

New Acland Coal Mine Stage 3 Project

Air, Noise and Vibration Report August 2023

New Acland Mine



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1. Introduction

1.1. Purpose

This document (**Report**) is issued by New Acland Coal Pty Ltd (**New Acland Coal/NAC**) in respect of the New Acland Coal Mine Stage 3 project (**New Acland Mine or Project**).

The purpose of this Report is to make publicly available environmental monitoring reports from air, noise and vibration monitoring that has been conducted at and around the New Acland Mine in accordance with environmental authority EPML00335713 (**Environmental Authority / EA**).

This Report exclusively covers the period commencing on 01 August 2023 and ending on 31 August 2023 (**Monitoring Period**).

This report is intended to satisfy the requirements of Condition 3 of the Co-ordinator General's Imposed Conditions applicable to the Project.¹

1.2. Overview of operations during the Monitoring Period

During the Monitoring Period, mining related activities continued in Manning Vale East pit, but did not progress into the Willeroo or Manning Vale West pits.

The mining activities included overburden extraction, coal extraction, coal refinement, and drilling and blasting from Manning Vale East.

1.3. Independent Review of Noise Compliance Monitoring

In accordance with EA Condition F13, for the first 12 months of the Stage 3 Mine, the monthly Compliance Noise Monitoring Report must be reviewed by an appropriately qualified independent acoustic consultant. This independent acoustic consultant must prepare their own (independent) report/memorandum, within two weeks of receiving the draft report, stating the process they have used to review the noise monitoring, analysis and findings and their acceptance (or otherwise) of the monthly noise monitoring report.

This review has been completed by AARC consulting, a third-party independent entity, and the report can be reviewed in Appendix 3 – Third-Party External Reports. The review of the determined the following:

- AARC accept the August 2023 SLR report as being in accordance with the EA and agree with the conclusion of the SLR report that NAC mine noise levels during the August 2023 monitoring period were not compliant with the NAC EA in five (5) instances.

Recommendations / amendments identified by AARC were implemented in the monthly compliance monitoring report as needed. All monitoring data collected over the Monitoring Period has been assessed against the compliance limits of the relevant Environmental Authority conditions. These relevant Environmental Authority conditions are reproduced in Appendix 4 and the applicable Environmental Authority limits have been reproduced in Table 12 to Table 14: which are set out in Appendix 5.

¹ As last stated in the New Acland Coal Mine Stage 3 project Coordinator-General's change report No. 4 – amendment to stated conditions following Land Court (2021) proceedings released on 26 May 2022.

2. Environmental Monitoring

During the Monitoring Period, the following monitoring was undertaken:

- Meteorological Monitoring (Section 2.1)
 - Wind Speed and Direction
 - Temperature
 - Precipitation
 - Relative Humidity
 - Solar Radiation
 - Net radiation
- Air Quality Monitoring (Section 2.2)
 - Total suspended particles (TSP) using TEOMs.
 - PM2.5 using TEOMs.
 - PM10 using TEOMs.
 - Insoluble solids.
- Noise Monitoring (Section 2.3)
 - Continuous performance monitoring.
 - Attended and unattended sensitive receptor monitoring.
- Vibration Monitoring (Section 2.4)
 - Blast and vibration results at sensitive receptors.

All environmental monitoring described in this Report was conducted by suitably qualified and experienced personnel as required under schedule B of the Environmental Authority and using equipment / instruments maintained in accordance with schedule F of the Environmental Authority.

2.1. Meteorological Monitoring Location and Parameters

A weather station is situated within the Acland Township to provide real-time conditions to the site. This includes monitoring for the parameters outlined within the Table 1 below. The station has been constructed and installed in accordance with AS AS/NZS 3580:14:2014.

Table 1: Meteorological monitoring site and parameters

Parameter	Site ID	Device / Instrument	Measuring Method
Wind Speed, Direction and Sigma	1, 2 (Acland)	RM Young 86000	Methods for sampling and analysis of ambient air, AS/NZS 3580.14-2014, Meteorological monitoring for ambient air quality monitoring applications
Temperature and Relative Humidity		RM Young 41382VC	
Rainfall		RM Young 52202 Tipping Bucket	

2.2. Air Quality Monitoring Locations and Parameters

Air quality monitoring was performed at seven (7) locations during the Monitoring Period. These monitoring locations are outlined in Table 2 and shown in Figure 1.

It is noted that certain location descriptions outlined below deviate from the ones outlined in the Environmental Authority conditions with the rationale for such deviations being set out in New Acland Coal’s Air Emissions Management Plan.

Table 2: Air quality monitoring sites and parameters

Parameter	Site ID					
	1, 2 (Acland)	7, 8 (North)	38, 39 (West)	37 (west)	16 (East) Acland Silverleigh Road	15 (East)
PM _{2.5} TEOM	✓				✗	
PM _{2.5} background	✗	✗	✓	✗	✓	✗
PM ₁₀ TEOM	✓	✓	✓	✓	✓	✓
TSP TEOM	✓	✓**	✓**	✓**	✓**	✓**
Dust gauge – insoluble solids	✓	✓	✓	✓	✓	✓

2.3. Noise Monitoring Parameters and Locations

Noise monitoring was performed at various locations during the Monitoring Period. These monitoring locations are outlined in Table 3 and shown in Figure 2.

For further information on the noise monitoring strategy please refer to the Noise and Vibration Management Plan.

Table 3: Noise monitoring sites and aspects

Aspect	Locations									
Performance Monitoring – Directional Noise Compass*2	Northern Compass					Acland Compass				
Unattended Noise Monitoring	1	4	8	10	11	15	19	34	35	38
Attended Noise Monitoring	1	4	8	10	11	15	19	34	35	38

2.4. Vibration Monitoring Parameters and Locations

Appropriate spatial analysis was undertaken to determine which noise sensitive places are closest to the centroid of each blast in each of the Stage 3 Mine’s three pits. For further information on the vibration monitoring strategy please refer to the Noise and Vibration Management Plan. Based on the progressive nature of blasting, it is anticipated that the nearest sensitive/commercial place will remain the same for significant periods of time (months, if not years).

2 * Noise performance monitoring includes correlated noise compasses based on mining progression.

For further information on the vibration and blasting monitoring strategy please refer to the Noise and Vibration Management Plan.

3. Data and Results

Data collected over the course of this Monitoring Period have been summarised and presented in the following sections in comparison to the limits prescribed by the Environmental Authority.

3.1. Meteorological Monitoring

During the monitoring period, weather conditions were monitored to determine the temperature, wind speed and direction, rainfall, and humidity. This data collected from the monitoring station are validated and made available on New Hope Group’s [Real-Time Mine Noise Results](#) page.

The average conditions for the period are presented in Table 4 below. The weather monitoring station are managed and operated in accordance with AS/NZS 3580:14:2014.

Table 4: Meteorological Data for the Monitoring Period

Date Range	Monthly Temperature		Monthly Humidity	Monthly Wind Speed		Monthly Direction	Monthly Rainfall
	Min	Max	Average	Min	Max	Average	Total
01/08/23 to 30/08/23	3.5°C	26.9°C	62.26 %	0 m/s	6.3 m/s	145.17°	0.1 mm

3.2. Air Quality Monitoring

New Acland Coal collected real-time dust monitoring and monthly depositional dust data during the Monitoring Period to inform any offsite impacts. This included monitoring for total suspended particles (TSP), fine particulate matter (PM2.5, PM10), and insoluble solids.

A summary of the data has been presented in Table 5. For the entire results please refer to the appendices of this document. A month-to-month summary is also available online, [Real-Time Air Quality and Noise Performance Monitoring Data](#) dashboard. Interpretation of compliance is undertaken by comparing the EA nuisance limit to the 24-hour average.

The data has been compared to the relevant Environmental Authority limits to determine compliance and outlined in the Table 5.

3.2.1. Data Validation

Lear Siegler Australasia Pty Ltd performs data validation on behalf of NAC in accordance with the National Environmental Protection (Ambient Air Quality) Measure (AAQ NEPM) Technical Paper No.5: Data Collection and Handling. All data captured during the monitoring period undergoes validation to verify accuracy of the data and invalidate(remove) any data which is deemed inaccurate. A summary of the data validation and what data has been invalidated is provided to NAC at the end of the monthly monitoring period.

Table 5: Compliance air quality monitoring data collected during the Monitoring Period.

Location	Units	EA Limits (24 hour)	Data points (Count only)	24-hour Average - Monthly Maximum	24-hour Average - Monthly Minimum	24-hour Monthly Average
Total Suspended Particles (TSP)						
1, 2 (Acland)	µg/m ³	Annual Air Quality Limit – 90	30.00	25.93	8.32	14.70
7, 8 (North)	µg/m ³		30.00	24.10	7.19	14.51
38, 39 (West)	µg/m ³		30.00	24.96	6.35	14.34
35, 36 (West)	µg/m ³		29.00	20.97	7.01	12.07
16 (East) Acland-Silverleigh Road	µg/m ³		31.00	18.60	5.61	10.31
15 (East)	µg/m ³	Nuisance Limit** – 80	31.00	27.89	8.85	15.95
Particulate Matter (PM 2.5)						
1, 2 (Acland)	µg/m ³	24-hour Avg 25	30	14.27	2.62	5.87
Particulate Matter (PM10)						
1, 2 (Acland)	µg/m ³	24-hour Avg 50	30.00	22.27	6.98	12.37
7, 8 (North)	µg/m ³		30.00	18.77	6.06	11.36
38, 39 (West)	µg/m ³		30.00	20.77	5.95	11.99
35, 36 (West)	µg/m ³		30.00	19.15	5.96	11.44
16 (East) Acland-Silverleigh Road	µg/m ³		31.00	21.03	6.49	11.92
15 (East)	µg/m ³		30.00	19.99	6.82	11.62
Deposition Dust – Insoluble Solids						
1, 2 (Acland)	mg/m ² /day	120	1 [^]	--	--	73
7, 8 (North)	mg/m ² /day		1 [^]	--	--	10
38, 39 (West)	mg/m ² /day		1 [^]	--	--	53
35, 36 (West)	mg/m ² /day		1 [^]	--	--	17
16 (East) Acland-Silverleigh Road	mg/m ² /day		1 [^]	--	--	106
15 (East)	mg/m ² /day		1 [^]	--	--	23

**Environmental Nuisance under schedule 15 of the Environmental Protection Act 1994 is define as unreasonable interference or likely interference with an environmental value caused by air contaminants, visual conditions, or other ways as prescribed by regulation.

[^] Monitoring period of 30 days has been included as per dust depositional standards, AS/NZS 2850.10.1.2016.

3.3. Noise Performance and Quality Monitoring

New Acland Coal has collated and presented the noise monitoring data that has been collected in accordance with the Environmental Authority. A summary of the data has been presented in Table 6; for the complete results, please refer to the appendices of this document. A month-to-month summary is also available online, on the [Real-Time Air Quality and Noise Performance Monitoring Data](#) dashboard. The data has been compared to the relevant EA limits outlined in to determine compliance as outlined in Table 6: . Noise limits for NAC mine change based on the hours of operation and are more conservative during night shift (10PM to 7AM), Sundays, and Public Holidays. Please refer to Appendix 5 for further information. If performance or compliance monitoring indicates the potential for exceedance of the relevant EA limits, NAC undertakes a review of the noise source and implements noise abatement measures as required.

3.3.1. Noise Exclusions

NAC’s Noise and Vibration Management Plan outlines the process of data exclusions and inclusions based on extraneous noise collected by the compasses. The data shown in Table 6 is all noise data collected by the compasses and includes instances of external noise generation that would have been excluded during usual operations. Common extraneous noise sources include wildlife, weather condition, vehicular movements, and aircraft.

Table 6: Compliance noise monitoring data collected during the Monitoring Period.

Location	Units	EA Limits	Data points (Count only)	Monthly Maximum	Monthly Minimum	Monthly Average
Attended Monitoring						
Refer to Appendix 3 – Third-Party External Reports for outcomes of the monitoring event.						
Unattended Monitoring						
Refer to Appendix 3 – Third-Party External Reports for outcomes of the monitoring event.						
Performance Monitoring – L_{eq} 15 minutes (7AM – 6PM) *						
Location 1 – Acland	dB	42	503	41.99	24.50	35.75
Location 2 – North	dB		1057	40.94	21.17	30.65
Performance Monitoring – L_{eq} 15 minutes (6PM – 7AM) *						
Location 1 – Acland	dB	35	915	35.30	15.12	26.61
Location 2 – North	dB		971	34.90	12.77	23.06
Performance Monitoring – L_{max} (10 PM – 7AM) *						
Location 1 – Acland	dB	50	11401	57.46	20.64	32.29
Location 2 – North	dB		12571	49.98	22.96	31.12

*It is noted that performance noise monitoring is undertaken onsite at the New Acland Mine and is not used to determine compliance with relevant Environmental Authority conditions.

3.3.2. Blast and Vibration Quality Monitoring

During the Monitoring Period, four (4) blasts were undertaken at NAC. All blasting was undertaken from the Manning Vale East pit. The closest sensitive receptor from the blasting locations was identified as the Acland township. The results of each blast have been presented in Table 7 and determined to be compliant with the EA limits as outlined.

Table 7: Blast and vibration monitoring data collected during the Monitoring Period

Date	Time	Location	Acland - Airblast Over pressure (dB)	Acland - Ground Vibration Peak Particle Velocity (mm/sec)
Environmental Authority Limits			115	5
10/08/23	11:00AM	Acland Township	DNT	DNT
21/08/23	11:00AM		DNT	DNT
25/08/23	02:13PM		107.9	1.32
30/08/23	10:45AM		104.5	1.14

* 'Did not trigger (DNT)' applies when the blasting event was not detected on the monitoring device.

4. Compliance Review and Conclusion

During the Monitoring Period there was no recorded noncompliance against the EA limits, excluding the elevated noise results identified during the attended and unattended monitoring event. These elevated results pertain to attended noise measurements collected at monitoring location, NML01 (Acland Township) outlined in *New Acland Coal – Stage 3 Noise Survey, August 2023* (SLR, 2023). A copy of the full report and analysis developed by SLR consultants can be reviewed in Appendix 3 – **Third-Party External Reports**. These results are anomalies in the monitoring event, comprising of five out of the 672 individual 15-minute intervals analysed (<1% of the dataset). Furthermore, no community nuisance or impacts were expected to have occurred because of this event.

In response to the event, NAC have undertaken corrective actions to prevent a recurrence of the event. These include:

- A comprehensive review undertaken by NAC in conjunction with SLR to determine the cause and relevant corrective actions.
- NAC engaging SLR consultants to undertake further dashboard review and training, which occurred for day and night shifts (4 noise dashboard crews in total) on 29 and 31 August 2023.
- Reviewing the existing correlation factors used for the Acland Noise Compass via updated correlation noise measurements.

This matter will be further reviewed and monitored in subsequent months.

Appendix 2 sets out full results for monitoring conducted during the Monitoring Period, including graphical representation, demonstrating compliance status. NAC is committed to the preservation of environmental values and ongoing commitment to compliance with Environmental Authority conditions. Further reports will be submitted upon completion in coming months.

Appendix 1 – Monitoring Locations

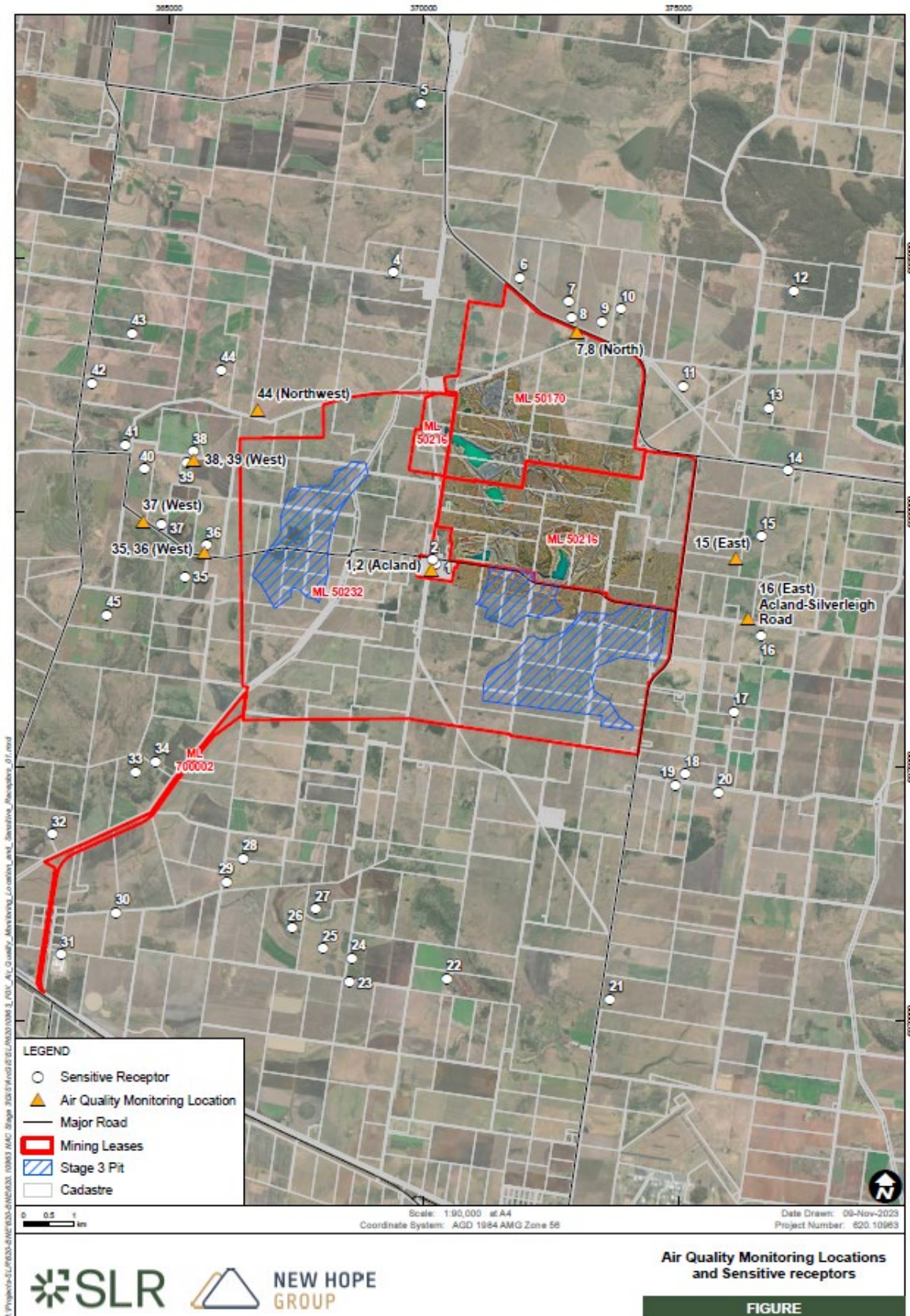


Figure 1: NAC Stage 3 Air Quality Monitoring Locations

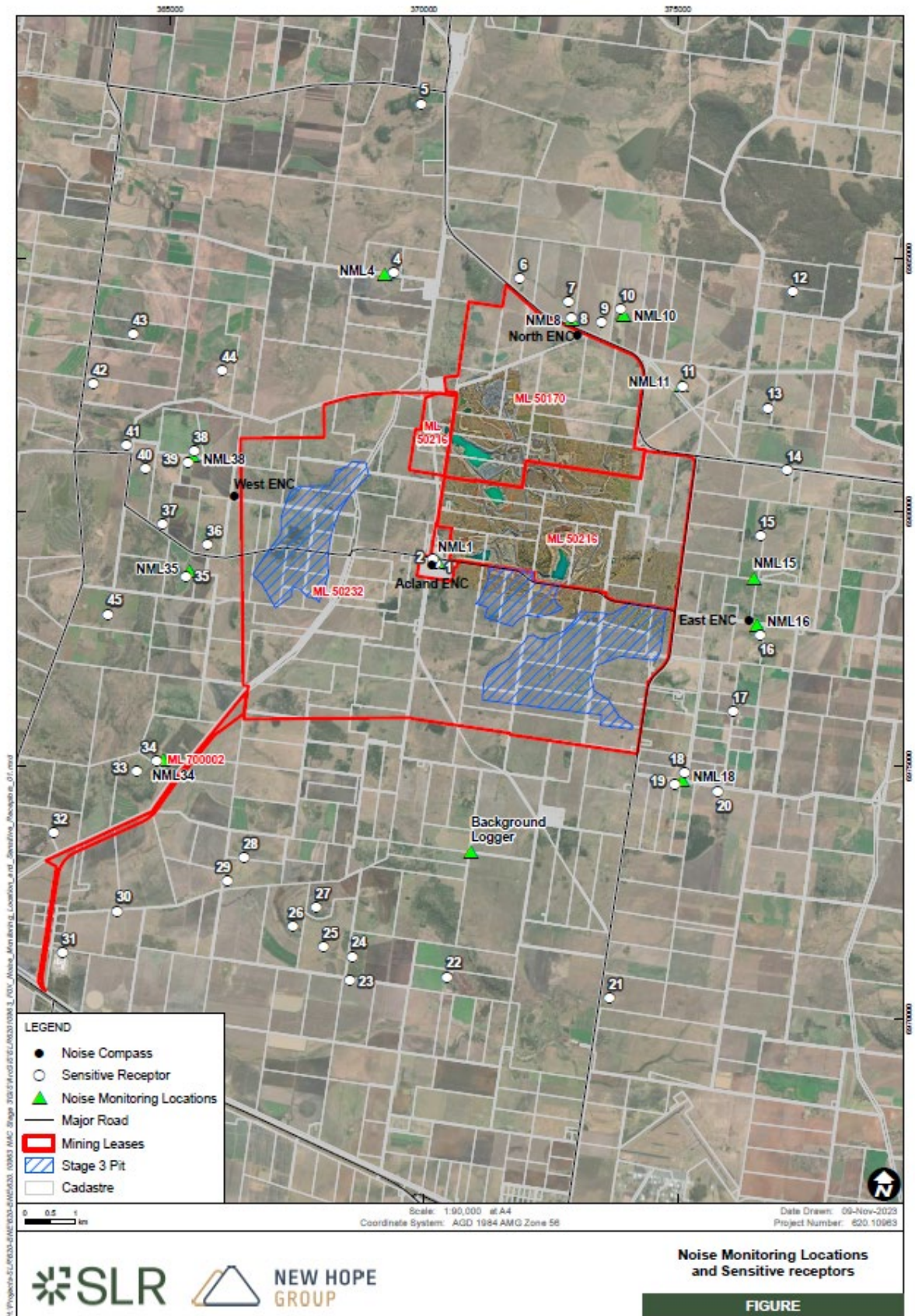


Figure 2: NAC Stage 2 Noise Performance and Compliance Monitoring Locations

Appendix 2 – Environmental Monitoring Data

Table 8: New Acland Coal's Air Quality Monitoring for Total Suspended Particles (TSP), PM10, and PM2.5.

Date	Time	Location 1 - Acland PM10	Location 1 - Acland PM2.5	Location 1 - Acland TSP	Location 2 - North PM10	Location 2 - North TSP	Location 3a - West PM2.5	Location 3a - West PM10	Location 3a - West TSP	Location 5 - South West PM10	Location 5 - South West TSP	Location 6 - East PM10
01/08/2023	0:00	18.13	10.89	21.33	18.67	23.41	3.33	15.84	18.44	15.31	17.81	20.39
02/08/2023	0:00	18.46	9.62	22.62	15.93	17.8	2.15	16.27	17.08	16.49	18.53	15.61
03/08/2023	0:00	9	4.21	12.26	7.6	8.84	1.71	7.74	8.05	7.8	9.03	8.01
04/08/2023	0:00	7.34	4.26	9.6	6.06	7.19	1.63	5.95	6.35	5.96	7.27	7.42
05/08/2023	0:00	8.02	4.15	10.96	7.26	8.86	2.69	7.12	7.13	7.24	9.05	7.59
06/08/2023	0:00	7.6	4.23	9.46	6.8	7.84	1.69	6.38	6.68	6.44	7.76	7.73
07/08/2023	0:00	7.45	5.09	8.49	7.59	9.15	2.07	7.64	8.8	7.17	8.7	8.45
08/08/2023	0:00	6.98	3.37	9.01	6.37	7.71	1.61	6.85	8.12	6.51	8	6.49
09/08/2023	0:00	9.43	3.51	14.5	6.88	8.55	2.53	6.86	8.24	6.65	8.53	7.37
10/08/2023	0:00	9.32	5.3	10.89	9.68	13.23	2.2	10.43	12.94	9.88	12.21	8.69
11/08/2023	0:00	13.03	6.33	15.02	14.48	20.55	1.8	14.06	17.25	13.4	16.28	13.91
12/08/2023	0:00	15.56	6.3	18.2	14.49	21.28	2.8	14.67	18.11	14.29	17.86	14.42
13/08/2023	0:00	16.08	8.52	18.08	14.83	20.32	3.51	14.53	17.3	14.37	16.61	13.52
14/08/2023	0:00	14.18	5.89	17.12	13.27	18.47	2.44	16.6	21.17	14.96	19.04	13.55
15/08/2023	0:00	16.06	9.52	17.79	17.27	24.1	3.95	18.93	24.96	16.39	20.97	16
16/08/2023	0:00	15.82	6.68	20.24	12.36	15.8	3.01	13.81	17.52	12.57	16.05	14.37
17/08/2023	0:00	18.68	10.52	21.96	15.61	20.43	3.51	16.46	20.43	16.15	19.51	14.98
18/08/2023	0:00	11.1	9.18	13.23	11.27	15.3	2.97	12.34	15.5	11.25	14.39	11.14
19/08/2023	0:00	7.34	2.62	8.32	9.07	13.3	0.76	10.46	13.05	8.64	10.88	8.06
20/08/2023	0:00	8.91	3.57	10.31	8.68	10.73	2.9	9.55	12.1	7.73	9.09	8.74
21/08/2023	0:00	22.27	14.27	25.93	<Samp	<Samp	2.94	20.77	24.02	19.15	<Samp	21.03

Date	Time	Location 1 - Acland PM10	Location 1 - Acland PM2.5	Location 1 - Acland TSP	Location 2 - North PM10	Location 2 - North TSP	Location 3a - West PM2.5	Location 3a - West PM10	Location 3a - West TSP	Location 5 - South West PM10	Location 5 - South West TSP	Location 6 - East PM10
22/08/2023	0:00	<Samp	<Samp	<Samp	12.07	14.12	<Samp	<Samp	<Samp	<Samp	<Samp	13.53
23/08/2023	0:00	10.13	3.08	11.88	11.24	15.77	2.9	11.44	14.66	10.51	8.13	12.63
24/08/2023	0:00	18.76	6.59	21.7	18.77	21.62	6.96	18.13	19.81	17.49	12.16	19.57
25/08/2023	0:00	17.07	5.77	19.75	14.14	16.23	6.12	14.15	16.56	15.36	10.89	14.99
26/08/2023	0:00	13.34	4.65	15.69	11.43	13.45	4.55	11.99	13.72	11.99	8.65	11.8
27/08/2023	0:00	10.28	3.94	11.36	9.68	11.02	3.38	10.1	11.84	9.49	7.79	10.48
28/08/2023	0:00	11.91	3.56	13.34	11.14	14.4	3.63	10.89	12.84	11.43	8.84	10.97
29/08/2023	0:00	9.05	3.53	10.13	9.2	11.53	4.13	8.32	9.78	8.1	7.01	8.76
30/08/2023	0:00	10.09	3.67	10.56	9.59	11.54	4.42	10.08	11.72	10.27	9.02	9.31
31/08/2023	0:00	9.8	3.32	11.28	9.22	12.8	4.37	11.32	16.05	10.27	9.95	10.13

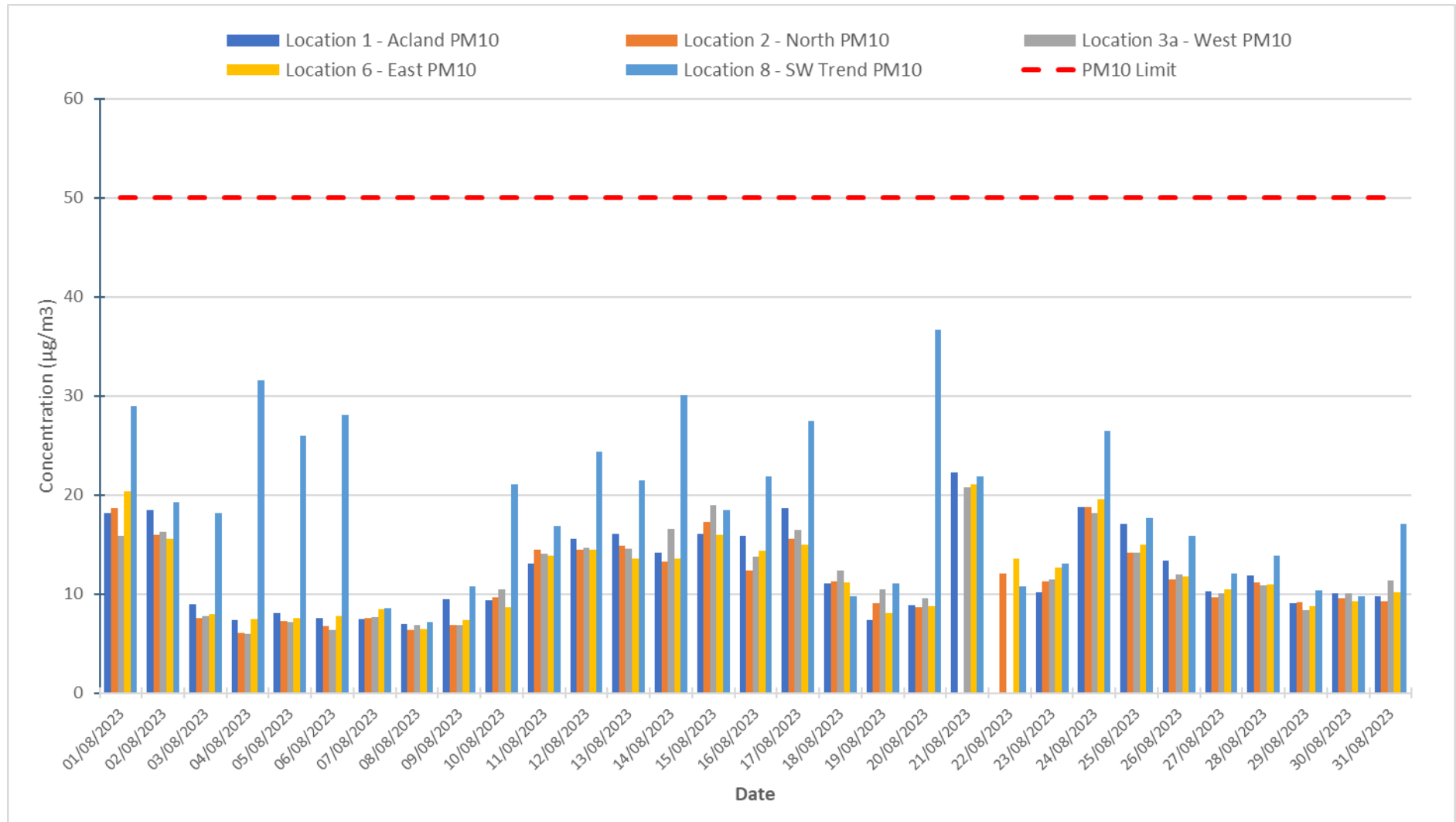


Figure 3: Daily PM10 values for New Acland Coal

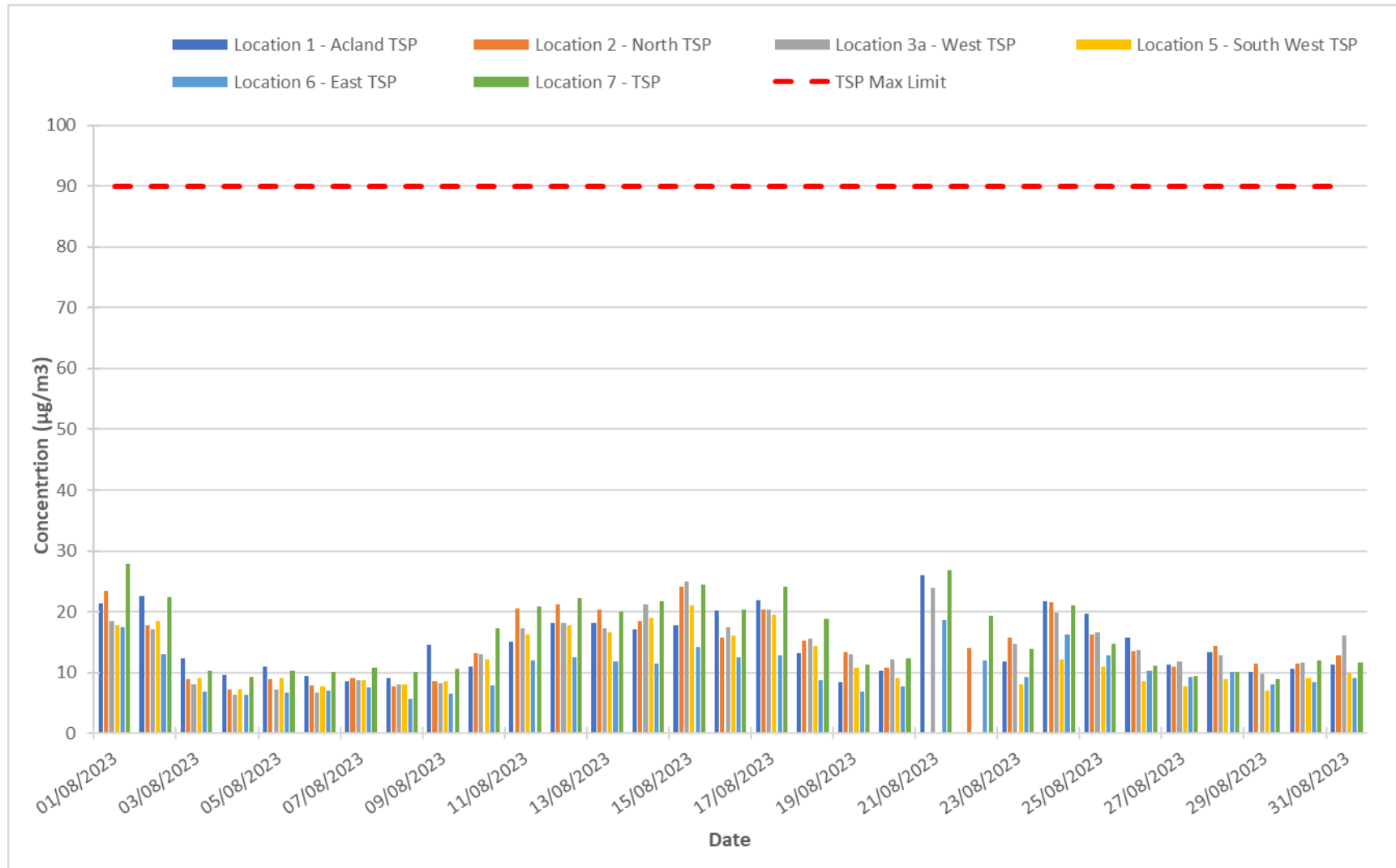


Figure 4: Daily TSP values for New Acland Coal

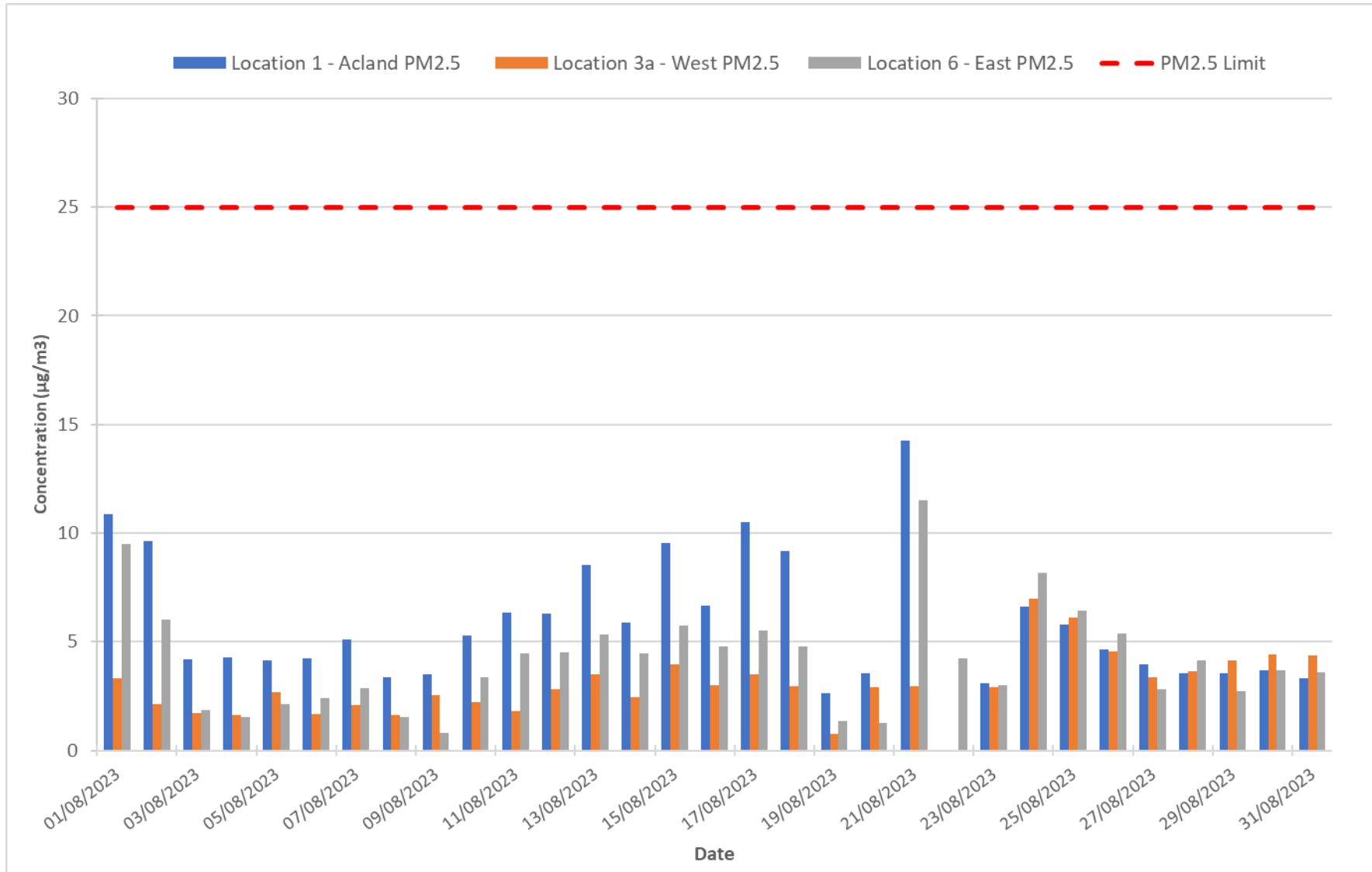


Figure 5: Daily PM2.5 values for New Acland Coal

Table 9: NAC Noise Compass Data L_{eq} (dB) for Acland and Northern Compasses

Date	Location 1 - Acland				Location 2 - North			
	Count	Max	Min	Average	Count	Max	Min	Average
01/08/2023	51	40.95	15.12	29.00	75.00	33.67	13.90	25.24
02/08/2023	25	32.53	17.51	25.33	44.00	38.98	14.46	27.81
03/08/2023	28	40.01	17.86	24.42	50.00	37.40	15.83	27.82
04/08/2023	37	41.39	16.71	26.81	57.00	37.01	13.49	28.23
05/08/2023	35	41.30	18.65	29.78	74.00	33.56	13.36	25.45
06/08/2023	57	40.24	19.14	31.15	73.00	33.76	14.81	25.45
07/08/2023	32	40.60	17.99	28.35	63.00	34.96	16.71	27.45
08/08/2023	32	40.04	20.38	32.03	64.00	36.94	15.30	27.50
09/08/2023	47	41.99	19.21	33.00	69.00	37.21	15.51	28.54
10/08/2023	55	37.78	19.02	30.73	66.00	37.60	14.76	27.02
11/08/2023	38	39.59	20.69	31.35	56.00	36.99	16.92	27.14
12/08/2023	49	38.58	25.86	33.31	62.00	36.86	16.22	28.47
13/08/2023	57	37.70	20.39	31.11	82.00	36.54	14.61	27.55
14/08/2023	36	41.13	19.30	30.03	56.00	37.60	14.53	27.76
15/08/2023	44	39.29	20.94	30.54	55.00	36.27	14.42	28.42
16/08/2023	33	34.94	19.82	31.36	62.00	36.71	15.87	27.26
17/08/2023	26	35.24	20.03	30.21	39.00	34.84	16.24	26.50
18/08/2023	29	39.43	25.04	30.44	42.00	35.61	15.61	25.73
19/08/2023	31	33.18	17.33	24.87	39.00	36.48	16.82	26.94
20/08/2023	53	38.96	16.55	27.10	73.00	37.20	16.30	26.68
21/08/2023	42	38.83	16.27	26.99	68.00	32.53	12.77	25.10
22/08/2023	58	38.88	17.40	27.35	73.00	37.21	17.00	26.52
23/08/2023	53	40.56	19.37	28.90	67.00	34.35	16.87	26.58
24/08/2023	54	41.90	16.54	29.70	80.00	37.46	14.66	27.86
25/08/2023	65	41.16	20.09	30.88	83.00	40.94	15.02	28.09
26/08/2023	71	41.89	18.87	32.65	88.00	37.50	14.57	27.33
27/08/2023	67	41.81	19.19	31.96	85.00	36.52	12.88	25.68
28/08/2023	63	41.96	19.79	30.19	84.00	36.96	15.41	28.04
29/08/2023	68	39.04	15.96	29.40	83.00	34.53	14.73	25.95
30/08/2023	50	39.43	16.70	28.68	65.00	35.70	14.24	27.02
31/08/2023	32	39.29	20.99	30.09	51.00	34.21	13.31	27.32

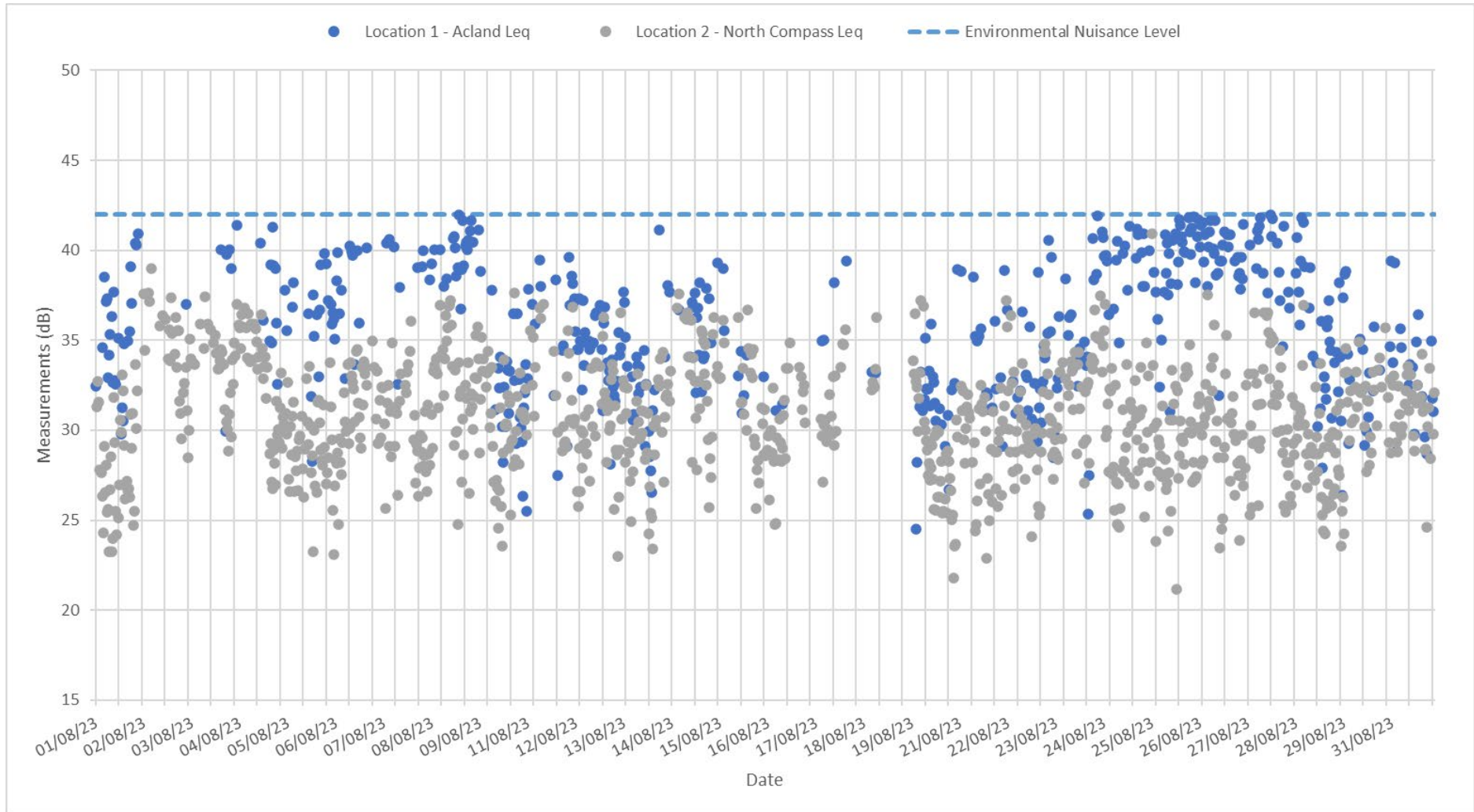


Figure 6: Performance Noise Measurements (7 AM to 6 PM) for New Acland Coal during the Monitoring Period

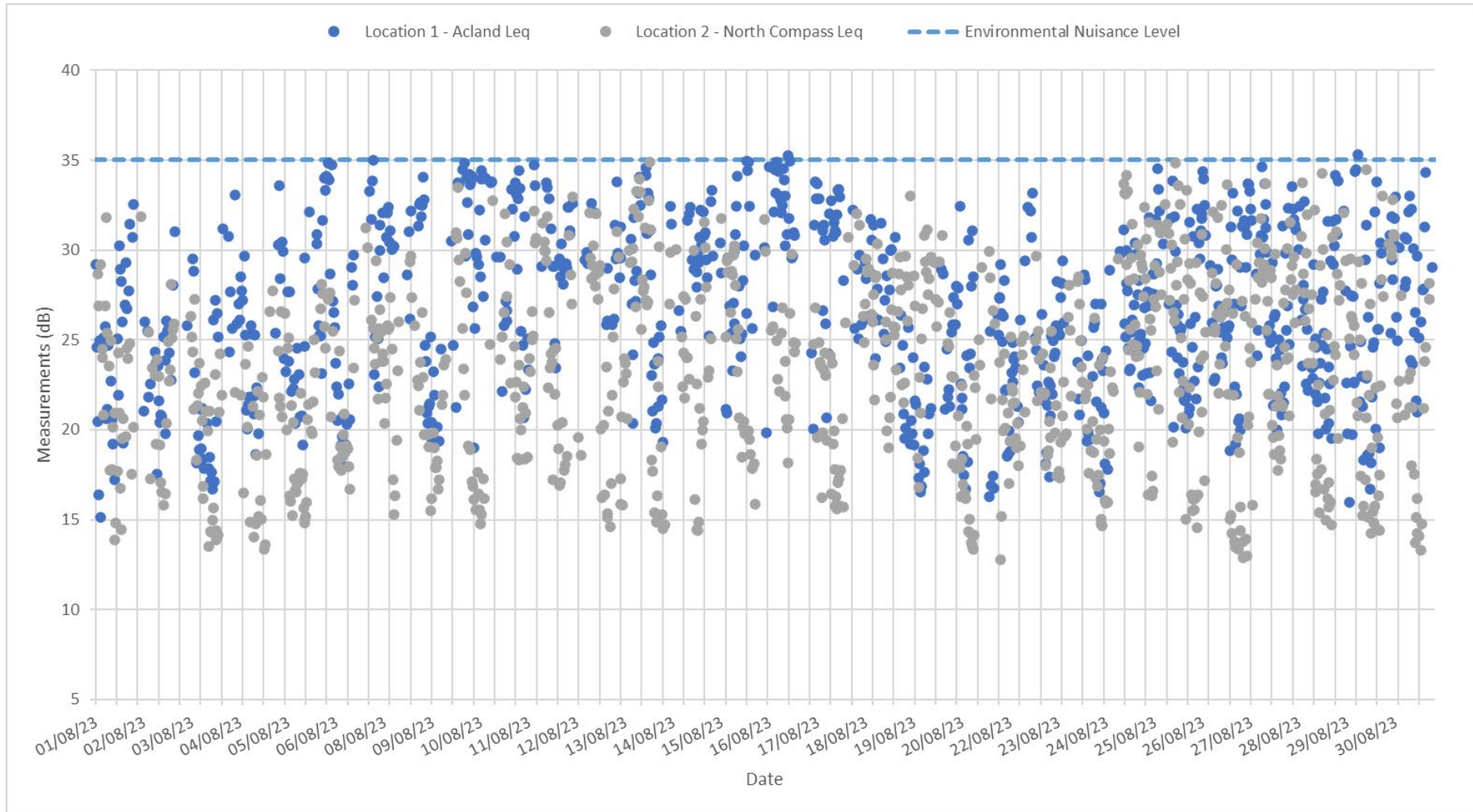


Figure 7: Performance Noise Measurements (6PM to 7AM) for New Acland Coal during the Monitoring Period

Table 10: L_AMax Noise monitoring data collected during the Monitoring Period

Date	Location 1 -Acland				Location 2 - North			
	Count	Max	Min	Average	Count	Max	Min	Average
01/08/2023	347	49.95	21.31	31.62	400	49.63	23.41	29.06
02/08/2023	362	49.90	21.63	32.88	406	49.12	23.92	31.54
03/08/2023	342	49.54	21.43	29.58	401	49.23	23.80	33.93
04/08/2023	344	49.97	21.27	29.35	395	49.46	23.26	27.79
05/08/2023	377	49.93	21.18	29.76	415	49.47	23.18	26.60
06/08/2023	377	49.98	21.37	30.14	441	49.93	23.75	28.71
07/08/2023	378	49.80	20.92	30.75	394	49.91	23.12	30.44
08/08/2023	380	49.79	22.47	33.46	398	49.47	23.54	32.04
09/08/2023	371	49.99	20.67	30.32	402	49.63	23.51	28.64
10/08/2023	396	49.94	21.24	34.01	391	49.70	22.96	27.34
11/08/2023	359	49.99	21.26	30.50	396	49.95	23.37	28.58
12/08/2023	354	49.96	21.31	33.38	424	49.92	23.04	29.25
13/08/2023	413	49.94	20.95	34.23	465	49.96	23.40	31.09
14/08/2023	404	49.95	20.81	31.60	391	49.92	23.22	29.06
15/08/2023	397	49.91	21.01	35.40	414	49.88	23.13	31.12
16/08/2023	351	49.94	20.92	34.24	385	49.19	23.44	31.12
17/08/2023	345	49.96	30.19	37.78	384	49.98	27.02	40.21
18/08/2023	412	57.46	24.84	37.63	402	49.93	24.72	36.74
19/08/2023	404	49.98	20.64	33.94	382	49.81	23.51	35.88
20/08/2023	361	49.93	20.83	29.32	440	49.93	23.70	32.33
21/08/2023	357	49.86	21.36	29.35	405	49.96	23.75	30.31
22/08/2023	387	50.00	21.79	33.43	406	49.92	24.80	34.87
23/08/2023	362	50.00	22.51	34.22	395	49.57	23.76	32.64
24/08/2023	379	49.99	21.64	31.16	399	49.68	23.34	29.29
25/08/2023	343	49.67	23.09	30.72	387	49.56	23.65	30.59
26/08/2023	327	49.89	23.15	31.00	421	49.79	23.31	31.47
27/08/2023	349	49.78	23.11	30.72	449	49.76	23.37	29.88
28/08/2023	380	49.97	23.06	33.52	406	49.68	24.89	33.54
29/08/2023	361	49.97	22.00	31.36	401	49.90	23.40	30.33
30/08/2023	353	49.99	21.57	31.86	391	49.91	23.17	30.88
31/08/2023	329	49.83	22.08	31.86	385	49.98	23.18	30.12

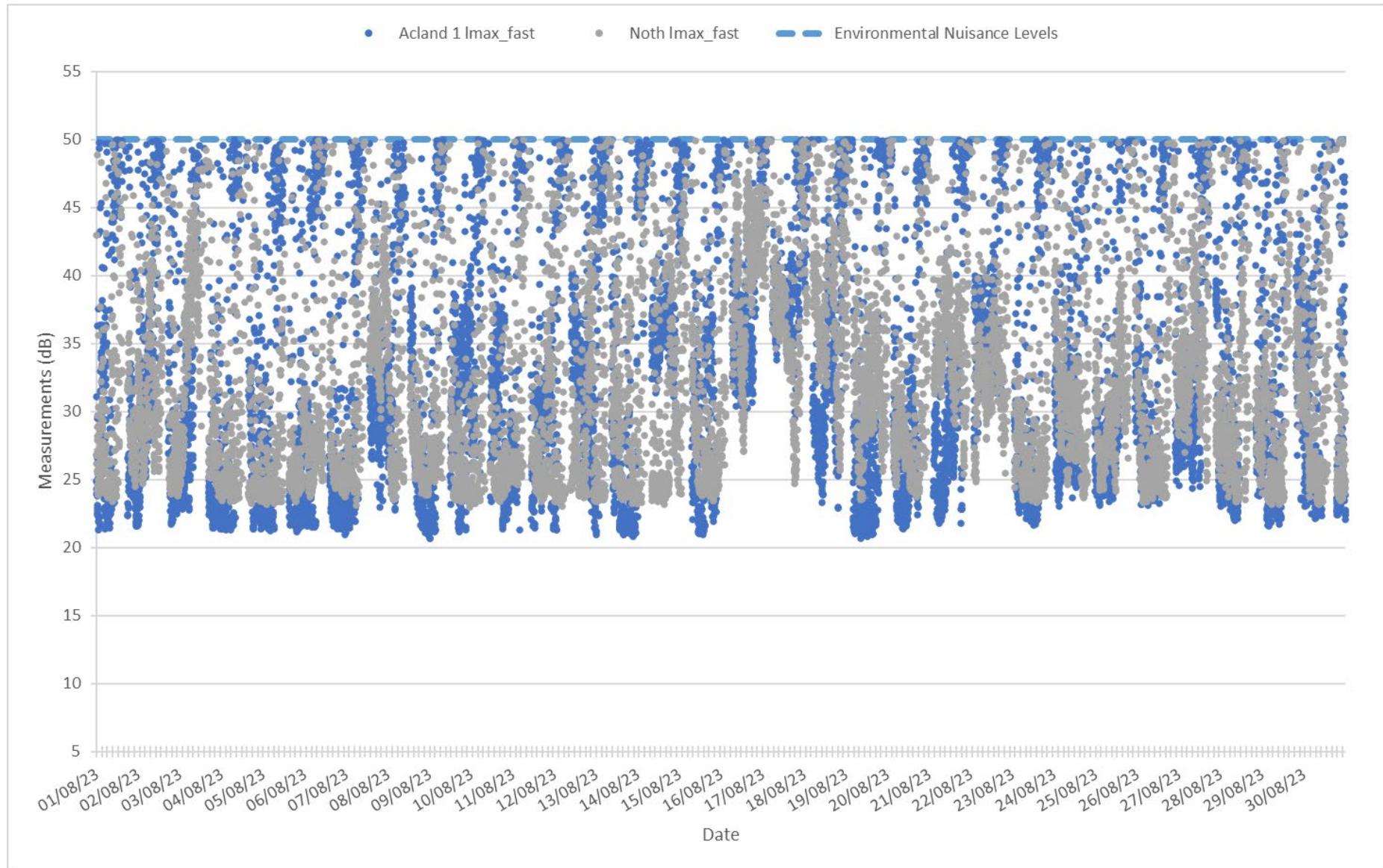


Figure 8: Performance Noise Measurements (Lmax, 10PM to 6AM) for New Acland Coal

Appendix 3 – Third-Party External Reports



New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

Muldu Road
Acland QLD 4401

Prepared by:

SLR Consulting Australia Pty Ltd

Level 16, 175 Eagle Street, Brisbane, QLD, Australia,
4000

SLR Project No.: 620.10963.01003

17 November 2023

Revision: 1.0

Revision Record

Revision	Date	Prepared By	Checked By	Authorised By
1.0	17 November 2023	Brendan Hansen	Glyn Cowie	Glyn Cowie

Basis of Report

This report has been prepared by SLR Consulting Australia Pty Ltd (SLR) with all reasonable skill, care and diligence, and taking account of the timescale and resources allocated to it by agreement with New Acland Coal Pty Ltd (the Client). Information reported herein is based on the interpretation of data collected, which has been accepted in good faith as being accurate and valid.

This report is for the exclusive use of the Client. No warranties or guarantees are expressed or should be inferred by any third parties. This report may not be relied upon by other parties without written consent from SLR.

SLR disclaims any responsibility to the Client and others in respect of any matters outside the agreed scope of the work.



Executive Summary

SLR Consulting Australia Pty Ltd (SLR) was engaged by New Acland Coal Pty Ltd (NAC) to conduct monthly noise monitoring and assessment for the New Acland Coal Mine (NAC mine) during the 12-month period of May 2023 to April 2024 to satisfy Conditions F4, F6 and Table F2 of the NAC Environmental Authority (EA) EPML00335713 dated 14 November 2022, and Section 6 of the Department of Environment and Science (DES) approved NAC *Noise and Vibration Management Plan*. This report presents the noise monitoring results for August 2023 (‘the August 2023 monitoring period’).

In undertaking this noise survey during the month of August 2023, the following points are noted and provide context to the overall noise survey, analysis and assessment:

- For the monitoring period between 4 and 12 August 2023 (inclusive), NAC operations occurred 24-hours a day, Monday to Sunday. This covers the full day, evening and night-time periods which forms the basis for this analysis and assessment of the monitoring locations.
- The NAC rail spur is yet to be constructed, therefore an assessment against rail noise limits is not applicable.

For this August 2023 monitoring period, noise monitoring was undertaken between 4 and 12 August 2023 (inclusive) at the locations detailed in the EA *Table F2 Compliance noise monitoring locations and frequency* and *Figure F1 – Noise monitoring locations and sensitive places*. In accordance with Table F2 of the EA, analysis was undertaken on seven (7) selected days which, where possible, included days where there were adverse weather conditions (ie temperature inversions, and/or light source to receiver wind directions) and/or normal to peak mine operations. The dates below represent the start of each assessed daily period:

- Monitoring location NML1 - 6 to 12 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.
- Monitoring location NML35 – 4 to 8, 10 and 11 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.
- Remaining monitoring locations – 4 to 10 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.

A visual ‘traffic light’ summary of the attended and unattended noise monitoring completed in the August 2023 monitoring period are presented in Table E1, where:

- ○ an unshaded symbol indicates NAC was not operating during this period. Therefore an assessment against the EA noise conditions was not required,
- ● grey indicates NAC mine noise was undetectable while the mine was operational,
- ● green indicates detected NAC mine noise measurements achieved the relevant time period noise limit/s,
- ● orange indicates marginal exceedances of the relevant time period noise limit/s (marginal being an acoustically negligible exceedance of 1 or 2 dBA), and
- ● red indicates an exceedance greater than 2 dBA of the relevant time period noise limit/s.

Where NAC mine attributable noise could not be detected in the unattended noise monitoring data, it has been concluded that at times, ambient noise sources likely masked contributions from NAC mine preventing further detection.

As required by Condition F6 of the EA, noise monitoring was completed at a representative Background Location during this assessment. A review of the unattended noise monitoring data indicated Rating Background Levels (RBLs) typical of a rural environment with ambient noise sources such as bird song, wind noise, aircraft noise (from Oakey Air Base and small light aircraft)



and distant road traffic noise being the predominant sources. No periods were considered to have NAC mine attributable noise audible and/or measurable.

A detailed summary of results and findings for the unattended and attended noise monitoring during the August 2023 monitoring period is presented further within this report.



Table E1 Summary of August 2023 NAC Mine Noise Monitoring Results

Noise Monitoring Location	Unattended Results			Attended Results		
	Day	Evening	Night	Day	Evening	Night
EA EPMLOO335713 noise limit	42 dBA LAeq,15min, adj.	35 dBA LAeq,15min, adj.	35 dBA LAeq,15min, adj. 50 dBA LAmix	42 dBA LAeq,15min, adj.	35 dBA LAeq,15min, adj.	35 dBA LAeq,15min, adj. 50 dBA LAmix
NML1	● Measured up to 39 dBA LAeq,15min, adj.	● Measured up to 40 dBA LAeq,15min, adj.	● Measured up to 35 dBA LAeq,15min, adj., one (1) LAmix mine events >50 dBA	● Not detected	● Not detected	● Not detected
NML4	● Not detected	● Measured up to 20 dBA LAeq,15min, adj.	● Measured up to 20 dBA LAeq,15min, adj., no LAmix mine events >50 dBA	● Not detected	● Not detected	● Not detected
NML8	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML10	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML11	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML15	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML16	● Rarely detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML18	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML34	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML35	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected
NML38	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected	● Not detected

Day: 7:00 am to 6:00 pm
 Evening: 6:00 pm to 10:00 pm
 Night: 10:00 pm to 7:00 am



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Appendices

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Appendix D	Attended Noise Monitoring Summary
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Acronyms and Abbreviations

dBA	Decibels, A-weighted
CHPP	Coal handling and preparation plant
Daytime	The time period of 7:00 am to 6:00 pm
DES	Department of Environment and Science
EA	Environmental Authority
Evening	The time period of 6:00 pm to 10:00 pm
ML	Mine lease
NAC	New Acland Coal
Night-time	The time period of 10:00 pm to 7:00 am
NML	Noise monitoring location
NMM	DES <i>Noise Measurement Manual (2020)</i>
NVMP	Noise and Vibration Management Plan
RBL	Rating Background Level
RoM	Run-of-Mine
RTN	Road traffic noise



1.0 Introduction

The New Acland Coal (NAC) mine is located to the northeast of Acland in Queensland and is operated by NAC. The current mining activities consist of overburden and topsoil removal in Manning Vale East pit and rehabilitation of Stage 2 areas (Centre, South, and West pits), and drilling for blast preparations in Manning Vale East. Current forecasts have NAC extracting Stage 3 coal in October 2023, at which point export coal is transported by road haul trucks along Jondaryan-Muldu Road to a coal stock yard southeast of Jondaryan adjacent to the Warrego Highway and processing plants being restarted. Export coal is loaded onto trains, at the Jondaryan Rail Loadout Facility (JRLF), to transport to Port of Brisbane. Since NAC has been in care and maintenance since 2020, there has been no activity at the JRLF. Therefore, no noise associated with rail corridors has been assessed in this report.

The NAC mine is operated under Environmental Authority (EA) EPML00335713 dated 14 November 2022. The noise levels in Schedule F – Table F1 of the EA apply at noise sensitive receptors and vary depending on the daytime, evening and night-time periods.

This report details environmental noise levels measured during the month of August 2023 to satisfy Conditions F4, F6 and Table F2 of the EA EPML00335713, and Section 6 of the DES approved NAC *Noise and Vibration Management Plan* (reference '20221125_NAC03 – Noise and Vibration Management Plan-Ver-01', dated 27 April 2023, referred to herein as the NVMP). Where measured noise levels have been determined to be attributable to NAC mining activities, those noise levels have been assessed against the noise levels prescribed in the EA.

In undertaking this noise survey during the month of August 2023, the following points are noted and provide context to the overall noise survey, analysis and assessment:

- For the monitoring period between 4 and 12 August 2023 (inclusive), official NAC operations occurred 24-hours a day, Monday to Sunday. Hence, analysis and assessment of all monitoring locations was undertaken for each of the day, evening and night time periods.
- The NAC rail spur is yet to be constructed, therefore an assessment against rail noise limits is not applicable.

The term 'noise' is commonly understood as unwanted sound but commonly used when discussing all sound within our environment. In this report, the term 'noise' refers to all sound pressure levels irrespective of whether it would be defined as 'unwanted'. The report uses specialist acoustic terminology and an explanation of common terms is provided in Appendix A.

2.0 EA EPML00335713 and NVMP Requirements

2.1 EA Noise Limits

Schedule F of NAC EA EPML00335713 contains noise¹ conditions relevant to mining operations occurring within the mining leases referenced under the EA. The EA noise conditions relevant to this monitoring and assessment are reproduced below (either in full, or in-part as noted).

F1: The environmental authority holder must ensure that noise generated by the mining activities does not cause the criteria in Table F1 – Noise Limits (includes construction activities) [Table 1] to be exceeded at a noise sensitive place.

The measurement of noise for a noise sensitive place is either:

a) At that place (if measured there); or

b) At the monitoring location to which the noise sensitive place is correlated (where there is not measure at the noise sensitive place).

¹ Schedule F also contains conditions related to blasting, however these are not applicable to this monitoring and assessment.



Table 1 *Table F1: Noise Limits (includes construction activities)*

Noise level dBA measured as	All days		
	7:00 am – 6:00 pm	6:00 pm - 10:00 pm	10:00 pm – 7:00 am
Noise measured at a 'Noise sensitive place'			
L _{Aeq, adj, 15min} ¹	42	35	35
L _{Amax}	-	-	50
L _{Amax rail spur} ²	-	-	56
L _{Aeq(24hour) rail spur} ²	-	-	50
NOTE:			
1 All noise other than that which is distinguishable as train noise			
2 Only for noise distinguishable as train noise			

F4: A Noise Monitoring Program must be developed by a suitably qualified and experienced person in relation to noise and implemented for all stages of mining to monitor compliance with Table F1 – Noise limits (includes construction noise) [Table 1] at the frequency and locations in Table F2 – Compliance noise monitoring locations and frequency and shown in Figure F1 – Noise monitoring locations and sensitive places [Figure 1].

The Noise Monitoring Program must include a figure which identifies noise monitoring locations and sensitive places. [Figure 1]

[The remaining part of Condition F4 is not directly applicable to this monitoring and assessment]

F6: Compliance noise monitoring and recording required by conditions F4, F5, F6, F7 and F8 must be conducted in accordance with the administering authority's Noise Measurement Manual and include the following:

a) LA01, adj, 15 min - day, evening & night; LA10, adj, 15 min - day, evening & night; LAeq, adj, 15min - day, evening & night and LA90, adj, 15 min - day, evening & night;

b) background noise LA90;

c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;

d) atmospheric conditions including temperature, relative humidity and wind speed and directions;

e) effects due to any extraneous factors such as traffic noise and natural sources (e.g. insects, birds and wind);

f) location, date and time of monitoring;

g) if a complaint concerns low frequency noise and where permitted by the owner or occupier of the noise sensitive place: LLINeq 10 min (internal), LAeq 10 min (internal) and one third octave band measurements in LLINeq 10 min (internal) for centre frequencies in the 10 – 200 Hz range;

h) maximum (L_{Amax}) noise levels – night (for a minimum of 30 min); and

i) 1/3 octave band spectrums



Table 2 Table F2 – Compliance noise monitoring locations and frequency

Monitoring Locations	Frequency
1 (Acland)	Monthly
34 (rail spur), 35 and 38 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to condition F4, F5, F6, F7 and F8)	Monthly
4, 8 and 10 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to condition F4, F5, F6, F7 and F8)	Monthly
11, 15, 16 (if occupied) and 19 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to condition F4, F5, F6, F7 and F8)	Monthly
Seven (7) days unattended monitoring at the above noise sensitive places or alternate locations identified in the Noise Monitoring Program developed pursuant to condition F4.	Monthly for the first 12 months

Note: Monitoring locations are presented on Figure 1.

2.2 NVMP Requirements

Section 3.2 'Detailed Description of the Noise Management System' from the NVMP states the following relevant details to this assessment and reporting:

Monthly Compliance Noise Monitoring – In accordance with EA Conditions F4, F6 and F12, NAC will undertake monthly compliance noise measurements at the nominated residential locations contained in Table F2 of the EA.

This monthly compliance monitoring is additional to the continuous performance monitoring and is to be undertaken as a series of short-term, operator attended noise measurements by an appropriately qualified acoustic consultant.

Section 6 provides a detailed description of the monthly noise compliance monitoring methodology for the Stage 3 Mine.

Section 7 contains the protocol that NAC will employ throughout the life of the Stage 3 Mine's operations to determine exceedances of the EA noise limits.

Section 6 'Monthly Compliance Noise Monitoring, Assessment and Reporting' of the NVMP states the following relevant details to this assessment and reporting:

6.1. Compliance Monitoring Locations and Frequency

In accordance with EA Condition F12 and Table F2 – Compliance Noise Monitoring Locations and Frequency, the monthly compliance noise monitoring will be undertaken at the locations stated in Table 6-1 [Table 3].

Table 3 Table 6-1: Compliance Monitoring Locations for the Stage 3 Mine.

Monitoring Locations	Frequency
1 (Acland)	Monthly
34 (rail spur), 35 and 38 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to EA Condition F4)	Monthly
4, 8 and 10 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to EA Condition F4)	Monthly
11, 15 and 19 (or alternative noise sensitive places identified in the Noise Monitoring Program developed pursuant to EA Condition F4)	Monthly
Seven (7) days unattended monitoring at the above noise sensitive places or alternate locations identified in the Noise Monitoring Program developed pursuant to condition F4.	Monthly for the first 12 months

The relevance of the noise monitoring locations outlined in Table 6-1 [Table 3] will be reviewed on an annual basis. If any changes to the noise monitoring locations are required, a brief



report/memorandum will be produced and submitted to DES for their review and approval prior to any changes to the Noise Monitoring Program being implemented.

6.2. Compliance Monitoring Equipment and Methodology

The compliance noise monitoring methodology and reporting will be undertaken as follows (subject to the review comments/feedback from the independent acoustic consultant appointed to review the compliance noise monitoring for the first 12 months of the Stage 3 Mine).

- *Noise measurements will be undertaken by an appropriately qualified acoustic consultant.*
- *On a monthly basis, a minimum of three (3) 15-minute operator-attended noise measurements will be undertaken in a random order across all ten (10) locations stated in Table 6-1 [Table 3].*
- *All attended measurements will ideally be undertaken within 50m of the residence (but not closer than 3.5m). However, if (a) access is not obtainable to enter the property or (b) domestic noise sources (e.g. air-conditioning, barking dogs, etc.) prevent measurements being undertaken close to each residence, then measurements must be undertaken as close as practically possible to the residence to allow a judgement/calculation to be made as to what the corresponding noise levels would have been at the residence.*
- *Ideally one (1) measurement will be taken during each of the day (7am to 6pm), evening (6pm to 10pm) and night (10pm to 7am) periods. However, if mining operations are unmeasurable during the day period (due to non-adverse weather and/or the presence of other ambient extraneous noise sources), then the three (3) measurements must be undertaken during the evening and/or night periods.*
- *All measurements will be undertaken using a NATA-calibrated Type-1 sound level meter (compliant with AS IEC 61672.1-2019 “Electroacoustics - Sound Level Meters”).*
- *All measurements and subsequent analysis will be undertaken in strict accordance with EA EPML00335713 (most notably condition F6) and DES’s Noise Measurement Manual (DEHP 2013).*
- *Within 14 days of completion of the compliance noise monitoring, a Compliance Noise Monitoring Report will be prepared.*
- *In addition to the above, for the first 12 months, seven days of unattended noise monitoring will also be undertaken at the noise monitoring locations outlined in Table 6-1 [Table 3]. At the completion of the unattended noise monitoring, the data will be downloaded, analysed and reported in the Compliance Noise Monitoring Report (in conjunction with the roving short-term attended measurements).*

Section 7 ‘Protocol for Determining Exceedances of the EA Noise Conditions’ of the NVMP states the following relevant details to this assessment and reporting:

Exceedances of the EA noise conditions can only be determined from the monthly compliance noise monitoring or any additional compliance noise monitoring requested by DES. However, the note in Condition F7 states “The performance monitoring required under this condition is to be used for performance management and can be used by the administering authority to assess compliance with Table F1 – Noise limits (includes construction activities)”.

All exceedances of the EA noise conditions determined from either form of compliance noise monitoring (monthly or DES requested) will be documented in either the monthly Compliance Noise Monitoring Report, which will then be published publicly, or in a stand-alone report provided to DES in response to a specific request to undertake compliance noise monitoring.

All noise monitoring equipment and methodology used to determine whether any exceedances have occurred during compliance noise monitoring will be undertaken in accordance with EA Condition F6, Section 6.2 and DES’s Noise Measurement Manual (DEHP 2013) and Australian Standard (AS) 1055.



In accordance with EA Condition F2, if noise monitoring indicates the potential for an exceedance of the EA noise conditions, NAC will immediately implement noise abatement measures upon receiving those results to avoid exceeding the EA noise conditions.

3.0 Mine Operations During the August 2023 Monitoring Period

NAC has provided the following explanation of mine operations during this noise monitoring assessment period. This explanation is supported with additional information contained within Appendix B of this report.

The primary noise generating departments at NAC mine are:

- Removal of overburden,
- Drill and blast works,
- Progressive rehabilitation, and
- Heavy vehicle workshop.

NAC operate mobile mining equipment as listed in Table 4 at any one time. The mobile plant are the most significant noise generators at NAC for this reporting period.

Production workers generally operate a combination of the mobile plant to achieve its schedule across a combination of active pits. Burden material from these active pits is transferred to relatively local dumping points.

Production workers are scheduled to operate a combination of the mobile plant listed in Table 4 across the following roster:

- 4 to 12 August; Monday to Sunday – NAC operations occurred over a 24-hour period, where noise permits (ie actively monitoring their performance noise monitoring system), and deemed safe. The heavy vehicle workshop operates from 6:30 am to 6:30 pm, with tool box talks and general preparation occurring between 6:30 am and 7:00 am.

Available operational logs (see Appendix B) with recorded actions relating to equipment start and stop times during the 4 to 12 August monitoring period were reviewed to inform the unattended monitoring analysis.

Table 4 NAC Mobile Mining Equipment List

Unit Number	Machine Type	Unit Number	Machine Type
	Excavators		Dozer
EX107	Hitachi EX1800	DZ609	Caterpillar D10T
EX109 ¹	Hitachi EX470	DZ610M	Caterpillar D11R
EX110 ¹	Hitachi EX3600	DZ611	Caterpillar D11R
	Wheel Loaders	DZ612	Caterpillar D11T
WL208	Caterpillar 992G	DZ613	Caterpillar D11T
WL211	Caterpillar 992G	DZ618	Caterpillar D10T
WL214 ¹	Le Tourneau L1150	DZ622	Caterpillar D11R
WL216 ¹	Le Tourneau L1350	DZ625 ¹	Caterpillar D11T
	Haul Trucks	DZ626 ¹	Caterpillar D11T
RD310	Caterpillar 785 Volumax		Wheel Dozer
RD311	Caterpillar 785 Rock Body	WD802	Caterpillar 854G



Unit Number	Machine Type	Unit Number	Machine Type
RD312	Caterpillar 785 Volumax	WD803 ¹	Caterpillar 854G
RD314 ²	Caterpillar 785 Coal Tray		Grader
RD316 ²	Caterpillar 785 Coal Tray	GR703	Caterpillar 16G
RD317 ²	Caterpillar 785 Volumax	GR704	Caterpillar 24H
RD318 ¹	Caterpillar 785 Coal Tray	GR706	Caterpillar 24H
RD319 ¹	Caterpillar 785 Volumax Coal		Water Truck
RD320 ¹	Caterpillar 785 Volumax Coal	WT004	Caterpillar 773B
RD406 ¹	Caterpillar 789C	WT006 ¹	Caterpillar 785C Watertruck
RD407 ¹	Caterpillar 789C	WT008 ¹	Caterpillar 789C Watertruck
RD408 ¹	Caterpillar 789C		Drill
RD409 ¹	Caterpillar 789C	DR991	Atlas Copco DML
RD410 ¹	Caterpillar 789C		Service Trucks
RD411 ¹	Caterpillar 789D	ST004	Ford Louisville Service Truck
RD412 ¹	Caterpillar 789D	ST006	Mack Service Truck
RD413 ¹	Caterpillar 789D	ST007	Mack Service Truck Granite
RD414 ¹	Caterpillar 789D	ST012	Caterpillar 773F ST
RD415 ¹	Caterpillar 789D		
RD501 ¹	Caterpillar 793F		
RD502 ¹	Caterpillar 793F		
RD503 ¹	Caterpillar 793F		
RD504 ¹	Caterpillar 793F		
RD505 ¹	Caterpillar 793F		

Note: This is mobile mining equipment only and does not include ancillary equipment such as lighting plants, pumps etc.

Note 1: Fully noise attenuated mobile mining equipment.

Note 2: Partially noise attenuated mobile mining equipment.

The heavy vehicle workshop is scheduled to operate between 6:30 am and 6:30 pm, and includes one (1) service truck operator, and five (5) fitters spread between the field and workshop as needed. Additional and other tradespersons are contracted as required. Servicing consists of a variety of noise generating activities, some more significant than others.

NAC are scheduled to start mining coal in quarter 4 of 2023. Accordingly, during the monitoring period, there were no mobile equipment assigned to excavating Run-of-Mine (ROM) coal, nor were either of the coal handling and preparation plants (CHPPs) operating.

The NAC rail spur is yet to be constructed, therefore an assessment against rail noise is not applicable to this monitoring period.

The exception to the above is NAC's operational constraints; agreed shift times, human resources (absenteeism/overtime), weather, unscheduled maintenance, unscheduled delays for performance management relating to noise at sensitive receptor locations, and emergencies. Attached as Appendix B are details of unscheduled activities and other 'noise events' during this noise monitoring assessment period that are considered typical of normal mining operations.





4.0 Noise Monitoring Methodology

This assessment has been conducted through a combination of long-term unattended noise measurements and the short-term operator attended noise measurement. The monitoring and analysis methodology detailed in the following subsections have been conducted in a manner to be in general accordance with DES's *Noise Measurement Manual* (NMM) and address the requirements of EA Condition F6.




4.1 Monitoring Locations

The noise monitoring locations are detailed in Table 5 and shown in Figure 1. Each location was selected to minimise influences from extraneous noise sources (eg optimum placement of the monitors away from air-conditioners, dogs, rustling trees etc.), but remaining near enough to be representative of the sensitive receptor in general accordance with the requirements of the NVMP.




Table 5 Noise Monitoring Location Details

Location	Coordinates (GDA 94, Zone 56)	Description	Representative Photo
NML1	370,385 m E 6,979,192 m S	Located at historical noise monitoring location representing this sensitive receptor, which is approx. 25 m northeast of the residence at Allen Street, Acland. Location approx. 360 m southwest of NAC's Stage 2 West Pit.	
NML4	369,336 m E 6,984,857 m S	Located on opposite side of Balgowan Road to the NML4 residence to the southwest. Location approx. 2.7 km northwest of NAC admin building.	






Location	Coordinates (GDA 94, Zone 56)	Description	Representative Photo
NML8	373,015 m E 6,983,968 m S	Located in front yard, 20 m south of the residence façade. Location approx. 2.0 km northwest of NAC admin building.	
NML10	374,031m E 6,984,060 m S	Noise monitor located at representative location 35 m southwest of sensitive receptor. Approximately 3.0 km northeast from NAC admin building	
NML11	375,169 m E 6,982,676 m S	Noise monitor located approximately 40 m southwest of sensitive receptor at representative location. Location approx. 3.9 km east of NAC admin building.	



Location	Coordinates (GDA 94, Zone 56)	Description	Representative Photo
NML15	376,603 m E 6,978,865 m S	Noise monitor located at representative location 70 m southwest of sensitive receptor. Approximately 2.7 km east from NAC	
NML16	376,661 m E 6,977,960 m S	Noise monitor located at representative location 70 m northwest of sensitive receptor. Approximately 3 km southeast from NAC	
NML18	375,194 m E 6,974,907 m S	Noise monitor located at representative location 70 m southwest of sensitive receptor. Approximately 4.4 km southeast from NAC	



Location	Coordinates (GDA 94, Zone 56)	Description	Representative Photo
NML34	364,969 m E 6,975,304 m S	Noise monitor located at representative location 35 m northeast of sensitive receptor. Approximately 7.1 km southwest from NAC	 A photograph showing a noise monitor (NML34) in a field. The monitor is a black pole with a microphone at the top, standing on a wooden frame. The field is dry and grassy, with trees in the background.
NML35	365,482 m E 6,979,010 m S	Noise monitor located at representative location 12 m east of sensitive receptor. Approximately 5 km southwest from NAC	 A photograph showing a noise monitor (NML35) located near a residential property. The monitor is a black pole with a microphone, positioned behind a white fence. A house is visible in the background.
NML38	365,549 m E 6,981,292 m S	Noise monitor located at representative location approximately 50 m to the southeast of the sensitive receptor. Location approx. 5.0 km west of NAC.	 A photograph showing a noise monitor (NML38) in a field. The monitor is a black pole with a microphone, standing on a black case. The field is dry and grassy, with a building and trees in the background.



Location	Coordinates (GDA 94, Zone 56)	Description	Representative Photo
Background	371,979 m E 6,971,669 m S	Located in field, approximately 7 km southeast of NAC and 1.7 km west of Oakey Cooyar Road.	



365000

370000

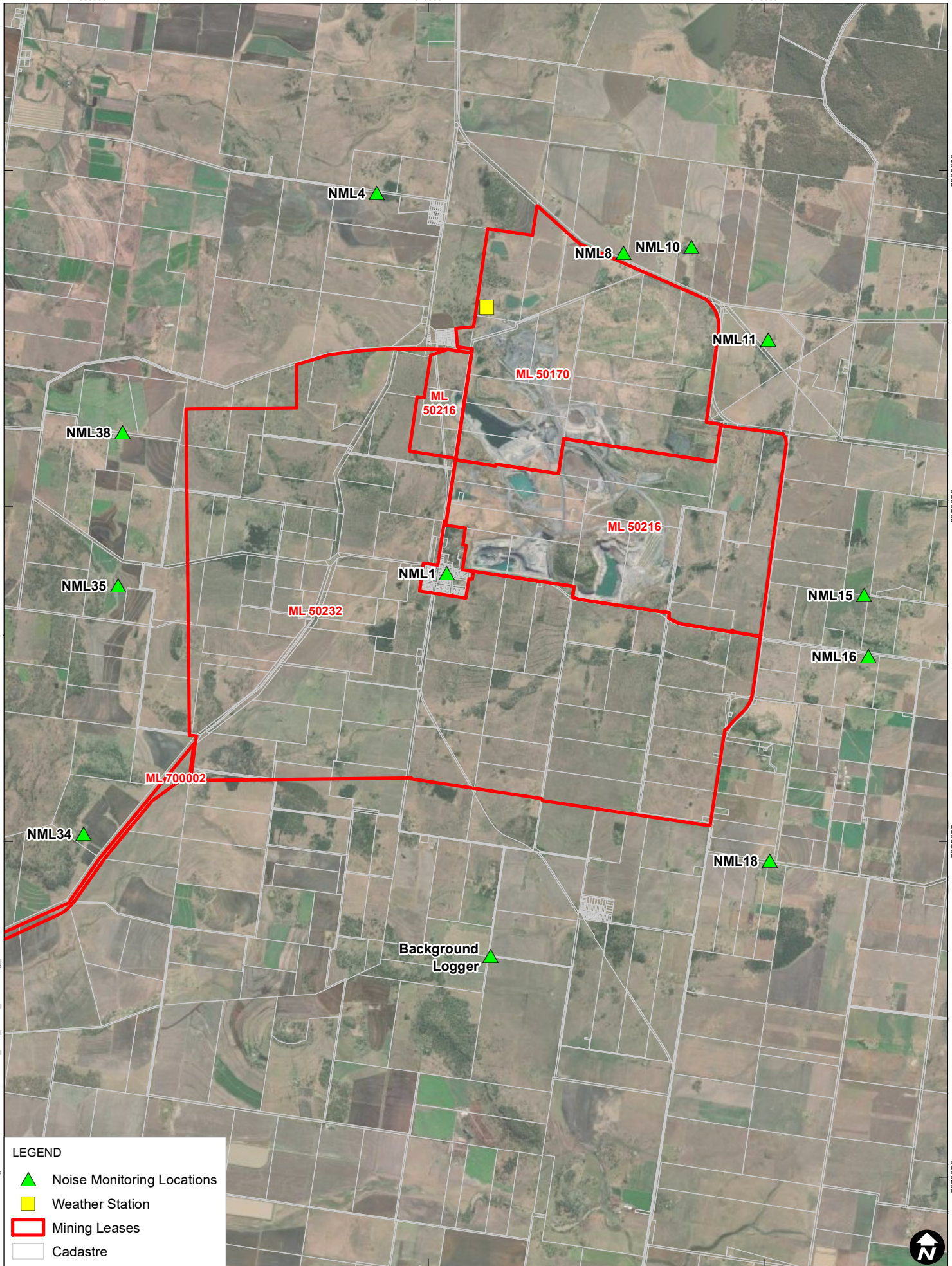
375000

6885000

6880000

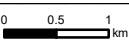
6875000

6870000



LEGEND

- ▲ Noise Monitoring Locations
- Weather Station
- Mining Leases
- Cadastre



Scale: 1:72,500 at A4
 Coordinate System: AGD 1984 AMG Zone 56

Date Drawn: 18-Oct-2023
 Project Number: 620.10963



H:\Projects-SLR\620-BNE\620-BNE\620-BNE\620.10963 NAC Stage 3\GIS\4-Noise\GIS\SLR\62010963_PO1_Noise_monitoring_01.mxd



**NAC Stage 3 Noise Survey
 Noise Monitoring Locations**

FIGURE 1

4.2 Monitoring Dates

For this August 2023 monitoring period, noise monitoring was undertaken between 4 and 12 August 2023 (inclusive). In accordance with the EA and NVMP requirements (see Section 2.0), analysis was undertaken on seven (7) selected days which, where possible, included days where there were adverse weather conditions (ie temperature inversions, and/or light source to receiver wind directions) and/or normal to peak mine operations.

The dates below represent the start of each assessed daily period:

- Monitoring location NML1 - 6 to 12 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.
- Monitoring location NML35 – 4 to 8, 10 and 11 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.
- Remaining monitoring locations – 4 to 10 August 2023, assessment period being 24-hours starting 10:00 pm prior to each of these days.

In accordance with the NVMP requirements, a total of three (3) 15-minute attended noise measurements were conducted at each monitoring location targeted at each of the day, evening and night time periods (1x 15-minute attended measurement conducted in each of these periods). Measurements were conducted on 3, 4, 7, 8, 10 and/or 14 August 2023, coinciding with the unattended monitoring period at the locations, and occurred during the NAC operating period.

4.3 Noise Monitoring Equipment

Table 6 details the noise monitoring equipment used for unattended and attended noise monitoring. To also ensure suitable analysis could be completed on the unattended noise monitoring data, audio data, one-third octave frequency data, and fast and impulsive L_{Amax} data were captured by the noise logger at each location.

All unattended noise loggers were set to log data in 15-minute intervals (in accordance with Condition F6 of EA EPML00335713). The Background Location was also set to log 15-minute intervals (representing a standard background monitoring location/program). The primary logging profile for each unattended noise logger was set to log A-weighted and fast response continuous noise levels.

All acoustic instrumentation employed throughout the noise monitoring survey was designed to comply with the requirements of AS IEC 61672.1-2019 “*Electroacoustics - Sound Level Meters*” and carried current manufacturer calibration certificates. Instrument calibration was checked in the field before and after each measurement survey, with the variation in calibrated levels not exceeding the acceptable variation of ±1.0 dBA.

Table 6 Unattended and Attended Noise Monitoring Equipment – August 2023

Location	Noise Monitoring Equipment
NML1	SVAN 977 SN: 45701
NML4	SVAN 977 SN: 99018
NML8	SVAN 977 SN: 99019
NML10	SVAN 977 SN: 99032
NML11	SVAN 977 SN: 99033
NML15	SVAN 977 SN: 69757
NML16	SVAN 977 SN: 99035
NML18	SVAN 977 SN: 99021
NML34	NGARA SN: 8781C7



Location	Noise Monitoring Equipment
NML35	SVAN 977 SN: 69756
NML38	NGARA SN: 8780ED
Background	NGARA SN: 878053
All	Brüel & Kjær 2250 Sound Level Meter SN: 3004710 Brüel & Kjær 2250 Sound Level Meter SN: 3004638
All	G.R.A.S 42AG SN:279052 SV30A SN:24573

4.4 Meteorological Conditions

Weather data during the August 2023 monitoring period was obtained from a permanent weather station located approximately 300 m northwest of NAC’s main administration building (see Figure 1) and was considered representative of the study area (ie all monitoring locations are within 11 km of this permanent weather station without any major intervening terrain with the potential to impact the local weather). The meteorological data from the weather station was filtered for any periods of rainfall and periods where wind speeds were in excess of 5.0 m/s (18 km/h), with noise levels excluded where these periods occurred. Comments have also been included where elevated wind noise and/or rainfall was observed during unattended logging or operator attended noise measurements but where the recorded weather conditions were compliant with DES’s NMM.

4.5 Analysis Methodology

The attended and unattended analysis methodology utilised for this August 2023 monitoring period is outlined in the following sub-sections. It is noted that this methodology may be reviewed and revised for future monitoring rounds (including when mine operations move to more intensive 24-hour operations and rail activities commence), however it is not proposed to reanalyse historical data if and when such conditions change.

4.5.1 Attended Noise Data

For those attended measurements where NAC mine attributable noise was audible and/or measurable, analysis of the attended noise measurements was completed through re-reviewing the LAeq,15 min data file to remove periods of noted extraneous noise (ie traffic passbys, wind/tree noise, bird song etc). This was completed via the following steps (which are similar to those completed for the unattended analysis outlined in Section 4.5.2):

- Extract the 1-second LAeq overall noise levels and one-third octave band data.
- Identify periods of extraneous noise and remove the corresponding 1-second data periods (this identification process was undertaken through reviewing the measurement notes and listening back to the captured audio data to confirm start/stop times of sources).
- Recalculate the LAeq based on the remaining 1-second data and confirm NAC attributable noise level.
- Unlike the unattended analysis outlined in Section 4.5.2, the attended analysis has not used frequency filters and corresponding correction factors. As such, all one-third octave bands have been considered in the recalculate LAeq.
- Where bird song was observed throughout the 15-minute measurement period, and could not be excluded through the 1-second data (ie because bird song was continuous through the 15-minute period), this source was excluded via manually adjusting the recalculated LAeq one-third octave band spectra in the bands dominated by bird song to levels more representative of the observed mining contribution).



- For periods where mine noise was only observed for a brief period within the overall 15-minute measurement period, only this period was further analysed and an NAC attributable noise level derived from that data period.

With the removal of those extraneous sources, the $L_{Aeq,15\text{ min}}$ was calculated to a level attributable to NAC mine noise. During this review, where practicable, the resulting $L_{AFmax,15\text{ min}}$ and corresponding $L_{AImax,15\text{ min}}$ attributable to NAC mine noise were compared to determine whether any impulsive corrections were warranted in accordance with the NMM. Similarly, if tonal characteristics were measured/audible, the $L_{Aeq,15\text{ min}}$ noise level calculated to a level attributable to NAC noise was reviewed and adjusted via the following method outlined in the NMM:

- 1 Confirm the $L_{eq,15\text{ min}}$ A-weighted one-third octave band noise level exceeds the neighbouring bands by 5 dB
- 2 Add 5 dB to the tonal one-third octave band noise level
- 3 Logarithmically sum all A-weighted one-third octave bands, including the adjusted band
- 4 The arithmetic difference between the logarithmically summed noise level determined in point 3 and the original overall A-weighted noise level becomes the tonal correction.

If NAC attributable noise was determined to be inaudible and/or unmeasurable during the attended measurement, the above re-review was not performed and an NAC mine attributable noise level was not presented. Similarly, in instances where short durations (less than 30 seconds) of NAC mine attributable noise was discernible yet significantly below ambient noise levels, such that accurate quantification was not possible, an estimated upper limit for the noise contribution has been presented and a full re-review was not performed.

For attended measurements undertaken during the night time period and where NAC mine noise was detected, the attended noise data was analysed and noise attributable to NAC operations was assessed against the L_{Amax} 50 dBA night-time noise limit.

4.5.2 Unattended Noise Data

The analysis of the unattended noise monitoring data captured from each monitoring location (excluding the Background location) has been completed via the following methodology. The methodology outlined below has been undertaken in order to identify the NAC mine attributable noise level, where it is in fact audible and/or measurable (ie acoustically detectable²). In a lot of instances, due to the prominence of ambient noise sources, prevailing weather condition, and/or extent of mining activities, NAC mine noise could either not be detected or only 'just' detectable via the methodology outlined below and an exact NAC attributable noise level has not been possible to determine. In these cases, the results presented in Appendix E represent 'ambient' noise levels where NAC mine attributable noise, if just detected, is less than the reported value. If NAC noise was not detected, the results solely represent 'ambient' noise levels.

- 1 For August 2023, SLR has been advised that the official NAC operating period is 24-hours, Monday to Sunday. A review of available operational logs (see Appendix B) noting recorded actions relating to start and stop times during the 4 to 12 August monitoring period has been undertaken to inform the analysis. Detailed analysis of the unattended noise monitoring data has been completed for the day, evening and night periods for the seven (7) days outlined in Section 4.2, consistent with the possible operational period.

² The phrases 'acoustically detectable/detected' and 'audible and measurable' are used in this report to refer to measurements where the key noise source (i.e. NAC mine operations) was able to be measured by an appropriate sound level meter (measurable in one or more one-third octave band), and/or was audible to a suitably qualified acoustic consultant. In some instances, the key source was measurable but not audible due to, for example, either being acoustically 'masked' by other sources (such as constant wind noise) or at the edge of or below the range of typical human hearing. Conversely, in some instances the key sources were audible but difficult to measure due to, for example, either being acoustically 'masked' by other sources (such as constant wind noise or traffic noise), or a complex noise environment was observed where multiple other noise sources were detected which contributed to the overall measured noise level elevated above the key source's contribution.



- 2 Noting eight (8) 24 hour periods were monitored between 4 and 12 August 2023 (inclusive), the selected seven (7) 24-hour periods for reporting were initially determined based on a preliminary review of the noise data (namely one-third octave band), weather data and the operational mine log. Where practical, these 24-hour periods align with adverse weather conditions for noise propagation (ie temperature inversions, and/or light source to receiver wind directions, limited to no rain) and/or normal to peak mine operations.
- 3 Through detailed analysis of selected 'mine dominant' attended noise measurements associated with the performance monitoring station correlation survey in April and May 2023³, (see analysis in Appendix C), it was determined that the difference in mine noise contribution for the frequency range of 20 Hz to 630 Hz and separately the 20 Hz to 1 kHz one-third octave bands (inclusive) when compared to the total mine noise (20 Hz to 20 kHz) were as follows:
 - Acland performance monitoring station:
 - ≤ 630 Hz filter: missed mine noise energy = +2.3 dBA.
 - ≤ 1 kHz filter: missed mine noise energy = +0.7 dBA.
 - Northern performance monitoring station:
 - ≤ 630 Hz filter: missed mine noise energy = +1.6 dBA.
 - ≤ 1 kHz filter: missed mine noise energy = +0.7 dBA.

Due to the prominence of extraneous noise sources above 630 Hz or 1 kHz (ie bird song, traffic passbys, depending on the time of day), these frequency band filters have been applied to all logged unattended noise data. This was applied via logarithmically summing the LAeq 20 Hz to 630 Hz and 20 Hz to 1 kHz one-third octave bands for each 15-minute logged interval.

The ≤ 630 Hz one-third octave band forms the primary filter for all compliance monitoring locations due to mine noise generally been detectable within this frequency range (or theoretically detectable) noting the distance many locations are setback from NAC. The exception is NML1 where both filters have been considered due to the proximity of this location to NAC operations and that mine noise can be clearly measured at contributing noise levels in the frequency range of 800 Hz and 1 kHz and not solely ≤ 630 Hz.

The corrections have been applied to the following grouping:

- Acland performance monitoring station frequency filter corrections – applied to NML1, NML15, NML16, NML18, NML34, NML35, NML38,
 - Northern performance monitoring station frequency filter corrections – applied to NML4, NML8, NML10, NML11.
- 4 Periods where the LAeq,15 min value was greater than the corresponding time period noise level conditioned within Schedule F – Table F1 (day – 42 dBA, evening – 35 dBA, night-time – 35 dBA, as applicable), with the addition of the frequency filter corrections noted in Point 2, were conditionally formatted to automatically highlight. The conditional formatting is:
 - Day (>42 dBA) – pink cells in Appendix E
 - Evening (>35 dBA) – peach cells in Appendix E
 - Night-time (>35 dBA) – peach cells in Appendix E.
 - 5 LAeq,15 min periods that were highlighted were reviewed to determine the contributing noise levels from NAC mine operations or whether extraneous noise sources interfered with that

³ Correlation monitoring completed by SLR for NAC, and occurred at the Acland and Northern performance monitoring stations.



15-minute period, including contributing the ≤ 630 Hz and/or ≤ 1 kHz one-third octave bands. This review was completed via the following logged data and other supporting information:

- Listen back to the logged audio data to determine audible noise sources.
 - One-third octave noise spectrum – either the total 15-minute spectrum or at a finer resolution of 1-minute interval data.
 - Review of measured weather data and to eliminate noise monitoring periods that exceeded the prescribed wind speed and rainfall criteria stated in the NMM.
 - Review available mine operation logs to confirm mining activities occurred in highlighted periods.
- 6 In addition to the review of those periods that were highlighted through Point 4, 15-minute periods that were within 5 dBA of the relevant time period noise level limits prescribed in Schedule F - Table F1 were also reviewed to determine the contributing noise levels from NAC operations or whether extraneous noise sources interfered with that 15-minute period, including into the ≤ 630 Hz and/or ≤ 1 kHz one-third octave bands contributions. This accounted for periods where potential tonal or impulsive characteristics may be present and warranted corrections being applied (thus increasing the reported NAC attributable noise level). 15-minute periods where the L_{Aeq} noise level was less than 5 dBA of the relevant time period noise level limit prescribed in Schedule F - Table F1 were generally not reviewed unless there was clear evidence of NAC attributable noise in the raw one-third octave band data or 15-minute periods before/after were within 5 dBA of the relevant time period noise level contained in Schedule F - Table F1.
- 7 This review identified the following common extraneous noise sources that were removed from the filtered results contained in this report:
- Traffic passbys,
 - Bird song,
 - Insects,
 - Wind,
 - Helicopters, and
 - Domestic noise.

The process for removing these extraneous sources were as follows:

- Traffic passbys, helicopters, domestic noise and wind noise that contained typically broadband energy well into the frequency filters – these type of extraneous sources were recorded during the assessed time periods, with certain times observing multiple events in a 15-minute period. They typically dominated the noise environment for 30-60 seconds per event, or longer if repetitive events occurred, sometimes dominating the full 15-minute period. Where these events were detected and determined to dominate a corresponding 1-minute period, that data was removed from the analysis. Where 1-minute periods were removed, the remaining 1-minute L_{Aeq} 's within that 15-minute period were logarithmically averaged to recalculate a corrected $L_{Aeq, 15min}$. Where more than 5-minutes of data was excluded, the full 15-minute period was excluded.
- Bird song – bird song was clearly audible and dominant for much of the monitoring period. Bird song is typically observed from just prior to sunrise to just after sunset, with bird song attributable noise levels most elevated during the morning and late afternoon periods. Typically, bird song dominated those frequencies above 1 kHz so were inherently excluded from this analysis through the ≤ 630 Hz / ≤ 1 kHz one-third octave band filters. At times however, bird song (typically from crows, roosters and pigeons) contaminated the 1 kHz one-third octave band, and observed within the 630 Hz and 800 Hz one-third octave bands, which required the removal of that contamination. Where the analysis clearly identified bird song contributing or dominating the ≤ 1 kHz



filter, the ≤ 630 Hz filter was considered more appropriate over the ≤ 1 kHz filter for determining mine contributions (this is in part the key reason why the ≤ 630 Hz filter forms the primary filter for the majority of monitoring locations). If bird song was also identified as contributing to or dominating the ≤ 630 Hz filter, a similar process for correcting passbys, helicopters etc was adopted by removing the dominant 1-minute period/s. Where 1-minute period/s were removed, the remaining 1-minute L_{Aeq} 's within that 15-minute period were logarithmically averaged to recalculate a corrected $L_{Aeq, 15min}$. Again, where more than 5-minutes of data was excluded, the full 15-minute period was excluded.

- Insects – insect noise, where observed, was always in a frequency range above 1 kHz (typically in the range of 2 kHz to 6.3 kHz), and therefore exceeded via both the 630 Hz and ≤ 1 kHz filters. Minute by minute data did not have to be removed to exclude insect noise.
- 8 Where extraneous noise sources have been removed from a $L_{Aeq, 15 min}$ and the noise level recalculated, that number has been presented in blue – see Appendix E. Where a 15-minute noise level was above the relevant time period noise level limit prescribed in Schedule F - Table F1, however considered to have been dominated by extraneous noise for the more than 5-minutes of the 15-minute period, a blue cell shading has been applied to the comment cell, and the 15-minute noise level is to be excluded.
 - 9 As part of this review, suitable analysis was completed on the reviewed periods to determine whether any tonal and/or impulsive characteristics were detected (in accordance with the NMM and Condition F6 of EA EPML00335713). Dozer track slaps were observed with a number of events satisfying SLR's interpretation of the NMM criterion for determining where impulsive corrections need be applied. Tonal characteristics from mining activities were also observed at times and again satisfying SLR's interpretation of the NMM criterion for determining where tonal corrections need be applied. Where tonal and/or impulsive characteristic correction has been applied to an $L_{Aeq, 15 min}$ noise level, that number has been presented in magenta – see Appendix E.
 - 10 Analysis to determine compliance with the night-time 50 dBA L_{Amax} noise limit has been undertaken according to the following steps:
 - a) An initial filter has been applied to the as measured L_{Amax} 15-minute noise levels to identify those above 50 dBA. When the L_{Amax} noise level is equal to or less than 50 dBA, no further analysis has been completed, regardless of whether mine noise has been detected or not.
 - b) Where the measured L_{Amax} 15-minute noise level is above 50 dBA, the L_{Amax} event has been identified and via the spectral and/or audio data, the source identified and noted accordingly in Appendix E.
 - c) If multiple events are above 50 dBA within the 15-minute, but no mine noise is detected, no further identification of these additional events is conducted.
 - d) If multiple events are above 50 dBA within the 15-minute, and mine noise is detected, further identification of these additional events is conducted to confirm whether any are attributable to mine noise. If the mine attributable L_{Amax} can be identified and is above 50 dBA, this is reported. If all events above 50 dBA are attributable to non-mine sources, this is noted accordingly.
 - e) For this analysis, the L_{Amax} is defined as the maximum noise event, rather than an 'average maximum'. This aligns to the definition of L_{Amax} in the EA.
 - f) For the period of just prior to sunrise and through to 7:00 am, where bird song tends to dominant the noise environment, determination of mine attributable L_{Amax} noise levels can often be difficult. Where a conclusive determination of the mine attributable L_{Amax} noise cannot be made, due to the frequent nature of bird song or other extraneous noise sources, this is noted accordingly.



Finally, as noted in Section 4.4, comments have also been included where elevated wind noise and/or rainfall was observed during unattended logging noise measurements but where the recorded weather conditions were compliant with the NMM. Where wind noise and/or rainfall has either effected or dominated the measurement, this has been noted accordingly including whether the 15-minute data is considered suitable for use or excluded due to wind/rain effects/dominance (see Appendix E).

5.0 Noise Monitoring Results

The following section documents the attended and unattended noise monitoring results completed as part of this assessment.

5.1 Attended Noise Results

As noted in Section 4.2, three (3) 15-minute attended noise measurements were conducted at each monitoring location on 3, 4, 7, 8, 10 and/or 14 August 2023, and occurred during the NAC mine operating period.

The results of the attended noise measurements, including the derived noise level attributable to NAC mine operations where NAC mine was detectable (audible and/or measurable), are detailed in Appendix D. A summary of the findings are presented below:

- NML1: NAC mine was not detected during all three (3) attended measurements.
- NML4: NAC mine was not detected during all three (3) attended measurements.
- NML8: NAC mine was not detected during all three (3) attended measurements.
- NML10: NAC mine was not detected during all three (3) attended measurements.
- NML11: NAC mine was not detected during all three (3) attended measurements.
- NML15: NAC mine was not detected during all three (3) attended measurements.
- NML16: NAC mine was not detected during all three (3) attended measurements.
- NML18: NAC mine was not detected during all three (3) attended measurements.
- NML34: NAC mine was not detected during all three (3) attended measurements.
- NML35: NAC mine was not detected during all three (3) attended measurements.
- NML38: NAC mine was not detected during all three (3) attended measurements.

NAC mine attributable noise was not detected (inaudible/unmeasurable) during the August 2023 attended measurements at all measurement locations. Accordingly, the relevant $L_{Aeq,15min adj}$ noise limit prescribed in Schedule F - Table F1 of NAC's EA is achieved for the period in which the attended measurements took place.

5.2 Unattended Noise Results

A summary of each monitoring location's analysed noise logger data (statistical and audio) is contained within the following sections.

The detailed analysis results for each monitoring location during the August 2023 monitoring period is contained within Appendix E.

5.2.1 NML1

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed between 6 and 12 August 2023, totalling 672 individual 15-minute intervals. Analysis showed that for five (5) 15-minute intervals where NAC mine noise was detected following the unattended analysis methodology presented in Section 4.5.2, the resulting NAC mine attributable noise levels were found to be above the relevant time period noise level limits prescribed in Schedule F - Table F1 of



NAC's EA. These are discussed further in Table 7. For all remaining 15-minute periods where NAC attributable noise was detected, the resulting level was equal to or below the corresponding time period noise limit.

Through the detailed analysis, tonal characteristics were identified during four (4) 15-minute periods between 6 to 12 August 2023, for which relevant corrections were applied. Regarding impulsive characteristics, eleven (11) 15-minute periods were identified to contain transient mine noise events deemed as warranting correction for impulsive characteristics (up to 4 dBA). With the inclusion of appropriate tonal and impulsive corrections, four (4) periods were identified with $L_{Aeq, adj, 15 min}$ noise level attributable to NAC mine operations above the noise levels contained in Schedule F – Table F1. These are identified in Table 7.

A summary of the measured 15-minute periods which were found to have a calculated NAC mine contribution above the noise levels contained in Schedule F – Table F1 is provided in Table 7. SLR notes that for all four (4) of the $L_{Aeq, 15min, adj}$ exceedances presented in Table 7, the unadjusted $L_{Aeq, 15min}$ noise levels were measured at equal to or below the corresponding time period noise limit, with the impulsive and/or tonality corrections resulting in the identified exceedances.

Table 7 Unattended Noise Results – Monitoring Location 1 – August 2023

Date and time (end of period)	Calculated NAC Noise Level (dBA $L_{Aeq, adj, 15min}$)	NAC attributable 15-minute L_{Amax} (dBA, applicable to night-time periods only)	Comments
06-08-2023 8:00 pm	36 ¹	-	Mine noise including dozer track slaps. Low level wind noise (brief). ≤ 1 kHz contribution is more representative of NAC attributable noise level. L_{AFmax} mine event determined from a dozer track slap at 45 dBA with a corresponding $L_{AI max}$ difference of +3 dB. Therefore +3 dB impulsive correction applied. Mine calculated 15-minute L_{Aeq} tonal in 100 Hz band, tonality adjustment applied resulting in a +1 dB correction overall.
06-08-2023 8:30 pm	38	-	Mine noise including dozer track slaps dominant. ≤ 1 kHz contribution is more representative of NAC attributable noise level. L_{AFmax} mine event determined from a dozer track slap at 49 dBA with a corresponding $L_{AI max}$ difference of +4 dB. Therefore +4 dB impulsive correction applied.
06-08-2023 8:45 pm	38	-	Mine noise including dozer track slaps dominant. Light breeze in trees (around 25 dBA) audible. ≤ 1 kHz contribution is more representative of NAC attributable noise level. L_{AFmax} mine event determined from a dozer track slap at 45 dBA with a corresponding $L_{AI max}$ difference of +3 dB. Therefore +3 dB impulsive correction applied. Mine calculated 15-minute L_{Aeq} tonal in 100 Hz band, tonality adjustment applied resulting in a +1 dB correction overall.



Date and time (end of period)	Calculated NAC Noise Level (dBA LAeq, adj, 15min)	NAC attributable 15-minute LAmax (dBA, applicable to night-time periods only)	Comments
07-08-2023 7:30 pm	40	-	Mine noise including dozer track slaps dominant. Light breeze in trees (around 26 dBA) audible. Brief periods (approximately 30 seconds total) of helicopter noise audible however helicopter contribution towards overall LAeq is considered to be negligible. ≤1kHz contribution is more representative of NAC attributable noise level. LAFmax mine event determined from a dozer track slap at 54 dBA with a corresponding LAImax difference of +4 dB. Therefore +4 dB impulsive correction applied. Mine calculated 15-minute LAeq tonal in 100 Hz band, tonality adjustment applied resulting in a +1 dB correction overall.
08-08-2023 03:45 am	35	52 ¹	Mine noise including grader engine revs briefly audible. Low level wind noise (brief). No impulsivity or tonal corrections were warranted upon review of audio and spectral data. LAFmax mine event determined from a grader engine rev at 52 dBA.

Note 1: Consider acoustically imperceptible

Noise levels within 1 to 2 dBA and above those contained in Schedule F – Table F1 are considered imperceptible and therefore are not acoustically material, for the following two (2) reasons:

- Changes in noise levels of 1 or 2 dBA are imperceptible to the human ear (or expressed differently, mining noise at 37 dBA LAeq would sound the same to the human ear as mining noise at 35 dBA LAeq), and;
- It is commonly accepted in the acoustic fraternity that environmental noise monitoring has a ±2 dBA measurement accuracy – as such, the assessed noise levels within 2 dBA of the levels contained in Schedule F – Table F1 are within the measurement accuracy.

Regarding the identified events in Table 7 for 6 and 7 August 2023, on review of supplied operational logs from NAC, it was identified that a dozer was operating approximately 1.1 km east of NML1 from approximately 7:00 pm until 9:30 pm each evening period. Attributable noise levels during these times were determined between 30 and 40 dBA LAeq,15min adj for the identified 15-minute periods occurring during these evening periods, with exceedances of the evening 35 dBA LAeq,15min adj noise limit discussed further in Table 7.

The noise environment at NML1 was routinely dominated by aircraft noise (from Oakey Air Base and small light aircraft), bird song, vehicle passbys (albeit infrequent at times), and wind generated noise. Typically, between the hours of 4:00 am to 10:00 am each day, crow and rooster calls were identified to contaminate the 800 Hz one-third octave band, thus elevating the values calculated through the application of the ≤1 kHz filter. Therefore the ≤630 Hz filter was deemed more representative of mine contributions where mine noise was detected in these periods, unless noted otherwise.

Accordingly, for NML1, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F – Table F1 of NAC’s EA with the exception of the five (5) 15-minute periods detailed in Table 7.

SLR understands that NAC did not receive any noise complaints as a result of these five (5) exceedances, in particular the three (3) events above the acoustically negligible range. Furthermore, at the time of reporting, it is SLR’s understanding that NAC had received no formal complaints of environmental nuisance from DES regarding these time periods.



5.2.2 NML4

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed between 4 to 10 August 2023, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was rarely detected (audible or measurable) at this location. Specifically two (2) 15 minute periods were identified where very low levels of mine noise were detected. In both instances, the mine contribution was estimated at <20 dBA LAeq,15min. The noise environment at NML4 was routinely dominated by aircraft noise (from Oakey Air Base and small light aircraft), bird song, dog barks and other wildlife noises, wind generated noise, local and distant traffic, and farming machinery. It is possible that at times, these ambient noise source masked contributions from NAC mine hindering detection in the unattended noise data.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during aforementioned monitoring dates were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of aircraft, wind generated noise or other noted extraneous sources as noted.

No tonal or impulsive NAC mine noise characteristics were detected during this period, therefore no adjustments were warranted.

As NAC mine attributable noise was not detected at noise levels greater than 20 dBA during any night time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft and bird song). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML4 during aforementioned monitoring dates.

Accordingly, for NML4, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC's EA for the August monitoring period.

5.2.3 NML8

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed on 4 to 10 August 2023, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was not detected (audible or measurable) at this location. The noise environment at NML8 was routinely dominated by road traffic noise (being louder at this location than most other locations), aircraft noise (from Oakey Air Base and small light aircraft), bird song and wind generated noise. It is probable that these ambient noise source masked contributions from NAC mine hindering detection in the unattended noise data.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 and 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant road traffic, aircraft and wind generated noise, and NAC mine attributable noise could not be detected.

No tonal or impulsive NAC mine noise characteristics were detected during this period, therefore no adjustments were warranted.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song and road traffic noise). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML8 during aforementioned monitoring dates.

Accordingly, for NML8, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC's EA for the August monitoring period.



5.2.4 NML10

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed between 4 to 10 August 2023, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was not detected (audible or measurable) at this location. The noise environment at NML10 was routinely dominated by road traffic noise, aircraft noise (from Oakey Air Base and small light aircraft), bird song, wind generated noise, local machinery noise, and animal noise/dog barks. It is possible that at times, these ambient noise sources masked contributions from NAC mine hindering detection in the unattended noise data.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 and 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA $L_{Aeq,15min}$ for the day-time period, or 35 dBA $L_{Aeq,15min}$ for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant road traffic, aircraft, bird song, wind generated noise or other noted extraneous sources, and NAC mine attributable noise could not be detected.

No tonal or impulsive NAC noise characteristics were detected during this period, therefore no adjustments were warranted.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured L_{Amax} events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song and road traffic noise). Hence, the 50 dBA L_{Amax} noise limit is considered to be achieved at NML10 during aforementioned monitoring dates.

Accordingly, for NML10, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC's EA for the August monitoring period.

5.2.5 NML11

There was a total of seven (7) 24-hour periods (day, evening and night time), analysed between 4 and 10 August 2023 at NML11, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was not detected (audible or measurable) at this location. The noise environment at NML11 was routinely dominated by road traffic noise, aircraft noise (from Oakey Air Base and small light aircraft), bird song, wind generated noise, local machinery noise, animal noises and dog barks. It is possible that at times, these ambient noise source masked contributions from NAC mine hindering detection in the unattended noise data.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 and 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA $L_{Aeq,15min}$ for the day-time period, or 35 dBA $L_{Aeq,15min}$ for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant road traffic, aircraft, bird song, wind generated noise or other noted extraneous sources, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML11, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured L_{Amax} events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song, road traffic and wind noise). Hence, the 50 dBA L_{Amax} noise limit is considered to be achieved at NML11 during aforementioned monitoring dates.

Accordingly, for NML11, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC's EA for the August monitoring period.



5.2.6 NML15

There was a total of seven (7) 24-hour periods analysed between 4 and 10 August 2023 at NML15, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was not detected (audible or measurable) at this location. The noise environment at NML15 was routinely dominated by road traffic noise (in the same direction as the mine), aircraft noise (from Oakey Air Base and small light aircraft), bird song, and wind generated noise.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 to 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA $L_{Aeq,15min}$ for the day-time period, or 35 dBA $L_{Aeq,15min}$ for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant road traffic, aircraft, farm machinery, wind generated noise or other noted extraneous sources, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML15, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured L_{Amax} events at this location are deemed to be extraneous in nature (primarily attributable to aircraft, bird song, road traffic and wind noise). Hence, the 50 dBA L_{Amax} noise limit is considered to be achieved at NML15 during aforementioned monitoring dates.

Accordingly, for NML15, NAC mine attributable noise levels are considered to be below the relevant time period noise levels contained in Schedule F - Table F1 of NAC's EA for the August monitoring period.

SLR notes that statistical values (particularly unfiltered L_{90} and L_{10}) presented in the Appendix E analysis of this location are presented at times as unusually low numbers during quiet night time periods. It is considered likely that the SVAN 977 unit (SN 69757) used at this location encountered difficulties computing values close to the noise floor of the unit. The L_{Aeq} noise levels, including one-third octave data used for the detailed analysis, is unaffected. Considering the insignificant -0.1 dB calibration drift over the week long measurement period and the abnormal statistical values only occurring during periods below the noise floor of the instrument, SLR considers the measured L_{Aeq} and L_{Amax} data as accurate for the purposes of determining mine noise compliance.

5.2.7 NML16

There was a total of seven (7) 24-hour periods analysed between 4 and 10 August 2023 at NML16, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise was rarely detected (audible or measurable) at this location. The noise environment at NML16 was routinely dominated by road traffic noise, aircraft noise (from Oakey Air Base and small light aircraft), bird song, dog barks and wind generated noise. It is possible that at times, these ambient noise sources masked contributions from NAC mine preventing further detection.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during the 4 to 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA $L_{Aeq,15min}$ for the day-time period, or 35 dBA $L_{Aeq,15min}$ for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant traffic, aircraft, and/or wind generated noise, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML16, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured L_{Amax} events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song, road traffic and wind noise). Hence, the 50 dBA L_{Amax} noise limit is considered to be achieved at NML16 during aforementioned monitoring dates.



Accordingly, for NML16, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F – Table F1 of NAC’s EA for the August monitoring period.

5.2.8 NML18

There was a total of seven (7) 24-hour periods analysed between 4 and 10 August 2023 at NML18, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise could not be detected (audible or measurable) at this location. The noise environment at NML18 was routinely dominated by road traffic noise, aircraft noise (namely from Oakey Air Base), bird song, onsite vehicles, wind generated noise, and dog barks/animal noises.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 to 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant traffic, aircraft, bird or wind generated noise, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML18, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song, road traffic and wind noise). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML18 during aforementioned monitoring dates.

Accordingly, for NML18, NAC mine attributable noise levels are considered to be below the relevant time period noise levels contained in Schedule F - Table F1 of NAC’s EA for the August monitoring period.

5.2.9 NML34

There was a total of seven (7) 24-hour periods analysed between 4 and 10 August 2023 at NML34, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise could not be detected (audible or measurable) at this location. The noise environment at NML34 was routinely dominated by road traffic noise, aircraft noise (from Oakey Air Base and small light aircraft), bird song (including pigeons dominating the 630 Hz band), localised mechanical noise (farming equipment), wind generated noise, dog barks and domestic noise.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 to 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant road traffic, aircraft, bird song, wind generated noise or other noted extraneous sources, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML34, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song and road traffic noise). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML34 during aforementioned monitoring dates.

Accordingly, for NML34, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC’s EA for the August monitoring period.



5.2.10 NML35

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed between 4 and 11 August 2023, totalling 672 individual 15-minute intervals. The 24 hour period from 10:00 pm on 8 August until 10:00 pm on 9 August was excluded due to interference from pre-amp static on the noise monitoring unit. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise could not be detected (audible or measurable) at this location. The noise environment at NML35 was routinely dominated by aircraft noise (from Oakey Air Base and small light aircraft), bird song, wind generated noise and isolated vehicle passbys.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 to 11 August 2023 period were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant wind generated or aircraft noise, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML35, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song and road traffic noise). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML35 during aforementioned monitoring dates.

Accordingly, for NML35, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F – Table F1 of NAC's EA for the August monitoring period.

SLR notes that intermittent equipment static noise was audible and dominant for periods during the seven (7) days at this monitoring location. This is likely attributable to an intermittent pre-amp malfunction on noise monitoring unit. These periods have been noted and data excluded accordingly. Notwithstanding this, SLR notes that calibration drift on the unit was less than 0.5 dB, hence all measured noise levels during periods unaffected by the static are considered to be reliable for compliance noise monitoring purposes.

5.2.11 NML38

There was a total of seven (7) 24-hour periods (day, evening and night time) analysed between 4 and 10 August 2023, totalling 672 individual 15-minute intervals. Following the unattended analysis methodology presented in Section 4.5.2, NAC mine attributable noise could not be detected (audible or measurable) at this location. The daytime noise environment at NML38 was routinely dominated by aircraft noise (from Oakey Air Base and small light aircraft), background road traffic noise, bird song, localised machinery and trucks, and wind generated noise.

Following the unattended analysis methodology presented in Section 4.5.2, the resulting ≤ 630 Hz filtered noise levels for the majority of the 15-minute intervals during 4 and 10 August 2023 period were below the relevant time period noise limit (ie 42 dBA LAeq,15min for the day-time period, or 35 dBA LAeq,15min for the evening and night-time period). Those 15-minute intervals above the relevant time period noise limit were determined to be a result of dominant wind generated noise, and NAC mine attributable noise could not be detected.

As NAC mine attributable noise could not be detected at NML38, an assessment for tonal or impulsive adjustments is not applicable.

Similarly, as NAC mine attributable noise was not detected, including during the night-time period, the measured LAmax events at this location are deemed to be extraneous in nature (primarily attributable to animals, aircraft, bird song, localised bangs/clangs, and wind noise). Hence, the 50 dBA LAmax noise limit is considered to be achieved at NML38 during aforementioned monitoring dates.



Accordingly, for NML38, NAC mine attributable noise levels are considered to be below the relevant time period noise level limits prescribed in Schedule F - Table F1 of NAC's EA for the August monitoring period.

5.3 Unattended Noise Results – Background Location

To assist with this assessment, the unattended noise monitoring data from the Background Location has been analysed for the following:

- Determination of 'Rating Background Levels' (RBLs), and
- Conduct a high-level statistical and audio data review to confirm whether NAC mine noise was detected at this location and if so, to what noise level (if measurable).

The unattended ambient noise monitoring data was used to determine the RBL for day-time (7:00 am to 6:00pm), evening (6:00 pm to 10:00 pm) and night-time (10:00 pm to 7:00 am) periods, as presented in Table 8. The RBL is the median of the 10th percentile of the daily background (LA90) noise levels in each assessment period (day, evening and night) over the duration of the monitoring.

Table 8 Background Location RBL

Monitoring Month	RBL (dBA)		
	Daytime (7:00 am – 6:00 pm)	Evening (6:00 pm - 10:00 pm)	Night-time (10:00 pm – 7:00 am)
August 2023	25	21	20

A review of the data presented in Table 8 indicates that the RBLs are typical of a rural environment with ambient noise sources such as bird song, wind noise, aircraft noise (from Oakey Air Base and small light aircraft) and distant road traffic noise being the predominant sources.

A high-level review of the captured audio and statistical data (namely one-third octave band LAeq spectra) from the Background location was conducted to confirm whether NAC attributable noise was audible and/or measurable at this location. This review concluded that no periods were considered to have NAC mine attributable noise audible and/or measurable during the August 2023 monitoring period.

6.0 Discussion – NML1 Noise Levels

Condition F2 of EA EPML00335713 states that '*If performance or compliance monitoring indicates the potential for exceedance of the relevant limits in Table F1 – Noise limits (includes construction activities) then the environmental authority holder must immediately implement noise abatement measures to avoid exceeding the relevant limits.*' Upon identifying the NML1 exceedances outlined in Table 7, the following actions have been undertaken.

In consultation with NAC, SLR has been supplied with the noise data from the Performance Management noise monitoring station (Noise Compass) in the town of Acland to perform a comparison data review. This comparison review focuses on the LAeq data, as this parameter forms the primary basis for the NAC noise performance management system and dashboard operation.

The Acland Noise Compass is located approximately 140 m southwest of the NML1 noise monitoring location, and incorporates calibration factors which are discussed in part further in Appendix C.

Table 9 details the LAeq 15-minute noise levels from the Acland Noise Compass for the exceedance periods, and represents the noise level the dashboard operators observed during these times.



Table 9 Acland Noise Compass –Comparison of ‘Compliance’ and ‘Performance’ Monitoring Results

Date and time (end of period)	NML1 LAeq,15min (dBA) ‘Compliance’		Acland Compass LAeq,15min (dBA) ‘Performance’	
	NAC Component	With Tonal/ Impulsive Adjustment	NAC Component	With Tonal/ Impulsive Adjustment
06-08-2023 8:00 pm	32	36	31	33
06-08-2023 8:30 pm	34	38	31	34
06-08-2023 8:45 pm	34	38	31	35
07-08-2023 7:30 pm	35	40	32 (31) ¹	36 (34) ¹

Note 1: 2-minutes of this 15-minute period were identified in the supplied data as containing aircraft noise and presumably excluded by the dashboard operator. The noise level in brackets is the LAeq noise level excluding these 2-minutes.

The findings from this review are as follows:

- With extraneous noise exclusions in place (as applied by NAC dashboard operators), the ‘performance’ noise dashboard showed no 15-minute period exceeded the relevant noise limit.
- NAC’s ‘performance’ noise dashboard system is incorporating tonal and impulsive adjustments in-line with those identified for NML1.
- Regarding the 15-minute period finishing 7:30 pm on 7 August 2023 (the 5 dBA exceedance period), 2-minutes of this 15-minute period were identified in the supplied data as containing aircraft noise and was excluded by the dashboard operator erroneously resulting in compliance via the dashboard. SLR’s review of this 15-minute period also identified this same aircraft noise, however (and as noted in Table 7) this aircraft noise, whilst audible, was considered to be negligible in relation to the overall NAC attributable LAeq noise level. Therefore these first 2 minutes of this 15-minute period were not excluded from SLR’s analysis (as they were from the dashboard).

Upon identifying these exceedance events in the compliance monitoring, NAC immediately engaged SLR to undertake further dashboard review and training, which occurred for day and night shifts (4 noise dashboard crews in total) on 29 and 31 August 2023. This training included, amongst many other elements, further education on when to not exclude dashboard measurements based on extraneous noise being audible but not dominant, versus when to exclude a measurement because extraneous noise was dominant (compared to mine noise).

The variation in LAeq,15min noise levels between the two (2) noise monitoring locations and techniques (compliance versus performance) were generally within 3 dBA of each other. Noting the earlier discussion in Section 5.2.1 regarding noise level changes of 1 to 2 dBA being acoustically negligible, this 3 dBA variation is just above this range. In consultation with NAC, the correlation factors used for the Acland Noise Compass are to be re-reviewed via updated correlation noise measurements. This is planned to occur within the next 1 to 2 months (ie within Q4 of 2023, subject to favourable weather).

At the time of reporting, physical abatement measures (ie source attenuation for applicable mobile mining plant and/or earth bunds) are not warranted in response to these exceedances. On-going compliance noise monitoring will also confirm the appropriateness of the noise management actions that have been taken in response to these exceedances at NML1.



7.0 Conclusion

This August 2023 monitoring period has confirmed through attended and unattended noise monitoring at the eleven (11) monitoring locations that:

- For all monitoring locations excluding NML1, no 15-minute periods during the assessed seven (7) days contained NAC mine attributable noise levels that exceeded the relevant noise level limits prescribed in Schedule F - *Table F1: Noise Limits (includes construction activities)* of NAC's EA.
- For NML1, of the 672 individual 15-minute intervals analysed, five (5) 15-minute periods during the assessed seven (7) days (less than 1%) contained NAC mine attributable noise levels above the relevant noise level limits prescribed in Schedule F - *Table F1: Noise Limits (includes construction activities)* of NAC's EA.

Regarding these five (5) 15-minute intervals at NML1 which contained NAC mine attributable noise levels above the relevant noise level limits prescribed in Schedule F - Table F1;

- Two (2) 15-minute period events resulted in NAC attributable noise levels that were either 1 or 2 dB above the relevant noise limit. Noise levels within 1 to 2 dBA and above those contained in Schedule F – Table F1 are considered imperceptible and therefore are not acoustically material, for the following two (2) reasons:
 - Changes in noise levels of 1 or 2 dBA are imperceptible to the human ear (or expressed differently, mining noise at 37 dBA LAeq would sound the same to the human ear as mining noise at 35 dBA LAeq), and;
 - It is commonly accepted in the acoustic fraternity that environmental noise monitoring has a ± 2 dBA measurement accuracy – as such, the assessed noise levels within 2 dBA of the levels contained in Schedule F – Table F1 are within the measurement accuracy.
- Three (3) 15-minute period events resulted in NAC attributable noise levels that were either 3 or 5 dB above the relevant noise limit. All three (3) 15-minute period events included impulsive and/or tonal adjustment totalling 4 or 5 dB. Expressed differently, the unadjusted 15-minute noise levels for these three (3) events were determined to have NAC attributable noise levels of 34 or 35 dBA LAeq,15min (ie at or below NAC's 35 dBA LAeq,15min evening limit). Within each of these three (3) 15-minute period events, analysing logged 1-minute LAeq noise level data indicates NAC attributable mine noise was detected for between 6 and 12 minutes. This finding in combination with reviewing of the available mine logs for these periods indicates NAC was attempting to manage the noise levels from mining activities during these periods (via the Acland Noise Compass).

SLR understands that NAC did not receive any noise complaints as a result of these five (5) exceedances, in particular the three (3) non-negligible events. Furthermore, at the time of reporting, it is SLR's understanding that NAC had received no formal complaints of environmental nuisance from DES regarding these time periods.

Upon identifying the NML1 exceedances, in accordance with Condition F2 of EA EPML00335713, the following noise management actions were taken. In consultation with NAC, SLR has been supplied with the noise data from the Performance Management noise monitoring station (Noise Compass) in the town of Acland to perform a comparison data review for these exceeding 15-minute periods. The findings from this review identified:

- With extraneous noise exclusions in place (as applied by NAC dashboard operators), the 'performance' noise dashboard showed no 15-minute period exceeded the relevant noise limit.
- NAC's 'performance' noise dashboard system is incorporating tonal and impulsive adjustments in-line with those identified for NML1.
- The 15-minute period finishing 7:30 pm on 7 August 2023 (the 5 dBA exceedance period) contained aircraft noise which was excluded by the dashboard operator erroneously



resulting in compliance via the dashboard. SLR's review of this 15-minute period also identified this same aircraft noise, however this aircraft noise, whilst audible, was considered to be negligible in relation to the overall NAC attributable L_{Aeq} noise level. Therefore these first 2 minutes of this 15-minute period were not excluded from SLR's analysis (as they were from the dashboard).

Further, NAC immediately engaged SLR to undertake further dashboard review and training, which occurred for day and night shifts (4 noise dashboard crews in total) on 29 and 31 August 2023. This training included, amongst many other elements, further education on when to not exclude dashboard measurements based on extraneous noise being audible but not dominant, versus when to exclude a measurement because extraneous noise was dominant (compared to mine noise).

In consultation with NAC, the correlation factors used for the Acland Noise Compass are to be updated via new correlation noise measurements currently being planned.

At the time of reporting, physical abatement measures (ie source attenuation for applicable mobile mining plant and/or earth bunds) have not been warranted in response to these exceedances. On-going compliance noise monitoring will also confirm the appropriateness of the noise management actions that have been taken in response to these exceedances at NML1.

This August 2023 assessment is now complete and subject to no further noise monitoring.





Appendix A Acoustic Terminology

New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

SLR Project No.: 620.10963.01003

17 November 2023

Sound Level (or Noise Level)

The terms sound and noise are almost interchangeable, except that in common usage noise is often used to refer to unwanted sound.

Sound (or noise) consists of minute fluctuations in atmospheric pressure capable of evoking the sense of hearing. The human ear (and those of other species) responds to changes in sound pressure over a very wide range. The loudest sound pressure to which the human ear responds is ten million times greater than the softest. The decibel (dB or dBL) scale reduces this ratio to a more manageable size by the use of logarithms.

The symbols SPL, L or LP are commonly used to represent Sound Pressure Level. The symbol LA represents A-weighted Sound Pressure Level. The standard reference unit for Sound Pressure Levels expressed in decibels is 2×10^{-5} Pa.

A-weighted Sound Pressure Level

The overall level of a sound is usually expressed in terms of dBA, which is measured using a sound level meter with an 'A-weighting' filter. This is an electronic filter having a frequency response corresponding approximately to human hearing.

People's hearing is most sensitive to sounds at mid frequencies (500 Hz to 4,000 Hz), and less sensitive at lower and higher frequencies. Thus, the level of a sound in dBA is a good measure of the loudness of that sound. Different sources having the same dBA level generally sound about equally loud.

Sound Power Level

The sound power of a source is the rate at which it emits acoustic energy. As with sound pressure, sound power levels (SWL) are expressed in dB units, but are identified by the symbols SWL.

The relationship between sound power and sound pressure may be likened to an electric radiator, which is characterised by a power rating but has an effect on the surrounding environment that can be measured in terms of a different parameter, temperature.

Change in Sound Pressure Levels

For human perception, a change of 1 dBA or 2 dBA in the level of a sound is considered to be indiscernible, while a 3 dBA to 5 dBA change corresponds to a small but noticeable change in loudness. A 10 dBA change corresponds to an approximate doubling or halving in loudness.

Typical Sound Pressure Levels

The table below lists examples of typical sound pressure levels.

Table A1 Examples of Typical Sound Pressure Levels

Sound Pressure Level (dBA)	Typical Example	Subjective (Human) Evaluation
130	Threshold of pain	Intolerable
120	Metal hammering	Extremely noisy
110	Grinding on steel	
100	Loud car horn at 3 metres (m)	Very noisy
90	Dog bark at 1 m	
80	Cicadas at 1 m	Loud
70	Noise level directly adjacent to a busy main road	
60	Ambient noise level in urban area close to main roads	Moderate to quiet
50	Typical rural environment with high insect noise or close to a main road	



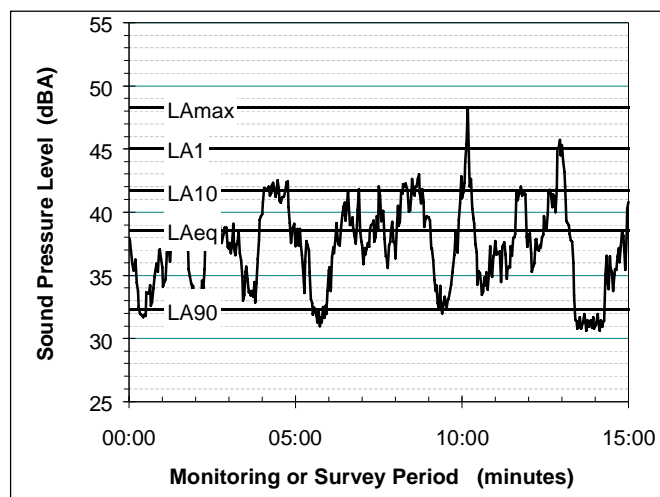
Sound Pressure Level (dBA)	Typical Example	Subjective (Human) Evaluation
40	Ambient noise level in a rural environment with light breezes and some noise from insects, birds and distant traffic	Quiet to very quiet
30	Ambient noise level in a typical rural noise environment in the absence of insect noise and wind	
20	Ambient noise level in remote and quiet rural environment away from main roads with no wind and no insect noise	Almost silent

Statistical Noise Levels

Sounds that vary in level over time, such as road traffic noise and most community noise, are commonly described in terms of the statistical exceedance levels (LAN), where LAN is the A-weighted sound pressure level exceeded for N% of a given measurement period. For example, the LA1 is the noise level exceeded for 1% of the time and LA10 the noise exceeded for 10% of the time.

Figure A1 presents a hypothetical 15 minute noise measurement, illustrating various common statistical indices of interest.

Figure A1 Hypothetical 15 Minute Noise Measurement



Of particular relevance to this study, are:

- **LAmax** The A-weighted maximum sound pressure level of any given measurement period.
- **LA1** The A-weighted noise level exceeded for 1% during any given measurement period.
- **LA10** The A-weighted noise level exceeded for 10% during any given measurement period. This is commonly referred to as the average maximum noise level.
- **LA90** The A-weighted noise level exceeded for 90% during any given measurement period, often referred to as the 'background' noise level.
- **LAeq** The A-weighted equivalent noise level (basically the average noise level). It is defined as the steady sound level that contains the same amount of acoustical energy as the corresponding time-varying sound.
- **LAeq, adj, 15min** The specific noise level measured as the A-weighted equivalent continuous noise level (LAeq) plus any adjustment for the character of the noise (tonal and/or impulsive) determined over a reference time period of 15-minutes.

Noise Propagation

Provided the receptor is in the far-field of the noise source, noise levels will reduce as a receptor moves further away from the source. This is due to spreading of the noise source energy over



distance. For a simple point source (for example, a motor) the theoretical reduction in noise levels is 6 dBA per doubling of distance. For a line source (for example, a busy road) the theoretical reduction is 3 dBA per doubling of distance. In reality however other factors affect noise propagation. These include ground absorption, air absorption, acoustic screening and meteorological effects.

Meteorological Effects

At distances over 500 m, meteorological affects (for example, local weather and atmospheric conditions) can substantially enhance or impair noise propagation. The most influential meteorological conditions on noise propagation are wind speed and direction and the occurrence of temperature inversions. Ambient air temperature and humidity and atmospheric pressure also affect noise propagation although to a lesser extent than wind and temperature inversions.

Wind Conditions

Wind conditions enhance noise propagation when the wind is blowing from a noise source towards a receptor and therefore noise levels at the receptor will be higher under these conditions. The wind can be thought to carry the noise in the direction it is heading. Where winds blow from the receptor towards the source, the propagation of noise is impaired and therefore lower noise levels will be experienced at the receptor.

It is important to consider the effect of prevailing wind conditions when assessing noise propagation over larger distances. Wind roses, which graph long term variations in wind speed and direction, are a useful tool for analysing prevailing wind conditions where available.

Temperature Inversions

Temperature inversions are a meteorological phenomenon where a layer of cold air is trapped at the ground surface under a layer of warmer air. Temperature inversions enhance noise propagation because sound travelling away from the ground is reflected back down from where the colder air meets the warmer air due to the change in pressure between the two layers.

Conditions that favour the development of a strong surface inversion are nights with calm winds and clear skies. Calm winds prevent warmer air above the surface from mixing down to the ground, and clear skies increase the rate of cooling at the Earth's surface. It is therefore important to consider the effect of temperature inversions when assessing noise propagation over larger distances and during night-time periods.

Tonality

Tonal noise contains one or more prominent tones (i.e. distinct frequency components), and is normally regarded as more offensive than 'broad band' noise.

Impulsive

An impulse noise is typified by a sudden rise time and a rapid sound decay. Impulse noise can be defined as having a high peak of short duration or a sequence of such peaks (bangs, clicks, clatters, or thumps).





Appendix B NAC Mine Operations Supporting Documents – August 2023

New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

SLR Project No.: 620.10963.01003

17 November 2023

Time	Event Type	Message
2023-08-03 22:13:52+1000	action	No equipment or machinery operating from 18:30 03/08/23 to 6:30 04/08/23
2023-08-04 07:01:21+1000	action	110 digger starting at idle
2023-08-04 07:05:14+1000	action	110 at full revs moving to new bench
2023-08-04 07:10:02+1000	action	611 starting at idle
2023-08-04 07:12:51+1000	action	stopping 110 for noise
2023-08-04 07:14:10+1000	action	110 and 611 engines shut down, all machines are turned off
2023-08-04 07:16:00+1000	action	611 starting and going to work to push up digger start
2023-08-04 07:21:44+1000	action	216 circuit starting and then going to work
2023-08-04 07:39:03+1000	action	Stop 611
2023-08-04 07:45:13+1000	action	start 611
2023-08-04 07:56:02+1000	action	Stop 611
2023-08-04 08:00:17+1000	action	Start 611
2023-08-04 08:16:57+1000	action	Start 802
2023-08-04 08:20:46+1000	action	Start 618
2023-08-04 08:35:24+1000	action	704 and 008 starting work
2023-08-04 08:45:27+1000	action	Start 110 circuit @ idle
2023-08-04 08:48:08+1000	action	Stopping 216 circuit.
2023-08-04 08:54:44+1000	action	704, 611,008 stopped while trying digger circuit.
2023-08-04 08:59:21+1000	action	110 starting to load first truck
2023-08-04 09:03:43+1000	action	2nd truck joining 110 circuit.
2023-08-04 09:09:09+1000	action	3rd truck joined 110 circuit.
2023-08-04 09:15:53+1000	action	216 circuit and 109 starting up
2023-08-04 09:29:01+1000	action	704, 008, 216 circuit , 626,109 started
2023-08-04 09:32:31+1000	action	618 2nd gear
2023-08-04 09:32:59+1000	action	618 started in 2nd.
2023-08-04 09:49:07+1000	action	802 moving back to 110 dump when ready
2023-08-04 09:55:32+1000	action	Stop 110 circuit.
2023-08-04 10:01:09+1000	action	Start 110 circuit.
2023-08-04 10:14:13+1000	action	110 circuit stopped. 006 pulled up for the day due to noise.
2023-08-04 10:16:16+1000	action	start 110 circuit.
2023-08-04 10:28:44+1000	action	Stop 110 circuit.
2023-08-04 10:32:08+1000	action	Start 110 circuit, trucks locking down to 2nd gear on ramps.
2023-08-04 10:46:21+1000	action	110 trucks heading to dump 6
2023-08-04 10:58:52+1000	action	Stop 110 circuit.
2023-08-04 11:02:49+1000	action	110 circuit starting to go to crib
2023-08-04 11:03:09+1000	action	drill starting at idle to get ready for noise test
2023-08-04 11:19:04+1000	action	drill test finished - drill now walking to eastern end MVE
2023-08-04 11:45:19+1000	action	110 gear coming back to work
2023-08-04 11:45:49+1000	action	drill to low revs for walking
2023-08-04 11:47:20+1000	action	626 back from crib 1st gear
2023-08-04 12:13:46+1000	action	Stopped 110 circuit due to noise.
2023-08-04 12:15:13+1000	action	Start 110 circuit.
2023-08-04 12:38:06+1000	action	Stop 110 circuit.
2023-08-04 12:45:18+1000	action	Start 110 circuit.
2023-08-04 13:07:28+1000	action	Start 609.
2023-08-04 13:31:28+1000	action	start drill 23
2023-08-04 13:57:30+1000	action	Stop pit due to noise samples not coming through.
2023-08-04 14:15:27+1000	action	Start all units again after dashboard has begun working correctly.
2023-08-04 14:29:01+1000	action	Stop all units in pit.
2023-08-04 14:30:33+1000	action	Start all units in pit again.
2023-08-04 14:58:09+1000	action	Stop 110 circuit.
2023-08-04 15:00:50+1000	action	Start 110 circuit
2023-08-04 16:05:17+1000	action	216 circuit and 110 circuit stopped for crib.
2023-08-04 17:01:07+1000	action	Start 110 circuit.
2023-08-04 17:02:34+1000	action	All other units started back after crib.
2023-08-04 17:13:04+1000	action	Stop 110 circuit.
2023-08-04 17:15:18+1000	action	Start 110 circuit.
2023-08-04 17:28:57+1000	action	Stop 110 circuit.
2023-08-04 17:40:57+1000	action	Stop 110 circuit.
2023-08-04 17:41:16+1000	action	Stop 626
2023-08-04 17:49:23+1000	action	stop all units @ 5:43pm
2023-08-04 17:52:43+1000	action	All units parking up and stopped by 6pm.
2023-08-04 18:56:19+1000	action	start 704 grader
2023-08-04 19:16:34+1000	action	stop 704 approx 709
2023-08-04 19:17:26+1000	action	start 704 grader
2023-08-04 19:21:28+1000	action	stop 704 grader
2023-08-04 19:31:28+1000	action	start 706 grader
2023-08-04 19:35:58+1000	action	stop 704 grader
2023-08-04 19:46:44+1000	action	Start 704 grader
2023-08-04 22:29:10+1000	action	704 Parked up, No machines Working
2023-08-05 07:01:04+1000	action	Start 110 @ idle.
2023-08-05 07:08:03+1000	action	110 stopped for noise
2023-08-05 07:08:30+1000	action	216 circuit starting at idle
2023-08-05 07:11:44+1000	action	216 starting to load when truck arrive
2023-08-05 07:14:43+1000	action	starting drill at idle
2023-08-05 07:20:04+1000	action	drill to high idle test
2023-08-05 07:23:06+1000	action	drill commencing drilling activities

Time	Event Type	Message
2023-08-05 07:29:42+1000	action	109 okay to start when he gets to machine
2023-08-05 07:29:58+1000	action	803 starting on dump 14/15
2023-08-05 07:33:24+1000	action	704 and 008 starting work
2023-08-05 07:33:58+1000	action	008 delayed start for radio changeout
2023-08-05 07:47:42+1000	action	drill starting and drilling when warmed up
2023-08-05 07:48:20+1000	action	704 stopped to allow drill a better chance of working
2023-08-05 07:53:17+1000	action	drill stopped for noise
2023-08-05 07:55:48+1000	action	pit stopped to control noise
2023-08-05 08:00:48+1000	action	216 circuit, 704, 008, 109, 803 started
2023-08-05 08:16:22+1000	action	626 started
2023-08-05 08:29:12+1000	action	216 circuit pulling up noise
2023-08-05 08:29:21+1000	action	110 start at idle
2023-08-05 08:30:33+1000	action	all pit pulled up while testing 110 circuit for noise
2023-08-05 08:33:42+1000	action	110 pulled up for noise
2023-08-05 08:34:58+1000	action	216 circuit started
2023-08-05 08:36:51+1000	action	803 and 109 started again
2023-08-05 08:39:41+1000	action	008 started.
2023-08-05 08:45:04+1000	action	704 and 626 started
2023-08-05 09:13:17+1000	action	216 circuit stopped for noise
2023-08-05 09:14:06+1000	action	110 circuit stated at idle
2023-08-05 09:14:36+1000	action	all pit stopped for 110 circuit test
2023-08-05 09:20:26+1000	action	1 truck heading to 110 for load
2023-08-05 09:23:07+1000	action	2nd 110 truck joining circuit
2023-08-05 09:27:29+1000	action	3rd truck joining 110 circuit.
2023-08-05 09:31:04+1000	action	216 circuit starting
2023-08-05 09:41:59+1000	action	Stop 110 circuit.
2023-08-05 09:45:06+1000	action	Start 110 circuit.
2023-08-05 09:58:56+1000	action	Stop 110 circuit.
2023-08-05 10:00:07+1000	action	Start 110 circuit.
2023-08-05 10:09:01+1000	action	008 starting
2023-08-05 10:10:56+1000	action	Start 704
2023-08-05 10:22:13+1000	action	Stop 110 circuit.
2023-08-05 10:30:14+1000	action	Start 110 circuit.
2023-08-05 11:06:31+1000	action	drill starting at idle
2023-08-05 11:11:02+1000	action	drill starting to drill
2023-08-05 11:28:34+1000	action	008 watering west pit
2023-08-05 11:44:27+1000	action	109 starting after crib
2023-08-05 11:57:13+1000	action	110 circuit started.
2023-08-05 12:12:41+1000	action	626 started in 1st gear.
2023-08-05 12:53:36+1000	action	Start 609 @ 12:35 ish, 211 and 211 trucks start up and go to load area. 109 walking from MVE to CP.
2023-08-05 13:14:50+1000	action	211 circuit started, 110 trucks running to dump 6.
2023-08-05 13:36:28+1000	action	110 trucks sent back to dump 2.
2023-08-05 14:13:32+1000	action	Stop 110 circuit.
2023-08-05 15:00:04+1000	action	trucks in sp started for brake tests.
2023-08-05 16:08:33+1000	action	Drill 23 broken, stopped work.
2023-08-05 16:42:55+1000	action	Stop 110 circuit.
2023-08-05 16:45:42+1000	action	1110 circuit started
2023-08-05 16:53:46+1000	action	216 starting at idle
2023-08-05 17:00:40+1000	action	Start 216 circuit.
2023-08-05 17:17:41+1000	action	brake testing all west pit trucks
2023-08-05 17:18:06+1000	action	109/208 starting
2023-08-05 17:57:01+1000	action	5:37pm 216 broke down and didn't run again for rest of shift.
2023-08-05 17:57:31+1000	action	All units in pit parked by 6pm. Nothing running in pit after 6pm.
2023-08-05 19:01:48+1000	action	1900 Dozer started
2023-08-05 20:22:24+1000	action	Dozer parked 20.22
2023-08-06 02:09:29+1000	action	No Equipment running from 20.22 on the 5/8/23 to 6.30 on the 6/8/23
2023-08-06 07:00:24+1000	action	110 starting at idle
2023-08-06 07:10:35+1000	action	110 on bench and noise still under, trucks starting at idle, 1 to digger
2023-08-06 07:11:56+1000	action	110 circuit stopped for noise
2023-08-06 07:15:21+1000	action	214 going to work
2023-08-06 07:15:50+1000	action	802 to work on dump 15/14
2023-08-06 07:42:32+1000	action	Start swampy.
2023-08-06 07:46:03+1000	action	swampy delated - needs jumpstart
2023-08-06 07:48:12+1000	action	swampy to work
2023-08-06 07:49:47+1000	action	626 starting
2023-08-06 08:02:32+1000	action	704 and 008 starting work.
2023-08-06 08:47:04+1000	action	all circuits stopped to try 110
2023-08-06 08:47:16+1000	action	110 digger to full revs for test
2023-08-06 08:48:45+1000	action	110 trucks started
2023-08-06 08:51:51+1000	action	1st truck to 110
2023-08-06 08:54:06+1000	action	All the 110 trucks sent to circuit to start hauling.
2023-08-06 09:00:21+1000	action	008 heading to 110 circuit for a lap
2023-08-06 09:03:16+1000	action	214 back to work
2023-08-06 09:06:24+1000	action	802 back to work then take care of 110 dump and floor
2023-08-06 09:14:30+1000	action	Swampy started, 626, 704.
2023-08-06 09:15:31+1000	action	Start drill @ idle.
2023-08-06 09:19:14+1000	action	Drill 23 to high idle.

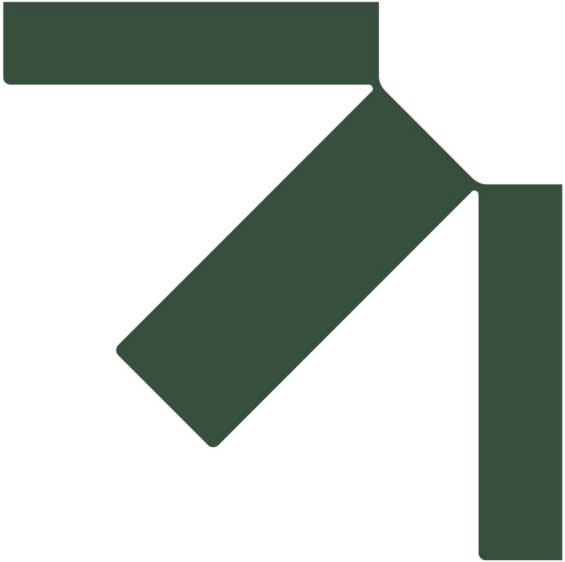
Time	Event Type	Message
2023-08-06 09:23:00+1000	action	start drill 23 drilling.
2023-08-06 09:59:04+1000	action	Stop 110 circuit.
2023-08-06 10:00:57+1000	action	Start 110 circuit.
2023-08-06 10:15:12+1000	action	west pit stopped and then started after 2 minutes
2023-08-06 10:58:57+1000	action	Stop 110 circuit.
2023-08-06 11:00:27+1000	action	Start 110 circuit.
2023-08-06 11:30:35+1000	action	110 trucks heading to dump 6
2023-08-06 12:30:23+1000	action	Drill 23 stopped for servicing.
2023-08-06 12:48:58+1000	action	110 tucks going to dump 6.
2023-08-06 13:10:20+1000	action	109 Started work @ 12:38pm.
2023-08-06 13:39:12+1000	action	110 Trucks going to dump 2.
2023-08-06 13:57:22+1000	action	All of west pit stopped for noise
2023-08-06 14:00:24+1000	action	west pit restarted
2023-08-06 14:29:08+1000	action	Stop 110 circuit, 704 and stop drill.
2023-08-06 14:30:39+1000	action	Start drill 23 and 110 circuit, 704.
2023-08-06 15:33:25+1000	action	110 trucks to dump 6.
2023-08-06 16:07:14+1000	action	110 trucks going to dump 2.
2023-08-06 16:27:22+1000	action	3-6 brake testing trucks at centre pit
2023-08-06 16:41:04+1000	action	Stop 110 circuit.
2023-08-06 16:45:54+1000	action	west pit back to work
2023-08-06 16:58:50+1000	action	Stop 110 circuit and 008.
2023-08-06 17:06:25+1000	action	Drill 23 start.
2023-08-06 17:11:16+1000	action	Stop 110 circuit.
2023-08-06 17:40:34+1000	action	110 trucks to parkup when empty
2023-08-06 17:57:06+1000	action	all units in pit parked by 6. nothing to run later
2023-08-06 19:05:03+1000	action	Start a dozer up at 19:05
2023-08-06 19:15:38+1000	action	Dozer stopped 19012
2023-08-06 19:16:07+1000	action	Dozer started 19.15
2023-08-06 19:25:09+1000	action	Stop dozer 19.24
2023-08-06 19:30:02+1000	action	Start dozer 19.30
2023-08-06 19:38:28+1000	action	Stop dozer 19.38
2023-08-06 19:45:40+1000	action	Dozer start 19.45
2023-08-06 19:57:42+1000	action	Dozer stopped 19.57
2023-08-06 20:00:10+1000	action	Dozer start 20.00
2023-08-06 20:08:21+1000	action	Dozer stopped 20.08
2023-08-06 20:14:50+1000	action	DOZER START 20.15
2023-08-06 20:27:46+1000	action	Dozer stopped 20.27
2023-08-06 20:29:50+1000	action	Dozer start 20.30
2023-08-06 20:37:15+1000	action	Dozer stopped 20.36
2023-08-06 20:45:19+1000	action	Dozer start 20.45
2023-08-06 20:55:04+1000	action	Dozer stopped 20.55
2023-08-06 21:00:07+1000	action	Dozer start 21.00
2023-08-06 21:06:53+1000	action	Dozer stopped 21.06
2023-08-06 21:22:27+1000	action	Dozer start 21.22
2023-08-06 23:03:47+1000	action	No equipment or machinery operating from 2300 on the 6/8/23 to 6.30 7/8/23
2023-08-07 07:02:03+1000	action	110 starting
2023-08-07 07:02:21+1000	action	216 circuit starting at idle
2023-08-07 07:07:47+1000	action	Stop 110.
2023-08-07 07:10:53+1000	action	216 starting work
2023-08-07 07:13:39+1000	action	803 starting at idle
2023-08-07 07:14:07+1000	action	Start 803 @ idle.
2023-08-07 07:15:36+1000	action	803 west pit to dumps14/15
2023-08-07 07:25:09+1000	action	216 circuit and 803 stopped for noise
2023-08-07 07:31:36+1000	action	Start 216 circuit and 803
2023-08-07 07:45:06+1000	action	211 and 618 to work
2023-08-07 07:46:36+1000	action	704 started
2023-08-07 07:47:10+1000	action	008 started
2023-08-07 08:00:15+1000	action	Drill 23 start at idle.
2023-08-07 08:02:38+1000	action	704 and 008 stop for drill to do a noise test.
2023-08-07 08:03:23+1000	action	Drill to full revs for noise test.
2023-08-07 08:05:16+1000	action	Drill 23 to low revs.
2023-08-07 08:07:01+1000	action	Drill 23 to full revs for noise test.
2023-08-07 08:08:52+1000	action	drill back to idle
2023-08-07 08:10:29+1000	action	drill shutting down engine
2023-08-07 08:18:49+1000	action	704 and 008 back to work
2023-08-07 08:24:46+1000	action	704 stopped for noise
2023-08-07 08:26:04+1000	action	all pit stopped for noise
2023-08-07 08:30:50+1000	action	216 circuit, 008, 211, 611 started
2023-08-07 08:35:15+1000	action	803 started
2023-08-07 08:45:17+1000	action	704 started
2023-08-07 08:45:31+1000	action	008 to water west pit
2023-08-07 08:58:15+1000	action	008 just getting to west pit for a water up
2023-08-07 08:58:44+1000	action	110 circuit idling to warm up
2023-08-07 09:00:29+1000	action	110 to high revs for noise test.
2023-08-07 09:03:02+1000	action	Start 110 circuit.
2023-08-07 09:13:31+1000	action	drill starting at idle to warm up
2023-08-07 09:18:18+1000	action	drill shutting down for noise

Time	Event Type	Message
2023-08-07 09:26:48+1000	action	110 circuit stopped
2023-08-07 09:30:53+1000	action	110 circuit started
2023-08-07 09:43:00+1000	action	Stop 110 circuit.
2023-08-07 09:45:16+1000	action	110 circuit started
2023-08-07 09:45:55+1000	action	803 dump 145 to dump 2
2023-08-07 09:59:59+1000	action	drill starting at idle
2023-08-07 10:01:14+1000	action	Drill 23 started drilling.
2023-08-07 10:12:22+1000	action	Stop 110 circuit.
2023-08-07 10:14:55+1000	action	110 circuit started
2023-08-07 10:16:28+1000	action	Start 110 circuit.
2023-08-07 10:36:17+1000	action	walking 626 a few hundred metres in south pit
2023-08-07 11:42:12+1000	action	110 circuit stopped for noise control
2023-08-07 11:45:11+1000	action	Start 110 circuit.
2023-08-07 12:57:24+1000	action	110 circuit and 704 stopped to control noise
2023-08-07 13:00:59+1000	action	110 and 704 started
2023-08-07 13:14:30+1000	action	110 circuit and 704 stopped.
2023-08-07 13:16:54+1000	action	110 and 704 back to work
2023-08-07 13:28:51+1000	action	Stop 110 circuit and 704.
2023-08-07 13:30:22+1000	action	Start 110 circuit and 704.
2023-08-07 13:58:24+1000	action	Stop 110 circuit and 704.
2023-08-07 14:00:48+1000	action	110 and 704 started
2023-08-07 14:10:09+1000	action	Stop 110 circuit and 704.
2023-08-07 14:15:19+1000	action	110 circuit and 704 started.
2023-08-07 14:27:32+1000	action	110 circuit and 704 stopped for noise
2023-08-07 14:30:44+1000	action	110 and 704 started
2023-08-07 14:43:07+1000	action	110 circuit stopped
2023-08-07 14:45:32+1000	action	Start 110 circuit.
2023-08-07 15:01:08+1000	action	110 circuit running again
2023-08-07 15:12:57+1000	action	110 circuit stopped to control noise
2023-08-07 15:15:31+1000	action	Start 110 circuit.
2023-08-07 15:25:49+1000	action	110 stopped for noise
2023-08-07 15:30:02+1000	action	110 circuit started
2023-08-07 15:34:38+1000	action	Drill 23 broken down due to hydraulic leak.
2023-08-07 15:43:09+1000	action	110 circuit stopped to control noise
2023-08-07 15:45:16+1000	action	Start 110 circuit.
2023-08-07 15:51:37+1000	action	Drill 23 started.
2023-08-07 16:23:47+1000	action	110 circuit stopped for noise
2023-08-07 16:30:45+1000	action	Start 110 circuit.
2023-08-07 16:41:46+1000	action	110 circuit and water truck stopped for noise
2023-08-07 16:43:46+1000	action	drill stopped for noise
2023-08-07 16:46:08+1000	action	drill pulling 4m of rod and then going back into noise
2023-08-07 16:46:24+1000	action	110 circuit started
2023-08-07 16:53:45+1000	action	110 circuit stopped for noise
2023-08-07 17:11:47+1000	action	110 and 803 stopped for noise
2023-08-07 17:16:28+1000	action	110 and 803 started
2023-08-07 17:24:31+1000	action	110 circuit stopped for noise
2023-08-07 17:30:41+1000	action	Start 110 circuit.
2023-08-07 17:30:56+1000	action	110 circuit starting and loading last truck (10 min to get off bench)
2023-08-07 18:08:37+1000	action	All units in pit stopped by 6pm. Nothing in mine running after 6pm.
2023-08-07 18:51:46+1000	action	start 611 dozer
2023-08-07 19:11:15+1000	action	stop 611
2023-08-07 19:12:36+1000	action	start 611
2023-08-07 19:21:39+1000	action	Stop 611 dozer.
2023-08-07 19:31:34+1000	action	start 611 dozer
2023-08-07 19:33:43+1000	action	Stop 611 dozer.
2023-08-07 19:46:55+1000	action	start 611 dozer
2023-08-07 19:53:50+1000	action	Stop 611 dozer.
2023-08-07 19:54:35+1000	action	start 611
2023-08-07 19:56:36+1000	action	Stop 611 dozer.
2023-08-07 20:01:31+1000	action	start 611 dozer
2023-08-07 20:03:41+1000	action	611 parked
2023-08-07 20:23:01+1000	action	Started 626 South Pit/ MVE East
2023-08-07 20:48:21+1000	action	626 going, 1st gear
2023-08-07 22:38:35+1000	action	start 626 dozer
2023-08-07 22:59:48+1000	action	Stop 626
2023-08-07 23:01:33+1000	action	Start 626
2023-08-07 23:28:50+1000	action	stop 626
2023-08-07 23:31:41+1000	action	start 626
2023-08-07 23:41:54+1000	action	stop 626
2023-08-07 23:45:44+1000	action	626 to work
2023-08-08 00:07:10+1000	action	626 1st gear 12:00am
2023-08-08 00:11:00+1000	action	stop 626
2023-08-08 00:16:49+1000	action	start 626 dozer
2023-08-08 00:30:43+1000	action	stop 626
2023-08-08 00:35:08+1000	action	start 626 dozer
2023-08-08 00:51:01+1000	action	stop 626
2023-08-08 00:51:50+1000	action	start 626

Time	Event Type	Message
2023-08-08 01:43:28+1000	action	stop 626
2023-08-08 01:47:04+1000	action	start 626
2023-08-08 02:08:18+1000	action	stop 626
2023-08-08 02:10:08+1000	action	start 626
2023-08-08 02:44:18+1000	action	stop 626
2023-08-08 02:45:43+1000	action	start 626 dozer
2023-08-08 03:21:34+1000	action	626 parked
2023-08-08 03:27:47+1000	action	start 704
2023-08-08 03:36:59+1000	action	stop 704 grader
2023-08-08 03:38:37+1000	action	start 706 grader
2023-08-08 03:40:44+1000	action	stop 704 grader
2023-08-08 03:45:38+1000	action	start 704 grader
2023-08-08 03:47:40+1000	action	stop 704 grader
2023-08-08 04:15:23+1000	action	704 parked
2023-08-08 04:15:58+1000	action	no mine equipment running
2023-08-08 07:03:11+1000	action	110 circuit started @ idle. 216 circuit started @ idle to warm up.
2023-08-08 07:08:36+1000	action	802 tramming from workshop to WP
2023-08-08 07:12:56+1000	action	110 shutting down for noise after jumping on bench
2023-08-08 07:13:44+1000	action	Start 216 circuit running.
2023-08-08 07:19:07+1000	action	211 and 618 going to work
2023-08-08 07:30:34+1000	action	drill starting at idle
2023-08-08 07:33:18+1000	action	Drill 23 to full revs for noise test.
2023-08-08 07:42:56+1000	action	618 stopped.
2023-08-08 07:45:54+1000	action	802 heading into west pit
2023-08-08 07:46:08+1000	action	312 from work shop to brake test area
2023-08-08 08:16:50+1000	action	008, 618, 704 started.
2023-08-08 08:18:32+1000	action	803 started work.
2023-08-08 08:27:27+1000	action	008 going to do a test run of west pit 110 circuit.
2023-08-08 08:42:44+1000	action	110 starting at idle
2023-08-08 08:47:28+1000	action	Start 110 for noise test.
2023-08-08 08:53:15+1000	action	1 110 truck sent onto circuit to start loading.
2023-08-08 09:01:00+1000	action	110 circuit now running with all 3 trucks.
2023-08-08 09:34:27+1000	action	618 2nd gear
2023-08-08 10:10:50+1000	action	Evaporators starting in centre pit.
2023-08-08 10:28:54+1000	action	Stop 110 circuit.
2023-08-08 10:29:49+1000	action	Start 110 circuit.
2023-08-08 12:18:50+1000	action	611 started work.
2023-08-08 13:24:12+1000	action	Stop 611
2023-08-08 13:25:39+1000	action	Stop 110 circuit.
2023-08-08 13:29:29+1000	action	Start 110 circuit
2023-08-08 13:30:34+1000	action	start 611
2023-08-08 14:00:29+1000	action	109 walking in centre pit
2023-08-08 14:13:28+1000	action	Stop 110 circuit and 611.
2023-08-08 14:16:03+1000	action	west pit back to work
2023-08-08 15:56:44+1000	action	502 idling and doing a break test at 4pm
2023-08-08 17:25:10+1000	action	110 circuit, 611 dozer stopped.
2023-08-08 17:30:14+1000	action	Start 110 circuit and 611.
2023-08-08 17:34:18+1000	action	Stop 110 circuit due to noise.
2023-08-08 17:40:19+1000	action	west pit stopped for noise
2023-08-08 17:46:09+1000	action	110 tramming to park up. 611 started.
2023-08-08 18:00:26+1000	action	all machines in pit pulled up and shut down by 6
2023-08-08 19:06:04+1000	action	Dozer start 19.05
2023-08-08 20:44:36+1000	action	Dozer stopped 20.43
2023-08-08 20:46:15+1000	action	Dozer start 20.45
2023-08-08 22:46:29+1000	action	Dozer parked 22.46
2023-08-08 23:02:54+1000	action	No equipment or machinery operating from 2300
2023-08-09 07:18:03+1000	action	706 start up
2023-08-09 07:30:58+1000	action	609 to work dump 14/15
2023-08-09 07:39:05+1000	action	211 and 618 to work
2023-08-09 07:40:52+1000	action	Parked 211 to move onto 611
2023-08-09 07:44:11+1000	action	grader stopped
2023-08-09 07:45:26+1000	action	626 to work
2023-08-09 07:49:00+1000	action	626 stopped for track noise
2023-08-09 07:56:39+1000	action	706 to work
2023-08-09 08:19:14+1000	action	008 ready up
2023-08-09 09:07:02+1000	action	dr23 start up
2023-08-09 09:30:41+1000	action	110 & @RDT start up
2023-08-09 09:45:13+1000	action	dr23 down for maintenance
2023-08-09 17:19:40+1000	action	110 stopped
2023-08-09 17:21:28+1000	action	West pit dozers
2023-08-09 17:41:10+1000	action	802 parked up
2023-08-09 17:47:53+1000	action	West pit dozers park up
2023-08-09 18:35:36+1000	action	Start 023 drill
2023-08-09 18:56:53+1000	action	Drill up flow rate for dust suppression.
2023-08-09 20:38:32+1000	action	704 to start rom
2023-08-09 20:47:53+1000	action	410 to leave south pit to rom
2023-08-09 20:52:48+1000	action	704 shut down

Time	Event Type	Message
2023-08-09 21:00:04+1000	action	211 going
2023-08-09 21:02:21+1000	action	410 idled back
2023-08-09 21:05:29+1000	action	Drill 023 to idle back
2023-08-09 21:07:44+1000	action	211 and 023 drill to remain idle
2023-08-09 21:15:56+1000	action	410 to go to rom
2023-08-09 21:18:33+1000	action	211 and 410 to stop work
2023-08-09 21:28:52+1000	action	drill to idle back
2023-08-09 21:31:09+1000	action	410 to go back to soth pit park up
2023-08-09 21:44:53+1000	action	Drill to start back up
2023-08-09 21:46:38+1000	action	410 parked back at South pit park up
2023-08-09 21:55:00+1000	action	drill to idle back
2023-08-09 22:01:01+1000	action	Drill walking
2023-08-09 23:55:16+1000	action	Drill breakdown
2023-08-10 00:21:54+1000	action	Start 704
2023-08-10 01:30:41+1000	action	Start 023 drill
2023-08-10 03:42:47+1000	action	pull up 023 drill
2023-08-10 04:15:50+1000	action	Park 704
2023-08-10 04:24:24+1000	action	Start 023 drill
2023-08-10 04:31:04+1000	action	Parked 023
2023-08-10 07:03:04+1000	action	216 and trucks to work
2023-08-10 07:16:43+1000	action	626 start dump 14
2023-08-10 07:20:23+1000	action	006 704 ready up
2023-08-10 07:52:33+1000	action	110 idle mve
2023-08-10 09:03:05+1000	action	803 ready up
2023-08-10 09:09:50+1000	action	Evaporators starting in centre pit.
2023-08-10 18:51:23+1000	action	start drill
2023-08-10 20:05:16+1000	action	408 to leave south pit
2023-08-10 20:13:10+1000	action	208 going to rom
2023-08-10 21:21:24+1000	action	208 stopped
2023-08-10 21:36:00+1000	action	006 starting
2023-08-10 21:55:56+1000	action	Drill idle back
2023-08-10 22:03:34+1000	action	006 stopped
2023-08-10 22:07:36+1000	action	006 to rom
2023-08-10 22:13:41+1000	action	Drill 023 starting
2023-08-10 22:40:58+1000	action	006 shut
2023-08-10 22:44:54+1000	action	Drill 023 to idle back
2023-08-10 22:46:06+1000	action	023 start
2023-08-10 22:46:19+1000	action	006 shutdown
2023-08-11 01:04:26+1000	action	start drill
2023-08-11 01:10:38+1000	action	stop drill
2023-08-11 01:17:14+1000	action	Drill shut down
2023-08-11 01:50:55+1000	action	Walk drill to east
2023-08-11 01:54:14+1000	action	Park drill
2023-08-11 07:02:13+1000	action	216 to work
2023-08-11 07:10:50+1000	action	Starting large spray gen
2023-08-11 07:12:25+1000	action	Aircraft flying around
2023-08-11 07:29:41+1000	action	water conons stopped
2023-08-11 07:30:03+1000	action	110 to work, Top loading
2023-08-11 07:43:43+1000	action	006, 610 and 611 to work
2023-08-11 07:44:06+1000	action	704 to work
2023-08-11 08:03:55+1000	action	618, 802 to work
2023-08-11 08:09:40+1000	action	Drill to work
2023-08-11 08:28:08+1000	action	Water cannons to work
2023-08-11 17:46:48+1000	action	MVE Dozers parking up
2023-08-11 18:43:21+1000	action	Start 023 drill
2023-08-11 19:03:14+1000	action	Walk 110
2023-08-11 19:03:24+1000	action	pull up 023 drill
2023-08-11 19:03:39+1000	action	Pull up 110
2023-08-11 19:08:00+1000	action	Shut down 023 drill
2023-08-11 19:17:35+1000	action	Start 023 drill
2023-08-11 20:21:58+1000	action	Walk 023 drill
2023-08-12 01:25:58+1000	action	Start 704
2023-08-12 03:02:43+1000	action	Park 704
2023-08-12 04:19:56+1000	action	Shut down 023 drill
2023-08-12 07:00:15+1000	action	216 and trucks to work
2023-08-12 07:04:16+1000	action	214 move into block and start work
2023-08-12 07:11:05+1000	action	Stopped 214
2023-08-12 07:16:56+1000	action	2 214 trucks to work
2023-08-12 07:22:35+1000	action	214 to work
2023-08-12 07:27:59+1000	action	testing 110 at idle
2023-08-12 07:31:20+1000	action	211 and 319 to work
2023-08-12 07:33:27+1000	action	626 ready up
2023-08-12 07:34:46+1000	action	802 to work
2023-08-12 07:41:39+1000	action	3rd truck to 214 and dump 6
2023-08-12 07:41:51+1000	action	006 to work
2023-08-12 07:43:08+1000	action	704 to work
2023-08-12 07:47:20+1000	action	Drill to work

Time	Event Type	Message
2023-08-12 07:59:43+1000	action	610 and 611 to work
2023-08-12 08:02:18+1000	action	110 walking into the double bench area
2023-08-12 08:19:14+1000	action	2 bank blowers started
2023-08-12 18:44:43+1000	action	Drill 023 started
2023-08-12 20:20:19+1000	action	214 to move
2023-08-12 21:41:56+1000	action	drill to idle back
2023-08-12 21:55:58+1000	action	Drill to work
2023-08-12 21:56:21+1000	action	2 pack water cannon stopped



Appendix C Attended Noise Analysis to Determine Mine Spectra Contribution

New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

SLR Project No.: 620.10963.01003

17 November 2023

Historically, in conducting compliance noise survey's at NAC, SLR has undertaken frequency analysis from representative attended noise measurements where NAC mine noise has been clearly audible (or dominant) to determine those frequencies dominated by NAC contributions and assist in providing a suitable 'filter' for the analysis of the unattended noise logging. These historical attended measurements were typically during the night-time period with low or negligible ambient noise source contribution (ie wind noise, insects, traffic etc).

In-lieu of such attended measurement data being readily available for this August 2023 monitoring period, a frequency analysis was completed on the LAeq,1min one-third spectrums from a number of night-time attended noise measurements associated with the performance monitoring station correlation survey⁴ that, via a detailed review of available one-third octave band data and audio recordings, were determined to represent mine dominant periods. A summary of this analysis is contained within Table C1 (Northern Noise Compass) and Table C2 (Acland Noise Compass).

Table C1 Frequency Analysis of Mine Noise – Northern Noise Compass

Logarithmic Sum of Frequency Range (LAeq,1min dBA)				
Total	20 Hz to 1.0 kHz	20 Hz to 630 kHz	Difference – Total to ≤ 1 kHz	Difference – Total to ≤ 630 Hz
41.8	41.5	40.7	0.3	1.1
30.6	29.7	28.5	0.9	2.1
35.3	34.8	34.2	0.5	1.1
37.8	37.5	36.7	0.3	1.1
38.2	37.9	37.3	0.3	0.9
38.3	37.9	37.3	0.4	1.0
34.9	34.6	34.1	0.3	0.8
37.2	37.0	36.5	0.2	0.7
30.1	29.5	28.5	0.6	1.6
30.4	29.9	29.1	0.5	1.3
30.5	29.7	28.8	0.8	1.7
28.5	27.6	26.4	0.9	2.1
29.4	28.6	27.6	0.8	1.8
25.9	24.0	23.0	1.9	2.9
26.6	25.1	24.2	1.5	2.4
27.5	26.1	25.0	1.4	2.5
32.0	31.5	30.4	0.5	1.6
35.3	35.0	34.2	0.3	1.1
39.6	38.9	37.1	0.7	2.5
37.3	36.6	34.9	0.7	2.4
43.6	43.2	41.9	0.4	1.7
Average			0.7	1.6

Note: Numbers have been reported to 1 decimal place to facilitate this frequency analysis discussion.

⁴ The analysis undertaken for the performance monitoring station correlation surveys focused on total mine noise versus mine contribution in the range of 100 Hz to 630 Hz one-third octave band as this is the range that the directional components of the performance monitoring stations measure in. The data from these surveys has been reanalysed to cover the filters applicable to this current study (ie the inclusion of one-third octave bands below 100 Hz).



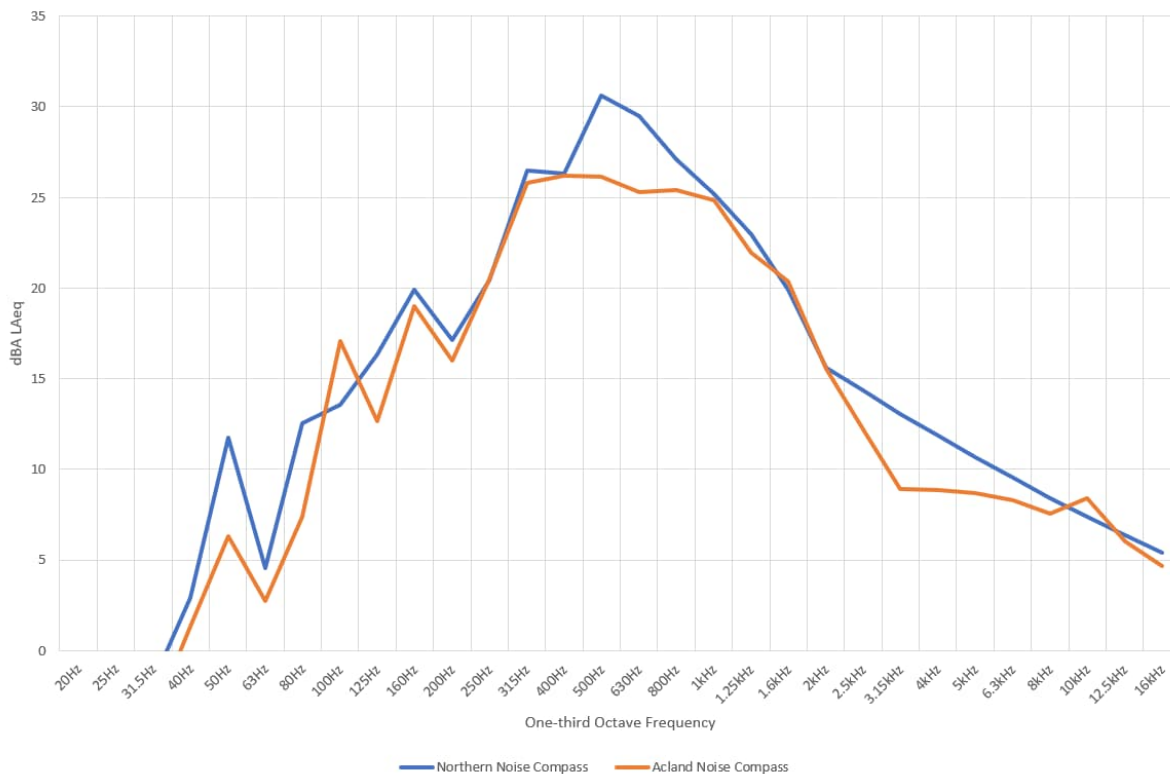
Table C2 Frequency Analysis of Mine Noise – Acland Noise Compass

Logarithmic Sum of Frequency Range (L _{Aeq,1min} dBA)				
Total	20 Hz to 1.0 kHz	20 Hz to 630 kHz	Difference – Total to ≤ 1 kHz	Difference – Total to ≤ 630 Hz
33.6	33.1	29.3	0.5	4.3
27.0	26.1	23.3	0.9	3.7
28.6	27.9	24.9	0.7	3.7
28.3	26.9	25.2	1.4	3.1
30.1	29.0	27.0	1.1	3.1
37.5	36.8	34.9	0.7	2.6
33.1	32.7	31.0	0.4	2.1
36.7	35.9	34.5	0.8	2.2
31.1	30.4	28.6	0.7	2.5
30.5	29.8	28.6	0.7	1.9
32.5	31.9	30.3	0.6	2.2
33.6	33.2	30.9	0.4	2.7
33.0	32.5	31.2	0.5	1.8
33.0	32.5	30.7	0.5	2.3
33.9	32.7	30.5	1.2	3.4
34.0	33.4	32.1	0.6	1.9
33.9	32.3	30.9	1.6	3.0
41.0	40.5	39.7	0.5	1.3
33.7	33.0	31.9	0.7	1.8
40.9	40.6	39.6	0.3	1.3
28.2	27.2	26.5	1.0	1.7
30.1	29.3	28.3	0.8	1.8
31.3	30.5	29.2	0.8	2.1
33.6	33.1	31.9	0.5	1.7
34.4	33.7	32.4	0.7	2.0
37.8	37.4	36.0	0.4	1.8
36.1	35.6	34.9	0.5	1.2
30.2	29.5	28.6	0.7	1.6
31.8	31.2	30.4	0.6	1.4
34.7	34.1	33.0	0.6	1.7
Average			0.7	2.3

Note: Numbers have been reported to 1 decimal place to facilitate this frequency analysis discussion.



Figure C1 Frequency Analysis of Mine Noise – Average NAC Attributable Noise Spectrum (LAeq,1min) – Northern Noise Compass and Acland Noise Compass



Through the frequency analysis summarised in Table C1 and Table C2, and the above summation of Figure C1, it was considered that filters at ≤ 630 Hz or ≤ 1 kHz were suitable to initially filter all the unattended noise data to determine NAC attributable noise.

SLR notes that this current analysis is based on 1-minute LAeq noise levels, however is being applied to 15-minute LAeq noise levels. The range in 1-minute LAeq noise levels are however considered to be representative of the overall LAeq range of NAC attributable noise detected during this August 2023 monitoring round. Further, for generally steady-state mine operations, the 15-minute LAeq noise level would typically be close to the average noise level of the 1-minute LAeq (although with the LAeq being an ‘energy equivalent’, it becomes elevated above an average noise level where short, high energy events are detected).

To assist this analysis further, the following is noted based on the summaries provided in Table C1 and Table C2:

- There tends to be an inverse relationship between overall mine noise level and correction values for both filters – that is where higher mine components were measured, the corrections were lower, and conversely where lower mine components were measured, the corrections were higher. It is the former that indicates the correction values reported and used for this monitoring period as being conservative – as NAC mine attributable noise levels approach noise levels of 35 dBA and 42 dBA LAeq (ie the NAC mine noise limits), the correction values are typically at or lower than the average correction values used for this monitoring period.
- The correction values utilised in this monitoring period are based on an average of all individual 1-minute values. When all measured mine component noise levels for a compass location are averaged, and differences calculated (ie correction values), they are equal to or 0.1 dB less than the average of individual 1-minute correction values. This is likely due to negligible variations in rounding. However, when all measured mine component noise levels for a compass location are logarithmically-averaged, and differences calculated (ie correction values), the values are 0.1 dB to 0.4 dB lower than the average of individual



1-minute correction values. Therefore the average approach adopted is considered conservative as it results in higher correction values.

- If a 75th percentile correction value was to be adopted in-lieu of the currently used average, the ≤ 630 Hz correction values would increase by 0.4 dB to 0.5 dB depending on the referenced noise compass data set, while the ≤ 1 kHz correction values would be equal to, or increase by 0.1 dB depending on the referenced noise compass data set. With reference to NML1, being the monitoring location with highest NAC mine attributable noise levels detected for this monitoring period, these changes are not considered to materially change the noise levels, nor result in reported noise levels of up to 41 dBA $L_{Aeq,15min,adj}$ exceeding the 42 dBA $L_{Aeq,15min,adj}$ noise limit.

The ≤ 630 Hz one-third octave band forms the primary filter for all compliance monitoring locations due to mine noise has generally been detectable within this frequency range (or theoretically detectable) noting the distance many locations are setback from NAC. The exception is NML1 where both filters have been considered due to the proximity of this location to NAC operations and that mine noise can be clearly measured at contributing noise levels in the frequency range of 800 Hz and 1 kHz and not solely ≤ 630 Hz.

In concluding this review, this analysis and associated frequency filter correction values may be reviewed and revised for future monitoring rounds (including when mine operations move to 24-hour operations and rail activities commence), however it is not proposed to reanalyse historical data if and when such conditions change.





Appendix D Attended Noise Monitoring Summary

New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

SLR Project No.: 620.10963.01003

17 November 2023

Table D1 Attended Noise Monitoring Results – August 2023

Sensitive Receptor Location	Start Date & Time	Measured Noise Level in dB, 15-min					NAC LAeq, adj 15min ¹	Description of Acoustic Environment
		L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
NML1	03/08/23 7:15 pm (DL)	60	54	46	25	42	NAC Inaudible	NAC inaudible. Constant aircraft noise of varying noise levels from start to end of measurement. Insect noise present, with occasional light wind and tree movement. Could not hear NAC (possibly due to constant aircraft noise).
	04/08/23 12:15 am (DL)	35	28	23	18	21	NAC Inaudible	NAC inaudible. Occasional light wind and tree movement. Very faint mechanical noise from south (near opposite direction from NAC)
	04/08/23 10:45 am (DL)	87	76	64	42	63	NAC Inaudible	NAC inaudible. Constant aircraft noise of varying noise levels from start to end of measurement. Occasional local car passbys on Allen Street.
NML4	03/08/23 9:30 pm (DL)	52	36	29	22	27	NAC Inaudible	NAC inaudible. Occasional light wind, tree movement. Background consists of near constant faint road traffic (Oakey Cooyar Rd).
	03/08/23 10:00 pm (DL)	50	33	27	22	26	NAC Inaudible	NAC inaudible. Noise profile similar to that of the 9:30pm measurement. Slightly stronger winds and tree movement than 9:30pm. Less frequent but still faint road traffic noise from Oakey Cooyar Rd.
	08/08/23 8:30 am (BH)	56	45	39	32	37	NAC inaudible	NAC inaudible. Localised tractor movement, constant bird calls and wind in trees dominant. Distant RTN also audible for brief periods.
NML8	03/08/23 8:00 pm (CP)	58	53	38	23	40	NAC inaudible	NAC inaudible. Occasional car passby and regular aircraft flyover. Noise from unknown animal in undergrowth and distant RTN.



Sensitive Receptor Location	Start Date & Time	Measured Noise Level in dB, 15-min					NAC LAeq, adj 15min ¹	Description of Acoustic Environment
		L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
	03/08/23 10:30 pm (CP)	55	49	29	24	34	NAC inaudible	NAC inaudible. Occasional animal noises; cow, cat, birds and pig. Car passby in last 1 minute.
	04/08/23 9:45 am (CP)	64	57	54	40	50	NAC inaudible	NAC inaudible. Constant elevated wind noise, car passbys and bird calls.
NML10	03/08/23 7:30 pm (CP)	52	45	37	23	34	NAC inaudible	NAC inaudible. Herd of cows in close proximity, constant cow bellows and movement noises. Herd moves on at 19:44:56.
	03/08/23 11:00 pm (CP)	46	34	28	22	26	NAC inaudible	NAC inaudible. Regular cows bellows, occasional frog and duck sounds. Light wind noise and distant RTN.
	07/08/23 3:45 pm (BH)	83	70	50	37	59	NAC inaudible	NAC inaudible. Constant bird calls & wind in trees dominant; noise from quad bike on property audible. Occasional cow calls.
NML11	03/08/23 9:30 pm (CP)	42	27	23	20	22	NAC inaudible	NAC inaudible. Constant bird calls and distant RTN.
	03/08/23 10:00 pm (CP)	68	30	23	20	32	NAC inaudible	NAC inaudible. Constant bird calls and distant RTN. Loud bang at 22:07:00 from local impact noise.
	14/08/23 11:00 am (DL)	85	76	65	41	64	NAC Inaudible	NAC inaudible. Occasional light wind, tree movement and bird noise. Background consists of near constant local tractor noise faint aircraft noise and road traffic. Occasional cow bellows.
NML15	03/08/23 7:00 pm (CP)	49	36	31	24	29	NAC inaudible	NAC inaudible. Frequent aircraft flyover, and medium wind noise. Distant RTN and occasional wildlife noise.
	04/08/23 12:00 am (CP)	44	29	24	21	23	NAC inaudible	NAC inaudible. Occasional cow, dog and horse noise. Distant RTN.



Sensitive Receptor Location	Start Date & Time	Measured Noise Level in dB, 15-min					NAC LAeq, adj 15min ¹	Description of Acoustic Environment
		L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
	07/08/23 4:30 pm (BH)	53	42	34	25	32	NAC inaudible	NAC inaudible. Birdsong, distant RTN and wind in trees dominant. Occasional tractor noise audible from nearby property.
NML16	03/08/23 6:30 pm (CP)	59	46	32	25	36	NAC inaudible	NAC inaudible. Constant cricket noise. Regular dog barking, cow bellows and aircraft flyover.
	03/08/23 11:30 pm (CP)	44	28	23	20	22	NAC inaudible	NAC inaudible. Occasional cow bellows and dog barking.
	04/08/23 9:15 am (CP)	62	55	48	28	44	NAC inaudible	NAC inaudible. Distant RTN. Varying wind noise, begins light with some very heavy periods. Occasional cow mooing, birds flyover and aircraft flyover.
NML18	03/08/23 6:00 pm (CP)	63	58	42	30	43	NAC inaudible	NAC inaudible. Primarily birdsong and distant RTN. Constant crickets and light noise from nearby residence. Occasional plane flyover and car passby.
	04/08/23 12:30 am (CP)	36	26	22	19	21	NAC inaudible	NAC inaudible. Frequent dog barking and cow bellows. Occasional local machine noise.
	08/08/23 7:45 am (BH)	81	63	43	32	53	NAC inaudible	NAC inaudible. Several car passby events and plane flyover event. Distant steady state RTN on Oakey-Cooyar Road and constant birdsong otherwise dominant.
NML34	03/08/23 7:45 pm (DL)	57	39	33	23	30	NAC Inaudible	NAC inaudible. Occasional light wind, tree movement and bird noise. Background consists of near constant faint aircraft noise and road traffic.
	03/08/23 11:45 pm (DL)	43	37	29	18	27	NAC Inaudible	NAC inaudible. Minimal wind during measurement. Aircraft passby heard for most of measurement (1st 4min, clearly audible, last 10min very faint). Last 1min of measurement with no



Sensitive Receptor Location	Start Date & Time	Measured Noise Level in dB, 15-min					NAC LAeq, adj 15min ¹	Description of Acoustic Environment
		L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
								aircraft noise, approximately 20 dBA.
	04/08/23 12:15 pm (DL)	83	75	66	45	63	NAC Inaudible	NAC inaudible. Background noise dominated by on-property generated noise sources (farming tractor, farm animals, etc).
NML35	03/08/23 8:15 pm (DL)	65	36	29	20	31	NAC Inaudible	NAC inaudible. Occasional light wind, tree movement and bird noise. Background consists of near constant faint aircraft noise and road traffic.
	03/08/23 11:15 pm (DL)	43	31	24	18	22	NAC Inaudible	NAC inaudible. Minimal wind during measurement. Background noise mostly consists of animal movement in paddock (grass moving noise, etc). Very quiet.
	07/08/23 3:00 pm (BH)	57	46	40	34	38	NAC Inaudible	NAC inaudible. Constant bird calls & wind in trees dominant.
NML38	03/08/23 8:45 pm (DL)	54	37	27	20	27	NAC Inaudible	NAC inaudible. Occasional light winds, tree movement and bird calls. Background noise mostly consists of faint aircraft noise.
	03/08/23 10:45 pm (DL)	47	36	26	21	26	NAC Inaudible	NAC inaudible. Minimal wind during measurement. Occasional farm animal noise (cow mooing, etc). Very faint, but constant road traffic noise (coming from northwest)
	08/08/23 9:15 am (BH)	65	54	42	28	41	NAC inaudible	NAC inaudible. Distant RTN and wind (including creaking from rotating windmill) dominant. Constant birdsong also audible.
Background Location	03/08/23 6:30 pm (DL)	57	42	38	31	36	NAC Inaudible	NAC inaudible. Distant taxiing helicopters at airbase audible. Constant insect noise and road traffic noise.



Sensitive Receptor Location	Start Date & Time	Measured Noise Level in dB, 15-min					NAC LAeq, adj 15min ¹	Description of Acoustic Environment
		L _{Amax}	L _{A1}	L _{A10}	L _{A90}	L _{Aeq}		
	04/08/23 12:45 am (DL)	43.	32	23	17	22	NAC Inaudible	NAC inaudible. Occasional light winds but mostly still weather, very faint road traffic. Mostly quiet during measurement.
	10/08/23 11:15 am (BH)	54	38	35	26	32	NAC Inaudible	NAC inaudible. Distant taxiing helicopters at airbase audible. Wind and insects dominant and occasional bird calls also audible.

Note 1: This represents the corrected LAeq attributable to NAC noise including any corrections as noted.





Appendix E Unattended Noise Monitoring Summary

New Acland Coal – Stage 3 Noise Survey August 2023

New Acland Coal Pty Ltd

SLR Project No.: 620.10963.01003

17 November 2023

End Time	View Point	Location	Support	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description	Area Division Code	Area Division Name	Area Division Description		
09-26-2023 03:13	NW	MnS	Shore 977 504-4570	1.3	120	15	45	25	45	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20	10	10	20

End Time	Wind Period	Location	Logger	Wind Gauge Data	Wind Speed (mph)	Wind Direction	Wind Characterization Data										L-Noise	L-Noise (A-weighted)	L-Noise (C-weighted)	L-Noise (D-weighted)	Data Acquisition Sequence																							
							Battl. Vol	Freq. (%)	Humidity (%)	Air Temp. (°F)	Air Press. (in)	Lat	Long	Alt. (ft)	2014-2016	2016					2016	2016	2016	2016	2016	2016	2016	2016	2016	2016	2016													
05-05-2023 22:15	Night	NA4	03M4-977-29e-2016	1.2	30	101.5	18.1	20.8	54	39	33	33	34		16			2016-03-05-25		Comments: Background (noisy account)	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 22:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25		2 inches excluded: Local road traffic noise. L-Noise caused by local road traffic noise.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 22:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 23:00	Night	NA4	03M4-977-29e-2016	1.2	30	101.5	18.1	20.8	54	39	33	33	34		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 23:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 23:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25		3 inches excluded: dog barking.	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 23:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 00:00	Night	NA4	03M4-977-29e-2016	1.2	30	101.5	18.1	20.8	54	39	33	33	34		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 00:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 00:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 00:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 01:00	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 01:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 01:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 01:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 02:00	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 02:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 02:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 02:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 03:00	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 03:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 03:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 03:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 04:00	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 04:15	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 04:30	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 04:45	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 05:00	Night	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 05:15	Day	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
05-05-2023 05:30	Day	NA4	03M4-977-29e-2016	2.2	30	101.3	18.2	20.8	54	38	34	34	35		16			2016-03-05-25			17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34						

End Time	Flow Point	Location	Laggar	Max Drawdown Date	Max Drawdown (mm)	Max Drawdown Depth (mm)	Tens (mm)	Tens (m)	Recovery (%)	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	P11	P12	P13	P14	P15	P16	P17	P18	P19	P20	P21	P22	P23	P24	P25	P26	P27	P28	P29	P30	P31	P32	P33	P34	P35	P36	P37	P38	P39	P40	P41	P42	P43	P44	P45	P46	P47	P48	P49	P50	P51	P52	P53	P54	P55	P56	P57	P58	P59	P60	P61	P62	P63	P64	P65	P66	P67	P68	P69	P70	P71	P72	P73	P74	P75	P76	P77	P78	P79	P80	P81	P82	P83	P84	P85	P86	P87	P88	P89	P90	P91	P92	P93	P94	P95	P96	P97	P98	P99	P100	P101	P102	P103	P104	P105	P106	P107	P108	P109	P110	P111	P112	P113	P114	P115	P116	P117	P118	P119	P120	P121	P122	P123	P124	P125	P126	P127	P128	P129	P130	P131	P132	P133	P134	P135	P136	P137	P138	P139	P140	P141	P142	P143	P144	P145	P146	P147	P148	P149	P150	P151	P152	P153	P154	P155	P156	P157	P158	P159	P160	P161	P162	P163	P164	P165	P166	P167	P168	P169	P170	P171	P172	P173	P174	P175	P176	P177	P178	P179	P180	P181	P182	P183	P184	P185	P186	P187	P188	P189	P190	P191	P192	P193	P194	P195	P196	P197	P198	P199	P200	P201	P202	P203	P204	P205	P206	P207	P208	P209	P210	P211	P212	P213	P214	P215	P216	P217	P218	P219	P220	P221	P222	P223	P224	P225	P226	P227	P228	P229	P230	P231	P232	P233	P234	P235	P236	P237	P238	P239	P240	P241	P242	P243	P244	P245	P246	P247	P248	P249	P250	P251	P252	P253	P254	P255	P256	P257	P258	P259	P260	P261	P262	P263	P264	P265	P266	P267	P268	P269	P270	P271	P272	P273	P274	P275	P276	P277	P278	P279	P280	P281	P282	P283	P284	P285	P286	P287	P288	P289	P290	P291	P292	P293	P294	P295	P296	P297	P298	P299	P300	P301	P302	P303	P304	P305	P306	P307	P308	P309	P310	P311	P312	P313	P314	P315	P316	P317	P318	P319	P320	P321	P322	P323	P324	P325	P326	P327	P328	P329	P330	P331	P332	P333	P334	P335	P336	P337	P338	P339	P340	P341	P342	P343	P344	P345	P346	P347	P348	P349	P350	P351	P352	P353	P354	P355	P356	P357	P358	P359	P360	P361	P362	P363	P364	P365	P366	P367	P368	P369	P370	P371	P372	P373	P374	P375	P376	P377	P378	P379	P380	P381	P382	P383	P384	P385	P386	P387	P388	P389	P390	P391	P392	P393	P394	P395	P396	P397	P398	P399	P400	P401	P402	P403	P404	P405	P406	P407	P408	P409	P410	P411	P412	P413	P414	P415	P416	P417	P418	P419	P420	P421	P422	P423	P424	P425	P426	P427	P428	P429	P430	P431	P432	P433	P434	P435	P436	P437	P438	P439	P440	P441	P442	P443	P444	P445	P446	P447	P448	P449	P450	P451	P452	P453	P454	P455	P456	P457	P458	P459	P460	P461	P462	P463	P464	P465	P466	P467	P468	P469	P470	P471	P472	P473	P474	P475	P476	P477	P478	P479	P480	P481	P482	P483	P484	P485	P486	P487	P488	P489	P490	P491	P492	P493	P494	P495	P496	P497	P498	P499	P500	P501	P502	P503	P504	P505	P506	P507	P508	P509	P510	P511	P512	P513	P514	P515	P516	P517	P518	P519	P520	P521	P522	P523	P524	P525	P526	P527	P528	P529	P530	P531	P532	P533	P534	P535	P536	P537	P538	P539	P540	P541	P542	P543	P544	P545	P546	P547	P548	P549	P550	P551	P552	P553	P554	P555	P556	P557	P558	P559	P560	P561	P562	P563	P564	P565	P566	P567	P568	P569	P570	P571	P572	P573	P574	P575	P576	P577	P578	P579	P580	P581	P582	P583	P584	P585	P586	P587	P588	P589	P590	P591	P592	P593	P594	P595	P596	P597	P598	P599	P600	P601	P602	P603	P604	P605	P606	P607	P608	P609	P610	P611	P612	P613	P614	P615	P616	P617	P618	P619	P620	P621	P622	P623	P624	P625	P626	P627	P628	P629	P630	P631	P632	P633	P634	P635	P636	P637	P638	P639	P640	P641	P642	P643	P644	P645	P646	P647	P648	P649	P650	P651	P652	P653	P654	P655	P656	P657	P658	P659	P660	P661	P662	P663	P664	P665	P666	P667	P668	P669	P670	P671	P672	P673	P674	P675	P676	P677	P678	P679	P680	P681	P682	P683	P684	P685	P686	P687	P688	P689	P690	P691	P692	P693	P694	P695	P696	P697	P698	P699	P700	P701	P702	P703	P704	P705	P706	P707	P708	P709	P710	P711	P712	P713	P714	P715	P716	P717	P718	P719	P720	P721	P722	P723	P724	P725	P726	P727	P728	P729	P730	P731	P732	P733	P734	P735	P736	P737	P738	P739	P740	P741	P742	P743	P744	P745	P746	P747	P748	P749	P750	P751	P752	P753	P754	P755	P756	P757	P758	P759	P760	P761	P762	P763	P764	P765	P766	P767	P768	P769	P770	P771	P772	P773	P774	P775	P776	P777	P778	P779	P780	P781	P782	P783	P784	P785	P786	P787	P788	P789	P790	P791	P792	P793	P794	P795	P796	P797	P798	P799	P800	P801	P802	P803	P804	P805	P806	P807	P808	P809	P810	P811	P812	P813	P814	P815	P816	P817	P818	P819	P820	P821	P822	P823	P824	P825	P826	P827	P828	P829	P830	P831	P832	P833	P834	P835	P836	P837	P838	P839	P840	P841	P842	P843	P844	P845	P846	P847	P848	P849	P850	P851	P852	P853	P854	P855	P856	P857	P858	P859	P860	P861	P862	P863	P864	P865	P866	P867	P868	P869	P870	P871	P872	P873	P874	P875	P876	P877	P878	P879	P880	P881	P882	P883	P884	P885	P886	P887	P888	P889	P890	P891	P892	P893	P894	P895	P896	P897	P898	P899	P900	P901	P902	P903	P904	P905	P906	P907	P908	P909	P910	P911	P912	P913	P914	P915	P916	P917	P918	P919	P920	P921	P922	P923	P924	P925	P926	P927	P928	P929	P930	P931	P932	P933	P934	P935	P936	P937	P938	P939	P940	P941	P942	P943	P944	P945	P946	P947	P948
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				Writ Speed (bytes)	Read Speed	Barrel	Time (s)	Rotary (s)	Inner	Outer	Lat	Lead					LDD	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA	ATA																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
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End Time	File Path	Location	Logger	Main Weather Data					Main Ozone Weather Data					LAD	LAD2	LAD3	LAD4	LAD5	LAD6	LAD7	LAD8	LAD9	LAD10	LAD11	LAD12	LAD13	LAD14	LAD15	LAD16	LAD17	LAD18	LAD19	LAD20	LAD21	LAD22	LAD23	LAD24	LAD25	LAD26	LAD27	LAD28	LAD29	LAD30	LAD31	LAD32	LAD33	LAD34	LAD35	LAD36	LAD37	LAD38	LAD39	LAD40	LAD41	LAD42	LAD43	LAD44	LAD45	LAD46	LAD47	LAD48	LAD49	LAD50	LAD51	LAD52	LAD53	LAD54	LAD55	LAD56	LAD57	LAD58	LAD59	LAD60	LAD61	LAD62	LAD63	LAD64	LAD65	LAD66	LAD67	LAD68	LAD69	LAD70	LAD71	LAD72	LAD73	LAD74	LAD75	LAD76	LAD77	LAD78	LAD79	LAD80	LAD81	LAD82	LAD83	LAD84	LAD85	LAD86	LAD87	LAD88	LAD89	LAD90	LAD91	LAD92	LAD93	LAD94	LAD95	LAD96	LAD97	LAD98	LAD99	LAD100	LAD101	LAD102	LAD103	LAD104	LAD105	LAD106	LAD107	LAD108	LAD109	LAD110	LAD111	LAD112	LAD113	LAD114	LAD115	LAD116	LAD117	LAD118	LAD119	LAD120	LAD121	LAD122	LAD123	LAD124	LAD125	LAD126	LAD127	LAD128	LAD129	LAD130	LAD131	LAD132	LAD133	LAD134	LAD135	LAD136	LAD137	LAD138	LAD139	LAD140	LAD141	LAD142	LAD143	LAD144	LAD145	LAD146	LAD147	LAD148	LAD149	LAD150	LAD151	LAD152	LAD153	LAD154	LAD155	LAD156	LAD157	LAD158	LAD159	LAD160	LAD161	LAD162	LAD163	LAD164	LAD165	LAD166	LAD167	LAD168	LAD169	LAD170	LAD171	LAD172	LAD173	LAD174	LAD175	LAD176	LAD177	LAD178	LAD179	LAD180	LAD181	LAD182	LAD183	LAD184	LAD185	LAD186	LAD187	LAD188	LAD189	LAD190	LAD191	LAD192	LAD193	LAD194	LAD195	LAD196	LAD197	LAD198	LAD199	LAD200	LAD201	LAD202	LAD203	LAD204	LAD205	LAD206	LAD207	LAD208	LAD209	LAD210	LAD211	LAD212	LAD213	LAD214	LAD215	LAD216	LAD217	LAD218	LAD219	LAD220	LAD221	LAD222	LAD223	LAD224	LAD225	LAD226	LAD227	LAD228	LAD229	LAD230	LAD231	LAD232	LAD233	LAD234	LAD235	LAD236	LAD237	LAD238	LAD239	LAD240	LAD241	LAD242	LAD243	LAD244	LAD245	LAD246	LAD247	LAD248	LAD249	LAD250	LAD251	LAD252	LAD253	LAD254	LAD255	LAD256	LAD257	LAD258	LAD259	LAD260	LAD261	LAD262	LAD263	LAD264	LAD265	LAD266	LAD267	LAD268	LAD269	LAD270	LAD271	LAD272	LAD273	LAD274	LAD275	LAD276	LAD277	LAD278	LAD279	LAD280	LAD281	LAD282	LAD283	LAD284	LAD285	LAD286	LAD287	LAD288	LAD289	LAD290	LAD291	LAD292	LAD293	LAD294	LAD295	LAD296	LAD297	LAD298	LAD299	LAD300	LAD301	LAD302	LAD303	LAD304	LAD305	LAD306	LAD307	LAD308	LAD309	LAD310	LAD311	LAD312	LAD313	LAD314	LAD315	LAD316	LAD317	LAD318	LAD319	LAD320	LAD321	LAD322	LAD323	LAD324	LAD325	LAD326	LAD327	LAD328	LAD329	LAD330	LAD331	LAD332	LAD333	LAD334	LAD335	LAD336	LAD337	LAD338	LAD339	LAD340	LAD341	LAD342	LAD343	LAD344	LAD345	LAD346	LAD347	LAD348	LAD349	LAD350	LAD351	LAD352	LAD353	LAD354	LAD355	LAD356	LAD357	LAD358	LAD359	LAD360	LAD361	LAD362	LAD363	LAD364	LAD365	LAD366	LAD367	LAD368	LAD369	LAD370	LAD371	LAD372	LAD373	LAD374	LAD375	LAD376	LAD377	LAD378	LAD379	LAD380	LAD381	LAD382	LAD383	LAD384	LAD385	LAD386	LAD387	LAD388	LAD389	LAD390	LAD391	LAD392	LAD393	LAD394	LAD395	LAD396	LAD397	LAD398	LAD399	LAD400	LAD401	LAD402	LAD403	LAD404	LAD405	LAD406	LAD407	LAD408	LAD409	LAD410	LAD411	LAD412	LAD413	LAD414	LAD415	LAD416	LAD417	LAD418	LAD419	LAD420	LAD421	LAD422	LAD423	LAD424	LAD425	LAD426	LAD427	LAD428	LAD429	LAD430	LAD431	LAD432	LAD433	LAD434	LAD435	LAD436	LAD437	LAD438	LAD439	LAD440	LAD441	LAD442	LAD443	LAD444	LAD445	LAD446	LAD447	LAD448	LAD449	LAD450	LAD451	LAD452	LAD453	LAD454	LAD455	LAD456	LAD457	LAD458	LAD459	LAD460	LAD461	LAD462	LAD463	LAD464	LAD465	LAD466	LAD467	LAD468	LAD469	LAD470	LAD471	LAD472	LAD473	LAD474	LAD475	LAD476	LAD477	LAD478	LAD479	LAD480	LAD481	LAD482	LAD483	LAD484	LAD485	LAD486	LAD487	LAD488	LAD489	LAD490	LAD491	LAD492	LAD493	LAD494	LAD495	LAD496	LAD497	LAD498	LAD499	LAD500	LAD501	LAD502	LAD503	LAD504	LAD505	LAD506	LAD507	LAD508	LAD509	LAD510	LAD511	LAD512	LAD513	LAD514	LAD515	LAD516	LAD517	LAD518	LAD519	LAD520	LAD521	LAD522	LAD523	LAD524	LAD525	LAD526	LAD527	LAD528	LAD529	LAD530	LAD531	LAD532	LAD533	LAD534	LAD535	LAD536	LAD537	LAD538	LAD539	LAD540	LAD541	LAD542	LAD543	LAD544	LAD545	LAD546	LAD547	LAD548	LAD549	LAD550	LAD551	LAD552	LAD553	LAD554	LAD555	LAD556	LAD557	LAD558	LAD559	LAD560	LAD561	LAD562	LAD563	LAD564	LAD565	LAD566	LAD567	LAD568	LAD569	LAD570	LAD571	LAD572	LAD573	LAD574	LAD575	LAD576	LAD577	LAD578	LAD579	LAD580	LAD581	LAD582	LAD583	LAD584	LAD585	LAD586	LAD587	LAD588	LAD589	LAD590	LAD591	LAD592	LAD593	LAD594	LAD595	LAD596	LAD597	LAD598	LAD599	LAD600	LAD601	LAD602	LAD603	LAD604	LAD605	LAD606	LAD607	LAD608	LAD609	LAD610	LAD611	LAD612	LAD613	LAD614	LAD615	LAD616	LAD617	LAD618	LAD619	LAD620	LAD621	LAD622	LAD623	LAD624	LAD625	LAD626	LAD627	LAD628	LAD629	LAD630	LAD631	LAD632	LAD633	LAD634	LAD635	LAD636	LAD637	LAD638	LAD639	LAD640	LAD641	LAD642	LAD643	LAD644	LAD645	LAD646	LAD647	LAD648	LAD649	LAD650	LAD651	LAD652	LAD653	LAD654	LAD655	LAD656	LAD657	LAD658	LAD659	LAD660	LAD661	LAD662	LAD663	LAD664	LAD665	LAD666	LAD667	LAD668	LAD669	LAD670	LAD671	LAD672	LAD673	LAD674	LAD675	LAD676	LAD677	LAD678	LAD679	LAD680	LAD681	LAD682	LAD683	LAD684	LAD685	LAD686	LAD687	LAD688	LAD689	LAD690	LAD691	LAD692	LAD693	LAD694	LAD695	LAD696	LAD697	LAD698	LAD699	LAD700	LAD701	LAD702	LAD703	LAD704	LAD705	LAD706	LAD707	LAD708	LAD709	LAD710	LAD711	LAD712	LAD713	LAD714	LAD715	LAD716	LAD717	LAD718	LAD719	LAD720	LAD721	LAD722	LAD723	LAD724	LAD725	LAD726	LAD727	LAD728	LAD729	LAD730	LAD731	LAD732	LAD733	LAD734	LAD735	LAD736	LAD737	LAD738	LAD739	LAD740	LAD741	LAD742	LAD743	LAD744	LAD745	LAD746	LAD747	LAD748	LAD749	LAD750	LAD751	LAD752	LAD753	LAD754	LAD755	LAD756	LAD757	LAD758	LAD759	LAD760	LAD761	LAD762	LAD763	LAD764	LAD765	LAD766	LAD767	LAD768	LAD769	LAD770	LAD771	LAD772	LAD773	LAD774	LAD775	LAD776	LAD777	LAD778	LAD779	LAD780	LAD781	LAD782	LAD783	LAD784	LAD785	LAD786	LAD787	LAD788	LAD789	LAD790	LAD791	LAD792	LAD793	LAD794	LAD795	LAD796	LAD797	LAD798	LAD799	LAD800	LAD801	LAD802	LAD803	LAD804	LAD805	LAD806	LAD807	LAD808	LAD809	LAD810	LAD811	LAD812	LAD813	LAD814	LAD815	LAD816	LAD817	LAD818	LAD819	LAD820	LAD821	LAD822	LAD823	LAD824	LAD825	LAD826	LAD827	LAD828	LAD829	LAD830	LAD831	LAD832	LAD833	LAD834	LAD835	LAD836	LAD837	LAD838	LAD839	LAD840	LAD841	LAD842	LAD843	LAD844	LAD845	LAD846	LAD847	LAD848	LAD849	LAD850	LAD851	LAD852	LAD853	LAD854	LAD855	LAD856	LAD857	LAD858	LAD859	LAD860	LAD861	LAD862	LAD863	LAD864	LAD865	LAD866	LAD867	LAD868	LAD869	LAD870	LAD871	LAD872	LAD873	LAD874	LAD875	LAD876	LAD877	LAD878	LAD879	LAD880	LAD881	LAD882	LAD883	LAD884	LAD8
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End Time	Fire Period	Location	Appar	Risk Reduction Ops				Risk 1 Vehicle Operations Ops				LAD0	LAD1	LAD2	LAD3	LAD4	LAD5	LAD6	LAD7	LAD8	LAD9	LAD10	LAD11	LAD12	LAD13	LAD14	LAD15	LAD16	LAD17	LAD18	LAD19	LAD20	LAD21	LAD22	LAD23	LAD24	LAD25	LAD26	LAD27	LAD28	LAD29	LAD30	LAD31	LAD32	LAD33	LAD34	LAD35	LAD36	LAD37	LAD38	LAD39	LAD40	LAD41	LAD42	LAD43	LAD44	LAD45	LAD46	LAD47	LAD48	LAD49	LAD50	LAD51	LAD52	LAD53	LAD54	LAD55	LAD56	LAD57	LAD58	LAD59	LAD60	LAD61	LAD62	LAD63	LAD64	LAD65	LAD66	LAD67	LAD68	LAD69	LAD70	LAD71	LAD72	LAD73	LAD74	LAD75	LAD76	LAD77	LAD78	LAD79	LAD80	LAD81	LAD82	LAD83	LAD84	LAD85	LAD86	LAD87	LAD88	LAD89	LAD90	LAD91	LAD92	LAD93	LAD94	LAD95	LAD96	LAD97	LAD98	LAD99	LAD100	LAD101	LAD102	LAD103	LAD104	LAD105	LAD106	LAD107	LAD108	LAD109	LAD110	LAD111	LAD112	LAD113	LAD114	LAD115	LAD116	LAD117	LAD118	LAD119	LAD120	LAD121	LAD122	LAD123	LAD124	LAD125	LAD126	LAD127	LAD128	LAD129	LAD130	LAD131	LAD132	LAD133	LAD134	LAD135	LAD136	LAD137	LAD138	LAD139	LAD140	LAD141	LAD142	LAD143	LAD144	LAD145	LAD146	LAD147	LAD148	LAD149	LAD150	LAD151	LAD152	LAD153	LAD154	LAD155	LAD156	LAD157	LAD158	LAD159	LAD160	LAD161	LAD162	LAD163	LAD164	LAD165	LAD166	LAD167	LAD168	LAD169	LAD170	LAD171	LAD172	LAD173	LAD174	LAD175	LAD176	LAD177	LAD178	LAD179	LAD180	LAD181	LAD182	LAD183	LAD184	LAD185	LAD186	LAD187	LAD188	LAD189	LAD190	LAD191	LAD192	LAD193	LAD194	LAD195	LAD196	LAD197	LAD198	LAD199	LAD200	LAD201	LAD202	LAD203	LAD204	LAD205	LAD206	LAD207	LAD208	LAD209	LAD210	LAD211	LAD212	LAD213	LAD214	LAD215	LAD216	LAD217	LAD218	LAD219	LAD220	LAD221	LAD222	LAD223	LAD224	LAD225	LAD226	LAD227	LAD228	LAD229	LAD230	LAD231	LAD232	LAD233	LAD234	LAD235	LAD236	LAD237	LAD238	LAD239	LAD240	LAD241	LAD242	LAD243	LAD244	LAD245	LAD246	LAD247	LAD248	LAD249	LAD250	LAD251	LAD252	LAD253	LAD254	LAD255	LAD256	LAD257	LAD258	LAD259	LAD260	LAD261	LAD262	LAD263	LAD264	LAD265	LAD266	LAD267	LAD268	LAD269	LAD270	LAD271	LAD272	LAD273	LAD274	LAD275	LAD276	LAD277	LAD278	LAD279	LAD280	LAD281	LAD282	LAD283	LAD284	LAD285	LAD286	LAD287	LAD288	LAD289	LAD290	LAD291	LAD292	LAD293	LAD294	LAD295	LAD296	LAD297	LAD298	LAD299	LAD300	LAD301	LAD302	LAD303	LAD304	LAD305	LAD306	LAD307	LAD308	LAD309	LAD310	LAD311	LAD312	LAD313	LAD314	LAD315	LAD316	LAD317	LAD318	LAD319	LAD320	LAD321	LAD322	LAD323	LAD324	LAD325	LAD326	LAD327	LAD328	LAD329	LAD330	LAD331	LAD332	LAD333	LAD334	LAD335	LAD336	LAD337	LAD338	LAD339	LAD340	LAD341	LAD342	LAD343	LAD344	LAD345	LAD346	LAD347	LAD348	LAD349	LAD350	LAD351	LAD352	LAD353	LAD354	LAD355	LAD356	LAD357	LAD358	LAD359	LAD360	LAD361	LAD362	LAD363	LAD364	LAD365	LAD366	LAD367	LAD368	LAD369	LAD370	LAD371	LAD372	LAD373	LAD374	LAD375	LAD376	LAD377	LAD378	LAD379	LAD380	LAD381	LAD382	LAD383	LAD384	LAD385	LAD386	LAD387	LAD388	LAD389	LAD390	LAD391	LAD392	LAD393	LAD394	LAD395	LAD396	LAD397	LAD398	LAD399	LAD400	LAD401	LAD402	LAD403	LAD404	LAD405	LAD406	LAD407	LAD408	LAD409	LAD410	LAD411	LAD412	LAD413	LAD414	LAD415	LAD416	LAD417	LAD418	LAD419	LAD420	LAD421	LAD422	LAD423	LAD424	LAD425	LAD426	LAD427	LAD428	LAD429	LAD430	LAD431	LAD432	LAD433	LAD434	LAD435	LAD436	LAD437	LAD438	LAD439	LAD440	LAD441	LAD442	LAD443	LAD444	LAD445	LAD446	LAD447	LAD448	LAD449	LAD450	LAD451	LAD452	LAD453	LAD454	LAD455	LAD456	LAD457	LAD458	LAD459	LAD460	LAD461	LAD462	LAD463	LAD464	LAD465	LAD466	LAD467	LAD468	LAD469	LAD470	LAD471	LAD472	LAD473	LAD474	LAD475	LAD476	LAD477	LAD478	LAD479	LAD480	LAD481	LAD482	LAD483	LAD484	LAD485	LAD486	LAD487	LAD488	LAD489	LAD490	LAD491	LAD492	LAD493	LAD494	LAD495	LAD496	LAD497	LAD498	LAD499	LAD500	LAD501	LAD502	LAD503	LAD504	LAD505	LAD506	LAD507	LAD508	LAD509	LAD510	LAD511	LAD512	LAD513	LAD514	LAD515	LAD516	LAD517	LAD518	LAD519	LAD520	LAD521	LAD522	LAD523	LAD524	LAD525	LAD526	LAD527	LAD528	LAD529	LAD530	LAD531	LAD532	LAD533	LAD534	LAD535	LAD536	LAD537	LAD538	LAD539	LAD540	LAD541	LAD542	LAD543	LAD544	LAD545	LAD546	LAD547	LAD548	LAD549	LAD550	LAD551	LAD552	LAD553	LAD554	LAD555	LAD556	LAD557	LAD558	LAD559	LAD560	LAD561	LAD562	LAD563	LAD564	LAD565	LAD566	LAD567	LAD568	LAD569	LAD570	LAD571	LAD572	LAD573	LAD574	LAD575	LAD576	LAD577	LAD578	LAD579	LAD580	LAD581	LAD582	LAD583	LAD584	LAD585	LAD586	LAD587	LAD588	LAD589	LAD590	LAD591	LAD592	LAD593	LAD594	LAD595	LAD596	LAD597	LAD598	LAD599	LAD600	LAD601	LAD602	LAD603	LAD604	LAD605	LAD606	LAD607	LAD608	LAD609	LAD610	LAD611	LAD612	LAD613	LAD614	LAD615	LAD616	LAD617	LAD618	LAD619	LAD620	LAD621	LAD622	LAD623	LAD624	LAD625	LAD626	LAD627	LAD628	LAD629	LAD630	LAD631	LAD632	LAD633	LAD634	LAD635	LAD636	LAD637	LAD638	LAD639	LAD640	LAD641	LAD642	LAD643	LAD644	LAD645	LAD646	LAD647	LAD648	LAD649	LAD650	LAD651	LAD652	LAD653	LAD654	LAD655	LAD656	LAD657	LAD658	LAD659	LAD660	LAD661	LAD662	LAD663	LAD664	LAD665	LAD666	LAD667	LAD668	LAD669	LAD670	LAD671	LAD672	LAD673	LAD674	LAD675	LAD676	LAD677	LAD678	LAD679	LAD680	LAD681	LAD682	LAD683	LAD684	LAD685	LAD686	LAD687	LAD688	LAD689	LAD690	LAD691	LAD692	LAD693	LAD694	LAD695	LAD696	LAD697	LAD698	LAD699	LAD700	LAD701	LAD702	LAD703	LAD704	LAD705	LAD706	LAD707	LAD708	LAD709	LAD710	LAD711	LAD712	LAD713	LAD714	LAD715	LAD716	LAD717	LAD718	LAD719	LAD720	LAD721	LAD722	LAD723	LAD724	LAD725	LAD726	LAD727	LAD728	LAD729	LAD730	LAD731	LAD732	LAD733	LAD734	LAD735	LAD736	LAD737	LAD738	LAD739	LAD740	LAD741	LAD742	LAD743	LAD744	LAD745	LAD746	LAD747	LAD748	LAD749	LAD750	LAD751	LAD752	LAD753	LAD754	LAD755	LAD756	LAD757	LAD758	LAD759	LAD760	LAD761	LAD762	LAD763	LAD764	LAD765	LAD766	LAD767	LAD768	LAD769	LAD770	LAD771	LAD772	LAD773	LAD774	LAD775	LAD776	LAD777	LAD778	LAD779	LAD780	LAD781	LAD782	LAD783	LAD784	LAD785	LAD786	LAD787	LAD788	LAD789	LAD790	LAD791	LAD792	LAD793	LAD794	LAD795	LAD796	LAD797	LAD798	LAD799	LAD800	LAD801	LAD802	LAD803	LAD804	LAD805	LAD806	LAD807	LAD808	LAD809	LAD810	LAD811	LAD812	LAD813	LAD814	LAD815	LAD816	LAD817	LAD818	LAD819	LAD820	LAD821	LAD822	LAD823	LAD824	LAD825	LAD826	LAD827	LAD828	LAD829	LAD830	LAD831	LAD832	LAD833	LAD834	LAD835	LAD836	LAD837	LAD838	LAD839	LAD840	LAD841	LAD842	LAD843	LAD844	LAD845	LAD846	LAD847	LAD848	LAD849	LAD850	LAD851	LAD852	LAD853	LAD854	LAD855	LAD856	LAD857	LAD858	LAD859	LAD860	LAD861	LAD862	LAD863	LAD864	LAD865	LAD866	LAD867	LAD868	LAD869	LAD870	LAD871	LAD872	LAD873	LAD874	LAD875	LAD876	LAD877	LAD878	LAD879	LAD880	LAD881	LAD882	LAD883	LAD
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End Time	Fire Period	Location	Appar	Main Standby Date				Fire Element Standby Date				LAD0	LAD1	LAD2	LAD3	LAD4	LAD5	LAD6	LAD7	LAD8	LAD9	LAD10	LAD11	LAD12	LAD13	LAD14	LAD15	LAD16	LAD17	LAD18	LAD19	LAD20	LAD21	LAD22	LAD23	LAD24	LAD25	LAD26	LAD27	LAD28	LAD29	LAD30	LAD31	LAD32	LAD33	LAD34	LAD35	LAD36	LAD37	LAD38	LAD39	LAD40	LAD41	LAD42	LAD43	LAD44	LAD45	LAD46	LAD47	LAD48	LAD49	LAD50	LAD51	LAD52	LAD53	LAD54	LAD55	LAD56	LAD57	LAD58	LAD59	LAD60	LAD61	LAD62	LAD63	LAD64	LAD65	LAD66	LAD67	LAD68	LAD69	LAD70	LAD71	LAD72	LAD73	LAD74	LAD75	LAD76	LAD77	LAD78	LAD79	LAD80	LAD81	LAD82	LAD83	LAD84	LAD85	LAD86	LAD87	LAD88	LAD89	LAD90	LAD91	LAD92	LAD93	LAD94	LAD95	LAD96	LAD97	LAD98	LAD99	LAD100	LAD101	LAD102	LAD103	LAD104	LAD105	LAD106	LAD107	LAD108	LAD109	LAD110	LAD111	LAD112	LAD113	LAD114	LAD115	LAD116	LAD117	LAD118	LAD119	LAD120	LAD121	LAD122	LAD123	LAD124	LAD125	LAD126	LAD127	LAD128	LAD129	LAD130	LAD131	LAD132	LAD133	LAD134	LAD135	LAD136	LAD137	LAD138	LAD139	LAD140	LAD141	LAD142	LAD143	LAD144	LAD145	LAD146	LAD147	LAD148	LAD149	LAD150	LAD151	LAD152	LAD153	LAD154	LAD155	LAD156	LAD157	LAD158	LAD159	LAD160	LAD161	LAD162	LAD163	LAD164	LAD165	LAD166	LAD167	LAD168	LAD169	LAD170	LAD171	LAD172	LAD173	LAD174	LAD175	LAD176	LAD177	LAD178	LAD179	LAD180	LAD181	LAD182	LAD183	LAD184	LAD185	LAD186	LAD187	LAD188	LAD189	LAD190	LAD191	LAD192	LAD193	LAD194	LAD195	LAD196	LAD197	LAD198	LAD199	LAD200	LAD201	LAD202	LAD203	LAD204	LAD205	LAD206	LAD207	LAD208	LAD209	LAD210	LAD211	LAD212	LAD213	LAD214	LAD215	LAD216	LAD217	LAD218	LAD219	LAD220	LAD221	LAD222	LAD223	LAD224	LAD225	LAD226	LAD227	LAD228	LAD229	LAD230	LAD231	LAD232	LAD233	LAD234	LAD235	LAD236	LAD237	LAD238	LAD239	LAD240	LAD241	LAD242	LAD243	LAD244	LAD245	LAD246	LAD247	LAD248	LAD249	LAD250	LAD251	LAD252	LAD253	LAD254	LAD255	LAD256	LAD257	LAD258	LAD259	LAD260	LAD261	LAD262	LAD263	LAD264	LAD265	LAD266	LAD267	LAD268	LAD269	LAD270	LAD271	LAD272	LAD273	LAD274	LAD275	LAD276	LAD277	LAD278	LAD279	LAD280	LAD281	LAD282	LAD283	LAD284	LAD285	LAD286	LAD287	LAD288	LAD289	LAD290	LAD291	LAD292	LAD293	LAD294	LAD295	LAD296	LAD297	LAD298	LAD299	LAD300	LAD301	LAD302	LAD303	LAD304	LAD305	LAD306	LAD307	LAD308	LAD309	LAD310	LAD311	LAD312	LAD313	LAD314	LAD315	LAD316	LAD317	LAD318	LAD319	LAD320	LAD321	LAD322	LAD323	LAD324	LAD325	LAD326	LAD327	LAD328	LAD329	LAD330	LAD331	LAD332	LAD333	LAD334	LAD335	LAD336	LAD337	LAD338	LAD339	LAD340	LAD341	LAD342	LAD343	LAD344	LAD345	LAD346	LAD347	LAD348	LAD349	LAD350	LAD351	LAD352	LAD353	LAD354	LAD355	LAD356	LAD357	LAD358	LAD359	LAD360	LAD361	LAD362	LAD363	LAD364	LAD365	LAD366	LAD367	LAD368	LAD369	LAD370	LAD371	LAD372	LAD373	LAD374	LAD375	LAD376	LAD377	LAD378	LAD379	LAD380	LAD381	LAD382	LAD383	LAD384	LAD385	LAD386	LAD387	LAD388	LAD389	LAD390	LAD391	LAD392	LAD393	LAD394	LAD395	LAD396	LAD397	LAD398	LAD399	LAD400	LAD401	LAD402	LAD403	LAD404	LAD405	LAD406	LAD407	LAD408	LAD409	LAD410	LAD411	LAD412	LAD413	LAD414	LAD415	LAD416	LAD417	LAD418	LAD419	LAD420	LAD421	LAD422	LAD423	LAD424	LAD425	LAD426	LAD427	LAD428	LAD429	LAD430	LAD431	LAD432	LAD433	LAD434	LAD435	LAD436	LAD437	LAD438	LAD439	LAD440	LAD441	LAD442	LAD443	LAD444	LAD445	LAD446	LAD447	LAD448	LAD449	LAD450	LAD451	LAD452	LAD453	LAD454	LAD455	LAD456	LAD457	LAD458	LAD459	LAD460	LAD461	LAD462	LAD463	LAD464	LAD465	LAD466	LAD467	LAD468	LAD469	LAD470	LAD471	LAD472	LAD473	LAD474	LAD475	LAD476	LAD477	LAD478	LAD479	LAD480	LAD481	LAD482	LAD483	LAD484	LAD485	LAD486	LAD487	LAD488	LAD489	LAD490	LAD491	LAD492	LAD493	LAD494	LAD495	LAD496	LAD497	LAD498	LAD499	LAD500	LAD501	LAD502	LAD503	LAD504	LAD505	LAD506	LAD507	LAD508	LAD509	LAD510	LAD511	LAD512	LAD513	LAD514	LAD515	LAD516	LAD517	LAD518	LAD519	LAD520	LAD521	LAD522	LAD523	LAD524	LAD525	LAD526	LAD527	LAD528	LAD529	LAD530	LAD531	LAD532	LAD533	LAD534	LAD535	LAD536	LAD537	LAD538	LAD539	LAD540	LAD541	LAD542	LAD543	LAD544	LAD545	LAD546	LAD547	LAD548	LAD549	LAD550	LAD551	LAD552	LAD553	LAD554	LAD555	LAD556	LAD557	LAD558	LAD559	LAD560	LAD561	LAD562	LAD563	LAD564	LAD565	LAD566	LAD567	LAD568	LAD569	LAD570	LAD571	LAD572	LAD573	LAD574	LAD575	LAD576	LAD577	LAD578	LAD579	LAD580	LAD581	LAD582	LAD583	LAD584	LAD585	LAD586	LAD587	LAD588	LAD589	LAD590	LAD591	LAD592	LAD593	LAD594	LAD595	LAD596	LAD597	LAD598	LAD599	LAD600	LAD601	LAD602	LAD603	LAD604	LAD605	LAD606	LAD607	LAD608	LAD609	LAD610	LAD611	LAD612	LAD613	LAD614	LAD615	LAD616	LAD617	LAD618	LAD619	LAD620	LAD621	LAD622	LAD623	LAD624	LAD625	LAD626	LAD627	LAD628	LAD629	LAD630	LAD631	LAD632	LAD633	LAD634	LAD635	LAD636	LAD637	LAD638	LAD639	LAD640	LAD641	LAD642	LAD643	LAD644	LAD645	LAD646	LAD647	LAD648	LAD649	LAD650	LAD651	LAD652	LAD653	LAD654	LAD655	LAD656	LAD657	LAD658	LAD659	LAD660	LAD661	LAD662	LAD663	LAD664	LAD665	LAD666	LAD667	LAD668	LAD669	LAD670	LAD671	LAD672	LAD673	LAD674	LAD675	LAD676	LAD677	LAD678	LAD679	LAD680	LAD681	LAD682	LAD683	LAD684	LAD685	LAD686	LAD687	LAD688	LAD689	LAD690	LAD691	LAD692	LAD693	LAD694	LAD695	LAD696	LAD697	LAD698	LAD699	LAD700	LAD701	LAD702	LAD703	LAD704	LAD705	LAD706	LAD707	LAD708	LAD709	LAD710	LAD711	LAD712	LAD713	LAD714	LAD715	LAD716	LAD717	LAD718	LAD719	LAD720	LAD721	LAD722	LAD723	LAD724	LAD725	LAD726	LAD727	LAD728	LAD729	LAD730	LAD731	LAD732	LAD733	LAD734	LAD735	LAD736	LAD737	LAD738	LAD739	LAD740	LAD741	LAD742	LAD743	LAD744	LAD745	LAD746	LAD747	LAD748	LAD749	LAD750	LAD751	LAD752	LAD753	LAD754	LAD755	LAD756	LAD757	LAD758	LAD759	LAD760	LAD761	LAD762	LAD763	LAD764	LAD765	LAD766	LAD767	LAD768	LAD769	LAD770	LAD771	LAD772	LAD773	LAD774	LAD775	LAD776	LAD777	LAD778	LAD779	LAD780	LAD781	LAD782	LAD783	LAD784	LAD785	LAD786	LAD787	LAD788	LAD789	LAD790	LAD791	LAD792	LAD793	LAD794	LAD795	LAD796	LAD797	LAD798	LAD799	LAD800	LAD801	LAD802	LAD803	LAD804	LAD805	LAD806	LAD807	LAD808	LAD809	LAD810	LAD811	LAD812	LAD813	LAD814	LAD815	LAD816	LAD817	LAD818	LAD819	LAD820	LAD821	LAD822	LAD823	LAD824	LAD825	LAD826	LAD827	LAD828	LAD829	LAD830	LAD831	LAD832	LAD833	LAD834	LAD835	LAD836	LAD837	LAD838	LAD839	LAD840	LAD841	LAD842	LAD843	LAD844	LAD845	LAD846	LAD847	LAD848	LAD849	LAD850	LAD851	LAD852	LAD853	LAD854	LAD855	LAD856	LAD857	LAD858	LAD859	LAD860	LAD861	LAD862	LAD863	LAD864	LAD865	LAD866	LAD867	LAD868	LAD869	LAD870	LAD871	LAD872	LAD873	LAD874	LAD875	LAD876	LAD877	LAD878	LAD879	LAD880	LAD881	LAD882	LAD883	LAD
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Making Sustainability Happen

16 November 2023

New Acland Coal Pty Ltd
Level 16/175 Eagle Street
Brisbane City QLD 4000
MDugmore@newhopegroup.com.au

Attention: Marnie Dugmore

Re: New Acland Coal Mine – Stage 3: August 2023 Noise Report – Independent Peer Review

AARC Environmental Solutions Pty Ltd (AARC) has been commissioned by New Acland Coal Pty Ltd (NAC), part of the New Hope Group, to undertake a peer review of the monthly compliance noise monitoring reports for New Acland Coal Mine Stage 3. This review addresses the August 2023 noise report.

The author of this review is Stephen Pugh, an Acoustic Engineer with over 25 years acoustics experience including in environmental and mine noise and vibration matters.

Introduction

The noise monitoring and monthly reports are to be undertaken and prepared by SLR Consulting Australia Pty Ltd (SLR) as per Environmental Authority (EA) EPML00335713 Conditions F4, F6 and Table F2. The EA refers to a noise monitoring program which is included in the NAC Noise and Vibration Management Plan (NVMP) (27/04/2023, Version 0, and labelled draft).

EA Condition F12(g) indicates that the monthly compliance report is subject to a peer review, and Condition F13 includes the following related requirement:

The environmental authority holder must, at their own cost, appoint an independent acoustic consultant to review the monthly noise report format for a twelve (12) month period following the commencement of reporting.

The monthly reports must be submitted to the administering authority.

The monthly reports must be produced to present information from noise monitoring in a manner that is clear, open and unambiguous.

The independent/peer review requirement is also included in Section 6.3 of the NVMP as follows:

In accordance with EA Condition F13, for the first 12 months of the Stage 3 Mine, the monthly Compliance Noise Monitoring Report must be reviewed by an appropriately-qualified independent acoustic consultant. This independent acoustic consultant must prepare their own (independent) report/memorandum, within two weeks of receiving the draft report, stating the process they have used to review the noise monitoring, analysis and findings and their acceptance (or otherwise) of the monthly noise monitoring report.

Review history

This monthly report addresses noise monitoring in August 2023 and was provided to AARC for review on 10/10/2023. AARC provided a marked-up copy of the report to SLR and NAC on 1/11/2023. A marked up report was subsequently provided to AARC on 9/11/2023.

The purpose of this report is to provide a peer review of the August 2023 SLR report (ref: 620.10963.01003, Revision: 0.2, dated 10/10/2023, provided 9/11/2023 including AARC and SLR comments).

Review

The following review is provided on the basis of the SLR report, SLR spreadsheets, a previous Teams meeting where SLR demonstrated the spreadsheets associated with the analysis, and correspondence and discussions between AARC and SLR regarding the report and methodology. AARC has not reviewed any audio data in the review process, and therefore assumes that references to noise sources in the SLR spreadsheets are accurate.

The process that SLR has used to determine mine noise levels from the attended and unattended noise measurements is considered to be appropriate in that extraneous noise was considered to be removed to an acceptable standard. Selected calculations and analysis in the sample spreadsheet for August 2023 were reviewed and considered acceptable. The spreadsheet review is included in the Excel file “NAC Unattended Analysis_NML1_August 2023_For Review Only_AARC”.

It is understood that there were no rail activities during this monitoring period as the NAC rail spur is yet to be constructed, and therefore the rail noise limits in the EA did not require consideration.

As previously noted, the executive summary section of the report refers to EA noise limit exceedances of 1 to 2 dB as ‘marginal’ and ‘acoustically negligible’. From discussions with SLR it is understood that ‘acoustically negligible’ is in reference to there being no discernible difference between noise levels separate by only 1 to 2 dB. In the June 2023 report review AARC agreed with this definition, noting that SLR has confirmed, that whilst such an exceedance would be considered marginal and acoustically indiscernible, the exceedances would warrant further review and it would be expected that NAC would outline mitigation/management measures that were being employed at the time, and into the future. This report refers to such 1 to 2 dB exceedances as ‘imperceptible’, ‘not acoustically material’, and ‘within the measurement accuracy’, and refers to a 3 dB exceedance as ‘just above this range’, where ‘this range’ is referred to as ‘acoustically negligible’. Though ultimately the exceedances are required to be addressed, the reviewer recommends the use of less ambiguous language in future reports.

In this August 2023 report there have been five (5) reported exceedances detected in the unattended noise monitoring which occurs over a 1 week period. The exceedances range between 1 dB and 5 dB. The report indicates the exceedances were due to:

- 06-08-2023 8:00 pm, 1 dB L_{eq} exceedance: due in part to Acland noise compass (NAC performance noise monitoring system monitored by NAC staff) under-reporting noise levels.
- 06-08-2023 8:30 pm, 3 dB L_{eq} exceedance: due in part to Acland noise compass under-reporting noise levels.
- 06-08-2023 8:45 pm, 3 dB L_{eq} exceedance: due in part to Acland noise compass under-reporting noise levels.
- 07-08-2023 7:30 pm, 5 dB L_{eq} exceedance: due in part to training of Acland noise compass dashboard operator/s, and Acland noise compass under-reporting noise levels.
- 08-08-2023 03:45 am, 2 dB L_{max} exceedance: no cause provided.

As a result of these exceedances, NAC are required to “*immediately implement noise abatement measures to avoid exceeding the relevant limits*” under EA condition F2.

The report indicates that it is not proposed to implement physical mitigation measures, but rather (i) SLR reviewed the NAC Acland compass noise levels versus the SLR noise monitoring; and (ii) SLR provided additional training to staff. Given these are the first reported exceedances, and the limited number of such exceedances, it is considered reasonable that noise management measures are the first step and that physical measures are not required at this stage.

The SLR review of the Acland noise compass indicated it was under-reporting noise levels for the four (4) L_{eq} exceedances by 3 to 4 dB, and therefore a more comprehensive review is proposed to occur by the end of 2023, subject to favourable weather. While AARC agrees with this recommendation, the EA holder might

consider applying an additional interim control in the form of a safety factor correction applied by Acland compass operators. Such an interim safety factor could involve Acland compass operators operating to a noise ceiling below the actual EA limit, until the aforementioned comprehensive review is completed.

The SLR report concludes that noise levels during the August 2023 monitoring period included exceedances of NAC's EA noise limits. Upon review of the SLR report, AARC agree with this conclusion.

Summary

Overall, AARC accept the August 2023 SLR report as being in accordance with the EA, and agree with the conclusion of the SLR report that NAC mine noise levels during the August 2023 monitoring period were not compliant with the NAC EA in five (5) instances.

Given these are the first reported exceedances, and the limited number of such exceedances, it is considered reasonable that noise management measures are the first step and that physical noise mitigation measures are not required at this stage.

As four (4) of the five (5) exceedances were due in part to the Acland noise compass under-reporting noise levels, the EA holder might consider an interim safety factor correction be implemented (i.e. operating under a noise level ceiling below the EA noise limits) in addition to the proposed comprehensive review to be conducted later this year.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Stephen Pugh', with a stylized flourish extending to the right.

Stephen Pugh
Principal Engineer

Appendix 4 – Extracted Conditions

Table 11: Regulatory conditions and requirements referred to in report.

Condition	Report section
Environmental Authority	
Air Quality	
<p>(B2) All air quality indicators listed in Table B1 – Air quality monitoring requirements³, must be monitoring at the locations and at the frequency listed in Table B1 – Air quality monitoring requirements in accordance with the following methodologies:</p> <p>a) For dust deposition of 120 milligrams per square metre per day, averaged over 1-month, when monitored in accordance with the most recent version of Standards Australia AS/NZS 350.10.1 Methods for sampling and analysis of ambient air – Determination of particulate matter – Deposited matter – Gravimetric method;</p> <p>b) For a concentration of particulate matter with an aerodynamic diameter of less than 10 micrometres (PM10) suspended in the atmosphere of 50 micrograms per cubic metre e over a 24-hour averaging time¹ and 25 micrograms per cubic metre over a 1-year averaging time¹, when monitored in accordance with the most recent version of either: (i) Standards Australia AS/NZS 3580.9.6 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 high volume sampler with size-selective inlet – Gravimetric method; or (ii) Standards Australia AS/NZS 3580.9.9 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 low volume sampler – Gravimetric method; or (iii) Standards Australia AS 3580.9.8 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – PM10 continuous direct mass method using tapered element oscillating microbalance analyser.</p> <p>c) For a concentration of particulate matter suspended in the atmosphere of 90 micrograms per cubic metre over a 24-hour averaging time and 90 micrograms per cubic metre over a 1-year averaging time¹, when monitored in accordance with the most recent version of AS/NZS 3580.9.3 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) – High volume sampler gravimetric method.</p> <p>d) For a concentration of particulate matter with an aerodynamic diameter of less than 2.5 micrometres (PM2.5) suspended in the atmosphere of 25 micrograms per cubic meter over a 24-hour averaging time¹ and 8 micrograms per cubic meter over a 1-year averaging time¹ when monitored in accordance with:</p> <p>(i) The most recent version of Standards Australia AS/NZS 3580.9.12 Methods for sampling and analysis of ambient air, Determination of suspended particulate matter – PM2.5 beta attenuation monitors; or</p>	Sections 2.2, and 3.1

³ Reproduced as Table 7 in Appendix 5 of this Report.

Condition	Report section
<p>(ii) The most recent version of <i>Standards Australia AS/NZS 3580.9.13 Methods of sampling and analysis of ambient air, Determination of suspended particulate matter – PM2.5 continuous direct mass method using a tapered element oscillating microbalance monitor</i>; or</p> <p>(iii) Another method as agreed to in writing by the administering authority.</p> <p>NOTE: 1 These limits are based upon relevant air quality objectives contained in the Environmental Protection (Air) Policy 2019 and may be automatically amended to reflect any amendment or replacement of the relevant air quality objective in the Environmental Protection (Air) Policy 2019.</p>	
<p>(B8) All continuously monitored parameters required by Table B1 – Air quality monitoring requirements and the forecasting system required by condition B5 must be made publicly available online and in real-time, presented:</p> <p>a) Spatially; and</p> <p>b) Real-time rolling over 1-hour average across all sites that can be drilled into for each location to provide:</p> <p>(i) Real-time rolling over 1-hour average data on 24-hour basis;</p> <p>(ii) Links to historical data on one hour basis; and</p> <p>(iii) Links to historical 24-hour data.</p>	<p>Please see the Real-Time Air Quality and Noise Performance Monitoring Data dashboard.</p>
Noise	
<p>(F1) The environmental authority holder must ensure that noise generated by the mining activities does not cause the criteria in Table F1 – Noise Limits (includes construction activities)⁴ to be exceeded at a noise sensitive place...</p>	<p>Section 3.2</p>
<p>(F3) The environmental authority holder must ensure that blasting does not cause the limits for peak particle velocity and air blast overpressure in Table F3 – Blasting noise limits⁵ to be exceeded at a noise sensitive place.</p>	<p>Not applicable to this Report as no blasting was conducted in the period.</p>
<p>(F6) Compliance noise monitoring and recording required by conditions F4, F5, F6, F7 and F8 must be conducted in accordance with the administering authority's Noise Measurement Manual and include the following:</p> <p>a) LA01, adj, 15 min - day, evening & night; LA10, adj, 15 min - day, evening & night; LAeq, adj, 15 min - day, evening & night and LA90, adj, 15 min - day, evening & night;</p> <p>b) background noise LA90;</p> <p>c) the level and frequency of occurrence of impulsive or tonal noise and any adjustment and penalties to statistical levels;</p> <p>d) atmospheric conditions including temperature, relative humidity and wind speed and directions;</p>	<p>Sections 2.3 and 3.3</p>

⁴ Reproduced as Table 5 in Appendix 5 of this Report.

⁵ Reproduced as Table 6 in Appendix 5 of this Report.

Condition	Report section
<p>e) effects due to any extraneous factors such as traffic noise and natural sources (e.g., insects, birds and wind);</p> <p>f) location, date and time of monitoring;</p> <p>g) if a complaint concerns low frequency noise and where permitted by the owner or occupier of the noise sensitive place: LLINeq 10 min (internal), LAeq 10 min (internal) and one third octave band measurements in LLINeq 10 min (internal) for centre frequencies in the 10 – 200 Hz range;</p> <p>h) maximum (LAm_{ax}) noise levels – night (for a minimum of 30 min); and</p> <p>i) 1/3 octave band spectrums.</p>	
<p>(F13) The environmental authority holder must, at their own cost, appoint an independent acoustic consultant to review the monthly noise report format for a twelve (12) month period following the commencement of reporting.</p> <p>The monthly reports must be submitted to the administering authority.</p> <p>The monthly reports must be produced to present information from noise monitoring in a manner that is clear, open and unambiguous.</p>	Section 1.3
<p>(F15) The environmental authority holder must develop and implement a blast monitoring program to monitor compliance with Table F3 – Blasting noise limits for:</p> <p>a) At least 90% of all blasts undertaken on this site in each year at the nearest noise sensitive place to the centroid of the blast; and</p> <p>b) All blasts conducted during any time period specified by the administering authority at the nearest noise sensitive place.</p> <p>Results of the blast monitoring program must be included in the monthly compliance monitoring report required by the coordinator-General's imposed condition 3.</p>	Section 3.3.2

Appendix 5 – Environmental Authority Limits

Table 12: EA Noise Limits (including Construction).

Noise level dBA measured as	All days		
	7am – 6pm	6pm – 10pm	10pm – 7am
Noise measured at a 'Noise sensitive place'			
LAeq,adj,15min ¹	42	35	35
LAm _{ax}	-	-	50
LAm _{ax} - rail spur ²	-	-	56
LAeq(24hr) - rail spur ²	50		

Note:

1. All noise other than that which is distinguishable as train noise
2. Only for noise distinguishable as train noise

Table 13: EA Blasting Noise Limits.

Blasting noise limits	Sensitive place or commercial place blasting noise limits	
	Monday to Friday: 7am to 6pm Saturday: 9am to 1pm	Monday to Friday: 6pm to 7am. Saturday: 1pm to 9am. Sunday. Public Holidays.
Air blast overpressure	115 dB (Linear) Peak for 9 out of 10 consecutive blasts initiated and not greater than 120 dB (Linear) Peak at any time	No blasting
Ground vibration peak particle velocity	5mm/second peak particle velocity for 9 out of 10 consecutive blasts and not greater than 10 mm/second peak particle velocity at any time	No blasting

Table 14: Air quality limits and monitoring requirements

Location*	Air Quality Indicator	Instrument	Frequency	Air Quality Limit	Nuisance Limit
1, 2 (Acland)	PM2.5	TEOM	Continuous	25µg/m ³ (24-hr avg) 8µg/m ³ (annual)	
	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
7,8 (or an alternative location to the north of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to condition B4).	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	
16 (East) Acland-Silverleigh Road	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
38,39 (or an alternative location to the north-west of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed in pursuant to condition B4).	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
15 (East)	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)

Location*	Air Quality Indicator	Instrument	Frequency	Air Quality Limit	Nuisance Limit
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
35,36 (west of mine site)	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
37 (West)+ (trend monitoring at 37 or an alternative location to the west of Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to condition B4).	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day
44 (northwest)+ (trend monitoring at 44 or an alternative location to the north-west of the Stage 3 New Acland mine identified in the Air Emissions Management Plan developed pursuant to condition B4).	PM10	TEOM	Continuous	50µg/m ³ (24-hr avg) 25µg/m ³ (annual)	
	TSP	Modified TEOM	Continuous	90µg/m ³ (annual)	80µg/m ³ (24-hr avg)
	Insoluble solids	Dust Gauge	Monthly	120mg/m ² /day	120mg/m ² /day