Ashton Coal

Monthly attended noise monitoring - October 2022

Prepared for Ashton Coal Operations Pty Ltd

October 2022

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Ashton Coal Operations Pty Ltd

E211129 RP#10

October 2022

Version	Date	Prepared by	Approved by	Comments
1	21 October 2022	Lucas Adamson	Najah Ishac	

Approved by

Najah Ishac
Director
21 October 2022

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Tables

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1 Introduction

EMM Consulting Pty Limited (EMM) was engaged to complete monthly attended noise surveys on behalf of Ashton Coal Operations Pty Ltd (Ashton Coal).

The monitoring purpose was to address requirements of the approved Ashton Coal Noise Management Plan (NMP), prepared to satisfy the requirements of Development Consent DA 309-11-2001-I (DC) and Environment Protection License (EPL) 11879.

This report presents the results and findings of attended noise monitoring conducted on 13 October 2022.

The following material was referenced as part of this assessment:

- Department of Planning and Environment (DPE), Development Consent 309-11-2001-I, as modified on 6 July 2022 (current as of 13 October 2022);
- Environment Protection Authority (EPA), Environment Protection Licence 11879, as varied on 3 February 2020 (current as of 13 October 2022);
- Ashton Coal Project Noise Management Plan (NMP), approved by DPE on 23 September 2020 (current as of 13 October 2022);
- NSW EPA, Industrial Noise Policy (INP), 2000;
- NSW EPA, Industrial Noise Policy Application notes, 2017; and
- NSW EPA, Noise Policy for Industry (NPfI), 2017.

2 Glossary of acoustic terms

Several technical terms are discussed in this report. These are explained in Table 2.1.

Table 2.1 Glossary of acoustic terms

Term	Description
dB	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
L_{A1}	The 'A-weighted' noise level which is exceeded 1% of the time.
$L_{A1,1\ minute}$	The 'A-weighted' noise level exceeded for 1% of the specified time period of 1 minute.
L_{A10}	The 'A-weighted' noise level which is exceeded 10% of the time. It is approximately equivalent to the average of maximum noise level.
L_{A90}	Commonly referred to as the background noise level. The 'A-weighted' noise level exceeded 90% of the time.
L_{Aeq}	The energy average noise from a source. This is the equivalent continuous 'A-weighted' sound pressure level over a given period. The $L_{Aeq,15\ minute}$ descriptor refers to an L_{Aeq} noise level measured over a 15-minute period.
L_{Amin}	The minimum 'A-weighted' noise level received during a measuring interval.
L_{Amax}	The maximum root mean squared 'A-weighted' sound pressure level (or maximum noise level) received during a measuring interval.
L_{Ceq}	The equivalent continuous 'C-weighted' sound pressure level over a given period. The $L_{Ceq,15\ minute}$ descriptor refers to an L_{Ceq} noise level measured over a 15 minute period. C-weighting can be used to measure low frequency noise.
Day period	Monday – Saturday: 7 am to 6 pm, on Sundays and Public Holidays: 8 am to 6 pm.
Evening period	Monday – Saturday: 6 pm to 10 pm, on Sundays and Public Holidays: 6 pm to 10 pm.
Night period	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.

It is useful to have an appreciation of decibels (dB), the unit of noise measurement. Table 2.2 gives an indication as to how an average person perceives changes in noise levels. Examples of common noise levels are provided in Figure 2.1.

Table 2.2 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise in surrounding environment
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

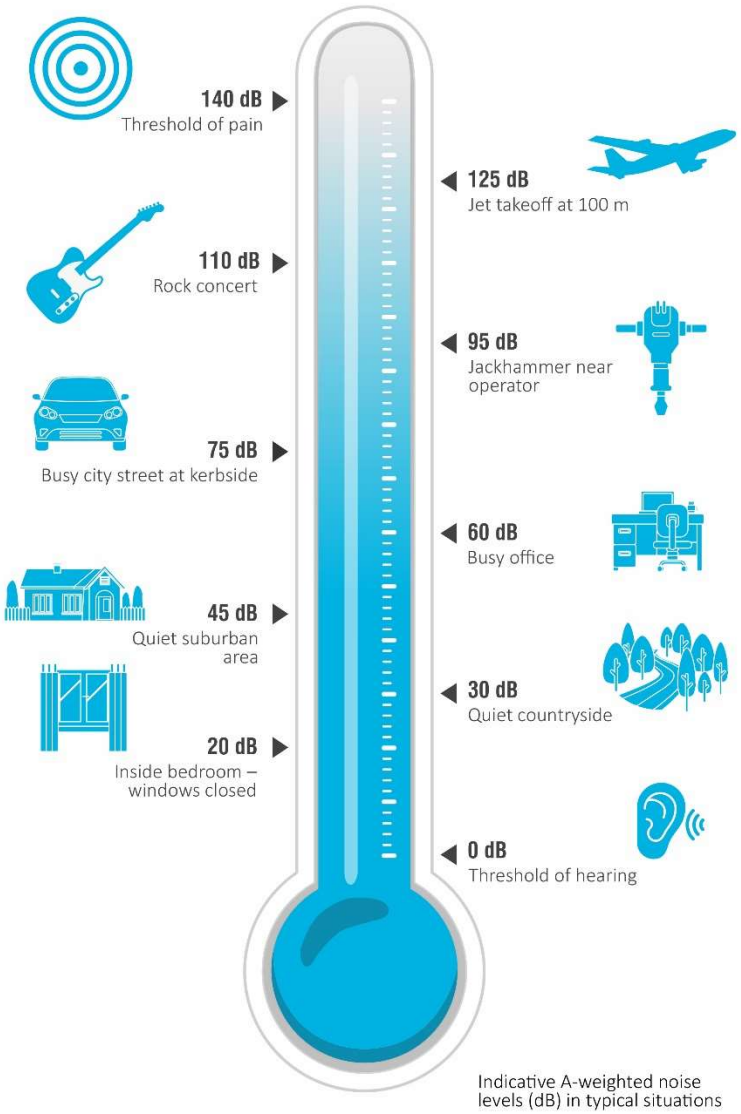


Figure 2.1 Common noise levels

3 Noise limits

3.1 Operational and sleep disturbance noise limits

Ashton Coal noise limits are provided in Table 1, Condition 2 of Appendix 6 of the DC and Condition L4.1 of the EPL. Extracts of the relevant sections of the DC and EPL pertaining to noise are provided in Appendix A and B, respectively. The approved NMP adopts three attended noise monitoring locations that are representative of residences outlined in the DC. The noise monitoring locations and relevant criteria are summarised in Table 3.1.

Table 3.1 Noise impact assessment criteria

Monitoring location	Day $L_{Aeq,15\ minute}$, dB	Evening $L_{Aeq,15\ minute}$, dB	Night $L_{Aeq,15\ minute}$, dB	Night $L_{A1,1\ minute}$, dB
N2	38	38	36	46
N3	38	38	36	46
N4	38	38	36	46

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; and
- temperature inversion conditions greater than 3°C/100m.

For this assessment, the recorded L_{Amax} has been used as a conservative estimate of the $L_{A1,1\ minute}$. The INP application notes state that the EPA accepts sleep disturbance analysis based on either the $L_{A1,1\ minute}$ or L_{Amax} metrics (EPA 2013), with use of L_{Amax} resulting in a more conservative assessment.

The DC and EPL state that modification factor corrections in the application notes to the INP (updated in 2017) shall be applied to the measured mine noise levels where applicable. The application notes to the INP state that Fact Sheet C of the NPfI (EPA 2017) now applies regarding the application of modifying factor corrections.

3.2 Cumulative noise criteria

Ashton Coal cumulative noise limits are provided in Condition 5 and Condition 6 of Schedule 3 of the DC. An extract of the conditions relevant to cumulative noise criteria is provided here.

> 5. The Applicant must implement all reasonable and feasible measures to ensure that the noise generated by the Ashton Mine Complex combined with the noise generated by other mines in the vicinity does not exceed the criteria in Table 4 at any residence on any privately-owned land or on more than 25 per cent of any privately-owned land (except for the noise affected residential receivers in Table 1).

Table 4: Cumulative Noise Criteria dB(A) $L_{Aeq\ (period)}$

Location	Day	Evening	Night
Camberwell Village	55	45	40
All other privately-owned land	50	45	40

> Cumulative noise 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.

> 6. If the cumulative noise generated by the Ashton Mine Complex combined with the noise generated by other coal mines in the vicinity exceeds the criteria in Table 5 at any residence on privately-owned land or more than 25 per cent of any privately-owned land (except for the noise-affected residential receivers ion Table 1), then upon receiving a written request from the landowner, the Applicant must, together with the relevant mines, acquire the land on as equitable basis as possible, in accordance with the procedures in conditions 7 and 8 of schedule 4.

Table 5: Cumulative Noise Acquisition Criteria dB(A) $L_{Aeq\ (period)}$

Location	Day	Evening	Night
Camberwell Village	60	50	45
All other privately-owned land	55	50	45

> Cumulative noise 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.

3.3 Modifying factors

The EPA 'Noise Policy for Industry' (NPfI, 2017) was approved for use in NSW in October 2017. For assessment of modifying factors, the NPfI immediately superseded the 'Industrial Noise Policy' (INP, 2000), as outlined in the EPA document 'Implementation and transitional arrangements for the Noise Policy for Industry' (2017). Assessment and reporting of modifying factors has been undertaken in accordance with Fact Sheet C of the NPfI.

4 Assessment methodology

4.1 Attended noise monitoring

To quantify noise emissions from Ashton Coal, 15-minute attended noise monitoring surveys were completed at representative locations as per the approved NMP. Noise monitoring locations and their coordinates are listed in Table 4.1 and are shown in Figure 4.1.

Table 4.1 Attended noise monitoring locations

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

Attended noise monitoring is scheduled to be "unannounced" and, to EMM's knowledge, Ashton Coal were not aware of the monitoring prior to its commencing. Noise monitoring is avoided during any scheduled downtime or major maintenance. Information provided by Ashton Coal after completion of the noise monitoring confirmed that regular operations were occurring during the monitoring period.

Where possible throughout each survey, the operator has quantified the contribution of each significant noise source. This was done by matching audible sounds with the response of the analyser (where applicable) and/or via post-analysis of data (eg low pass filtering).

4.2 Instrumentation

A Brüel & Kjær 2250 Type 1 sound analyser (s/n 3029363) was used to conduct 15-minute attended measurements and record 1/3 octave frequency and statistical noise indices. The sound analyser was calibrated before and on completion of the survey using a Svantek SV-36 calibrator (s/n 79952). Instrumentation calibration certificates are provided in Appendix C.

4.3 Attended noise monitoring exceedance procedure

Ashton Coal has developed an attended monitoring exceedance procedure that is to be implemented if measurements show Ashton Coal noise emissions are above any relevant criterion. This response plan is implemented if site noise levels are determined to be above a relevant criterion which was applicable due to suitable meteorological conditions. The following noise management initiatives are implemented:

- Consultant will record the reading and advise Ashton Coal of the exceedance. Ashton Coal will implement remedial action as required.
- A follow up measurement is to be conducted (within 75 minutes after the first measurement and no earlier than 10 pm).
- If the follow up measurement indicates that site noise levels are above a relevant criterion and that noise limits are applicable, the consultant will record the result, note the site has failed and is deemed a 'noise affected night' at that location and move on to the next monitoring location. An additional monitoring test should be scheduled to be undertaken at the same location within one week.
- If the follow up measurement indicates that site noise levels are below relevant noise criteria and that noise limits are applicable, the consultant will record the result, note the site has passed and move on to the next monitoring location. An additional monitoring test should be scheduled to be undertaken at the same location within one week.

4.4 Determination of stability category

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 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).

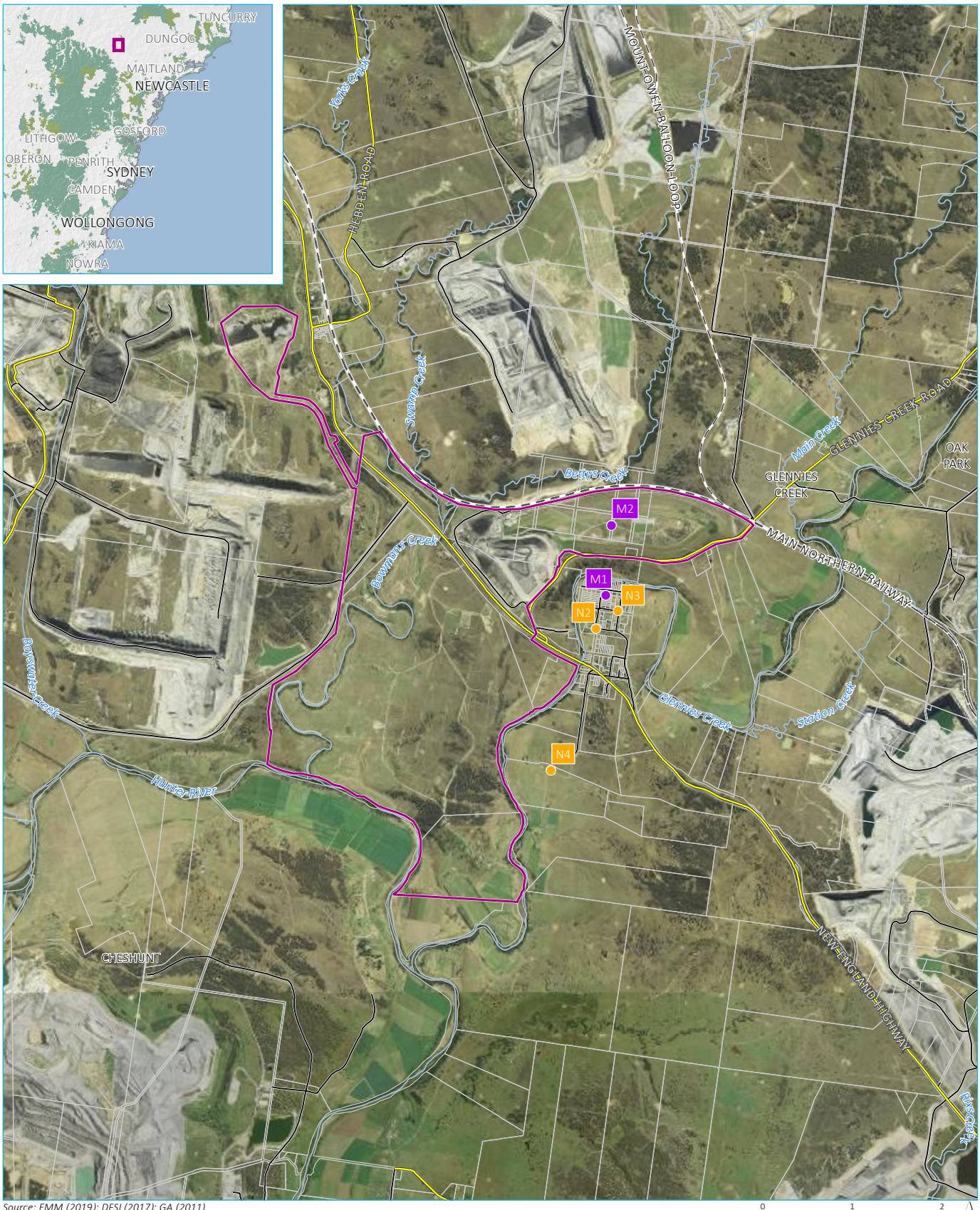
Table D2 of the NPfI (EPA 2017) is reproduced in Table 4.2 and presents the stability categories and associated ranges in temperature lapse rates.

Table 4.2 Stability categories and temperature lapse rates

Stability category	Temperature lapse rate (ΔT) (°C/100 m)
A	$\Delta T < -1.9$
B	$-1.9 \leq \Delta T < -1.7$
C	$-1.7 \leq \Delta T < -1.5$
D	$-1.5 \leq \Delta T < -0.5$
E	$-0.5 \leq \Delta T < 1.5$
F	$1.5 \leq \Delta T < 4.0$
G	$\Delta T \geq 4.0$

Source: NPfI (EPA 2017).

Other meteorological data, such as wind speed, has been sourced directly from meteorological station M2 since it is more representative of the weather conditions nearer to the Ashton Coal noise sources.



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

0 1 2 km

GDA 1994 MGA Zone 56

N

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

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Figure 4.1

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5 Review of data and discussion

5.1 Summary

Results of attended noise measurements are summarised in Table 5.1. Ashton Coal contribution and total mine noise were determined for each survey using in-field observations and post-analysis of data as required (eg removing higher frequencies that are not mine related). Attended monitoring was completed on 13 October 2022. Noise from Ashton Coal operations was inaudible during all three measurements.

Meteorological data for the monitoring period was sourced from Ashton Coal's two weather stations (M1 and M2) to determine applicability of criteria in accordance with the DC and EPL. Noise limits were found to be applicable during all three measurements.

All measurements were evaluated for potential modifying factors in accordance with the NPfI. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

Given that Ashton Coal was not audible during any of the three measurements, LFN modifying factors were not applied to any of the measurements. Notwithstanding the preceding, it is noted that total measured noise levels negligibly exceeded the relevant LFN thresholds during all three measurements. However, these were influenced by road traffic on the New England Highway. Therefore, in accordance with the NPfI, LFN modifying factors were not applied to estimated cumulative mining noise levels at any of the locations.

Ashton Coal noise contributions and cumulative mine noise contributions were below (ie complied with) the relevant noise limits at all monitoring locations.

Table 5.1 Ashton Coal attended noise monitoring results – October 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] limits apply (Y/N)	Exceedance dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	Mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
N2	13/10	22:04	37	39	44	48	52	55	60	Nil	IA	IA	36	46	1.4 m/s @ 117° F class stability 3.0°C/100m VTG Y	Nil	Ashton Coal mine inaudible. Other mines in the vicinity (34 dB $L_{Aeq,15\ minute}$), traffic on the New England Highway, insects and frogs consistently audible. Distant dogs barking occasionally audible.
N3	13/10	22:21	36	38	43	47	50	60	60	Nil	IA	IA	36	46	1.1 m/s @ 123° F class stability 2.9°C/100m VTG Y	Nil	Ashton Coal mine inaudible. Other mines in the vicinity (35 dB $L_{Aeq,15\ minute}$), traffic on the New England Highway, insects and frogs consistently audible. Distant dogs barking, bird noise and a train on the main line (unrelated to Ashton Coal) occasionally audible.
N4	13/10	22:43	35	37	43	46	51	64	59	Nil	IA	IA	36	46	1.3 m/s @ 180° F class stability 2.1°C/100m VTG Y	Nil	Ashton Coal mine inaudible. Other mines in the vicinity (35 dB $L_{Aeq,15\ minute}$), traffic on the New England Highway, insects, frogs and powerline hum consistently audible.

Notes:
1. Modifying factor correction for low frequency, tonal or intermittent noise in accordance with Fact Sheet C of the NPfI).
2. For assessment purposes the L_{Amax} and the $L_{A1,1\ minute}$ are interchangeable.
3. Meteorological data were taken as an average over 15 minutes from the Ashton Coal weather station (Refer to Section 5.1). VTG assumes the temperature sensors on the two weather stations are in proper working order and calibrated to manufacturers requirements.
4. IA = inaudible.
5. N/A = not applicable.

5.2 N2 - Camberwell Village (west)

Ashton Coal operations were inaudible during the entire measurement. Typically, when a particular source is not audible above local ambient noise levels, the likely contribution of that source is at least 10 dB below the measured background (L_{A90}) level. Given this and the measured background noise level of 39 dB L_{A90}, the Ashton Coal $L_{Aeq,15\ minute}$ mine noise contribution was estimated to be <29 dB $L_{Aeq,15\ minute}$ and therefore below the relevant noise limit. Ashton Coal noise contributions complied with the DC and EPL noise limits.

Other noise sources included other mines in the vicinity, insects, frogs, traffic on the New England Highway and distant dogs barking.

Other mining operations in the vicinity were consistently audible during the operator-attended noise survey at monitoring location N2. The cumulative mining noise level was estimated to be 31 dB $L_{Aeq,night}$ (ie Other mine noise of 34 dB $L_{Aeq,15\ minute}$ less 3 dB as per NPfI methodology) which is below the relevant 40 dB $L_{Aeq,night}$ limit. A graph of the total noise levels measured in each one-third octave frequency bands is shown in .

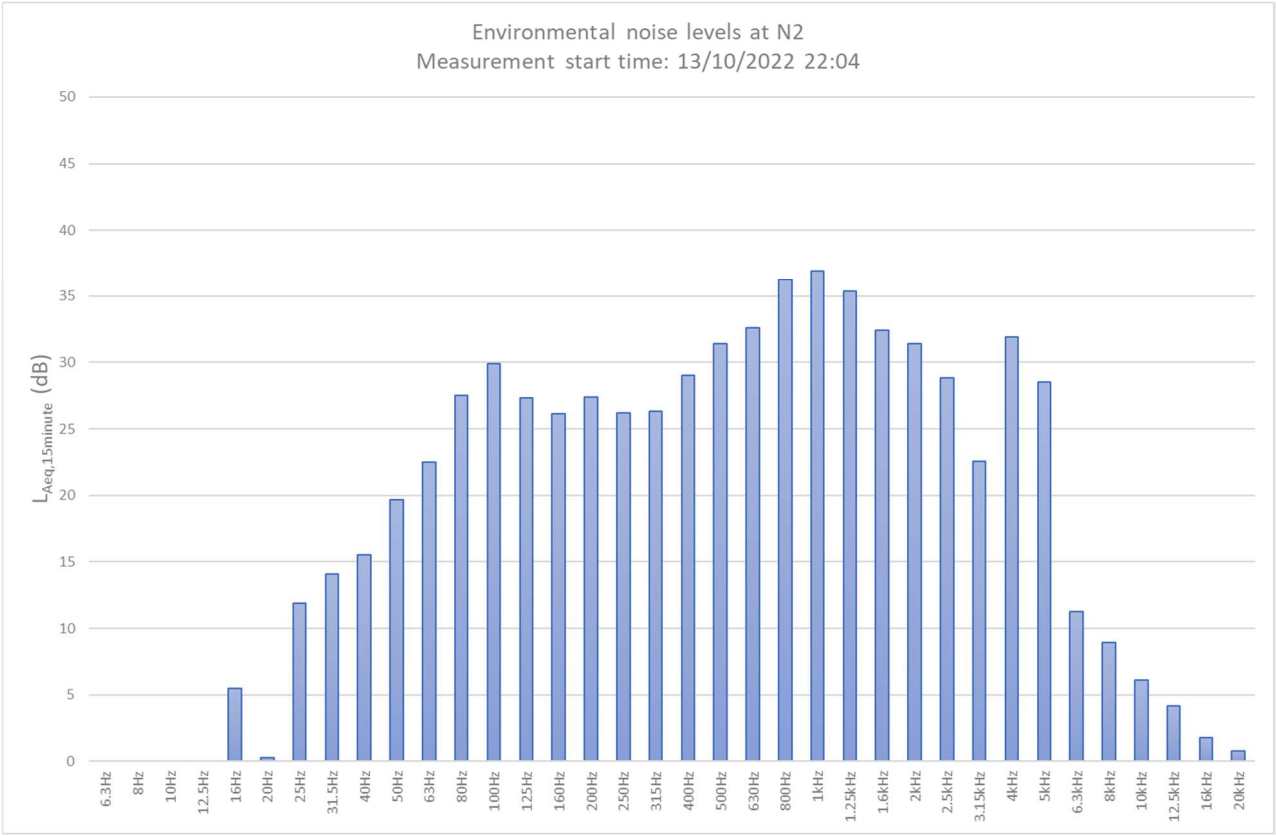

Figure 5.1 N2 total measured one-third octave band frequencies

5.3 N3 - Camberwell Village (north-east)

Ashton Coal operations were inaudible during the entire measurement. Given this and the measured background noise level of 38 dB L_{A90}, the Ashton Coal $L_{Aeq,15\ minute}$ mine noise contribution was estimated to be <28 dB $L_{Aeq,15\ minute}$ and therefore below the relevant noise limit. Ashton Coal noise contributions complied with the DC and EPL noise limits.

Other noise sources included other mines in the vicinity, insects, frogs, traffic on the New England Highway, distant dogs barking, bird noise and a train on the main line (unrelated to Ashton Coal).

Other mining operations in the vicinity were consistently audible during the operator-attended noise survey at monitoring location N3. The cumulative mining noise level was estimated to be 32 dB $L_{Aeq,night}$ (ie Other mine noise of 35 dB $L_{Aeq,15\ minute}$ less 3 dB as per NPfI methodology) which is below the relevant 40 dB $L_{Aeq,night}$ limit. A graph of the total noise levels measured in the one-third octave frequency bands is shown in .

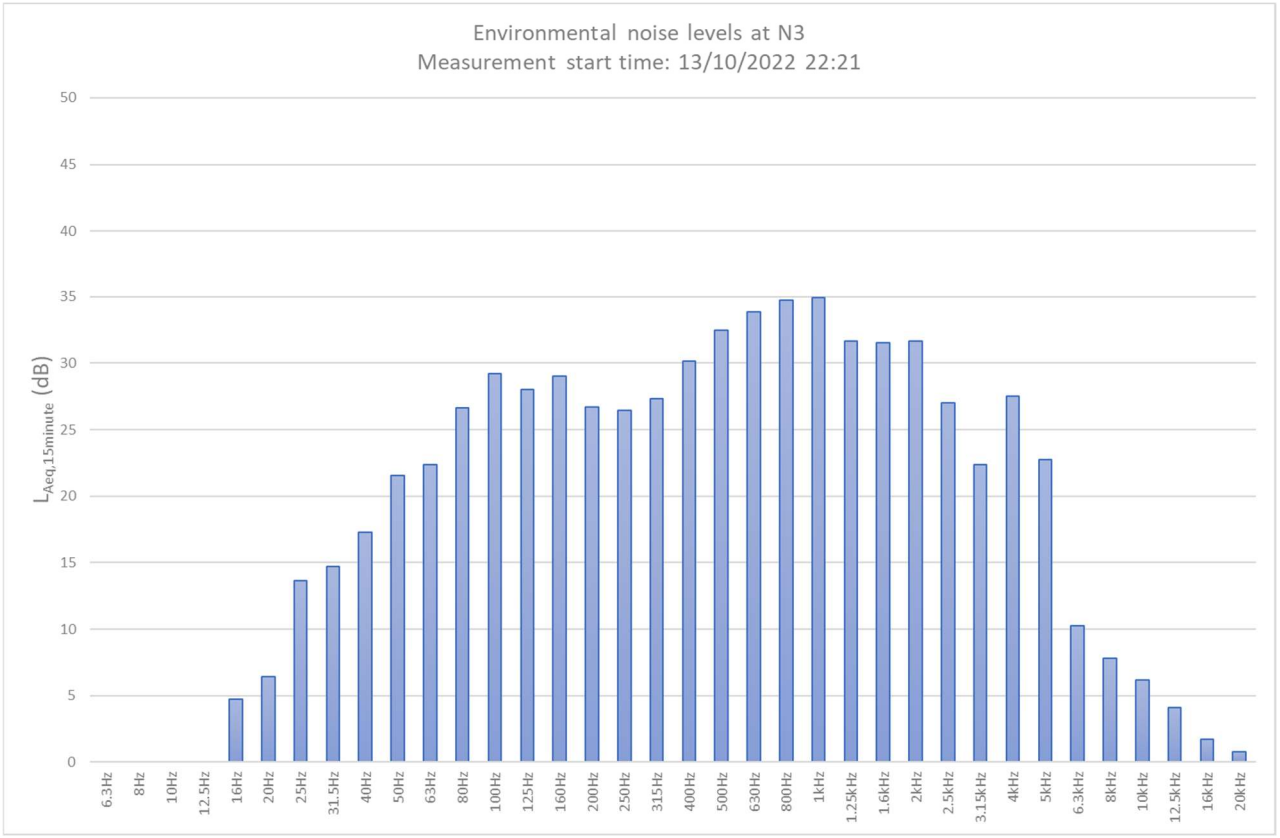

Figure 5.2 N3 total measured one-third octave band frequencies

5.4 N4 - South of New England Highway

Ashton Coal operations were inaudible during the entire measurement. Given this and the measured background noise level of 37 dB L_{A90}, the Ashton Coal $L_{Aeq,15\ minute}$ mine noise contribution was estimated to be <27 dB $L_{Aeq,15\ minute}$ and therefore below the relevant noise limit. Ashton Coal noise contributions complied with the DC and EPL noise limits.

Other noise sources included insects and frogs, other mines in the vicinity, traffic on the New England Highway and powerline hum.

Other mining operations in the vicinity were frequently audible during the operator-attended noise survey at monitoring location N4. The cumulative mining noise level was estimated to be 32 dB $L_{Aeq,night}$ (ie Other mine noise of 35 dB $L_{Aeq,15\ minute}$ less 3 dB as per NPfI methodology) which is below the relevant 40 dB $L_{Aeq,night}$ limit. A graph of the total noise levels measured in one-third octave frequency bands is shown below in .

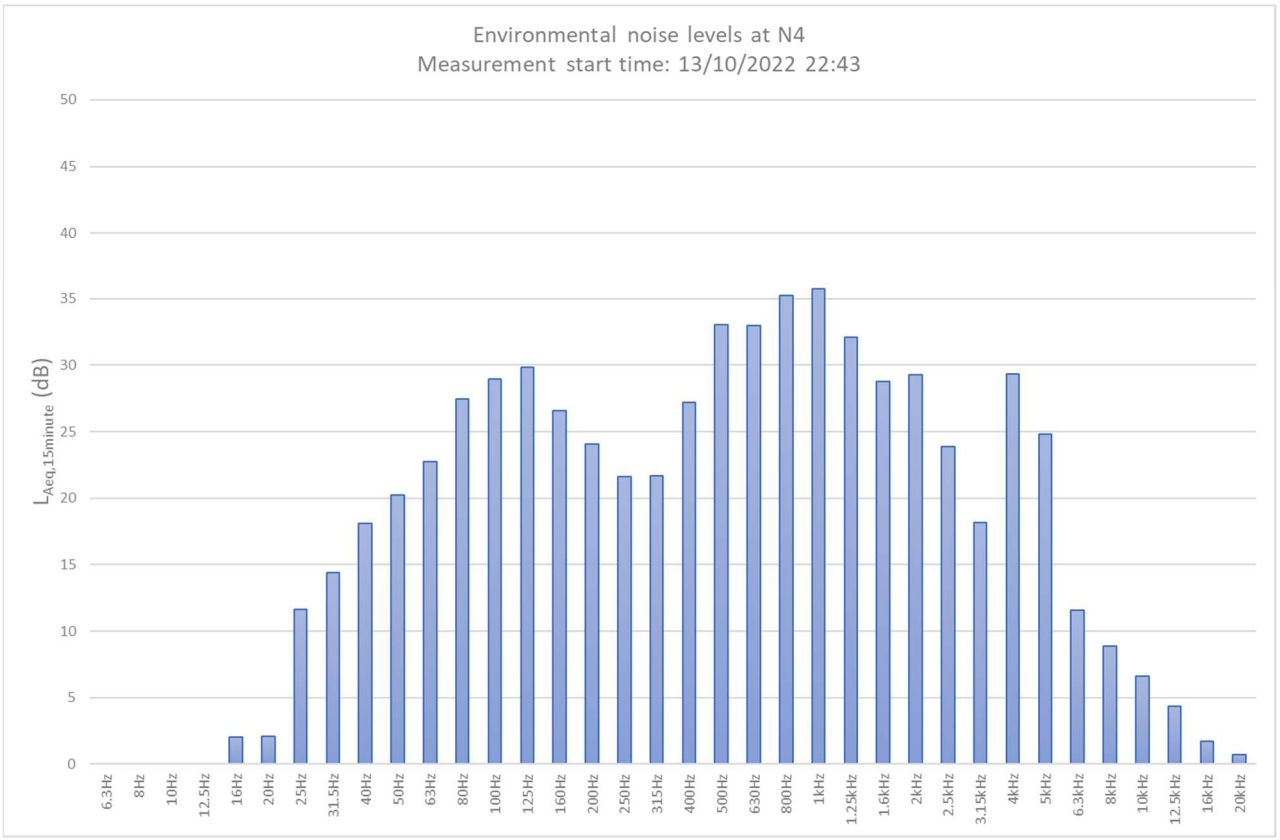

Figure 5.3 N4 total measured one-third octave band frequencies

6 Conclusion

EMM has completed a review of mine noise from Ashton Coal within the surrounding community based on attended measurements conducted on 13 October 2022.

The applicability of noise limits was assessed with reference to Ashton Coal's two meteorological stations M1 and M2 located to the east of and on the site, respectively. Noise limits were found to be applicable during all three measurements.

The assessment of noise from site included consideration of modifying factors for noise characteristics, where relevant, and in accordance with the DC and EPL.

Both Ashton Coal noise and cumulative mine noise were below (satisfied) the relevant noise limits at all monitoring locations during this round of monitoring.

References

Ashton Coal Noise Management Plan, 2017.

NSW Department of Planning, Industry and Environment, Development Consent DA309-11-2001-I, 2016.

NSW Environment Protection Authority, Environment Protection License 11879.

NSW Environment Protection Authority, Industrial Noise Policy, 2000.

NSW Environment Protection Authority, Industrial Noise Policy Application notes, 2017.

NSW Environment Protection Authority, Noise Policy for Industry, 2017.

Appendix A
Project approval extract

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APPENDIX 6

ALTERNATE NOISE CONDITIONS

NOISE

Application

1. 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

2. 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

3. 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).

Appendix B
EPL extract

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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 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

Appendix C
Calibration certificates

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CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C33872

EQUIPMENT TESTED : Sound Level Calibrator

Manufacturer: Svantek
Type No: SV-36 **Serial No:** 79952
Owner: EMM Consulting Pty Ltd
L3, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details overleaf. All Test Passed.

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.09 dB	1000.00 Hz	1.12 %
Level2:	NA	N	114.06 dB	1000.00 Hz	0.71 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:

Ambient Pressure 1004 hPa ±1 hPa
Temperature 23 °C ±1° C
Relative Humidity 55 % ±5%

Date of Receipt : 26/09/2022
Date of Calibration : 29/09/2022
Date of Issue : 29/09/2022

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

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

Accredited for compliance with ISO/IEC 17025 - Calibration
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HBK HOTTINGER BRÜEL & KJÆR
The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark

ilac-MRA

DANAK
CAL Reg.No. 307
Member of EA MLA

CERTIFICATE OF CALIBRATION

No: CDK2007931

CALIBRATION OF

Sound Level Meter:	Brüel & Kjær Type 2250	No: 3029363	Id: -
Microphone:	Brüel & Kjær Type 4189	No: 3260501	
PreAmplifier:	Brüel & Kjær Type ZC-0032	No: 30109	
Supplied Calibrator:	None		
Software version:	BZ7222 Version 4.7.6	Pattern Approval:	-
Instruction manual:	BE1712-22		

CUSTOMER

EMM Consulting
Ground Floor, Suite 1
20 Chandos Street
2065 St Leonards
New South Wales, Australia

CALIBRATION CONDITIONS

Preconditioning: 4 hours at 23°C ± 3°C

Environment conditions: *See actual values in sections.*

SPECIFICATIONS

The Sound Level Meter Brüel & Kjær Type 2250 has been calibrated in accordance with the requirements as specified in IEC 61672-1:2013 class 1. Procedures from IEC 61672-3:2013 were used to perform the periodic tests. The accreditation assures the traceability to the international units system SI.

PROCEDURE

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System 3630 with application software type 7763 (version 8.2 - DB: 8.20) by using procedure B&K proc 2250, 4189 (IEC 61672:2013).

RESULTS

Calibration Mode: **Calibration as received.**

The reported expanded uncertainty is based on the standard uncertainty multiplied by a coverage factor $k = 2$ providing a level of confidence of approximately 95 %. The uncertainty evaluation has been carried out in accordance with EA-4/02 from elements originating from the standards, calibration method, effect of environmental conditions and any short time contribution from the device under calibration.

Date of calibration: 2020-11-26

Date of issue: 2020-11-26

Lene Petersen
Calibration Technician

Erik Bruus
Approved Signatory

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