Chain Valley Colliery

Quarterly attended noise monitoring - Q4 2025

Prepared for Delta Power & Energy (Chain Valley) Pty Ltd (Trading as Delta Coal)

January 2025

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E241225 RP2

January 2025

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14 January 2026

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1 Introduction

1.1 Background

EMM Consulting Pty Ltd (EMM) was engaged by Delta Power & Energy (Chain Valley) Pty Ltd (Trading as Delta Coal) to conduct a quarterly noise survey of operations at Chain Valley Colliery (CVC) located at Construction Road, Mannering Park 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 at nine monitoring locations during the day, evening and night periods on 27 November 2025 and 1, 2, 3, 5 and 8 December 2025.

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 and are based on the approved noise management plan.

Table 1.1 Attended noise monitoring locations

Location descriptor	Description	Coordinates (MGA56)	
		Easting	Northing
ATN001	Griffith Street, Mannering Park	363990	6330529
ATN002	Lakeshore Avenue, Kingfisher Shores	365218	6329388
ATN003	Short Street, Macquarie Shores	365165	6328323
ATN004	Lloyd Avenue, Chain Valley Bay	365949	6328530
ATN005	Teragalin Drive, Chain Valley Bay	366560	6328590
ATN006	Sunset Parade, Chain Valley Bay	366305	6329321
ATN007[1]	Cams Boulevard, Chain Valley Bay	366559	6331109
R12	Lakeshore Avenue, Kingfisher Shores	365185	6329352
R13	Karoola Avenue, Kingfisher Shores	365391	6329169

Notes: 1. Attended noise monitoring was undertaken at the R22 residence (EPL Point 23) instead.

Source: EMM (2024); ABS (2021); DCSSS (2024); GA (2009); MetroMap (2024)

0 0.5 1 km
GDA 1994 MGA Zone 56

N

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KEY

- (A) Noise monitoring location
- (W) Meteorological station
- CVC consent boundary
- Major road
- Minor road
- Watercourse/drainage line
- Waterbody

CVC attended noise monitoring locations

Chain Valley Colliery
Quarterly Attended Noise Monitoring
Figure 1.1

EMM
creating opportunities

1.3 Terminology and abbreviations

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% 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.
$L_{Aeq,15minute}$	The energy average A-weighted noise level over the specified time period of 15 minutes.
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.
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 (m).
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.

2 Noise limits

2.1 Development consent

Noise limits for CVC are provided in Table 1, Condition 7 of Schedule 3 of the current development consent SSD-5465 (DC) dated July 2021. Long-term goals for CVC are provided in Condition 8(d) of Schedule 3 of the DC. Relevant sections of the DC are reproduced in Appendix B.1.

2.2 Environment protection licence

Noise limits for CVC are provided in Conditions L5.1 and L5.2 of environment protection licence 1770 (EPL) dated 9 April 2025. Relevant sections of the EPL are reproduced in Appendix B.2.

2.3 Noise management plan

The approved noise management plan (NMP) (dated 20 April 2022) was prepared in line with the Mod 4 approval and in accordance with the NSW EPA 'Noise Policy for Industry' (NPfI) issued in October 2017. Table 5 of the NMP adopts nine attended noise monitoring (NM) locations that are representative of residences outlined in the DC. Where several assessment locations are in one NM catchment, representative noise limits have been adopted to ensure that the lowest (most stringent) limits within the NM catchment can be achieved. Relevant sections of the NMP are reproduced in Appendix B.3.

2.4 Noise limits

Noise impact limits based on the DC and EPL are provided in Table 2.1. The assessment location represented by each noise monitoring location is consistent with the NMP, most of which are listed in the DC and EPL (as shown in brackets alongside where applicable).

Table 2.1 Noise impact limits, dB

Noise monitoring location	Assessment location	Day $L_{Aeq,15minute}$	Evening $L_{Aeq,15minute}$	Night $L_{Aeq,15minute}$	Night $L_{A1,1minute}$
ATN001	R8 (EPL Point 9)	38	38	38	45
ATN002	R11 (EPL Point 12)	49	49	49	54
ATN003	R15 (EPL Point 16)	36	36	36	45
ATN004	R14[1]	35	35	35	45
ATN005	R17[1]	35	35	35	45
ATN006	R19 (EPL Point 20)	37	37	37	45
ATN007[2]	R22 (EPL Point 23)	46	46	46	46
R12	R12 (EPL Point 13)	49	49	49	53
R13	R13 (EPL Point 14)	43	43	43	49

Notes: 1. DC limits for this location are under 'all other privately-owned land'.

2. Attended noise monitoring was undertaken at the R22 residence (EPL Point 23) instead.

2.5 Meteorological conditions

Appendix 8 of the DC states meteorological conditions under which noise limits do not apply as follows:

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

Condition L5.4 of the EPL states meteorological conditions under which noise limits do not apply as follows:

- wind speeds greater than 3 m/s at 10 m above ground level
- stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level
- stability category G temperature inversion conditions
- as defined under the NPfI.

The last point referencing the NPfI adds the concept of 'very noise-enhancing' conditions which are considered outside the 'standard' or 'noise-enhancing' meteorological conditions defined in Table D1 of Fact Sheet D of the NPfI.

Further, Fact Sheet E of the NPfI (point 6 of Section E1) provides additional guidance on monitoring the performance of a site against 'suitable' noise limits placed in the DC/EPL. Noise limits are based on 'achievable' noise levels under the 'standard' and/or 'noise-enhancing' meteorological conditions. Where meteorological conditions are considered 'very noise-enhancing', a positive adjustment of 5 dB applies to noise limits for 'standard' or 'noise-enhancing' meteorological conditions.

In accordance with the NPfI, where 'very noise-enhancing' meteorological conditions were present during a noise measurement, a positive adjustment of 5 dB has been applied to the noise limits. This approach means that noise limits are always applicable, with or without a positive adjustment of 5 dB, depending on whether meteorological conditions are 'very noise-enhancing' or not.

2.6 Additional requirements

2.6.1 Attended noise monitoring

Condition M4.1 of the EPL specifies additional noise monitoring requirements to determine compliance, including the following:

- Locations of monitoring – EPL points listed in Table 2.1 above.
- Frequency of monitoring – quarterly and at least two months between monitoring periods.
- Periods of monitoring:
    - For three out of four quarterly periods – each day, evening and night periods for a minimum of 15 minutes. Night period monitoring must be undertaken between the hours of 1:00 am and 4:00 am.

- For one out of four quarterly periods – day period monitoring must be undertaken for a minimum of 1.5 hours (six 15 minute periods); evening period monitoring must be undertaken for a minimum of 30 minutes (two 15 minute periods); night period monitoring must be undertaken for a minimum of 1 hour (four 15 minute periods).

- Days of monitoring – each quarterly monitoring must be undertaken on a different day of the week excluding Saturday, Sundays and public holidays.

In accordance with the preceding, this round of quarterly attended noise monitoring (Q4 2025) was undertaken on Thursday 27 November 2025 as well as Monday 1, Tuesday 2, Wednesday 3 and Friday 5 December 2025, which is more than two months since the last quarterly monitoring (Q3 2025) which finished on Friday 5 September 2025. This quarterly period (Q4 2025), monitoring at each monitoring location (listed in the EPL) was conducted for a minimum of 1.5 hours during the day period, 0.5 hour during the evening period and 1 hour during the night period. The 'short' periods monitoring (e.g. 15 minutes during each period with night period monitoring undertaken between the hours of 1:00 am and 4:00 am) is planned to be completed next in Q1 2026. Monitoring at locations not listed in the EPL (i.e. ATN004 and ATN005) was conducted for 15 minutes during each period in accordance with the NMP.

As per the approved NMP, attended noise monitoring is scheduled considering the occurrence of regular operations at CVC. Noise monitoring avoids scheduled down-time or maintenance. Regular operations were occurring during this round of monitoring (Q4 2025).

Monitoring and reporting have been done in accordance with the NPfI and 'Approved methods for the measurement and analysis of environmental noise in NSW' (the approved methods) (EPA 2022).

2.6.2 CVC long-term goals

Long-term goals for CVC are provided in Condition 8(d) of Schedule 3 of the DC, which states:

> 8. The Applicant must:
>
> (d) use its best endeavours to achieve the long-term noise goals in Table 2, where reasonable and feasible, and report on progress towards achieving these goals in each Annual Review;

The long-term goals for CVC in Table 2.2 of the DC are summarised in Table 2.2 for the relevant assessment locations.

Table 2.2 CVC long-term goals

Assessment location	Day $L_{Aeq,15minute}$, dB	Evening $L_{Aeq,15minute}$, dB	Night $L_{Aeq,15minute}$, dB
R11 (EPL Point 12)	41	41	41
R12 (EPL Point 13)	41	41	41
R13 (EPL Point 14)	41	41	41
R22 (EPL Point 23)	40	40	40

As stated in Appendix 9 of the DC, Delta Coal is committed to the progressive implementation of feasible and reasonable measures to target long-term noise goals which are designed to reduce noise emissions from CVC. For this compliance noise monitoring assessment, site $L_{Aeq,15minute}$ have also been compared to the long-term goals as discussed in Section 4.2.2.

3 Methodology

3.1 Overview

Attended environmental noise monitoring was done in accordance with Australian Standard AS1055 'Acoustics, Description and Measurement of Environmental Noise' and relevant EPA requirements. Meteorological data was obtained from the Mannering Colliery 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, evening and night periods at each location. Minimum monitoring periods at each EPL location was in accordance with the EPL; 1.5 hours during the day period, 30 minutes during the evening period and 1 hour during the night period. The duration of each measurement was 15 minutes. Atmospheric conditions (at microphone height) 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 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.

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 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 the 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 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 $L_{A1,1minute}$. 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

This assessment determined stability categories throughout attended monitoring period using the sigma-theta method as per Fact Sheet D of the NPfI. This data was sourced from the Mannering Colliery AWS, in accordance with requirements of EPL 1770.

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 adjustments have been reported and added to measured site-only L_{Aeq}.

A low-frequency noise (LFN) modifying factor adjustment has been applied to the site-only L_{Aeq} where the site caused the LFN threshold exceedance. Specific methodology for assessment of each modifying factor is outlined in Fact Sheet C of the NPfI.

3.5 Instrumentation and personnel

Attended noise monitoring was conducted by Acoustical Consultants Teanuanua Villierme and Kirsten Garlick. Qualifications, experience and competency are in accordance with the Approved methods and demonstration 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 Attended noise monitoring equipment

Item	Serial number	Calibration due date	Relevant standard
Brüel & Kjær 2250 sound level meter	2759405	20/12/2025	IEC 61672-1:2013
Svantek SV-36 calibrator	162796	28/01/2025	IEC 60942:2017
Brüel & Kjær 2255 sound level meter	100299	14/08/2026	IEC 61672-1:2013
Svantek SV-36 calibrator	140737	02/10/2026	IEC 60942:2017

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.

Table 4.1 Total measured noise levels[1], dB – Quarter 4 2025

Location	Period	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
ATN001	Day	27/11/2025 8:33	70	64	52	52	48	47	46
ATN001	Day	27/11/2025 8:51	69	61	50	50	47	46	44
ATN001	Day	27/11/2025 9:08	76	62	50	52	47	46	44
ATN001	Day	27/11/2025 9:25	78	69	51	56	47	46	44
ATN001	Day	27/11/2025 9:40	72	65	56	53	47	46	44
ATN001	Day	27/11/2025 9:56	74	64	49	52	46	45	41
ATN001	Evening	2/12/2025 21:19	61	47	46	45	45	44	42
ATN001	Evening	2/12/2025 21:35	62	50	46	45	45	44	42
ATN001	Night	2/12/2025 22:00	79	47	46	50	45	44	42
ATN001	Night	2/12/2025 22:16	48	47	46	45	45	44	42
ATN001	Night	2/12/2025 22:32	58	47	46	45	45	44	43
ATN001	Night	2/12/2025 22:47	64	47	46	45	45	44	42
ATN002	Day	27/11/2025 12:29	74	64	56	54	50	46	42
ATN002	Day	27/11/2025 12:45	74	60	53	52	49	46	43
ATN002	Day	27/11/2025 13:03	75	58	49	49	46	43	41
ATN002	Day	27/11/2025 13:19	69	58	49	48	46	44	41
ATN002	Day	27/11/2025 13:35	60	52	48	46	46	44	41
ATN002	Day	27/11/2025 13:51	94	66	50	73	46	44	41
ATN002	Evening	2/12/2025 20:31	55	46	39	37	36	34	32
ATN002	Evening	2/12/2025 20:47	47	40	37	36	36	34	33
ATN002	Night	8/12/2025 22:03	48	40	39	38	38	37	35
ATN002	Night	8/12/2025 22:18	44	40	39	38	38	37	35
ATN002	Night	8/12/2025 22:34	43	40	39	38	38	37	35
ATN002	Night	8/12/2025 22:49	51	40	39	38	38	36	34
ATN003	Day	27/11/2025 14:16	66	59	50	48	44	40	37
ATN003	Day	27/11/2025 14:34	63	53	48	45	43	40	37
ATN003	Day	27/11/2025 14:50	66	59	50	48	45	41	37
ATN003	Day	27/11/2025 15:05	70	56	48	46	43	39	36

Location	Period	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
ATN003	Day	27/11/2025 15:21	61	52	47	44	42	39	36
ATN003	Day	27/11/2025 15:36	71	55	49	48	43	39	36
ATN003	Evening	3/12/2025 21:15	58	40	39	37	37	36	34
ATN003	Evening	8/12/2025 21:43	50	44	41	40	40	38	36
ATN003	Night	1/12/2025 22:00	54	43	40	39	38	37	35
ATN003	Night	1/12/2025 22:15	56	43	39	37	37	35	33
ATN003	Night	1/12/2025 22:30	49	40	37	36	35	34	33
ATN003	Night	1/12/2025 22:45	44	39	38	36	36	34	33
ATN004	Day	5/12/2025 11:25	65	51	42	42	37	34	31
ATN004	Evening	3/12/2025 20:38	64	51	38	39	34	32	29
ATN004	Night	1/12/2025 23:11	49	44	41	39	38	36	34
ATN005	Day	05/12/2025 10:58	68	54	41	44	36	34	32
ATN005	Evening	3/12/2025 20:00	68	57	49	46	39	35	31
ATN005	Night	2/12/2025 00:52	63	49	45	42	41	39	37
ATN006	Day	5/12/2025 9:04	56	44	40	38	38	36	33
ATN006	Day	5/12/2025 9:20	53	46	42	40	40	36	33
ATN006	Day	5/12/2025 9:37	57	47	43	41	40	37	35
ATN006	Day	5/12/2025 9:54	57	51	45	42	39	37	35
ATN006	Day	5/12/2025 10:11	61	51	44	41	37	35	33
ATN006	Day	5/12/2025 10:26	64	49	44	42	42	36	34
ATN006	Evening	3/12/2025 19:18	63	53	44	42	37	34	31
ATN006	Evening	3/12/2025 19:35	63	45	41	38	36	33	31
ATN006	Night	1/12/2025 23:42	64	43	41	39	39	37	34
ATN006	Night	1/12/2025 23:57	50	45	43	41	40	39	36
ATN006	Night	2/12/2025 0:13	60	44	42	40	40	38	36
ATN006	Night	2/12/2025 0:28	49	44	42	40	40	38	36
R22	Day	5/12/2025 7:00	63	52	45	45	44	42	40
R22	Day	5/12/2025 7:16	66	52	43	43	42	41	40
R22	Day	5/12/2025 7:32	62	55	45	45	43	42	40
R22	Day	5/12/2025 7:47	61	52	44	44	43	42	40
R22	Day	5/12/2025 8:02	58	48	44	43	42	41	40
R22	Day	5/12/2025 8:17	64	48	44	44	42	41	40
R22	Evening	3/12/2025 18:34	63	49	47	45	44	42	40

Location	Period	Start date and time	L_{Amax}	L_{A1}	L_{A10}	L_{Aeq}	L_{A50}	L_{A90}	L_{Amin}
R22	Evening	3/12/2025 18:50	49	47	45	44	43	42	40
R22	Night	5/12/2025 5:50	62	47	44	44	43	42	41
R22	Night	5/12/2025 6:08	57	47	44	44	43	43	41
R22	Night	5/12/2025 6:23	69	53	45	46	44	43	41
R22	Night	5/12/2025 6:41	63	56	48	46	44	43	41
R12	Day	27/11/2025 12:29	74	64	56	54	50	46	42
R12	Day	27/11/2025 12:45	74	60	53	52	49	46	43
R12	Day	27/11/2025 13:03	75	58	49	49	46	43	41
R12	Day	27/11/2025 13:19	69	58	49	48	46	44	41
R12	Day	27/11/2025 13:35	60	52	48	46	46	44	41
R12	Day	27/11/2025 13:51	94	66	50	73	46	44	41
R12	Evening	2/12/2025 20:31	55	46	39	37	36	34	32
R12	Evening	2/12/2025 20:47	47	40	37	36	36	34	33
R12	Night	8/12/2025 22:03	48	40	39	38	38	37	35
R12	Night	8/12/2025 22:18	44	40	39	38	38	37	35
R12	Night	8/12/2025 22:34	43	40	39	38	38	37	35
R12	Night	8/12/2025 22:49	51	40	39	38	38	36	34
R13	Day	27/11/2025 10:29	64	57	53	49	46	41	39
R13	Day	27/11/2025 10:45	70	61	52	50	44	41	37
R13	Day	27/11/2025 11:01	65	60	51	49	45	41	38
R13	Day	27/11/2025 11:17	66	61	57	53	49	43	40
R13	Day	27/11/2025 11:37	66	58	54	51	49	45	42
R13	Day	27/11/2025 11:52	69	56	52	49	48	43	40
R13	Evening	2/12/2025 19:55	61	50	42	40	38	35	32
R13	Evening	2/12/2025 20:12	66	56	43	44	37	35	32
R13	Night	8/12/2025 23:10	53	41	39	36	35	33	31
R13	Night	8/12/2025 23:25	53	51	49	43	36	34	31
R13	Night	8/12/2025 23:40	59	56	51	47	43	34	31
R13	Night	8/12/2025 23:55	61	54	52	48	44	35	32

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 m above ground. Attended noise monitoring is not done during rain, hail, or average wind speeds above 5 m/s at microphone height.

Table 4.2 Measured atmospheric conditions – Quarter 4 2025

Location	Period	Start date and time	Temperature °C	Wind speed m/s	Wind direction ° Magnetic north[1]	Cloud cover 1/8s
ATN001	Day	27/11/2025 8:33	27	<0.5	-	0
ATN001	Day	27/11/2025 8:51	28	0.5	245	0
ATN001	Day	27/11/2025 9:08	28	2.2	250	0
ATN001	Day	27/11/2025 9:25	28	2.0	250	0
ATN001	Day	27/11/2025 9:40	29	2.0	230	0
ATN001	Day	27/11/2025 9:56	30	1.7	250	0
ATN001	Evening	2/12/2025 21:19	18	<0.5	-	1
ATN001	Evening	2/12/2025 21:35	18	<0.5	-	3
ATN001	Night	2/12/2025 22:00	18	<0.5	-	1
ATN001	Night	2/12/2025 22:16	18	<0.5	-	3
ATN001	Night	2/12/2025 22:32	18	<0.5	-	2
ATN001	Night	2/12/2025 22:47	18	<0.5	-	1
ATN002	Day	27/11/2025 12:29	34	0.6	140	0
ATN002	Day	27/11/2025 12:45	35	0.6	160	0
ATN002	Day	27/11/2025 13:03	34	0.6	350	0
ATN002	Day	27/11/2025 13:19	35	<0.5	340	0
ATN002	Day	27/11/2025 13:35	35	0.8	20	0
ATN002	Day	27/11/2025 13:51	34	<0.5	-	0
ATN002	Evening	2/12/2025 20:31	19	<0.5	-	3
ATN002	Evening	2/12/2025 20:47	18	<0.5	-	2
ATN002	Night	8/12/2025 22:03	22	<0.5	-	0
ATN002	Night	8/12/2025 22:18	22	<0.5	-	0
ATN002	Night	8/12/2025 22:34	22	<0.5	-	0
ATN002	Night	8/12/2025 22:49	22	<0.5	-	0
ATN003	Day	27/11/2025 14:16	35	1.2	230	0
ATN003	Day	27/11/2025 14:34	34	1.5	220	0
ATN003	Day	27/11/2025 14:50	34	1.2	220	0
ATN003	Day	27/11/2025 15:05	34	0.8	280	0
ATN003	Day	27/11/2025 15:21	34	1.6	210	0
ATN003	Day	27/11/2025 15:36	34	1.6	240	0
ATN003	Evening	3/12/2025 21:15	20	0.6	300	0

Location	Period	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
ATN003	Evening	8/12/2025 21:43	22	<0.5	-	0
ATN003	Night	1/12/2025 22:00	18	0.6	220	4
ATN003	Night	1/12/2025 22:15	18	<0.5	-	3
ATN003	Night	1/12/2025 22:30	17	<0.5	-	1
ATN003	Night	1/12/2025 22:45	17	<0.5	-	5
ATN004	Day	5/12/2025 11:25	35	0.9	300	0
ATN004	Evening	3/12/2025 20:38	20	0.7	30	0
ATN004	Night	1/12/2025 23:11	17	<0.5	-	2
ATN005	Day	5/12/2025 10:58	35	0.8	345	0
ATN005	Evening	3/12/2025 20:00	21	1.2	40	0
ATN005	Night	2/12/2025 00:52	17	0.6	200	8
ATN006	Day	5/12/2025 9:04	27	<0.5	-	0
ATN006	Day	5/12/2025 9:20	32	0.7	40	0
ATN006	Day	5/12/2025 9:37	32	1.1	350	0
ATN006	Day	5/12/2025 9:54	30	1.7	345	0
ATN006	Day	5/12/2025 10:11	32	0.5	340	0
ATN006	Day	5/12/2025 10:26	34	<0.5	-	0
ATN006	Evening	3/12/2025 19:18	21	1.5	325	0
ATN006	Evening	3/12/2025 19:35	21	2.0	350	0
ATN006	Night	1/12/2025 23:42	18	0.5	210	5
ATN006	Night	1/12/2025 23:57	18	<0.5	-	6
ATN006	Night	2/12/2025 0:13	18	<0.5	-	6
ATN006	Night	2/12/2025 0:28	17	<0.5	-	7
R22	Day	5/12/2025 7:00	18	<0.5	-	0
R22	Day	5/12/2025 7:16	19	<0.5	-	0
R22	Day	5/12/2025 7:32	20	<0.5	-	0
R22	Day	5/12/2025 7:47	21	<0.5	-	0
R22	Day	5/12/2025 8:02	22	<0.5	-	0
R22	Day	5/12/2025 8:17	24	<0.5	-	0
R22	Evening	3/12/2025 18:34	22	1.4	340	0
R22	Evening	3/12/2025 18:50	22	0.8	320	0
R22	Night	5/12/2025 5:50	17	<0.5	-	0
R22	Night	5/12/2025 6:08	16	<0.5	-	0

Location	Period	Start date and time	Temperature °C	Wind speed m/s	Wind direction °Magnetic north[1]	Cloud cover 1/8s
R22	Night	5/12/2025 6:23	16	<0.5	-	0
R22	Night	5/12/2025 6:41	17	<0.5	-	0
R12	Day	27/11/2025 12:29	30	2.7	220	0
R12	Day	27/11/2025 12:45	30	0.9	230	0
R12	Day	27/11/2025 13:03	31	1.3	330	0
R12	Day	27/11/2025 13:19	32	1.2	275	0
R12	Day	27/11/2025 13:35	32	1.2	260	0
R12	Day	27/11/2025 13:51	32	1.0	255	0
R12	Evening	2/12/2025 20:31	19	<0.5	-	2
R12	Evening	2/12/2025 20:47	19	<0.5	-	2
R12	Night	8/12/2025 22:03	22	<0.5	-	0
R12	Night	8/12/2025 22:18	22	<0.5	-	0
R12	Night	8/12/2025 22:34	22	<0.5	-	0
R12	Night	8/12/2025 22:49	22	<0.5	-	0
R13	Day	27/11/2025 10:29	30	2.7	220	0
R13	Day	27/11/2025 10:45	30	0.9	230	0
R13	Day	27/11/2025 11:01	31	1.3	330	0
R13	Day	27/11/2025 11:17	32	1.2	275	0
R13	Day	27/11/2025 11:37	32	1.2	260	0
R13	Day	27/11/2025 11:52	32	1.0	255	0
R13	Evening	2/12/2025 19:55	19	<0.5	-	2
R13	Evening	2/12/2025 20:12	19	<0.5	-	2
R13	Night	8/12/2025 23:10	21	<0.5	-	0
R13	Night	8/12/2025 23:25	21	<0.5	-	0
R13	Night	8/12/2025 23:40	21	<0.5	-	0
R13	Night	8/12/2025 23:55	21	<0.5	-	0

Notes: 1. "-" indicates calm conditions at monitoring location.

4.2 Site only noise levels

4.2.1 Monitoring results

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

Table 4.3 Site noise levels and limits – Quarter 4 2025

Location	Start date and time	Period	Wind[1]		Stability class[1]	Very noise-enhancing?[2]	Limits, dB		Site levels, dB		Exceedances, dB	
			Speed m/s	Direction[4]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$[3]	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
ATN001	27/11/2025 8:33	Day	1.1	228	A	No	38	N/A	IA	N/A	Nil	N/A
ATN001	27/11/2025 8:51	Day	1.5	248	A	No	38	N/A	IA	N/A	Nil	N/A
ATN001	27/11/2025 9:08	Day	2.2	254	A	No	38	N/A	IA	N/A	Nil	N/A
ATN001	27/11/2025 9:25	Day	3.1	252	A	Yes	43	N/A	IA	N/A	Nil	N/A
ATN001	27/11/2025 9:40	Day	2.5	254	A	No	38	N/A	IA	N/A	Nil	N/A
ATN001	27/11/2025 9:56	Day	3.2	257	A	Yes	43	N/A	IA	N/A	Nil	N/A
ATN001	2/12/2025 21:19	Evening	1.1	173	F	No	38	N/A	IA	N/A	Nil	N/A
ATN001	2/12/2025 21:35	Evening	1.6	183	F	No	38	N/A	IA	N/A	Nil	N/A
ATN001	2/12/2025 22:00	Night	1.4	186	F	No	38	45	IA	IA	Nil	Nil
ATN001	2/12/2025 22:16	Night	1.3	181	F	No	38	45	IA	IA	Nil	Nil
ATN001	2/12/2025 22:32	Night	1.7	181	F	No	38	45	IA	IA	Nil	Nil
ATN001	2/12/2025 22:47	Night	1.1	186	F	No	38	45	IA	IA	Nil	Nil
ATN002	27/11/2025 12:29	Day	4.3	281	A	Yes	54	N/A	IA	N/A	Nil	N/A
ATN002	27/11/2025 12:45	Day	4.0	286	A	Yes	54	N/A	IA	N/A	Nil	N/A
ATN002	27/11/2025 13:03	Day	3.7	272	A	Yes	54	N/A	IA	N/A	Nil	N/A
ATN002	27/11/2025 13:19	Day	4.7	284	A	Yes	54	N/A	IA	N/A	Nil	N/A
ATN002	27/11/2025 13:35	Day	3.4	289	A	Yes	54	N/A	IA	N/A	Nil	N/A
ATN002	27/11/2025 13:51	Day	4.7	267	A	Yes	54	N/A	IA	N/A	Nil	N/A

Location	Start date and time	Period	Wind[1]		Stability class[1]	Very noise-enhancing?[2]	Limits, dB		Site levels, dB		Exceedances, dB	
			Speed m/s	Direction[4]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$[3]	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
ATN002	2/12/2025 20:31	Evening	1.4	173	F	No	49	N/A	IA	N/A	Nil	N/A
ATN002	2/12/2025 20:47	Evening	1.0	178	F	No	49	N/A	IA	N/A	Nil	N/A
ATN002	8/12/2025 22:03	Night	1.5	58	A	No	49	54	IA	IA	Nil	Nil
ATN002	8/12/2025 22:18	Night	1.5	55	A	No	49	54	IA	IA	Nil	Nil
ATN002	8/12/2025 22:34	Night	1.6	48	A	No	49	54	IA	IA	Nil	Nil
ATN002	8/12/2025 22:49	Night	1.4	49	A	No	49	54	<25	51	Nil	Nil
ATN003	27/11/2025 14:16	Day	4.8	261	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	27/11/2025 14:34	Day	4.7	273	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	27/11/2025 14:50	Day	3.1	285	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	27/11/2025 15:05	Day	3.4	271	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	27/11/2025 15:21	Day	3.8	268	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	27/11/2025 15:36	Day	3.5	271	A	Yes	41	N/A	IA	N/A	Nil	N/A
ATN003	3/12/2025 21:15	Evening	1.9	28	F	No	36	N/A	IA	N/A	Nil	N/A
ATN003	8/12/2025 21:43	Evening	1.5	55	A	No	36	N/A	IA	N/A	Nil	N/A
ATN003	1/12/2025 22:00	Night	1.4	225	F	No	36	45	IA	IA	Nil	Nil
ATN003	1/12/2025 22:15	Night	1.5	228	F	No	36	45	IA	IA	Nil	Nil
ATN003	1/12/2025 22:30	Night	1.3	219	F	No	36	45	IA	IA	Nil	Nil
ATN003	1/12/2025 22:45	Night	1.2	241	F	No	36	45	IA	IA	Nil	Nil
ATN004	5/12/2025 11:25	Day	2.1	266	A	No	35	N/A	IA	N/A	Nil	N/A
ATN004	3/12/2025 20:38	Evening	2.3	39	F	Yes	40	N/A	<20	N/A	Nil	N/A

Location	Start date and time	Period	Wind[1]		Stability class[1]	Very noise-enhancing?[2]	Limits, dB		Site levels, dB		Exceedances, dB	
			Speed m/s	Direction[4]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$[3]	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
ATN004	1/12/2025 23:11	Night	2.3	269	F	Yes	40	50	IA	IA	Nil	Nil
ATN005	5/12/2025 10:58	Day	2.7	302	A	No	35	N/A	IA	N/A	Nil	N/A
ATN005	3/12/2025 20:00	Evening	1.6	48	F	No	35	N/A	IA	N/A	Nil	N/A
ATN005	2/12/2025 00:52	Night	3.6	250	D	Yes	40	50	IA	IA	Nil	Nil
ATN006	5/12/2025 9:04	Day	2.9	283	A	No	37	N/A	IA	N/A	Nil	N/A
ATN006	5/12/2025 9:20	Day	4.0	293	A	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	5/12/2025 9:37	Day	3.4	284	A	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	5/12/2025 9:54	Day	3.6	290	A	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	5/12/2025 10:11	Day	2.9	290	A	No	37	N/A	IA	N/A	Nil	N/A
ATN006	5/12/2025 10:26	Day	3.3	275	A	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	3/12/2025 19:18	Evening	2.5	50	F	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	3/12/2025 19:35	Evening	2.2	54	F	Yes	42	N/A	IA	N/A	Nil	N/A
ATN006	1/12/2025 23:42	Night	3.1	244	E	Yes	42	50	IA	IA	Nil	Nil
ATN006	1/12/2025 23:57	Night	3.1	250	E	Yes	42	50	IA	IA	Nil	Nil
ATN006	2/12/2025 0:13	Night	3.3	249	D	Yes	42	50	IA	IA	Nil	Nil
ATN006	2/12/2025 0:28	Night	3.5	253	E	Yes	42	50	IA	IA	Nil	Nil
R22	5/12/2025 7:00	Day	0.3	360	A	No	46	N/A	42 (40+2)	N/A	Nil	N/A
R22	5/12/2025 7:16	Day	0.3	28	A	No	46	N/A	39	N/A	Nil	N/A
R22	5/12/2025 7:32	Day	0.5	48	A	No	46	N/A	41 (39+2)	N/A	Nil	N/A
R22	5/12/2025 7:47	Day	0.6	51	A	No	46	N/A	39	N/A	Nil	N/A

Location	Start date and time	Period	Wind[1]		Stability class[1]	Very noise-enhancing?[2]	Limits, dB		Site levels, dB		Exceedances, dB	
			Speed m/s	Direction[4]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$[3]	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
R22	5/12/2025 8:02	Day	0.6	9	A	No	46	N/A	38	N/A	Nil	N/A
R22	5/12/2025 8:17	Day	0.9	270	A	No	46	N/A	39	N/A	Nil	N/A
R22	3/12/2025 18:34	Evening	2.5	55	A	No	46	N/A	45 (43+2)	N/A	Nil	N/A
R22	3/12/2025 18:50	Evening	2.5	56	A	No	46	N/A	44 (42+2)	N/A	Nil	N/A
R22	5/12/2025 5:50	Night	0.3	192	A	No	46	46	45 (40+5)	40[6]	Nil	Nil
R22	5/12/2025 6:08	Night	0.5	240	B	No	46	46	45 (40+5)	40[6]	Nil	Nil
R22	5/12/2025 6:23	Night	0.2	349	A	No	46	46	42 (40+2)	40[6]	Nil	Nil
R22	5/12/2025 6:41	Night	0.2	23	A	No	46	46	45 (40+5)	40[6]	Nil	Nil
R12	27/11/2025 12:29	Day	4.3	281	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	27/11/2025 12:45	Day	4.0	286	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	27/11/2025 13:03	Day	3.7	272	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	27/11/2025 13:19	Day	4.7	284	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	27/11/2025 13:35	Day	3.4	289	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	27/11/2025 13:51	Day	4.7	267	A	Yes	54	N/A	IA	N/A	Nil	N/A
R12	2/12/2025 20:31	Evening	1.4	173	F	No	49	N/A	IA	N/A	Nil	N/A
R12	2/12/2025 20:47	Evening	1.0	178	F	No	49	N/A	IA	N/A	Nil	N/A
R12	8/12/2025 22:03	Night	1.5	58	A	No	49	53	IA	IA	Nil	Nil
R12	8/12/2025 22:18	Night	1.5	55	A	No	49	53	IA	IA	Nil	Nil
R12	8/12/2025 22:34	Night	1.6	48	A	No	49	53	IA	IA	Nil	Nil
R12	8/12/2025 22:49	Night	1.4	49	A	No	49	53	<25	51	Nil	Nil

Location	Start date and time	Period	Wind[1]		Stability class[1]	Very noise-enhancing?[2]	Limits, dB		Site levels, dB		Exceedances, dB	
			Speed m/s	Direction[4]			$L_{Aeq,15minute}$	$L_{A1,1minute}$	$L_{Aeq,15minute}$[3]	L_{Amax}	$L_{Aeq,15minute}$	L_{Amax}
R13	27/11/2025 10:29	Day	3.4	246	A	Yes	48	N/A	IA	N/A	Nil	Nil
R13	27/11/2025 10:45	Day	3.0	283	A	No	43	N/A	IA	N/A	Nil	Nil
R13	27/11/2025 11:01	Day	3.5	268	A	Yes	48	N/A	IA	N/A	Nil	Nil
R13	27/11/2025 11:17	Day	4.7	265	A	Yes	48	N/A	IA	N/A	Nil	Nil
R13	27/11/2025 11:37	Day	3.4	267	A	Yes	48	N/A	IA	N/A	Nil	Nil
R13	27/11/2025 11:52	Day	3.9	257	A	Yes	48	N/A	IA	N/A	Nil	Nil
R13	2/12/2025 19:55	Evening	2.1	177	F	Yes	48	N/A	IA	N/A	Nil	Nil
R13	2/12/2025 20:12	Evening	1.8	175	F	No	43	N/A	IA	N/A	Nil	Nil
R13	8/12/2025 23:10	Night	1.1	60	F	No	43	49	IA	N/A	Nil	Nil
R13	8/12/2025 23:25	Night	1.0	71	F	No	43	49	IA	N/A	Nil	Nil
R13	8/12/2025 23:40	Night	0.9	70	F	No	43	49	IA	N/A	Nil	Nil
R13	8/12/2025 23:55	Night	0.8	61	F	No	43	49	IA	N/A	Nil	Nil

Notes:
1. Sourced from the Mannering Colliery AWS and measured at 10 m above ground level.
2. Noise limits are adjusted by +5 dB during 'very noise-enhancing meteorological conditions' in accordance with the NPfI.
3. Site-only $L_{Aeq,15minute}$, includes modifying factor adjustments if applicable.
4. Degrees magnetic north, "-" indicates calm conditions.
5. A positive adjustment for LFN was applicable.
6. Modifying factor adjustments do not apply to site L_{Amax}.
7. Calculated site $L_{A1,1minute}$ as the site L_{Amax} was measured 1 dB above the $L_{A1,1minute}$ limit.

4.2.2 Discussion of site noise

Noise from CVC was audible at the following monitoring locations during the Quarter 4 monitoring survey:

- ATN004: site-only L_{Aeq} of less than 20 dB was measured for one evening 15 minute measurement. Noise from the CVC dolly cart was just audible.
- ATN002/R12: site-only L_{Aeq} of less than 25 dB was measured for one night 15 minute measurement. Impact noise ('bang') from CVC was briefly audible on two occasions generating an L_{Amax} of 51 dB.
- R22: site-only L_{Aeq} of up to 42 dB were measured during the day measurements, and up to 45 dB during the evening and night measurements. The CVC ventilation fan was audible. Its contribution was above the NPfI LFN thresholds and hence modifying factor adjustments were applied where relevant.

4.2.3 Long term noise goals

Site $L_{Aeq,15minute}$ were also compared to the long-term noise goals (refer to Table 2.2) for the relevant locations (i.e. R11, R12, R13 and R22). Site $L_{Aeq,15minute}$ measured at ATN002 (R11), R12 and R13 satisfied the relevant long-term goals during the day, evening and night periods. At R22, the measured site $L_{Aeq,15minute}$ (inclusive of modifying factor adjustment for LFN) was above (by up to 2 dB) the relevant long-term $L_{Aeq,15minute}$ 40 dB goal for two of the six day period measurements. During all of the evening and night period measurements, the measured site $L_{Aeq,15minute}$ (inclusive of modifying factor adjustment for LFN) was above the relevant long-term goal by up to 5 dB.

5 Summary

EMM was engaged by Delta Power & Energy (Chain Valley) Pty Ltd (Trading as Delta Coal) to conduct a quarterly noise survey of operations at CVC. 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 at nine monitoring locations during the day, evening and night periods on 27 November 2025 and 1, 2, 3, 5 and 8 December 2025.

Noise levels from site complied with relevant limits at all monitoring locations during the Q4 2025 survey.

CVC $L_{Aeq,15minute}$ were also compared to the long-term noise goals applicable at R11 (ATN002), R12, R13 and R22. CVC $L_{Aeq,15minute}$ satisfied these during all measurements at R11 (ATN002), R12 and R13. At R22, the measured site $L_{Aeq,15minute}$ (inclusive of modifying factor adjustment for LFN) was above (by up to 2 dB) the long-term $L_{Aeq,15minute}$ 40 dB goal for two of the six day period measurements. During all of the evening and night period measurements, the measured site $L_{Aeq,15minute}$ (inclusive of modifying factor adjustment for LFN) was above the long-term goal (by up to 5 dB).

Appendix A
Noise perception and examples

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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

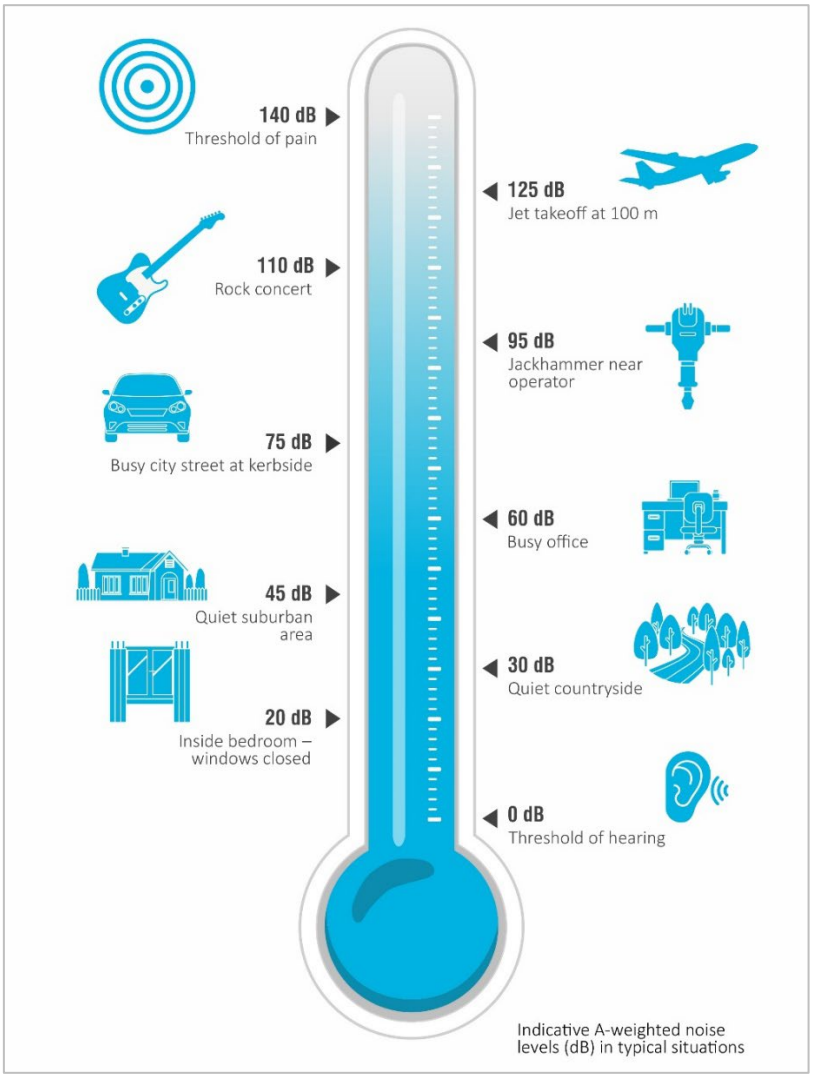

Figure A.1 Common noise levels

Appendix B
Regulator documents

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B.1 Development consent

4. Prior to 31 March 2014, and every 12 months thereafter for each calendar year in which coal haulage from the site is undertaken utilising public roads, unless the Planning Secretary directs otherwise, the Applicant must commission a suitably qualified person, whose appointment has been approved by the Planning Secretary at least one month prior to undertaking the audit, to conduct an Independent Traffic Audit of the development. This audit must:
   (a) be undertaken without prior notice to the Applicant, and in consultation with TfNSW, NCC, CC Council and the CCC;
   (b) assess the impact of the development on the performance and safety of the road network, including a review of:
      - haulage records;
      - accident records on the haulage route, infringements relating to the code of conduct and any incidents involving haulage vehicles;
      - community complaints register; and
   (c) assess the effectiveness of the Road Transport Protocol; and, if necessary, recommend measures to reduce or mitigate any adverse (or potentially adverse) impacts.

5. Within 1 month of receiving the audit report, or as otherwise agreed by the Planning Secretary, the Applicant must submit a copy of the report to the Planning Secretary, with a detailed response to any of the recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report.

   A summary of the audit report must be included in the Annual Review.

Alternative Coal Transport Options

6. Prior to 31 December 2014, and every three years thereafter, the Applicant must prepare and submit to the Planning Secretary for approval, a study of the reasonable and feasible options to reduce or eliminate the use of public roads to transport coal from the development, unless otherwise agreed by the Planning Secretary. The assessment must include:
   (a) an analysis of the capital, construction and operating costs of the alternative transport options; and
   (b) quantified social and environmental impacts associated with road and rail transport.

NOISE

Noise Impact Assessment Criteria

7. The Applicant must ensure that the noise generated by the development at any residence on privately-owned land does not exceed the criteria for the location in Table 1 nearest to that residence.

Table 1: Noise Criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$
R8	38	38	38	45
R11	49	49	49	54
R12	49	49	49	53
R13	43	43	43	49
R15	36	36	36	45
R19	37	37	37	45
R22	46	46	46	46
all other privately-owned land	35	35	35	45

Notes:
- *To interpret the locations referred to in Table 1, see Appendix 6 and the EIS; and*
- *Noise generated by the development is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. Appendix 8 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.*

However, these criteria do not apply if the Applicant has a written agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Operating Conditions

8. The Applicant must:
   (a) implement best management practice, including all reasonable and feasible noise mitigation measures, to minimise the construction, operational and transport noise generated by the development;
   (b) regularly assess the noise monitoring and meteorological data and relocate, modify, and/or stop operations on site to ensure compliance with the relevant conditions of this consent;
   (c) minimise the noise impacts of the development during meteorological conditions under which the noise limits in this consent do not apply (see Appendix 8);
   (d) use its best endeavours to achieve the long-term noise goals in Table 2, where reasonable and feasible, and report on progress towards achieving these goals in each Annual Review;
   (e) carry out a comprehensive noise audit of the development in conjunction with each independent environmental audit; and
   (f) prepare an action plan to implement any additional reasonable and feasible onsite noise mitigation measures identified by each audit;
   to the satisfaction of the Planning Secretary.

Table 2: Long-term Noise Goals dB(A)

Location	***Day***	***Evening***	***Night***
	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$
R11 – R13	41	41	41
R22	40	40	40

Notes:

- *To interpret the locations referred to in Table 2, see Appendix 6 and the EIS; and*
- *Noise generated by the development is to be measured in accordance with the relevant requirements, and exemptions (including certain meteorological conditions), of the NSW Industrial Noise Policy. Appendix 8 sets out the meteorological conditions under which these criteria apply, and the requirements for evaluating compliance with these criteria.*

Noise Management Plan

9. The Applicant must prepare a Noise Management Plan for the development to the satisfaction of the Planning Secretary. This plan must:
   (a) be prepared in consultation with the EPA and submitted to the Planning Secretary for approval within 4 months of the date of this consent, unless otherwise agreed by the Planning Secretary;
   (b) describe the measures that would be implemented to ensure compliance with the noise criteria and operating conditions in this consent;
   (c) describe the proposed noise management system in detail including the mitigation measures that would be implemented to minimise noise during construction and operations, including on and off site road noise generated by vehicles associated with the development; and
   (d) include a monitoring program that:
      - uses attended monitoring to evaluate the compliance of the development against the noise criteria in this consent;
      - evaluates and reports on:
        - the effectiveness of the on-site noise management system; and
        - compliance against the noise operating conditions; and
      - defines what constitutes a noise incident, and includes a protocol for identifying and notifying the Department and relevant stakeholders of any noise incidents.

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

AIR QUALITY

Odour

10. The Applicant must ensure that no offensive odours are emitted from the site, as defined under the POEO Act.

APPENDIX 6
NOISE RECEIVER LOCATIONS

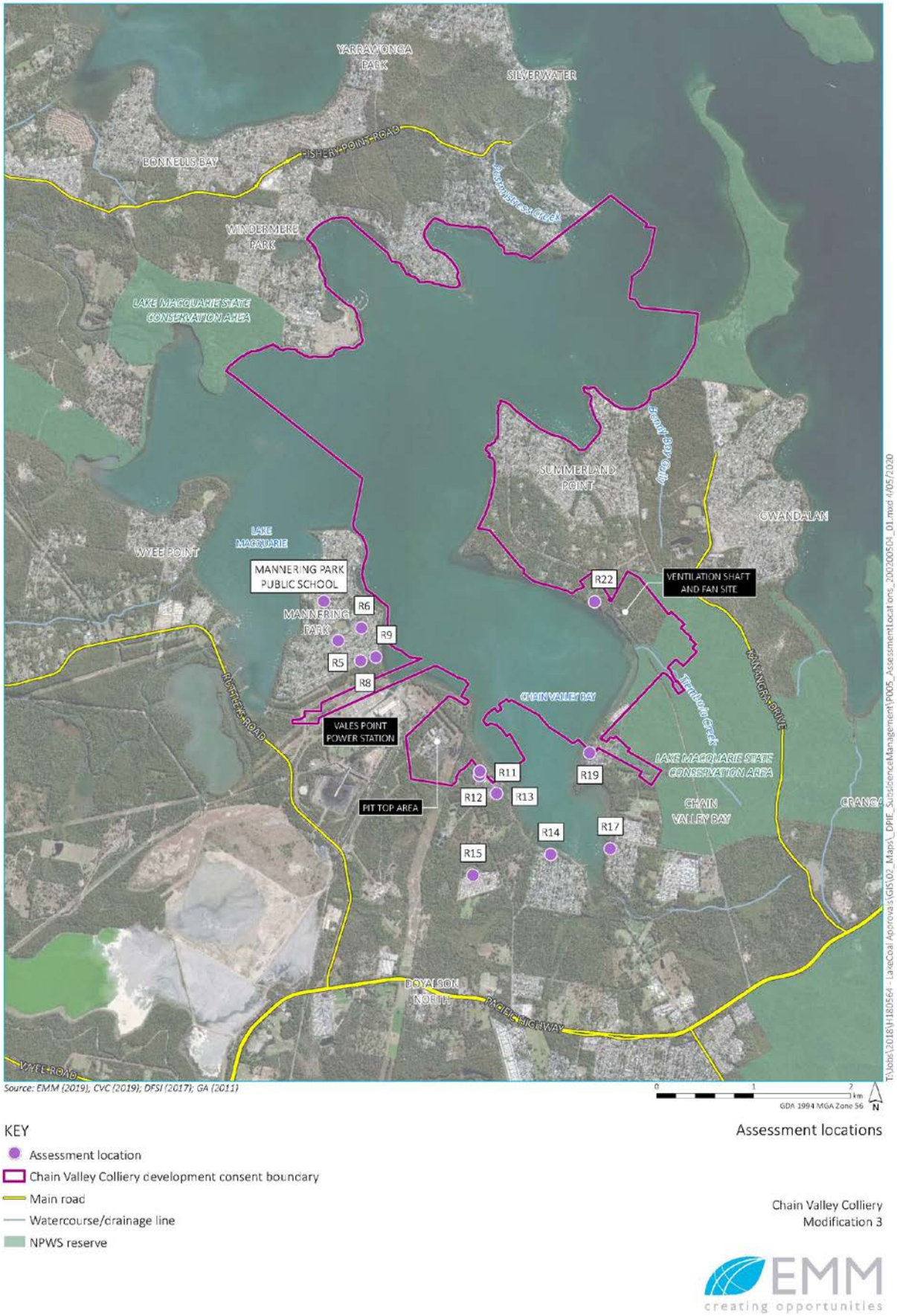

Figure 1: *Noise Receiver Locations*

APPENDIX 8
NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Table 1 of the conditions are to apply under all meteorological conditions except the following:
   (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 measured at 10 m above ground level; or
   (d) temperature inversion conditions greater than 3°C/100 m.

Determination of Meteorological Conditions

2. Except for wind speed at microphone height, the data to be used for determining meteorological conditions must be that recorded by the meteorological station described in condition 14 of schedule 3.

Compliance Monitoring

3. Attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent.

4. This monitoring must be carried out at least 4 times in each calendar year (ie at least once every 3 months), unless the Planning Secretary directs otherwise.

5. Unless otherwise agreed with the Planning Secretary, this monitoring is to be carried out in accordance with the relevant requirements 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) meteorological conditions during which collection of noise data is not appropriate;
   (c) equipment used to collect noise data, and conformity with Australian Standards relevant to such equipment; and
   (d) modifications to noise data collected, including for the exclusion of extraneous noise and/or penalties for modifying factors apart from adjustments for duration.

	results of this monitoring program will be reviewed by a suitably qualified expert and used to determine the appropriateness of the existing irrigation area to receive this effluent; • develop a program to monitor creek line channel stability and the health of riparian vegetation within Swindles Creek. Monitoring will be undertaken in accordance with Section 8.5.2 of the Surface Water Impact Assessment (EIS Appendix E) and incorporated into the Colliery's WMP or Biodiversity Management Plan; and • record monitoring data in accordance with the Colliery's WMP and EPL 1770. Monitoring data will be interpreted as it is received to ensure appropriate operational guidance on monitoring water quality within desired parameters. Results of water quality monitoring will be reported in the Annual Review and made available to the CCC, as well as CC Council and LMCC.
Noise	Management and monitoring of noise will continue to be undertaken in accordance with the Colliery's NMP, which will be reviewed and updated as required to include the commitments made below. Great Southern Energy Pty Limited will: • continue attended compliance monitoring on site which will be used to identify potential hot spots and primary noise sources; • continue real-time noise monitoring alerts to site personnel to enable implementation of any required rapid noise management initiatives; • manage potential non-compliance through a noise complaint handling and response system, including the identification of responsible sources to enable targeted remedial action; • assess if further noise mitigation options for the ventilation fans are reasonable and feasible following the receipt of attenuation proposals; and • discuss potential management measures or agreement options with the landowner at 275 Cams Boulevard, following receipt of proposals from acoustics specialists. In addition to the above, Great Southern Energy Pty Limited is committed to the progressive implementation of feasible measures to target long-term noise goals which are designed to reduce noise emissions from the Colliery. Long-term options for investigation include: • modification to belt/movement alarms; • investigation of surface conveyer and coal preparation equipment, to determine if noise reductions are possible; • identifying sound attenuation options for the surface bulldozer and front-end loader; • strategic placement of acoustic barriers; • attenuation for the surface screener/shaker; • installation of quiet rollers for surface conveyor belts; • acoustic treatments around compressors; and • the use of a conveyor stacker for product coal stockpiling.
Air Quality and greenhouse gases	Management and monitoring of air quality and greenhouse gases will continue to be undertaken in accordance with the Colliery's AQGHGMP, which will be reviewed and updated as required to include the commitments made below Great Southern Energy Pty Limited will: • investigate the use of a stacker to replace hauling between current conveyor system and stockpiles; • undertake GHG monitoring comprising measurement of carbon dioxide and methane at the ventilation shaft and fan sites; and • record and report annual diesel, oil, grease, acetylene and electricity use to fulfil National Greenhouse and Energy Reporting Scheme requirements.
Traffic and transport	Management and monitoring of traffic and transport will continue to be undertaken in accordance with the Colliery's RTP. In addition, Great Southern Energy Pty Limited will continue to investigate alternative options for transporting export coal to the Port of Newcastle, specifically the preferred rail transport option, requiring the construction of a private haul road to the VPPS coal unloading facility and associated infrastructure upgrades. In addition, Great Southern Energy Pty Limited will investigate options to reduce peak hour traffic would be investigated including potentially limiting the peak hourly volumes of the Colliery truck traffic which would be permitted to travel via this intersection should the Colliery not be using rail transport for export coal by five years from the granting of development consent. Alternatively, a pro-rata financial contribution to the cost of installing traffic signals at the southbound intersection of the F3 and Sparks Road interchange could be made commensurate with the percentage of Colliery generated traffic using the intersection.
Subsidence	Management and monitoring of subsidence will continue to be undertaken in accordance with the Colliery's SMP or Extraction Plans, which will be reviewed and

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27	Discharge to waters Discharge quality and volume monitoring	Discharge to waters Discharge quality and volume monitoring	Discharge to waters via dam spillway from final settlement pond adjacent to Point 1, shown as "Point 27" on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3).

P1.4 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
9	Noise monitoring	Noise monitoring site, shown as "Point 9", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 109 Griffith Street, MANNERING PARK, 2259. Identified as R8 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
12	Noise monitoring	Noise monitoring site, shown as "Point 12", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 35 Lakeshore Avenue, KINGFISHER SHORES, 2259. Identified as R11 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
13	Noise monitoring	Noise monitoring site, shown as "Point 13", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 20 Lakeshore Avenue, KINGFISHER SHORES, 2259. Identified as R12 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).

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14	Noise monitoring	Noise monitoring site, shown as "Point 14", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 33 Karoola Avenue, KINGFISHER SHORES, 2259. Identified as R13 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
16	Noise monitoring	Noise monitoring site, shown as "Point 16", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 150 Tall Timbers Road, DOYALSON NORTH, 2262. Identified as R15 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
20	Noise monitoring	Noise monitoring site, shown as "Point 20", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 2 Sunset Parade, CHAIN VALLEY BAY, 2259. Identified as R19 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
23	Noise monitoring	Noise monitoring site, shown as "Point 23", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (EPA Ref: DOC24/771631-3). Located at 275 Cams Boulevard, SUMMERLAND POINT, 2259. Identified as R22 in Development Consent SSD-5465 (MOD 4) submitted to the EPA and dated 12 August 2021 (EPA Ref: DOC21/691135-1).
26	Meteorological Station	Meteorological monitoring site, shown as "Point 26", on the plan titled "EPL 1770 Boundaries and Monitoring Points" submitted to the EPA and dated 24 October 2024 (DOC24/771631-3) and 11 August 2021 (DOC21/691135). Located at Mannering Colliery (Ruttleys Road), DOYALSON NORTH, 2259.

3 Limit Conditions

L1 Pollution of waters

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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 For each monitoring/discharge point or utilisation area specified in the table/s below (by a point number), the concentration of a pollutant discharged at that point, or applied to that area, must not exceed the concentration limits specified for that pollutant in the table.

L2.2 Where a pH quality limit is specified in the table, the specified percentage of samples must be within the specified ranges.

L2.3 To avoid any doubt, this condition does not authorise the pollution of waters by any pollutant other than those specified in the table\s.

L2.4 Water and/or Land Concentration Limits

POINT 1,27

Pollutant	Units of Measure	50 percentile concentration limit	90 percentile concentration limit	3DGM concentration limit	100 percentile concentration limit
Oil and Grease	milligrams per litre				10
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

L3 Volume and mass limits

L3.1 For each discharge point or utilisation area specified below (by a point number), the volume/mass of:
a) liquids discharged to water; or;
b) solids or liquids applied to the area;
must not exceed the volume/mass limit specified for that discharge point or area.

Point	Unit of Measure	Volume/Mass Limit
1	kilolitres per day	12161
27	kilolitres per day	12161

L3.2 The volumetric daily discharge limit for the premises is the combined discharge measured at EPA discharge

points 1 and 27 and must not exceed 12161 kilolitres per day.

L4 Waste

L4.1 The licensee must not cause, permit or allow any waste to be received at the premises, except the wastes expressly referred to in the column titled “Waste” and meeting the definition, if any, in the column titled “Description” in the table below.
Any waste received at the premises must only be used for the activities referred to in relation to that waste in the column titled “Activity” in the table below.
Any waste received at the premises is subject to those limits or conditions, if any, referred to in relation to that waste contained in the column titled “Other Limits” in the table below.
This condition does not limit any other conditions in this licence.

Code	Waste	Description	Activity	Other Limits
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource exemption under Clause 92 of the Protection of the Environment Operations (Waste) Regulation 2014.	As specified in each particular resource recovery exemption	NA

L5 Noise limits

L5.1 Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

POINT 12

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	49
Evening	Evening-LAeq (15 minute)	-	49
Night	Night-LAeq (15 minute)	-	49
Night	Night-LA1 (1 minute)	-	54

POINT 13

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	49
Evening	Evening-LAeq (15 minute)	-	49

Night	Night-LAeq (15 minute)	-	49
Night	Night-LA1 (1 minute)	-	53

POINT 14

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	43
Evening	Evening-LAeq (15 minute)	-	43
Night	Night-LAeq (15 minute)	-	43
Night	Night-LA1 (1 minute)	-	49

POINT 16

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	36
Evening	Evening-LAeq (15 minute)	-	36
Night	Night-LAeq (15 minute)	-	36
Night	Night-LA1 (1 minute)	-	45

POINT 20

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	37
Evening	Evening-LAeq (15 minute)	-	37
Night	Night-LAeq (15 minute)	-	37
Night	Night-LA1 (1 minute)	-	45

POINT 23

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	46
Evening	Evening-LAeq (15 minute)	-	46
Night	Night-LAeq (15 minute)	-	46
Night	Night-LA1 (1 minute)	-	46

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POINT 9

Time period	Measurement parameter	Measurement frequency	Noise level dB(A)
Day	Day-LAeq (15 minute)	-	38
Evening	Evening-LAeq (15 minute)	-	38
Night	Night-LAeq (15 minute)	-	38
Night	Night-LA1 (1 minute)	-	45

L5.2 The licensee must ensure that noise generated on the premises does not exceed:

a) 35 LAeq(15min) during the day, evening or night at any privately owned land nearest to the residence apart from those receivers identified in Condition 5.1; and
b) 45 LA1(1min) during the night at any privately owned land nearest to the residence apart from those receivers identified in Condition 5.1.

Note: The licensee may provide to the EPA written evidence of any agreement with a landholder which is subject to the above noise limits. The written evidence may be submitted with a licence variation to remove the landholder from the above tables.

L5.3 For the purpose of condition L5.1 and condition L5.2:
(a) Day is defined as the period from 7am to 6pm Monday to Saturday and 8am to 6pm Sunday and public holidays;
(b) Evening is defined as the period 6pm to 10pm, and
(c) Night is defined as the period from 10pm to 7am Monday to Saturday and 10pm to 8am Sunday and public holidays.

L5.4 The noise limits set out in condition L5.1 and condition L5.2 apply under all meterorological conditions except for any one of the following:
(a) Wind speeds greater than 3 metres/second at 10 metres above ground level; or
(b) Stability category F temperature inversion conditions and wind speeds greater than 2 metres/second at 10 metres above ground level; or
(c) Stability category G temperature inversion conditions.
(d) Or as defined under the NSW EPA Noise Policy for Industry 2017.

L5.5 For the purpose of condition L5.4:
(a) the meteorological data to be used for determining meteorological conditions is the data recorded at the meteorological station identified in this licence as EPA Identification Point 26.
(b) Stability category temperature inversion conditions are to be determined in accordance with the NSW EPA Noise Policy for Industry 2017.

Note: The weather station must be designed, commissioned and operated in a manner to obtain the necessary parameters required under the above condition.

L5.6 For the purpose of determining the noise generated at the premises the licensee must use a Class 1 or Class 2 noise monitoring device as defined by AS IEC61672.1 and AS IEC61672.2-2004, or other noise monitoring equipment accepted by the EPA in writing.

L5.7 To determine compliance:

1. With the $L_{Aeq(15\ min)}$ noise limits in condition L5.1 and condition L5.2, the licensee must locate noise monitoring equipment;

(a) within 30 metres of a dwelling facade (but not closer than 3 metres) where any dwelling on the property is situated more then 30 metres from the property boundary that is closest to the premises;

(b) approximately on the boundary where any dwelling is situated 30 metres or less from the property boundary that is closest to the premises, or, where applicable,

(c) within approximately 50 metres if the boundary of a national park or nature reserve.

2. With the LA1(1 minute) noise limits in condition L5.1 and L5.2, the noise monitoring equipment must be located within 1 metre of a dwelling facade.

3. With the noise limits in condition L5.1 and condition L5.2, the noise monitoring equipment must be located;

(a) at the most affected point at a location where there is no dwelling at the location, or

(b) at the most affected point within an area at a location prescribed by conditions L5.7 1(a) or L5.7 1(b).

L5.8 A non-compliance of condition L5.1 or condition L5.2 will still occur where noise generated from the premises in excess of the appropriate limit is measured;
a) at a location other than an area prescribed by conditions L5.7 1(a) and L5.7 1(b), and /or
b) at a point other than the most affected point at a location.

L5.9 For the purposes of determining the noise generated at the premises all applicable modification factors as described in the NSW EPA Noise Policy for Industry 2017 must be applied, as appropriate, to the noise levels measured by the noise monitoring equipment.

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.

M4 Environmental monitoring

Requirement to monitor noise

M4.1 To determine compliance with condition L5.1, attended noise monitoring must be undertaken in accordance with conditions L5.7 and L5.8, and

(a) at each one of the locations listed in condition L5.1;
(b) occur quarterly within the reporting period of the Environment Protection Licence with at least 2 months between monitoring periods;
(c) occur during each day, evening and night period as defined in the NSW Industrial Noise Policy (EPA 2000) for a minimum of 15 minutes for three of the quarters;
(d) the night time 15 minute attended monitoring in accordance with c) must be undertaken between the hours of 1am and 4am;
(e) the night time LA1 (1 min) attended monitoring in accordance with c) must be undertaken between the hours of 1am and 4am;
(f) one quarterly monitoring must occur during each day, evening and night period as defined in the NSW EPA Noise Policy for Industry 2017 for a minimum of 1.5 hours during the day; 30 minutes during the evening; and 1 hours during the night, and
(g) each quarterly monitoring must be undertaken on a different day(s) of the week not including Saturdays, Sundays and public holidays; and
(h) these monitoring conditions take effect in the 2015 Reporting period.

Note: The intention of this condition is that quarterly monitoring be undertaken at each sensitive receiver. That at each sensitive receiver monitoring is undertaken over a range of different days excluding weekends and public holidays during the reporting period so as to be representative of operating hours. That night time 15 minute attended monitoring and the LA1 (1min) monitoring for three of the quarters be undertaken at worst case being the most stable atmospheric conditions and when noise would be most intrusive to sleep. All of the sensitive receivers do not have to be monitored on the same day, evening and night for sub condition f.

M5 Weather monitoring

M5.1 At the point(s) identified below, the licensee must monitor (by sampling and obtaining results by analysis) the parameters specified in Column 1 of the table below, using the corresponding sampling method, units of measure, averaging period and sampling frequency, specified opposite in the Columns 2, 3, 4 and 5 respectively.

B.3 Noise management plan

2.4 Chain Valley Colliery Environmental Protection License 1770

CVC operates under EPL 1770 issued by the NSW EPA under the POEO Act. The EPL has been modified, most recently on 2 April 2019 acknowledging the transfer of ownership from LakeCoal Pty Ltd to Great Southern Energy Pty Ltd.

Noise related requirements of EPL 1770 together with where they are addressed in this NMP are provided in **Appendix E**.

2.5 Mannering Colliery Environmental Protection License 191

Mannering Colliery operates under EPL 191 issued by the NSW EPA under the POEO Act. The EPL has been modified, most recently on 1 April 2019 following the statutory five-year review and consisting of a number of variations which were mostly administrative in nature.

Condition L5 of EPL 191 notes that noise limits are not specified, with the Department of Planning, Industry and Environment being the appropriate authority for regulating noise conditions under Project Approval 06_0311.

2.6 Operational Noise Criteria

Noise limits within CVC Development Consent SSD-5465 and MC Project Approval 06_0311 have been outlined in **Table 2**.

Table 2: Consented Operational Noise Criteria dB(A) for Delta Coal Collieries

Consent/Approval/EPL Location	Day		Evening		Night		
	$L_{Aeq\ (15\ min)}$		$L_{Aeq\ (15\ min)}$		$L_{Aeq\ (15\ min)}$		$L_{A1\ (1\ min)}$
Chain Valley Colliery							
R8 (EPL Point 8)	38		38		38		45
R11 (EPL Point 11)	49	41^	49	41^	49	41^	54
R12 (EPL Point 12)	49	41^	49	41^	49	41^	53
R13 (EPL Point 13)	43	41^	43	41^	43	41^	49
R15 (EPL Point 15)	36		36		36		45
R19 (EPL Point 19)	37		37		37		45
R22 (EPL Point 22)	46	40^	46	40^	46	40^	46
All other privately-owned land	35		35		35		45
Mannering Colliery							
4 – di Rocco	40		36		36		46
5 – Keighran	40		39		39		49
6 – Swan	40		37		37		47
7 – Druitt	40		35		35		45
8 – Macquarie Shores Home Village	42		42		42		47
9 – Jeans	40		37		37		47
11 – Jeans	40		36		36		46
18 – Jeans	40		36		36		46
20 – Knight and all other privately-owned residences	40		36		36		46

^ = Long Term Noise Goals (where long-term goals differ from consented criteria)

Noise criteria outlined in **Table 2** do not apply if Delta Coal has an agreement with the owner/s of the relevant residence or land to exceed the noise criteria and Delta Coal has advised the EPA and DPIE in writing of the terms of this agreement.

As CVC has been operating for approximately 58 years, some of the predicted noise impacts at local receivers are greater than would usually be permissible without the requirement to offer noise treatments or voluntary acquisition. Notably the relocation of coal handling from CVC to MC in 2017 significantly improved CVC progression toward realising the long-term goals at receivers R11 to R13, where currently monitoring typically notes that occasional forklift and plant start-up warnings can be heard during monitoring at these receivers, while typically the site is inaudible. Consistent with noise monitoring results, community complaints from residents at these receivers regarding noise emissions has significantly decreased.

4.2.2 Chain Valley Colliery

Consistent with the noise impact assessment prepared by AECOM Pty Ltd for CVC in 2011 and undertaken as part of the Environmental Impact Statement (EIS) for Development Consent of SSD-5465, residential receivers have been divided into seven (7) noise catchment areas with similar geographical and acoustic features. The following points are considered representative of each noise catchment area:

- ATN001, representative of EPL 1770 monitoring point identification number 9, also identified in Development Consent SSD-5465 as receiver 'R8'. The attended monitoring point captures noise emissions at privately-owned residential properties located in Mannering Park, northwest of the Chain Valley Colliery pit top. The dominant noise sources in this area are birds, insects, traffic and other industrial sources;
- ATN002, representative of EPL 1770 monitoring point identification number 12, also identified in Development Consent SSD-5465 as receiver 'R11'. The attended monitoring point captures noise emissions at privately-owned residential properties located in Kingfisher Shores, south-east of the Chain Valley Colliery pit top. The dominant noise sources in this area are birds, insects, traffic and other industrial sources;
- ATN003, representative of EPL 1770 monitoring point identification number 16, also identified in Development Consent SSD-5465 as receiver 'R15'. The attended monitoring point captures noise emissions at privately-owned relocatable residences within MSHV, south of the Chain Valley Colliery pit top. The dominant noise sources in this receiver area are birds, insects, traffic and other industrial sources. Activities at Mannering Colliery are also audible at times;
- ATN004, representative of Development Consent SSD-5465 receiver 'R14'. The attended monitoring point captures noise emissions at privately-owned residential properties located in Chain Valley Bay South, south-east of the Chain Valley Colliery pit top. The dominant noise sources in this area are birds, insects, traffic and other industrial sources;
- ATN005, representative of Development Consent SSD-5465 receiver 'R17'. The attended monitoring point captured noise emissions at privately-owned residential properties located in Chain Valley Bay East, south-east of the Chain Valley Colliery pit top. The dominant noise sources in this area are birds, insects, traffic and other industrial sources;
- ATN006, representative of EPL 1770 monitoring point identification number 20, also identified in Development Consent SSD-5465 as receiver 'R19'. The attended monitoring point captures noise emissions at privately-owned residential properties located in Chain Valley Bay North, east of the Chain Valley Colliery pit top. The dominant noise sources in this area are birds, insects, traffic and other industrial sources
- ATN007, representative of EPL 1770 monitoring point identification number 23, also identified in Development Consent SSD-5465 as receiver 'R22'. The attended monitoring point captured

noise emissions at privately-owned residential properties located in Summerland Point, surrounding Chain Valley Colliery's Summerland Point ventilation shaft and fan site. The dominant noise sources in this area are birds, insects, traffic and the Summerland Point ventilation shaft and fan site.

It is noted that, with reference to the requirements of the EPL, two receivers were not considered to be captured by the seven (7) noise catchment areas outlined in the EIS and as such, monitoring is to be undertaken at the following points in addition to locations ATN001 to ATN007:

- R12, identified in EPL 1770 as noise monitoring point 13, noted to be adjacent to ATN002 at Kingfisher Shores on Lakeshore Avenue, Kingfisher Shores; and
- R13, identified in EPL 1770 as noise monitoring point 14, located on Karoola Avenue, Kingfisher Shores.

The spatial locations of the CVC attended monitoring locations and relevant noise criteria are detailed in **Table 5** below.

Table 5: Noise Monitoring Locations and Limits for Chain Valley Colliery

Location	Receivers Represented EPL 1770 ID SSD-5465 ID	Coordinates	Day $L_{Aeq(15\ min)}$ dB (A)	Evening $L_{Aeq(15\ min)}$ dB (A)	Night $L_{Aeq(15\ min)}$ dB (A)	Night $L_{A1(1\ min)}$ dB (A)
ATN001	EPL #9 R8	364140 E 6330594 N	35	35	35	35
ATN002	EPL #12 R11	365218 E 6329388 N	49	49	49	54
ATN003	EPL#16 R15	365165 E 6328323 N	36	36	36	45
ATN004	N/A R14	365949 N 6328530 E	35	35	35	45
ATN005	N/A R17	366560 N 6328590 E	35	35	35	45
ATN006	20 R19	366305 N 6329321 E	37	37	37	45
ATN007	23 R22	366425 N 6331135 E	46	46	46	46
R12	13 R12	365185 N 6329352 E	49	49	49	53
R13	14 R13	365391 N 6329169 E	43	43	43	49

Appendix C
Calibration certificates

EMM
creating opportunities

Sydney Calibration Laboratory
Suite 4.03, Level 4, 3 Thomas Holt Drive, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2300941

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2250	No: 2759405
Microphone:	Brüel & Kjær	4189	No: 2983733
Preamplifier:	Brüel & Kjær	ZC-0032	No: 22666
Supplied Calibrator:	None		
Software version:	BZ7224 Version 4.7.4	Pattern Approval:	-
Instruction manual:	BE1712-22	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-1:2013 class 1.
Procedures from IEC 61672-3:2013 were used to perform the periodic tests.
The measurements included in this document are traceable to Australian/National standards.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2250-4189.

RESULTS:

	Initial calibration		Calibration prior to repair/adjustment
X	Calibration without repair/adjustment		Calibration after repair/adjustment

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:20/12/2023

Certificate issued:21/12/2023

Calibration Technician: Sajeeb Tharayil

Approved signatory: Sajeeb Tharayil

Sydney Calibration Laboratory
Unit 21, 1 Talavera Road, Macquarie Park NSW 2113, Australia
Accredited for compliance with ISO/IEC 17025 - Calibration. Laboratory No. 1301

CERTIFICATE OF CALIBRATION

Certificate No: CAU2400803

CALIBRATION OF:

Sound Level Meter:	Brüel & Kjær	2255	No: 2255-100299
Microphone:	Brüel & Kjær	4966	No: 3403563
Preamplifier:	Brüel & Kjær	ZC-0043	No: 3399249
Supplied Calibrator:	None		
Software version:	BZ7300 Version 1.2.0.1325	Pattern Approval:	-
Instruction manual:	BE1917-11	Identification:	N/A

CUSTOMER:

EMM Consulting Pty Limited
20 Chandos Street
St Leonards NSW 2065

CALIBRATION CONDITIONS:

Preconditioning:	4 hours at 23 °C
Environment conditions:	*see actual values in **Environmental conditions** sections*

SPECIFICATIONS:

The Sound Level Meter has been calibrated in accordance with the requirements as specified in IEC61672-3:2006 class 1. Procedures from IEC 61672-3:2006 were used to perform the periodic tests. The measurements included in this document are traceable to Australian / International standards through accredited calibration of all relevant reference equipment.

PROCEDURE:

The measurements have been performed with the assistance of Brüel & Kjær Sound Level Meter Calibration System B&K 3630 with application software type 7763 (version 8.6 - DB: 8.60) and test procedure 2255-N, 4966 (BZ-7300).

RESULTS:

X	Initial calibration		Calibration prior to repair/adjustment
	Calibration without repair/adjustment		Calibration after repair/adjustment

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: 14/08/2024

Certificate issued: 14/08/2024

Barath Chandar Rajendran
Calibration Technician

Sajeeb Tharayil
Approved signatory

Summary

Preliminary inspection	**Passed**
Environmental conditions, Prior to calibration	**Passed**
Reference information	**Passed**
Indication at the calibration check frequency	**Passed**
Acoustical signal tests of a frequency weighting, C weighting	**Passed**
Self-generated noise, Microphone installed	**Passed**
Self-generated noise, Electrical	**Passed**
Electrical signal tests of frequency weightings, A weighting	**Passed**
Electrical signal tests of frequency weightings, C weighting	**Passed**
Electrical signal tests of frequency weightings, Z weighting	**Passed**
Frequency and time weightings at 1 kHz	**Passed**
Long-term stability, Reference	**Passed**
Level linearity on the reference level range, Upper	**Passed**
Level linearity on the reference level range, Lower	**Passed**
Toneburst response, Time-weighting Fast	**Passed**
Toneburst response, Time-weighting Slow	**Passed**
Toneburst response, Leq	**Passed**
C-weighted peak sound level, 8 kHz	**Passed**
C-weighted peak sound level, 500 Hz	**Passed**
Overload indication	**Passed**
Long-term stability, 1. relative	**Passed**
High-level stability	**Passed**
Long-term stability, 2. relative	**Passed**
Environmental conditions, Following calibration	**Passed**

The sound level meter submitted for testing successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organization responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Conformance to a performance specification is demonstrated when the following criteria are both satisfied: (a) a measured deviation from a design goal does not exceed the applicable acceptance limit and (b) the corresponding uncertainty of measurement does not exceed the corresponding maximum-permitted uncertainty of measurement given in IEC 61672-1:2013 for the same coverage probability of 95 %.

Instruments

Category:	Type:	Manufacturer:	Serial No.:
Voltmeter	DMM34461A	Keysight / Agilent	MY60055667
Generator	Pulse Generator	Bruel & Kjaer	BK3161-105338
Calibrator	4226	Bruel & Kjaer	3222931
AmplifierDivider	WB-3630 Output Module	Bruel & Kjaer	3330940
Adaptor	WA0302B, 15 pF	Bruel & Kjaer	2747050

Preliminary inspection

Visually inspect instrument, and operate all relevant controls. (clause 5)

	Result
Visual inspection	OK

Environmental conditions, Prior to calibration

Actual environmental conditions prior to calibration. (clause 7)

	Expected	Accept - Limit	Accept + Limit	Measured [Deg / kPa / %RH]
Air temperature	23.00	-3.00	3.00	24.10
Air pressure	101.30	-21.30	3.70	101.50
Relative humidity	50.00	-25.00	20.00	51.20

Reference information

Information about reference range, level and channel. (clause 22.h + 22.m)

	Value [dB SPL]
Reference sound pressure level	94
Reference level range	140
Channel number	1

Indication at the calibration check frequency

Measure and adjust sound level meter using the supplied calibrator. (clause 10 + 22.m)

	Expected [dB SPL / Hz]	Measured [dB SPL / Hz]	Uncertainty [dB]
Calibration check frequency (in-house calibrator)	1000.00	1000.00	1.00
Initial indication (in-house calibrator)	93.89	93.96	0.29
Adjusted indication (in-house calibrator)	93.89	93.93	0.29

Acoustical signal tests of a frequency weighting, C weighting

Frequency weightings measured acoustically with a calibrated multi-frequency sound calibrator. Averaging time is 10 seconds, and the result is the average of 2 measurements. (clause 12)

	Coupler Pressure Lc	Mic. Correction C4226	Body Influence	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB]	[dB]	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
1000Hz, Ref. (1st)	93.96	0.06	0.01	93.89	93.91	-0.7	0.7	0.02	0.29
1000Hz, Ref. (2nd)	93.96	0.06	0.01	93.89	93.91	-0.7	0.7	0.02	0.29
1000Hz, Ref. (Average)	93.96	0.06	0.01	93.89	93.91	-0.7	0.7	0.02	0.29
125.89Hz (1st)	94.04	0.00	0.00	93.85	93.86	-1.0	1.0	0.01	0.26
125.89Hz (2nd)	94.04	0.00	0.00	93.85	93.83	-1.0	1.0	-0.02	0.26
125.89Hz (Average)	94.04	0.00	0.00	93.85	93.84	-1.0	1.0	-0.01	0.26
7943.3Hz (1st)	93.69	2.88	-0.03	87.85	87.58	-2.5	1.5	-0.27	0.47
7943.3Hz (2nd)	93.69	2.88	-0.03	87.85	87.58	-2.5	1.5	-0.27	0.47
7943.3Hz (Average)	93.69	2.88	-0.03	87.85	87.58	-2.5	1.5	-0.27	0.47

Self-generated noise, Microphone installed

Self-generated noise measured with microphone submitted for periodic testing. Averaging time is 30 seconds. An anechoic chamber is used to isolate environmental noise.
The level of self-generated noise is reported for information only and is not used to assess conformance to a requirement. (clause 11.1)

	Max	Measured	Uncertainty
	[dB SPL]	[dB SPL]	[dB]
A weighted	17.30	16.81	0.50

Self-generated noise, Electrical

Self-generated noise measured in most sensitive range, with electrical substitution for microphone, according to manufactures specifications.
The level of self-generated noise is reported for information only and is not used to assess conformance to a requirement. (clause 11.2)

	Max	Measured	Uncertainty
	[dB SPL]	[dB SPL]	[dB]
A weighted	12.00	7.05	0.30
C weighted	15.30	12.07	0.30
Z weighted	21.50	18.11	0.30

Electrical signal tests of frequency weightings, A weighting

Frequency response measured with electrical signal relative to level at 1 kHz in reference range. (clause 13)
Electrical and acoustical response and body influence corrections are adjusted with the respective correction values at the reference frequency, in accordance with clause 13.6

	Input Level	Expected	Measured	Response Corr.	Body Influence	Corr. Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dBV]	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
1000Hz, Ref.	-25.00	95.00	95.00	0.00	0.00	95.00	-0.5	0.5	0.00	0.12
63.096Hz	1.20	95.00	94.95	0.02	-0.01	94.96	-1.0	1.0	-0.04	0.12
125.89Hz	-8.90	95.00	94.96	0.02	-0.01	94.97	-1.0	1.0	-0.03	0.12
251.19Hz	-16.40	95.00	94.96	0.01	0.02	94.99	-1.0	1.0	-0.01	0.12
501.19Hz	-21.80	95.00	94.96	0.01	0.07	95.04	-1.0	1.0	0.04	0.12
1995.3Hz	-26.20	95.00	95.04	-0.03	-0.11	94.90	-1.0	1.0	-0.10	0.12
3981.1Hz	-26.00	95.00	95.09	-0.11	0.12	95.10	-1.0	1.0	0.10	0.12
7943.3Hz	-23.90	95.00	94.90	0.09	-0.04	94.95	-2.5	1.5	-0.05	0.12
15849Hz	-18.40	95.00	94.43	0.57	0.14	95.14	-16.0	2.5	0.14	0.12

Electrical signal tests of frequency weightings, C weighting

Frequency response measured with electrical signal relative to level at 1 kHz in reference range. (clause 13)
Electrical and acoustical response and body influence corrections are adjusted with the respective correction values at the reference frequency, in accordance with clause 13.6

	Input Level	Expected	Measured	Response Corr.	Body Influence	Corr. Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dBV]	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
1000Hz, Ref.	-25.00	95.00	95.00	0.00	0.00	95.00	-0.5	0.5	0.00	0.12
63.096Hz	-24.20	95.00	94.91	0.02	-0.01	94.92	-1.0	1.0	-0.08	0.12
125.89Hz	-24.80	95.00	95.03	0.02	-0.01	95.04	-1.0	1.0	0.04	0.12
251.19Hz	-25.00	95.00	94.99	0.01	0.02	95.02	-1.0	1.0	0.02	0.12
501.19Hz	-25.00	95.00	95.02	0.01	0.07	95.10	-1.0	1.0	0.10	0.12
1995.3Hz	-24.80	95.00	95.07	-0.03	-0.11	94.93	-1.0	1.0	-0.07	0.12
3981.1Hz	-24.20	95.00	95.10	-0.11	0.12	95.11	-1.0	1.0	0.11	0.12
7943.3Hz	-22.00	95.00	94.90	0.09	-0.04	94.95	-2.5	1.5	-0.05	0.12
15849Hz	-16.50	95.00	94.40	0.57	0.14	95.11	-16.0	2.5	0.11	0.12

Electrical signal tests of frequency weightings, Z weighting

Frequency response measured with electrical signal relative to level at 1 kHz in reference range. (clause 13)
Electrical and acoustical response and body influence corrections are adjusted with the respective correction values at the reference frequency, in accordance with clause 13.6

	Input Level	Expected	Measured	Response Corr.	Body Influence	Corr. Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dBV]	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
1000Hz, Ref.	-25.04	95.00	95.00	0.00	0.00	95.00	-0.5	0.5	0.00	0.12
63.096Hz	-25.04	95.00	94.94	0.02	-0.01	94.95	-1.0	1.0	-0.05	0.12
125.89Hz	-25.04	95.00	94.97	0.02	-0.01	94.98	-1.0	1.0	-0.02	0.12
251.19Hz	-25.04	95.00	94.99	0.01	0.02	95.02	-1.0	1.0	0.02	0.12
501.19Hz	-25.04	95.00	95.00	0.01	0.07	95.08	-1.0	1.0	0.08	0.12
1995.3Hz	-25.04	95.00	95.04	-0.03	-0.11	94.90	-1.0	1.0	-0.10	0.12
3981.1Hz	-25.04	95.00	95.12	-0.11	0.12	95.13	-1.0	1.0	0.13	0.12
7943.3Hz	-25.04	95.00	94.92	0.09	-0.04	94.97	-2.5	1.5	-0.03	0.12
15849Hz	-25.04	95.00	94.44	0.57	0.14	95.15	-16.0	2.5	0.15	0.12

Frequency and time weightings at 1 kHz

Frequency and time weighting measured at 1 kHz with electrical signal in reference range. Measured relative to A-weighted and Fast response. (clause 14)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
LAF, Ref.	94.00	94.00	-0.5	0.5	0.00	0.12
LCF	94.00	94.00	-0.2	0.2	0.00	0.12
LZF	94.00	94.04	-0.2	0.2	0.04	0.12
LAS	94.00	94.00	-0.1	0.1	0.00	0.12
LAeq	94.00	94.00	-0.1	0.1	0.00	0.12

Long-term stability, Reference

Long-term stability over 25 to 35 minutes, with steady 1kHz signal at reference level. (clause 15)
Adjusting to reference level indication.

	Measured	Accept - Limit	Accept + Limit	Deviation	Timestamp	Uncertainty
	[dB SPL]	[dB]	[dB]	[dB]		[dB]
Reference	94.00	-0.5	0.5	0.00	2024-08-14 12:06:21	0.10

Level linearity on the reference level range, Upper

Level linearity in reference range, measured at 8 kHz until overload. (clause 16)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
94 dB	94.00	94.00	-0.5	0.5	0.00	0.13
99 dB	99.00	99.00	-0.8	0.8	0.00	0.13
104 dB	104.00	104.00	-0.8	0.8	0.00	0.13
109 dB	109.00	109.00	-0.8	0.8	0.00	0.13
114 dB	114.00	114.00	-0.8	0.8	0.00	0.13
119 dB	119.00	119.00	-0.8	0.8	0.00	0.13
124 dB	124.00	124.00	-0.8	0.8	0.00	0.13
129 dB	129.00	129.00	-0.8	0.8	0.00	0.13
134 dB	134.00	134.00	-0.8	0.8	0.00	0.13
135 dB	135.00	135.00	-0.8	0.8	0.00	0.13
136 dB	136.00	136.00	-0.8	0.8	0.00	0.13
137 dB	137.00	137.00	-0.8	0.8	0.00	0.13
138 dB	138.00	138.00	-0.8	0.8	0.00	0.13
139 dB	139.00	139.00	-0.8	0.8	0.00	0.13
140 dB	140.00	140.00	-0.8	0.8	0.00	0.13

Level linearity on the reference level range, Lower

Level linearity in reference range, measured at 8 kHz down to lower limit, or until underrange. (clause 16)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
94 dB	94.00	94.00	-0.5	0.5	0.00	0.13
89 dB	89.00	89.00	-0.8	0.8	0.00	0.13
84 dB	84.00	84.00	-0.8	0.8	0.00	0.13
79 dB	79.00	79.00	-0.8	0.8	0.00	0.13
74 dB	74.00	74.00	-0.8	0.8	0.00	0.13
69 dB	69.00	69.00	-0.8	0.8	0.00	0.13
64 dB	64.00	64.00	-0.8	0.8	0.00	0.13
59 dB	59.00	59.00	-0.8	0.8	0.00	0.13
54 dB	54.00	54.00	-0.8	0.8	0.00	0.13
49 dB	49.00	49.00	-0.8	0.8	0.00	0.13
44 dB	44.00	44.00	-0.8	0.8	0.00	0.13
39 dB	39.00	39.00	-0.8	0.8	0.00	0.24
34 dB	34.00	34.01	-0.8	0.8	0.01	0.24
29 dB	29.00	29.03	-0.8	0.8	0.03	0.24
28 dB	28.00	28.04	-0.8	0.8	0.04	0.24
27 dB	27.00	27.05	-0.8	0.8	0.05	0.24
26 dB	26.00	26.04	-0.8	0.8	0.04	0.24
25 dB	25.00	25.09	-0.8	0.8	0.09	0.24
24 dB	24.00	24.08	-0.8	0.8	0.08	0.24
23 dB	23.00	23.11	-0.8	0.8	0.11	0.24

Toneburst response, Time-weighting Fast

Response to 4 kHz toneburst measured in reference range, relative to continuous signal. (clause 18)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous, Ref.	137.00	137.00	-0.5	0.5	0.00	0.12
200 ms Burst	136.00	136.02	-0.5	0.5	0.02	0.12
2 ms Burst	119.00	118.95	-1.5	1.0	-0.05	0.12
0.25 ms Burst	110.00	109.83	-3.0	1.0	-0.17	0.12

Toneburst response, Time-weighting Slow

Response to 4 kHz toneburst measured in reference range, relative to continuous signal. (clause 18)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous, Ref.	137.00	137.00	-0.5	0.5	0.00	0.12
200 ms Burst	129.60	129.58	-0.5	0.5	-0.02	0.12
2 ms Burst	110.00	109.97	-3.0	1.0	-0.03	0.12

Toneburst response, Leq

Response to 4 kHz toneburst measured in reference range, relative to continuous signal. (clause 18)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous, Ref.	137.00	137.00	-0.5	0.5	0.00	0.12
200 ms Burst	120.00	120.01	-0.5	0.5	0.01	0.12
2 ms Burst	100.00	99.98	-1.5	1.0	-0.02	0.12
0.25 ms Burst	91.00	90.85	-3.0	1.0	-0.15	0.12

C-weighted peak sound level, 8 kHz

Peak-response to a 8 kHz single-cycle sine measured in least-sensitive range, relative to continuous signal. (clause 19)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous, Ref.	132.00	132.00	-0.5	0.5	0.00	0.09
Single Sine	135.40	135.32	-2.0	2.0	-0.08	0.20

C-weighted peak sound level, 500 Hz

Peak-response to a 500 Hz half-cycle sine measured in least-sensitive range, relative to continuous signal. (clause 19)

	Expected	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous, Ref.	135.00	135.00	-0.5	0.5	0.00	0.09
Half-sine, Positive	137.40	137.14	-1.0	1.0	-0.26	0.12
Half-sine, Negative	137.40	137.14	-1.0	1.0	-0.26	0.12

Overload indication

Overload indication in the least sensitive range determined with a 4 kHz positive/negative half-cycle signal. (clause 20)

	Measured / Input Level	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB]	[dB]	[dB]	[dB]
Continuous	140.00	-0.5	0.5	0.00	0.25
Half-sine, Positive	142.00	-10.0	10.0	2.00	0.25
Half-sine, Negative	142.00	-10.0	10.0	2.00	0.25
Difference	142.00	-1.5	1.5	0.00	0.25

Long-term stability, 1. relative

Long-term stability over 25 to 35 minutes, with steady 1kHz signal at reference level. (clause 15) Relative to prior adjustment to reference level indication.

	Measured	Accept - Limit	Accept + Limit	Deviation	Timestamp	Uncertainty
	[dB SPL / Min]	[dB / Min]	[dB / Min]	[dB / Min]		[dB]
Measurement	94.00	-0.1	0.1	0.00	2024-08-14 12:38:01	0.10
Time passed	31.40	0.0	35.0	31.40		0.00

High-level stability

High-level stability over 5 minutes, with steady 1kHz signal, 1dB below upper boundary. (clause 21)

	Measured	Accept - Limit	Accept + Limit	Deviation	Uncertainty
	[dB SPL]	[dB]	[dB]	[dB]	[dB]
High-level, Ref.	139.00	-0.5	0.5	0.00	0.10
High-level, after 5min	139.00	-0.1	0.1	0.00	0.10

Long-term stability, 2. relative

Long-term stability over 25 to 35 minutes, with steady 1kHz signal at reference level. (clause 15)
Relative to prior adjustment to reference level indication.

	Measured	Accept - Limit	Accept + Limit	Deviation	Timestamp	Uncertainty
	[Min / dB SPL]	[Min / dB]	[Min / dB]	[Min / dB]		[dB]
Wait	37.20	25.0	120.0	37.20		0.00
Measurement	94.00	-0.1	0.1	0.00	2024-08-14 12:44:02	0.10

Environmental conditions, Following calibration

Actual environmental conditions following calibration. (clause 7)

	Expected	Accept - Limit	Accept + Limit	Measured
				[Deg / kPa / %RH]
Air temperature	23.00	-3.00	3.00	24.07
Air pressure	101.30	-21.30	3.70	101.40
Relative humidity	50.00	-25.00	20.00	52.06

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Sound Calibrator

IEC 60942:2017

Calibration Certificate

Calibration Number C25652-V1

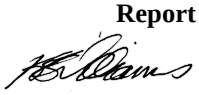
Client Details EMM Consulting
Level 3, 175 Scott Street
Newcastle, NSW, 2300

	Manufacturer	*Model*	*Serial*
Equipment Tested :			
Instrument :	Svantek	SV36	140737

Atmospheric Conditions

Ambient Temperature : 21.8 °C
Relative Humidity : 38 %
Barometric Pressure : 99.58 kPa

Calibration Technician : Peter Elters
Secondary Check: Rhys Gravelle
Calibration Date : 02-Oct-2025
Report Issue Date : 03-Oct-2025

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	94.11	1000.00
114	1000	114.09	1000.00

The sound calibrator has been shown to conform to the class 1 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	*±0.10 dB*	*Temperature*	*±0.1 °C*
Frequency	*±0.07 %*	*Relative Humidity*	*±1.9 %*
Distortion	*±0.20 %*	*Barometric Pressure*	*±0.019 kPa*

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

NATA WORLD RECOGNISED ACCREDITATION

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 Test Report

Calibration Number C25652-V1

Client Details EMM Consulting
Level 3, 175 Scott Street
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	Manufacturer	*Model*	*Serial*
Equipment Tested : Instrument :	Svantek	SV36	140737

Atmospheric Conditions

Ambient Temperature : 21.8 °C
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Report Issue Date : 03-Oct-2025

Approved Signatory : Ken Williams

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

The sound calibrator has been shown to conform to the class 1 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	*±0.10 dB*	*Temperature*	*±0.1 °C*
Frequency	*±0.07 %*	*Relative Humidity*	*±1.9 %*
Distortion	*±0.20 %*	*Barometric Pressure*	*±0.019 kPa*

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

1. REVISION HISTORY

Revision	Date	Description
1	03-Oct-2025	Original Issue

2. OVERVIEW

This report presents the calibration test results of a SV36 Acoustic Calibrator, and associated equipment. Calibration is carried out in accordance with *IEC 60942-2017, Electroacoustics - Sound Calibrators*.

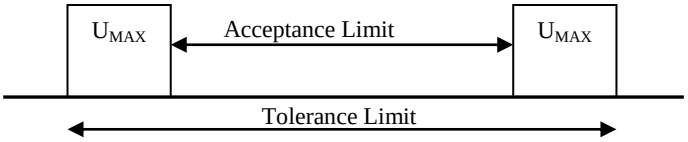
Relevant clauses from this standard have been used for periodic testing in conjunction with Acoustic Research Labs internal test methods described in Section 2 of the calibration work instruction manual.

This report was generated using template version identifier of 69876974.

2.1 UNCERTAINTIES

For each test performed, the associated measurement uncertainties are derived at the 95% confidence level and are given with a coverage factor of 2.

The uncertainty applies at the time of measurement only, and takes no account of any drift or other effects that may apply afterwards. When estimating uncertainty at any later time, other relevant information should also be considered, including, where possible, the history of the performance of the instrument and the manufacturer's specifications.



Where deviations from the design goals are provided to determine conformance to performance specifications, each measurement is reported with:

- The measured deviation from the design goal
- Associated acceptance limits for the test
- Maximum allowable uncertainty of measurement for the test
- Actual expanded uncertainty for each measurement

2.2 DOCUMENT CONVENTIONS

Test results which highlight non-conformances relative to the standard, and the sound level meter type specified by the manufacturer have been marked with an **F** in the respective tests.

Any tests that are not required, due to sound level meter configuration, are marked N/A.

3. GENERAL

3.1 DEVICE UNDER TEST

Equipment Tested :	*Manufacturer*	*Model*	*Serial*
Instrument :	Svantek	SV36	140737

Instrument received in fair condition.

3.2 ENVIRONMENTAL CONDITIONS DURING TEST

No corrections have been applied to any results obtained to compensate for the environmental conditions.

All tolerance limits stated apply to measurements made at and around reference environmental conditions within the following ranges:

80 kPa to 105 kPa

20°C to 26°C

25% to 90% relative humidity

3.3 CALIBRATION TESTS

Where applicable the following tests were performed in accordance with the requirements of *IEC 60942-2017* Annex B.

3.4 TEST EQUIPMENT USED

All test equipment used during periodic testing are calibrated every 12months by an accredited laboratory, traceable to SI units.

The performance of all equipment during these calibrations and the effects of instrument stability are used to determine the measurement uncertainty of each reported result.

3.4.1 Multi-function Acoustic Calibrator

A Bruel & Kjaer 4226 Multi-function calibrator (S/N – 3215300) was used as the reference for the sound pressure level and the signal frequency.

3.4.2 Sound Level Meter

ARL Ngara Class 1 (S/N – 878035). This device was used for converting acoustic signals into voltages which may be measured by the multimeter.

3.4.3 Audio Analyser

Abonet Audio Analyzer AVR-3710 (S/N – V859B9018). This device was used for measuring the AC voltage output of the reference Ngara unit. The AC level is proportional to the sound pressure level and frequency applied to the reference microphone.

3.4.4 Environmental Monitoring

A MHB-382SD (S/N – AH88227) was used for measuring environmental conditions during device calibration. It is capable of providing temperature, relative humidity and pressure measurements.

4. CALIBRATION TEST RESULTS

4.1 SOUND PRESSURE LEVEL

4.1.1 Generated Sound Pressure Level

The sound pressure level generated by the sound calibrator was measured three times as an average over 20 s of operation. During each measurement the sound calibrator was decoupled and rotated from the microphone to ensure any variations in operation were captured.

Table 1 – Generated Sound Pressure Level Results

Nominal Level (dB)	Nominal Frequency (Hz)	Measured Level (dB)	Deviation (dB)	Acceptance Limit (dB)	P/F	Uncertainty (dB)	Maximum Permitted Uncertainty (dB)	
94	1000	94.11	0.11	±0.25	P	0.10	0.15	Measured Output
114	1000	114.09	0.09	±0.25	P	0.10	0.15	Measured Output

4.2 FREQUENCY OUTPUT

The frequency generated by the sound calibrator was measured as an average over 20s of operation. The deviation from expected values is calculated as the absolute value of the difference in per cent between the frequency of the sound generated by the sound calibrator and the corresponding specified frequency.

Table 2 – Frequency Output Results

Nominal Level (dB)	Nominal Frequency (Hz)	Measured Frequency (Hz)	Deviation (Hz)	Acceptance Limit (Hz)	P/F	Uncertainty (Hz)	Maximum Permitted Uncertainty (Hz)	
94	1000	1000.00	0.00	±7.00	P	0.70	2.00	Measured Output
114	1000	1000.00	0.00	±7.00	P	0.70	2.00	Measured Output

4.3 TOTAL HARMONIC DISTORTION AND NOISE

The total harmonic distortion and noise (THD+N), measured over the frequency range from 22,5 Hz to 20 kHz, was measured as an average over 20s of operation.

Table 3 – THD+N Results

Nominal Level (dB)	Nominal Frequency (Hz)	Distortion (%)	Acceptance Limit (%)	P/F	Uncertainty (%)	Maximum Permitted Uncertainty (%)	
94	1000	0.32	±2.50	P	0.20	0.50	Measured Output
114	1000	0.87	±2.50	P	0.20	0.50	Measured Output

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C52587

EQUIPMENT TESTED : Acoustic Calibrator

Manufacturer: Svantek
Type No: SV 36 **Serial No:** 162796
Class: 1
Owner: EMM Consulting
Level 1, 175 Scott Street
Newcastle, NSW 2300
Tests Performed: Measured Output Pressure level, Frequency & Distortion
Comments: See Details and Class Tolerance overleaf.

CONDITION OF TEST:

Ambient Pressure	995	hPa ±1 hPa	**Date of Receipt :**	28/01/2025
Temperature	24	°C ±1° C	**Date of Calibration :**	28/01/2025
Relative Humidity	45	% ±5%	**Date of Issue :**	29/01/2025

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
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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