

Monthly Environmental Data March 2014

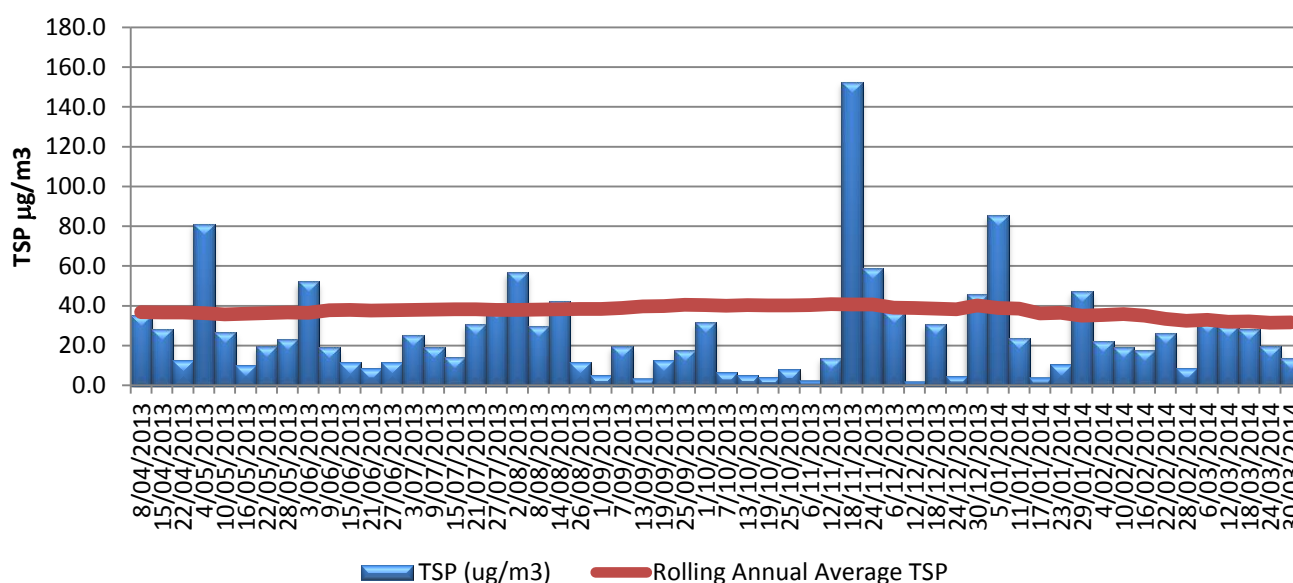
1 Air Quality

1.1 High Volume Samplers

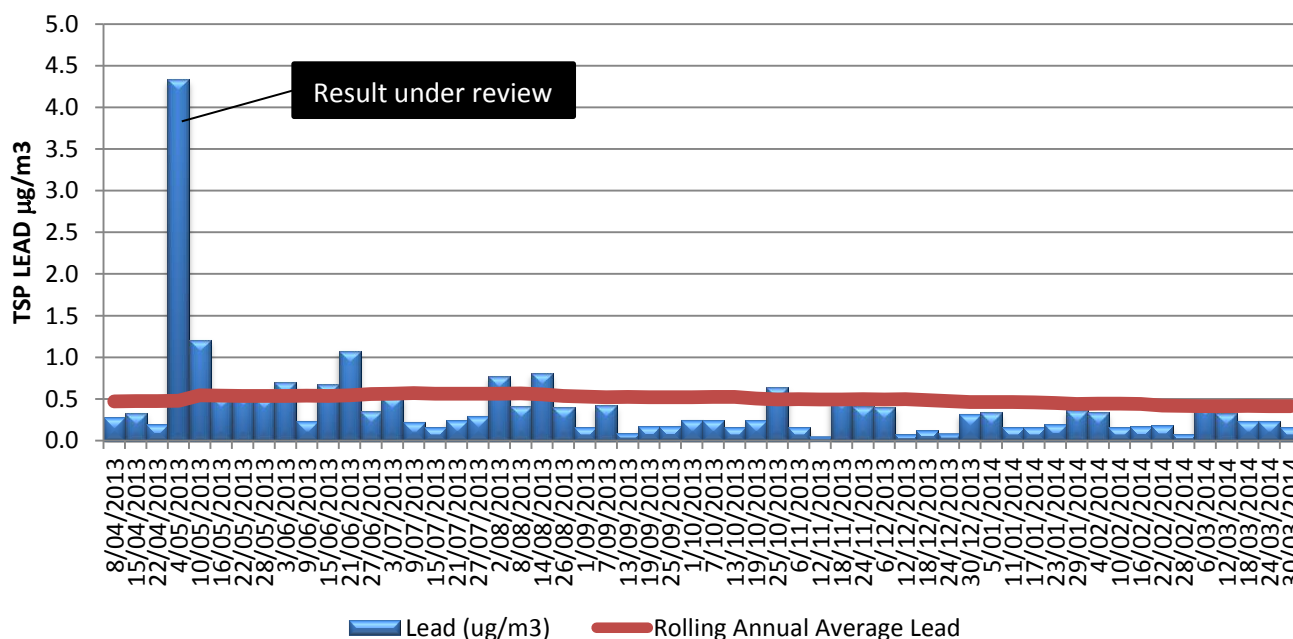
EPL10

DATE	TSP (ug/m3)	Lead (ug/m3)
6/03/2014	32	0.44
12/03/2014	30	0.33
18/03/2014	28	0.24
24/03/2014	20	0.24
30/03/2014	14	0.16

Total Suspended Particles - Silver Tank - On Site (EPL10)

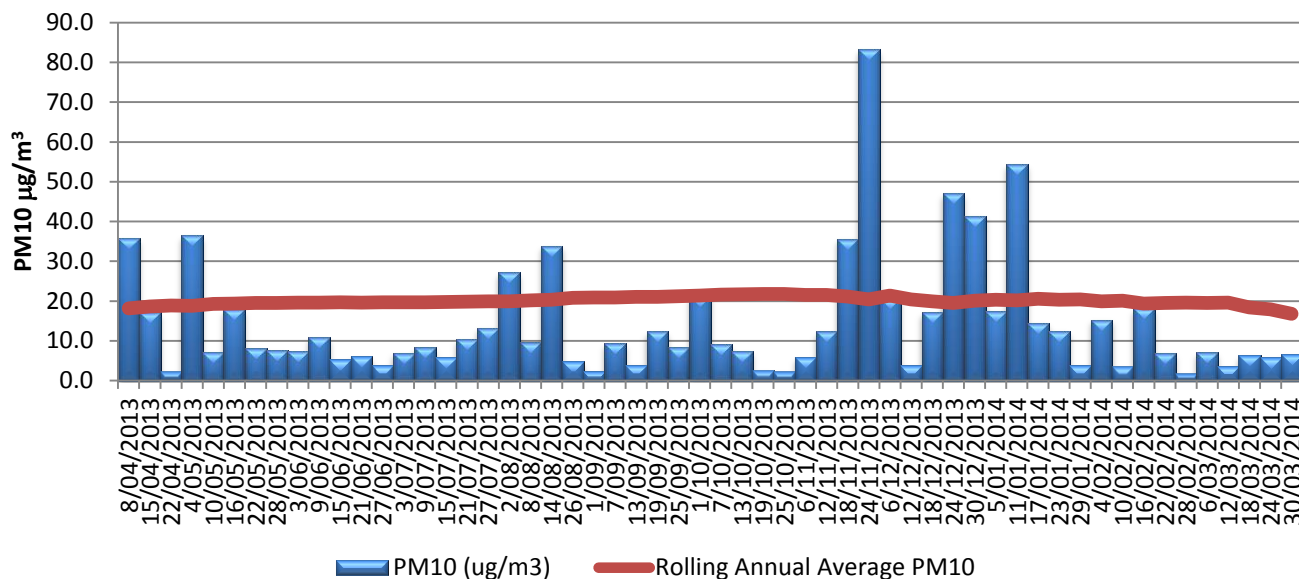


TSP Lead - Silver Tank - On Site (EPL10)

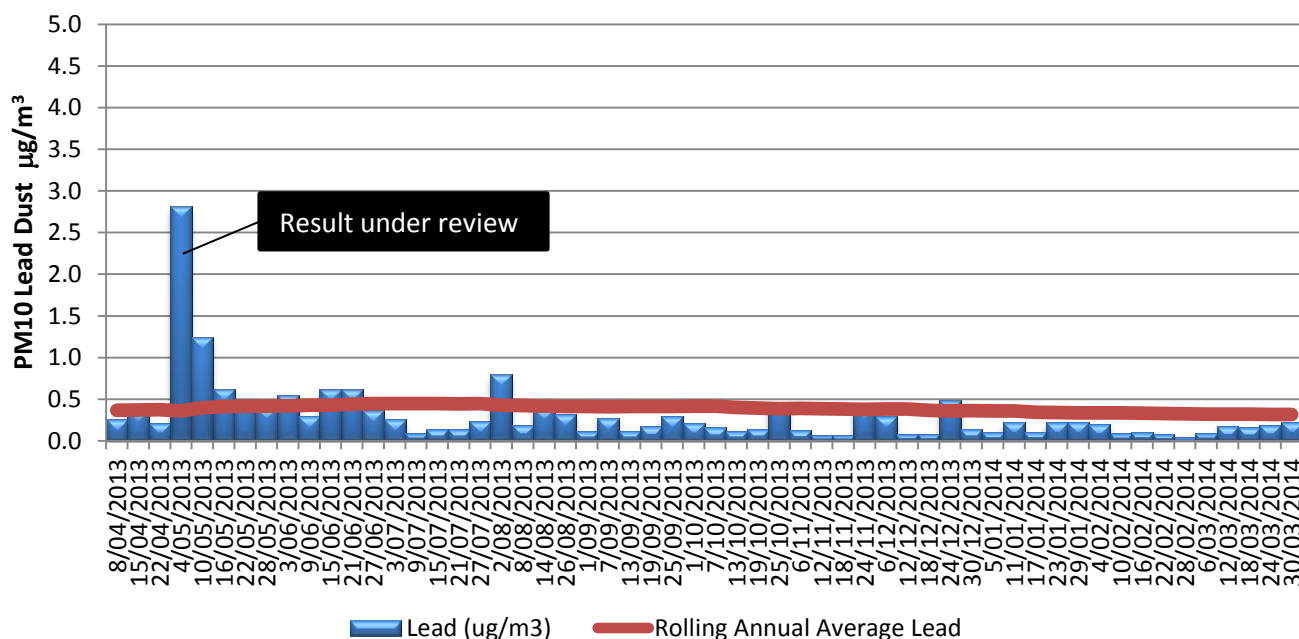


DATE	PM10 (ug/m ³)	Lead (ug/m ³)
6/03/2014	7.0	0.1
12/03/2014	3.6	0.2
18/03/2014	6.4	0.2
24/03/2014	5.7	0.2
30/03/2014	6.6	0.2

Particulate Matter <10 Microns - Silver Tank - Onsite (EPL11)

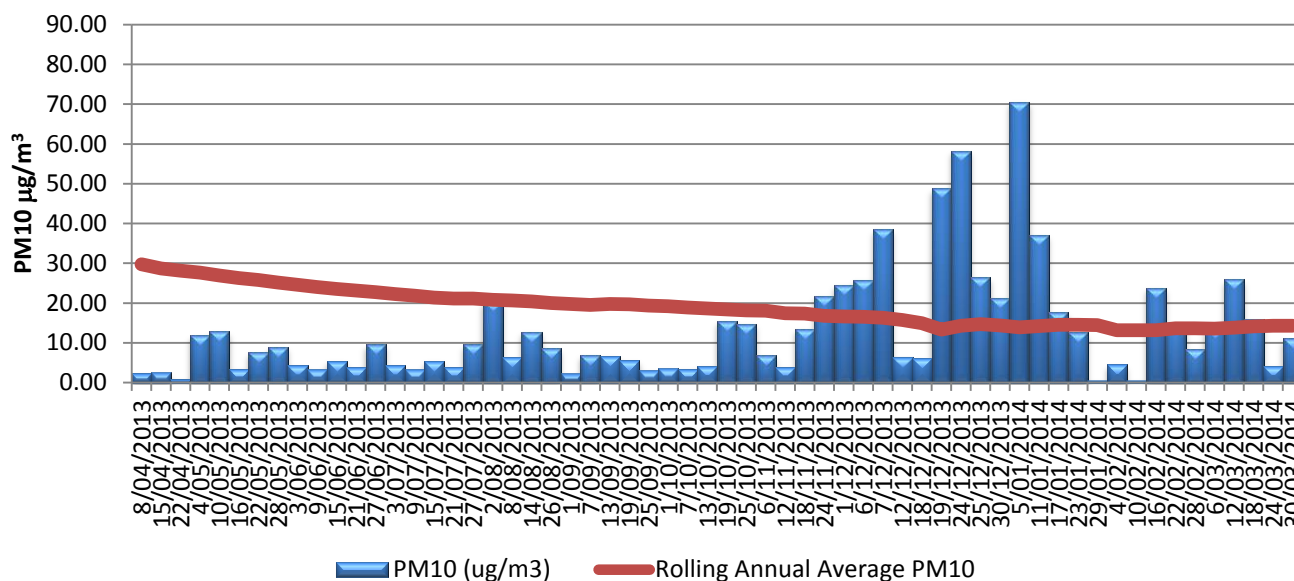


PM10 Lead Dust - Silver Tank - Onsite (EPL11)

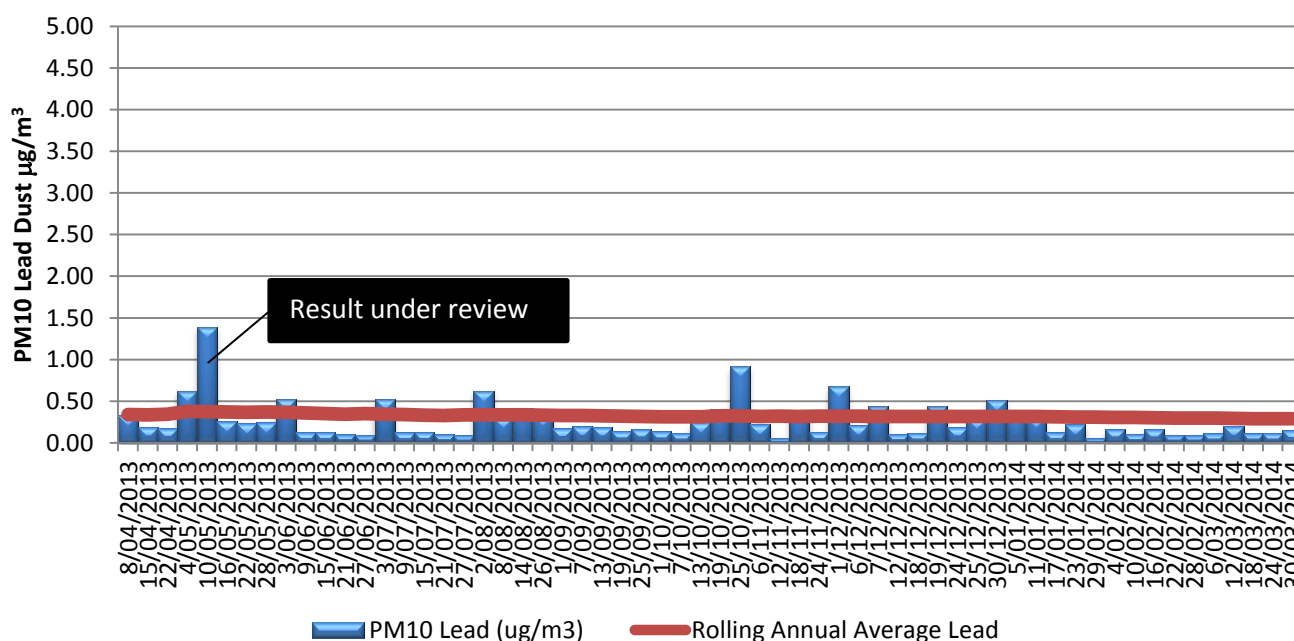


DATE	PM10 (ug/m ³)	Lead (ug/m ³)
6/03/2014	7.0	0.1
12/03/2014	3.6	0.2
18/03/2014	6.4	0.2
24/03/2014	5.7	0.2
30/03/2014	6.6	0.2

Particulate Matter <10 Microns - Blackwoods Pit - On Site (EPL12)



PM10 Lead Dust - Blackwoods Pit - On Site (EPL12)

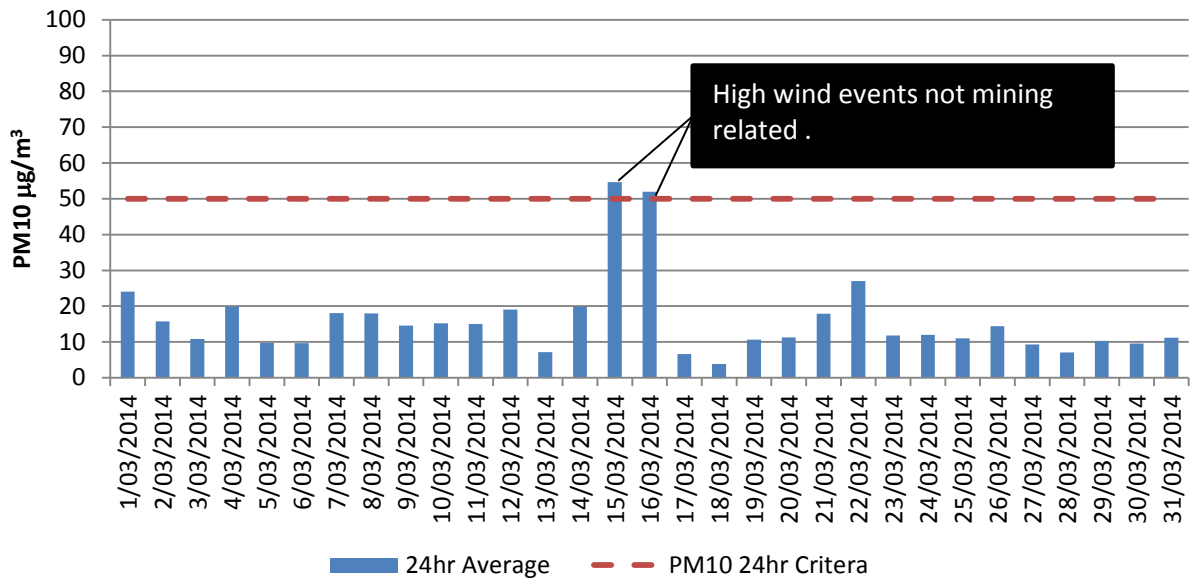


1.2 Tapered Element Oscillating Microbalance Sampling

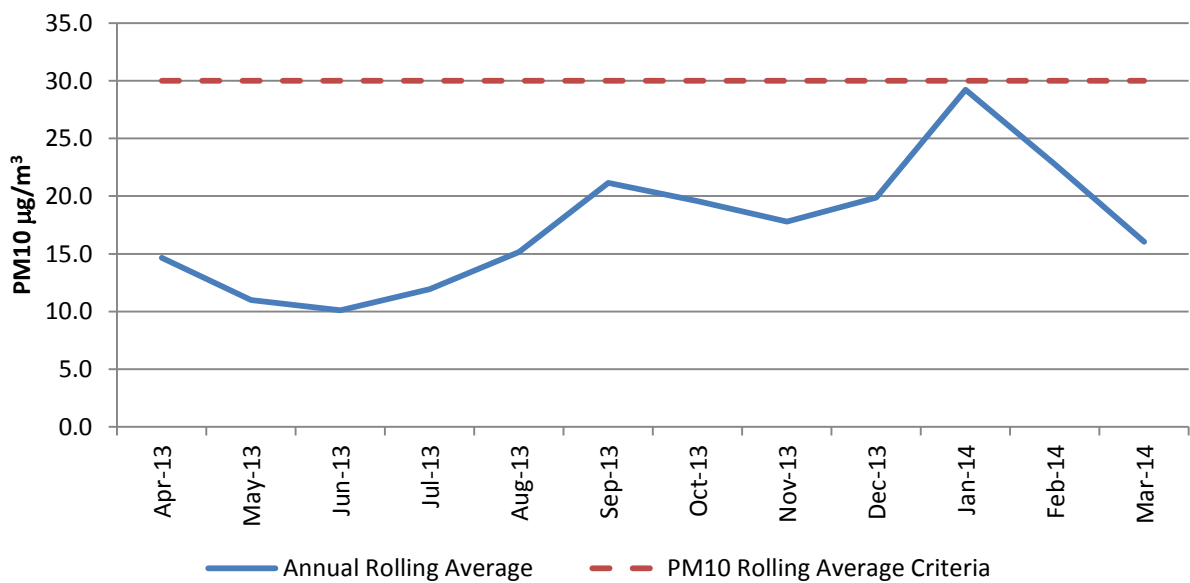
Particulate Matter <10 Microns 24Hr Average		
Date	TEOM 1 - EPL 13 (µg/m³)	TEOM 2 – EPL (µg/m³)
1/03/2014	24.06	27.5
2/03/2014	15.7	31.13
3/03/2014	10.85	24.2
4/03/2014	19.87	12.57
5/03/2014	9.71	9.64
6/03/2014	9.64	19.36
7/03/2014	18.08	25.32
8/03/2014	17.98	21.34
9/03/2014	14.57	15.08
10/03/2014	15.21	13.6
11/03/2014	15.06	13.67
12/03/2014	19.02	23.06
13/03/2014	7.18	19.03
14/03/2014	19.88	19.47
15/03/2014	54.64	23.8
16/03/2014	51.93	29.35
17/03/2014	6.59	13.34
18/03/2014	3.88	11.93
19/03/2014	10.65	15.73
20/03/2014	11.24	12.83
21/03/2014	17.9	18.17
22/03/2014	27	35.44
23/03/2014	11.83	14.42
24/03/2014	12.01	20.43
25/03/2014	11.03	22.43
26/03/2014	14.42	20.47
27/03/2014	9.33	11.7
28/03/2014	7.03	7.27
29/03/2014	10.25	3.46
30/03/2014	9.54	3.75
31/03/2014	11.15	6.23

PM10 µg/m³ 12 Month Rolling Average												
	Apr-13	May-13	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14
TEOM 1 EPL13	14.7	11.7	7.8	12.0	15.2	23.4	32.6	22.5	22.0	32.0	23.7	17.6
TEOM 2 EPL14	16.2	11.7	7.8	12.0	15.2	23.4	32.6	22.5	22.0	32.0	23.7	17.6

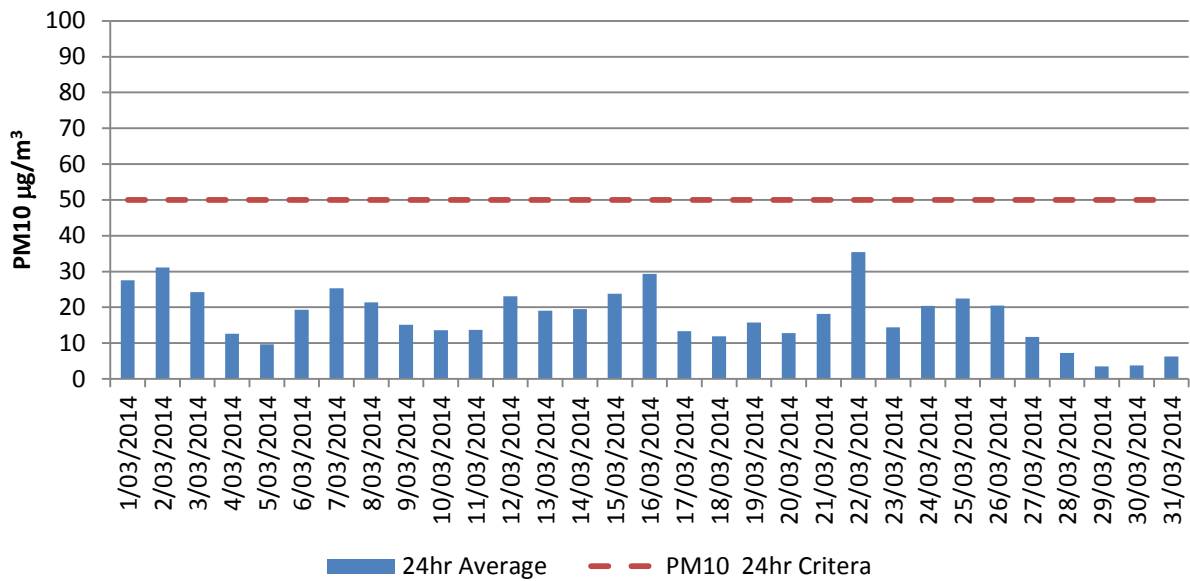
Particulate Matter <10 Microns 24hr Average - TEOM 1 (EPL13)



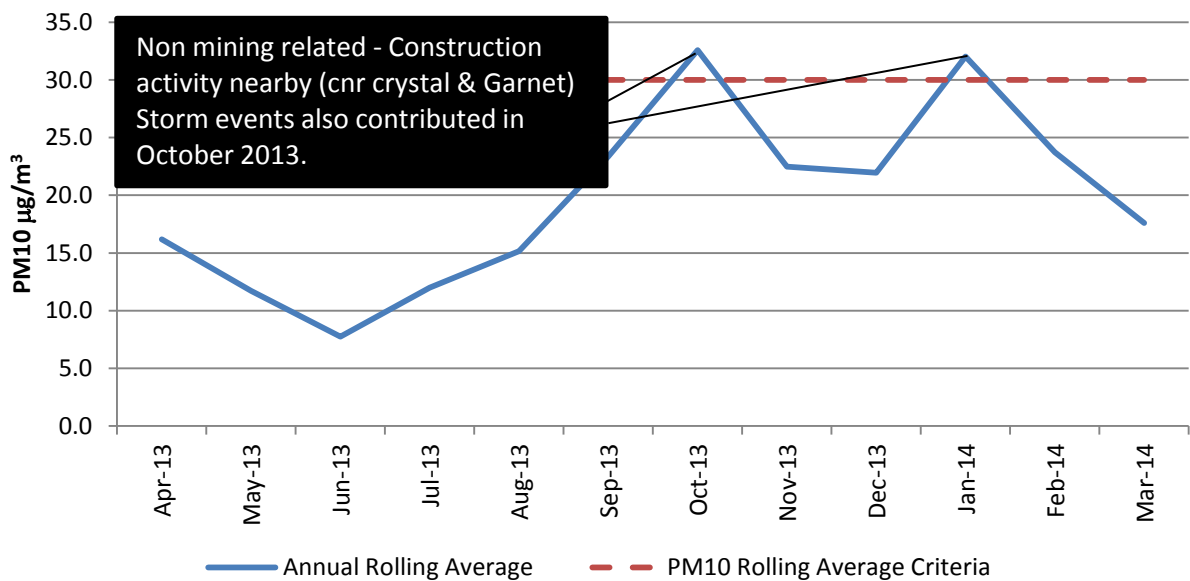
Particulate Matter <10 Microns - 12 Month Rolling Average - TEOM 1 (EPL13)



Particulate Matter <10 Microns 24hr Average - TEOM 2 (EPL14)



Particulate Matter <10 Microns 12 Month Rolling Average - TEOM 2 (EPL14)

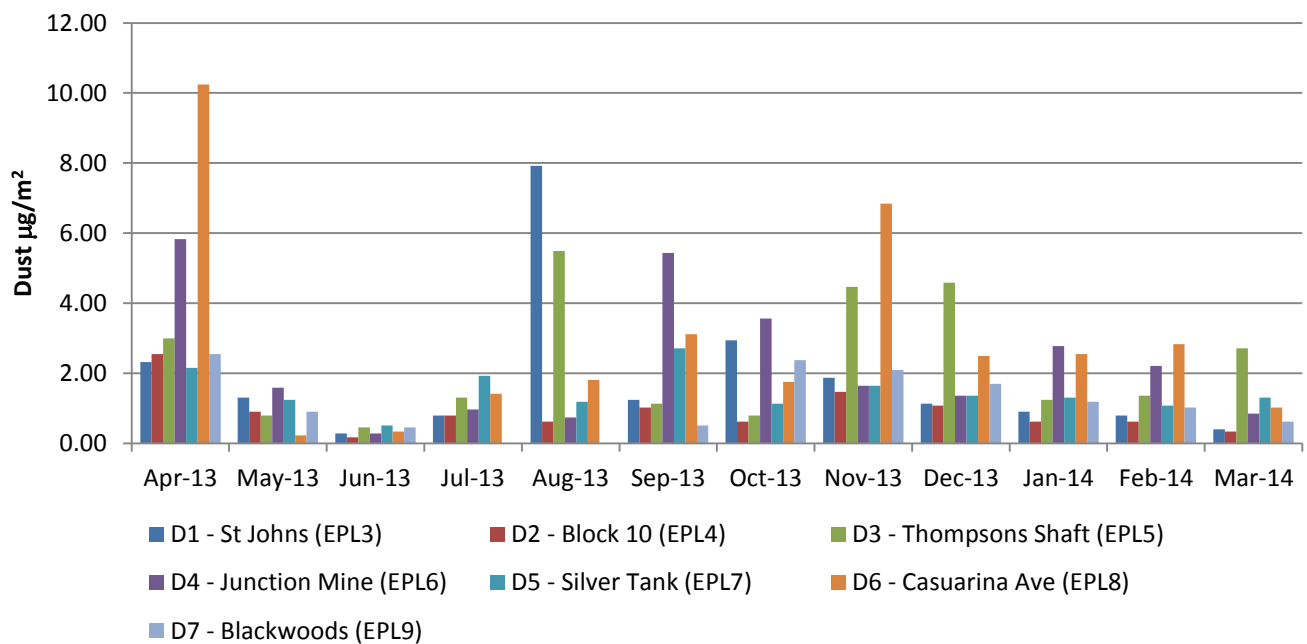


1.3 Dust Deposition Sampling

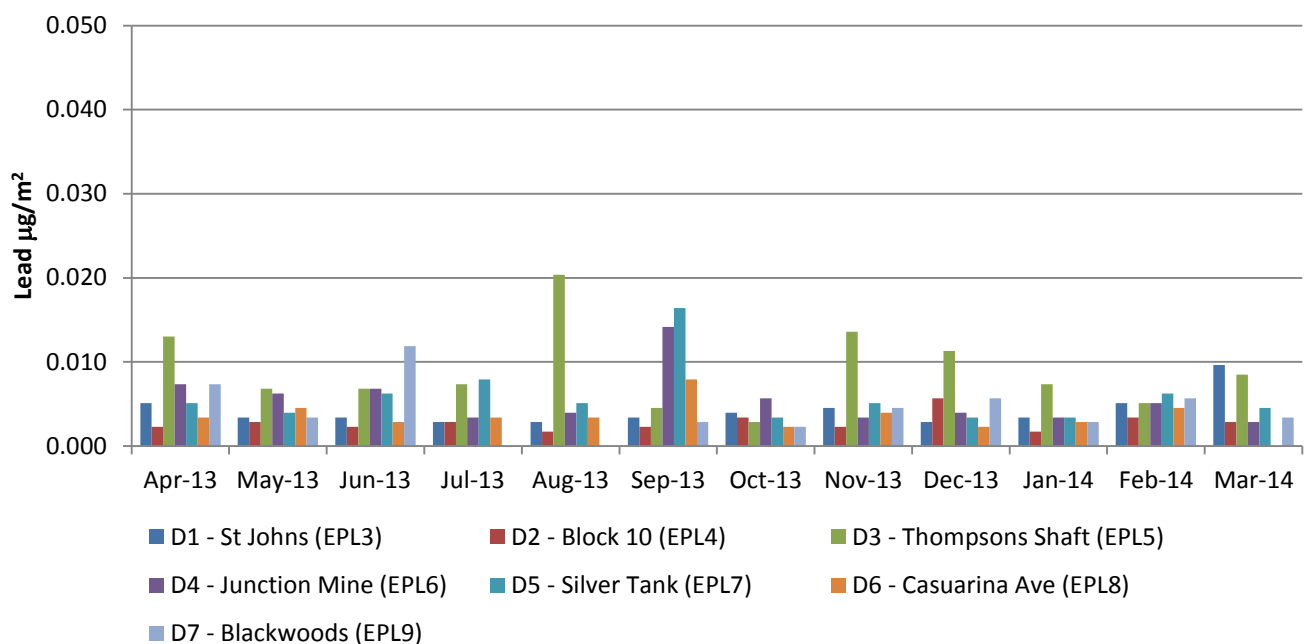
Total Deposited Dust ($\mu\text{g}/\text{m}^2$)							
Date	D1 (off site)	D2	D3	D4	D5	D6 (off site)	D7
Mar 2014	0.40	0.34	2.72	0.85	1.30	1.02	0.62
Background	4.0	3.1	4.3	5.7	n/a	5.8	n/a

Total Deposited Lead ($\mu\text{g}/\text{m}^2$)							
Date	D1	D2	D3	D4	D5	D6	D7
Mar 2014	0.010	0.003	0.008	0.003	0.005	0.000	0.003
Background	0.0034	0.0045	0.0046	0.0060	n/a	0.0036	n/a

Monthly Total Deposited Dust



Monthly Total Deposited Lead



2 Blasting

- During the month of February blasting occurred daily there was a total number of 69 blasts 5 of which were production firings all inside licensing criteria.
- 64 blast were below a ppv of 0.75mm/s and did not trigger an event
- 1 Blasts recorded a ppv of >5mm/s 1.44% of blasts.
- 0 Blasts recorded a ppv of >10mm/s
- All overpressure readings were inside limits.

Date / Location	Peak Vibration (mm/s)	Peak O/Pressure (dBL)
1/03/2014	2.87	98.8
V2	3.18	98.8
V3	2.56	97.5
2/03/2014	6.03	109.5
V2	2.93	109.5
V3	9.14	102.8
6/03/2014	3.34	101
Rover @ V3	4.44	97.5
V2	2.25	101
9/03/2014	2.3	95.9
Rover @ Air Express	2.43	95.9
V2	2.17	95.9
14/03/2014	4.55	101.9
Rover @ V3	5.52	101.9
V2	3.59	100
Overall Average	3.82	109.5

3 Water Results

3.1 Ground Water Results

Water Sample Results March 2014		
Date	17/03/2014	17/03/2014
Sample ID	Shaft #7	U/G Supply
pH Value (pH)	6.36	6.62
Electrical conductivity (uS/cm)	11800	11700
Total Dissolved Solids (mg/L)	14800	13100
Hydroxide Alkalinity as CaCO ₃ (mg/L)	1	1
Carbonate Alkalinity CaCO ₃ (mg/L)	1	1
Bicarbonate Alkalinity as CaCO ₃ (mg/L)	9	26
Total Alkalinity (mg/L)	9	26
Sulphate as SO ₄ (mg/L)	6620	6080
Chloride (mg/L)	1160	1260
Calcium (mg/L)	498	509
Magnesium (mg/L)	262	269
Sodium (mg/L)	1500	1600
Cadmium (mg/L)	3.32	3.18
Manganese (mg/L)	681	543
Lead (mg/L)	1.5	2.69
Zinc (mg/L)	1830	1390
Iron (mg/L)	0	0

3.2 Surface Water

Insufficient water was available for samples at surface water locations.

3.2.1 Surface Water Table

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	Insufficient water for sample
EPL32	2 x Per year when contains water	Insufficient water for sample
EPL33	2 x Per year when contains water	Insufficient water for sample
EPL34	2 x Per year when contains water	Insufficient water for sample
EPL35	2 x Per year when contains water	Insufficient water for sample

3.2.2 Groundwater Table

EPA Identification Number	Frequency	Comment
EPL37	Quarterly	Scheduled April 2014
EPL38	Quarterly	Scheduled April 2014
EPL39	Quarterly	Scheduled April 2014
EPL40	Quarterly	Scheduled April 2014
EPL41	Quarterly	Scheduled April 2014
EPL42	Quarterly	Scheduled April 2014
EPL43	Quarterly	Scheduled April 2014
EPL44	Quarterly	Scheduled April 2014
EPL45	Quarterly	Scheduled April 2014
EPL46	Quarterly	Scheduled April 2014
EPL47	Quarterly	Scheduled April 2014
EPL48	Quarterly	Scheduled April 2014
EPL49	Quarterly	Scheduled April 2014
EPL50	Quarterly	Scheduled April 2014
EPL51	Quarterly	Scheduled April 2014
EPL52	Quarterly	Scheduled April 2014
EPL53	Monthly	Sampled (Results in table above)
EPL54	Monthly	Sampled (Results in table above)

4 Weather Data

4.1 Wind Speed / Average Wind Direction

(BHOPS – Automatic Weather Station was unavailable for the month of March, repairs are scheduled for June 2014. The following data was obtained from the Bureau of Meteorology Broken Hill)

Broken Hill, New South Wales March 2014 Daily Weather Observations

Most observations from Broken Hill (Patten Street), but some from Broken Hill Airport.

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	Sa	13.5	29.2	0			SE	50	16:49	15.4	72	1	SSW	26	1018.1	28.3	44	3	SSE	30	1015.2
2	Su	15.4	30.2	0			SE	57	13:21	19.0	75	0	S	26	1018.4	29.1	39	2	SE	39	1016.0
3	Mo	18.9	32.7	0			ESE	48	09:30	22.8	68	0	ESE	20	1019.6	30.6	40	6	SE	20	1016.6
4	Tu	21.1	32.2	5.2			N	46	12:54	23.2	75	1	NNE	26	1019.0	24.2	79	7	N	20	1017.2
5	We	20.5	33.5	12.4			S	39	15:45	22.8	83	1	NW	15	1016.9	32.6	46	4	SW	17	1014.0
6	Th	14.5	32.7	0			SSE	33	13:13	16.3	66	1	SSW	24	1017.9	30.7	38	1	SE	15	1015.7
7	Fr	15.8	31.2	0			SSE	39	13:38	16.8	58	1	S	24	1020.1	29.1	35	1	SE	20	1017.8
8	Sa	16.8	34.8	0			E	37	10:11	21.7	46	2	E	28	1019.3	33.5	31	1	W	17	1015.4
9	Su	21.5	36.8	0			NE	39	10:13	25.6	45	1	NNE	24	1016.8	33.8	29	5	SSW	7	1014.3
10	Mo	24.0	37.0	0			NNW	31	08:38	26.9	47	3	N	17	1018.8	34.1	33	6	N	13	1016.7
11	Tu	23.0	37.1	0			SSW	59	19:39	26.5	43	1	N	11	1019.7	35.6	28	1	E	13	1016.3
12	We	19.2	29.7	0			S	44	23:01	19.5	68	5	S	28	1020.3	28.0	42	2	S	22	1017.6
13	Th	12.6	30.2	0			SSW	33	14:44	15.2	67	1	S	15	1019.3	28.4	21	3	SSW	17	1015.6
14	Fr	15.0	34.1	0			W	31	17:08	21.2	36	1	NE	20	1014.6	32.7	13	7	W	19	1011.1
15	Sa	21.1	32.7	0			W	76	11:16	25.2	31	7	NW	9	1008.6	30.2	40	2	NW	37	1004.2
16	Su	14.6	26.1	1.0			WSW	46	09:40	18.5	60	2	WSW	15	1012.2	24.8	32	5	WSW	28	1010.6
17	Mo	14.8	30.2	0			NW	46	13:40	19.0	50	0	N	11	1018.0	28.5	27	1	W	17	1016.1
18	Tu	17.9	33.2	0			SE	31	22:05	20.8	59	0	SE	17	1021.1	32.2	31	1	SSE	11	1019.3
19	We	17.9	30.3	0			ESE	43	12:48	19.2	59	5	SSE	26	1025.0	29.1	33	1	ESE	19	1022.1
20	Th	18.4	33.8	0			E	35	09:14	21.2	35	1	ENE	26	1021.7	32.2	21	1	SSW	15	1017.5
21	Fr	20.4	34.7	0			S	52	17:19	22.4	54	4	NNE	20	1016.8	33.7	23	4	W	17	1014.5
22	Sa	12.5	25.9	0			SSE	46	02:00	13.2	70	6	SSE	22	1020.3	23.1	38	2	SSE	13	1017.5
23	Su	12.3	21.8	0			SSE	41	17:18	13.0	54	7	SSW	15	1018.3	17.2	49	6	SSE	24	1017.0
24	Mo	8.9	22.1	1.0			S	50	09:50	10.7	77	1	S	26	1020.3	21.1	35	1	S	30	1017.4
25	Tu	10.7	24.7	0			SE	43	14:23	13.1	74	2	SSW	22	1019.6	23.7	36	1	S	22	1016.5
26	We	11.9	29.8	0			ENE	69	18:53	13.7	93	2	SSW	20	1018.3	28.3	36	3	ENE	20	1014.8
27	Th	13.9	28.3	9.2			NNW	50	16:52	18.7	86	5	E	15	1015.6	26.7	50	6	ENE	7	1012.5
28	Fr	14.9	26.7	2.2			SSE	31	12:40	18.0	87	3	WNW	2	1015.7	25.8	53	6	SSE	17	1014.1
29	Sa	17.4	30.2	0			SSE	26	16:01	18.7	78	7	WNW	4	1016.6	28.3	42	4	ESE	13	1014.6
30	Su	18.1	32.0	0			SSE	28	16:04	21.7	63	1	Calm		1019.0	30.3	38	1	SW	7	1016.8
31	Mo	20.3	34.1	0			ENE	31	15:15	23.7	46	1	NE	15	1018.9	32.2	29	2	N	15	1015.7
Statistics for March 2014																					
Mean		16.7	30.9							19.5	62	2		18	1018.2	29.0	36	3		18	1015.5
Lowest		8.9	21.8	0						10.7	31	0		Calm	1008.6	17.2	13	1	#	7	1004.2
Highest		24.0	37.1	12.4			W	76		26.9	93	7	#	28	1025.0	35.6	79	7	SE	39	1022.1
Total				31.0																	

IDCJDW2020.201403 Prepared at 13:00 UTC on Tuesday 3 June 2014

Legend

Dir = Direction , Spd = Wind Speed, Temp = Temperature, RH= Relative Humidity

5 Results Sent / Obtained

Sample	Date sent to lab	Result Received
Hi Volume Samples	17/3/2014	6/5/2014
TEOM	Real time (Downloading Issues)	Corrected by Lear Siegler (14/05/2014)
Dust Deposition	17/3/2014	6/5/2014
Water	17/3/2014	3/4/2014
Blast Vibration and overpressure	Real Time (Downloading issues)	Corrected by saros (30/03/2014)
Noise	Real Time	Downloaded (13/03/2014)

6 Correction Log for reporting period 1st April 2013 to 31st March 2014

Sample	Original Data	Corrected Data	Date Corrected	Date Originally Published	Reason