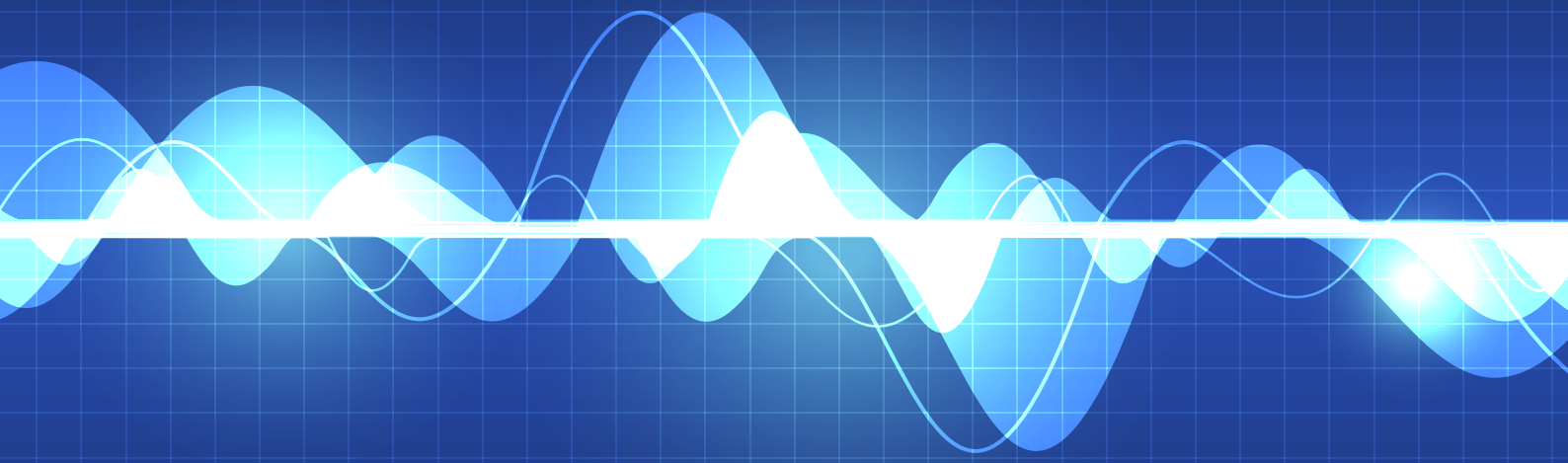
Chain Valley Colliery

Quarterly attended noise monitoring
Quarter 3 - 2021

Prepared for Great Southern Energy Pty Ltd (trading as Delta Coal)
November 2021



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Quarterly attended noise monitoring - Quarter 3 2021

Report Number

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Client

Great Southern Energy Pty Ltd (trading as Delta Coal)

Date

8 November 2021

Version

v2 Final

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8 November 2021

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8 November 2021

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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 (trading as 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 third quarter (Q3) of 2021 from attended noise monitoring conducted on 17, 23 and 24 September 2021.

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 17 September 2021);
- NSW Environment Protection Authority (EPA), Environment Protection License 1770, as varied on 2 April 2019 (current as of the monitoring date 8 September 2021);
- Chain Valley Colliery Noise Management Plan (approved NMP), approved by DPE on 12 March 2014;
- Chain Valley Colliery and Mannering Colliery Noise Management Plan (revised NMP – DPIE approval pending), updated following Chain Valley Colliery Modification 3 (Mod 3) approval;
- EPA, Industrial Noise Policy (INP), 2000;
- EPA, Industrial Noise Policy application notes, 2017; and
- EPA, Noise Policy for Industry (NPfI), 2017.

It is of note that Delta Coal is currently in the process of updating the NMP to reflect changes associated with Modification 3 (Mod 3) of the DC which was approved by the DPIE in June 2020. Modification 4 (Mod 4) of the DC was subsequently approved by DPIE in July 2021, however no changes to the CVC noise requirements resulted from the Mod 4 approval. Delta Coal have submitted a revised NMP to DPIE for approval to reflect any changes to, or additional, operational noise conditions. The revised NMP incorporates noise management for both Delta Coal's CVC and Mannering Colliery (MC).

The CVC noise monitoring locations and associated noise limits in the revised NMP are generally consistent with those provided in the approved NMP. The CVC noise limits in the revised NMP have not changed from the approved NMP; however, the revised NMP provides two additional noise monitoring locations and associated noise limits for CVC, consistent with those provided in the EPL. For the purpose of this assessment, the CVC noise monitoring requirements in the revised NMP have been adopted for the monitoring undertaken on 17, 23 and 24 September 2021. These are discussed further in Section 2 and Section 3.

It should also be noted that the EPL was varied on 30 September 2021 which was after the completion of the Q3 attended noise compliance monitoring. The latest EPL refers to the NPfI for noise monitoring purposes instead of the superseded INP. The latest EPL variation also corrected a typographical error in the noise limits as noted in previous compliance noise monitoring reports for CVC. No other changes related to noise monitoring requirements

for the site were noted in the latest EPL variation. For the purpose of this assessment and consistent with the revised NMP, monitoring requirements as per the NPfI have been adopted for the monitoring undertaken on 17, 23 and 24 September 2021.

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

The noise limits for CVC are provided in Condition 7 of Schedule 3 of the DC and Condition L5 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 $L_{Aeq,15\ minute}$, dB	Evening $L_{Aeq,15\ minute}$, dB	Night $L_{Aeq,15\ minute}$, dB	Night $L_{A1,1\ minute}$, 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.

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 $L_{A1,1\ minute}$. The INP application notes (EPA 2017) state that the EPA accepts sleep disturbance analysis based on either the $L_{A1,1\ minute}$ 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.

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

Table 2.3 CVC long-term goals

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

Table 2.3 CVC long-term goals

Assessment location	Day $L_{Aeq,15\ minute}$, dB	Evening $L_{Aeq,15\ minute}$, dB	Night $L_{Aeq,15\ minute}$, 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 $L_{Aeq,15\ minute}$ noise contributions have also been compared to the long-term goals.

2.3 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.

Fact sheet C of the NPfI provides guidelines for applying modifying factor adjustments to account for low frequency noise 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 low frequency noise threshold values in Table C2 of the NPfI, which has been reproduced in Table 2.4.

Table 2.4 One-third octave low frequency noise threshold levels

	One-third octave $L_{Zeq,15\ minute}$ 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 low frequency noise are to be applied to the site $L_{Aeq,15\ minute}$ 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 day period.

Hence, where possible throughout each survey the operator 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 low frequency noise has been applied to this assessment as presented in Section 4.

It is of note that Fact Sheet C of the NPfI states that modifying factor adjustments for low frequency noise only apply under the standard or noise-enhancing meteorological conditions.

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 revised NMP.

Attended noise monitoring locations as per the revised 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 calculated back to R22.

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.

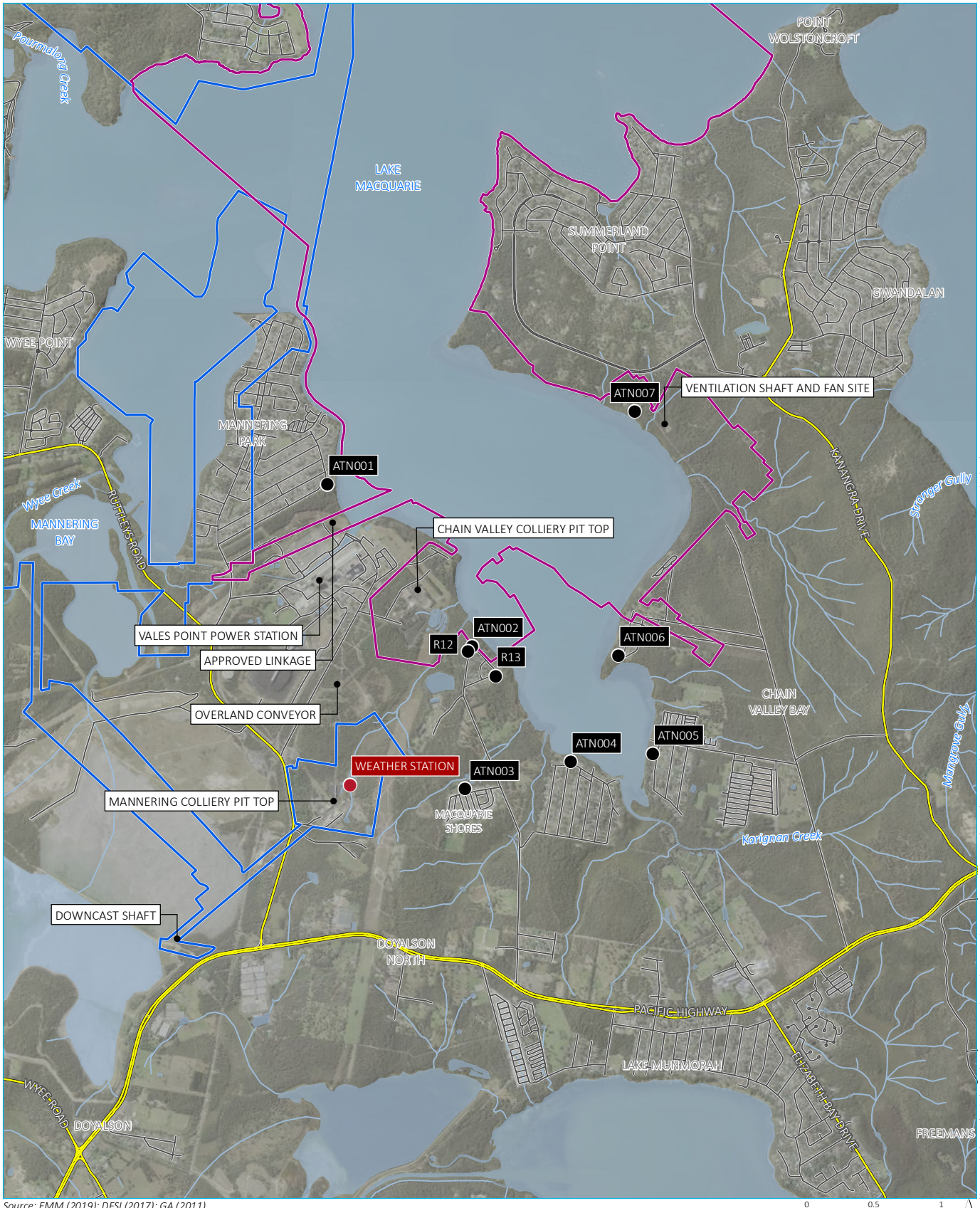
In accordance with the preceding, this round of quarterly attended noise monitoring (Q3 2021) was undertaken on Friday 17, Thursday 23 and Friday 24 September 2021 which is more than two months since the last quarterly round of monitoring (Q2 2021) conducted on Tuesday 15 and Wednesday 16 June 2021. Furthermore, this round of quarterly attended noise monitoring (Q3 2021) was undertaken at each EPL point listed in Table 3.1 for 1.5 hours during the day period, 30 minutes during the evening period and 1 hour during the night period. It is noted that this EPL condition does not apply to the attended noise monitoring undertaken at locations ATN004 (R14) and ATN005 (R17) as these are not listed in the EPL.

As per the revised 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 noise monitoring.

3.2 Instrumentation

Two Brüel & Kjær (B&K) 2250 Type 1 sound analysers (s/n 2759405 and 3029363) were used to conduct 15-minute attended measurements and record one-third octave frequency and statistical noise indices. The sound analysers were calibrated in-field before and on completion of the surveys 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).



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

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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 categories

For the purpose of this assessment and as required by the DC, EPL and revised 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.

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 17, 23 and 24 September 2021. Monitoring surveys occurred at most monitoring locations for 1.5 hours during the day period, 30 minutes during the evening period and 1 hour during the night-time period as per the EPL. The exceptions were at ATN004 and ATN005 (not listed in the EPL) where monitoring surveys occurred for 15 minutes during the day, evening and night periods. Results are presented in 15-minute intervals for each location for direct comparison to the relevant noise limits. Results for this Q3 2021 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 'very noise-enhancing' due to average wind speed greater than 3 m/s for six of the 15-minute noise measurements (at locations ATN001, ATN003 and R13). Therefore, a positive adjustment of 5 dB was applied to the noise limits for these measurements as indicated in Table 4.1. The standard noise limits as shown in Table 2.1 applied for all other 15-minute noise measurements.

Measured site noise levels did not exceed the relevant LFN threshold levels during most of the measurements where CVC was audible, and hence LFN modifying factor adjustments were found to be not relevant for most of the measurements. Measured site noise levels exceeded the relevant LFN threshold levels during the evening and night-time measurements at ATN007. Therefore, in accordance with the NPfI, a 2 dB positive adjustment was applied to the estimated site $L_{Aeq,15\ minute}$ noise contributions for these measurements (as shown in Table 4.1).

Site noise was inaudible during 75 of the 90 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 all of the measurements where site noise was inaudible, the measured L_{A90} noise levels were no more than 5 dB above the relevant $L_{Aeq,15\ minute}$ limits. Hence, site $L_{Aeq,15\ minute}$ noise contributions were likely below the relevant limits during these measurements.

At the four monitoring locations where site noise was audible, including ATN002 (night), ATN003 (day), ATN007 (day, evening and night) and R12 (night), CVC noise contributions satisfied the relevant noise limits.

Site $L_{Aeq,15\ minute}$ 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 $L_{Aeq,15\ minute}$ noise contributions satisfied the relevant long-term goals at R11 (ATN002), R12 and R13 during the day, evening and night periods. At R22 (ATN007), site $L_{Aeq,15\ minute}$ noise contributions satisfied the relevant long-term goals during the day period. However, during the evening and night period measurements at R22 (ATN007), site $L_{Aeq,15\ minute}$ noise contributions (inclusive of the 2 dB positive adjustment for LFN) exceeded the relevant long-term goals by 3 dB.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN001	17/9	13:54 (Day)	41	43	57	52	71	81	68	Nil	IA	N/A	3.4 m/s @ 57° SC A Yes	43[4] (38+5)	N/A	Nil	**CVC inaudible**. Insects and frogs consistently audible. VPPS hum consistently audible. Distant traffic, local traffic, wind in foliage and birds frequently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible. Car passbys and noise from nearby residents occasionally audible.
ATN001	17/9	14:09 (Day)	40	42	55	53	69	76	64	Nil	IA	N/A	3.0 m/s @ 74° SC A No	38	N/A	Nil	**CVC inaudible**. Insects and frogs consistently audible. VPPS hum consistently audible. Distant traffic, local traffic, wind in foliage and birds frequently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible. Car passbys and noise from nearby residents occasionally audible.
ATN001	17/9	14:24 (Day)	40	42	56	52	69	80	64	Nil	IA	N/A	3.2 m/s @ 55° SC A Yes	43[4] (38+5)	N/A	Nil	**CVC inaudible**. Insects and frogs consistently audible. VPPS hum consistently audible. Distant traffic, local traffic, wind in foliage and birds frequently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible. Car passbys and noise from nearby residents occasionally audible.
ATN001	17/9	14:39 (Day)	40	42	54	48	67	81	65	Nil	IA	N/A	2.6 m/s @ 52° SC A No	38	N/A	Nil	**CVC inaudible**. Insects and frogs consistently audible. VPPS hum consistently audible. Distant traffic, local traffic, wind in foliage and birds frequently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible. Car passbys and noise from nearby residents occasionally audible.
ATN001	23/9	17:10 (Day)	40	42	62	55	74	88	71	Nil	IA	N/A	1.9 m/s @ 60° SC B No	38	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Noise from nearby resident frequently audible. Traffic passby, distant traffic and wind in foliage occasionally audible.
ATN001	23/9	17:25 (Day)	41	42	56	51	64	84	66	Nil	IA	N/A	1.7 m/s @ 59° SC B No	38	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Noise from nearby resident frequently audible. Traffic passby, distant traffic and wind in foliage occasionally audible.
ATN001	23/9	18:00 (Eve.)	41	42	54	51	69	77	64	Nil	IA	N/A	1.4 m/s @ 41° SC E No	38	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Noise from nearby resident frequently audible. Traffic passby occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN001	23/9	18:15 (Eve.)	41	42	56	54	70	81	66	Nil	IA	N/A	1.2 m/s @ 56° SC D No	38	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Noise from nearby resident frequently audible. Traffic passby occasionally audible.
ATN001	24/9	0:43 (Night)	38	39	40	41	42	61	58	Nil	IA	IA	0.8 m/s @ 337° SC F No	38	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
ATN001	24/9	0:58 (Night)	37	39	40	40	41	42	58	Nil	IA	IA	0.9 m/s @ 340° SC E No	38	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
ATN001	24/9	1:13 (Night)	38	39	40	41	44	55	58	Nil	IA	IA	0.9 m/s @ 342° SC E No	38	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
ATN001	24/9	1:28 (Night)	38	39	40	41	42	60	58	Nil	IA	IA	0.7 m/s @ 334° SC F No	38	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
ATN002	17/9	7:37 (Day)	37	39	50	50	60	74	69	Nil	IA	N/A	0.4 m/s @ 24° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby and distant traffic occasionally audible. Reverse alarm from the east-north-east (unrelated to Delta Coal) frequently audible. Dog barking briefly audible.
ATN002	17/9	7:52 (Day)	37	40	51	53	65	70	64	Nil	IA	N/A	0.5 m/s @ 5° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Nearby residents talking. Reverse alarm from the east-north-east (unrelated to Delta Coal) frequently audible. Dog barking briefly audible on occasions.
ATN002	17/9	8:07 (Day)	38	40	54	52	65	78	68	Nil	IA	N/A	1.2 m/s @ 32° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Nearby residents talking. Dog barking briefly audible.
ATN002	17/9	8:22 (Day)	37	39	45	47	56	64	62	Nil	IA	N/A	1.6 m/s @ 19° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN002	17/9	8:38 (Day)	36	39	48	48	60	70	63	Nil	IA	N/A	2.0 m/s @ 1° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Aircraft noise briefly audible. Delivery truck parking nearby and idling.
ATN002	17/9	8:53 (Day)	36	39	51	48	66	69	62	Nil	IA	N/A	2.0 m/s @ 10° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Delivery truck nearby idling then leaving. Dog barking briefly audible.
ATN002	23/9	20:05 (Eve.)	40	42	43	44	45	47	64	Nil	IA	N/A	0.4 m/s @ 234° SC F No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Insects just audible. Local traffic briefly audible.
ATN002	23/9	20:20 (Eve.)	40	42	43	44	45	48	64	Nil	IA	N/A	0.4 m/s @ 352° SC F No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Insects just audible. Local traffic briefly audible on two occasions.
ATN002	23/9	23:30 (Night)	41	42	45	45	54	60	64	Nil	<40	<40	0.8 m/s @ 311° SC E No	49	54	Nil	**CVC drift lift alarm noise briefly audible**. VPPS hum consistently audible (dominant). Traffic passby and distant traffic occasionally audible.
ATN002	23/9	23:46 (Night)	40	42	43	44	46	51	63	Nil	IA	IA	0.8 m/s @ 312° SC E No	49	54	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Nearby resident arriving by car.
ATN002	24/9	0:01 (Night)	40	42	43	44	45	47	64	Nil	IA	IA	0.7 m/s @ 284° SC F No	49	54	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant).
ATN002	24/9	0:16 (Night)	39	41	43	44	45	48	64	Nil	IA	IA	0.6 m/s @ 330° SC F No	49	54	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant).
ATN003	17/9	9:15 (Day)	35	39	44	44	53	68	60	Nil	IA	N/A	2.4 m/s @ 33° SC A No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Mowing nearby consistently audible. Birds, insects and frogs consistently audible. Local traffic and distant traffic occasionally audible. Noise from nearby residents occasionally audible.
ATN003	17/9	9:31 (Day)	34	36	41	43	49	63	60	Nil	IA	N/A	2.6 m/s @ 31° SC A No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Mowing and leaf blower nearby audible. Birds consistently audible. Local traffic and distant traffic frequently audible. Noise from nearby residents occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN003	17/9	9:46 (Day)	34	36	47	46	60	71	61	Nil	IA	N/A	3.0 m/s @ 27° SC A No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Car passby, local traffic and distant traffic occasionally audible. Noise from nearby residents occasionally audible.
ATN003	17/9	10:01 (Day)	33	36	42	44	51	64	60	Nil	IA	N/A	3.2 m/s @ 17° SC A Yes	41[4] (36+5)	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Local traffic and distant traffic occasionally audible. Noise from nearby residents occasionally audible. Wind in foliage occasionally audible.
ATN003	17/9	10:17 (Day)	33	35	40	42	49	60	60	Nil	IA	N/A	2.9 m/s @ 29° SC A No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Birds consistently audible. Local traffic and distant traffic occasionally audible. Noise from nearby residents occasionally audible.
ATN003	17/9	10:33 (Day)	34	37	42	43	51	66	61	Nil	<36	N/A	3.1 m/s @ 12° SC A Yes	41[4] (36+5)	N/A	Nil	**CVC forklift 'bang' noise occasionally audible**. VPPS hum consistently audible. Birds consistently audible. Local traffic and distant traffic occasionally audible. Noise from nearby residents occasionally audible. Wind in foliage occasionally audible.
ATN003	23/9	19:30 (Eve.)	39	40	42	44	45	48	59	Nil	IA	N/A	0.4 m/s @ 20° SC F No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Distant traffic occasionally audible. Noise from nearby air-conditioning unit just audible. Residents talking nearby.
ATN003	23/9	19:45 (Eve.)	36	38	41	43	45	54	59	Nil	IA	N/A	0.6 m/s @ 236° SC F No	36	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Local and distant traffic occasionally audible. Noise from nearby air-conditioning unit just audible. Residents talking nearby.
ATN003	23/9	3:00 (Night)	40	42	44	45	46	56	60	Nil	IA	IA	0.3 m/s @ 179° SC F No	36	45	Nil	**CVC inaudible**. MC CHP noise consistently audible. VPPS hum consistently audible (dominant most of the time). Distant traffic audible on one occasion.
ATN003	23/9	4:00 (Night)	38	41	45	46	55	62	60	Nil	IA	IA	0.2 m/s @ 153° SC F No	36	45	Nil	**CVC inaudible**. MC CHP noise consistently audible. VPPS hum consistently audible (dominant most of the time). Distant traffic audible on one occasion. Birds occasionally audible.
ATN003	23/9	5:00 (Night)	38	41	50	54	61	65	60	Nil	IA	IA	0.7 m/s @ 333° SC F No	36	45	Nil	**CVC inaudible**. MC CHP noise audible to inaudible. VPPS hum consistently audible (dominant). Distant traffic audible on occasion. Birds frequently audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN003	23/9	6:00 (Night)	38	40	44	45	52	67	59	Nil	IA	IA	0.2 m/s @ 318° SC F No	36	45	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Alarm sound briefly audible from the south-west (unrelated to Delta Coal). Distant traffic consistently audible. Birds and insects consistently audible.
ATN004	17/9	7:15 (Day)	40	45	53	53	63	78	61	Nil	IA	N/A	0.4 m/s @ 12° SC A No	35	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Car passby on two occasions. Aircraft noise briefly audible.
ATN004	23/9	20:45 (Eve.)	36	38	42	44	46	58	57	Nil	IA	N/A	1.0 m/s @ 350° SC D No	35	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Insects frequently audible. Birds and dog barking briefly audible.
ATN004	23/9	5:30 (Night)	39	43	54	56	63	77	64	Nil	IA	IA	0.4 m/s @ 318° SC D No	35	45	Nil	**CVC inaudible**. Local and distant traffic frequently audible. VPPS hum consistently audible. Birds consistently audible.
ATN005	17/9	11:50 (Day)	36	41	50	53	59	64	60	Nil	IA	N/A	2.7 m/s @ 33° SC A No	35	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. VPPS hum consistently audible. Local traffic and nearby pedestrians frequently audible. Noise from nearby residents frequently audible. Car passby. Aircraft noise audible.
ATN005	23/9	20:02 (Eve.)	37	38	41	43	45	64	60	Nil	IA	N/A	0.4 m/s @ 234° SC F No	35	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident frequently audible. Distant traffic occasionally audible.
ATN005	23/9	23:06 (Night)	35	37	39	40	42	55	58	Nil	IA	IA	0.3 m/s @ 189° SC F No	35	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
ATN006	17/9	12:10 (Day)	35	38	48	48	61	70	61	Nil	IA	N/A	2.6 m/s @ 46° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.
ATN006	17/9	12:25 (Day)	34	37	42	44	49	61	58	Nil	IA	N/A	3.0 m/s @ 52° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN006	17/9	12:40 (Day)	33	36	41	43	48	61	57	Nil	IA	N/A	2.7 m/s @ 59° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.
ATN006	17/9	12:55 (Day)	35	37	43	46	51	68	58	Nil	IA	N/A	2.6 m/s @ 60° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.
ATN006	17/9	13:10 (Day)	35	38	46	45	58	69	57	Nil	IA	N/A	2.8 m/s @ 59° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.
ATN006	17/9	13:25 (Day)	37	41	47	48	57	67	59	Nil	IA	N/A	2.7 m/s @ 72° SC A No	37	N/A	Nil	**CVC inaudible**. Insects, frogs and birds consistently audible. Distant traffic frequently audible. Local traffic, wind in foliage, aircraft noise and dog barking occasionally audible.
ATN006	23/9	20:22 (Eve.)	34	36	38	39	40	63	59	Nil	IA	N/A	0.4 m/s @ 352° SC F No	37	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident and distant traffic occasionally audible.
ATN006	23/9	20:37 (Eve.)	35	36	37	38	39	62	59	Nil	IA	N/A	0.9 m/s @ 2° SC D No	37	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident and distant traffic occasionally audible.
ATN006	23/9	22:00 (Night)	37	39	41	42	46	54	60	Nil	IA	IA	0.5 m/s @ 311° SC E No	37	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident, birds, unidentified fauna and distant traffic occasionally audible.
ATN006	23/9	22:15 (Night)	36	38	40	41	42	65	60	Nil	IA	IA	0.4 m/s @ 281° SC F No	37	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident, birds, unidentified fauna and distant traffic occasionally audible.
ATN006	23/9	22:30 (Night)	36	38	39	40	42	53	60	Nil	IA	IA	0.6 m/s @ 295° SC E No	37	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident, birds, unidentified fauna and distant traffic occasionally audible.
ATN006	23/9	22:45 (Night)	35	37	39	40	42	46	59	Nil	IA	IA	0.6 m/s @ 28° SC F No	37	45	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Noise from nearby resident, birds, unidentified fauna and distant traffic occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN007[5]	17/9	11:40 (Day)	45	47	47	48	49	55	69	Nil	40	N/A	2.7 m/s @ 33° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds consistently audible. Distant traffic occasionally audible. Wind in foliage occasionally audible.
ATN007[5]	17/9	11:55 (Day)	46	47	48	48	57	65	69	Nil	40	N/A	2.7 m/s @ 39° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds consistently audible. Distant traffic occasionally audible. Aircraft noise briefly audible. Wind in foliage occasionally audible.
ATN007[5]	17/9	12:11 (Day)	45	47	50	48	61	68	69	Nil	40	N/A	2.6 m/s @ 46° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds consistently audible. Distant traffic occasionally audible. Aircraft noise briefly audible. Wind in foliage occasionally audible.
ATN007[5]	17/9	12:26 (Day)	45	47	47	48	49	52	69	Nil	40	N/A	3.0 m/s @ 52° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds consistently audible. Distant traffic occasionally audible. Wind in foliage occasionally audible.
ATN007[5]	17/9	12:41 (Day)	45	47	47	48	49	56	69	Nil	40	N/A	2.7 m/s @ 59° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds consistently audible. Distant traffic occasionally audible. Wind in foliage occasionally audible.
ATN007[5]	17/9	12:57 (Day)	46	47	48	48	49	55	69	Nil	40	N/A	2.6 m/s @ 60° SC A No	46	N/A	Nil	**CVC vent fans consistently audible**. Birds frequently audible. Distant traffic occasionally audible. Wind in foliage frequently audible.
ATN007[5]	23/9	21:30 (Eve.)	47	48	49	49	50	52	70	2	43 (41+2)	N/A	0.6 m/s @ 315° SC F No	46	N/A	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.
ATN007[5]	23/9	21:45 (Eve.)	47	48	48	49	50	54	69	2	43 (41+2)	N/A	0.5 m/s @ 320° SC F No	46	N/A	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.
ATN007[5]	23/9	22:00 (Night)	47	48	48	49	50	54	70	2	43 (41+2)	41	0.5 m/s @ 311° SC E No	46	46	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.
ATN007[5]	23/9	22:16 (Night)	47	48	48	49	49	52	70	2	43 (41+2)	41	0.4 m/s @ 281° SC F No	46	46	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
ATN007[5]	23/9	22:31 (Night)	46	47	48	49	49	52	70	2	43 (41+2)	41	0.6 m/s @ 295° SC E No	46	46	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.
ATN007[5]	23/9	22:46 (Night)	46	48	48	49	50	53	70	2	43 (41+2)	41	0.6 m/s @ 28° SC F No	46	46	Nil	**CVC vent fans consistently audible**. VPPS hum just audible and consistent. Birds and distant traffic occasionally audible.
R12	17/9	7:37 (Day)	37	39	50	50	60	74	69	Nil	IA	N/A	0.4 m/s @ 24° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby and distant traffic occasionally audible. Reverse alarm from the east-north-east (unrelated to Delta Coal) frequently audible. Dog barking briefly audible.
R12	17/9	7:52 (Day)	37	40	51	53	65	70	64	Nil	IA	N/A	0.5 m/s @ 5° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Nearby residents talking. Reverse alarm from the east-north-east (unrelated to Delta Coal) frequently audible. Dog barking briefly audible on occasions.
R12	17/9	8:07 (Day)	38	40	54	52	65	78	68	Nil	IA	N/A	1.2 m/s @ 32° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Nearby residents talking. Dog barking briefly audible.
R12	17/9	8:22 (Day)	37	39	45	47	56	64	62	Nil	IA	N/A	1.6 m/s @ 19° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible.
R12	17/9	8:38 (Day)	36	39	48	48	60	70	63	Nil	IA	N/A	2.0 m/s @ 1° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Aircraft noise briefly audible. Delivery truck parking nearby and idling.
R12	17/9	8:53 (Day)	36	39	51	48	66	69	62	Nil	IA	N/A	2.0 m/s @ 10° SC A No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Birds consistently audible. Traffic passby, local traffic and distant traffic occasionally audible. Delivery truck nearby idling then leaving. Dog barking briefly audible.
R12	23/9	20:05 (Eve.)	40	42	43	44	45	47	64	Nil	IA	N/A	0.4 m/s @ 234° SC F No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Insects just audible. Local traffic briefly audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
R12	23/9	20:20 (Eve.)	40	42	43	44	45	48	64	Nil	IA	N/A	0.4 m/s @ 352° SC F No	49	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Insects just audible. Local traffic briefly audible on two occasions.
R12	23/9	23:30 (Night)	41	42	45	45	54	60	64	Nil	<40	<40	0.8 m/s @ 311° SC E No	49	53	Nil	**CVC drift lift alarm noise briefly audible**. VPPS hum consistently audible (dominant). Traffic passby and distant traffic occasionally audible.
R12	23/9	23:46 (Night)	40	42	43	44	46	51	63	Nil	IA	IA	0.8 m/s @ 312° SC E No	49	53	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant). Nearby resident arriving by car.
R12	24/9	0:01 (Night)	40	42	43	44	45	47	64	Nil	IA	IA	0.7 m/s @ 284° SC F No	49	53	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant).
R12	24/9	0:16 (Night)	39	41	43	44	45	48	64	Nil	IA	IA	0.6 m/s @ 330° SC F No	49	53	Nil	**CVC inaudible**. VPPS hum consistently audible (dominant).
R13	17/9	10:11 (Day)	38	45	57	62	65	73	60	Nil	IA	N/A	2.9 m/s @ 29° SC A No	43	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible.
R13	17/9	10:26 (Day)	37	42	52	55	63	72	62	Nil	IA	N/A	3.1 m/s @ 12° SC A Yes	48[4] (43+5)	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible.
R13	17/9	10:41 (Day)	38	41	53	54	65	77	59	Nil	IA	N/A	2.4 m/s @ 34° SC A No	43	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible.
R13	17/9	10:56 (Day)	36	39	54	55	68	79	61	Nil	IA	N/A	2.7 m/s @ 34° SC A No	43	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
R13	17/9	11:11 (Day)	37	41	57	59	69	77	61	Nil	IA	N/A	3.1 m/s @ 34° SC A Yes	48[4] (43+5)	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible. Nearby residents talking.
R13	17/9	11:26 (Day)	39	43	62	60	74	87	65	Nil	IA	N/A	2.4 m/s @ 32° SC A No	43	N/A	Nil	**CVC inaudible**. Consistent insects, frogs and birds. VPPS hum consistently audible. Noise from nearby resident gardening occasionally audible. Local and distant traffic occasionally audible. Dogs barking occasionally audible. Nearby residents talking.
R13	23/9	19:14 (Eve.)	36	38	41	43	46	54	57	Nil	IA	N/A	0.7 m/s @ 1° SC E No	43	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Distant traffic and birds occasionally audible.
R13	23/9	19:29 (Eve.)	37	39	41	42	49	53	58	Nil	IA	N/A	0.4 m/s @ 20° SC F No	43	N/A	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Distant traffic and birds occasionally audible.
R13	23/9	23:30 (Night)	39	41	43	44	45	55	60	Nil	IA	IA	0.8 m/s @ 311° SC E No	43	49	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
R13	23/9	23:45 (Night)	38	40	42	43	44	51	59	Nil	IA	IA	0.8 m/s @ 312° SC E No	43	49	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.
R13	24/9	0:00 (Night)	38	40	42	43	44	47	59	Nil	IA	IA	0.7 m/s @ 284° SC F No	43	49	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.

Table 4.1 CVC attended noise monitoring results – Q3 2021

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Meteorological conditions[3] Very noise-enhancing?	Noise limits, dB		Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN[1]	L_{Aeq}	L_{Amax}[2]		L_{Aeq}	L_{Amax}[2]		
R13	24/9	0:15 (Night)	38	40	42	44	46	55	58	Nil	IA	IA	0.6 m/s @ 330° SC F No	43	49	Nil	**CVC inaudible**. VPPS hum consistently audible. Insects and frogs consistently audible. Birds and distant traffic occasionally audible.

Notes:
1. Modifying factor adjustment for low frequency noise in accordance with Fact sheet C of the NPfI (refer to Section 2.3).
2. For assessment purposes the L_{Amax} and the $L_{A1,1\ minute}$ are interchangeable.
3. Meteorological data including wind speed, wind direction and stability category (SC) were taken as an average over 15 minutes from Mannering Colliery's weather station (Refer to Section 3.3).
4. A positive adjustment of 5 dB to the noise limit(s) was applicable due to the presence of 'very noise-enhancing' meteorological conditions as per the revised NMP and NPfI.
5. 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 were calculated back to R22/EPL Point 23.
6. IA = inaudible.
7. 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 17, 23 and 24 September 2021.

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 revised 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 'very noise-enhancing' due to average wind speed greater than 3 m/s for six measurements at three locations. Therefore, a positive adjustment of 5 dB was applied to the noise limits for the relevant 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 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 $L_{Aeq,15\ minute}$ noise contribution for these measurements before comparison to the relevant noise limits.

CVC $L_{Aeq,15\ minute}$ and L_{Amax} noise contributions for this round (Q3) of noise monitoring satisfied the relevant noise limits at all monitoring locations as outlined in the DC, EPL and revised NMP.

CVC $L_{Aeq,15\ minute}$ noise contributions were also compared to the long-term noise goals applicable at R11, R12, R13 and R22. CVC $L_{Aeq,15\ minute}$ noise contributions satisfied the relevant long-term goals during all measurements at R11, R12 and R13. At R22 (ATN007), CVC $L_{Aeq,15\ minute}$ noise contribution (inclusive of the 2 dB positive adjustment for LFN) satisfied the relevant long-term goal during the day period, however, exceeded the relevant long-term goal by 3 dB during the evening and night periods.

References

Chain Valley Colliery Noise Management Plan (approved NMP), 2014.

Chain Valley Colliery and Mannering Colliery Noise Management Plan (revised NMP – DPIE approval pending).

NSW Department of Planning and Environment, Development Consent SSD5465, 2020.

NSW Environment Protection Authority, Environment Protection License 1770, 2019 (superseded).

NSW Environment Protection Authority, Environment Protection License 1770, 2021.

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.5.1 Glossary of acoustic terms

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

It is useful to have an appreciation of the decibel (dB), the unit of noise measurement. Table A.2 gives an indication as to what an average person perceives about changes in noise levels.

Table A.5.2 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

Examples of common noise levels are provided in Figure A.1.

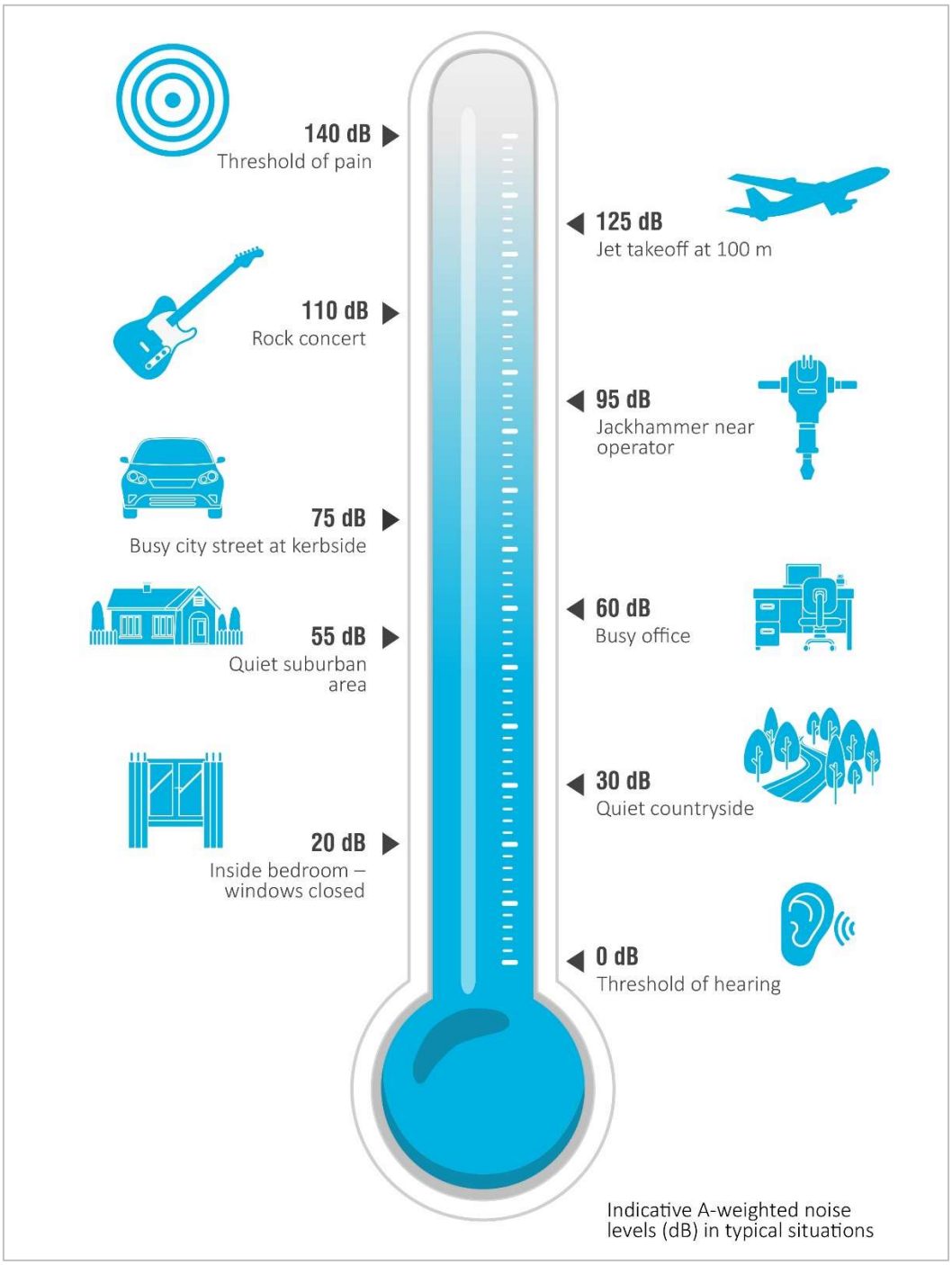

Figure A.1 Common noise levels

Appendix B

Development consent 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

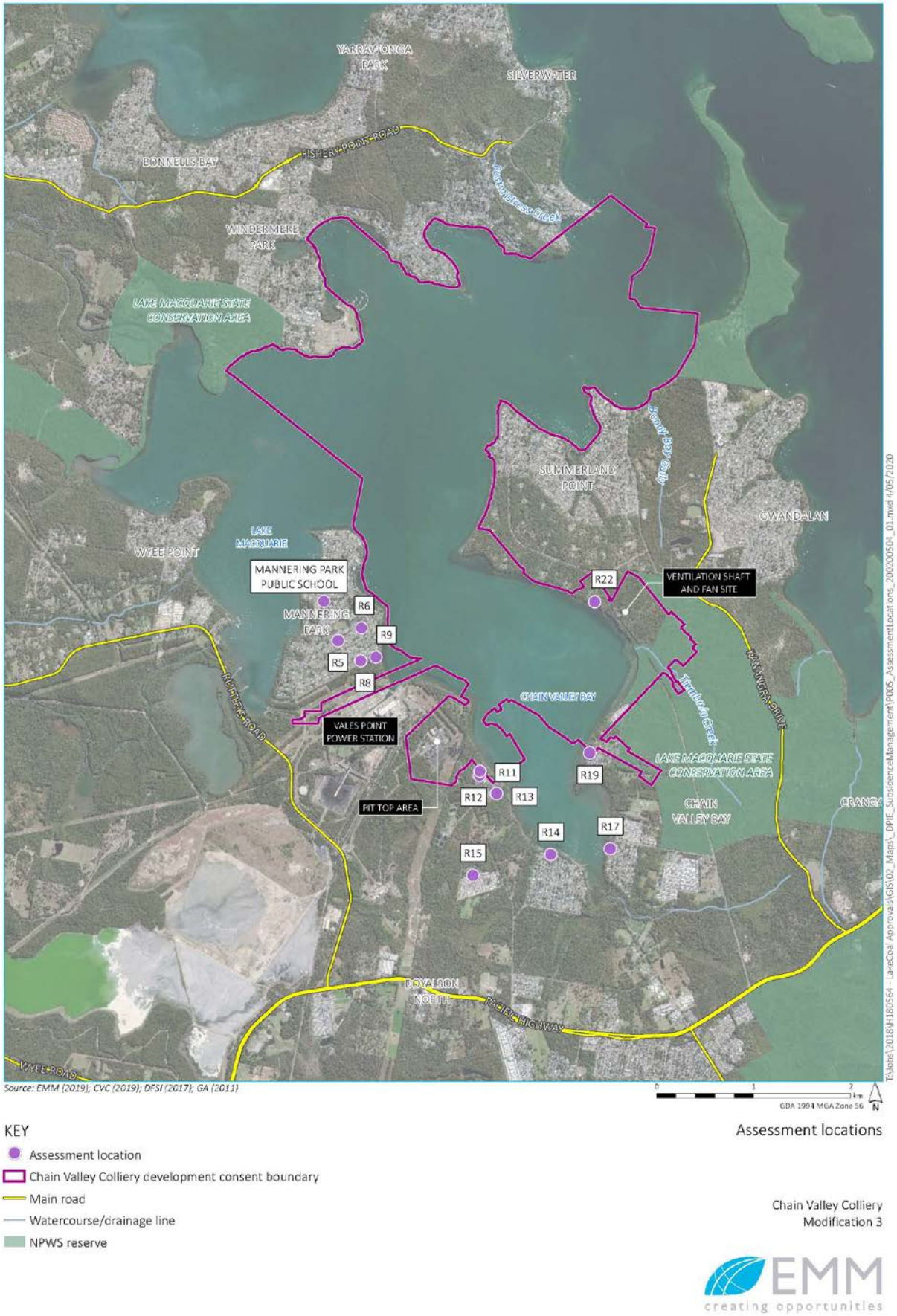

Figure 1: *Noise Receiver Locations*

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.

Appendix C

EPL extract

Environment Protection Licence

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.

POINT 26

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Rainfall	AM-4	millimetres	24 hours	Continuous
Wind Direction at 10 metres	AM-2 & AM-4	Degrees	1 hour	Continuous
Wind Speed	AM-2 & AM-4	metres per second	1 hour	Continuous
Temperature at 10 metres	AM-4	degrees Celsius	1 hour	Continuous
Sigma Theta	AM-2 & AM-4	Degrees	15 minutes	Continuous
Relative humidity	AM-4	percent	1 hour	Continuous

M5.2 The licensee may use the Vales Point Power Station Meteorological Station to determine compliance with condition M5.1, provided the licensee has authority from Sunset Power International Pty Ltd to access meteorological data at all times.

M6 Recording of pollution complaints

M6.1 The licensee must keep a legible record of all complaints made to the licensee or any employee or agent of the licensee in relation to pollution arising from any activity to which this licence applies.

M6.2 The record must include details of the following:
a) the date and time of the complaint;
b) the method by which the complaint was made;
c) any personal details of the complainant which were provided by the complainant or, if no such details were provided, a note to that effect;
d) the nature of the complaint;
e) the action taken by the licensee in relation to the complaint, including any follow-up contact with the complainant; and
f) if no action was taken by the licensee, the reasons why no action was taken.

M6.3 The record of a complaint must be kept for at least 4 years after the complaint was made.

M6.4 The record must be produced to any authorised officer of the EPA who asks to see them.

M7 Telephone complaints line

M7.1 The licensee must operate during its operating hours a telephone complaints line for the purpose of receiving any complaints from members of the public in relation to activities conducted at the premises or by the vehicle or mobile plant, unless otherwise specified in the licence.

M7.2 The licensee must notify the public of the complaints line telephone number and the fact that it is a complaints line so that the impacted community knows how to make a complaint.

Appendix D

Calibration certificates

CERTIFICATE OF CALIBRATION

CERTIFICATE NO.: SLM 26291 & FILT 5615

Equipment Description:	Sound Level Meter		
Manufacturer:	B & K		
Model No:	2250	**Serial No:**	2759405
Microphone Type:	4189	**Serial No:**	2888134
Preamplifier Type:	ZC0032	**Serial No:**	16037
Filter Type:	1/3 Octave	**Serial No:**	2759405
Comments:	All tests passed for class 1. (See over for details)		
Owner:	EMM Consulting Level 3, 175 Scott Street Newcastle, NSW 2300		
Ambient Pressure:	1007 hPa ±1.5 hPa		
Temperature:	24 °C ±2° C	**Relative Humidity:**	53% ±5%
Date of Calibration:	05/02/2020	**Issue Date:**	05/02/2020
Acu-Vib Test Procedure:	AVP10 (SLM) & AVP06 (Filters)		

CHECKED BY: JKB **AUTHORISED SIGNATURE:** ..... Jack Kielt

Accredited for compliance with ISO/IEC 17025 - Calibration
The results of the tests, calibration and/or measurements included in this document are traceable to Australian/national standards.

NATA
WORLD RECOGNISED ACCREDITATION

ACU-VIB
ELECTRONICS
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Accredited Lab. No. 9262
Acoustic and Vibration Measurements

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: C28053

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 was found to be:

Parameter	Pre-Adj	Adj Y/N	Output: (db re 20 µPa)	Frequency: (Hz)	THD&N (%)
Level 1:	NA	N	94.13	1000.00	1.26
Level 2:	NA	N	114.04	1000.00	0.50
Uncertainty:			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITIONS OF TEST:

Ambient Pressure: 995 hPa ±1.5 hPa **Relative Humidity:** 57 % ±5%
Temperature: 24 °C ±2° C
Date of Calibration: 15/10/2020 **Issue Date:** 16/10/2020
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.

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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