



Rasp Mine  
Monthly Environmental Monitoring Report  
December 2024

## 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 BHOP 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.coolabahmetals.com.au/sustainability-1](http://www.coolabahmetals.com.au/sustainability-1).

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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

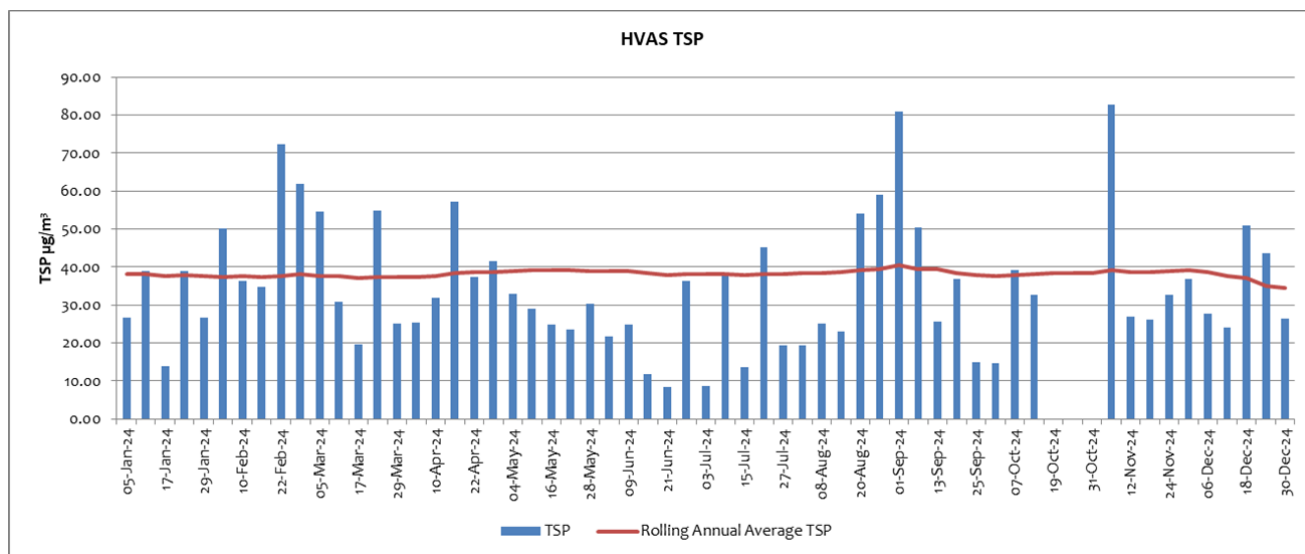
### 1.1 High Volume Air Samplers

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 December 2024**

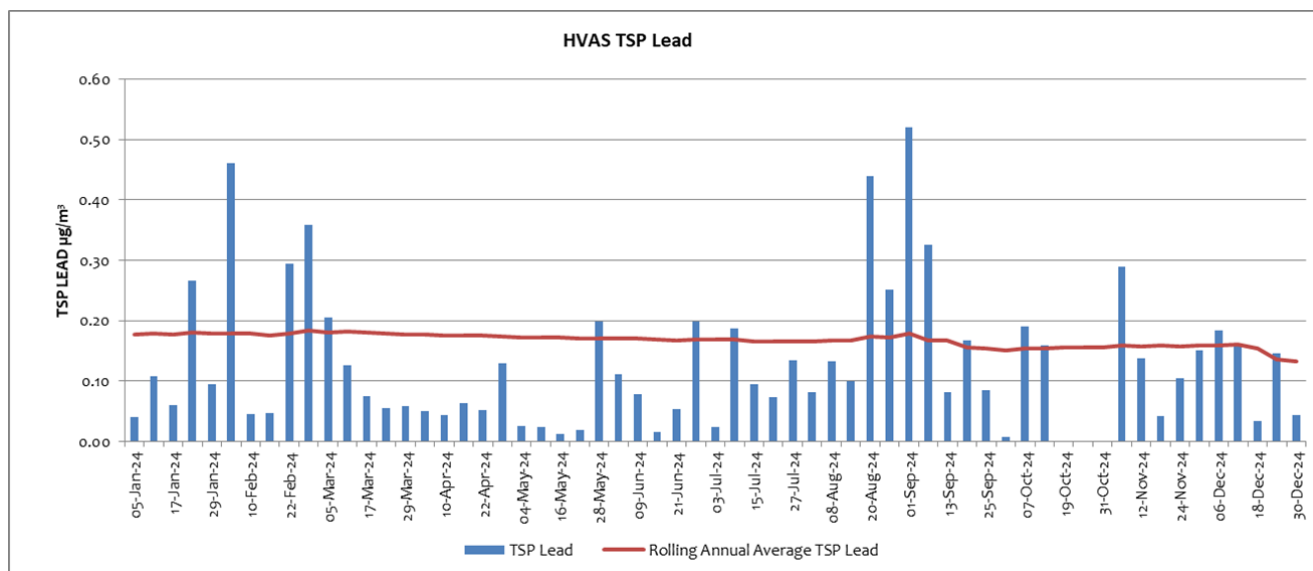
DATE	TSP (µg/m <sup>3</sup> )	Lead (µg/m <sup>3</sup> )
6-Dec-24	27.7	0.183
12-Dec-24	24.0	0.160
18-Dec-24	51.0	0.034
24-Dec-24	43.7	0.146
30-Dec-24	26.4	0.043

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.



TSP dust results at HVAS for the month of December were similar to previous months. The highest TSP result for December was  $51 \mu\text{g}/\text{m}^3$  on 18 December when winds were predominantly from the SSE suggesting the dust had originated from outside the mine premises. 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  $34.5 \mu\text{g}/\text{m}^3$  at the end of December, lower than the average of  $38.5 \mu\text{g}/\text{m}^3$  at the end of December 2023.

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

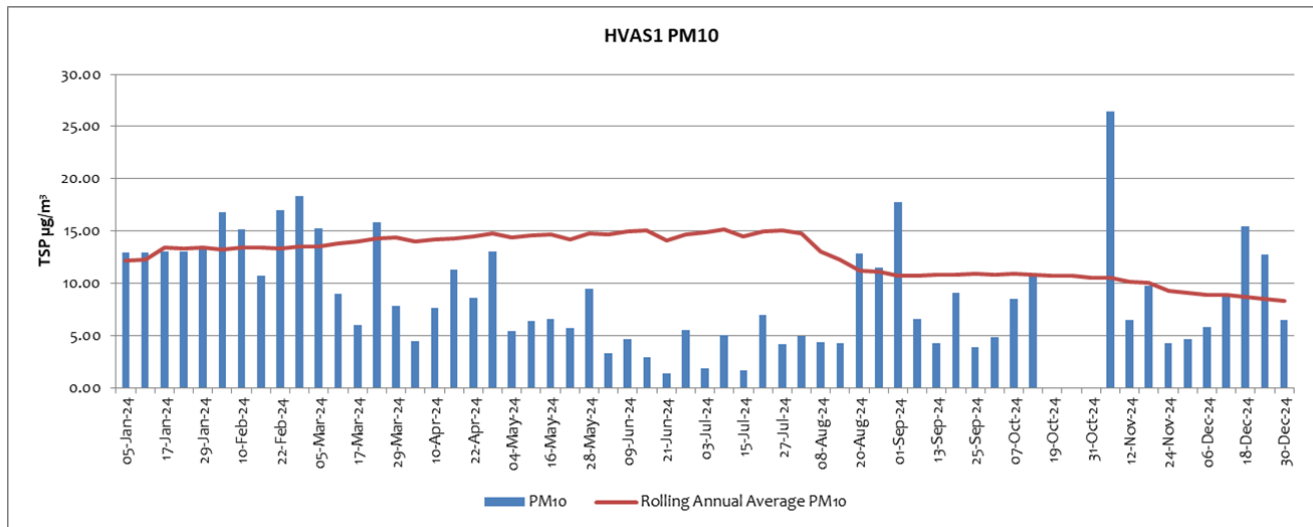


TSP Lead dust results at HVAS for the month of December were similar to previous months. The highest TSP Lead level for December was  $0.18 \mu\text{g}/\text{m}^3$  on 6 December when winds were predominately from the NNE. It is likely that the TSP Lead sampled on 6 December has originated from on-site. 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 December 2024 was  $0.13 \mu\text{g}/\text{m}^3$ , lower than the rolling annual average of  $0.18 \mu\text{g}/\text{m}^3$  for TSP Lead at the end of December 2023.

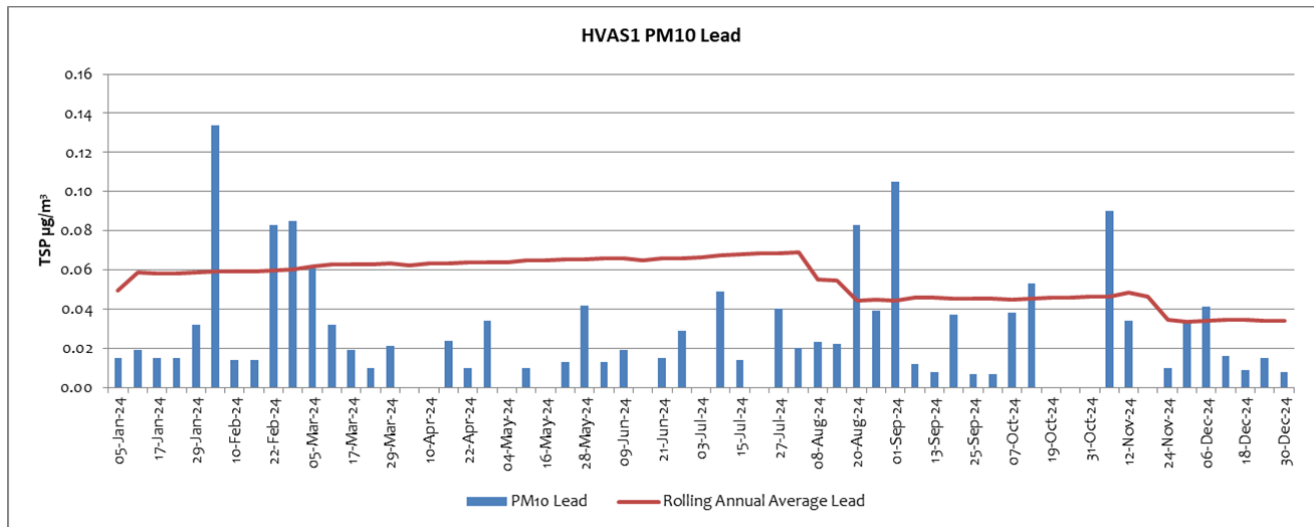
### *HVAS1 (EPL11) - Silver Tank (On Site) Results for December 2024*

DATE	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> Lead (µg/m <sup>3</sup> )
6-Dec-24	5.8	0.041
12-Dec-24	9.0	0.016
18-Dec-24	15.4	0.009
24-Dec-24	12.7	0.015
30-Dec-24	6.5	0.008

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.



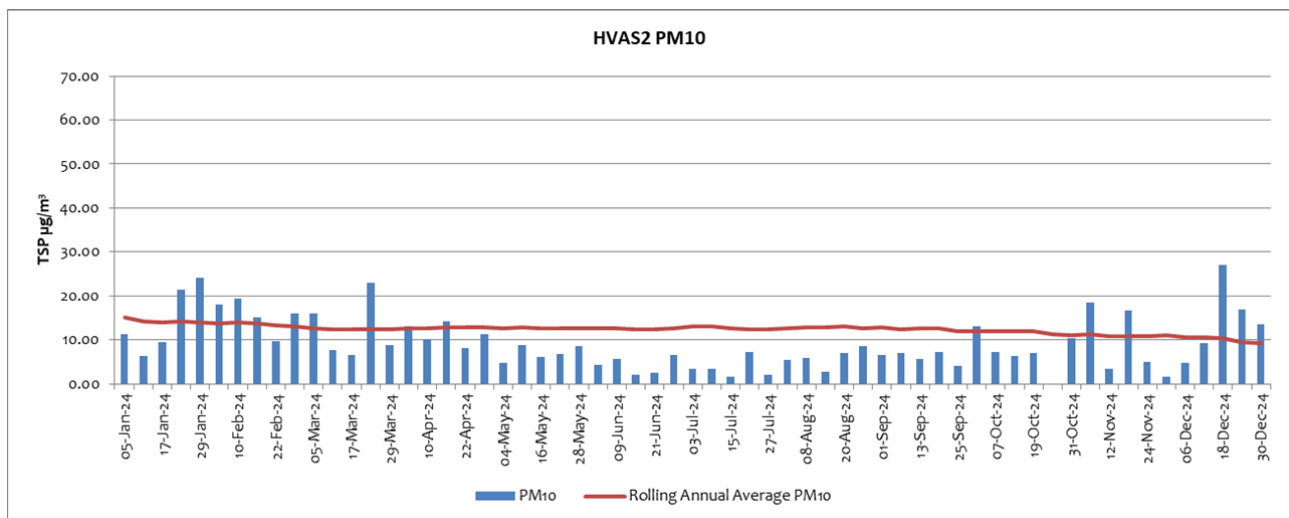
PM<sub>10</sub> dust results at HVAS1 for the month of December were on average higher than in previous months. The highest PM<sub>10</sub> dust level for December was 15.4 µg/m<sup>3</sup> on 18 December when winds were predominantly from the SSE suggesting contribution from off-site sources. Water 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 8.3 µg/m<sup>3</sup> at the end of December 2024, lower than the annual rolling average at the beginning of December 2023 which was 13.3 µg/m<sup>3</sup>. External and extreme dust events are recorded in measurements.



PM<sub>10</sub> Lead dust results at HVAS1 in the month of December were slightly lower than in previous months. The highest Lead PM<sub>10</sub> result for December was 0.04 µg/m<sup>3</sup> on 6 December when winds were predominantly from the NNE suggesting contribution from on-site 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 December was 0.03 µg/m<sup>3</sup>, lower than the average of 0.05 µg/m<sup>3</sup> in December 2023.

#### ***HVAS 2 (EPL12) – Blackwood Pit (On Site) Results for December 2024***

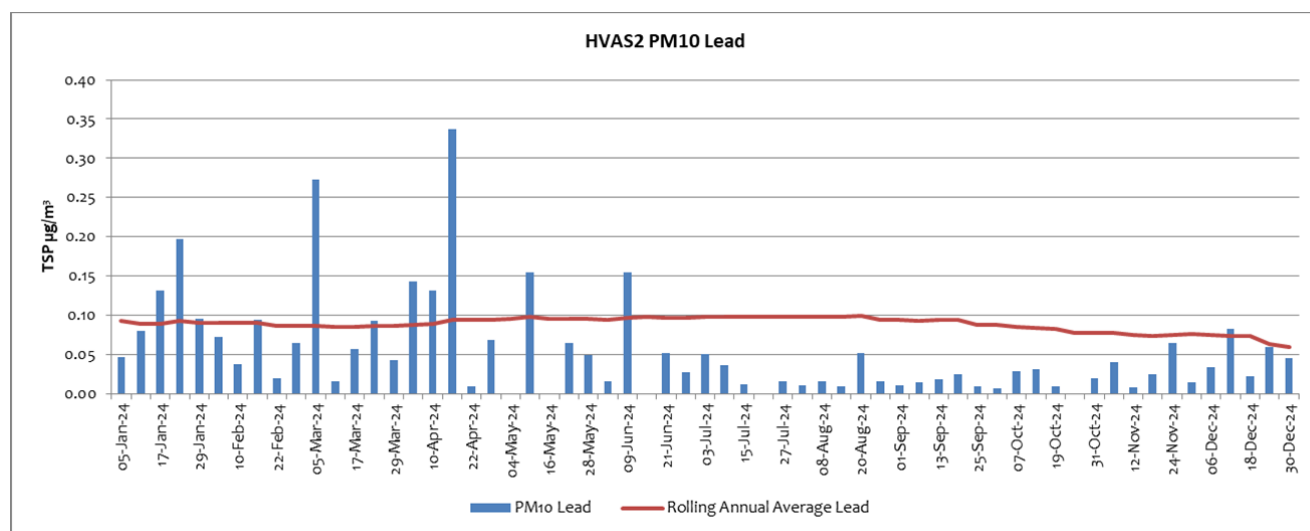
DATE	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> Lead (µg/m <sup>3</sup> )
<b>6-Dec-24</b>	<b>4.8</b>	<b>0.033</b>
<b>12-Dec-24</b>	<b>9.3</b>	<b>0.083</b>
<b>18-Dec-24</b>	<b>27.0</b>	<b>0.022</b>
<b>24-Dec-24</b>	<b>17.0</b>	<b>0.059</b>
<b>30-Dec-24</b>	<b>13.5</b>	<b>0.045</b>



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.

In December the PM<sub>10</sub> levels at HVAS2 showed an increase by comparison to previous months. The highest recorded PM<sub>10</sub> dust reading for December was 27.0 µg/m<sup>3</sup> on 18 December when winds were from the SSE suggesting contribution from on-site sources. Smoke haze from the Victorian bushfires was also present and may have contributed to the elevated result. The surface of Blackwoods TSF2 to the south is treated with dust suppressant and the TSF spray system has been installed. The annual rolling average for PM<sub>10</sub> dust at this location is 9.2 µg/m<sup>3</sup> at the end of December, down from 17.4 µg/m<sup>3</sup> in December 2023.

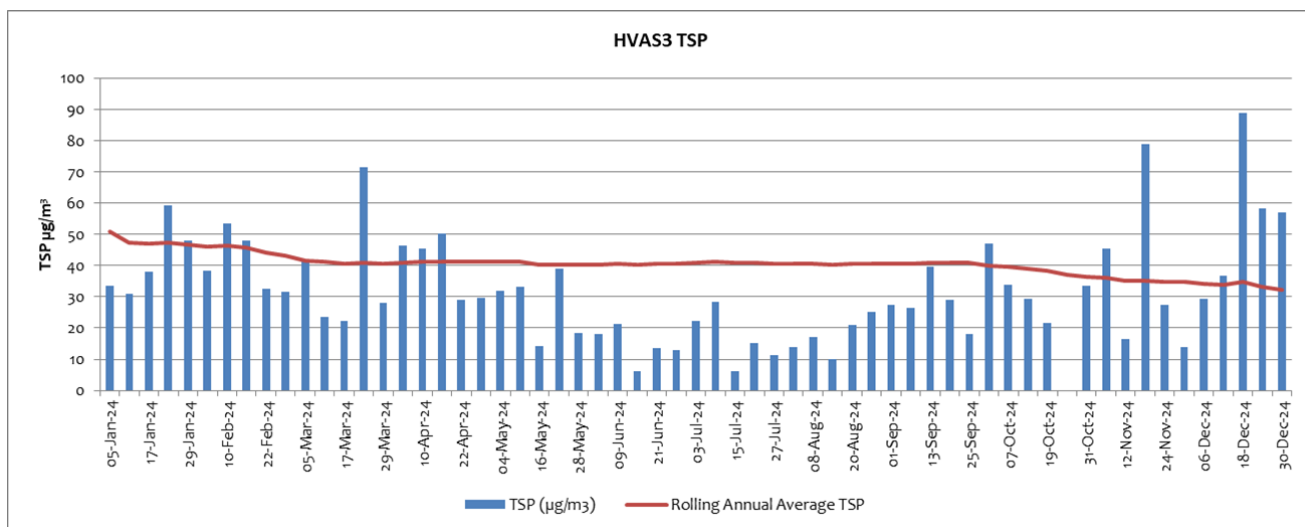
The annual rolling average for PM<sub>10</sub> dust is determined using data with extreme dust events included.



PM<sub>10</sub> lead levels in December were slightly higher than previous 6 months. The highest recorded PM<sub>10</sub> Lead dust reading for December was 0.08 µg/m<sup>3</sup> on 12 December when winds were from the South suggesting contribution from site activities. The surface of Blackwoods TSF2 is treated with dust suppressant and the TSF spray system has been installed. The rolling annual average for PM<sub>10</sub> Lead in December was 0.06 µg/m<sup>3</sup>, down from 0.10 µg/m<sup>3</sup> in December 2023.

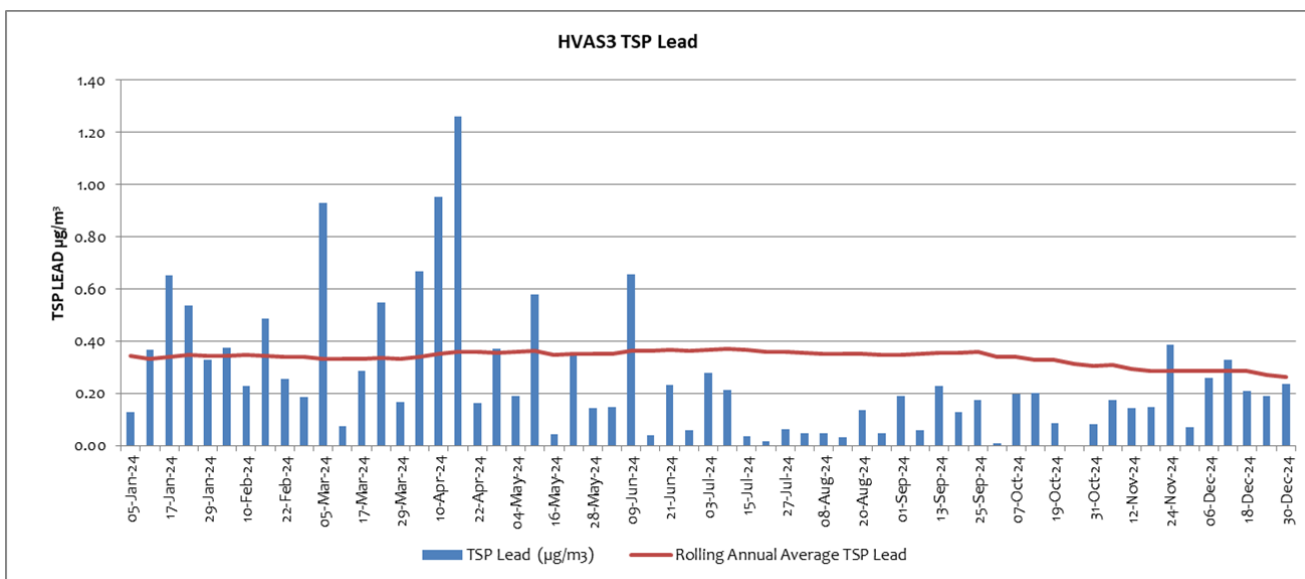
### ***HVAS 3 (EPL57) – Blackwood Pit (On Site) Results for December 2024***

DATE	TSP (µg/m <sup>3</sup> )	Lead (µg/m <sup>3</sup> )
6-Dec-24	29.4	0.258
12-Dec-24	36.7	0.326
18-Dec-24	88.8	0.207
24-Dec-24	58.2	0.188
30-Dec-24	56.9	0.235



TSP levels at HVAS3 were highest on 18 December with a result of  $88.8 \mu\text{g}/\text{m}^3$ , when winds were from the SSE, suggesting the dust source was likely Blackwoods TSF2. Smoke haze from the Victorian bushfires was also present and may have contributed to the elevated result. The surface of Blackwoods TSF2 is treated with dust suppressant and the TSF spray system has been installed. The annual rolling average for TSP dust at this location is  $32.3 \mu\text{g}/\text{m}^3$  at the end of December, down from  $55.5 \mu\text{g}/\text{m}^3$  in December 2023.

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



TSP Lead levels in December were higher than previous 6 months, with the highest result of  $0.33 \mu\text{g}/\text{m}^3$  recorded on 12 December when winds were from the South suggesting contribution from site activities. The rolling annual average for TSP Lead in December was  $0.26 \mu\text{g}/\text{m}^3$ , down from  $0.36 \mu\text{g}/\text{m}^3$  in December 2023. 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) sampling 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 sample for particulate matter less than 10 microns (PM<sub>10</sub>) in size.

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 ug/m<sup>3</sup> and an annual average criteria of 25 ug/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 consultants using Australian Standards and internal procedures, and is used to populate the table of TEOM monthly data provided below.

***TEOM1 (EPL13) (Off Site) and TEOM2 (EPL14) (On Site) Validated Results for December 2024***

Particulate Matter <10 Microns 24Hr Average				
Date	TEOM 1 ( $\mu\text{g}/\text{m}^3$ )	Compliant with 50 $\mu\text{g}/\text{m}^3$ 24hr average?	TEOM 2 ( $\mu\text{g}/\text{m}^3$ )	Compliant with 50 $\mu\text{g}/\text{m}^3$ 24hr average?
1-Dec-24	9.6	Y	4.8	Y
2-Dec-24	16.9	Y	8.6	Y
3-Dec-24	9.7	Y	11.4	Y
4-Dec-24	13.0	Y	12.9	Y
5-Dec-24	12.9	Y	9.3	Y
6-Dec-24	16.3	Y	9.9	Y
7-Dec-24	10.1	Y	25.5	Y
8-Dec-24	7.5	Y	9.1	Y
9-Dec-24	12.4	Y	15.8	Y
10-Dec-24	14.0	Y	21.8	Y
11-Dec-24	9.6	Y	19.4	Y
12-Dec-24	9.2	Y	NA	Y
13-Dec-24	10.5	Y	7.7	Y
14-Dec-24	10.2	Y	5.3	Y
15-Dec-24	11.4	Y	8.6	Y
16-Dec-24	18.3	Y	13.1	Y
17-Dec-24	23.5	Y	134.0	N
18-Dec-24	18.3	Y	33.9	Y
19-Dec-24	17.7	Y	14.4	Y
20-Dec-24	23.4	Y	24.5	Y
21-Dec-24	20.1	Y	24.4	Y
22-Dec-24	37.7	Y	39.7	Y
23-Dec-24	18.0	Y	40.6	Y
24-Dec-24	16.4	Y	19.4	Y
25-Dec-24	10.8	Y	7.9	Y
26-Dec-24	24.5	Y	30.2	Y
27-Dec-24	18.3	Y	21.9	Y
28-Dec-24	15.4	Y	14.5	Y
29-Dec-24	11.9	Y	13.3	Y
30-Dec-24	12.3	Y	18.5	Y
31-Dec-24	11.0	Y	36.7	Y

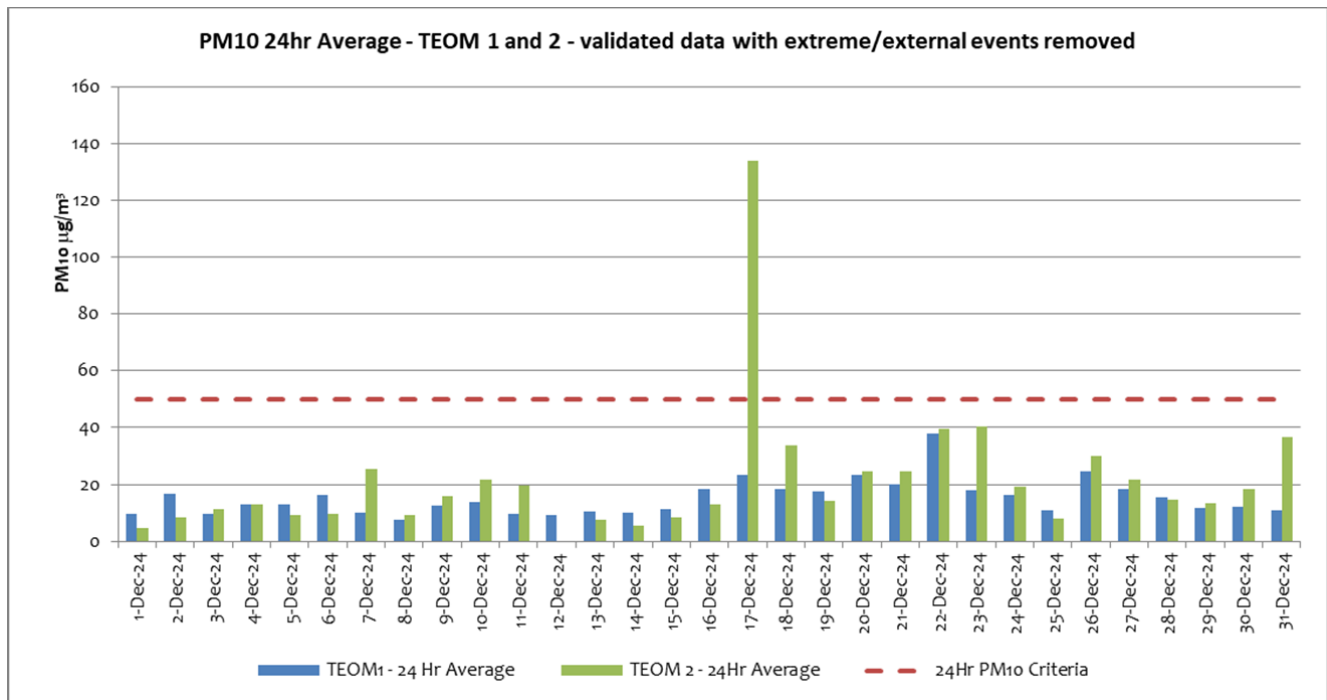
NA - sample collected but data invalid; NS – insufficient sample collected

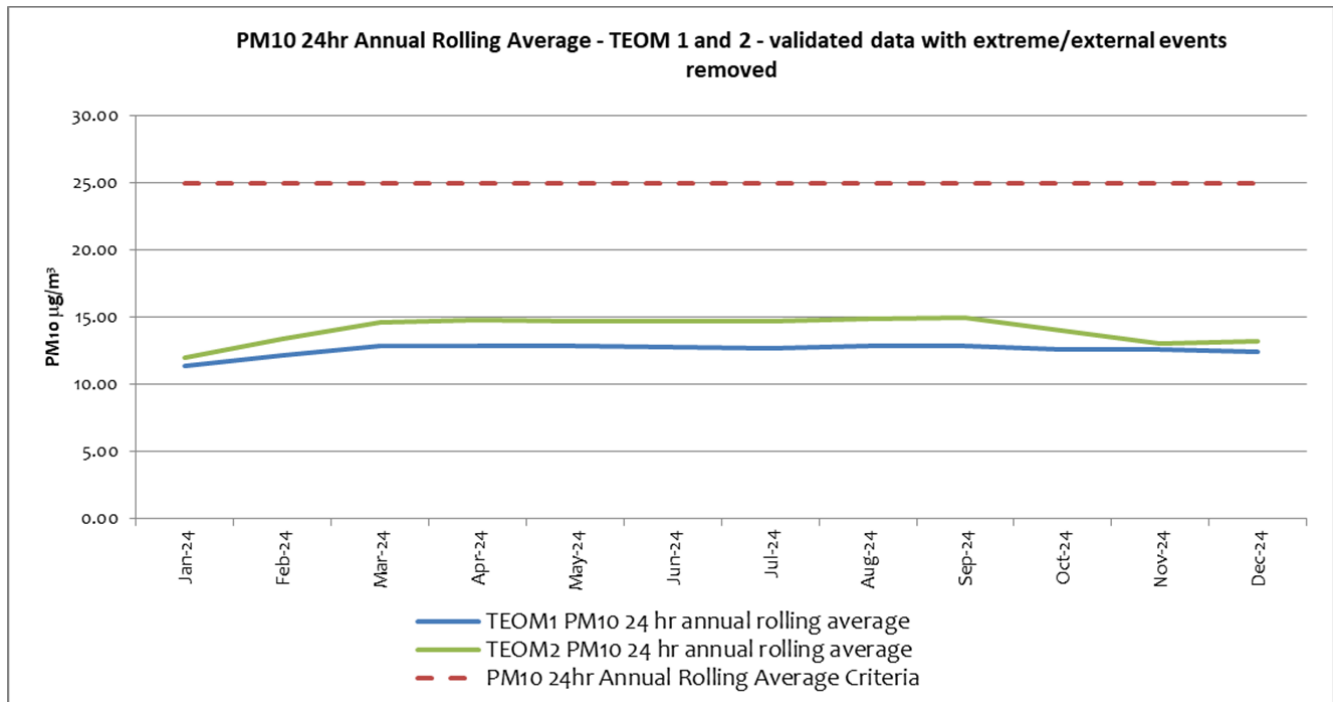
Data collected for the dates of 16, 18, and 26 December have been corrected due to the impact from dust storms and smoke haze from the Victorian bushfires. The rolling annual average for PM10 at TEOM1 with external dust events and invalid data removed for the period December 2023 to December 2024 is 12.47  $\mu\text{g}/\text{m}^3$ , higher than the rolling annual average of 11.19  $\mu\text{g}/\text{m}^3$  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 December 2023 to December 2024 is 13.22 µg/m<sup>3</sup>, higher than the rolling annual average of 11.04 µg/m<sup>3</sup> at the beginning of the reporting period. On 17 December there was an exceedance of the 24-hour average limit of 50 µg/m<sup>3</sup> as specified in the Project Approval. The non-compliance was reported to the DPHI. Data was collected on 12 December but it is not reported as for much of the day the unit was stabilising. Data collected for the dates of 16, 18, 21 and 26 December have been corrected due to the impact from dust storms and smoke haze from the Victorian bushfires.

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.

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>.





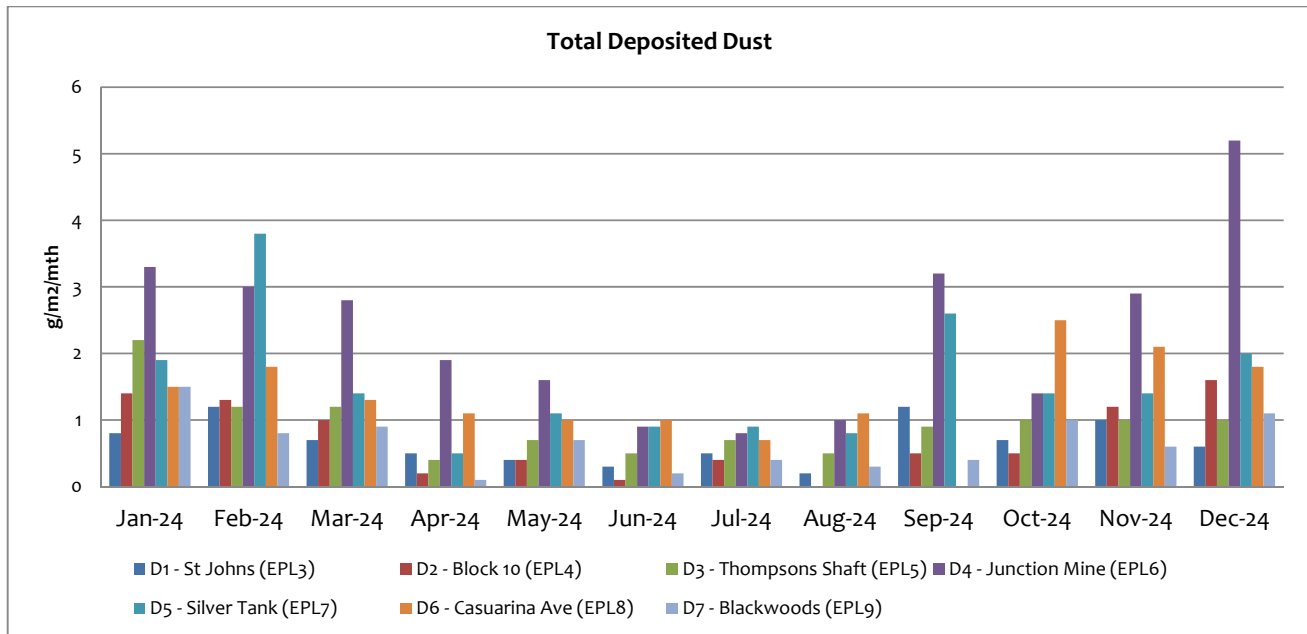
### 1.3 Dust Deposition Sampling

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 on the Rasp Mine web site. 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 December 2024***

Total Deposited Dust (g/m <sup>2</sup> .Month)							
Sample Period	D1 (off site)	D2 (off site)	D3 (on site)	D4 (off site)	D5 (on site)	D6 (off site)	D7 (on site)
December 2024	0.6	1.6	1.0	5.2	2	1.8	1.1
Annual Rolling Average	0.68	0.78	0.94	2.33	1.56	1.45	0.67
Background (2010)	4.0	3.1	4.3	5.7	- <sup>1</sup>	5.8	- <sup>1</sup>

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



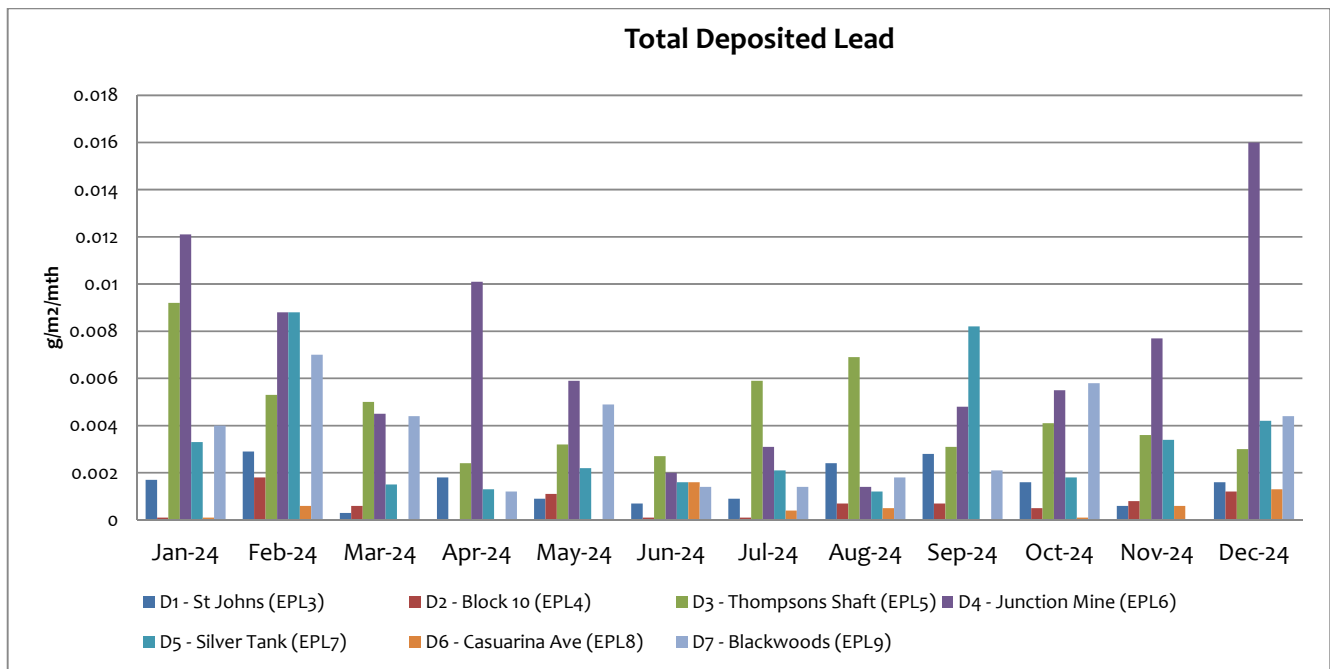
The dust levels recorded in Dust Gauges in December 2024 were similar to previous months. The highest dust levels in December were recorded in the D4 Junction Mine gauge. The predominant wind direction for December was from the South as shown in the Wind Rose in Section 4.

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. All off-site Dust Deposition Gauges except EPL6 were compliant in the reporting period.

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)
December 2024	0.0016	0.0012	0.003	0.016	0.0042	0.0013	0.0044
Background (2010)	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. Lead results in December 2024 were highest in the D4 Junction Mine gauge. There were variable wind directions in December although the prominent wind direction for the month of December was from the South. The source of Lead in the sample was likely from on-site sources.

The questionable D7 Blackwoods gauge results from November mentioned in the previous monthly report were removed from the dataset. The contractor in charge of the analysis (ALS Environmental) acknowledged an erroneous analysis and the sample could not be reanalysed.

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.

## 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 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.

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***Primary Vent Shaft (EPL1) and Crusher Baghouse (EPL2) Results for December 2024***

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The latest round of emissions monitoring was conducted at the Primary Vent Shaft (EPL1) and the Crusher Baghouse (EPL2) between 26 and 27 November 2024. Results were within limits and are provided below.

Parameter	Unit	Primary Vent Shaft (EPL1)	Crusher Baghouse (EPL2)
Dry Gas Density	kg/m <sup>3</sup>	1.29	1.29
Moisture	%	1.80	2.3
Molecular weight of stack gases	g/m <sup>3</sup>	1,288	1,288
Temperature	°C	26.0	23.0
Nitrogen Oxides	mg/m <sup>3</sup>	2.05	NA
Volatile Organic Compounds	mg/m <sup>3</sup>	0.51	NA
Total Suspended particles	mg/Nm <sup>3</sup>	5.48	11.20
Type 1 and Type 2	mg/Nm <sup>3</sup>	0.050	0.14
Velocity	m/sec	11.1	22.9
Volumetric Flowrate	Nm <sup>3</sup> /sec	172	8.9



## 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, Italio (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 December 2024 (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 1.29 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%

The 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.

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 December 2024*

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)	5.75	14800	17000	<1	5200	1550	456	332	1720	4.1	2.46	535	1610	0.1

***Groundwater Bores (EPL37 - EPL52) Results for December 2024***

Sample Point	pH	EC ( $\mu\text{S}/\text{cm}^2$ )	TDS (mg/l)	Alkalinity ( $\text{CaCO}_3$ ) (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)
GW01 (EPL37)	4.42	8460	7860	<1	3990	571	191	293	1150	0.107	0.027	189	152	<0.05
GW02 (EPL38)	Bore Dry													
GW03 (EPL39)	5.56	15100	13300	<1	4510	2840	641	422	2600	0.553	2.37	404	373	1.07
GW04 (EPL40)	6.52	14700	11800	298	4910	2630	546	504	2150	0.0243	0.046	17	5.82	<0.05
GW05 (EPL41)	5.94	13300	11500	39	4480	2550	545	349	1900	0.952	0.044	244	172	<0.05
GW06 (EPL42)	5.7	14700	13600	46	4990	2720	615	539	2670	1.81	0.023	400	285	<0.05
GW07 (EPL43)	5.75	12300	11400	18	4420	1710	596	388	2190	2.14	1.1	288	334	<0.05
GW08 (EPL44)	5.60	11100	10800	10	3880	1780	642	318	1680	1.92	0.625	257	448	<0.05
GW09 (EPL45)	6.51	10800	8960	217	3410	1990	566	390	1200	0.239	<0.001	18.7	8.13	<0.05
GW10 (EPL46)	5.72	15300	13500	39	4910	3100	541	458	2130	2.93	0.011	170	321	<0.05
GW11 (EPL47)	6.07	3320	2750	14	1230	300	276	63	287	1.06	0.462	8.27	52.4	<0.05
GW12 (EPL48)	Insufficient sample													
GW13 (EPL49)	Bore Dry													
GW14 (EPL50)	Bore Dry													
GW15 (EPL51)	Bore Dry													
GW16 (EPL52)	Bore Dry													

### 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	cadmium (Cd), chloride (Cl), electrical conductivity (EC), lead Pb), manganese (Mn), pH, sodium (Na), sulphate (SO <sub>4</sub> ), total dissolved solids (TDS) and zinc (Zn)
Ryan Street Dam EPL31/S49	2 x per year, six months apart	
Adjacent Olive Grove EPL32/S1A	2 x per year, six months apart	
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 December 2024*

No surface water samples were collected in December.

## 4 Weather Data

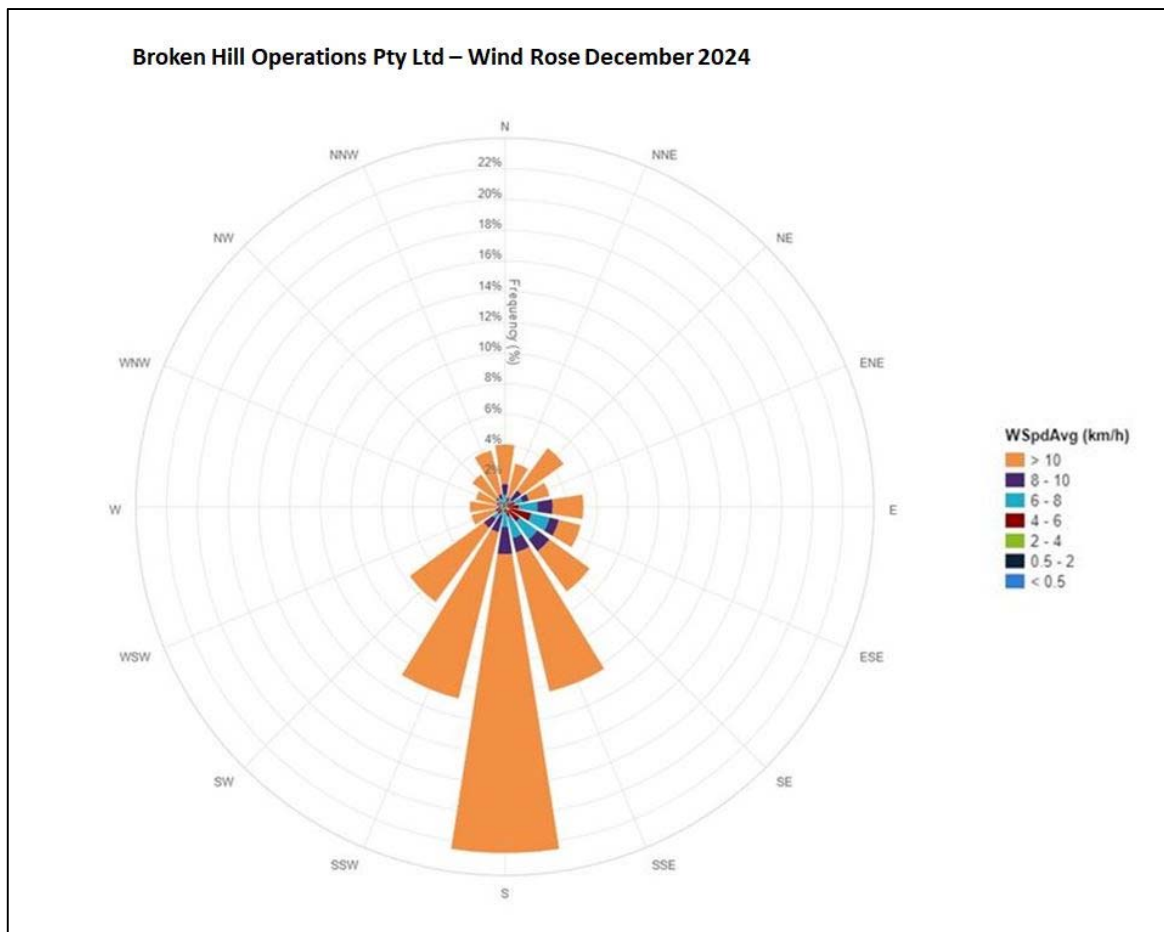
The weather station continuously monitors the following parameters as per Point 55 of the Environmental Protection Licence.

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 prominent wind direction for the month of December was from the South.



***Weather Data Summary for December 2024***

Date	Temperature @ 10m (°C)		Wind Speed @ 10m (km/hr)		Predominant Wind Direction @ 10m		Rainfall (mm)
	Min	Max	Min	Max	Cardinal	Degree	Total
01-Dec-24	17.3	30.8	0.2	47.4	SSW	206	0.00
02-Dec-24	21.6	29.0	0.1	35.7	NNE	21	7.46
03-Dec-24	21.9	31.4	0.4	43.4	South	180	0.97
04-Dec-24	16.7	31.4	0.7	38.0	SSE	158	0.00
05-Dec-24	24.3	37.4	0.6	28.6	East	88	0.00
06-Dec-24	25.2	36.1	1.5	45.1	NNE	21	0.00
07-Dec-24	24.8	36.2	1.2	41.7	South	180	0.02
08-Dec-24	14.2	27.1	3.1	37.8	SSE	159	0.00
09-Dec-24	19.7	29.7	0.1	24.5	SSE	160	0.00
10-Dec-24	21.2	29.5	0.5	33.3	South	181	0.00
11-Dec-24	15.6	27.8	1.9	33.5	South	179	0.00
12-Dec-24	16.7	30.3	0.6	32.5	South	180	0.00
13-Dec-24	18.6	32.5	1.3	27.5	South	180	0.00
14-Dec-24	22.9	36.1	0.1	27.2	ESE	112	0.00
15-Dec-24	26.8	39.2	0.5	24.7	ESE	113	0.00
16-Dec-24	30.8	41.3	1.1	53.8	NNE	21	0.00
17-Dec-24	19.1	31.6	8.5	49.7	South	178	0.02
18-Dec-24	14.7	28.1	1.3	44.7	SSE	156	0.00
19-Dec-24	19.4	31.7	0.7	27.0	SE	134	0.00
20-Dec-24	24.8	35.3	0.9	36.6	SSE	157	0.00
21-Dec-24	15.6	30.8	3.1	45.0	South	179	0.00
22-Dec-24	15.8	28.7	5.5	41.9	South	182	0.00
23-Dec-24	11.4	22.9	5.1	53.3	South	179	0.00
24-Dec-24	12.6	27.8	2.8	31.9	SE	134	0.00
25-Dec-24	20.8	34.4	0.0	32.4	NE	45	0.00
26-Dec-24	22.8	38.3	0.6	55.4	NNE	21	0.00
27-Dec-24	15.1	24.6	3.2	41.9	SSW	205	0.00
28-Dec-24	15.0	26.5	0.2	35.4	South	178	0.00
29-Dec-24	16.2	27.7	0.2	27.2	South	179	0.00
30-Dec-24	20.1	31.2	0.1	27.3	South	179	0.00
31-Dec-24	19.7	32.6	2.1	34.7	South	178	0.00

There was a total rainfall of 8.45 mm in December 2024.

## 5 Data Log

Sample	Result Received
Hi Volume Samples	22-01-2025
TEOM	29-01-2025
Dust Deposition	22-01-2025
Vents & Bag House	09-10-2024
Noise	05-12-2024
Water	06-01-2025
Blast vibration and overpressure	01-12-2024
Weather	01-12-2024
Date posted to web site	21-02-2025

## 6 Correction Log

No corrections.



## 7 Appendix 1 – Monitoring Locations

