

Ashton Coal

Monthly attended noise monitoring - February 2023

Prepared for Ashton Coal Operations Pty Ltd

March 2023

Ashton Coal

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Ashton Coal Operations Pty Ltd

E221164 RP2

March 2023

Version	Date	Prepared by	Reviewed by	Comments
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2	6 March 2023	Lucas Adamson	Tony Welbourne	Final

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Ashton Coal Operations Pty Ltd to conduct a monthly noise survey of operations at Ashton Coal Operations (Ashton Coal, the site) located at Glennies Creek Rd, Camberwell NSW. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified limits.

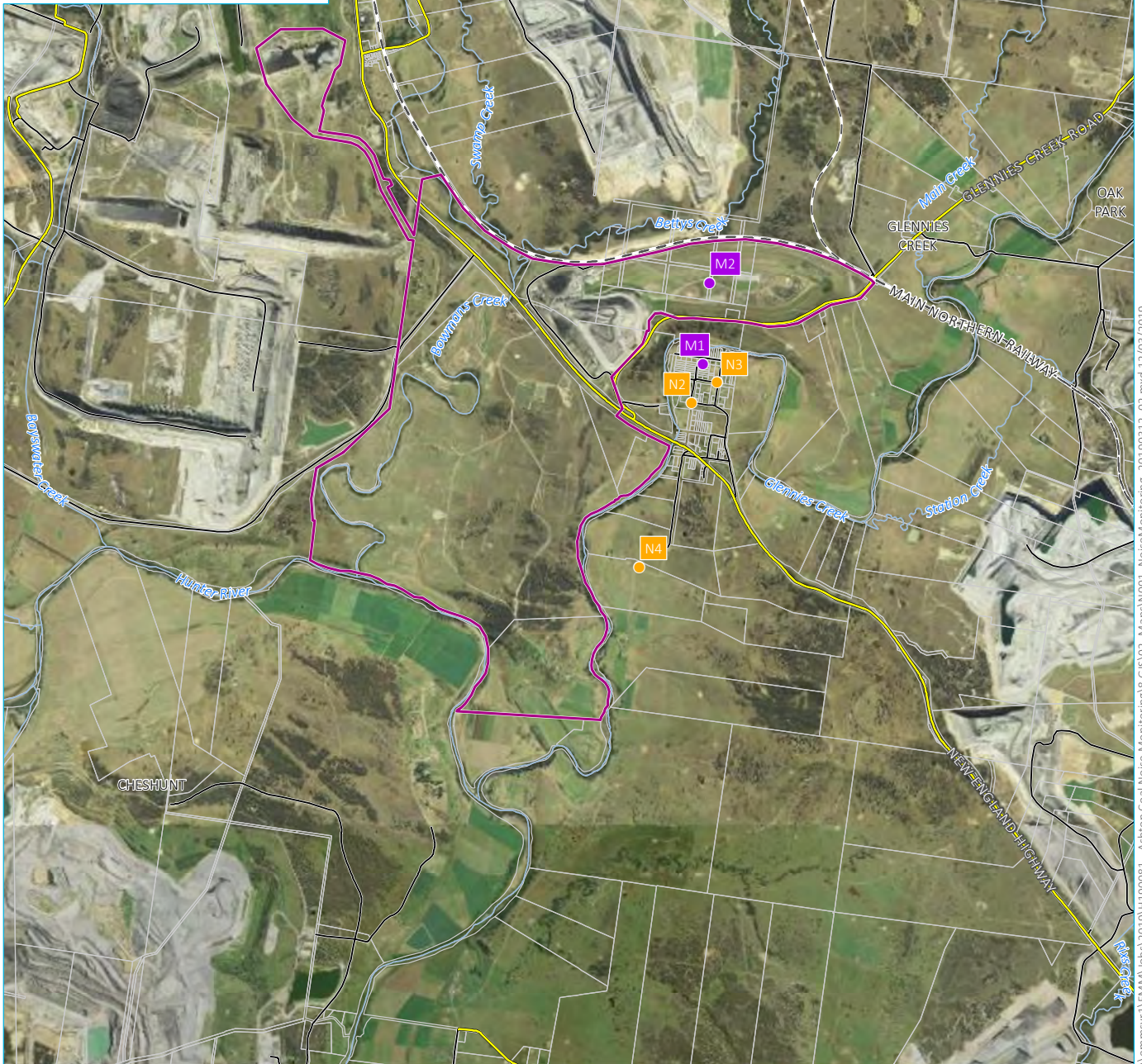
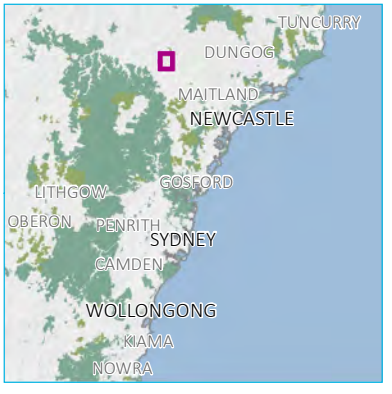
Attended environmental noise monitoring described in this report was conducted during the night period of Wednesday 15 February 2023 at three monitoring locations.

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/ID	Description/address	Coordinates (MGA56)	
		Easting	Northing
N2	Camberwell Village (west)	320297	6405670
N3	Camberwell Village (north-east)	320554	6405839
N4	South of New England Highway	319776	6404101



Source: EMM (2019); DFSI (2017); GA (2011)



KEY

- Site boundary
- Noise monitoring location
- Meteorological station
- Rail line
- Main road
- Local road
- Watercourse/drainage line
- Cadastral boundary

Noise monitoring locations and Ashton colliery boundary

Ashton Coal
Monthly attended noise monitoring
Figure 1.1

\\emmsvr1\EMM\lobbs\2019\H\190081 - Ashton Coal Noise Monitoring\GIS\02_Maps\N001_NoiseMonitoring_20190312_02.mxd 12/03/2019

1.3 Terminology and abbreviations

Some definitions of terms and abbreviations which may be used in this report are provided in Table 1.2.

Table 1.2 Terminology and abbreviations

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 per cent of the time.
$LA_{1,1minute}$	The A-weighted noise level which is exceeded for 1 per cent of the specified time period of 1 minute.
LA_{10}	The A-weighted noise level which is exceeded for 10 percent of the time.
LA_{eq}	The energy average A-weighted noise level.
LA_{50}	The A-weighted noise level which is exceeded for 50 per cent of the time, also the median noise level during a measurement period.
LA_{90}	The A-weighted noise level exceeded for 90 percent of the time, also referred to as the “background” noise level and commonly used to derive noise limits.
LA_{min}	The minimum A-weighted noise level over a time period.
LC_{eq}	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 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night	Monday – Saturday: 10 pm to 7 am, on Sundays and Public Holidays: 10 pm to 8 am.
Temperature inversion	A meteorological condition where the atmospheric temperature increases with altitude.

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.

2 Noise limits

2.1 Development consent

Ashton Coal noise limits are provided in Table 1, Condition 2 of Appendix 6 of development consent 309-11-2001-I (DC). Relevant sections of the DC are reproduced in Appendix B.1.

2.2 Environment protection licence

Ashton Coal noise limits are provided in Condition L4.1 of EPL 11879 (EPL). Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved NMP adopts three attended noise monitoring locations that are representative of residences outlined in the DC and EPL. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise impact limits based on the NMP are as shown in Table 2.1.

Table 2.1 Noise impact limits, dB

Location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
N2	38	38	36	46
N3	38	38	36	46
N4	38	38	36	46

2.5 Meteorological conditions

The DC and the EPL specify the following meteorological conditions under which noise limits do not apply:

- during periods of rain or hail
- average wind speed at microphone height exceeds 5 metres per second (m/s)
- wind speeds greater than 3 m/s at 10 metres above ground level
- temperature inversion conditions greater than 3°C/100 m.

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.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in general accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Ashton Coal on-site weather station which allowed correlation of atmospheric parameters with measured noise levels.

3.2 Attended noise monitoring

During this survey, attended noise monitoring was conducted during the night 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 $L_{Aeq,15minute}$ and L_{Amax} were measured directly or determined by other methods detailed in Section 7.1 of the NPfI.

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

The terms 'Inaudible' (IA) or 'Not Measurable' (NM) may be used in this report. When site noise is noted as IA, no site noise was audible at the monitoring location. When site noise is noted as NM, this means site noise was audible but could not be quantified. All results noted as NM in this report were due to one or more of the following:

- Site noise levels were extremely low and unlikely, in many cases, to be noticed.
- Site noise levels were masked by other more dominant noise 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 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.

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

3.3 Meteorological data

As per Condition L4.4, this assessment determined the stability categories throughout the attended monitoring period using the direct measurement method as per Fact Sheet D of the Noise Policy for Industry (2017).

The temperature lapse rate between the two weather stations (M1 – Sentinex Unit 40 located in Camberwell Village and M2 – Ashton Coal 'repeater' meteorological station, the site AWS, located in the north-eastern open cut (NEOC) area) was calculated using the following formula:

$$\text{Temperature lapse rate} = (\Delta T) \times (100/(\Delta H))$$

Where:

- ΔT = temperature measured at M2 (at 10 metres above ground level) minus temperature measured at M1 (at 10 metres above ground level); and
- ΔH = the vertical height difference between M2 and M1 (equal to 73 metres).

3.4 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} noise levels.

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.

3.5 Instrumentation

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

Table 3.1 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Rion NA28 sound level meter	00370304	31/10/2024	IEC 61672-1:2002
Pulsar 105 calibrator	81334	29/11/2023	IEC 60942

4 Results

4.1 Total measured noise levels and atmospheric conditions

Overall noise levels measured at each location during attended measurements are provided in Table 4.1. Discussion as to the noise sources responsible for these measured levels is provided in Section 5 of this report.

Table 4.1 Total measured noise levels – February 2023¹

Location	Start date	Time	L _{Amax} dB	L _{A1} dB	L _{A10} dB	L _{Aeq} dB	L _{A50} dB	L _{A90} dB	L _{Amin} dB
N2	15/2/2023	22:45	58	54	52	49	48	45	41
N3	15/2/2023	22:23	56	48	45	43	43	40	36
N4	15/2/2023	22:00	50	47	46	44	43	41	38

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 – February 2023

Location	Start date	Time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north ¹	Cloud cover 1/8s
N2	15/2/2023	22:45	20.2	0.7	165	0
N3	15/2/2023	22:23	20.6	1.1	150	0
N4	15/2/2023	22:00	21.2	2.4	130	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. Limits are applicable if weather conditions were within specified parameters during each measurement.

Table 4.3 Site noise levels and limits – February 2023

Location	Start Date	Time	Wind		Stability Class	Lapse rate	Limits apply? ¹	Limit, dB		Site level, dB ²		Exceedance, dB	
			Speed m/s	Direction ⁴				L _{Aeq,15minute}	L _{Amax}	L _{Aeq,15minute}	L _{Amax}	L _{Aeq,15minute}	L _{Amax}
N2	15/2/2023	22:45	2.5	149	E	1.2°C/100m VTG	Yes	36	46	IA	IA	Nil	Nil
N3	15/2/2023	22:23	2.4	143	E	1.1°C/100m VTG	Yes	36	46	IA	IA	Nil	Nil
N4	15/2/2023	22:00	2.8	128	E	-0.3°C/100m VTG	Yes	36	46	IA	IA	Nil	Nil

- Notes:
1. Noise emission limits do not apply during periods of rainfall or winds greater than 3 metres per second (at a height of 10 metres).
 2. Site-only L_{Aeq,15minute}, includes modifying factor penalties if applicable.
 3. NA in exceedance column means criterion was not applicable due to atmospheric conditions outside those specified in project approval.
 4. Degrees magnetic north, “-” indicates calm conditions.

5 Discussion

5.1 Noted noise sources

During attended monitoring, the time variations (temporal characteristics) of noise sources are considered in each measurement via statistical descriptors. From these observations, summaries have been derived for the location and provided in this chapter. Statistical 1/3 octave-band analysis of environmental noise was undertaken and the following figures display frequency ranges of various noise sources at each location for L_{A1} , L_{A10} , L_{Aeq} , L_{A50} , and L_{A90} descriptors. These figures also provide, graphically, statistical information for these noise levels.

An example is provided as Figure 5.1, where frogs and insects are seen to be generating noise at frequencies above 1000 Hz, while industrial noise is observed at frequencies less than 1000 Hz.

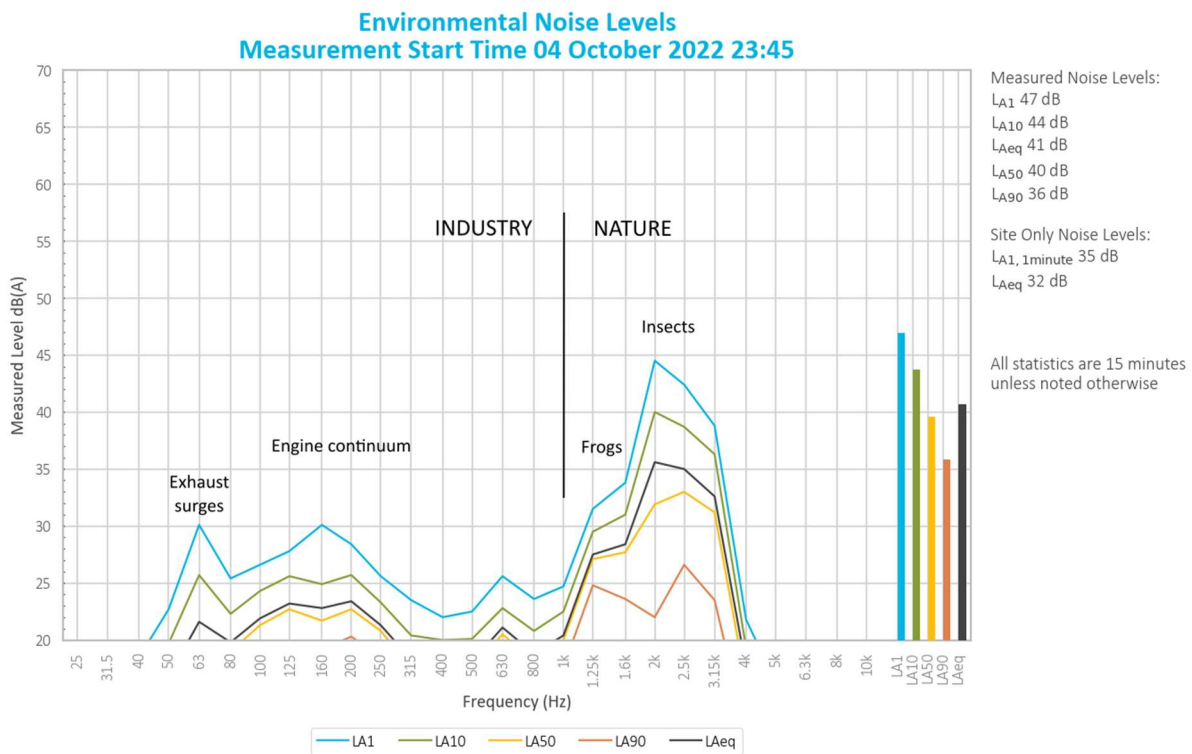


Figure 5.1 Example graph (refer to Section 5.1 for explanatory note)

5.2 N2

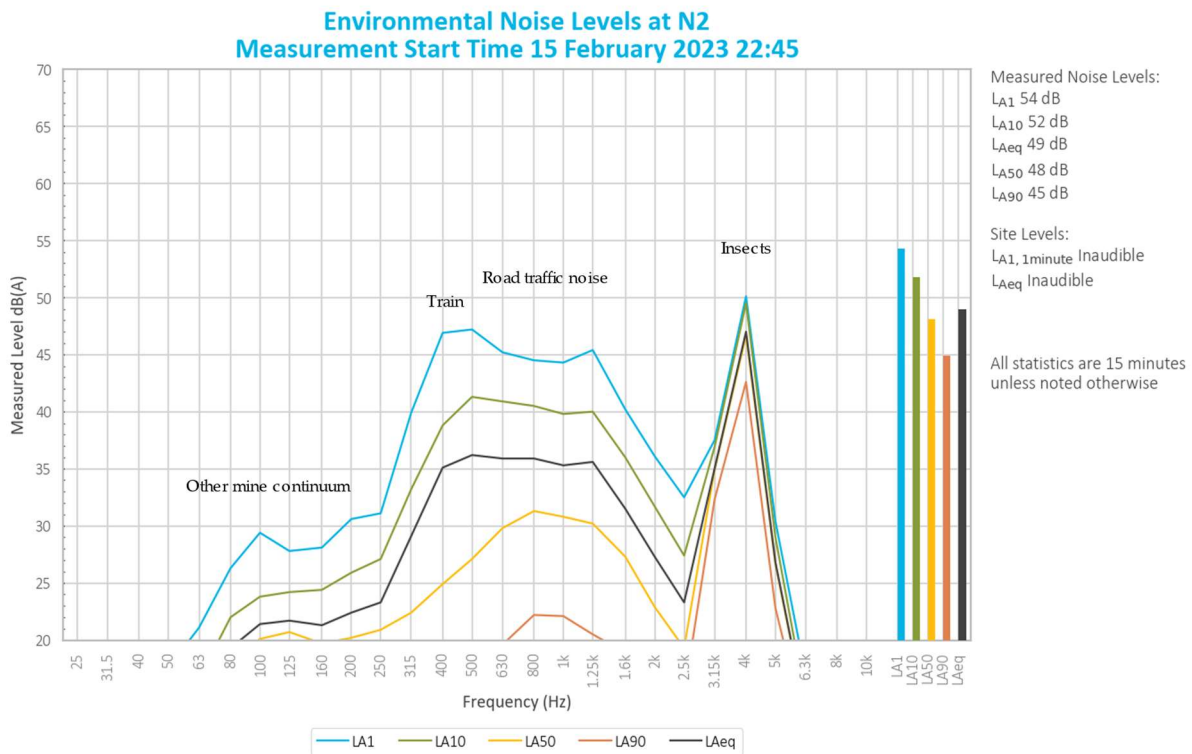


Figure 5.2 Environmental Noise Levels - NM2, Camberwell Village (West)

Ashton Coal operations were inaudible during the entire measurement.

Insects, road traffic noise, and a train generated the measured L_{A1} and L_{A10} . Insects were primarily responsible for the measured L_{A50} and L_{Aeq} with a contribution from road traffic noise. Insects were primarily responsible for the measured L_{A90} .

Noise from wind in the trees, a train horn, and bats were also noted. Noise generated by other mines in the vicinity (unrelated to Ashton Coal) contributed $< L_{Aeq,15\text{minute}} 26$ dB.

5.2.1 Cumulative mining noise at N2

Ashton Coal was inaudible and, therefore, did not contribute to any mining noise at this location.

5.3 N3

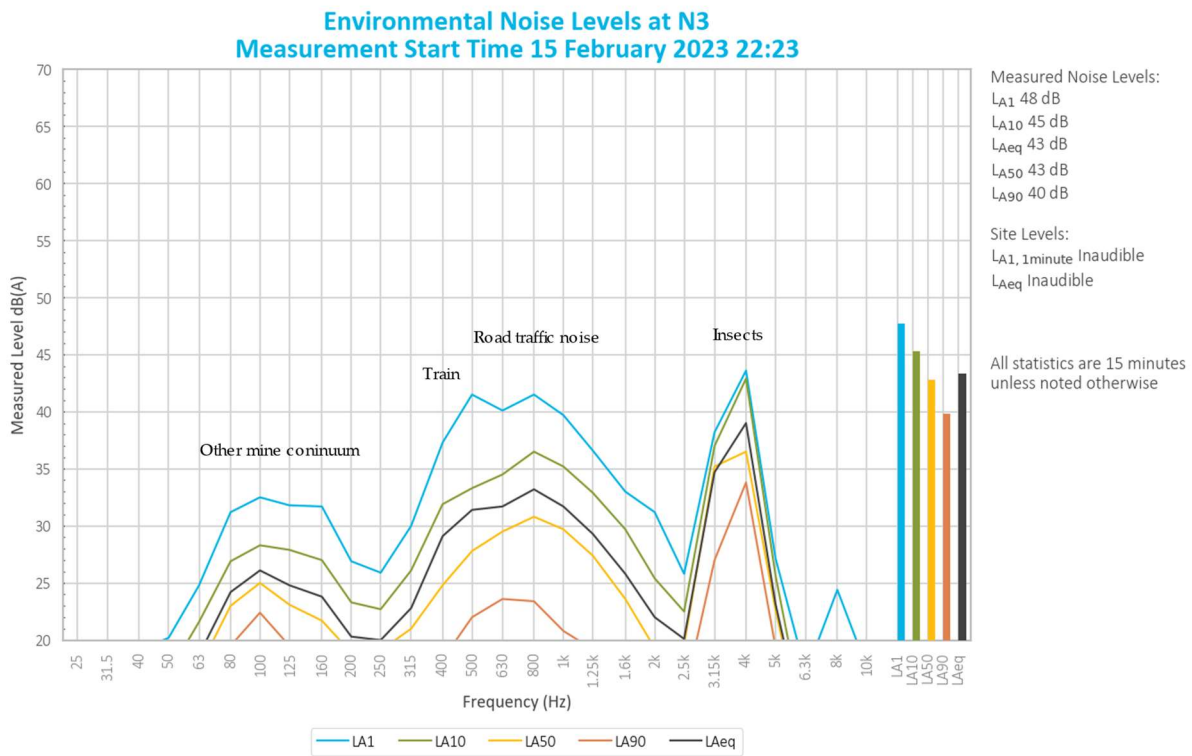


Figure 5.3 Environmental Noise Levels – N3, Camberwell Village (North-East)

Ashton Coal operations were inaudible during the entire measurement.

Insects, road traffic noise, and a train generated the measured LA1 and LA10. Insects and road traffic noise were primarily responsible for the measured LA50, and LAeq with a contribution from another mine continuum (unrelated to Ashton). Insects were primarily responsible for the measured LA90.

Noise from a dog barking was also noted. Noise generated by other mines in the vicinity (unrelated to Ashton) contributed < LAeq,15minute 34 dB.

5.3.1 Cumulative mining noise at N3

Ashton Coal was inaudible and, therefore, did not contribute to any mining noise at this location.

5.4 N4

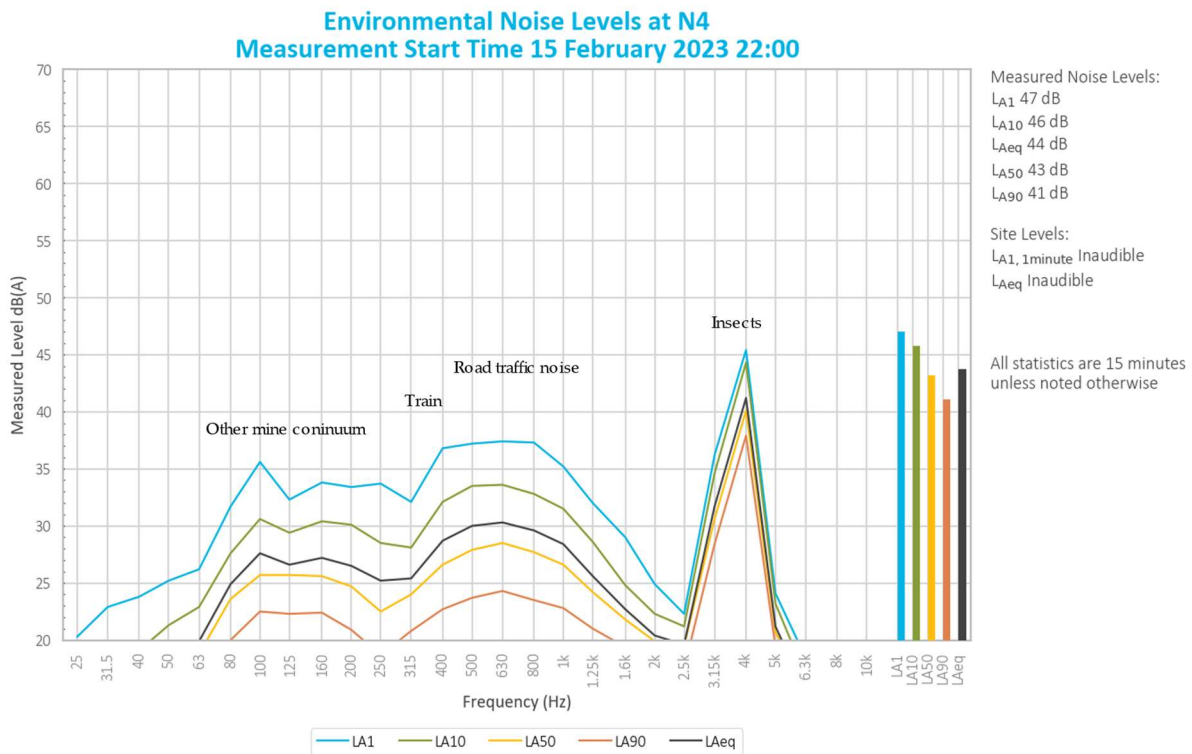


Figure 5.4 Environmental Noise Levels – N4, South of New England Highway

Ashton Coal operations were inaudible during the entire measurement.

Insects, road traffic noise, and a train generated the measured L_{A1} and L_{A10} . Insects were primarily responsible for the measured L_{A50} and L_{Aeq} with a large contribution from road traffic noise, and a small contribution from trains and other mine continuum. Insects were primarily responsible for the measured L_{A90} .

Noise from wind in the trees, a train horn, and bats were also noted. Noise generated by other mines in the vicinity (not Ashton Coal) contributed $< L_{Aeq,15\text{minute}}$ 35 dB.

5.4.1 Cumulative mining noise at N4

Ashton Coal was inaudible and, therefore, did not contribute to any mining noise at this location.

6 Summary

EMM Consulting Pty Ltd (EMM) was engaged by Ashton Coal Operations Pty Ltd to conduct a monthly noise survey of operations at Ashton Coal. The survey purpose was to quantify the acoustic environment and compare site noise levels against specified noise limits.

Attended environmental noise monitoring described in this report was done during the night period on Wednesday 15 February 2023 at three monitoring locations.

Noise levels from site complied with relevant limits at all monitoring locations during the February 2023 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

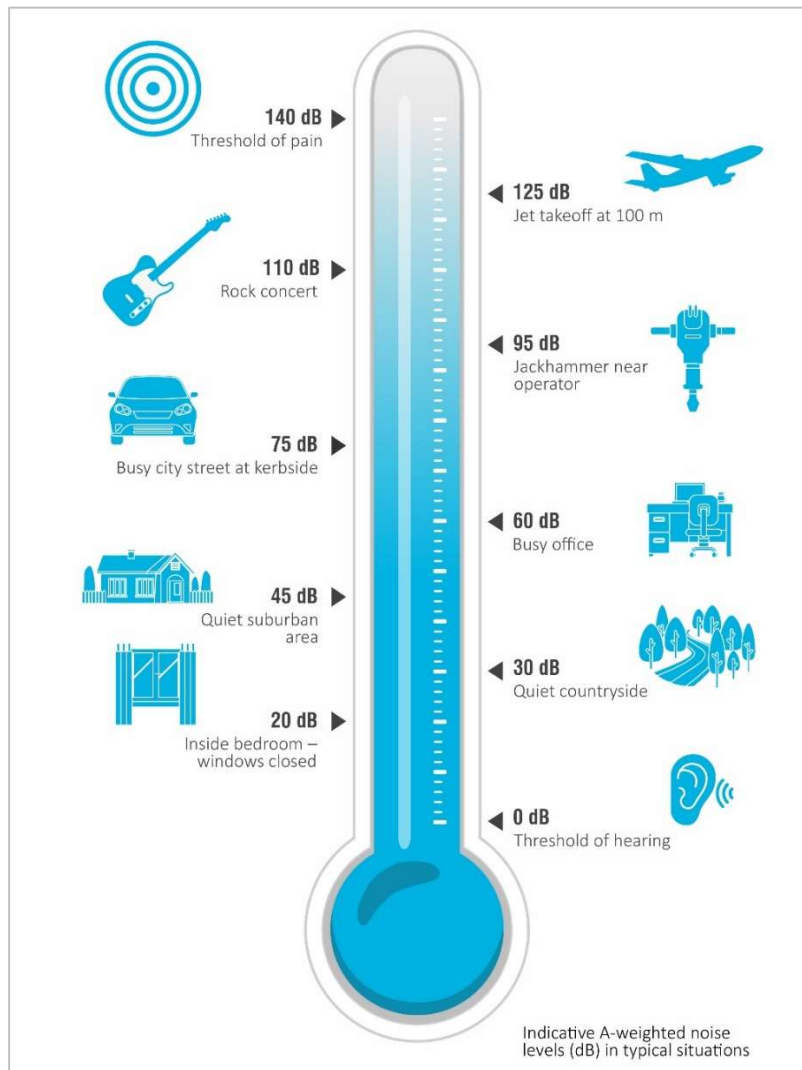


Figure A.1 Common noise levels

Appendix B

Regulator documents

B.1 Project approval

APPENDIX 6 ALTERNATE NOISE CONDITIONS

NOISE

Application

- Conditions 2 to 3 below have effect during times when open cut mining operations are not being undertaken at the Ashton Mine Complex, in the opinion of the [Planning](#) Secretary.

Noise Criteria

- Except for the noise-affected land in Table 1 of Schedule 3, 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 or on more than 25 per cent of any privately-owned land.

Table 1: Noise Criteria dB(A)

Receiver No.	Receiver	Day (L_{Aeq} (15min))	Evening (L_{Aeq} (15min))	Night (L_{Aeq} (15min))	Night (L_{A1} (1 min))
-	All privately-owned land	38	38	36	46

Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy*. Appendix 8 sets out the requirements for evaluating compliance with these criteria.

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

Additional Noise Mitigation Measures

- Upon receiving a written request from the owner of any residence on any privately-owned land where subsequent operational noise monitoring shows the noise generated by the development exceeds the noise limits in Table 2, the Applicant must implement additional reasonable and feasible noise mitigation measures (such as double glazing, insulation, and/or air conditioning) at the residence in consultation with the owner.

If within 3 months of receiving this request from the landowner, the Applicant and the landowner cannot agree on the measures to be implemented, or there is a dispute about the implementation of these measures, then either party may refer the matter to the [Planning](#) Secretary for resolution.

Table 2: Additional Noise Mitigation Criteria dB(A) L_{Aeq} (15min)

Receiver No.	Receiver	Day (L_{Aeq} (15min))	Evening (L_{Aeq} (15min))	Night (L_{Aeq} (15min))
-	All privately-owned land	38	38	38

Notes:

- Noise generated by the development is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy*. Appendix 8 sets out the requirements for evaluating compliance with these criteria.
- For this condition to apply, the exceedance of the criteria must be systemic.

APPENDIX 8

NOISE COMPLIANCE ASSESSMENT

Compliance Monitoring

1. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this approval.
2. Data collected for the purposes of determining compliance with the relevant conditions of this approval is to be excluded under the following meteorological conditions:
 - a) during periods of rain or hail;
 - b) average wind speed at microphone height exceeds 5 m/s;
 - c) wind speeds greater than 3 m/s measures at 10 m above ground level; and
 - d) temperature inversion conditions greater than 3°C/100m.
3. Unless otherwise agreed with the **Planning** Secretary, this monitoring is to be carried out in accordance with the relevant requirements relating for reviewing performance set out in the NSW Industrial Noise Policy (as amended from time to time), in particular the requirements relating to:
 - a) monitoring locations for the collection of representative noise data;
 - b) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
 - c) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.
4. To the extent that there is any inconsistency between the Industrial Noise Policy and the requirements set out in this Appendix, the Appendix prevails to the extent of the inconsistency.

Determination of Meteorological Conditions

5. Except for wind speed at microphone height, the data to be used for determining meteorological conditions **must** be that recorded by the meteorological station located in the vicinity of the site (as required by condition 18 of Schedule 3).

B.2 Environmental protection licence

Environment Protection Licence

Licence - 11879

14	Noise monitoring	Monitoring at coordinates 320297, 6405670 (Easting, Northing), identified as N2 on Figure 2 and representative of Noise Assessment Group 1.
15	Noise monitoring	Monitoring at coordinates 319776, 6404101 (Easting, Northing), identified as N4 on Figure 2 and representative of Noise Assessment Group 3.
32	Meteorological Station – to determine meteorological conditions for noise monitoring	Monitoring of temperature at 'M1' at coordinates 320259, 6405971 (Easting, Northing).

- P1.5 For the purposes of Condition P1.1, P1.2 and P1.3, Figure 1 refers to the plan titled "Ashton Underground Mine Environment Protection licence 11879 Premises Boundary, Surface Infrastructure" dated 30/08/19 (EPA reference DOC19/761196).
- P1.6 For the purpose of Condition P1.4, Figure 2 refers to the plan titled "Ashton Underground Mine Environment Protection licence 11879 Premises Boundary, Monitoring" dated 30/08/19 (EPA reference DOC19/761196).
- P1.7 The datum for grid references in this Licence is the Geodetic Datum of Australia 1994 (GDA94), Zone 56.

3 Limit Conditions

L1 Pollution of waters

- L1.1 Except as may be expressly provided in any other condition of this licence, the licensee must comply with section 120 of the Protection of the Environment Operations Act 1997.

L2 Concentration limits

- L2.1 Flares must be operated by the licensee such that there is no visible emission other than for a total period of no more than 5 minutes in any 2 hours, except for heat haze.

L3 Waste

- L3.1 The licensee must not cause, permit or allow any waste to be received at the premises unless specified in this licence.
- L3.2 The Licensee must not dispose of waste on the premises unless authorised by a condition of this Licence.

L4 Noise limits

- L4.1 Noise from the premises must not exceed the noise limits specified in the table below.

Residences referenced in this table are from the consent DA 309-11-2001-i and summarised in the EPA

Environment Protection Licence

Licence - 11879

reference DOC19/761196.

Location	Day LAeq(15 minute)	Evening LAeq(15 minute)	Night LAeq(15 minute)	Night LAeq(1 minute)
EPA Point 13	38	38	36	46
EPA Point 14	38	38	36	46
EPA Point 15	38	38	36	46
All other privately owned residences	38	38	36	46

L4.2 For the purpose of Condition L4.1:

- a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sundays and Public Holidays,
- b) Evening is defined as the period from 6pm to 10pm, and
- c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sundays and Public Holidays

L4.3 The noise emission limits identified in condition L4.1 apply under the following meteorological conditions:

- a) wind speeds up to 3m/s at 10m above ground level; and
- b) temperature inversion conditions up to 3 degrees C/100m.

L4.4 For the purposes of condition L4.1:

- a) Data recorded by the closest and most representative meteorological station installed on the premises at EPA Identification Point 12 must be used to determine meteorological conditions; and
- b) Temperature inversion conditions (stability category) are to be determined by the methods referred to in Fact Sheet D of the Noise Policy for Industry (2017) using EPA Identification Points 12 and 32.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.

This includes:

- a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
- b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:

- a) must be maintained in a proper and efficient condition; and
- b) must be operated in a proper and efficient manner.

B.3 Noise management plan

4.2 Applicable Criteria

Noise criteria for the ACP are divided into three categories:

- Impact assessment criteria;
- Additional noise mitigation criteria; and
- Cumulative noise acquisition criteria.

4.2.1 Impact Assessment Criteria

In accordance with Condition 2, Appendix 6 of the Development Consent and Condition L4.1 of EPL 11879, noise generated by the development must not exceed the limits specified in **Table 3**.

Table 3: Noise Impact Criteria dB(A)

Location	Day	Evening	Night	
	LAeq (15 minute)	LAeq (15 minute)	LAeq (15 minute)	LA1 (1 minute)
Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit.	38	38	36	46

4.2.2 Additional Noise Mitigation Criteria

If noise emissions generated by the ACP exceed the criteria in **Table 4** at any residence on privately owned land, then, upon receiving a written request from the landowner, ACOL will implement additional reasonable and feasible noise mitigation measures (such as double glazing, insulation and/or air conditioning) at the residence in consultation with the owner.

Table 4: Additional Noise Mitigation Criteria dB(A)*

Location	Day	Evening	Night
	LAeq (15 minute)	LAeq (15 minute)	LAeq (15 minute)
Any residence not owned by the Applicant or not subject to an agreement between the Applicant and the residence owner as to an alternate noise limit.	38	38	38

* Exceedance of the criteria must be systemic.

4.2.3 Cumulative Noise Acquisition Criteria

If noise emissions generated by the ACP and other mines exceed the criteria in **Table 5** at any residence on privately owned land or on more than 25 per cent of any privately-owned land (except for noise affected residential receivers in Condition 1, Schedule 3 of the Development Consent), then, upon receiving a written request for acquisition from the landowner, ACOL together with the relevant mines, will acquire the land in accordance with the Acquisition Process (as defined in Conditions 7 and 8, Schedule 4 of the Development Consent).

Table 5: Cumulative Noise Acquisition Criteria dB(A)

Location	Day	Evening	Night
	L _{Aeq} (period)	L _{Aeq} (period)	L _{Aeq} (period)
Camberwell Village	60	50	45
All other privately-owned land	55	50	45

4.3 Existing Environment

The ACP is located in the Hunter Valley region of New South Wales and is bound by the Main Northern Railway to the north, Hunter River to the south and Glennies Creek to the east with the New England Highway dividing the open cut from the underground mining areas.

Other mining operations in the area include the Ravensworth Complex, the Mount Owen Complex, Rix's Creek Open Cut, Integra Underground and Hunter Valley Operations. The approved Ashton SEOC project is located to the south east of the site (see Figure 1 for the Project location in relation to surrounding mining operations).

The closest sensitive receivers are located in Camberwell. There are currently 13 private landholdings in the local area, 11 of these have an occupied residence.

Ambient noise levels within the village of Camberwell are influenced by the New England Highway to the south, the railway line to the northeast and surrounding mining operations. Attended noise monitoring has confirmed that the major contributing noise source is usually the New England Highway. Noise from ACP has been noted at times in Camberwell Village, historical reports show this has been infrequent and at relatively low levels.

Based on the historical meteorological data collected by ACOL's M2 (repeater) weather station the most common winds in winter are from the west-northwest and the east-southeast in summer. Prevailing winds act to enhance noise from surrounding noise sources (road, rail and mining).

Appendix C

Calibration certificates



Octave Band Filter IEC 61260-3:2016 Calibration Certificate

Calibration Number C22699A

Client Details EMM Consulting
Level 3/175 Scott Street
Newcastle NSW 2300

Filter Model Number : Rion NA-28
Filter Serial Number : N/A
Instrument Serial Number : 00370304
Microphone Serial Number : 10421
Pre-amplifier Serial Number : 60313
Firmware Version : 2.0

Atmospheric Conditions

Ambient Temperature : 23.8°C
Relative Humidity : 47.8%
Barometric Pressure : 98.77kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 31 Oct 2022

Secondary Check: Dhanush Bonu
Report Issue Date : 31 Oct 2022

Approved Signatory :

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
Midband Relative Attenuation (Clause 10)	Pass	Operating Range Lower Limit (Clause 12)	Pass
Linearity, Range and Overload (Clause 11)	Pass	Relative Attenuation (Clause 13)	Pass

The filter submitted for testing successfully completed the periodic tests of IEC 61260-3, for the environmental conditions under which the tests were performed. However, no general statement or conclusion can be made about conformance of the filter to the full specifications of IEC 61260-1:2014 because (a) evidence was not publicly available, from an independent testing organization responsible for pattern approvals, to demonstrate that the model of filter fully conformed to the class 1 specifications in IEC 61260-1:2014 and (b) because the periodic tests of IEC 61260-3 cover only a limited subset of the specifications in IEC 61260-1:2014.

Electrical Tests	Uncertainties of Measurement -	Environmental Conditions
-5dB < ΔA(Ω) ≤ 40dB	±0.12dB	Temperature
40dB < ΔA(Ω) ≤ 120dB	±0.2dB	Relative Humidity
		Barometric Pressure
		±0.1°C
		±1.9%
		±0.014kPa

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.





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Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C21832

Client Details Global Acoustics Pty Ltd
12/16 Huntingdale Drive
Thornton NSW 2322

Equipment Tested/ Model Number : Pulsar Model 105
Instrument Serial Number : 81334

Atmospheric Conditions

Ambient Temperature : 25°C
Relative Humidity : 49.6%
Barometric Pressure : 100.8kPa

Calibration Technician : Lucky Jaiswal
Calibration Date : 29 Nov 2021
Secondary Check: Harrison Kim
Report Issue Date : 2 Dec 2021

Approved Signatory :  Ken Williams

Characteristic Tested	Result
Generated Sound Pressure Level	Pass
Frequency Generated	Pass
Total Distortion	Pass

Nominal Level	Nominal Frequency	Measured Level	Measured Frequency
94	1000	94.19	1000.30

The sound calibrator has been shown to conform to the class 2 requirements for periodic testing, described in Annex B of IEC 60942:2017 for the sound pressure level(s) and frequency(ies) stated, for the environmental conditions under which the tests were performed.

Uncertainties of Measurement -

Specific Tests	Environmental Conditions
Generated SPL ±0.11dB	Temperature ±0.1°C
Frequency ±0.07%	Relative Humidity ±1.9%
Distortion ±0.50%	Barometric Pressure ±0.014kPa

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.

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