

# DURALIE COAL MINE

Quarterly Compliance Monitoring  
May 2020

Prepared for:  
Duralie Coal Ltd

SLR Ref: 630.11772-R13  
Version No: -v1.0  
August 2020

SLR 

## PREPARED BY

SLR Consulting Australia Pty Ltd  
ABN 29 001 584 612  
10 Kings Road  
New Lambton NSW 2305 Australia  
(PO Box 447 New Lambton NSW 2305)  
T: +61 2 4037 3200  
E: newcastleau@slrconsulting.com www.slrconsulting.com

## 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 Duralie Coal 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.

## DOCUMENT CONTROL

Reference	Date	Prepared	Checked	Authorised
630.11772-R13-v1.0	5 August 2020	Shannon Harvey	Martin Davenport	Martin Davenport

## CONTENTS

<b>1</b>	<b>INTRODUCTION .....</b>	<b>4</b>
<b>2</b>	<b>DCM NOISE LIMITS .....</b>	<b>4</b>
2.1	EPL Noise Limits .....	4
2.2	Project Approval Noise Limits.....	5
2.3	Low Frequency Noise .....	6
<b>3</b>	<b>OPERATIONAL NOISE MONITORING METHODOLOGY .....</b>	<b>6</b>
3.1	General Requirements .....	6
3.2	Methodology – Operator-attended Noise Monitoring Locations.....	6
<b>4</b>	<b>RESULTS.....</b>	<b>8</b>
4.1	Operator-attended Monitoring – DCM Operational Activity .....	8
4.1.1	Operator-attended Noise Survey Results .....	8
<b>5</b>	<b>PERFORMANCE ASSESSMENT.....</b>	<b>10</b>
<b>6</b>	<b>CONCLUSION .....</b>	<b>10</b>

## DOCUMENT REFERENCES

### TABLES

Table 1	EPL Noise Limits for the Nominated Attended Noise Monitoring Locations .....	4
Table 2	DCM Operational Noise Monitoring Locations .....	6
Table 3	Daytime Operator Attended Noise Survey Results .....	9
Table 4	Performance Assessment – Operations.....	10

### FIGURES

Figure 1	Duralie Coal Mine Attended Noise Monitoring Locations .....	7
----------	---	---

### APPENDICES

Appendix A	Acoustic Terminology
Appendix B	Operator Attended Noise Survey Charts

# 1 Introduction

Duralie Coal Pty Limited (DCPL), a wholly owned subsidiary of Yancoal Australia Limited (Yancoal), has commissioned SLR Consulting Australia Pty Ltd (SLR) to conduct quarterly noise monitoring for the Duralie Coal Mine (DCM) operations guided by the requirements of the *Duralie Coal Mine Noise Management Plan* (NMP), Document No. NMP-R06-A, dated May 2018. This report presents the results and findings from operator-attended operational noise monitoring conducted on Friday 29 May 2020. DCM has ceased mining operations and is currently undergoing rehabilitation works. Rehabilitation works are conducted during the daytime period only, as defined in the NSW *Industrial Noise Policy* (INP) (EPA 2000), and as such operator-attended monitoring was only conducted during the day-time period.

The objectives of the noise monitoring programme for this operating period were as follows:

- Conduct one round of external operator-attended noise measurements during operational periods at four nominated locations listed in Project Approval, representative of receivers located in the north, west and south directions from the DCM. The monitoring locations are NM1, NM4, NM5, and NM6.
- The three rounds comprise a single round within each of the day, evening and night-time periods as defined in the NSW *Industrial Noise Policy* (EPA 2000).
- Quantify all sources of noise within each of the attended noise surveys, including measured and/or estimated contribution and maximum level of individual noise sources.
- Assess the noise emissions from the DCM and determine compliance with respect to the limits contained in the NMP.

This report uses specialist acoustic terminology. An explanation of common terms is provided in **Appendix A**.

## 2 DCM Noise Limits

### 2.1 EPL Noise Limits

The site specific noise limits of sub-section L4.1 of Section L4 *Noise Limits* of the EPA’s Environment Protection Licence (EPL), EPL 11701 dated 8 November 2017, for the five nominated attended noise monitoring locations, are summarised in **Table 1**.

**Table 1 EPL Noise Limits for the Nominated Attended Noise Monitoring Locations**

Locality	LAeq(15minute)			LA1(1minute)
	Daytime	Evening	Night-time	Night-time
NM1 Woodley	35	35	35	45
NM4 Fisher-Webster	35	35	37	45
NM5 Moylan	35	35	35	45
NM6 - Oleksiuk and Carmody	35	35	39	45

Additional conditions relating to the noise monitoring location and applicable meteorological conditions are outlined in sub-sections L4.2 (a) and L4.8 of EPL 11701 and are summarised below.

*L4.2 (a) with the  $L_{Aeq}$  (15-minute) noise limits in condition 4.1, the noise measurement equipment must be located:*

*Approximately on the property boundary, where any dwelling is situated 30 metres or less from the property boundary closest to the premises; or*

*Within 30 metres of a dwelling façade, but not closer than 3 m, where any dwelling on the property is situated more than 30 metres from the boundary closest to the premises.*

*Noise from the premises is to be measured at a distance within 30 metres of the locations identified in L4.1 to determine compliance with this condition.*

*L4.8 The noise limits set out in condition in L4.1 apply under all meteorological conditions except for the following:*

- a) wind speeds greater than 3 metres/second at 10 metres above ground level; or*
- b) Temperature Inversion conditions up to 3 degrees Celsius/100m and wind speeds greater than 2 metres/second at 10 metres above the ground level; or*
- c) Temperature inversion conditions greater than 3 degrees Celsius/100m.*

## 2.2 Project Approval Noise Limits

The Project approval conditions relating to the noise limits are as follows:

### Noise Criteria

2. Except for the land referred to in Table 1, the Proponent shall ensure that the noise generated by the project does not exceed the criteria in Table 2 at any residence on privately-owned land or on more than 25 percent of any privately-owned land.

Table 2: Noise criteria dB(A)

Location	Day	Evening	Night	
	$L_{Aeq}(15\text{ minute})$	$L_{Aeq}(15\text{ minute})$	$L_{Aeq}(15\text{ minute})$	$L_{A1}(1\text{ minute})$
172 - Lyall	35	39	40	45
126 – Hamann Pixalu PL	35	35	39	45
123 – Oleksiuk & Carmody				
173 – Trigg & Holland	35	36	37	45
116 - Weismantel				
127 – Fisher-Webster	35	35	37	45
131(1) - Relton				
180 (1) - Thompson	35	36	36	45
95 - Smith & Ransley	35	35	36	45
144 - Wielgosinski				
169 - Williams	35	36	35	45
177 - Thompson				
All other privately-owned land	35	35	35	45

Notes:

- Noise generated by the project is to be measured in accordance with the relevant procedures and exemptions (including certain meteorological conditions) of the NSW Industrial Noise Policy; and
- For this condition to apply, the exceedences of the criteria must be systemic.

## 2.3 Low Frequency Noise

The ‘Duralie Modification Noise and Blasting Assessment’ (prepared by SLR Consulting Australia dated 9 July 2014) included a low frequency analysis of C and A weighted intrusive noise levels in accordance with the NSW *Industrial Noise Policy* (INP) requirements. The assessment indicated that there is no dominant low-frequency content relating to noise emissions from the DCM.

At all locations DCM was either not audible or significantly below the relevant noise criteria and low frequency noise is therefore not addressed further in this report. The results of the operator attended noise measurements presented in **Section 3**.

## 3 Operational Noise Monitoring Methodology

### 3.1 General Requirements

All acoustic instrumentation employed throughout the monitoring programme has been designed to comply with the requirements of AS IEC 61672.1 – 2004 *Electroacoustics—Sound level meters – Specifications*, AS IEC 61672.2-2004, AS IEC 61672.3-2004 and carried current NATA or manufacturer calibration certificates. Instrument calibration was checked before and after each measurement survey, with the variation in calibrated levels not exceeding  $\pm 0.5$  dBA.

### 3.2 Methodology – Operator-attended Noise Monitoring Locations

Noise monitoring was conducted guided by the requirements of the NMP. Operator-attended noise measurements were conducted during the day period for a minimum of 15 minutes per period at each of the four nominated noise monitoring locations. The details of the operator-attended noise monitoring locations are contained within **Table 2** and shown in **Figure 1**. During the operator attended noise measurements, the character and relative contribution of ambient noise sources along with the mine contributions were noted.

**Table 2 DCM Operational Noise Monitoring Locations**

Monitoring Location	Receiver Type	Resident / Owner	Monitoring Location - MGA Zone 56	
			Easting (m)	Northing (m)
NM1	Residence	Woodley <sup>1</sup>	400644	6421907
NM4	Residence	Fisher-Webster	396790	6428961
NM5	Residence	Moylan	396770	6428945
NM6	Residence	Oleksiuk and Carmody	399661	6431862

Note 1: Woodley property has changed ownership but will retain the title of ‘Woodley’ until a License revision.

H:\Projects\SLR630-Sw\NTL\630-NTL\630.11772\Duralla Coal Quarterly Noise Monitoring\06 SLR Data\01 Drafting\Figures\CAD\CURRENT\Fig1\_630.11772.00100\_AttenNMLocations\_V5.dwg



**LEGEND**

- Attended Noise Monitoring Location



Base Aerial Photography Source: Google Earth

Scale: 1:100000  
(GDA94) MGA ZONE 56

06.08.2018  
630.11772.00100

Sheet Size: A4



www.slrconsultingaustralia.com.au PH: 61 2 4037 3200

### ATTENDED NOISE MONITORING LOCATIONS

FIGURE 1

The objective of the DCM operational operator-attended noise monitoring was to measure the maximum ( $L_{Amax}$ ) and the  $L_{Aeq(15minute)}$  noise level contributions at the nearest potentially affected receptors to determine the noise contribution of mining activities associated with Duralie Coal Mine operations over a 15 minute measurement period. In addition, the operator quantifies and characterises the overall levels of ambient noise in the area (i.e.  $L_{Amax}$ ,  $LA1$ ,  $LA10$ ,  $LA90$ , and  $L_{Aeq}$ ) over the 15 minute measurement interval. Operator-attended noise measurements were conducted using a one-third octave integrating Brüel & Kjær Type 2250L sound level meter (s/n 3003389) and Brüel & Kjær Type 2270 sound level meter (s/n 2697354).

## 4 Results

### 4.1 Operator-attended Monitoring – DCM Operational Activity

Operator-attended noise measurements were conducted during the day period on Friday 29 May 2020. Results of the operator-attended noise surveys at NM1, NM4, NM5, NM6 are provided in **Table 3**.

A summary of the results for the operator-attended noise monitoring are displayed graphically in **Appendix B**. Charts of the noise surveys show  $L_{Amax}$ ,  $L_{Aeq}$ , and  $L_{Aeq(\leq 1.25kHz)}$  in 1-second intervals throughout the monitoring survey.

Ambient noise levels presented include all noise sources such as transport (roads, rail and aircraft), fauna (insects, frogs, birds, and bats), farm animals, the natural environment (wind in trees), domestic noises, other industrial operations as well as Duralie Coal Mine noise emissions.

Weather data during the monitoring period has been obtained from the weather station located on the Duralie Coal Mine site. Where this data was not available meteorological conditions have been estimated based on observed conditions during the monitoring period.

The tables provide the following information:

- Date and start time, operator and equipment details.
- Monitoring location.
- Wind velocity (m/s) and temperature (°C) at the measurement location.
- Typical maximum ( $L_{Amax}$ ) and contributed  $L_{Aeq(15minute)}$  noise levels.

#### 4.1.1 Operator-attended Noise Survey Results

Results of the operator-attended noise surveys at all monitoring locations are provided in **Table 3**. Monitoring location NM1 represents residential receptors located to the south of the site. Due to access restrictions noise monitoring was conducted at the entrance to the property.



**Table 3 Daytime Operator Attended Noise Survey Results**

Location	Date/Start Time/ Weather	Primary Noise Descriptor dBA (15 minute)						Description of Noise Emissions and Typical Maximum Noise Levels (dBA)
		L <sub>Amax</sub>	L <sub>A1</sub>	L <sub>A10</sub>	L <sub>A90</sub>	L <sub>Aeq</sub>	L <sub>Aeq</sub> (≤1.25kHz)	
NM1	29/05/2020 09:02 11°C 0.7 m/s NE	54	47	43	31	39	36	<i>Site related noise events:</i> <b>DCM: Inaudible</b> <i>Other noise events:</i> Road traffic 35-46 Birdsong 37-54 Cows 34-36
NM4	29/05/2020 08:23 10°C 1.1 m/s SE	77	65	49	34	53	52	<i>Site related noise events:</i> <b>DCM: Inaudible</b> <i>Other noise events:</i> Road traffic 43-77 Farming operations 38-42 Aeroplane 34-36 Birdsong 33-68
NM5	29/05/2020 08:36 10°C 1 m/s ENE	74	57	43	35	48	46	<i>Site related noise events:</i> <b>DCM: Occasionally Audible</b> Haul trucks 29-33 Rock dump 43 <b>L<sub>Aeq</sub>(15minute) contribution 30 dBA</b> <i>Other noise events:</i> Road traffic 40-74 Birdsong 40-54
NM6	29/05/2020 08:58 11°C 0.7 m/s NE	60	54	46	35	43	41	<i>Site related noise events:</i> <b>DCM: Occasionally Audible</b> General pit operations 31-36 <b>L<sub>Aeq</sub>(15minute) contribution &lt;30 dBA</b> <i>Other noise events:</i> Wind 30-34 Birdsong 48-60

**NM1**

- DCM operations were inaudible during the operator-attended survey at this location.
- The ambient noise environment at the monitoring location generally consisted of natural sources such as cows and birdsong as well as road traffic noise.

**NM4**

- DCM operations were inaudible during the operator-attended survey at this location.
- The ambient noise environment at the monitoring location generally consisted of natural sources such as birdsong as well as road traffic noise and farming operations.

## NM5

- DCM operations were audible during the operator-attended survey at this location. DCM operations generated LAeq(15minute) contributions of 30 dBA during the day at this location.
- The ambient noise environment at the monitoring location generally consisted of natural sources such as birdsong as well as road traffic noise.

## NM6

- DCM operations were inaudible during the operator-attended survey at this location. DCM operations generated LAeq(15minute) contributions of 33 dBA during the day at this location.
- The ambient noise environment at the monitoring location generally consisted of natural sources such as birdsong and wind related noise.

# 5 Performance Assessment

Results of the operator-attended noise measurements compared with the relevant noise criteria contained in the Project Approval and EPL 11701 are given in **Table 4**.

**Table 4 Performance Assessment – Operations**

Location	Estimated DCM LAeq(15minute) Contribution dBA	Noise Criteria LAeq(15minute) dBA	Compliance
NM1	I/A <sup>1</sup>	35	Yes
NM4	I/A	35	Yes
NM5	30	35	Yes
NM6	<30	35	Yes

1. I/A = Inaudible

Results presented in **Table 4** indicate that compliance with the relevant criteria was achieved at all operator-attended monitoring locations.

# 6 Conclusion

SLR has conducted quarterly noise monitoring for the DCM guided by the requirements of the NMP.

Operator-attended operational noise monitoring was conducted at four locations on Friday 29 May 2020. The assessment of daytime operational noise emissions found DCM to be compliant with the relevant criteria contained within the DCM PA and EPL.

# APPENDIX A

## Acoustic Terminology

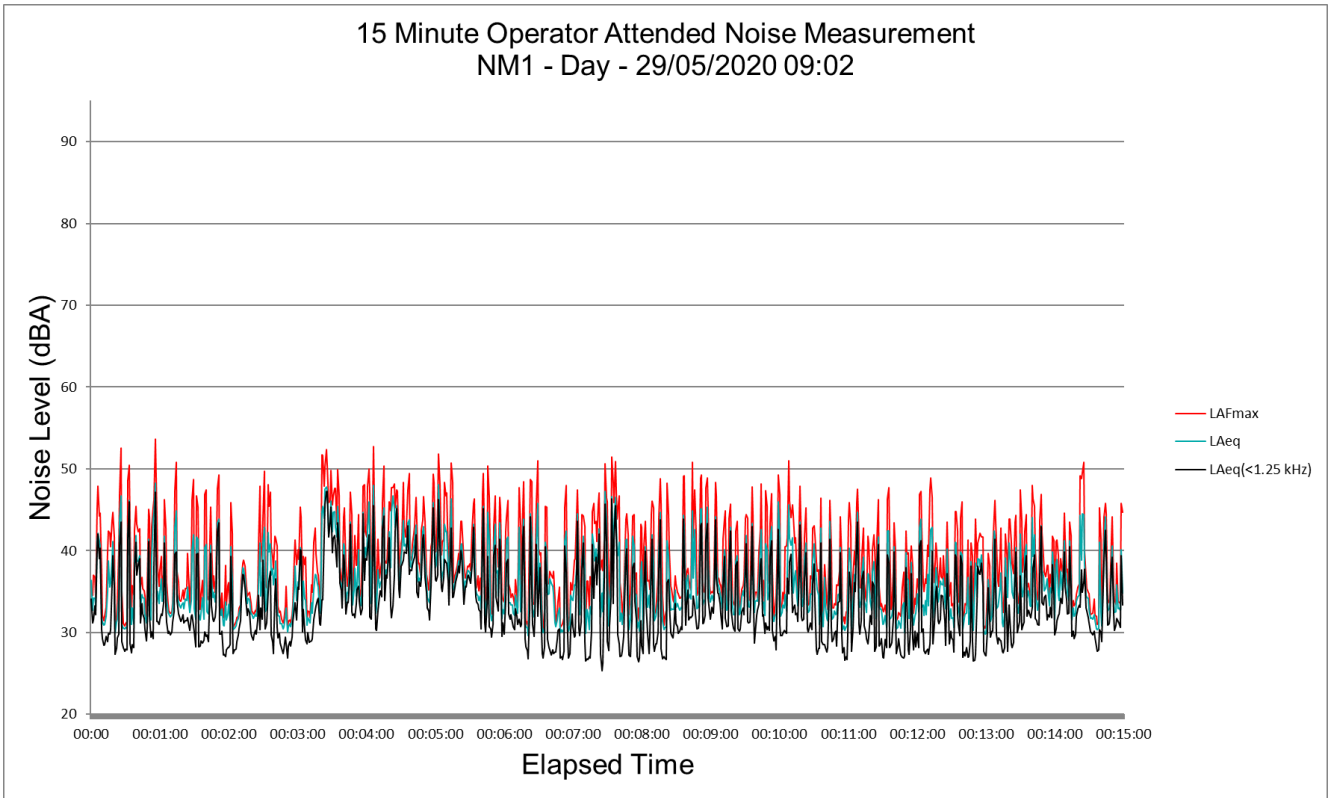
The following is a brief description of the acoustic terminology.

Acoustic Terminology	Description
'A' Weighted	Frequency filter applied to measured noise levels to represent how humans hear sounds.
dBA	'A' Weighted overall sound pressure level.
L90 , L10, L1	A statistical measurement giving the sound pressure level which is exceeded for the given percentile of an observation period, i.e., L90 is the level which is exceeded for 90 percent of an observation period. L90 is commonly referred to as the background sound level.
L <sub>Amax</sub>	Highest value of the A-weighted sound pressure level with a specified time weighting that occurs during a given event.

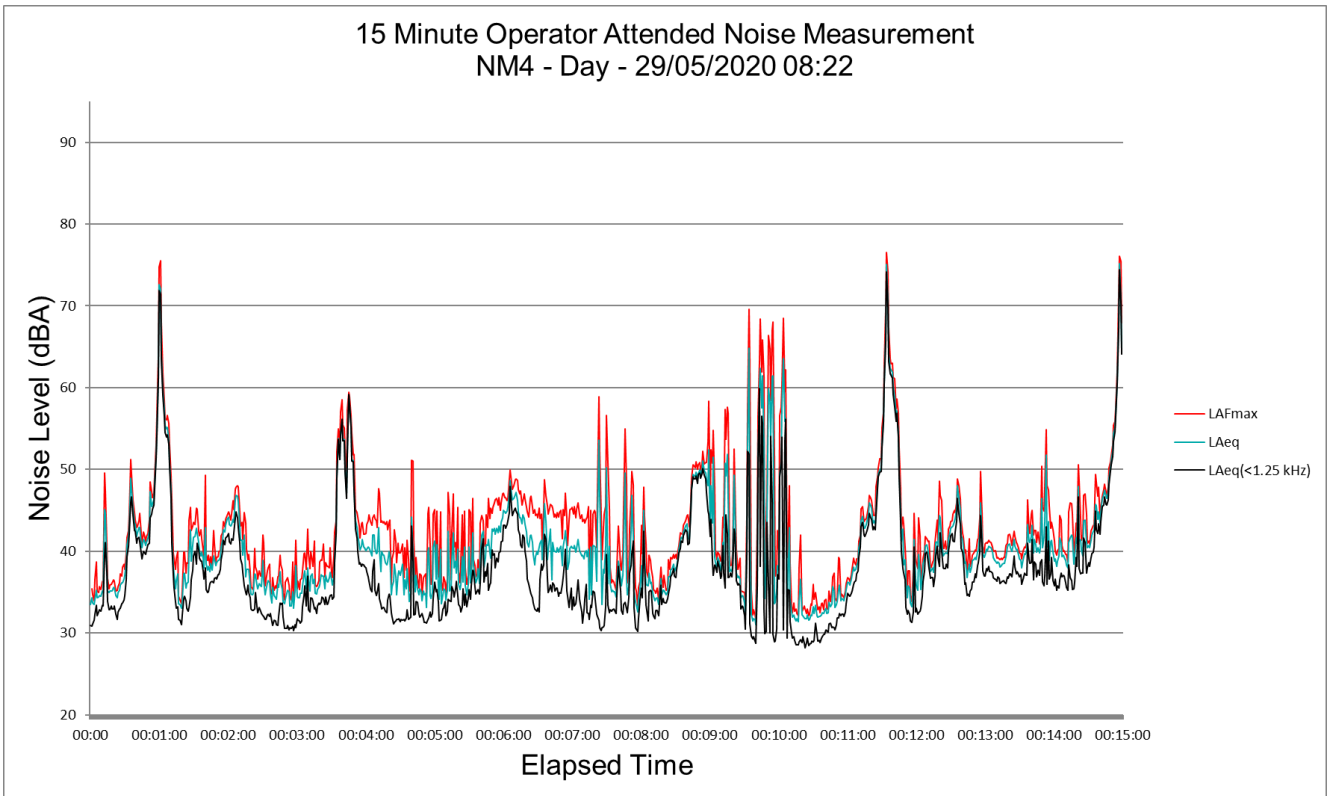
# APPENDIX B

## Operator-attended Noise Survey Charts

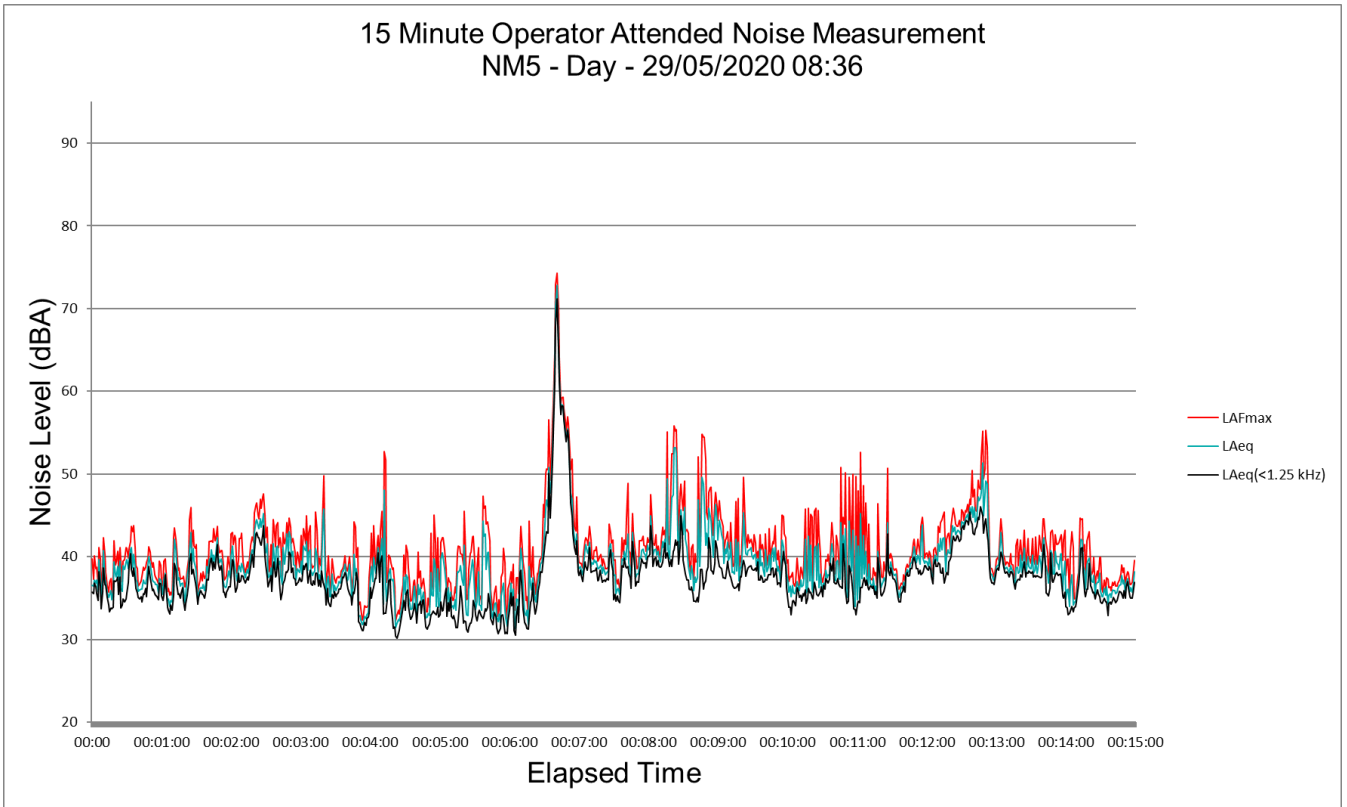
**Figure B1 – Day Period – NM1 Operator Attended Noise Survey Results**



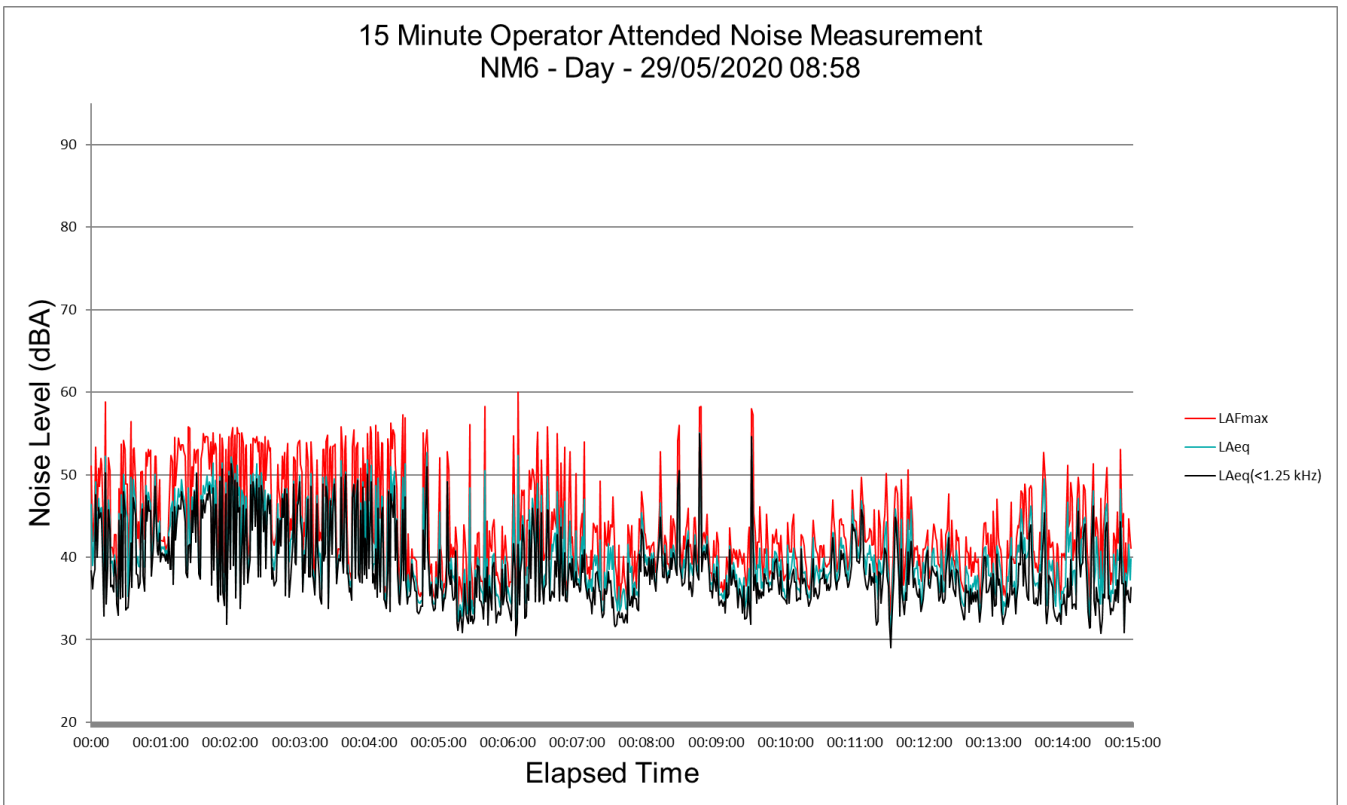
**Figure B2 – Day Period – NM4 Operator Attended Noise Survey Results**



**Figure B3 – Day Period – NM5 Operator Attended Noise Survey Results**



**Figure B4 – Day Period – NM6 Operator Attended Noise Survey Results**



## ASIA PACIFIC OFFICES

### BRISBANE

Level 2, 15 Astor Terrace  
Spring Hill QLD 4000  
Australia  
T: +61 7 3858 4800  
F: +61 7 3858 4801

### CANBERRA

GPO 410  
Canberra ACT 2600  
Australia  
T: +61 2 6287 0800  
F: +61 2 9427 8200

### DARWIN

Unit 5, 21 Parap Road  
Parap NT 0820  
Australia  
T: +61 8 8998 0100  
F: +61 8 9370 0101

### GOLD COAST

Level 2, 194 Varsity Parade  
Varsity Lakes QLD 4227  
Australia  
M: +61 438 763 516

### MACKAY

21 River Street  
Mackay QLD 4740  
Australia  
T: +61 7 3181 3300

### MELBOURNE

Level 11, 176 Wellington Parade  
East Melbourne VIC 3002  
Australia  
T: +61 3 9249 9400  
F: +61 3 9249 9499

### NEWCASTLE

10 Kings Road  
New Lambton NSW 2305  
Australia  
T: +61 2 4037 3200  
F: +61 2 4037 3201

### PERTH

Ground Floor, 503 Murray Street  
Perth WA 6000  
Australia  
T: +61 8 9422 5900  
F: +61 8 9422 5901

### SYDNEY

Tenancy 202 Submarine School  
Sub Base Platypus  
120 High Street  
North Sydney NSW 2060  
Australia  
T: +61 2 9427 8100  
F: +61 2 9427 8200

### TOWNSVILLE

12 Cannan Street  
South Townsville QLD 4810  
Australia  
T: +61 7 4722 8000  
F: +61 7 4722 8001

### WOLLONGONG

Level 1, The Central Building  
UoW Innovation Campus  
North Wollongong NSW 2500  
Australia  
T: +61 2 4249 1000

### AUCKLAND

68 Beach Road  
Auckland 1010  
New Zealand  
T: 0800 757 695

### NELSON

6/A Cambridge Street  
Richmond, Nelson 7020  
New Zealand  
T: +64 274 898 628