

Monthly Environmental Monitoring Report

January 2018

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Date	Rev.	Status

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1. Introduction

The Mount Pleasant Operation (MPO) is located in the Upper Hunter Valley of New South Wales, approximately three kilometres (km) north-west of Muswellbrook and approximately 50 km north-west of Singleton. The villages of Aberdeen and Kayuga are located 12 km north-northeast and 3 km north of the Project boundary, respectively.

The purpose of this Report is to provide a monthly update of monitoring data in accordance with the requirements of Environmental Protection Licence (EPL) 20850, Section 66(6) of the POEO Act and the MPO Project Approval DA 92/97.

Table 1-1 – Mount Pleasant Operations

Name of Operation	Mount Pleasant Operation
Name of Licensee	MACH Energy Australia Pty Ltd
Environmental Protection Licence	20850
Reporting Period Start Date	1 January 2018
Reporting Period End Date	31 January 2018
Date Data Received	21 February 2018

To view MPO EPL 20850 in full please refer to the link below.

<http://www.environment.nsw.gov.au>

2. Monitoring Requirements

The MPO Environment Protection Licence (EPL) 20850 specifically requires the monitoring of:

- 2 x Palas Fidas PM10 sites;
- Noise monitoring
- Blast monitoring; and
- Meteorological monitoring.

Monitoring of sites not required by the EPL are carried out in accordance with MPO Environmental Monitoring Program (EMP) and Project Approval DA 92/97.

The MPO Environmental Monitoring Network is shown on **Figure 2-1 and Figure 2-2**.

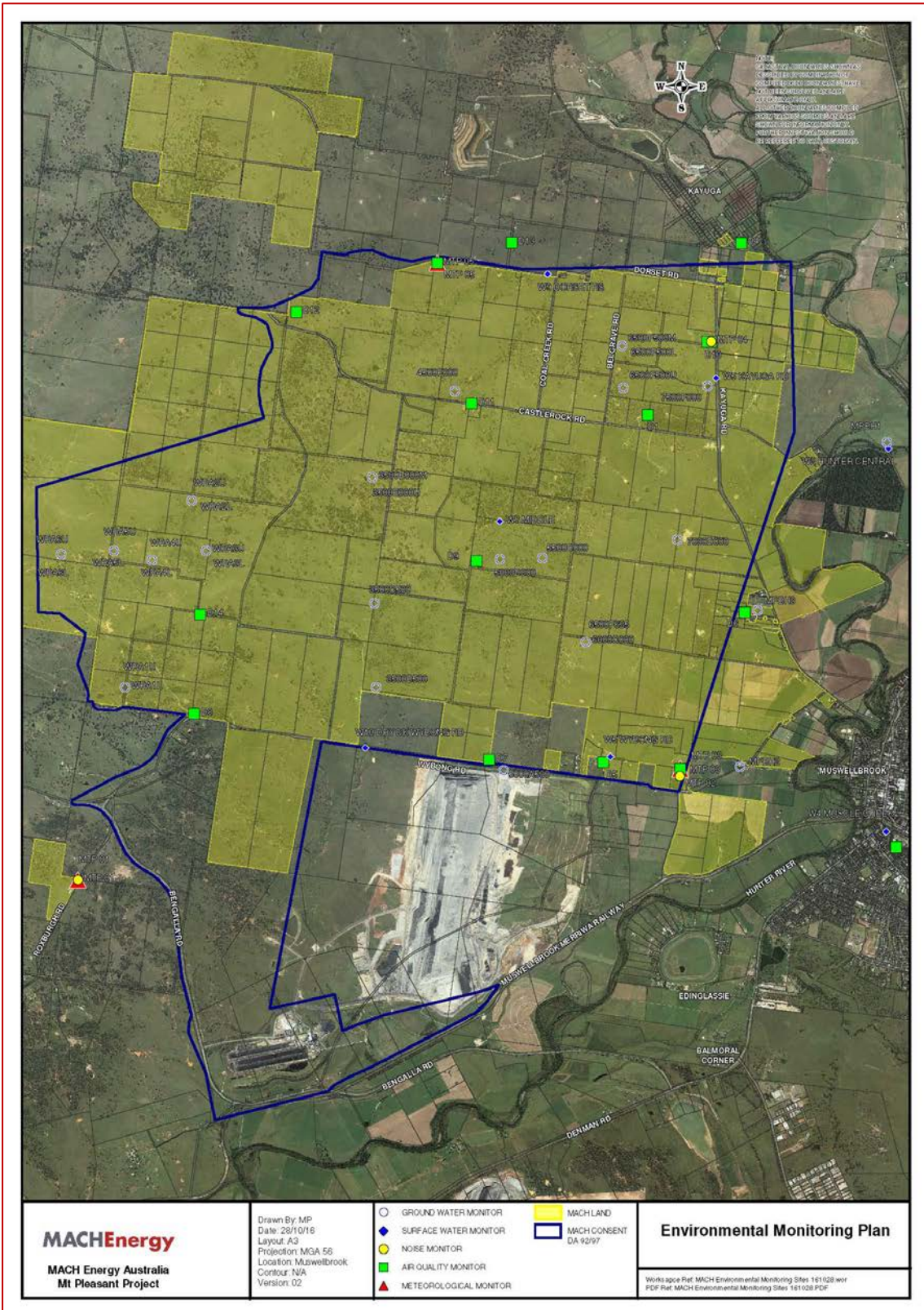


Figure 2-1 – MPO Environmental Monitoring Network

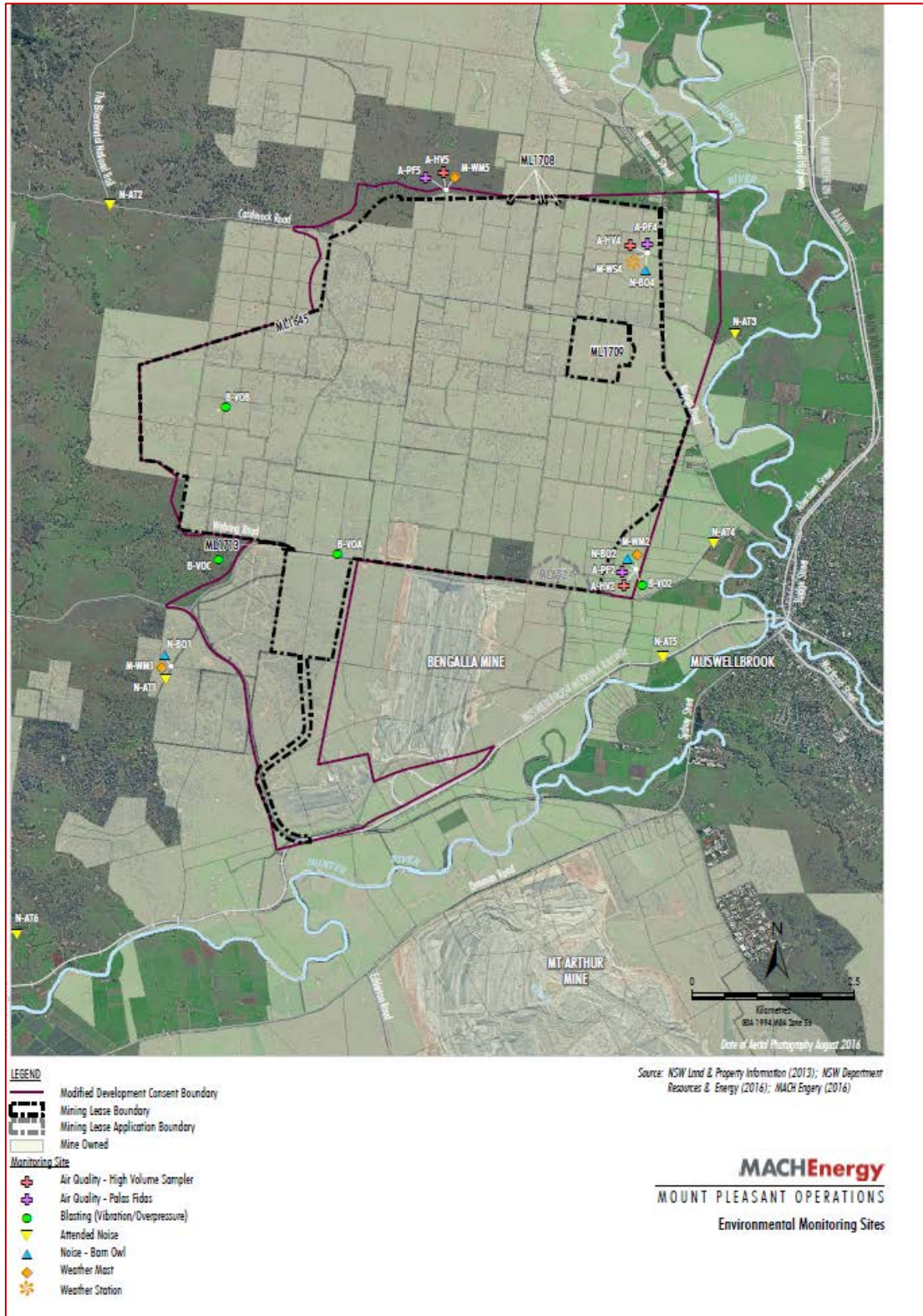


Figure 2-2 – MPO Environmental Monitoring Network/EPL Monitoring Sites

3. Dust Depositional Monitoring

Dust deposition was monitored according to the OEH's Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DEC 2007), which references AS/NZS 3580.10.1:2003 (R2014) Determination of particulate matter – Deposited matter – Gravimetric Method. The dust deposition exposure period for all gauges commenced on 21 December 2017. Sample collection was undertaken on 19 January 2018 by AECOM with sample analysis performed by SRT NATA accredited laboratory. The monitoring network comprises of 13 dust deposition gauges (DDG). Results for January 2018 are shown in **Table 3-1**.

Table 3-1: Dust Depositional Results – January 2018

Location	YTD Insoluble Solids (g/m ² .month)	Insoluble Solids Annual Rolling Average (g/m ² .month)
D1	0.8	1.2
D3	1.3	1.8
D4	0.5	1.3
D5	2.9	N/A*
D6	2.5	2.6
D7	13.7	N/A*
D8	4.0	5.7
D9	0.9	1.6
D10	0.7	1.2
D11	0.5	1.6
D12	0.5	0.8
D13	0.7	3.1
D14	2.2	2.4
<i>Criterion</i>	-	4

* Sites D5a and D7a were installed in September 2017. Insoluble solids annual rolling average data is not available.

Note: Contaminated results are not included in the 12 month rolling average. Monthly results above 4g/m²/month are not classed as an exceedance of criteria as the criteria is an annual average of 4g/m²/month. **Figure 3-1** compares the monthly insoluble solids results to the annual averages for each dust gauge and the assessment criterion.

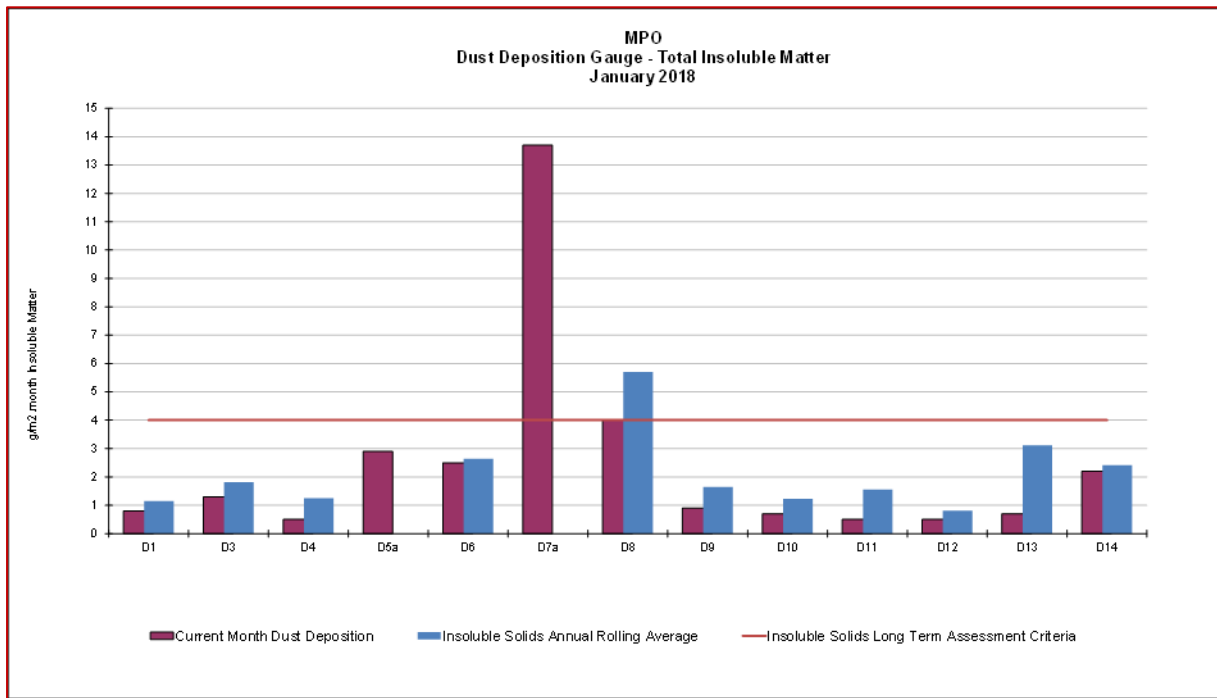


Figure 3-1: MPO DDG Total Insoluble Solids Monitoring Results – January 2018

Exceedance of the EPA annual average criterion for dust deposition (insoluble solids) was recorded at site D8 (5.7 g/m².month). This gauge was immediately adjacent road works. Field notes from the January sampling event noted that all the gauges contained insects. Bird droppings were also present in one of the gauges.

4. Total Suspended Particulates

All HVAS are run for 24 hours every six days in accordance with AM-15 of Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DECC, 2007), referencing AS/NZS 3580.9.3:2015 Methods for sampling and analysis of ambient air – Determination of suspended particulate matter – Total suspended particulate matter (TSP) - High volume sampler gravimetric method, for the monitoring of TSP.

TSP results for the monitoring period are provided in **Table 4-1**.

Table 4-1 Total Suspended Particulate Monitoring Data – January 2018

Run Date	Criterion	A-PF2	M-WS4	A-PF5
	µg/m ³			
1/01/2018	-	65	45	56
7/01/2018	-	53	36	31
13/01/2018	-	210	47	46
19/01/2018	-	137	91	96
25/01/2018	-	138	104	108
Monthly Mean	-	84	59	71
Annual Rolling Average	90	52.9*	30.5*	25.4*

*Year to date (YTD) average only available.

For the reporting period, the year to date average TSP data for HVAS A-PF2 and HVAS M-WS4 was below the annual average criterion of 90 µg/m³ at all monitoring sites.

5. Real Time PM₁₀ Monitoring

Continuous particulate matter less than 10µm (PM10) monitoring was conducted by three (3) Palas Fidas units at MPO during January 2018.

The EPA identification numbers 1 and 2 refer to Palas Fidas Units installed on Wybong Road (APF2) and Castlerock Road (APF5) respectively. In addition, a third unit (APF4) is installed on Kayuga Road with data used for management purposes only.

On the 13th, 19th, 22nd and 23rd January 2018, monitoring location A-PF2 exceeded 50 µg/m³ for the 24 hour rolling average. MACH Energy's contribution was less than 50µg/m³ and ceased all dust generating activities in accordance with its Air Quality and Greenhouse Gas Management Plan.

Real time PM10 results for January 2018 are illustrated in **Figure 5-1** and shown in **Table 5- 1**

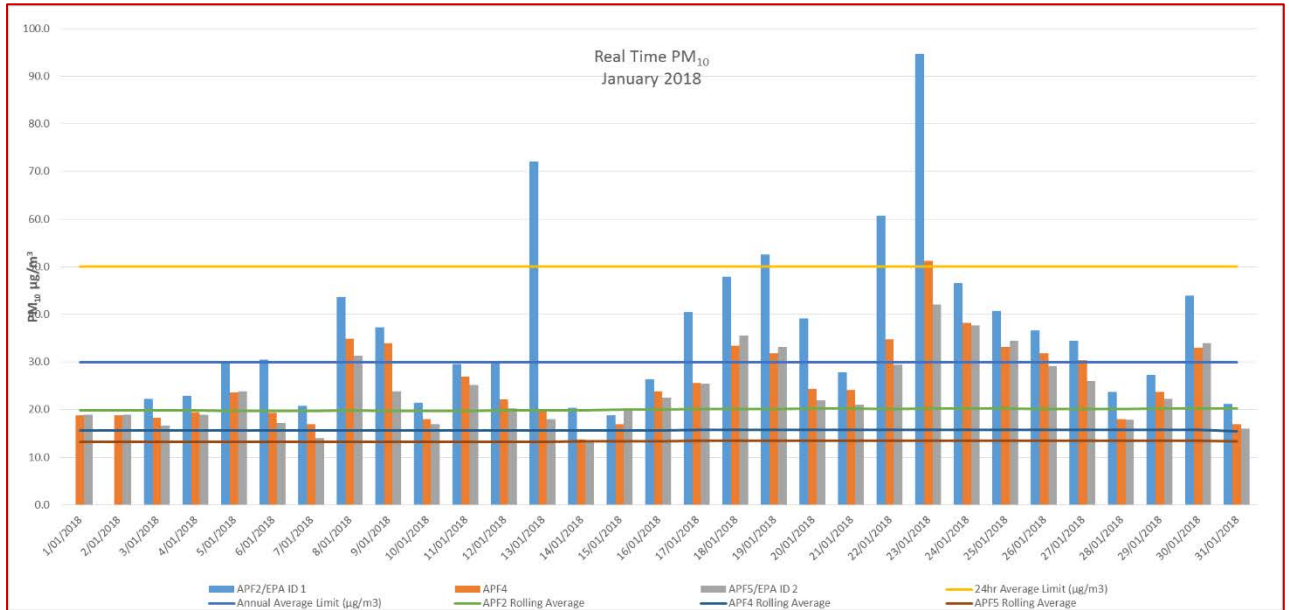


Figure 5-1 : MPO Daily Results from Palas Fidas – January 2018

Table 5-1: MPO Palas Fidas Data – January 2018

Date	APF2/EPA ID 1	APF4	APF5/EPA ID 2	24hr Average Limit (µg/m3)
	Daily Result	Daily Result	Daily Result	
1/01/2018	Power outage	19	19	50
2/01/2018		19	19	50
3/01/2018	22	18	17	50
4/01/2018	23	20	19	50
5/01/2018	30	24	24	50
6/01/2018	30	19	17	50
7/01/2018	21	17	14	50
8/01/2018	44	35	31	50
9/01/2018	37	34	24	50
10/01/2018	21	18	17	50
11/01/2018	30	27	25	50
12/01/2018	30	22	20	50
13/01/2018	72	20	18	50
14/01/2018	20	14	13	50
15/01/2018	19	17	20	50
16/01/2018	26	24	22	50
17/01/2018	40	26	25	50
18/01/2018	48	33	36	50
19/01/2018	53	32	33	50
20/01/2018	39	24	22	50
21/01/2018	28	24	21	50
22/01/2018	61	35	29	50

23/01/2018	95	51	42	50
24/01/2018	47	38	38	50
25/01/2018	41	33	35	50
26/01/2018	37	32	29	50
27/01/2018	35	30	26	50
28/01/2018	24	18	18	50
29/01/2018	27	24	22	50
30/01/2018	44	33	34	50
31/01/2018	21	17	16	50



6. Surface Water Monitoring

Monthly surface water quality sampling and field analysis was conducted on 22 January 2018 by AECOM. Laboratory analysis was performed by SRT NATA accredited laboratory. **Table 6-1** shows the total suspended solids, electrical conductivity and pH for the routine monthly monitoring.

Table 6-1 – MPO Surface Water Monitoring Results – January 2018

Sampling Point	pH	Electrical Conductivity (µs/cm)	Total Suspended Solids (mg/L)
W1	8.1	350	12
W2	8.2	350	10
W3	8.0	360	15
W4	7.5	2150	4
W5	*	*	*
W6A	8.2	340	9
W7	*	*	*
W8	*	*	*
W9	*	*	*
W11	7.6	6550	8
W12	8.1	5150	12
W13	*	*	*
W14	*	*	*
W15	8.0	380	13
* dry or insufficient water			
^ no suitable access point			

Six of the fourteen monitoring locations were found to be dry on the sampling day. All of the sites sampled were below or inside the trigger level values during January 2018.

7. Groundwater Monitoring

Monitoring did not occur during January 2018. The next quarterly sampling event is scheduled for February 2018 and the next annual monitoring event is scheduled for May 2018.

8. Noise Monitoring

In accordance with the MPO Noise Management Plan attended noise compliance monitoring is undertaken quarterly by a suitably qualified and experienced person. All monitoring measurements are undertaken during day, evening and night periods. Noise monitoring was undertaken during the day, evening and night periods. Monitoring was not undertaken in January 2018. The next quarterly monitoring event is scheduled for March 2018.

9. Blast Monitoring

Blasting commenced at MPO in January 2018. Results are presented in **Table 9-1**.

Table 9-1 – MPO Blast Monitoring Results – January 2018

Date	Time	Vibration Wybong Road	Overpressure Wybong Road	Vibration MWD	Overpressure MWD	Vibration HV Road	Overpressure HV Road	Vibration EDMIA	Overpressure EDMIA	Vibration BVOA - ED3	Overpressure BVOA - ED3	Vibration BVOC	Overpressure BVOC	Vibration BVO2 Site 2	Overpressure BVO2 Site 2
1/04/2018	9:08	1.250 mm/s	107 DBL	0.200 mm/s	95.8 DBL	0.250 mm/s	103.5 DBL	0.310 mm/s	95.9 DBL	0.240 mm/s	92.3 DBL	0.100 mm/s	93.4 DBL	0.420 mm/s	98.5 DBL
1/05/2018	14:00	1.650 mm/s	103.2 DBL	0.440 mm/s	101.3 DBL	0.220 mm/s	97.7 DBL	0.260 mm/s	95.1 DBL	0.230 mm/s	93.3 DBL	0.120 mm/s	87.5 DBL	0.410 mm/s	99 DBL
17/01/18	15:00	3.550 mm/s	106.8 DBL	0.550 mm/s	105.2 DBL	0.270 mm/s	99 DBL	0.220 mm/s	95.9 DBL	0.720 mm/s	94.9 DBL	0.150 mm/s	90.6 DBL	0.570 mm/s	101.9 DBL
24/01/18	9:40	0.090 mm/s	89.7 DBL	0.430 mm/s	105.6 DBL	0.070 mm/s	96.4 DBL	0.360 mm/s	99.1 DBL	0.250 mm/s	96.5 DBL	0.080 mm/s	95.9 DBL	0.040 mm/s	83.9 DBL
25/01/18	12:00	0.660 mm/s	102.2 DBL	0.260 mm/s	95.3 DBL	0.900 mm/s	109.4 DBL	0.230 mm/s	94.1 DBL	0.410 mm/s	90.7 DBL	0.170 mm/s	91.8 DBL	0.860 mm/s	102.5 DBL
30/01/18	14:10	0.340 mm/s	98 DBL	0.150 mm/s	93 DBL	0.730 mm/s	109.6 DBL	0.150 mm/s	89.9 DBL	0.300 mm/s	93.9 DBL	0.080 mm/s	85.6 DBL	0.590 mm/s	105.1 DBL

Blast results complied with all criteria at each monitoring site.

10. Meteorological Monitoring

Weather data is measured continuously at the Kayuga Road (M-WS4). Temperature (2m) and rainfall data are presented below. In addition to these parameters the weather station also measures wind, temperature (10m), solar radiation, humidity, atmospheric pressure, and sigma theta. All data was captured during January 2018.

