

Monthly Environmental Data December 2014

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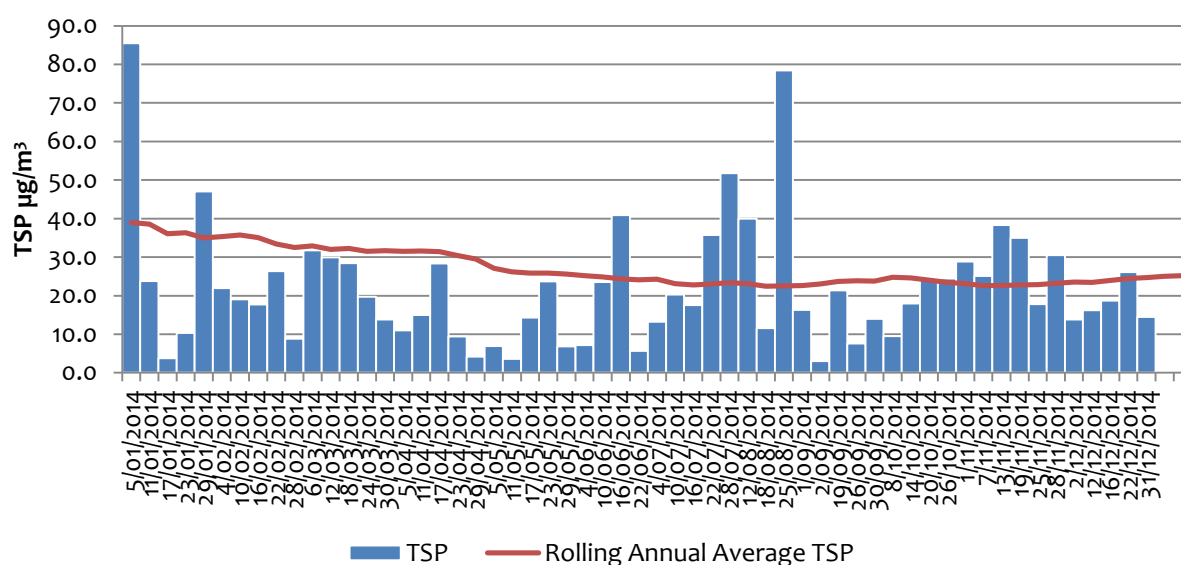
1 Air Quality

1.1 High Volume Air Samplers

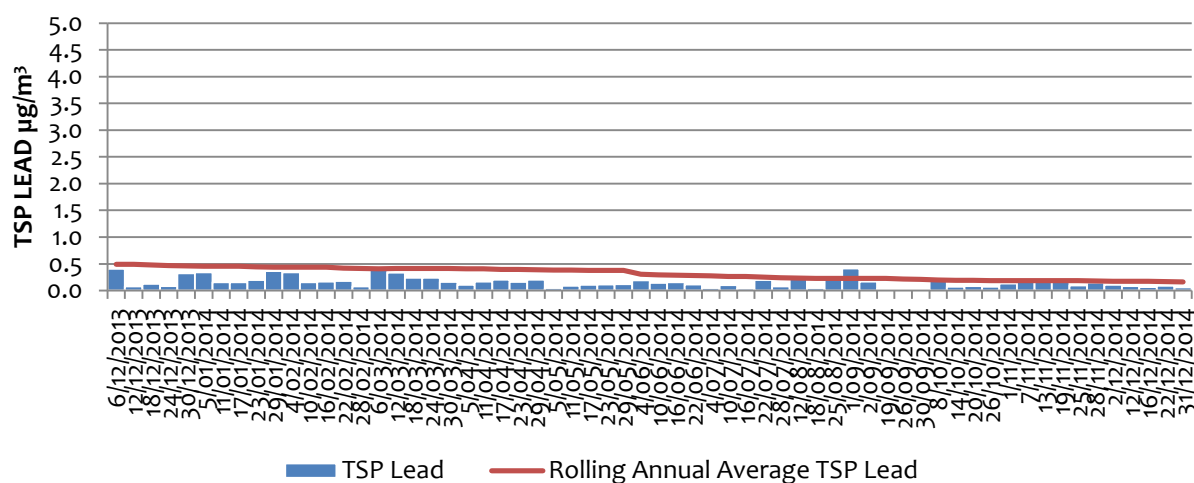
EPL10 - SILVER TANK - ON SITE

DATE	TSP ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
2/12/2014	13.81	0.11
12/12/2014	16.19	0.08
16/12/2014	18.69	0.07
22/12/2014	26.13	0.09
31/12/2014	14.46	0.06

Total Suspended Particles

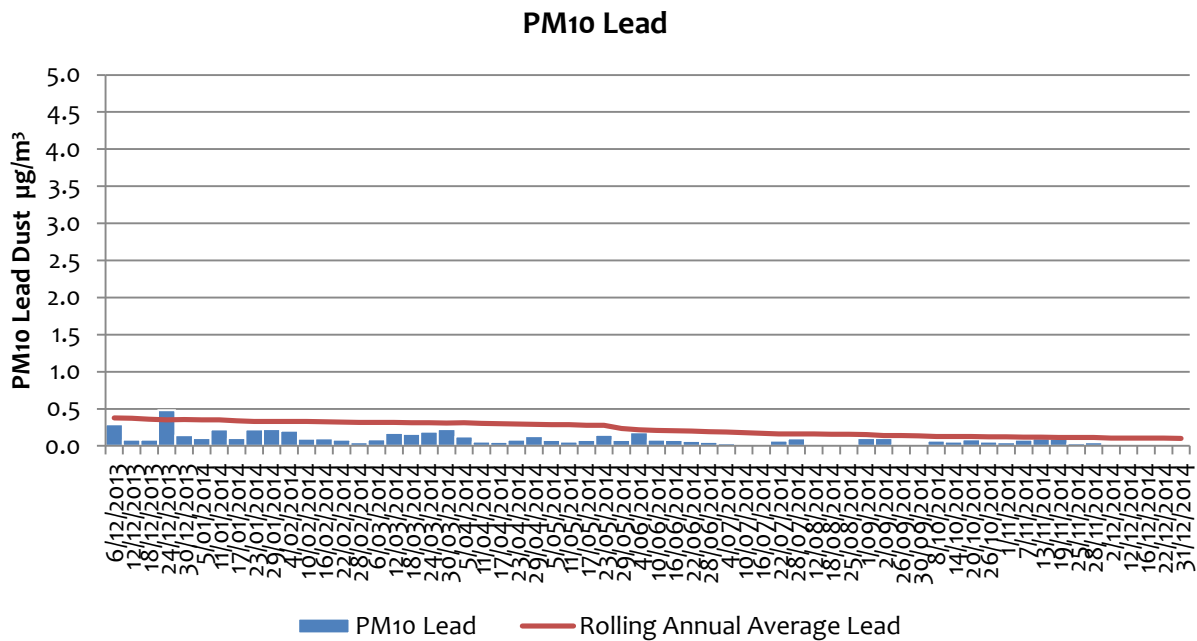
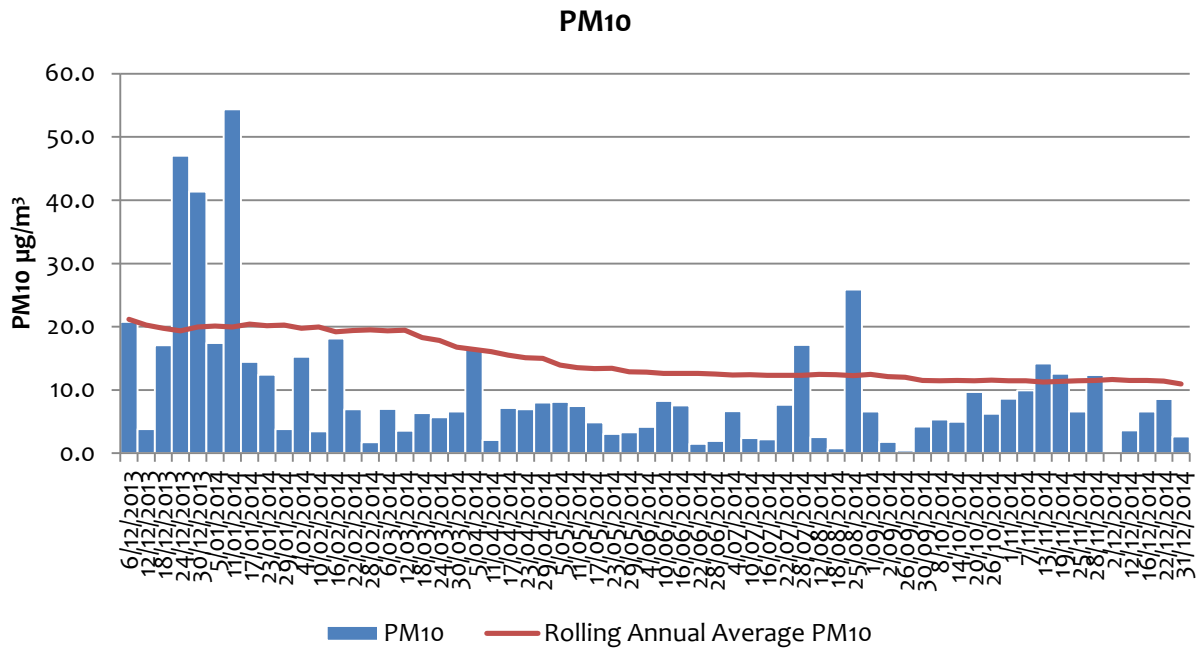


Total Suspended Particles - Lead



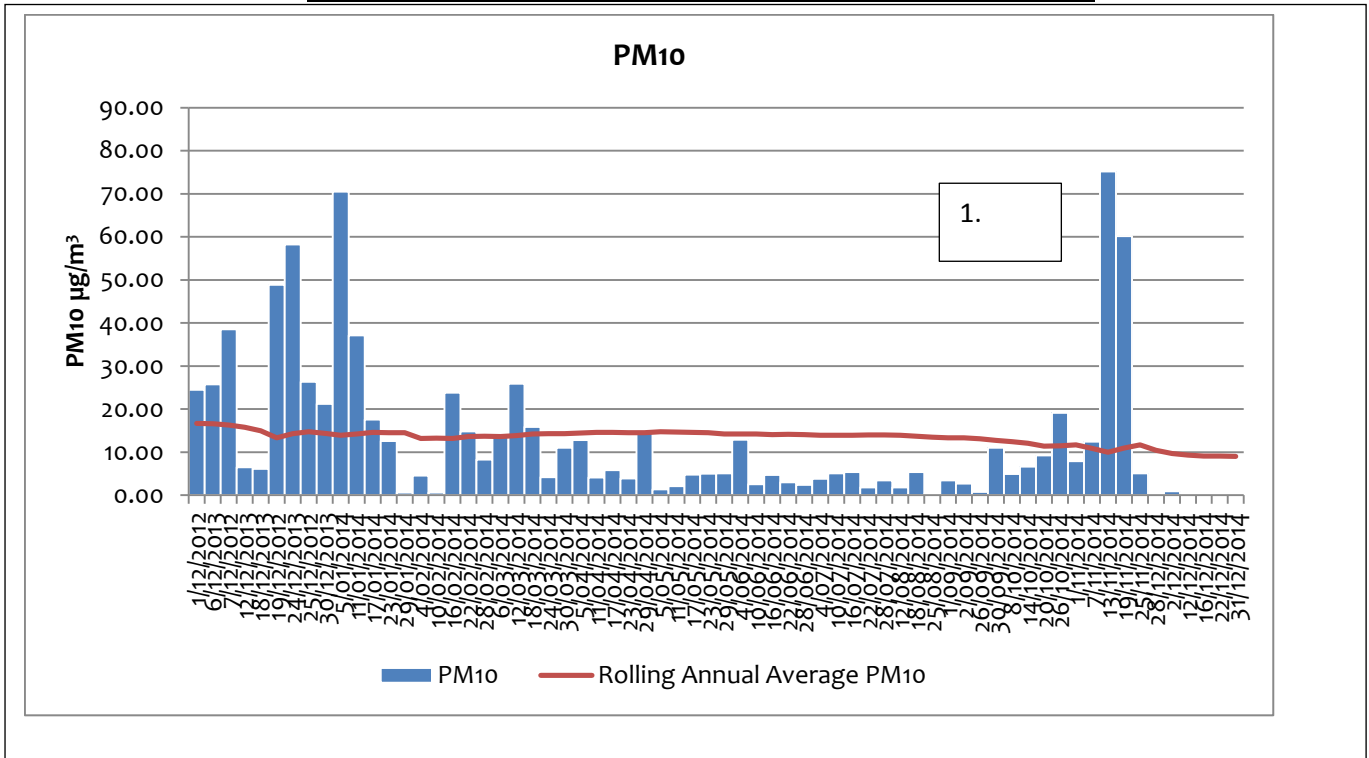
EPL11 - Silver Tank - On Site

DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
2/12/2014	0.06	0.01
12/12/2014	3.63	0.01
16/12/2014	6.61	0.01
22/12/2014	8.57	0.02
31/12/2014	2.68	0.01

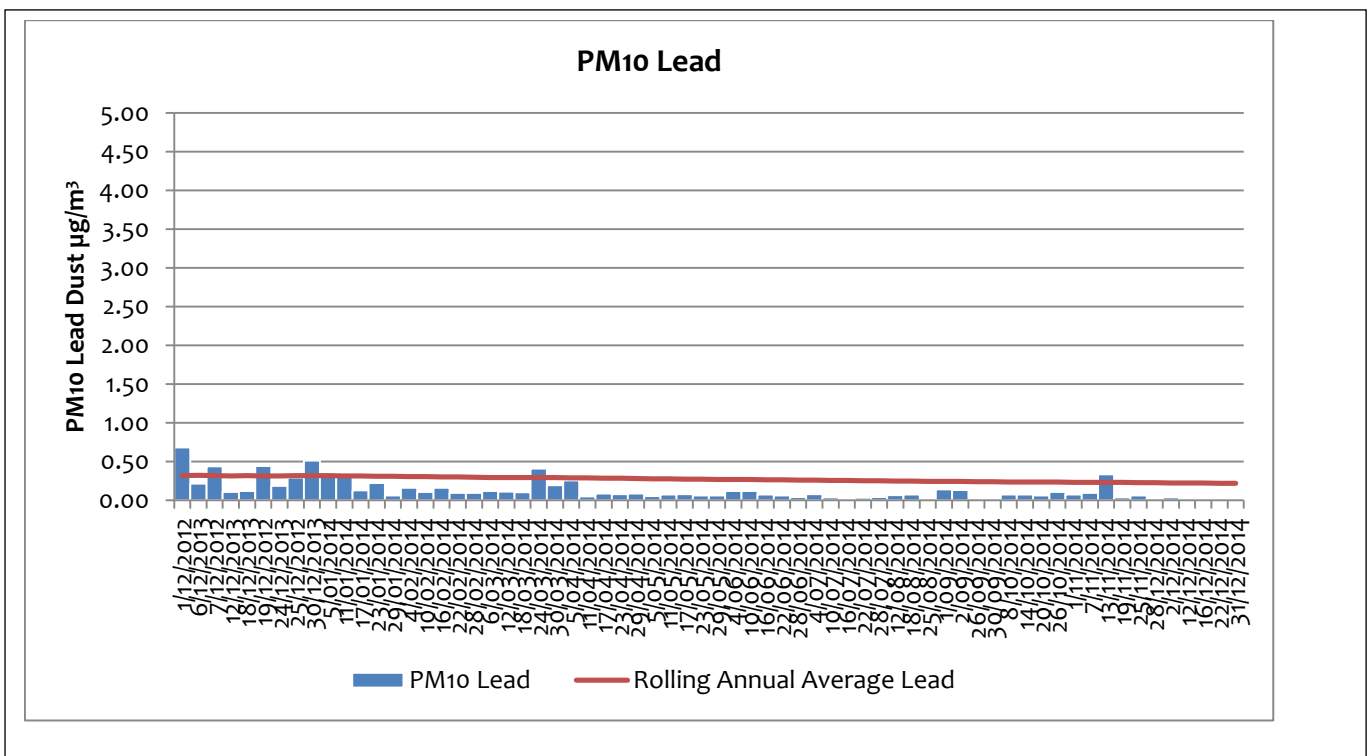


EPL12 - Blackwoods Pit – On Site

DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
2/12/2014	0.89	0.04
12/12/2014	0.06	0.01
16/12/2014	0.06	0.00
22/12/2014	0.06	0.01
31/12/2014	0.06	0.01



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

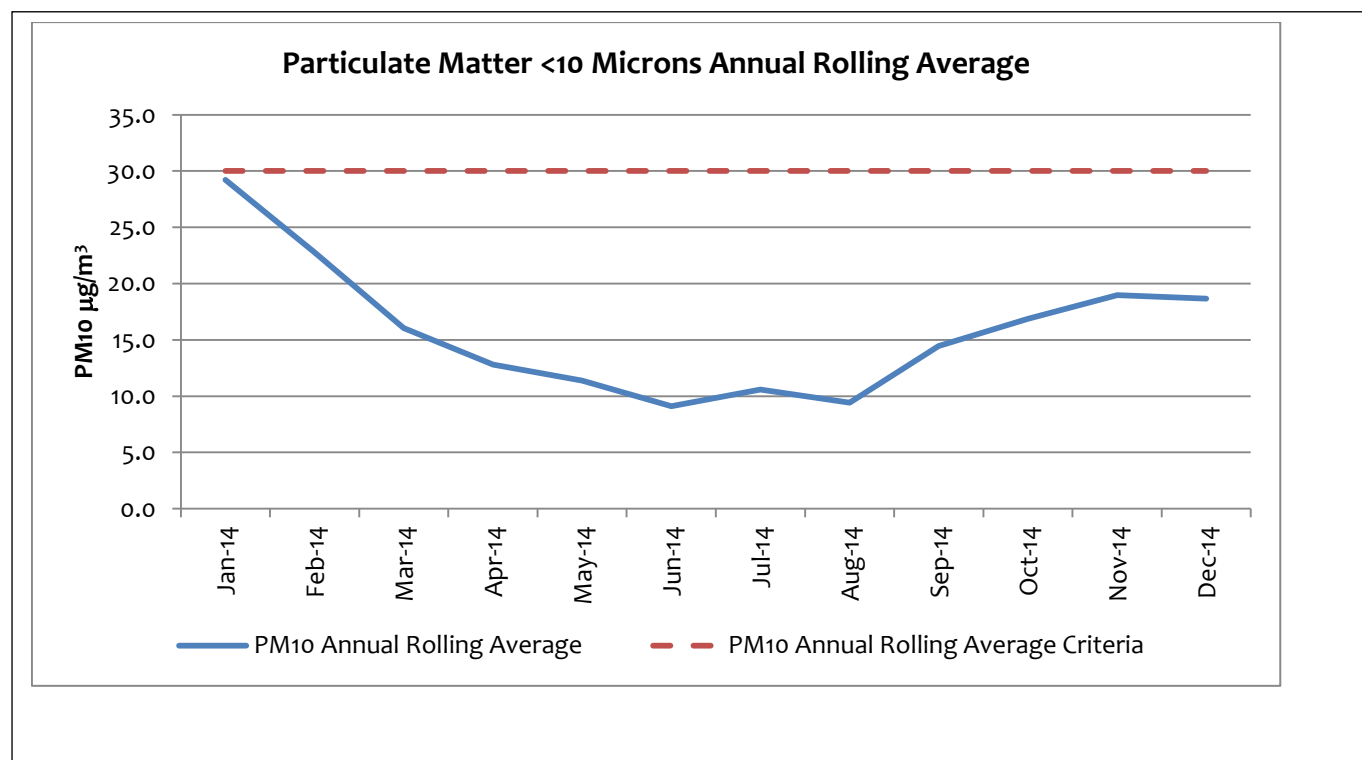
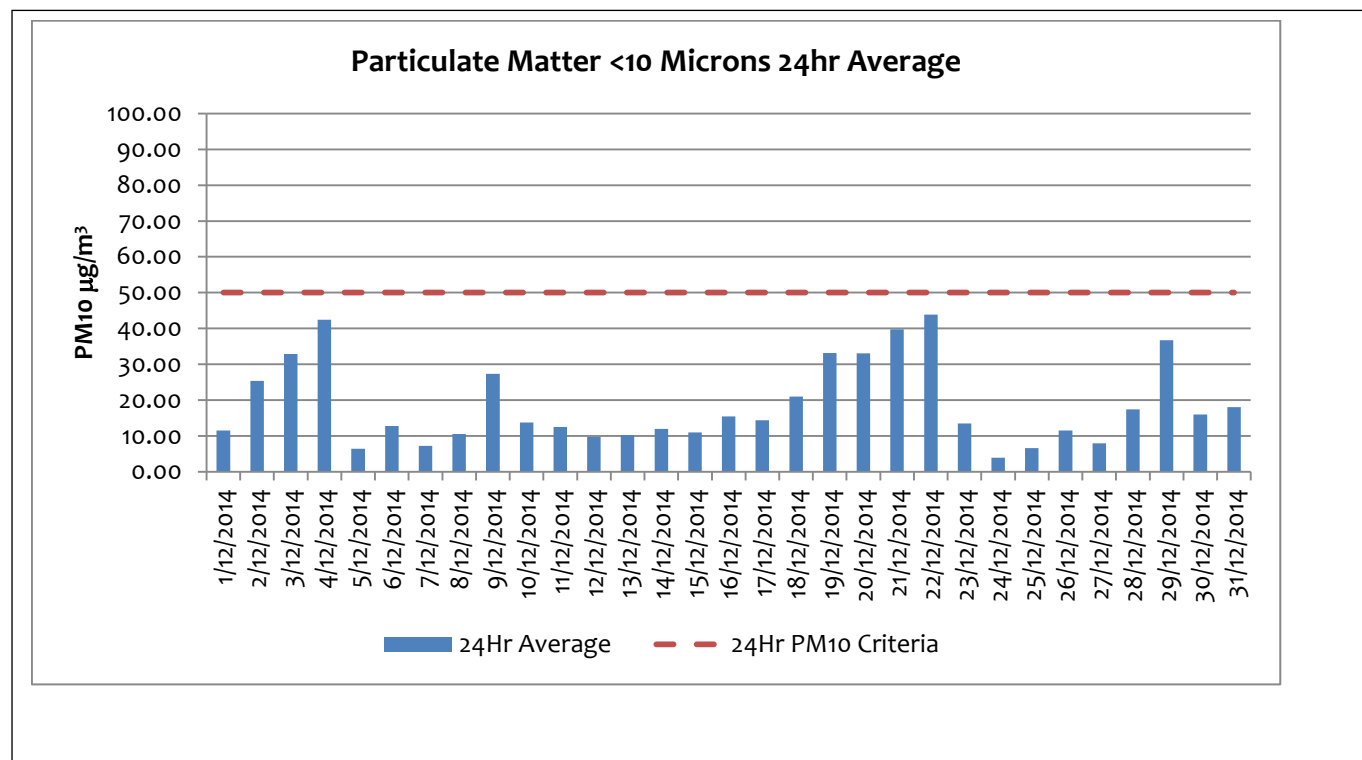


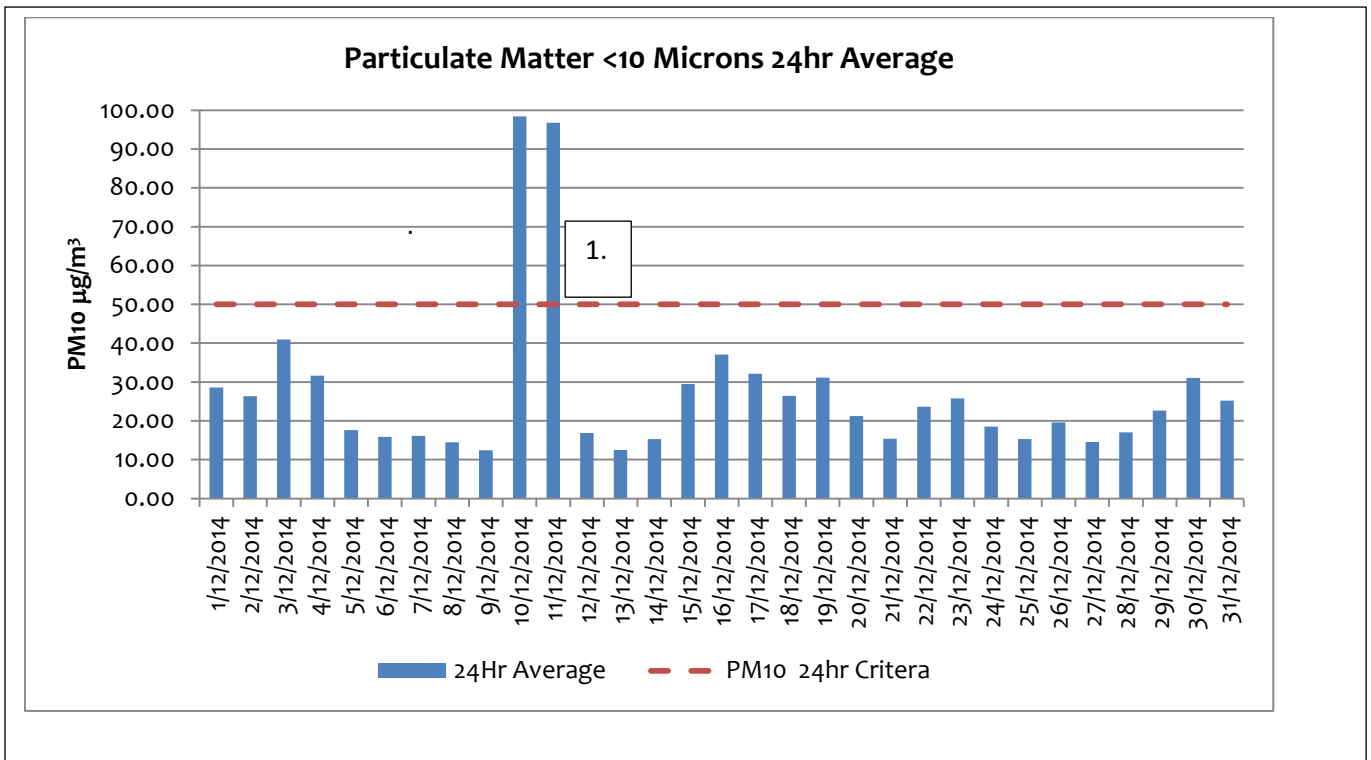
1.2 Tapered Element Oscillating Microbalance Sampling (TEOM)

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
1/12/2014	11.51	28.57
2/12/2014	25.43	26.37
3/12/2014	32.90	40.96
4/12/2014	42.48	31.62
5/12/2014	6.49	17.60
6/12/2014	12.78	15.90
7/12/2014	7.24	16.12
8/12/2014	10.59	14.45
9/12/2014	27.36	12.42
10/12/2014	13.82	98.36
11/12/2014	12.55	96.77
12/12/2014	9.80	16.90
13/12/2014	10.31	12.52
14/12/2014	12.01	15.28
15/12/2014	10.98	29.52
16/12/2014	15.50	37.05
17/12/2014	14.38	32.16
18/12/2014	21.03	26.41
19/12/2014	33.18	31.10
20/12/2014	33.05	21.25
21/12/2014	39.74	15.37
22/12/2014	43.88	23.65
23/12/2014	13.51	25.79
24/12/2014	3.95	18.48
25/12/2014	6.60	15.32
26/12/2014	11.59	19.59
27/12/2014	7.97	14.58
28/12/2014	17.42	17.03
29/12/2014	36.74	22.65
30/12/2014	15.98	31.09
31/12/2014	18.09	25.19

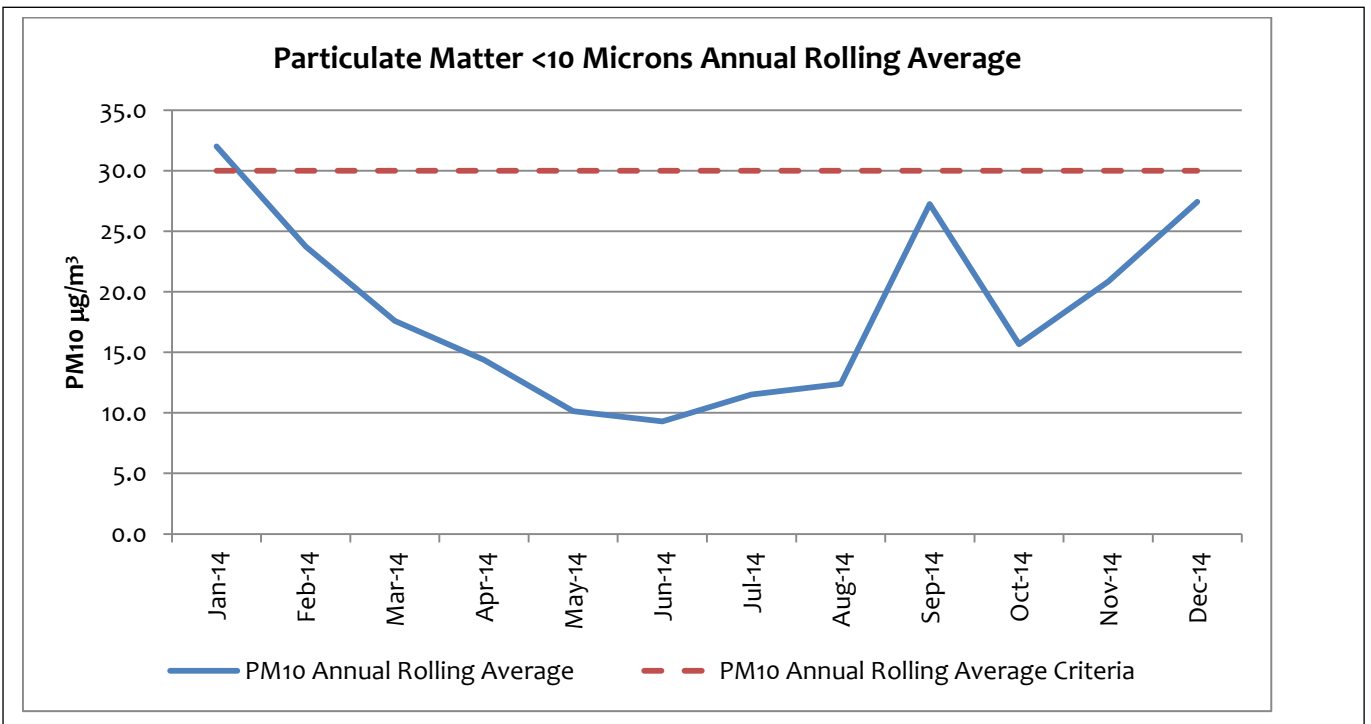
PM10 $\mu\text{g}/\text{m}^3$ 12 Month Rolling Average												
	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14
TEOM 1 EPL13 Essential Water Off Site	29.2	22.7	16.0	12.8	11.4	9.1	10.6	9.4	14.4	16.9	19.0	18.7
TEOM 2 EPL14 Blackwoods Pit On Site	32.0	23.7	17.6	14.4	10.2	9.3	11.5	12.4	27.2	15.7	20.8	27.4

EPL13 – Essential Water – Off Site





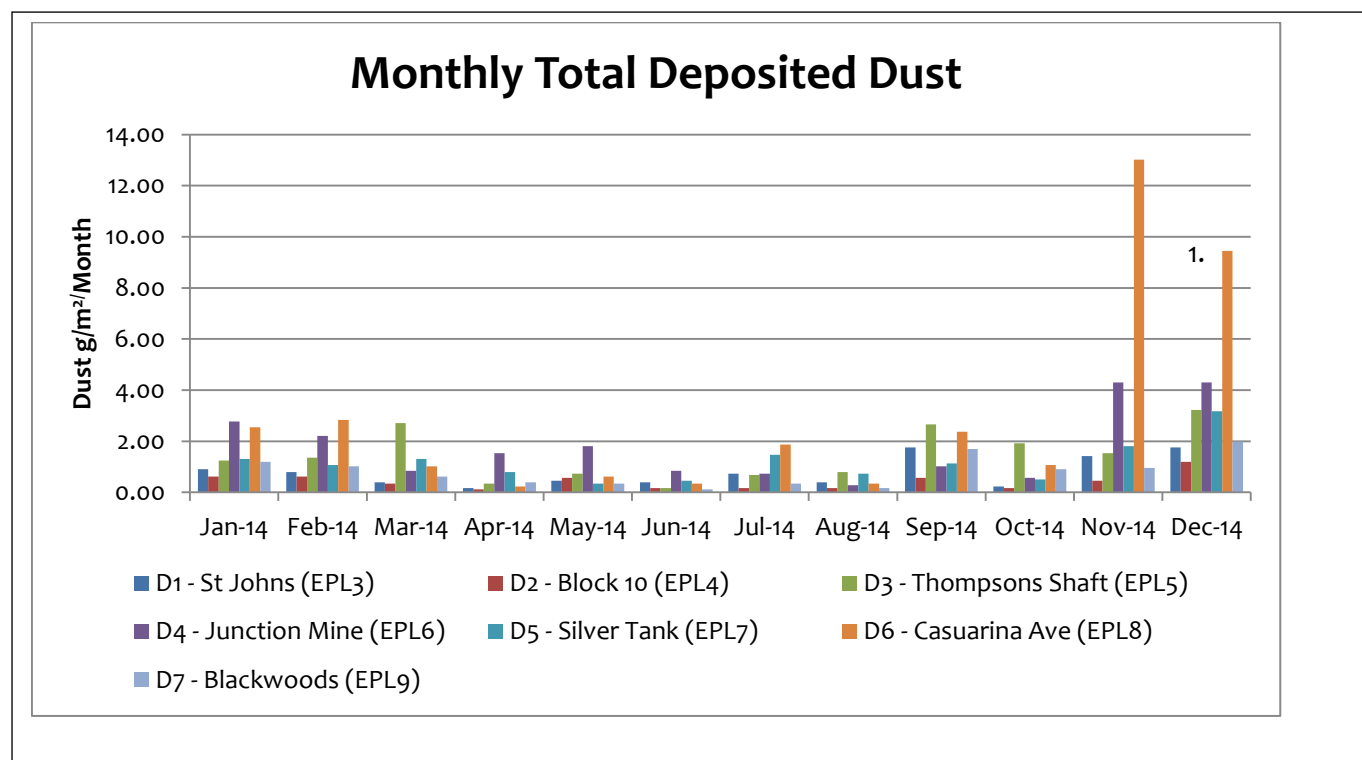
1. NNW winds gusts to 46km/h



1.3 Dust Deposition Sampling

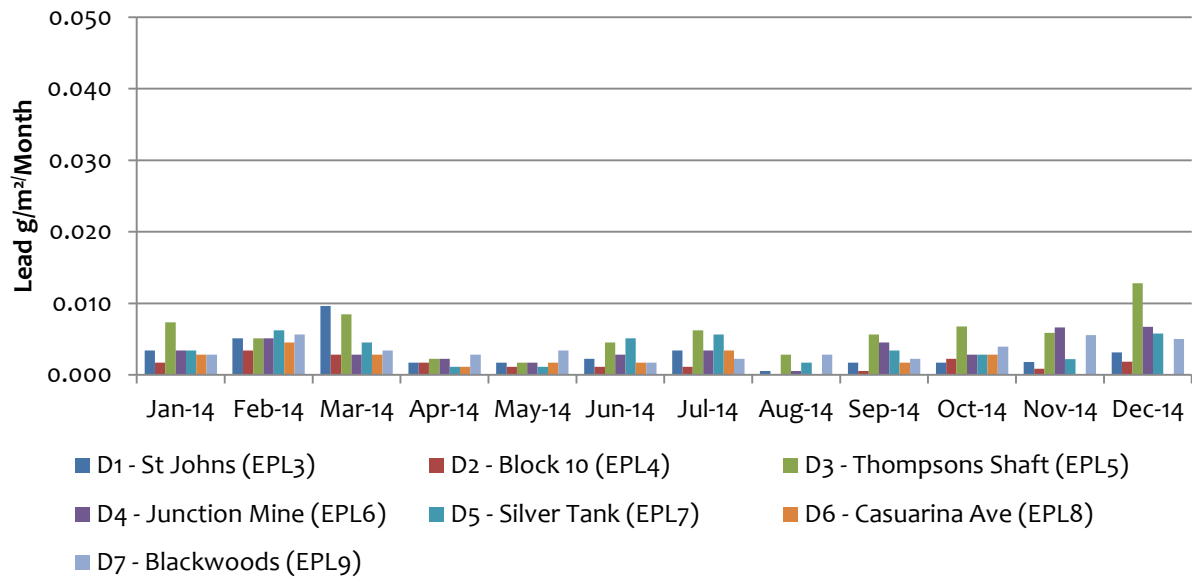
Total Deposited Dust (g/m ² /Month)							
Date	D1 (off site)	D2	D3	D4	D5	D6 (off site)	D7
December 2014	1.75	1.19	3.23	4.30	3.17	9.45	1.98
Background Average	4.0	3.1	4.3	5.7	n/a	5.8	n/a

Total Deposited Lead (g/m ² /Month)							
Date	D1 (Off Site)	D2	D3	D4	D5	D6 (Off Site)	D7
December 2014	0.003	0.002	0.013	0.007	0.006	0.000	0.005
Background Average	0.0034	0.0045	0.0046	0.0060	n/a	0.0036	n/a



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

Monthly Total Deposited Lead



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
- 2 Blasts recorded an over pressure level over 115 (dBL)
- 2 Blasts recorded an over pressure above 120 (dBL)

Date/Location	PPV (mm/s)	O/Press (dBL)
7/12/2014	1.91	100
V3 Air Express Yard	1.91	100
10/12/2014	1.09	120.8
electrical workshop	0.29	120.8
V3 Air Express Yard	1.09	110.9
11/12/2014	2.59	125.8
electrical workshop	0.46	108.4
V2 Hire Yard	0.96	125.8
V3 Air Express Yard	2.59	106
17/12/2014	2.72	98.8
80 Eyre Street	0.45	88
V2 Hire Yard	0.96	94
V3 Air Express Yard	2.72	98.8
20/12/2014	4.56	101.9
80 Eyre Street	0.29	88
V2 Hire Yard	1.27	101.9
V3 Air Express Yard	4.56	101
21/12/2014	0.17	88
V1 Silver Tank	0.17	88
24/12/2014	3.94	101.9
80 Eyre Street	0.33	88
V2 Hire Yard	1.37	100
V3 Air Express Yard	3.94	101.9
28/12/2014	0.69	88
80 Eyre Street	0.21	88
Core Shed	0.69	88
31/12/2014	1.36	97.5
V3 Air Express Yard	1.36	97.5

3 Noise

EMGA Mitchell McLennan Pty Limited (EMM) completed quarterly attended noise monitoring for the RASP Mine during November 2014. The next round of testing is to be conducted in February 2015.

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

[illegible]

4.2 Ground Water UG & Shaft 7

11/12/2014		UG Feed	Shaft 7
Analyte grouping/Analyte	Units		
pH Value	pH Unit	6.29	6.01
Electrical Conductivity @ 25°C	µS/cm	9870	11200
Total Dissolved Solids @180°C	mg/L	10600	11900
Hydroxide Alkalinity as CaCO3	mg/L	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	9	11
Total Alkalinity as CaCO3	mg/L	9	11
Sulfate as SO4 - Turbidimetric	mg/L	5010	5880
Chloride	mg/L	1140	1320
Calcium	mg/L	447	482
Magnesium	mg/L	194	276
Sodium	mg/L	1150	1320
Cadmium	mg/L	3.08	1.98
Manganese	mg/L	416	539
Lead	mg/L	2.92	2.52
Zinc	mg/L	1200	1050
Iron	mg/L	12.2	20.4

4.3 Surface Water

Insufficient water was available for samples at surface water locations.

Surface Water Table

EPA Identification Number	Frequency	Comment
EPL29	2 x Per year when contains water	Sufficient samples for year
EPL30	2 x Per year when contains water	Insufficient water for sample
EPL31	2 x Per year when contains water	Insufficient water for sample
EPL32	2 x Per year when contains water	Insufficient water for sample
EPL33 Horwood Dam	2 x Per year when contains water	Sufficient samples for year
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 December.

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

Date	Day	Temps		Rain mm	Evap mm	Sun hours	Max wind gust			9 am					3 pm						
		Min	Max				Dir	Spd	Time	Temp	RH	Cl	Dir	Spd	MSLP	Temp	RH	Cl	Dir	Spd	MSLP
		°C	°C					km/h	local	°C	%	g th		km/h	hPa	°C	%	g th		km/h	hPa
1	Mo	23.0	37.8	0			WNW	61	14:53	27.6	53	2	NNW	19	1008.9	36.7	23	6	NW	30	1004.5
2	Tu	18.6	38.1	0			W	57	20:07	24.2	43	4	ESE	19	1009.5	35.8	17	6	WNW	17	1005.8
3	We	21.1	38.8	2.8			WSW	59	02:31	25.9	61	5	Calm		1008.4	37.4		6	NW	30	1006.5
4	Th	21.8	35.7	0.2			WSW	46	16:47	25.6		3	SSW	24	1009.9	34.1		2	WSW	26	1007.6
5	Fr	17.8	32.8	0			SSW	46	15:45	21.5		2	SSW	26	1009.5	31.8		1	WSW	30	1006.4
6	Sa	16.2	28.6	0			S	54	17:19	18.3		2	SSW	28	1007.7	27.4		4	S	26	1005.0
7	Su	15.2	31.2	0			WSW	43	13:55	19.5		4	S	20	1006.4	31.1		6	SW	26	1004.1
8	Mo	16.6	35.1	0			W	35	12:26	23.6		0	SE	19	1008.5	34.3		4	SW	13	1006.9
9	Tu	19.8	38.7	0			NW	59	12:50	27.1		1	E	17	1011.7	37.2		1	SSW	7	1008.1
10	We	21.5	37.8	0			SSE	76	18:20	27.2		2	SSW	22	1010.1	36.1		6	SE	9	1006.9
11	Th	16.9	28.2	6.4			SSE	54	16:45	17.0		8	S	26	1012.0	24.3		6	SSE	28	1011.4
12	Fr	16.3	31.1	4.6			ESE	59	12:10	21.3	49	0	ESE	30	1014.4	30.0	23	1	SE	26	1012.2
13	Sa	18.4	33.2	0			ENE	43	06:18	26.3	30	0	ENE	20	1013.3	30.7	17	0	SE	4	1009.8
14	Su	22.3	36.5	0			NW	69	16:40	29.3	22	3	NNW	24	1009.4	34.1	17	3	ESE	24	1007.0
15	Mo	21.2	40.4	0.6			WNW	70	17:51	25.6	36	1	ESE	13	1007.0	40.0	12	5	NW	31	1001.4
16	Tu	22.8	38.0	0			W	72	15:26	24.1	45	6	NW	4	1004.1	36.7	13	1	WNW	33	1000.9
17	We	13.6	29.8	0			SSW	54	23:01	17.2	38	1	SE	20	1009.2	27.7	22	1	WSW	19	1006.8
18	Th	16.8	33.2	0			W	65	11:50	24.1	24	4	NNE	11	1009.2	32.7	16	1	SW	41	1008.6
19	Fr	14.2	27.8	0			SSW	44	14:19	16.7	44	1	SSE	28	1017.9	26.2	20	0	SSW	20	1016.2
20	Sa	14.9	32.1	0			ESE	35	14:06	19.8	39	0	SSE	13	1018.1	30.2	23	0	SSE	20	1014.1
21	Su	19.6	37.0	0			ENE	35	07:43	27.5	23	1	NE	28	1013.7	35.8	15	6	W	11	1010.1
22	Mo	26.8	35.3	0			N	69	12:29	30.2	19	8	NNE	19	1007.7	32.7	15	8	SW	20	1008.2
23	Tu	18.9	35.1	0			WSW	59	14:00	23.2	59	1	SSW	28	1009.1	34.1	29	2	SW	22	1008.4
24	We	14.6	32.0	0			S	50	03:09	18.1	56	0	SSE	28	1013.8	30.3	31	1	S	24	1010.9
25	Th	15.7	31.8	0			SW	50	12:18	17.3	51	3	SSW	35	1011.6	30.2	24	1	WSW	20	1008.7
26	Fr	12.2	25.2	0			SSW	61	23:01	14.7	49	2	SSE	33	1016.8	23.2	22	1	SSE	28	1014.6
27	Sa	12.6	29.6	0			SSW	41	13:24	17.0	41	7	SSE	19	1018.1	28.3	13	2	SE	24	1015.1
28	Su	15.8	34.6	0			WSW	39	16:39	23.5	57	1	WSW	6	1014.7	30.5	23	3	E	13	1009.4
29	Mo	20.8	34.8	0			WNW	63	11:18	25.1	35	2	WSW	20	1008.5	34.1	16	1	W	39	1005.3
30	Tu	13.8	30.8	0			SW	43	15:16	17.7	51	0	S	20	1015.1	27.1	32	0	SSW	13	1012.4
31	We	15.7	33.3	0			SW	39	16:00	18.8	51	0	SE	15	1015.7	30.4	21	0	S	11	1012.1
Statistics for December 2014																					
Mean		17.9	33.7							22.4	42	2		20	1011.3	32.0	20	2		22	1008.6
Lowest		12.2	25.2	0						14.7	19	0		Calm	1004.1	23.2	12	0	SE	4	1000.9
Highest		26.8	40.4	6.4			SSE	76		30.2	61	8	SSW	35	1018.1	40.0	32	8	SW	41	1016.2
Total				14.6																	

IDCJDW2020201412 Prepared at 16:00 UTC on Monday 2 February 2015

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	8/1/2015	20/1/2015	10/2/2015
TEOM	Real time	-	10/2/2015
Dust Deposition	8/1/2015	20/1/2015	10/2/2015
Water	09/12/2014	15/12/2014	10/2/2015
Blast Vibration and overpressure	Real Time	-	10/2/2015

7 Correction Log December 2014

There are no data corrections for December 2014