

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

**December 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 December 2024               |
| <b>Reporting Period End Date</b>        | 31 December 2024              |
| <b>Date All Data Received</b>           | 30 January 2025               |

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

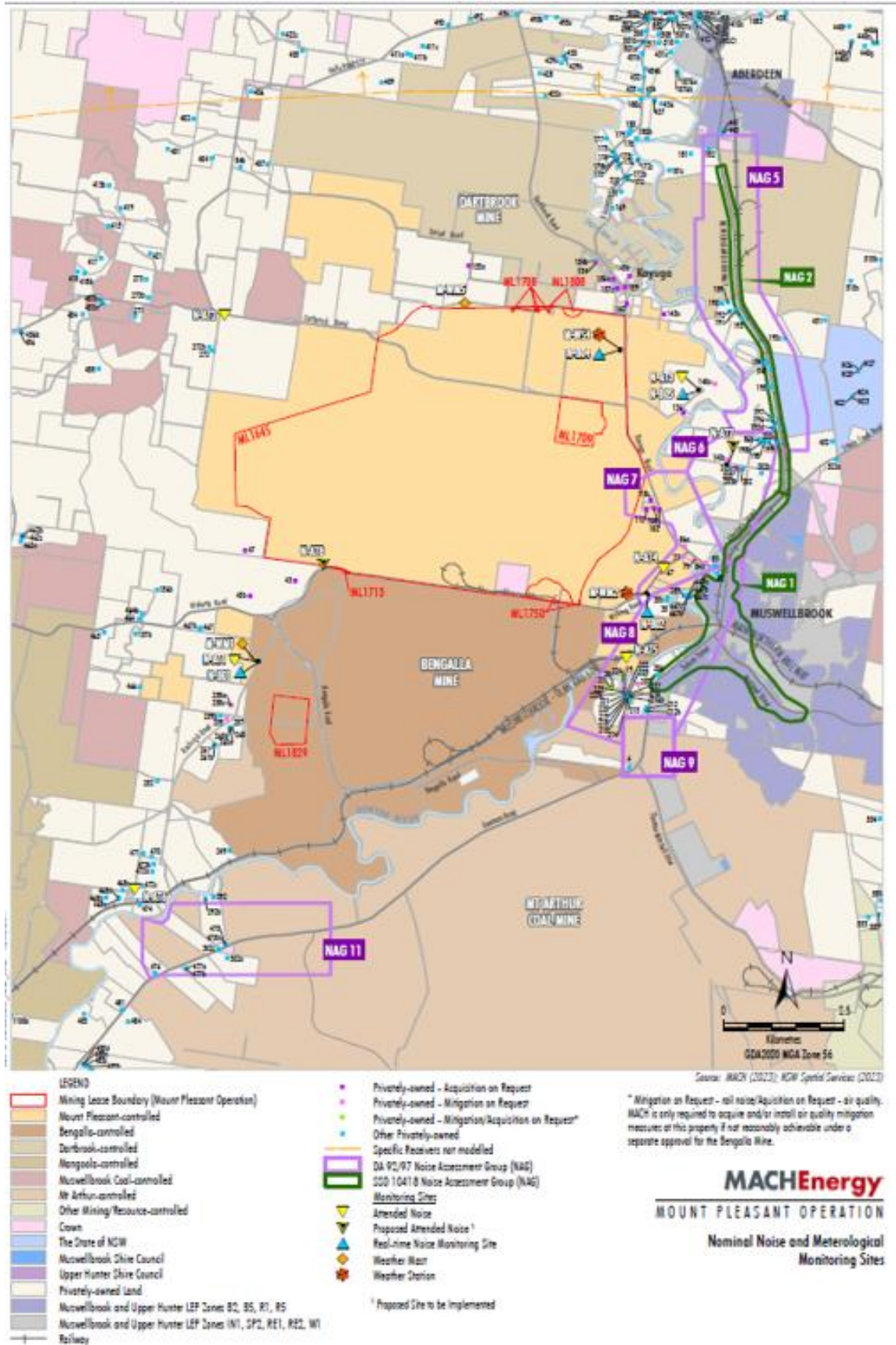
The MPO EPL 20850 specifically requires the monitoring of:

- 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).

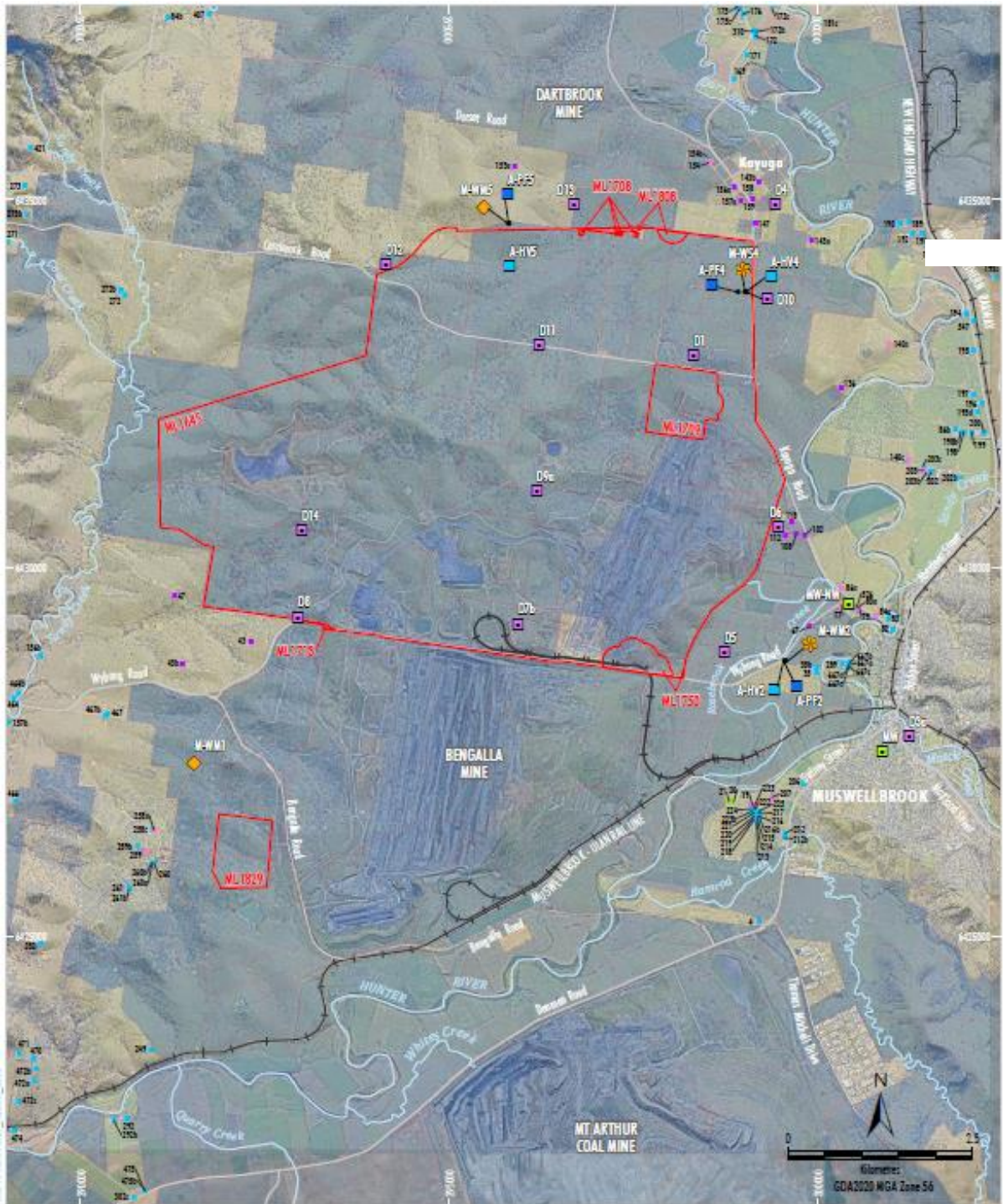
All monitoring is undertaken by suitably qualified and experienced person(s). The MPO Environmental Monitoring Network is shown in the following figures:

- **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

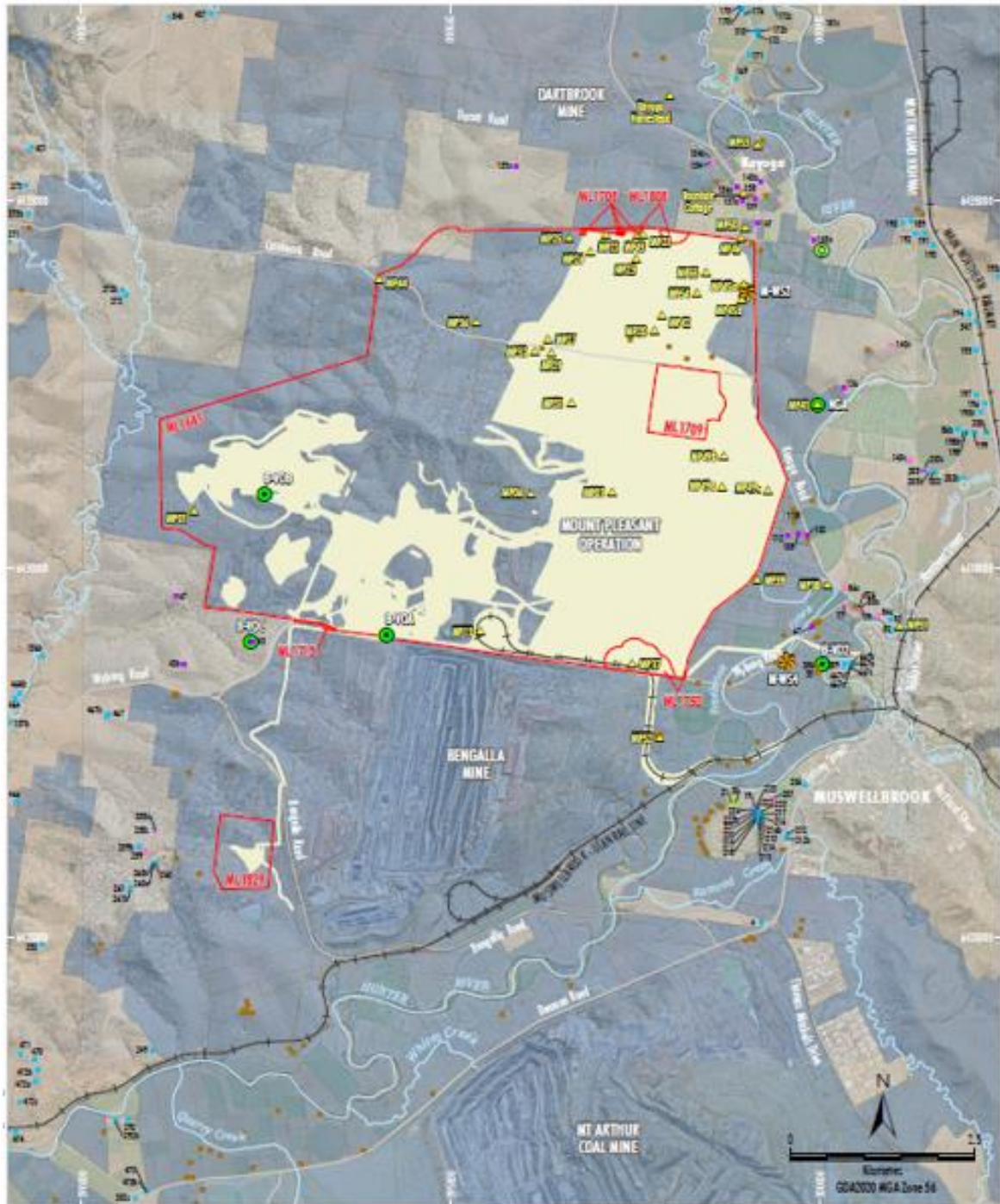
\* Mitigation on Request - rail noise/Acquisition on Request - air quality. MACH is only required to acquire and/or install air quality mitigation measures at this property if not reasonably achievable under a separate approval for the Bengalla Mine.

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

**MACH Energy**  
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)<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/vibration 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.

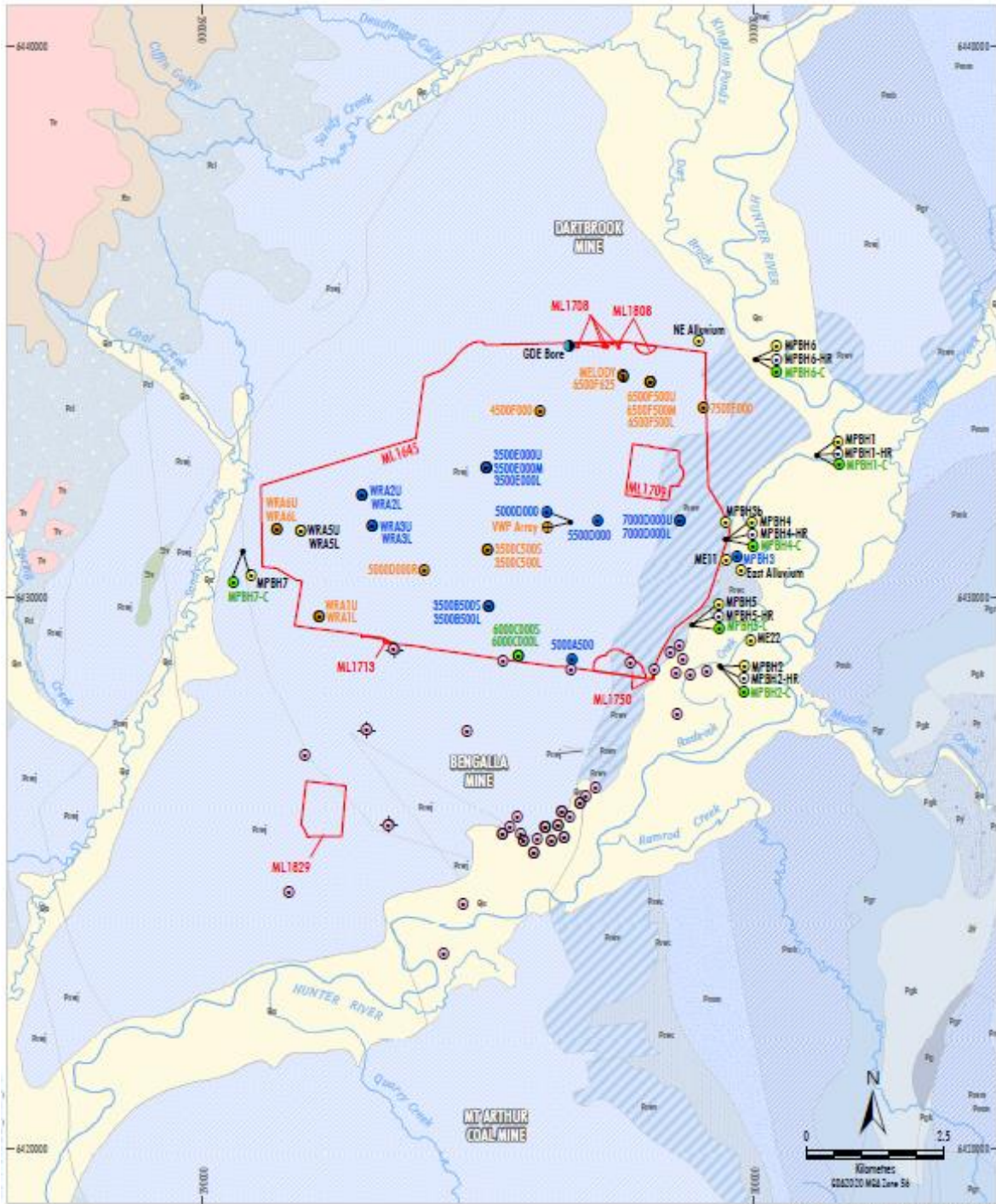
<sup>1</sup> Excludes some incidental Project components such as water management infrastructure, access roads, topsoil stockpiles, power supply, temporary offices, other ancillary works and construction disturbance.

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

**MACHEnergy**  
 MOUNT PLEASANT OPERATION  
 Blast Monitoring Locations

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





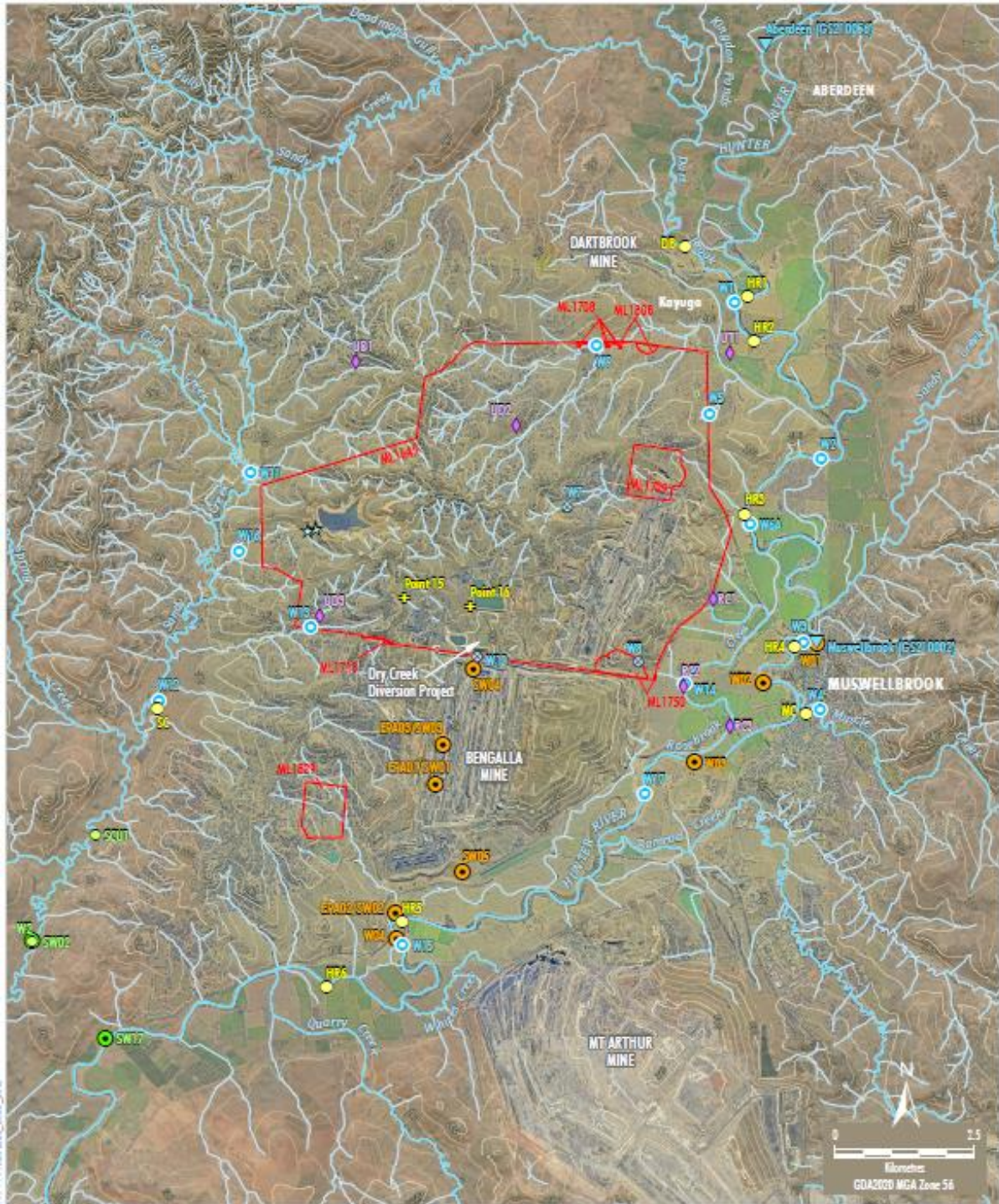
Source: NSW Spatial Services (2023); Department of Planning and Environment (2019)

- 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**





Source: MACH (2023); NSW Spatial Services (2023); NSW Department of Primary Industries - Water (2016); Bengalla Mining Company (2015); Mungah Coal Operations Pty Ltd (2014)  
 Orthophoto: MACH (Jun 2022, 2020)

| 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                    |
|        | Y-notch Weir                                     |
|        | Water Discharge/Monitoring Point (EPL 20850)     |
|        | Manoolo Monitoring                               |
|        | Surface Water Monitoring Site                    |
|        | Stream Health Monitoring Site                    |
|        | Bengalla Monitoring                              |
|        | Surface Water Monitoring Site                    |

**MACH Energy**  
 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 during December 2024 (the monitoring period). An additional monitor (E-BAM) is located at M-WS2 to provide additional capture for air quality. Additional meteorological data was collected at M-WS4.

Throughout December 2024, there was 41.4mm and 43.6mm 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, 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 Depositional Monitoring will continue to be included in monthly reporting as per DA92/97 up until surrender where it will be discontinued.

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<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.



## 4.2 Results

The dust deposition exposure period for gauges commenced on 29 November 2024. Sample collection was undertaken on 30 December 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 December 2024 have been provided as an indication of performance between January 2024 – December 2024 and represents 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 – December 2024**

| Location         | YTD Insoluble Solids (g/m <sup>2</sup> .month) | Insoluble Solids Annual Rolling Average (g/m <sup>2</sup> .month) |
|------------------|--|---|
| D1               | 2.2  | 2.2   |
| D3               | 1.2  | 1.2   |
| D4               | 1.1  | 1.1   |
| D5a              | 2.1  | 2.1   |
| D6               | 1.9  | 1.9   |
| D7b              | 8.6  | 8.6   |
| D8               | 4.6  | 4.6   |
| D9a              | 3.4  | 3.4   |
| D10              | 1.1  | 1.1   |
| D11              | 3.3  | 3.3   |
| D12              | 1  | 1   |
| D13              | 1.4  | 1.4   |
| D14              | 3  | 3   |
| <b>Criterion</b> | -  | <b>4</b>  |

*Notes:*

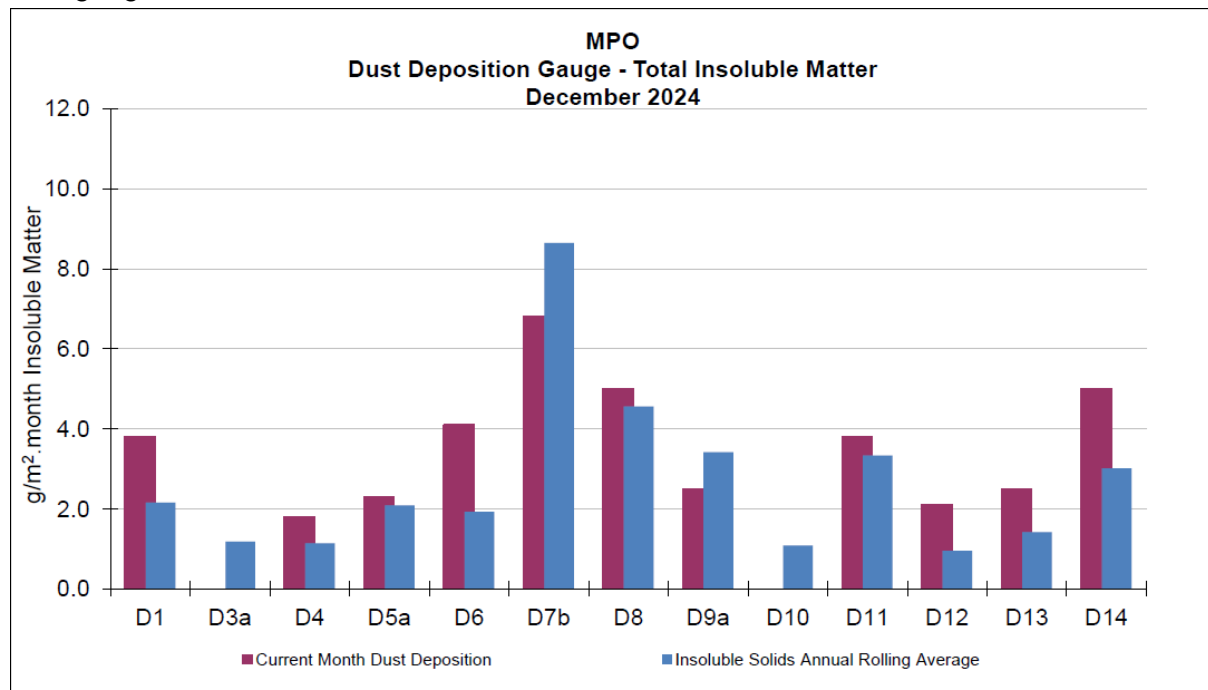
Results in **bold** indicate an elevated measurement of adopted assessment criteria.

\* 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 December sampling event noted that all of the gauges contained insects, four also contained vegetation and two contained bird droppings. Annual average dust deposition results were below the annual average criterion of 4 g/m<sup>2</sup>.month at all sites except D7b (8.8 g/m<sup>2</sup>) and D8 (4.3 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 – December 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 December 2024 have been provided as an indication of performance between January 2024 – December 2024 and 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 – December 2024**

| Run Date                      | Assessment Criterion | TSP µg/m <sup>3</sup> |            |            |
|-------------------------------|----------------------|-----------------------|------------|------------|
|                               |                      | HVAS A-PF2            | HVAS A-PF5 | HVAS M-WS4 |
| 1/12/2024                     | -                    | 32.4                  | 25.4       | 22.8       |
| 7/12/2024                     | -                    | 79.1                  | 26.6       | 29         |
| 13/12/2024                    | -                    | 89.8                  | 77.7       | 95.2       |
| 19/12/2024                    | -                    | 40.2                  | 64.8       | 32.6       |
| 25/12/2024                    | -                    | 42.2                  | 39.8       | 35.5       |
| 31/12/2024                    | -                    | 66.5                  | 120        | 49.2       |
| *Monthly Mean                 | -                    | 58.4                  | 59         | 44         |
| <b>Annual Rolling Average</b> | <b>90</b>            | <b>47</b>             | <b>44</b>  | <b>33</b>  |

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/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 December 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 December 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 December 2024. Real time PM<sub>10</sub> 24 hour daily average results for December 2024 are presented in **Table 6-1**.

**Table 6-1: MPO Palas Fidas PM<sub>10</sub> Data – December 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 |       |                |                 |  |
| 1/12/2024  | 13                     |       | 4              | 19.6            | 50   |
| 2/12/2024  | 15                     |       | 4              | 15.7            | 50   |
| 3/12/2024  | 15                     |       | 4              | 26.5            | 50   |
| 4/12/2024  | 16                     |       | 6              | 39.1            | 50   |
| 5/12/2024  | 14                     |       | 6              | 23              | 50   |
| 6/12/2024  | 19                     |       | 7              | 22.7            | 50   |
| 7/12/2024  | 21                     |       | 4              | 39.8            | 50   |
| 8/12/2024  | 16                     |       | 4              | 25.4            | 50   |
| 9/12/2024  | 16                     |       | 6              | 28.7            | 50   |
| 10/12/2024 | 27                     |       | 7              | 28.2            | 50   |
| 11/12/2024 | 26                     |       | 7              | 24.1            | 50   |
| 12/12/2024 | 32                     |       | 6              | 10.3            | 50   |
| 13/12/2024 | 30                     |       | 7              | 13.4            | 50   |
| 14/12/2024 | 33                     |       | 11             | 15.5            | 50   |
| 15/12/2024 | 33                     |       | 11             | 12.6            | 50   |
| 16/12/2024 | 19                     |       | 7              | 13.8            | 50   |
| 17/12/2024 | 29                     |       | 5              | 18              | 50   |
| 18/12/2024 | 14                     |       | 5              | 13.5            | 50   |
| 19/12/2024 | 16                     |       | 5              | 19.8            | 50   |
| 20/12/2024 | 18                     |       | 6              | 15.2            | 50   |
| 21/12/2024 | 24                     |       | 6              | 13.3            | 50   |
| 22/12/2024 | 27                     |       | 8              | 14.2            | 50   |
| 23/12/2024 | 32                     |       | 6              | 19              | 50   |
| 24/12/2024 | 26                     | 34    | 4              | 22.9            | 50   |
| 25/12/2024 | 13                     | 12    | 4              | 23.5            | 50   |
| 26/12/2024 | 31                     | 13    |                | 26.1            | 50   |
| 27/12/2024 | 33                     | 17    |                | 33.7            | 50   |
| 28/12/2024 | 27                     | 24    |                | 22              | 50   |
| 29/12/2024 | 25                     | 24    |                | 24.1            | 50   |
| 30/12/2024 | 20                     | 16    |                | 11.5            | 50   |
| 31/12/2024 | 23                     | 19    |                |                 |  |

**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 December 2024.

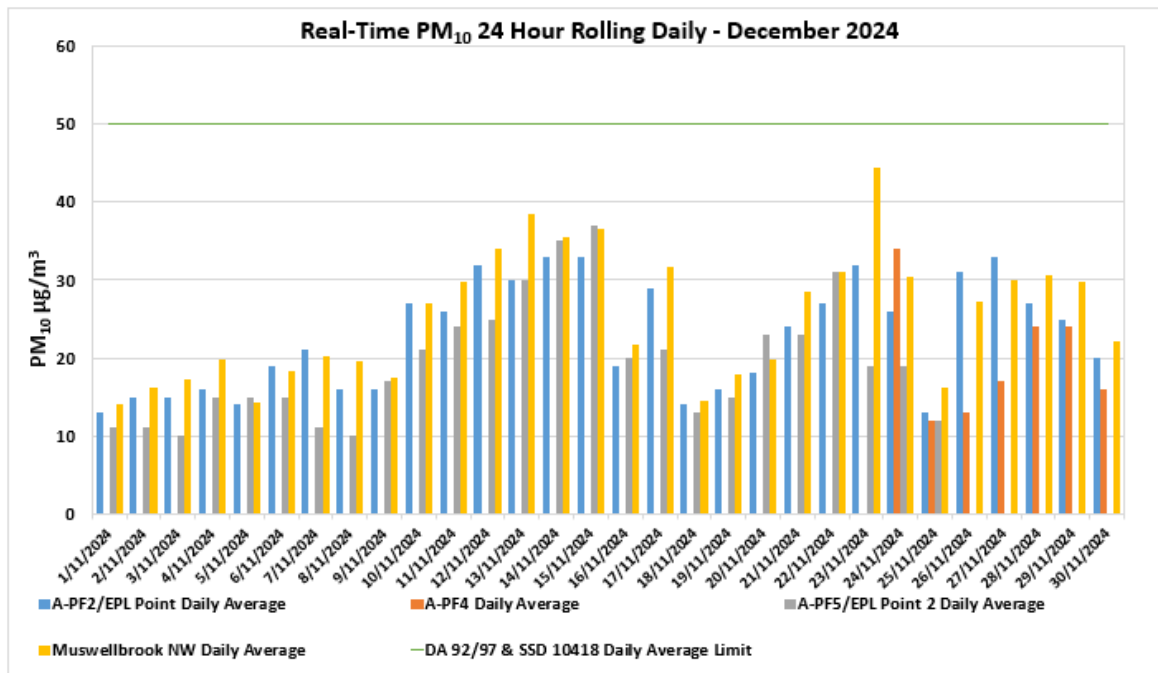


Figure 6-1: Real-time PM<sub>10</sub> 24 Daily Average Results for December 2024.

## 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 December 2024. Real time PM<sub>10</sub> annual rolling averages during the reporting period are presented in Figure 6-2 below.

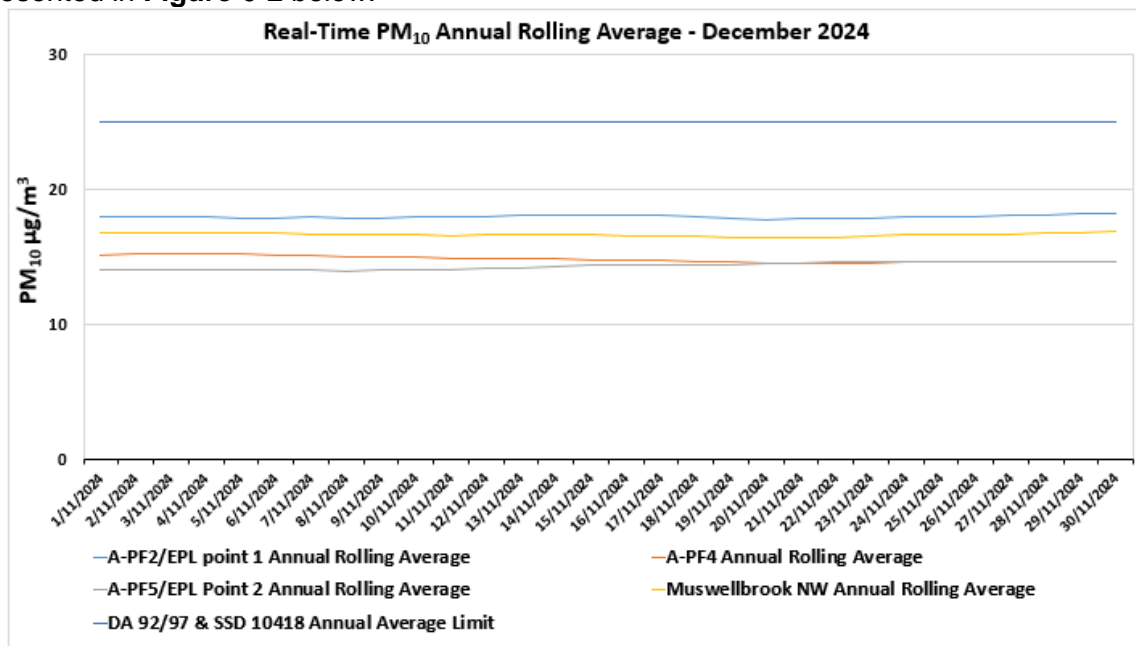


Figure 6-2: Real-time PM<sub>10</sub> Annual Rolling Average Results for December 2024.

## 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 December 2024. Real time PM<sub>2.5</sub> 24 hour rolling average results for December 2024 are presented in **Table 6-2**.

**Table 6-2: MPO Palas Fidas PM<sub>2.5</sub> Data – December 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 |       |                |  |
| 1/12/2024  | 4                      |       | 4              | 25   |
| 2/12/2024  | 4                      |       | 4              | 25   |
| 3/12/2024  | 5                      |       | 4              | 25   |
| 4/12/2024  | 6                      |       | 6              | 25   |
| 5/12/2024  | 6                      |       | 6              | 25   |
| 6/12/2024  | 8                      |       | 7              | 25   |
| 7/12/2024  | 5                      |       | 4              | 25   |
| 8/12/2024  | 5                      |       | 4              | 25   |
| 9/12/2024  | 6                      |       | 6              | 25   |
| 10/12/2024 | 8                      |       | 7              | 25   |
| 11/12/2024 | 7                      |       | 7              | 25   |
| 12/12/2024 | 7                      |       | 6              | 25   |
| 13/12/2024 | 6                      |       | 7              | 25   |
| 14/12/2024 | 11                     |       | 11             | 25   |
| 15/12/2024 | 12                     |       | 11             | 25   |
| 16/12/2024 | 7                      |       | 7              | 25   |
| 17/12/2024 | 6                      |       | 5              | 25   |
| 18/12/2024 | 6                      |       | 5              | 25   |
| 19/12/2024 | 6                      |       | 5              | 25   |
| 20/12/2024 | 5                      |       | 6              | 25   |
| 21/12/2024 | 6                      |       | 6              | 25   |
| 22/12/2024 | 8                      |       | 8              | 25   |
| 23/12/2024 | 7                      |       | 6              | 25   |
| 24/12/2024 | 5                      | 6     | 4              | 25   |
| 25/12/2024 | 5                      | 4     | 4              | 25   |
| 26/12/2024 | 6                      | 5     |                | 25   |
| 27/12/2024 | 7                      | 5     |                | 25   |
| 28/12/2024 | 9                      | 8     |                | 25   |
| 29/12/2024 | 6                      | 6     |                | 25   |
| 30/12/2024 | 7                      | 6     |                | 25   |
| 31/12/2024 | 8                      | 8     |                | 25   |

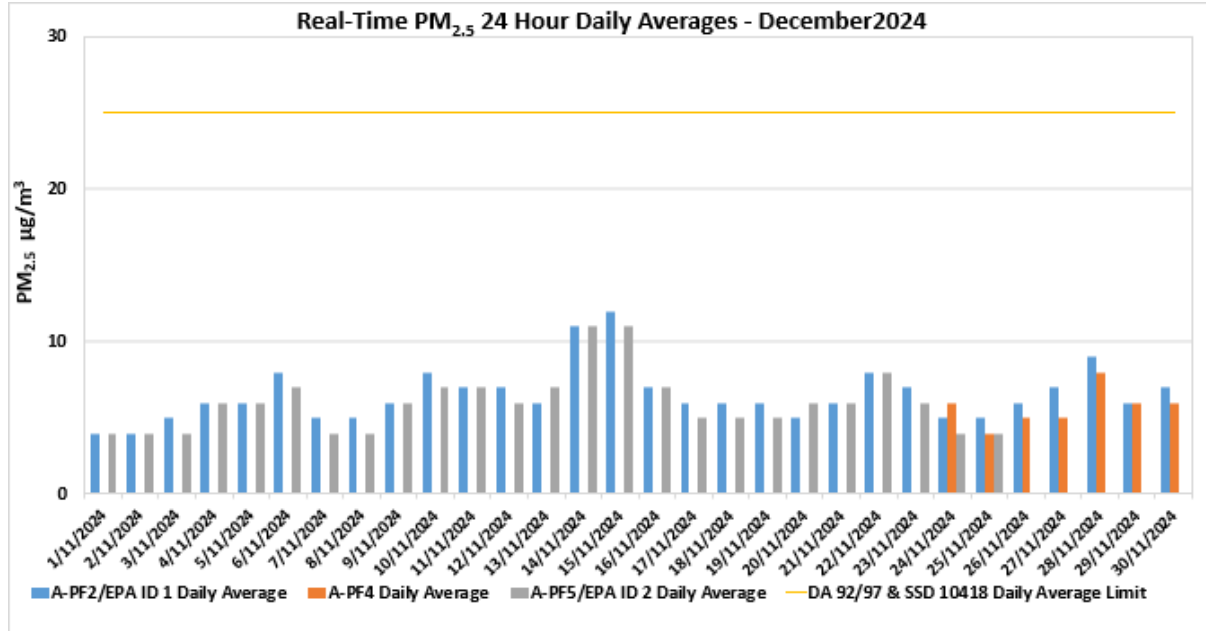
**Notes:**

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



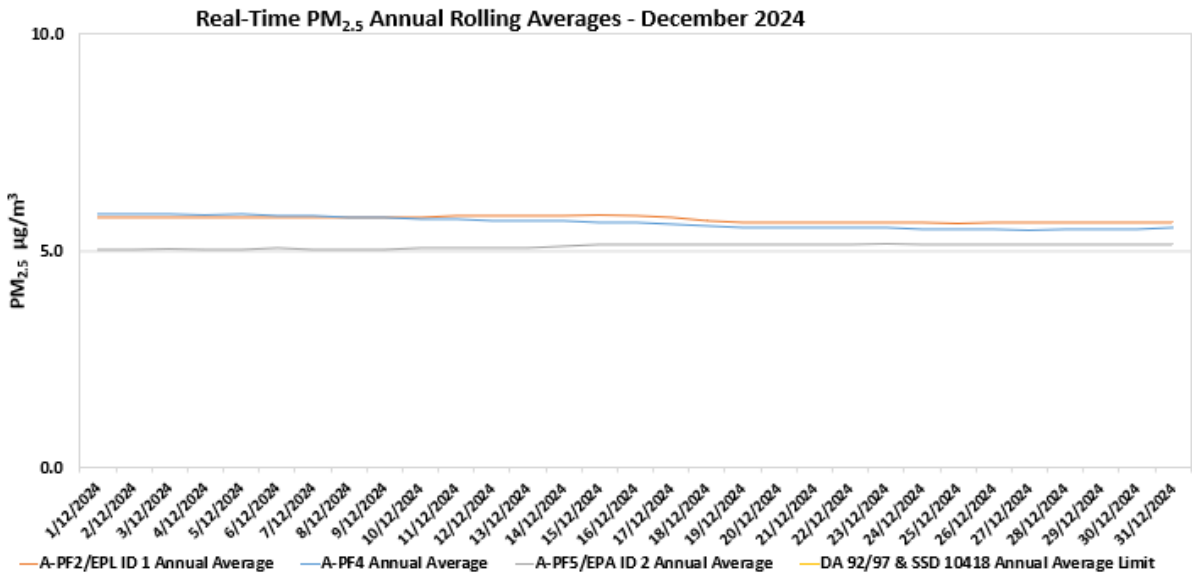
Real time PM<sub>2.5</sub> 24-hour average results for December 2024 are presented in **Figure 6-3** below.



**Figure 6-3: Real-time PM<sub>2.5</sub> 24 hour Daily Average Results for December 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 December 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 December 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 19 December 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 – 19 December 2024**

| Station | pH         | Electrical Conductivity (EC) ( $\mu\text{s}/\text{cm}$ ) <sup>1</sup> | Total Dissolved Solids (TDS) (mg/L) | Total Suspended Solids (TSS) (mg/L) |
|---------|------------|---|-------------------------------------|-------------------------------------|
| W1      | 8.1        | 510   | 240                                 | 18                                  |
| W2      | 8.1        | <b>580</b>  | 302                                 | 18                                  |
| W3      | 8          | 660   | 363                                 | 28                                  |
| W4      | 7.7        | 2250  | 1350                                | 6                                   |
| W5      | *          | *   | *                                   | *                                   |
| W6A     | 8.2        | <b>590</b>  | 315                                 | 11                                  |
| W9      | *          | *   | *                                   | *                                   |
| W11     | <b>8.2</b> | 3850  | 2150                                | <5                                  |
| W12     | 7.9        | 5000  | 2760                                | 8                                   |
| W13     | *          | *   | *                                   | *                                   |
| W14     | *          | *   | *                                   | *                                   |
| W15     | **         | **  | **                                  | **                                  |
| W16     | <b>8.6</b> | <b>8650</b>   | 4960                                | 33                                  |
| W17     | 7.9        | <b>750</b>  | 420                                 | 30                                  |

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-WI2 (EC).

During 19 December 2024 monitoring event, four (4) sites were dry and one (1) site was unable to be accessed due to track conditions. Sites W2, W6A, W16 and W17 were above their respective EC trigger levels. Sites W11 and W16 were above their respective pH trigger levels.

Site W6A was above the respective EC trigger level for four consecutive monitoring events during the last monthly environmental report (October 2024) and continues to be above trigger levels for December 2024.

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.

Site W6A continued to exceed the respective EC trigger level (750  $\mu\text{S}/\text{cm}$ ) for December 2024; however, according to Table 26 of the WMP no further investigation is required as the upstream site W2 (Hunter River reference site) was also found to be exceeding trigger levels.

## 8. Groundwater Monitoring

The next quarterly groundwater monitoring event is scheduled for February 2025

## 9. Noise Monitoring

Attended noise monitoring was undertaken during the night of 19<sup>th</sup> December 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 December 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 – 19 December 2024**

| Location | Start Date and Time | MPO Only $L_{A1,1\text{min}}$ dB <sup>2,4</sup> | Criterion dB    | Wind Speed m/s Direction ° | Criterion Applies <sup>1</sup> | Stability Class | Exceedance dB <sup>3</sup> |
|----------|---------------------|---|-----------------|----------------------------|--------------------------------|-----------------|----------------------------|
| N-AT1    | 1:42pm              | IA  | 45              | 1.1 / 230                  | Yes                            | E               | No                         |
| N-AT2    | 0:39pm              | IA  | 45              | 3.4 / 156                  | No                             | E               | NA                         |
| N-AT3    | 0:26pm              | IA  | 45              | 4.2 / 145                  | No                             | E               | NA                         |
| N-AT4    | 0:53pm              | IA  | 45              | 1.6 / 220                  | Yes                            | E               | No                         |
| N-AT5    | 1:14pm              | IA  | 45              | 1.6 / 211                  | Yes                            | E               | No                         |
| N-AT6    | 1:41pm              | IA  | 45              | 1.1 / 230                  | Yes                            | E               | No                         |
| N-AT7    | 0:01pm              | IA  | 45              | 3.8 / 148                  | No                             | E               | NA                         |
| N-AT8    | 1:15pm              | 57  | NA <sub>2</sub> | 1.6 / 211                  | NA <sup>6</sup>                | E               | NA <sup>6</sup>            |

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  $L_{A1,1minute}$  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 – 19 Dec 2024**

| Location | Start Date and Time | MPO Only $L_{A1,1min}$ 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    | 11:42pm             | IA                                       | 37              | 1.3            | Yes                            | E               | No                         |
| N-AT2    | 10:39pm             | IA                                       | 35              | 2.2            | No                             | E               | NA                         |
| N-AT3    | 10:26pm             | IA                                       | 40              | 1.5            | No                             | E               | NA                         |
| N-AT4    | 10:53pm             | IA                                       | 38              | 0.7            | Yes                            | E               | No                         |
| N-AT5    | 11:14pm             | IA                                       | 37              | 0.9            | Yes                            | E               | No                         |
| N-AT6    | 11:41pm             | IA                                       | 35              | 1.4            | Yes                            | E               | No                         |
| N-AT7    | 10:01pm             | IA                                       | 37              | 1.5            | No                             | E               | NA                         |
| N-AT8    | 11:15pm             | 54                                       | NA <sup>5</sup> | 1.4            | NA <sup>6</sup>                | E               | NA <sup>5</sup>            |

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
4. 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 – 19 Dec 2024**

| Location | Start Date and Time | Measured Mining Only $L_{Aeq, period}$ dB <sup>1,2,3</sup> | Cumulative Noise Criterion LAeq dB | Exceedance dB   |
|----------|---------------------|--|------------------------------------|-----------------|
| N-AT1    | 11:42pm             | 39   | 40                                 | No              |
| N-AT2    | 10:39pm             | IA   | 40                                 | NA              |
| N-AT3    | 10:26pm             | IA   | 40                                 | NA              |
| N-AT4    | 10:53pm             | IA   | 40                                 | No              |
| N-AT5    | 11:14pm             | IA   | 40                                 | No              |
| N-AT6    | 11:41pm             | 25   | 40                                 | No              |
| N-AT7    | 10:01pm             | IA   | 40                                 | NA              |
| N-AT8    | 11:15pm             | 54   | 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 six (6) blast events during December (a total of 87 blasts YTD). Results for December 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 – December 2024**

| Day & Date Fired | Time Fired | BVOC<br>Vibration<br>(mm/s) | BVOC<br>Overpressure<br>(dBL) | BVO2<br>Vibration<br>(mm/s) | BVO2<br>Overpressure<br>(dBL) | Blast Fume<br>Compliant |
|------------------|------------|-----------------------------|-------------------------------|-----------------------------|-------------------------------|-------------------------|
| 4/12/2024        | 12:56      | 0.330 mm/s                  | 96.5 DBL                      | 0.430 mm/s                  | 100.3 DBL                     | Y                       |
| 13/12/2024       | 14:47      | 0.470 mm/s                  | 104.8 DBL                     | 0.260 mm/s                  | 100.2 DBL                     | Y                       |
| 13/12/2024       | 13:30      | 1.190 mm/s                  | 91.6 DBL                      | 0.590 mm/s                  | 96.9 DBL                      | Y                       |
| 18/12/2024       | 15:40      | 0.370 mm/s                  | 107.9 DBL                     | 0.420 mm/s                  | 111.3 DBL                     | Y                       |
| 20/12/2024       | 10:01      | 0.690 mm/s                  | 88.2 DBL                      | 0.620 mm/s                  | 90.9 DBL                      | Y                       |
| 24/12/2024       | 9:12       | 0.210 mm/s                  | 87.1 DBL                      | 0.790 mm/s                  | 92.8 DBL                      | Y                       |

**END OF REPORT**