

Monthly Environmental Data February 2015

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•	0 BLAST RECORDED A PPV OF >5MM/S	9
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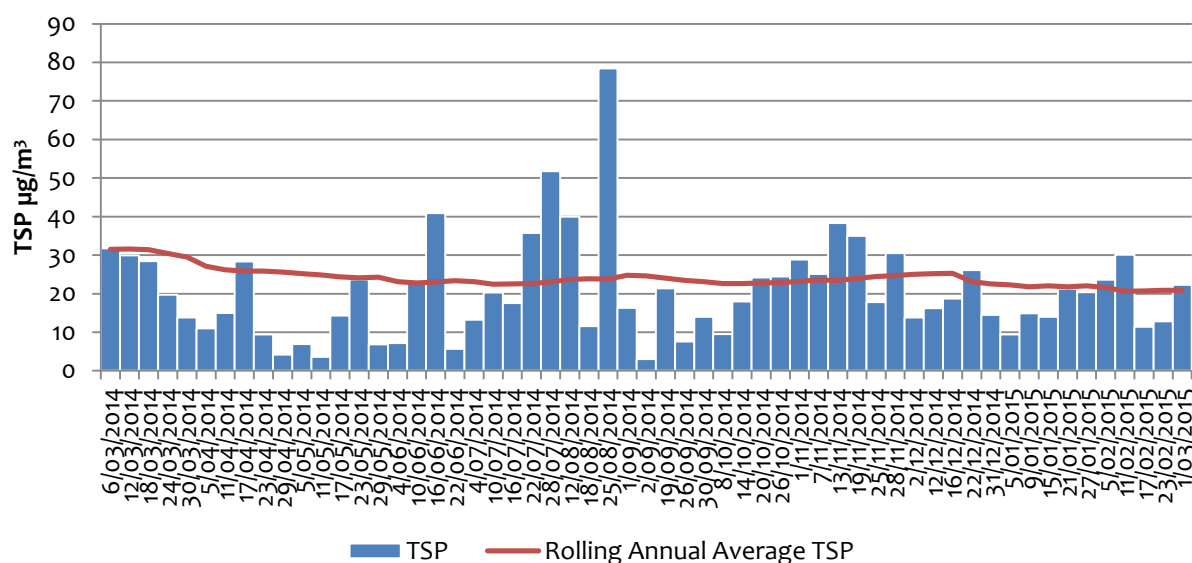
1 Air Quality

1.1 High Volume Air Samplers

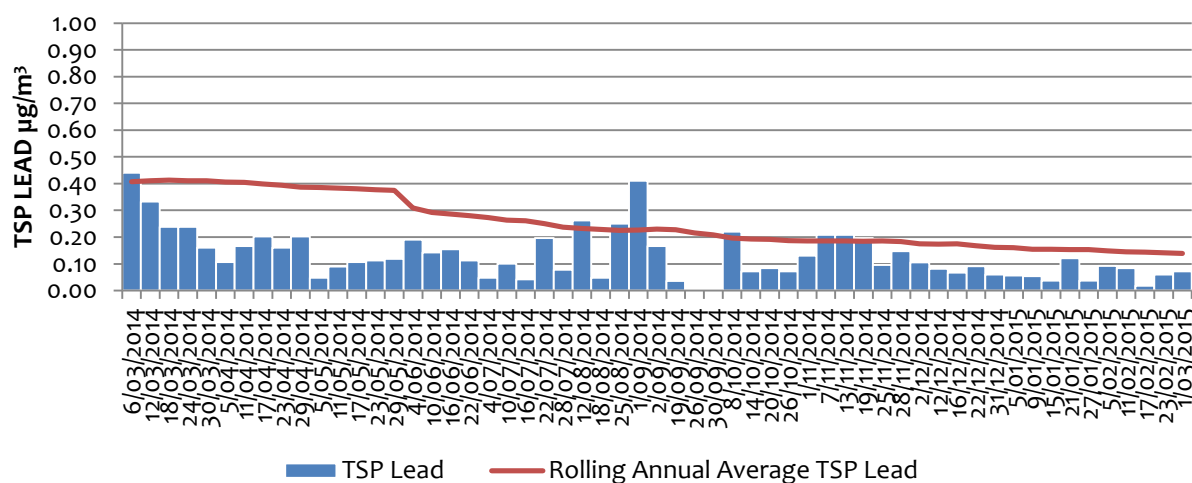
EPL10 - SILVER TANK - ON SITE

DATE	TSP ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
5/02/2015	24	0.09
11/02/2015	30	0.08
17/02/2015	11	0.02
23/02/2015	13	0.06
1/03/2015	22	0.07

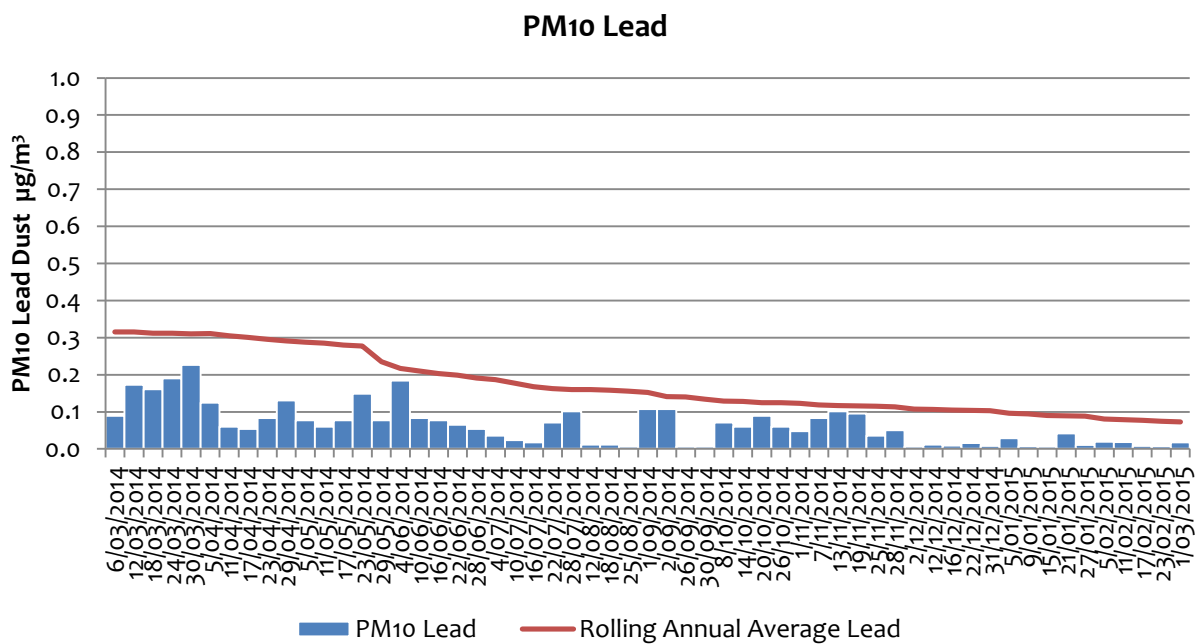
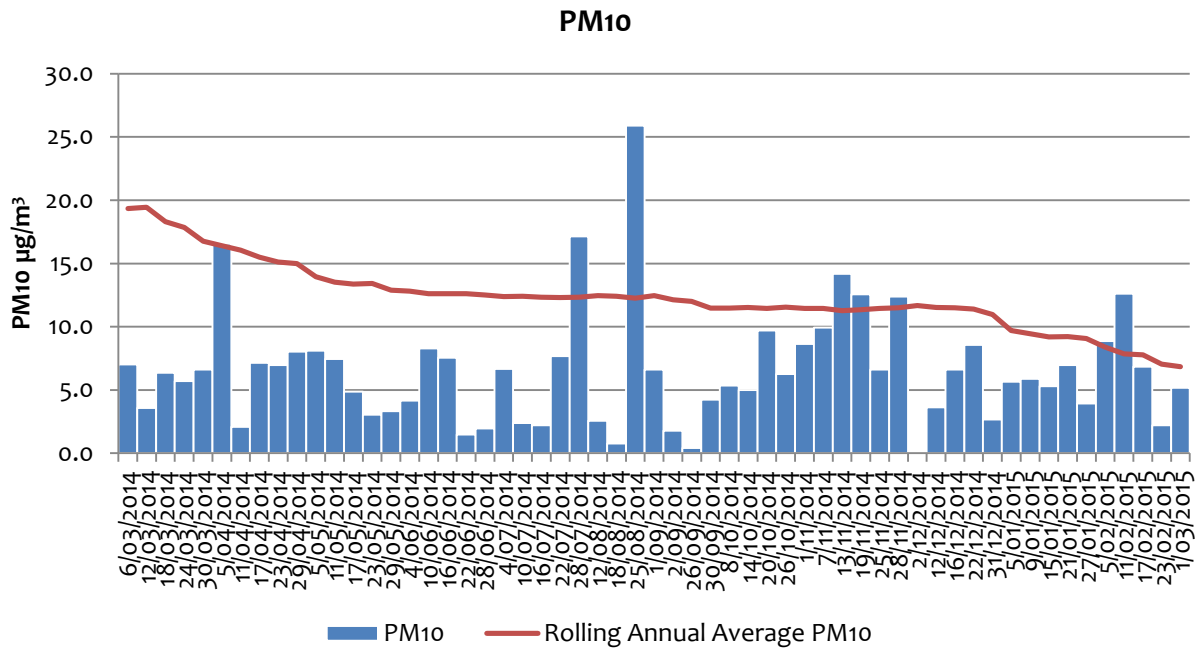
Total Suspended Particles



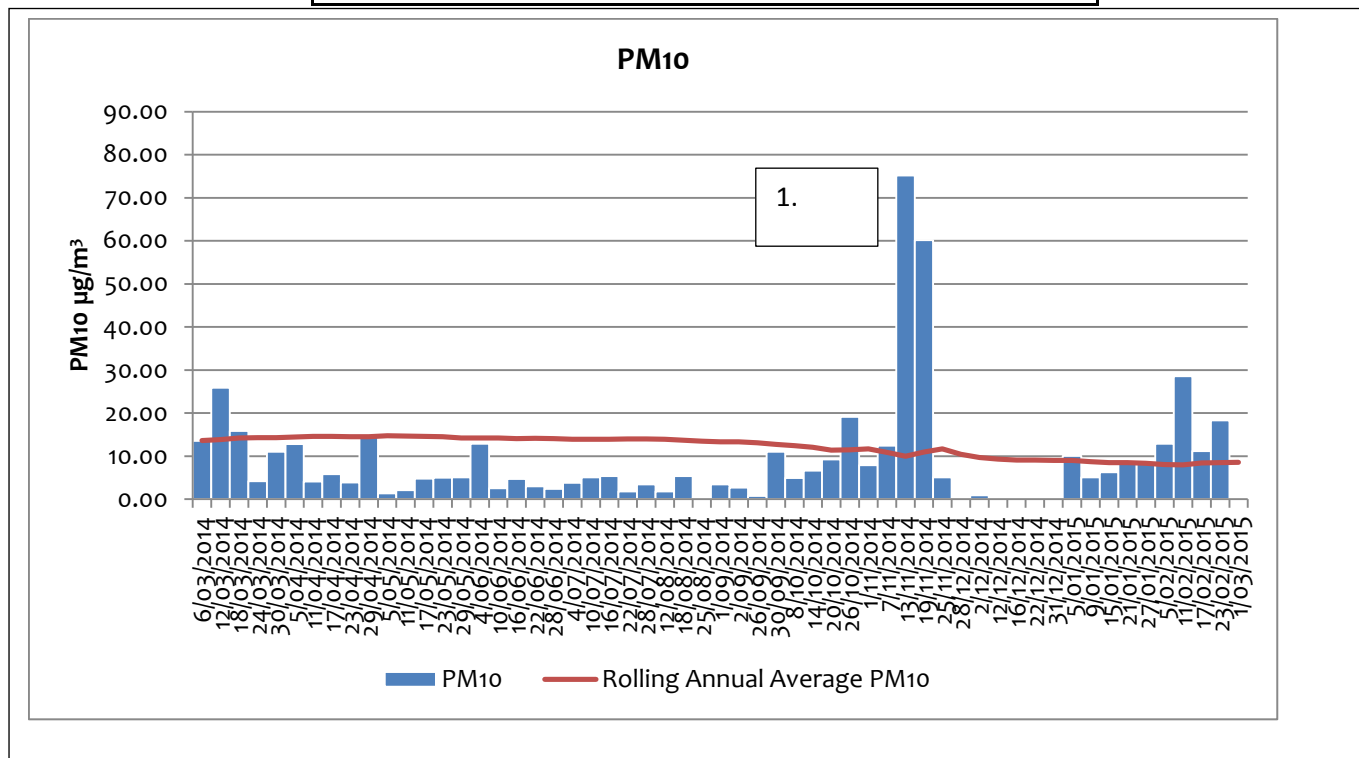
Total Suspended Particles - Lead



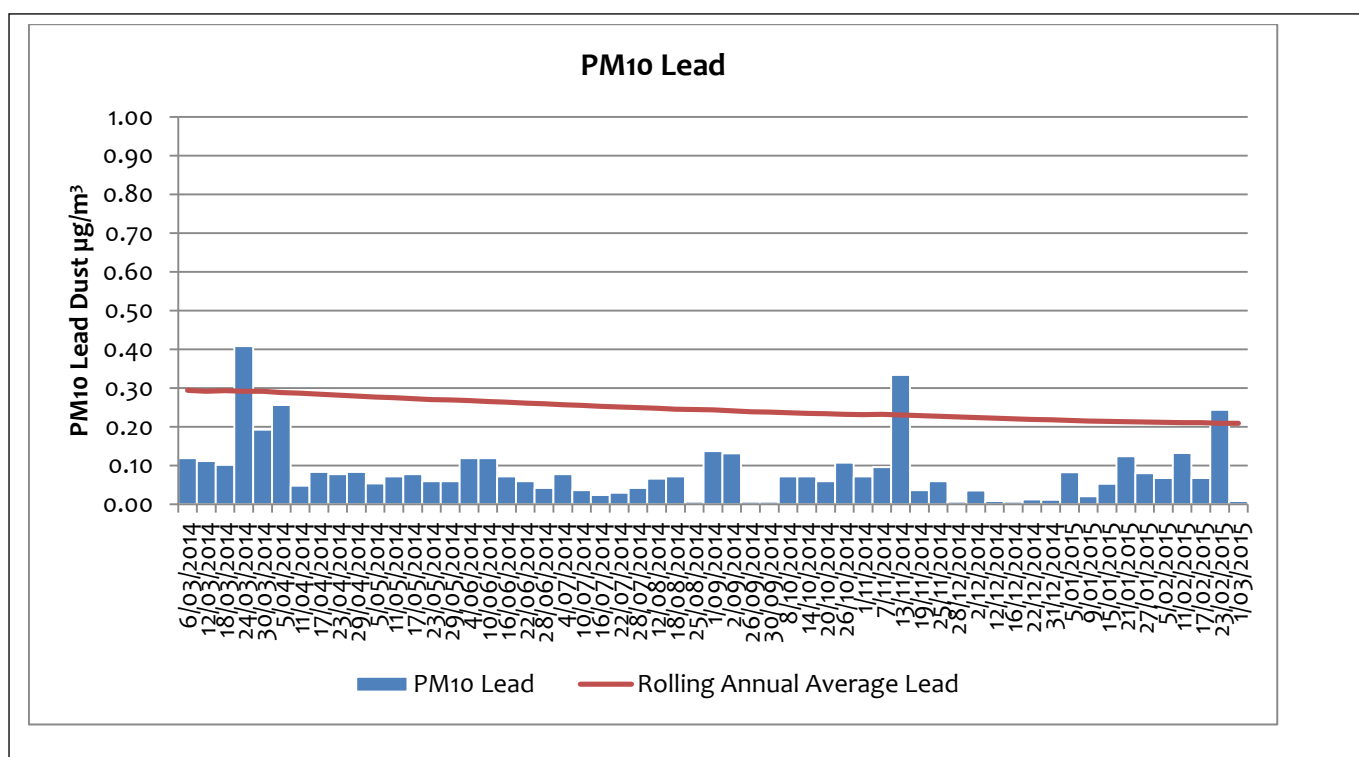
DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
5/02/2015	9	0.02
11/02/2015	13	0.02
17/02/2015	7	0.01
23/02/2015	2	0.01
1/03/2015	5	0.02



DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
5/02/2015	12.86	0.07
11/02/2015	28.57	0.13
17/02/2015	11.19	0.07
23/02/2015	18.33	0.24
1/03/2015	0.06	0.01



1. High dust values in November coincide with road works that were carried out by Broken Hill City Council in the vicinity of Blackwoods Pit.

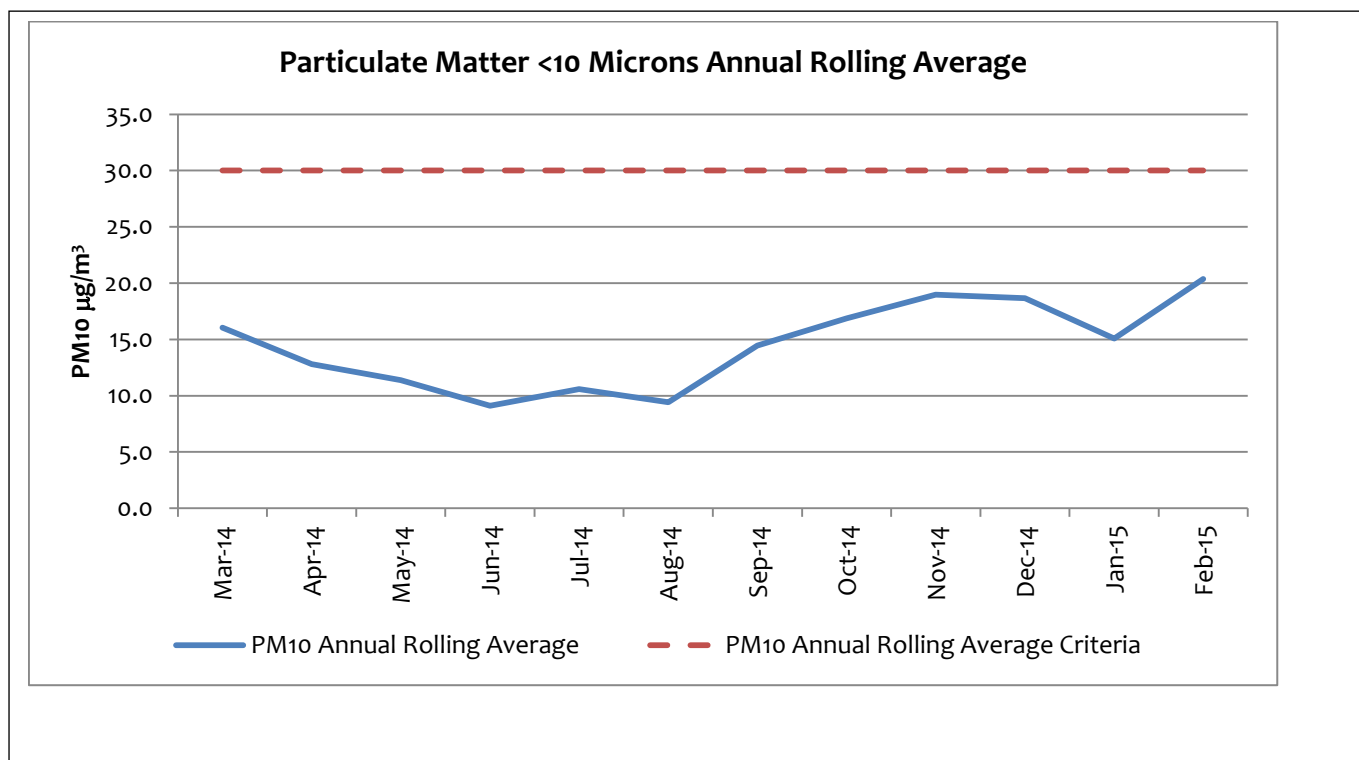
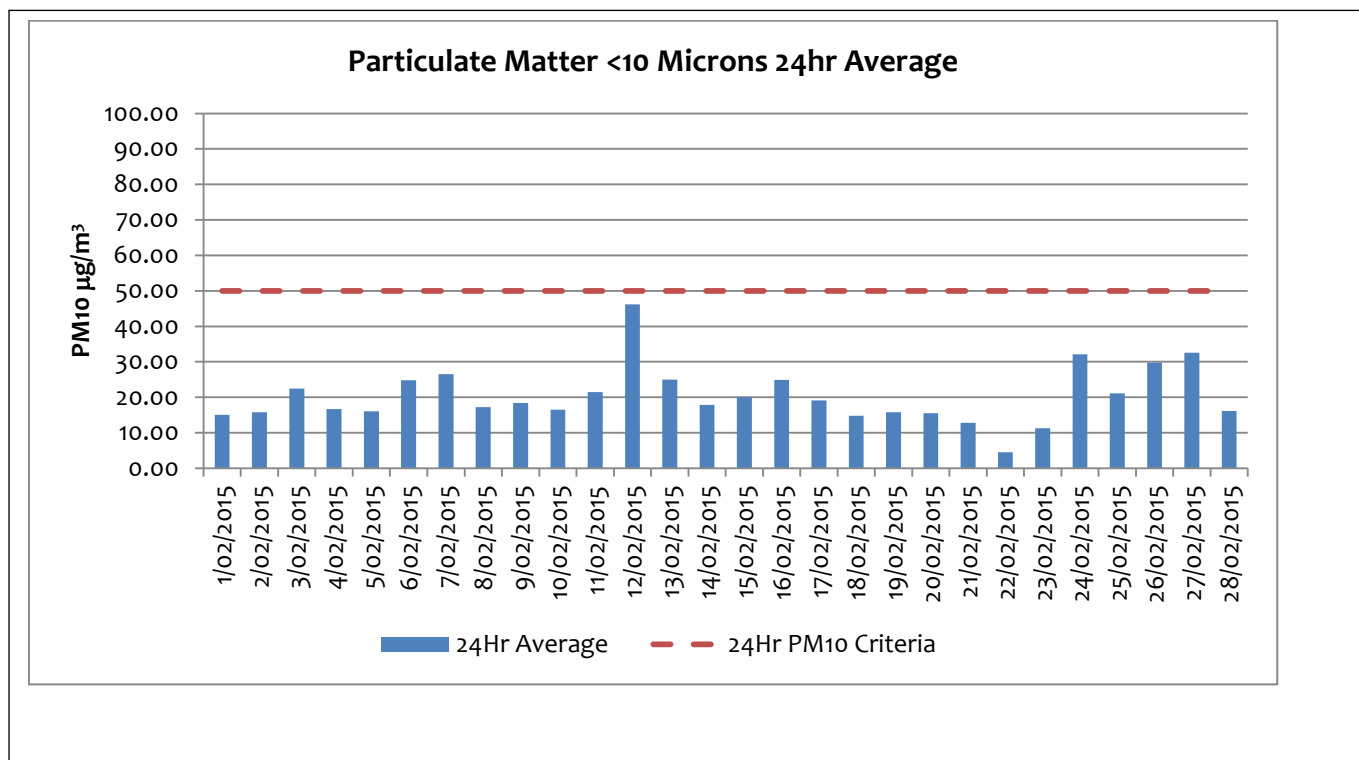


1.2 Tapered Element Oscillating Microbalance Sampling (TEOM)

Particulate Matter <10 Microns 24Hr Average		
Date	TEOM 1 - EPL 13 ($\mu\text{g}/\text{m}^3$) Essential Water – Off Site	TEOM 2 – EPL 14 ($\mu\text{g}/\text{m}^3$) Blackwoods Pit – On Site
1/02/2015	15.08	17.07
2/02/2015	15.75	22.87
3/02/2015	22.43	29.27
4/02/2015	16.67	26.48
5/02/2015	16.08	23.33
6/02/2015	24.82	20.74
7/02/2015	26.52	20.99
8/02/2015	17.23	16.72
9/02/2015	18.42	23.92
10/02/2015	16.47	23.91
11/02/2015	21.47	24.50
12/02/2015	46.18	48.77
13/02/2015	24.99	23.95
14/02/2015	17.83	15.16
15/02/2015	20.05	19.50
16/02/2015	24.86	26.07
17/02/2015	19.16	21.85
18/02/2015	14.80	17.05
19/02/2015	15.74	14.62
20/02/2015	15.49	13.85
21/02/2015	12.83	10.38
22/02/2015	4.49	3.86
23/02/2015	11.27	9.60
24/02/2015	32.14	40.11
25/02/2015	21.14	30.09
26/02/2015	29.74	21.52
27/02/2015	32.58	18.25
28/02/2015	16.14	15.13

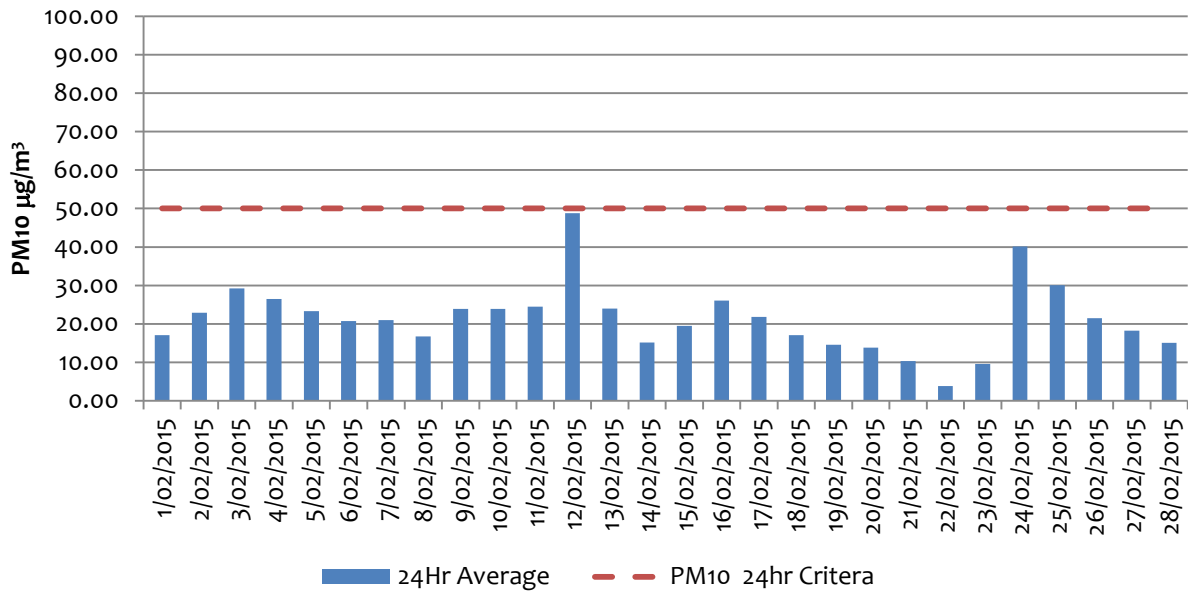
PM10 $\mu\text{g}/\text{m}^3$ 12 Month Rolling Average												
	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15
TEOM 1 EPL13 Essential Water Off Site	16.0	12.8	11.4	9.1	10.6	9.4	14.4	16.9	19.0	18.7	15.1	20.4
TEOM 2 EPL14 Blackwoods Pit On Site	17.6	14.4	10.2	9.3	11.5	12.4	27.2	15.7	20.8	27.4	16.5	21.6

EPL13 – Essential Water – Off Site

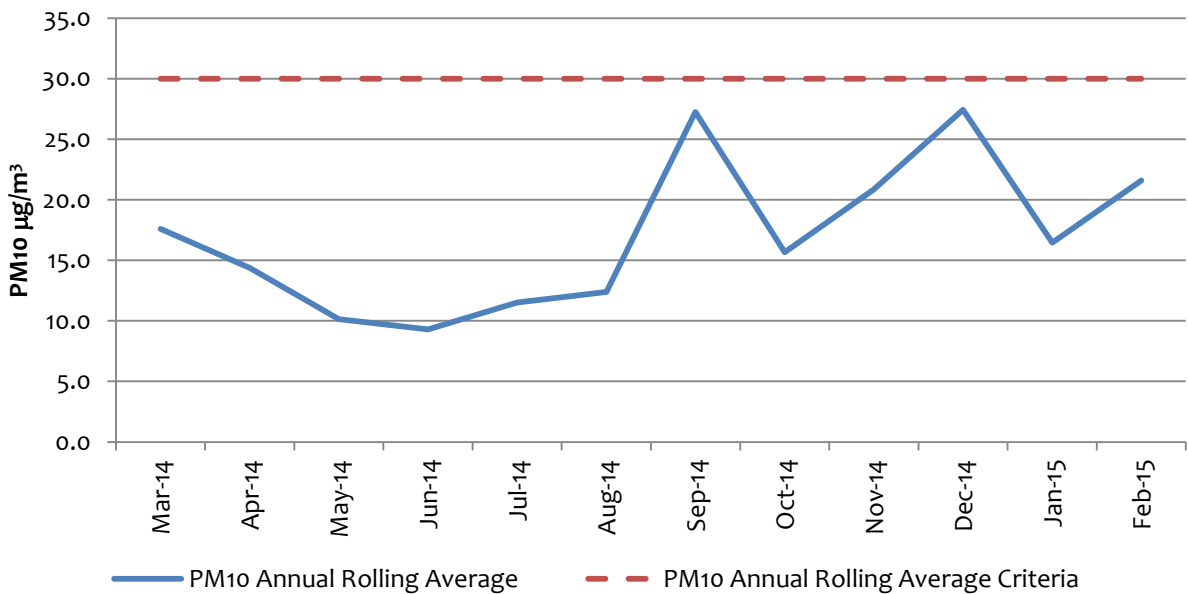


EPL14 – Blackwoods Pit – On Site

Particulate Matter <10 Microns 24hr Average

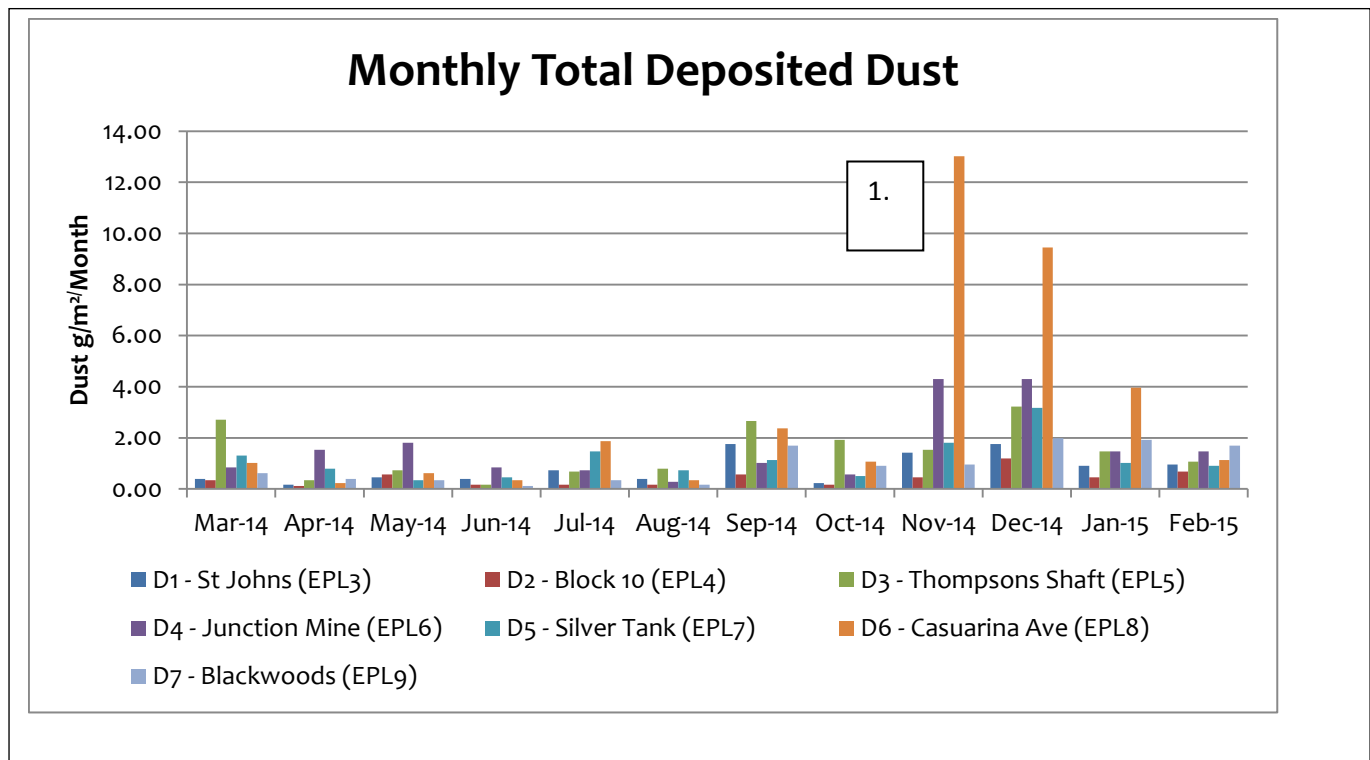


Particulate Matter <10 Microns Annual Rolling Average



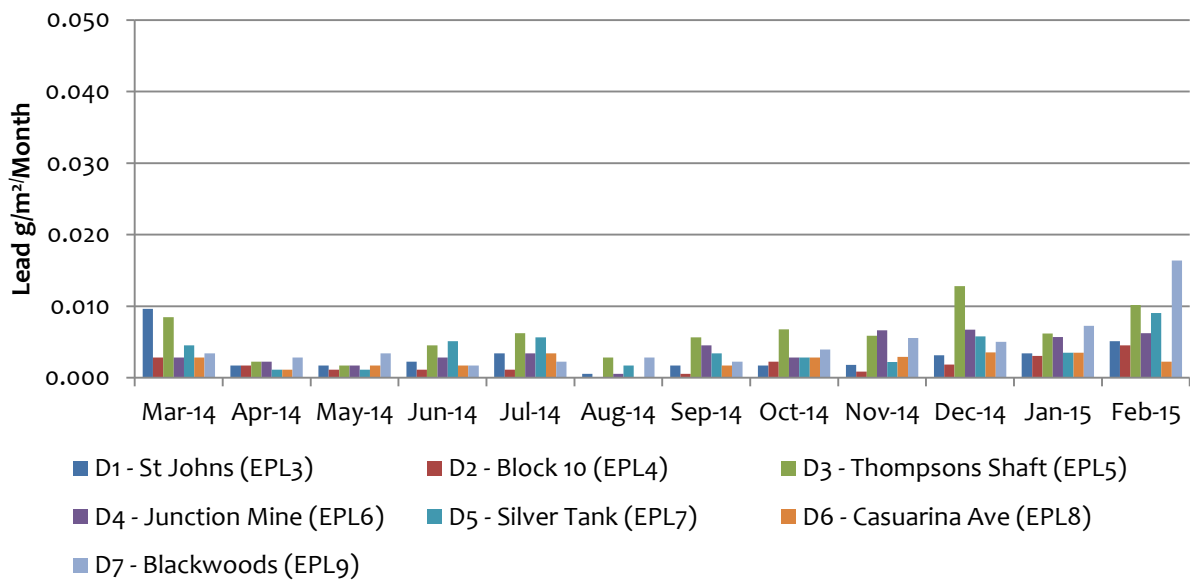
1.3 Dust Deposition Sampling

Total Deposited Dust (g/m ² /Month)							
Date	D1 (off site)	D2	D3	D4	D5	D6 (off site)	D7
February 2015	0.96	0.68	1.08	1.47	0.91	1.13	1.70
Background Average	4.0	3.1	4.3	5.7	n/a	5.8	n/a



1. Samples at Casuarina Ave appear to have been tampered with in both November and December 2014.

Monthly Total Deposited Lead



Total Deposited Lead (g/m ² /Month)							
Date	D1 (Off Site)	D2	D3	D4	D5	D6 (Off Site)	D7
February 2015	0.005	0.005	0.010	0.006	0.009	0.002	0.016
Background Average	0.0034	0.0045	0.0046	0.0060	n/a	0.0036	n/a

2 Blasting (Vibration and Overpressure)

Note: *Vibration is recorded in Peak Particle Velocity (ppv), Overpressure is recorded in Decibels (dBL)*

- During November blasting occurred daily, there were 9 production firings
- 0 Blast recorded a ppv of >5mm/s
- 0 Blasts recorded a ppv of >10mm/s
- 0 Blasts recorded an over pressure level over 115 (dBL)
- 0 Blasts recorded an over pressure above 120 (dBL)

Date	Monitoring Location	PPV (mm/s)	O/Press (dBL)
5/03/2015	V1 Silver Tank	0.38	88
5/03/2015	V2 Hire Yard	0.76	112.8
5/03/2015	V3 Air Express Yard	1.76	101.9
7/03/2015	V1 Silver Tank	0.28	106
7/03/2015	V2 Hire Yard	1.64	101
7/03/2015	V3 Air Express Yard	3.98	101
12/03/2015	V1 Silver Tank	0.33	109.5
12/03/2015	V2 Hire Yard	0.72	114.2
12/03/2015	V3 Air Express Yard	3.08	103.5
20/03/2015	V1 Silver Tank	0.22	102.8
20/03/2015	V2 Hire Yard	1.4	113.8
20/03/2015	V3 Air Express Yard	4.17	98.8
30/03/2015	V1 Silver Tank	0.15	91.5
30/03/2015	V2 Hire Yard	1	108.8
30/03/2015	V3 Air Express Yard	1.68	95.9

3 Noise

Noise monitoring is continuing this month, 12 locations have been successfully sampled with 2 remaining. Wind conditions have not been favourable for sampling over during March with winds staying consistently above 3m/sec for the majority of the time.

EMGA Mitchell McLennan Pty Limited (EMM) completed quarterly attended noise monitoring for the RASP Mine during November 2014.

Since submission of the 24 hour crusher noise assessment, the site's Environment Protection License (EPL) (license number 12559) has been amended to include 24 hour operation of the crusher, and consequently a 12 month quarterly noise monitoring programme is required for RASP Mine as per the EPL, starting November 2014. The first quarterly noise monitoring assessment was carried out by EMM and CBH Resources between 18 and 21 November 2014.

For 23 out of the 36 samples (64%), the wind speed was above 3 m/s and therefore the noise limits do not apply for these samples according to the site's EPL.

Three recorded measurements were slightly above the limits set in the Rasp Mine Environment Protection Licence but were within the Industrial Noise Policy's allowable 2 dB tolerance of the noise limits for three valid (applicable meteorological conditions) attended measurements. All other noise contributions satisfied the relevant noise limits.

The report is published in full on the CBH website.

4 Water

4.1 Ground Water Sampled 10/02/2015

Analyte	Units	GW01	GW03	GW04	GW05	GW06	GW07	GW09	GW11	GW12	SHAFT 7	UG FEED	6L ELEC
pH Value	pH Unit	5.25	6.28	7.53	7.17	7.19	6.81	8.04	7.65	7.26	6.69	6.64	7.8
Electrical Conductivity @ 25°C	µS/cm	10700	14800	14000	16400	13700	12800	9210	3080	12500	11500	9760	11600
Total Dissolved Solids @180°C	mg/L	11000	12800	12000	16000	12900	12200	7900	2060	10800	12500	10300	10000
Hydroxide Alkalinity as CaCO ₃	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Carbonate Alkalinity as CaCO ₃	mg/L	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Bicarbonate Alkalinity as CaCO ₃	mg/L	<1	6	186	136	52	12	263	95	76	11	8	223
Total Alkalinity as CaCO ₃	mg/L	<1	6	186	136	52	12	263	95	76	11	8	223
Sulfate as SO ₄ - Turbidimetric	mg/L	5020	4790	4530	7160	5250	4620	2790	1140	5160	5270	5620	4850
Chloride	mg/L	1280	2980	2660	2770	2480	2170	1760	312	1710	1440	1060	1410
Calcium	mg/L	305	598	613	547	566	571	810	108	462	539	518	436
Magnesium	mg/L	472	415	488	719	505	387	479	109	567	302	213	437
Sodium	mg/L	1770	2680	2640	3150	2480	2250	1060	490	2440	1610	1290	2240
Cadmium	mg/L	0.203	1.76	0.56	1.01	0.992	4.23	0.0158	0.0165	1.18	1.91	2.75	0.0808
Manganese	mg/L	310	336	115	329	305	324	0.242	22.7	54.5	473	326	39
Lead	mg/L	1.22	1.68	0.214	0.075	0.117	0.568	<0.001	0.003	0.025	0.946	2.06	0.027
Zinc	mg/L	260	311	52	319	214	312	1.23	22.4	176	1220	1190	34.6
Iron	mg/L	8.41	<0.05	<0.05	0.25	<0.05	<0.05	<0.05	<0.05	<0.05	0.76	0.27	2.51

4.2 Surface Water

Insufficient rainfall for opportunistic surface water sampling during February 2015.

Surface Water Table Nov 2014 to Nov 2015

EPA Identification Number	Frequency	Comment
EPL29	2 x Per year when contains water	Insufficient water for sample
EPL30	2 x Per year when contains water	Insufficient water for sample
EPL31	2 x Per year when contains water	Sampled during January
EPL32	2 x Per year when contains water	Insufficient water for sample
EPL33 Horwood Dam	2 x Per year when contains water	Not sampled yet, waiting for rainfall event
EPL34 Upstream	2 x Per year when contains water	Insufficient water for sample
EPL35 Downstream	2 x Per year when contains water	Insufficient water for sample

5 Weather Data

BHOP – Automatic Weather Station was unavailable for the month of January.

The following data was obtained from the Bureau of Meteorology Broken Hill

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9 am						3 pm					
		Min	Max				Dir	Spd	Time	Temp	RH	Cld	Dir	Spd	MSLP	Temp	RH	Cld	Dir	Spd	MSLP
		°C	°C				mm	mm	hours	km/h	local	°C	%	g th	km/h	hPa	°C	%	g th	km/h	hPa
1	Su	16.2	27.7	0			S	63	07:20	17.1	61	1	S	44	1012.2	26.3	31	1	S	33	1011.7
2	Mo	16.3	31.0	0			ESE	35	05:00	19.6	42	6	ESE	28	1014.0	28.5	25	1	SE	17	1011.4
3	Tu	17.8	33.5	0			SSE	41	10:08	19.4	32	1	SSE	24	1015.6	32.7	22	2	S	19	1013.3
4	We	18.3	31.2	0			S	39	07:18	18.3	55	7	S	28	1016.8	28.2	36	5	SSE	11	1014.3
5	Th	14.8	24.1	0			S	61	07:32	16.3	71	8	S	39	1018.7	22.8	36	3	S	31	1016.7
6	Fr	10.1	26.4	0			S	52	09:10	11.8	71	1	S	33	1017.8	23.1	29	1	SSW	26	1013.8
7	Sa	11.9	23.4	0			S	28	12:08	15.2	71	4	S	17	1015.2	22.2	49	7	SW	15	1013.3
8	Su	12.8	31.7	0			SW	28	14:24	16.8	65	1	S	20	1014.2	30.2	28	1	WSW	13	1011.2
9	Mo	16.0	30.8	0			E	44	12:54	17.8	57	1	SSE	26	1015.3	28.3	32	4	W	6	1012.7
10	Tu	15.6	32.3	0			SE	35	10:34	17.7	59	1	SE	22	1016.5	31.0	23	0	S	20	1013.3
11	We	17.6	33.9	0			S	37	17:27	22.3	40	0	S	15	1015.1	33.2	19	1	SW	20	1013.4
12	Th	16.2	29.1	0			S	46	16:30	17.1	60	0	S	31	1018.8	27.2	32	1	SSE	24	1016.5
13	Fr	13.0	26.8	0			S	44	15:05	15.1	50	0	SE	28	1020.5	25.7	22	0	SSE	26	1017.4
14	Sa	13.9	32.5	0			S	41	15:57	16.7	36	0	SSE	7	1017.6	31.7	13	1	SSW	24	1013.8
15	Su	15.1	28.5	0			S	41	07:54	17.1	64	1	S	30	1014.6	27.6	39	0	S	24	1012.6
16	Mo	15.9	34.5	0			NE	33	08:23	19.3	28	1	NE	22	1012.6	31.3	12	3	ENE	9	1009.5
17	Tu	19.2	35.8	0.4			NNW	54	13:30	24.8	17	7	NNE	28	1006.2	34.4	13	7	NNW	33	1002.7
18	We	17.0	32.8	0			SW	31	23:13	18.9	70	0	S	13	1009.2	30.0	29	1	W	13	1007.4
19	Th	18.8	39.7	0			NW	54	15:40	25.4	35	0	N	17	1009.2	39.0	18	1	NW	30	1006.9
20	Fr		24.9	0			SSE	54	08:57				SSE	35	1019.4	23.4	33	1	S	31	1018.6
21	Sa	10.9	24.9	0			SSE	46	12:43	13.7	44	0	SE	24	1022.8	23.7	23	0	SSE	26	1020.0
22	Su	12.8	33.5	0			S	28	08:47	15.7	34	0	SSW	17	1018.1	31.5	25	1	WSW	9	1014.0
23	Mo	15.7	34.3	0			SSW	48	22:49	24.2	22	2	NNW	13	1012.5	31.3	21	6	SW	31	1011.3
24	Tu	11.8	21.9	0			SSW	50	23:08	12.5	80	3	S	33	1018.2	20.7	36	1	S	24	1016.9
25	We	9.0	24.2	0			WSW	41	16:02	10.5	56	2	SE	9	1019.8	22.8	28	2	W	24	1017.3
26	Th	10.2	21.9	0			S	48	13:11	13.8	42	2	SSW	26	1024.6	20.2	25	1	SSW	26	1023.4
27	Fr	7.6	22.5	0			SW	44	15:06	10.1	71	1	S	19	1027.9	20.2	35	1	S	13	1023.7
28	Sa	9.2	24.7	0			E	28	09:20	13.4	61	4	ESE	13	1025.2	23.7	31	6	SSW	9	1021.4
29	Su	13.2	24.8	0			SSW	31	19:36	17.3	47	7	ENE	13	1023.0	23.2	34	8	W	6	1021.3
30	Mo	14.8	28.2	0			SSW	35	13:49	17.1	65	1	SE	11	1023.9	27.2	27	0	SSW	17	1021.5
31	Tu	14.9	30.8	0			ENE	37	11:11	16.7	48	0	SSW	9	1024.1	27.8	25	1	E	19	1019.9
Statistics for March 2015																					
Mean		14.2	29.1							17.1	51	2		22	1017.4	27.4	27	2		20	1014.9
Lowest		7.6	21.9	0						10.1	17	0	SSE	7	1006.2	20.2	12	0	W	6	1002.7
Highest		19.2	39.7	0.4			S	63		25.4	80	8	S	44	1027.9	39.0	49	8	#	33	1023.7
Total				0.4																	

Legend

Dir = Direction, **Spd**=Wind Speed, **Temp**=Temperature, **RH**=Relative Humidity, **CLD**=Cloud, **MSLP**=Mean Sea Level Pressure

6 Data Log

Sample	Date sent to lab	Result Received	Date Published
Hi Volume Samples	17/3/2015	31/3/2015	8/4/2015
TEOM	Real time	-	8/4/2015
Dust Deposition	4/3/2015	13/3/2015	8/4/2015
Water	12/3/2015	19/3/2015	8/4/2015
Blast Vibration and overpressure	Real Time	-	8/4/2015

7 Correction Log February 2015

There are no data corrections for February 2015