

Mount Pleasant Operation Monthly Environmental Monitoring Report

July 2025



1. Introduction

The Mount Pleasant Operation (MPO) is located within 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 operations, respectively.

The purpose of this report is to provide a monthly update of monitoring data in accordance with the requirements of NSW Environmental Protection Licence (EPL) 20850, Section 66(6) of the *Protection of the Environment Operations Act 1997 (POEO Act)*, the MPO Development Approval (DA 92/97) and the MPO Development Consent (SSD 10418).

Table 1-1 – Mount Pleasant Operation

Name of Operation	Mount Pleasant Operation
Name of Licensee	MACH Energy Australia Pty Ltd
Environmental Protection Licence	20850
Project Approval	DA 92/97 and SSD 10418
Reporting Period Start Date	1 July 2025
Reporting Period End Date	31 July 2025
Date All Data Received	14 August 2025

Links to three key regulatory documents are provided here:

- Mount Pleasant Operation Development Application Approval DA 92/97; and
- Mount Pleasant Operation Development Consent SSD 10418.

2. Monitoring Requirements

The MPO EPL 20850 specifically requires the monitoring of:

- 2 x Continuous particulate monitors
- Noise monitoring.
- Blast monitoring; and
- Meteorological monitoring.

Monitoring of sites not required by the EPL are conducted in accordance with the respective Management Plans as required by Project Approval (DA 92/97) and Development Consent (SSD 10418).

All monitoring is undertaken by suitably qualified and experienced person(s). The MPO Environmental Monitoring Network is shown in the following figures:

- **Figure 2-1** shows MPO attended noise monitoring locations and Noise Assessment Groups (NAGs).
- Figure 2-2 shows the MPO Air Quality Monitoring network.
- Figure 2-3 shows the MPO Blast Monitoring Locations.
- Figure 2-4 shows the MPO Groundwater Monitoring network; and
- Figure 2-5 shows the MPO Surface Water Monitoring network.

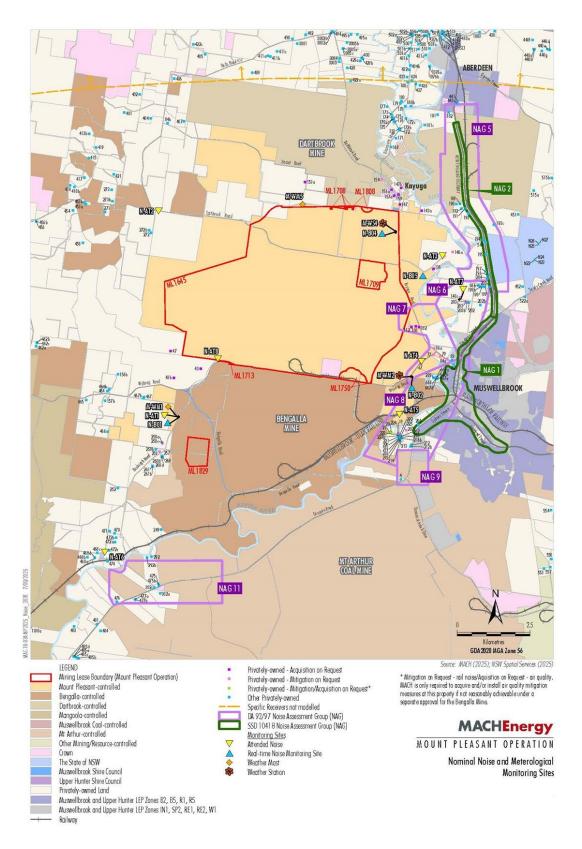


Figure 2-1 – MPO Attended Noise Monitoring Assessment Groups and Locations - Approved (SSD 10418) Water Management Plan

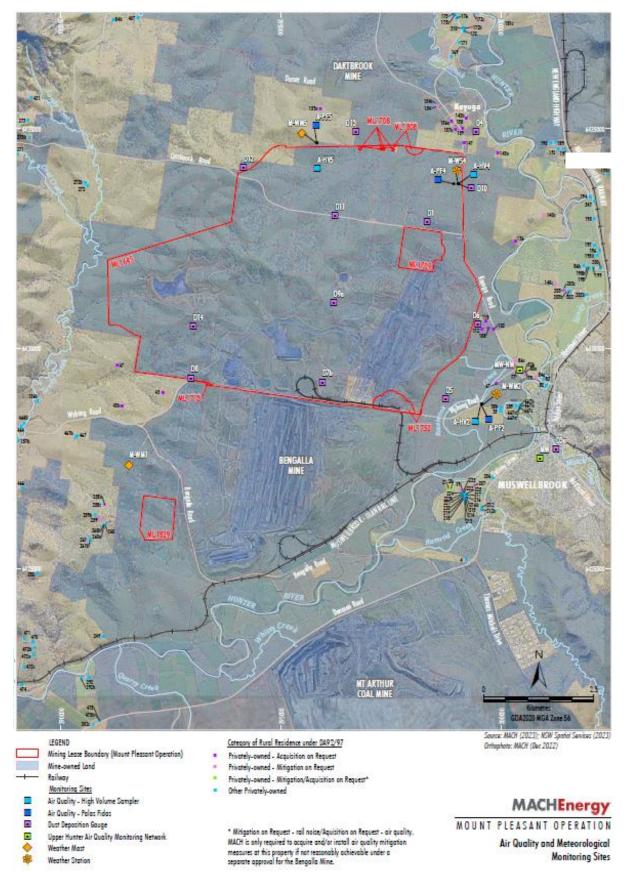


Figure 2-2 – MPO Air Quality and Meteorological Monitoring Network - Approved (SSD 10418) Water Management Plan

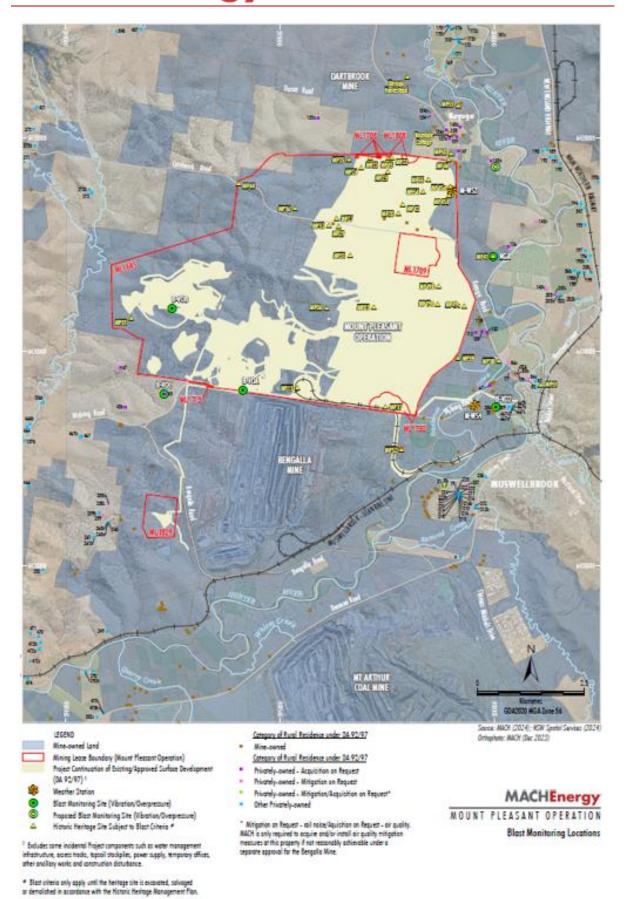


Figure 2-3 – MPO Blast Monitoring Locations

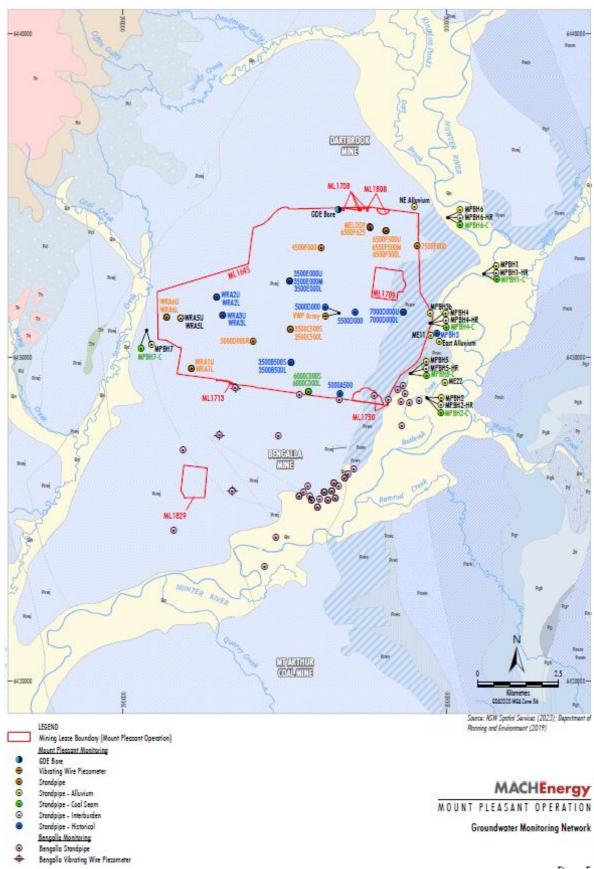


Figure 2-4 – MPO Groundwater Monitoring Network – Approved (SSD 10418) Water Management Plan

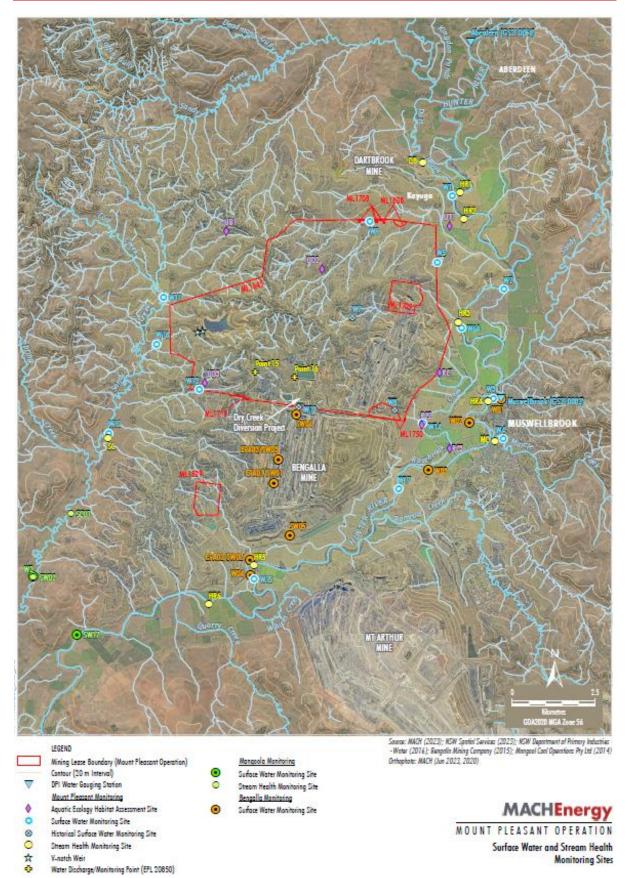


Figure 2-5 – MPO Surface Water Monitoring Network - Approved (SSD 10418) Water Management Plan



3. Meteorological Monitoring

Weather data is measured continuously¹ at the Kayuga Road (M-WS4) and the Wybong Road (M-WS2) meteorological stations. In addition to air quality parameters (particulate matter less than 10 μ m and less than 2.5 μ m (PM₁₀ and PM_{2.5})), the weather stations measure wind speed and direction, temperature (at 2 metres (m) and 10m), temperature inversion (using the sigma theta method), solar radiation, relative humidity, rainfall, and atmospheric pressure.

Meteorological data was captured at M-WS2 and M-WS4 during the monitoring period. Throughout July 2025, there was 41.8mm and 51.2mm of rainfall recorded at M-WS2 and M-WS4, respectively.

4. Dust Depositional Monitoring

4.1 Methodology

The dust deposition monitoring network comprises of thirteen (13) dust deposition gauges (DDG) that are collected on a monthly basis. Details of the monitoring locations are shown in Figure 2-2.

4.2 Assessment Criteria

Dust Deposition were assessed as per the MPO Air Quality and Greenhouse Gas Management Plan (MACH Energy, 2024). Dust deposition was monitored according to the OEH's Approved Methods for the Sampling and Analysis of Air Pollutants in New South Wales (DECC 2007), which references Australian Standard (AS)/New Zealand Standard (NZS) 3580.10.1:2016 Methods for Sampling and Analysis of Ambient Air: Determination of particulate matter – Deposited matter – Gravimetric Method.

DDG samples can be contaminated by a variety of means, notably by the presence of insects and bird droppings. Results for contaminated gauges were not included in the calculation of the annual averages as this would result in skewed or misleading results for the purpose of dust deposition assessment. The Australian Standard does not provide criteria for the determination of contamination of a DDG. AECOM determines a gauge sample to be contaminated only after reference to field observation sheets, historical monitoring location data, laboratory notes and results, prevailing atmospheric conditions, and feedback from field technicians. For example, a gauge sample with a statistically abnormally high insoluble solids result, a low ash residue result (indicating an elevated level of organic matter) and field notation that bird droppings or insects were present is likely to be considered contaminated.

While the new SSD 10418 doesn't explicitly mention dust deposition gauges, there's a notable shift in regulations towards embracing high volume air sampler results and continuous air quality monitoring programs, with a specific focus on total particulate matter, PM10, and PM2.5. These modern monitoring techniques offer a more comprehensive approach to environmental surveillance, furnishing real-time data and insights into air quality conditions. By harnessing these advanced methods, MPO can ensure the implementation of robust monitoring practices. This transition from the previous development consent DA92/97

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¹ The EPA's Ambient air monitoring guidance note (Guidance Note) states that after allowing sufficient down time for routine maintenance and calibrations a continuous monitoring system should be able to achieve at least a 95% availability.



(which is yet to be surrendered) to SSD 10418 signifies a proactive measure towards upholding environmental compliance. Therefore, Dust Depositional Monitoring will continue to be included in monthly reporting as per DA92/97 up until surrender where it will be discontinued. Site D7b is located within close proximity to the northern boundary of a neighbouring mining operation and thus can be influenced by this site. D7b will continue to be monitored, however will not be used to assess compliance or to represent residential receivers in the area.

4.3 Results

Dust Deposition Data was conducted by AECOM during the monitoring period. Sample analysis was performed by ALS, a National Accreditation and Testing Authority (NATA) accredited laboratory.

Results are summarised in **Table 4-1**. Annual rolling averages have been provided as an indication of performance in the 12 months leading up to the current monitoring period as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

Table 4-1: Dust Depositional Results - July 2025

Location	Monthly Insoluble Solids (g/m².month)	Insoluble Solids Annual Rolling Average (g/m².month)		
D1	2.3	3.0		
D3	1.2	1.4		
D4	0.4	1.1		
D5a	2.7	2.2		
D6	1.8	2.0		
D7b	18.2**	7.5		
D8	4.4	4.9		
D9a	2.7	3.9		
D10	1.0	1.2		
D11	2.5	4.4		
D12	0.9	1.4		
D13	1.2	2.1		
D14	3.1	4.0		
Criterion	-	4.0		

Notes:

Results in **bold** indicate an elevated measurement of adopted assessment criteria.

^{*} Insufficient monthly results to calculate annual average

^{**} Contaminated results



Figure 4-1 compares the monthly insoluble solids results to the annual averages for each dust gauge and the assessment criterion.

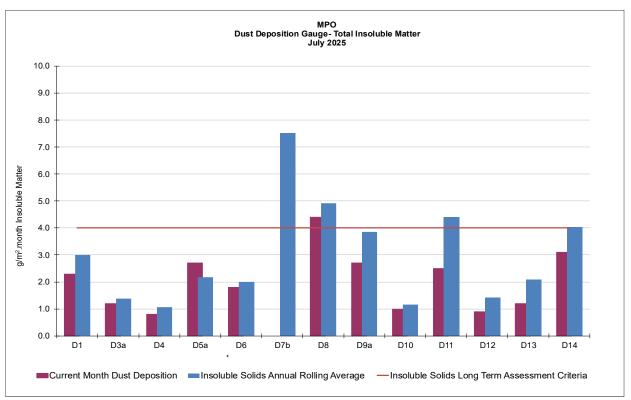


Figure 4-1: MPO Dust Deposition Monthly Results and Annual Rolling Average

5. Total Suspended Particulates

5.1 Methodology

Three Total Suspended Particulate Matter (TSP) High-Volume Air Samplers (HVAS) are run for 24 hours every six days. The locations are displayed in **Table 5-1** below.

Table 5-1 Total Suspended Particulate Monitoring Sites

ID	Description
A-PF2	Reilly's
M-WS4	Kayuga Road Met Station
A-PF5	Athlone

5.2 Assessment Criteria

Total Suspended Particulates were assessed as per the MPO Air Quality and Greenhouse Gas Management Plan (MACH Energy, 2024) 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 is assessed against the guidelines defined in the EPA Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales (EPA 2016), Project Approval DA 92/97 and Development Consent SSD 10418. The DA 92/97 and SSD 10418 both specify an annual average project contribution plus background criterion of 90µg/m3.

5.3 Results

Sample collection was undertaken by AECOM with sample analysis performed by ALS, a NATA accredited laboratory. TSP results for the monitoring period are provided in Table 5-2. Twelve month rolling averages to the current month are provided as an indication of performance as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

Table 5-2 Total Suspended Particulate Monitoring Data – July 2025

	Assessment	TSP μg/m³				
Run Date	Criterion	HVAS A- PF2	HVAS A-PF5	HVAS M-WS4		
05/07/2025	-	26	46.4	20.2		
11/07/2025		77.8	7.1	7.8		
17/07/2025		54.4	57.4	78.7		
23/07/2025	-	104	9.7	15.5		
29/07/2025	-	92.2	8.7	14.6		
*Monthly Mean	-	70.9	25.9	27.4		
Annual Rolling Average	90	52	49	38		

Notes:

6. Real Time Air Quality Monitoring

6.1 Methodology

Continuous particulate matter monitoring less than 10 μ m (PM10) and particulate matter less than 2.5 μ m (PM2.5) was conducted continuously at three locations (one utilised for management only) at MPO during the monitoring period.

6.2 Assessment Criteria

The EPA identification numbers 1 and 2 refer to monitors installed on Wybong Road (A-PF2) and Dorset Road (A-PF5), respectively. In addition, a third monitor (A-PF4) is installed on Kayuga Road with data used for management purposes only. Project Approval Schedule 3, Condition 20 of DA 92/97 and Development Consent Schedule 2, Condition B28 of SSD 10418 specify a limit for PM10 of 50 μ g/m3 and PM2.5 of 25 μ g/m3 in a 24-hour daily average.

6.3 Results

Real time PM10 and PM2.5 annual rolling averages to the current month have been provided in **Figures 6.2 and 6.4**, respectively. **Figure 6.1 and Table 6.1** below show the real-time PM₁₀ 24 hour daily average results at MPO air quality monitoring sites during the

^{*}Results have been rounded to one decimal place for reporting purposes where applicable. Results in **bold** indicate an elevated measurement of adopted assessment criteria.



monitoring period. Real time PM_{2.5} 24-hour average results during the reporting period are presented in **Figure 6.3** and **Table 6.2**.

Table 6-1: MPO Continuous Particulate PM₁₀ Data - July 2025

D.1	A-PF2/ EPA ID 1	A-PF4	A-PF5/ EPA ID 2	A-PF2, A-PF4, A- PF5
Date	24	24 Hour Average Limit (µg/m³)		
01/07/2025	12.84	12.21	13.16	50
02/07/2025	8.65	6.62	6.54	50
03/07/2025	8.53	5.66	5.61	50
04/07/2025	7.81	5.68	5.33	50
05/07/2025	8.48	7.74	8.11	50
06/07/2025	13.40	14.12	15.17	50
07/07/2025	14.32	10.07	8.87	50
08/07/2025	12.80	7.03	6.48	50
09/07/2025	13.84	9.25	8.04	50
10/07/2025	44.57	12.15	10.40	50
11/07/2025	18.96	9.18	8.44	50
12/07/2025	15.05	7.64	7.07	50
13/07/2025	12.38	7.78	6.72	50
14/07/2025	16.08	8.70	7.02	50
15/07/2025	21.03	9.09	7.54	50
16/07/2025	13.80	7.29	6.46	50
17/07/2025	13.04	10.56	9.16	50
18/07/2025	27.39	35.15	25.65	50
19/07/2025	19.68	33.06	19.64	50
20/07/2025	16.75	15.48	12.38	50
21/07/2025	15.16	12.42	14.30	50
22/07/2025	13.01	14.35	21.06	50
23/07/2025	18.15	15.48	17.49	50
24/07/2025	17.52	7.14	6.56	50
25/07/2025	8.82	8.07	8.41	50
26/07/2025	15.48	19.61	23.21	50
27/07/2025	10.73	6.88	6.25	50
28/07/2025	34.26	5.37	5.09	50
29/07/2025	26.22	5.78	5.17	50
30/07/2025	14.90	14.69	13.95	50
31/07/2025	9.88	12.47	12.76	50

Results in **bold** indicate an elevated measurement of adopted assessment criteria.

Results with "- "indicate dates where data was affected by maintenance or servicing (scheduled and unscheduled)



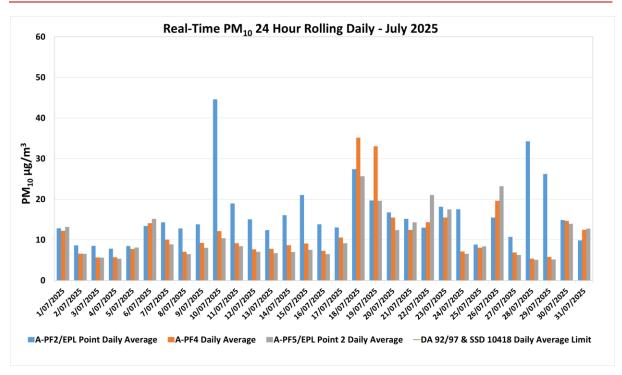


Figure 6-1: Real-time PM₁₀ 24 Daily Average Results for July 2025.

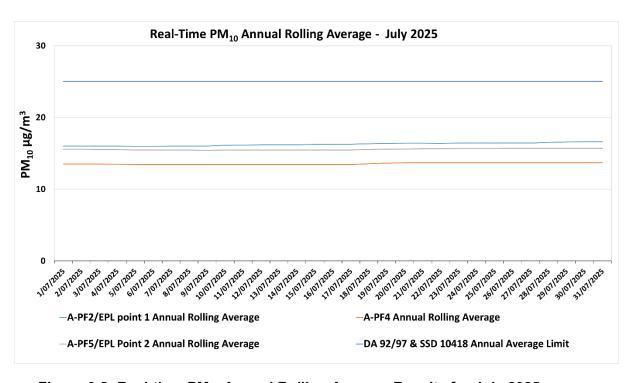


Figure 6-2: Real-time PM₁₀ Annual Rolling Average Results for July 2025.



Table 6-2: MPO Palas Fidas PM_{2.5} Data – July 2025

Date	A-PF2/EPA ID 1	A-PF4	A-PF5/EPA ID 2	A-PF2, A-PF4, A-PF5 24 Hour Average
	24-	hour Average R	esult	Limit (µg/m³)
01/07/2025	5.89	5.42	4.98	25
02/07/2025	3.50	3.20	3.04	25
03/07/2025	2.85	2.52	2.55	25
04/07/2025	3.16	2.78	2.67	25
05/07/2025	3.77	3.47	3.21	25
06/07/2025	5.28	5.16	4.82	25
07/07/2025	4.49	3.93	3.59	25
08/07/2025	3.63	3.08	2.94	25
09/07/2025	3.66	3.17	3.00	25
10/07/2025	7.38	3.54	3.30	25
11/07/2025	3.97	3.16	3.07	25
12/07/2025	3.94	3.25	3.17	25
13/07/2025	4.08	3.49	3.25	25
14/07/2025	3.97	3.31	3.06	25
15/07/2025	4.56	3.41	3.10	25
16/07/2025	4.03	3.25	3.06	25
17/07/2025	4.09	3.64	3.28	25
18/07/2025	5.95	6.31	5.14	25
19/07/2025	5.78	6.84	5.29	25
20/07/2025	5.77	4.97	4.28	25
21/07/2025	5.71	4.54	4.40	25
22/07/2025	5.23	5.44	6.76	25
23/07/2025	5.92	5.27	5.51	25
24/07/2025	4.26	3.11	2.99	25
25/07/2025	3.50	3.20	3.08	25
26/07/2025	4.76	5.20	5.13	25
27/07/2025	3.25	2.82	2.70	25
28/07/2025	5.15	2.57	2.52	25
29/07/2025	4.29	2.65	2.56	25
30/07/2025	4.25	4.08	3.98	25
31/07/2025	3.88	4.66	4.32	25

Results in **bold** indicate an elevated measurement of adopted assessment criteria.

Results with "- "indicate dates where data was affected by maintenance or servicing (scheduled and unscheduled)



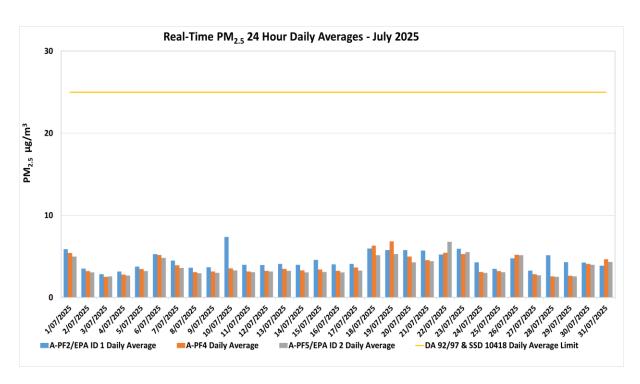


Figure 6-3: Real-time PM_{2.5} 24 hour Daily Average Results for July 2025.

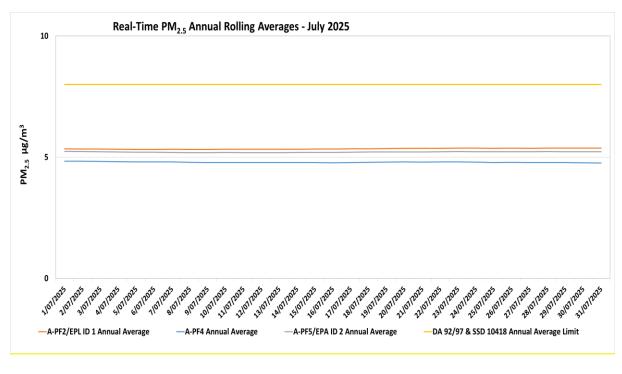


Figure 6-4: Real-time PM_{2.5} Annual Rolling Average Results for July 2025.



7. Surface Water Monitoring

7.1 Methodology

Surface water quality is monitored at fourteen (14) sites on a monthly basis, with additional monitoring conducted if triggered by a rain event. A more comprehensive suite of analysis is performed at these sites on a quarterly basis.

7.2 Assessment Criteria

Surface waters were assessed as per the <u>MPO Water Management Plan</u> (MACH Energy, 2025) in accordance with site specific trigger values that have been developed using the <u>ANZECC</u> (2000) guidelines for sites that contain a minimum of two years of monthly data. Sites with insufficient data are assessed on default trigger values adopted from ANZECC (2000) guidelines.

In accordance with the MPO Water Management Plan (WMP) Table 26 (MACH Energy, 2024) if a water quality indicator at a potential impact monitoring location or at a downstream receiving water monitoring location is above (or outside the range) of the site-specific trigger value for three consecutive sampling events an investigation is required.

7.3 Results

Surface water monitoring was conducted by AECOM during the monitoring period. Laboratory analysis was performed by ALS NATA accredited laboratory. Monthly monitoring results for pH, EC, TSS and Total Dissolved Solids (TDS) are presented in **Table 7-1**.

Table 7-1 - MPO Monthly Surface Water Monitoring Results - 30 July 2025

Station	рН	Electrical Conductivity (EC) (μs/cm) ¹	Total Dissolved Solids (TDS) (mg/L)	Total Suspended Solids (TSS) (mg/L)
W1	8.2	437	220	6.7
W2	8.2	467	240	12
W3	8.3	463	240	14
W4	7.7	1980	1100	6.1
W5	*	*	*	*
W6A	8.2	455	230	8.6
W9	*	*	*	*
W11	8.0	3900	2000	<5
W12	8.1	4600	2600	11
W13	8.0	6340	3500	15
W14	*	*	*	*
W15	8.3***	466	240	19
W16	8.4	8460	4900	6.2
W17	8.2	477	240	18

Note: Results in **bold** indicate exceedances of adopted assessment criteria.

^{*}Dry or insufficient water to sample.

^{**} No access due to track conditions.

^{***} Investigation Required

¹ Results have been rounded in accordance with the In-house method Q4AN(EV)-332-WI2 (EC).



This is the third consecutive sampling event where pH levels have been above trigger levels for W15. An investigation and reporting will be undertaken in accordance with the MPO Water Management Plan.

8. Groundwater Monitoring

No groundwater sampling was undertaken in July 2025. Next annual and quarterly groundwater sampling is scheduled for August 2025.

9. Noise Monitoring

9.1 Methodology

Attended noise monitoring was undertaken during the monitoring period at eight (8) monitoring locations as per the <u>MPO Noise Management Plan</u> (MACH Energy, 2024) in accordance with DA 92/97, SSD 10418 and EPL 20850.

9.2 Results

The results for nighttime attended noise monitoring against noise criteria is shown in **Table 9-1**; **Table 9-2**; and **Table 9-3**.

Table 9-1 – L_{A1,1min} Generated by MPO: Attended Night Monitoring – 17 and 18 July 2025

Location	Start Date and Time	MPO Only L _{A1,1min} dB ^{2.4}	Criterion dB	Wind Speed m/s Direction °	Criterion Applies ¹	Stability Class	Exceedance dB ³
N-AT1	1:42am	IA	45	0.7 / 105	Yes	F	No
N-AT2	11.05pm	32	45	2.1 / 290	Yes	Е	No
N-AT3	11:38pm	27	45	1.2 / 257	Yes	F	No
N-AT4	12:04am	IA	45	0.9 / 083	Yes	D	No
N-AT5	12:25am	IA	45	1.4 / 132	Yes	Е	No
N-AT6	1:19am	IA	45	1.7 / 196	Yes	E	No
N-AT7	10:25pm	27	45	1.4 / 263	Yes	F	No
N-AT8	12:52am	IA	NA ₂	1.2 / 018	NA ⁶	D	NA ²

Notes:

As per Condition L2.3 of EPL 20850, noise emission limits do not apply during wind speeds greater than 3m/s at 10m above ground level, or stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level, or stability category G temperature inversion conditions.

^{2.} Estimated or measured L_{A1,1minute} attributed to MPO.

^{3.} NA in exceedance column means meteorological conditions outside those specified in Condition L2.3 of EPL 20850 and thus criterion is not applicable.

^{4.} IA = inaudible; and

^{5.} Bold results indicate exceedance of criteria.

^{6.} This is not a compliance monitoring location.



Table 9-2 – L_{Aeq,15min} Generated by MPO: Attended Night Monitoring – 17 and 18 July 2025

Location	Start Date and Time	MPO Only L _{A1,1min} dB ^{2,4}	Criterion dB	Wind Speed m/s Direction °	Criterion Applies ¹	Stability Class	Exceedance dB ³
N-AT1	1:42am	IA	37	0.7 / 105	Yes	F	No
N-AT2	11.05pm	29	35	2.1 / 290	Yes	E	No
N-AT3	11:38pm	24	40	1.2 / 257	Yes	F	No
N-AT4	12:04am	IA	38	0.9 / 083	Yes	D	No
N-AT5	12:25am	IA	37	1.4 / 132	Yes	Е	No
N-AT6	1:19am	IA	35	1.7 / 196	Yes	E	No
N-AT7	10:25pm	24	37	1.4 / 263	Yes	F	No
N-AT8	12:52am	IA	NA ²	1.2 / 018	NA ⁶	D	NA ²

Notes:

- 1. As per Condition L2.3 of EPL 20850, noise emission limits do not apply during wind speeds greater than 3m/s at 10m above ground level, or stability category F temperature inversion conditions and wind speeds greater than 2m/s at 10m above ground level, or stability category G temperature inversion conditions.
- 2. Estimated or measured L_{Aeq,15minute} attributed to MPO.
- 3. IA = inaudible; and
- Bold results indicate exceedance of criteria.
- 5. This is not a compliance monitoring location.

Table 9-3 – L_{Aeq, period} Cumulative Noise: Attended Night Monitoring – 17 and 18 July 2025

Location	Start Date and Time	Measured Mining Only L _{Aeq,}	Cumulative Noise Criterion LAeq dB	Exceedance dB
N-AT1	1:42am	38	40	No
N-AT2	11.05pm	29	40	No
N-AT3	11:38pm	24	40	No
N-AT4	12:04am	IA	40	No
N-AT5	12:25am	29	40	No
N-AT6	1:19am	32	40	No
N-AT7	10:25pm	24	40	No
N-AT8	12:52am	IA	NA ²	NA ²

Notes:

- 1. These are the results for MPO and all other mining sources. 15-minute measurements have been assumed to apply across the entire night period as a conservative measure and to represent "worst case" results; and
- By definition, cumulative noise refers to two or more noise sources. If only one other source of mining is audible, or if MPO is inaudible, the measured cumulative noise defined here is 'Nii'.
- 3. NA in exceedance column means criterion was not applicable due to atmospheric conditions.
- 4. This is not a compliance monitoring location.



10. Blast Monitoring

There were thirteen (13) blast events (a total of 56 blasts YTD). Results are presented in **Table 10-1**. All blast results during this monitoring period were below the criteria stated in Schedule 3, Condition 10 of DA 92/97, Schedule 2; Condition B12 of SSD 10418; and L5 of EPL 20850.

Table 10-1 - MPO Blast Monitoring Results - July 2025

Day & Date Fired	Time Fired	BVOC Vibration (mm/s)	BVOC Overpressure (dBL)	BVO2 Vibration (mm/s)	BVO2 Overpressure (dBL)	Blast Fume Compliant
01/07/25	16:58	0.320 mm/s	113 DBL	0.400 mm/s	113.5 DBL	Υ
02/07/2025	15:05	0.160 mm/s	104.5 DBL	0.200 mm/s	108 DBL	Υ
03/07/2025	11:33	0.170 mm/s	105.9 DBL	0.340 mm/s	99.9 DBL	Y
09/07/2025	16:56	1.200 mm/s	95 DBL	0.530 mm/s	104 DBL	Υ
15/07/2025	14:52	1.230 mm/s	102.1 DBL	0.400 mm/s	102 DBL	Υ
17/07/2025	10:21	0.710 mm/s	101.8 DBL	0.680 mm/s	103.2 DBL	Υ
18/07/2025	12:46	0.050 mm/s	94.5 DBL	0.100 mm/s	84.7 DBL	Υ
21/07/2025	15:37	0.210 mm/s	97.8 DBL	0.220 mm/s	90.6 DBL	Υ
24/07/25	15:13	1.450 mm/s	105 DBL	1.030 mm/s	101.8 DBL	Υ
25/07/25	15:24	0.240 mm/s	90.4 DBL	0.240 mm/s	78.4 DBL	Υ
28/07/25	09:15	0.370 mm/s	106.2 DBL	0.230 mm/s	103 DBL	Υ
30/07/25	11:13	0.340 mm/s	96 DBL	0.310 mm/s	88.7 DBL	Υ
31/07/25	10:36	0.130 mm/s	95.1 DBL	0.160 mm/s	89.3 DBL	Υ

END OF REPORT