

Environmental Monitoring Report

July 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 July 2018
Reporting Period End Date	31 July 2018
Date Data Received	21 August 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**.

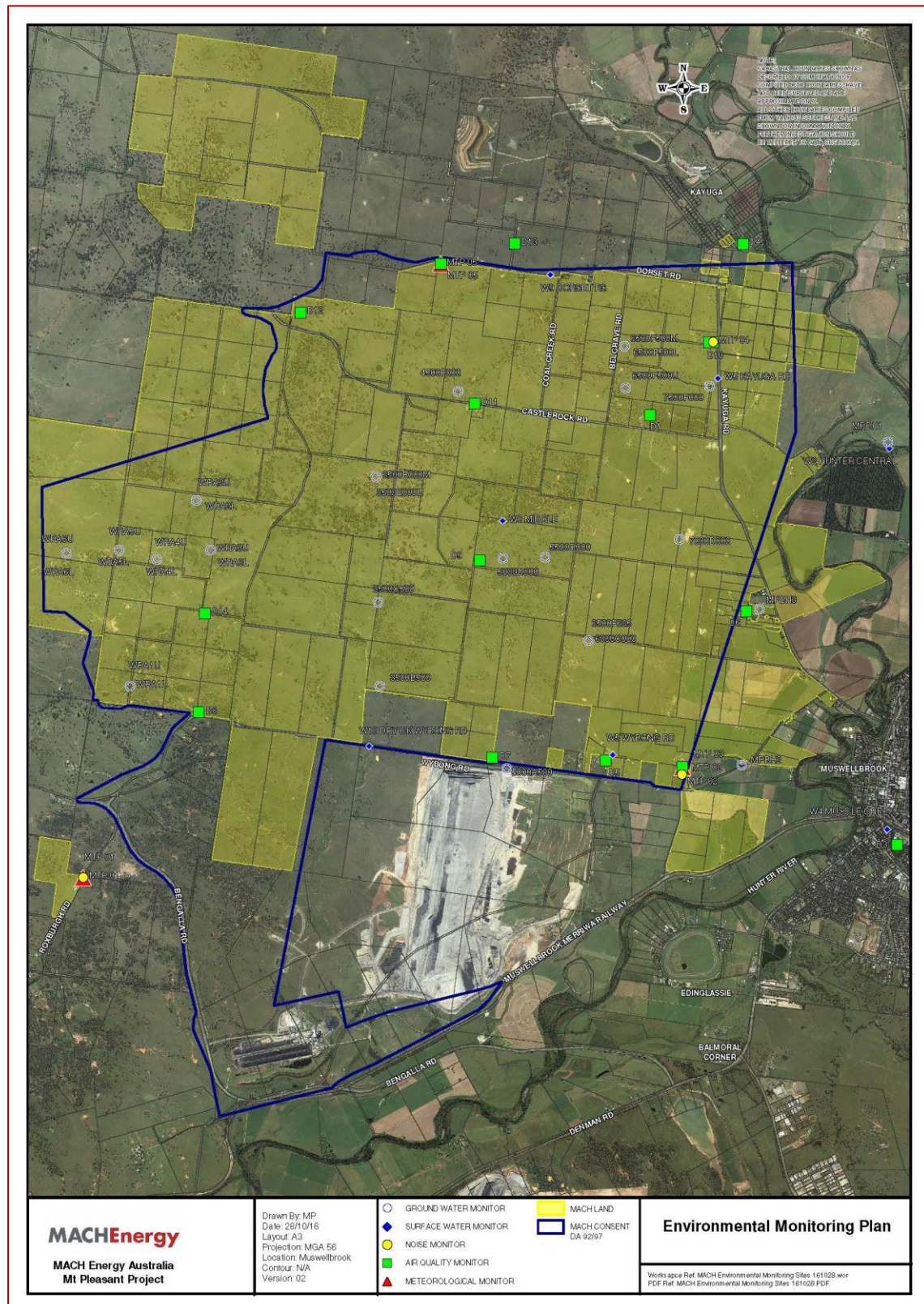


Figure 2-1 – MPO Environmental Monitoring Network

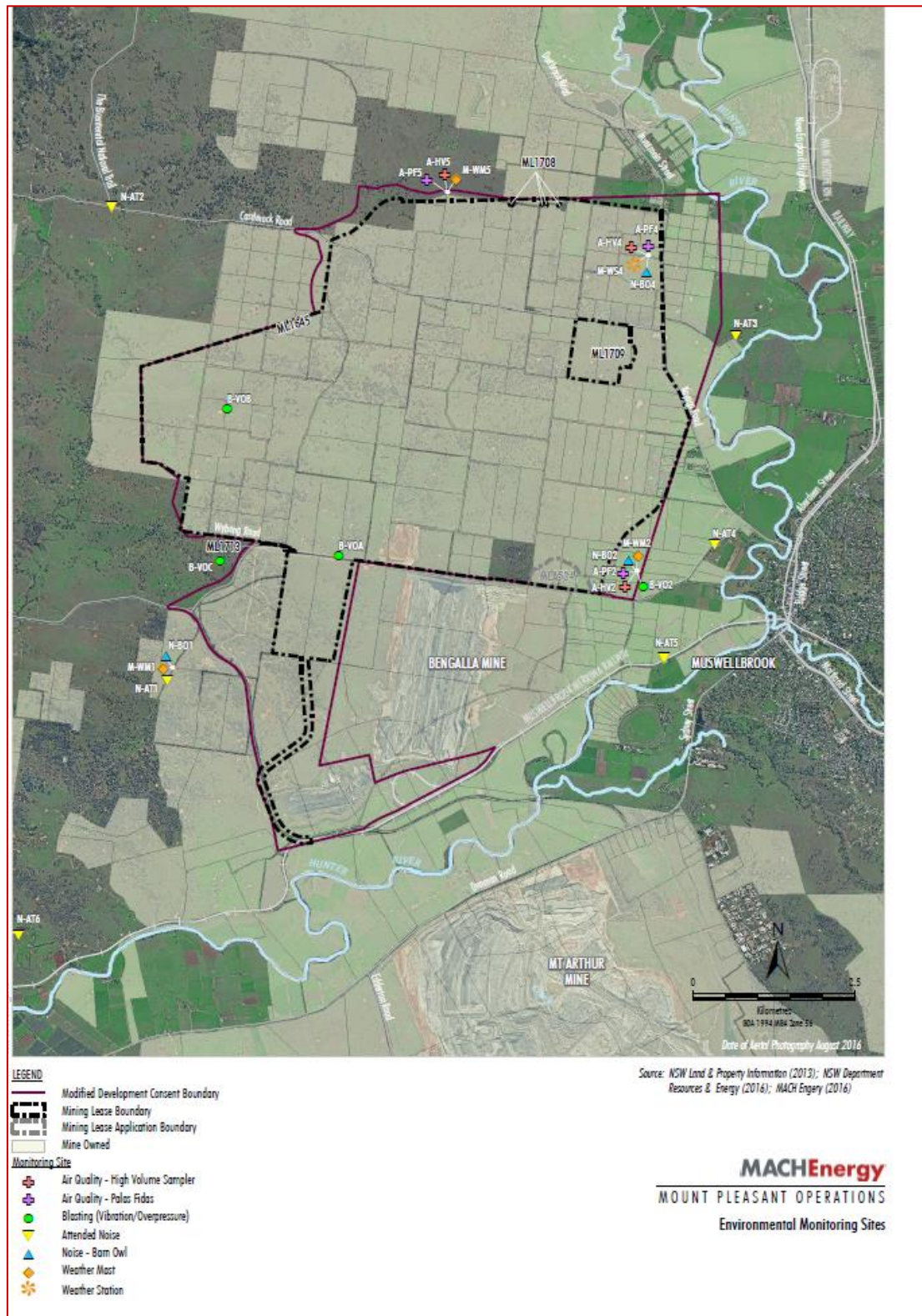


Figure 2-2 – MPO Environmental Monitoring Network/EPL Monitoring Sites

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

Table 3-1: Dust Depositional Results – July 2018

Location	YTD Insoluble Solids (g/m ² .month)	Insoluble Solids Annual Rolling Average (g/m ² .month)
D1	1.4	1.3
D3	2.6	2.3
D4	1.6	1.4
D5	2.4	2.0*
D6	3.5	3.1
D7	9.6	8.2*
D8	3.9	4.0
D9	1.8	1.7
D10	1.4	1.3
D11	1.8	1.8
D12	0.9	0.9
D13	1.7	2.3
D14	3.0	2.6
<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.

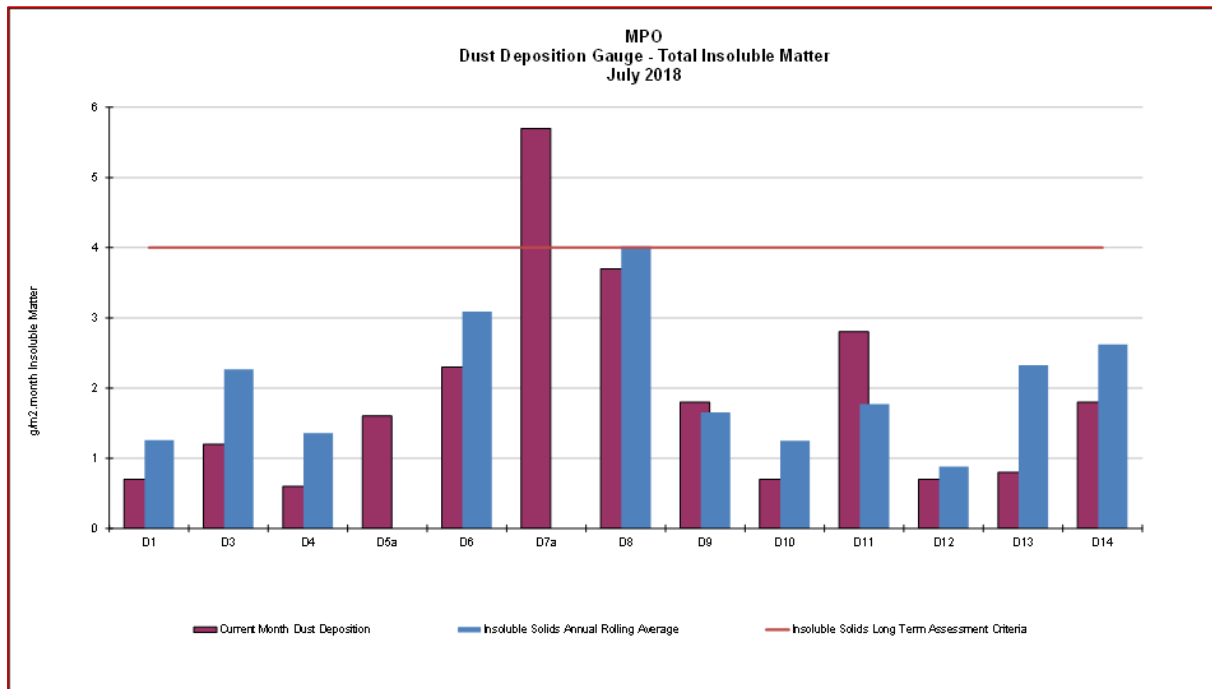


Figure 3-1: MPO DDG Total Insoluble Solids Monitoring Results – July 2018

For the reporting period, all dust depositional (insoluble solids) results were below the EPA annual average criterion of 4 g/m².month. Field notes from the July sampling event noted that all the gauges contained insects. Evidence of bird droppings and vegetation were recorded in four 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 – July 2018

Run Date	Criterion	A-HV2	A-HV4	A-HV5
	$\mu\text{g}/\text{m}^3$			
6/07/2018	-	81	17	18
12/07/2018	-	88	18	13
18/07/2018	-	133	60	53
24/07/2018	-	182	32	28
30/07/2018	-	67	16	13
Monthly Mean	-	110	29	25
Annual Rolling Average	90	81	42	38

For the reporting period, the year to date average TSP data for HVAS A-HV2, HVAS – A-HV4 and HVAS A-HV5 was below the annual average criterion of 90 $\mu\text{g}/\text{m}^3$ at all monitoring sites.

5. Real Time PM₁₀ Monitoring

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

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

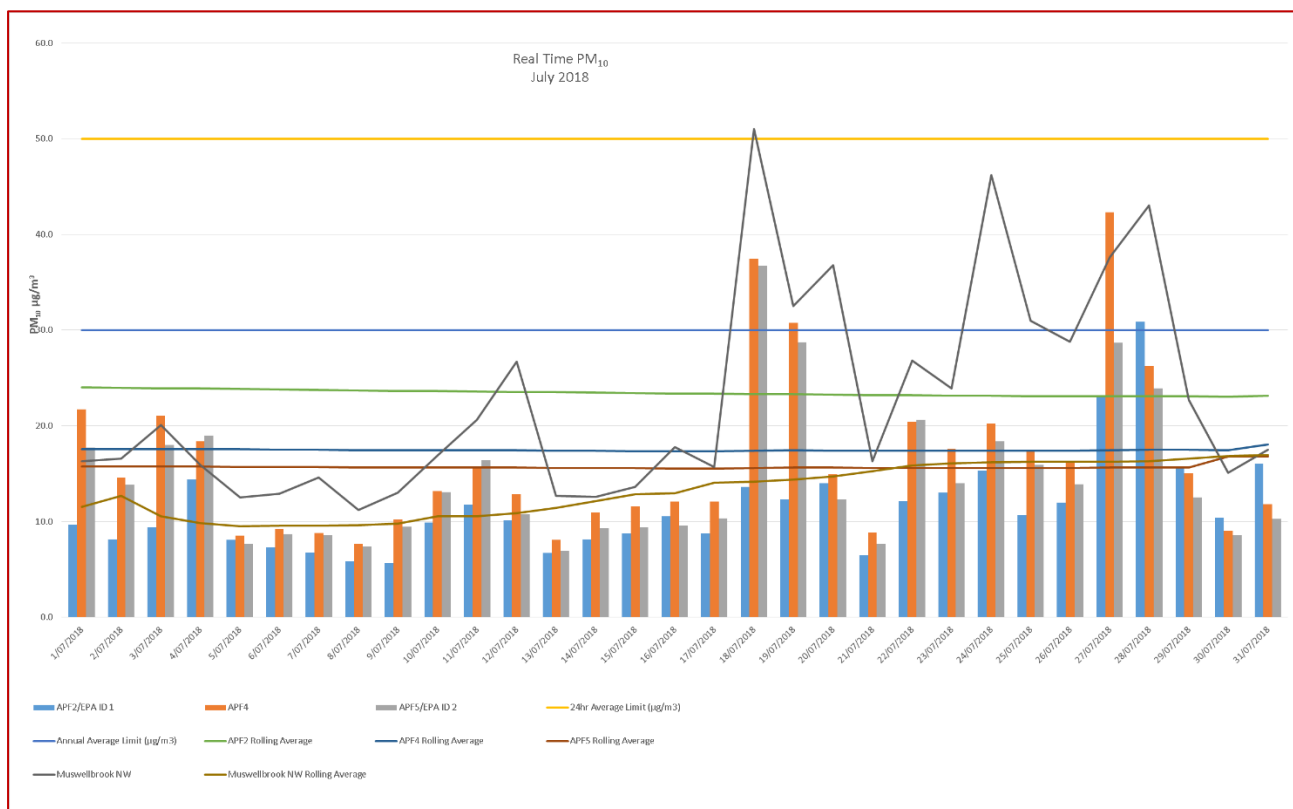


Figure 5-1 : MPO Daily Results from Palas Fidas – July 2018

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

Date	APF2/EPA ID 1	APF4	APF5/EPA ID 2	OEH Muswellbrook NW	24hr Average Limit (µg/m3)
	Daily Result			Daily Result	
1/07/2018	9.7	21.7	17.7	16.3	50
2/07/2018	8.1	14.6	13.8	16.6	50
3/07/2018	9.4	21.1	18.0	20.1	50
4/07/2018	14.4	18.4	19.0	15.9	50
5/07/2018	8.1	8.5	7.7	12.5	50
6/07/2018	7.3	9.2	8.7	12.9	50
7/07/2018	6.8	8.8	8.6	14.6	50
8/07/2018	5.8	7.7	7.4	11.2	50
9/07/2018	5.7	10.2	9.4	13	50
10/07/2018	9.9	13.2	13.1	16.9	50
11/07/2018	11.7	15.8	16.4	20.6	50
12/07/2018	10.1	12.9	10.8	26.7	50
13/07/2018	6.7	8.1	6.9	12.7	50
14/07/2018	8.1	10.9	9.3	12.6	50
15/07/2018	8.8	11.6	9.4	13.6	50
16/07/2018	10.6	12.1	9.6	17.8	50

17/07/2018	8.8	12.1	10.3	15.7	50
18/07/2018	13.6	37.4	36.7	51	50
19/07/2018	12.3	30.8	28.8	32.5	50
20/07/2018	14.0	14.9	12.3	36.8	50
21/07/2018	6.5	8.8	7.6	16.3	50
22/07/2018	12.2	20.4	20.6	26.8	50
23/07/2018	13.0	17.6	14.0	23.9	50
24/07/2018	15.3	20.2	18.4	46.2	50
25/07/2018	10.6	17.5	15.9	31	50
26/07/2018	12.0	16.3	13.9	28.8	50
27/07/2018	23.0	42.3	28.7	37.6	50
28/07/2018	30.9	26.2	23.9	43	50
29/07/2018	15.5	15.1	12.5	22.7	50
30/07/2018	10.4	9.0	8.6	15.1	50
31/07/2018	16.0	11.8	10.3	17.5	50

6. Surface Water Monitoring

Monthly surface water quality sampling and field analysis was conducted on 30 July 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 – July 2018

Sampling Point	pH	Electrical Conductivity (µs/cm)	Total Suspended Solids (mg/L)	Total Dissolved Solids (TDS) (mg/L)
W1	8.0	360	2	216
W2	7.8	370	7	248
W3	8.2	400	3	235
W4	8.0	2000	5	1290
W5	*	*	*	*
W6A	8.3	370	2	219
W7	*	*	*	*
W9	*	*	*	*
W11	7.9	5850	4	3430
W12	8.1	4800	3	2860
W13	*	*	*	*
W14	*	*	*	*
W15	8.0	460	4	294
* dry or insufficient water x no suitable access point				

Five of the thirteen monitoring locations were found to be dry on the sampling day. All of the remaining sites sampled were below or inside the trigger level values during July 2018.

7. Groundwater Monitoring

Groundwater monitoring did not occur during July 2018. The next sampling quarterly monitoring event is scheduled for August 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. Monitoring was not undertaken in July 2018. Attended noise monitoring is next scheduled for September 2018.

9. Blast Monitoring

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

Table 9-1 – MPO Blast Monitoring Results – July2018

Date Fired	Time Fired	Vibration BVOA	Overpressure BVOA	Vibration BVOC	Overpressure BVOC	Vibration BVO2	Overpressure BV02
4/07/2018	14:09:00	0.920 mm/s	97.9 DBL	0.420 mm/s	93.8 DBL	0.940 mm/s	102.2 DBL
6/07/2018	13:58:00	0.630 mm/s	104.7 DBL	0.270 mm/s	109.9 DBL	0.860 mm/s	105.7 DBL
11/07/2018	14:03:00	0.490 mm/s	96.7 DBL	0.270 mm/s	90.4 DBL	1.480 mm/s	108.3 DBL
13/07/18	10:02:00	0.580 mm/s	101.7 DBL	0.240 mm/s	103.2 DBL	0.770 mm/s	102.9 DBL
20/07/18	09:01:00	2.020 mm/s	113.6 DBL	0.700 mm/s	105.7 DBL	1.400 mm/s	114.5 DBL
25/07/18	12:15:00	0.770 mm/s	97.7 DBL	0.500 mm/s	104.3 DBL	0.900 mm/s	99.5 DBL
27/07/18	14:09:00	0.700 mm/s	93.1 DBL	0.260 mm/s	89.4 DBL	1.250 mm/s	102 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 July 2018.