Rasp Mine
Monthly Environmental Monitoring Report
June 2019

INTRODUCTION

Broken Hill Operations Pty Ltd (BHOP) [a wholly owned subsidiary of CBH Resources Limited (CBH)] 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 granted 31 January 2011, 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 Rasp Mine web site.

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1 Air Quality

The following criteria as listed in the Project Approval (MOD4 6 September 2017) apply to air quality monitoring:

Long Term Criteria for Particulate Matter

Pollutant	Averaging Period	Criterion
Total solid particles (TSP)	Annual	90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	25 µg/m^3

Short Term Criterion for Particulate Matter

Pollutant	Averaging Period	Criterion
Particulate matter < 10 µm (PM_{10})	24 hour	50 µg/m^3

Long Term Criteria for Deposited Dust

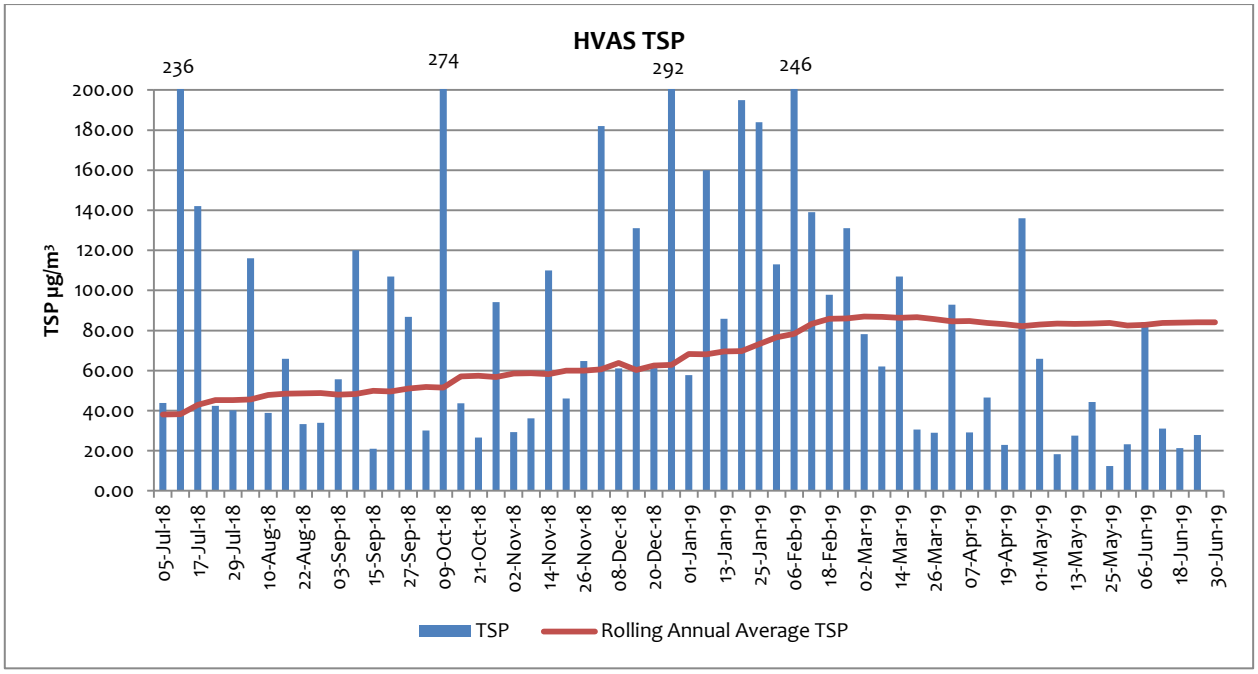
Pollutant	Averaging Period	Maximum Project Contribution	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

1.1 High Volume Air Samplers

There are three 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) is located adjacent to and north of Blackwood Pit. A map indicating these locations can be found on the Rasp Mine web site. HVAS samples for total suspended particulates (TSP) and lead dust, and HVAS1 and HVAS2 sample for particulate matter less than 10 microns (PM_{10}) and lead dust.

HVAS (EPL10) - Silver Tank (On Site) Results for June

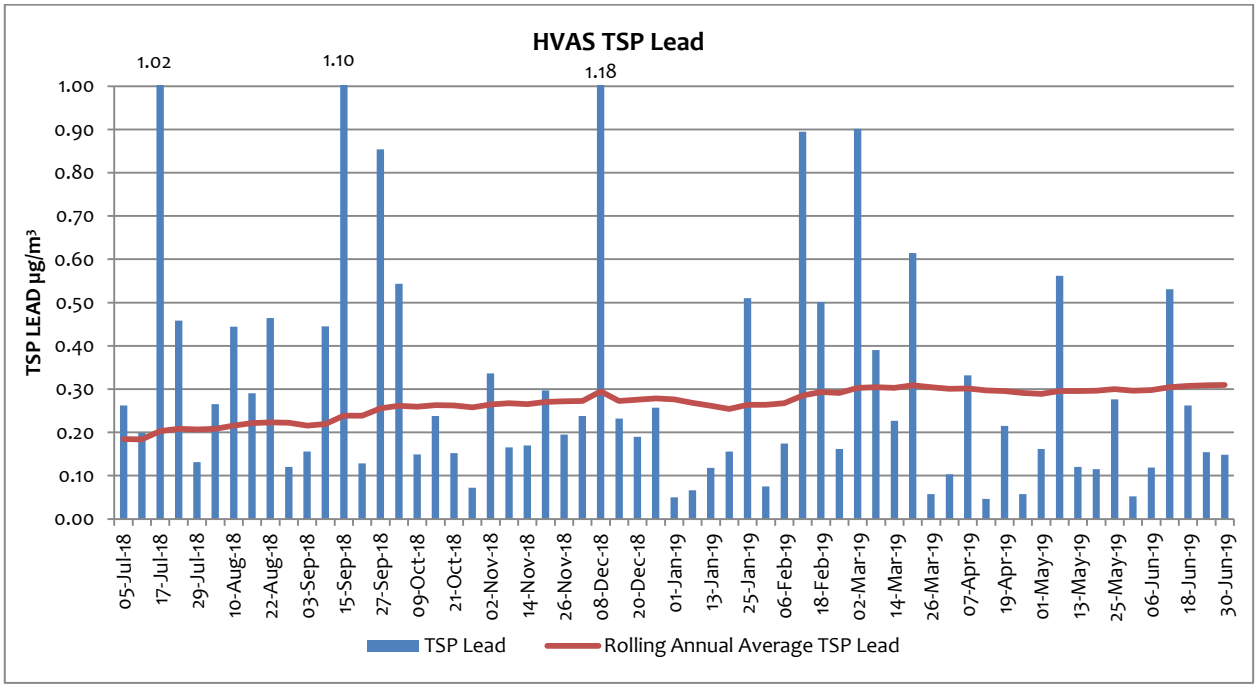
DATE	TSP (µg/m^3)	Lead (µg/m^3)
6-06-2019	23.3	0.12
12-06-2019	84.1	0.53
18-06-2019	31.0	0.26
24-06-2019	21.3	0.15
30-06-2019	27.8	0.15



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. There was an elevated dust level recorded at HVAS on 6 June with a maximum wind speed for the day of 39km/hr and the predominant wind direction was from the SSE (off site). Overall the trend for TSP at this location rose over the 12 months to June as drought conditions and dust storm events continued into June.

The rolling annual average for TSP to June is 82.04 µg/m^3 which is below the long term annual average criteria of 90 µg/m^3.

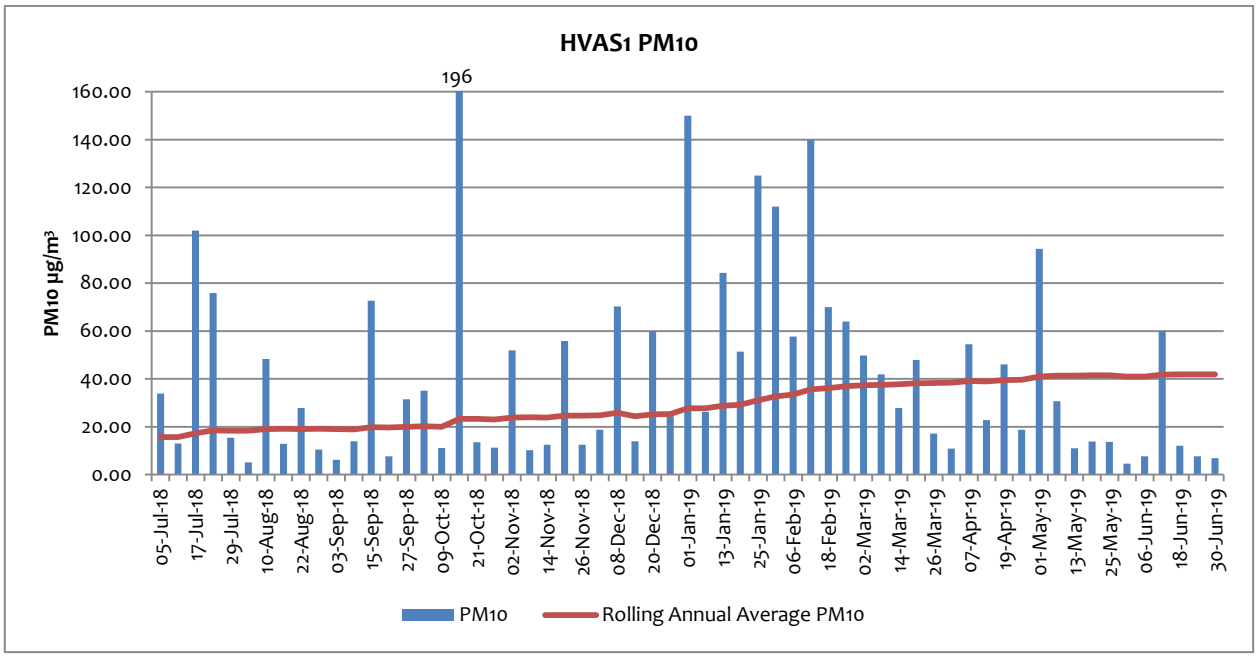
Dust is controlled on site using the application of dust suppressant and the watering of haul roads.



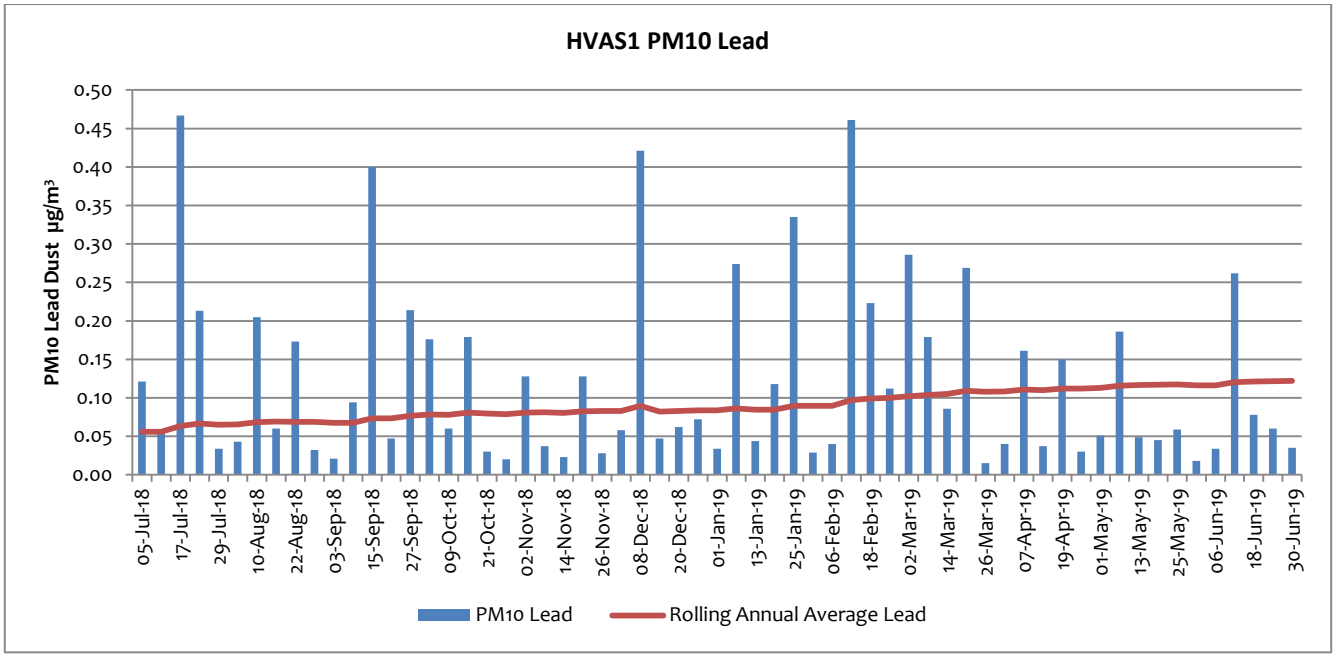
There was an elevated lead dust level recorded at HVAS on 12 June with a maximum wind speed for the day of 50.8km/hr and the predominant wind direction was from the South (off site). The rolling annual average for TSP Lead to June was 0.31 µg/m^3.

HVAS1 (EPL11) - Silver Tank (On Site) Results for June

DATE	PM10 (µg/m^3)	PM10 Lead (µg/m^3)
6-06-2019	7.70	0.03
12-06-2019	60.10	0.26
18-06-2019	12.10	0.08
24-06-2019	7.70	0.06
30-06-2019	6.80	0.04



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. There was an elevated PM10 dust level of 60.10 µg/m^3 recorded on 12 June with maximum wind speed for the day of 50.8km/hr and the predominant wind direction was from the South (off site). Overall the trend for PM10 at this location has risen over the previous 12 month. The results show that the PM_{10} rolling annual average for HVAS1 has risen to 41.9 µg/m^3 which is above the PM_{10} annual average criterion of 25 µg/m^3 required at the nearest residential location. The increase in PM_{10} annual average would be a result of severe drought and dusty conditions over this period. Calculation of the rolling annual average includes results from days when there were dust storm events.



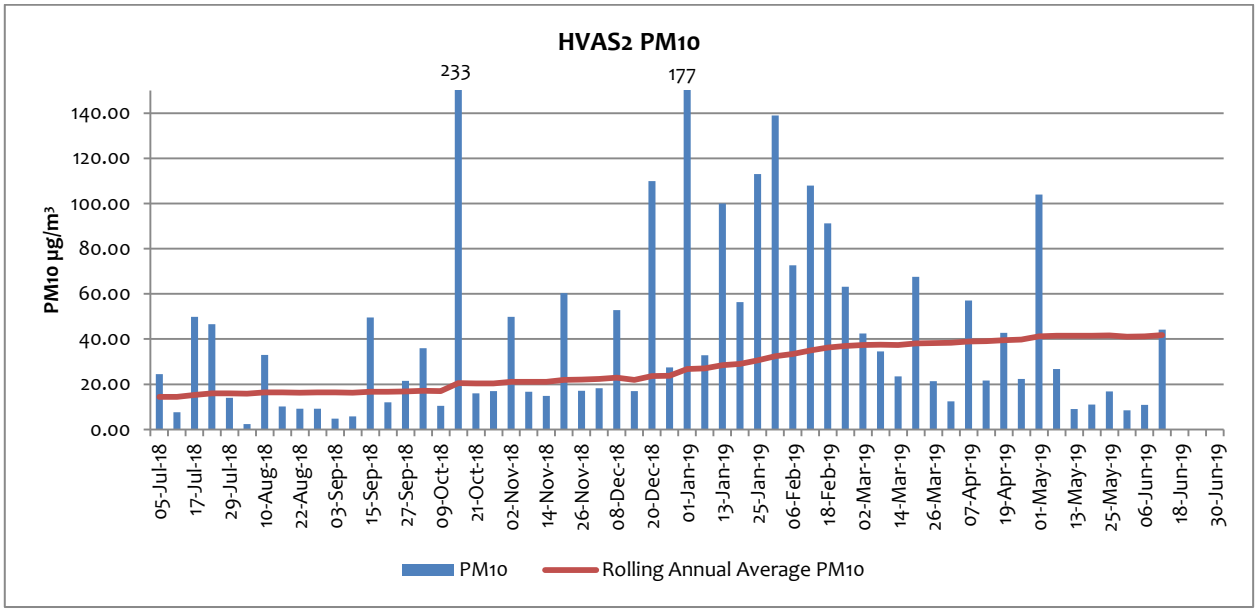
There is no guideline for assessing PM_{10} lead dust; the trend for PM10 lead dust at this location has risen slightly over the previous 12 months from 0.05 µg/m^3 to 0.12 µg/m^3 and is likely the result of drought conditions and windy weather transporting lead contaminated dust from the Broken Hill environs. There was an elevated PM10 lead dust level of 0.26 µg/m^3 recorded on 12 June with a maximum wind speed for the day of 50.8km/hr and the predominant wind direction was from the South (off site).

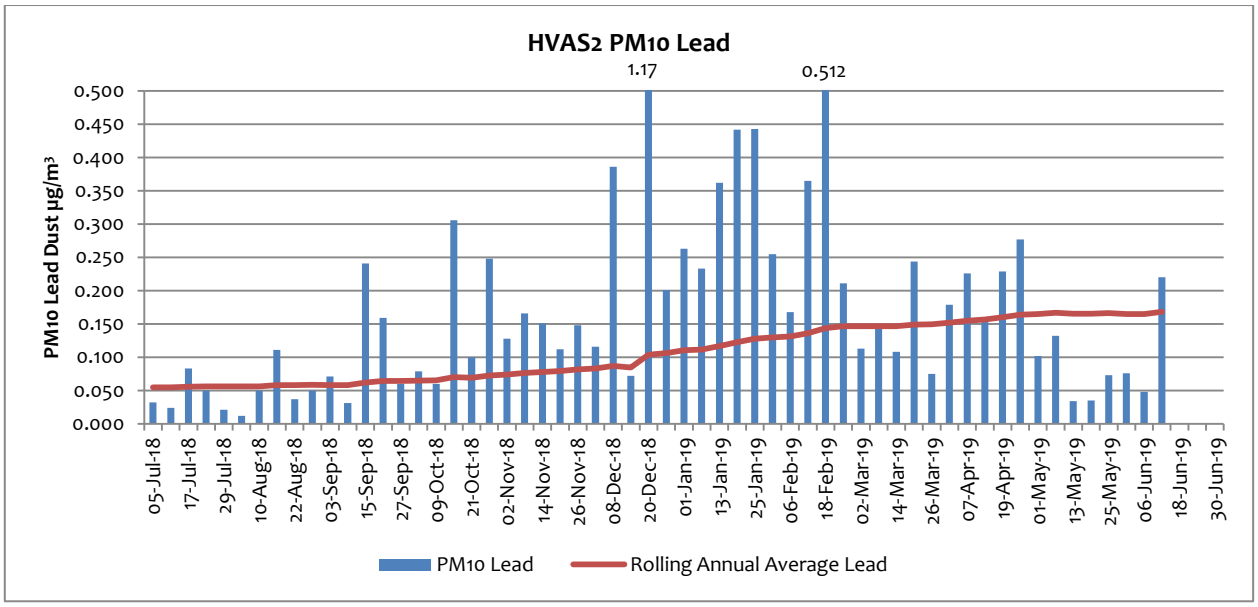
HVAS 2 (EPL12) - Blackwood Pit (On Site) Results for June

DATE	PM10 (µg/m^3)	Lead (µg/m^3)
6-06-2019	10.80	0.05
12-06-2019	44.20	0.22
18-06-2019	NS	NS
24-06-2019	NS	NS
30-06-2019	NS	NS

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 has been decommissioned while Embankment 2 TSF2 construction works are undertaken. A real-time PM10 monitor is in place adjacent to the HVAS2 location. There were elevated dust levels recorded at HVAS on 12 June with a dust storm occurring on the morning of the day. The maximum wind speed for the day was 50.8km/hr and the predominant wind direction was from the South. As the wind was predominantly from the South on these days, it is unlikely the site operations contributed significantly to the high recordings as elevated dust levels were also recorded at all other high volume air samplers on the northern and southern boundaries of the operations.

The rolling annual average PM_{10} to June is 41.74 µg/m^3 is above the PM_{10} annual average criterion 25 µg/m^3 required at the nearest residential location. Calculation of the rolling annual average includes results from days when there were dust storm events.

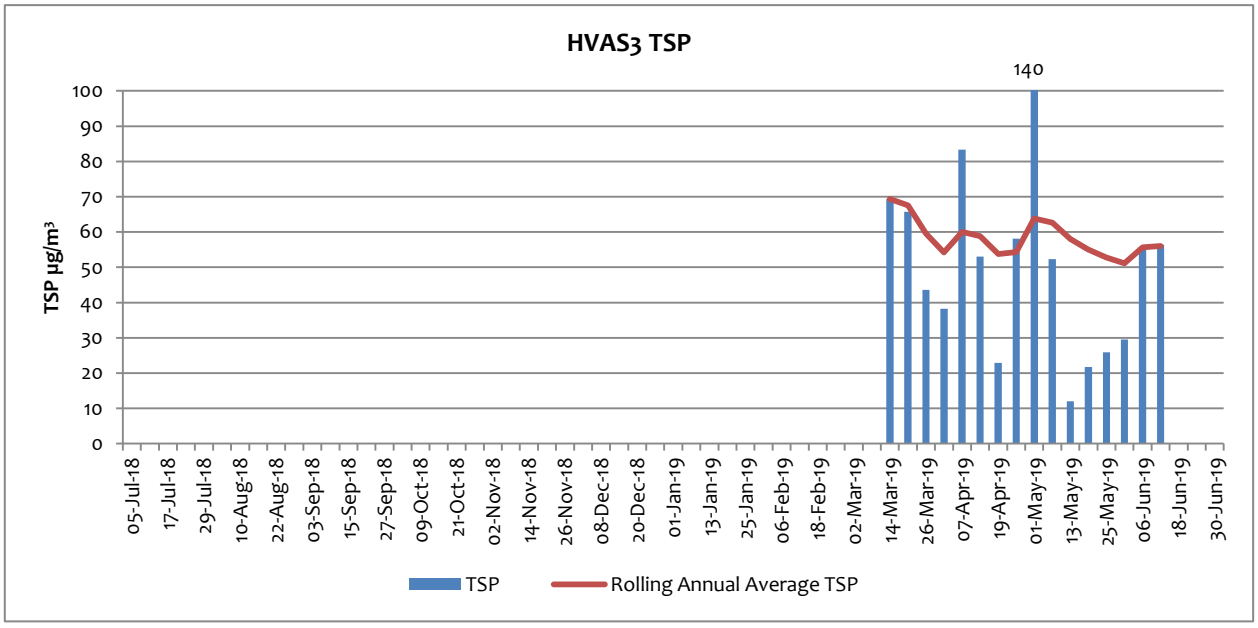




There is no guideline for assessing PM10 lead dust; the Annual Rolling Average for lead dust at this location has increased over the previous 12 months from 0.07 µg/m^3 to 0.16 µg/m^3 at the end of June 2019. There was an elevated PM10 lead dust level of 0.22 µg/m^3 recorded on 12 June with a maximum wind speed for the day of 50.8km/hr and the predominant wind direction was from the South (off site).

HVAS 3 (EPL57) - Blackwood Pit (On Site) Results for June

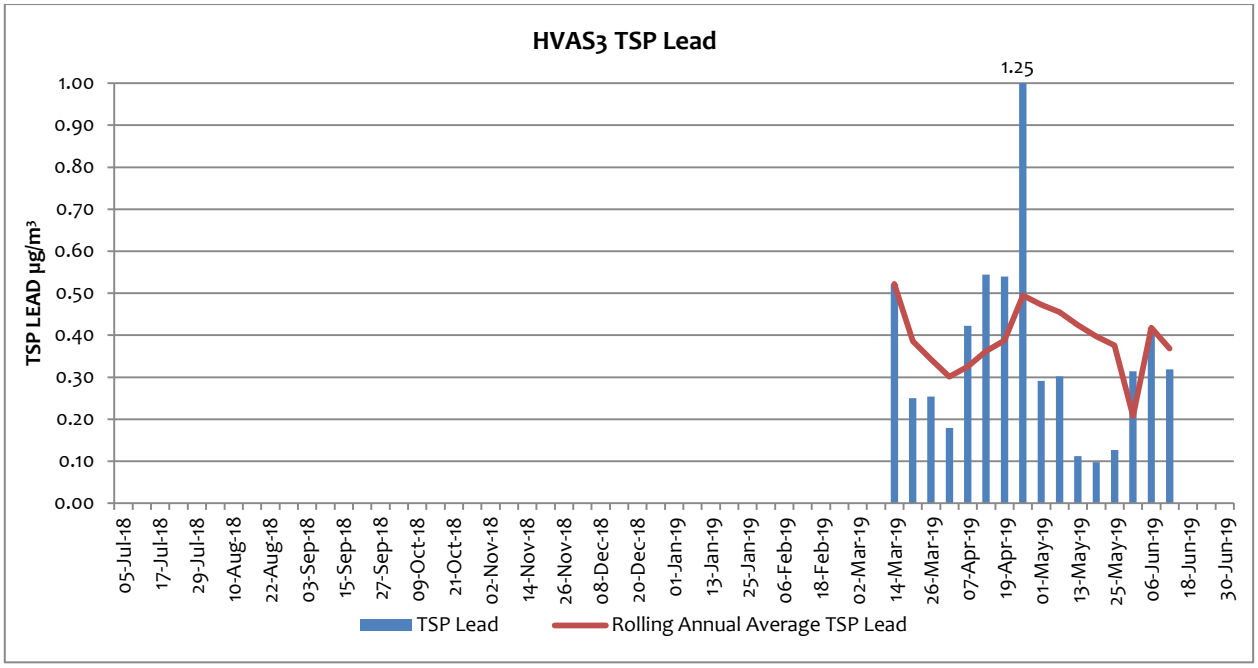
DATE	TSP (µg/m^3)	PM10 Lead (µg/m^3)
6-06-2019	55.70	0.418
12-06-2019	56.40	0.319
18-06-2019	NS	NS
24-06-2019	NS	NS
30-06-2019	NS	NS



HVAS3 (EPL57) 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. HVAS3 (EPL57) was included in EPL 12559 on 14 March 2019 to provide for monitoring of TSP Dust on the northern boundary of the site at Blackwoods Pit TSF2. There were elevated dust levels recorded at HVAS on 6 and 12 June. The maximum wind speed for these days was 39km/hr and 50.8km/hr with the predominant wind direction from the SE and South. High dust levels were also recorded in high volume air samplers on the northern and southern boundaries of the site.

The rolling annual average for TSP to June is 56.05 µg/m^3 which is below the long term annual average criteria of 90 µg/m^3.

The rolling annual average for TSP Lead to June is 0.37 µg/m^3.



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 on the Rasp Mine web site. TEOM1 and TEOM2 operate continuously and sample for particulate matter less than 10 microns (PM_{10}) in size.

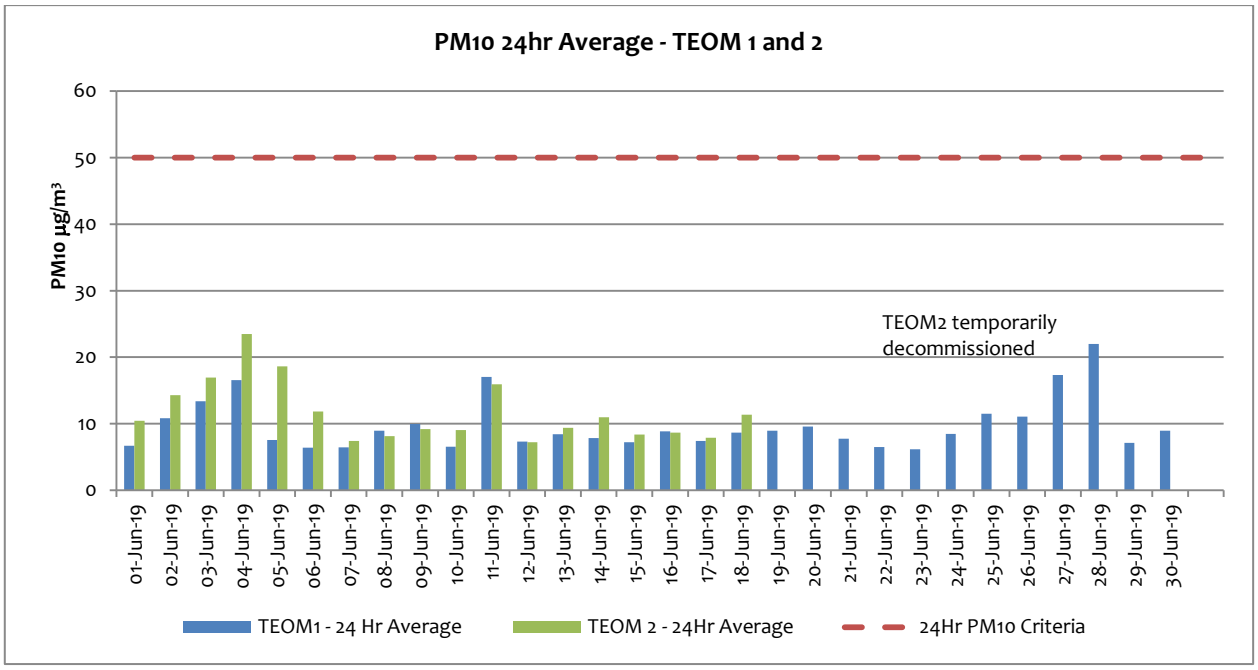
TEOM1 (EPL13) (Off Site) and TEOM2 (EPL14) (On Site) Results for June

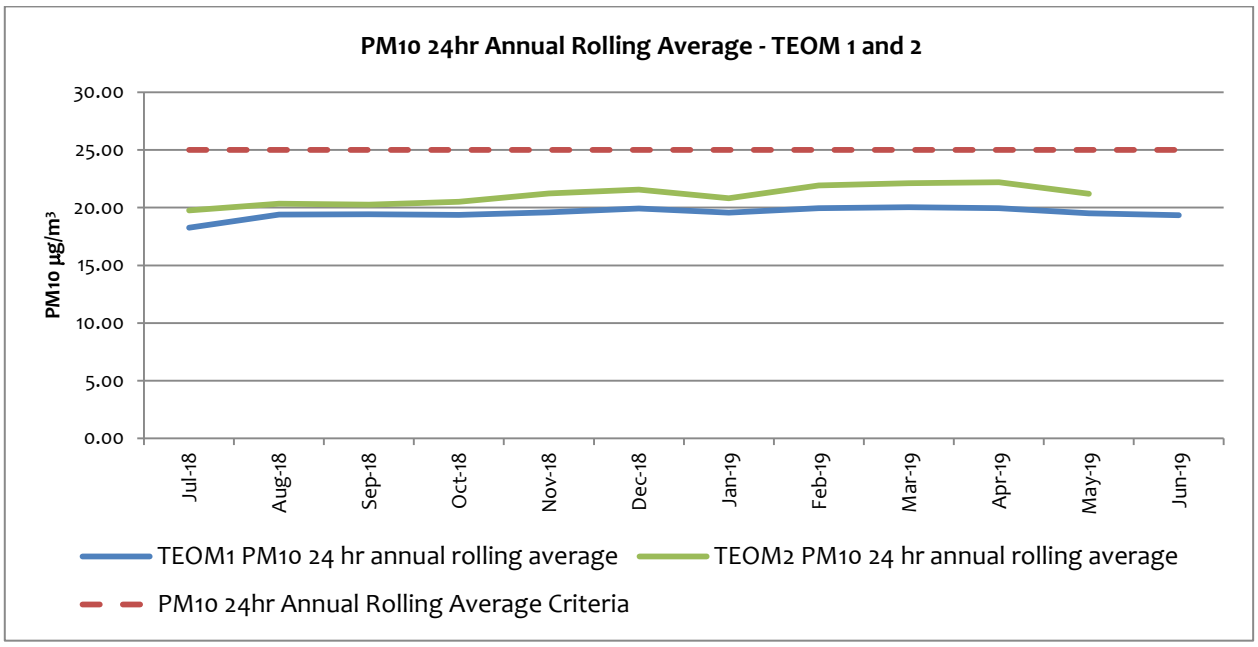
Particulate Matter <10 Microns 24Hr Average				
Date	TEOM 1 (µg/m^3)	Compliant with 50µg/m^3 24hr average?	TEOM 2 (µg/m^3)	Compliant with 50µg/m^3 24hr average?
01-Jun-19	6.7	Y	10.4	Y
02-Jun-19	10.8	Y	14.3	Y
03-Jun-19	13.4	Y	16.9	Y
04-Jun-19	16.5	Y	23.5	Y
05-Jun-19	7.6	Y	18.6	Y
06-Jun-19	6.4	Y	11.8	Y
07-Jun-19	6.4	Y	7.4	Y
08-Jun-19	9.0	Y	8.1	Y
09-Jun-19	10.0	Y	9.2	Y
10-Jun-19	6.5	Y	9.0	Y
11-Jun-19	17.0	Y	15.9	Y
12-Jun-19	7.3	Y	7.2	Y
13-Jun-19	8.4	Y	9.4	Y
14-Jun-19	7.8	Y	11.0	Y
15-Jun-19	7.2	Y	8.4	Y
16-Jun-19	8.8	Y	8.7	Y
17-Jun-19	7.4	Y	7.9	Y
18-Jun-19	8.7	Y	11.3	Y
19-Jun-19	9.0	Y	NS	Y
20-Jun-19	9.6	Y	NS	Y
21-Jun-19	7.7	Y	NS	Y
22-Jun-19	6.5	Y	NS	Y
23-Jun-19	6.2	Y	NS	Y
24-Jun-19	8.4	Y	NS	Y
25-Jun-19	11.5	Y	NS	Y
26-Jun-19	11.1	Y	NS	Y
27-Jun-19	17.3	Y	NS	Y
28-Jun-19	22.0	Y	NS	Y
29-Jun-19	7.1	Y	NS	Y
30-Jun-19	8.9	Y	NS	Y

Project Approval 07_0018 apply at TEOM1 and 2, with two criteria listed for PM10, a 24 hour average criteria of 50 ug/m^3 and an annual average criteria of 25 ug/m^3.

TEOM2 was decommissioned from 19 June due to Embankment 2 TSF2 construction works. The decommissioning is in accordance with dust management strategies agreed with the EPA which includes the operation of a real-time PM10 monitor north of the construction works. The average monthly PM_{10} during June was 9.7 µg/m^3 at TEOM1 and 11.6 µg/m^3 at TEOM2. Both Project Approval and Environment Protection Licence criteria exclude dust storms and other extraordinary events. The graphs provided below exclude results impacted by dust storms and external events.

The PM10 24-hour rolling average has fallen slightly to 19.35 µg/m^3 for TEOM1 and remained stable at 21.22 µg/m^3 for TEOM2 as the rolling average has not been calculated while the unit has been decommissioned.





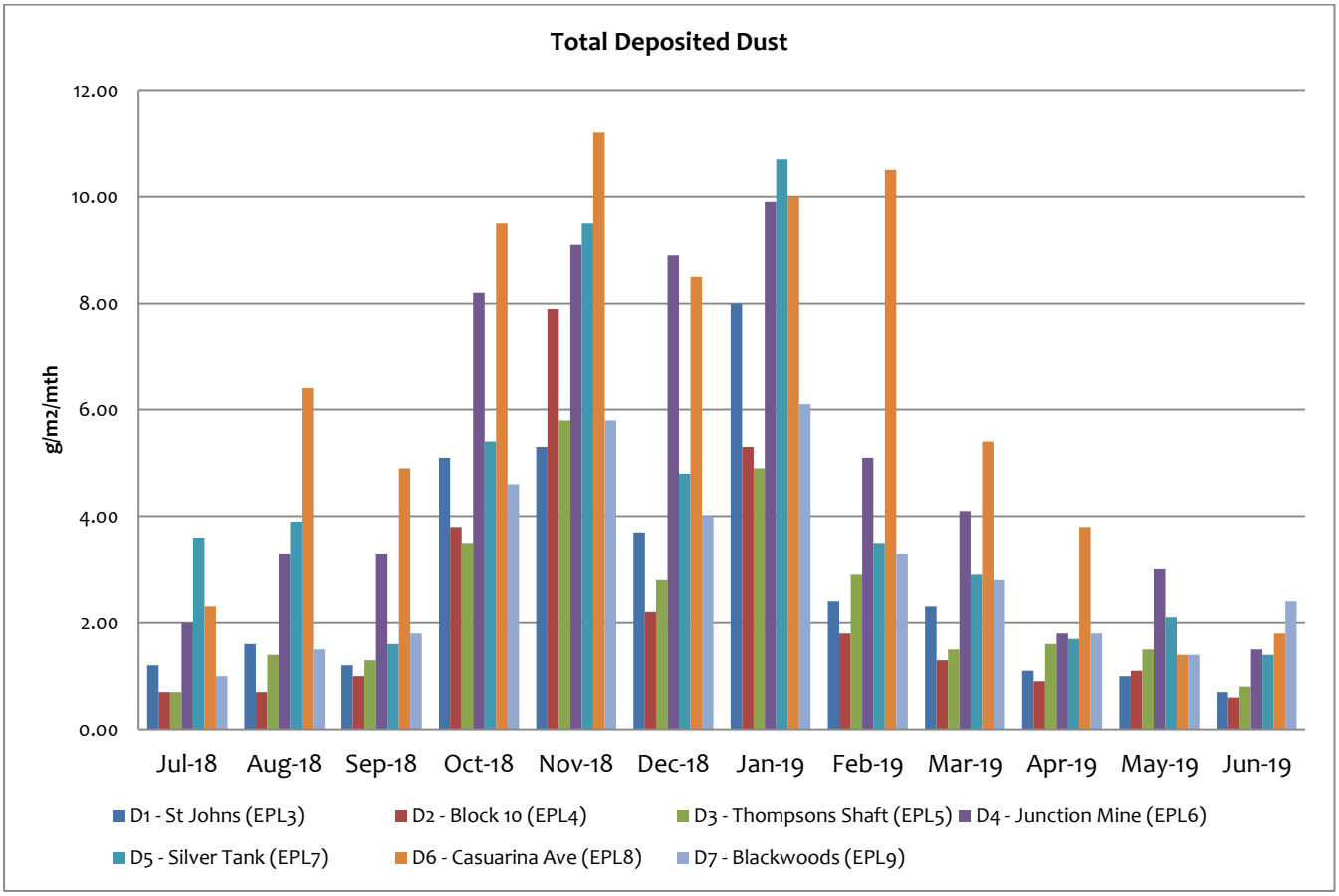
1.3 Dust Deposition Sampling

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 June

Total Deposited Dust (g/m$^{2/}$Month)							
Date	D1 (off site)	D2 (on site)	D3 (on site)	D4 (on site)	D5 (on site)	D6 (off site)	D7 (on site)
June 2019	0.7	0.6	0.8	1.5	1.4	1.8	2.4
Background (2010)	4.0	3.1	4.3	5.7	-1	5.8	-1
Compliant?	Y	N/A	N/A	N/A	N/A	Y	N/A

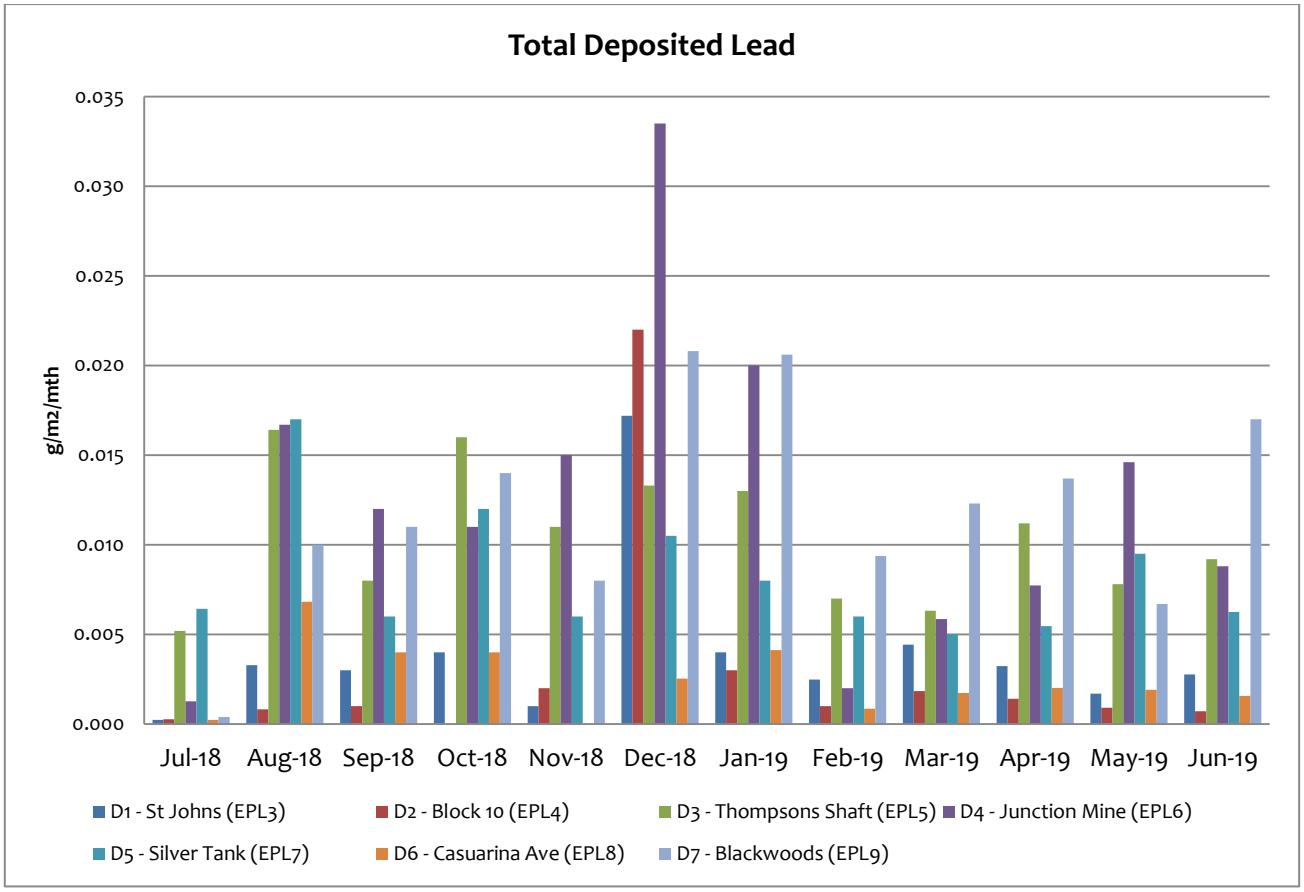
Note: "1"= background not available N/A = not applicable as dust deposition unit is located on site



Dust results at Blackwoods were the highest in June. The Blackwoods location is surrounded by unsurfaced areas both on and off-site which are subject to vehicular traffic.

Total Deposited Lead (g/m$^{2/}$Month)							
Date	D1 (off Site)	D2 (on site)	D3 (on site)	D4 (on site)	D5 (on site)	D6 (off Site)	D7 (on site)
June 2019	0.0028	0.0007	0.0092	0.009	0.006	0.0016	0.017
Background (2010)	0.0034	0.005	0.005	0.006	-1	0.004	-1

Note: "1"= background not available



There are no guidelines for deposited lead dust. Lead results in June were highest at Blackwoods. The Blackwoods monitor is sited adjacent to unsurfaced areas subject to vehicular traffic. Dust suppressant is applied to unsealed areas of the site.

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 April 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.

The following criteria apply:

Primary Ventilation Shaft (EPL1)

	Unit	Criteria
Nitrogen Oxides	mg/m^3	350
Volatile Organic Compounds	mg/m^3	40

Primary Ventilation Shaft (EPL1), Shaft 6 (EPL56) and Crusher Baghouse (EPL2)

	Unit	Criteria
Total Suspended particles	mg/m^3	20
Type 1 and Type 2[1]	mg/m^3	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 June 2019

2 Noise

2.1 Blasting (Vibration and Overpressure)

There are 6 vibration monitors at various locations to measure for vibration and overpressure from blast firings. These include V1 to V5 which are located off-site and V6 which is located on-site near Shaft 4. A map indicating these locations can be found on the Rasp Mine web site. In addition there are 2 roving monitors, which may be used to monitor vibration and overpressure at particular locations as required. Monitors operate continuously and are automatically triggered 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[1]
(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[1]
(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

Blasting Data Summary Results for June 2019

Total Blasts:

- 0 production blasts occurred before 6.45 am or after 7.15 pm
- The number of Production blasts averaged 4.0 per week over the previous calendar year
- The number of Development blasts averaged 29.9 per week over the previous calendar year

Western Mineralisation and Main Lodes (excluding Block 7):

- 0 Blasts 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 = 0% (July 2018 to June 2019)
- Percentage of production blasts over 5 mm/sec = 4.4% (July 2018 to June 2019)

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 = 0% (July 2018 to June 2019)
- Percentage of production blasts over 3mm/sec = 0% (July 2018 to June 2019) (criteria does not apply in this period as not a regulator reporting period)

There was no blasting in Block 7 during June. The last blasts to have been conducted in Block 7 were in July 2018.

2.2 Noise

Noise monitoring is undertaken as per the NSW Noise Policy for Industry at a frequency of once per annum. Annual noise monitoring was conducted in December 2018.

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 January. No limits are applied in the EPL to the results from groundwater monitoring.

Groundwater Monitoring Requirements

EPA Identification Number	Frequency	Parameters to be analysed
Shaft 7 EPL53	Monthly	alkalinity (calcium carbonate ($CaCO_3$)), cadmium (Cd), calcium (Ca), chloride (Cl), electrical conductivity (EC), iron (Fe), lead Pb), magnesium (Mg), manganese (Mn), pH, sodium (Na), sulphate (SO4), 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 June 2019

Sample Point	pH	EC (µS/cm^2)	TDS (mg/l)	Alkalinity ($CaCO_3$) (mg/l)	SO4 (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)	6.31	12600	12500	8	5480	1460	545	294	1780	2.2	0.438	323	910	0.38
Kintore Pit (EPL54)	6.34	12600	12900	8	5560	1450	476	302	1860	2.5	0.502	306	1030	3.22

Groundwater Bores (EPL37 - EPL52) Results for June 2019

Sample Point	pH	EC (µS/cm^2)	TDS (mg/l)	Alkalinity ($CaCO_3$) (mg/l)	SO4 (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)	-Bore Dry-													
GW02 (EPL38)	-Bore Dry-													
GW03 (EPL39)	5.13	13400	12000	<1	5080	2950	560	372	2260	1.69	2.43	290	273	<0.05
GW04 (EPL40)	7.13	13600	10700	250	4850	2700	572	521	2370	0.108	0.021	49	22	<0.05
GW05 (EPL41	6.35	14200	13800	118	6750	2700	506	654	2640	0.705	0.253	348	284	<0.05
GW06 (EPL42)	6.42	12100	11200	49	4150	2440	530	436	2140	0.815	0.081	267	166	<0.05
GW07 (EPL43)	6.3	10500	10300	34	4680	1710	520	301	1740	520	0.118	273	324	<0.05
GW08 (EPL44)	6.02	10900	11600	13	4270	2410	550	304	1630	2.19	0.487	634	748	<0.05
GW09 (EPL45)	6.77	10000	10200	89	3980	1660	623	539	1400	1.07	0.04	84.1	103	<0.05
GW10 (EPL46)	7.15	12400	11500	281	4860	2680	571	526	2240	0.191	0.005	9.13	22.5	<0.05
GW11 (EPL47)	7.04	4600	3890	72	2390	487	297	152	628	0.0264	0.021	23.7	37.9	<0.05
GW12 (EPL48)	6.37	11300	12200	72	5000	1760	444	559	2100	1.51	0.05	83.4	177	<0.05
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 on the Rasp Mine web site. Sampling is 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
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	(Mn), pH, sodium (Na), sulphate (SO4), total dissolved solids (TDS) and zinc (Zn)
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 Monitoring Results

No monitoring required.

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

Weather Data Summary for June

Date	Temperature @ 10m (°C)		Wind Speed @ 10m (km/hr)		Predominant Wind Direction @ 10m		Rainfall (mm)
	Min	Max	Min	Max	Cardinal	Degree	Total
1-Jun-19	10.0	12.2	5.7	26.1	SSE	163	0.00
2-Jun-19	6.3	11.6	7.0	30.1	SSW	200	0.00
3-Jun-19	5.0	11.8	7.9	39.0	SSW	206	0.00
4-Jun-19	2.7	11.1	9.5	38.3	South	180	0.00
5-Jun-19	2.5	11.5	8.2	31.3	South	176	0.00
6-Jun-19	2.8	10.3	7.6	39.0	SSE	158	0.00
7-Jun-19	5.3	15.3	2.4	22.5	ESE	111	0.00
8-Jun-19	8.5	18.8	0.3	20.2	ENE	66	0.00
9-Jun-19	12.6	16.7	5.2	27.8	NE	46	0.00
10-Jun-19	15.2	20.4	2.4	33.0	West	273	0.00
11-Jun-19	13.4	23.7	6.9	30.9	NNE	28	0.00
12-Jun-19	11.5	21.0	1.6	50.8	South	182	0.80
13-Jun-19	10.2	15.5	0.7	14.9	SW	227	0.00
14-Jun-19	10.4	16.4	0.8	13.7	SW	226	0.00
15-Jun-19	9.9	16.6	1.1	14.6	SE	135	0.00
16-Jun-19	10.8	15.0	0.5	12.2	NE	43	0.00
17-Jun-19	9.5	16.0	0.9	21.6	NW	314	0.00
18-Jun-19	5.5	13.1	4.8	23.8	SSW	204	0.00
19-Jun-19	3.3	10.9	3.0	13.0	SSW	202	0.00
20-Jun-19	5.4	11.6	1.2	14.8	NE	46	0.00
21-Jun-19	5.5	11.0	0.5	17.3	SSE	155	0.00
22-Jun-19	3.9	10.7	2.8	21.0	SSE	156	0.00
23-Jun-19	2.3	10.2	4.1	25.9	SSE	156	0.00
24-Jun-19	3.9	11.9	0.8	19.1	East	91	0.00
25-Jun-19	9.0	16.6	1.6	10.6	East	89	0.00
26-Jun-19	8.8	17.4	4.1	19.7	ENE	66	0.00
27-Jun-19	11.3	20.2	6.8	26.9	NE	42	0.00
28-Jun-19	12.4	20.6	7.7	40.6	NNE	25	0.30
29-Jun-19	6.8	17.3	8.3	46.7	West	271	0.00
30-Jun-19	5.7	13.6	3.3	14.7	NW	314	0.00

5 Data Log

Sample	Result Received
Hi Volume Samples	25-07-2019
TEOM	26-07-2019
Dust Deposition	18-07-2019
Vents & Bag House	2-07-2019
Water	9-07-2019
Blast vibration and overpressure	1-07-2019
Weather	1-07-2019
Date posted to web site	9-08-2019

6 Correction Log

Nil corrections.