

Monthly Environmental Monitoring Report

July 2017

July 2017	1	Final	Klay Marchant	Beth Viertel	Klay Marchant
Date	Rev.	Status	Prepared By	Checked By	Approved By

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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.

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; 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**.

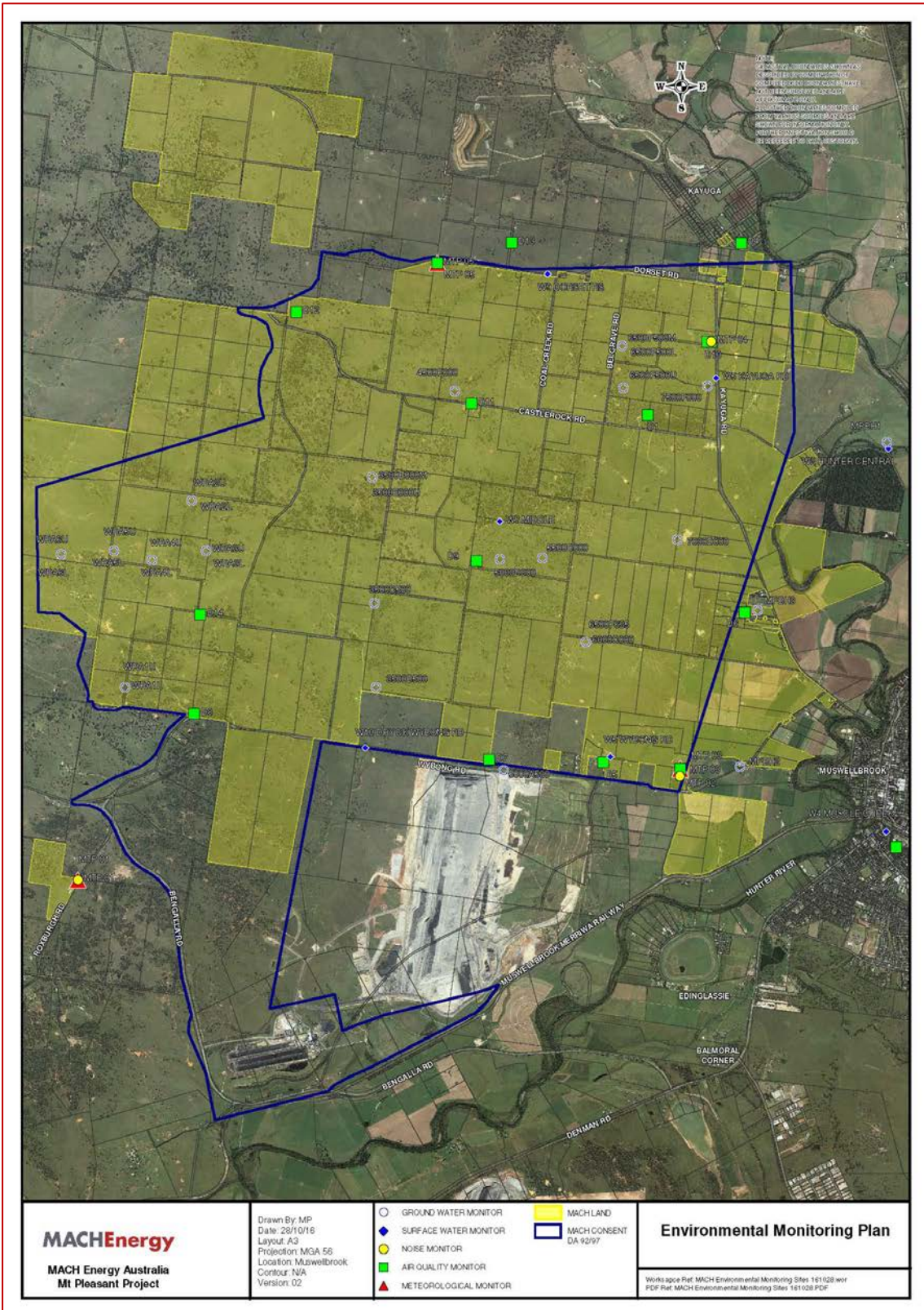


Figure 2-1 – MPO Environmental Monitoring Network

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 monitoring network comprises of 13 dust deposition gauges (DDG). Results for July are shown in **Table 3-1**.

Table 3-1: Dust Depositional Results – July 2017

Station	Depositional Dust (g/m ² .month)		Ratio of Insoluble Solids to Ash (%)	YTD Insoluble Solids (g/m ² .month)	Insoluble Solids Annual Rolling Average (g/m ² .month)
	Insoluble Solids	Ash			
D1	1.4	0.8	57	1.3	1.5
D3	1.6	0.9	56	2.0	1.7
D4	0.9	0.4	44	1.6	1.5
D5	5.1	3.5	69	3.2	2.9
D6	2.7	1.4	52	2.9	2.5
D7	10.2c	6.4c	63	6.6	6.6
D8	9.9c	3.8c	38	7.7	5.5
D9	1.6	0.7	44	1.9	1.6
D10	0.6	0.2	33	1.4	1.4
D11	2.0	1.0	50	1.6	1.5
D12	0.6	0.2	33	0.9	0.8
D13	2.6	1.3	50	3.9	3.0
D14	1.8	1.0	56	2.8	3.1
<i>Criterion</i>	-	-	-	-	4

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.

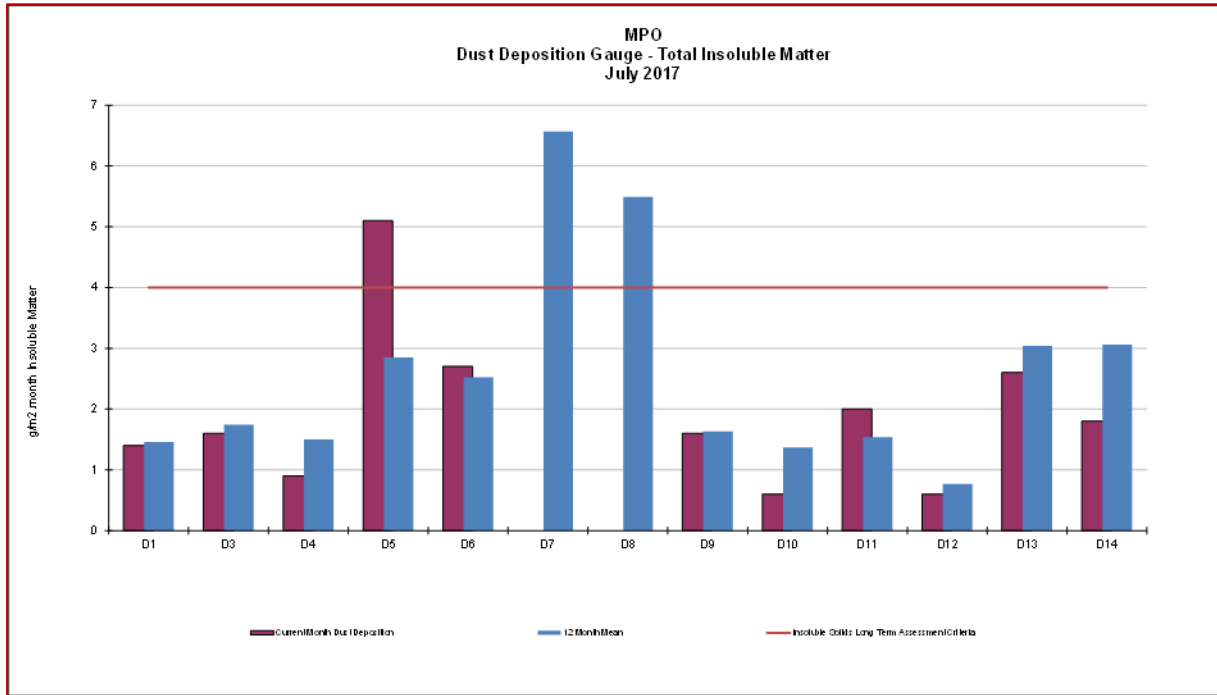


Figure 3-1: MPO DDG Total Insoluble Solids Monitoring Results – July 2017

Exceedance of the EPA annual average criterion for dust deposition (insoluble solids) was recorded at sites D7 (6.6g/m².month) and D8 (5.5g/m².month).

DDG water for D7 was recorded in field notes as being brown and turbid and containing insects and seeds. Also, the monthly dust deposition result of 10.2 g/m²/month significantly exceeded the annual average result at this site (6.6 g/m²/month) and as such the sample was considered likely to have been contaminated. Field notes for the D8 sample state that gauge water was brown, slightly turbid and contained insects and vegetation (seeds). The ash to insoluble solids ratio for the gauge was 38% which indicated that the contents were mainly organic material. As such, the sample was considered likely to have been contaminated. Also, this site was likely influenced by its close proximity to the Bengalla mine. Due to the likelihood of contamination D7 and D8 gauges analysed results did not contribute to the respective 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 – July 2017

Run Date	Criterion	A-PF2	M-WS4	A-PF5
	µg/m ³			
6/05/2017	-	31	9	Power Supply Interruption
12/05/2017	-	50	33	
18/05/2017	-	44	8	
24/05/2017	-	16	11	
30/05/2017	-	42	15	
Monthly Mean	-	36.6	15.2	
Annual Rolling Average	90	*42.0	*25.7	*22.7

*Year to date (YTD) average only available.

^Did not run (DNR). No available power at site.

HVAS unit A-PF5 did not run for any of the five scheduled run days in July due to a power supply issue. Therefore monthly mean and year to date average have not been influenced by the July sampling period. 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 MTP during July 2017.

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 2017 are illustrated in **Figure 5-1** and shown in **Table 5- 1**

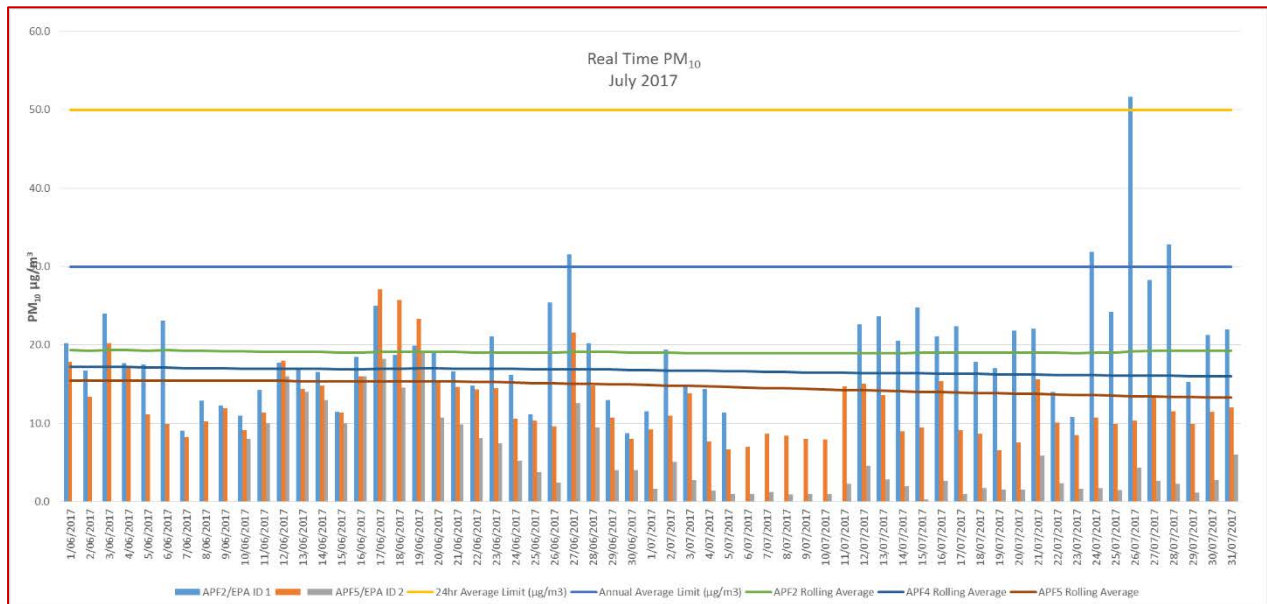


Figure 5-1 : MPO Daily Results from Palas Fidas

Table 5-1: MPO Palas Fidas Data – July 2017

Date	APF2/EPA ID 1	APF4	APF5/EPA ID 2	24hr Average Limit (µg/m3)
	Daily Result	Daily Result	Daily Result	
1/07/2017	11.6	9.2	1.6	50
2/07/2017	19.4	11.0	5.0	50
3/07/2017	14.9	13.9	2.8	50
4/07/2017	14.4	7.7	1.4	50
5/07/2017	11.4	6.7	1.0	50
6/07/2017	Power supply interruption	6.9	1.0	50
7/07/2017		8.7	1.3	50
8/07/2017		8.4	1.0	50
9/07/2017		8.0	1.0	50
10/07/2017		8.0	1.0	50
11/07/2017		14.7	2.3	50
12/07/2017	22.6	15.1	4.6	50
13/07/2017	23.7	13.6	2.9	50
14/07/2017	20.6	9.0	2.0	50
15/07/2017	24.8	9.5	0.3	50
16/07/2017	21.1	15.3	2.7	50
17/07/2017	22.4	9.2	1.0	50
18/07/2017	17.8	8.7	1.7	50
19/07/2017	17.0	6.6	1.5	50
20/07/2017	21.8	7.5	1.6	50
21/07/2017	22.1	15.6	5.8	50
22/07/2017	14.0	10.1	2.3	50

23/07/2017	10.9	8.5	1.6	50
24/07/2017	31.9	10.8	1.7	50
25/07/2017	24.2	9.9	1.5	50
26/07/2017	51.7	10.3	4.4	50
27/07/2017	28.3	13.5	2.7	50
28/07/2017	32.9	11.5	2.3	50
29/07/2017	15.3	10.0	1.1	50
30/07/2017	21.3	11.5	2.8	50
31/07/2017	22.0	12.0	6.0	50

6. Surface Water Monitoring

Surface water quality is monitored on a monthly basis at nine (9) sites. **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 2017

Sampling Point	pH	Electrical Conductivity (µs/cm)	Total Suspended Solids (mg/L)
W1 - Hunter Upstream	8.1	580	2
W2 - Hunter Central Site	8.0	710	1
W4 - Muscle Creek	7.9	2500	2
W5 – Kayuga Road	*	*	*
W6 - Hunter Downstream	^	^	^
W7 – Middle MTP near DDG9	*	*	*
W8 – Wybong Rd near DDG5	*	*	*
W9 – Dorset Rd – 2 nd culvert	*	*	*
W10 – Dry Creek Wybong Rd	*	*	*
<i>Criteria</i>	6.5 – 8.5	125 – 2200	<50
* dry or insufficient water ^ no suitable access point			

Five of the nine monitoring locations were found to be dry or had insufficient water on the sampling day. Sampling was able to be undertaken at W1, due to a new site access agreement W6 was not sampled as no suitable access point was identified. W4 exceeded the assessment criterion for EC. All of the other sites sampled met the adopted criteria during July 2017.

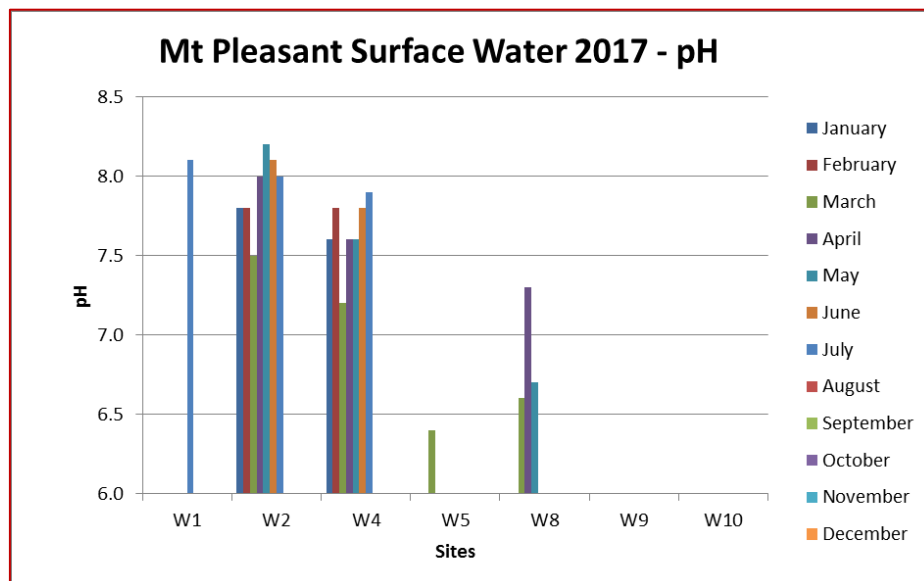


Figure 6-1 – MPO Surface Water pH

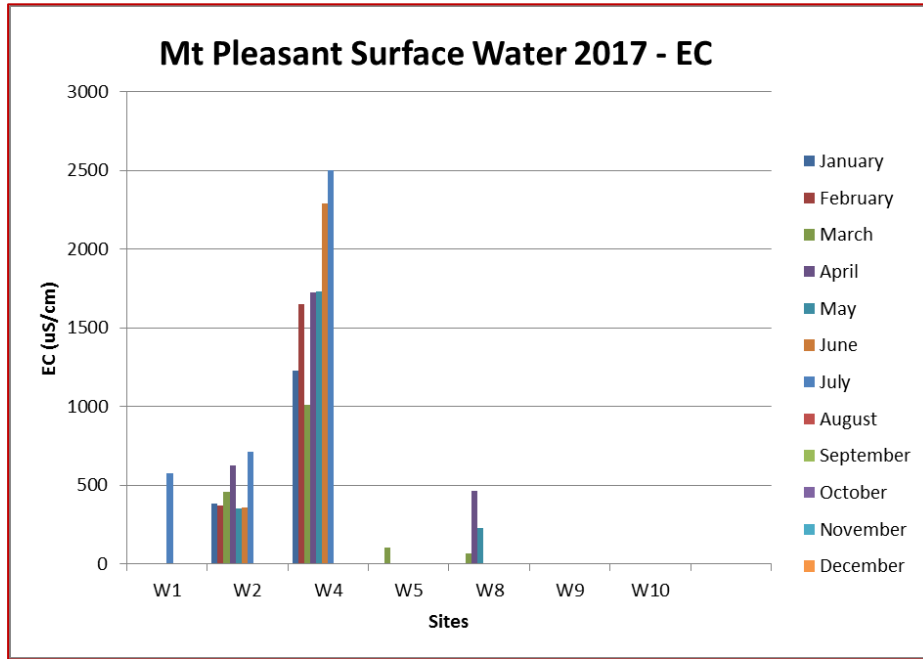


Figure 6-2 – MPO Surface Water EC

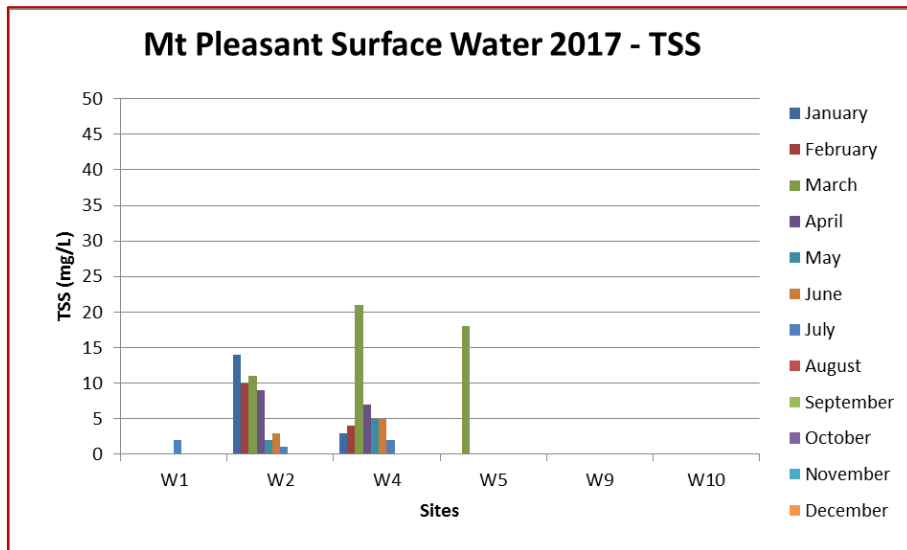


Figure 6-3 – MPO Surface Water TSS

7. Groundwater Monitoring

Groundwater monitoring did not occur during July 2017. The next quarterly sampling event is scheduled for August 2017 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. The next round of quarterly monitoring is due in September 2017. All monitoring measurements are undertaken during day, evening and night periods. Construction was limited to day time hours only during July. Additional Out of Hours Construction Monitoring was undertaken in July 2017. Noise levels from MPO complied with all criteria at each monitoring location during all monitoring periods.

9. 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 2017.