

## **Mount Pleasant Operation Monthly Environmental Monitoring Report**

**September 2024**

## 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**

<b>Name of Operation</b>	Mount Pleasant Operation
<b>Name of Licensee</b>	MACH Energy Australia Pty Ltd
<b>Environmental Protection Licence</b>	20850
<b>Project Approval</b>	DA 92/97 and SSD 10418
<b>Reporting Period Start Date</b>	1 September 2024
<b>Reporting Period End Date</b>	30 September 2024
<b>Date All Data Received</b>	08 November 2024

Links to three key regulatory documents are provided here:

- [MACH Energy Environment Protection Licence EPL 20850; and](#)
- [Mount Pleasant Operation Development Application Approval DA 92/97; and](#)
- [Mount Pleasant Operation Development Consent SSD 10418.](#)

## 2. Monitoring Requirements

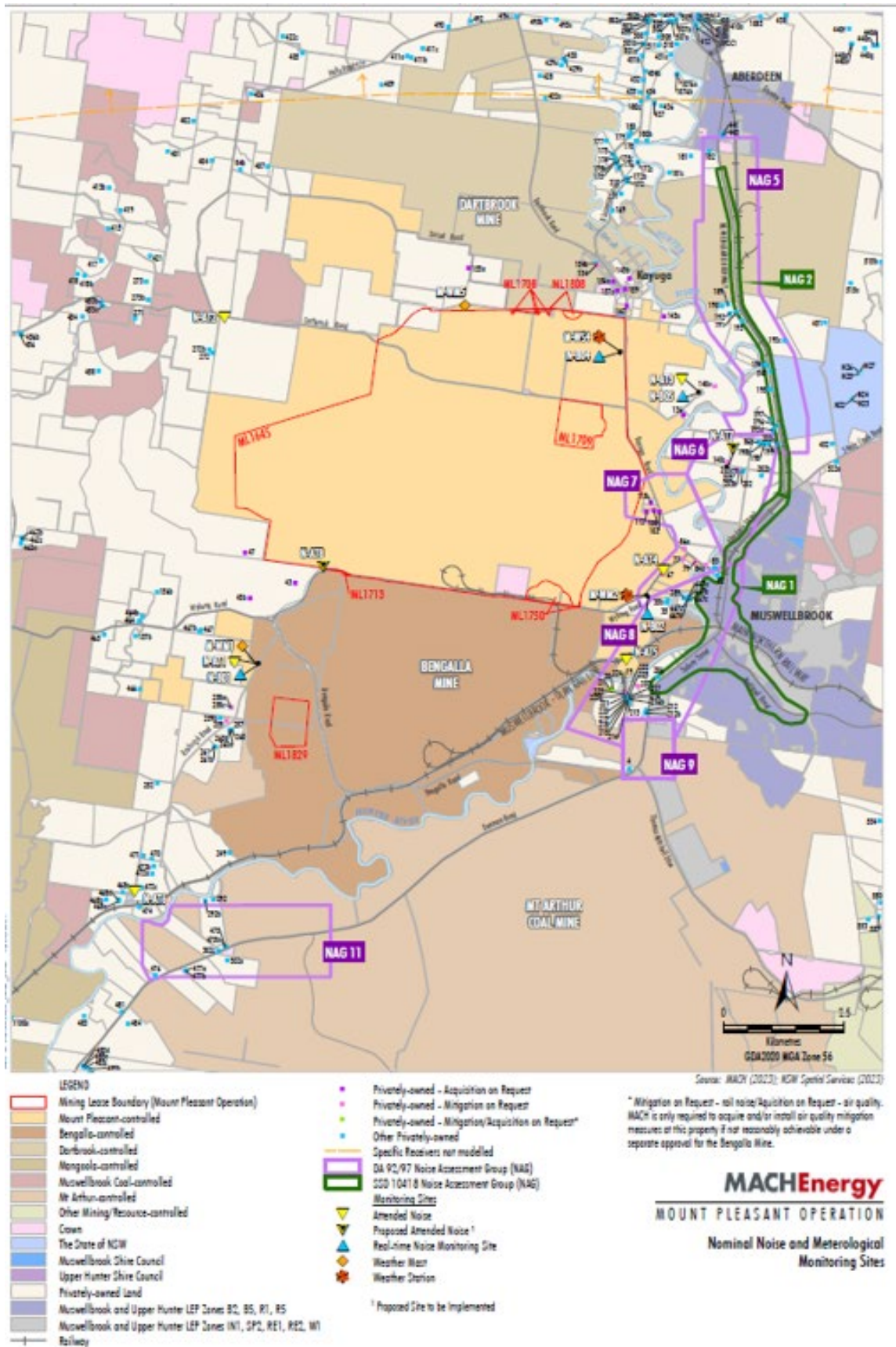
The MPO EPL 20850 specifically requires the monitoring of:

- 2 x Palas Fidas Air Quality Monitoring sites.
- Noise monitoring.
- Blast monitoring; and
- Meteorological monitoring.

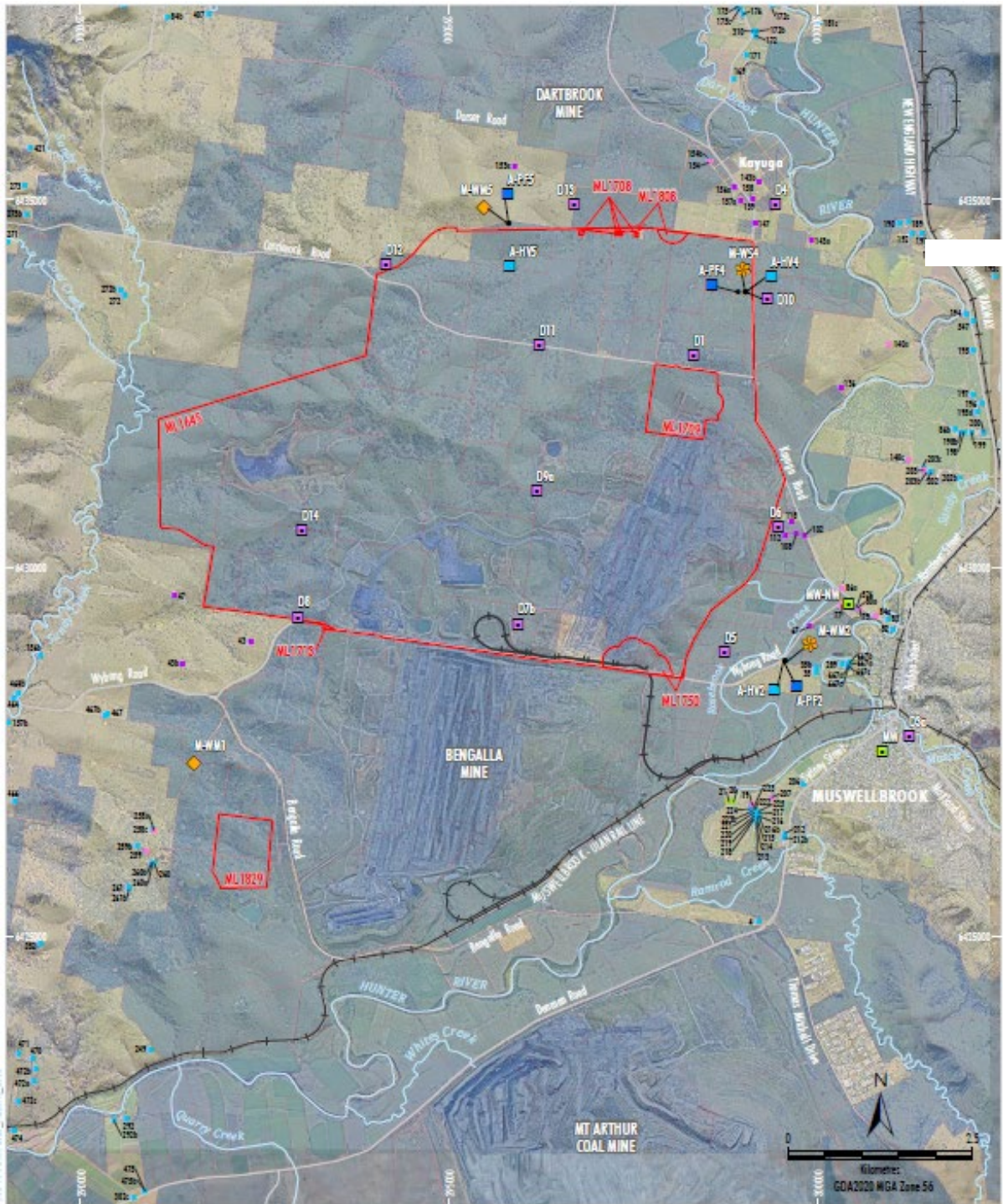
Monitoring of sites not required by the EPL are conducted in accordance with *MPO Environmental Monitoring Program (EMP)*, Project Approval (DA 92/97) and Development Consent (SSD 10418).

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**



- LEGEND**
- Mining Lease Boundary (Mount Pleasant Operation)
  - Mine-owned Land
  - Railway
  - Monitoring Sites:**
  - Air Quality - High Volume Sampler
  - Air Quality - Poles Fidas
  - Dust Deposition Gauge
  - Upper Hunter Air Quality Monitoring Network
  - Weather Mast
  - Weather Station

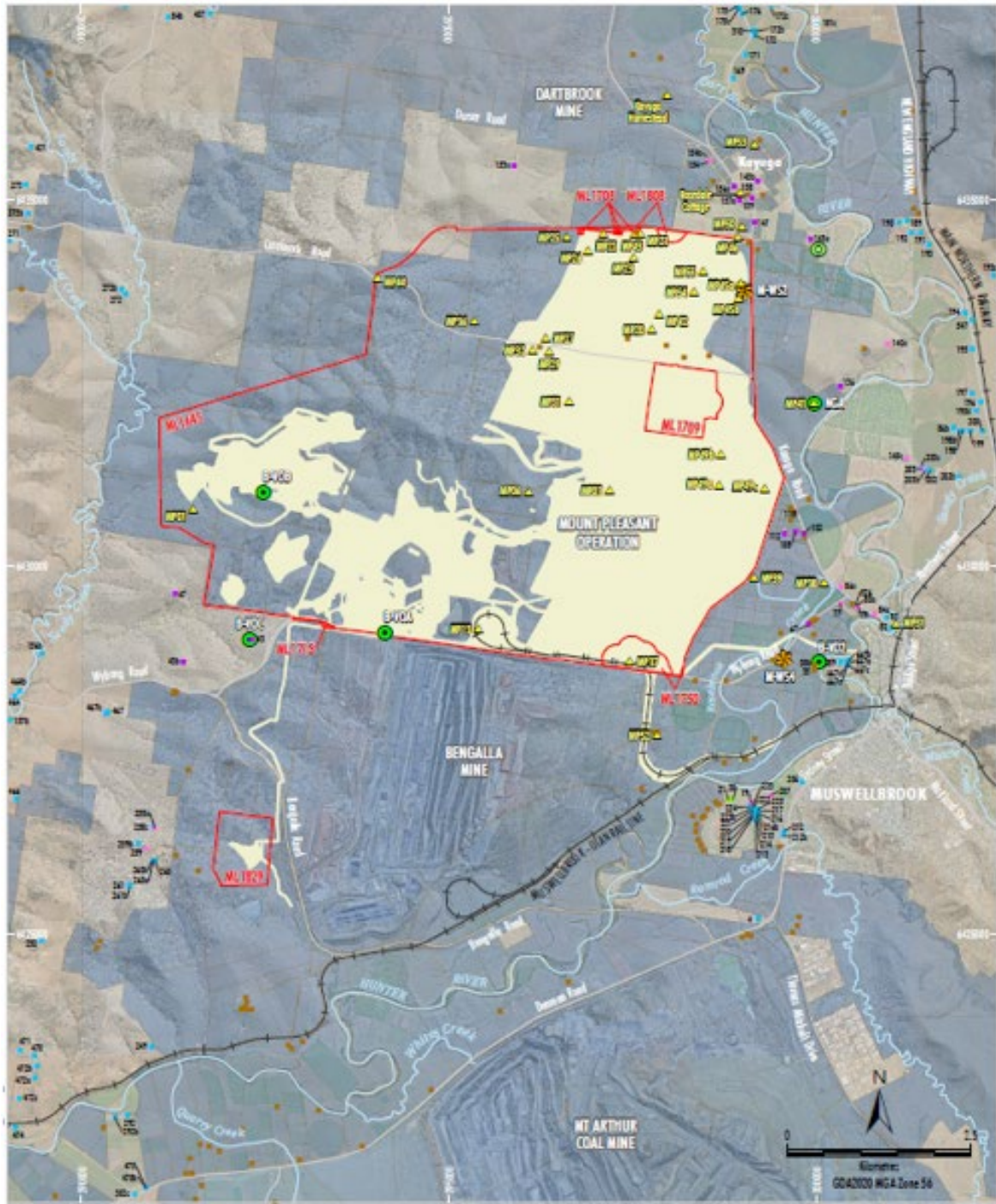
- Category of Rural Residence under DA92/97**
- Privately-owned - Acquisition on Request
  - Privately-owned - Mitigation on Request
  - Privately-owned - Mitigation/Acquisition on Request\*
  - Other Privately-owned

\* Mitigation on Request - rail noise/Acquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

Source: MACH (2023); NSW Spatial Services (2023)  
Orthophoto: MACH (Dec 2022)

**MACHEnergy**  
MOUNT PLEASANT OPERATION  
Air Quality and Meteorological  
Monitoring Sites

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



**LEGEND**

- Wine-owned Land
- Mining Lease Boundary (Mount Pleasant Operation)
- Project Continuation of Existing/Approved Surface Development (DA 92/97)<sup>1</sup>
- Weather Station
- Blast Monitoring Site (Vibration/Overpressure)
- Proposed Blast Monitoring Site (Vibration/Overpressure)
- Historic Heritage Site Subject to Blast Criteria<sup>#</sup>

**Category of Rural Residence under DA 92/97**

- Mine-owned
- Category of Rural Residence under DA 92/97**
- Privately-owned - Acquisition on Request
- Privately-owned - Mitigation on Request
- Privately-owned - Mitigation/Acquisition on Request\*
- Other Privately-owned

\* Mitigation on Request - soil noise/liquation on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

<sup>1</sup> Excludes some incidental Project components such as water management infrastructure, access roads, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

<sup>#</sup> Blast criteria only apply until the heritage site is excavated, salvaged or demolished in accordance with the Historic Heritage Management Plan.

Source: MACH (2024); NSW Spatial Services (2024)  
Orthophoto: MACH (Dec. 2023)

**MACHEnergy**  
MOUNT PLEASANT OPERATION  
Blast Monitoring Locations

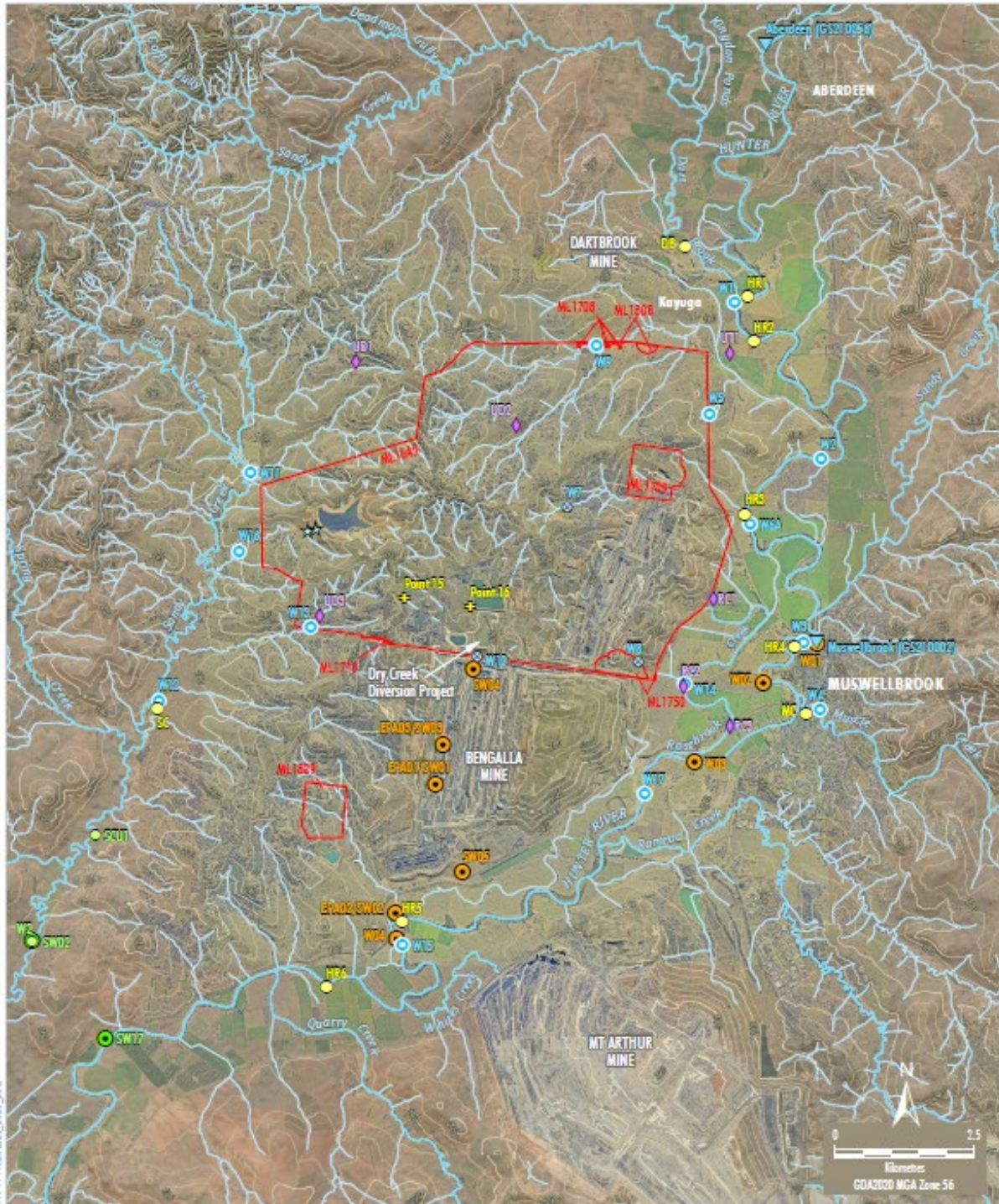
**Figure 2-3 – MPO Blast Monitoring Locations**



- LEGEND**
- Mining Lease Boundary (Mount Pleasant Operation)
  - Mount Pleasant Monitoring**
  - GDE Bore
  - Vibrating Wire Piezometer
  - Standpipe
  - Standpipe - Alluvium
  - Standpipe - Coal Seam
  - Standpipe - Interburden
  - Standpipe - Historical
  - Bengalla Monitoring**
  - Bengalla Standpipe
  - Bengalla Vibrating Wire Piezometer

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Groundwater Monitoring Network

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



LEGEND	
	Mining Lease Boundary (Mount Pleasant Operation)
	Contour (20 m Interval)
	DPI Water Gauging Station
	Mount Pleasant Monitoring
	Aquatic Ecology Habitat Assessment Site
	Surface Water Monitoring Site
	Historical Surface Water Monitoring Site
	Stream Health Monitoring Site
	V-notch Weir
	Water Discharge/Monitoring Point (EPL 20850)
	Manoopa Monitoring
	Surface Water Monitoring Site
	Stream Health Monitoring Site
	Bengalla Monitoring
	Surface Water Monitoring Site

Source: MACH (2023); NSW Spatial Services (2023); NSW Department of Primary Industries - Water (2016); Bengalla Mining Company (2015); Manganese Coal Operations Pty Ltd (2014)  
 Orthophoto: MACH (Jun 2023, 2020)

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Surface Water and Stream Health  
 Monitoring Sites

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

### 3. Meteorological Monitoring

Weather data is measured continuously<sup>1</sup> 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 µm and less than 2.5 µm (PM<sub>10</sub> and PM<sub>2.5</sub>)), 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 (>90.3%) during September 2024 (the monitoring period) except for PM<sub>10</sub> and PM<sub>2.5</sub> (69.4%). An additional monitor (E-BAM) is located at M-WS2 to provide additional capture for air quality until the issue is resolved. Additional meteorological data was collected at M-WS4 (92.4%).

Throughout September 2024, there was 38.4mm and 42.2mm of rainfall recorded at M-WS2 and M-WS4, respectively.

### 4. Dust Depositional Monitoring

#### 4.1 Methodology

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*. The dust deposition monitoring network comprises of 13 dust deposition gauges (DDG). Details of the monitoring locations are shown in **Figure 2-2**.

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, PM<sub>10</sub>, and PM<sub>2.5</sub>. 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, effectively supplanting the older dust deposition gauges. This transition from the previous development consent DA92/97 (which is yet to be surrendered) to SSD 10418 signifies a proactive measure towards upholding environmental compliance. Therefore, Dust

---

<sup>1</sup> 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.



Depositional Monitoring will continue to be included in monthly reporting as per DA92/97 up until surrender where it will be discontinued.

## 4.2 Results

The dust deposition exposure period for gauges commenced on 28 August 2024. Sample collection was undertaken on 26 September 2024 by AECOM with sample analysis performed by ALS, a National Accreditation and Testing Authority (NATA) accredited laboratory. Results are summarised in **Table 4-1**. Annual rolling averages for August 2024 have been provided as an indication of performance between September 2023 – September 2024 and does not represent annual average results for 2024 as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

**Table 4-1: Dust Depositional Results – September 2024**

Location	YTD Insoluble Solids (g/m <sup>2</sup> .month)	Insoluble Solids Annual Rolling Average (g/m <sup>2</sup> .month)
D1	2.1	1.9
D3	1.1	1.3
D4	1.0	1.1
D5a	2.1	2.2
D6	1.7	2.0
D7b	9.7	<b>9.6</b>
D8	4.4	<b>4.2</b>
D9a	3.6	3.6
D10	0.9	1.1
D11	3.4	3.6
D12	0.8	0.9
D13	1.2	1.2
D14	2.5	2.9
<b>Criterion</b>	-	<b>4</b>

Notes:

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

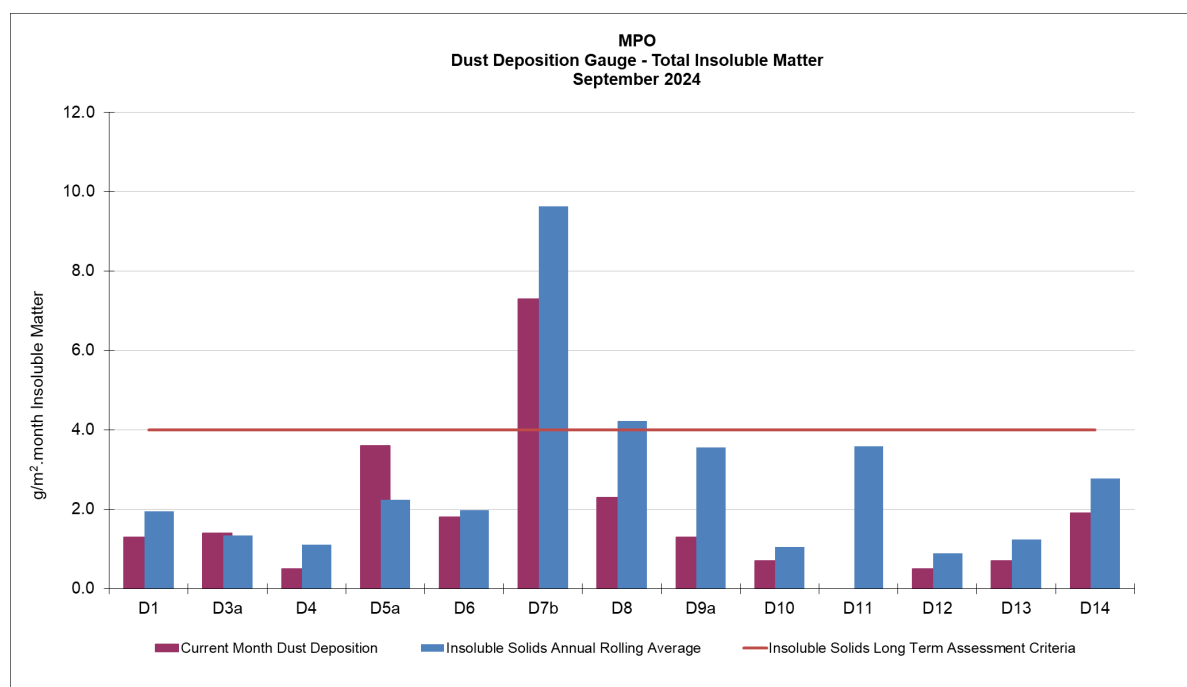
\* Insufficient monthly results to calculate annual average

Contaminated results, as described in Section 4.1, are not included in the 12-month rolling average. 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. Furthermore, there are no privately-owned receivers in the vicinity of D8, D9 and D14.

Whilst these sites do not represent residence(s) on privately-owned land, they will continue to be monitored in accordance with the *MPO Air Quality and Greenhouse Gas Management Plan* (MACH Energy, 2019).

Field notes from the September sampling event noted that the majority of gauges contained insects and sediment. It was also noted that no sample was retrieved from D11 due to a damaged dust gauge. All September 2024 insoluble solid results were included in the annual rolling average calculations. Annual average dust deposition results were below the annual average criterion of 4 g/m<sup>2</sup>.month at all sites except D7b (9.6 g/m<sup>2</sup>) and D8 (4.2 g/m<sup>2</sup>).

**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 – September 2024**

## 5. Total Suspended Particulates

All High-Volume Air Samplers (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.

Three TSP HVAS units are included in the MPO air quality monitoring network and are displayed in **Table 5-1** below. These units were commissioned in March 2017.

**Table 5-1 Total Suspended Particulate Monitoring Sites**

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

## 5.1 Assessment Criteria

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 90 µg/m<sup>3</sup>.

## 5.2 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**. Annual rolling averages for September 2024 have been provided as an indication of performance between September 2023 – September 2024 and do not represent annual average results for 2024 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 – September 2024**

Run Date	Assessment Criterion	TSP µg/m <sup>3</sup>		
		HVAS A-PF2	HVAS A-PF5	HVAS M-WS4
2/09/2024	-	116	26.6	35.3
9/09/2024	-	73.1	26.0	35.1
14/09/2024	-	37.2	15.8	14.5
20/09/2024	-	79.2	19.4	25.2
26/09/2024	-	51.2	40.6	36.0
*Monthly Mean	-	71.3	25.7	29.2
<b>Annual Rolling Average</b>	90	50	48	33

Notes:

Results in **bold** indicate an elevated reading

## 5.3 Discussion

For the reporting period, the annual rolling average TSP data at all sites was below the annual average criterion of 90 µg/m<sup>3</sup>.

## 6. Real Time Air Quality Monitoring

Continuous particulate matter less than 10 µm (PM<sub>10</sub>) and particulate matter less than 2.5 µm (PM<sub>2.5</sub>) monitoring was conducted by three Palas Fidas units (one utilised for management only) at MPO during September 2024.

The EPA identification numbers 1 and 2 refer to Palas Fidas units installed on Wybong Road (A-PF2) and Dorset Road (A-PF5), respectively. In addition, a third unit (A-PF4) is installed on Kayuga Road with data used for management purposes only.

Real time PM<sub>10</sub> and PM<sub>2.5</sub> 12-month rolling averages for September 2024 have been provided in Section 6.2 and 6.4 respectively, as an indication of performance during 2024 as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

### 6.1 PM<sub>10</sub> Results – 24 Hour Rolling Average

In accordance with the DA 92/97 and SSD 10418 limit of 50 µg/m<sup>3</sup> for the 24-hour daily average, there were no elevated readings in September 2024. Real time PM<sub>10</sub> 24 hour daily average results for September 2024 are presented in **Table 6-1**.

**Table 6-1: MPO Palas Fidas PM<sub>10</sub> Data – September 2024**

Date	A-PF2/EPA ID 1	A-PF4	A-PF5/EPA ID 2	Muswellbrook NW	A-PF2, A-PF4, A-PF5 24 Hour Average Limit (µg/m <sup>3</sup> )
	24-hour Average Result				
1/09/2024	-	12	11	35.7	50
2/09/2024	-	14	13	-	50
3/09/2024	-	17	23	8.4	50
4/09/2024	-	19	18	13.6	50
5/09/2024	-	17	15	22.5	50
6/09/2024	-	17	15	23.4	50
7/09/2024	28	16	17	33.8	50
8/09/2024	22	14	14	19.3	50
9/09/2024	15	9	-	15.8	50
10/09/2024	17	13	-	18.9	50
11/09/2024	28	22	-	27.5	50
12/09/2024	13	10	-	10.6	50
13/09/2024	14	-	-	16.4	50
14/09/2024	17	-	-	21.9	50
15/09/2024	12	-	-	17.9	50
16/09/2024	15	-	-	24.5	50
17/09/2024	15	-	-	16.5	50
18/09/2024	-	-	-	14.3	50
19/09/2024	-	-	-	21.6	50
20/09/2024	-	-	-	27.7	50
21/09/2024	17	-	8	20.5	50

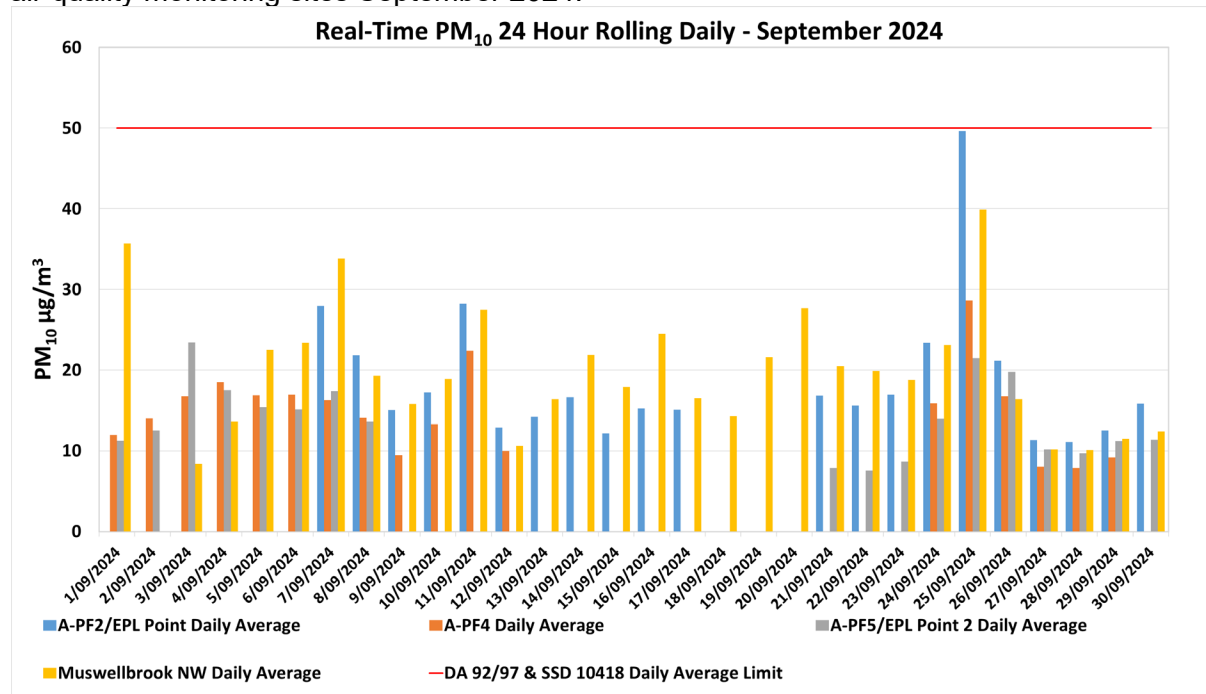
22/09/2024	16	-	8	19.9	50
23/09/2024	17	-	9	18.8	50
24/09/2024	23	16	14	23.1	50
25/09/2024	50	29	22	39.9	50
26/09/2024	21	17	20	16.4	50
27/09/2024	11	8	10	10.2	50
28/09/2024	11	8	10	10.1	50
29/09/2024	13	9	11	11.5	50
30/09/2024	16	-	11	12.4	50

Notes:

Results in **bold** indicate elevated readings during adverse weather conditions.

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

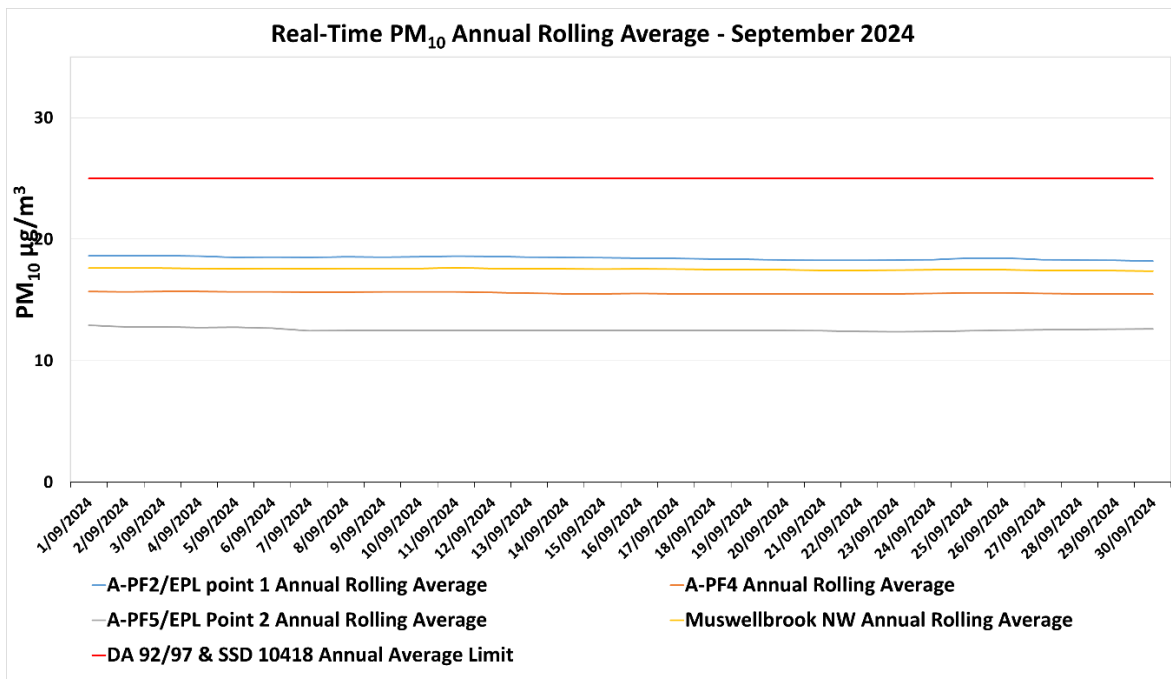
**Figure 6-1** below shows the results of real-time PM<sub>10</sub> 24 hour daily average results at MPO air quality monitoring sites September 2024.



**Figure 6-1: Real-time PM<sub>10</sub> 24 Daily Average Results for September 2024.**

## 6.2 PM<sub>10</sub> Results – Annual Rolling Average

There was no exceedance of the PM<sub>10</sub> annual rolling average reported at MPO during September 2024. Real time PM<sub>10</sub> annual rolling averages during the reporting period are presented in **Figure 6-2** below.



**Figure 6-2: Real-time PM<sub>10</sub> Annual Rolling Average Results for September 2024.**

### 6.3 PM<sub>2.5</sub> Results – 24 Hour Daily Average

There was no exceedance of the PM<sub>2.5</sub> annual rolling average reported at MPO during September 2024. Real time PM<sub>2.5</sub> 24 hour rolling average results for September 2024 are presented in **Table 6-2**.

**Table 6-2: MPO Palas Fidas PM<sub>2.5</sub> Data – September 2024**

Date	A-PF2/EPA ID 1	A-PF4	A-PF5/EPA ID 2	A-PF2, A-PF4, A-PF5 24 Hour Average Limit (µg/m <sup>3</sup> )
	24-hour Average Result			
1/09/2024	-	4	4	25
2/09/2024	-	4	4	25
3/09/2024	-	5	6	25
4/09/2024	-	6	6	25
5/09/2024	-	6	6	25
6/09/2024	-	7	6	25
7/09/2024	9	6	6	25
8/09/2024	7	6	6	25
9/09/2024	4	3	-	25
10/09/2024	5	5	-	25
11/09/2024	10	8	-	25
12/09/2024	6	5	-	25
13/09/2024	5	-	-	25
14/09/2024	6	-	-	25
15/09/2024	4	-	-	25
16/09/2024	4	-	-	25

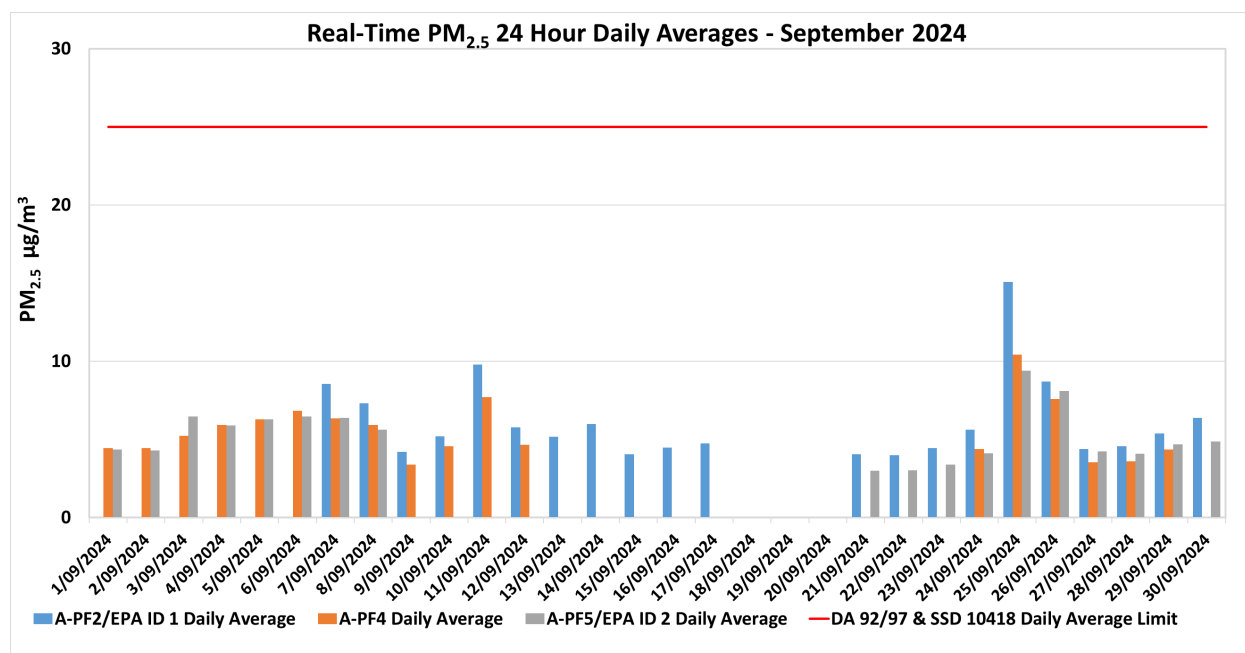
17/09/2024	5	-	-	25
18/09/2024	-	-	-	25
19/09/2024	-	-	-	25
20/09/2024	-	-	-	25
21/09/2024	4	-	3	25
22/09/2024	4	-	3	25
23/09/2024	4	-	3	25
24/09/2024	6	4	4	25
25/09/2024	15	10	9	25
26/09/2024	9	8	8	25
27/09/2024	4	4	4	25
28/09/2024	5	4	4	25
29/09/2024	5	4	5	25
30/09/2024	6	-	5	25

Notes:

Results in **bold** indicate elevated readings during adverse weather conditions.

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

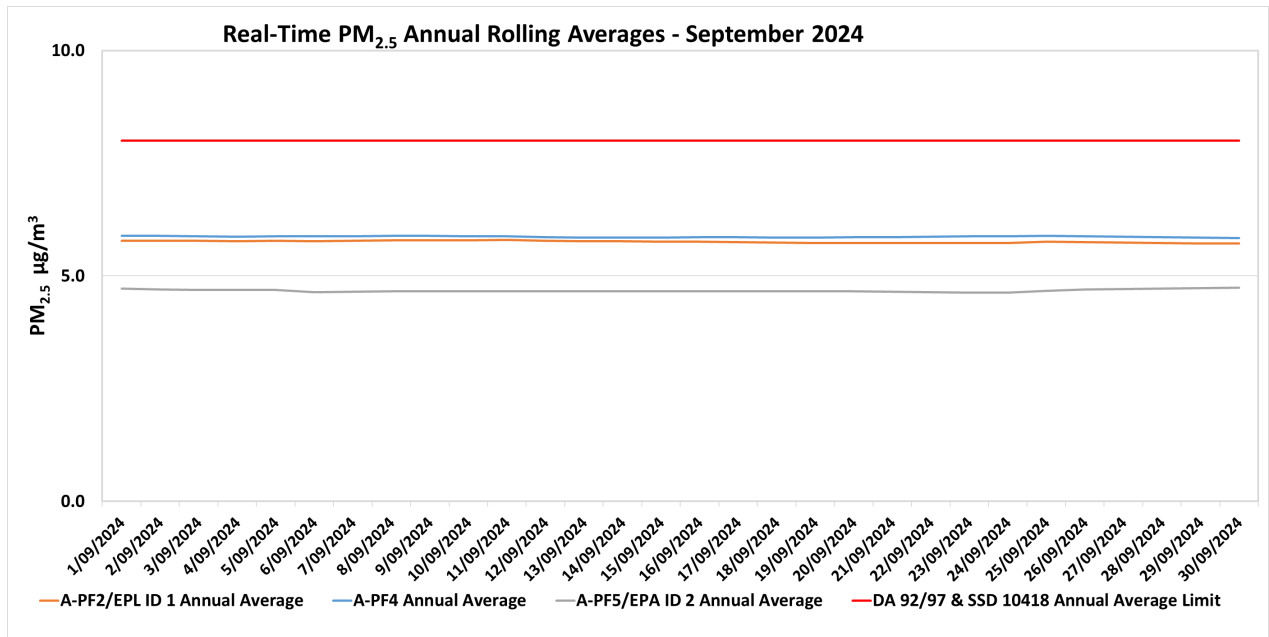
Real time PM<sub>2.5</sub> 24-hour average results for September 2024 are presented in **Figure 6-3** below.



**Figure 6-3: Real-time PM<sub>2.5</sub> 24 hour Daily Average Results for September 2024.**

## 6.4 PM<sub>2.5</sub> Results - Annual Rolling Average

There was no exceedance of the PM<sub>2.5</sub> annual rolling average reported at MPO during September 2024. Real time PM<sub>2.5</sub> annual rolling averages during the reporting period are presented in **Figure 6-4** below.



**Figure 6-4: Real-time PM<sub>2.5</sub> Annual Rolling Average Results for September 2024.**



## 7. Surface Water Monitoring

### 7.1 Methodology

Surface water quality is monitored at 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 [MPO Water Management Plan](#) (MACH Energy, 2024) in accordance with site specific trigger values that have been developed using the [ANZECC](#) (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.

### 7.3 Results

Surface water monitoring was conducted by AECOM on 27 September 2024. 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 – 27 September 2024**

Station	pH	Electrical Conductivity (EC) (µs/cm) <sup>1</sup>	Total Dissolved Solids (TDS) (mg/L)	Total Suspended Solids (TSS) (mg/L)
W1	8.2	<b>700</b>	400	8.8
W2	**	**	**	**
W3	8.2	880	510	15
W4	7.7	2000	1200	<b>21</b>
W5	*	*	*	*
W6A	8.3	<b>830</b>	460	<b>27</b>
W9	7.1	310	250	66
W11	<b>8.3</b>	3600	1900	<5
W12	8.0	4950	2700	5.5
W13	<b>8.4</b>	<b>4750</b>	2700	11
W14	*	*	*	*
W15	<b>8.2</b>	<b>910</b>	510	14
W16	<b>8.3</b>	<b>8300</b>	4800	12
W17	8.1	<b>920</b>	510	12

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

\*Dry or insufficient water to sample.

\*\* No access due to track conditions.

<sup>1</sup> Results have been rounded in accordance with the In-house method Q4AN(EV)-332-W12 (EC).

During the 27 September 2024 monitoring event, two (2) sites were dry and one (1) site was unable to be accessed due to track conditions. Sites W11, W13, W15 and W16 were above the respective pH trigger levels. Sites W1, W6A, W13, W15, W16 and W17 were above the respective EC trigger levels. Sites W4 and W6A were above the respective TSS triggers levels.

Sites W13 and W16 have been above respective pH trigger levels for three consecutive monitoring events (July, August, and September 2024). Sites W6A, W13 and W16 have been above the respective EC trigger levels for the three consecutive monitoring events (July, August, and September).

In accordance with the MPO Water Management Plan (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. Site W6A was exceeding the respective EC level (496  $\mu\text{S}/\text{cm}$ ) for three consecutive monitoring events (July, August, and September). Site W16 was exceeding the respective EC site specific trigger levels for upstream monitoring location W11 (7,050  $\mu\text{S}/\text{cm}$ ) for three consecutive monitoring events (July, August, and September).

An investigation relating to recent environmental conditions (ACT Williams, January 2024) concluded that prevailing climatic factors, combined with increased contributions of naturally high EC (Electrical Conductivity) water from tributary inflows, have influenced water quality at several monitoring locations including W6A. Similar impacts were observed at W16, the upstream monitoring location W11, and W13 which remains unaffected by mining activities. Additionally, the Fines Emplacement Area (FEA) Water Quality Assessment (AECOM, 2021) identified naturally high EC levels in a spring expressing as artesian flow downstream, further contributing to the observed changes in water quality.

## 8. Groundwater Monitoring

Groundwater monitoring did not occur during this reporting period. The next quarterly monitoring event is scheduled for November 2024.

## 9. Noise Monitoring

Attended noise monitoring was undertaken during the night period of 24/25 September 2024 at eight (8) monitoring locations as per the [MPO Noise Management Plan](#) (MACH Energy, 2021) in accordance with DA 92/97, SSD 10418 and EPL 20850.

### 9.1 Results

The results for nighttime attended noise monitoring for noise generated by MPO in September 2024 against noise criteria is shown in **Table 9-1**; **Table 9-2**; and **Table 9-3**.

**Table 9-1 –  $L_{A1,1\text{min}}$  Generated by MPO: Attended Night Monitoring – 24/25 September 2024**

Location	Start Date and Time	MPO Only $L_{A1,1\text{min}}$ dB <sup>2,4</sup>	Criterion dB	Wind Speed m/s	Criterion Applies <sup>1</sup>	Stability Class	Exceedance dB <sup>3</sup>
N-AT1	25/09/2024 01:34	IA	45	1.0	Yes	E	No

N-AT2	24/09/2024 22:57	IA	45	3.0	Yes	E	No
N-AT3	24/09/2024 23:31	IA	45	2.9	Yes	D	No
N-AT4	24/09/2024 23:57	IA	45	1.1	Yes	F	No
N-AT5	25/09/2024 00:18	36	45	1.0	Yes	F	No
N-AT6	25/09/2024 01:10	IA	45	0.7	Yes	F	No
N-AT7	24/09/2024 22:17	IA	45	3.0	Yes	D	No
N-AT8	25/09/2024 00:44	46	45	0.7	Yes	F	NA <sup>6</sup>

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.
- Estimated or measured  $L_{A1,1\text{minute}}$  attributed to MPO.
- NA in exceedance column means meteorological conditions outside those specified in Condition L2.3 of EPL 20850 and thus criterion is not applicable.
- IA = inaudible; and
- Bold results indicate exceedance of criteria.
- This is not a compliance monitoring location.

**Table 9-2 –  $L_{Aeq,15\text{min}}$  Generated by MPO: Attended Night Monitoring – 24/25 September 2024**

Location	Start Date and Time	MPO Only $L_{A1,1\text{min}}$ dB <sup>2,4</sup>	Criterion dB	Wind Speed m/s	Criterion Applies <sup>1</sup>	Stability Class	Exceedance dB <sup>3</sup>
N-AT1	25/09/2024 01:34	IA	37	1.0	Yes	E	No
N-AT2	24/09/2024 22:57	IA	35	3.0	Yes	E	No
N-AT3	24/09/2024 23:31	IA	40	2.9	Yes	D	No
N-AT4	24/09/2024 23:57	IA	38	1.1	Yes	F	No
N-AT5	25/09/2024 00:18	30	37	1.0	Yes	F	No
N-AT6	25/09/2024 01:10	IA	35	0.7	Yes	F	No
N-AT7	24/09/2024 22:17	IA	37	3.0	Yes	D	No
N-AT8	25/09/2024 00:44	38	NA <sup>5</sup>	0.7	Yes	F	NA <sup>5</sup>

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.
- Estimated or measured  $L_{Aeq,15\text{minute}}$  attributed to MPO.
- IA = inaudible; and
- Bold results indicate exceedance of criteria.
- This is not a compliance monitoring location.

**Table 9-3 –  $L_{Aeq, \text{period}}$  Cumulative Noise: Attended Night Monitoring – 24/25 September 2024**

Location	Start Date and Time	Measured Mining Only $L_{Aeq, \text{period}}$ dB <sup>1,2,3</sup>	Cumulative Noise Criterion $L_{Aeq}$ dB	Exceedance dB
----------	---------------------	---	---	---------------

N-AT1	25/09/2024 01:34	IA	40	No
N-AT2	24/09/2024 22:57	IA	40	No
N-AT3	24/09/2024 23:31	IA	40	No
N-AT4	24/09/2024 23:57	IA	40	No
N-AT5	25/09/2024 00:18	30	40	No
N-AT6	25/09/2024 01:10	IA	40	No
N-AT7	24/09/2024 22:17	IA	40	No
N-AT8	25/09/2024 00:44	38	NA <sup>4</sup>	NA <sup>4</sup>

**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*
2. *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 'Nil'.*
3. *NA in exceedance column means criterion was not applicable due to atmospheric conditions.*
4. *This is not a compliance monitoring location.*

The purpose of the noise monitoring is to quantify and describe the existing acoustic environment around the mining operation and compare results with relevant limits as per the *MPO Noise Management Plan* (MACH Energy, 2021).

## 10. Blast Monitoring

The MPO Blast Management Plan (SSD 10418) is undergoing additional consultation with Council and will be finalised early 2025. There were nine (9) blast events during September (a total of 67 blasts YTD). Results for September 2024 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 – September 2024**

Day & Date Fired	Time Fired	BVOC Vibration (mm/s)	BVOC Overpressure (dBL)	BVO2 Vibration (mm/s)	BVO2 Overpressure (dBL)	Blast Fume Compliant
Tuesday 03/09/2024	13:06	0.140	96.3	0.200	94	N
Friday 06/09/2024	9:19	0.500	106	0.610	103.1	Y
Monday 09/09/2024	15:00	0.230	97.4	0.500	102.7	N
Thursday 12/09/2024	10:00	0.640	100	0.800	103.9	N
Friday 13/09/2024	11:40	0.190	95.6	0.250	108.2	N
Wednesday 18/09/2024	15:00	0.420	99.4	0.730	106	N
Friday 20/09/2024	11:00	0.360	103.3	0.280	104.6	Y
Tuesday 24/09/2024	13:00	0.270	88.6	0.480	95.5	N
Thursday 26/09/2024	15:29	0.110	89.2	0.310	96.9	N

**END OF REPORT**