



Rasp Mine  
Monthly Environmental Monitoring Report  
May 2025

## INTRODUCTION

Broken Hill Operations Pty Ltd (BHOP) [a wholly owned subsidiary of Broken Hill Mines (BHM)] owns and operates the Rasp Mine (the Mine), which is located centrally within the City of Broken Hill on Consolidated Mine Lease 7 (CML7).

Mining has been undertaken within CML7 since 1885. The existing operations at the Rasp Mine include underground mining operations, a processing plant producing zinc and lead concentrates and a rail siding for concentrate dispatch. These operations are undertaken in accordance with Project Approval 07\_0018 under Part3A of the Environmental Planning and Assessment Act 1979 (EP&A Act).

As the holder of an Environmental Protection Licence, 12559, BHOP is required, under Section 66(6) of the NSW *Protection of the Environment Operations Act 1997*, to publish pollution monitoring data. In addition, BHO is required to publish data in accordance with its Project Approval 07\_0018 Schedule 4 Condition 9. These documents can be found on the Broken Hill Mines web pages at [www.brokenhillmines.com/projects/approvals-and-reporting](http://www.brokenhillmines.com/projects/approvals-and-reporting).

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## 1 Air Quality

Table 1 below shows the following pollutants as listed in the Project Approval DA 07\_0018 are required to be monitored in EPL 12559:

**Table 1: EPL 12559 monitoring criteria  
Long Term Criteria for Particulate Matter**

Pollutant	Averaging Period	Criterion
Total solid particles (TSP)	Annual	90 µg/m <sup>3</sup>
Particulate matter < 10 µm (PM <sub>10</sub> )	Annual	25 µg/m <sup>3</sup>

**Short Term Criterion for Particulate Matter**

Pollutant	Averaging Period	Criterion
Particulate matter < 10 µm (PM <sub>10</sub> )	24 hour	50 µg/m <sup>3</sup>

**Long Term Criteria for Deposited Dust**

Pollutant	Averaging Period	Maximum Project Contribution	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m <sup>2</sup> /month	4 g/m <sup>2</sup> /month

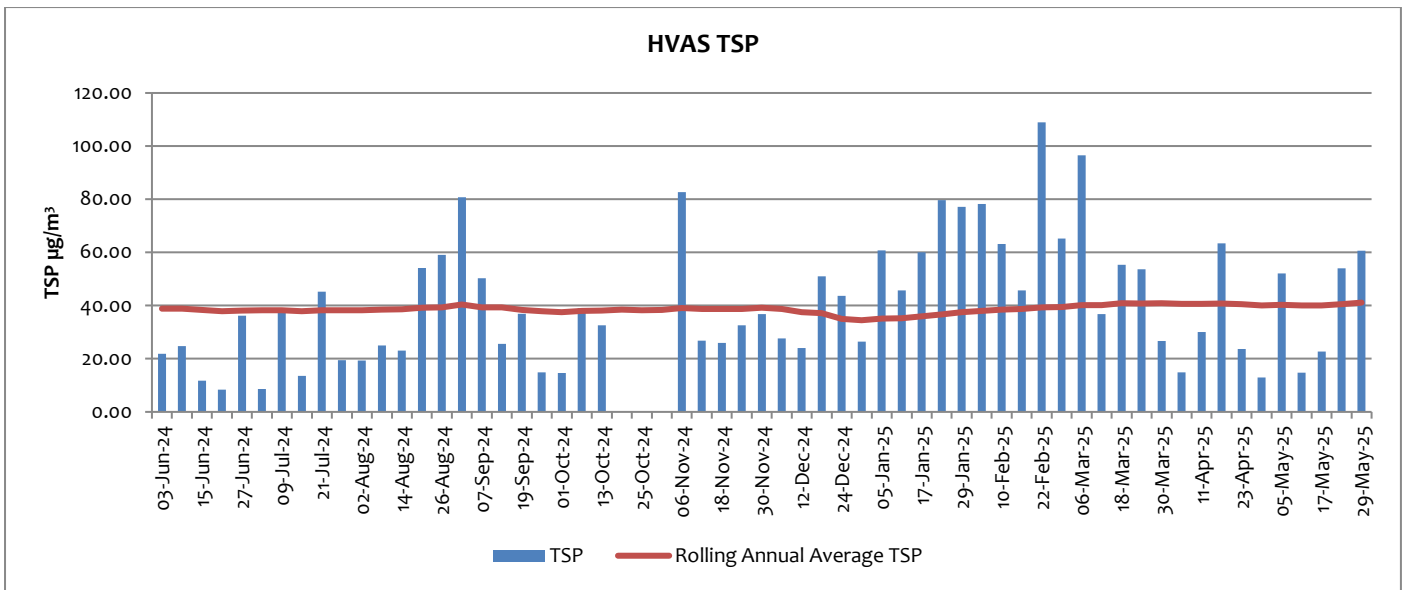
### 1.1 High Volume Air Samplers

There are four high volume air samplers used to measure ambient air quality at the Rasp Mine – HVAS (EPL10) and HVAS1 (EPL11) are located at the Silver Tank, central and to the south of the mine lease, and HVAS2 (EPL12) and HVAS3 (EPL57) are located adjacent to and north of Blackwood Pit. A map indicating these locations can be found in appendix 1. HVAS and HVAS3 sample for total suspended particulates (TSP) and lead dust, and HVAS1 and HVAS2 sample for particulate matter less than 10 microns (PM<sub>10</sub>) and lead dust.

**TABLE 2: HVAS (EPL10) - Silver Tank (On Site) Results for May 2025**

DATE	TSP (µg/m <sup>3</sup> )	Lead (µg/m <sup>3</sup> )
05-May-25	52.1	0.367
11-May-25	14.8	0.035
17- May-25	22.7	0.083
23- May-25	54.0	0.287
29- May-25	60.7	0.261

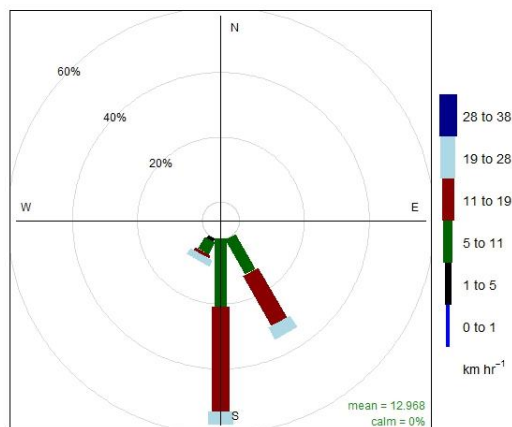
HVAS (EPL10) is located on the southern boundary of Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location.



**Figure 1: HVAS TSP measurements 12-month overview**

TSP dust results at HVAS for the month of May were similar to measurements from previous month (see figure 1). The highest TSP result measured at HVAS (EPL10) for May was 60.7 µg/m<sup>3</sup> sampled on the 29 May. The wind sensor from the on-site weather station indicated that relatively weak winds—mostly light to gentle breezes—were blowing mostly from the South, as shown in figure 2 below, implying that the source was external to the mining site. Water carts apply water to site roads daily and dust suppressant is applied to free areas and unsealed roads. The annual rolling average for TSP at this location is 41.1 µg/m<sup>3</sup> at the end of May, slightly higher than the average of 38.9 µg/m<sup>3</sup> at the beginning of June 2024.

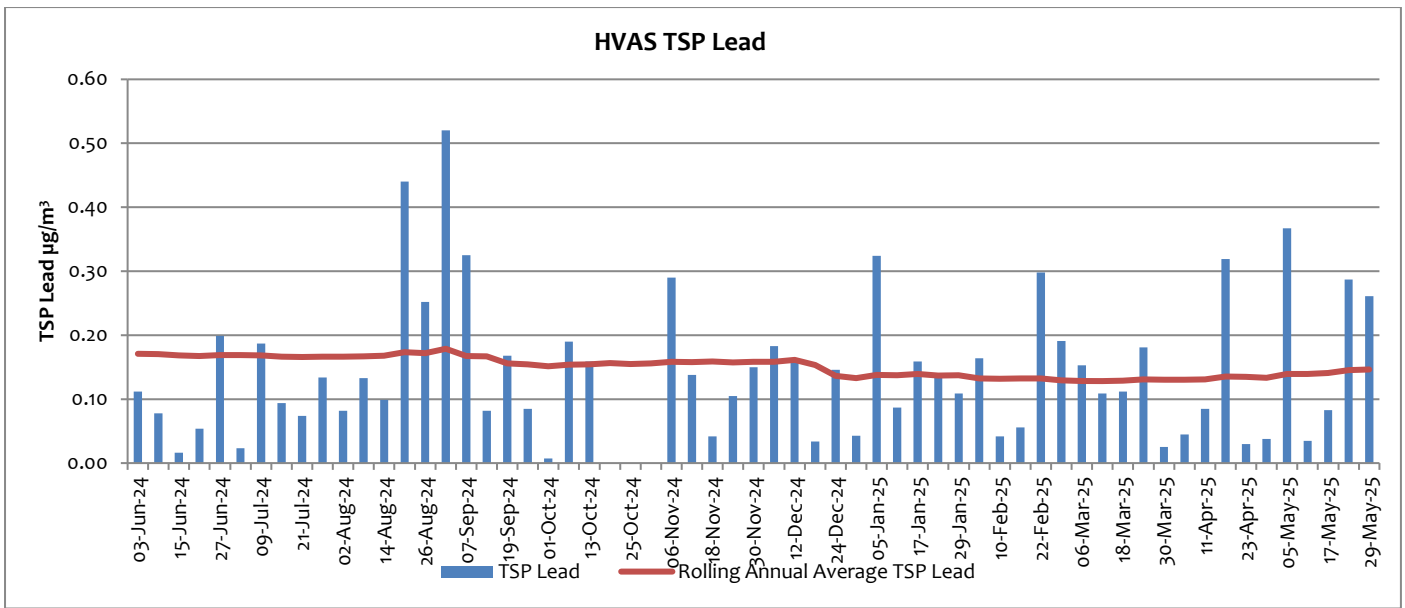
Broken Hill Operations Pty Ltd - Wind Rose 29 May 2025



Frequency of counts by wind direction (%)

**Figure 2: Wind rose for 29 May**

The annual rolling average for TSP is determined using data with extreme dust events included.

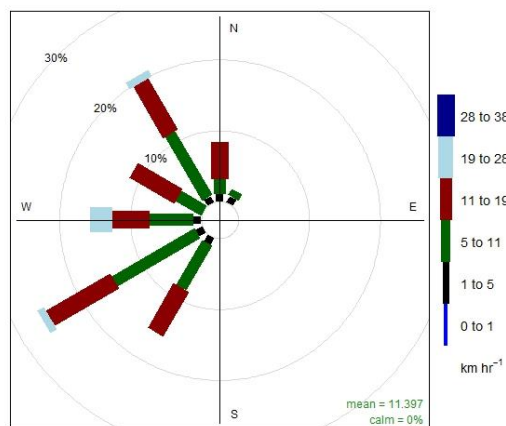


**Figure 3: Lead in HVAS TSP measurements 12-month overview**

TSP Lead dust results at HVAS for the month of May were higher than the previous month (see figure 3 above). The highest TSP Lead level recorded in May was  $0.29 \mu\text{g}/\text{m}^3$  on 23 May. Wind directions were highly variable on that day, suggesting that the lead originated only partially from on-site sources (see wind rose in figure 4). Water carts apply water to site roads daily and dust suppressant is applied to free areas and unsealed roads.

The rolling annual average for TSP Lead in May 2025 was  $0.15 \mu\text{g}/\text{m}^3$ , lower than the rolling annual average of  $0.17 \mu\text{g}/\text{m}^3$  for TSP Lead at the end of May 2024.

Broken Hill Operations Pty Ltd - Wind Rose 23 May 2025



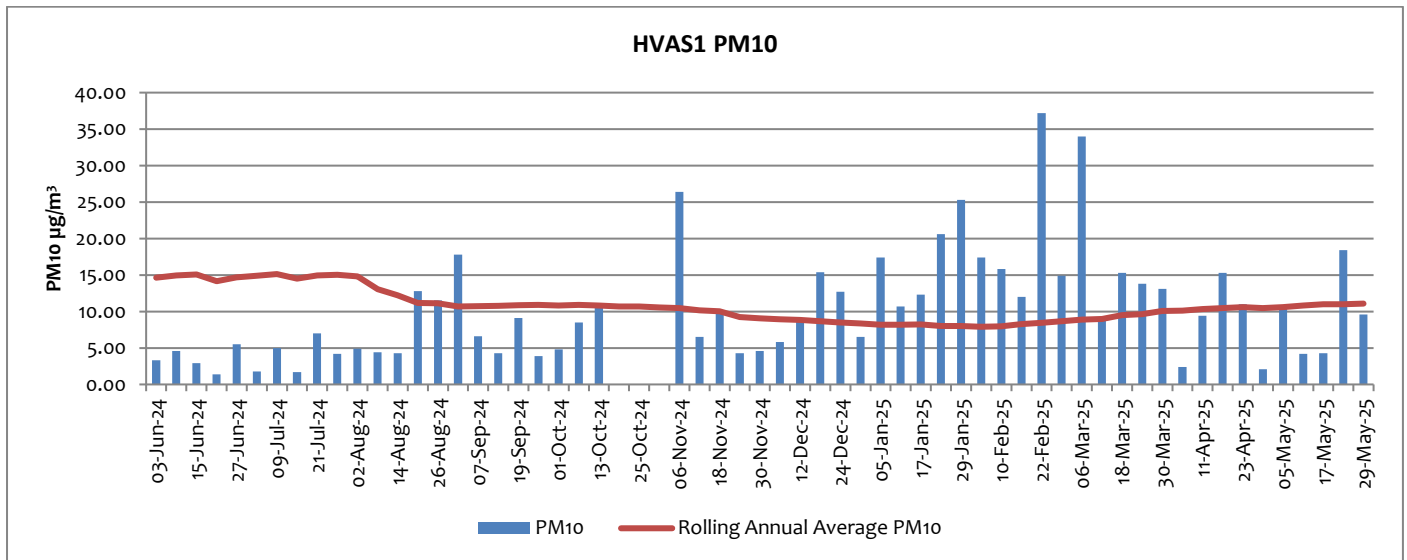
Frequency of counts by wind direction (%)

**Figure 4: Wind rose for 23 May**

**HVAS1 (EPL11) - Silver Tank (On Site) Results for May 2025**

DATE	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> Lead (µg/m <sup>3</sup> )
<b>05-May-25</b>	<b>10.6</b>	<b>0.086</b>
<b>11-May-25</b>	<b>4.2</b>	<b>&lt;0.007</b>
<b>17-May-25</b>	<b>4.3</b>	<b>0.028</b>
<b>23-May-25</b>	<b>18.4</b>	<b>0.075</b>
<b>29-May-25</b>	<b>9.6</b>	<b>0.018</b>

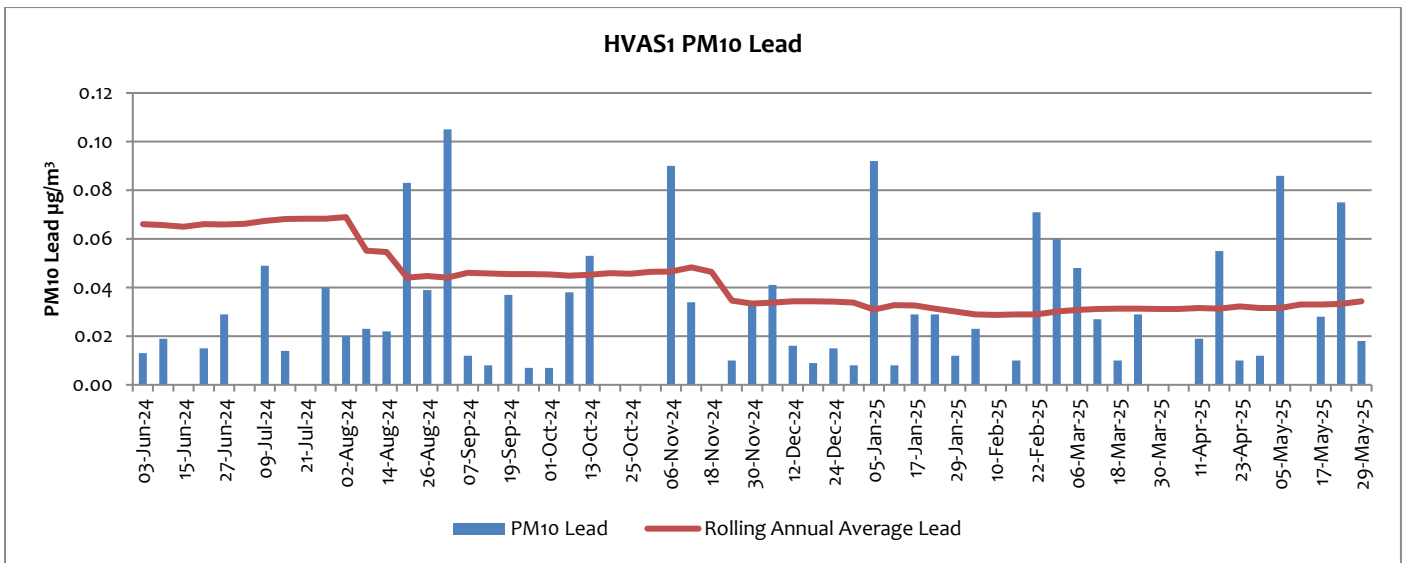
HVAS1 (EPL11) is located on the southern boundary of Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location.



**Figure 5: HVAS01 PM10 measurements 12-month overview**

PM<sub>10</sub> dust results at HVAS1 for the month of May were similar to results from the previous month. The highest PM<sub>10</sub> dust level for May was recorded on 23 May (see figure 5 above). The dust mass concentration reached 18.4 µg/m<sup>3</sup> for that sample. As mentioned in the section above, the variable wind directions on that day suggest that the dust originated only partially from on-site sources.

Water carts apply water to site roads daily and dust suppressant is applied to free areas and unsealed roads. The annual rolling average for PM<sub>10</sub> dust at this location is 11.0 µg/m<sup>3</sup> at the end of May 2025, lower than the annual rolling average at the end of May 2024 which was 14.7 µg/m<sup>3</sup>. External and extreme dust events are recorded in measurements.

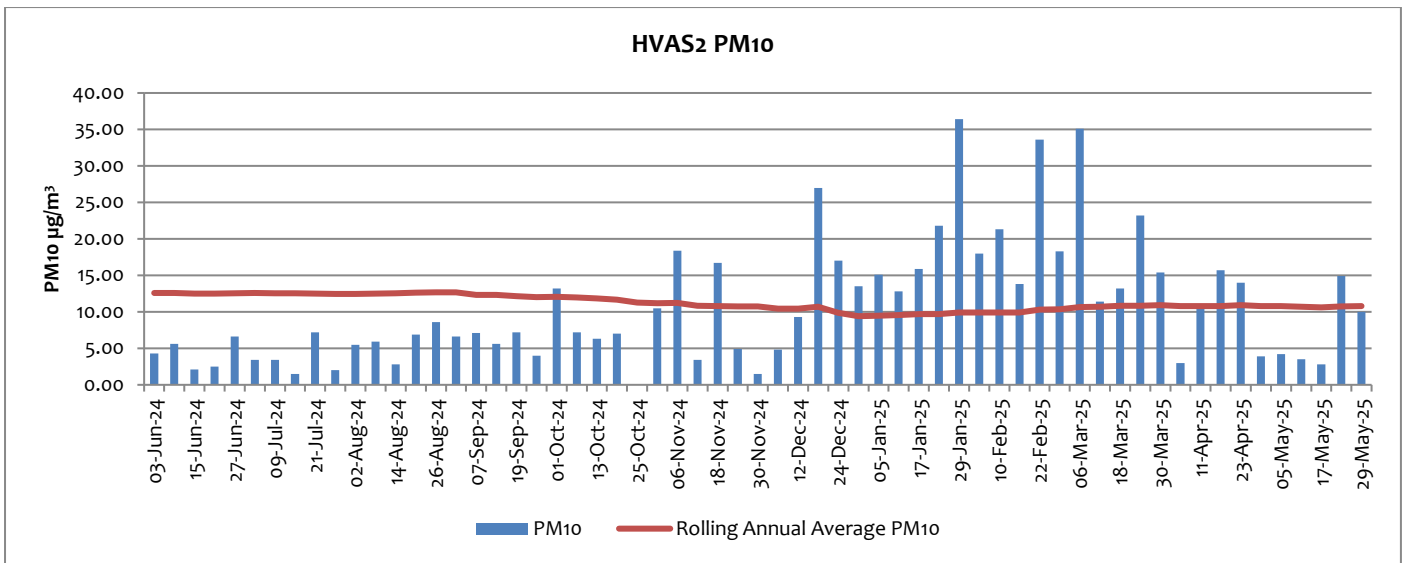


**Figure 6: Lead in HVAS01 PM10 measurements 12-month overview**

PM<sub>10</sub> Lead dust results at HVAS1 in the month of May were heterogenous, on average slightly higher than measurements from previous month. The highest Lead PM<sub>10</sub> result for May was 0.08 µg/m<sup>3</sup> on 23 May when winds were blowing from variable directions (see figure 4 above), suggesting partial contribution from external sources. Water carts apply water to site roads daily and dust suppressant is applied to free areas and unsealed roads. The rolling annual average for PM<sub>10</sub> Lead in May was 0.03 µg/m<sup>3</sup>, lower than the average of 0.07 µg/m<sup>3</sup> in May 2024.

***HVAS 2 (EPL12) – Blackwood Pit (On Site) Results for May 2025***

DATE	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> Lead (µg/m <sup>3</sup> )
05-May-25	4.2	<0.007
11-May-25	3.5	0.02
17-May-25	2.8	0.023
23-May-25	14.9	0.031
29-May-25	10.0	0.015

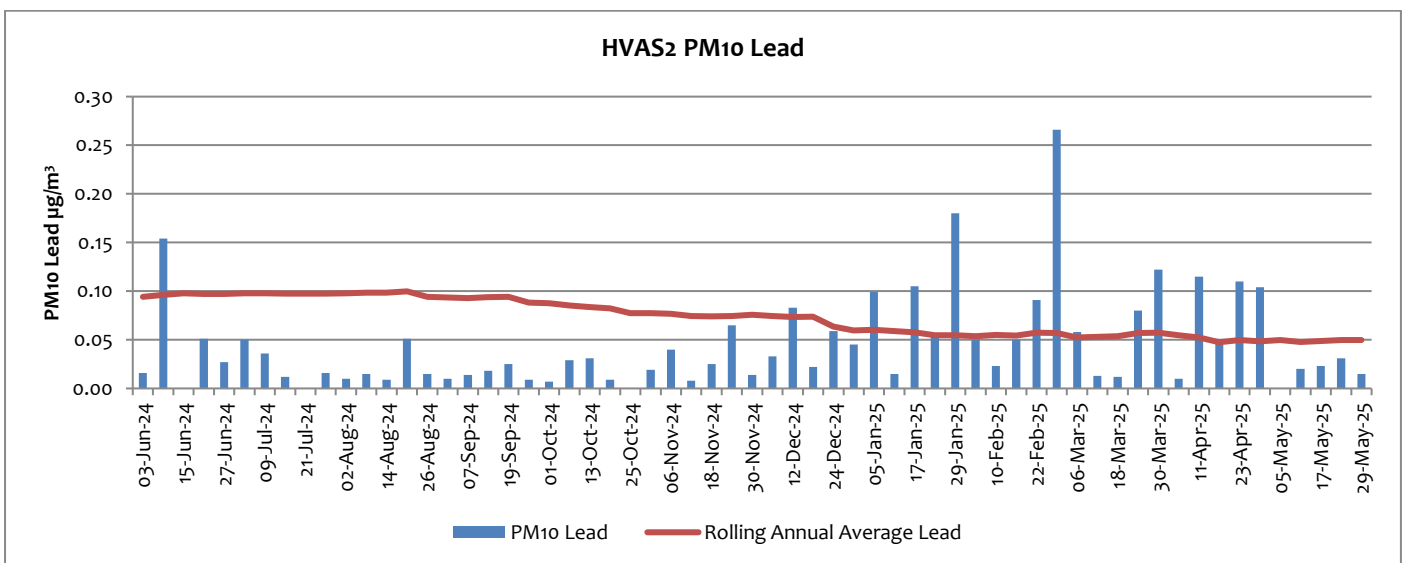


**Figure 7: HVAS2 PM10 measurements 12-month overview**

HVAS2 (EPL12) is located on the northern boundary of Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location.

HVAS2 PM10 measurements in the month of May were on average slightly lower than measurements from the previous month. The highest recorded PM<sub>10</sub> dust reading for May was 14.9 µg/m<sup>3</sup> on 23 May when winds were blowing from variable directions (see figure 4), suggesting partial contribution from on-site sources. The annual rolling average for PM<sub>10</sub> dust at this location is 10.8 µg/m<sup>3</sup> at the end of May, down from 12.6 µg/m<sup>3</sup> in May 2024. The decrease is clearly impacted by the low values measured during the previous 2 seasons (see figure 7 above).

The annual rolling average for PM<sub>10</sub> dust is determined using data with extreme dust events included.

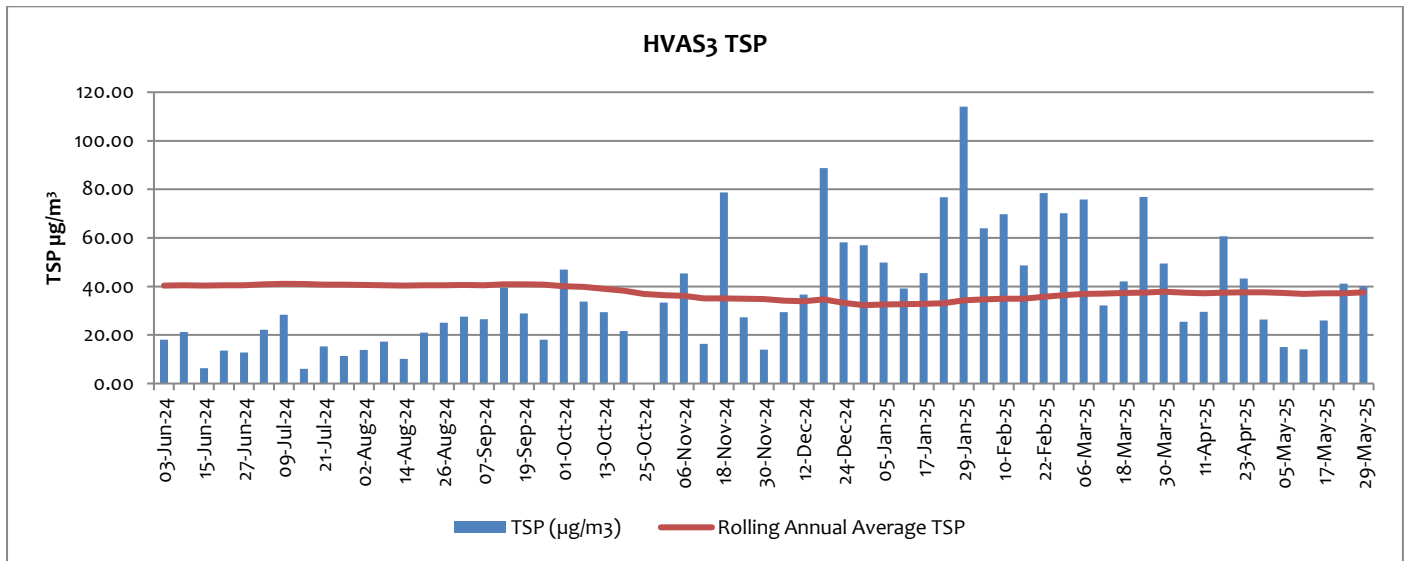


**Figure 8: Lead in HVAS2 PM10 measurements 12-month overview**

PM<sub>10</sub> lead levels in May are homogeneous and lower to those recorded over the past two months. The highest recorded PM<sub>10</sub> Lead dust reading for May was 0.03 µg/m<sup>3</sup> on 23 May when wind directions varied greatly (see figure 4 above) suggesting partial contribution from external sources. The surface of Blackwoods TSF2 is treated with dust suppressant and the TSF spray system has been installed and is operational. The rolling annual average for PM<sub>10</sub> Lead in May was 0.05 µg/m<sup>3</sup>, down from 0.09 µg/m<sup>3</sup> in May 2024.

**HVAS 3 (EPL57) – Blackwood Pit (On Site) Results for May 2025**

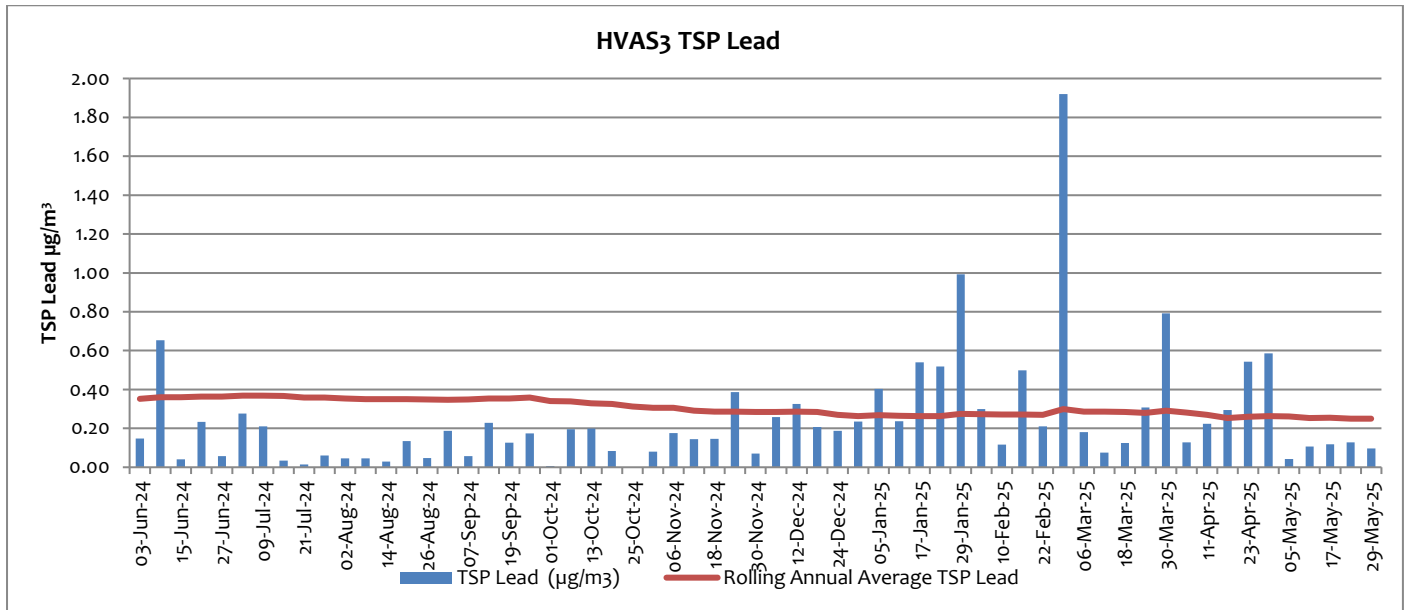
DATE	TSP (µg/m <sup>3</sup> )	Lead (µg/m <sup>3</sup> )
05-May-25	15.0	0.043
11-May-25	14.1	0.107
17-May-25	26.0	0.118
23-May-25	41.1	0.128
29-May-25	40.0	0.096



**Figure 9: HVAS03 TSP measurements 12-month overview**

As it can be seen on figure 9 above, TSP levels at HVAS3 were highest on 23 May with a result of 41.1 µg/m<sup>3</sup>. The wind sensor from the on-site weather station indicated that relatively weak winds—mostly light to gentle breezes—were blowing from a variety of directions, as shown in figure 4 above, implying that the source was partially external to the mining site. The surface of Blackwoods TSF2 is treated with dust suppressant and the TSF spray system has been installed and is operational. The annual rolling average for TSP dust at this location is 37.6 µg/m<sup>3</sup> at the end of May, slightly down from 40.3 µg/m<sup>3</sup> in May 2024.

The annual rolling average for TSP is determined using data with extreme dust events included.



**Figure 10: Lead in HVAS03 TSP measurements 12-month overview**

TSP Lead levels in May were significantly lower to those from previous month (see figure 10 above). A lead concentration of 0.128 µg/m<sup>3</sup> was recorded as the highest monthly value on 23 May. The wind sensor from the on-site weather station indicated that relatively weak winds—mostly light to gentle breezes—were blowing from a variety of directions, as shown in figure 4 above, implying that the source was partially external to the mining site. The rolling annual average for TSP Lead in May was 0.25 µg/m<sup>3</sup>, slightly down from 0.35 µg/m<sup>3</sup> in May 2024. The surface of Blackwoods TSF2 is treated with dust suppressant and the TSF spray system has been installed.

## 1.2 Tapered Element Oscillating Microbalance Sampling (TEOM)

There are two Tapered Element Oscillating Microbalance (TEOM) monitoring units used to measure ambient air quality at the Rasp Mine – TEOM1 (EPL13) is located off-site within the perimeter fence of Essential Water south of the mine lease, and TEOM2 (EPL14) is located on-site adjacent to Blackwood Pit to the north of the mine lease. A map indicating these locations can be found appendix 1. TEOM1 and TEOM2 are designed to operate continuously and monitor concentrations of particulate matter less than 10 microns (PM<sub>10</sub>) in size with a time resolution of five minutes.

Project Approval 07\_0018 criteria apply at TEOM1 and TEOM2, with two criteria listed for PM<sub>10</sub>, a 24-hour average criteria of 50 µg/m<sup>3</sup> and an annual average criteria of 25 µg/m<sup>3</sup>. Both Project Approval and Environment Protection Licence criteria exclude dust storms and other extraordinary events.

TEOM data is validated by third party NATA-accredited consultants using Australian Standards and internal procedures, and is used to populate the table of TEOM monthly data provided below.

PM<sub>10</sub> concentrations exceeded the 50 µg/m<sup>3</sup> limit during two episodes this month: 22 and 26 May.

The first exceedance on 22 May occurred at TEOM2 and was reported to DPHI (INX 10483). The second exceedance was measured at both TEOM1 and TEOM2 on 26 May due to a regional dust storm.

***TEOM1 (EPL13) (Off Site) and TEOM2 (EPL14) (On Site) Validated Results for May 2025***

Particulate Matter <10 Microns 24Hr Average				
Date	TEOM 1 (µg/m <sup>3</sup> )	Compliant with 50µg/m <sup>3</sup> 24hr average?	TEOM 2 (µg/m <sup>3</sup> )	Compliant with 50µg/m <sup>3</sup> 24hr average?
1/05/2025	10.7	Y	10.0	Y
2/05/2025	10.5	Y	7.6	Y
3/05/2025	9.8	Y	5.3	Y
4/05/2025	9.2	Y	6.6	Y
5/05/2025	9.1	Y	4.5	Y
6/05/2025	12.1	Y	8.6	Y
7/05/2025	14.5	Y	17.6	Y
8/05/2025	17.0	Y	15.9	Y
9/05/2025	16.6	Y	16.2	Y
10/05/2025	14.0	Y	13.0	Y
11/05/2025	8.2	Y	5.6	Y
12/05/2025	7.9	Y	5.6	Y
13/05/2025	9.3	Y	8.7	Y
14/05/2025	10.7	Y	15.3	Y
15/05/2025	11.6	Y	12.5	Y
16/05/2025	9.8	Y	6.6	Y
17/05/2025	8.6	Y	6.0	Y
18/05/2025	12.3	Y	21.3	Y
19/05/2025	11.2	Y	18.4	Y
20/05/2025	10.2	Y	10.9	Y
21/05/2025	12.3	Y	14.5	Y
22/05/2025	18.3	Y	<b>52.8</b>	<b>N</b>
23/05/2025	20.7	Y	18.9	Y
24/05/2025	13.8	Y	10.8	Y
25/05/2025	14.1	Y	15.6	Y
26/05/2025	<b>92.1</b>	Y	<b>98.7</b>	Y
27/05/2025	24.1	Y	23.4	Y
28/05/2025	11.5	Y	12.5	Y
29/05/2025	10.8	Y	11.5	Y
30/05/2025	11.2	Y	11.0	Y
31/05/2025	15.0	Y	13.6	Y

NA - sample collected but data invalid; NS – insufficient sample collected

The data capture rate for the TEOM1 and TEOM2 monitors in May were 99.6% and 99.8%, respectively, both exceeding the 95% requirement.

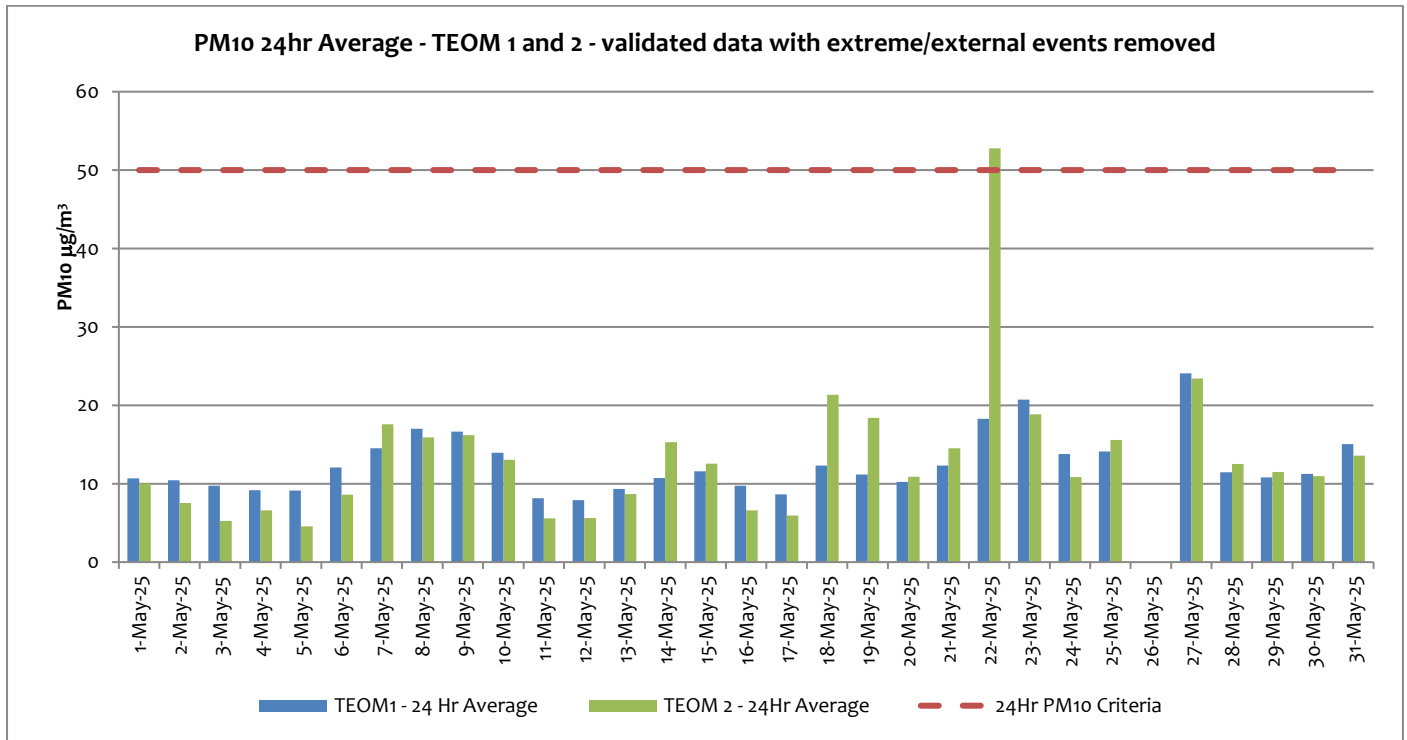
The rolling annual average for PM<sub>10</sub> at TEOM1 with external dust events and invalid data removed for the period May 2024 to May 2025 is 12.8 µg/m<sup>3</sup>, similar the rolling annual average of 12.8 µg/m<sup>3</sup> at the beginning of the annual period.

The rolling annual average for PM<sub>10</sub> at TEOM2 with external dust events and invalid data removed for the period May 2024 to May 2025 is 13.8 µg/m<sup>3</sup>, lower than the rolling annual average of 14.7 µg/m<sup>3</sup> at the beginning of the reporting period.

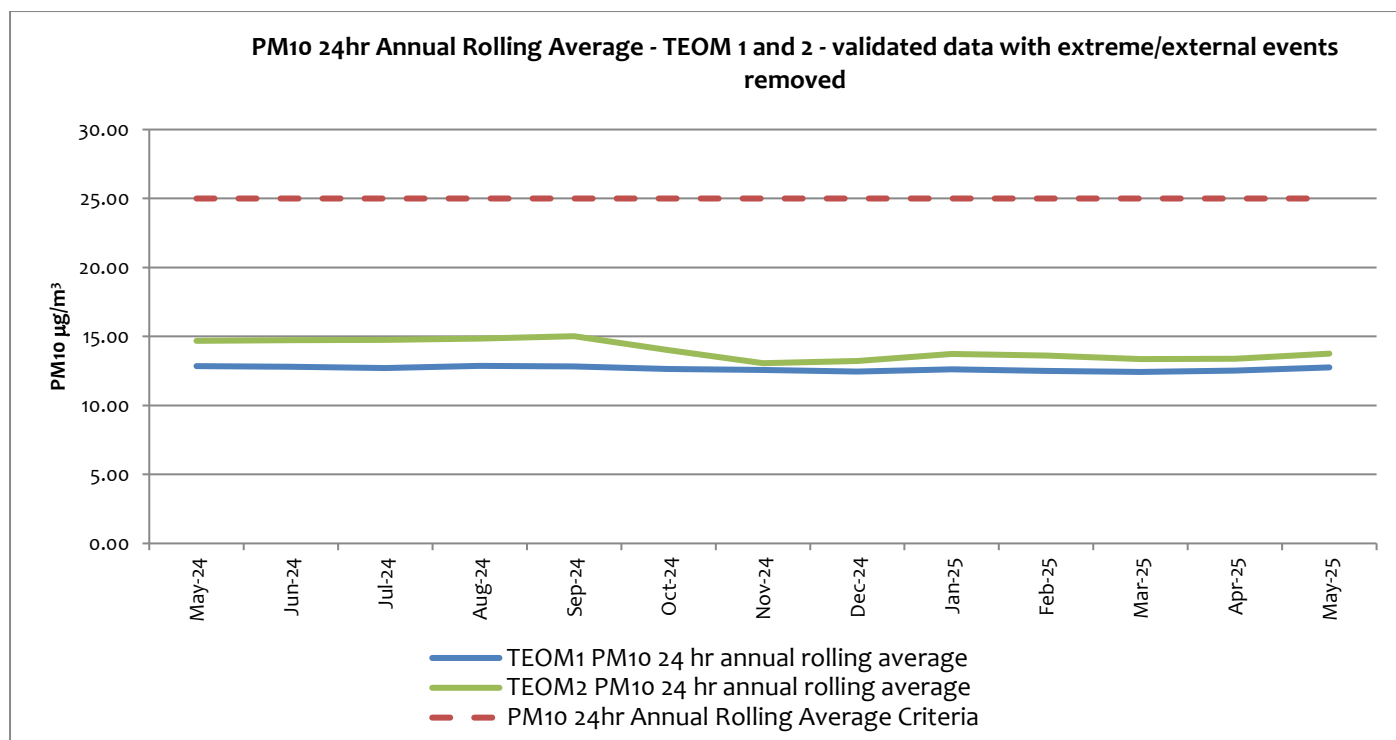
Data collected for the dates of 26 May have been corrected due to the impact from dust storms and external events, with very limited impact on final dataset.

Six-monthly servicing of TEOMs was conducted from 11 to 12 December. A portable PM<sub>10</sub> monitor is located adjacent to TEOM2 to provide real-time dust readings and dust level alerts whilst the TEOM was undergoing servicing and testing. Three-monthly maintenance took place on 21 March and 04 April.

The PM<sub>10</sub> 24-hour rolling annual average for both TEOM sites remain below the annual average criteria of 25 µg/m<sup>3</sup>.



**Figure 15: Site 1 and site 2 PM10 24-hour averaged measurements**



**Figure 16: Site 1 & 2 - Annual rolling average PM10 measurements 12-month overview**

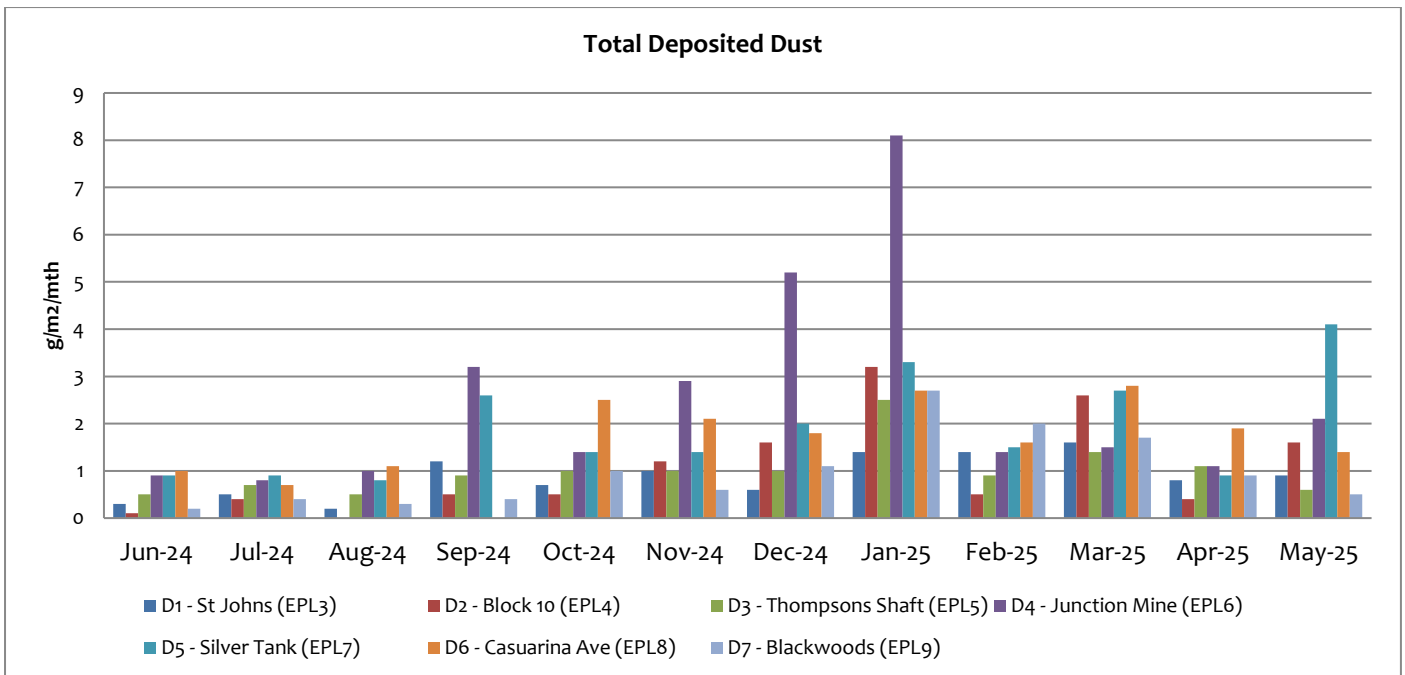
### 1.3 Dust Deposition Sampling

There are seven dust deposition gauges to measure ambient air quality at the Rasp Mine – D1 to D7. D1 and D6 are located off-site, D1 near the St Johns training facility north of the Rasp Mine and D6 in Casuarina Avenue south of the Rasp Mine. D2 to D5 and D7 are located on the mine lease in various locations. A map indicating these locations can be found in Appendix 1. Dust samples are collected monthly and analysed for total deposited dust and deposited lead dust.

#### ***Dust Deposition Gauges D1 (EPL3) to D7 (EPL9) – Results for May 2025***

<b>Total Deposited Dust (g/m<sup>2</sup>.Month)</b>							
<b>Sample Period</b>	<b>D1 (off site)</b>	<b>D2 (off site)</b>	<b>D3 (on site)</b>	<b>D4 (off site)</b>	<b>D5 (on site)</b>	<b>D6 (off site)</b>	<b>D7 (on site)</b>
<b>May 2025</b>	0.9	1.6	0.6	2.1	4.1	1.40	0.5
<b>Annual Rolling Average</b>	0.88	1.15	1.01	2.47	1.88	1.78	0.98
<b>Background (2010)</b>	4.0	3.1	4.3	5.7	-1	5.8	-1

**Note:** “1”= background not available, N/A = not applicable as dust deposition unit is located on site, NS = No sample



**Figure 17: Total deposited dust collected by 7 dust gauges - 12-month overview**

The highest dust levels in May were recorded in the D5 Silver Tank gauge. All results for this month were relatively low, below 2 g/m<sup>2</sup> month for 5 gauges (D1, D2, D3, D6 and D7) and below 1 g/m<sup>2</sup>.month for D1, D3 and D7.

Dust Deposition Gauges that are located off-site must adhere to criteria for annually averaged deposited dust of 4 g/m<sup>2</sup>.month.

Dust suppressant is applied to unsealed areas of the site and roads are frequently watered using water carts in an attempt to control dust emissions. The waste dump adjacent to the rail loadout is treated with dust suppressant to capture any loose dust accumulating on the lower batters and on the upper surface.

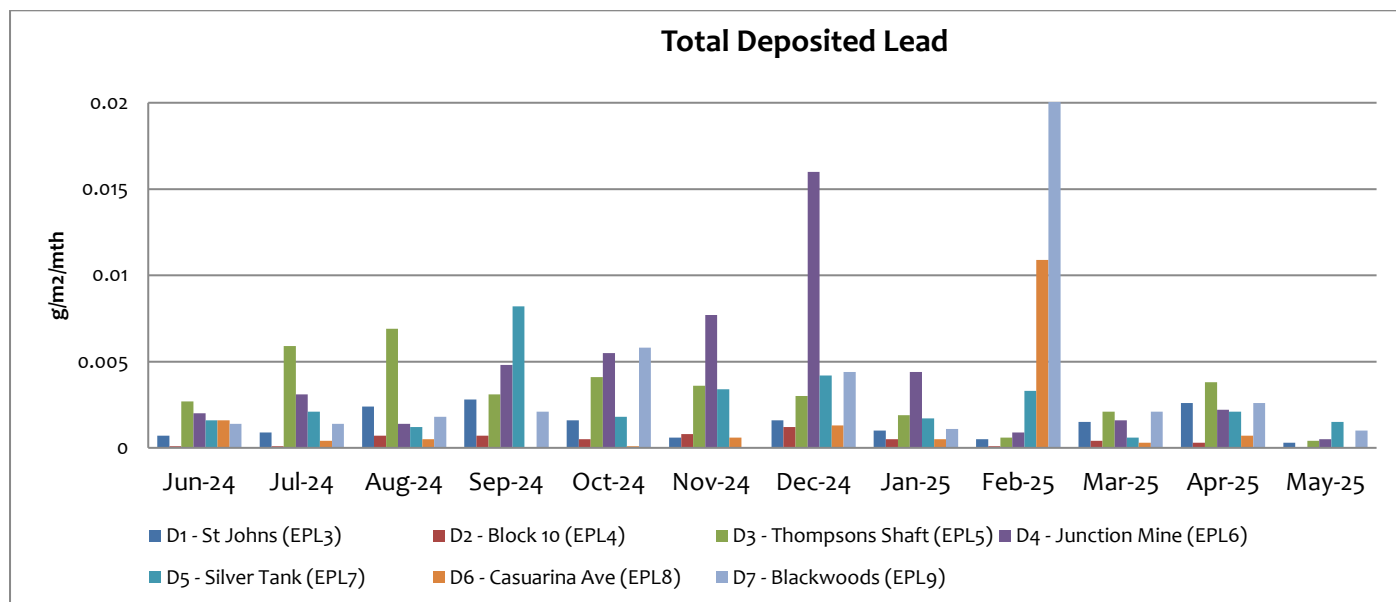
**Total Deposited Lead (g/m<sup>2</sup>.Month)**

Sample Period	D1 (off Site)	D2 (on site)	D3 (on site)	D4 (on site)	D5 (on site)	D6 (off Site)	D7 (on site)
<b>May 2025</b>	0.0003	<0.0001	0.0004	0.001	0.0015	<0.0001	0.001
<b>Background (2010)</b>	0.0034	0.005	0.005	0.006	- <sup>1</sup>	0.004	- <sup>1</sup>

Note: "<sup>1</sup>"= background not available, NS = No sample

There are no guidelines for deposited lead dust. As shown in Figure 18 below, lead levels in May 2025 decreased compared to the previous month and remained significantly below the results from the summer months and well below the background levels recorded in 2010. D5 Silver Tank sampled the maximum value for this month, with monthly surface concentration of 0.0015 g/m<sup>2</sup>.month. The confirmed high value recorded at D7 Blackwoods in February (0.0819 g/m<sup>2</sup>.month) is not displayed properly on figure 18 below due to the choice of y-axis scale, more suitable for the dataset.

Dust suppressant is applied to unsealed areas of the site and roads are frequently watered using water carts in an attempt to control dust emissions. The waste dump adjacent to the rail loadout is treated with dust suppressant to capture any loose dust accumulating on the lower batters and on the upper surface.



**Figure 18: Lead deposited dust collected by 7 dust gauges - 12-month overview**

## 1.4 Ventilation Outlets and Bag House Monitoring

There are two locations to measure pollutants from exhausts or stacks; these include the Primary Ventilation Shaft, measuring pollutants from underground firings, and the Baghouse Stack at the crusher measuring dust. Each are located on site; the Primary Ventilation Shaft is located centrally and to the north of the mine lease and the Primary Crusher Baghouse Stack is located within the area of the processing plant to the east of the lease. Shaft 6 (EPL56) was removed as a monitoring location with the variation of EPL12559 in March 2019 as it became an intake rather than an exhaust in June 2018. A map indicating these locations can be found on the Rasp Mine web site. Samples are collected quarterly and analysed for a number of parameters listed in below. Reference to the item required in the Rasp Mine Environment Protection Licence (EPL) is provided below. Emissions monitoring is conducted quarterly.

The following criteria apply:

### Primary Ventilation Shaft (EPL1)

	Unit	Criteria
<b>Nitrogen Oxides</b>	mg/m <sup>3</sup>	350
<b>Volatile Organic Compounds</b>	mg/m <sup>3</sup>	40

### Primary Ventilation Shaft (EPL1) and Crusher Baghouse (EPL2)

	Unit	Criteria
<b>Total Suspended particles (TSP)</b>	mg/m <sup>3</sup>	20
<b>Type 1 and Type 2<sup>1</sup></b>	mg/m <sup>3</sup>	1

**Note 1:** “Type 1 substance” means the elements antimony, arsenic, cadmium, lead or mercury or any compound containing one or more of those elements.

“Type 2 substance” means the elements beryllium, chromium, cobalt, manganese, nickel, selenium, tin or vanadium or any compound containing one or more of those elements.

### ***Primary Vent Shaft (EPL1) and Crusher Baghouse (EPL2) Results for May 2025***

The latest round of emissions monitoring was conducted at the Primary Vent Shaft (EPL1) and the Crusher Baghouse (EPL2) on 11 March 2025. Results were within limits and are provided below.

Parameter	Unit	Primary Vent Shaft (EPL1)	Crusher Baghouse (EPL2)
Dry Gas Density	kg/Nm <sup>3</sup>	1	1
Moisture	%	2.4	2.2
Molecular weight of stack gases	g/Nm <sup>3</sup>	1,288	1,288
Temperature	°C	25.0	35.0
Nitrogen Oxides	mg/Nm <sup>3</sup>	<2.05	NA
Volatile Organic Compounds	mg/m <sup>3</sup>	<0.44	NA
Total Suspended particles	mg/Nm <sup>3</sup>	17.1	12.3
Type 1 and Type 2	mg/Nm <sup>3</sup>	0.25	0.20
Velocity	m/sec	11.1	22.9
Volumetric Flowrate	Nm <sup>3</sup> /sec	172	9

## 2 Noise

### 2.1 Blasting (Vibration and Overpressure)

There are five compliance vibration monitors at various locations measuring for vibration and overpressure from blast firings. These include V1 to V5 which are located on-site and off-site. A map indicating these locations can be found on the Rasp Mine web site. In addition, there are a number of roving monitors which may be used to monitor vibration and overpressure at particular locations as required. Monitors operate continuously and are automatically triggered to record when a blast occurs. The following conditions apply as listed in the PA 07\_0018 and EPL 12559:

#### Blasting Criteria (Western Mineralisation and Main Lodes excluding Block 7)

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance (for production and development blasts)
Residence on privately owned land (7am-7pm)	115	5	5% of the total number of blasts over a 12-month period <sup>1</sup>
(7am-7pm)	120	10	0%
(7pm-10pm)	105	-	-
(10pm-7am)	95	-	-
Public Infrastructure	-	100	0%

**Note 1:** Does not apply until completion of Pollution Reduction Program on the EPL at the end of 2018. Applies to EPL criteria in the period for the Annual Return 3 Nov to 2 Nov the following year and to DPE criteria in the reporting period 1 Jul to 30 Jun each year.

#### Blasting Criteria (Block 7)

Location	Airblast Overpressure (dB(Lin Peak))	Ground Vibration (mm/s)	Allowable Exceedance (for production and development blasts)
Residence on privately owned land (7am-7pm)	115	3 (interim)	5% of the total number of blasts over a 12-month period <sup>1</sup>
(7am-7pm)	120	10	0%
(7pm-10pm)	105	-	-
(10pm-7am)	95	-	-
Broken Hill Bowling Club, Italo (Bocce) Club, Heritage Items within CML7	-	50	0%
Perilya Southern Operations	-	100	0%
Public Infrastructure	-	100	0%

**Note 1:** Applies to EPL criteria in the period for the Annual Return 3 Nov to 2 Nov the following year and to DPE criteria in the reporting period 1 Jul to 30 Jun each year.

In addition the following conditions also apply:

- Production blasts may occur between 6.45 am and 7.15 pm on any day
- 1 production blast per day, with 6 per week averaged over a calendar year
- 6 development blasts per day, with 42 per week averaged over a calendar year

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***Blasting Data Summary Results for May 2025 (annual period)***

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**Total Blasts:**

- 0 production blasts occurred before 6.45 am or after 7.15 pm
- The number of Production blasts averaged 1.5 per week over the previous calendar year
- The number of Development blasts averaged 8.48 per week over the previous calendar year

**Western Mineralisation and Main Lodes (excluding Block 7):**

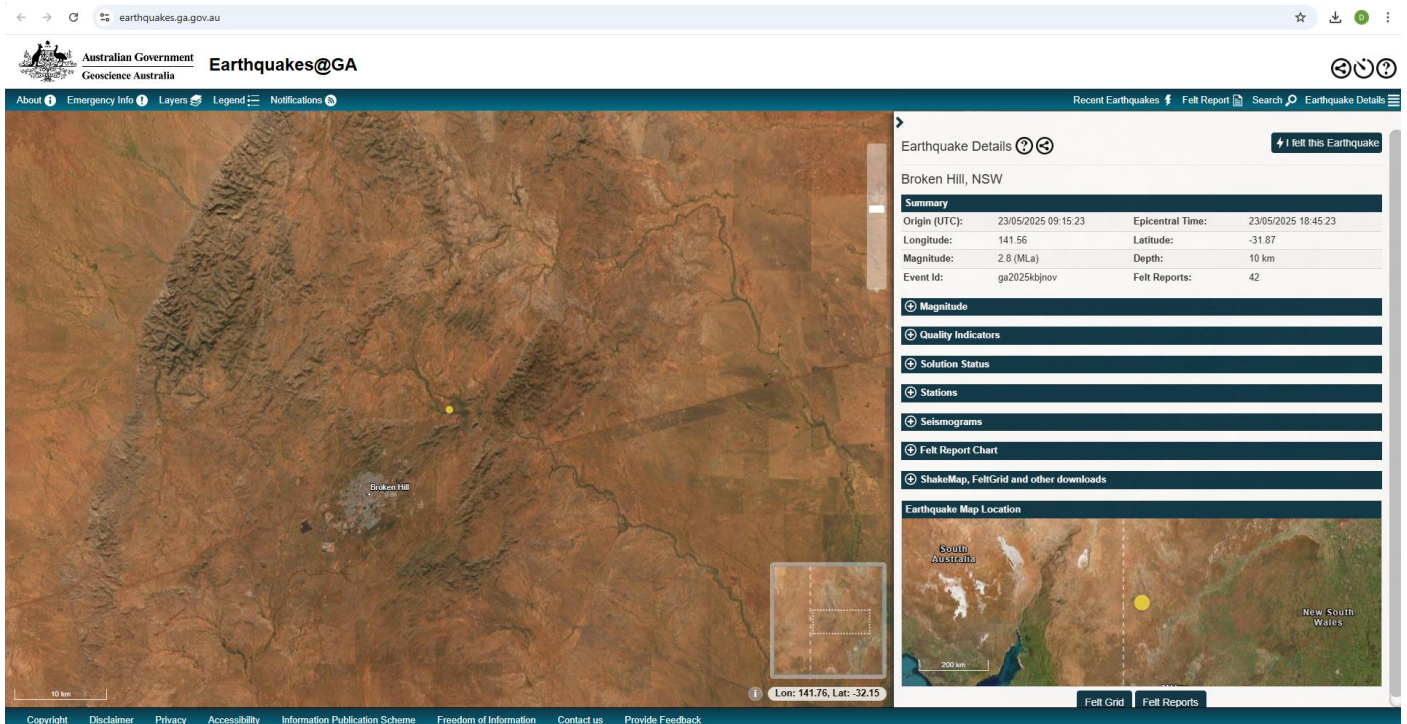
- 0 Blast recorded >5 mm/s
- 0 Blasts recorded >10 mm/s
- 0 development blasts recorded an over pressure level over 95 dBL (10pm to 7am)
- 0 development blasts recorded an over pressure level over 105 dBL (7pm to 10pm)
- 0 Blasts recorded an over pressure level over 115dBL (7am to 7pm)
- 0 Blasts recorded an over pressure level over or 120 dBL at any time
- Percentage of development blasts over 5 mm/sec for the annual period = 0%
- Percentage of production blasts over 5 mm/sec for the annual period = 0%

**Block 7:**

- 0 Blasts recorded >3 mm/s
- 0 Blasts recorded >10 mm/s
- 0 Blasts recorded >50 mm/s at V6
- 0 development blasts recorded an over pressure level over 95 dBL (10pm to 7am)
- 0 development blasts recorded an over pressure level over 105 dBL (7pm to 10pm)
- 0 Blasts recorded an over pressure level over 115 dBL (7am to 7pm)
- 0 Blasts recorded an over pressure level over or 120 dBL at any time
- Percentage of development blasts over 3mm/sec for the annual period = 0%
- Percentage of production blasts over 3mm/sec for the annual period =100%

There have been no production blasts in the Western Mineralisation and Main Lodes producing vibration at monitors over 5 mm/sec for the 12-month period.

According to Geoscience Australia, a large seismic event took place NE of Broken Hill at 18:45:23 on 23.05.205 (see details on figure 19). The event overlapped a production blast resulting in a vibration level record of 5.12mm/s at the V2 Hire Yard monitor.



**Figure 19: 23/05 earthquake details (source: Earthquakes@GA)**

There have been no production blasts in Block 7 for the 12-month period.

## 2.2 Noise

Noise monitoring is undertaken as per the NSW Noise Policy for Industry at a frequency of once per annum. Attended environmental noise monitoring was done during the night period of 20 and 21 December 2024 at 14 monitoring locations. Noise levels from site complied with relevant limits at all monitoring locations during the December 2024 survey.

### 3 Water

#### 3.1 Groundwater

There are eighteen sampling locations for groundwater. GW01 (EPL37) to GW16 (EPL52) are piezometers installed at various locations around the mine site and are sampled quarterly. There are also two sampling locations for water pumped from underground mining, Shaft 7 (EPL53) and Kintore Pit (EPL54), which are sampled monthly. A map indicating these locations can be found on the Rasp Mine web site. Groundwater monitoring is scheduled for completion in March, June, September and December. No limits are applied in the EPL to the results from groundwater monitoring. Levels for all parameters are stable.

#### Ground and Mine Water Monitoring Requirements

EPA Identification Number	Frequency	Parameters to be analysed
Shaft 7 EPL53	Monthly	alkalinity (calcium carbonate (CaCO <sub>3</sub> )), cadmium (Cd), calcium (Ca), chloride (Cl), electrical conductivity (EC), iron (Fe), lead Pb), magnesium (Mg), manganese (Mn), pH, sodium (Na), sulphate (SO <sub>4</sub> ), total dissolved solids (TDS) and zinc (Zn)
Kintore Pit (U/G dewatering) EPL54	Monthly	
Piezometers EPL37 (GW01) to EPL52 (GW16)	Quarterly	

#### *Shaft 7 (EPL53) and Kintore Pit (EPL54) Results for May 2025*

Sample Point	pH	EC (µS/cm <sup>2</sup> )	TDS (mg/l)	Alkalinity (CaCO <sub>3</sub> ) (mg/l)	SO <sub>4</sub> (mg/l)	Cl (mg/l)	Ca (mg/l)	Mg (mg/l)	Na (mg/l)	Cd (mg/l)	Pb (mg/l)	Mn (mg/l)	Zn (mg/l)	Fe (mg/l)	
Shaft 7 (EPL53)															No pumping
Kintore Pit (EPL54)	6.16	13900	15700	7	5010	1450	490	343	1780	3.67	2.19	482	1260	<0.05	

***Groundwater Bores (EPL37 - EPL52) Results for May 2025***

No ground water samples were collected in May.

**3.2 Surface Water Sample Record**

There are seven sampling locations for surface water, these include surface water basins located on the mine lease to capture and retain rainfall and two locations up and down stream of an ephemeral creek located south of the mine lease boundary. A map indicating these locations can be found in Appendix 1. Based on historical data, sampling is most likely to be undertaken in October (highest rainfall month as recorded by Bureau of Meteorology) and April.

**Surface Water Monitoring Requirements**

Description	Frequency	Parameters to be Analysed
Federation Way Culvert EPL29/S31-1	2 x per year, six months apart	
Ryan Street Dam EPL31/S49	2 x per year, six months apart	
Adjacent Olive Grove EPL32/S1A	2 x per year, six months apart	cadmium (Cd), chloride (Cl), electrical conductivity (EC), lead Pb), manganese (Mn), pH, sodium (Na), sulphate (SO4), total dissolved solids (TDS) and zinc (Zn)
Adjacent Bowls Club EPL33 /S9-B2	2 x per year, six months apart	
Horwood Dam EPL34/S34	2 x per year, six months apart	
Upstream Bonanza St EPL35	2 x per year, six months apart	
Downstream Sydney Rd EPL36	2 x per year, six months apart	

***Surface Water Results for May 2025***

No surface water samples were collected in May.

## 4 Weather Data

The weather station continuously monitors the following parameters as per Point 55 of the Environmental Protection Licence.

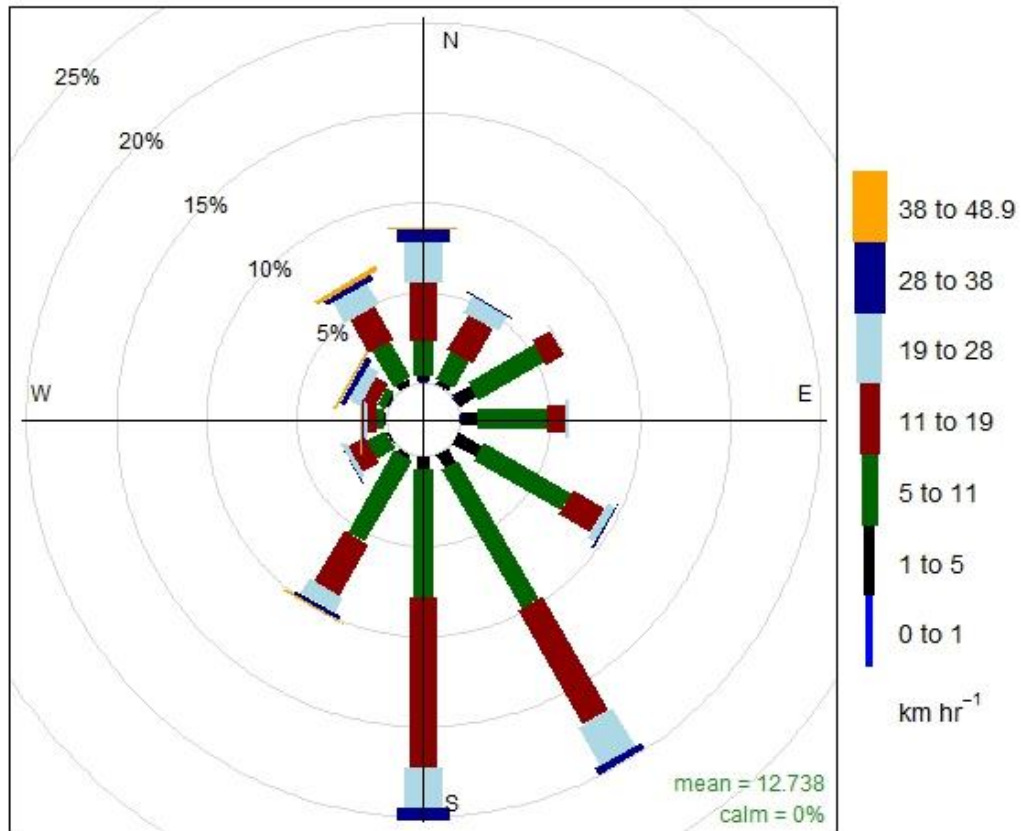
The following parameters are required to be recorded each month as listed in the EPL 12559:

### Rasp Mine Weather Station (EPL55) Monitoring Requirements

Parameter	Sampling method	Units of measure	Averaging period	Frequency
Temperature at 10 metres	AM-4	degrees Celsius	15 minutes	Continuous
Wind Direction at 10 metres	AM-4	degrees in a clockwise direction from True North	15 minutes	Continuous
Wind Speed at 10 metres	AM-4	metres per second	15 minutes	Continuous
Rainfall	AM-4	millimetres	1 hour	Continuous
Sigma theta	AM-2 & AM-4	degrees	15 minutes	Continuous

The wind rose provided below indicates that the predominant wind direction for the month of May was from the South, with more than 50% of wind blowing either from the South or from SSE. Strong winds (Near gale, Beaufort level 7) were observed in less than 2% of this period, blowing either from the North or from the South

**Broken Hill Operations Pty Ltd - Wind Rose May 2025**



**Frequency of counts by wind direction (%)**

**Figure 19: Wind rose for May 2025**

*Weather Data Summary for May 2025*

Date	Temperature @ 10m (°C)		Wind Speed @ 10m (km/hr)		Predominant Wind Direction @ 10m		Rainfall (mm)
	Min	Max	Min	Max	Cardinal	Degree	Total
1-May-25	8	17.9	1.8	27.3	S	169	0
2-May-25	10.7	18.9	1.5	25.8	ESE	104	0
3-May-25	12.2	22	1.1	24.2	NE	56	0
4-May-25	15.1	23.7	2.1	31.7	NNE	22	0
5-May-25	15.4	24.3	0.9	34.9	N	1	0
6-May-25	17.8	25.6	0.1	29.8	NNW	339	0
7-May-25	14.2	21.8	0.1	34	SSW	196	0
8-May-25	7.8	16.9	2.4	40.5	SSE	153	0
9-May-25	8.3	18.1	1.2	28.9	SE	133	0
10-May-25	9.9	21.6	1	19.3	ESE	108	0
11-May-25	14.9	22.5	1.1	17	ENE	65	0
12-May-25	16	21.8	1.1	20.3	ESE	108	0
13-May-25	15.2	22.5	0.3	20.6	SE	134	0
14-May-25	14.3	21.8	0.1	30.7	SSE	162	0
15-May-25	9	19	3.1	29.4	S	181	0
16-May-25	8.3	17.4	4	26.3	SSW	206	0
17-May-25	9	16.4	3.6	29.9	SSW	198	0
18-May-25	6	12.4	4.5	48.5	S	170	0
19-May-25	3.6	14.9	0.8	30.7	SSE	159	0
20-May-25	8.2	17.9	1.1	24.9	ESE	116	0
21-May-25	9.1	16.7	1.2	34.1	SE	146	0
22-May-25	6.9	15.4	4	37	S	175	0
23-May-25	9	18	0.8	26.4	W	277	0
24-May-25	9.1	18.9	0.4	41	N	351	0
25-May-25	13.9	20.9	1.1	52.9	N	0	0
26-May-25	12.5	19.8	3.1	50.6	NW	323	0
27-May-25	9.8	16.5	4.8	44.1	W	259	0
28-May-25	8.5	13.4	1	34.2	S	188	0
29-May-25	8	11.4	2.9	25.5	S	172	0
30-May-25	5.8	15.9	1	25.2	S	173	0
31-May-25	6.3	17.7	0.5	15.7	ESE	121	0

There was a total rainfall of 0 mm in May 2025.

## 5 Data Log

Sample	Result Received
Hi-Volume Samples	16-06-2025
TEOM	27-06-2025
Dust Deposition	19-06-2025
Vents & Bag House	09-04-2025
Noise	09-04-2025
Water	22-05-2025
Blast vibration and overpressure	01-06-2025
Weather	01-06-2025
Date posted to web site	17-07-2025

## 6 Correction Log

No corrections.

**7 Appendix 1 – Monitoring Locations**

