

Monthly Environmental Data March 2015

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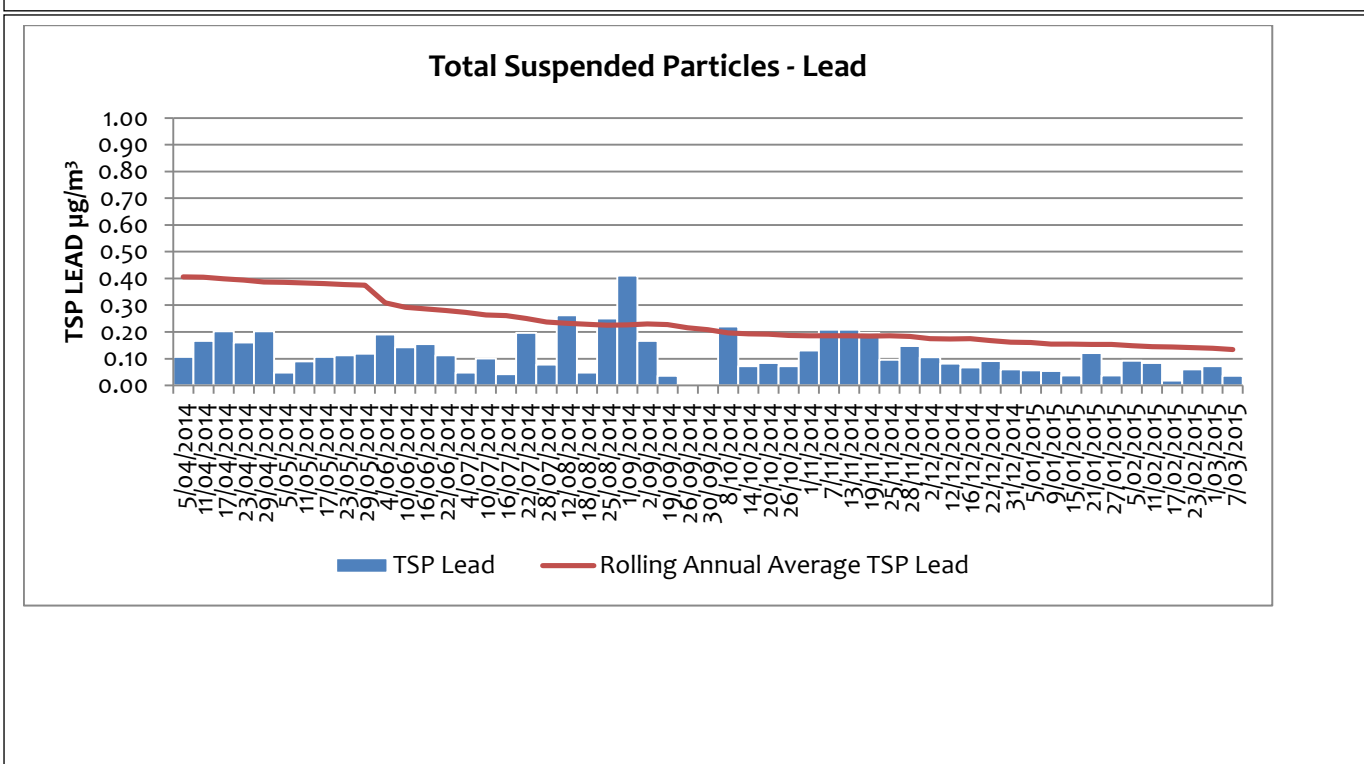
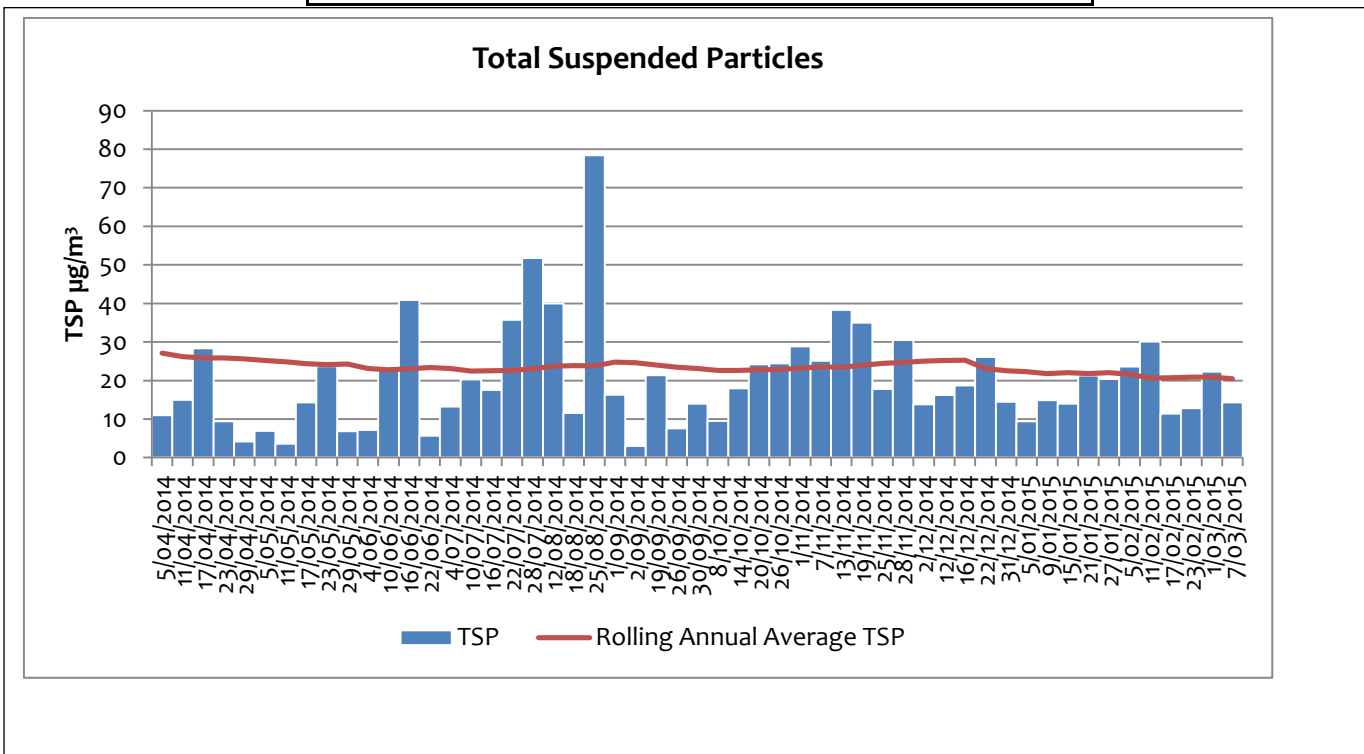
1 Air Quality

1.1 High Volume Air Samplers

EPL10 - SILVER TANK - ON SITE

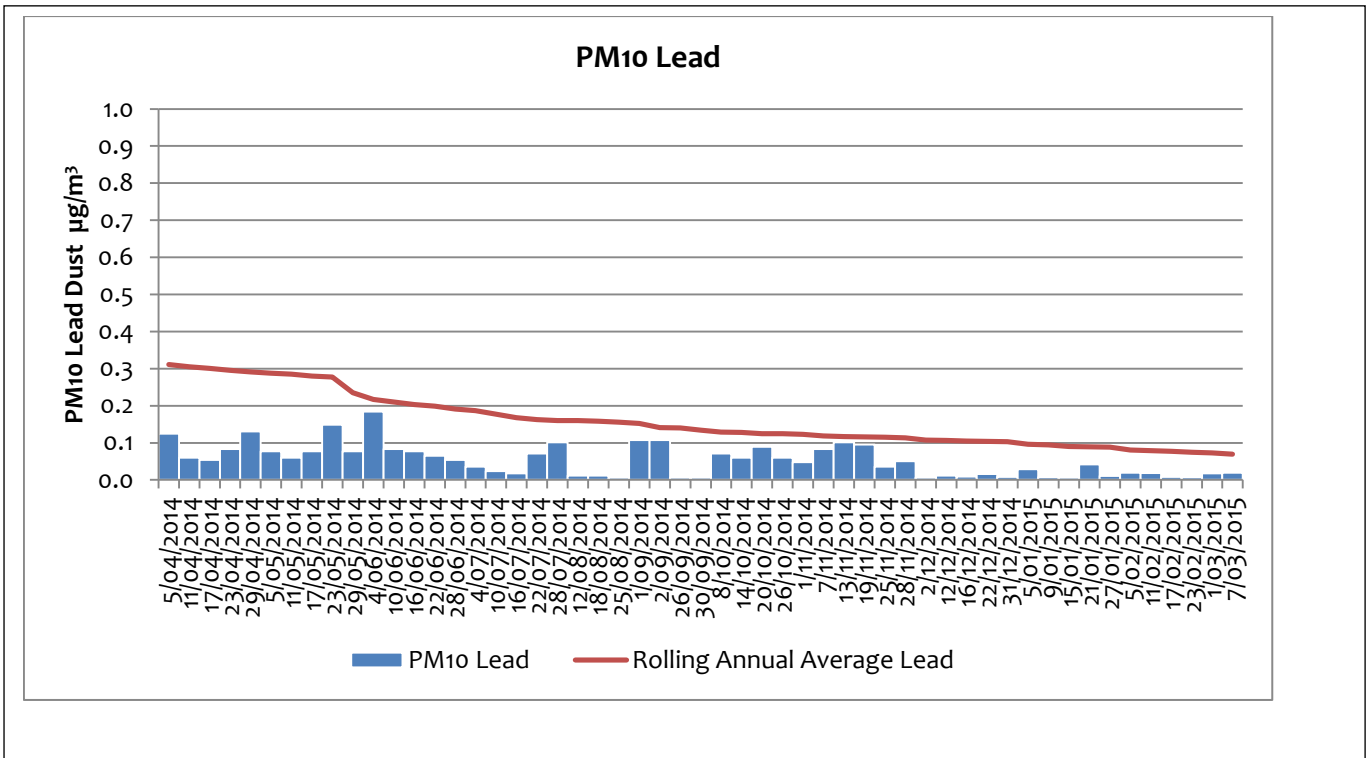
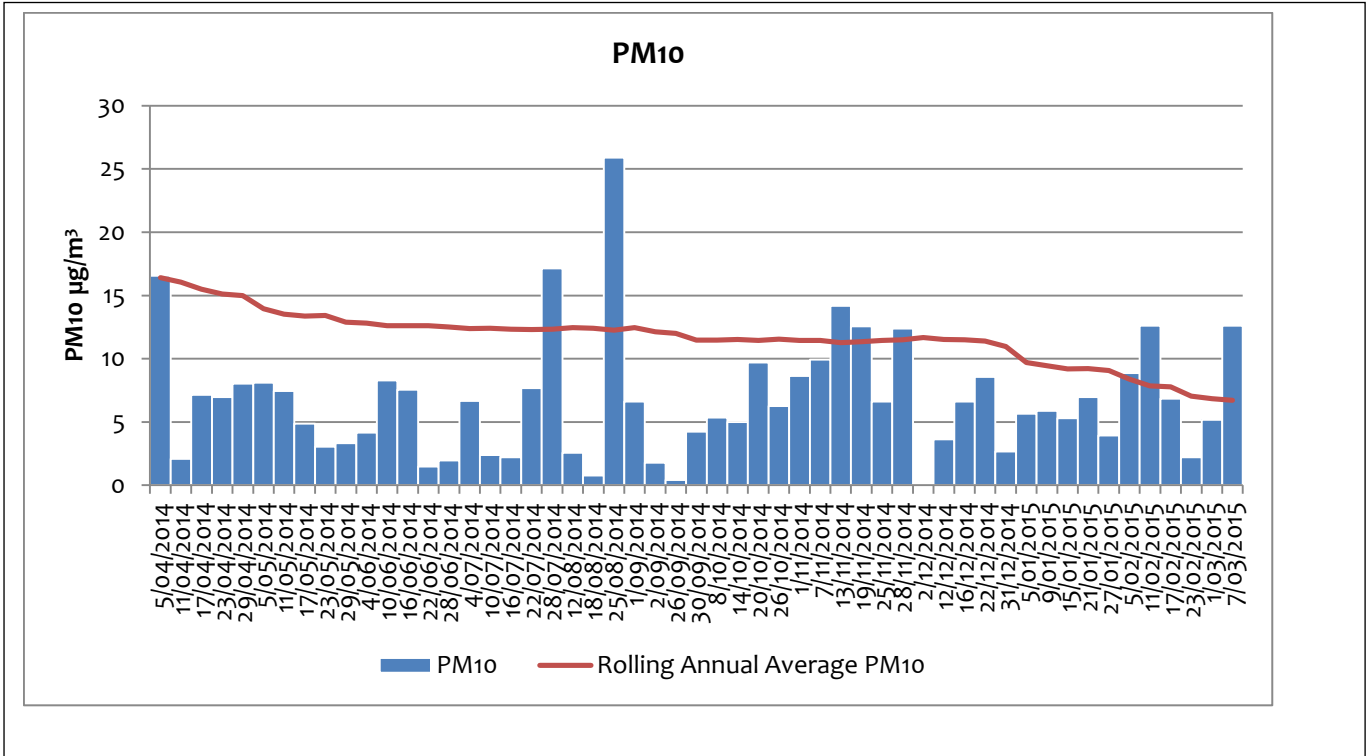
DATE	TSP ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
7/03/2015	14.3	0.036

HVA1 was serviced in March 2015 and found to be unserviceable. This unit was taken out of service and replaced with a new machine in April. Only one sampling event was captured during March. This has been reported to the EPA.



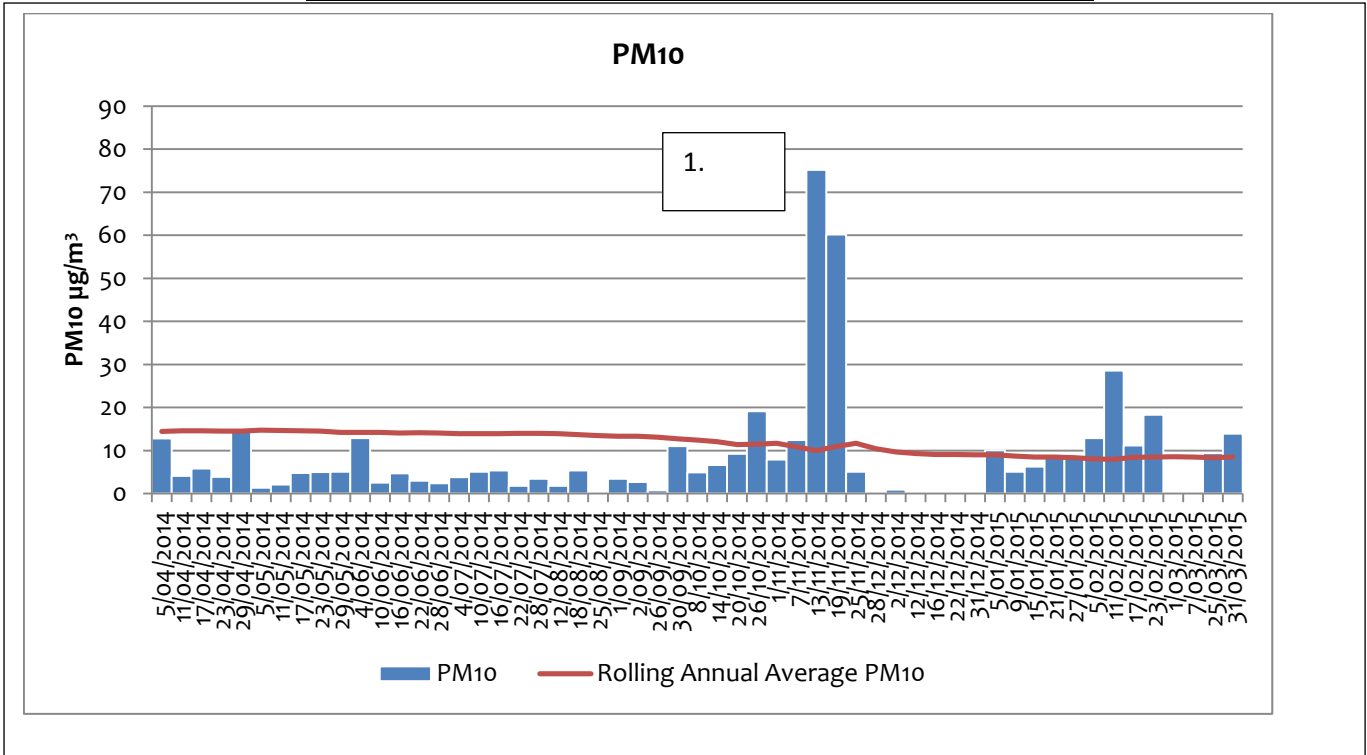
DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
7/03/2015	12.6	0.019

HVA2 was serviced in March 2015 and found to be unserviceable. This unit was taken out of service and replaced with a new machine in April. Only one sampling event was captured during March. This has been reported to the EPA.

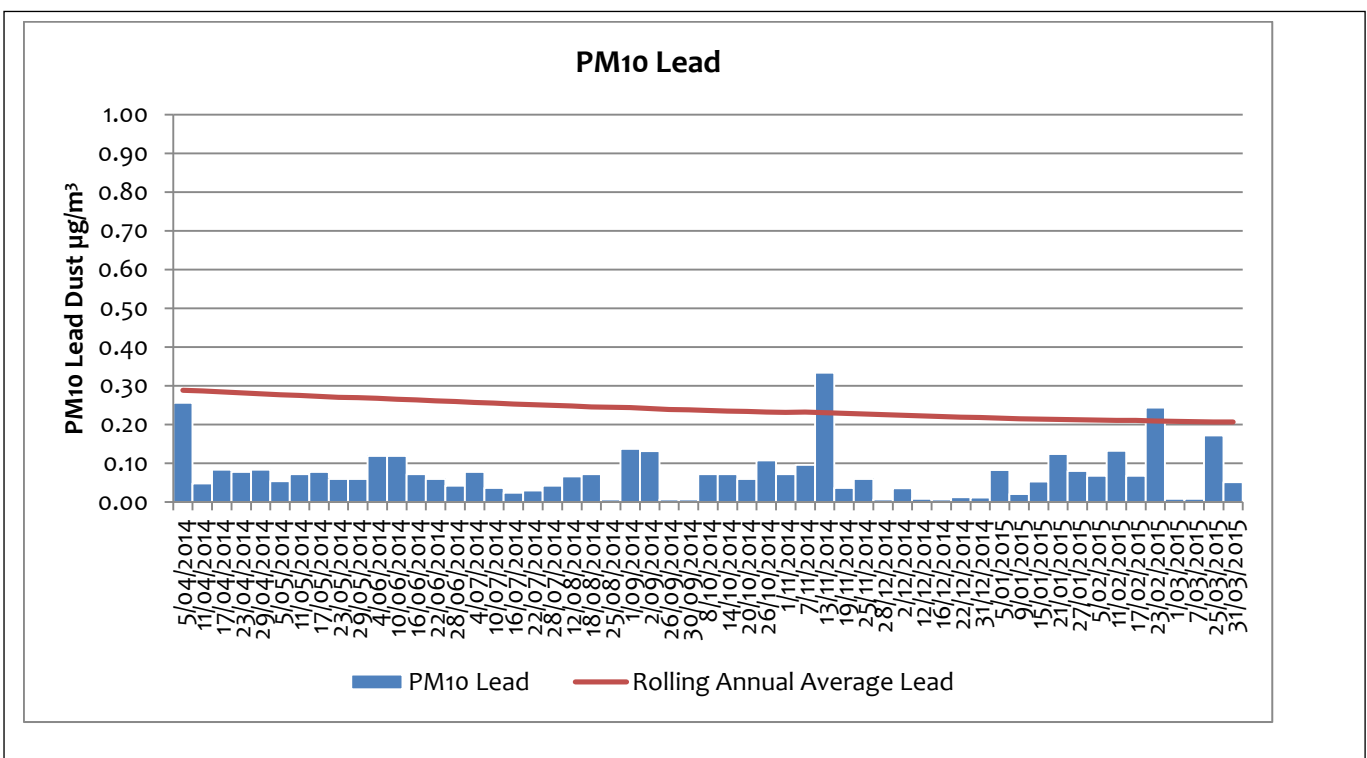


EPL12 - Blackwoods Pit – On Site

DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
7/03/2015	0.1	0.008
25/03/2015	9.4	0.172
31/03/2015	13.9	0.051
HVA3 was serviced during March. The machine failed to reset and missed 2 sampling events. This has been reported to the EPA.		



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



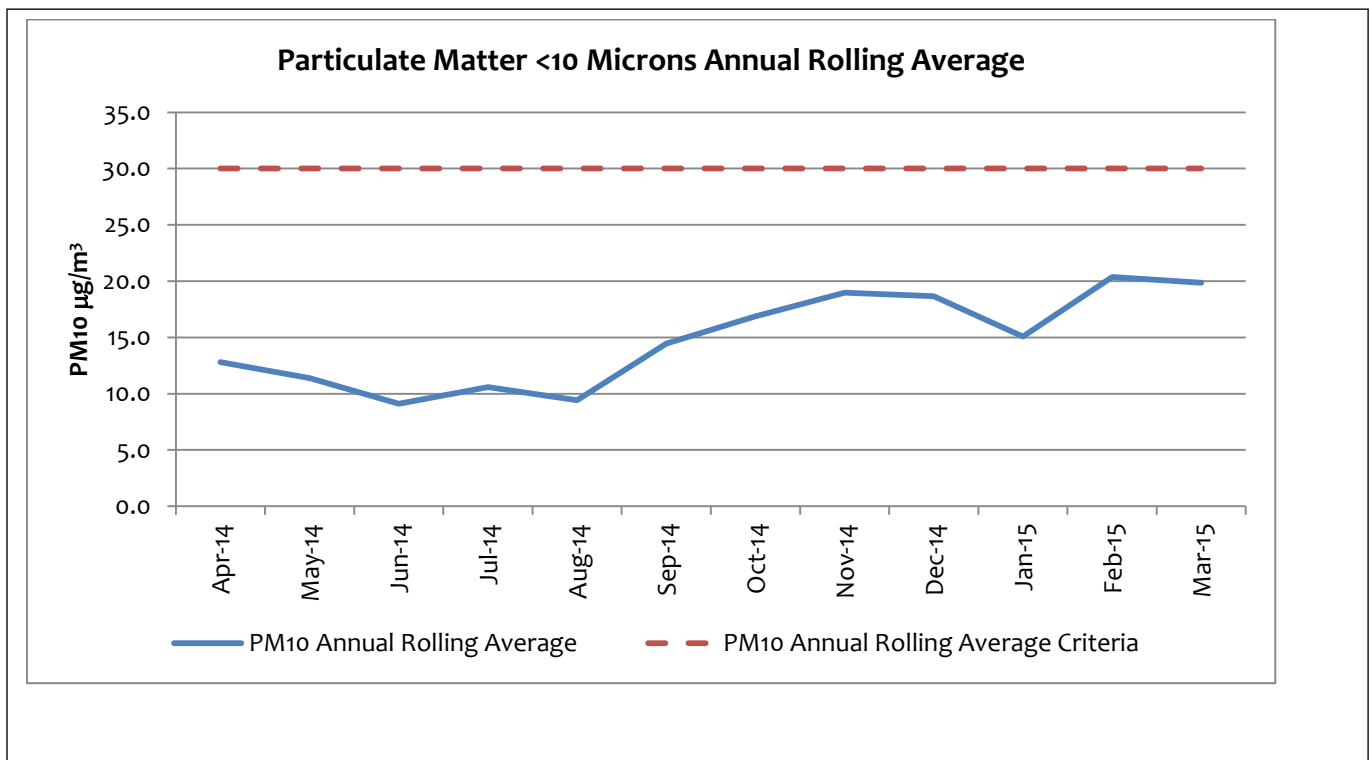
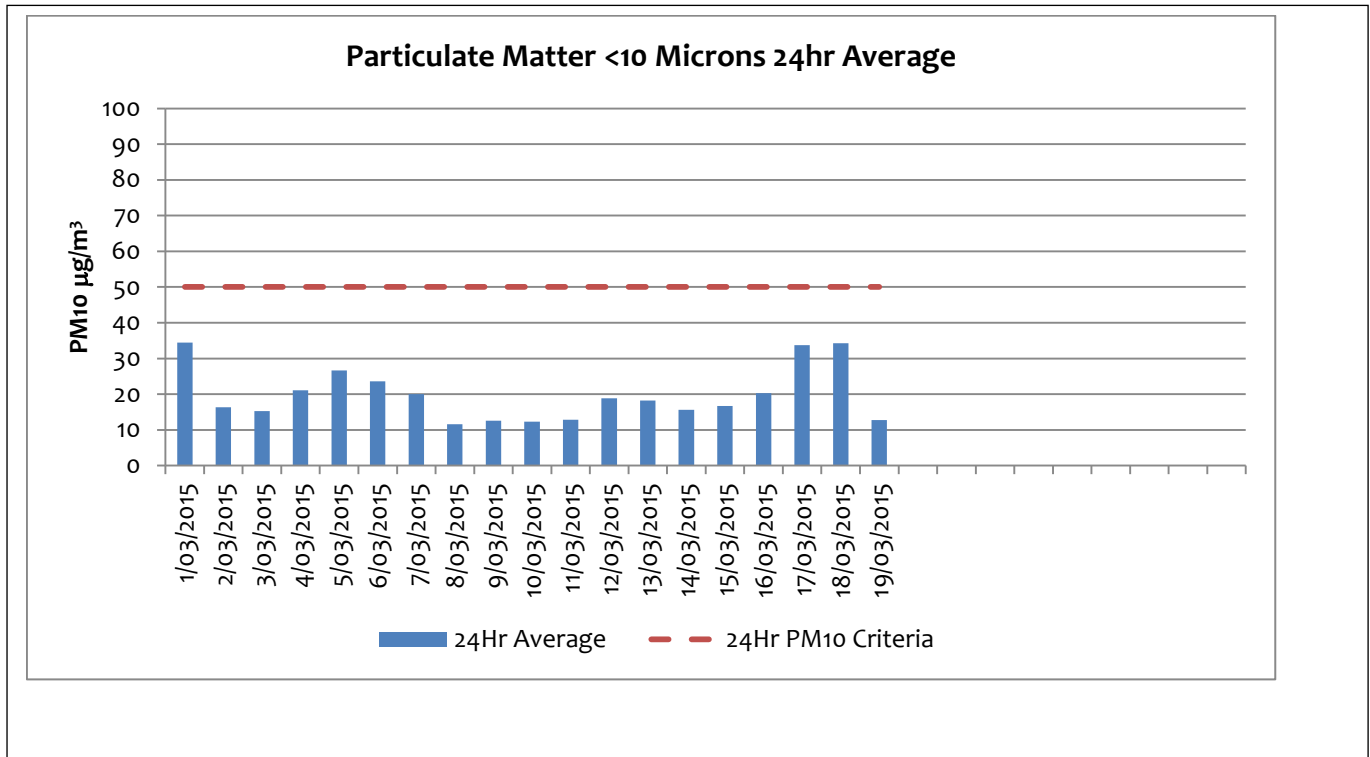
1.2 Tapered Element Oscillating Microbalance Sampling (TEOM)

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
1/03/2015	34.47	34.71
2/03/2015	16.34	21.49
3/03/2015	15.27	18.80
4/03/2015	21.06	23.28
5/03/2015	26.64	31.20
6/03/2015	23.56	34.71
7/03/2015	20.03	24.15
8/03/2015	11.61	13.72
9/03/2015	12.56	15.24
10/03/2015	12.31	14.38
11/03/2015	12.87	15.91
12/03/2015	18.81	24.15
13/03/2015	18.21	23.20
14/03/2015	15.63	20.64
15/03/2015	16.68	21.82
16/03/2015	20.30	16.85
17/03/2015	33.77	22.05
18/03/2015	34.29	32.71
19/03/2015	12.74	0.00
20/03/2015		58.12
21/03/2015		36.59
22/03/2015		25.33
23/03/2015		25.21
24/03/2015		20.12
25/03/2015		17.24
26/03/2015		20.02
27/03/2015		23.45
28/03/2015		15.23
29/03/2015		12.03
30/03/2015		12.72
31/03/2015		18.40

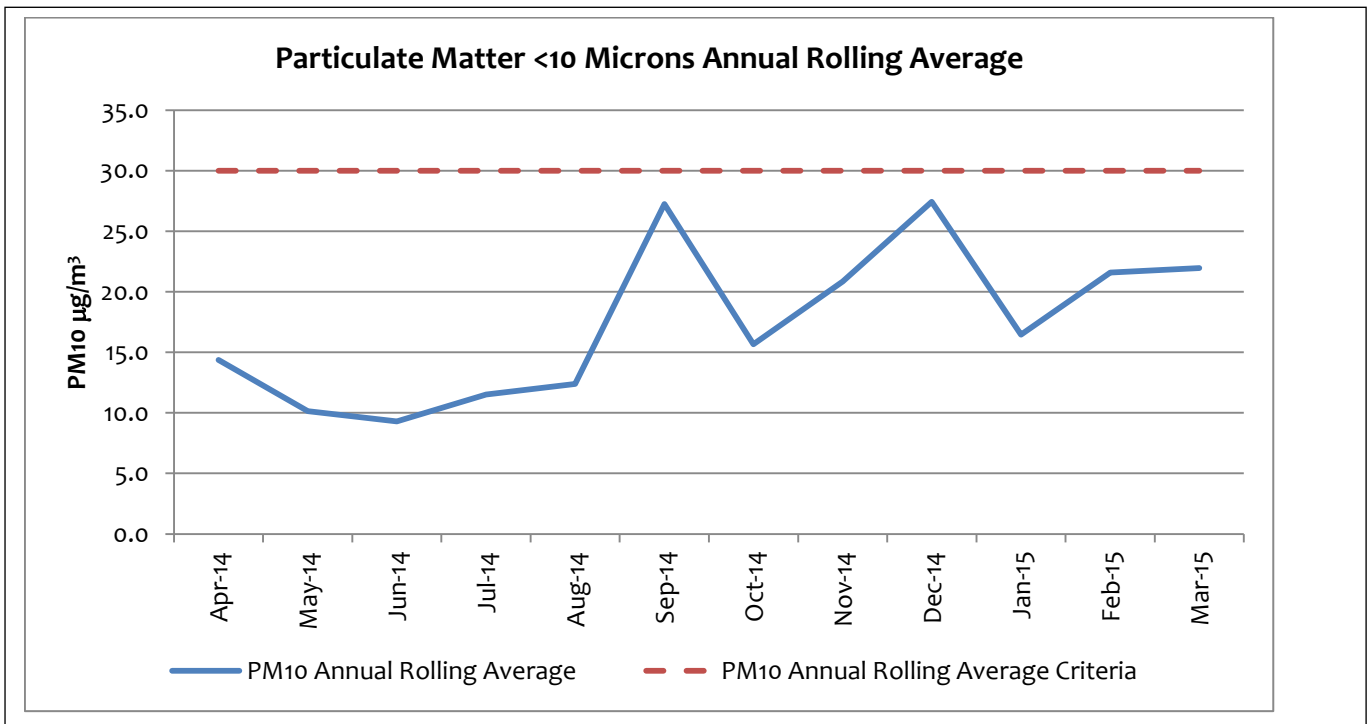
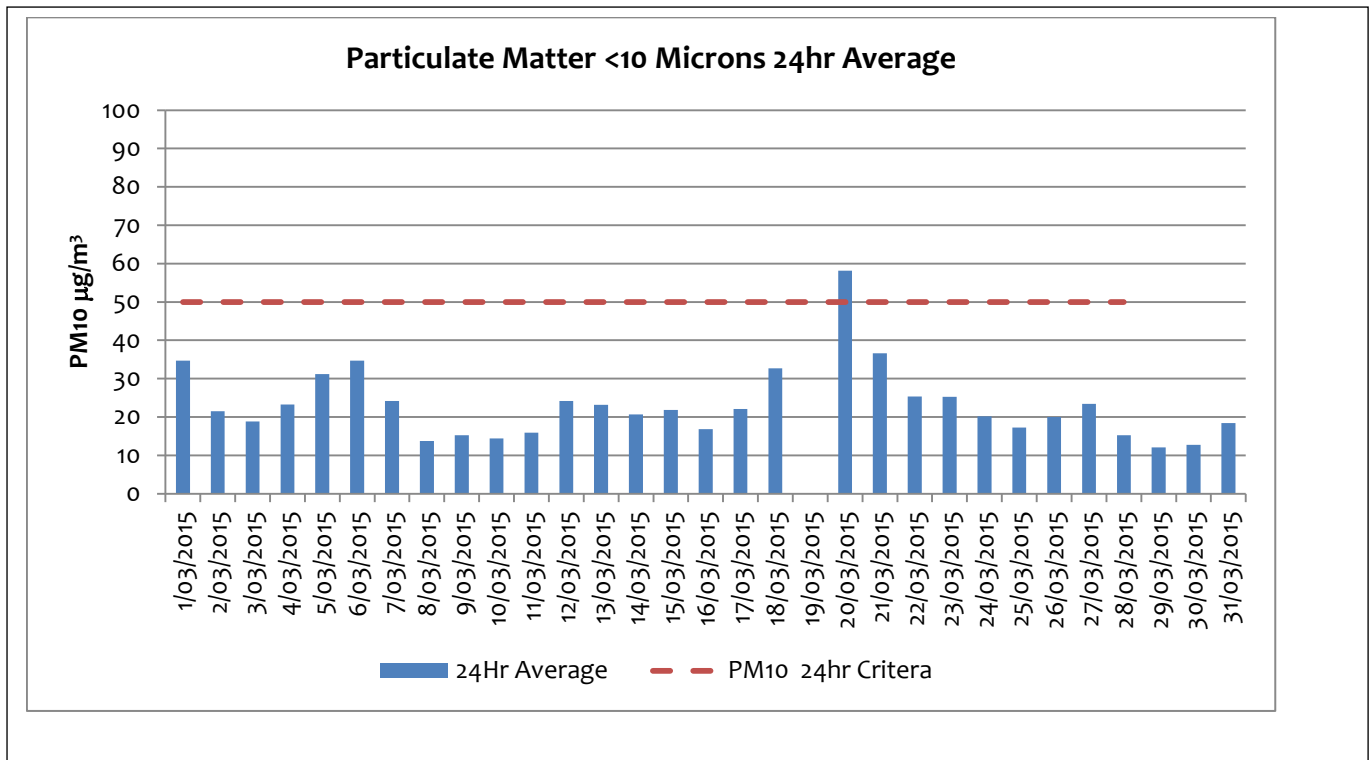
TEOM 1 stopped recording data after a service conducted in March. The TEOM has since been reset and is recording as normal.

PM10 $\mu\text{g}/\text{m}^3$ 12 Month Rolling Average												
	Apr-14	May-14	Jun-14	Jul-14	Aug-14	Sep-14	Oct-14	Nov-14	Dec-14	Jan-15	Feb-15	Mar-15
TEOM 1 EPL13 Essential Water Off Site	12.8	11.4	9.1	10.6	9.4	14.4	16.9	19.0	18.7	15.1	20.4	19.8
TEOM 2 EPL14 Blackwoods Pit On Site	14.4	10.2	9.3	11.5	12.4	27.2	15.7	20.8	27.4	16.5	21.6	22.0

EPL13 – Essential Water – Off Site

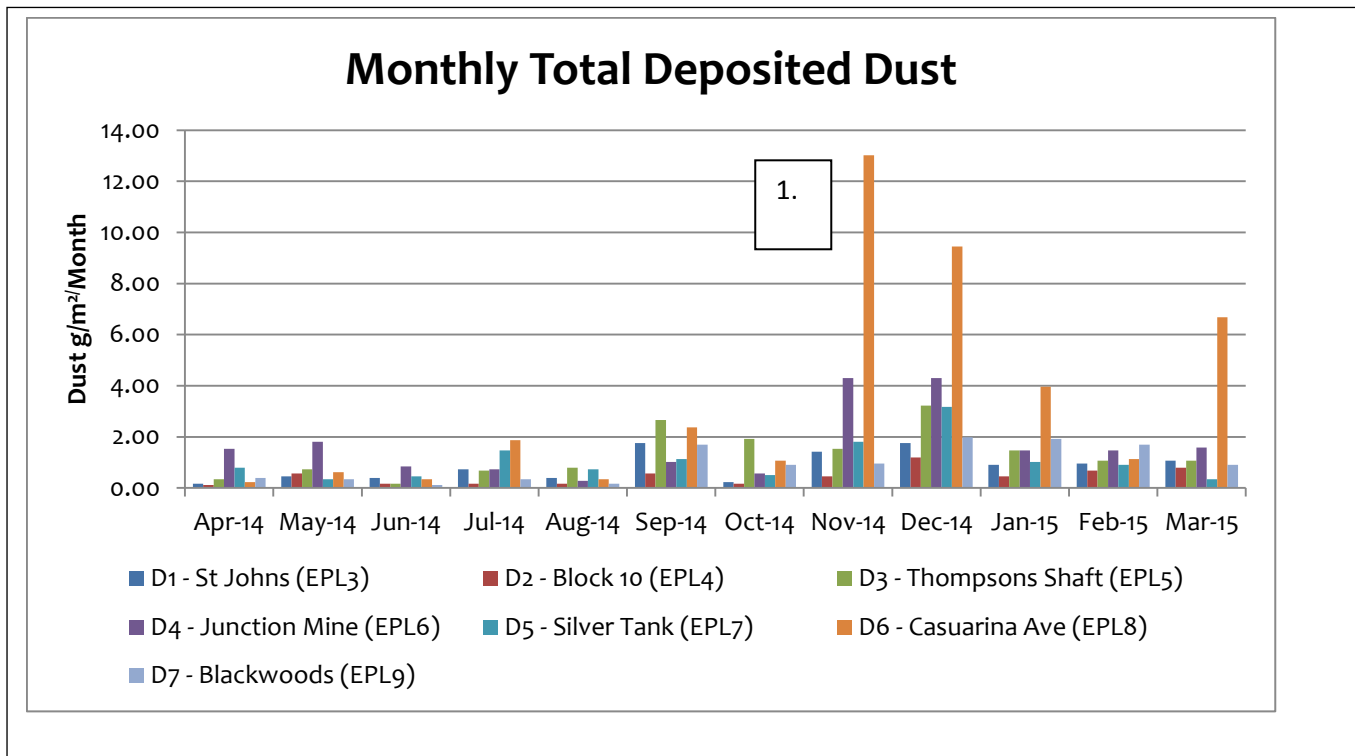


EPL14 – Blackwoods Pit – On Site



1.3 Dust Deposition Sampling

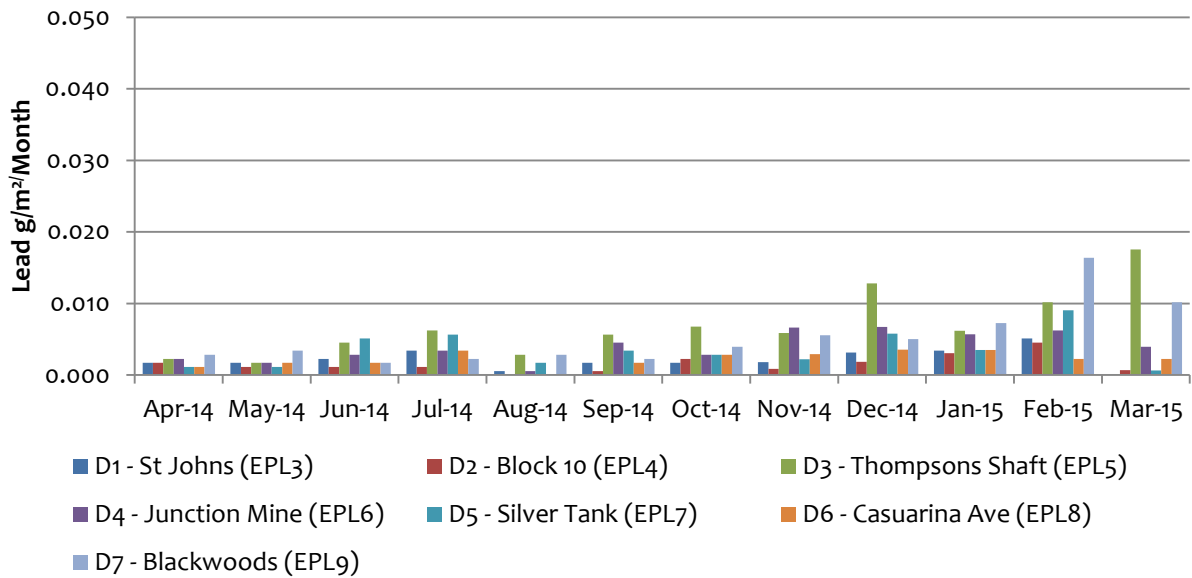
Total Deposited Dust (g/m ² /Month)							
Date	D1 (off site)	D2	D3	D4	D5	D6 (off site)	D7
March 2015	1.08	0.79	1.08	1.58	0.34	6.68	0.91
Background Average	4.0	3.1	4.3	5.7	n/a	5.8	n/a



1. Samples at Casuarina Ave appear to have been tampered with in November and December 2014 as well as March 2015. These jars when picked up had large volumes of water present.

Total Deposited Lead (g/m ² /Month)							
Date	D1 (Off Site)	D2	D3	D4	D5	D6 (Off Site)	D7
March 2015	0.005	0.005	0.010	0.006	0.009	0.002	0.016
Background Average	0.0000	0.001	0.0018	0.0040	0.0010	0.0020	0.0100

Monthly Total Deposited Lead



2 Blasting (Vibration and Overpressure)

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

March Summary:

- 14 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

3 Noise

Quarterly noise monitoring is continuing as per the Pollution Reduction Program on EPL 12559. EMGA Mitchell McLennan Pty Limited (EMM) completed the assessment of operational noise. The latest report concluded as follows:

“EMM has completed a noise monitoring assessment of operational noise from RASP Mine activities as per the site's EPL (12559). The monitoring assessment for this second quarterly survey found that noise limits were inapplicable due to meteorological conditions, notwithstanding noise from RASP Mine operations (including the crushing plant) were below the noise limits at most locations, and for most measurements. Subsequent additional attended measurements identified site noise to be below the relevant noise limits hence reaffirming compliance at all locations.”

The report is published in full on the CBH website.

4 Water

4.1 Ground Water Sampled 3/03/2015

		UNDERGROUND FEED	SHAFT 7
Analyte grouping/Analyte	Units		
pH Value	pH Unit	6.55	6.58
Electrical Conductivity @ 25°C	µS/cm	10400	12000
Total Dissolved Solids @180°C	mg/L	10100	12000
Hydroxide Alkalinity as CaCO3	mg/L	<1	<1
Carbonate Alkalinity as CaCO3	mg/L	<1	<1
Bicarbonate Alkalinity as CaCO3	mg/L	16	58
Total Alkalinity as CaCO3	mg/L	16	58
Sulfate as SO4 - Turbidimetric	mg/L	5180	5650
Chloride	mg/L	1250	1580
Calcium	mg/L	486	514
Magnesium	mg/L	227	303
Sodium	mg/L	1210	1430
Cadmium	mg/L	2.73	2.11
Manganese	mg/L	362	570
Lead	mg/L	0.224	0.834
Zinc	mg/L	1170	1240
Iron	mg/L	1.54	0.22

4.2 Surface Water

Insufficient rainfall for opportunistic surface water sampling during March 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 March.

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	Clid	Dir	Spd	MSLP	Temp	RH	Clid	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	13/4/2015	20/4/2015	13/5/2015
TEOM	Real time	-	13/5/2015
Dust Deposition	15/4/2015	12/5/2015	13/5/2015
Water	14/3/2015	11/3/2015	13/5/2015
Blast Vibration and overpressure	Real Time	-	13/5/2015

A foam box containing dust deposition jars was lost by the courier during April. They were reported missing by the lab and eventually recovered and processed.

7 Correction Log March 2015

There are no data corrections for March 2015. However there have been some improvements in the reported data. Concentrations of dust and lead as a component of dust in the hi vol analysis are now NATA accredited. Concentration was previously calculated in house from reported totals on the filter papers.