



Geotechnical Engineering

Engineering Geology

Hydrogeology

Contaminated Site Assessment

Construction Materials Testing

Environmental Monitoring

GROUND WATER DEPOSITIONAL DUST HVAS AND METEOROLOGICAL MONITORING

PINE DALE MINE

Prepared for
**PINE DALE MINE COMMUNITY
CONSULTATIVE COMMITTEE**

Prepared by
RCA AUSTRALIA

RCA-LE ref 6880-793/0

APRIL 2012

RCA AUSTRALIA

ABN 53 063 515 711

92 Hill Street, CARRINGTON NSW 2294


Telephone: +61 2 4902 9200

Facsimile: +61 2 4902 9299

Email: administrator@rca.com.au

Internet: www.rca.com.au

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RCA LE ref 6880-793/0



15 May 2012

Enhance Place Pty Ltd
Pine Dale Mine
PO Box 6095
South Coast Mail Centre
WOLLONGONG NSW 2521

Attention: Mr Hilton Goldfinch

**REPORT COMPILED FOR
PINE DALE MINE COMMUNITY CONSULTATIVE COMMITTEE
DETAILING
GROUND WATER, DEPOSITIONAL DUST
HVAS AND METEOROLOGICAL MONITORING
APRIL 2012**

1 GENERAL COMMENTS

Job Number: 6880.

Date Samples Received: During the month of April; and 1 & 2 May 2012.

Samples received were sampled by RCA Laboratories – Environmental staff.

2 ANALYTICAL PROCEDURES

The analytical procedures used by RCA Laboratories – Environmental are based on established internationally recognised procedures such as APHA and Australian Standards. Analytical test methods are detailed in **Table 1**. When an external testing laboratory is used to obtain the analysis of samples then the details of that laboratory's official report will be attached in an Appendix.

Table 1 *Analytical Test Methods*

ANALYSIS	METHOD	UNITS	ANALYSING LABORATORY	NATA / NON-NATA ANALYSIS
Determination of Suspended Particulate	ENV-LAB003	$\mu\text{g}/\text{m}^3$	RCA Laboratories - Environmental	NATA
Determination of Particulate Matter –	ENV-LAB004	$\text{g}/\text{m}^2/\text{month}$	RCA Laboratories - Environmental	NATA
pH	ENV-LAB006	pH	RCA Laboratories - Environmental	NATA Analysis
Conductivity	ENV-LAB010	$\mu\text{S}/\text{cm}$	RCA Laboratories - Environmental	NATA Analysis

3 WATER ANALYSIS RESULTS

3.1 GROUNDWATER

A total of five groundwater samples were collected for the month of April 2012. No sample was collected from groundwater monitoring location P4 as the bore was dry at the time of sampling.

Water quality analysis results are shown in **Table 2**.

Table 2 *Groundwater Analysis Results*

ANALYSIS	UNITS	P2	P3	P6	P7	P7a
Sample Number		04126880020	04126880021	04126880011	04126880022	04126880023
Date Sampled	-	02/05/12	02/05/12	01/05/12	01/05/12	01/05/12
Time Sampled	-	7:42	7:36	17:03	16:29	16:39
Standing Water Level	m	5.42	5.82	27.14	7.93	6.10
Standpipe Height	m	0.95	0.66	0.95	1.00	0.90
Relative Standing Water Level*	m	4.47	5.16	26.19	6.93	5.20
pH	pH unit	5.1	5.5	6.8	6.9	6.9
Conductivity	µS/cm	273	332	601	673	768

NOTES:

* Depth relative to ground level (not standpipe height).

Groundwater monitoring locations are shown in **Appendix 1**.

4 AIR QUALITY MONITORING RESULTS

4.1 HIGH VOLUME AIR SAMPLERS (HVAS)

HVAS at this facility conform to AS/NZS 3580.9.3:2003 and AS/NZS 3580.1.1:2007.

HVAS Total Suspended Particulate analysis results are shown in **Table 3**; PM₁₀ Suspended Particulate Matter results are shown in **Table 4**.

Table 3 Total Suspended Particulates ($\mu\text{g}/\text{m}^3$ 0°C 101.3 kPa)

RUN DATE	TSP ($\mu\text{g}/\text{m}^3$)	SAMPLE NO	FILTER NO	DATE FILTER OFF	TIME FILTER OFF	FIELD TECH	HOURS RUN
2-Apr-12	23	03126880056	8565803	03-Apr-12	10:20	Client	24.02
8-Apr-12	16	04126880025	8565805	10-Apr-12	11:08	Client	24.00
14-Apr-12	21	04126880027	8565807	16-Apr-12	13:30	Client	24.00
20-Apr-12	22	04126880029	8565809	24-Apr-12	10:25	Client	24.00
26-Apr-12	22	04126880031	8365701	30-Apr-12	10:45	Client	24.00

Table 4 Suspended Particulate Matter PM₁₀ ($\mu\text{g}/\text{m}^3$ 0°C 101.3 kPa)

RUN DATE	PM ₁₀ ($\mu\text{g}/\text{m}^3$)	SAMPLE NO	FILTER NO	DATE FILTER OFF	TIME FILTER OFF	FIELD TECH	HOURS RUN
2-Apr-12	12	03126880057	8565804	3-Apr-12	10:25	C Oxenham	24.01
8-Apr-12	15	04126880026	8565806	10-Apr-12	11:08	Client	24.00
14-Apr-12	11	04126880028	8565808	16-Apr-12	13:30	Client	24.00
20-Apr-12	10	04126880030	8565810	24-Apr-12	10:25	Client	24.00
26-Apr-12	10	04126880032	8565811	30-Apr-12	10:45	Client	24.00

4.1.1 Allowable TSP Limits

The NSW Office of Environment and Heritage (OEH) annual mean TSP limit is 90 $\mu\text{g}/\text{m}^3$. All TSP HVAS results during this monitoring period are in compliance with consent conditions, as the *current annual mean* (from May 2011 to April 2012) for the TSP unit is 19.9 $\mu\text{g}/\text{m}^3$, which is well below the allowable limit of 90 $\mu\text{g}/\text{m}^3$.

4.1.2 Allowable PM₁₀ Limits

The OEH 24 hour maximum PM₁₀ limit is 50 $\mu\text{g}/\text{m}^3$. The EPA annual mean PM₁₀ limit is 30 $\mu\text{g}/\text{m}^3$. All PM₁₀ HVAS results during this monitoring period are in compliance with consent conditions, as the *current annual mean* for the PM₁₀ unit is 10.1 $\mu\text{g}/\text{m}^3$, which is below the allowable limit of 30 $\mu\text{g}/\text{m}^3$ and the 24 hour maximum was not exceeded on any run day during the month.

4.1.3 Comments

HVAS monitoring locations are shown in **Appendix 1**.
Graphical HVAS results presentations are shown in **Appendix 2**.

4.2 DEPOSITIONAL DUST

Depositional Dust Gauges at this facility conform to AS/NZS 3580.10.1:2003 and AS/NZS 3580.1.1:2007. Depositional Dust monitoring results are shown in **Table 5**.

Table 5 *Deposited Matter (g/m²/month)*

SAMPLE NO	DEPOSIT GAUGE	DATE SAMPLE STARTED	DATE SAMPLE COMPLETED	NO OF DAYS	NOTES	INSOLUBLE SOLIDS (g/m ² /month)	ASH (g/m ² /month)	COMBUSTIBLE MATTER (g/m ² /month)
04126880043	D1	3/04/2012	1/05/2012	28	T	1.0	0.6	0.4
04126880044	D2	3/04/2012	1/05/2012	28	I	0.7	0.4	0.3
04126880045	D3	3/04/2012	1/05/2012	28	I	1.0	0.6	0.4
04126880046	D4	3/04/2012	1/05/2012	28	I	0.6	0.2	0.4
04126880047	D5	3/04/2012	1/05/2012	28	I	0.4	0.2	0.2
04126880048	D6	3/04/2012	1/05/2012	28	I	0.3	<0.1	0.3

4.2.1 Glossary of Terms Used in Notes

I Insects (e.g. Ants, spiders) T Tree litter

4.2.2 Allowable Depositional Dust Limits:

The OEH Long Term (Annual Average) Dust Limit is 4g/m² per month. All Depositional Dust results during this monitoring period are in compliance with consent conditions. The Annual Average for Dust Gauges D1, D2, D3, D4, D5 and D6 all are all less than 0.9g/m² per month, which is below the allowable Annual Average Long Term Limit of 4g/m² per month.

Depositional Dust monitoring locations are shown in **Appendix 1**.

Graphical Depositional Dust results are shown in **Appendix 2**.

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Please contact the undersigned if you have any queries.

Yours sincerely



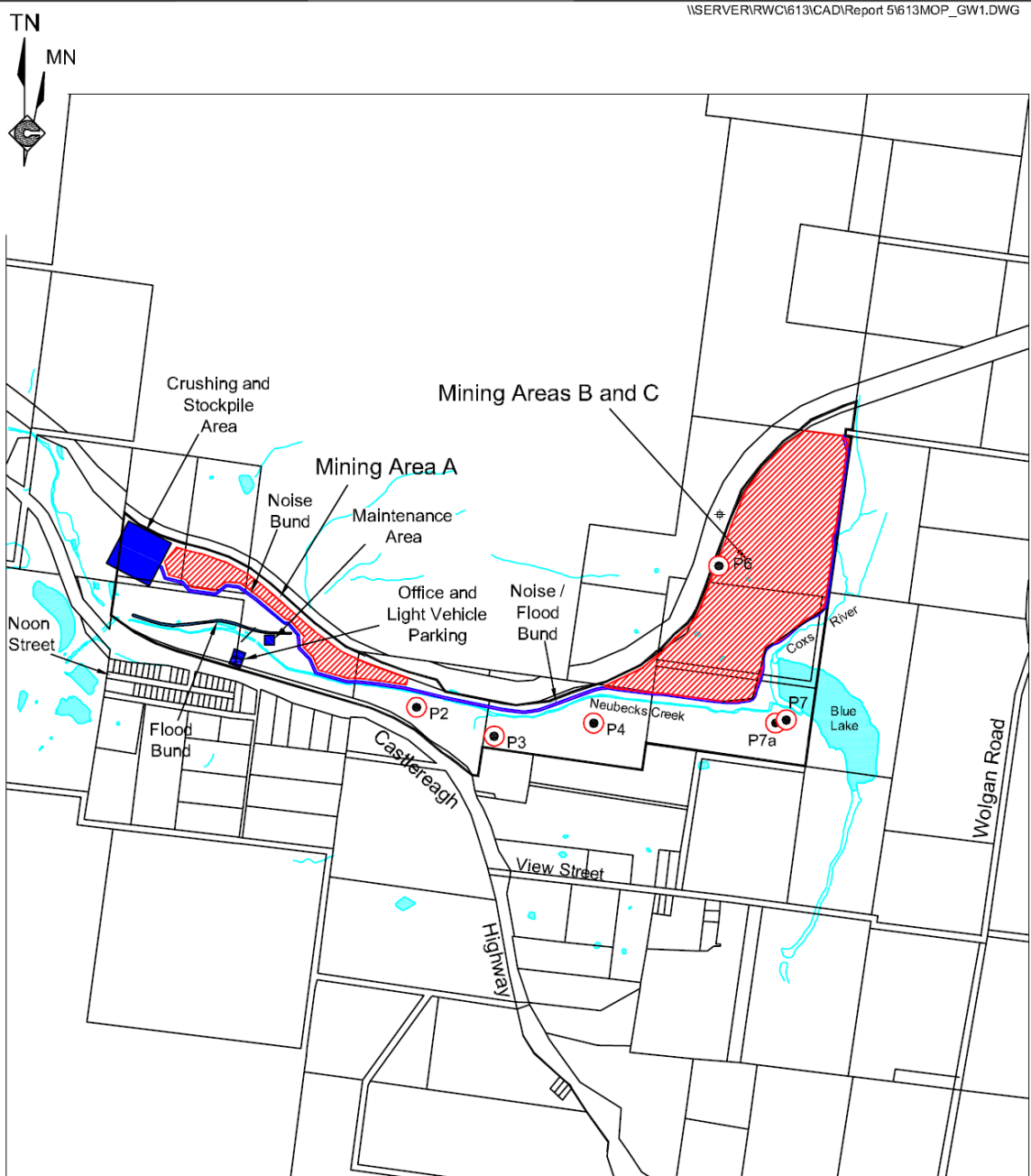
Katy Shaw
Environmental Scientist
RCA Australia Pty Ltd trading as
RCA Laboratories – Environmental



Karen Tripp
Senior Environmental Scientist / Hygienist
RCA Australia Pty Ltd trading as
RCA Laboratories – Environmental

Appendix 1

Groundwater and Air Quality Monitoring Locations



REFERENCE
— Mine Site Boundary (ML_XYZ)
● P4 Groundwater Monitoring Location

SCALE 1:20 000

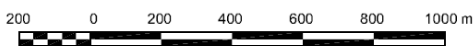
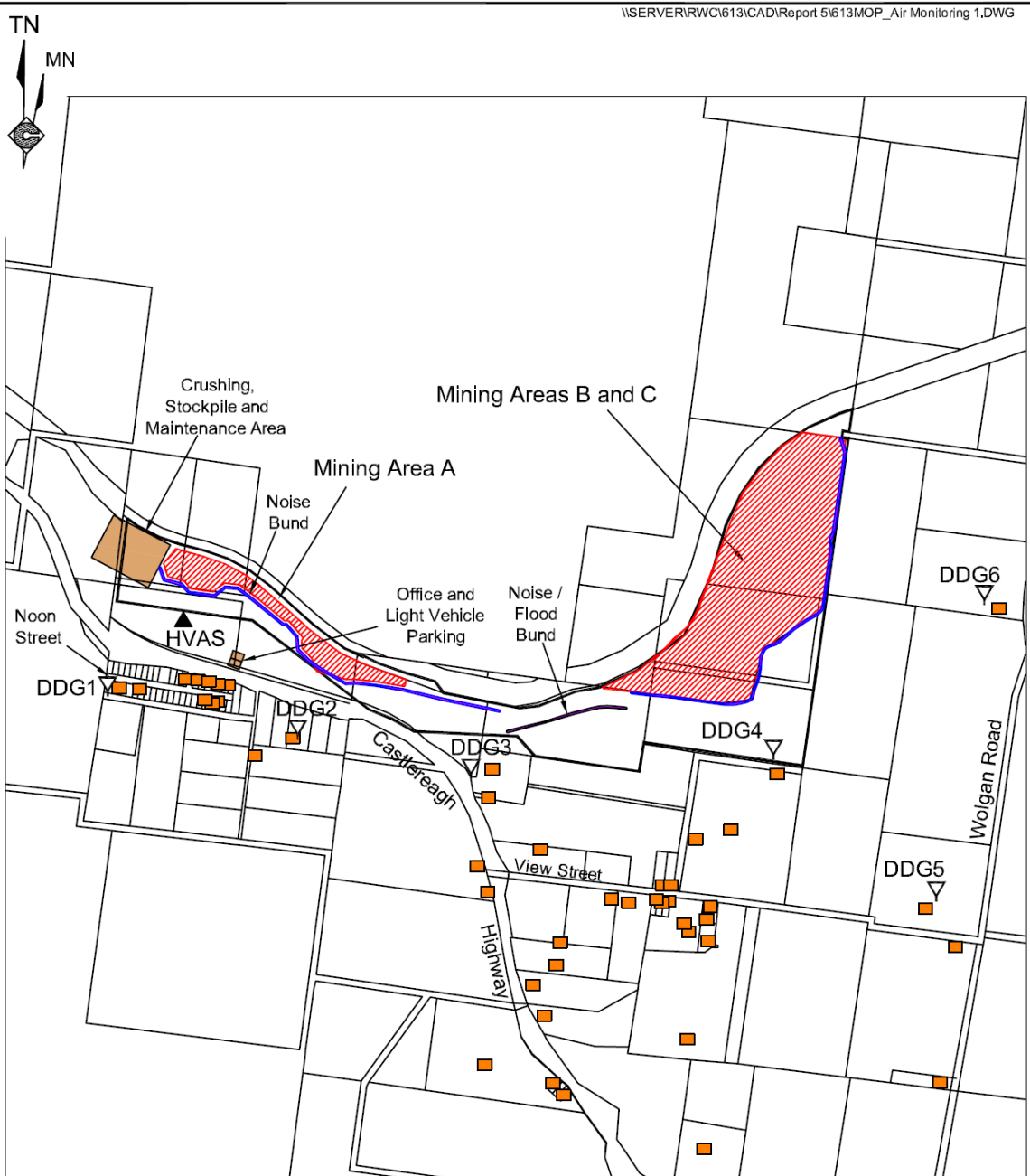


Figure GW1
GROUNDWATER MONITORING LOCATIONS



- REFERENCE
- Mine Lease Boundary (ML1578)
 - Residence
 - DDG1 ▽ Air Quality Monitoring Location (Deposited Dust)
 - HVAS ▲ Air Quality Monitoring Location (High Volume Sampling)

SCALE 1:20 000

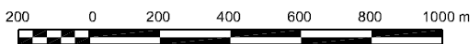
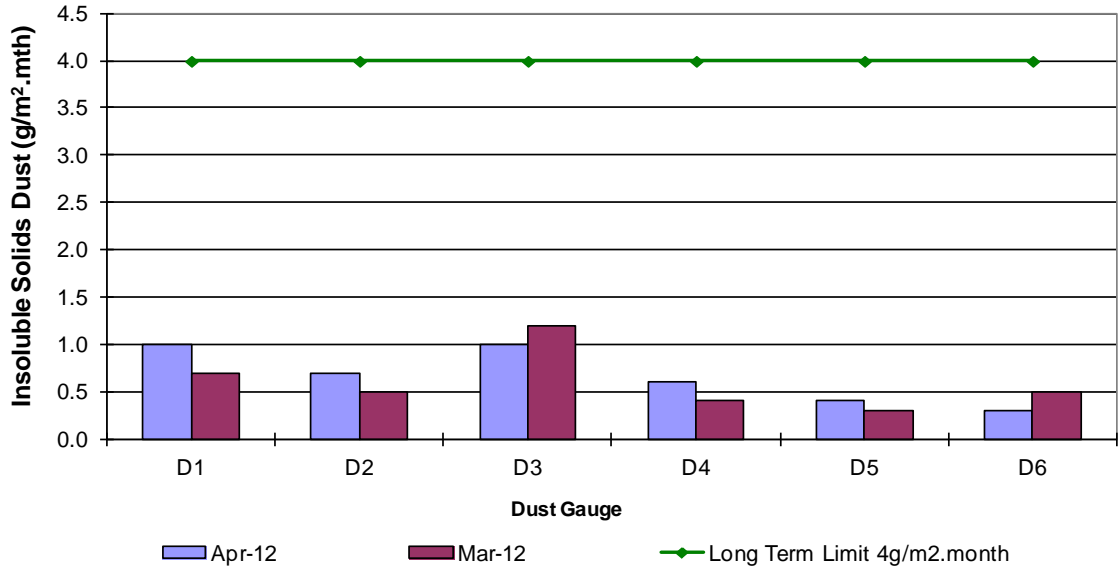


Figure AQ1
AIR QUALITY MONITORING LOCATIONS

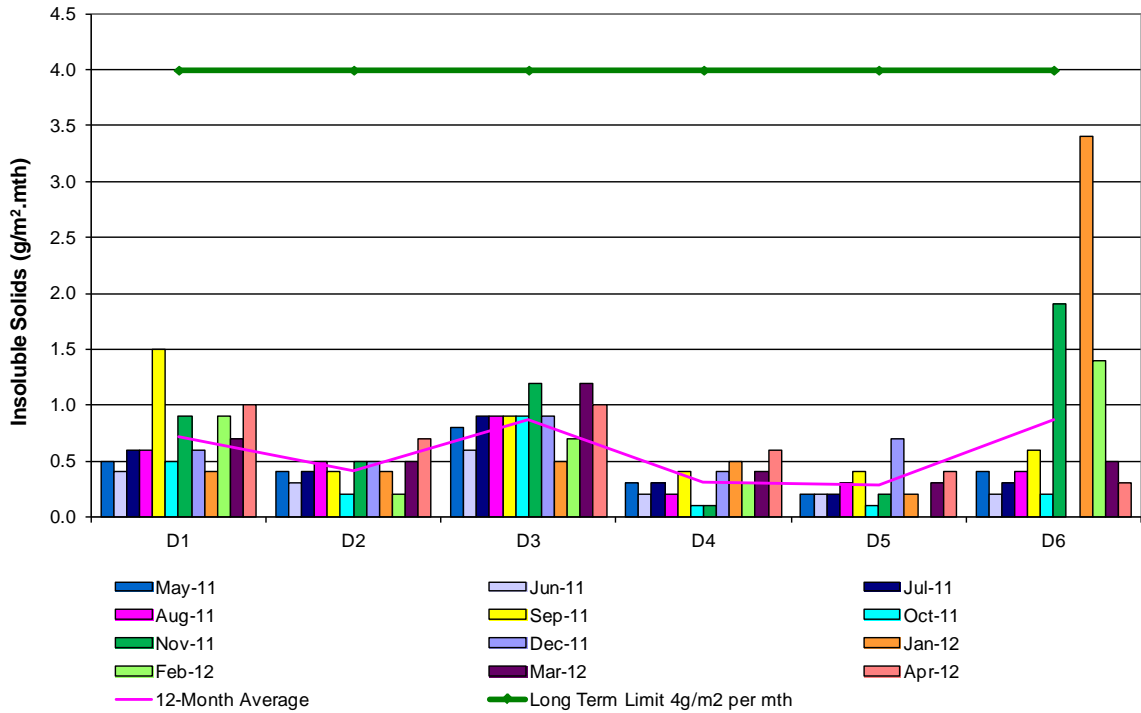
Appendix 2

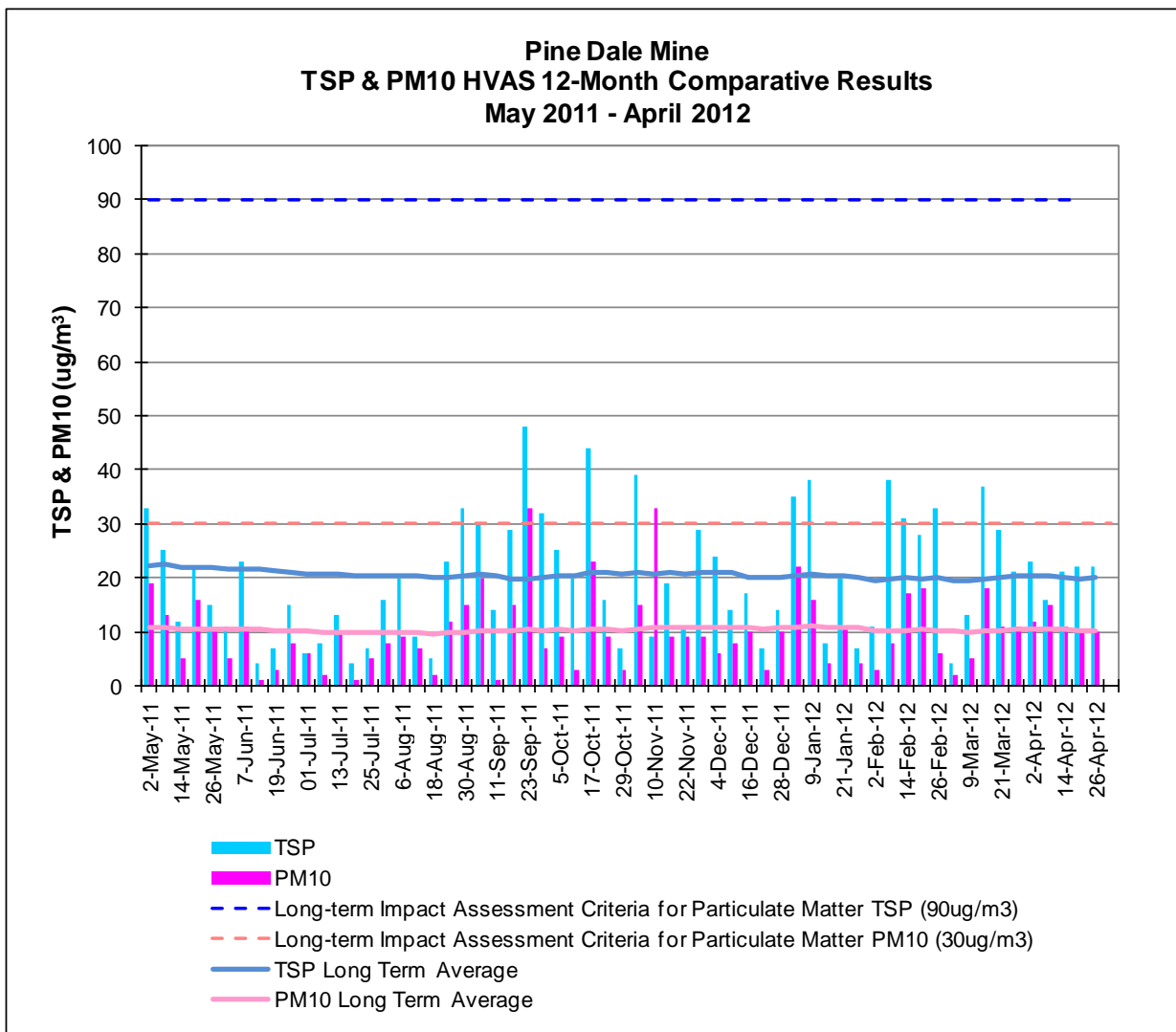
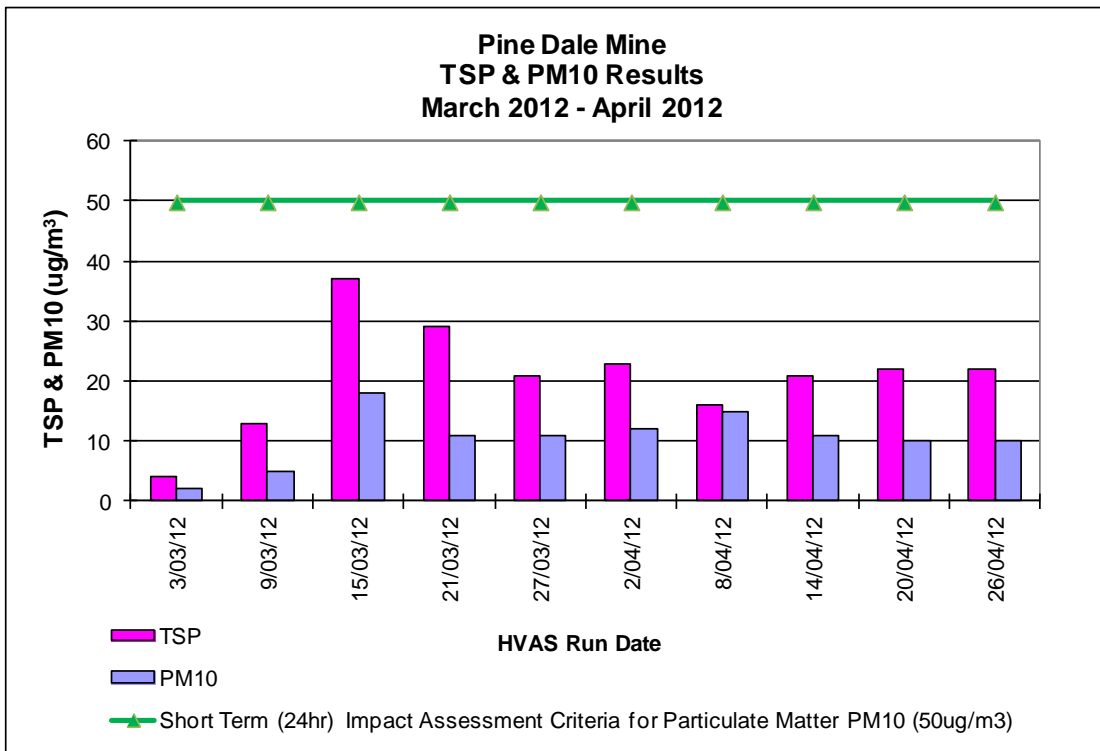
Depositional Dust and HVAS Result Graphs

**Pine Dale Mine
Depositional Dust Gauge Comparative Results
March 2012 - April 2012**



**Pine Dale Mine
Deposited Matter - Insoluble Solids 12 Months Comparative Results
May 2011 - April 2012**

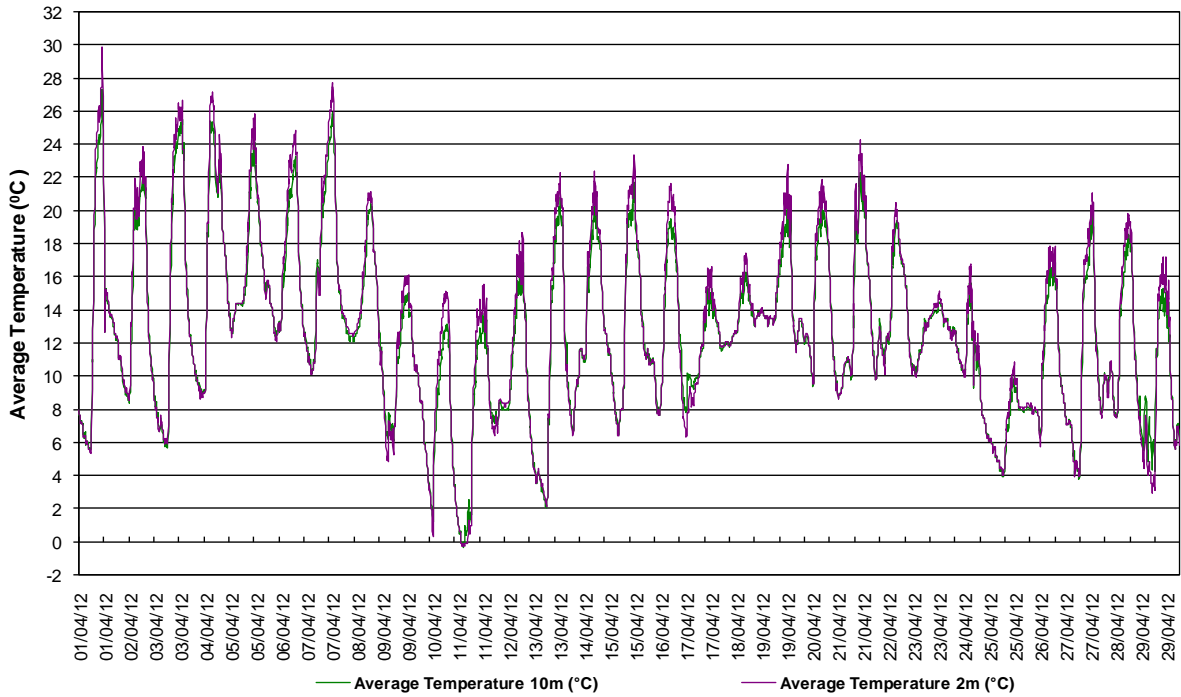




Appendix 3

Meteorological Data

Blackmans Flat NSW
Average Air Temperature - Period: 1/4/12 to 30/4/12



Blackmans Flat NSW
Total Rainfall - Period: 1/04/12 to 30/04/12

