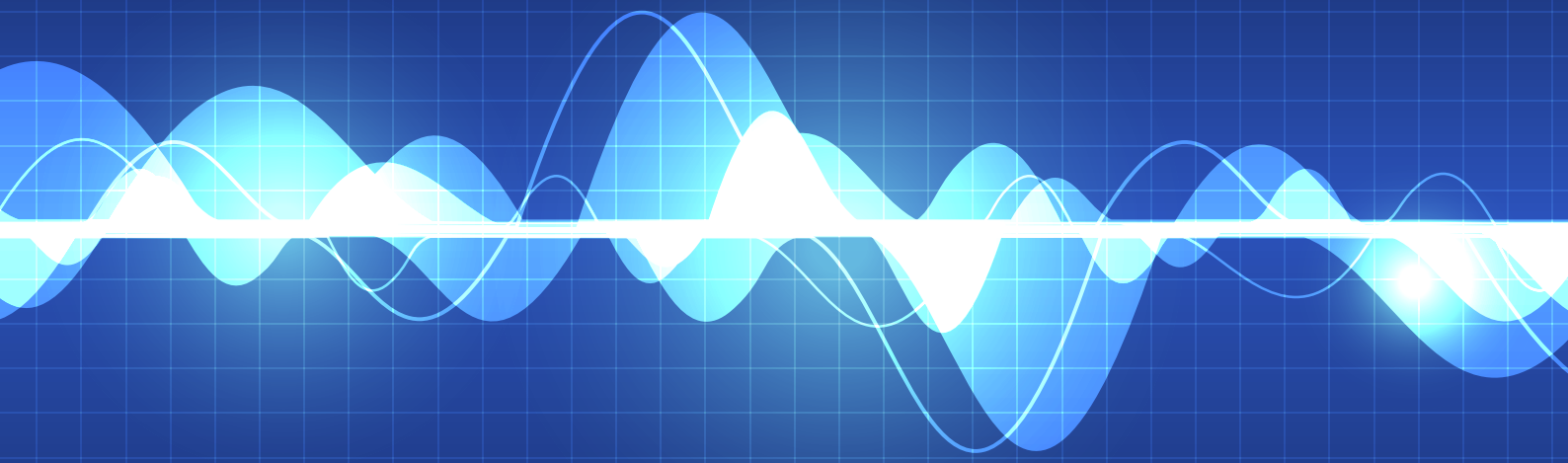
Mannering Colliery

Monthly attended noise monitoring
May 2020

Prepared for Great Southern Energy Pty Ltd (trading as DeltaCoal)
May 2020



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F 02 4907 4899

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F 07 3839 1866

ADELAIDE
Level 1, 70 Pirie Street
Adelaide SA 5000
T 08 8232 2253

PERTH
PO Box 8155
Fremantle WA 6160

CANBERRA
PO Box 9148
Deakin ACT 2600

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EMM Newcastle
Level 3, 175 Scott Street
Newcastle NSW 2300

T 02 4907 4800
E info@emmconsulting.com.au

www.emmconsulting.com.au

Mannering Colliery

Monthly attended noise monitoring - May 2020

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Client

Great Southern Energy Pty Ltd (trading as DeltaCoal)

Date

25 May 2020

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Prepared by

Teanuanua Villierme
Senior Acoustic Consultant
25 May 2020

Approved by

Katie Teyhan
Associate
25 May 2020

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1 Introduction

EMM Consulting Pty Limited (EMM) was engaged to complete operator attended noise surveys on behalf of DeltaCoal Pty Limited (DeltaCoal).

The purpose of the monitoring was to address requirements of the approved Mannering Colliery Noise Management Plan (NMP), prepared to satisfy the requirements of the project approval MP06_0311 (PA) and Environment Protection License (EPL) 191.

Noise monitoring is required to occur on a monthly basis. This report presents the results and findings of attended noise monitoring conducted on 5 and 12 May 2020.

The following material was referenced as part of this assessment:

- Department of Planning, Industry and Environment (DPIE), Project Approval MP06_0311, as modified on 4 August 2016 (current as of the monitoring date 12 May 2020);
- Environment Protection Authority (EPA), Environment Protection License (EPL) 191, as varied on 25 November 2019 (current as of the monitoring date 12 May 2020);
- Mannering Colliery Noise Management Plan (NMP), approved by DPIE in November 2019;
- 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

Mannering Colliery noise limits are provided in Table 1, Condition 1 of Appendix 4B of the PA. EPL 191 references the PA with respect to noise limits. Extracts of the relevant sections of the PA and EPL pertaining to noise are provided in Appendix B and Appendix C of this report, respectively. The approved NMP adopts three attended noise monitoring locations that are representative of residences outlined in the PA.

It is of note that the Mannering Colliery noise monitoring program was modified during an update to the site's NMP in December 2019. Consequently, for a period of 12 months from November 2019 onwards, the frequency of the Mannering Colliery noise monitoring program was revised from quarterly noise monitoring events covering the day, evening and night periods to monthly noise monitoring covering the evening and night periods only.

The attended noise monitoring locations and relevant criteria are summarised in Table 2.1.

Table 2.1 Noise impact assessment criteria

Monitoring location	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
RA1	4, 5, 6	40	40	40	49
RA2	7, 8	45	45	43	47
RA3	9, 11, 18, 20	39	39	39	49

The PA specifies the following meteorological conditions under which noise limits do not apply:

- wind speeds greater than 3 m/s at 10 m above ground level;
- stability category F temperature inversion conditions with wind speeds greater than 2 m/s at 10 m above ground level; or
- stability category G temperature inversion conditions.

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

The PA states that modifying factor corrections in the INP application notes (2017) shall be applied to the measured mine noise levels where applicable.

2.2 Low frequency noise criteria

Appendix 4A Condition 5 of the PA states that noise generated by Mannering Colliery is to be measured in accordance with the relevant requirements of the INP. The INP application notes state that Section 4 of the INP has been withdrawn and the modifying factor adjustments outlined in Fact Sheet C of the NPfI (EPA 2017) are to be used when assessing certain characteristics of a noise source, including low frequency noise.

Fact sheet C of the NPfI provides guidelines for applying modifying factor corrections 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 2.2.

Table 2.2 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 corrections for low frequency noise are to be applied to the site $L_{Aeq,15\ minute}$ noise contribution where the site 'C-weighted' minus site 'A-weighted' noise emission level is found to be 15 dB or more and:

- where any of the one-third octave noise levels in Table 2.2 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 2.2 are exceeded by more than 5 dB and cannot be mitigated, a 2 dB positive adjustment to measured/predicted A-weighted levels applies for the day period and a 5 dB positive adjustment to measured/predicted A-weighted levels applies for the evening/night 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 threshold values in Table 2.2 to identify the relevant modifying factor correction (if applicable). This method for the application of modifying factors for low frequency noise has been applied to this assessment as presented in Section 4.

It is of note that the NPfI states that low frequency noise corrections only apply under the standard or noise-enhancing (ie applicable) meteorological conditions.

3 Assessment methodology

3.1 Attended noise monitoring

To quantify noise emissions from Mannering Colliery, 15-minute operator-attended noise monitoring surveys were completed at representative locations as per the approved NMP.

Attended noise monitoring locations required 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

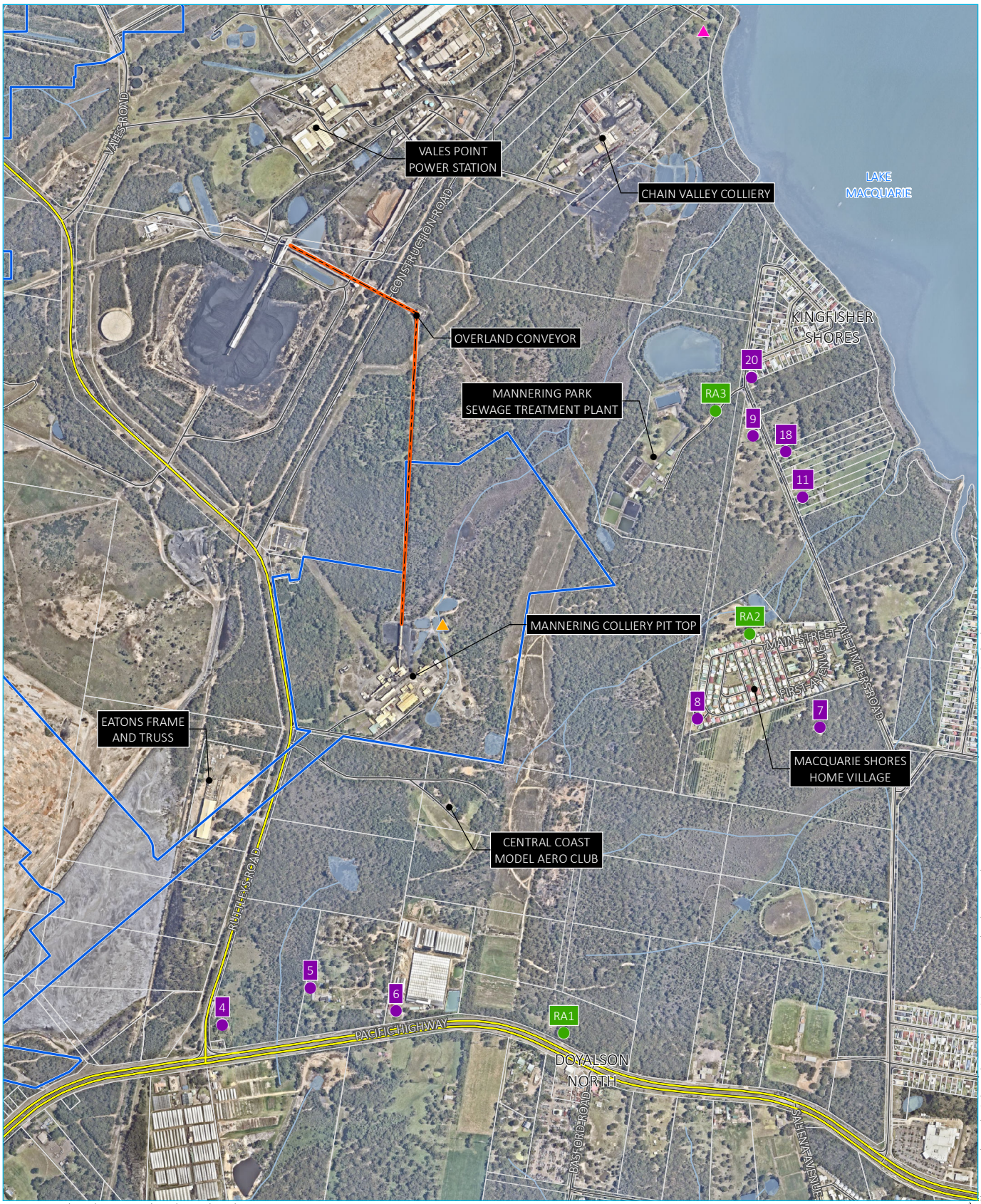
Monitoring location	Description	Coordinates (MGA56)	
		Easting	Northing
RA1	Pacific Highway, Doyalson	364646	6327221
RA2	Macquarie Shores Village, Doyalson North	365164	6328332
RA3	Tall Timbers Road (northern end), Kingfisher Shores	365069	6328953

As per the NMP, attended noise monitoring is scheduled considering the occurrence of regular operations at Mannering Colliery. Noise monitoring avoids scheduled down-time or maintenance. Regular operations were occurring during this round of noise monitoring.

3.2 Instrumentation

A Brüel & Kjær (B&K) 2250 Type 1 sound analyser (s/n 2759405) was used to conduct 15-minute attended measurements and record one-third octave frequency and statistical noise indices. The sound analyser was calibrated before and on completion of the survey using a B&K Type 4230 calibrator (s/n 1276091). 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); NearMap (2019); DFSI (2017)

KEY

- Mannering Colliery project approval boundary
- Alignment of overland conveyor to VPPS
- Main road
- Local road
- Watercourse/drainage line
- Waterbody
- Cadastral boundary
- Assessment location
- Attended monitoring location
- Continuous monitoring location
- Meteorological station

Site Boundary and noise monitoring locations

Mannering Colliery noise monitoring

Figure 3.1

EMM creating opportunities

3.3 Determination of stability category

For the purpose of this assessment and as required by the PA, EPL and NMP, stability categories were determined for each 15-minute attended monitoring periods. This was completed using the sigma-theta (ST) method as per Appendix E of the INP (EPA 2000). The ST data for the monitoring period was obtained from Mannering Colliery's meteorological station located to the north of the site (refer to Figure 3.1).

Table E1 of the INP (EPA 2000) is reproduced in Table 3.2 and presents the stability categories and associated ranges in temperature lapse rates.

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: INP (EPA 2000).

4 Review of data and discussion

Results of the May 2020 operator-attended noise monitoring are summarised in Table 4.1. Mannering Colliery noise contribution 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 ie above 630 Hz where applicable). The May 2020 attended noise monitoring was initially completed on 5 May 2020. Follow-up attended noise monitoring was also completed on 12 May 2020.

The meteorological data for the monitoring periods were sourced from Mannering Colliery's meteorological station to determine applicability of noise limits in accordance with the PA.

A summary of results for the attended noise monitoring completed on 5 and 12 May is provided in the following sections.

4.1 5 May 2020

On 5 May, attended noise monitoring was completed during the evening and night periods at RA1, RA2 and RA3. In accordance with the PA, noise limits were applicable for all six measurements. A review of the meteorological data identified the presence of stability category F temperature inversion conditions with light winds (<1 m/s) during half of the measurements.

Site noise was inaudible during the evening measurement at RA1. When a particular source is not audible above local ambient noise levels, the contribution of that source is generally at least 10 dB below the measured background (L_{A90}) level. The measured total L_{A90} noise level for the evening measurement at RA1 was less than 10 dB above the relevant limit. Therefore, the site $L_{Aeq,15min}$ noise contribution likely satisfied the relevant noise limit during the evening measurement at RA1.

Where site noise was audible (ie during five of the six measurements), the $L_{Aeq,15min}$ noise contributions satisfied the relevant noise limits during most measurements. The exception was during the evening measurement at RA3 (commenced at 21:48) where the site $L_{Aeq,15min}$ noise contribution was 5 dB above the relevant noise limit. As a result, the noise exceedance protocol in accordance with the site NMP was followed. This included contacting the site's control room to notify them of the result and to discuss operational sources on-site and potential noise management options to minimise site noise. Furthermore, follow-up attended noise monitoring was completed at RA3 to verify the site $L_{Aeq,15min}$ noise contribution. The follow-up night-time measurement at RA3 (commenced at 22:39) identified that the site $L_{Aeq,15min}$ noise contribution satisfied the relevant noise limit and hence no sustained noise exceedance was identified. EMM was advised that site operations were relatively the same during both the initial and follow-up measurements at RA3. It is likely that the decrease in site noise levels was due to changes in weather conditions (eg temperature inversion strength) after the initial measurement.

Subsequent night-time attended noise measurements at RA2 (commenced at 23:15) and RA1 (commenced at 23:51) also showed that site $L_{Aeq,15min}$ noise contributions satisfied the relevant noise limits.

Low frequency noise levels were found to satisfy the relevant thresholds at all locations during the attended noise monitoring on 5 May. Therefore, modifying factors for low frequency noise were not applied to the site $L_{Aeq,15min}$ noise contributions.

4.2 12 May 2020

On 12 May, further follow-up attended noise monitoring was completed during the evening period at RA3 (one measurement). In accordance with the PA, the noise limit was applicable for this measurement.

Site noise was inaudible during the evening attended noise measurement at RA3. The measured total L_{A90} noise level for this measurement was less than 10 dB above the relevant limit and therefore the site $L_{Aeq,15min}$ noise contribution likely satisfied the relevant noise limit during the evening measurement at RA3.

Low frequency noise levels were found to satisfy the relevant thresholds at RA3 for this follow-up measurement. Therefore, a modifying factor for low frequency noise was not applied to the site $L_{Aeq,15min}$ noise contribution.

Table 4.1 Mannering Colliery attended noise monitoring results – May 2020

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] limits apply (Y/N)	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
RA1	5/5	20:58 (Eve.)	37	47	64	68	75	82	68	N/A	IA	N/A	40	N/A	0.3 m/s @ 246° D class stability Y	Nil	**Site noise inaudible.** Hum from nearby petrol station and traffic on Pacific Highway consistently audible.
RA2	5/5	21:30 (Eve.)	41	43	47	48	50	55	64	N/A	45	N/A	45	N/A	1.3 m/s @ 247° D class stability Y	Nil	**MC processing plant (inc. breaker) noise consistently audible (dominant).** VPPS noise consistently audible in the background. Occasional traffic on Tall Timbers Road. **Distant birds occasionally audible.**
RA3	5/5	21:48 (Eve.)	45	46	47	48	51	57	68	N/A	44	N/A	39	N/A	0.3 m/s @ 37° F class stability Y	5	**MC processing plant (inc. breaker) noise consistently audible.** VPPS noise consistently audible. Occasional traffic on Tall Timbers Road. **Insects consistently audible in the background.**
RA3	5/5	22:39 (Night)	44	45	47	48	50	62	67	N/A	<39	≤39	39	49	1.0 m/s @ 254° D class stability Y	Nil	**MC processing plant noise consistently audible in the background.** VPPS noise consistently audible (dominant). Occasional traffic on Tall Timbers Road.
RA2	5/5	23:15 (Night)	36	37	39	40	41	60	63	N/A	<37	<37	43	47	0.7 m/s @ 9° F class stability Y	Nil	**MC processing plant noise consistently audible in the background.** VPPS noise consistently audible (dominant). Distant traffic occasionally frequently audible. **Insects occasionally audible.**
RA1	5/5	23:51 (Night)	35	38	61	64	73	78	64	N/A	<35	<35	40	49	0.7 m/s @ 271° F class stability Y	Nil	**MC processing plant noise consistently audible in the background.** Hum from nearby petrol station consistently audible. Traffic on Pacific Highway almost constant.

Table 4.1 Mannering Colliery attended noise monitoring results – May 2020

Location	Date	Start time	Total noise levels, dB							Site contributions, dB			Noise limits, dB		Meteorological conditions[3] limits apply (Y/N)	Exceedance, dB	Comments
			L_{Amin}	L_{A90}	L_{Aeq}	L_{A10}	L_{A1}	L_{Amax}	L_{Ceq}	LFN mod. factor[1]	L_{Aeq}	L_{Amax}[2]	L_{Aeq}	L_{Amax}[2]			
RA3	12/5	21:05 (Eve.)	41	43	44	45	48	60	66	N/A	IA	N/A	39	N/A	1.0 m/s @ 317° E class stability Y	Nil	**MC inaudible.** VPPS noise consistently audible and dominant. Insects and frogs consistently audible. Occasional traffic on Tall Timbers Road.

Notes:
1. Modifying factor adjustment for low frequency noise in accordance with Fact sheet C of the NPfI (refer to Section 2.2).
2. For assessment purposes the L_{Amax} and the $L_{A1,1\ minute}$ are interchangeable.
3. Meteorological data were taken as an average over 15 minutes from Mannering Colliery's weather station (Refer to Section 5.1).
4. IA = inaudible.
5. N/A = not applicable.

5 Conclusion

EMM has completed a review of mine noise from Mannering Colliery within the surrounding community based on attended measurements conducted on 5 and 12 May 2020.

The applicability of noise limits was assessed in accordance with the site's PA with reference to Mannering Colliery's meteorological station located to the north of the site. In accordance with the PA, noise limits were applicable for all measurements.

The assessment of noise contributions from site included consideration of modifying factors for certain noise characteristics such as low frequency noise in accordance with the NPfI. Modifying factors were found to be not applicable at all monitoring locations.

During the attended noise monitoring on 5 May, noise from Mannering Colliery was audible during five of the six measurements and site noise contributions satisfied the relevant noise limits for most measurements. The exception was during the evening measurement at RA3 where the site $L_{Aeq,15min}$ noise contribution was 5 dB above the relevant noise limit. The noise exceedance protocol in accordance with the site NMP was followed and a follow-up attended noise measurement at RA3 identified that the site $L_{Aeq,15min}$ noise contribution satisfied the relevant noise limit, and hence no sustained noise exceedance occurred.

Further, follow-up attended noise monitoring completed at RA3 on 12 May identified that the site $L_{Aeq,15min}$ noise contribution satisfied the relevant noise limit.

References

Mannering Colliery Noise Management Plan, 2019.

NSW Department of Planning and Environment, Project Approval MP 06_0311, 2016.

NSW Environment Protection Authority, Environment Protection License 191, 2019.

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.

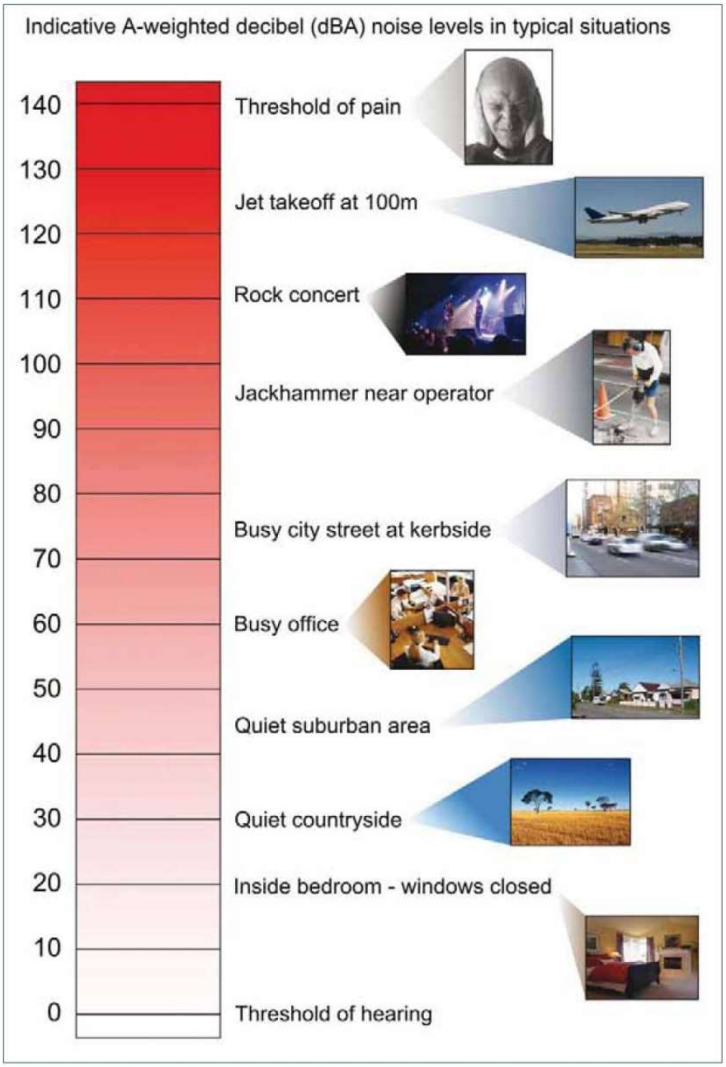
Table A.1 Glossary of acoustic terms

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.
$L_{A1,1\ minute}$	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 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 in the environment. 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



Source: Road Noise Policy (Department of Environment, Climate Change and Water 2011)

Figure A.1 Common noise levels

Appendix B

Project approval extract

SCHEDULE 3
SPECIFIC ENVIRONMENTAL CONDITIONS

NOISE

Noise Impact Criteria

1. The Proponent must ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1 at any residence on privately owned land.

Table 1: Noise limits dB(A)

Day $L_{Aeq(15\ min)}$	***Evening*** $L_{Aeq(15\ min)}$	***Night***		***Location*** (as listed in Appendix 4)
		$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$	
49	49	35	49	4 – di Rocco
47	47	35	49	5 – Keighran
44	44	35	49	6 – Swan
43	43	43	50	7 – Druitt
46	46	46	50	8 – May
45	45	45	52	9 – Jeans
40	40	40	52	11 – Jeans
43	43	43	52	18 – Jeans
44	44	44	52	20 – Knight and all other Chain Valley Bay residences

Note: The location of the land referred to in Table 1 is shown on the figure in Appendix 4.

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A 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 Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

This condition only has effect prior to recommencement of underground coal extraction at Mannering Colliery. At all other times, conditions 1 to 4 of Appendix 4B have effect in its place.

Noise Mitigation

2. The Proponent must prepare a report on potential noise mitigation measures for noisy equipment and activities undertaken on the site to the satisfaction of the Secretary. This report must be:
   (a) prepared by a suitably qualified acoustic expert;
   (b) submitted to the Secretary by the end of September 2008; and
   (c) accompanied by an action plan for the implementation of any reasonable and feasible recommendations of the report.

Noise Monitoring

3. The Proponent must prepare a Noise Monitoring Program for the project to the satisfaction of the Secretary. This program must:
   (a) be submitted to the Secretary by the end of September 2008;
   (a1) be revised in consultation with the EPA and be submitted to the Secretary by the end of April 2016; and
   (b) include the use of continuous and attended noise monitoring measures to monitor the performance of the project.

The Proponent must implement the approved Noise Monitoring Program as approved from time to time by the Secretary.

SUBSIDENCE

4. The Proponent must limit its coal extraction methods on the site to first workings only, and must not undertake second workings.

APPENDIX 4A: NOISE COMPLIANCE ASSESSMENT

Applicable Meteorological Conditions

1. The noise criteria in Tables 1 and 2 in Appendix 4B are to apply under all meteorological conditions except the following:
   (a) wind speeds greater than 3m/s at 10 metres above ground level;
   (b) stability category F temperature inversion conditions and wind speeds greater than 2 m/s at 10 m above ground level; or
   (c) stability category G temperature inversion conditions.

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 located on the site.

Compliance Monitoring

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

4. This monitoring must be carried out at least once a month (at least two weeks apart) for the first 12 months following recommencement of underground coal extraction, and then quarterly thereafter, unless the Secretary directs otherwise.

   Note: The Secretary may direct that the frequency of attended monitoring increase or decrease at any time during the life of the project.

5. Unless the Secretary agrees otherwise, 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 4B: ALTERNATE NOISE CONDITIONS

1. From the recommencement of underground coal extraction at Mannering Colliery until 18 months thereafter, the Proponent must ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 1 at any residence on privately-owned land.

Table 1: Noise limits dB(A)

Day	Evening	Night		Location
$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$	
40	40	40	49	4 – di Rocco
43	43	41	49	5 – Keighran
42	42	41	49	6 – Swan
39	39	39	47	7 – Druitt
46	46	46	47	8 – May
41	41	41	51	9 – Jeans
39	39	39	49	11 – Jeans
39	39	39	51	18 – Jeans
40	40	40	51	20 – Knight and all other Chain Valley Bay residences

Note: The location of the land referred to in Table 1 is shown on the figure in Appendix 4.

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A 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 Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

2. Following the expiry of the 18 month period referred to in condition 1 above, the Proponent must ensure that the noise generated by the project does not exceed the noise impact assessment criteria in Table 2 at any residence on privately-owned land.

Table 2: Noise limits dB(A)

Day	Evening	Night		Location
$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{Aeq(15\ min)}$	$L_{A1(1\ min)}$	
40	40	40	49	4 – di Rocco
41	41	41	49	5 – Keighran
41	41	41	49	6 – Swan
39	39	39	47	7 – Druitt
45	45	43	47	8 – May
41	41	41	51	9 – Jeans
39	39	39	49	11 – Jeans
39	39	39	51	18 – Jeans
40	40	40	51	20 – Knight and all other Chain Valley Bay residences

Note: The location of the land referred to in Table 2 is shown on the figure in Appendix 4.

Noise generated by the project is to be measured in accordance with the relevant requirements of the *NSW Industrial Noise Policy* (as may be updated from time-to-time). Appendix 4A 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 Proponent has an agreement with the owner/s of the relevant residence or land to generate higher noise levels, and the Proponent has advised the Department in writing of the terms of this agreement.

3. The Proponent must prepare a report on all noise mitigation measures required to achieve the noise limits in Table 2 to the satisfaction of the Secretary. This report must:
   (a) be prepared by a suitably qualified and experienced acoustic consultant whose appointment has been approved by the Secretary;
   (b) be prepared in consultation with EPA, and submitted to the Department for approval within 6 months after recommencement of underground coal extraction; and
   (c) include an action plan for the implementation of any reasonable and feasible recommendations of the report.

   The Proponent must implement the noise mitigation measures prior to the expiry of the 18 month period referred to in condition 1 above.

4. The Proponent must prepare a Noise Compliance Report for the project to the satisfaction of the Secretary. The report must:
   (a) be prepared by a suitably qualified acoustic consultant, whose appointment has been approved by the Secretary;
   (b) be prepared in consultation with EPA, and be submitted for approval within 6 months of the expiry of the 18 month period referred to in condition 1 above; and
   (c) investigate and evaluate the effectiveness of the noise mitigation measures required under condition 3 and compliance with the noise limits in Table 2.

Appendix C

EPL extract

L3.2 Exceedance of the volume limit for Point 1 is permitted only if the discharge from Point 1 occurs solely as a result of rainfall at the premises exceeding 10mm during the 24 hours immediately prior to the commencement of discharge

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	Waste	Any other waste received on the premises for storage, treatment, processing, sorting or disposal and which receipt is not a scheduled activity under Schedule 1 of the POEO Act, as in force from time to time.		
NA	General or Specific exempted waste	Waste that meets all the conditions of a resource recovery exemption under Clause 51A of the Protection of the Environment Operations (Waste) Regulation 2014	As specified in each particular resource recovery exemption	N/A

L4.2 The licensee must not cause, permit or allow any waste generated outside the premises to be received at the premises for storage, treatment, processing, reprocessing or disposal or any waste generated at the premises to be disposed of at the premises, except as expressly permitted by the licence.

L4.3 This condition only applies to the storage, treatment, processing, reprocessing or disposal of waste at the premises if it requires an environment protection licence.

L5 Noise limits

Note: Noise limits are not specified as a condition of this licence. Noise limits are prescribed with the conditions of Project Approval 06_0311 granted under the *Environmental Planning and Assessment Act 1979.* Under

the *Environmental Planning and Assessment Act 1979* the Department of Planning is the appropriate authority in respect of the administration and regulation of the Project Approval.

4 Operating Conditions

O1 Activities must be carried out in a competent manner

O1.1 Licensed activities must be carried out in a competent manner.
This includes:
a) the processing, handling, movement and storage of materials and substances used to carry out the activity; and
b) the treatment, storage, processing, reprocessing, transport and disposal of waste generated by the activity.

O2 Maintenance of plant and equipment

O2.1 All plant and equipment installed at the premises or used in connection with the licensed activity:
a) must be maintained in a proper and efficient condition; and
b) must be operated in a proper and efficient manner.

O3 Dust

O3.1 The premises must be maintained in a condition which minimises or prevents the emission of dust from the premises.

O3.2 Activities occurring in or on the premises must be carried out in a manner that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.

O3.3 All trafficable areas, coal storage areas and vehicle manoeuvring areas in or on the premises must be maintained, at all times, in a condition that will minimise the generation, or emission from the premises, of wind-blown or traffic generated dust.

O3.4 The tailgates of all haulage trucks leaving the premises must be securely fixed prior to loading or immediately after unloading to prevent loss of materials.

O3.5 Coal stockpiles must be maintained in a condition that will minimise the generation and emission of dust on the premises.

O4 Emergency response

Note: The licensee must maintain, and implement as necessary, a current Pollution Incident Response Management Plan (PIRMP) for the premises. The PIRMP must be developed in accordance with the requirements in Part 5.7A of the Protection of the Environment Operations (POEO) Act 1997 and POEO regulations. The licensee must keep the incident response plan on the premises at all times. The incident

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 Kiett

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
HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
web site: www.acu-vib.com.au

Accredited Lab. No. 9262
Acoustic and Vibration Measurements

CERTIFICATE OF CALIBRATION

CERTIFICATE NO: 26290

EQUIPMENT TESTED: Sound Level Calibrator

Manufacturer: B & K
Type No: 4230 **Serial No:** 1276091
Owner: EMM Consulting
Level 3, 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	93.84	990.59	2.82
Level 2:	NA	N	NA	NA	NA
Uncertainty:			±0.11 dB	±0.05%	±0.20 %
Uncertainty (at 95% c.l.) k=2					

CONDITION OF TEST:
Ambient Pressure: 1007 hPa ±1.5 hPa **Relative Humidity:** 49% ±5%
Temperature: 24 °C ±2° C
Date of Calibration: 05/02/2020 **Issue Date:** 05/02/2020
Acu-Vib Test Procedure: AVP02 (Calibrators)
Test Method: AS IEC 60942 - 2017
CHECKED BY: KB **AUTHORISED SIGNATURE:** .....
Jack Rielt

.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.
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%.

NATA
WORLD RECOGNISED ACCREDITATION
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Acoustic and Vibration Measurements

ACU-VIB
ELECTRONICS
HEAD OFFICE
Unit 14, 22 Hudson Ave. Castle Hill NSW 2154
Tel: (02) 96808133 Fax: (02)96808233
Mobile: 0413 809806
Web site: www.acu-vib.com.au