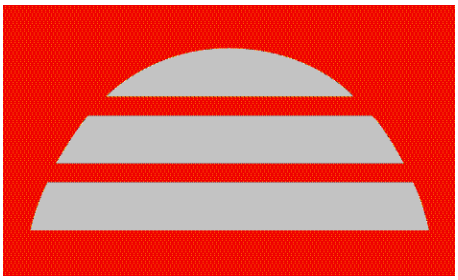

Rasp Mine
Monthly Environmental Monitoring Report
October 2018

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

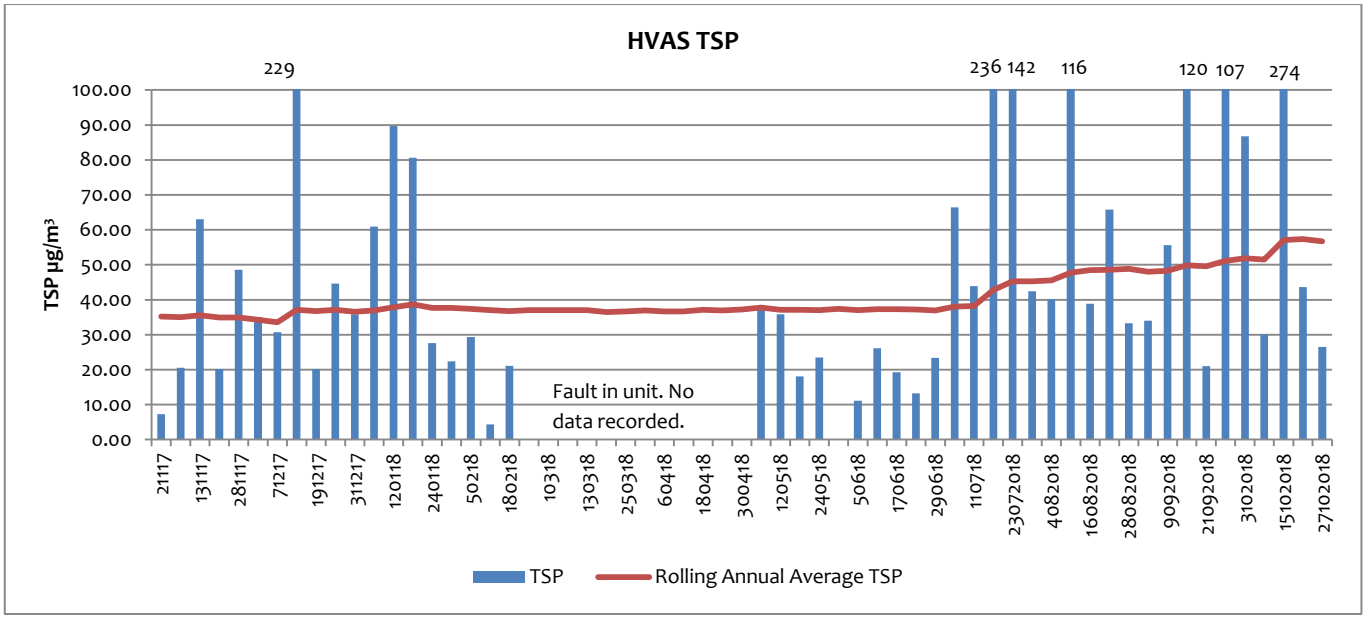
Pollutant	Averaging Period	Maximum Project Contribution	Maximum Total Deposited Dust Level
Deposited dust	Annual	2 g/m^2/month	4 g/m^2/month

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.

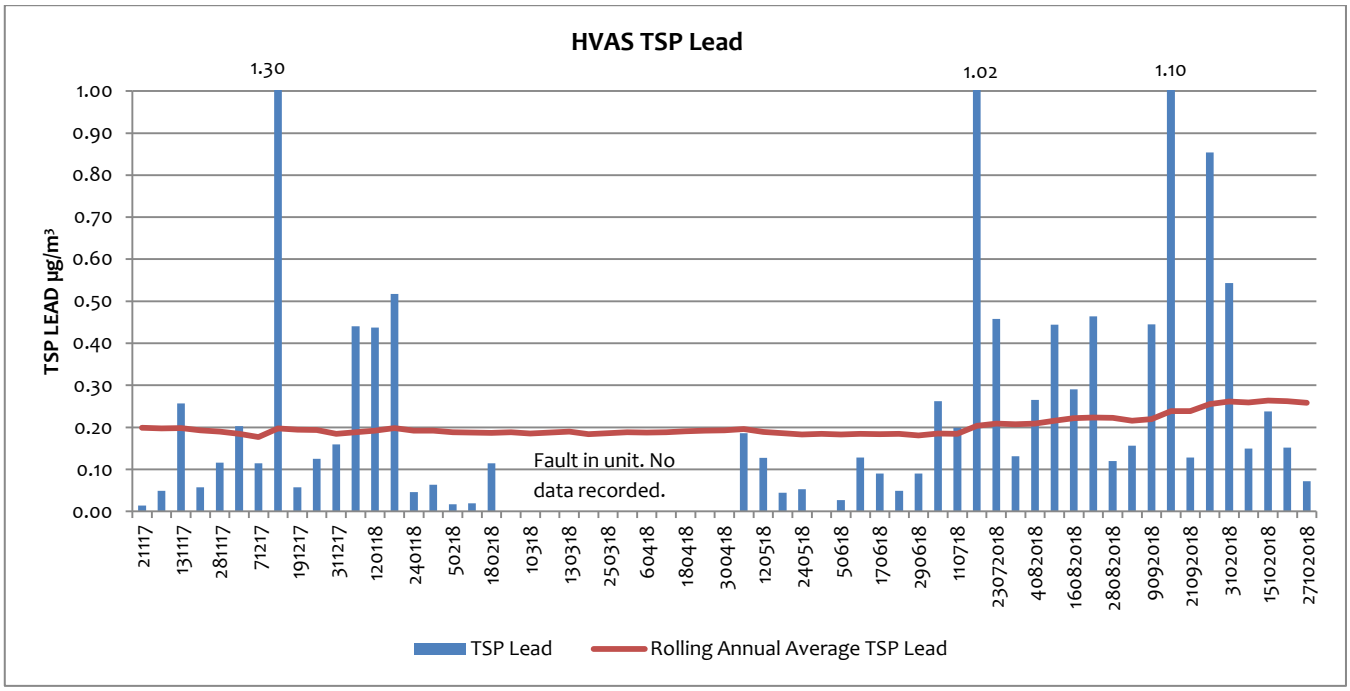
HVAS (EPL10) - Silver Tank (On Site) Results for October

DATE	TSP (µg/m^3)	Lead (µg/m^3)
03-10-2018	86.80	0.54
9-10-2018	30.10	0.15
15-10-2018	274.00	0.24
21-10-2018	43.60	0.15
28-10-2018	26.50	0.07



HVAS (EPL10) is located on the Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location. There were elevated dust levels recorded at HVAS on 3 October and 15 October. On 3 October the winds were predominantly from the northeast for much of the day but a dust storm blew in from the northwest (Silverton) at approximately 2:45pm with a maximum wind speed at this time (and for the day) of 16.2 m/sec (58.3 km/hr). On 15 October there was another dust storm in Broken Hill from mid-morning to late evening with winds predominantly from the northeast and at speeds up to 17.3 m/sec (62.28 km/hr). On both occasions the regional dust levels contributed to the dust loading recorded. Dust levels recorded at the TEOM units were also elevated on these days. Overall the trend for TSP at this location has risen over the past 12 months which is likely due to the severe drought conditions over this period.

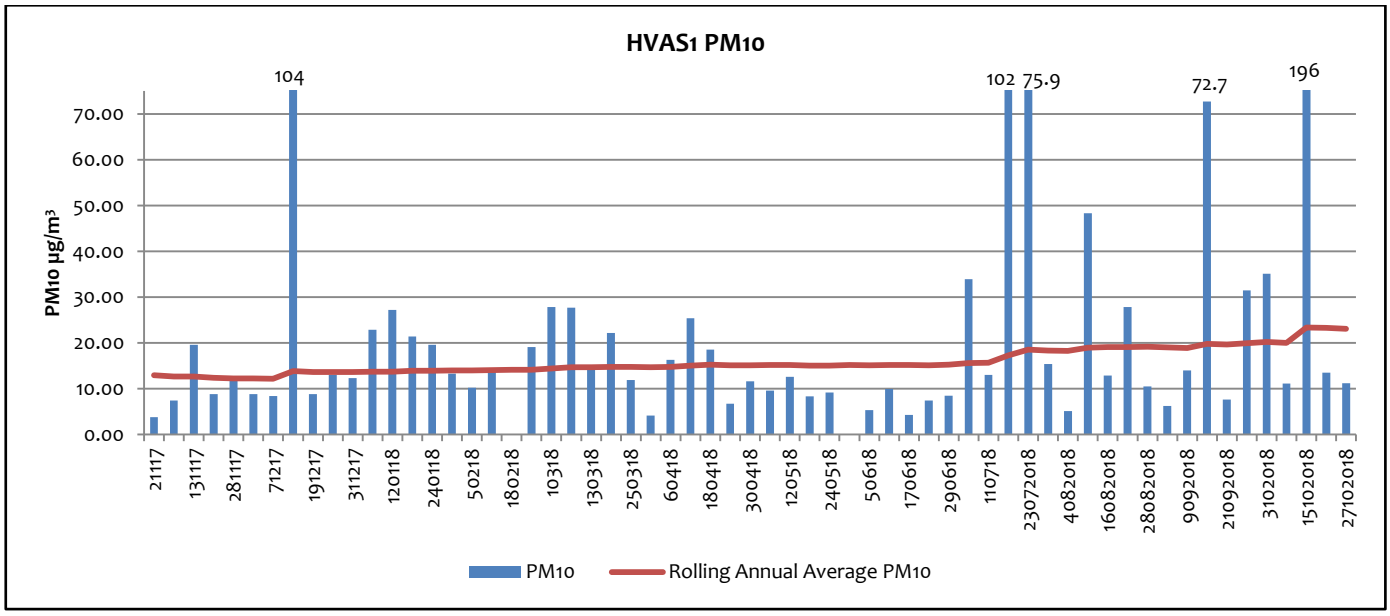
The rolling annual average for TSP to October is 56.70 µg/m^3 which is below the long term annual average criteria of 90 µg/m^3.



Lead levels were elevated on 3 October which was consistent with the high winds from the northwest on these days. Dust suppressant is applied to free areas on site and roads are continually watered using water carts. The rolling annual average for TSP Lead to October has risen slightly to 0.26 µg/m^3 however this well below the criterion of 0.5 µg/m^3.

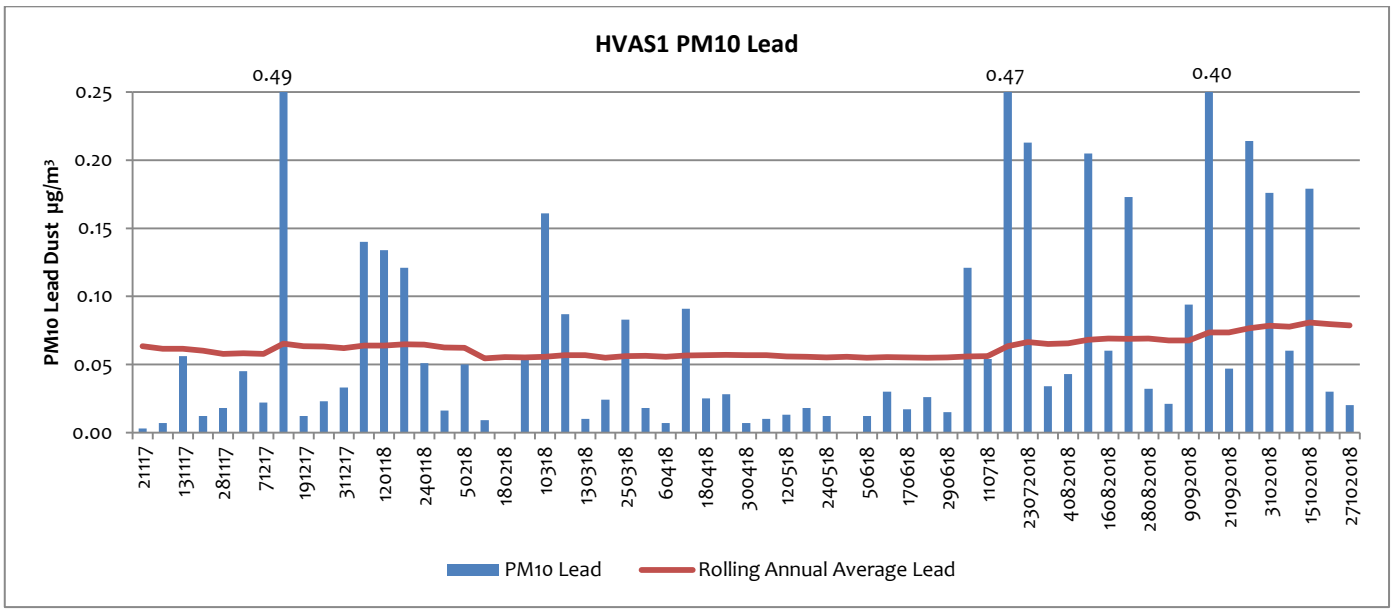
HVAS1 (EPL11) - Silver Tank (On Site) Results for October

DATE	PM10 (µg/m^3)	PM10 Lead (µg/m^3)
03-10-2018	35.1	0.18
9-10-2018	11.10	0.06
15-10-2018	196.00	0.18
21-10-2018	13.50	0.03
28-10-2018	11.20	0.02



HVAS1 (EPL11) is located on the Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location. There were elevated dust levels recorded at HVAS1 on 3 October and 15 October. On 3 October the winds were predominantly from the northeast for much of the day but a dust storm blew in from the northwest (Silverton) at approximately 2:45pm with a maximum wind speed at this time (and for the day) of 16.2 m/sec (58.3 km/hr). On 15 October there was another dust storm in Broken Hill from mid-morning to late evening with winds predominantly from the northeast and at speeds up to 17.3 m/sec (62.28 km/hr). On both occasions the regional dust levels contributed to the dust loading recorded. Dust levels recorded at the TEOM units were also elevated on these days.

Overall the trend for PM10 at this location has risen slightly over the previous 12 months and is likely due to very low rainfalls in the Broken Hill area producing frequent recent dust storms. However results (23.1 µg/m^3) remain below the PM_{10} annual average criterion of 25 µg/m^3 required at the nearest residential location.

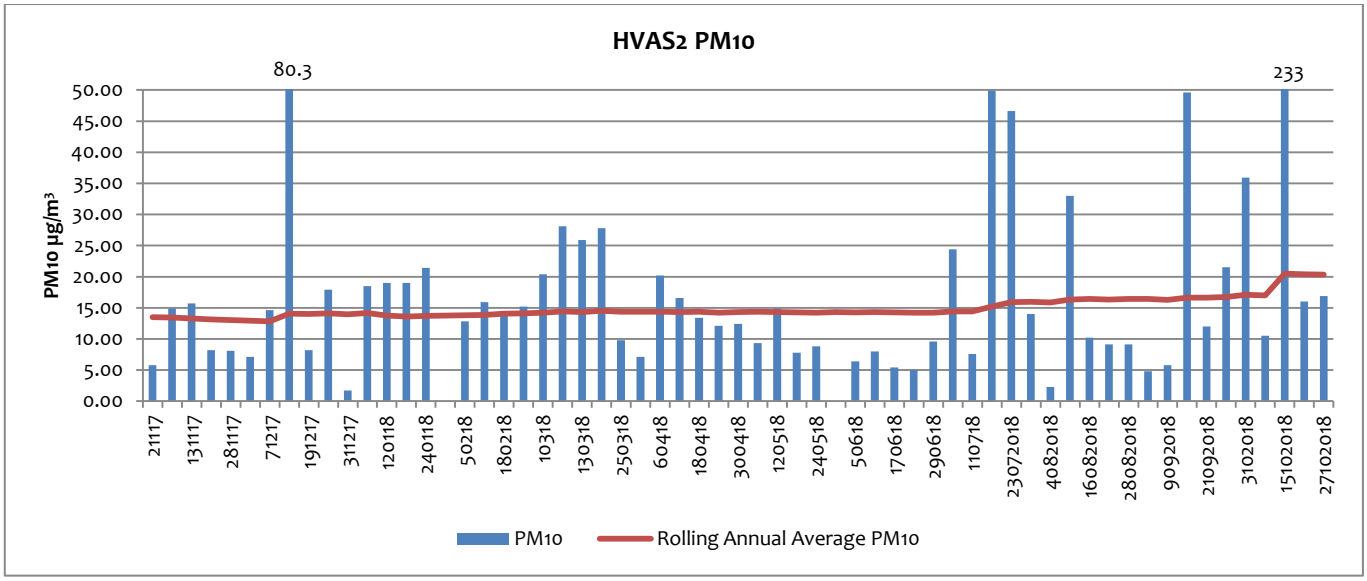


Lead levels were elevated on 3 and 15 October which was consistent with the high winds on these days. Dust suppressant is applied to free areas on site and roads are continually watered using water carts.

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 and is likely the result of drought conditions.

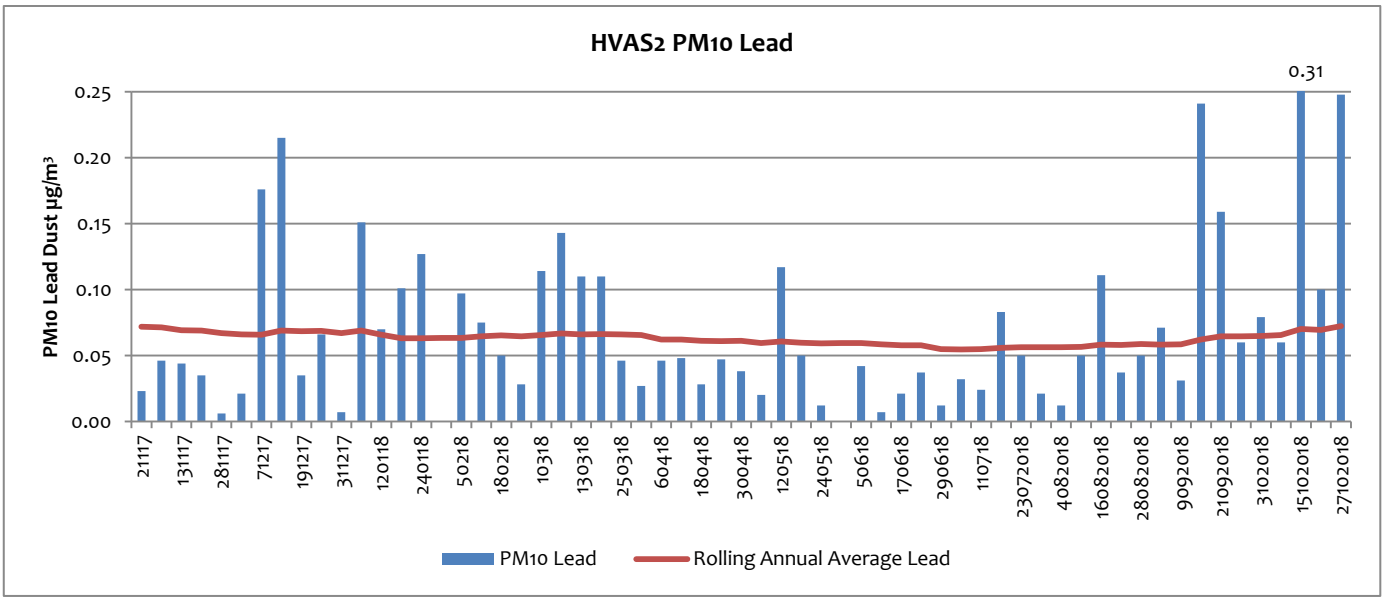
HVAS 2 (EPL12) - Blackwood Pit (On Site) Results for October

DATE	PM10 (µg/m^3)	Lead (µg/m^3)
03-10-2018	35.90	0.08
9-10-2018	10.50	0.06
15-10-2018	233.00	0.31
21-10-2018	16.00	0.10
28-10-2018	16.90	0.25



HVAS2 (EPL12) is located on the Rasp Mine and while limit criteria do not apply at this point, they do apply at the closest residential location. There were elevated dust levels recorded at HVAS2 on 3 October and 15 October. On 3 October the winds were predominantly from the northeast for much of the day but a dust storm blew in from the northwest (Silverton) at approximately 2:45pm with a maximum wind speed at this time (and for the day) of 16.2 m/sec (58.3 km/hr). On 15 October there was another dust storm in Broken Hill from mid-morning to late evening with winds predominantly from the northeast and at speeds up to 17.3 m/sec (62.28 km/hr). On both occasions the regional dust levels contributed to the dust loading recorded. Dust levels recorded at the TEOM units were also elevated on these days.

The rolling annual average PM_{10} to October is 20.33 µg/m^3 which is below the PM_{10} annual average criterion 25 µg/m^3 required at the nearest residential location.



Lead levels were elevated on 15 and 27 October. On 27 October the wind was predominantly from the south with a maximum wind speed of 9.9 m/sec (35.64 km/hr). Dust suppressant is applied to free areas on site and roads are continually watered using water carts.

There is no guideline for assessing PM10 lead dust; the trend for lead dust at this location remains consistent with the previous 12 months with the rolling annual average for Lead at the same level at the end of October 2018 (0.07 µg/m^3) as it was at the beginning of November 2017 (0.07 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 October

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-Oct-18	16.88	Y	18.94	Y
02-Oct-18	38.35	Y	28.28	Y
03-Oct-18	16.43	Y	82.22	Y[1]
04-Oct-18	6.91	Y	12.26	Y
05-Oct-18	15.65	Y	18.96	Y
06-Oct-18	7.56	Y	8.24	Y
07-Oct-18	5.50	Y	8.17	Y
08-Oct-18	35.78	Y	31.60	Y
09-Oct-18	8.06	Y	11.83	Y
10-Oct-18	7.10	Y	10.54	Y
11-Oct-18	9.88	Y	15.66	Y
12-Oct-18	9.94	Y	12.25	Y
13-Oct-18	17.63	Y	18.68	Y
14-Oct-18	15.66	Y	17.85	Y
15-Oct-18	306.53	Y[1]	305.55	Y[1]
16-Oct-18	16.16	Y	18.60	Y
17-Oct-18	7.60	Y	9.68	Y
18-Oct-18	13.79	Y	15.53	Y
19-Oct-18	54.04	Y[1]	44.21	Y
20-Oct-18	26.77	Y	36.53	Y
21-Oct-18	0.97	Y	16.02	Y
22-Oct-18	15.80	Y	13.52	Y
23-Oct-18	19.17	Y	27.17	Y
24-Oct-18	14.23	Y	17.04	Y
25-Oct-18	20.32	Y	23.50	Y
26-Oct-18	16.58	Y	29.09	Y
27-Oct-18	12.37	Y	19.68	Y

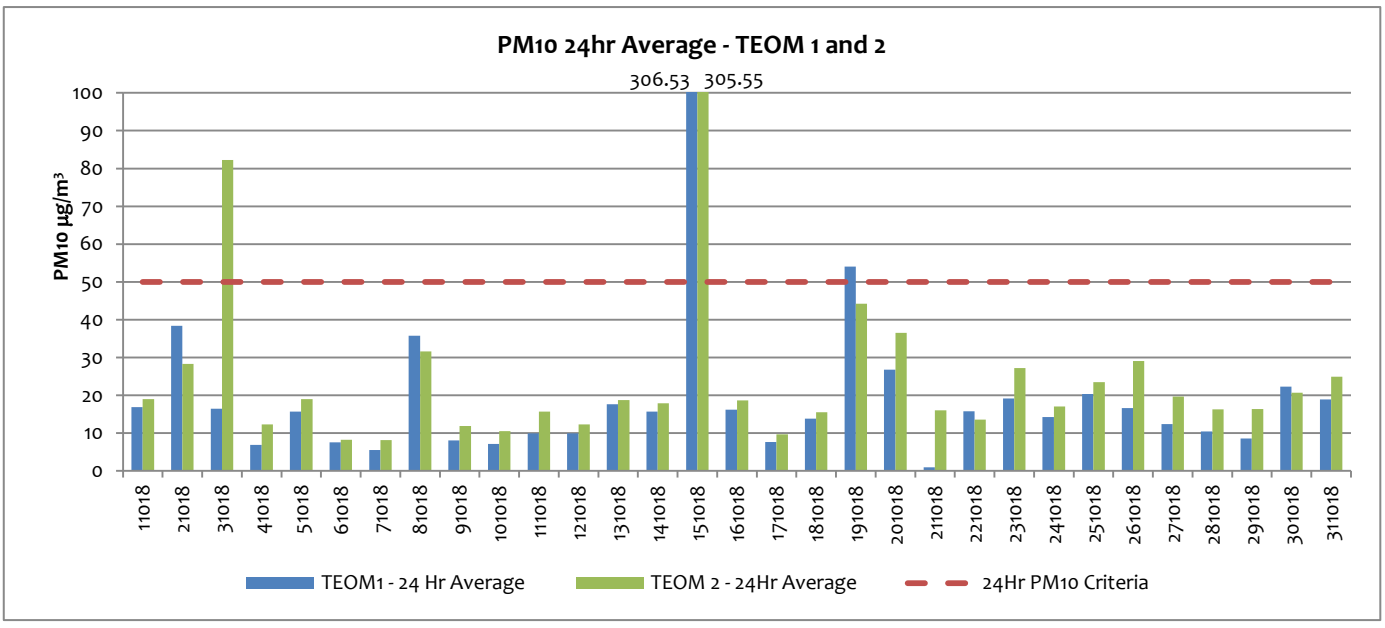
Particulate Matter <10 Microns 24Hr Average				
28-Oct-18	10.39	Y	16.24	Y
29-Oct-18	8.55	Y	16.31	Y
30-Oct-18	22.32	Y	20.64	Y
31-Oct-18	18.94	Y	24.92	Y

[1] = Monitoring results affected by general dust storms and high winds, particularly from the northwest and north-northeast.

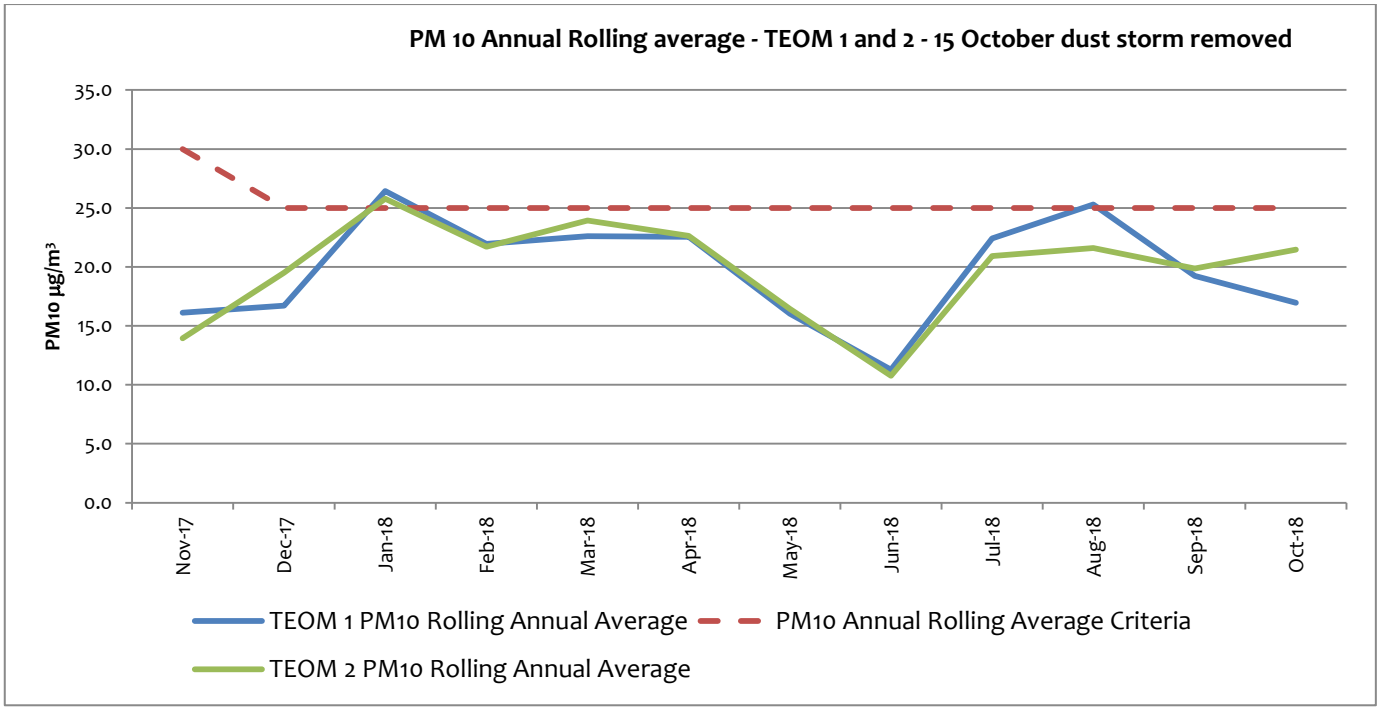
Project Approval 07_0018 apply at TEOM1 and 2, with two criteria listed for PM10, a 24 hour average criteria of 50 ug/m^3 and an annual average criteria of 25 ug/m^3.

The TEOM1 and TEOM2 24-Hr average results for 15 October were high at 306.53 µg/m^3 and 305.55 µg/m^3 respectively due to the dust storm on that day. The 24 hr average results for TEOM2 on 3 October were high due to the dust storm on that day (82.22 µg/m3).

The rolling annual average PM_{10} inclusive of dust storms during October was 25.7 µg/m^3 at TEOM1 and 30.6 µg/m^3 at TEOM2. Both Project Approval and Environment Protection Licence criteria exclude dust storms and other extraordinary events. If the results of 15 October were not included in the calculations then the rolling annual average PM10 results for TEOM1 and TEOM2 would be 16.3 µg/m^3 and 21.5 µg/m^3 respectively, which is below the PM10 annual average criterion 25 µg/m^3 required at the nearest residential location. Taking this into consideration the Rasp Mine is in compliance with this criterion and the trend for PM10 at this location would be consistent with the previous 12 months.



Note 1: Criteria changed to 25µg/m^3 in September as per PA MOD4.



Note 1: Criteria changed to 25µg/m^3 in September as per PA MOD4.

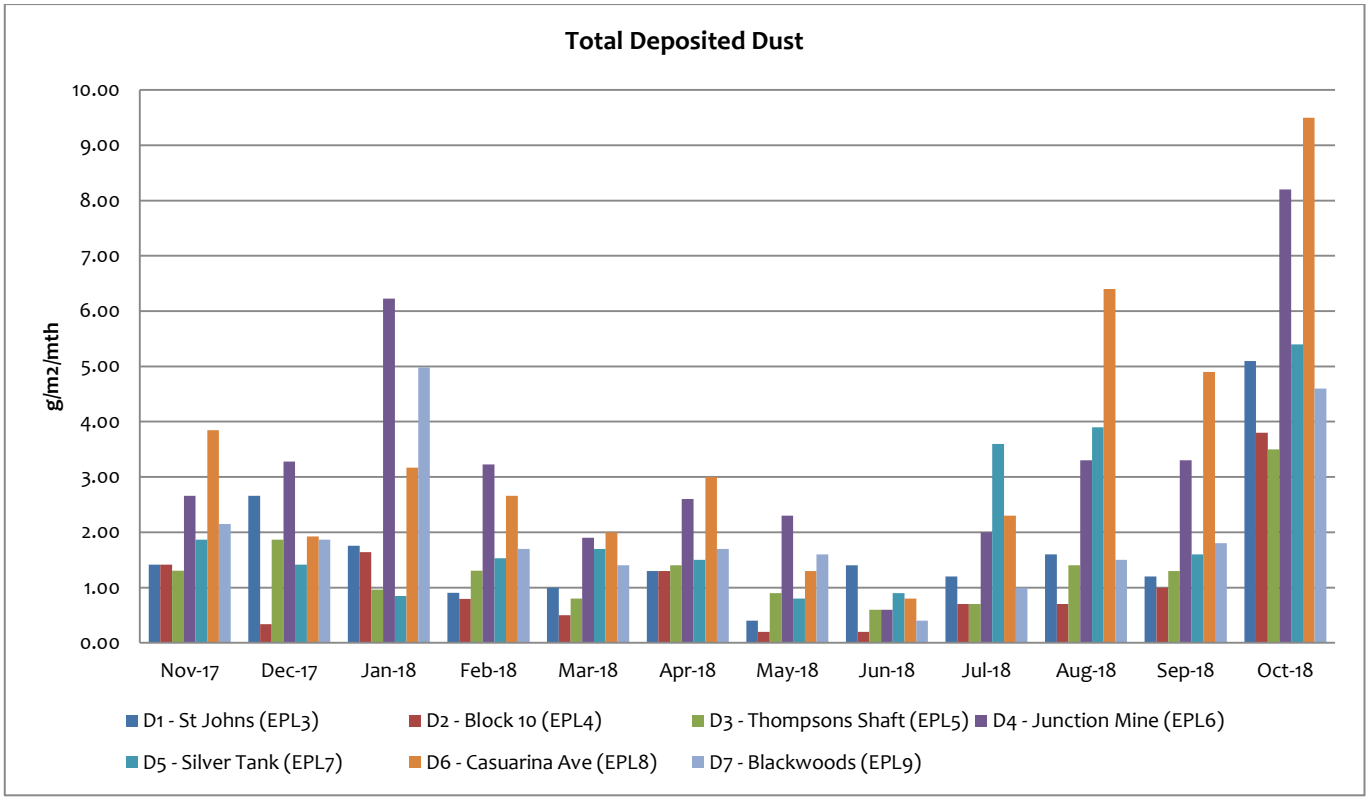
1.3 Dust Deposition Sampling

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 October

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)
October 2018	5.10	3.80	3.50	8.20	5.40	9.50	4.60
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

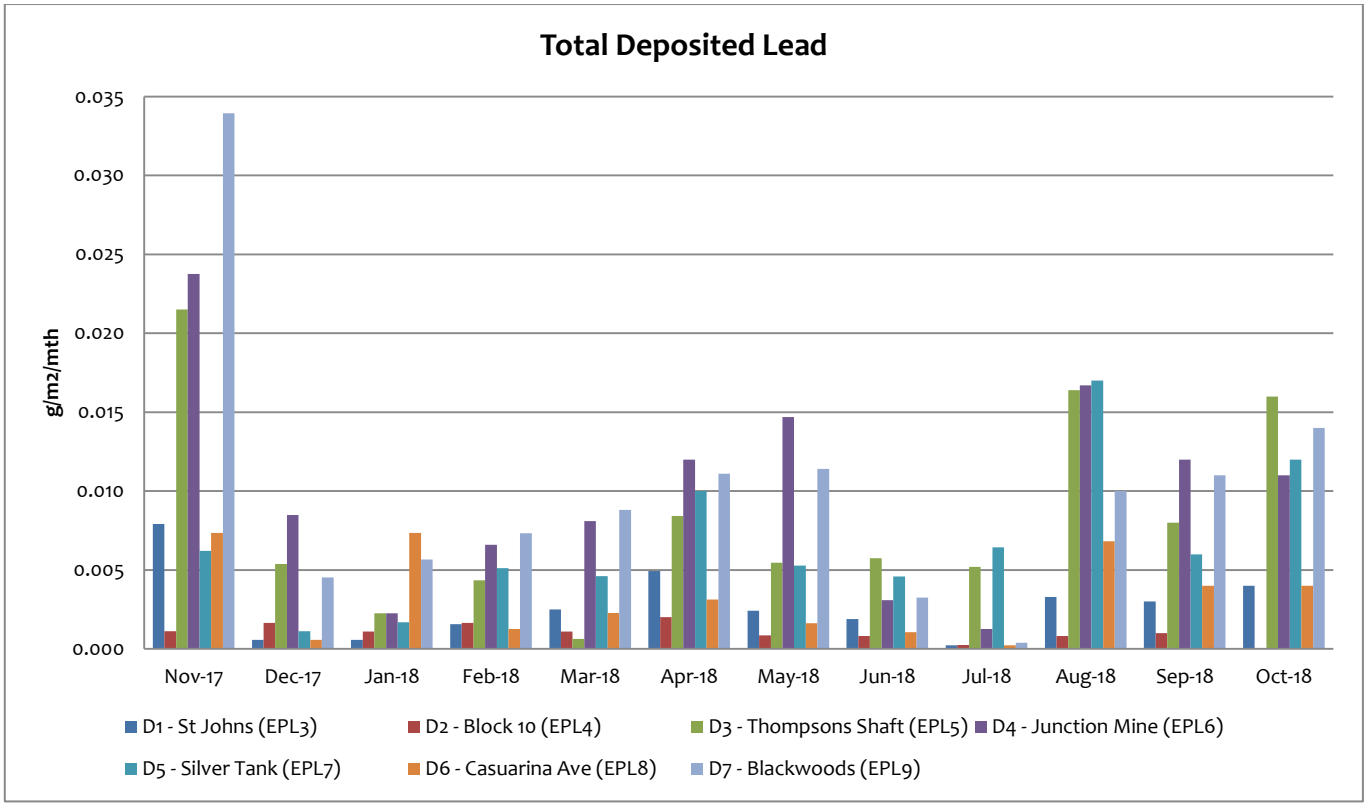
Note: "1"= background not available N/A = not applicable as dust deposition unit is located on site



Results for all dust gauges were elevated in October. While the October results at D1 and D6 are above the background levels measured in 2010 they were impacted by the two major dust storms on 3 and 15 October. Results were highest at Junction Mine and Casuarina Ave. There are no Rasp Mine activities being undertaken at the Junction Mine and Casuarina Avenue is not on the Mine site. The Casuarina Avenue location returns consistently high dust readings which is likely due to being situated in the backyard of a residence adjacent to a bare block. The Junction Mine location is also surrounded by bare areas subject to vehicular traffic which likely contribute dust to the elevated readings.

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)
October 2018	0.004	0.000	0.016	0.011	0.012	0.004	0.014
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 October were elevated at all locations except for Block 10 where the sample was too small to analyse and at Casuarina Avenue which was the same as the previous month. The Thompson's Shaft gauge is located on the northern corner of the site and would have received a majority of the dust from the northeast and northwest during the dust storms. Blackwoods is located to the north of the Rasp Mine and the gauge is sited adjacent to unsurfaced areas subject to vehicular traffic.

1.4 Ventilation Outlets and Bag House Monitoring

There are three locations to measure pollutants from exhausts or stacks, these include the Primary Ventilation Shaft and Shaft 6, both measuring pollutants from underground firings, and the Baghouse Stack at the crusher measuring dust. All are located on site; the Primary Ventilation Shaft is located centrally and to the north of the mine lease and Shaft 6 is located centrally within the lease. The Primary Crusher Baghouse Stack is located within the area of the processing plant to the east of the lease. 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.

Quarterly sampling is undertaken in March, June, September and December. The following criteria apply:

Primary Ventilation Shaft (EPL1) and Shaft 6 (EPL56)

	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), Crusher Baghouse (EPL2) and Vent Shaft 6 (EPL56) Results for October

There are no results for October; sampling is scheduled for December.

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 October

Total Blasts:

- 0 production blasts occurred before 6.45 am or after 7.15 pm
- The number of Production blasts averaged 4.4 per week over the previous calendar year
- The number of Development blasts averaged 29.4 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 = 0% (1 November 2017 until 31 October 2018)
- Percentage of production blasts over 5 mm/sec = 2.9% (1 November 2017 until 31 October 2018)

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% (1 November 2017 until 31 October 2018)
- Percentage of production blasts over 3mm/sec = 17.4% (1 November 2017 until 31 October 2018) (criteria does not apply in this period as not a regulator reporting period)

There was no blasting in Block 7 during October. However, during the last 12 months four blasts in Block 7 have exceeded 3 mm/s - 3.07 (Dec), 3.1 (Dec), 3.1 (Jan) and 3.45 (Jan) and continue to impact the rolling average.

2.2 Noise

Noise monitoring is undertaken as per the NSW Noise Policy for Industry at a frequency of once per annum. A noise assessment was conducted in November 2017, and is next due 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 May, 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 October

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)	6.60	14100	15200	24	5860	1910	525	354	1840	2.71	3.09	492	982	0.05
Kintore Pit (EPL54)	6.48	13700	15000	10	5710	1820	521	335	1770	2.48	2.64	445	1030	0.44

Groundwater Bores (EPL37 - EPL52) Results for October

Ground water sampling not required in October.

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 (Mn), pH, sodium (Na), sulphate (SO4), 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 Monitoring Results

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)
S31-1 (EPL29)	6.09	1940	1270	6	722	30	147	14	33	2.8	2.76	63.3	334	0.05
S49 (EPL31)	5.86	982	839	6	375	10	79	8	14	0.716	0.33	32.5	109	0.05
S1A (EPL32)	6.67	556	376	26	176	24	52	6	21	0.115	0.784	5.01	19.1	0.05
S9-B2 (EPL33)	Dry – No Sample													
S34 (EPL41)	6.14	21700	13000	21	5740	3680	574	701	3280	8.54	3.73	508	499	<0.05
Upstream (EPL35)	6.66	339	262	56	25	34	25	5	25	0.005	0.308	0.332	1.16	0.19
Downstream (EPL36)	7.3	360	518	70	21	40	15	4	42	0.0002	0.001	0.002	0.021	0.12

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

Note: The onsite weather station currently does not report Sigma theta

Weather Data Summary for October

Date	Temperature @ 10m (°C)		Wind Speed @ 10m (m/s)		Predominant Wind Direction @ 10m		Rainfall (mm)
	Min	Max	Min	Max	Cardinal	Degree	Total
01-Oct-18	12.2	26.2	0.8	9.3	NE	44	0.00
02-Oct-18	19.1	28.6	0.5	12.0	NNE	22	0.04
03-Oct-18	12.8	27.0	0.0	16.2	NE	41	0.57
04-Oct-18	10.0	16.7	2.5	14.4	South	184	0.00
05-Oct-18	7.1	19.6	0.9	8.8	South	182	0.00
06-Oct-18	14.3	24.1	0.6	8.8	NE	44	0.00
07-Oct-18	17.0	26.4	0.2	6.8	ENE	68	0.00
08-Oct-18	17.7	28.3	0.2	12.2	NE	44	0.00
09-Oct-18	15.4	22.3	0.6	10.4	SSW	206	0.02
10-Oct-18	9.6	17.2	1.6	12.4	South	183	0.00
11-Oct-18	11.9	21.3	1.2	9.5	South	178	0.00
12-Oct-18	12.0	23.4	0.3	6.9	ESE	113	0.00
13-Oct-18	16.4	25.7	0.8	8.6	ENE	68	0.06
14-Oct-18	17.8	28.3	0.8	12.2	NE	44	0.00
15-Oct-18	19.0	29.8	0.8	17.3	NE	44	1.72
16-Oct-18	14.1	24.1	0.9	11.1	West	268	0.00
17-Oct-18	11.2	22.5	1.3	8.6	SW	223	0.00
18-Oct-18	10.9	25.8	0.2	7.8	South	183	0.00
19-Oct-18	18.2	31.6	0.5	15.4	NNE	24	0.01
20-Oct-18	12.2	26.7	1.7	16.7	South	182	0.01
21-Oct-18	10.2	24.2	0.3	5.9	SSE	159	0.00
22-Oct-18	16.4	29.0	0.2	7.7	North	7	0.00
23-Oct-18	14.4	24.3	0.9	11.5	South	180	0.00
24-Oct-18	10.2	22.5	0.9	11.9	SE	135	0.00
25-Oct-18	14.5	29.7	0.1	7.9	WSW	247	0.00
26-Oct-18	13.4	26.5	0.9	9.4	South	185	0.00

Date	Temperature @ 10m (°C)		Wind Speed @ 10m (m/s)		Predominant Wind Direction @ 10m		Rainfall (mm)
	Min	Max	Min	Max	Cardinal	Degree	Total
27-Oct-18	13.4	23.9	0.5	9.9	South	180	0.02
28-Oct-18	15.9	20.4	0.7	6.9	South	181	0.01
29-Oct-18	10.9	25.6	0.4	6.8	South	180	0.00
30-Oct-18	19.4	31.4	0.2	5.8	NE	43	0.00
31-Oct-18	19.2	34.4	0.1	6.6	NE	48	0.00

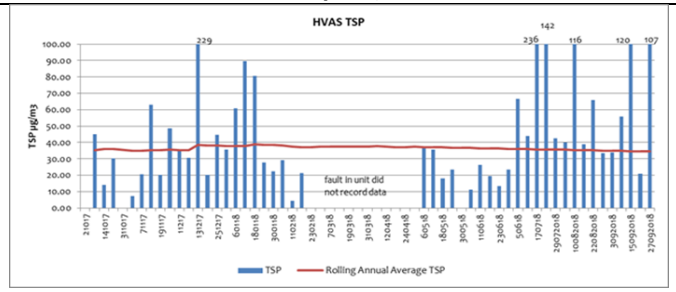
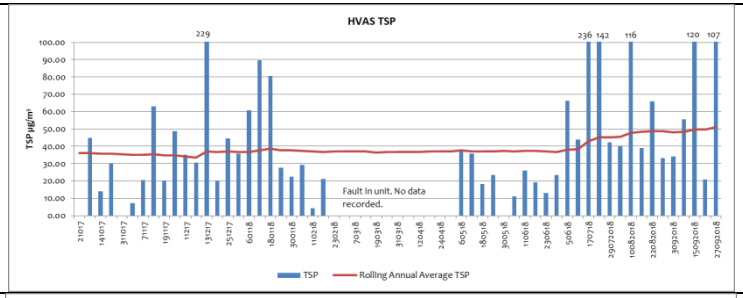
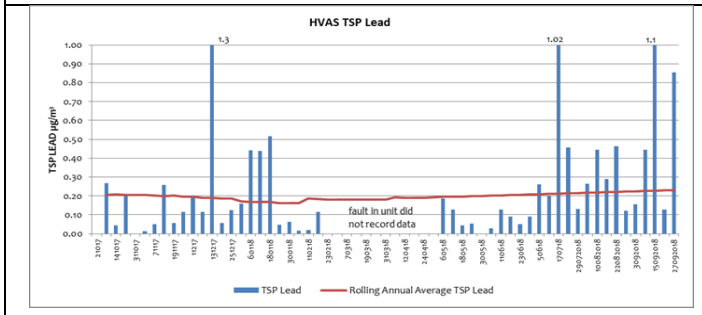
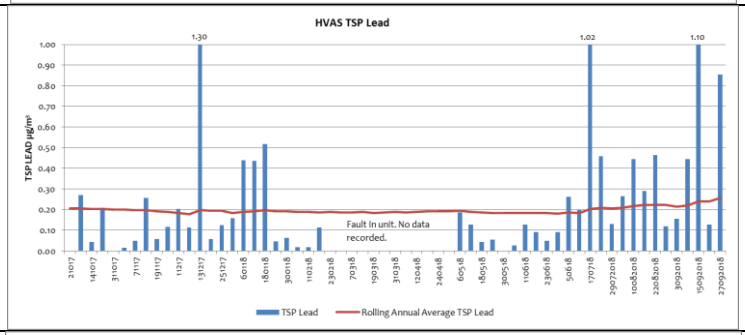
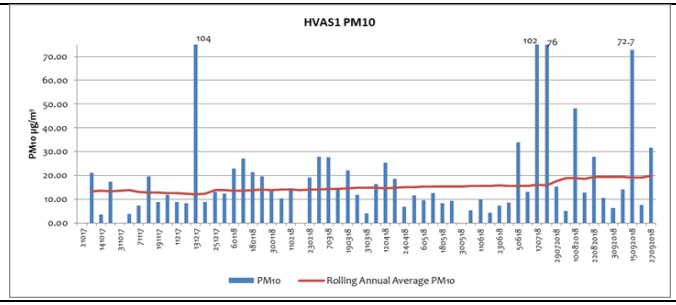
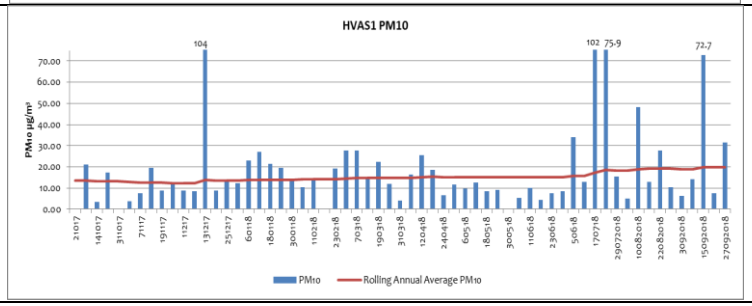
5 Data Log

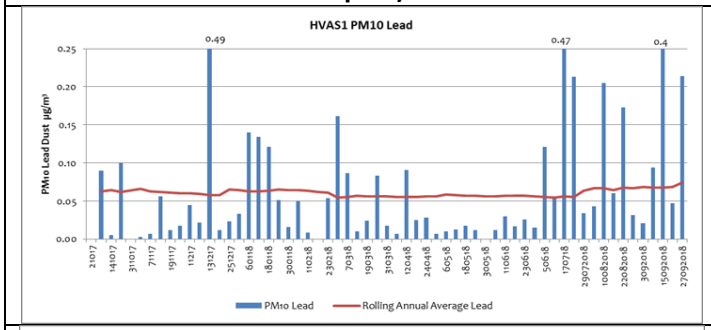
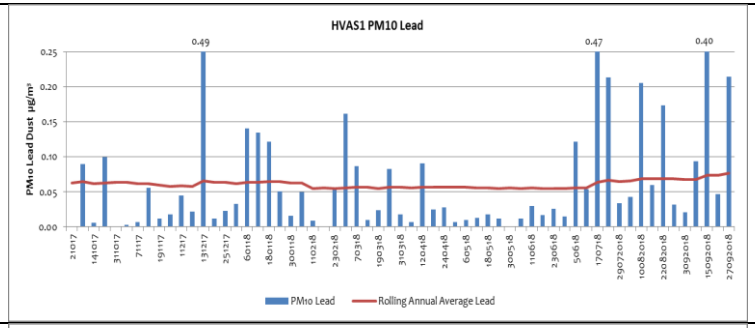
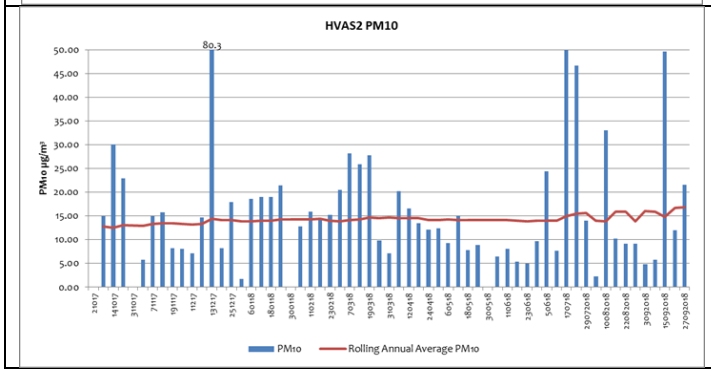
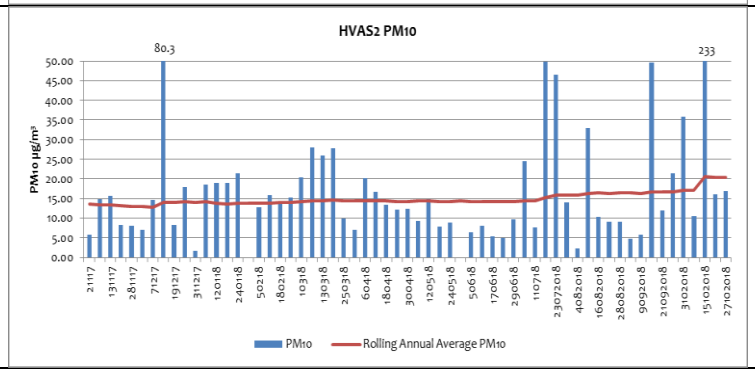
Sample	Result Received
Hi Volume Samples	9-11-2018
TEOM	2-11-2018
Dust Deposition	16-11-2018
Vents & Bag House	NA
Water	16-10-2018
Blast vibration and overpressure	7-11-2018
Weather	1-11-2018
Date posted to web site	7-12-2018

6 Correction Log

The formula used to calculate rolling annual averages displayed in the graphs for HVAS TSP and TSP Lead, HVAS1 PM10 and PM10 Lead, and HVAS2 PM10, for the months of July to September in the September 2018 report, did not include all the data of the previous 12 months required to perform the correct averaging calculation. The formulas have been corrected and the correct data is presented in this, the October, report. The corrected rolling averages are still below the annual compliance limits of 90 µg/m^3 for TSP and 25 µg/m^3 for PM10.

A table with original graphs from the September 2018 report and corrected graphs from this report displaying the annual rolling average to September 2018 are provided below.

Graph displaying incorrect data (September 2018 report)	Corrected Graph with data to September 2018	Reason for correction
		The formula used to calculate rolling annual averages for the HVAS TSP did not include all the data of the previous 12 months required to perform the correct averaging calculation.
		The formula used to calculate rolling annual averages for the HVAS TSP Lead did not include all the data of the previous 12 months required to perform the correct averaging calculation.
		The formula used to calculate rolling annual averages for the HVAS1 PM10 did not include all the data of the previous 12 months required to perform the correct averaging calculation.

Graph displaying incorrect data (September 2018 report)	Corrected Graph with data to September 2018	Reason for correction
		The formula used to calculate rolling annual averages for the HVAS1 PM10 Lead did not include all the data of the previous 12 months required to perform the correct averaging calculation.
		The formula used to calculate rolling annual averages for the HVAS2 PM10 did not include all the data of the previous 12 months required to perform the correct averaging calculation.