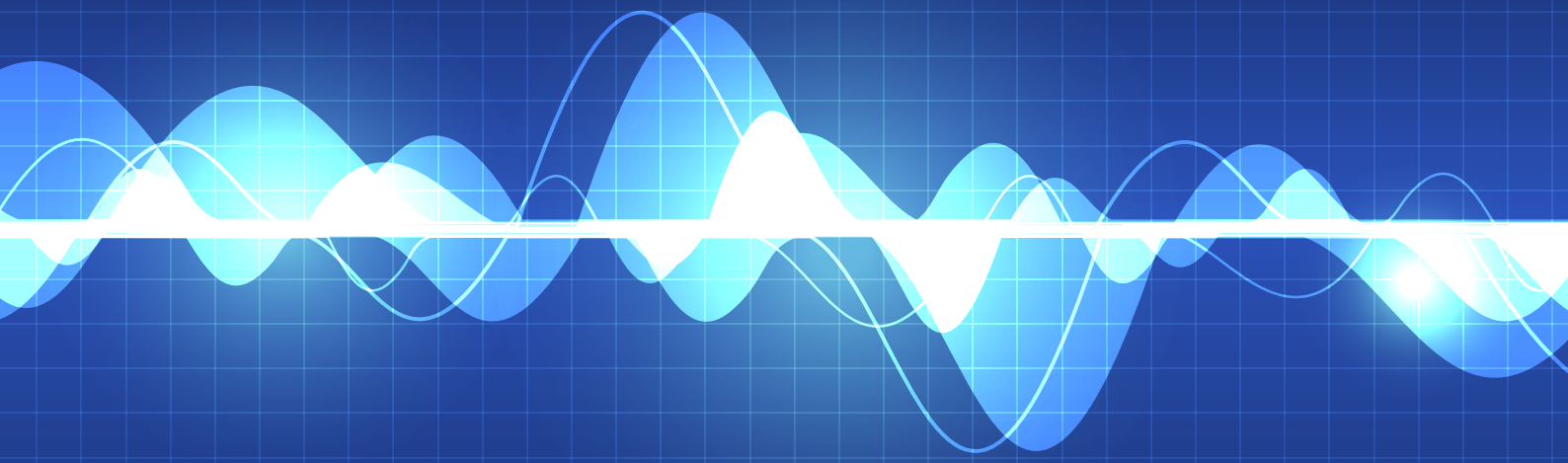
Chain Valley Colliery

Quarterly attended noise monitoring
Quarter 2 - 2022

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)
July 2022



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Quarterly attended noise monitoring - Quarter 2 2022

Report Number

E220003 RP2

Client

Great Southern Energy Pty Ltd (trading as Delta Coal)

Date

31 July 2022

Version

v2 Final

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31 July 2022

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31 July 2022

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1 Introduction

EMM Consulting Pty Limited (EMM) was engaged to undertake operator-attended noise surveys on behalf of Great Southern Energy Pty Ltd (Delta Coal).

The purpose of the noise monitoring was to address requirements of the approved Chain Valley Colliery Noise Management Plan (NMP), prepared to satisfy the requirements of the Development Consent SSD-5465 (DC) and Environment Protection License (EPL) 1770.

Compliance noise monitoring is required to occur on a quarterly basis for Chain Valley Colliery (CVC or the site). This report presents the results and findings for the second quarter (Q2) of 2022 from attended noise monitoring conducted on 20 and 22 June 2022.

The following material was referenced as part of this assessment:

- NSW Department of Planning, Industry and Environment (DPIE), Development Consent SSD-5465, as modified (Modification 4) July 2021 (current as of the monitoring date 20 June 2022);
- NSW Environment Protection Authority (EPA), Environment Protection License 1770, as varied on 24 February 2022 (current as of the monitoring date 20 June 2022);
- Chain Valley Colliery and Mannering Colliery Noise Management Plan (NMP) (approved 19 April 2022) updated following CVC Modification 4 (Mod 4) approval;
- NSW EPA, Industrial Noise Policy (INP), 2000;
- NSW EPA, Industrial Noise Policy application notes, 2017; and
- NSW EPA, Noise Policy for Industry (NPfI), 2017.

A glossary of acoustic terms relevant to this report is provided in Appendix A.

2 Noise limits

2.1 Operational and sleep disturbance noise limits

Noise limits for CVC are provided in Table 1, Condition 7 of Schedule 3 of the DC and Conditions L5.1 and L5.2 of the EPL. Extracts of the relevant sections of the DC and EPL pertaining to noise are provided in Appendix B and Appendix C, respectively. Assessment locations and relevant noise limits are summarised in Table 2.1.

Table 2.1 Noise limits

Assessment location	Day $L_{Aeq,15min}$, dB	Evening $L_{Aeq,15min}$, dB	Night $L_{Aeq,15min}$, dB	Night $L_{A1,1min}$, dB
R8 (EPL Point 9)	38	38	38	45
R11 (EPL Point 12)	49	49	49	54
R12 (EPL Point 13)	49	49	49	53
R13 (EPL Point 14)	43	43	43	49
R15 (EPL Point 16)	36	36	36	45
R19 (EPL Point 20)	37	37	37	45
R22 (EPL Point 23)	46	46	46	46
All other privately-owned land	35	35	35	45

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 m/s;
- wind speeds greater than 3 m/s at 10 m above ground level; or
- 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; or
- as defined under the NPfI.

The last point refers to '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. Table D1 of the NPfI is reproduced in Table 2.2.

Table 2.2 Standard and noise-enhancing meteorological conditions

Meteorological conditions	Meteorological parameters
Standard meteorological conditions	Day/evening/night: stability categories A-D with wind speed up to 0.5 m/s at 10 m above ground level.
Noise-enhancing meteorological conditions	Day/evening: stability categories A-D with wind light winds (up to 3 m/s at 10 m above ground level). Night: stability categories A-D with light winds (up to 3 m/s at 10 m above ground level) and/or stability category F with winds up to 2 m/s at 10 m above ground level.

Source: NPfI (EPA 2017)

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 consent/environment protection licence. Noise limits are based on 'achievable' noise levels under the 'standard' and/or 'noise-enhancing' meteorological conditions (refer to Table 2.2). 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 and for consistency between the DC and EPL, where 'very noise-enhancing' meteorological conditions were present during a noise survey, a positive adjustment of 5 dB has been applied to the noise limits stated in the DC and EPL (refer to Table 2.1). This approach means that noise limits will always be applicable, with or without a positive adjustment of 5 dB, depending on whether meteorological conditions are 'very noise-enhancing' or not.

For this assessment, the recorded L_{Amax} has been used as a conservative estimate of the $L_{A1,1min}$. The INP application notes (EPA 2017) state that the EPA accepts sleep disturbance analysis based on either the $L_{A1,1min}$ or L_{Amax} metrics, with the L_{Amax} resulting in a more conservative assessment of site noise emissions.

The DC and EPL state that all modifying factor adjustments must be applied as appropriate to the measured site noise levels before comparison to the relevant noise limits, where applicable. Fact Sheet C of the NPfI outlines the method for assessing the presence of noise with annoying characteristics and applying the relevant modifying factor adjustment(s) to measured site noise at a residential receiver.

2.1 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 of the DC are summarised in Table 2.3 for the relevant assessment locations.

Table 2.3 CVC long-term goals

Assessment location	Day $L_{Aeq,15min}$, dB	Evening $L_{Aeq,15min}$, dB	Night $L_{Aeq,15min}$, dB
R11 (EPL Point 12)	41	41	41

Table 2.3 CVC long-term goals

Assessment location	Day $L_{Aeq,15min}$, dB	Evening $L_{Aeq,15min}$, dB	Night $L_{Aeq,15min}$, dB
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 measures to target long-term noise goals which are designed to reduce noise emissions from CVC. For the purpose of this compliance noise monitoring assessment, site $L_{Aeq,15min}$ noise contributions have also been compared to the long-term goals in Section 4, where relevant.

2.2 Low frequency noise criteria

Condition 5 in Appendix 8 of the DC and L5.9 of the EPL state that noise generated by CVC is to be measured in accordance with the relevant requirements of the INP. The INP application notes state that modifying factor adjustments outlined in Fact Sheet C of the NPfI are to be used when assessing certain characteristics of a noise source such as low frequency noise (LFN).

Fact sheet C of the NPfI provides guidelines for applying modifying factor adjustments to account for LFN emissions. The NPfI specifies that a difference of 15 dB or more between site 'C-weighted' and site 'A-weighted' noise emission levels identifies the potential for an unbalanced noise spectrum and potential increased annoyance at a residential receiver.

Where a difference of 15 dB or more between site 'C-weighted' and site 'A-weighted' noise emission levels is identified, the one-third octave noise levels recorded should be compared to the LFN threshold values in Table C2 of the NPfI (EPA 2017), which has been reproduced in Table 2.4.

Table 2.4 One-third octave LFN threshold levels

	One-third octave $L_{Zeq,15min}$ threshold levels												
Frequency (Hz)	**10**	**12.5**	**16**	**20**	**25**	**31.5**	**40**	**50**	**63**	**80**	**100**	**125**	**160**
dB (Z)	92	89	86	77	69	61	54	50	50	48	48	46	44

The following modifying factor adjustments for LFN are to be applied to the site $L_{Aeq,15min}$ noise contribution where the site 'C-weighted' and site 'A-weighted' noise emission level is 15 dB or more and:

- where any of the one-third octave noise levels in Table 2.4 are exceeded by up to and including 5 dB and cannot be mitigated, a 2 dB positive adjustment to measured/predicted A-weighted levels applies for the evening/night period; or
- where any of the one-third octave noise levels in Table 2.4 are exceeded by more than 5 dB and cannot be mitigated, a 5 dB positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2 dB positive adjustment applies for the daytime period.

Hence, where possible throughout each survey the operator has estimated the difference between site 'C-weighted' and site 'A-weighted' noise emission levels by matching audible sounds with the response of the sound analyser (L_{Ceq}-L_{Aeq}). Where this was found to be 15 dB or greater, the measured one-third octave frequencies have been compared to the values in Table 2.4 to identify the relevant modifying factor adjustments (if applicable). This method for the application of modifying factor adjustments for LFN has been applied to this assessment as presented in Section 4.

It is of note that the NPfI states that LFN modifying factor adjustments only apply under the standard or noise-enhancing meteorological conditions as per Fact Sheet D of the NPfI.

3 Assessment methodology

3.1 Attended noise monitoring

To quantify noise emissions from CVC, attended noise monitoring surveys were completed at representative locations, in accordance with the NMP.

Attended noise monitoring locations as per the NMP, and their coordinates are listed in Table 3.1 and are shown in Figure 3.1.

Table 3.1 Attended noise monitoring locations

Attended noise monitoring location	Assessment location	Description	Coordinates (MGA56)	
			Easting	Northing
ATN001	R8 (EPL Point 9)	Griffith Street, Mannering Park	363990	6330529
ATN002	R11 (EPL Point 12)	Lakeshore Avenue, Kingfisher Shores	365218	6329388
ATN003	R15 (EPL Point 16)	Short Street, Macquarie Shores	365165	6328323
ATN004	R14	Lloyd Avenue, Chain Valley Bay	365949	6328530
ATN005	R17	Teragalin Drive, Chain Valley Bay	366560	6328590
ATN006	R19 (EPL Point 20)	Sunset Parade, Chain Valley Bay	366305	6329321
ATN007[1]	R22 (EPL Point 23)	Cams Boulevard, Chain Valley Bay	366425	6331135
R12	R12 (EPL Point 13)	Lakeshore Avenue, Kingfisher Shores	365185	6329352
R13	R13 (EPL Point 14)	Karoola Avenue, Kingfisher Shores	365391	6329169

Notes: 1. Due to access issues, noise monitoring for ATN007 was conducted at an intermediate location within the site boundary and site noise contributions were calculated back to R22 (EPL Point 23).

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 3.1;
- 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 am and 4 am; and
  - 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-minue 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.

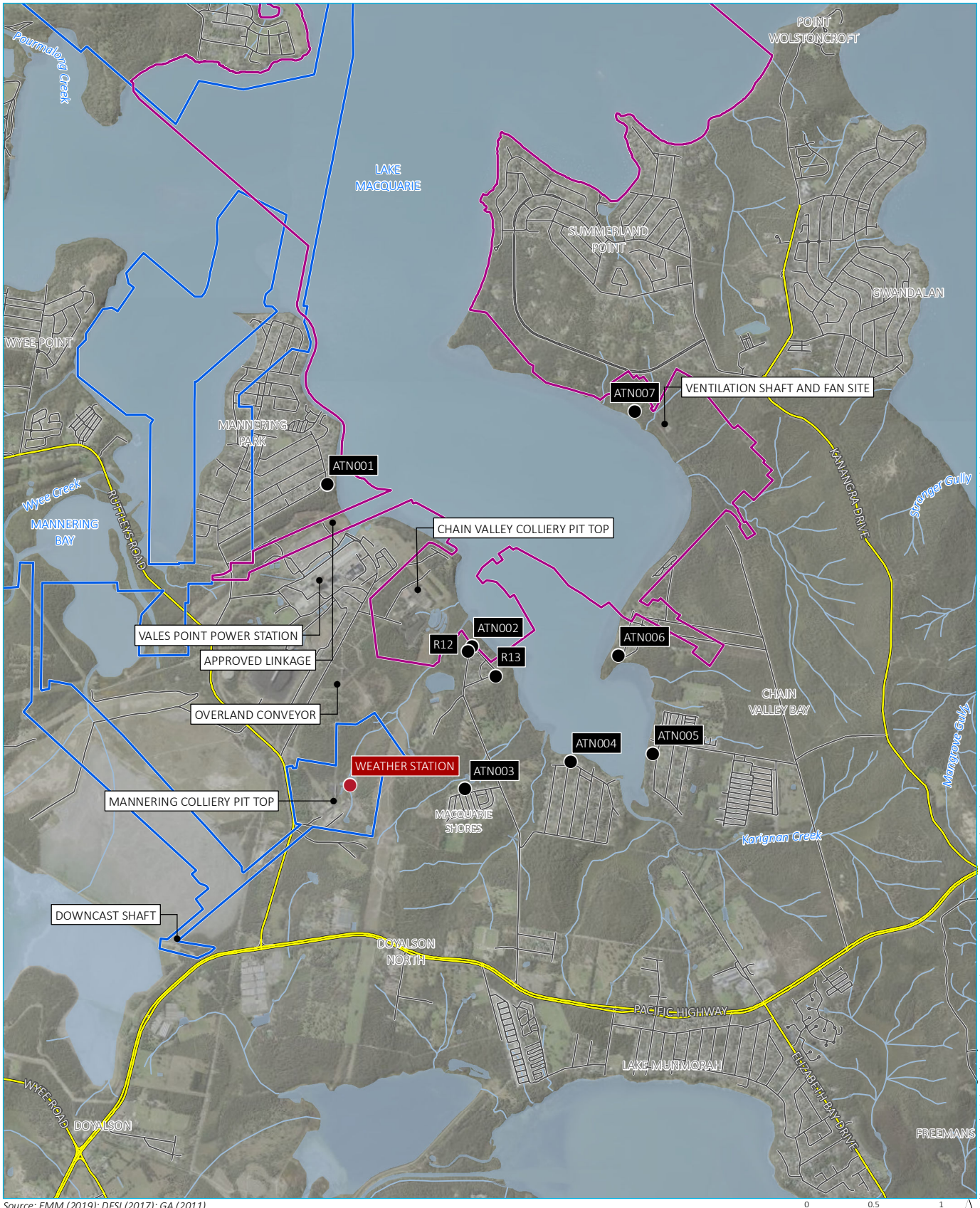
In accordance with the preceding, this round of quarterly attended noise monitoring (Q2 2022) was undertaken on Monday 20 and Wednesday 22 June 2022 which is more than two months since the last quarterly round of monitoring (Q1 2022) conducted on Monday 14, Wednesday 15 and Friday 18 March 2022.

As per the 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 (Q2 2022) of noise monitoring.

3.2 Instrumentation

Two Brüel & Kjær (B&K) 2250 Type 1 sound analysers (s/n 2759405 and s/n 3029363) were used to conduct 15-minute attended measurements and record one-third octave frequency and statistical noise indices. The sound analysers were calibrated before and on completion of the survey using a Svantek Type SV 36 calibrator (s/n 79952). Instrumentation calibration certificates are provided in Appendix D.

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



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

0 0.5 1 km

GDA 1994 MGA Zone 56

N

KEY

- Chain Valley Colliery development consent boundary
- Mannering Colliery project approval boundary
- Noise monitoring location
- Weather station
- Main road
- Local road
- Watercourse/drainage line
- Waterbody

Site boundary and noise monitoring locations

Chain Valley Colliery noise monitoring
Figure 3.1

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3.3 Determination of stability category

For the purpose of this assessment and as required by the DC, EPL and NMP, stability categories were determined for each 15-minute attended monitoring period. The stability category data for the monitoring period as well as the average wind data (speed and direction) were obtained from MC's meteorological station located to the south of the site (refer to Figure 3.1).

The stability categories and associated ranges in temperature lapse rates are presented in Table 3.2.

Table 3.2 Stability categories and temperature lapse rates

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

Source: NPfI (EPA 2017).

4 Review of data and discussion

Noise contribution from CVC was determined for each survey using in-field observations and post-analysis of data as required (eg removing higher frequencies that are not mine related). Attended noise monitoring was completed on 20 and 22 June 2022. Monitoring surveys occurred at all monitoring locations for 15 minutes during the day, evening and night periods as per the EPL. Results for this Q2 2022 attended noise monitoring are summarised in Table 4.1.

The meteorological data for the monitoring period was sourced from Mannering Colliery's meteorological station to determine if a positive adjustment of 5 dB to the noise limits was applicable due to 'very noise-enhancing' meteorological conditions as per the NPfI. Meteorological conditions were 'standard' or 'noise-enhancing' at the time of the monitoring and, in accordance with the NMP, the standard noise limits shown in Table 2.1 applied for all 28 measurements.

Site noise was inaudible during 25 of the 28 measurements. Typically, when a particular source is not audible above local ambient noise levels, the likely contribution of that source is at least 10 dB below the measured background (L_{A90}) level. For most of the measurements where site noise was inaudible, the measured L_{A90} noise levels were no more than 10 dB above the relevant $L_{Aeq,15min}$ limits. The exception was during the daytime measurement at ATN005 (R17). Field observations made at the time of this measurement indicate that noise from nearby construction works (unrelated to Delta Coal) was consistently audible and contributed to the measured $L_{A90,15min}$ at ATN005 (R17). Hence, site $L_{Aeq,15min}$ noise contributions likely satisfied the relevant limits during all of the measurements where site noise was inaudible.

At the one noise monitoring location where site noise was audible; ATN007 (R22), CVC noise contributions satisfied the relevant noise limits during the day, evening and night periods.

With regard to LFN modifying factor adjustments, these have not been applied to locations where CVC was deemed to be inaudible. Measured site noise levels exceeded the relevant LFN threshold levels during the evening and night-time measurements at ATN007 (R22). Therefore, in accordance with the NPfI, a 2 dB positive adjustment was applied to the estimated site $L_{Aeq,15min}$ noise contributions for these measurements (as shown in Table 4.1).

Site $L_{Aeq,15min}$ noise contributions were also compared to the long-term noise goals (refer to Table 2.3) for the relevant locations (ie R11, R12, R13 and R22). Site $L_{Aeq,15min}$ noise contributions measured at ATN002 (R11), R12 and R13 satisfied the relevant long-term goals during the day, evening and night periods. During the daytime measurement at ATN007 (R22), site $L_{Aeq,15min}$ noise contribution exceeded the relevant long-term goal by 2 dB. During the evening and night-time measurements at ATN007 (R22), site $L_{Aeq,15min}$ noise contributions (inclusive of the 2 dB positive adjustment for LFN) exceeded the relevant long-term goals by 4 and 5 dB respectively.

Table 4.1 CVC attended noise monitoring results – Q2 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] Very noise-enhancing?	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
ATN001	22/6	14:37 (Day)	44	46	50	47	60	74	73	Nil	IA	N/A	38	N/A	2.4 m/s @ 267° SC B No	Nil	CVC inaudible. VPPS hum consistently audible. Wind in foliage, distant and local traffic frequently audible. Bird noise and resident noise occasionally audible.
ATN001	22/6	19:47 (Eve.)	41	42	47	44	51	75	66	Nil	IA	N/A	38	N/A	0.3 m/s @ 138° SC F No	Nil	CVC inaudible. VPPS hum, insects and frogs consistently audible. Distant and local traffic occasionally audible.
ATN001	22/6	2:02 (Night)	45	46	47	47	48	63	69	Nil	IA	IA	38	45	0.9 m/s @ 248° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Insects just audible.
ATN002	22/6	15:41 (Day)	32	35	47	47	60	66	62	Nil	IA	N/A	49	N/A	1.6 m/s @ 272° SC B No	Nil	CVC inaudible. VPPS hum, insects, frogs and bird noise consistently audible. Distant traffic and resident noise occasionally audible.
ATN002	20/6	20:48 (Eve.)	39	40	42	42	44	52	65	Nil	IA	N/A	49	N/A	0.4 m/s @ 183° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Overland conveyor unrelated to Delta Coal barely audible. Distant traffic, nearby resident and dog barking occasionally audible.
ATN002	22/6	2:24 (Night)	42	44	45	46	47	49	69	Nil	IA	IA	49	54	1.5 m/s @ 244° SC F No	Nil	CVC inaudible. VPPS hum consistently audible.

Table 4.1 CVC attended noise monitoring results – Q2 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] Very noise-enhancing?	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
ATN003	22/6	15:02 (Day)	38	41	58	51	70	84	71	Nil	IA	N/A	36	N/A	1.3 m/s @ 278° SC A No	Nil	CVC inaudible. VPPS hum and bird noise consistently audible. Traffic passbys frequently audible. Dogs barking occasionally audible.
ATN003	20/6	21:30 (Eve.)	38	39	40	42	43	49	63	Nil	IA	N/A	36	N/A	0.4 m/s @ 327° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Overland conveyor unrelated to Delta Coal barely audible to inaudible. Insects/frogs consistently audible. Distant traffic frequently audible.
ATN003	20/6	23:30 (Night)	39	40	41	42	45	49	64	Nil	IA	IA	36	45	0.2 m/s @ 297° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Insects/frogs consistently audible. Distant traffic frequently audible.
ATN003	22/6	3:00 (Night)	38	39	41	42	45	55	62	Nil	IA	IA	36	45	1.9 m/s @ 240° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Mannering Colliery and overland conveyor unrelated to Delta Coal consistently audible. Insects/frogs consistently audible. Distant traffic occasionally audible.
ATN004	22/6	16:00 (Day)	35	38	47	51	56	66	61	Nil	IA	N/A	35	N/A	1.0 m/s @ 267° SC C No	Nil	CVC inaudible. VPPS hum and bird noise consistently audible. Distant and local traffic frequently audible. Resident noise occasionally audible.
ATN004	22/6	19:22 (Eve.)	36	37	40	41	46	57	61	Nil	IA	N/A	35	N/A	0.2 m/s @ 170° SC F No	Nil	CVC inaudible. VPPS hum, insects and frogs consistently audible. Distant traffic frequently audible. Dogs barking occasionally audible.
ATN004	20/6	22:48 (Night)	34	37	38	39	41	61	58	Nil	IA	IA	35	45	0.2 m/s @ 285° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Distant traffic and dog barking occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q2 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] Very noise-enhancing?	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
ATN005	22/6	16:25 (Day)	42	51	66	68	78	85	76	Nil	IA	N/A	35	N/A	0.5 m/s @ 196° SC A No	Nil	CVC inaudible. Noise from nearby construction works consistently audible. Bird noise and nearby children frequently audible. Traffic passbys occasionally audible.
ATN005	22/6	18:30 (Eve.)	34	37	52	52	63	78	64	Nil	IA	N/A	35	N/A	0.5 m/s @ 288° SC F No	Nil	CVC inaudible. VPPS hum, insects and frogs consistently audible. Distant traffic frequently audible. Bird noise occasionally audible.
ATN005	20/6	22:00 (Night)	37	39	40	42	44	61	62	Nil	IA	IA	35	45	0.2 m/s @ 320° SC F No	Nil	CVC inaudible. VPPS hum consistently audible.
ATN006	22/6	16:45 (Day)	36	39	45	47	55	67	63	Nil	IA	N/A	37	N/A	0.5 m/s @ 173° SC D No	Nil	CVC inaudible. VPPS hum and construction noise consistently audible. Resident noise and pedestrians frequently audible. Dogs barking occasionally audible.
ATN006	22/6	18:50 (Eve.)	39	41	43	45	49	64	63	Nil	IA	N/A	37	N/A	0.3 m/s @ 70° SC F No	Nil	CVC inaudible. VPPS hum, insects and frogs consistently audible. Distant traffic frequently audible. Dogs barking occasionally audible.
ATN006	22/6	03:24 (Night)	37	39	41	42	43	49	64	Nil	IA	IA	37	45	1.0 m/s @ 265° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Birds occasionally audible.
ATN007[4]	22/6	17:15 (Day)	48	49	50	50	51	53	71	Nil	42	N/A	46	N/A	0.4 m/s @ 218° SC B No	Nil	CVC vent fans consistently audible. Insects and frogs consistently audible. Bird noise and distant traffic occasionally audible.
ATN007[4]	22/6	18:01 (Eve.)	47	49	49	50	51	58	71	2 dB	44 (42+2)	N/A	46	N/A	0.4 m/s @ 190° SC F No	Nil	CVC vent fans consistently audible. Insects and frogs consistently audible. Distant traffic frequently audible.

Table 4.1 CVC attended noise monitoring results – Q2 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] Very noise-enhancing?	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
ATN007[4]	22/6	3:53 (Night)	48	50	51	51	53	60	71	2 dB	45 (43+2)	43	46	46	1.4 m/s @ 269° SC F No	Nil	CVC vent fan noise consistently audible. VPPS hum consistently audible in the background.
R12	22/6	15:41 (Day)	32	35	47	47	60	66	62	Nil	IA	N/A	49	N/A	1.6 m/s @ 272° SC B No	Nil	CVC inaudible. VPPS hum, insects, frogs and bird noise consistently audible. Distant traffic and resident noise occasionally audible.
R12	20/6	20:48 (Eve.)	39	40	42	42	44	52	65	Nil	IA	N/A	49	N/A	0.4 m/s @ 183° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Overland conveyor unrelated to Delta Coal barely audible. Distant traffic, nearby resident and dog barking occasionally audible.
R12	22/6	2:24 (Night)	42	44	45	46	47	49	69	Nil	IA	IA	49	53	1.5 m/s @ 244° SC F No	Nil	CVC inaudible. VPPS hum consistently audible.
R13	22/6	15:19 (Day)	37	40	56	54	67	79	69	Nil	IA	N/A	43	N/A	1.2 m/s @ 284° SC A No	Nil	CVC inaudible. VPPS hum, bird noise and resident noise consistently audible. Dogs barking and traffic passbys occasionally audible.
R13	20/6	21:06 (Eve.)	36	38	40	41	45	58	59	Nil	IA	N/A	43	N/A	0.3 m/s @ 257° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Overland conveyor unrelated to Delta Coal consistently audible. Distant traffic occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q2 2022

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] Very noise-enhancing?	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
R13	22/6	02:41 (Night)	41	43	44	45	47	65	61	Nil	IA	IA	43	49	1.4 m/s @ 232° SC F No	Nil	CVC inaudible. VPPS hum consistently audible. Mannering Colliery and overland conveyor unrelated to Delta Coal barely audible.

Notes:
1. Modifying factor adjustment for LFN in accordance with Fact sheet C of the NPfI (refer to Section 2.2).
2. For assessment purposes the recorded L_{Amax} has been used as a conservative estimate of the $L_{A1,1min}$.
3. Meteorological data including wind speed, wind direction and stability category (SC) were taken as an average over 15 minutes from MC's weather station (Refer to Section 3.3).
4. Due to access issues, noise monitoring for ATN007 was conducted at an intermediate location. Total noise levels shown were measured at the alternative location and site contributions calculated back to R22/EPL Point 23.
5. IA = inaudible, N/A = not applicable.

5 Conclusion

EMM has completed a review of mine noise from CVC within the surrounding community based on attended measurements conducted on 20 and 22 June 2022.

The meteorological data for the monitoring period was sourced from Mannering Colliery's meteorological station to determine if the standard noise limits applied as per the NMP or if a positive adjustment of 5 dB to the noise limits was applicable due to 'very noise-enhancing' meteorological conditions in accordance with the NPfI. Meteorological conditions were 'standard' or 'noise-enhancing' at the time of the monitoring and, in accordance with the NMP, the standard noise limits applied for all measurements.

The assessment of noise contributions from site included consideration of modifying factors for annoying noise characteristics, where relevant, and in accordance with the NPfI. A modifying factor for LFN was applicable at R22 (ATN007) during the evening and night-time measurements. Therefore, in accordance with the NPfI, a 2 dB positive adjustment was applied to the estimated site $L_{Aeq,15min}$ noise contribution for these measurements before comparison to the relevant noise limits.

CVC $L_{Aeq,15min}$ and L_{Amax} noise contributions for this round (Q2 2022) of noise monitoring satisfied the relevant noise limits at all monitoring locations as outlined in the DC, EPL and NMP.

CVC $L_{Aeq,15min}$ noise contributions were also compared to the long-term noise goals applicable at R11 (ATN002), R12, R13 and R22 (ATN007). CVC $L_{Aeq,15min}$ noise contributions satisfied the relevant long-term goals during all measurements at R11 (ATN002), R12 and R13. However, during the daytime measurements at R22 (ATN007), site $L_{Aeq,15min}$ noise contributions exceeded the relevant long-term goals by 2 dB, and during the evening and night-time measurements at R22 (ATN007), site $L_{Aeq,15min}$ noise contributions (inclusive of the 2 dB positive adjustment for LFN) exceeded the relevant long-term goals by 4 and 5 dB respectively.

References

Chain Valley Colliery and Mannering Colliery Noise Management Plan, 2022.NSW Department of Planning and Environment, Development Consent SSD5465, 2020.

NSW Environment Protection Authority, Environment Protection License 1770, 2022.

NSW Environment Protection Authority, Industrial Noise Policy, 2000.

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

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

Appendix A

Glossary of acoustic terms

Several technical terms are discussed in this report. These are explained in Table A.1.

Table A.1 Glossary of acoustic terms

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

It is useful to have an appreciation of decibels (dB), the unit of noise measurement. Table A.2 gives an indication as to what an average person perceives about changes in noise levels. Examples of common noise levels are provided in Figure A.1.

Table A.2 Perceived change in noise

Change in sound pressure level (dB)	Perceived change in noise in surrounding environment
up to 2	not perceptible
3	just perceptible
5	noticeable difference
10	twice (or half) as loud
15	large change
20	four times (or quarter) as loud

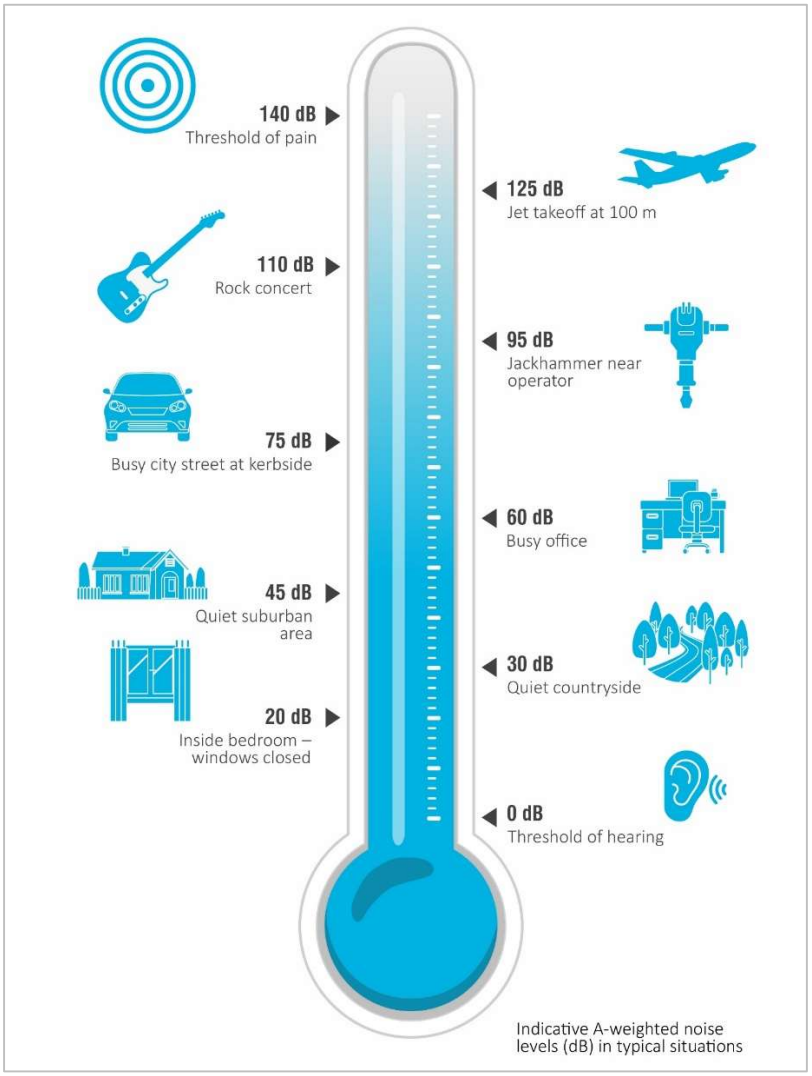

Figure A.1 Common noise levels

Appendix B

Project approval extract

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

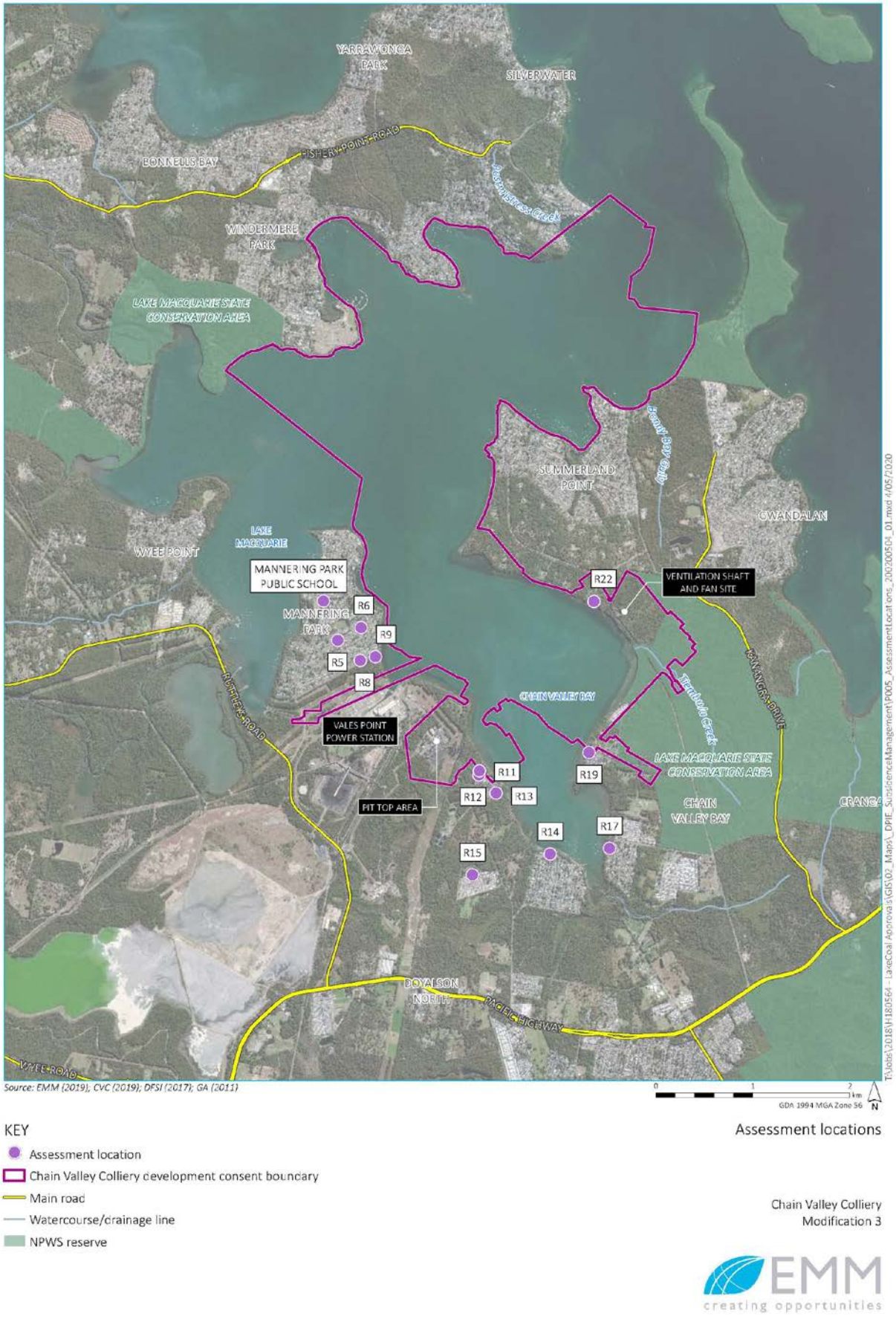

Figure 1: *Noise Receiver Locations*

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

Appendix C

EPL extract

1	Discharge to waters Discharge quality and volume monitoring	Discharge to waters Discharge quality and volume monitoring	Discharge to waters and monitoring from final settlement pond, gravity fed discharge pipe as identified in plan titled "Delta Coal Chain Valley Colliery, Surface EPA Premises Plan, DRG No: C1S0165_2" 10 August 2021 and saved as EPA Document DOC21/691135.
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 EPA Point 1 as identified in plan titled "Delta Coal Chain Valley Colliery, Surface EPA Premises Plan, DRG No: C1S0165_2" 10 August 2021 and saved as EPA Document DOC21/691135.

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 R8 as defined in Development Consent SSD-5465 (MOD 3), located at 109 Griffith Street, MANNERING PARK, 2259
12	Noise monitoring	Noise monitoring site R11 as defined in Development Consent SSD-5465 (MOD 3), located at 35 Lakeshore Avenue, CHAIN VALLEY BAY, 2259
13	Noise monitoring	Noise monitoring site R12 as defined in Development Consent SSD-5465 (MOD 3), located at 20 Lakeshore Avenue, Kingfisher Shores, CHAIN VALLEY BAY, 2259
14	Noise monitoring	Noise monitoring site R13 as defined in Development Consent SSD-5465 (MOD 3), located at 33 Karoola Avenue, Kingfisher Shores, CHAIN VALLEY BAY, 2259
16	Noise monitoring	Noise monitoring site R15 as defined in Development Consent SSD-5465 (MOD 3), located at Short Street, Macquarie Shores, CHAIN VALLEY BAY, 2259
20	Noise monitoring	Noise monitoring site R19 as defined in Development Consent SSD-5465 (MOD 3), located at 2 Sunset Parade, CHAIN VALLEY BAY, 2259

23	Noise monitoring	Noise monitoring site R22 as defined in Development Consent SSD-5465 (MOD 3), located at 275a Cams Boulevard, CHAIN VALLEY BAY, 2259
26	Meteorological Station	Mannering Colliery Meteorological Station, Ruttleys Road, Doyalson 2259.

3 Limit Conditions

L1 Pollution of waters

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

L2 Concentration limits

L2.1 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
Faecal Coliforms	colony forming units per 100 millilitres				200
pH	pH				6.5-8.5
Total suspended solids	milligrams per litre				50

Environment Protection Licence

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)

Environment Protection Licence

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

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.

M3.2 Subject to any express provision to the contrary in this licence, monitoring for the concentration of a pollutant discharged to waters or applied to a utilisation area must be done in accordance with the Approved Methods Publication unless another method has been approved by the EPA in writing before any tests are conducted.

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.

M4.2 For the Annual Reporting Period ending March 2015 the EPA will accept all monitoring required by the current Department of Planning and Environment consent (usually quarterly monitoring for noise as dB(A) Leq15minutes) for compliance with noise monitoring requirements in this licence, as a single report attached to the Annual Return for the premises.

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.

Appendix D

Calibration certificates

Certificate Of Calibration

Certificate No: SLM31670

Equipment Tested: Sound Level Meter

Manufacturer:	B & K		
Type No:	2250	**Serial No:**	2759405
Mic. Type:	4189	**Serial No:**	2983733
Pre-Amp. Type:	ZC0032	**Serial No:**	22666
Filter Type:	1/3 Octave	**Test No:**	F031671

Owner: EMM Consulting
Level 3, 175 Scott Street
Newcastle, NSW 2300

Tests Performed: IEC 61672-3:2013 & IEC 61260-3:2016

Comments: All Test passed for Class 1. (See overleaf for details)

Conditions Of Test:

Ambient Pressure	992	hPa ±1 hPa	**Date of Receipt :**	02/02/2022
Temperature	26	°C ±1° C	**Date of Calibration :**	02/02/2022
Relative Humidity	48	% ±5%	**Date of Issue :**	03/02/2022

Acu-Vib Test Procedure: AVP10 (SLM) & AVP06 (Filters)

Checked By: ..... **Authorised Signature:** .....

Jack Kielt

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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WORLD RECOGNISED ACCREDITATION
Accredited Lab No. 9262
Acoustic and Vibration Measurements

Acu-Vib Electronics
CALIBRATIONS SALES RENTALS REPAIRS

Head Office & Calibration Laboratory
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(02) 9680 8133
www.acu-vib.com.au

HBK HOTTINGER BRÜEL & KJÆR
The Calibration Laboratory
Skodsborgvej 307, DK-2850 Nærum, Denmark

ilac-MRA

DANAK
CAL Reg.No. 307
Member of EA MLA

CERTIFICATE OF CALIBRATION

No: CDK2007931

CALIBRATION OF

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

CUSTOMER

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

CALIBRATION CONDITIONS

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

Environment conditions: *See actual values in sections.*

SPECIFICATIONS

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

PROCEDURE

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

RESULTS

Calibration Mode: **Calibration as received.**

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

Date of calibration: 2020-11-26

Date of issue: 2020-11-26

Lene Petersen
Calibration Technician

Erik Bruus
Approved Signatory

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: C30591

EQUIPMENT TESTED : Sound Level Calibrator

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

Parameter	Pre-Adj	Adj Y/N	Output: (dB re 20 µPa)	Frequency (Hz)	THD&N (%)
Level1:	NA	N	94.12 dB	999.99 Hz	1.58 %
Level2:	NA	N	114.05 dB	999.99 Hz	1.12 %
Uncertainty			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:

Ambient Pressure 1007 hPa ±1 hPa
Temperature 21 °C ±1° C
Relative Humidity 43 % ±5%

Date of Receipt : 16/09/2021
Date of Calibration : 16/09/2021
Date of Issue : 16/09/2021

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

CHECKED BY: .....

AUTHORISED SIGNATURE: .....
Hein Soe

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