

Monthly Environmental Monitoring Report

April 2018

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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 April 2018
Reporting Period End Date	30 April 2018
Date Data Received	23 May 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**.

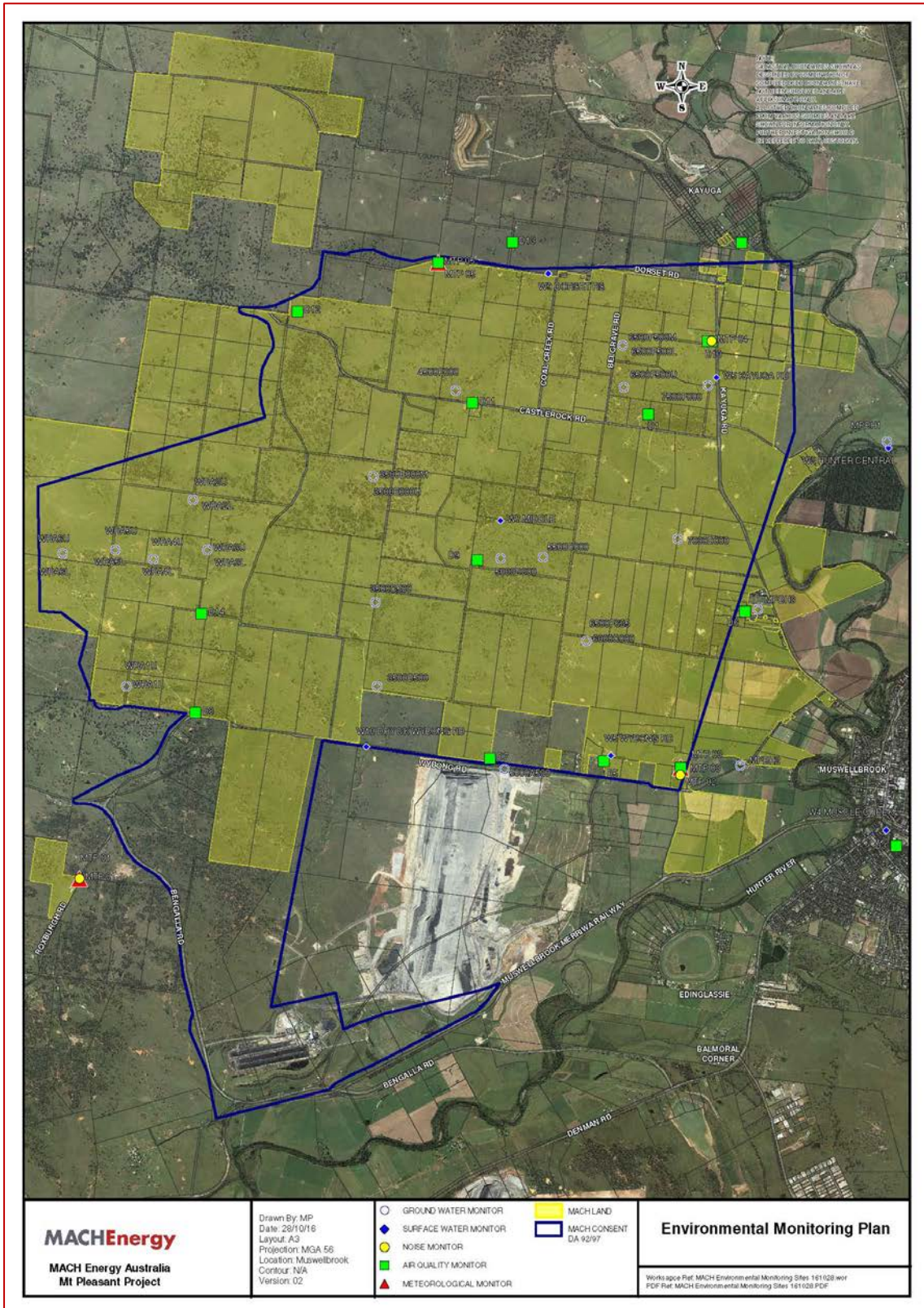


Figure 2-1 – MPO Environmental Monitoring Network

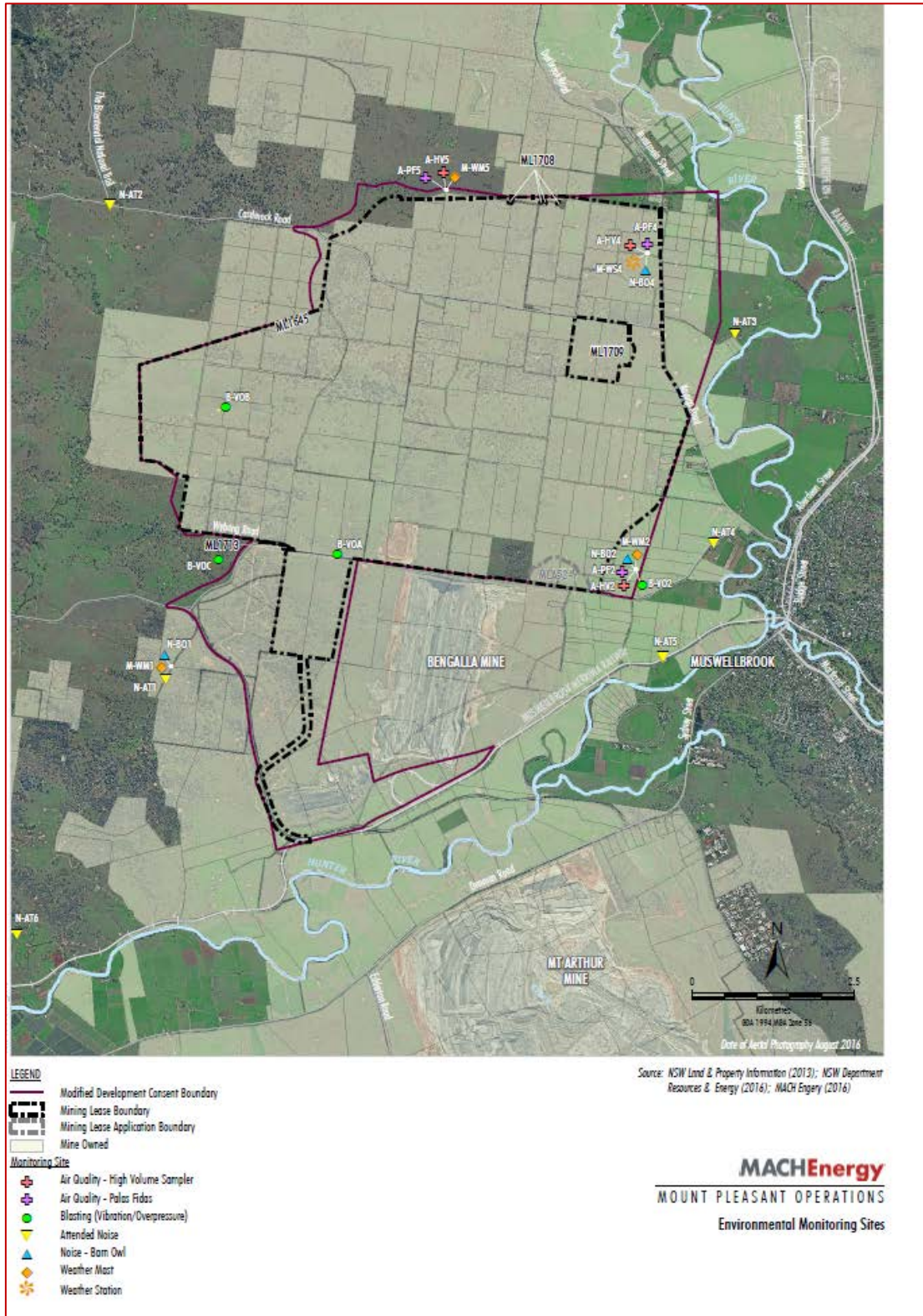


Figure 2-2 – MPO Environmental Monitoring Network/EPL Monitoring Sites

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 19 February 2018. Sample collection was undertaken on 21 April 2018 by AECOM with sample analysis performed by SRT NATA accredited laboratory. The monitoring network comprises of 13 dust deposition gauges (DDG). Results for April 2018 are shown in **Table 3-1**.

Table 3-1: Dust Depositional Results – April 2018

Location	YTD Insoluble Solids (g/m2.month)	Insoluble Solids Annual Rolling Average (g/m2.month)
D1	1.5	1.2
D3	3.4	2.2
D4	1.9	1.3
D5	2.6	1.4*
D6	4.1	3.1
D7	9.5	5.7*
D8	4.0	4.2
D9	1.4	1.5
D10	1.5	1.2
D11	1.8	1.8
D12	0.9	0.9
D13	1.9	2.6
D14	3.3	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.

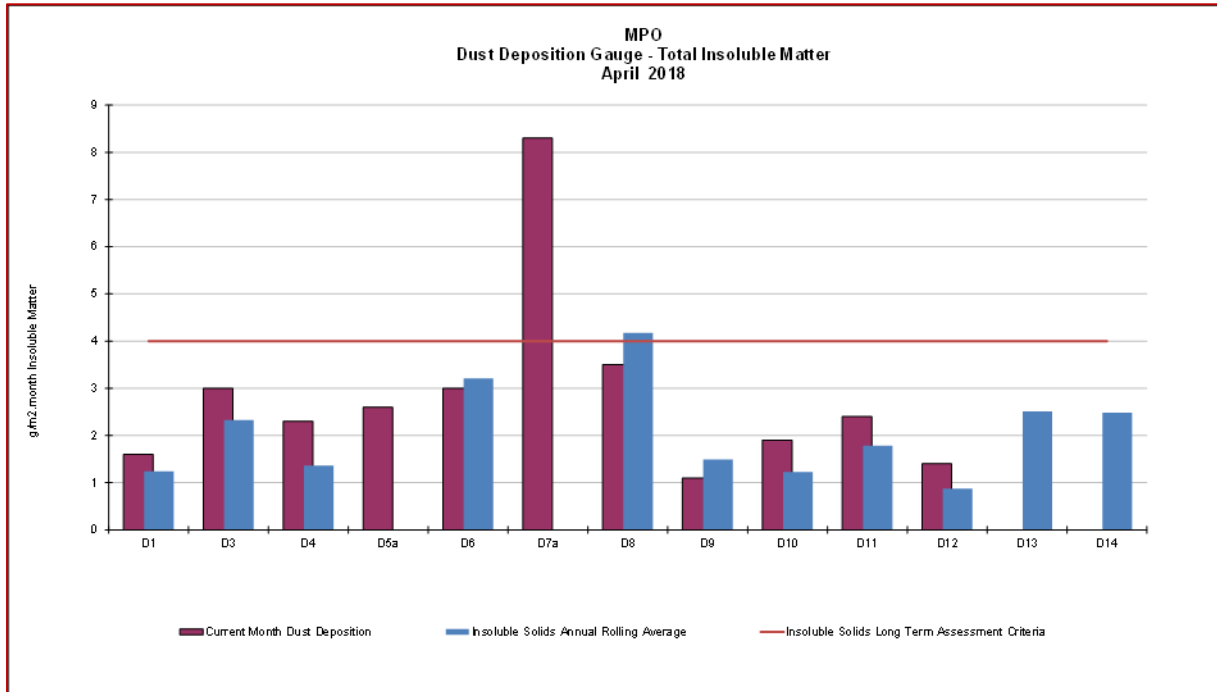


Figure 3-1: MPO DDG Total Insoluble Solids Monitoring Results – April 2018

Exceedance of the EPA annual average criterion for dust deposition (insoluble solids) was recorded at site D8 (4.2 g/m².month). DDG water for D13 was recorded in field notes as being light brown and slightly turbid. The water for D14 was noted as being cloudy and slightly turbid. Both gauges contained insects and gauge D14 also contained bird droppings. D13 and D14 both had a low ash to insoluble solids ratios (44% and 55% respectively). The monthly dust deposition results at each of these sites exceeded their annual rolling average results. Due to these factors, DDG D13 and D14 were considered to have been contaminated. Due to the likelihood of contamination of D13 and D14, the analysed results of these gauges did not contribute to their annual rolling averages.

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 – April 2018

Run Date	Criterion	A-PF2	M-WS4	A-PF5
	µg/m ³			
1/04/2018	-	65	44	41
7/04/2018	-	76	53	40
13/04/2018	-	85	42	35
19/04/2018	-	57	37	26
25/04/2018		92	136	66
Monthly Mean	-	75	62	42

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 April 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 15th of April 2018, monitoring location A-PF2 and A-PF4/A-PF5 exceeded 50 µg/m³ for the 24 hour rolling average. These exceedances were associated with wider regional air quality events and were not attributed to MACH Energy's operations.

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

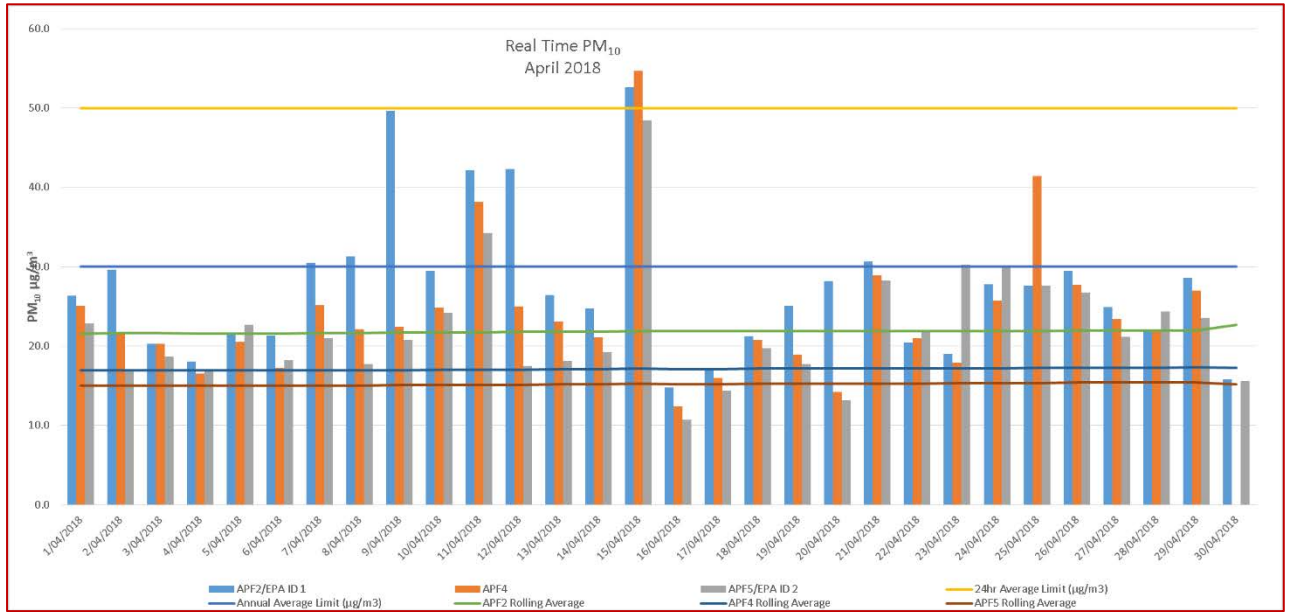


Figure 5-1 : MPO Daily Results from Palas Fidas – April 2018

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

Date	APF2/EPA ID 1	APF4	APF5/EPA ID 2	24hr Average Limit ($\mu\text{g}/\text{m}^3$)
	Daily Result			
1/04/2018	26.3	25.1	22.8	50
2/04/2018	29.6	21.7	16.8	50
3/04/2018	20.3	20.3	18.7	50
4/04/2018	18.0	16.6	16.9	50
5/04/2018	21.5	20.6	22.7	50
6/04/2018	21.3	17.3	18.2	50
7/04/2018	30.5	25.2	21.0	50
8/04/2018	31.3	22.1	17.7	50
9/04/2018	49.7	22.5	20.7	50
10/04/2018	29.4	24.8	24.2	50
11/04/2018	42.1	38.2	34.2	50
12/04/2018	42.3	25.0	17.5	50
13/04/2018	26.4	23.1	18.2	50
14/04/2018	24.8	21.1	19.2	50
15/04/2018	52.6	54.7	48.5	50
16/04/2018	14.8	12.4	10.7	50
17/04/2018	16.9	16.0	14.4	50
18/04/2018	21.2	20.7	19.7	50
19/04/2018	25.1	19.0	17.8	50
20/04/2018	28.1	14.2	13.2	50
21/04/2018	30.6	28.9	28.2	50
22/04/2018	20.5	21.0	21.8	50
23/04/2018	19.0	17.9	30.3	50
24/04/2018	27.8	25.7	29.9	50
25/04/2018	27.6	41.4	27.7	50
26/04/2018	29.5	27.7	26.7	50
27/04/2018	24.9	23.4	21.1	50
28/04/2018	21.8	22.1	24.3	50
29/04/2018	28.6	27.0	23.6	50
30/04/2018	15.8	18.3	15.6	50

6. Surface Water Monitoring

Monthly surface water quality sampling and field analysis was conducted on 27 April 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 – April 2018

Sampling Point	pH	Electrical Conductivity (µs/cm)	Total Suspended Solids (mg/L)	Total Dissolved Solids (TDS) (mg/L)
W1	8.2	330	4	233
W2	8.2	330	6	232
W3	8.2	340	8	229
W4	7.8	1450	25	870
W5	*	*	*	*
W6A	x	x	x	x
W7	*	*	*	*
W8	^	^	^	^
W9	*	*	*	*
W11	7.8	6750	5	4100
W12	8.0	4950	11	2910
W13	*	*	*	*
W14	*	*	*	*
W15	8.1	350	16	218
* dry or insufficient water x no suitable access point				

Five of the fourteen monitoring locations were found to be dry on the sampling day. W6A was unable to be sampled as it was inaccessible. Site W8 has been destroyed and reference to it will be removed from future reports. All of the remaining sites sampled were below or inside the trigger level values during April 2018.

7. Groundwater Monitoring

Quarterly monitoring of groundwater is undertaken for depth to water (DTW), pH and electrical Monitoring did not occur during April 2018. The next sampling event is scheduled for May 2018, which will include quarterly and annual monitoring.

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 undertaken in April 2018. Results will be made available during the next monthly report.

9. Blast Monitoring

Results for April 2018 are presented in **Table 9-1**.

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

Date Fired	Time Fired	Vibration BVOA	Overpressure BVOA	Vibration BVOC	Overpressure BVOC	Vibration BVO2	Overpressure BV02
5/04/18	12:03	0.560 mm/s	95.5 DBL	0.210 mm/s	100.3 DBL	1.500 mm/s	104.8 DBL
6/04/18	14:00	0.260 mm/s	97 DBL	0.050 mm/s	90.7 DBL	0.150 mm/s	107.7 DBL
6/04/18	14:00	0.300 mm/s	98.4 DBL	0.200 mm/s	90.4 DBL	0.840 mm/s	100.6 DBL
14/04/18	9:01	0.380 mm/s	94.7 DBL	0.270 mm/s	101.8 DBL	0.470 mm/s	109 DBL
17/04/18	9:08	0.400 mm/s	100.6 DBL	0.110 mm/s	97.4 DBL	0.550 mm/s	101.9 DBL
20/04/18	10:00	0.320 mm/s	94.5 DBL	0.140 mm/s	88.6 DBL	0.320 mm/s	100.1 DBL
24/04/18	11:20	1.180 mm/s	109.9 DBL	0.340 mm/s	100 DBL	1.260 mm/s	108.3 DBL
27/04/18	16:30	0.260 mm/s	102.5 DBL	0.300 mm/s	101.3 DBL	0.730 mm/s	97.9 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 April 2018.