



Wollongong Coal Wongawilli Colliery

Quarterly Air Quality and Noise Monitoring Report (April to June 2018)

4 February 2019

Project No.: 0478793

Document details	The details entered below are automatically shown on the cover and the main page footer. PLEASE NOTE: This table must NOT be removed from this document.
Document title	Wollongong Coal Wongawilli Colliery
Document subtitle	Quarterly Air Quality and Noise Monitoring Report (April to June 2018)
Project No.	0478793
Date	4 February 2019
Version	1.0
Author	Tajwar Dar, Russ Francis
Client Name	Wollongong Coal Ltd

Document history

Version	Revision	Author	Reviewed by	ERM approval to issue		Comments
				Name	Date	
Draft	01	Tajwar Dar	Russ Francis Aaron McKenzie	Damon Roddiss	20.12.2018	First draft
Report	01	Tajwar Dar	Aaron McKenzie	Damon Roddiss	04.02.2019	

Signature Page

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Quarterly Air Quality and Noise Monitoring Report (April to June 2018)

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1 INTRODUCTION

Environmental Resource Management (ERM) provides air quality and noise monitoring at the Wollongong Coal (WCL) Wongawilli Colliery, Wongawilli, NSW using the EnviroSuite system.

The following report provides a summary of the data collected during the second quarter, April to June 2018. The monitoring network comprises one continuous ambient air quality particulate monitor, one continuous ambient noise monitor and one continuous automatic weather station.

The monitoring network is summarised in **Table 1.1** and presented in **Figure 1.1**.

Table 1.1: Monitoring Network

Description	Site	Address / Location	MGA 56 Easting (m)	MGA 56 Northing (m)
Continuous PM10 Monitor	BAM	Jersey Farm Road	294129	6182474
Meteorological Station	AWS	Near water tanks on ridge line	306297	6195791
Continuous Noise Monitor	NMT 3	Jersey Farm Road	294137	6182448

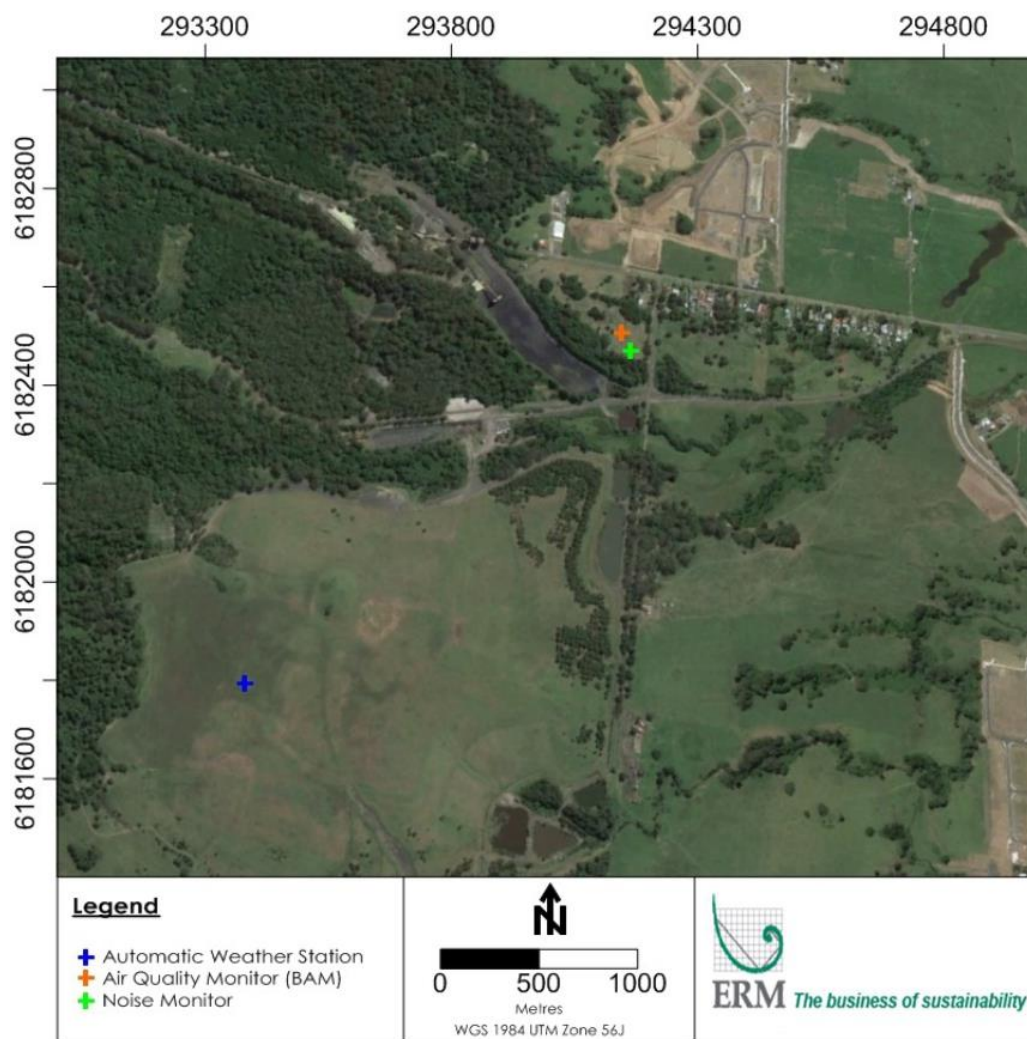


Figure 1.1: Monitoring Locations

2 PROJECT ENVIRONMENTAL CONDITIONS

2.1 Monitoring Requirements

In accordance with Project Approval (09_0161), air quality, meteorology and noise parameters are monitored as summarised in **Table 2-1**.

Table 2-1: Monitoring Summary

Item	Quantity Measured	Unit	Monitoring Frequency
Air Quality	Particulate Matter < 10 µm (PM ₁₀)	µg/m ³	24 h
Meteorology	Temperature at 10m	°C	Real Time
	Temperature at 2m	°C	
	Wind Speed at 10m	m/s	

	Wind Direction	°	
	Standard Deviation of Wind Speed (sigma theta)	-	
	Barometric Pressure	hPa	
	Rainfall	mm	
Noise	15 minute ambient continuous equivalent energy average noise level	LAeq,15min dB(A)	15 min
	1 minute LA1 noise level	LA1,1min dB(A)	1 min
	Period ambient continuous equivalent energy average noise level	LAeq, period dB(A)	Day, evening, night

2.2 Air Quality

The project is subject to environmental conditions as part of the Approval. For air quality these are summarised in **Table 2-2**.

Table 2-2: Project Air Quality Criteria

Pollutant	Averaging Period	Criterion ^a
Particulate Matter < 10 µm (PM ₁₀)	Annual	30 µg/m ³ (b)
Particulate Matter < 10 µm (PM ₁₀)	24 hour	50µg/m ³ (b)

- a) Excludes extraordinary events such as bushfires, prescribed burning, dust storms, sea fog, fire incidents, illegal activities or any other activity agreed by the Director-General in consultation with OEH.
- b) Total impact (i.e. incremental increase in concentrations due to the project plus background concentrations due to all other sources)

2.3 Noise

The Project Approval states both an amenity and intrusive noise criteria. The intrusive criteria are assessed over a 15 minute period and the amenity criteria are assessed over the relevant period (day, evening and night).

The intrusive criteria are both lower and assessed over a shorter time period, they represent the most onerous criteria and are therefore the limiting criteria.

These criteria are reproduced in **Table 2-3** and **Table 2-4**.

Table 2-3: Noise Criteria dB(A) – Medium term intrusive noise limits as defined in Table 4.3 of the Noise Management Plan

Location		Day	Evening	Night	
Area	Receiver Number	L _{Aeq} (15mins)	L _{Aeq} (15mins)	L _{Aeq} (15mins)	L _{A1} (15mins)

Lot 2410 Smiths Lane	RA1	43	43	43	59
120/130 Smiths Lane					
18 Wongawilli Road	RA2	44	43	43	60
1 Wongawilli Road					
Jersey Farm road	RA3	40	40	38	48
Horsley (closest receiver)					
All other privately owned land		40	40	38	48

Note: Day is defined as 7.00am to 6.00pm, evening as 6.00pm to 10.00pm and night as 10.00pm to 7.00am

Table 2-4: Noise Criteria dB(A) – Amenity Noise Limits as defined in Table 4 of the Project Approval

Receiver Area	Day	Evening	Night
	L _{Aeq} (11hr)	L _{Aeq} (4hr)	L _{Aeq} (9hr)
All privately-owned land	60	50	45

3 METEOROLOGICAL MONITORING RESULTS

During the second quarter of 2018, no meteorological data was gathered and therefore no data is presented below.

4 PM₁₀ MONITORING RESULTS

4.1 Continuous Air Quality Particulate Monitoring

Continuous air quality particulate monitoring is carried out at a BAM monitoring stations located on or near the site boundary (**Figure 1.1**). The monitors continuously measure airborne particulate matter from all sources.

The particle size ranges relevant to this report are described as PM₁₀ which refers to all particles with equivalent aerodynamic diameters of less than 10 µm, that is, all particles that behave aerodynamically in the same way as spherical particles with a unit density.

A statistical summary of the monitoring data collected during the second quarter of 2018 is provided in **Table 4.1**. The data recovery rate (for 24-hour average) was 27%. There was no data recovery for May and June. The 24-hour PM₁₀ concentrations are presented in **Figure 4.1** for the BAM.

Table 4.1: Summary Statistics for 24 hour PM₁₀ (µg/m³)

Statistical measure	April	May	June
Mean	17.9	-	-
Standard Deviation	6.2	-	-
Median	16.8	-	-
Minimum	8.1	-	-
Maximum	36.5	-	-
Days over the criteria	0	-	-

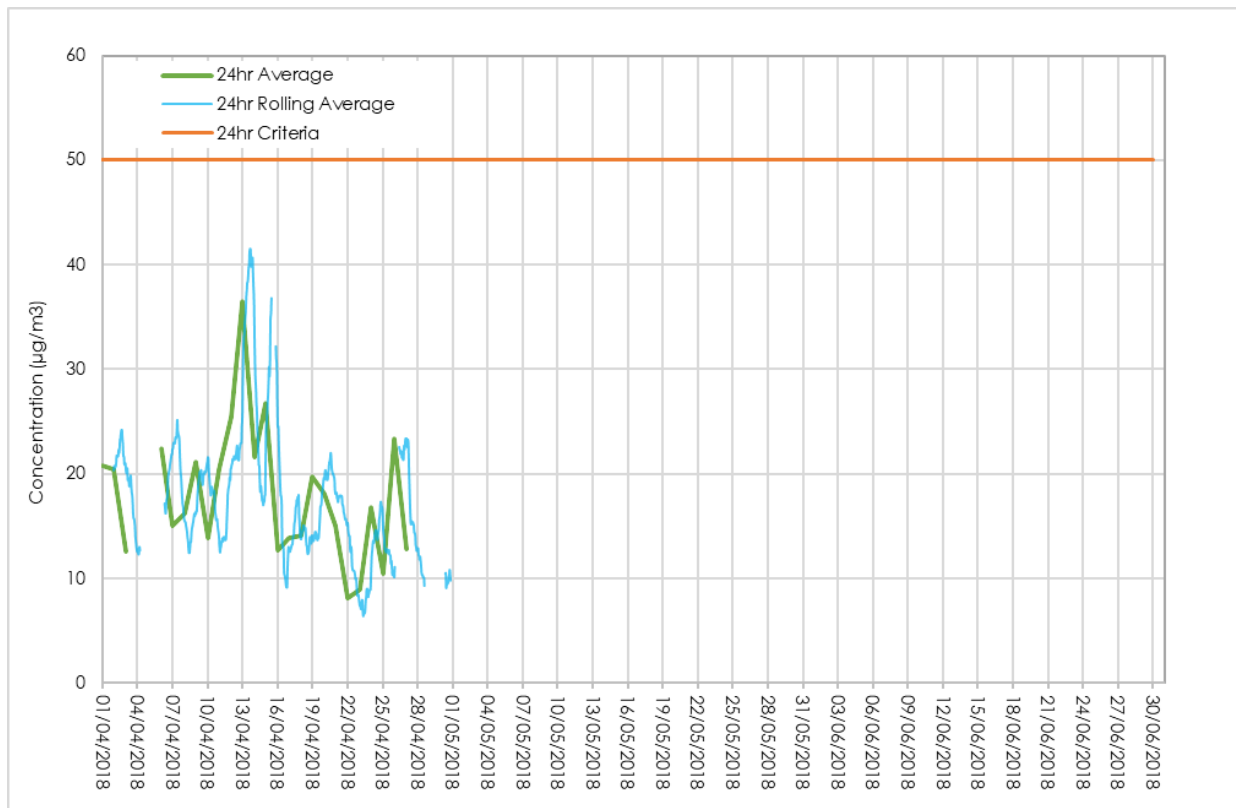


Figure 4.1: PM₁₀ Monitoring Data

5 NOISE MONITORING RESULTS

5.1 Unattended Noise Measurements

One permanent ambient noise monitor continuously monitor noise levels from all sources.

The unattended noise monitoring during the second quarter of 2018 recovered 7% of data at NMT3.

A summary of the unattended noise monitoring is presented in

Table 5.1. Noise monitoring is expressed in three descriptors as follows:

- L_{eq} AP - The all-pass equivalent continuous energy average noise level. This descriptor represents the same energy as the actual fluctuating noise level over the measurement period.
- L_{eq} LP - The low-pass equivalent continuous energy average noise level. This is the same as the L_{eq} AP except that a frequency filter has been applied and excludes noise above the 800Hz third octave frequency band.
- RBL – The rating background level (RBL) as defined within the Industrial Noise Policy. The RBL is defined as the median of each assessment background level (ABL). The ABL is the lowest tenth percentile L_{90} measurement for each period (day, evening and night) for the duration of the monitoring. The L_{90} is the noise level exceeded for 90% of the measurement period.

The results in are presented in the following time periods:

- Day - 7.00am to 6.00pm;
- Evening - 6.00pm to 10.00pm; and
- Night - 10.00pm to 7.00am.

Table 5.1: Second Quarter Noise Monitoring Summary, dB(A)

	Day			Evening			Night		
	L _{eq} LP ¹	L _{eq} AP ²	RBL ³	L _{eq} LP	L _{eq} AP	RBL	L _{eq} LP	L _{eq} AP	RBL
April	-	-	-	-	-	-	-	-	-
May	-	-	-	-	-	-	-	-	-
June	49	50	42	47	47	44	48	49	45

Note: 1. L_{eq} LP is the L_{eq} with a low pass filter applied at the 800Hz third octave band.
2. L_{eq} AP is L_{eq} All Pass with no frequency filter applied.
3. RBL is the rating background level according to the Industrial Noise Policy.

The daily noise monitoring results for NMT 3 are presented in **Table 5.4** to **(No data available)**

Table 5.6 and as graphs in **Figure 5.1** to **Figure 5.3**. The daily noise monitoring results are expressed as a logarithmic average of each measured Leq,15min during each period and the ABL.

The unattended noise monitors also record LA_{1,1min} levels continuously at both locations. The LA_{1,1min} represents short-term peak noise events and is the noise level exceeded for 1% of 1 minute. A summary of the LA_{1,1min} is presented in **Table 5-2**.

Table 5-2: April – June 2018 LA_{1,15minute} Noise Monitoring Summary, dB(A)

NMT1	LA _{1,1min} Maximum dB(A)	LA _{1,1min} Average dB(A)	LA _{1,15min} > 52 dB(A) night time (%)
April	-	-	-
May	-	-	-
June	85	50	25

The noise limits at the site apply for wind speeds less than 3 m/s. **Table 5-3** presents monthly percentages that wind speeds more than 3 m/s occurred from WTX monitoring data during this quarterly period.

Table 5-3: Wind Speed Exceedances Percentages April – June 2018

WTX	Exceedances (%)
April	-
May	-
June	-

Table 5.4: NMT3 Daily Noise Monitoring Results – April 2018

(No data available)

Table 5.5: NMT3 Daily Noise Monitoring Results – May 2018

(No data available)

Table 5.6: NMT3 Daily Noise Monitoring Results – June 2018

Date	Day			Evening			Night		
	L _{eq} .11hr	L _{eq} .11hr	ABL ²	L _{eq} .4hr LP	L _{eq} .4hr AP	ABL	L _{eq} .9hr LP	L _{eq} .9hr	ABL
1/06/2017	-	-	-	-	-	-	-	-	-
2/06/2017	-	-	-	-	-	-	-	-	-
3/06/2017	-	-	-	-	-	-	-	-	-
4/06/2017	-	-	-	-	-	-	-	-	-
5/06/2017	-	-	-	-	-	-	-	-	-
6/06/2017	-	-	-	-	-	-	-	-	-
7/06/2017	-	-	-	-	-	-	-	-	-
8/06/2017	-	-	-	-	-	-	-	-	-
9/06/2017	-	-	-	-	-	-	-	-	-
10/06/2017	-	-	-	-	-	-	-	-	-
11/06/2017	-	-	-	-	-	-	-	-	-
12/06/2017	-	-	-	-	-	-	-	-	-
13/06/2017	-	-	-	-	-	-	-	-	-
14/06/2017	-	-	-	-	-	-	-	-	-
15/06/2017	-	-	-	-	-	-	-	-	-
16/06/2017	-	-	-	-	-	-	-	-	-
17/06/2017	-	-	-	-	-	-	-	-	-
18/06/2017	-	-	-	-	-	-	-	-	-
19/06/2017	-	-	-	-	-	-	-	-	-
20/06/2017	-	-	-	-	-	-	-	-	-
21/06/2017	-	-	-	-	-	-	-	-	-
22/06/2017	50	52	40	44	44	41	-	-	-
23/06/2017	48	50	38	43	43	40	47	47	38
24/06/2017	45	46	36	49	49	43	43	43	39
25/06/2017	49	51	44	51	51	49	51	52	48
26/06/2017	48	51	39	42	42	40	51	51	48
27/06/2017	47	49	44	46	46	44	46	46	38
28/06/2017	51	52	44	47	48	46	46	47	43
29/06/2017	-	-	-	-	-	-	49	49	46
30/06/2017	-	-	-	-	-	-	-	-	-
Log Avg	49	50	42	47	47	44	48	49	45
Median	48	51	40	46	46	43	47	47	43
Max	51	52	44	51	51	49	51	52	48
Min	45	46	36	42	42	40	43	43	38

Note:

1. LP=Low Pass, AP= All Pass

2. ABL is the Assessment Background Level and represents the lowest tenth percentile L90 measured during the period

5.2 Unattended Noise Monitoring Graphs

(No data available)

Figure 5.1: NMT3 Noise Monitoring Results – April 2018

(No data available)

Figure 5.2: NMT3 Noise Monitoring Results – May 2018

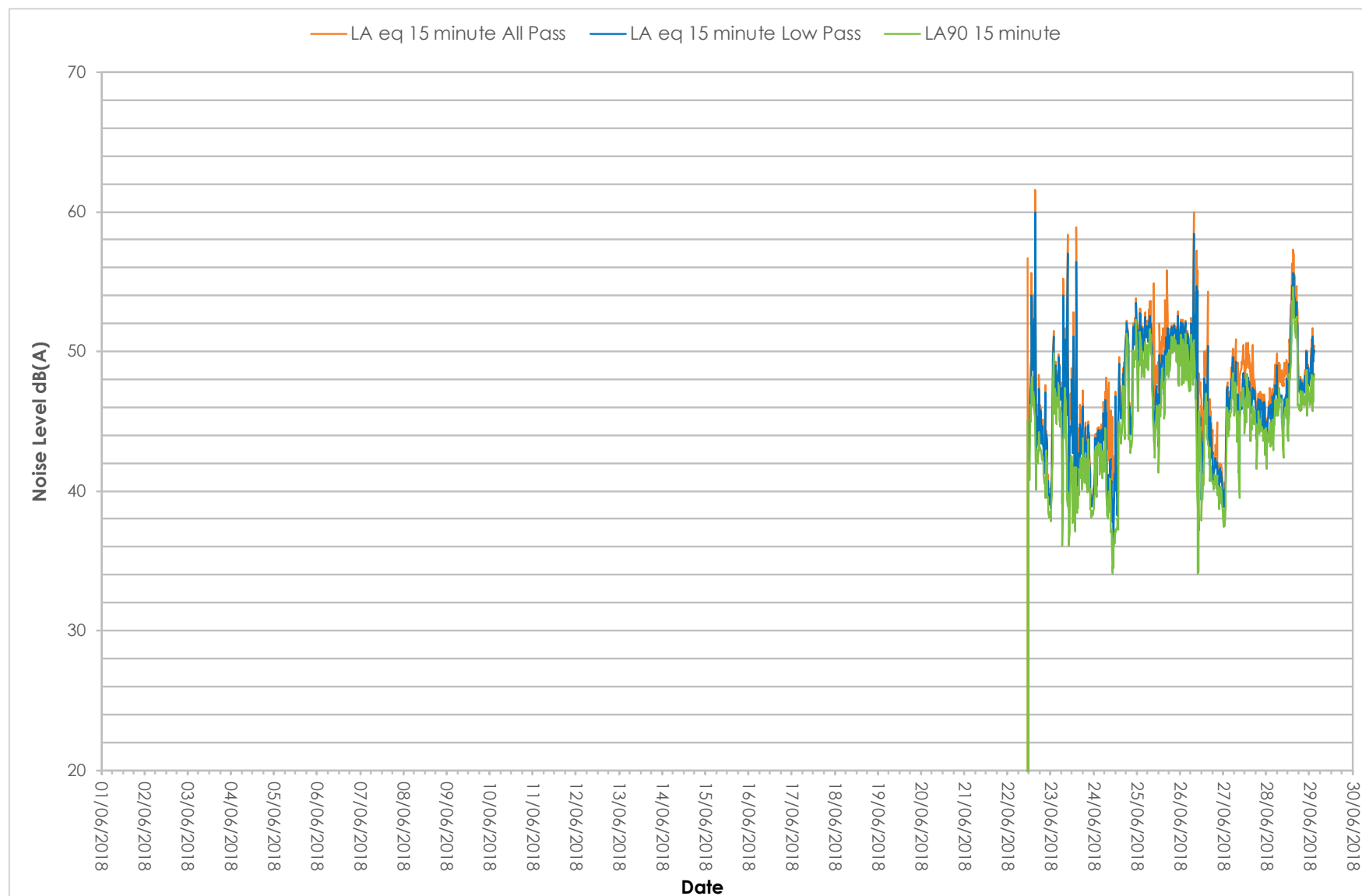


Figure 5.3: NMT3 Noise Monitoring Results – June 2018

(No data available)

Figure 5.4: $L_{1,15\text{minute}}$ (night time only) NMT3 Noise Monitoring Results – April 2018

(No data available)

Figure 5.5: $L_{1,15\text{minute}}$ (night time only) NMT3 Noise Monitoring Results – May 2018

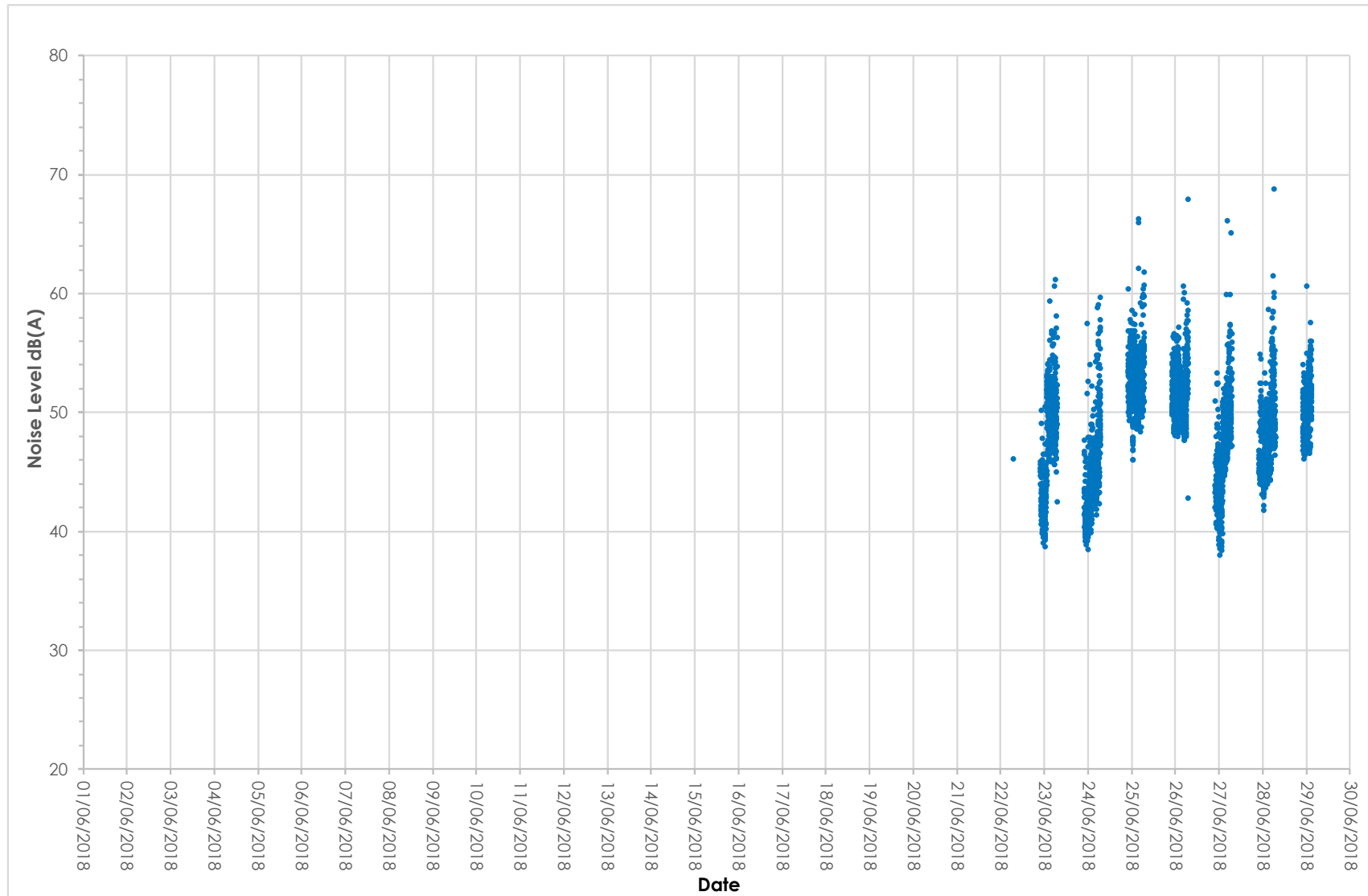


Figure 5.6: L_{1,15minute} (night time only) NMT3 Noise Monitoring Results – June 2018

5.3 Attended Noise Measurements

Whilst operational, attended noise measurements are carried out once every three months to establish compliance with the site's noise limits at up to ten different compliance locations surrounding the site during the day, evening and night.

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