

Environmental Monitoring Report

August 2018

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 August 2018
Reporting Period End Date	31 August 2018
Date Data Received	21 Sept 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 in Figure 2-1 and Figure 2-2.



Figure 2-1 – MPO Environmental Monitoring Network



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

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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 3580.10.1:2016 Determination of particulate matter – Deposited matter – Gravimetric Method. The dust deposition monitoring network comprises of 13 dust deposition gauges (DDG). The dust deposition exposure period for all gauges commenced on 19 August 2018. Sample collection was undertaken on 20 August 2018 by AECOM with sample analysis performed by SRT NATA accredited laboratory. The monitoring network comprises of 13 dust deposition gauges (DDG). Results for August 2018 are shown in **Table 3-1**.

Location	YTD Insoluble Solids (g/m2.month)	Insoluble Solids Annual Rolling Average (g/m2.month)
D1	1.4	1.3
D3	2.5	2.3
D4	1.5	1.4
D5	2.3	2.0*
D6	3.4	3.2
D7	8.9	7.9*
D8	3.6	4.1
D9	1.7	1.7
D10	1.3	1.3
D11	1.8	1.8
D12	0.9	0.9
D13	1.7	2.3
D14	3.0	2.8
Criterion	-	4

Table 3-1: Dust Depositional Results – August 2018

* 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.

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

Exceedance of the EPA annual average criterion for dust deposition (insoluble solids) was recorded at site D8 (4.1 g/m².month). Site D8 is located on MACH Energy owned land. Rolling annual average for insoluble solids result not available for D7a, but likely to exceed in September 2018 (Gauge installed Sept 2017).

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.

Pun Data	Criterion	A-HV2	A-HV4	A-HV5			
Kun Date	μg/m³						
5/08/2018	-	73	13 ¹	28			
11/08/2018	-	128	32	25			
17/08/2018	-	102	28	20			
23/08/2018	-	65	37	47			
29/08/2018	-	114	39	31			
Monthly Mean	-	96	30	30			
Annual Rolling Average	90	83	43	39			

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

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 μ g/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 August 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 August 2018 are illustrated in Figure 5-1 and shown in Table 5-1



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

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

Date	APF2/EPA ID 1	APF4	APF5/EPA ID 2	OEH Muswellbrook NW	24hr Average	
		Daily Result		Daily Result	Limit (µg/m ³)	
1/08/2018	52.4	12.3	11.9	28.0	50	
2/08/2018	28.7	21.1	28.5	25.3	50	
3/08/2018	43.0		21.4	31.2	50	
4/08/2018	58.9		45.2	48.8	50	
5/08/2018	31.9	24.2	23.4	25.1	50	
6/08/2018	24.5	18.6	15.1	26.3	50	
7/08/2018	35.5	22.9	23.8	29.1	50	
8/08/2018	22.7	8.1	6.6	12.0	50	
9/08/2018	19.3	11.3	8.4	17.4	50	
10/08/2018	28.8	11.8	9.9	17.3	50	
11/08/2018	42.1	17.9	13.0	31.1	50	
12/08/2018	21.0	5.2	4.8	12.1	50	
13/08/2018	10.0	6.4	5.8	11.4	50	
14/08/2018	13.5	7.7	6.5	10.0	50	
15/08/2018	22.2	11.3	9.5	17.7	50	
16/08/2018	40.6	14.0	11.1	29.7	50	
17/08/2018	33.1	14.7	11.4	25.9	50	
18/08/2018	76.2	13.7	11.9	33.9	50	
19/08/2018	43.9	12.0	10.3	32.1	50	
20/08/2018	36.7	9.7	7.2	22.4	50	
21/08/2018	34.7	9.6	8.4	23.1	50	
22/08/2018	28.3	11.7	10.3	21.9	50	
23/08/2018	24.7	18.0	18.2	20.3	50	
24/08/2018	28.0	24.9	23.7	23.8	50	
25/08/2018	28.0	23.0	19.6	21.4	50	
26/08/2018	19.9	15.2	13.3	11.6	50	
27/08/2018	15.1	15.4	12.0	13.7	50	
28/08/2018	24.1	25.9	27.4	20.8	50	
29/08/2018	30.2	16.8	18.2	19.1	50	
30/08/2018	23.1	19.4	18.4	22.4	50	
31/08/2018	42.0	33.3	32.5	33.6	50	

6. Surface Water Monitoring

Monthly surface water quality sampling and field analysis was conducted on 30 August 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.

Station	рН	Electrical Conductivity (EC) (µs/cm) ¹	Total Suspended Solids (TSS) (mg/L)	Total Dissolved Solids (TDS) (mg/L)
W1	8.1	440	1	229
W2	8.2	430	3	230
W3	8.2	390	6	254
W4	7.8	2100	7	1340
W5	*	*	*	*
W6A	8.2	410	2	217
W7	*	*	*	*
W9	*	*	*	*
W11	8.3	4650	10	2770
W12	8.2	5000	2	2860
W13	*	*	*	*
W14	*	*	*	*
W15	7.6	380	5	254

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

*Dry or insufficient water to sample.

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 August 2018.

7. Groundwater Monitoring

Quarterly monitoring of groundwater is undertaken for depth to water (DTW), pH and electrical conductivity. Sampling was conducted in accordance with the *Department of Planning and Environment document Groundwater Monitoring Guidelines for Mine Sites within the Hunter Region,* as adapted from AS 5667.11 (1998) Guidance on sampling of ground waters and AS/NZS 5667.1 (1998) Water Quality – Sampling – Guidance on the Design of Sampling Programs, Sampling Techniques and the Preservation and Handling of Samples. Where monitoring bores could not be practically purged due to depth, large well volumes or slow recharge rates, water was extracted to achieve stability in field measurements before samples were extracted.

Quarerly sampling was conducted during August 2018; results are provided in Table 7-1 below.

Station	Date	Time	Comment	Depth to Stand Pipe (m)	Standpipe height (m)	Depth to Ground (m)	EC Field (uS/cm (25TRef)	pH Field
WRA1L	15/8/2018	10:25	EC Checked	5.12	0.38	4.74	3210	7.0
WRA1U	15/8/2018	10:30	DRY					
WRA2L	15/8/2018	9:20		18.35	0.97	17.38	5470	7.2
WRA2U	15/8/2018	9:25	DRY					
WRA3L	15/8/2018	9:35		17.51	1.05	16.46	14970	6.8
WRA3U	15/8/2018	9:40		6.48	0.98	5.5	8870	7.3
WRA6L	15/8/2018	11:05		3.93	0.53	3.4	5380	7.0
WRA6U	15/8/2018	11:10		4.74	0.99	3.75	10170	6.9
MPBH1 (Bore3)	14/8/2018	14:00	Brown Precipitate	9.96	0.36	9.6	467	7.1
MPBH2	14/8/2018	9:25		12.46	0.43	12.03	842	6.9
MPBH3 (Bore 2)	14/8/2018	10:30	EC Checked	12.32	0.37	11.95	3760	7.6
3500C500 (L)	14/8/2018	11:35		56.62	0.88	55.74	4050	7.4
3500C500 (S)	14/8/2018	11:40		25.76	0.88	24.88	4040	7.0
4500F000	14/8/2018	13:25		25.16	0.95	24.21	9000	6.9
5000D000 (S)	14/8/2018	12:20	Suspended Fines	83.56	0.89	82.67	756	7.0
5500D000	14/8/2018	12:45		66.33	0.96	65.37	3220	7.0
6500F500L	15/8/2018	12:25		52.87	0.97	51.9	3410	7.1
6500F500M	15/8/2018	12:30		54.39	0.97	53.42	2910	7.4
6500F500U	15/8/2018	12:35		33.74	0.97	32.77	5220	7.0
7000D000U	14/8/2018	10:40		6.32	1.05	5.27	6360	6.7
7000D000L	14/8/2018	10:45		19.08	1.05	18.03	1480	6.9
7500F000	14/8/2018	11:50		35.88	0.32	35.56	6240	7.8

Table 7-1 – MPO Annual Groundwater Samplin	g Results
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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 August 2018. Monitoring is next scheduled for September 2018.

9. Blast Monitoring

Results for August 2018 are presented in Table 9-1.

Date Fired	Time Fired	Vibration BVOA	Overpressure BVOA	Vibration BVOC	Overpressure BVOC	Vibration BVO2	Overpressure BV02
1/08/18	9:33	0.330 mm/s	94.6 DBL	0.370 mm/s	103.6 DBL	0.560 mm/s	111.6 DBL
2/08/18	15:18	0.920 mm/s	96.5 DBL	0.410 mm/s	93.6 DBL	0.940 mm/s	99.4 DBL
4/08/18	11:30	0.540 mm/s	94.8 DBL	0.270 mm/s	103.6 DBL	0.690 mm/s	100.8 DBL
9/08/18	9:00	1.590 mm/s	93.1 DBL	0.380 mm/s	85.1 DBL	1.830 mm/s	110.2 DBL
9/08/18	9:00	1.590 mm/s	93.1 DBL	0.380 mm/s	85.1 DBL	1.830 mm/s	110.2 DBL
10/08/18	14:10	0.240 mm/s	101.8 DBL	0.140 mm/s	92 DBL	0.710 mm/s	102.2 DBL
15/08/18	9:00	0.830 mm/s	101.6 DBL	0.380 mm/s	95.6 DBL	1.070 mm/s	105.7 DBL
16/08/18	16:30	0.320 mm/s	86.2 DBL	0.230 mm/s	106.6 DBL	0.450 mm/s	103 DBL
17/08/18	10:00	0.530 mm/s	95 DBL	0.250 mm/s	96.9 DBL	1.250 mm/s	97.6 DBL
21/08/18	9:04	0.540 mm/s	101.2 DBL	0.360 mm/s	106.2 DBL	0.760 mm/s	101.2 DBL
22/08/18	10:10	0.370 mm/s	94.7 DBL	0.180 mm/s	104 DBL	0.600 mm/s	100.5 DBL
24/08/18	9:10	0.910 mm/s	95.2 DBL	0.390 mm/s	91.3 DBL	1.470 mm/s	100.9 DBL
28/08/18	15:00	0.400 mm/s	92 DBL	0.150 mm/s	94.7 DBL	1.450 mm/s	100.9 DBL

Table 9-1 – MPO	Blast	Monitorina	Results	- August2018

Blast results complied with all criteria at each monitoring site.

10. Meteorological Monitoring

Weather data is measured continuously at the Kayuga Road (M-WS4). In addition to these parameters the weather station also measures wind, temperature (10m), solar radiation, humidity, atmospheric pressure, and sigma theta.

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