

Monthly Environmental Data June 2014

Contents

1	AIR QUALITY	1
1.1	HIGH VOLUME AIR SAMPLERS	1
1.2	TAPERED ELEMENT OSCILLATING MICROBALANCE SAMPLING (TEOM).....	4
1.3	DUST DEPOSITION SAMPLING	7
2	BLASTING (VIBRATION AND OVERPRESSURE)	8
3	NOISE	9
4	WATER	10
4.1	GROUND WATER	10
4.2	SURFACE WATER.....	11
5	WEATHER DATA	12
6	DATA LOG	13
7	CORRECTION LOG 1ST JULY 2013 TO 30TH JUNE 2014.....	13

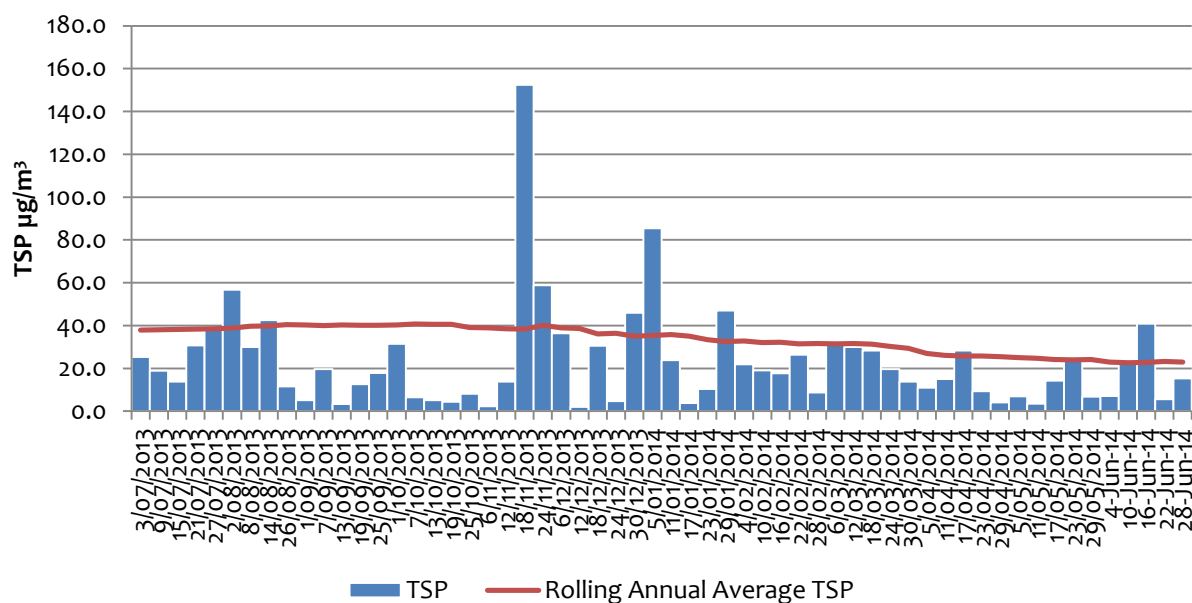
1 Air Quality

1.1 High Volume Air Samplers

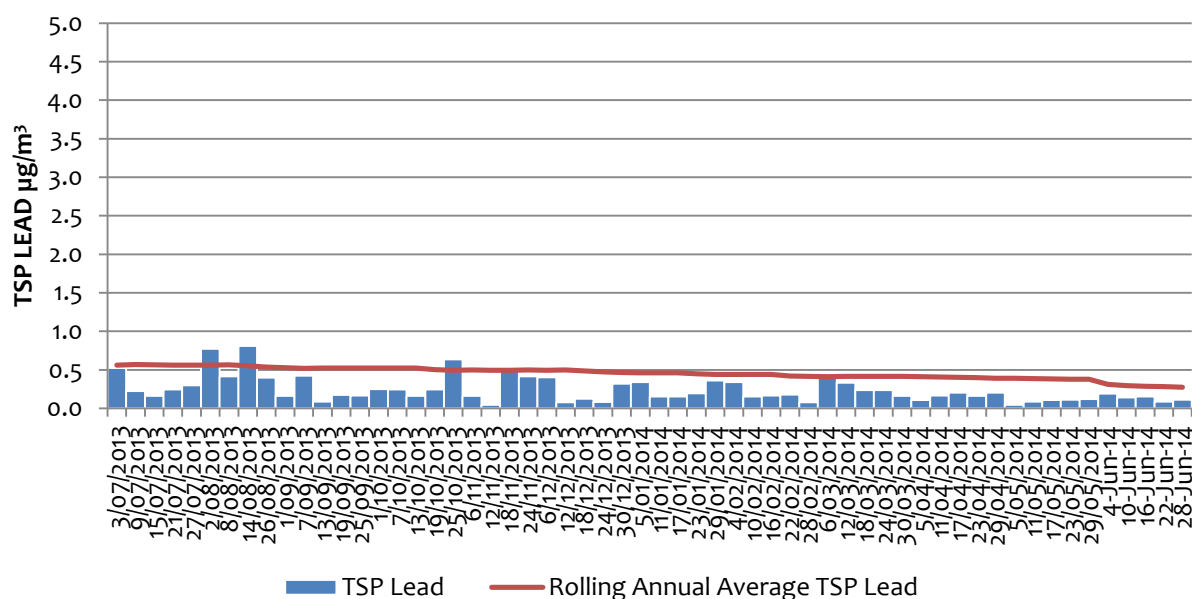
EPL10 - SILVER TANK - ON SITE

DATE	TSP ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
4-Jun-14	7	0.19
10-Jun-14	24	0.14
16-Jun-14	41	0.15
22-Jun-14	6	0.09
28-Jun-14	15	0.11

Total Suspended Particles

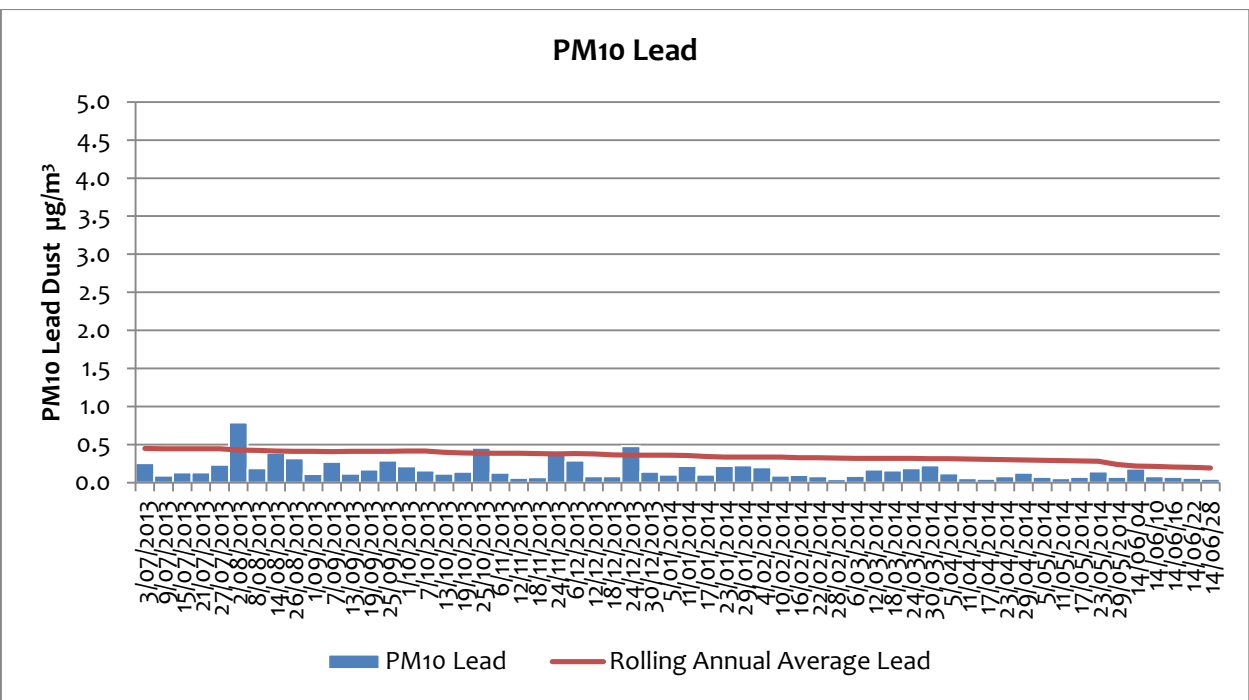
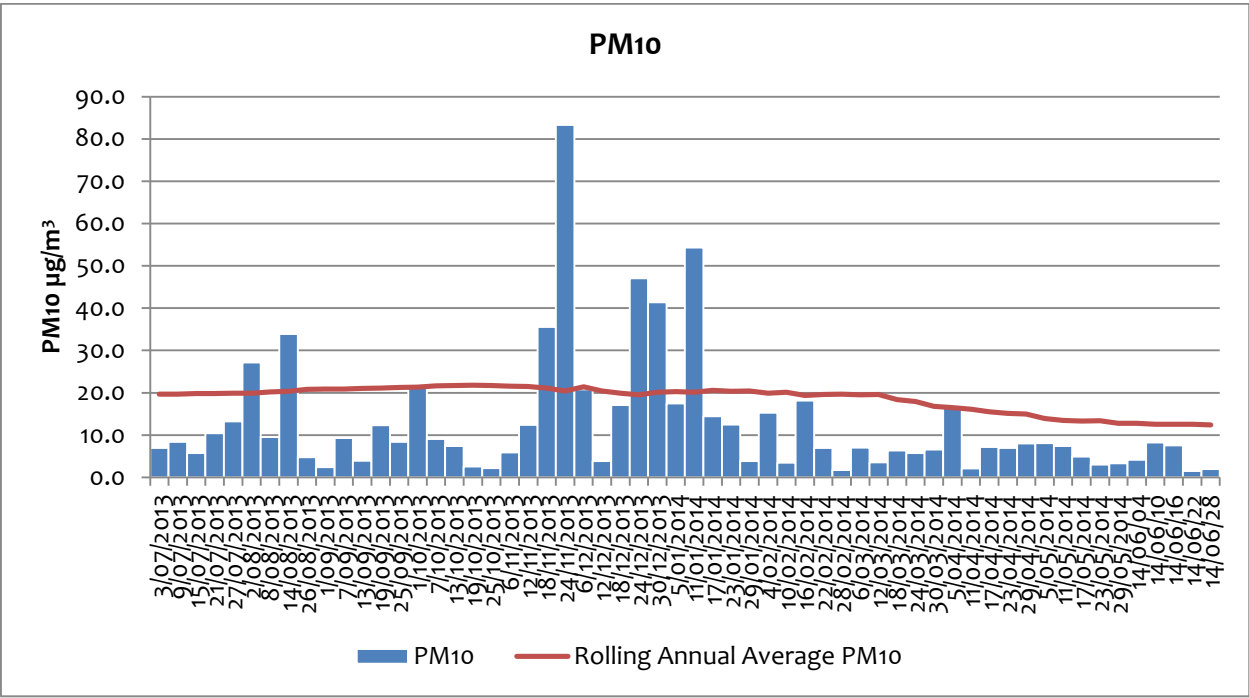


Total Suspended Particles - Lead needs to be same scale as below lead



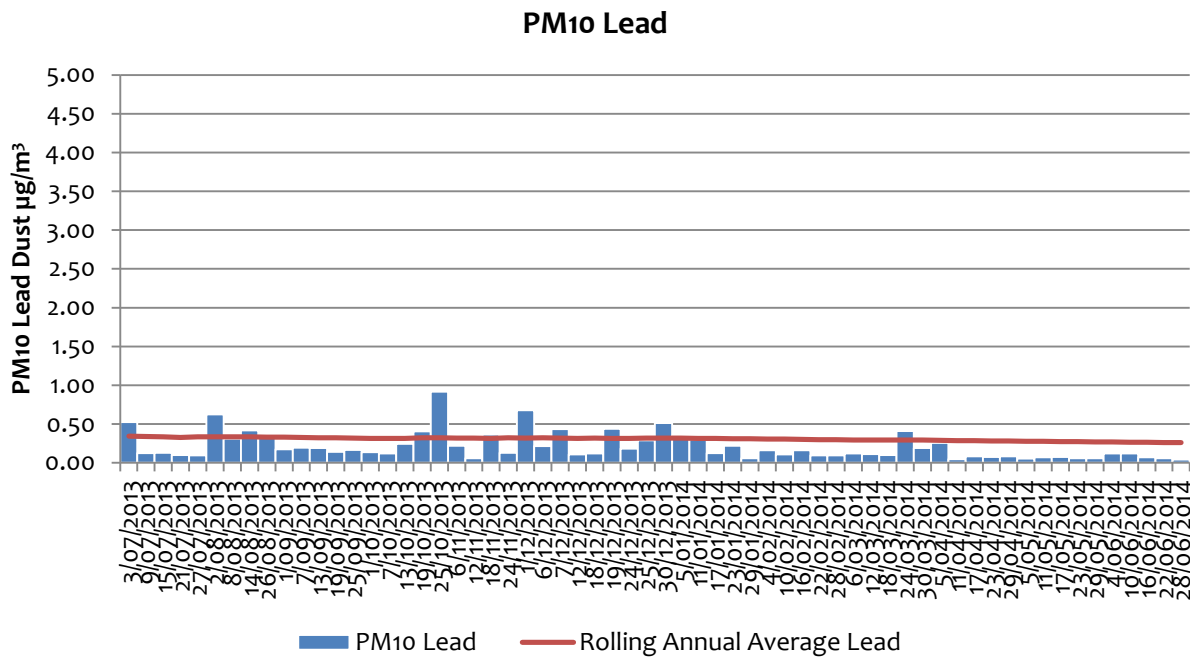
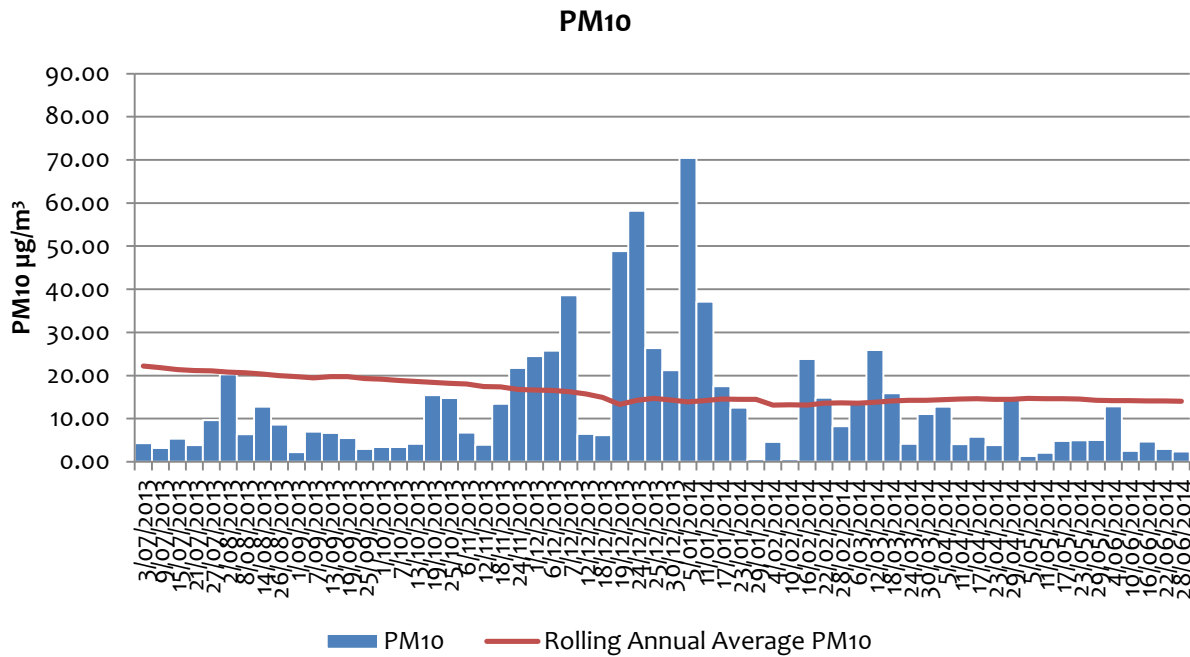
EPL11 - Silver Tank - On Site

DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
14/06/04	4.2	0.2
14/06/10	8.3	0.1
14/06/16	7.6	0.1
14/06/22	1.5	0.1
14/06/28	2.0	0.1



EPL12 - Blackwoods Pit – On Site

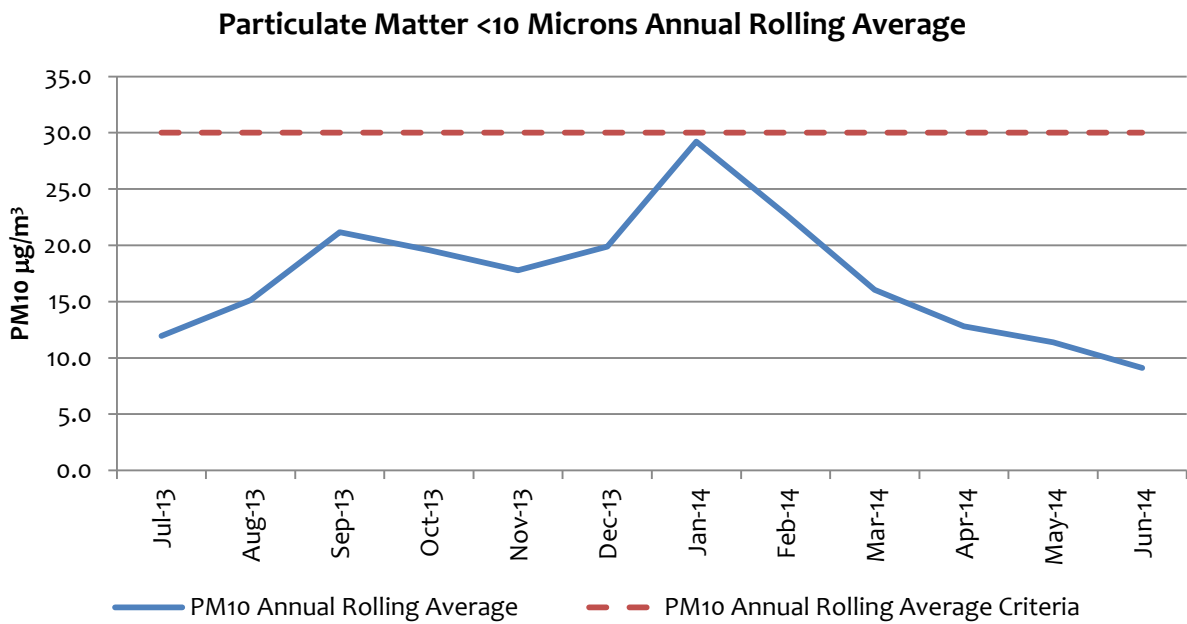
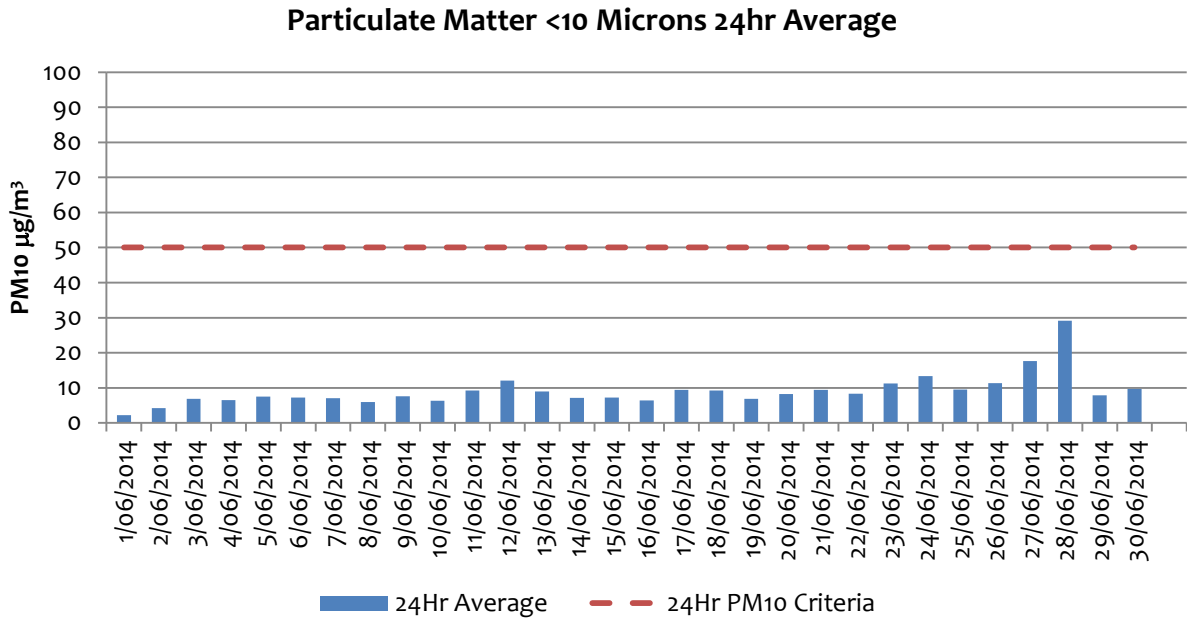
DATE	PM10 ($\mu\text{g}/\text{m}^3$)	Lead ($\mu\text{g}/\text{m}^3$)
4/06/2014	12.86	0.12
10/06/2014	2.56	0.12
16/06/2014	4.70	0.07
22/06/2014	2.98	0.06
28/06/2014	2.38	0.04

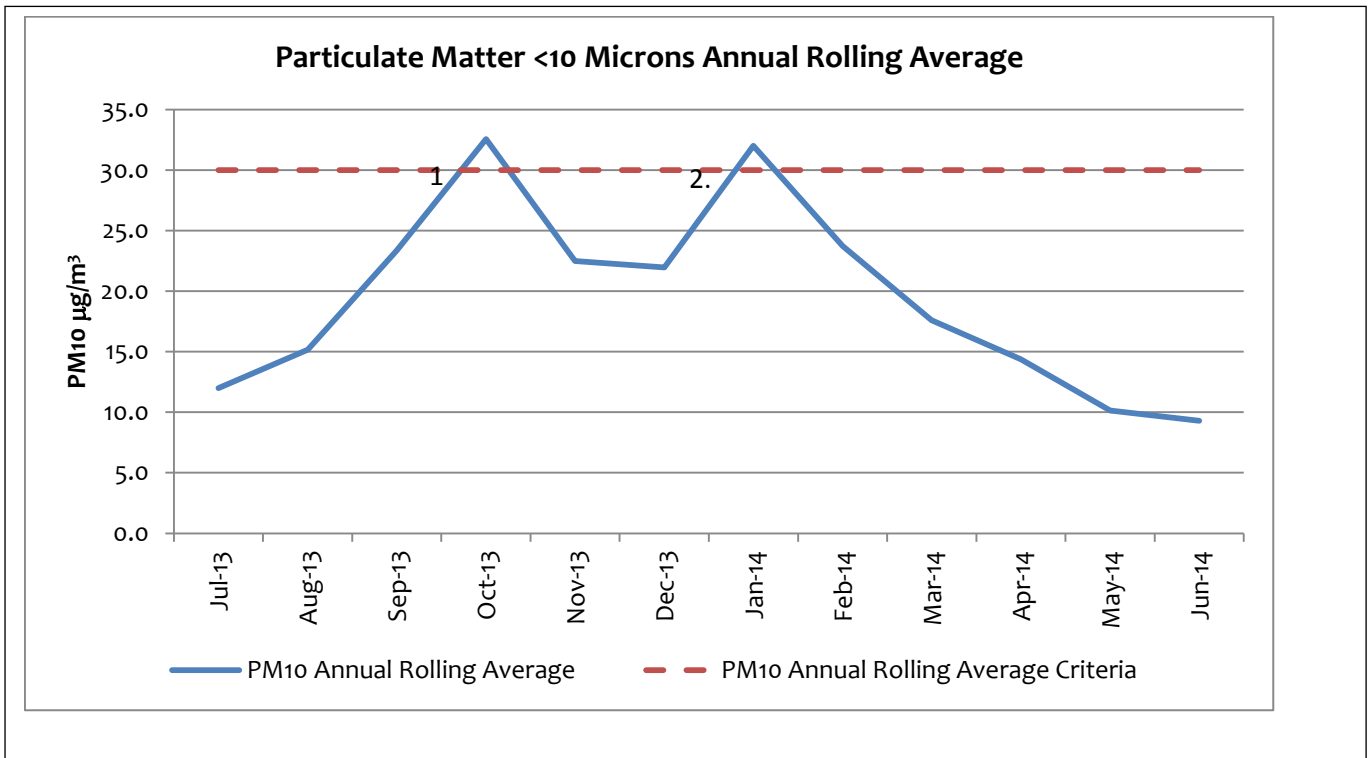
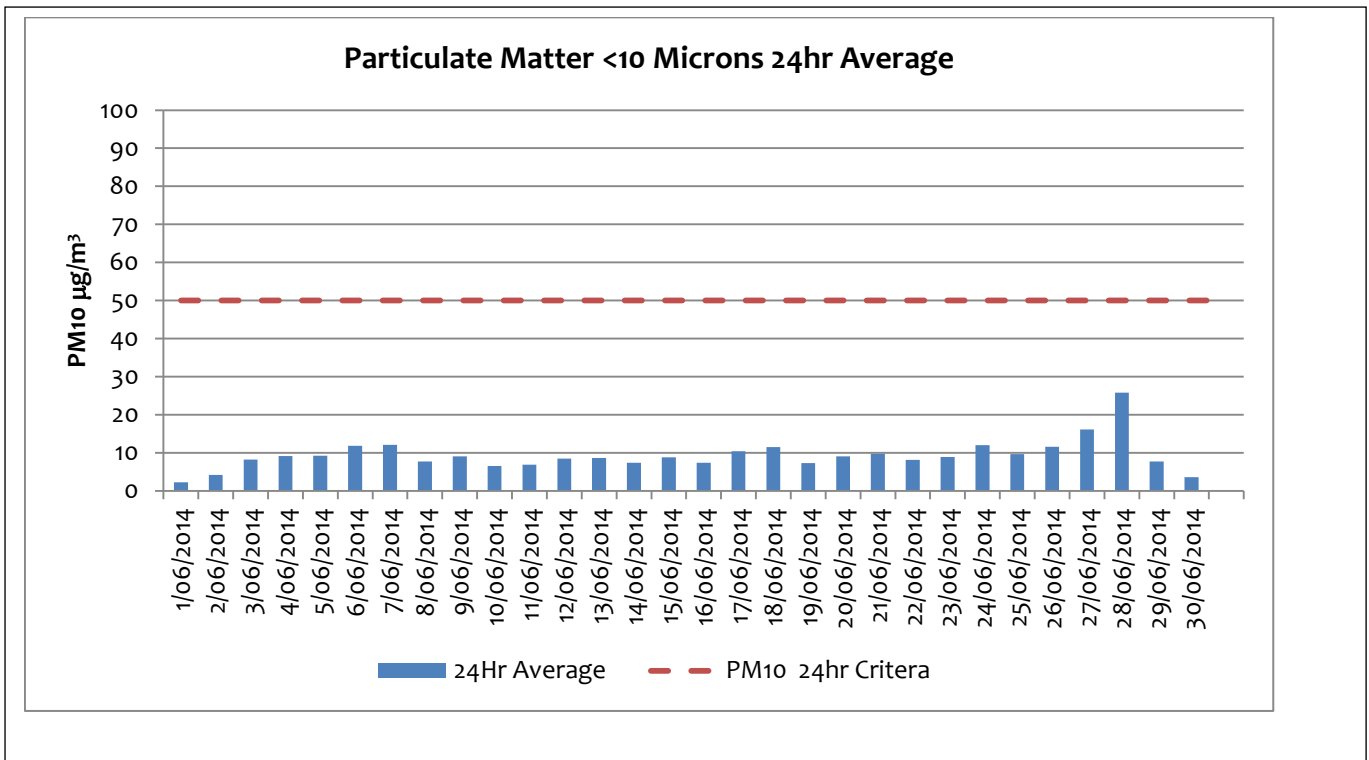


1.2 Tapered Element Oscillating Microbalance Sampling (TEOM)

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
1/06/2014	2.25	2.26
2/06/2014	4.19	4.15
3/06/2014	6.86	8.21
4/06/2014	6.51	9.1
5/06/2014	7.51	9.24
6/06/2014	7.19	11.82
7/06/2014	7.01	12.04
8/06/2014	5.98	7.72
9/06/2014	7.59	9.01
10/06/2014	6.29	6.5
11/06/2014	9.26	6.84
12/06/2014	12.03	8.46
13/06/2014	8.96	8.59
14/06/2014	7.09	7.37
15/06/2014	7.25	8.78
16/06/2014	6.43	7.36
17/06/2014	9.4	10.35
18/06/2014	9.25	11.47
19/06/2014	6.86	7.28
20/06/2014	8.24	9.04
21/06/2014	9.38	9.75
22/06/2014	8.34	8.09
23/06/2014	11.28	8.9
24/06/2014	13.3	12.02
25/06/2014	9.47	9.65
26/06/2014	11.29	11.54
27/06/2014	17.59	16.08
28/06/2014	29.11	25.81
29/06/2014	7.87	7.73
30/06/2014	9.67	3.58

PM10 $\mu\text{g}/\text{m}^3$ 12 Month Rolling Average												
	Jun-13	Jul-13	Aug-13	Sep-13	Oct-13	Nov-13	Dec-13	Jan-14	Feb-14	Mar-14	Apr-14	May-14
TEOM 1 EPL13												
Essential Water												
Off Site	12.0	15.1	21.2	19.6	17.8	19.9	29.2	22.7	16.0	12.8	11.4	9.1
TEOM 2 EPL14												
Blackwoods Pit												
On Site	12.0	15.2	23.4	32.6	22.5	22.0	32.0	23.7	17.6	14.4	10.2	9.3





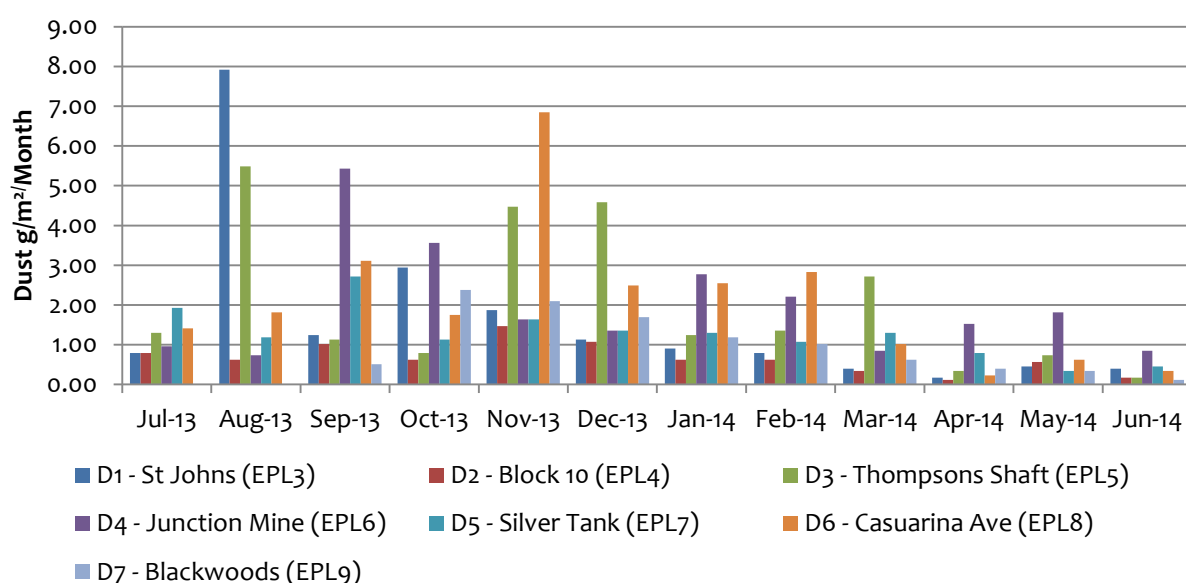
1. SW Winds of up to 81Km/h During the month of October 2013 with an Average Temp o 27°C .
2. S Winds of up to 72km/h during the month of January 2014 with an average Temperature of 36°C
Dust suppression was reapplied during the month of January 2013.

1.3 Dust Deposition Sampling

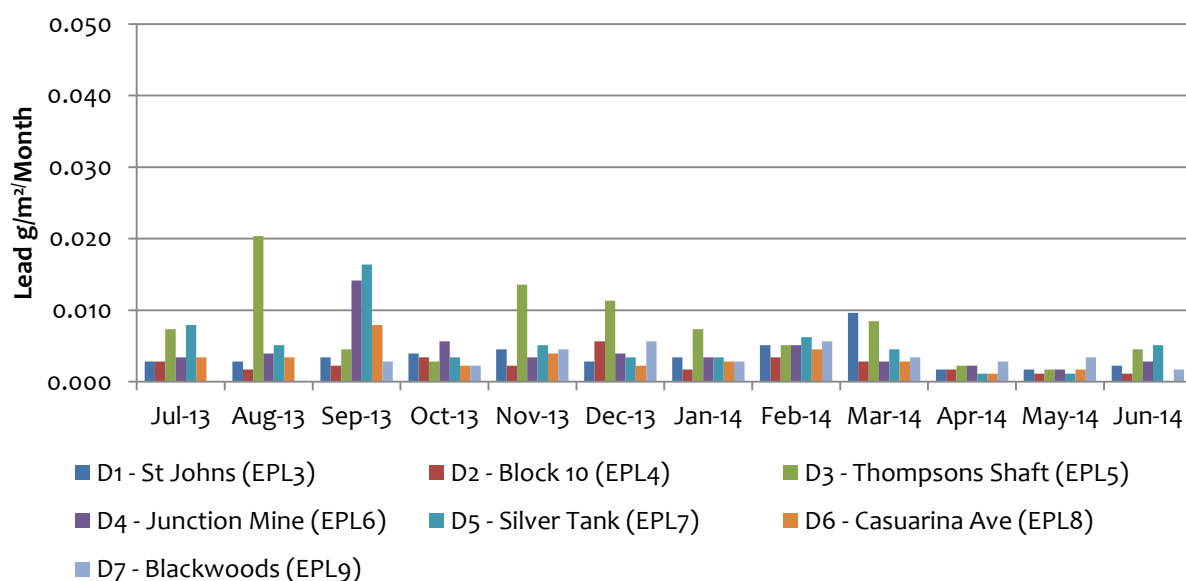
Total Deposited Dust (g/m ² /Month)							
Date	D1 (off site)	D2	D3	D4	D5	D6 (off site)	D7
June 2014	0.40	0.17	0.17	0.85	0.45	0.34	0.11
Background Average	4.0	3.1	4.3	5.7	n/a	5.8	n/a

Total Deposited Lead (g/m ² /Month)							
Date	D1 (Off Site)	D2	D3	D4	D5	D6 (Off Site)	D7
June 2014	0.002	0.001	0.005	0.003	0.005	0.000	0.002
Background Average	0.0034	0.0045	0.0046	0.0060	n/a	0.0036	n/a

Monthly Total Deposited Dust



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 the month of June blasting occurred daily there was a total number of 132 blasts 13 of which were production firings all inside licensing criteria.
- 119 blasts were below a ppv of 0.75mm/s and did not trigger an event
- 0 Blasts recorded a ppv of >5mm/s
- 0 Blasts recorded a ppv of >10mm/s
- All overpressure readings were inside limits.

Date / Location	Peak Vibration (PPV mm/s)	Peak Over Pressure (dBL)
02/06/2014	4.06	101
V1	No Trigger	No Trigger
V2	1.35	94
V3	4.06	101
04/06/2014	1.76	94
V1	No Trigger	No Trigger
V2	No Trigger	No Trigger
V3	1.76	94
05/06/2014	1.79	98.8
V1	No Trigger	No Trigger
V2	0.738	98.8
V3	1.79	95.9
08/06/2014	3.21	106.5
V1	No Trigger	No Trigger
V2	.663	101
V3	3.21	97.5
09/06/2014	1.53	101
V1	No Trigger	No Trigger
V2	0.663	101
V3	3.32	95.9
10/06/2014	3.32	95.9
V1	No Trigger	No Trigger
V2	2.01	95.9
V3	3.32	95.9
11/06/2014	3.34	95.9
V1	No Trigger	No Trigger
V2	2	94
V3	3.34	95.9
16/06/2014	1.39	91.5
V1	No Trigger	No Trigger
V2	No Trigger	No Trigger
V3	1.39	91.5
22/06/2014	3.58	104.9
V1	No Trigger	No Trigger
V2	1.65	95.5
V3	3.58	104.9
23/06/2014	2.29	100
V1	No Trigger	No Trigger
V2	0.577	100
V3	2.29	91.5
24/06/2014	4.5	102.8
V1	No Trigger	No Trigger
V2	3.44	101
V3	4.5	102.8
26/06/2014	5.6	100
V1	No Trigger	No Trigger
V2	2.26	95.5
V3	5.6	100
30/06/2014	2.18	91.5
V1	No Trigger	No Trigger
V2	No Trigger	No Trigger
V3	2.18	91.5

3 Noise

- *No noise monitoring was scheduled for the month of June 2014*
- *Last sampled March 2014 by EMM consultants for crusher project approval modification*

4 Water

4.1 Ground Water

Water Sample Results June 2014		
Date	5/06/2014	5/06/2014
Sample ID	EPL54	EPL53
pH Value (pH)	6.5	6.37
Electrical conductivity (uS/cm)	10800	11000
Total Dissolved Solids (mg/L)	11200	11100
Hydroxide Alkalinity as CaCO ₃ (mg/L)	0.5	0.5
Carbonate Alkalinity CaCO ₃ (mg/L)	0.5	0.5
Bicarbonate Alkalinity as CaCO ₃ (mg/L)	25	20
Total Alkalinity (mg/L)	25	20
Sulphate as SO ₄ (mg/L)	4750	4740
Chloride (mg/L)	1150	1130
Calcium (mg/L)	530	516
Magnesium (mg/L)	271	266
Sodium (mg/L)	1560	1530
Cadmium (mg/L)	5	5.09
Manganese (mg/L)	428	474
Lead (mg/L)	1.79	1.24
Zinc (mg/L)	1070	1340
Iron (mg/L)	0.5	0.5

Groundwater Table

EPA Identification Number	Frequency	Comment
EPL37	Quarterly	Scheduled for August 2014
EPL38	Quarterly	Scheduled for August 2014
EPL39	Quarterly	Scheduled for August 2014
EPL40	Quarterly	Scheduled for August 2014
EPL41	Quarterly	Scheduled for August 2014
EPL42	Quarterly	Scheduled for August 2014
EPL43	Quarterly	Scheduled for August 2014
EPL44	Quarterly	Scheduled for August 2014
EPL45	Quarterly	Scheduled for August 2014
EPL46	Quarterly	Scheduled for August 2014
EPL47	Quarterly	Scheduled for August 2014
EPL48	Quarterly	Scheduled for August 2014
EPL49	Quarterly	Scheduled for August 2014
EPL50	Quarterly	Scheduled for August 2014
EPL51	Quarterly	Scheduled for August 2014
EPL52	Quarterly	Scheduled for August 2014
EPL53	Monthly	Sample collected in June 2014
EPL54	Monthly	Sample collected in June 2014

4.2 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	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 Horwood Dam	2 x Per year when contains water	Sample due in August
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 June.

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	7.7	15.4	18.8			SW	28	03:59	10.2	99	8	SW	15	1019.3	12.3	97	8	WNW	11	1018.1
2	Mo	8.4	13.6	8.2			NW	31	08:53	10.5	99	7	NW	20	1020.8	13.1	93	8	NW	9	1019.1
3	Tu	8.5	16.3	1.2			S	24	14:12	10.0	100	8	S	11	1022.5	15.7	73	5	SSW	15	1021.7
4	We	9.6	16.7	0.4			S	17	17:31	11.3	92	8	Calm		1027.5	15.7	65	7	Calm		1025.7
5	Th	10.3	16.2	0			SW	31	14:18	12.5	82	2	SSW	13	1029.8	14.7	85	6	SSW	20	1027.9
6	Fr	4.5	14.8	0.4			SSE	43	12:28	7.1	96	1	S	13	1031.4	14.3	62	1	SSE	28	1028.9
7	Sa	5.3	15.7	0			S	41	11:54	8.9	95	3	S	22	1032.9	14.8	66	2	SSE	28	1030.0
8	Su	6.6	13.8	0.6			S	43	14:05	8.7	100	8	SSE	24	1032.2	13.4	65	3	SSE	24	1029.6
9	Mo	2.5	13.9	0.2			ESE	37	15:29	5.7	93	1	SE	15	1031.6	13.6	53	2	ESE	20	1028.4
10	Tu	1.6	17.0	0			ENE	31	12:38	7.2	91	2	ENE	11	1029.2	15.9	62	4	NE	20	1024.4
11	We	4.8	19.8	0.2			NE	33	12:57	11.3	84	6	NE	17	1023.2	19.2	50	6	NNE	15	1018.0
12	Th	10.7	18.2	0			N	35	12:20	13.2	70	8	NE	26	1014.7	16.4	59	7	NNW	15	1012.1
13	Fr	8.8	15.4	0.6			N	48	21:09	9.7	95	2	WNW	15	1014.0	14.3	58	4	NW	26	1011.8
14	Sa	6.9	14.8	2.6			SSW	48	04:21	8.1	97	1	SW	22	1017.2	13.3	78	6	SW	31	1017.7
15	Su	7.2	14.7	0			SSW	43	10:15	8.1	86	1	SSW	26	1024.4	13.8	66	2	SSW	24	1022.8
16	Mo	6.1	16.7	0			W	30	12:57	9.2	96	1	W	15	1027.8	16.3	62	4	WSW	20	1026.4
17	Tu	8.7	15.3	0.2			SSE	30	12:26	9.3	100	1	S	19	1032.0	14.5	63	1	S	15	1030.5
18	We	5.3	15.6	0.4			E	30	12:05	7.3	97	1	E	15	1032.0	14.8	62	1	E	15	1027.8
19	Th	6.3	17.1	0.2			N	37	10:46	10.2	82	7	N	19	1023.8	15.4	58	7	NW	15	1019.3
20	Fr	3.2	18.3	0			NW	41	11:17	11.3	67	1	NNW	19	1018.8	18.0	47	1	WNW	28	1016.6
21	Sa	10.5	18.1	0			WSW	26	09:02	10.9	97	4	W	19	1021.6	16.6	68	4	SW	15	1020.1
22	Su	7.7	18.7	0.4			NNW	43	22:57	10.7	100	1	NE	9	1023.2	18.0	51	3	NNW	17	1018.1
23	Mo	10.7	15.7	0			WNW	69	11:10	13.1	51	7	WNW	43	1012.6	15.0	45	5	W	43	1011.7
24	Tu	5.9	16.2	0			WNW	56	12:57	7.7	86	1	WNW	31	1017.7	15.4	61	7	W	37	1016.5
25	We	6.7	16.7	0.2			WNW	39	15:26	8.3	93	1	WNW	20	1023.9	16.1	47	1	WNW	24	1022.3
26	Th	6.9	17.3	0			NW	31	13:21	9.4	76	0	NW	17	1026.2	16.7	52	1	NW	17	1023.2
27	Fr	8.7	15.7	0			WNW	65	22:43	10.8	58	7	N	31	1015.5	14.7	39	4	NNW	39	1008.4
28	Sa	7.3	12.8	0			W	72	14:40	8.1	74	1	NW	37	1007.3	11.9	52	6	W	31	1008.1
29	Su	6.2	13.6	1.2			WSW	54	13:42	7.8	89	1	WNW	26	1015.5	12.2	64	4	W	26	1015.0
30	Mo	4.2	14.5	1.0			SW	33	12:46	6.2	93	4	SW	17	1026.3	13.1	51	3	SW	17	1025.5
Statistics for June 2014																					
Mean		6.9	16.0							9.4	87	3		19	1023.2	15.0	61	4		21	1020.9
Lowest		1.6	12.8	0						5.7	51	0	Calm		1007.3	11.9	39	1	Calm		1008.1
Highest		10.7	19.8	18.8			W	72		13.2	100	8	WNW	43	1032.9	19.2	97	8	W	43	1030.5
Total				36.8																	

IDCJDW2020.201406 Prepared at 16:00 UTC on Saturday 2 August 2014

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	2/7/14	16/7/14	13/8/14
TEOM	Real time	1/7/14	13/8/14
Dust Deposition	2/7/14	16/7/14	13/8/14
Water	2/7/14	16/7/14	13/8/14
Blast Vibration and overpressure	Real Time	1/7/14	13/8/14

7 Correction Log 1st July 2013 to 30th June 2014

Sample	Original Data	Corrected Data	Date Corrected	Date Originally Published	Reason