



**GROUND WATER DEPOSITIONAL
DUST HVAS AND METEOROLOGICAL MONITORING**

Pine Dale Mine

Pine Dale Mine Community Consultative Committee

RCA Australia

**RCA ref 6880-801/0
July 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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6 September 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
JULY 2012**

1 GENERAL COMMENTS

Job Number: 6880.

Date Samples Received: During the month of July 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 Matter	ENV-LAB003	$\mu\text{g}/\text{m}^3$	RCA Laboratories - Environmental	NATA Analysis
Determination of Particulate Matter – Deposited Matter	ENV-LAB004	$\text{g}/\text{m}^2/\text{month}$	RCA Laboratories - Environmental	NATA Analysis
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 5 on-site groundwater samples were collected during the month of July 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		07126880019	07126880020	07126880010	07126880021	07126880022
Date Sampled	-	30/07/2012	30/07/2012	30/07/2012	30/07/2012	30/07/2012
Time Sampled	-	14:45	14:38	13:30	14:10	14:18
Standing Water Level	m	4.90	5.64	26.64	7.73	5.80
Standpipe Height	m	0.95	0.66	0.95	1.00	0.90
Relative Standing Water Level*	m	3.95	4.98	25.69	6.73	4.90
pH	pH unit	4.2	5.4	6.9	7.0	6.9
Conductivity	µS/cm	333	411	814	693	776

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
1-Jul-12	8	07126880045	8365712	06-Jul-12	10:05	Client	24.00
7-Jul-12	12	07126880047	8579148	10-Jul-12	12:15	Client	24.00
13-Jul-12	9	07126880049	8579150	16-Jul-12	10:50	Client	24.00
19-Jul-12	26	07126880051	7626621	24-Jul-12	10:10	Client	24.00
25-Jul-12	24	07126880053	7626630	24-Jul-12	10:30	Client	24.00
31-Jul-12	33	07126880055	7626640	02-Aug-12	10:05	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
1-Jul-12	2	07126880046	8579147	06-Jul-12	10:05	Client	24.00
7-Jul-12	11	07126880048	8579149	10-Jul-12	12:15	Client	24.00
13-Jul-12	4	07126880050	7626620	16-Jul-12	10:50	Client	24.00
19-Jul-12	14	07126880052	7626629	24-Jul-12	10:10	Client	24.00
25-Jul-12	11	07126880054	7626631	27-Jul-12	10:10	Client	24.00
31-Jul-12	12	07126880056	7626648	02-Aug-12	10:05	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 August 2011 to July 2012) for the TSP unit is $22.5\mu\text{g}/\text{m}^3$, 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 50µg/m³. The EPA Annual Mean PM₁₀ limit is 30µg/m³. All PM₁₀ HVAS results during this monitoring period are in compliance with consent conditions, as the *current annual mean* for the PM₁₀ unit is 10.9µg/m³, which is below the allowable limit of 30µg/m³ 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)
07126880032	D1	28/06/2012	30/07/2012	32	I	0.6	0.4	0.2
07126880033	D2	28/06/2012	30/07/2012	32	I	0.7	0.3	0.4
07126880034	D3	28/06/2012	30/07/2012	32	I	0.7	0.5	0.2
07126880035	D4	28/06/2012	30/07/2012	32	I	0.3	0.1	0.2
07126880036	D5	28/06/2012	30/07/2012	32	I	0.6	0.4	0.2
07126880037	D6	28/06/2012	30/07/2012	32	I	0.3	0.1	0.2

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**.

5 SUMMARY

During the month of July 2012 all sites were found to be in compliance with EPL 4911.

Rolling annual averages from both the TSP and PM₁₀ High Volume Air Samplers are currently well below the EPA Annual Mean TSP and PM₁₀ criterion of 90µg/m³ and 30µg/m³ respectively. There were zero exceedances of the PM₁₀ short term impact assessment criteria of 50µg/m³ over twenty-four hours during July 2012.

Currently there are no depositional dust gauge results which are greater than the EPA Long Term (annual average) criteria of 4g/m²/month based upon a rolling average of the past 12 months.

Quarterly surface waters were not scheduled to be sampled this month. Water Quality monitoring is next scheduled to be undertaken at these sites in August 2012.

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Please contact the undersigned if you have any queries.

Yours sincerely



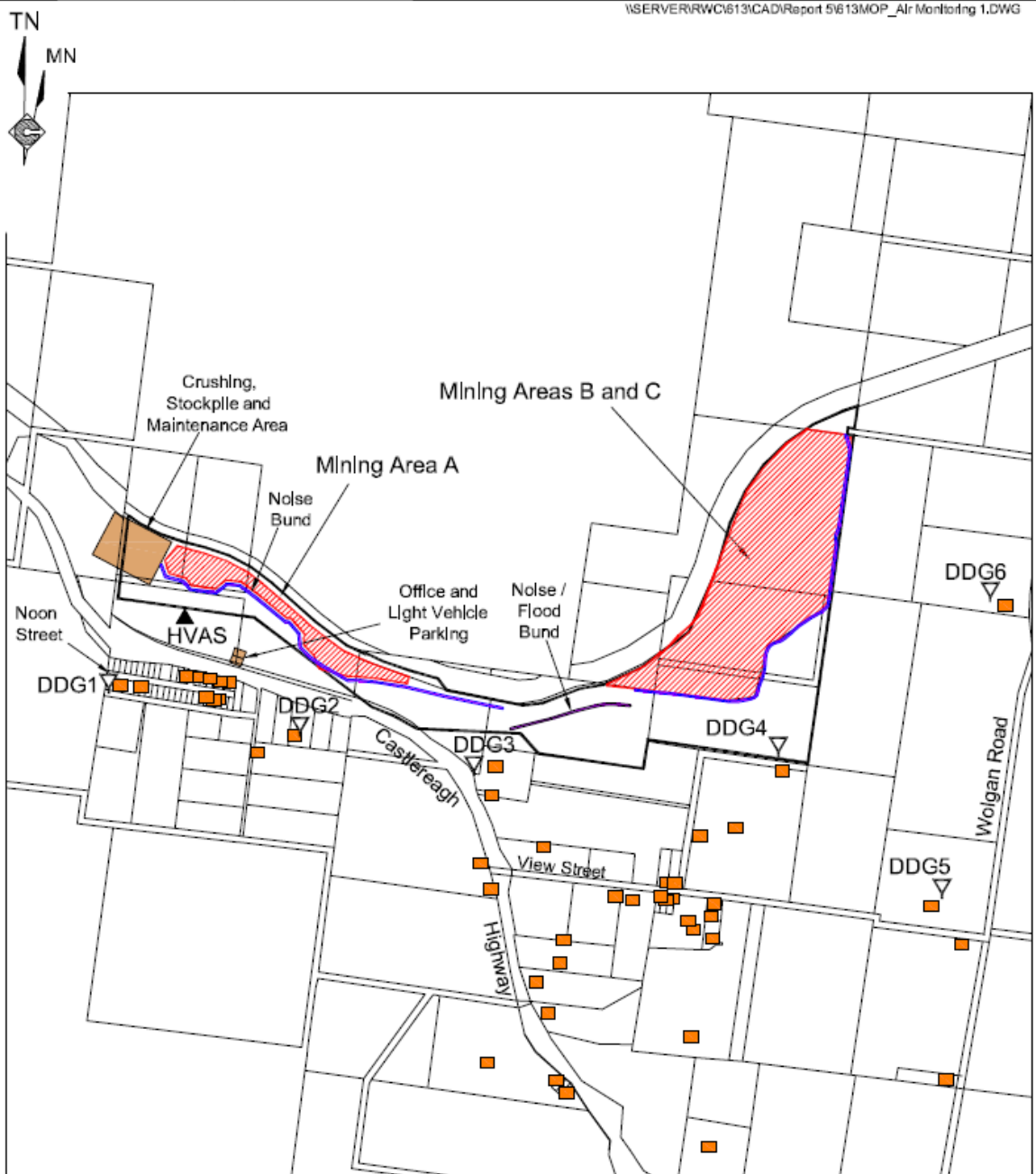
Katy Shaw
Environmental Scientist
RCA Australia Pty Ltd trading as
RCA Laboratories – Environmental



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)

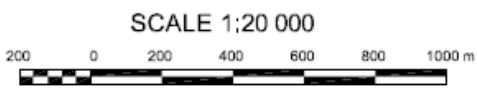
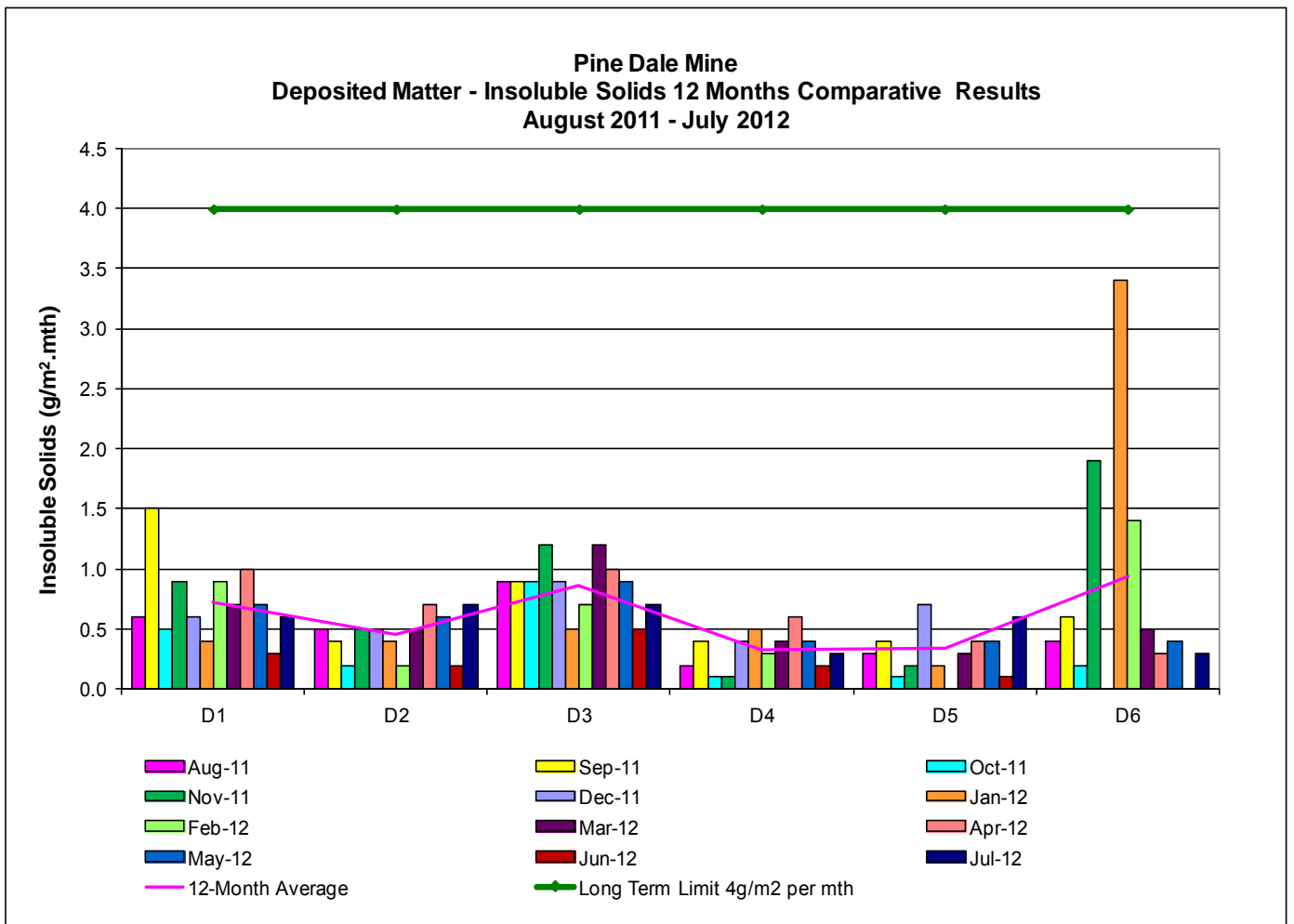
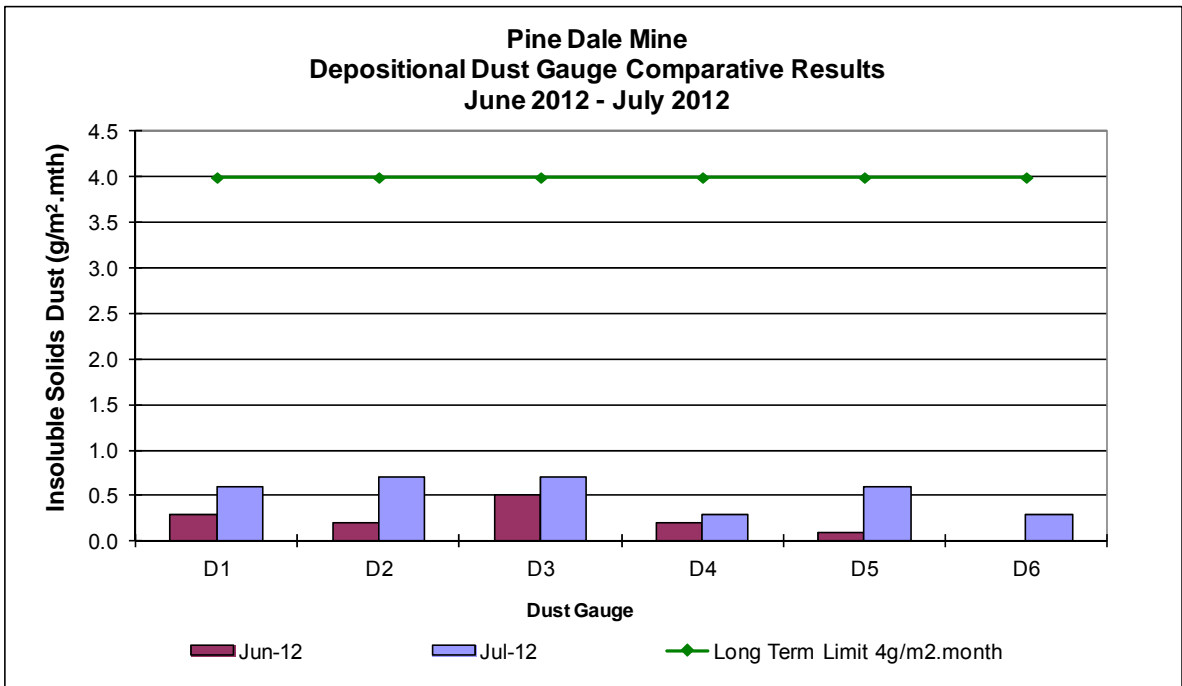
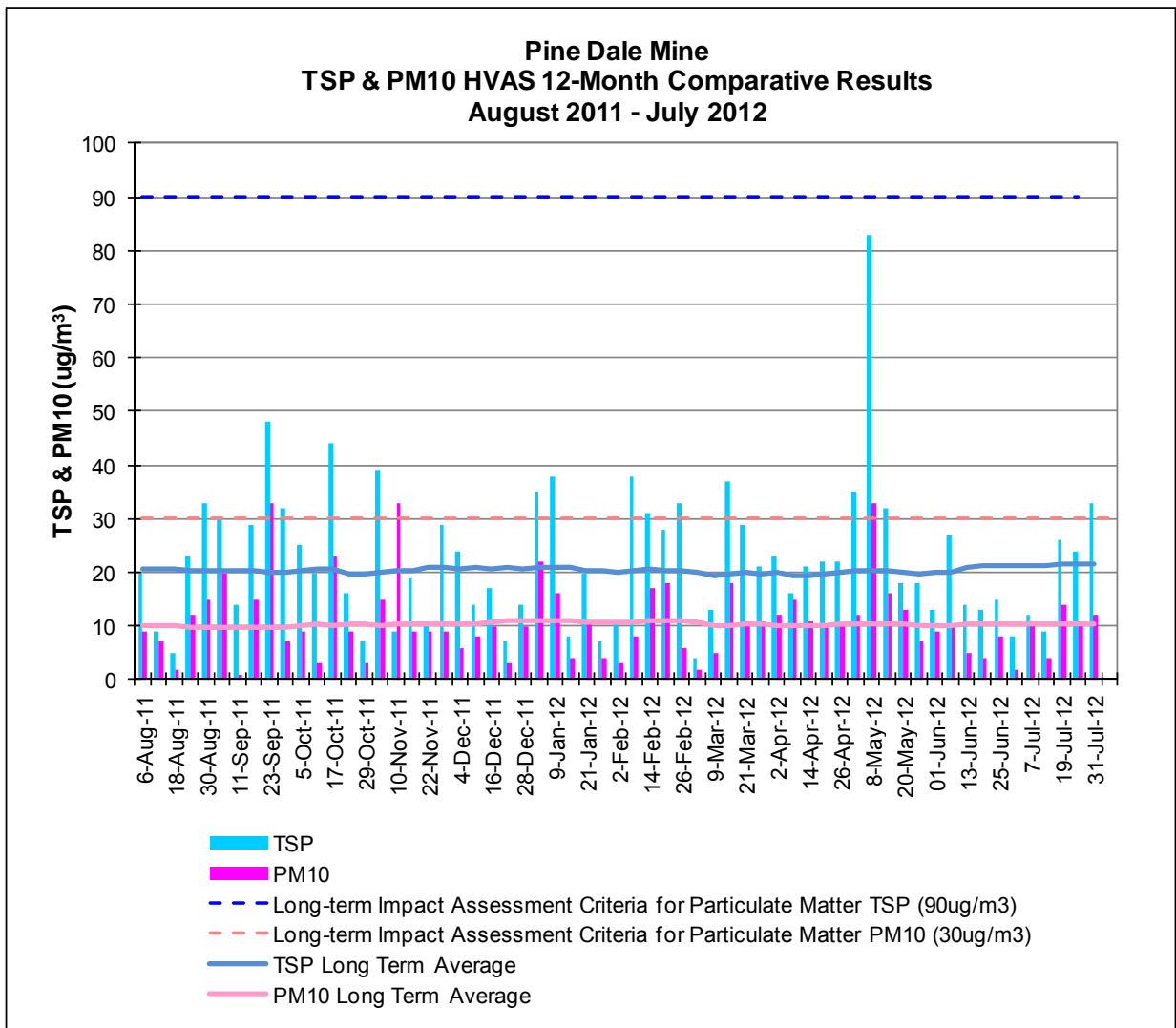
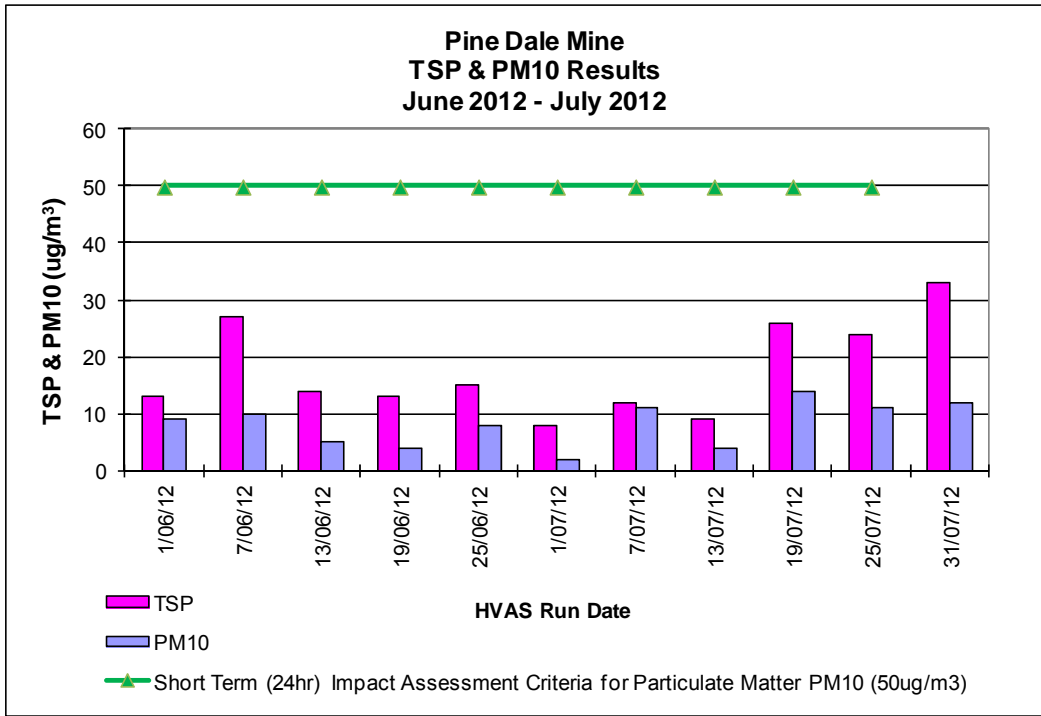


Figure AQ1
 AIR QUALITY MONITORING LOCATIONS

Appendix 2

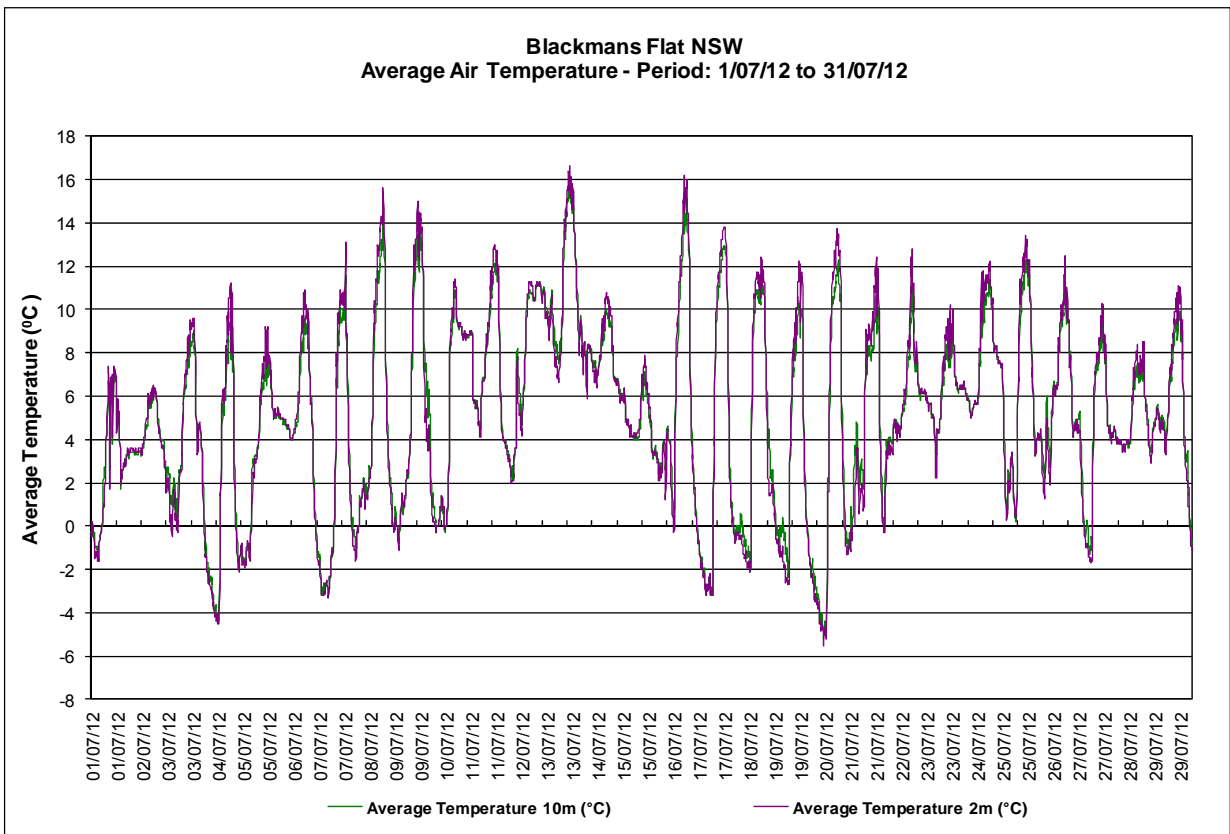
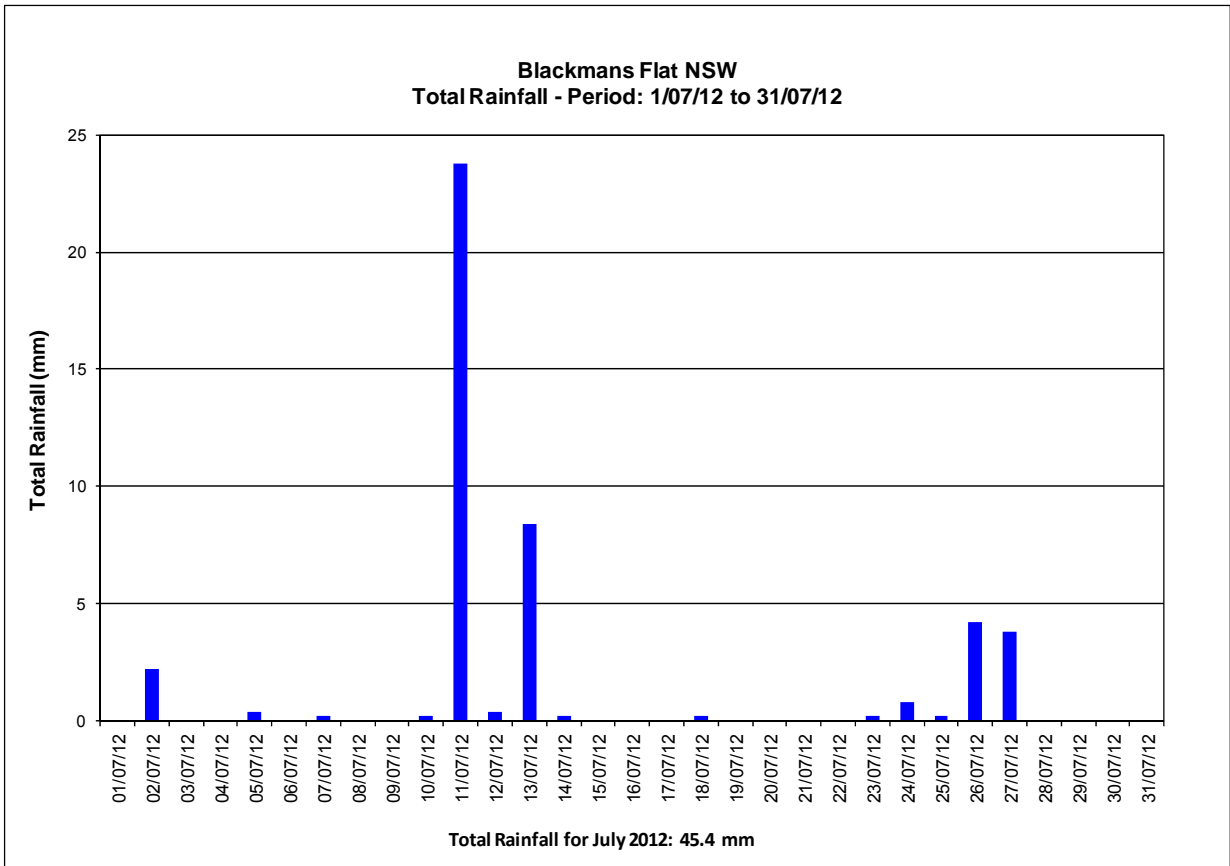
Depositional Dust and HVAS Result Graphs





Appendix 3

Meteorological Data



Neubecks Creek - Blackmans Flat NSW
Average Depth & Velocity vs. Rainfall- Period: 1/07/12 to 31/07/12

