

Mount Pleasant Operation Monthly Environmental Monitoring Report

May 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 May 2025
Reporting Period End Date	31 May 2025
Date All Data Received	20 June 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 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.

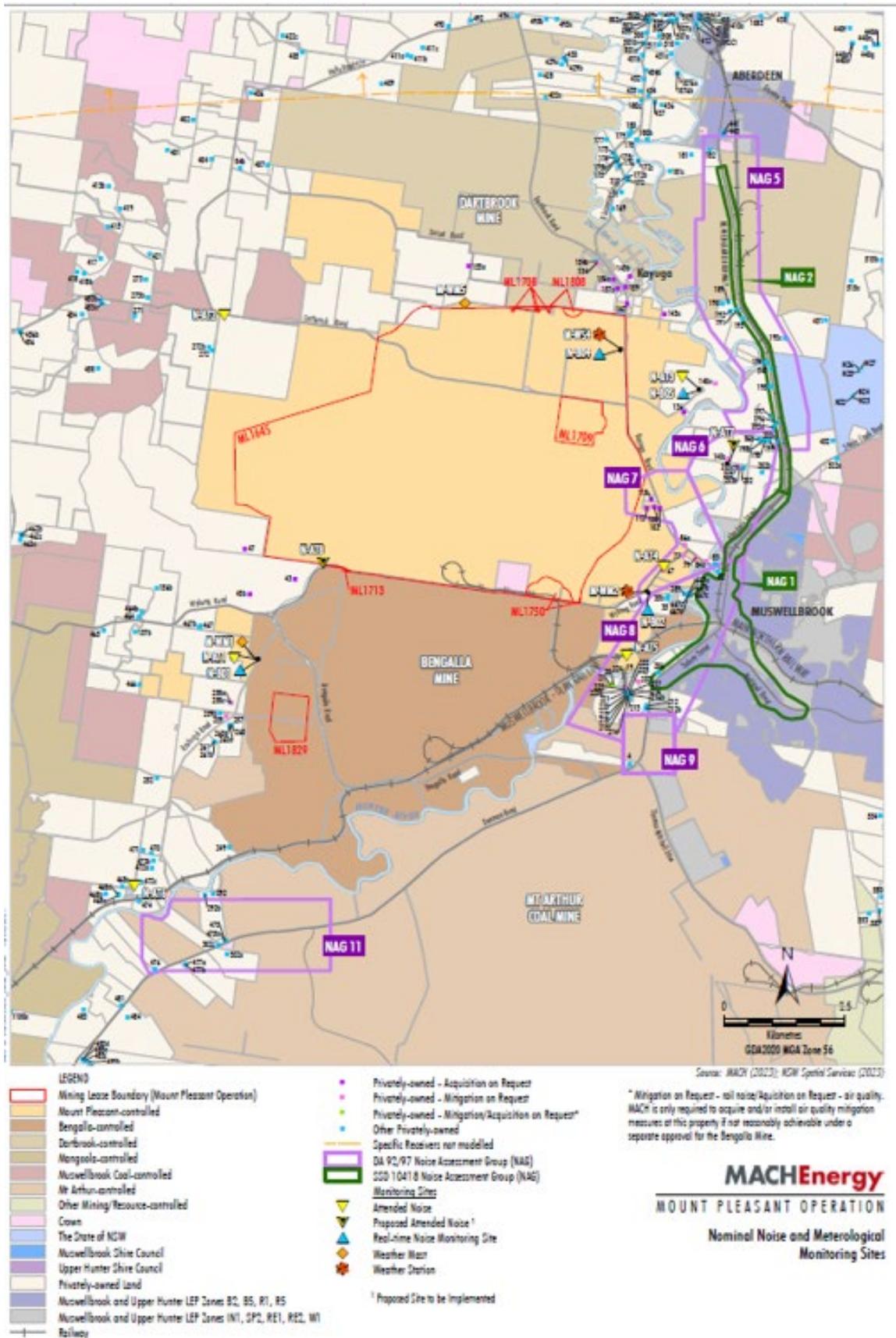
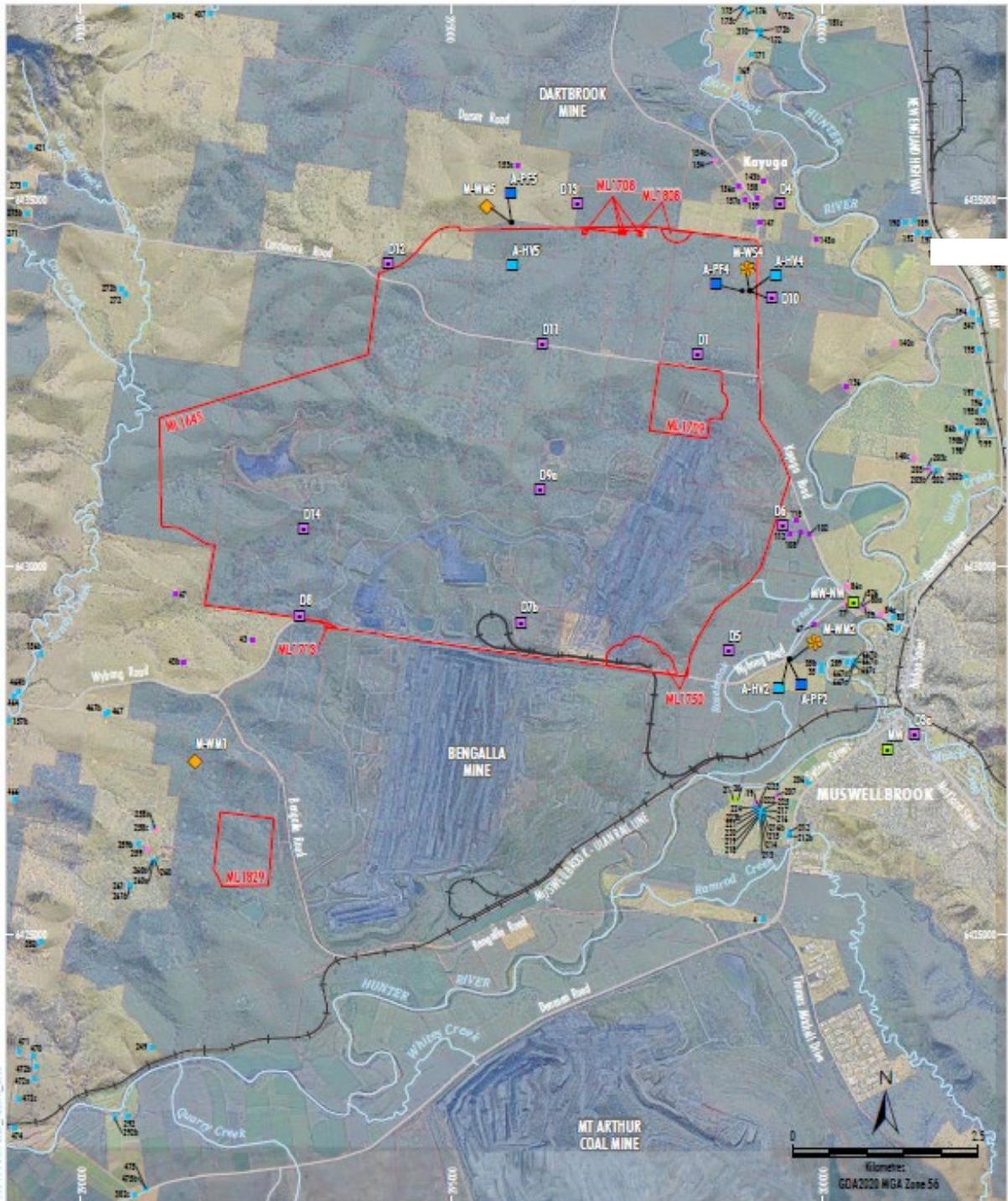


Figure 2-1 – MPO Attended Noise Monitoring Assessment Groups and Locations - Approved (SSD 10418) Water Management Plan



- 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

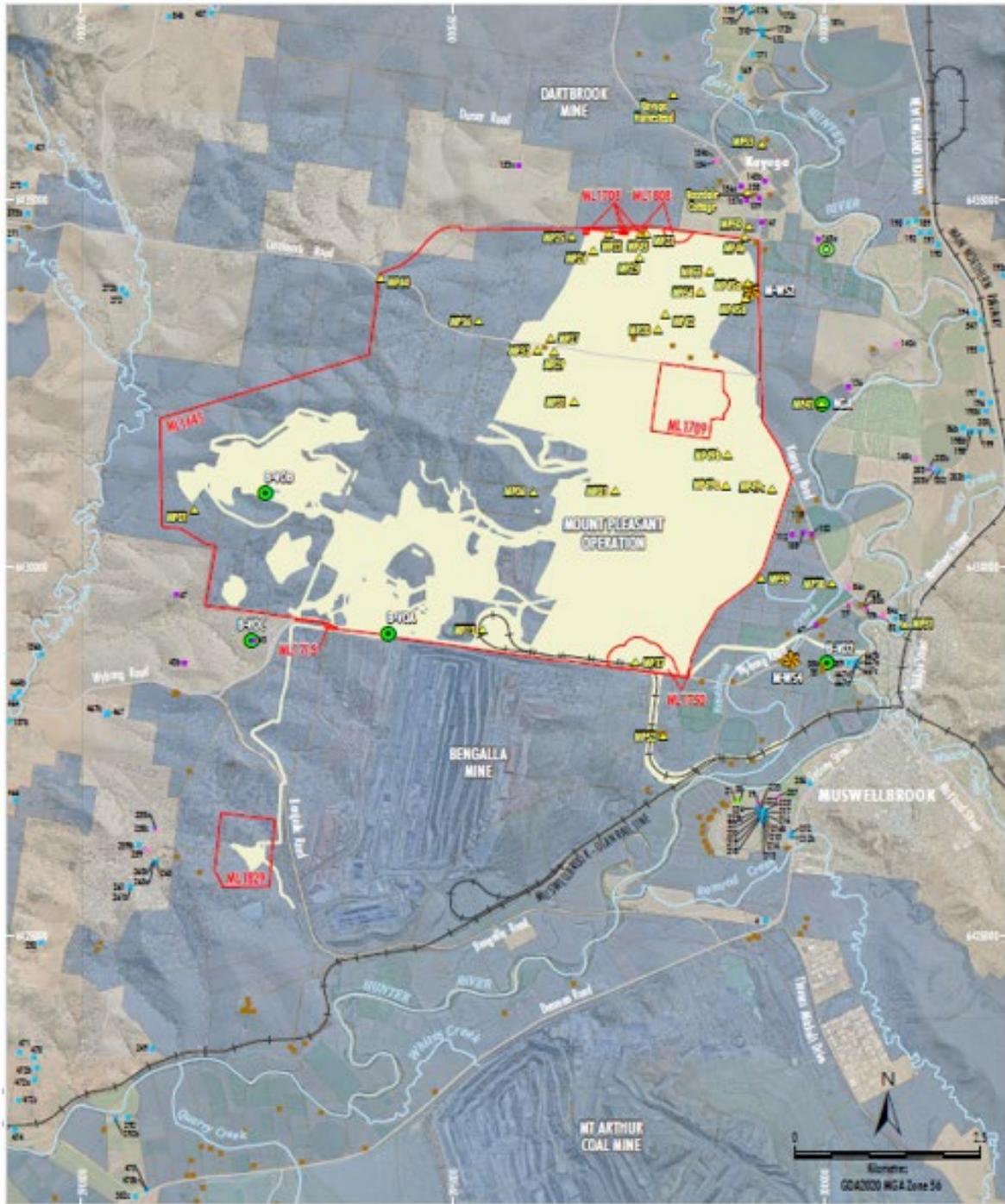
- Category of Rural Residence under DA92/97**
- Privately-owned - Acquisition on Request
 - Privately-owned - Mitigation on Request
 - Privately-owned - Mitigation/Acquisition on Request*
 - Other Privately-owned

* 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



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

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

- 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.

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

[#] Blast criteria only apply until the heritage site is excavated, salvaged or demolished in accordance with the Historic Heritage Management Plan.

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 MOUNT PLEASANT OPERATION
 Blast Monitoring Locations

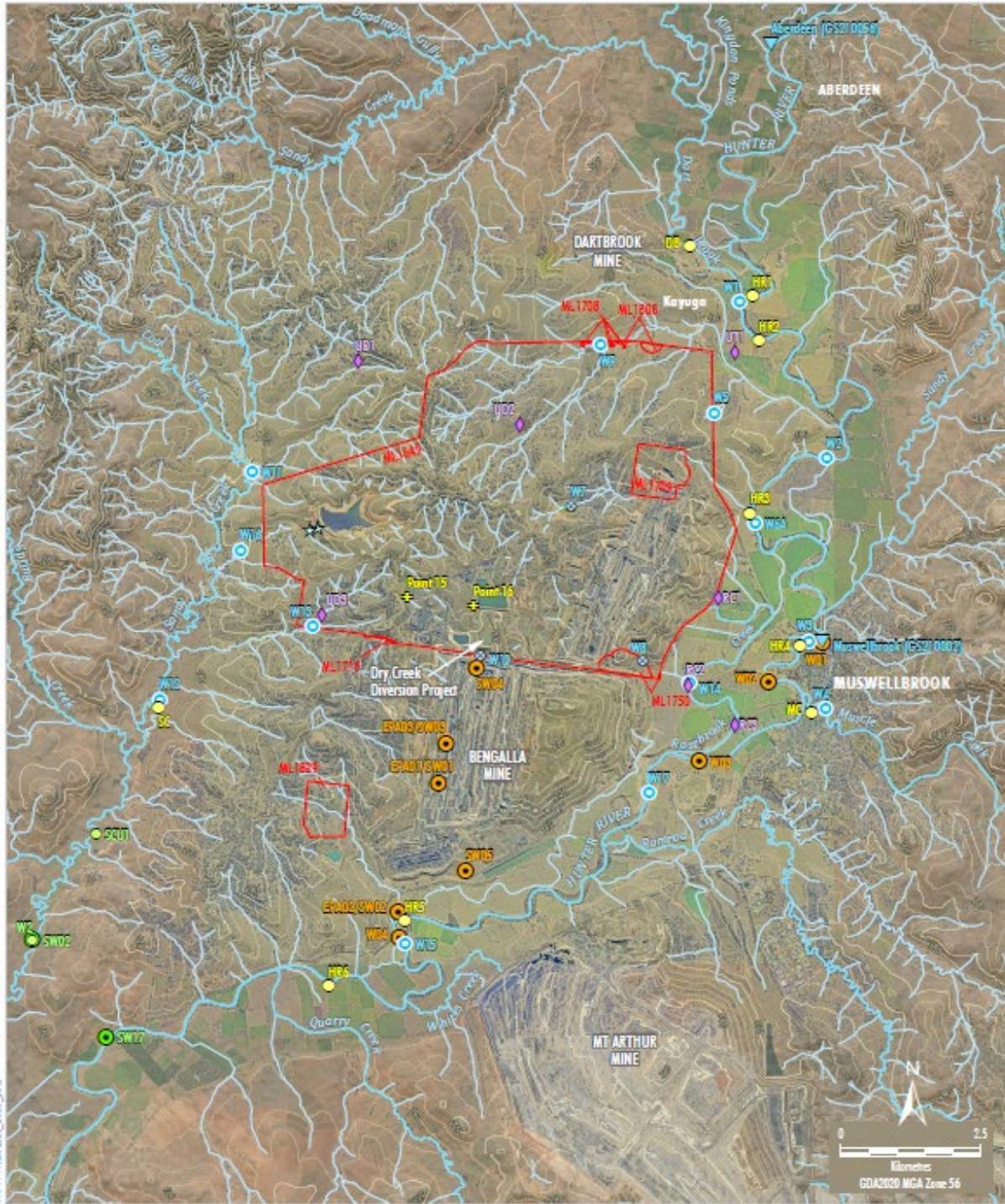
Figure 2-3 – MPO Blast Monitoring Locations



- 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

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 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)
	DPI Water Gauging Station
	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)
	Manassala Monitoring
	Surface Water Monitoring Site
	Stream Health Monitoring Site
	Surface Water Monitoring Site

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

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 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 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 µm and less than 2.5 µm (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 during May 2025 (the monitoring period). An additional monitor (E-BAM) was relocated to M-WS4 to provide additional capture for air quality. Additional meteorological data was collected at M-WS4.

Throughout May 2025, there was 136.4mm and 132.6mm 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, PM₁₀, and PM_{2.5}. 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, 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 Depositional Monitoring will continue to be included in monthly reporting as per DA92/97 up until surrender where it will be discontinued.

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.

4.2 Results

The dust deposition exposure period for gauges commenced on 28 April 2025 sample collection was undertaken on 28 May 2025 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 May 2025 have been provided as an indication of performance between June 2024 – May 2025 and represents 12month average results as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

Table 4-1: Dust Depositional Results – May 2025

Location	YTD Insoluble Solids (g/m ² .month)	Insoluble Solids Annual Rolling Average (g/m ² .month)
D1	3.9	3.0
D3	1.7	1.5
D4	1.1	1.1
D5a	1.6	2.1
D6	1.8	2.0
D7b	7.6	7.6
D8	6.0	4.9
D9a	5.3	3.7
D10	1.2	1.2
D11	6.6	4.3
D12	2.1	1.4
D13	3.0	2.1
D14	5.0	3.9
Criterion	-	4.0

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 May sampling event noted that all thirteen gauges contained insects, two had bird droppings. Annual average dust deposition results were below the annual average criterion of 4 g/m².month at all sites.

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

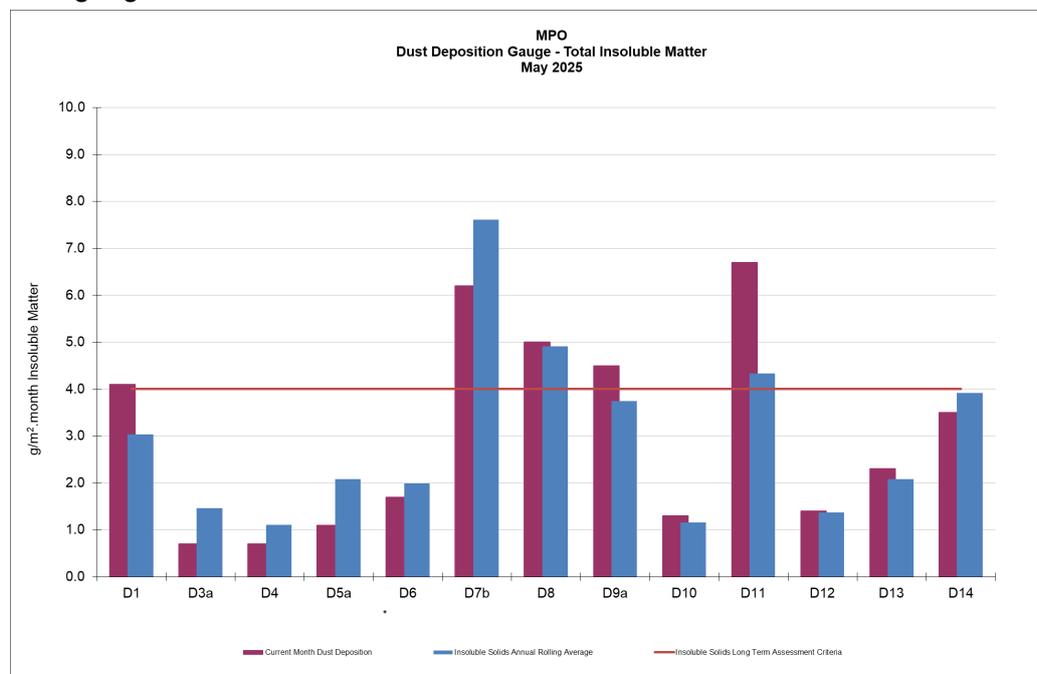


Figure 4-1: MPO Dust Deposition Monthly Results and Annual Rolling Average – May 2025

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/m³.

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**. Twelve month rolling averages to May 2025 is provided as an indication of performance between June 2024 – May 2025 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 – May 2025

Run Date	Assessment Criterion	TSP µg/m ³		
		HVAS A-PF2	HVAS A-PF5	HVAS M-WS4
6/05/2025	-	60.8	41	39
12/05/2025		18.7	90	21.8
18/05/2025		22.9	49.5	23.5
24/05/2025	-	22.4	10.2	11.1
30/05/2025	-	65.1	38.4	41.3
*Monthly Mean	-	38	45.8	27.3
Annual Rolling Average	90	47	49	36

Notes:

* Results have been rounded to one decimal place for reporting purposes where applicable.

^ Indicates makeup run results for run date 11/11/2024.

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/m³.

6. Real Time Air Quality Monitoring

Continuous particulate matter less than 10 µm (PM₁₀) and particulate matter less than 2.5 µm (PM_{2.5}) monitoring was conducted by three Palas Fidas units (one utilised for management only) at MPO during May 2025.

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 PM₁₀ and PM_{2.5} 12-month rolling averages to May 25 have been provided in Section 6.2 and 6.4 respectively, as an indication of performance during the last 12 month as per Schedule 3, Condition 20 of DA 92/97 and Schedule 2, Condition B28 of SSD 10418.

6.1 PM₁₀ Results – 24 Hour Rolling Average

In accordance with the DA 92/97 and SSD 10418 limit of 50 µg/m³ for the 24-hour daily average, there were no elevated readings in May 2025. Real time PM₁₀ 24 hour daily average results for May 2025 are presented in **Table 6-1**.

The elevated dust result from Muswellbrook NW during the month were due to a regional dust storm that came in from Western Australia.

Table 6-1: MPO Palas Fidas PM₁₀ Data – May 2025

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 ³)
	24-hour Average Result				
01/05/2025	11.24	12.30	19.95	18	50
02/05/2025	12.51	11.26	19.18	14.1	50
03/05/2025	9.41	9.56	15.26	13.1	50
04/05/2025	9.67	9.76	17.91	12	50
05/05/2025	9.87	9.49	13.73	11.8	50
06/05/2025	13.93	12.85	21.54	21.5	50
07/05/2025	13.98	8.81	9.00	17.6	50
08/05/2025	14.85	10.73	11.30	19.5	50
09/05/2025	14.14	14.78	19.98	17.3	50
10/05/2025	11.10		16.82	12.1	50
11/05/2025	9.43		14.48	7.7	50
12/05/2025	8.85		14.92	9.6	50
13/05/2025	9.83		16.94	9.2	50
14/05/2025	12.63		17.23	16.3	50
15/05/2025	17.11	9.92	25.97	16	50
16/05/2025	12.90	7.75	15.31	13	50
17/05/2025	11.95	9.23	11.41	16.5	50
18/05/2025	12.56	8.06	13.84	12.4	50
19/05/2025	9.45	6.00	12.33	6.3	50
20/05/2025	7.10	6.29	7.45	8.7	50
21/05/2025	7.54		7.39	7.1	50
22/05/2025	6.71	6.23	6.93	7	50
23/05/2025	9.03	8.34		8.2	50
24/05/2025	10.33	7.39		11.3	50
25/05/2025	11.75	8.65		19.4	50
26/05/2025	15.65	12.47		15.9	50
27/05/2025	37.22	25.66		90.9	50
28/05/2025	33.42		13.37	11.8	50
29/05/2025	9.42		7.42	16.4	50
30/05/2025	11.08		10.64	18.6	50
31/05/2025	14.29		15.84	17.2	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 PM₁₀ 24 hour daily average results at MPO air quality monitoring sites May 2025.

6.2 PM₁₀ Results – Annual Rolling Average

There was no exceedance of the PM₁₀ annual rolling average reported at MPO during May 2025. High reading at Muswellbrook station was due to regional dust storm. Real time PM₁₀ annual rolling averages during the reporting period are presented in Figure 6-2 below.

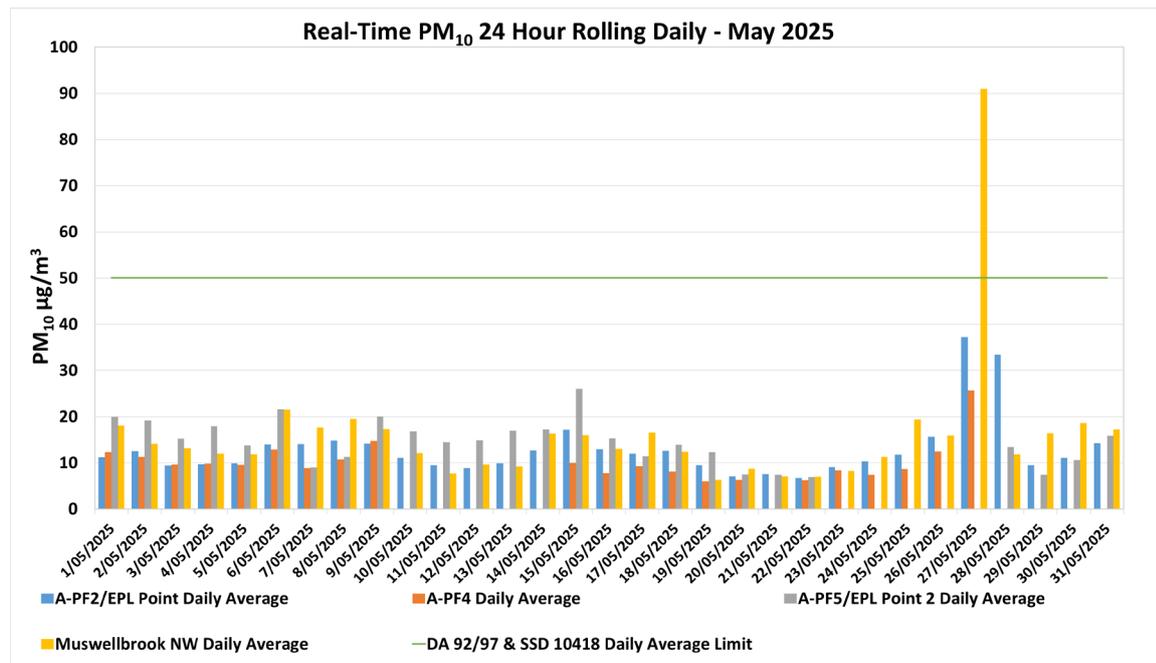


Figure 6-1: Real-time PM₁₀ 24 Daily Average Results for May 2025.

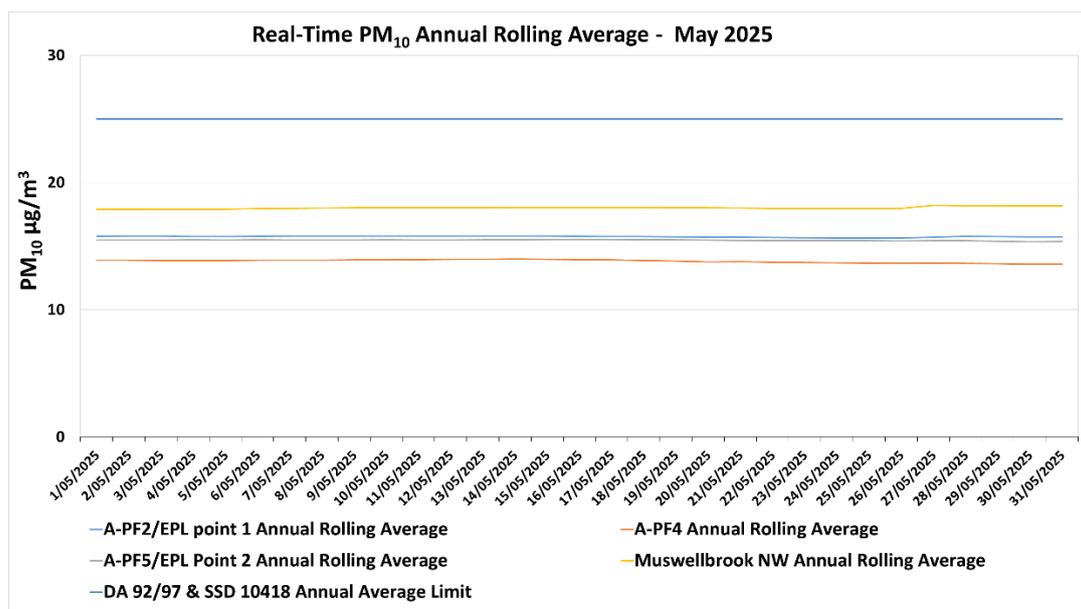


Figure 6-2: Real-time PM₁₀ Annual Rolling Average Results for May 2025.

6.3 PM_{2.5} Results – 24 Hour Daily Average

There was no exceedance of the PM_{2.5} annual rolling average reported at MPO during May 2025. Real time PM_{2.5} 24 hour rolling average results for May 2025 are presented in **Table 6-2**.

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

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 ³)
	24-hour Average Result			
01/05/2025	3.90	4.37	5.05	25
02/05/2025	3.88	3.87	4.81	25
03/05/2025	3.63	3.70	4.52	25
04/05/2025	3.99	3.79	4.73	25
05/05/2025	4.37	4.15	4.79	25
06/05/2025	4.81	4.40	5.45	25
07/05/2025	4.53	3.48	3.43	25
08/05/2025	4.22	3.72	3.82	25
09/05/2025	4.63	4.77	5.69	25
10/05/2025	4.27		5.45	25
11/05/2025	4.19		4.87	25
12/05/2025	4.00		4.53	25
13/05/2025	4.08		4.93	25
14/05/2025	5.06		5.68	25
15/05/2025	6.56	5.50	7.79	25
16/05/2025	5.43	4.59	6.14	25
17/05/2025	5.85	5.50	5.44	25
18/05/2025	5.50	4.80	5.28	25
19/05/2025	3.74	3.23	4.23	25
20/05/2025	3.28	3.16	3.43	25
21/05/2025	3.58		3.65	25
22/05/2025	3.25	3.18	3.43	25
23/05/2025	4.15	4.06		25
24/05/2025	3.84	3.23		25
25/05/2025	4.25	3.58		25
26/05/2025	5.47	4.74		25
27/05/2025	8.18	6.79		25
28/05/2025	6.73		4.01	25
29/05/2025	3.67		3.18	25
30/05/2025	4.54		4.30	25
31/05/2025	5.86		5.90	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_{2.5} 24-hour average results for May 2025 are presented in **Figure 6-3** below.

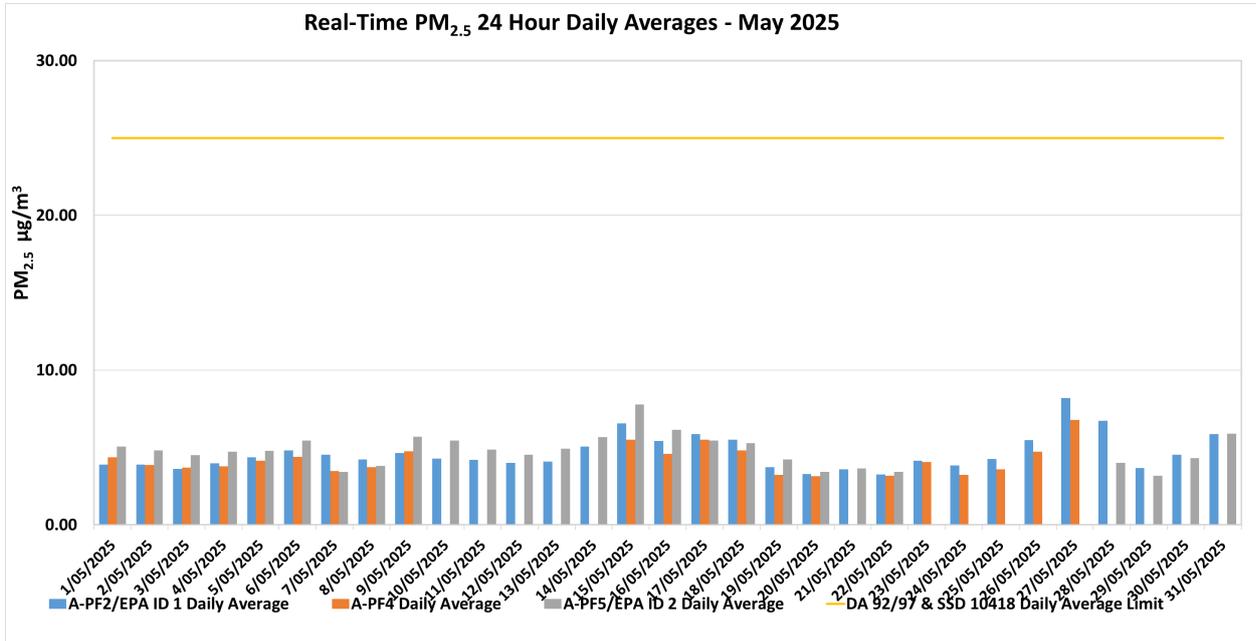


Figure 6-3: Real-time PM_{2.5} 24 hour Daily Average Results for May 2025.

6.4 PM_{2.5} Results - Annual Rolling Average

There was no exceedance of the PM_{2.5} annual rolling average reported at MPO during May 2025. Real time PM_{2.5} annual rolling averages during the reporting period are presented in **Figure 6-4** below.

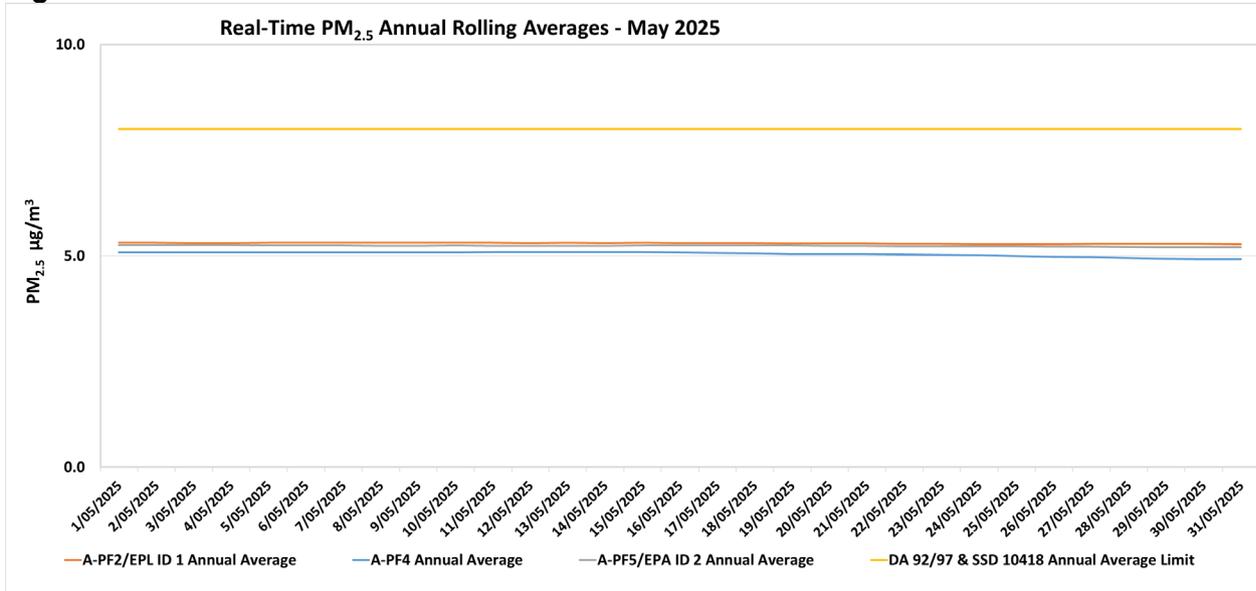


Figure 6-4: Real-time PM_{2.5} Annual Rolling Average Results for May 2025.

7. Dust Shutdowns

7.1 Methodology

PM₁₀ dust levels and wind direction is continually monitored at the Muswellbrook NW Upper Hunter Air Quality Monitoring Network Station to assess any exceedances over a 24-hour period.

7.2 Assessment Criteria

Adverse conditions that lead to the shutdown of dust generating activities at Mount Pleasant are assessed as per EPL 20850 requirement O3. Adverse conditions are defined as the occurrence of both adverse wind conditions and adverse PM₁₀ conditions measured at the Muswellbrook NW Air Quality Monitoring Station.

- Adverse wind conditions are the result of a one-hour average wind direction between 250 degrees and 340 degrees.
- Adverse PM₁₀ conditions are the occurrence of the rolling 24- hour average PM₁₀ concentration exceeding 44 µg/m³.

When adverse conditions have passed and a minimum of one hour of no dust generating activities have been undertaken, activities may resume.

7.3 Results

Table 7.1. presents a log of days throughout the reporting period when adverse conditions were triggered leading to a shutdown event, in accordance with EPL Condition O3.4.

Table 7-1 Dust Shutdowns MPO- May 2025

Date	Muswellbrook NW 24- hour rolling PM10 Average (µg/m ³)	Wind Direction (°)
27/05/2025	50.3	332

8. Surface Water Monitoring

8.1 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.

8.2 Assessment Criteria

Surface waters were assessed as per the [MPO Water Management Plan](#) (MACH Energy, 2025) 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.

8.3 Results

Surface water monitoring was conducted by AECOM on 27 May 2025. 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 May 2025

Station	pH	Electrical Conductivity (EC) (µs/cm) ¹	Total Dissolved Solids (TDS) (mg/L)	Total Suspended Solids (TSS) (mg/L)
W1	7.6	365	230	42
W2	**	**	**	**
W3	7.5	300	190	180
W4	6.8	106	220	160
W5	6.7	75	300	21
W6A	7.6	374	190	32
W9	6.7	117	300	34
W11	**	**	**	**
W12	7.4	205	280	530
W13	7.2	132	310	120
W14	*	*	*	*
W15	8.1	356	220	62
W16	**	**	**	**
W17	**	**	**	**

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

*Dry or insufficient water to sample.

** No access due to track conditions.

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

During 27 May 2025 monitoring event, one (1) site was dry, and four (4) were unable to be accessed.

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.

9. Groundwater Monitoring

Quarterly groundwater monitoring was conducted between 8, 12, 13, 14, 26 and 29 of May 2025. Water level results for the groundwater bores are presented in **Table 8-1**. The quarterly pH and EC results are presented in **Table 8-2** and **Table 8-3**, respectively.

Table 8-1 - MPO Quarterly Groundwater Water Level Results

Monitoring Location/ ID	Water Level Trigger Range		May 2025 Water Level (DTW)	February 2025 Water Level (DTW)	Nov 2024 Water Level (DTW)	Triggered (Yes/No)
	80 th Percentile (DTW)	Trigger				
WRA1L	-	>± 0.5m	2.73	2.44	1.98	
WRA1U	-	>± 0.5m	*	*	*	
WRA3L-R**	-	>± 0.5m	*	*	-	
WRA3U-R**	-	>± 0.5m	*	*	-	
WRA5L-R**	-	>± 0.5m	*	*	-	
WRA5U-R**	-	>± 0.5m	*	*	-	
WRA6L	-	>± 0.5m	0.03	0.37	0.36	
WRA6U	-	>± 0.5m	0.75	0.91	0.88	
MPBH1	9.71	10.70	9.06	9.72	9.74	No
MPBH2	12.20	13.59	11.81	11.82	11.74	No
MPBH3b	13.04	Dry (or 14.0m)	11.68	11.89	11.83	No
MPBH4	-	>± 0.5m	11.70	12.19	12.12	
MPBH5	-	>± 0.5m	*	*	*	
MPBH1-C	-	>± 0.5m	*	9.623	9.623	
MPBH1-HR	-	>± 0.5m	*	32.22	34.69	
MPBH2-C	-	>± 0.5m	11.83	11.833	11.743	
MPBH2-HR	-	>± 0.5m	11.87	11.856	11.756	
MPBH4-C	-	>± 0.5m	10.41	10.913	10.843	
MPBH4-HR	-	>± 0.5m	*	49.875	49.895	
MPBH5-C	-	>± 0.5m	*	11.479	11.359	
MPBH5-HR	-	>± 0.5m	*	11.52	11.42	
MPBH6	-	>± 0.5m	8.85	9.44	9.41	
MPBH6-C	-	>± 0.5m	10.18	10.848	10.838	
MPBH6-HR	-	>± 0.5m	8.88	10.355	10.295	
MPBH7	10.1	>± 0.5m	5.42	5.29	4.95	No
MPBH7-C	-	>± 0.5m	17.62	17.435	17.66	
3500C500L	-	>± 0.5m	26.42	25.98	25.79	
3500C500S	-	>± 0.5m	25.70	25.08	24.73	
4500F000	-	>± 0.5m	*	22.34	^	
5000D000-R	-	>± 0.5m	138.63	138.43	138.21	
5500D000	-	>± 0.5m	134.32	Removed	40.94	
6000C000L-R**	-	>± 0.5m	*	*	*	
6000C000U-R**	-	>± 0.5m	*	*	*	
6500F500L	-	>± 0.5m	52.10	50.48	50.46	
6500F500M	-	>± 0.5m	52.77	52.49	51.35	
6500F500U	-	>± 0.5m	31.74	31.8	31.92	

Monitoring Location/ ID	Water Level Trigger Range		May 2025 Water Level (DTW)	February 2025 Water Level (DTW)	Nov 2024 Water Level (DTW)	Triggered (Yes/No)
	80 th Percentile (DTW)	Trigger				
6500F625	-	>± 0.5m	16.18	16.1	16.04	
Melody	-	>± 0.5m	13.14	13.1	13.05	
7500F000	-	>± 0.5m	36.55	36.36	35.98	
GDE Bore Shallow**	-	>± 0.5m	*	*	*	
GDE Bore Deep**	-	>± 0.5m	10.92	10.86	10.67	
NE Alluvium**	-	>± 0.5m	*	^	^	
East Alluvium**	-	>± 0.5m	*	*	*	

Results in **bold** indicate that the bore has exceeded the adopted assessment criterion for changes in standing water level from the previous measurement.

* Dry/insufficient water to sample.

**New site.

^Unsafe access.

Table 8-2 - MPO Quarterly Groundwater pH Results

Monitoring Location/ ID	pH Trigger Range		May 2025 pH	Feb 2025 pH	Nov 2024 pH	Triggered (Yes/No)
	Lower	Upper				
WRA1L	6.0	8.5	7.1	7.1	7.1	No
WRA1U			*	*	*	-
WRA3L-R**			7.5	7.5	7.6	No
WRA3U-R**			*	*	*	-
WRA5L-R**			7.4	6.9	7.1	No
WRA5U-R**			7.5	7.5	7.5	No
WRA6L			7	7	7	No
WRA6U			6.9	6.9	6.9	No
MPBH1			6.9	7	7	No
MPBH2			6.8	6.9	6.8	No
MPBH3b			7.7	7.4	7.8	No
MPBH4			6.9	6.9	7	No
MPBH5			*	*	*	-
MPBH1-C			*	8.7	8.7	-
MPBH1-HR			*	8	8	-
MPBH2-C			7.4	10.2	7.7	No
MPBH2-HR			7.7	8.4	7.5	No
MPBH4-C			8	8	8	No
MPBH4-HR			*	7.2	7.2	-
MPBH5-C			*	9.1	9.8	-
MPBH5-HR			*	7.4	7.5	-
MPBH6			7	7.1	7	No
MPBH6-C			7.2	7	7	No
MPBH6-HR			7.4	7.3	7.3	No
MPBH7			7.1	7	7	No
MPBH7-C			7.1	7.1	7	No
3500C500L			7.5	7.5	7.5	No
3500C500S			7.3	7.1	7.1	No
4500F000			*	6.8	^	-
5000D000-R			7.5	7.5	7.4	No
5500D000	*	Removed	6.9	-		
6000C000L-R**	8.4	*	*	No		
6000C000U-R**	*	*	*	-		
6500F500L	7.2	7.2	7.2	No		
6500F500M	7.2	7.3	7.3	No		

Monitoring Location/ ID	pH Trigger Range		May 2025 pH	Feb 2025 pH	Nov 2024 pH	Triggered (Yes/No)
	Lower	Upper				
6500F500U			6.8	6.8	6.8	No
6500F625			7	6.7	6.9	No
Melody			6.8	6.8	6.9	No
7500F000			7.8	7.7	7.7	No
GDE Bore Shallow**			*	*	*	-
GDE Bore Deep**			6.8	7.4	7.5	No
NE Alluvium**			*	^	^	-
East Alluvium**			*	*	*	-

* Dry/insufficient water to sample.

**New site.

^Unsafe access.

An investigation is triggered when pH values are recorded outside the baseline range (20th – 80th percentile). Results shown in **bold** are outside of this range.

Table 8-3 - MPO Quarterly Groundwater EC Results

Monitoring Location/ ID	Maximum Beneficial Use Trigger	May 2025 EC ¹	Feb 2025 EC ¹	Nov 2024 EC ¹	Triggered (Yes/No)
WRA1L	7800	3120	3080	3050	No
WRA1U	*	***	***	***	-
WRA3L-R**	*	7500	*	*	-
WRA3U-R**	*	***	4800	5320	-
WRA5L-R**	*	5070	4800	5320	-
WRA5U-R**	*	5980	*	*	-
WRA6L	7800	6670	5880	5700	No
WRA6U	22000	8430	9010	8650	No
MPBH1	800	604	675	640	No
MPBH2	930	1222	1247	1300	Yes
MPBH3b	7800	5280	5920	5600	No
MPBH4	*	5290	5620	5650	-
MPBH5	*	***	***	***	-
MPBH1-C	*	***	1450	1500	-
MPBH1-HR	*	***	1580	1550	-
MPBH2-C	*	1363	1436	1078	-
MPBH2-HR	*	1113	1631	1229	-
MPBH4-C	*	4820	4950	4970	-
MPBH4-HR	*	***	5880	5500	-
MPBH5-C	*	***	1042	919	-
MPBH5-HR	*	***	842	856	-
MPBH6	*	1274	1230	1250	-
MPBH6-C	*	3770	2710	2730	-
MPBH6-HR	*	6150	1490	4760	-
MPBH7	*	7630	11480	9770	-
MPBH7-C	*	10220	10760	10280	-
3500C500L	7800	3820	3770	3890	No
3500C500S	7800	5610	6010	8270	No
4500F000	22000	***	8440	^	-
5000D000-R	*	4500	4490	4500	-
5500D000	7800	***	Removed	4350	No
6000C000L-R**	*	4760	4530	4780	-
6000C000U-R**	*	***	*	*	-
6500F500L	7800	2570	2530	2550	No
6500F500M	7800	2670	2780	2610	No
6500F500U	7800	5080	5120	4920	No

Monitoring Location/ ID	Maximum Beneficial Use Trigger	May 2025 EC ¹	Feb 2025 EC ¹	Nov 2024 EC ¹	Triggered (Yes/No)
6500F625	7800	4190	4480	4310	No
Melody	*	6280	6140	5810	-
7500F000	7800	6290	6450	6350	No
GDE Bore Shallow**	*	***	***	*	-
GDE Bore Deep**	*	12850	11240	10710	-
NE Alluvium**	*	***	^	^	-
East Alluvium**	*	***	*	*	-

* Indicates no trigger limit identified

** New site

*** Dry/insufficient water to sample

^Unsafe access.

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

An investigation is triggered when EC values recorded exceed the beneficial use quality range (as described in the GWMP) for three successive monitoring rounds. Results outside this range are shown in **bold**.

During the May 2025 monitoring event, sites WRA1U, GDE Bore Shallow, NE Alluvium and East Alluvium were dry. WRA3U-R contained insufficient water to sample and two (2) sites had changes in standing water level of greater than $\pm 0.5\text{m}$ from the previous measurement. All monitoring locations were within the pH trigger limits. All monitoring locations were below their respective EC trigger limits except MPBH2. MPBH2 have been outside these limits for five consecutive monitoring events.

An investigation is triggered if elevated measurements occur for three consecutive sampling events in accordance MPO Water Management Plan (MACH Energy, 2022). An investigation was triggered (AGE, 2023) examining the cause of elevated EC values in the alluvial zone, specifically MPBH2. The data strongly suggests that the cause of the increase in EC is persistent above-average stage in the adjacent Hunter River, caused by above-average rainfall since 2020, which is causing a rise in groundwater levels in similar alluvial bores. Trigger values have since been reviewed and will be incorporated in future Water management plans. The next quarterly ground water monitoring event is scheduled for August 2025.

10. Noise Monitoring

Attended noise monitoring was undertaken during the night of 28th March 2025 at eight (8) monitoring locations as per the [MPO Noise Management Plan](#) (MACH Energy, 2024) in accordance with DA 92/97, SSD 10418 and EPL 20850.

10.1 Results

The results for nighttime attended noise monitoring for noise generated by MPO in May 2025 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 – 29 and 30 May 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	1:18am	IA	45	0.9 / 343	Yes	E	No
N-AT2	10:40pm	31	45	1.8 / 329	Yes	D	No
N-AT3	11:15pm	37	45	1.4 / 338	Yes	E	No
N-AT4	11:41pm	IA	45	1.5 / 040	Yes	D	No
N-AT5	12:02am	35	45	1.1 / 020	Yes	D	No
N-AT6	12:55am	IA	45	1.1 / 034	Yes	D	No
N-AT7	10:00pm	IA	45	2.1 / 342	Yes	D	No
N-AT8	12:28am	IA	NA ²	0.9 / 208	NA ⁶	E	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.
- Estimated or measured L_{A1,1minute} 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,15min} Generated by MPO: Attended Night Monitoring – 29 and 30 May 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	1:18am	IA	37	0.9 / 343	Yes	E	No
N-AT2	10:40pm	27	35	1.8 / 329	Yes	D	No
N-AT3	11:15pm	34	40	1.4 / 338	Yes	E	No
N-AT4	11:41pm	IA	38	1.5 / 040	Yes	D	No
N-AT5	12:02am	30	37	1.1 / 020	Yes	D	No
N-AT6	12:55am	IA	35	1.1 / 034	Yes	D	No
N-AT7	10:00pm	IA	37	2.1 / 342	Yes	D	No
N-AT8	12:28am	IA	NA ²	0.9 / 208	NA ⁶	E	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.
- Estimated or measured L_{Aeq,15minute} attributed to MPO.
- IA = inaudible; and
- Bold results indicate exceedance of criteria.
- This is not a compliance monitoring location.

Table 9-3 – L_{Aeq, period} Cumulative Noise: Attended Night Monitoring – 29 and 30 May 2025

Location	Start Date and Time	Measured Mining Only L _{Aeq, period} dB ^{1,2,3}	Cumulative Noise Criterion LAeq dB	Exceedance dB
N-AT1	1:18am	IA	40	No
N-AT2	10:40pm	27	40	No
N-AT3	11:15pm	34	40	No
N-AT4	11:41pm	IA	40	No
N-AT5	12:02am	30	40	No
N-AT6	12:55am	IA	40	No
N-AT7	10:00pm	IA	40	No
N-AT8	12:28am	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
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).

11. Blast Monitoring

There were nine (9) blast events during May 2025 (a total of 40 blasts YTD). Results for May 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 – May 2025

Day & Date Fired	Time Fired	BVOC Vibration (mm/s)	BVOC Overpressure (dBL)	BVO2 Vibration (mm/s)	BVO2 Overpressure (dBL)	Blast Fume Compliant
1/05/25	15:06	0.520 mm/s	97.4 DBL	0.790 mm/s	95.5 DBL	Y
6/05/2025	11:32	0.460 mm/s	90.7 DBL	0.590 mm/s	96.4 DBL	Y
9/05/2025	10:59	0.760 mm/s	100.5 DBL	1.040 mm/s	104.1 DBL	Y

9/05/2025	09:03	0.300 mm/s	96.9 DBL	0.080 mm/s	87 DBL	Y
13/05/2025	14:50	0.030 mm/s	97.6 DBL	0.040 mm/s	95.6 DBL	Y
14/05/2025	16:12	0.780 mm/s	106.1 DBL	0.160 mm/s	87.6 DBL	Y
16/05/2025	09:12	0.490 mm/s	96.3 DBL	0.280 mm/s	93.7 DBL	Y
29/05/2025	15:01	0.710 mm/s	96 DBL	0.950 mm/s	101.3 DBL	Y
29/05/2025	15:49	0.270 mm/s	79.4 DBL	0.220 mm/s	92.3 DBL	Y

END OF REPORT