



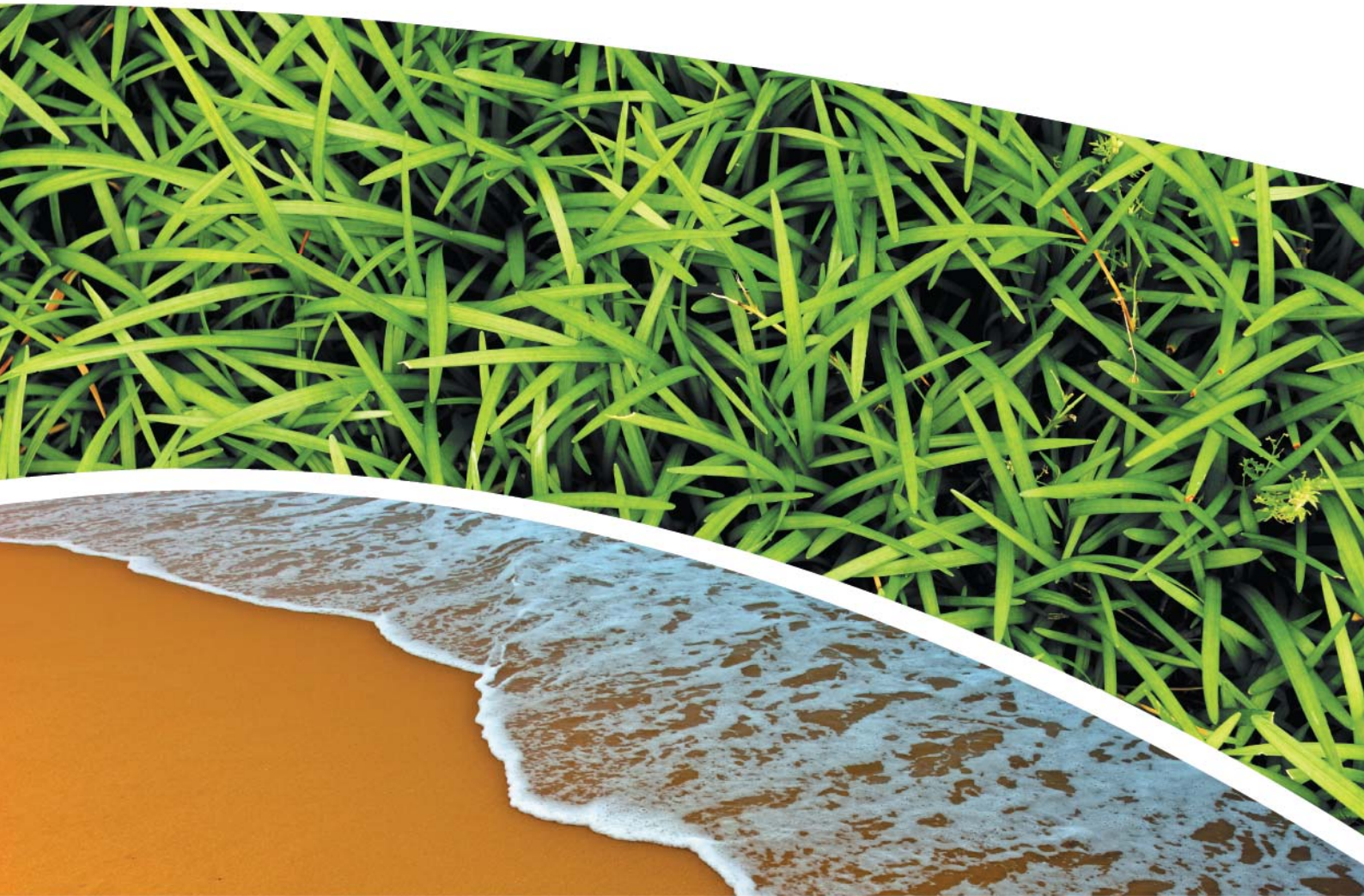
**GROUNDWATER, SURFACE WATER, DEPOSITIONAL DUST, HVAS
AND METEOROLOGICAL MONITORING**

Prepared For Pine Dale Mine Community Consultative Committee

RCA Australia

RCA ref 6880-798/0

June 2012



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27 July 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
JUNE 2012**

1 GENERAL COMMENTS

Job Number: 6880.

Date Samples Received: During the month of June 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 which become a part of this report, 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	µg/m ³	RCA Laboratories - Environmental	NATA Analysis
Determination of Particulate Matter –	ENV-LAB004	g/m ² /month	RCA Laboratories - Environmental	NATA Analysis
pH	ENV-LAB006	pH	RCA Laboratories - Environmental	NATA Analysis
Conductivity	ENV-LAB010	µS/cm	RCA Laboratories - Environmental	NATA Analysis
Dissolved Metals	EG020F	mg/L	ALS	NATA Analysis

3 WATER ANALYSIS RESULTS

3.1 GROUNDWATER

A total of 5 on-site groundwater samples were collected during the month of June 2012. No sample was collected from groundwater monitoring location P4 as the bore did not contain sufficient water to sample.

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

Table 2 *Groundwater Analysis Results*

ANALYSIS	UNITS	P2	P3	P6	P7	P7a
Sample Number		06126880020	06126880021	06126880011	06126880022	06126880023
Date Sampled	-	28/06/2012	28/06/2012	28/06/2012	28/06/2012	28/06/2012
Time Sampled	-	15:58	15:53	14:35	15:07	15:11
Standing Water Level	m	5.50	5.80	26.90	7.90	5.84
Standpipe Height	m	0.95	0.66	0.95	1.00	0.90
Relative Standing Water Level*	m	4.55	5.14	25.95	6.90	4.94
pH	pH unit	5.0	4.8	6.6	7.3	6.77
Conductivity	µS/cm	391	438	654	788	787
Dissolved Iron		2.36	0.62	1.29	1.95	1.09

NOTES:

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

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

3.2 EPA SURFACE WATER

Routine quarterly surface waters were not scheduled to be monitored this month. Quarterly surface water monitoring is next scheduled to be conducted in the August 2012 monitoring period.

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
01-Jun-12	13	06126880046	8579161	04-Jun-12	10:25	Client	24.19
07-Jun-12	27	06126880048	8365704	12-Jun-12	10:30	Client	24.00
13-Jun-12	14	06126880050	8365706	15-Jun-12	8:55	Client	24.00
19-Jun-12	13	06126880052	8365708	21-Jun-12	10:10	Client	24.00
25-Jun-12	15	06126880054	8365710	27-Jun-12	9:30	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
01-Jun-12	9	06126880047	8579162	04-Jun-12	9:40	Client	24.08
07-Jun-12	10	06126880049	8365705	12-Jun-12	10:30	Client	24.00
13-Jun-12	5	06126880051	8365707	15-Jun-12	8:55	Client	23.98
19-Jun-12	4	06126880053	8365709	21-Jun-12	10:10	Client	24.00
25-Jun-12	8	06126880055	8365711	27-Jun-12	9:30	Client	24.00

4.1.1 Allowable TSP Limits

The EPA 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 July 2011 to June 2012) for the TSP unit is $21.6\mu\text{g}/\text{m}^3$, which is well below the allowable limit of $90\mu\text{g}/\text{m}^3$.

4.1.2 Allowable PM10 Limits

The EPA 24h 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 $10.5\mu\text{g}/\text{m}^3$, 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)
06126880024	D1	30/05/2012	28/06/2012	29	I	0.3	0.1	0.2
06126880025	D2	30/05/2012	28/06/2012	29	I	0.2	<0.1	0.2
06126880026	D3	30/05/2012	28/06/2012	29	I	0.5	0.3	0.2
06126880027	D4	30/05/2012	28/06/2012	29	I	0.2	0.1	0.1
06126880028	D5	30/05/2012	28/06/2012	29	I	0.1	<0.1	0.1
06126880029	D6	30/05/2012	28/06/2012	29	I	<0.1	<0.1	<0.1

4.2.1 Glossary of Terms Used in Notes

I Insects

4.2.2 Allowable Depositional Dust Limits

The EPA 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 0.9g/m² per month or less, 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



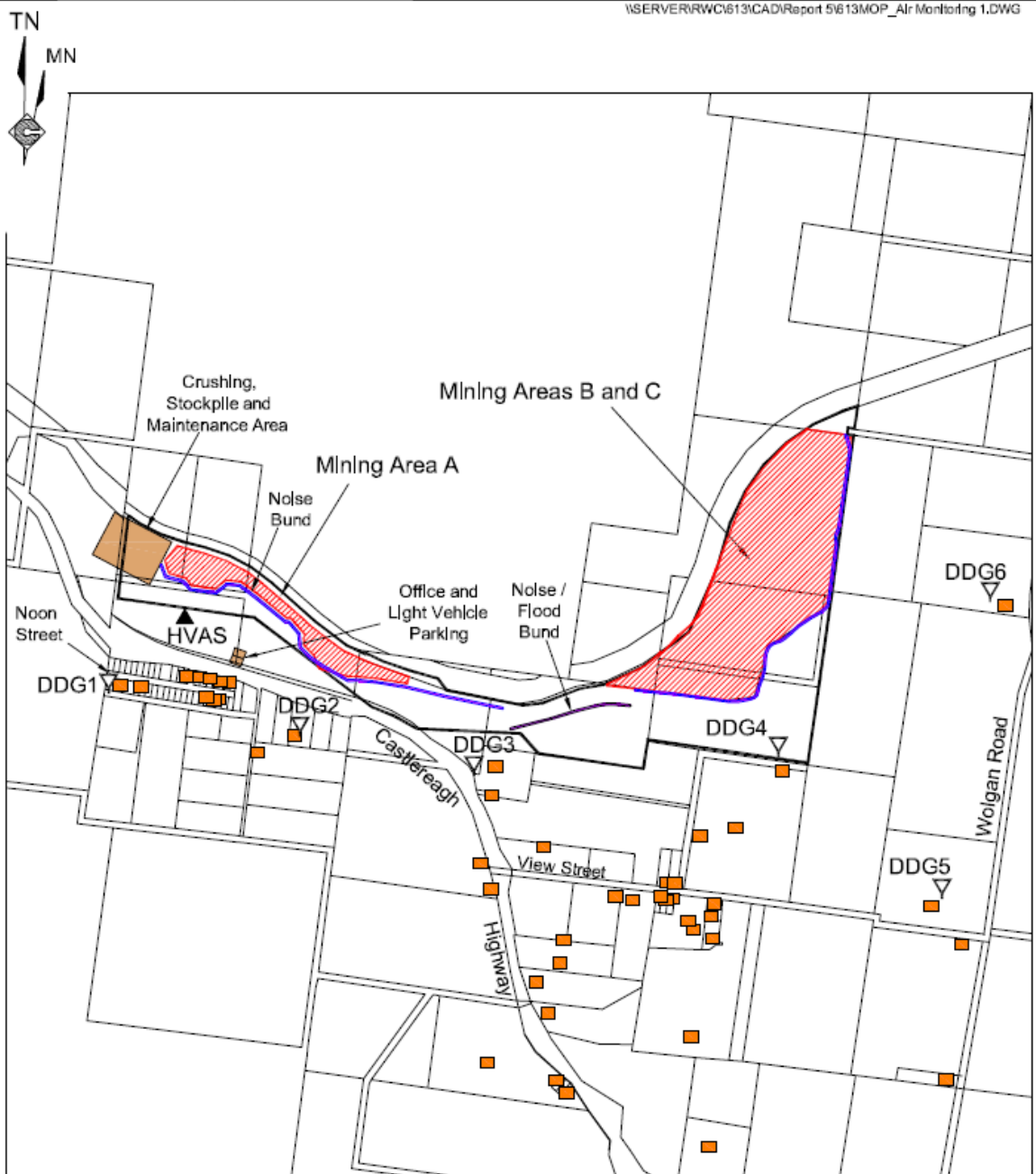
Katy Shaw
Environmental Scientist
RCA Australia Pty Ltd trading as
RCA Laboratories – Environmental



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

SCALE 1:20 000



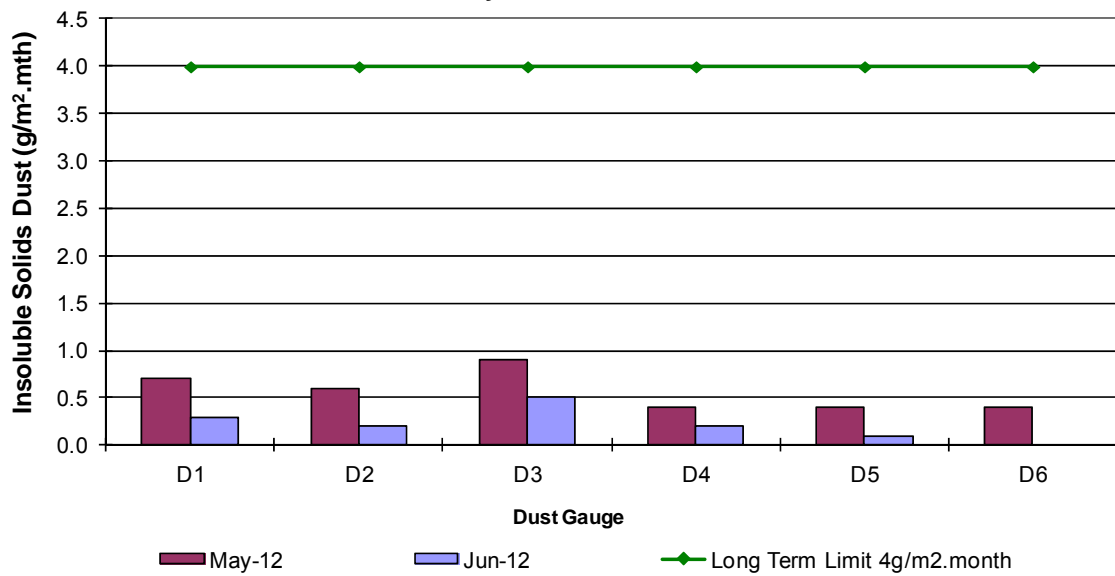
Figure AQ1
AIR QUALITY MONITORING LOCATIONS



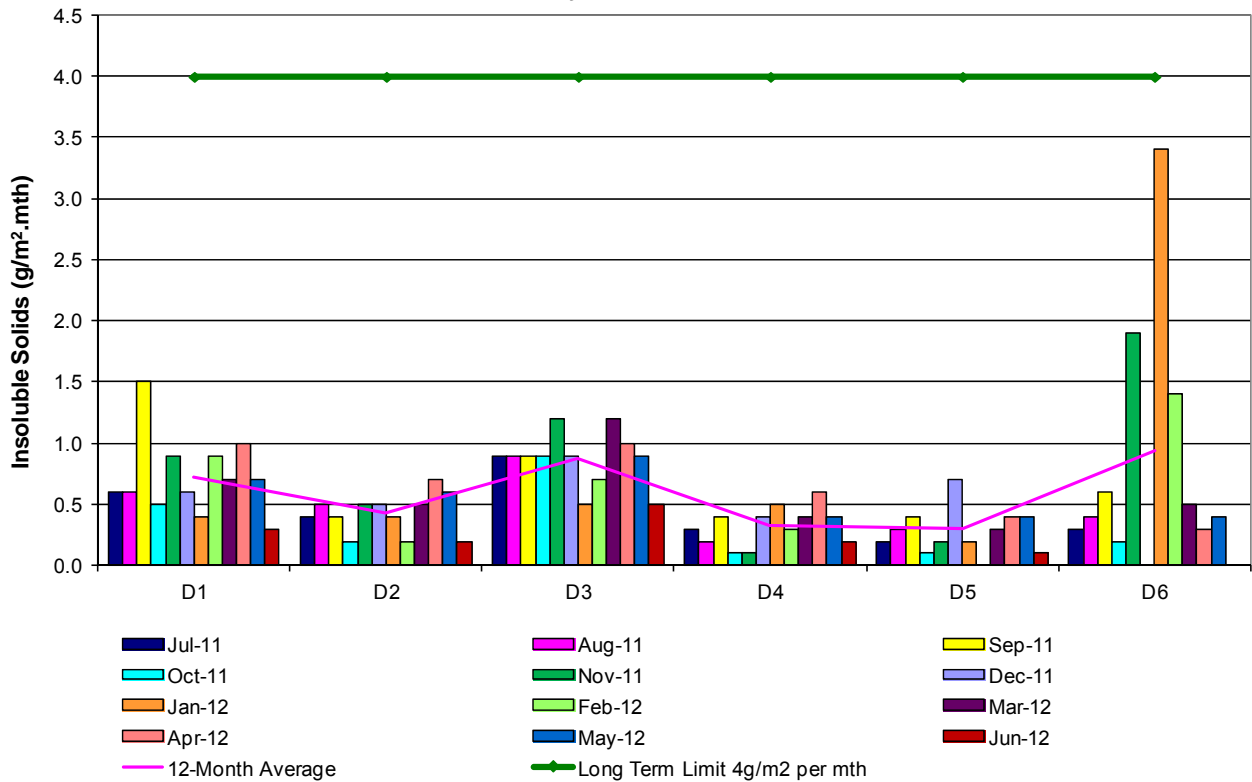
Appendix 2

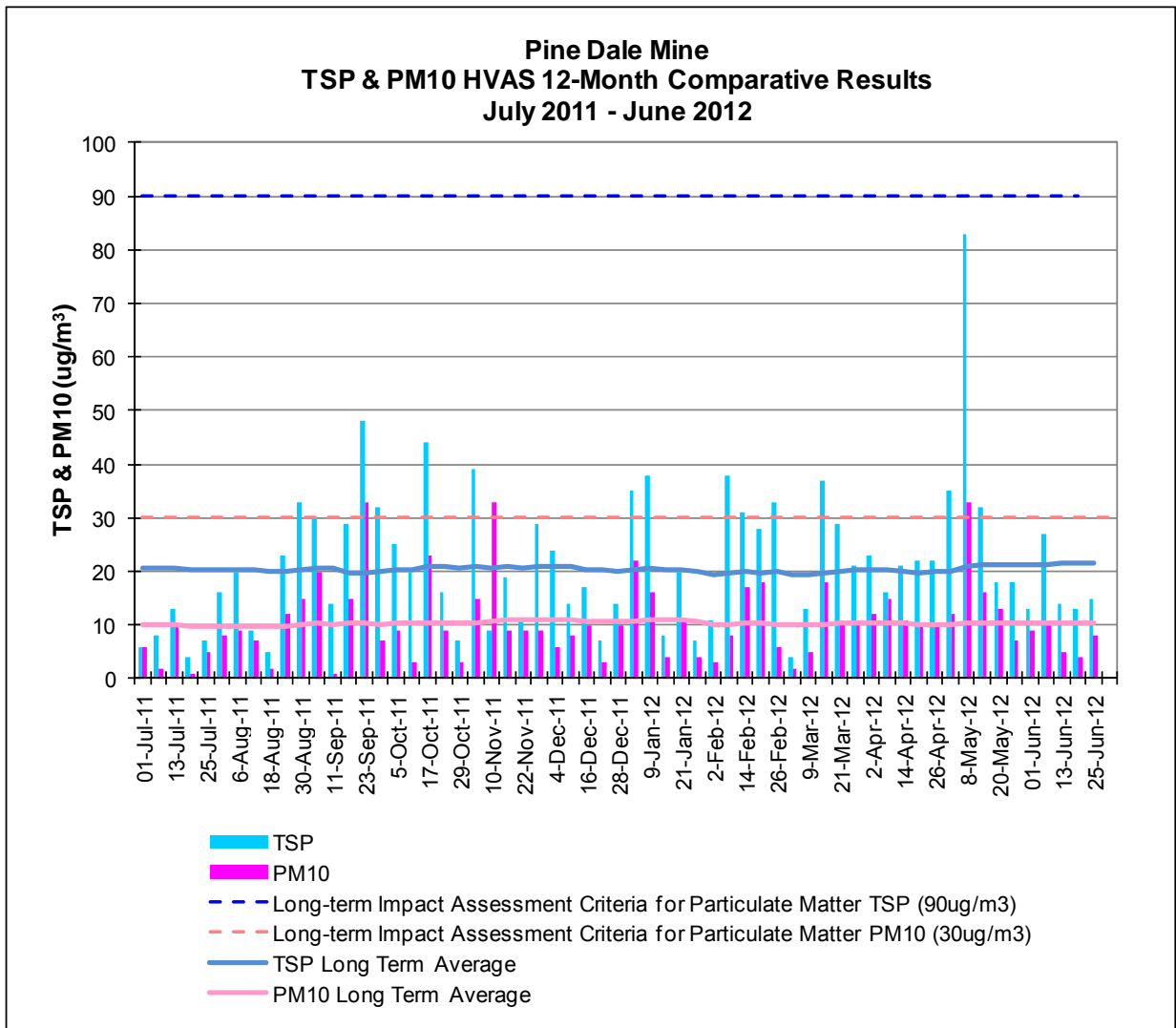
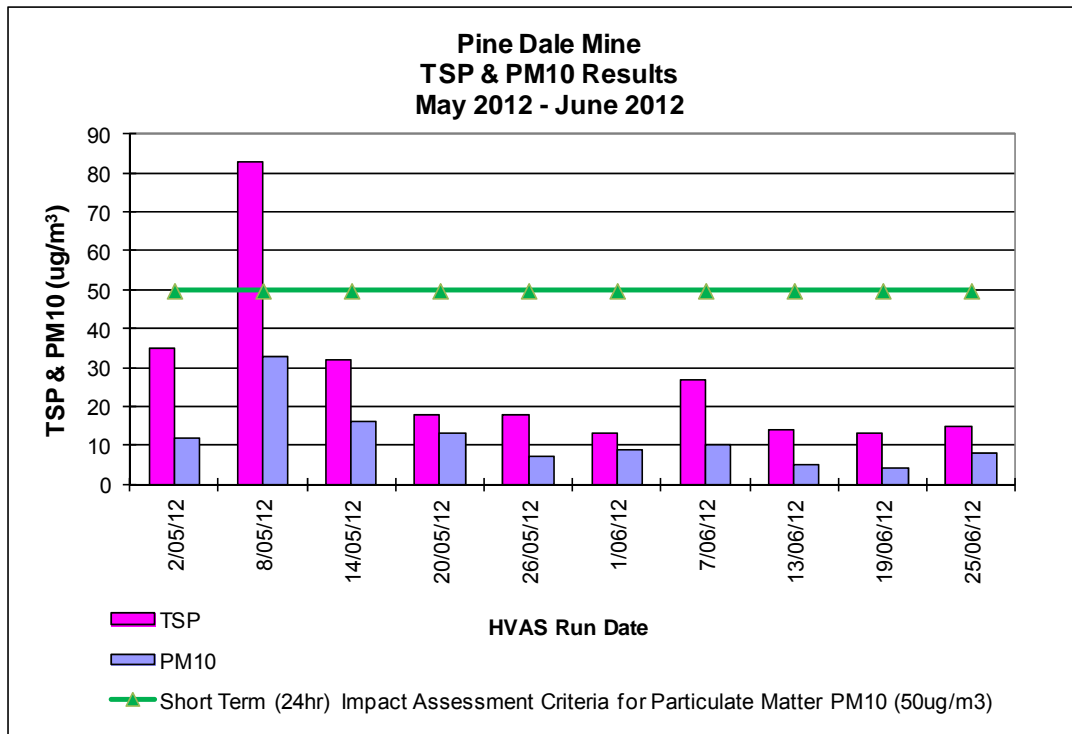
Depositional Dust and HVAS Result Graphs

**Pine Dale Mine
Depositional Dust Gauge Comparative Results
May 2012 - June 2012**



**Pine Dale Mine
Deposited Matter - Insoluble Solids 12 Months Comparative Results
July 2011 - June 2012**

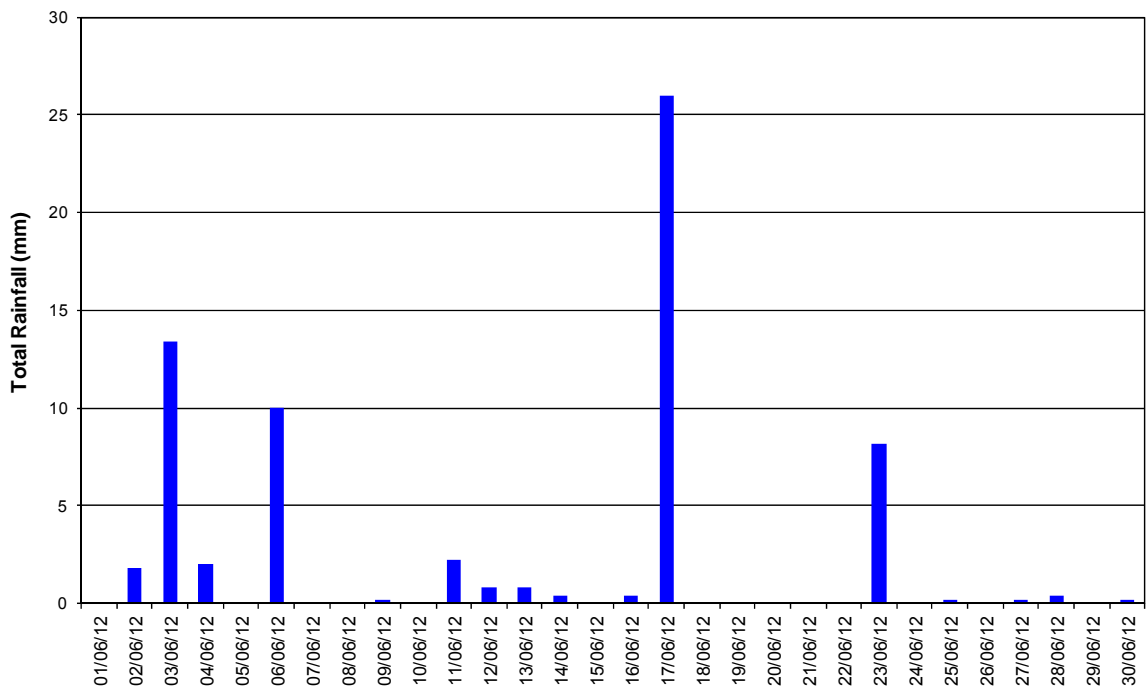




Appendix 3

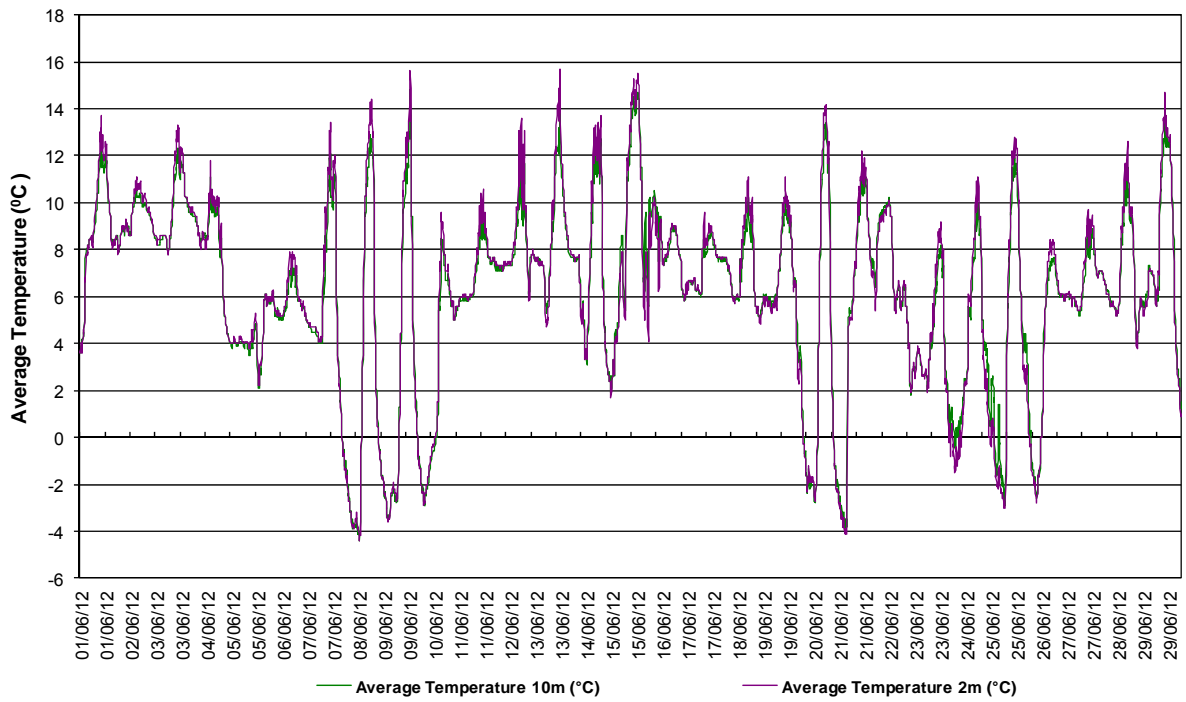
Meteorological Data

Blackmans Flat NSW
Total Rainfall - Period: 1/06/12 to 30/06/12



Total Rainfall for June 2012: 67.2 mm

Blackmans Flat NSW
Average Air Temperature - Period: 1/6/12 to 30/6/12



Neubecks Creek - Blackmans Flat NSW Average Depth & Velocity vs. Rainfall- Period: 1/6/12 to 30/6/12

