods of the ISO Guide to the Uncertainty of Measurement and quoted at a coverage factor of 2 with a confidence interval of approximately 95%.


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