APPENDIX B

Figures

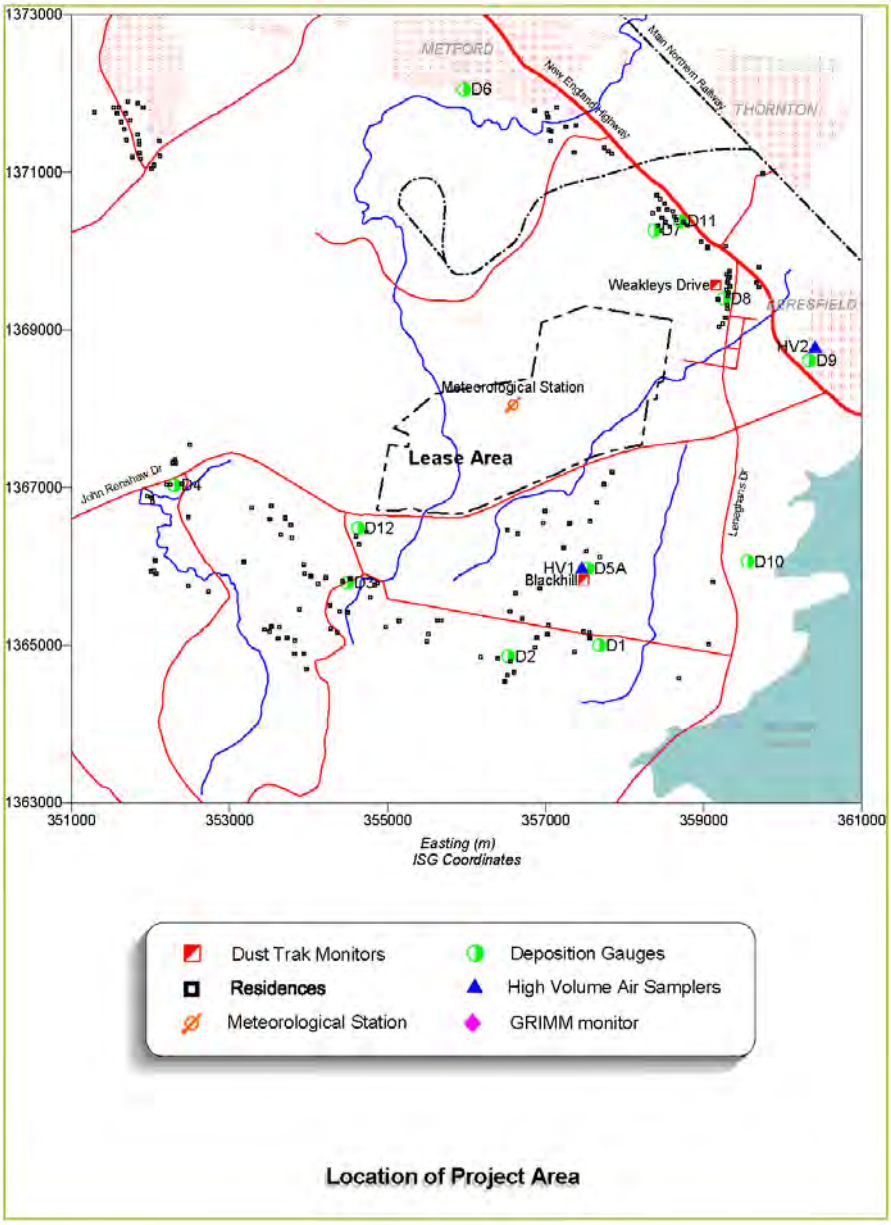


Figure 1: Project Location

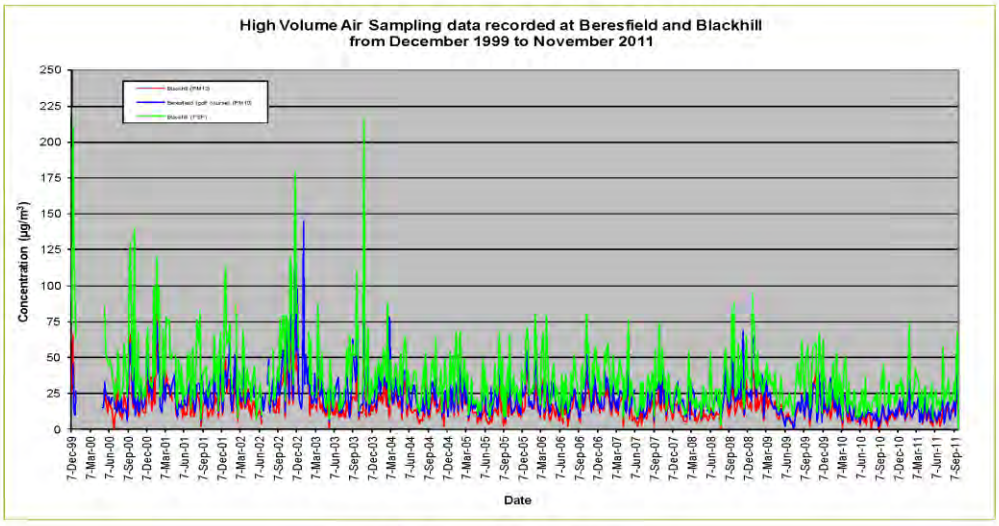


Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in November 2011 due to inability to access the site.

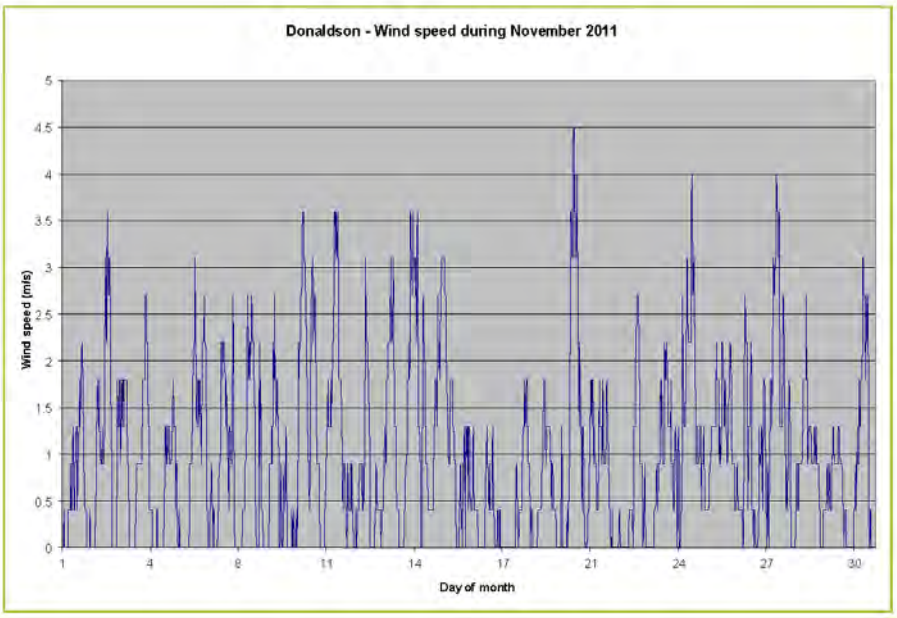
Figure 3: DustTrak sampling data - Blackhill site

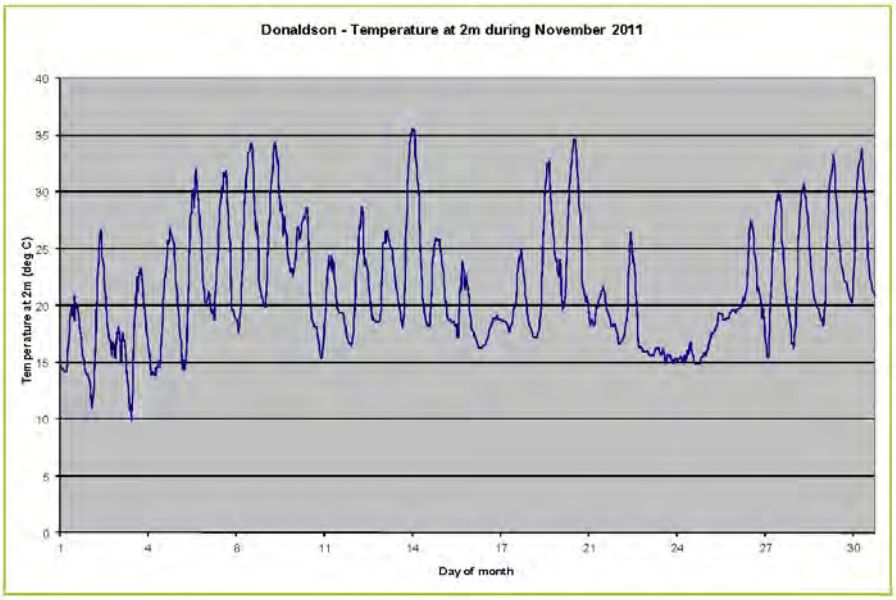
No Monitoring was avaliable for this site in November 2011 due to equipment malfunction

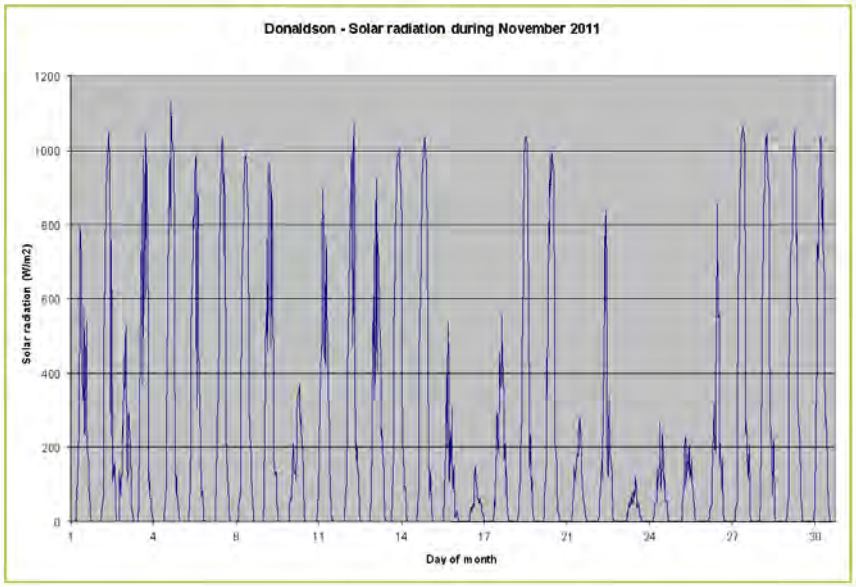
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data


Donaldson - Wind speed during November 2011
Wind speed (m/s)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
5
1
4
8
11
14
17
21
24
27
30
Day of month


Donaldson - Temperature at 2m during November 2011
Temperature at 2m (deg C)
0
5
10
15
20
25
30
35
40
1
4
8
11
14
17
21
24
27
30
Day of month



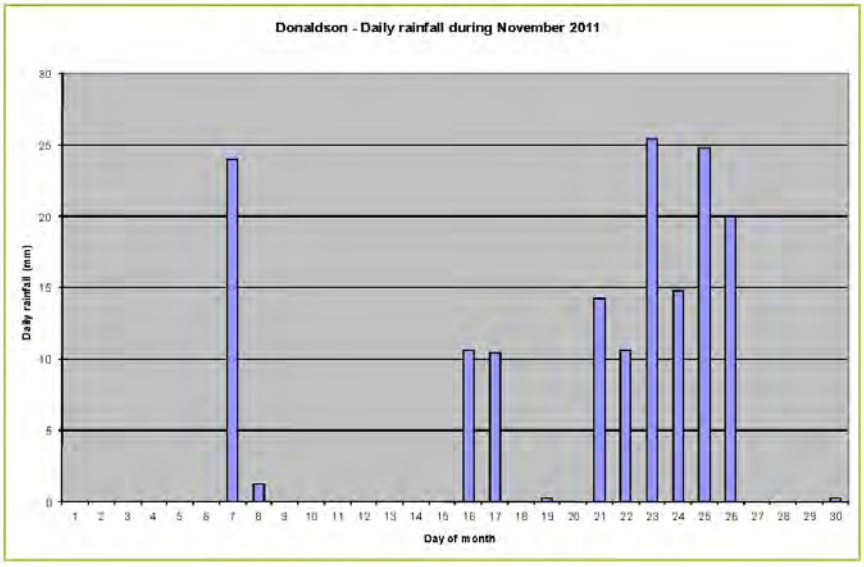


Figure 6: Meteorological conditions

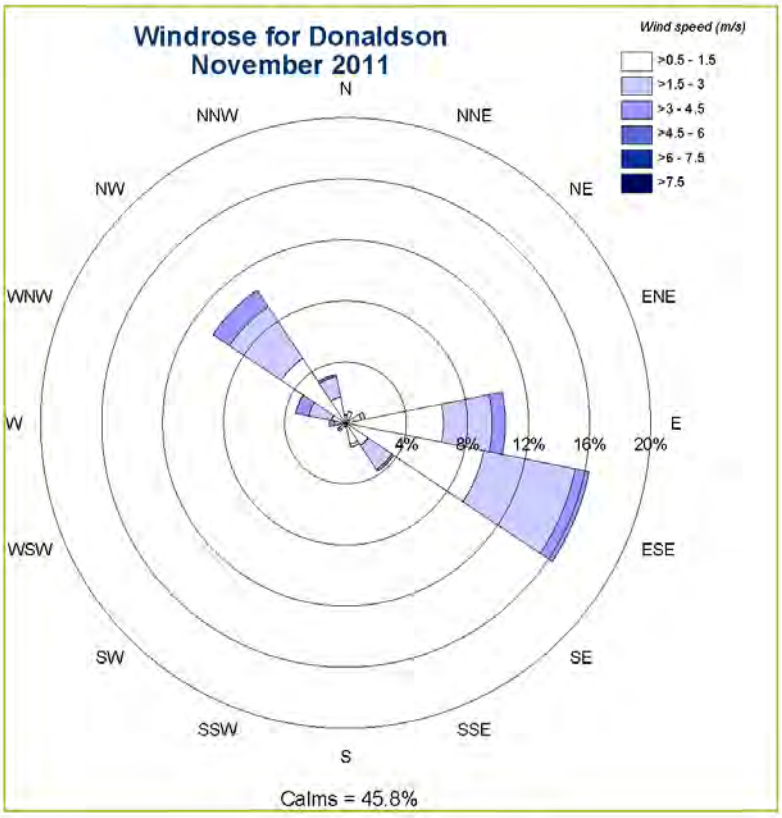


Figure 7: Windrose for November

REPORT

DUST AND METEOROLOGICAL DATA – DECEMBER 2011

Donaldson Coal

Job No: 3003

19 March 2012

A PEL Company

PROJECT TITLE:	**DUST AND METEOROLOGICAL DATA – DECEMBER 2011**
JOB NUMBER:	**3003**
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1 INTRODUCTION

As part of their Air Quality Management Plan, Donaldson Coal operate an ambient air quality monitoring network, including dust monitoring in the vicinity of the mining lease and meteorological monitoring at a single station on-site. This report has been prepared as a summary of the data collected throughout the network during December 2011.

The dust monitoring network includes continuous monitoring using TSI DustTrak, high volume air sampling (HVAS) on a one-day-in-six run cycle and dust deposition monitoring.

The continuous monitoring network consists of two DustTrak monitors measuring PM_{10} at two sites and an additional DustTrak monitor used for one week each quarter to measure $PM_{2.5}$.

There are two HVAS locations used to determine ambient concentrations of PM_{10} and TSP. These operate on a one-day-in-six run cycle, in line with similar measurements made by the NSW Office of Environment and Heritage (OEH)[a] at other locations throughout the state.

Monthly levels of dust deposition are also measured using twelve gauges placed at various locations in the vicinity of the mine. The locations of each of these monitors and gauges are shown in **Figure 1**.

Table 1 lists the instruments used and pollutants measured at these locations.

Table 1: Summary of monitoring locations and instruments

Monitoring Location	Instruments Used	Pollutant Monitored
Beresfield	HVAS	PM_{10}
Blackhill	HVAS	PM_{10}
	HVAS	TSP
	DustTrak	PM_{10}
	DustTrak (1 week per quarter)	$PM_{2.5}$
Weakleys Drive	DustTrak	PM_{10}
DG1 – DG12	Deposition Gauges	Dust Deposition

Meteorological data are downloaded monthly and forwarded to PAEHolmes for processing. The meteorological station is situated at the site of the office buildings and measures the following parameters:

- wind speed
- wind direction
- temperature
- solar radiation
- rainfall

[a] The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2 HIGH VOLUME AIR SAMPLING

High Volume Air Sampling (HVAS) was carried out at Beresfield and Blackhill by RCA Laboratories. PM_{10} is measured at both sites while TSP is only measured at Blackhill. The data collected during December 2011 are summarised in **Table 2**. A graph consisting of all the data collected to date is shown in **Figure 2**.

Table 2: HVAS data from Beresfield and Blackhill for December 2011

Date	Beresfield PM_{10} ($\mu g/m^3$)	Blackhill PM_{10} ($\mu g/m^3$)	Blackhill TSP ($\mu g/m^3$)
4/12/2011	7	20	29
10/12/2011	14	14	21
16/12/2011	9	10	16
22/12/2011	6	8	11
28/12/2011	14	15	20
Annual average	**14**	**13**	**27**

All measurements of PM_{10} for December are below the 24-hour OEH PM_{10} goal of 50 $\mu g/m^3$. The highest 24-hour average PM_{10} concentration was 20 $\mu g/m^3$, recorded at Blackhill on 4 December.

Figure 2 shows a seasonal trend in PM_{10} concentrations, peaking during the warmer months and decreasing during autumn and winter. This is a common trend and is seen consistently in the Hunter Valley.

The annual average PM_{10} concentrations for Beresfield and Blackhill were 14 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively for the 12 months to December 2011. These values are below the OEH annual average PM_{10} goal of 30 $\mu g/m^3$.

TSP measurements from the Blackhill site show that concentrations were below the OEH annual average TSP goal of 90 $\mu g/m^3$. It should be noted that the goal refers to an annual average and not a 24-hour average as measured by the high volume air sampler. The annual average TSP concentration for the 12 months to December 2011 was 27 $\mu g/m^3$.

These measurements will include all background sources relevant to that location, including contributions from the Donaldson mining operations.

3 CONTINUOUS MONITORING

3.1 DustTrak Monitoring at Blackhill

Monitoring data was not available for December 2011.

3.2 DustTrak Monitoring at Weakleys Drive

Monitoring data was not available for December 2011.

3.3 DustTrak $PM_{2.5}$ Monitoring at Blackhill

$PM_{2.5}$ monitoring was not carried out in December 2011.

4 DUST DEPOSITION MONITORING

Dust deposition monitoring is carried out each month via a network consisting of twelve (12) gauges. The results for December 2011 are shown in **Table 3**, in conjunction with results for the previous eleven months in order to provide an annual average for that period.

A summary of the complete data set from June 2000 is provided in **Appendix A**.

Table 3: Dust deposition monitoring for the 12-month period to December 2011

Month	Monthly dust deposition rate (g/m²/month)											
	DG1	DG2	DG3	DG4	DG5A	DG6	DG7	DG8	DG9	DG10	DG11	DG12
Dec-10	1.0#	0.7#	0.9#	1.1#	0.5#	0.4#	0.6#	2.4#	1.0#	0.5	1.0#	1.4#
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1+	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Jul-11	0.6	0.5	1.6	<0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	1	1.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Annual Average	**0.7**	**1.4**	**2.1**	**0.8**	**0.8**	**0.7**	**0.8**	**2.0**	**0.8**	**0.8**	**0.9**	**1.0**

Data supplied by RCA Laboratories. # Insects/bird droppings reported. +Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

The highest dust deposition measurement recorded in December 2011 was 5.5 g/m²/month at DG8.

It is noted that the OEH goal for dust deposition is expressed as an annual average and the annual average deposition rates for the gauges in the network are all significantly below the goal of 4 g/m²/month, indicating nuisance dust in the vicinity of the mine is not an issue.

5 METEOROLOGICAL MONITORING

Monthly plots of the wind speed, temperature, solar radiation, and rainfall data collected in December 2011 are shown in **Figure 6** and a windrose plot is shown in **Figure 7**.

The graphs shown in **Figure 6** indicate that the instruments were recording appropriately. Data maxima and minima all appeared to be sensible for this site during December. Total rainfall for the month was 74 mm. This is consistent with permanent Bureau of Meteorology weather stations in the area.

A windrose (see **Figure 7**) created from the available 30-minute average wind data shows that winds were predominantly from the east-southeast.

The site recorded calms (wind speed less than or equal to 0.5 m/s) for approximately 53.3% of the time. The relatively large fraction of calm winds is significantly higher than would be expected and may be as a result of the sheltered location of the weather station.

APPENDIX A

Dust Deposition Data

Dust deposition (g/m²/month)												
Month	D1	D2	D3	D4	D5A	D6	D7	D8	D9	D10	D11	D12
Jun-00	0.7	0.5	0.5	0.7	0.8	0.4	3.8	3.2	0.5	0.7	-	-
Jul-00	0.4	0.4	0.5	0.7	0.8	0.5	0.8	1.5	0.4	0.4	-	-
Aug-00	0.9	0.6	1.0	1.2	1.1	1.0	3.4	0.7	0.7	0.6	-	-
Sep-00	0.8	0.9	1.1	0.9	1.3	1.0	2.2	1.0	1.0	0.8	-	-
Oct-00	0.4	0.6	1.1	0.9	0.9	0.8	5.3	0.9	0.6	0.5	-	-
Nov-00	5.2	0.7	1.4	0.8	1.0	0.4	24.1	9.4	1.1	0.6	-	-
Dec-00	2.8	1.4	1.9	1.3	1.1	0.8	2.1	2.5	0.9	0.9	-	-
Jan-01	0.7	1.7	1.4	1.8	0.7	1.3	1.1	2.4	1.1	0.6	-	-
Feb-01	0.9	3.1	2.0	0.5	0.9	0.7	0.7	6.7	1.3	0.5	1.0	-
Mar-01	0.8	2.1	1.3	0.6	0.7	0.6	0.6	5.5	0.6	0.6	1.5	-
Apr-01	0.8	0.7	1.3	0.5	0.7	0.4	0.3	5.1	0.7	0.6	0.8	-
May-01	0.2	0.2	0.4	0.4	0.3	0.3	0.6	1.8	0.6	0.8	0.9	-
Jun-01	0.5	0.4	0.5	1.0	1.0	0.4	0.4	8.8	0.7	0.6	0.6	-
Jul-01	0.5	0.3	1.8	0.5	0.8	-	16.3	4.9	0.9	0.7	0.7	-
Aug-01	0.4	0.4	0.8	0.8	1.0	1.7	1.0	-	1.0	1.8	1.1	-
Sep-01	0.7	1.0	1.7	1.1	1.7	0.7	-	6.0	1.1	1.3	1.7	-
Oct-01	1.1	0.6	4.6	0.9	0.7	0.9	1.2	1.9	0.9	0.6	1.7	-
Nov-01	0.9	1.0	1.1	1.1	0.8	1.1	6.0	5.5	1.3	1.9	2.3	-
Dec-01	4.9	0.9	4.2	0.9	1.3	1.9	1.2	3.1	1.2	9.7	1.8	-
Jan-02	0.8	1.0	1.5	1.3	1.1	1.4	1.3	1.5	1.1	0.9	1.5	-
Feb-02	1.1	1.1	0.9	0.3	0.4	0.5	3.1	5.1	0.5	0.5	0.9	-
Mar-02	1.7	2.1	1.6	0.7	0.7	0.8	1.0	18	1.0	0.9	1.7	-
Apr-02	1.0	0.4	1.0	0.8	0.8	0.6	0.9	10.1	0.5	0.7	1.0	-
May-02	0.6	0.6	6.0	0.7	0.4	1.2	0.9	3.1	0.7	0.2	1.0	-
Jun-02	1.4	0.4	1.7	0.6	0.5	0.8	0.6	2.1	0.6	0.5	1.0	-
Jul-02	0.7	0.7	-	0.8	0.8	0.7	1.2	-	1.1	0.5	1.0	-
Aug-02	1.3	0.8	1.4	1.2	1.1	1.2	1.5	-	1.5	0.9	1.6	-
Sep-02	0.5	1.2	1.1	0.8	0.5	0.7	5.1	9.3	1.6	0.6	1.0	-
Oct-02	2.2	1.4	5.2	1.5	1.5	1.4	1.4	3.4	-	1.5	3.1	-
Nov-02	2.8	1.8	3.7	1.6	0.1	1.8	2.1	3.5	2.1	2	1.9	-
Dec-02	2.0	-	2.5	1.5	3.0	1.5	1.8	4.1	1.6	1.2	1.9	-
Jan-03	2.1	1.5	2.7	1.5	1.0	1.9	2.2	2.5	1.1	1.0	1.6	-
Feb-03	1.4	1.1	2.6	1.1	0.9	1.2	1.7	5.9	1.2	1.0	1.5	-
Mar-03	0.8	0.5	1.2	1.2	0.6	2.1	1.5	3.4	-	3.6	9.5	-
Apr-03	0.5	1.0	0.6	1.0	0.7	0.5	1.1	8.0	-	2.0	1.0	-
May-03	0.5	0.4	0.6	0.2	0.2	0.6	1.3	1.6	0.5	0.8	1.2	-
Jun-03	0.5	0.6	0.8	0.8	0.4	0.6	0.8	0.7	0.9	0.7	0.7	-
Jul-03	0.3	0.4	0.4	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.7	-
Aug-03	0.8	0.2	0.7	1.1	0.5	1.3	1.8	2.1	1.3	0.7	0.9	-
Sep-03	0.6	0.7	1.1	0.7	0.8	1.7	1.4	1.3	2.5	0.9	1.3	-
Oct-03	-	0.9	1.4	0.9	0.7	1.9	1.0	1.4	0.6	0.8	1.3	-
Nov-03	2.6	0.8	1.0	1.1	0.4	1.3	1.5	1.5	-	0.8	1.3	-
Dec-03	1.0	1.0	1.4	1.3	1.1	1.5	1.6	2.0	1.8	0.9	1.4	-
Jan-04	8.5	1.5	2.1	1.5	1.3	2.6	1.4	2.2	1.7	1.5	1.7	-
Feb-04	1.2	1.0	1.7	1.4	0.7	3.1	1.6	2.2	-	1.5	2.3	-
Mar-04	0.4	0.6	6.6	1.2	0.7	1.9	1.1	12.1	4.8	1.5	1.1	-

Apr-04	0.6	1.0	0.8	0.8	0.6	1.9	0.8	1.4	0.9	1.2	1.1	-
May-04	0.2	0.9	2.2	0.9	0.8	0.7	0.9	1.4	1.2	0.9	1.5	-
Jun-04	0.4	0.6	0.7	0.9	0.6	1.4	1.0	0.9	1.0	1.0	0.8	-
Jul-04	0.4	0.6	5.3#	0.6	0.5	2.9	1.0	1.1	0.9	0.6	1.2	-
Aug-04	0.5	0.5	0.5	1.3	0.7	1.1	1.1	1.4	-	1.0	1.0	-
Sep-04	0.6	0.6	0.8	2.2	1.0	1.0	0.9	4.4	0.9	16.7	1.1	-
Oct-04	0.7	0.9	1.2	0.9	0.8	1.4	1.0	10.5	1.0	1.0	0.8	-
Nov-04	0.8	0.7	1.3	1.9	0.7	0.9	1.0	3.0	1.1	1.1	1.6	-
Dec-04	2.0	1.4	3.6	1.5	1.3	2.2	3.2	7.9	1.8	5.5	2.5	-
Jan-05	1.2	1.0	3.7	1.6	1.4	4.0	2.3	2.7	2.6	2.5	2.8	-
Feb-05	1.2	1.2	1.8	1.6	1.3	2.0	1.7	-	2.3	1.5	2.3	-
Mar-05	1.3	0.9	1.4	0.9	0.9	3.0	1.2	7.7	-	0.8	1.3	-
Apr-05	1.1	0.7	0.9	0.8	0.7	0.9	1.4	3.3	1.1	0.8	0.9	-
May-05	0.7	8.6	1.1	0.8	0.7	0.8	0.9	4.4	1.2	0.8	1.1	-
Jun-05	1.3	0.8	1.3	1.3	0.8	1.2	1.2	1.3	1.5	2.5	0.9	-
Jul-05	1.0	0.5	0.5	0.7	0.4	1.6	0.7	1.2	0.8	4.3	1.1	-
Aug-05	0.6	0.6	0.8	1.0	0.8	0.9	0.7	1.0	0.9	1.0	0.9	-
Sep-05	0.6	0.7	0.8	0.7	0.7	1.2	1.3	1.3	1.0	0.9	1.1	-
Oct-05	0.8	0.9	1.3	0.9	0.8	1.4	1.2	1.9	1.3	1.1	1.3	-
Nov-05	-	2.3	2.3	2.0	1.7	1.2	2.0	3.2	1.6	1.4	2.2	-
Dec-05	1.9	3.2	2.3	3.3	2.6	3.4	2.3	-	1.3	2.1	3.9	-
Jan-06	1.0	2.1	1.7	1.0	23.	3.5	-	2.7	1.1	-	1.5	-
Feb-06	2.2	1.0	0.9	1.2	1.1	1.7	1.1	2.9	-	2.3	1.8	-
Mar-06	0.7	0.6	2.3	0.7	0.6	0.9	1.0	1.4	0.7	0.8	1.5	-
Apr-06	0.6	0.7	1.1	0.8	0.6	1.1	0.8	1.0	1.0	1.8	1.5	-
May-06	1.0	3.1	1.0	-	1.1	1.4	1.1	4.1	-	7.0	1.5	-
Jun-06	0.4	0.3	0.7	0.5	0.4	0.6	0.7	0.8	0.6	0.9	0.9	-
Jul-06	0.3	0.3	1	1.3	0.4	0.7	0.7	2.7	-	0.6	0.6	-
Aug-06	0.9	0.6	0.8	0.7	0.7	0.8	0.7	1.7	-	3.7	0.9	-
Sep-06	1.6	0.7	1.1	1.7	0.7	1	0.9	1.3	1.2	0.8	1.6	-
Oct-06	2	1.4	1.6	1.8	0.9	1.8	1.2	1.8	1.5	1.8	1.9	-
Nov-06	4.3	2.2	3	2.3	2.3	5.3	2.4	3.3	2.3	2.3	2.9	-
Dec-06	1.2	3.4	1.9	2.3	2.3		2.1	2.1		4.9	3.9	-
Jan-07	2	0.9	1.5	0.7	0.7	1.7	1.1		1.2	1.7	0.9	-
Feb-07	1.7	0.9	1.6	0.7	0.6	1	1.8	1.7	1.1	1.2	1.7	-
Mar-07	1.3	0.9	1.7	0.8	1.2	0.6	2.2	1.7	1	0.9	1.7	-
Apr-07	0.5	0.7	0.9	0.6	4.8	1.2	0.5	2.7	0.5	0.8	0.9	-
May-07	0.8	0.5	0.6	1.2	0.6	0.6	0.7	1.9	0.5	0.7	0.8	-
Jun-07	0.6	0.5	0.7	1.1	0.1	0.5	0.1	0.5	0.1	0.4	0.3	-
Jul-07	0.5	0.4	0.6	2.1	0.5	0.8	0.6	0.6	0.4	0.5	0.7	-
Aug-07	1.5	0.4	0.7	1	0.7	0.7	0.5	1	0.6	0.6	0.7	-
Sep-07	1.3	0.5	1.8	1	0.7	0.9	0.9	1.3	1	0.7	1.6	-
Oct-07	4.2	0.9	1.1	1.4	1.1	1.7	1.8	1.7	1.6	1.4	2.2	-
Nov-07	0.8	0.8	1.1	0.9	1.1	1.1	1.1	1.7	0.6	0.8	1.5	-
Dec-07	1.3	0.8	3	0.7	0.5	0.8	0.5	1.1	0.3	0.8	0.6	-
Jan-08	2.6	0.8	3.7	0.5	0.5	0.5	0.4	2.2	0.8	0.3	0.8	-
Feb-08	0.4	0.1	14	0.1	0.1	0.3	0.1	0.3	0.2	0.2	0.3	-

Mar-08	4.5	0.6	9.2+	0.6	2.9	2.1	0.6	1.5	0.5	1	0.9	-
April-08	0.4#	0.4#	0.8#	0.4#	0.4#	0.8#	1.1#	1.7#	1.2	1.1#	1.1#	-
May-08	1.1	2.4#	0.9	1.4	0.9	0.9	0.7	2.7	1#	1.1	1.3#	-
June-08	0.2	0.4#	0.1	0.5	0.1#	0.1	0.3	0.5#	0.1	0.8	0.2	-
July-08	0.4	0.7#	1.3#	0.6	0.8#	0.9	0.8	1	0.7	0.5	1.1	-
Aug-08	1	0.5	0.7	0.6	0.5	1.9	0.8	1	1	0.9	1.4	-
Sep-08	0.6	1	1.3	0.7	0.6	0.9	0.6	0.9	0.9	0.9	1.8	-
Oct-08	1	0.5	1	1.3	1.3	1.2	1	1.4	0.8	1.6	1.8	-
Nov-08	0.8	1.4	2.7	2.5	0.9	1.2	0.8	2.4	1.1	1	1.7	-
Dec-08	0.4	0.4	0.6	0.5	0.3	1.1	0.6	15	0.9	0.7	1.2	-
Jan-09	1.1	3#	1.6	0.8	0.9	1.4	0.7	1.5	0.9	0.9	5+	-
Feb-09	0.4	4.4	1.5	1.1	0.9	1.6	0.8	1.2	1.4	2.5	1.2	-
Mar-09	2.8	5.8	2.7	2.4	1.9	2.1	2.5	2.4	2.3	5.7	2.7	-
Apr-09	2	0.8	0.8	0.6	0.6	3.2	1.1	1.1	1	0.6	0.9	-
May-09	0.6	1.6	0.8	2.4	0.9	5.6 +	1.4	1.1	1.3	0.7	1.5	-
Jun-09	0.4	1.3	0.8	0.5	0.5	3.3	0.9	0.6	1	3.4	0.7	-
Jul-09	0.2	1.0	0.6	0.4	0.3	3.8	0.5	0.6	0.6	0.3	0.6	-
Aug-09	0.8	3.6	0.8	1.2	1.0	1.8	0.8	1.8	1.3	0.8	1.0	-
Sep-09	1.0	1.8#	1.8	8.3 +	1	1.8	0.9#	1.8#	1.7#	0.7	1.4#	-
Oct-09+	4.3	9#	5.2#	11.3#	3.2	3.8#	2.4#	6.8#	3.0#	2.2	3.2#	5.7#
Nov-09	0.8#	1.7#	1.4#	1.3#	0.7#	2.1#	1.3#	8.0#	*	1.0#	*	2.3
Dec-09	1.4#	4.0#	1.6#	2.4#	1.7#	1.8	1.6	2.6#	1.7#	1.7#	2.2#	1.7
Jan-10	0.6#	0.8#	5.6#	1.2#	2.4#	1.2#	0.8#	1.4#	1.3#	0.8#	1.3#	1.1#
Feb-10	1.9#	11.3+	1.9#	1.4#	1.5#	1.1#	1.2#	1.6#	1.1#	0.8#	1.8#	1.3#
Mar-10	0.6#	0.6#	3.2#	1#	4.1#	0.6#	0.6#	1.2	0.6	0.2#	0.8#	1.1#
Apr-10	0.8#	1.8#	2.4#	0.7#	+	0.3	0.6#	0.9#	0.6#	0.4#	0.8#	0.8#
May-10	0.8	4.9#	3.0#	1.1	1.2	1.0	0.7	1.3	1.0#	0.5	1.1#	0.8
Jun-10	0.3	2.2#	3.0#	0.6#	0.2	1.2#	0.5	0.5#	0.6	0.7#	0.7#	0.4#
Jul-10	0.6#	1.1#	0.7#	0.7	0.5	0.3	0.5#	0.6#	0.7	0.2#	0.8	0.5
Aug-10	0.4	0.5#	1.9#	0.8#	0.2#	0.7#	0.5#	0.5#	0.6	0.5#	0.7#	0.4#
Sep-10	0.6#	2.6#	1.6#	1.0#	0.5#	1.1#	0.5#	1.0#	0.9#	0.6#	0.8#	0.9#
Oct-10	0.9#	1.6#	0.9#	0.5#	0.4#	0.5	1.0#	1.3#	1.2#	2.0#	1.2#	0.4#
Nov-10	0.9#	3.5#	0.9#	1.4#	1.1#	0.9	0.6#	0.9#	*	0.9#	0.8#	1.1#
Dec-10	1.0#	0.7#	0.9#	1.1#	0.5#	0.4#	0.6#	2.4#	1.0#	0.5	1.0#	1.4#
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1+	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	11	11.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4

- sample contaminated| + - sample invalid|*-Broken funnel| ~ - Site inaccessible

[Note: Samples for November 2009 have been considered invalid, due to a widespread dust storm experienced on 23rd November 2009.]

APPENDIX B

Figures

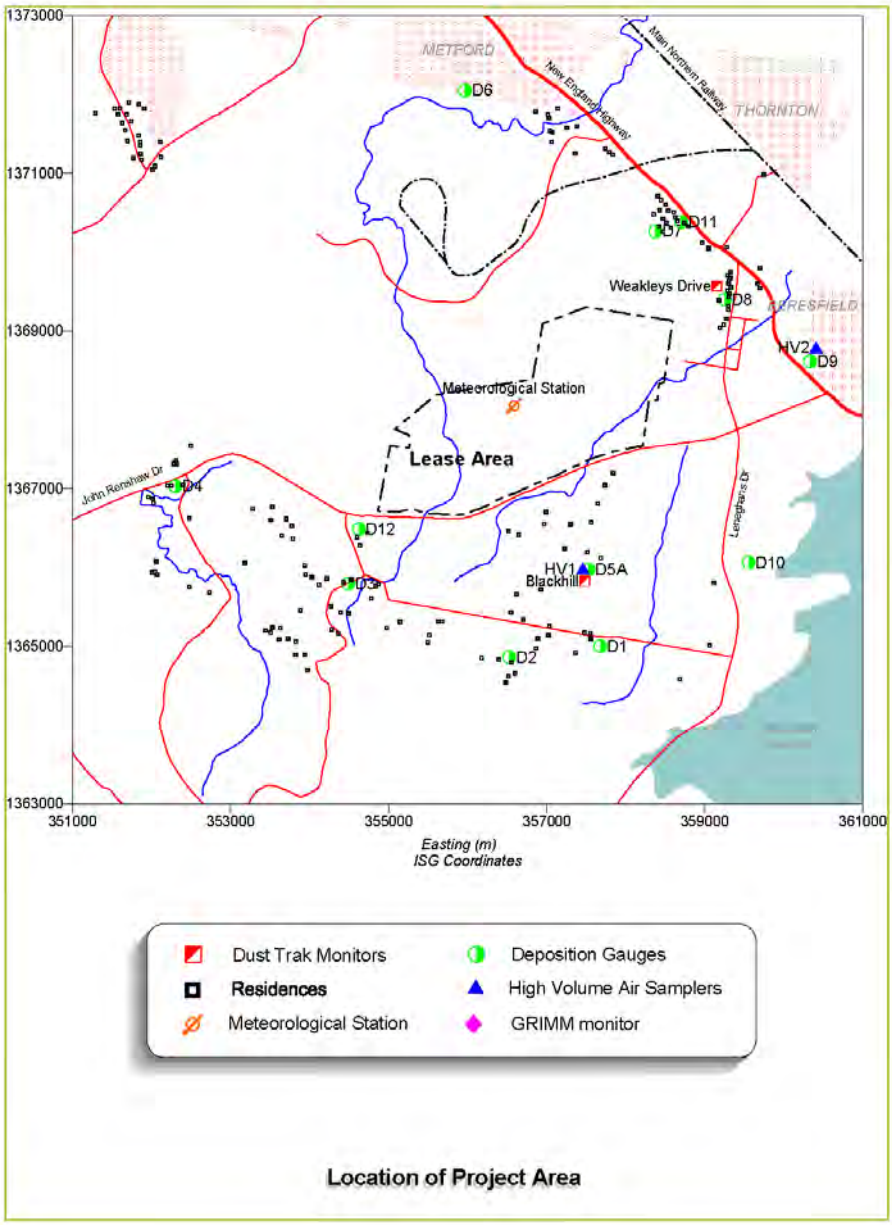


Figure 1: Project Location

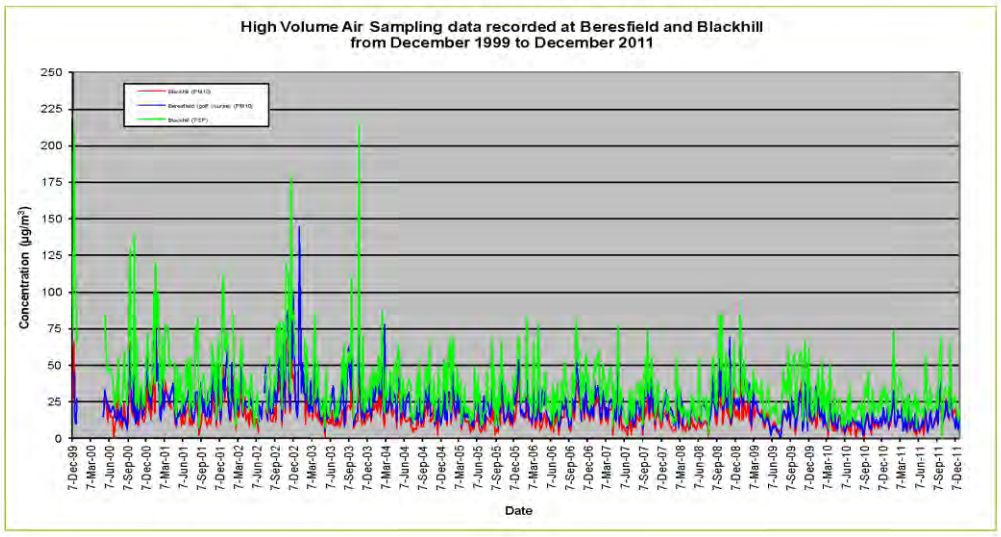


Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in December 2011.

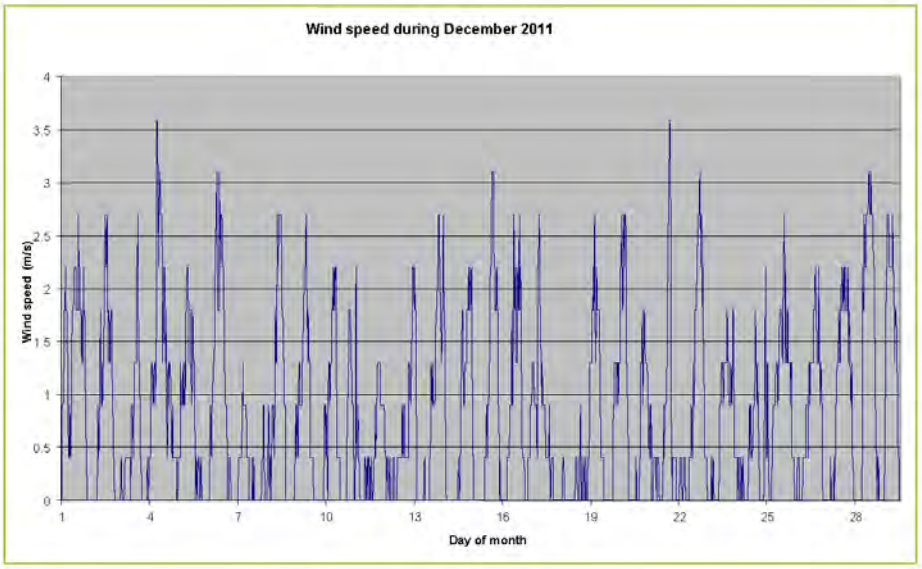
Figure 3: DustTrak sampling data - Blackhill site

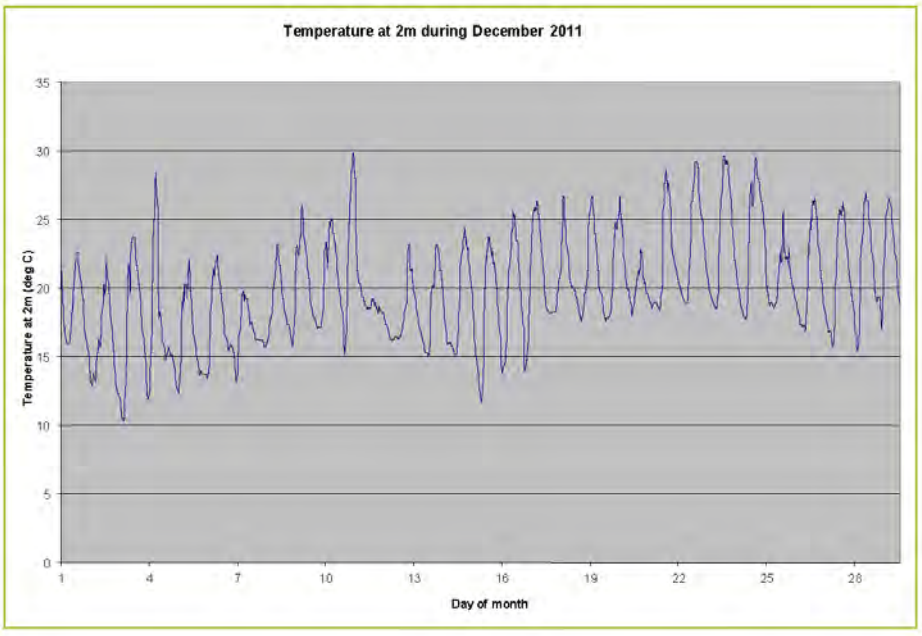
No Monitoring was avaliable for this site in December 2011.

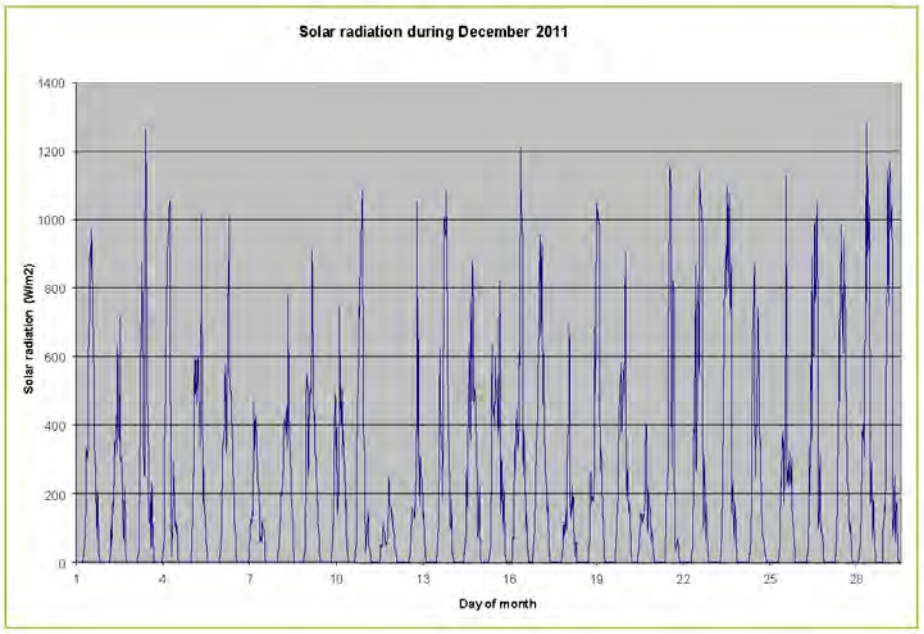
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data


Wind speed during December 2011
Wind speed (m/s)
0
0.5
1
1.5
2
2.5
3
3.5
4
1
4
7
10
13
16
19
22
25
28
Day of month


Temperature at 2m during December 2011
Temperature at 2m (deg C)
0
5
10
15
20
25
30
35
1
4
7
10
13
16
19
22
25
28
Day of month



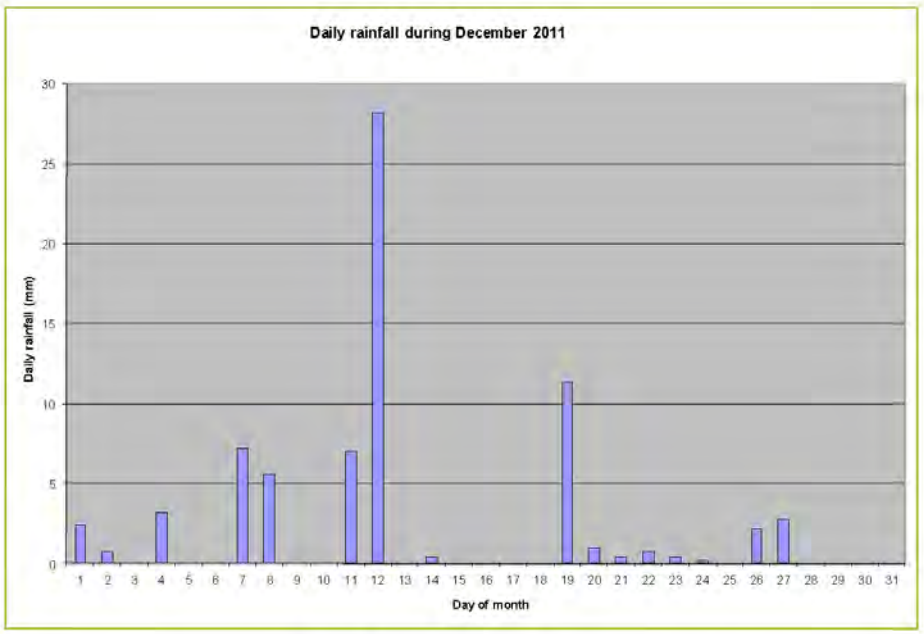


Figure 6: Meteorological conditions

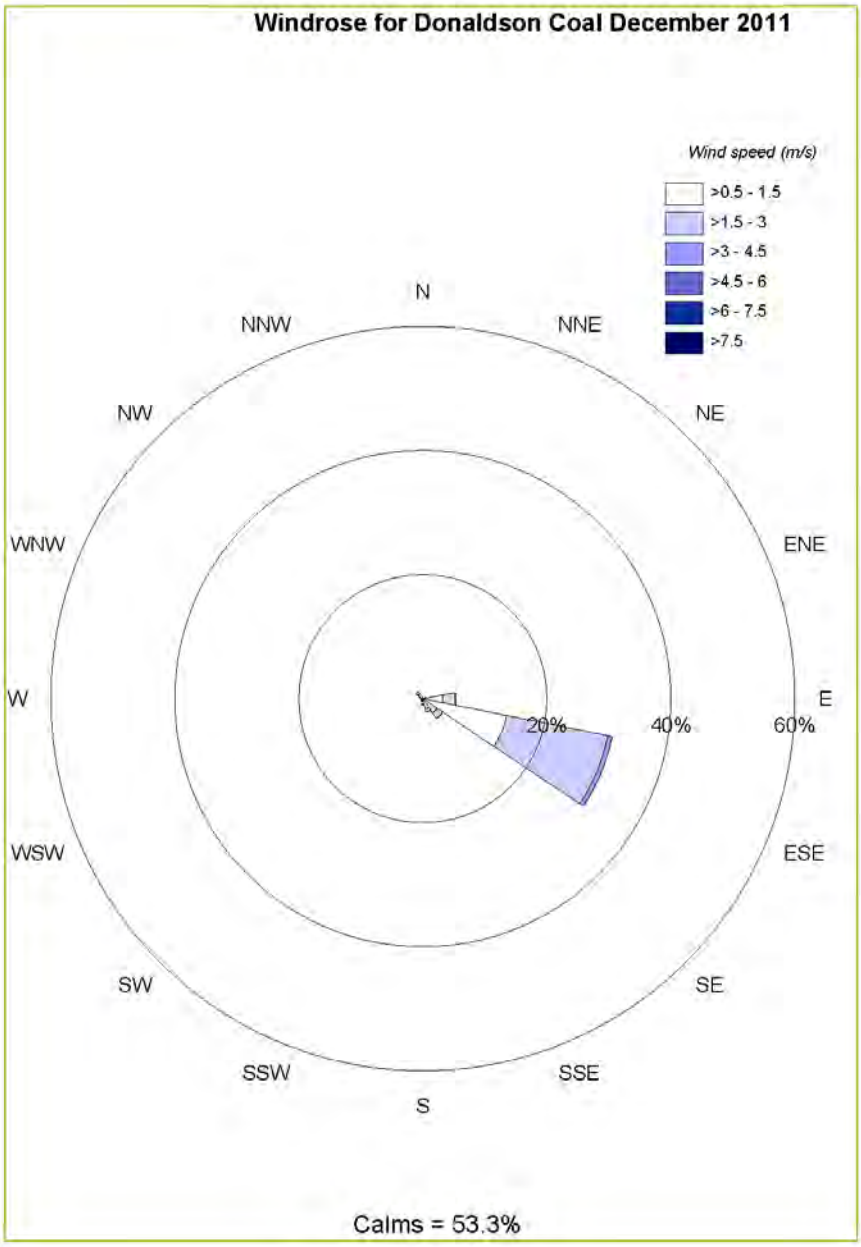


Figure 7: Windrose for December

REPORT

DUST AND METEOROLOGICAL DATA – JANUARY 2012

Donaldson Coal

Job No: 3003

19 March 2012

A PEL Company

PROJECT TITLE:	**DUST AND METEOROLOGICAL DATA – JANUARY 2012**
JOB NUMBER:	**3003**
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1 INTRODUCTION

As part of their Air Quality Management Plan, Donaldson Coal operate an ambient air quality monitoring network, including dust monitoring in the vicinity of the mining lease and meteorological monitoring at a single station on-site. This report has been prepared as a summary of the data collected throughout the network during January 2012.

The dust monitoring network includes continuous monitoring using TSI DustTrak, high volume air sampling (HVAS) on a one-day-in-six run cycle and dust deposition monitoring.

The continuous monitoring network consists of two DustTrak monitors measuring PM_{10} at two sites and an additional DustTrak monitor used for one week each quarter to measure $PM_{2.5}$.

There are two HVAS locations used to determine ambient concentrations of PM_{10} and TSP. These operate on a one-day-in-six run cycle, in line with similar measurements made by the NSW Office of Environment and Heritage (OEH)[a] at other locations throughout the state.

Monthly levels of dust deposition are also measured using twelve gauges placed at various locations in the vicinity of the mine. The locations of each of these monitors and gauges are shown in **Figure 1**.

Table 1 lists the instruments used and pollutants measured at these locations.

Table 1: Summary of monitoring locations and instruments

Monitoring Location	Instruments Used	Pollutant Monitored
Beresfield	HVAS	PM_{10}
Blackhill	HVAS	PM_{10}
	HVAS	TSP
	DustTrak	PM_{10}
	DustTrak (1 week per quarter)	$PM_{2.5}$
Weakleys Drive	DustTrak	PM_{10}
DG1 – DG12	Deposition Gauges	Dust Deposition

Meteorological data are downloaded monthly and forwarded to PAEHolmes for processing. The meteorological station is situated at the site of the office buildings and measures the following parameters:

- wind speed
- wind direction
- temperature
- solar radiation
- rainfall

[a] The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2 HIGH VOLUME AIR SAMPLING

High Volume Air Sampling (HVAS) was carried out at Beresfield and Blackhill by RCA Laboratories. PM_{10} is measured at both sites while TSP is only measured at Blackhill. The data collected during January 2012 are summarised in **Table 2**. A graph consisting of all the data collected to date is shown in **Figure 2**.

Table 2: HVAS data from Beresfield and Blackhill for January 2012

Date	Beresfield PM_{10} ($\mu g/m^3$)	Blackhill PM_{10} ($\mu g/m^3$)	Blackhill TSP ($\mu g/m^3$)
3/1/2012	16	15	23
9/1/2012	16	23	38
15/1/2012	12	8	15
21/1/2012	17	12	14
27/1/2012	11	10	16
Annual average	**14**	**13**	**27**

All measurements of PM_{10} for January are below the 24-hour OEH PM_{10} goal of 50 $\mu g/m^3$. The highest 24-hour average PM_{10} concentration was 23 $\mu g/m^3$, recorded at Blackhill on 9 January.

Figure 2 shows a seasonal trend in PM_{10} concentrations, peaking during the warmer months and decreasing during autumn and winter. This is a common trend and is seen consistently in the Hunter Valley.

The annual average PM_{10} concentrations for Beresfield and Blackhill were 14 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively for the 12 months to January 2012. These values are below the OEH annual average PM_{10} goal of 30 $\mu g/m^3$.

TSP measurements from the Blackhill site show that concentrations were below the OEH annual average TSP goal of 90 $\mu g/m^3$. It should be noted that the goal refers to an annual average and not a 24-hour average as measured by the high volume air sampler. The annual average TSP concentration for the 12 months to January 2012 was 27 $\mu g/m^3$.

These measurements will include all background sources relevant to that location, including contributions from the Donaldson mining operations.

3 CONTINUOUS MONITORING

3.1 DustTrak Monitoring at Blackhill

Monitoring data was not available for January 2012.

3.2 DustTrak Monitoring at Weakleys Drive

Monitoring data was not available for January 2012.

3.3 DustTrak $PM_{2.5}$ Monitoring at Blackhill

$PM_{2.5}$ monitoring was not carried out in January 2012.

4 DUST DEPOSITION MONITORING

Dust deposition monitoring is carried out each month via a network consisting of twelve (12) gauges. The results for January 2012 are shown in **Table 3**, in conjunction with results for the previous eleven months in order to provide an annual average for that period.

A summary of the complete data set from June 2000 is provided in **Appendix A**.

Table 3: Dust deposition monitoring for the 12-month period to January 2012

Month	Monthly dust deposition rate (g/m²/month)											
	DG1	DG2	DG3	DG4	DG5A	DG6	DG7	DG8	DG9	DG10	DG11	DG12
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1^	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1^	0.7	0.9#	2.1^	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Jul-11	0.6	0.5	1.6	<0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	1	1.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-12	0.9	0.6	0.4	0.6		3.6	1.2	1.4	0.6	0.9	1.1	1.1
Annual Average	**0.7**	**1.0**	**2.0**	**0.8**	**0.8**	**0.9**	**0.9**	**2.0**	**0.8**	**0.8**	**0.9**	**1.0**

Data supplied by RCA Laboratories. # Insects/bird droppings reported. ^Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

The highest dust deposition measurement recorded in January 2012 was 3.6 g/m²/month at DG6.

It is noted that the OEH goal for dust deposition is expressed as an annual average and the annual average deposition rates for the gauges in the network are all significantly below the goal of 4 g/m²/month, indicating nuisance dust in the vicinity of the mine is not an issue.

5 METEOROLOGICAL MONITORING

Monthly plots of the wind speed, temperature, solar radiation, and rainfall data collected in January 2012 are shown in **Figure 6** and a windrose plot is shown in **Figure 7**.

The graphs shown in **Figure 6** indicate that the instruments were recording appropriately. Data maxima and minima all appeared to be sensible for this site during January. Total rainfall for the month was 96.4 mm. This is consistent with permanent Bureau of Meteorology weather stations in the area.

A windrose (see **Figure 7**) created from the available 30-minute average wind data shows that winds were predominantly from the east-southeast.

The site recorded calms (wind speed less than or equal to 0.5 m/s) for approximately 44.1% of the time. The relatively large fraction of calm winds is significantly higher than would be expected and may be as a result of the sheltered location of the weather station.

APPENDIX A

Dust Deposition Data

Month	Dust deposition (g/m²/month)											
	D1	D2	D3	D4	D5A	D6	D7	D8	D9	D10	D11	D12
Jun-00	0.7	0.5	0.5	0.7	0.8	0.4	3.8	3.2	0.5	0.7	-	-
Jul-00	0.4	0.4	0.5	0.7	0.8	0.5	0.8	1.5	0.4	0.4	-	-
Aug-00	0.9	0.6	1.0	1.2	1.1	1.0	3.4	0.7	0.7	0.6	-	-
Sep-00	0.8	0.9	1.1	0.9	1.3	1.0	2.2	1.0	1.0	0.8	-	-
Oct-00	0.4	0.6	1.1	0.9	0.9	0.8	5.3	0.9	0.6	0.5	-	-
Nov-00	5.2	0.7	1.4	0.8	1.0	0.4	24.1	9.4	1.1	0.6	-	-
Dec-00	2.8	1.4	1.9	1.3	1.1	0.8	2.1	2.5	0.9	0.9	-	-
Jan-01	0.7	1.7	1.4	1.8	0.7	1.3	1.1	2.4	1.1	0.6	-	-
Feb-01	0.9	3.1	2.0	0.5	0.9	0.7	0.7	6.7	1.3	0.5	1.0	-
Mar-01	0.8	2.1	1.3	0.6	0.7	0.6	0.6	5.5	0.6	0.6	1.5	-
Apr-01	0.8	0.7	1.3	0.5	0.7	0.4	0.3	5.1	0.7	0.6	0.8	-
May-01	0.2	0.2	0.4	0.4	0.3	0.3	0.6	1.8	0.6	0.8	0.9	-
Jun-01	0.5	0.4	0.5	1.0	1.0	0.4	0.4	8.8	0.7	0.6	0.6	-
Jul-01	0.5	0.3	1.8	0.5	0.8	-	16.3	4.9	0.9	0.7	0.7	-
Aug-01	0.4	0.4	0.8	0.8	1.0	1.7	1.0	-	1.0	1.8	1.1	-
Sep-01	0.7	1.0	1.7	1.1	1.7	0.7	-	6.0	1.1	1.3	1.7	-
Oct-01	1.1	0.6	4.6	0.9	0.7	0.9	1.2	1.9	0.9	0.6	1.7	-
Nov-01	0.9	1.0	1.1	1.1	0.8	1.1	6.0	5.5	1.3	1.9	2.3	-
Dec-01	4.9	0.9	4.2	0.9	1.3	1.9	1.2	3.1	1.2	9.7	1.8	-
Jan-02	0.8	1.0	1.5	1.3	1.1	1.4	1.3	1.5	1.1	0.9	1.5	-
Feb-02	1.1	1.1	0.9	0.3	0.4	0.5	3.1	5.1	0.5	0.5	0.9	-
Mar-02	1.7	2.1	1.6	0.7	0.7	0.8	1.0	18	1.0	0.9	1.7	-
Apr-02	1.0	0.4	1.0	0.8	0.8	0.6	0.9	10.1	0.5	0.7	1.0	-
May-02	0.6	0.6	6.0	0.7	0.4	1.2	0.9	3.1	0.7	0.2	1.0	-
Jun-02	1.4	0.4	1.7	0.6	0.5	0.8	0.6	2.1	0.6	0.5	1.0	-
Jul-02	0.7	0.7	-	0.8	0.8	0.7	1.2	-	1.1	0.5	1.0	-
Aug-02	1.3	0.8	1.4	1.2	1.1	1.2	1.5	-	1.5	0.9	1.6	-
Sep-02	0.5	1.2	1.1	0.8	0.5	0.7	5.1	9.3	1.6	0.6	1.0	-
Oct-02	2.2	1.4	5.2	1.5	1.5	1.4	1.4	3.4	-	1.5	3.1	-
Nov-02	2.8	1.8	3.7	1.6	0.1	1.8	2.1	3.5	2.1	2	1.9	-
Dec-02	2.0	-	2.5	1.5	3.0	1.5	1.8	4.1	1.6	1.2	1.9	-
Jan-03	2.1	1.5	2.7	1.5	1.0	1.9	2.2	2.5	1.1	1.0	1.6	-
Feb-03	1.4	1.1	2.6	1.1	0.9	1.2	1.7	5.9	1.2	1.0	1.5	-
Mar-03	0.8	0.5	1.2	1.2	0.6	2.1	1.5	3.4	-	3.6	9.5	-
Apr-03	0.5	1.0	0.6	1.0	0.7	0.5	1.1	8.0	-	2.0	1.0	-
May-03	0.5	0.4	0.6	0.2	0.2	0.6	1.3	1.6	0.5	0.8	1.2	-
Jun-03	0.5	0.6	0.8	0.8	0.4	0.6	0.8	0.7	0.9	0.7	0.7	-
Jul-03	0.3	0.4	0.4	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.7	-
Aug-03	0.8	0.2	0.7	1.1	0.5	1.3	1.8	2.1	1.3	0.7	0.9	-
Sep-03	0.6	0.7	1.1	0.7	0.8	1.7	1.4	1.3	2.5	0.9	1.3	-
Oct-03	-	0.9	1.4	0.9	0.7	1.9	1.0	1.4	0.6	0.8	1.3	-
Nov-03	2.6	0.8	1.0	1.1	0.4	1.3	1.5	1.5	-	0.8	1.3	-
Dec-03	1.0	1.0	1.4	1.3	1.1	1.5	1.6	2.0	1.8	0.9	1.4	-
Jan-04	8.5	1.5	2.1	1.5	1.3	2.6	1.4	2.2	1.7	1.5	1.7	-
Feb-04	1.2	1.0	1.7	1.4	0.7	3.1	1.6	2.2	-	1.5	2.3	-
Mar-04	0.4	0.6	6.6	1.2	0.7	1.9	1.1	12.1	4.8	1.5	1.1	-

Apr-04	0.6	1.0	0.8	0.8	0.6	1.9	0.8	1.4	0.9	1.2	1.1	-
May-04	0.2	0.9	2.2	0.9	0.8	0.7	0.9	1.4	1.2	0.9	1.5	-
Jun-04	0.4	0.6	0.7	0.9	0.6	1.4	1.0	0.9	1.0	1.0	0.8	-
Jul-04	0.4	0.6	5.3#	0.6	0.5	2.9	1.0	1.1	0.9	0.6	1.2	-
Aug-04	0.5	0.5	0.5	1.3	0.7	1.1	1.1	1.4	-	1.0	1.0	-
Sep-04	0.6	0.6	0.8	2.2	1.0	1.0	0.9	4.4	0.9	16.7	1.1	-
Oct-04	0.7	0.9	1.2	0.9	0.8	1.4	1.0	10.5	1.0	1.0	0.8	-
Nov-04	0.8	0.7	1.3	1.9	0.7	0.9	1.0	3.0	1.1	1.1	1.6	-
Dec-04	2.0	1.4	3.6	1.5	1.3	2.2	3.2	7.9	1.8	5.5	2.5	-
Jan-05	1.2	1.0	3.7	1.6	1.4	4.0	2.3	2.7	2.6	2.5	2.8	-
Feb-05	1.2	1.2	1.8	1.6	1.3	2.0	1.7	-	2.3	1.5	2.3	-
Mar-05	1.3	0.9	1.4	0.9	0.9	3.0	1.2	7.7	-	0.8	1.3	-
Apr-05	1.1	0.7	0.9	0.8	0.7	0.9	1.4	3.3	1.1	0.8	0.9	-
May-05	0.7	8.6	1.1	0.8	0.7	0.8	0.9	4.4	1.2	0.8	1.1	-
Jun-05	1.3	0.8	1.3	1.3	0.8	1.2	1.2	1.3	1.5	2.5	0.9	-
Jul-05	1.0	0.5	0.5	0.7	0.4	1.6	0.7	1.2	0.8	4.3	1.1	-
Aug-05	0.6	0.6	0.8	1.0	0.8	0.9	0.7	1.0	0.9	1.0	0.9	-
Sep-05	0.6	0.7	0.8	0.7	0.7	1.2	1.3	1.3	1.0	0.9	1.1	-
Oct-05	0.8	0.9	1.3	0.9	0.8	1.4	1.2	1.9	1.3	1.1	1.3	-
Nov-05	-	2.3	2.3	2.0	1.7	1.2	2.0	3.2	1.6	1.4	2.2	-
Dec-05	1.9	3.2	2.3	3.3	2.6	3.4	2.3	-	1.3	2.1	3.9	-
Jan-06	1.0	2.1	1.7	1.0	23.	3.5	-	2.7	1.1	-	1.5	-
Feb-06	2.2	1.0	0.9	1.2	1.1	1.7	1.1	2.9	-	2.3	1.8	-
Mar-06	0.7	0.6	2.3	0.7	0.6	0.9	1.0	1.4	0.7	0.8	1.5	-
Apr-06	0.6	0.7	1.1	0.8	0.6	1.1	0.8	1.0	1.0	1.8	1.5	-
May-06	1.0	3.1	1.0	-	1.1	1.4	1.1	4.1	-	7.0	1.5	-
Jun-06	0.4	0.3	0.7	0.5	0.4	0.6	0.7	0.8	0.6	0.9	0.9	-
Jul-06	0.3	0.3	1	1.3	0.4	0.7	0.7	2.7	-	0.6	0.6	-
Aug-06	0.9	0.6	0.8	0.7	0.7	0.8	0.7	1.7	-	3.7	0.9	-
Sep-06	1.6	0.7	1.1	1.7	0.7	1	0.9	1.3	1.2	0.8	1.6	-
Oct-06	2	1.4	1.6	1.8	0.9	1.8	1.2	1.8	1.5	1.8	1.9	-
Nov-06	4.3	2.2	3	2.3	2.3	5.3	2.4	3.3	2.3	2.3	2.9	-
Dec-06	1.2	3.4	1.9	2.3	2.3		2.1	2.1		4.9	3.9	-
Jan-07	2	0.9	1.5	0.7	0.7	1.7	1.1		1.2	1.7	0.9	-
Feb-07	1.7	0.9	1.6	0.7	0.6	1	1.8	1.7	1.1	1.2	1.7	-
Mar-07	1.3	0.9	1.7	0.8	1.2	0.6	2.2	1.7	1	0.9	1.7	-
Apr-07	0.5	0.7	0.9	0.6	4.8	1.2	0.5	2.7	0.5	0.8	0.9	-
May-07	0.8	0.5	0.6	1.2	0.6	0.6	0.7	1.9	0.5	0.7	0.8	-
Jun-07	0.6	0.5	0.7	1.1	0.1	0.5	0.1	0.5	0.1	0.4	0.3	-
Jul-07	0.5	0.4	0.6	2.1	0.5	0.8	0.6	0.6	0.4	0.5	0.7	-
Aug-07	1.5	0.4	0.7	1	0.7	0.7	0.5	1	0.6	0.6	0.7	-
Sep-07	1.3	0.5	1.8	1	0.7	0.9	0.9	1.3	1	0.7	1.6	-
Oct-07	4.2	0.9	1.1	1.4	1.1	1.7	1.8	1.7	1.6	1.4	2.2	-
Nov-07	0.8	0.8	1.1	0.9	1.1	1.1	1.1	1.7	0.6	0.8	1.5	-
Dec-07	1.3	0.8	3	0.7	0.5	0.8	0.5	1.1	0.3	0.8	0.6	-
Jan-08	2.6	0.8	3.7	0.5	0.5	0.5	0.4	2.2	0.8	0.3	0.8	-
Feb-08	0.4	0.1	14	0.1	0.1	0.3	0.1	0.3	0.2	0.2	0.3	-

Mar-08	4.5	0.6	9.2+	0.6	2.9	2.1	0.6	1.5	0.5	1	0.9	-
April-08	0.4#	0.4#	0.8#	0.4#	0.4#	0.8#	1.1#	1.7#	1.2	1.1#	1.1#	-
May-08	1.1	2.4#	0.9	1.4	0.9	0.9	0.7	2.7	1#	1.1	1.3#	-
June-08	0.2	0.4#	0.1	0.5	0.1#	0.1	0.3	0.5#	0.1	0.8	0.2	-
July-08	0.4	0.7#	1.3#	0.6	0.8#	0.9	0.8	1	0.7	0.5	1.1	-
Aug-08	1	0.5	0.7	0.6	0.5	1.9	0.8	1	1	0.9	1.4	-
Sep-08	0.6	1	1.3	0.7	0.6	0.9	0.6	0.9	0.9	0.9	1.8	-
Oct-08	1	0.5	1	1.3	1.3	1.2	1	1.4	0.8	1.6	1.8	-
Nov-08	0.8	1.4	2.7	2.5	0.9	1.2	0.8	2.4	1.1	1	1.7	-
Dec-08	0.4	0.4	0.6	0.5	0.3	1.1	0.6	15	0.9	0.7	1.2	-
Jan-09	1.1	3#	1.6	0.8	0.9	1.4	0.7	1.5	0.9	0.9	5+	-
Feb-09	0.4	4.4	1.5	1.1	0.9	1.6	0.8	1.2	1.4	2.5	1.2	-
Mar-09	2.8	5.8	2.7	2.4	1.9	2.1	2.5	2.4	2.3	5.7	2.7	-
Apr-09	2	0.8	0.8	0.6	0.6	3.2	1.1	1.1	1	0.6	0.9	-
May-09	0.6	1.6	0.8	2.4	0.9	5.6 +	1.4	1.1	1.3	0.7	1.5	-
Jun-09	0.4	1.3	0.8	0.5	0.5	3.3	0.9	0.6	1	3.4	0.7	-
Jul-09	0.2	1.0	0.6	0.4	0.3	3.8	0.5	0.6	0.6	0.3	0.6	-
Aug-09	0.8	3.6	0.8	1.2	1.0	1.8	0.8	1.8	1.3	0.8	1.0	-
Sep-09	1.0	1.8#	1.8	8.3 +	1	1.8	0.9#	1.8#	1.7#	0.7	1.4#	-
Oct-09+	4.3	9#	5.2#	11.3#	3.2	3.8#	2.4#	6.8#	3.0#	2.2	3.2#	5.7#
Nov-09	0.8#	1.7#	1.4#	1.3#	0.7#	2.1#	1.3#	8.0#	*	1.0#	*	2.3
Dec-09	1.4#	4.0#	1.6#	2.4#	1.7#	1.8	1.6	2.6#	1.7#	1.7#	2.2#	1.7
Jan-10	0.6#	0.8#	5.6#	1.2#	2.4#	1.2#	0.8#	1.4#	1.3#	0.8#	1.3#	1.1#
Feb-10	1.9#	11.3+	1.9#	1.4#	1.5#	1.1#	1.2#	1.6#	1.1#	0.8#	1.8#	1.3#
Mar-10	0.6#	0.6#	3.2#	1#	4.1#	0.6#	0.6#	1.2	0.6	0.2#	0.8#	1.1#
Apr-10	0.8#	1.8#	2.4#	0.7#	+	0.3	0.6#	0.9#	0.6#	0.4#	0.8#	0.8#
May-10	0.8	4.9#	3.0#	1.1	1.2	1.0	0.7	1.3	1.0#	0.5	1.1#	0.8
Jun-10	0.3	2.2#	3.0#	0.6#	0.2	1.2#	0.5	0.5#	0.6	0.7#	0.7#	0.4#
Jul-10	0.6#	1.1#	0.7#	0.7	0.5	0.3	0.5#	0.6#	0.7	0.2#	0.8	0.5
Aug-10	0.4	0.5#	1.9#	0.8#	0.2#	0.7#	0.5#	0.5#	0.6	0.5#	0.7#	0.4#
Sep-10	0.6#	2.6#	1.6#	1.0#	0.5#	1.1#	0.5#	1.0#	0.9#	0.6#	0.8#	0.9#
Oct-10	0.9#	1.6#	0.9#	0.5#	0.4#	0.5	1.0#	1.3#	1.2#	2.0#	1.2#	0.4#
Nov-10	0.9#	3.5#	0.9#	1.4#	1.1#	0.9	0.6#	0.9#	*	0.9#	0.8#	1.1#
Dec-10	1.0#	0.7#	0.9#	1.1#	0.5#	0.4#	0.6#	2.4#	1.0#	0.5	1.0#	1.4#
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1+	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	11	11.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-11	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1

- sample contaminated| + - sample invalid|*-Broken funnel| ~ - Site inaccessible

[Note: Samples for November 2009 have been considered invalid, due to a widespread dust storm experienced on 23rd November 2009.]

APPENDIX B

Figures

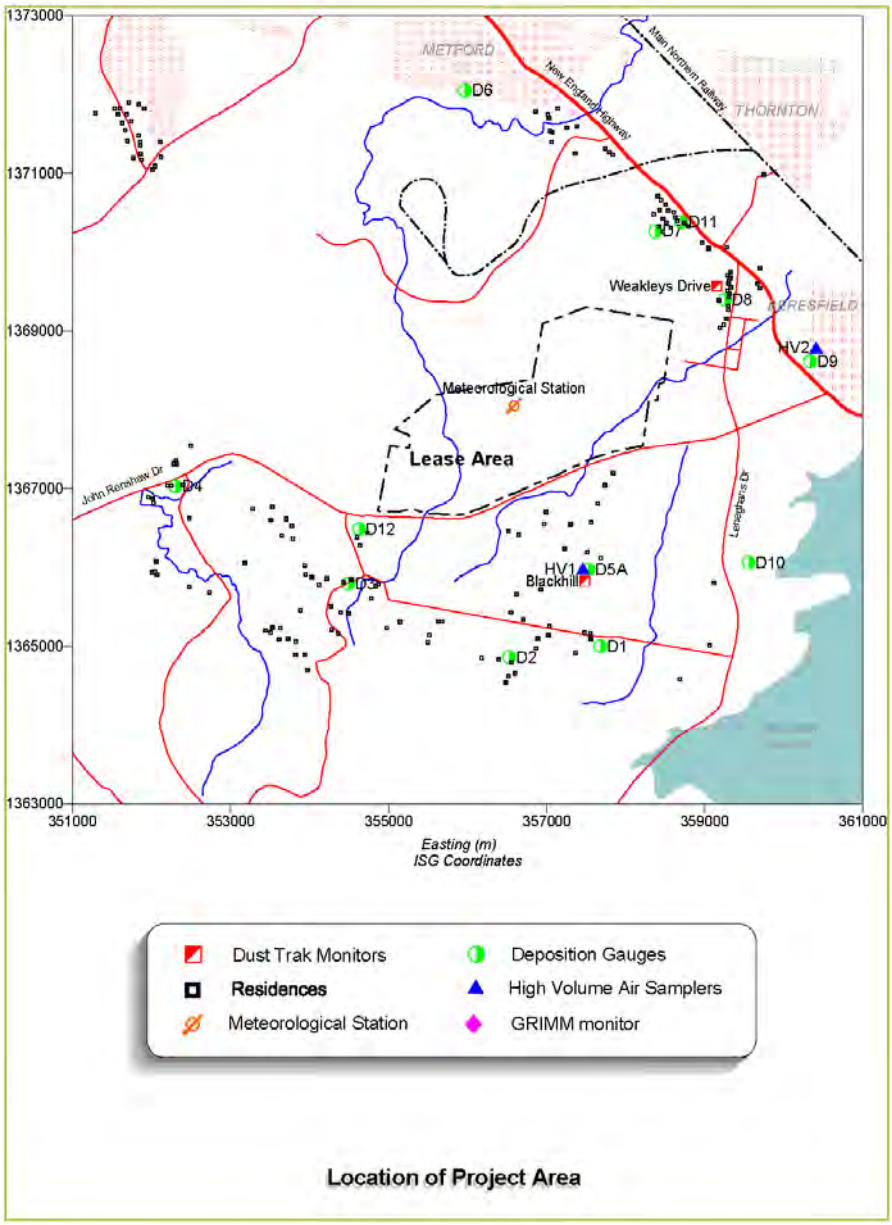


Figure 1: Project Location

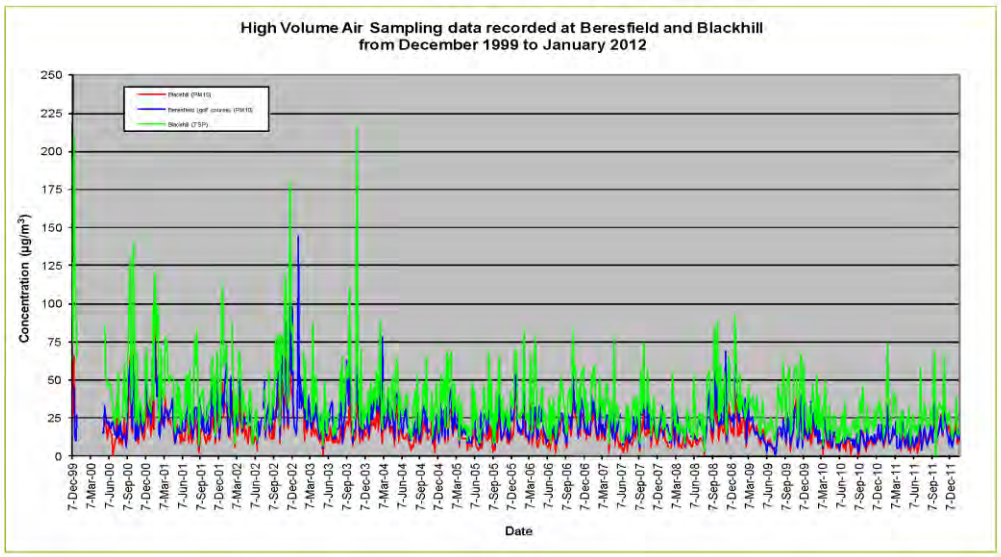


Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in January 2012.

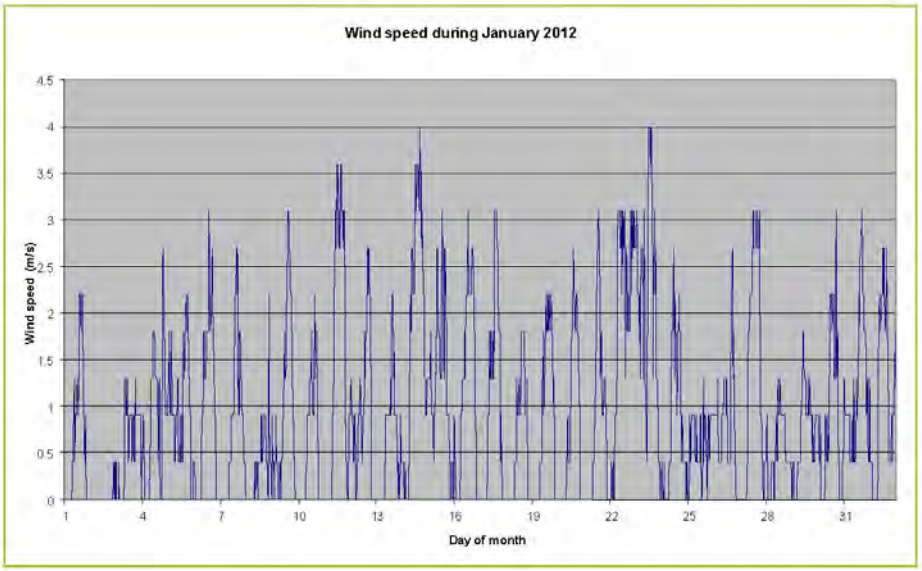
Figure 3: DustTrak sampling data - Blackhill site

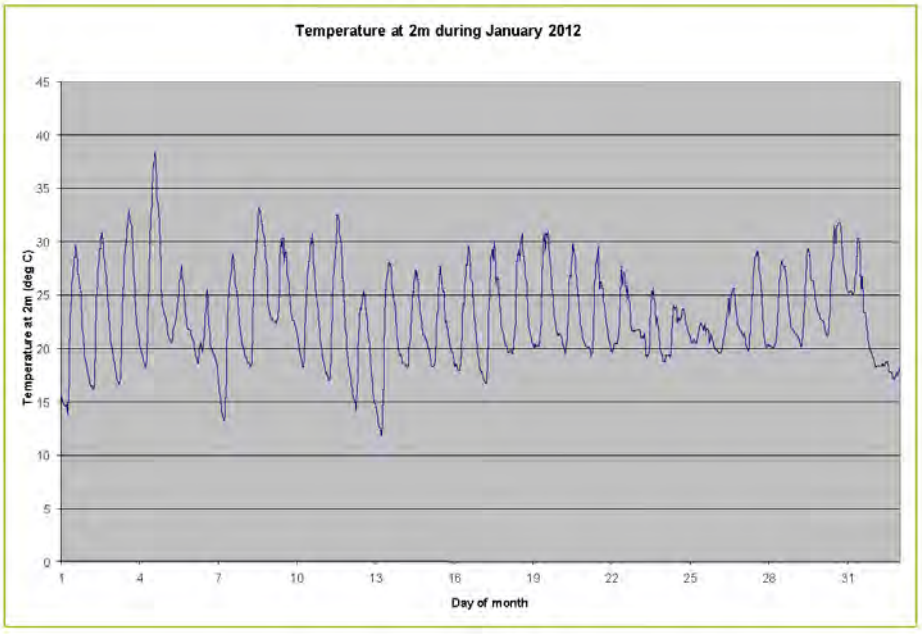
No Monitoring was avaliable for this site in January 2012.

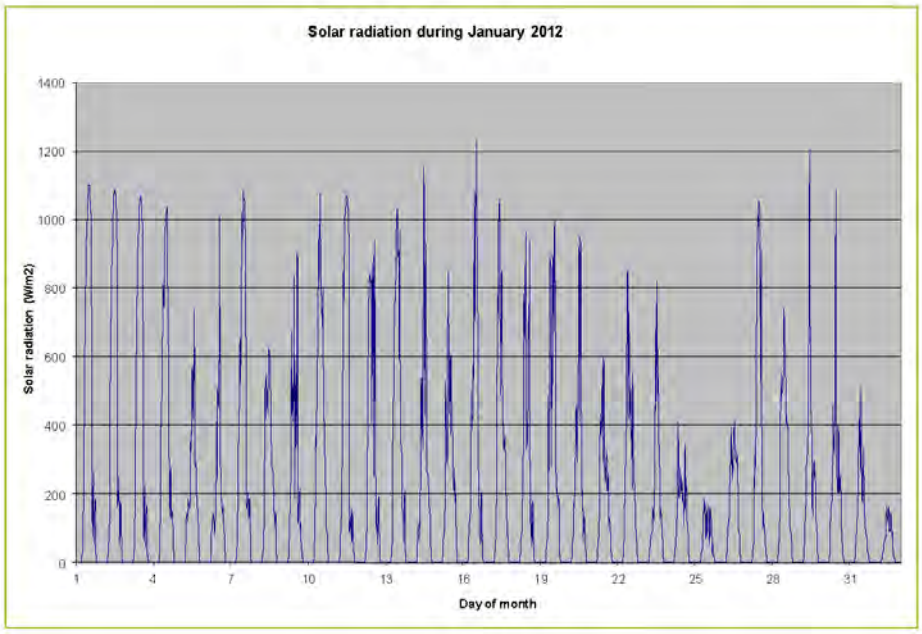
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data


Wind speed during January 2012
Wind speed (m/s)
0
0.5
1
1.5
2
2.5
3
3.5
4
4.5
1
4
7
10
13
16
19
22
25
28
31
Day of month


Temperature at 2m during January 2012
Temperature at 2m (deg C)
0
5
10
15
20
25
30
35
40
45
1
4
7
10
13
16
19
22
25
28
31
Day of month



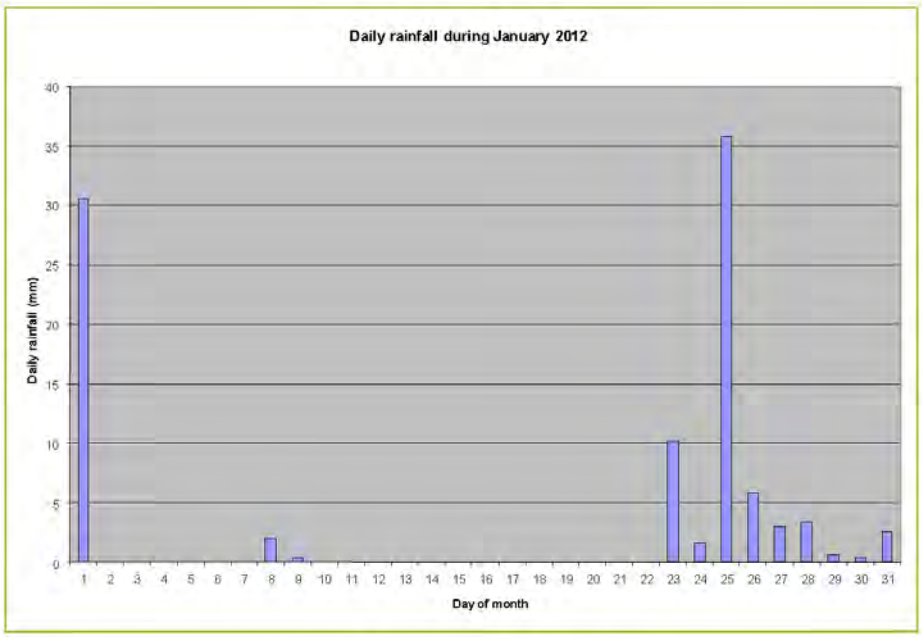
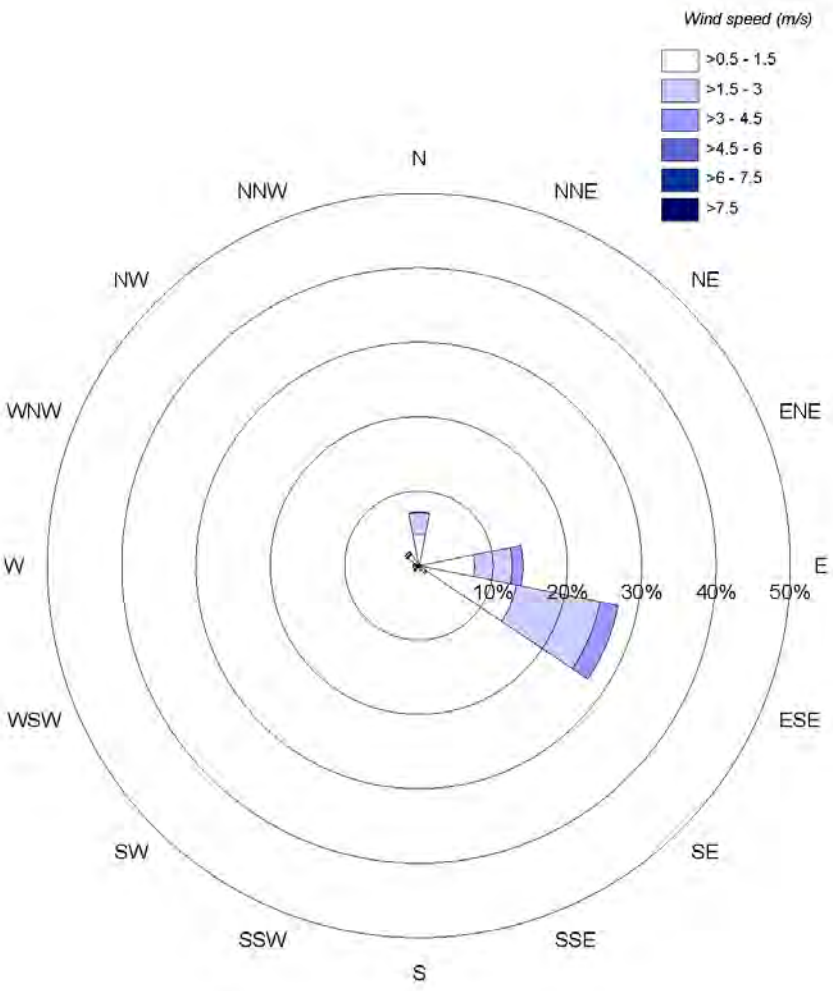


Figure 6: Meteorological conditions

Windrose for Donaldson Coal January 2012



Calms = 44.1%

Figure 7: Windrose for January

REPORT

DUST AND METEOROLOGICAL DATA – FEBRUARY 2012

Donaldson Coal

Job No: 3003

27 March 2012

A PEL Company

PROJECT TITLE:	**DUST AND METEOROLOGICAL DATA – FEBRUARY 2012**
JOB NUMBER:	**3003**
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1 INTRODUCTION

As part of their Air Quality Management Plan, Donaldson Coal operate an ambient air quality monitoring network, including dust monitoring in the vicinity of the mining lease and meteorological monitoring at a single station on-site. This report has been prepared as a summary of the data collected throughout the network during February 2012.

The dust monitoring network includes continuous monitoring using TSI DustTrak, high volume air sampling (HVAS) on a one-day-in-six run cycle and dust deposition monitoring.

The continuous monitoring network consists of two DustTrak monitors measuring PM_{10} at two sites and an additional DustTrak monitor used for one week each quarter to measure $PM_{2.5}$.

There are two HVAS locations used to determine ambient concentrations of PM_{10} and TSP. These operate on a one-day-in-six run cycle, in line with similar measurements made by the NSW Office of Environment and Heritage (OEH)[a] at other locations throughout the state.

Monthly levels of dust deposition are also measured using twelve gauges placed at various locations in the vicinity of the mine. The locations of each of these monitors and gauges are shown in **Figure 1**.

Table 1 lists the instruments used and pollutants measured at these locations.

Table 1: Summary of monitoring locations and instruments

Monitoring Location	Instruments Used	Pollutant Monitored
Beresfield	HVAS	PM_{10}
Blackhill	HVAS	PM_{10}
	HVAS	TSP
	DustTrak	PM_{10}
	DustTrak (1 week per quarter)	$PM_{2.5}$
Weakleys Drive	DustTrak	PM_{10}
DG1 – DG12	Deposition Gauges	Dust Deposition

Meteorological data are downloaded monthly and forwarded to PAEHolmes for processing. The meteorological station is situated at the site of the office buildings and measures the following parameters:

- wind speed
- wind direction
- temperature
- solar radiation
- rainfall

[a] The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2 HIGH VOLUME AIR SAMPLING

High Volume Air Sampling (HVAS) was carried out at Beresfield and Blackhill by RCA Laboratories. PM_{10} is measured at both sites while TSP is only measured at Blackhill. The data collected during February 2012 are summarised in **Table 2**. A graph consisting of all the data collected to date is shown in **Figure 2**.

Table 2: HVAS data from Beresfield and Blackhill for February 2012

Date	Beresfield PM_{10} ($\mu g/m^3$)	Blackhill PM_{10} ($\mu g/m^3$)	Blackhill TSP ($\mu g/m^3$)
2/02/2012	8	6	10
8/02/2012	15	15	17
14/02/2012	17	9	14
20/02/2012	12	11	14
26/02/2012	8	12	16
Annual average	**14**	**13**	**25**

All measurements of PM_{10} for February are below the 24-hour OEH PM_{10} goal of 50 $\mu g/m^3$. The highest 24-hour average PM_{10} concentration was 17 $\mu g/m^3$, recorded at Beresfield on 14 February.

Figure 2 shows a seasonal trend in PM_{10} concentrations, peaking during the warmer months and decreasing during autumn and winter. This is a common trend and is seen consistently in the Hunter Valley.

The annual average PM_{10} concentrations for Beresfield and Blackhill were 14 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively for the 12 months to February 2012. These values are below the OEH annual average PM_{10} goal of 30 $\mu g/m^3$.

TSP measurements from the Blackhill site show that concentrations were below the OEH annual average TSP goal of 90 $\mu g/m^3$. It should be noted that the goal refers to an annual average and not a 24-hour average as measured by the high volume air sampler. The annual average TSP concentration for the 12 months to February 2012 was 25 $\mu g/m^3$.

These measurements will include all background sources relevant to that location, including contributions from the Donaldson mining operations.

3 CONTINUOUS MONITORING

3.1 DustTrak Monitoring at Blackhill

Monitoring data was not available for February 2012.

3.2 DustTrak Monitoring at Weakleys Drive

Monitoring data was not available for February 2012.

3.3 DustTrak $PM_{2.5}$ Monitoring at Blackhill

$PM_{2.5}$ monitoring was not carried out in February 2012.

4 DUST DEPOSITION MONITORING

Dust deposition monitoring is carried out each month via a network consisting of twelve (12) gauges. The results for February 2012 are shown in **Table 3**, in conjunction with results for the previous eleven months in order to provide an annual average for that period.

A summary of the complete data set from June 2000 is provided in **Appendix A**.

Table 3: Dust deposition monitoring for the 12-month period to February 2012

Month	Monthly dust deposition rate (g/m²/month)											
	DG1	DG2	DG3	DG4	DG5A	DG6	DG7	DG8	DG9	DG10	DG11	DG12
Feb-11	0.7	4.1[+]	0.9	1.0	0.7	0.7	1.0[#]	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9[#]	+	0.9	1.7[#]	0.8	0.9[#]	1.9[#]	*	0.8[#]	1.2[#]	1.3[#]
Apr-11	0.7	0.6[#]	4.9[#]	0.8[#]	1.1[#]	0.7	0.9[#]	2.1[#]	0.8[#]	1.0[#]	0.3[#]	0.7[#]
May-11	0.4	1.1[#]	5.4[#]	0.7[#]	0.4	0.5[#]	0.6[#]	1.5[#]	0.4	0.4[#]	0.6[#]	0.7[#]
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Jul-11	0.6	0.5	1.6	<0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3[#]	0.4[#]	0.8[#]	0.5	0.6[#]	+	0.6[#]	1.5[#]	0.6[#]	2.3[#]	0.7[#]	0.7[#]
Oct-11	1	1.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2[#]	2	0.9	~	0.9	1.4	5.5	0.8[#]	1.2	1.2[#]	1.4
Jan-12	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7[^]	0.4[#]	0.4[#]	0.5[#]	~	1.4[#]	0.5[#]	1.2[#]	0.8[#&]	0.3[#^]	0.6[#&]	1.1[#]
Annual Average	**0.7**	**0.8**	**2.0**	**0.8**	**0.6**	**1.0**	**0.9**	**2.1**	**0.8**	**0.8**	**0.8**	**0.9**

Data supplied by RCA Laboratories. [#] Insects/bird droppings reported. [^] Grass and Grass Seeds. [&] Tree Litter [+]Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

The highest dust deposition measurement recorded in February 2012 was 1.4 g/m²/month at DG8.

It is noted that the OEH goal for dust deposition is expressed as an annual average and the annual average deposition rates for the gauges in the network are all significantly below the goal of 4 g/m²/month, indicating nuisance dust in the vicinity of the mine is not an issue.

5 METEOROLOGICAL MONITORING

Monthly plots of the wind speed, temperature, solar radiation, and rainfall data collected in February 2012 are shown in **Figure 6** and a windrose plot is shown in **Figure 7**.

The graphs shown in **Figure 6** indicate that the instruments were recording appropriately. Data maxima and minima all appeared to be sensible for this site during February. Total rainfall for the month was 125 mm. This is consistent with permanent Bureau of Meteorology weather stations in the area.

A windrose (see **Figure 7**) created from the available 30-minute average wind data shows that winds were predominantly from the east-southeast.

The site recorded calms (wind speed less than or equal to 0.5 m/s) for approximately 50.9% of the time. The relatively large fraction of calm winds is significantly higher than would be expected and may be as a result of the sheltered location of the weather station.

APPENDIX A

Dust Deposition Data

	Dust deposition (g/m²/month)											
Month	D1	D2	D3	D4	D5A	D6	D7	D8	D9	D10	D11	D12
Jun-00	0.7	0.5	0.5	0.7	0.8	0.4	3.8	3.2	0.5	0.7	-	-
Jul-00	0.4	0.4	0.5	0.7	0.8	0.5	0.8	1.5	0.4	0.4	-	-
Aug-00	0.9	0.6	1.0	1.2	1.1	1.0	3.4	0.7	0.7	0.6	-	-
Sep-00	0.8	0.9	1.1	0.9	1.3	1.0	2.2	1.0	1.0	0.8	-	-
Oct-00	0.4	0.6	1.1	0.9	0.9	0.8	5.3	0.9	0.6	0.5	-	-
Nov-00	5.2	0.7	1.4	0.8	1.0	0.4	24.1	9.4	1.1	0.6	-	-
Dec-00	2.8	1.4	1.9	1.3	1.1	0.8	2.1	2.5	0.9	0.9	-	-
Jan-01	0.7	1.7	1.4	1.8	0.7	1.3	1.1	2.4	1.1	0.6	-	-
Feb-01	0.9	3.1	2.0	0.5	0.9	0.7	0.7	6.7	1.3	0.5	1.0	-
Mar-01	0.8	2.1	1.3	0.6	0.7	0.6	0.6	5.5	0.6	0.6	1.5	-
Apr-01	0.8	0.7	1.3	0.5	0.7	0.4	0.3	5.1	0.7	0.6	0.8	-
May-01	0.2	0.2	0.4	0.4	0.3	0.3	0.6	1.8	0.6	0.8	0.9	-
Jun-01	0.5	0.4	0.5	1.0	1.0	0.4	0.4	8.8	0.7	0.6	0.6	-
Jul-01	0.5	0.3	1.8	0.5	0.8	-	16.3	4.9	0.9	0.7	0.7	-
Aug-01	0.4	0.4	0.8	0.8	1.0	1.7	1.0	-	1.0	1.8	1.1	-
Sep-01	0.7	1.0	1.7	1.1	1.7	0.7	-	6.0	1.1	1.3	1.7	-
Oct-01	1.1	0.6	4.6	0.9	0.7	0.9	1.2	1.9	0.9	0.6	1.7	-
Nov-01	0.9	1.0	1.1	1.1	0.8	1.1	6.0	5.5	1.3	1.9	2.3	-
Dec-01	4.9	0.9	4.2	0.9	1.3	1.9	1.2	3.1	1.2	9.7	1.8	-
Jan-02	0.8	1.0	1.5	1.3	1.1	1.4	1.3	1.5	1.1	0.9	1.5	-
Feb-02	1.1	1.1	0.9	0.3	0.4	0.5	3.1	5.1	0.5	0.5	0.9	-
Mar-02	1.7	2.1	1.6	0.7	0.7	0.8	1.0	18	1.0	0.9	1.7	-
Apr-02	1.0	0.4	1.0	0.8	0.8	0.6	0.9	10.1	0.5	0.7	1.0	-
May-02	0.6	0.6	6.0	0.7	0.4	1.2	0.9	3.1	0.7	0.2	1.0	-
Jun-02	1.4	0.4	1.7	0.6	0.5	0.8	0.6	2.1	0.6	0.5	1.0	-
Jul-02	0.7	0.7	-	0.8	0.8	0.7	1.2	-	1.1	0.5	1.0	-
Aug-02	1.3	0.8	1.4	1.2	1.1	1.2	1.5	-	1.5	0.9	1.6	-
Sep-02	0.5	1.2	1.1	0.8	0.5	0.7	5.1	9.3	1.6	0.6	1.0	-
Oct-02	2.2	1.4	5.2	1.5	1.5	1.4	1.4	3.4	-	1.5	3.1	-
Nov-02	2.8	1.8	3.7	1.6	0.1	1.8	2.1	3.5	2.1	2	1.9	-
Dec-02	2.0	-	2.5	1.5	3.0	1.5	1.8	4.1	1.6	1.2	1.9	-
Jan-03	2.1	1.5	2.7	1.5	1.0	1.9	2.2	2.5	1.1	1.0	1.6	-
Feb-03	1.4	1.1	2.6	1.1	0.9	1.2	1.7	5.9	1.2	1.0	1.5	-
Mar-03	0.8	0.5	1.2	1.2	0.6	2.1	1.5	3.4	-	3.6	9.5	-
Apr-03	0.5	1.0	0.6	1.0	0.7	0.5	1.1	8.0	-	2.0	1.0	-
May-03	0.5	0.4	0.6	0.2	0.2	0.6	1.3	1.6	0.5	0.8	1.2	-
Jun-03	0.5	0.6	0.8	0.8	0.4	0.6	0.8	0.7	0.9	0.7	0.7	-
Jul-03	0.3	0.4	0.4	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.7	-
Aug-03	0.8	0.2	0.7	1.1	0.5	1.3	1.8	2.1	1.3	0.7	0.9	-
Sep-03	0.6	0.7	1.1	0.7	0.8	1.7	1.4	1.3	2.5	0.9	1.3	-
Oct-03	-	0.9	1.4	0.9	0.7	1.9	1.0	1.4	0.6	0.8	1.3	-
Nov-03	2.6	0.8	1.0	1.1	0.4	1.3	1.5	1.5	-	0.8	1.3	-
Dec-03	1.0	1.0	1.4	1.3	1.1	1.5	1.6	2.0	1.8	0.9	1.4	-
Jan-04	8.5	1.5	2.1	1.5	1.3	2.6	1.4	2.2	1.7	1.5	1.7	-
Feb-04	1.2	1.0	1.7	1.4	0.7	3.1	1.6	2.2	-	1.5	2.3	-
Mar-04	0.4	0.6	6.6	1.2	0.7	1.9	1.1	12.1	4.8	1.5	1.1	-

Apr-04	0.6	1.0	0.8	0.8	0.6	1.9	0.8	1.4	0.9	1.2	1.1	-
May-04	0.2	0.9	2.2	0.9	0.8	0.7	0.9	1.4	1.2	0.9	1.5	-
Jun-04	0.4	0.6	0.7	0.9	0.6	1.4	1.0	0.9	1.0	1.0	0.8	-
Jul-04	0.4	0.6	5.3#	0.6	0.5	2.9	1.0	1.1	0.9	0.6	1.2	-
Aug-04	0.5	0.5	0.5	1.3	0.7	1.1	1.1	1.4	-	1.0	1.0	-
Sep-04	0.6	0.6	0.8	2.2	1.0	1.0	0.9	4.4	0.9	16.7	1.1	-
Oct-04	0.7	0.9	1.2	0.9	0.8	1.4	1.0	10.5	1.0	1.0	0.8	-
Nov-04	0.8	0.7	1.3	1.9	0.7	0.9	1.0	3.0	1.1	1.1	1.6	-
Dec-04	2.0	1.4	3.6	1.5	1.3	2.2	3.2	7.9	1.8	5.5	2.5	-
Jan-05	1.2	1.0	3.7	1.6	1.4	4.0	2.3	2.7	2.6	2.5	2.8	-
Feb-05	1.2	1.2	1.8	1.6	1.3	2.0	1.7	-	2.3	1.5	2.3	-
Mar-05	1.3	0.9	1.4	0.9	0.9	3.0	1.2	7.7	-	0.8	1.3	-
Apr-05	1.1	0.7	0.9	0.8	0.7	0.9	1.4	3.3	1.1	0.8	0.9	-
May-05	0.7	8.6	1.1	0.8	0.7	0.8	0.9	4.4	1.2	0.8	1.1	-
Jun-05	1.3	0.8	1.3	1.3	0.8	1.2	1.2	1.3	1.5	2.5	0.9	-
Jul-05	1.0	0.5	0.5	0.7	0.4	1.6	0.7	1.2	0.8	4.3	1.1	-
Aug-05	0.6	0.6	0.8	1.0	0.8	0.9	0.7	1.0	0.9	1.0	0.9	-
Sep-05	0.6	0.7	0.8	0.7	0.7	1.2	1.3	1.3	1.0	0.9	1.1	-
Oct-05	0.8	0.9	1.3	0.9	0.8	1.4	1.2	1.9	1.3	1.1	1.3	-
Nov-05	-	2.3	2.3	2.0	1.7	1.2	2.0	3.2	1.6	1.4	2.2	-
Dec-05	1.9	3.2	2.3	3.3	2.6	3.4	2.3	-	1.3	2.1	3.9	-
Jan-06	1.0	2.1	1.7	1.0	23.	3.5	-	2.7	1.1	-	1.5	-
Feb-06	2.2	1.0	0.9	1.2	1.1	1.7	1.1	2.9	-	2.3	1.8	-
Mar-06	0.7	0.6	2.3	0.7	0.6	0.9	1.0	1.4	0.7	0.8	1.5	-
Apr-06	0.6	0.7	1.1	0.8	0.6	1.1	0.8	1.0	1.0	1.8	1.5	-
May-06	1.0	3.1	1.0	-	1.1	1.4	1.1	4.1	-	7.0	1.5	-
Jun-06	0.4	0.3	0.7	0.5	0.4	0.6	0.7	0.8	0.6	0.9	0.9	-
Jul-06	0.3	0.3	1	1.3	0.4	0.7	0.7	2.7	-	0.6	0.6	-
Aug-06	0.9	0.6	0.8	0.7	0.7	0.8	0.7	1.7	-	3.7	0.9	-
Sep-06	1.6	0.7	1.1	1.7	0.7	1	0.9	1.3	1.2	0.8	1.6	-
Oct-06	2	1.4	1.6	1.8	0.9	1.8	1.2	1.8	1.5	1.8	1.9	-
Nov-06	4.3	2.2	3	2.3	2.3	5.3	2.4	3.3	2.3	2.3	2.9	-
Dec-06	1.2	3.4	1.9	2.3	2.3		2.1	2.1		4.9	3.9	-
Jan-07	2	0.9	1.5	0.7	0.7	1.7	1.1		1.2	1.7	0.9	-
Feb-07	1.7	0.9	1.6	0.7	0.6	1	1.8	1.7	1.1	1.2	1.7	-
Mar-07	1.3	0.9	1.7	0.8	1.2	0.6	2.2	1.7	1	0.9	1.7	-
Apr-07	0.5	0.7	0.9	0.6	4.8	1.2	0.5	2.7	0.5	0.8	0.9	-
May-07	0.8	0.5	0.6	1.2	0.6	0.6	0.7	1.9	0.5	0.7	0.8	-
Jun-07	0.6	0.5	0.7	1.1	0.1	0.5	0.1	0.5	0.1	0.4	0.3	-
Jul-07	0.5	0.4	0.6	2.1	0.5	0.8	0.6	0.6	0.4	0.5	0.7	-
Aug-07	1.5	0.4	0.7	1	0.7	0.7	0.5	1	0.6	0.6	0.7	-
Sep-07	1.3	0.5	1.8	1	0.7	0.9	0.9	1.3	1	0.7	1.6	-
Oct-07	4.2	0.9	1.1	1.4	1.1	1.7	1.8	1.7	1.6	1.4	2.2	-
Nov-07	0.8	0.8	1.1	0.9	1.1	1.1	1.1	1.7	0.6	0.8	1.5	-
Dec-07	1.3	0.8	3	0.7	0.5	0.8	0.5	1.1	0.3	0.8	0.6	-
Jan-08	2.6	0.8	3.7	0.5	0.5	0.5	0.4	2.2	0.8	0.3	0.8	-
Feb-08	0.4	0.1	14	0.1	0.1	0.3	0.1	0.3	0.2	0.2	0.3	-

Mar-08	4.5	0.6	9.2+	0.6	2.9	2.1	0.6	1.5	0.5	1	0.9	-
April-08	0.4#	0.4#	0.8#	0.4#	0.4#	0.8#	1.1#	1.7#	1.2	1.1#	1.1#	-
May-08	1.1	2.4#	0.9	1.4	0.9	0.9	0.7	2.7	1#	1.1	1.3#	-
June-08	0.2	0.4#	0.1	0.5	0.1#	0.1	0.3	0.5#	0.1	0.8	0.2	-
July-08	0.4	0.7#	1.3#	0.6	0.8#	0.9	0.8	1	0.7	0.5	1.1	-
Aug-08	1	0.5	0.7	0.6	0.5	1.9	0.8	1	1	0.9	1.4	-
Sep-08	0.6	1	1.3	0.7	0.6	0.9	0.6	0.9	0.9	0.9	1.8	-
Oct-08	1	0.5	1	1.3	1.3	1.2	1	1.4	0.8	1.6	1.8	-
Nov-08	0.8	1.4	2.7	2.5	0.9	1.2	0.8	2.4	1.1	1	1.7	-
Dec-08	0.4	0.4	0.6	0.5	0.3	1.1	0.6	15	0.9	0.7	1.2	-
Jan-09	1.1	3#	1.6	0.8	0.9	1.4	0.7	1.5	0.9	0.9	5+	-
Feb-09	0.4	4.4	1.5	1.1	0.9	1.6	0.8	1.2	1.4	2.5	1.2	-
Mar-09	2.8	5.8	2.7	2.4	1.9	2.1	2.5	2.4	2.3	5.7	2.7	-
Apr-09	2	0.8	0.8	0.6	0.6	3.2	1.1	1.1	1	0.6	0.9	-
May-09	0.6	1.6	0.8	2.4	0.9	5.6 +	1.4	1.1	1.3	0.7	1.5	-
Jun-09	0.4	1.3	0.8	0.5	0.5	3.3	0.9	0.6	1	3.4	0.7	-
Jul-09	0.2	1.0	0.6	0.4	0.3	3.8	0.5	0.6	0.6	0.3	0.6	-
Aug-09	0.8	3.6	0.8	1.2	1.0	1.8	0.8	1.8	1.3	0.8	1.0	-
Sep-09	1.0	1.8#	1.8	8.3 +	1	1.8	0.9#	1.8#	1.7#	0.7	1.4#	-
Oct-09+	4.3	9#	5.2#	11.3#	3.2	3.8#	2.4#	6.8#	3.0#	2.2	3.2#	5.7#
Nov-09	0.8#	1.7#	1.4#	1.3#	0.7#	2.1#	1.3#	8.0#	*	1.0#	*	2.3
Dec-09	1.4#	4.0#	1.6#	2.4#	1.7#	1.8	1.6	2.6#	1.7#	1.7#	2.2#	1.7
Jan-10	0.6#	0.8#	5.6#	1.2#	2.4#	1.2#	0.8#	1.4#	1.3#	0.8#	1.3#	1.1#
Feb-10	1.9#	11.3+	1.9#	1.4#	1.5#	1.1#	1.2#	1.6#	1.1#	0.8#	1.8#	1.3#
Mar-10	0.6#	0.6#	3.2#	1#	4.1#	0.6#	0.6#	1.2	0.6	0.2#	0.8#	1.1#
Apr-10	0.8#	1.8#	2.4#	0.7#	+	0.3	0.6#	0.9#	0.6#	0.4#	0.8#	0.8#
May-10	0.8	4.9#	3.0#	1.1	1.2	1.0	0.7	1.3	1.0#	0.5	1.1#	0.8
Jun-10	0.3	2.2#	3.0#	0.6#	0.2	1.2#	0.5	0.5#	0.6	0.7#	0.7#	0.4#
Jul-10	0.6#	1.1#	0.7#	0.7	0.5	0.3	0.5#	0.6#	0.7	0.2#	0.8	0.5
Aug-10	0.4	0.5#	1.9#	0.8#	0.2#	0.7#	0.5#	0.5#	0.6	0.5#	0.7#	0.4#
Sep-10	0.6#	2.6#	1.6#	1.0#	0.5#	1.1#	0.5#	1.0#	0.9#	0.6#	0.8#	0.9#
Oct-10	0.9#	1.6#	0.9#	0.5#	0.4#	0.5	1.0#	1.3#	1.2#	2.0#	1.2#	0.4#
Nov-10	0.9#	3.5#	0.9#	1.4#	1.1#	0.9	0.6#	0.9#	*	0.9#	0.8#	1.1#
Dec-10	1.0#	0.7#	0.9#	1.1#	0.5#	0.4#	0.6#	2.4#	1.0#	0.5	1.0#	1.4#
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1+	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	11	11.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-11	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7^	0.4#	0.4#	0.5#	~	1.4#	0.5#	1.2#	0.8#&	0.3#^	0.6#&	1.1#

Data supplied by RCA Laboratories. * Insects/bird droppings reported. ^ Grass and Grass Seeds. # Tree Litter. +Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

APPENDIX B

Figures

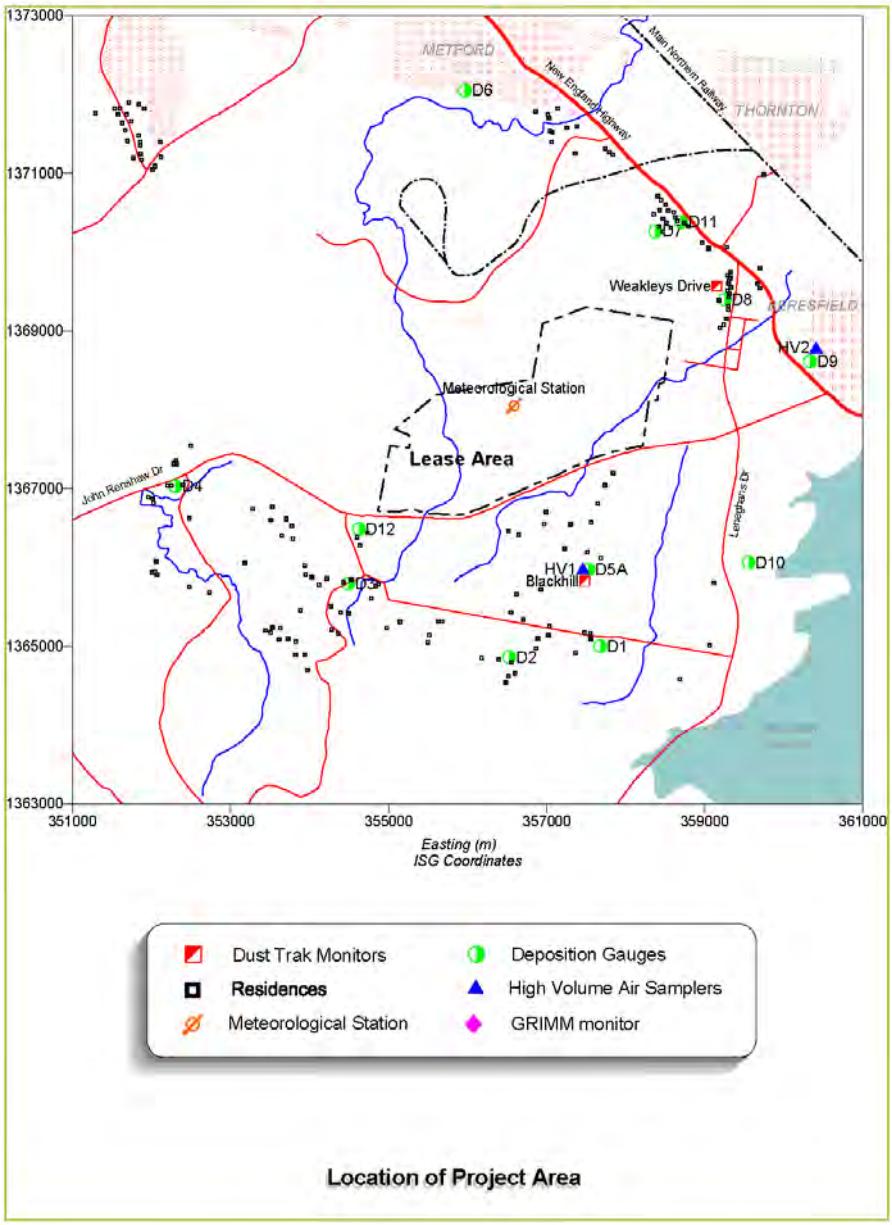


Figure 1: Project Location

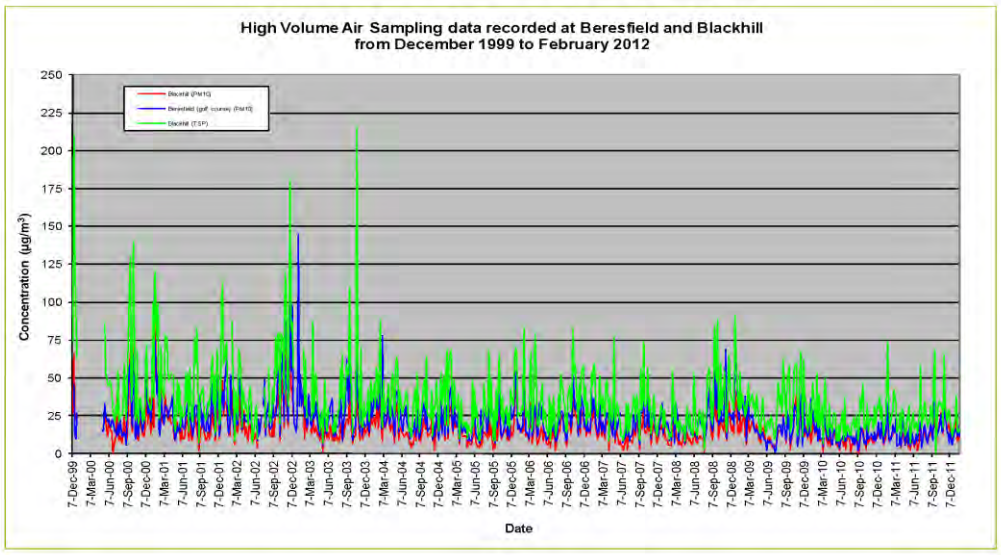


Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in February 2012.

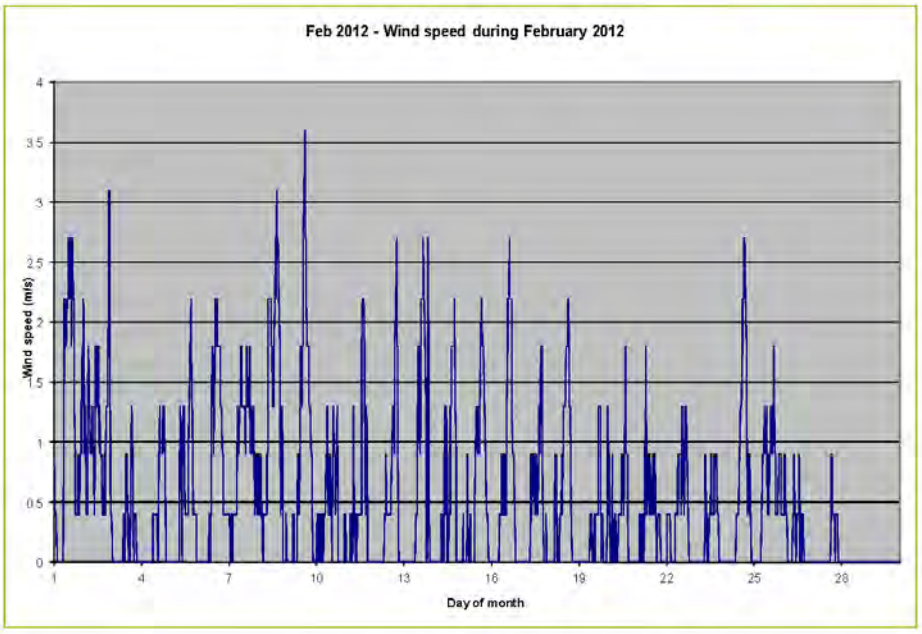
Figure 3: DustTrak sampling data - Blackhill site

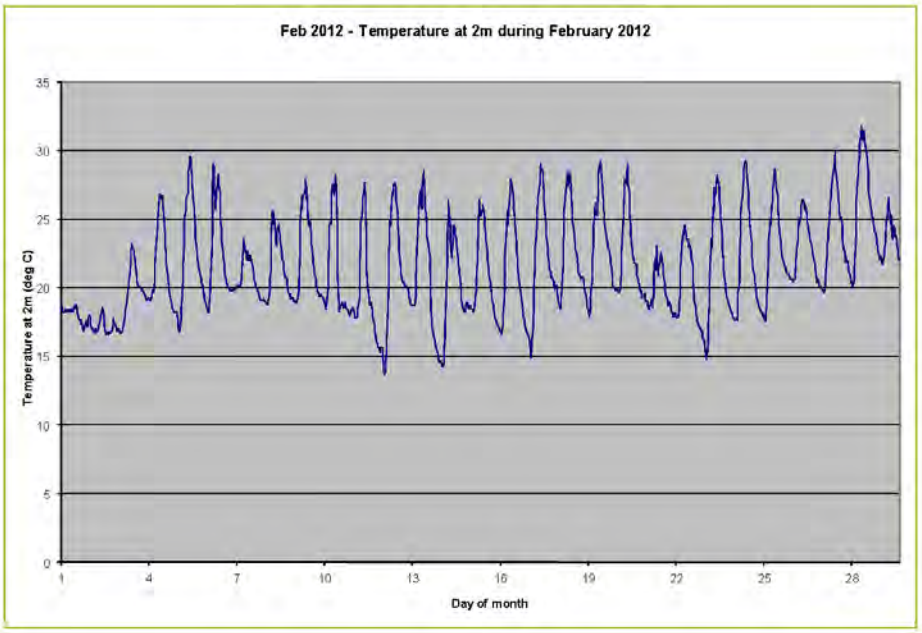
No Monitoring was avaliable for this site in February 2012.

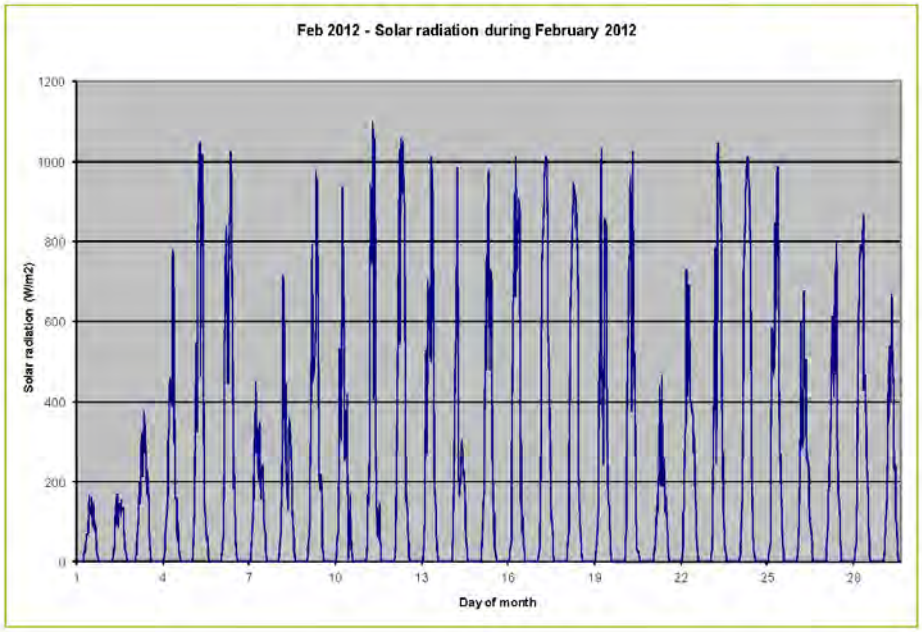
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data


Feb 2012 - Wind speed during February 2012
Wind speed (m/s)
Day of month


Feb 2012 - Temperature at 2m during February 2012
Temperature at 2m (deg C)
Day of month



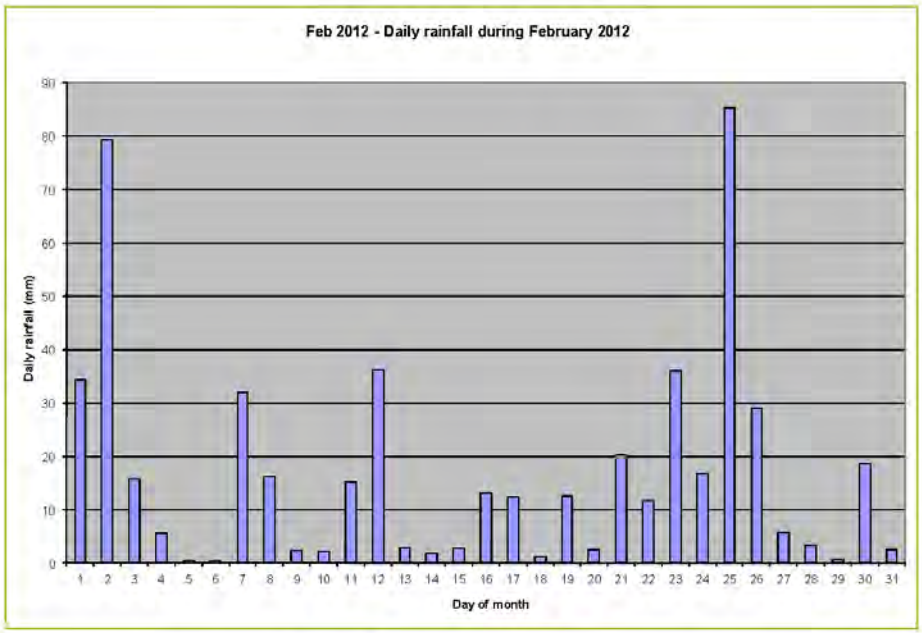
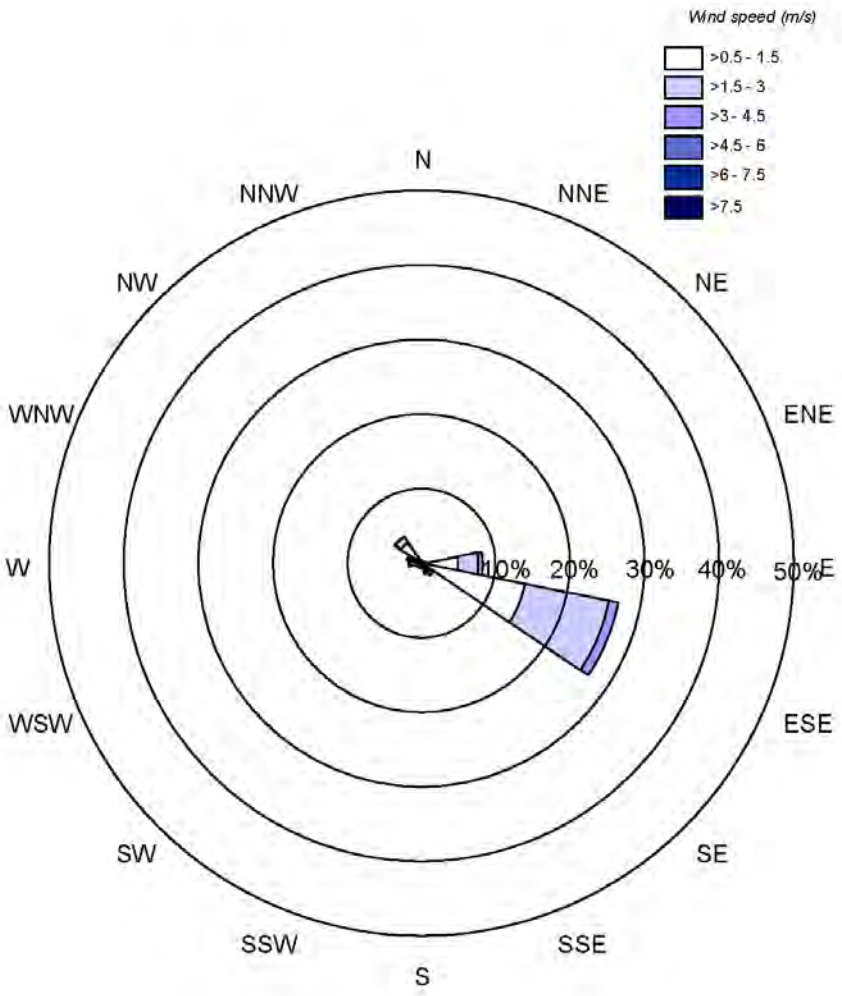


Figure 6: Meteorological conditions

Windrose for Donaldson Coal, February 2012



Calms = 50.9%

Figure 7: Windrose for February 2012

REPORT

DUST AND METEOROLOGICAL DATA – MARCH 2012

Donaldson Coal

Job No: 3003

3 May 2012

A PEL Company

PROJECT TITLE:	**DUST AND METEOROLOGICAL DATA – MARCH 2012**
JOB NUMBER:	**3003**
PREPARED FOR:	Phil Brown **DONALDSON COAL**
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1 INTRODUCTION

As part of their Air Quality Management Plan, Donaldson Coal operate an ambient air quality monitoring network, including dust monitoring in the vicinity of the mining lease and meteorological monitoring at a single station on-site. This report has been prepared as a summary of the data collected throughout the network during March 2012.

The dust monitoring network includes continuous monitoring using TSI DustTrak, high volume air sampling (HVAS) on a one-day-in-six run cycle and dust deposition monitoring.

The continuous monitoring network consists of two DustTrak monitors measuring PM_{10} at two sites and an additional DustTrak monitor used for one week each quarter to measure $PM_{2.5}$.

There are two HVAS locations used to determine ambient concentrations of PM_{10} and TSP. These operate on a one-day-in-six run cycle, in line with similar measurements made by the NSW Office of Environment and Heritage (OEH)[a] at other locations throughout the state.

Monthly levels of dust deposition are also measured using twelve gauges placed at various locations in the vicinity of the mine. The locations of each of these monitors and gauges are shown in **Figure 1**.

Table 1 lists the instruments used and pollutants measured at these locations.

Table 1: Summary of monitoring locations and instruments

Monitoring Location	Instruments Used	Pollutant Monitored
Beresfield	HVAS	PM_{10}
Blackhill	HVAS	PM_{10}
	HVAS	TSP
	DustTrak	PM_{10}
	DustTrak (1 week per quarter)	$PM_{2.5}$
Weakleys Drive	DustTrak	PM_{10}
DG1 – DG12	Deposition Gauges	Dust Deposition

Meteorological data are downloaded monthly and forwarded to PAEHolmes for processing. The meteorological station is situated at the site of the office buildings and measures the following parameters:

- wind speed
- wind direction
- temperature
- solar radiation
- rainfall

[a] The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2 HIGH VOLUME AIR SAMPLING

High Volume Air Sampling (HVAS) was carried out at Beresfield and Blackhill by RCA Laboratories. PM_{10} is measured at both sites while TSP is only measured at Blackhill. The data collected during March 2012 are summarised in **Table 2**. A graph consisting of all the data collected to date is shown in **Figure 2**.

Table 2: HVAS data from Beresfield and Blackhill for March 2012

Date	Beresfield PM_{10} ($\mu g/m^3$)	Blackhill PM_{10} ($\mu g/m^3$)	Blackhill TSP ($\mu g/m^3$)
3/03/2012	11	13	11
9/03/2012	13	14	29
15/03/2012	12	11	29
21/03/2012	7	8	24
27/03/2012	12	9	19
Annual average	**14**	**13**	**24**

All measurements of PM_{10} for March are below the 24-hour OEH PM_{10} goal of 50 $\mu g/m^3$. The highest 24-hour average PM_{10} concentration was 14 $\mu g/m^3$, recorded at Blackhill on 9 March.

Figure 2 shows a seasonal trend in PM_{10} concentrations, peaking during the warmer months and decreasing during autumn and winter. This is a common trend and is seen consistently in the Hunter Valley.

The annual average PM_{10} concentrations for Beresfield and Blackhill were 14 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively for the 12 months to March 2012. These values are below the OEH annual average PM_{10} goal of 30 $\mu g/m^3$.

TSP measurements from the Blackhill site show that concentrations were below the OEH annual average TSP goal of 90 $\mu g/m^3$. It should be noted that the goal refers to an annual average and not a 24-hour average as measured by the high volume air sampler. The annual average TSP concentration for the 12 months to March 2012 was 24 $\mu g/m^3$.

These measurements will include all background sources relevant to that location, including contributions from the Donaldson mining operations.

3 CONTINUOUS MONITORING

3.1 DustTrak Monitoring at Blackhill

Monitoring data was not available for March 2012.

3.2 DustTrak Monitoring at Weakleys Drive

Monitoring data was not available for March 2012.

3.3 DustTrak $PM_{2.5}$ Monitoring at Blackhill

$PM_{2.5}$ monitoring was not carried out in March 2012.

4 DUST DEPOSITION MONITORING

Dust deposition monitoring is carried out each month via a network consisting of twelve (12) gauges. The results for March 2012 are shown in **Table 3**, in conjunction with results for the previous eleven months in order to provide an annual average for that period.

A summary of the complete data set from June 2000 is provided in **Appendix A**.

Table 3: Dust deposition monitoring for the 12-month period to March 2012

Month	Monthly dust deposition rate (g/m²/month)											
	DG1	DG2	DG3	DG4	DG5A	DG6	DG7	DG8	DG9	DG10	DG11	DG12
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Jul-11	0.6	0.5	1.6	<0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	1	1.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-12	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7^	0.4#	0.4#	0.5#	~	1.4#	0.5#	1.2#	0.8#&	0.3#^	0.6#&	1.1#
Mar-12	0.8#^	0.3^	0.7#	0.6#	~	0.6#	0.4#	5.6	1.2	0.6#	0.7#	1.3#
Annual Average	**0.7**	**1.0**	**1.9**	**0.8**	**0.8**	**0.9**	**0.8**	**2.0**	**0.8**	**0.8**	**0.9**	**1.0**

Data supplied by RCA Laboratories. # Insects/bird droppings reported. ^ Grass and Grass Seeds. & Tree Litter 'Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

The highest dust deposition measurement recorded in March 2012 was 5.6 g/m²/month at DG8.

It is noted that the OEH goal for dust deposition is expressed as an annual average and the annual average deposition rates for the gauges in the network are all significantly below the goal of 4 g/m²/month, indicating nuisance dust in the vicinity of the mine is not an issue.

5 METEOROLOGICAL MONITORING

A monthly plot of the rainfall data collected in March 2012 are shown in **Figure 6** and a windrose plot is shown in **Figure 7**. Plots for temperature, wind speed and solar radiation are not available for this month, due to malfunction of the weather station.

The graph shown in **Figure 6** indicates that the rain gauge was recording appropriately. Data maxima and minima all appeared to be sensible for this site during March. Total rainfall for the month was 143.8 mm. This is consistent with permanent Bureau of Meteorology weather stations in the area.

A windrose (see **Figure 7**) created from the available 30-minute average wind data shows that winds were predominantly from the east-southeast.

The site recorded calms (wind speed less than or equal to 0.5 m/s) for approximately 41.4% of the time. The relatively large fraction of calm winds is significantly higher than would be expected and may be as a result of the sheltered location of the weather station.

APPENDIX A

Dust Deposition Data

	Dust deposition (g/m²/month)											
Month	D1	D2	D3	D4	D5A	D6	D7	D8	D9	D10	D11	D12
Jun-00	0.7	0.5	0.5	0.7	0.8	0.4	3.8	3.2	0.5	0.7	-	-
Jul-00	0.4	0.4	0.5	0.7	0.8	0.5	0.8	1.5	0.4	0.4	-	-
Aug-00	0.9	0.6	1.0	1.2	1.1	1.0	3.4	0.7	0.7	0.6	-	-
Sep-00	0.8	0.9	1.1	0.9	1.3	1.0	2.2	1.0	1.0	0.8	-	-
Oct-00	0.4	0.6	1.1	0.9	0.9	0.8	5.3	0.9	0.6	0.5	-	-
Nov-00	5.2	0.7	1.4	0.8	1.0	0.4	24.1	9.4	1.1	0.6	-	-
Dec-00	2.8	1.4	1.9	1.3	1.1	0.8	2.1	2.5	0.9	0.9	-	-
Jan-01	0.7	1.7	1.4	1.8	0.7	1.3	1.1	2.4	1.1	0.6	-	-
Feb-01	0.9	3.1	2.0	0.5	0.9	0.7	0.7	6.7	1.3	0.5	1.0	-
Mar-01	0.8	2.1	1.3	0.6	0.7	0.6	0.6	5.5	0.6	0.6	1.5	-
Apr-01	0.8	0.7	1.3	0.5	0.7	0.4	0.3	5.1	0.7	0.6	0.8	-
May-01	0.2	0.2	0.4	0.4	0.3	0.3	0.6	1.8	0.6	0.8	0.9	-
Jun-01	0.5	0.4	0.5	1.0	1.0	0.4	0.4	8.8	0.7	0.6	0.6	-
Jul-01	0.5	0.3	1.8	0.5	0.8	-	16.3	4.9	0.9	0.7	0.7	-
Aug-01	0.4	0.4	0.8	0.8	1.0	1.7	1.0	-	1.0	1.8	1.1	-
Sep-01	0.7	1.0	1.7	1.1	1.7	0.7	-	6.0	1.1	1.3	1.7	-
Oct-01	1.1	0.6	4.6	0.9	0.7	0.9	1.2	1.9	0.9	0.6	1.7	-
Nov-01	0.9	1.0	1.1	1.1	0.8	1.1	6.0	5.5	1.3	1.9	2.3	-
Dec-01	4.9	0.9	4.2	0.9	1.3	1.9	1.2	3.1	1.2	9.7	1.8	-
Jan-02	0.8	1.0	1.5	1.3	1.1	1.4	1.3	1.5	1.1	0.9	1.5	-
Feb-02	1.1	1.1	0.9	0.3	0.4	0.5	3.1	5.1	0.5	0.5	0.9	-
Mar-02	1.7	2.1	1.6	0.7	0.7	0.8	1.0	18	1.0	0.9	1.7	-
Apr-02	1.0	0.4	1.0	0.8	0.8	0.6	0.9	10.1	0.5	0.7	1.0	-
May-02	0.6	0.6	6.0	0.7	0.4	1.2	0.9	3.1	0.7	0.2	1.0	-
Jun-02	1.4	0.4	1.7	0.6	0.5	0.8	0.6	2.1	0.6	0.5	1.0	-
Jul-02	0.7	0.7	-	0.8	0.8	0.7	1.2	-	1.1	0.5	1.0	-
Aug-02	1.3	0.8	1.4	1.2	1.1	1.2	1.5	-	1.5	0.9	1.6	-
Sep-02	0.5	1.2	1.1	0.8	0.5	0.7	5.1	9.3	1.6	0.6	1.0	-
Oct-02	2.2	1.4	5.2	1.5	1.5	1.4	1.4	3.4	-	1.5	3.1	-
Nov-02	2.8	1.8	3.7	1.6	0.1	1.8	2.1	3.5	2.1	2	1.9	-
Dec-02	2.0	-	2.5	1.5	3.0	1.5	1.8	4.1	1.6	1.2	1.9	-
Jan-03	2.1	1.5	2.7	1.5	1.0	1.9	2.2	2.5	1.1	1.0	1.6	-
Feb-03	1.4	1.1	2.6	1.1	0.9	1.2	1.7	5.9	1.2	1.0	1.5	-
Mar-03	0.8	0.5	1.2	1.2	0.6	2.1	1.5	3.4	-	3.6	9.5	-
Apr-03	0.5	1.0	0.6	1.0	0.7	0.5	1.1	8.0	-	2.0	1.0	-
May-03	0.5	0.4	0.6	0.2	0.2	0.6	1.3	1.6	0.5	0.8	1.2	-
Jun-03	0.5	0.6	0.8	0.8	0.4	0.6	0.8	0.7	0.9	0.7	0.7	-
Jul-03	0.3	0.4	0.4	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.7	-
Aug-03	0.8	0.2	0.7	1.1	0.5	1.3	1.8	2.1	1.3	0.7	0.9	-
Sep-03	0.6	0.7	1.1	0.7	0.8	1.7	1.4	1.3	2.5	0.9	1.3	-
Oct-03	-	0.9	1.4	0.9	0.7	1.9	1.0	1.4	0.6	0.8	1.3	-
Nov-03	2.6	0.8	1.0	1.1	0.4	1.3	1.5	1.5	-	0.8	1.3	-
Dec-03	1.0	1.0	1.4	1.3	1.1	1.5	1.6	2.0	1.8	0.9	1.4	-
Jan-04	8.5	1.5	2.1	1.5	1.3	2.6	1.4	2.2	1.7	1.5	1.7	-
Feb-04	1.2	1.0	1.7	1.4	0.7	3.1	1.6	2.2	-	1.5	2.3	-
Mar-04	0.4	0.6	6.6	1.2	0.7	1.9	1.1	12.1	4.8	1.5	1.1	-

Apr-04	0.6	1.0	0.8	0.8	0.6	1.9	0.8	1.4	0.9	1.2	1.1	-
May-04	0.2	0.9	2.2	0.9	0.8	0.7	0.9	1.4	1.2	0.9	1.5	-
Jun-04	0.4	0.6	0.7	0.9	0.6	1.4	1.0	0.9	1.0	1.0	0.8	-
Jul-04	0.4	0.6	5.3#	0.6	0.5	2.9	1.0	1.1	0.9	0.6	1.2	-
Aug-04	0.5	0.5	0.5	1.3	0.7	1.1	1.1	1.4	-	1.0	1.0	-
Sep-04	0.6	0.6	0.8	2.2	1.0	1.0	0.9	4.4	0.9	16.7	1.1	-
Oct-04	0.7	0.9	1.2	0.9	0.8	1.4	1.0	10.5	1.0	1.0	0.8	-
Nov-04	0.8	0.7	1.3	1.9	0.7	0.9	1.0	3.0	1.1	1.1	1.6	-
Dec-04	2.0	1.4	3.6	1.5	1.3	2.2	3.2	7.9	1.8	5.5	2.5	-
Jan-05	1.2	1.0	3.7	1.6	1.4	4.0	2.3	2.7	2.6	2.5	2.8	-
Feb-05	1.2	1.2	1.8	1.6	1.3	2.0	1.7	-	2.3	1.5	2.3	-
Mar-05	1.3	0.9	1.4	0.9	0.9	3.0	1.2	7.7	-	0.8	1.3	-
Apr-05	1.1	0.7	0.9	0.8	0.7	0.9	1.4	3.3	1.1	0.8	0.9	-
May-05	0.7	8.6	1.1	0.8	0.7	0.8	0.9	4.4	1.2	0.8	1.1	-
Jun-05	1.3	0.8	1.3	1.3	0.8	1.2	1.2	1.3	1.5	2.5	0.9	-
Jul-05	1.0	0.5	0.5	0.7	0.4	1.6	0.7	1.2	0.8	4.3	1.1	-
Aug-05	0.6	0.6	0.8	1.0	0.8	0.9	0.7	1.0	0.9	1.0	0.9	-
Sep-05	0.6	0.7	0.8	0.7	0.7	1.2	1.3	1.3	1.0	0.9	1.1	-
Oct-05	0.8	0.9	1.3	0.9	0.8	1.4	1.2	1.9	1.3	1.1	1.3	-
Nov-05	-	2.3	2.3	2.0	1.7	1.2	2.0	3.2	1.6	1.4	2.2	-
Dec-05	1.9	3.2	2.3	3.3	2.6	3.4	2.3	-	1.3	2.1	3.9	-
Jan-06	1.0	2.1	1.7	1.0	23.	3.5	-	2.7	1.1	-	1.5	-
Feb-06	2.2	1.0	0.9	1.2	1.1	1.7	1.1	2.9	-	2.3	1.8	-
Mar-06	0.7	0.6	2.3	0.7	0.6	0.9	1.0	1.4	0.7	0.8	1.5	-
Apr-06	0.6	0.7	1.1	0.8	0.6	1.1	0.8	1.0	1.0	1.8	1.5	-
May-06	1.0	3.1	1.0	-	1.1	1.4	1.1	4.1	-	7.0	1.5	-
Jun-06	0.4	0.3	0.7	0.5	0.4	0.6	0.7	0.8	0.6	0.9	0.9	-
Jul-06	0.3	0.3	1	1.3	0.4	0.7	0.7	2.7	-	0.6	0.6	-
Aug-06	0.9	0.6	0.8	0.7	0.7	0.8	0.7	1.7	-	3.7	0.9	-
Sep-06	1.6	0.7	1.1	1.7	0.7	1	0.9	1.3	1.2	0.8	1.6	-
Oct-06	2	1.4	1.6	1.8	0.9	1.8	1.2	1.8	1.5	1.8	1.9	-
Nov-06	4.3	2.2	3	2.3	2.3	5.3	2.4	3.3	2.3	2.3	2.9	-
Dec-06	1.2	3.4	1.9	2.3	2.3		2.1	2.1		4.9	3.9	-
Jan-07	2	0.9	1.5	0.7	0.7	1.7	1.1		1.2	1.7	0.9	-
Feb-07	1.7	0.9	1.6	0.7	0.6	1	1.8	1.7	1.1	1.2	1.7	-
Mar-07	1.3	0.9	1.7	0.8	1.2	0.6	2.2	1.7	1	0.9	1.7	-
Apr-07	0.5	0.7	0.9	0.6	4.8	1.2	0.5	2.7	0.5	0.8	0.9	-
May-07	0.8	0.5	0.6	1.2	0.6	0.6	0.7	1.9	0.5	0.7	0.8	-
Jun-07	0.6	0.5	0.7	1.1	0.1	0.5	0.1	0.5	0.1	0.4	0.3	-
Jul-07	0.5	0.4	0.6	2.1	0.5	0.8	0.6	0.6	0.4	0.5	0.7	-
Aug-07	1.5	0.4	0.7	1	0.7	0.7	0.5	1	0.6	0.6	0.7	-
Sep-07	1.3	0.5	1.8	1	0.7	0.9	0.9	1.3	1	0.7	1.6	-
Oct-07	4.2	0.9	1.1	1.4	1.1	1.7	1.8	1.7	1.6	1.4	2.2	-
Nov-07	0.8	0.8	1.1	0.9	1.1	1.1	1.1	1.7	0.6	0.8	1.5	-
Dec-07	1.3	0.8	3	0.7	0.5	0.8	0.5	1.1	0.3	0.8	0.6	-
Jan-08	2.6	0.8	3.7	0.5	0.5	0.5	0.4	2.2	0.8	0.3	0.8	-
Feb-08	0.4	0.1	14	0.1	0.1	0.3	0.1	0.3	0.2	0.2	0.3	-

Mar-08	4.5	0.6	9.2+	0.6	2.9	2.1	0.6	1.5	0.5	1	0.9	-
April-08	0.4#	0.4#	0.8#	0.4#	0.4#	0.8#	1.1#	1.7#	1.2	1.1#	1.1#	-
May-08	1.1	2.4#	0.9	1.4	0.9	0.9	0.7	2.7	1#	1.1	1.3#	-
June-08	0.2	0.4#	0.1	0.5	0.1#	0.1	0.3	0.5#	0.1	0.8	0.2	-
July-08	0.4	0.7#	1.3#	0.6	0.8#	0.9	0.8	1	0.7	0.5	1.1	-
Aug-08	1	0.5	0.7	0.6	0.5	1.9	0.8	1	1	0.9	1.4	-
Sep-08	0.6	1	1.3	0.7	0.6	0.9	0.6	0.9	0.9	0.9	1.8	-
Oct-08	1	0.5	1	1.3	1.3	1.2	1	1.4	0.8	1.6	1.8	-
Nov-08	0.8	1.4	2.7	2.5	0.9	1.2	0.8	2.4	1.1	1	1.7	-
Dec-08	0.4	0.4	0.6	0.5	0.3	1.1	0.6	15	0.9	0.7	1.2	-
Jan-09	1.1	3#	1.6	0.8	0.9	1.4	0.7	1.5	0.9	0.9	5+	-
Feb-09	0.4	4.4	1.5	1.1	0.9	1.6	0.8	1.2	1.4	2.5	1.2	-
Mar-09	2.8	5.8	2.7	2.4	1.9	2.1	2.5	2.4	2.3	5.7	2.7	-
Apr-09	2	0.8	0.8	0.6	0.6	3.2	1.1	1.1	1	0.6	0.9	-
May-09	0.6	1.6	0.8	2.4	0.9	5.6 +	1.4	1.1	1.3	0.7	1.5	-
Jun-09	0.4	1.3	0.8	0.5	0.5	3.3	0.9	0.6	1	3.4	0.7	-
Jul-09	0.2	1.0	0.6	0.4	0.3	3.8	0.5	0.6	0.6	0.3	0.6	-
Aug-09	0.8	3.6	0.8	1.2	1.0	1.8	0.8	1.8	1.3	0.8	1.0	-
Sep-09	1.0	1.8#	1.8	8.3 +	1	1.8	0.9#	1.8#	1.7#	0.7	1.4#	-
Oct-09+	4.3	9#	5.2#	11.3#	3.2	3.8#	2.4#	6.8#	3.0#	2.2	3.2#	5.7#
Nov-09	0.8#	1.7#	1.4#	1.3#	0.7#	2.1#	1.3#	8.0#	*	1.0#	*	2.3
Dec-09	1.4#	4.0#	1.6#	2.4#	1.7#	1.8	1.6	2.6#	1.7#	1.7#	2.2#	1.7
Jan-10	0.6#	0.8#	5.6#	1.2#	2.4#	1.2#	0.8#	1.4#	1.3#	0.8#	1.3#	1.1#
Feb-10	1.9#	11.3+	1.9#	1.4#	1.5#	1.1#	1.2#	1.6#	1.1#	0.8#	1.8#	1.3#
Mar-10	0.6#	0.6#	3.2#	1#	4.1#	0.6#	0.6#	1.2	0.6	0.2#	0.8#	1.1#
Apr-10	0.8#	1.8#	2.4#	0.7#	+	0.3	0.6#	0.9#	0.6#	0.4#	0.8#	0.8#
May-10	0.8	4.9#	3.0#	1.1	1.2	1.0	0.7	1.3	1.0#	0.5	1.1#	0.8
Jun-10	0.3	2.2#	3.0#	0.6#	0.2	1.2#	0.5	0.5#	0.6	0.7#	0.7#	0.4#
Jul-10	0.6#	1.1#	0.7#	0.7	0.5	0.3	0.5#	0.6#	0.7	0.2#	0.8	0.5
Aug-10	0.4	0.5#	1.9#	0.8#	0.2#	0.7#	0.5#	0.5#	0.6	0.5#	0.7#	0.4#
Sep-10	0.6#	2.6#	1.6#	1.0#	0.5#	1.1#	0.5#	1.0#	0.9#	0.6#	0.8#	0.9#
Oct-10	0.9#	1.6#	0.9#	0.5#	0.4#	0.5	1.0#	1.3#	1.2#	2.0#	1.2#	0.4#
Nov-10	0.9#	3.5#	0.9#	1.4#	1.1#	0.9	0.6#	0.9#	*	0.9#	0.8#	1.1#
Dec-10	1.0#	0.7#	0.9#	1.1#	0.5#	0.4#	0.6#	2.4#	1.0#	0.5	1.0#	1.4#
Jan-11	1.0#	0.7#	1.8#	1.2#	0.6#	0.7	0.9#	1.3#	1.0#	0.5#	1.5#	1.0
Feb-11	0.7	4.1+	0.9	1.0	0.7	0.7	1.0#	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9#	+	0.9	1.7#	0.8	0.9#	1.9#	*	0.8#	1.2#	1.3#
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	11	11.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-11	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7^	0.4#	0.4#	0.5#	~	1.4#	0.5#	1.2#	0.8#&	0.3#^	0.6#&	1.1#

Mar-12	0.8#^	0.3^	0.7#	0.6*	~	0.6#	0.4#	5.6	1.2	0.6#	0.7#	1.3*

Data supplied by RCA Laboratories. * Insects/bird droppings reported. ^ Grass and Grass Seeds. # Tree Litter. †Invalid. = No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

APPENDIX B

Figures

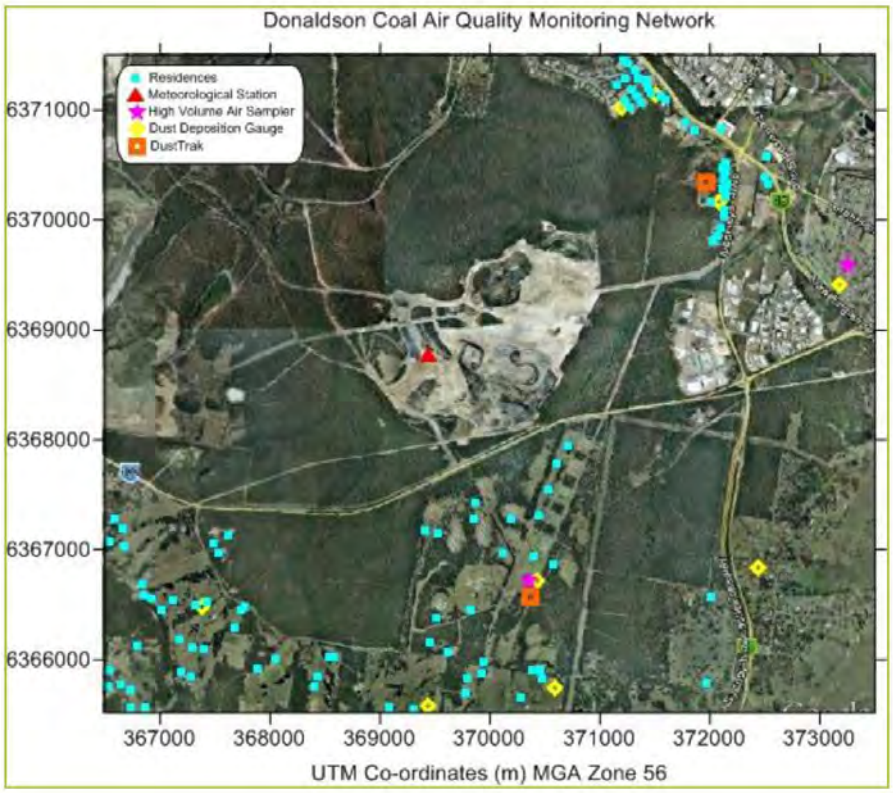

Figure 1: Project Location

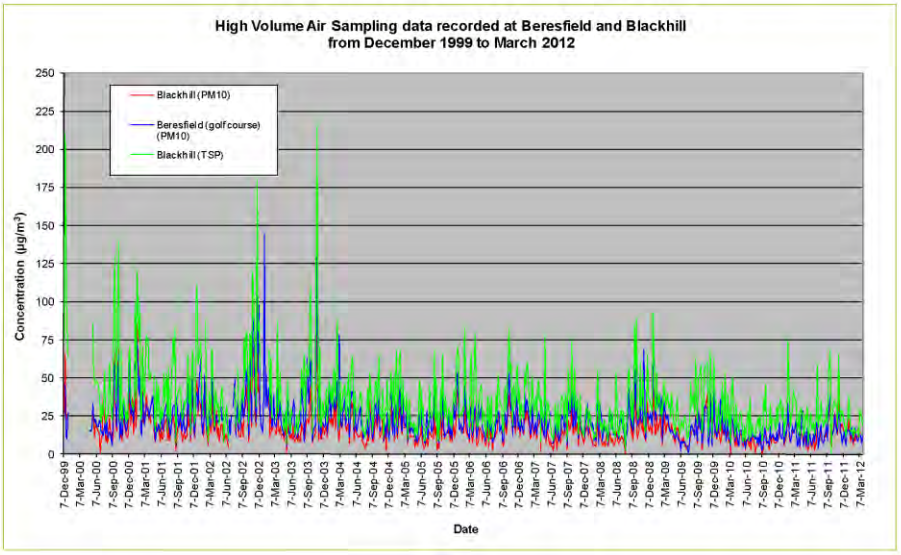

Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in March 2012.

Figure 3: DustTrak sampling data - Blackhill site

No Monitoring was avaliable for this site in March 2012.

Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data

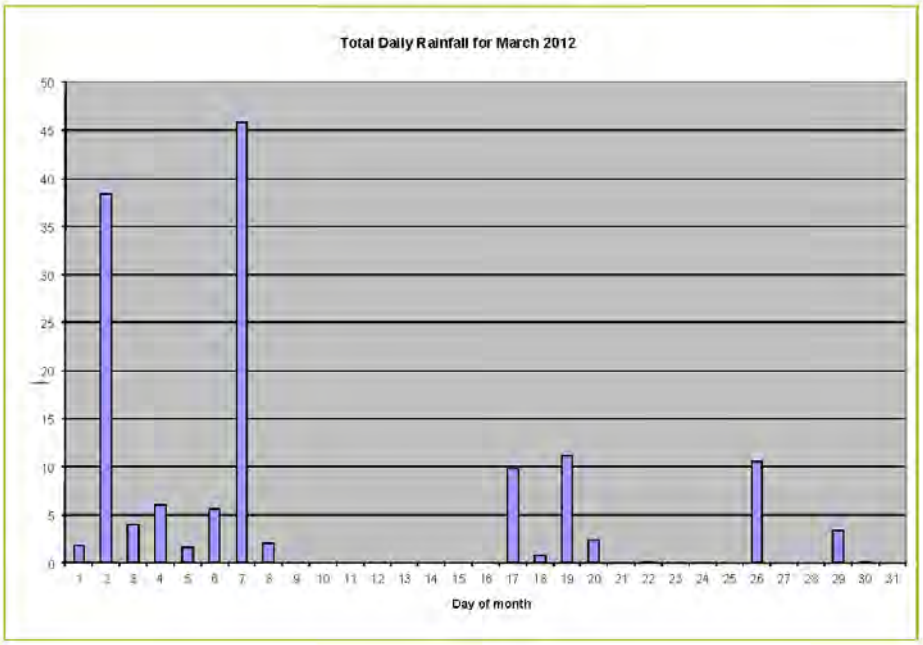

Figure 6: Meteorological conditions

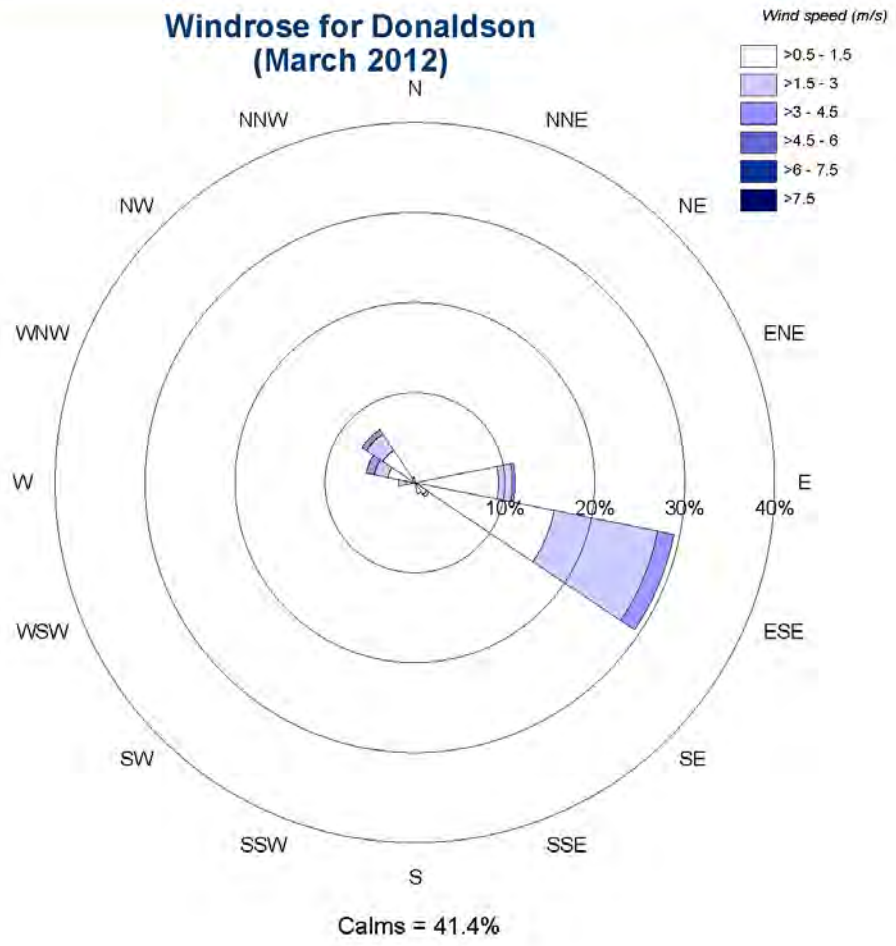

Figure 7: Windrose for March 2012

REPORT

DUST AND METEOROLOGICAL DATA – APRIL 2012

Donaldson Coal

Job No: 3003

28 May 2012

A PEL Company

PROJECT TITLE:	**DUST AND METEOROLOGICAL DATA – APRIL 2012**
JOB NUMBER:	**3003**
PREPARED FOR:	Phil Brown **DONALDSON COAL**
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1 INTRODUCTION

As part of their Air Quality Management Plan, Donaldson Coal operate an ambient air quality monitoring network, including dust monitoring in the vicinity of the mining lease and meteorological monitoring at a single station on-site. This report has been prepared as a summary of the data collected throughout the network during April 2012.

The dust monitoring network includes continuous monitoring using TSI DustTrak, high volume air sampling (HVAS) on a one-day-in-six run cycle and dust deposition monitoring.

The continuous monitoring network consists of two DustTrak monitors measuring PM_{10} at two sites and an additional DustTrak monitor used for one week each quarter to measure $PM_{2.5}$.

There are two HVAS locations used to determine ambient concentrations of PM_{10} and TSP. These operate on a one-day-in-six run cycle, in line with similar measurements made by the NSW Office of Environment and Heritage (OEH)[a] at other locations throughout the state.

Monthly levels of dust deposition are also measured using twelve gauges placed at various locations in the vicinity of the mine. The locations of each of these monitors and gauges are shown in **Figure 1**.

Table 1 lists the instruments used and pollutants measured at these locations.

Table 1: Summary of monitoring locations and instruments

Monitoring Location	Instruments Used	Pollutant Monitored
Beresfield	HVAS	PM_{10}
Blackhill	HVAS	PM_{10}
	HVAS	TSP
	DustTrak	PM_{10}
	DustTrak (1 week per quarter)	$PM_{2.5}$
Weakleys Drive	DustTrak	PM_{10}
DG1 – DG12	Deposition Gauges	Dust Deposition

Meteorological data are downloaded monthly and forwarded to PAEHolmes for processing. The meteorological station is situated at the site of the office buildings and measures the following parameters:

- wind speed
- wind direction
- temperature
- solar radiation
- rainfall

[a] The NSW EPA exists as a legal entity operated within the Office of Environment and Heritage (OEH) which came into existence in April 2011. OEH was previously part of the Department of Environment, Climate Change and Water (DECCW). The DECCW was also recently known as the Department of Environment and Climate Change (DECC), and prior to that the Department of Environment and Conservation (DEC). The terms NSW EPA, OEH, DECCW, DECC and DEC are interchangeable in this report.

2 HIGH VOLUME AIR SAMPLING

High Volume Air Sampling (HVAS) was carried out at Beresfield and Blackhill by RCA Laboratories. PM_{10} is measured at both sites while TSP is only measured at Blackhill. The data collected during April 2012 are summarised in **Table 2**. A graph consisting of all the data collected to date is shown in **Figure 2**.

Table 2: HVAS data from Beresfield and Blackhill for April 2012

Date	Beresfield PM_{10} ($\mu g/m^3$)	Blackhill PM_{10} ($\mu g/m^3$)	Blackhill TSP ($\mu g/m^3$)
2/04/2012	13	11	20
8/04/2012	18	20	27
14/04/2012	10	9	16
20/04/2012	16	16	20
26/04/2012	13	12	21
Annual average	**14**	**13**	**24**

All measurements of PM_{10} for April are below the 24-hour OEH PM_{10} goal of 50 $\mu g/m^3$. The highest 24-hour average PM_{10} concentration was 20 $\mu g/m^3$, recorded at Blackhill on 8 April.

Figure 2 shows a seasonal trend in PM_{10} concentrations, peaking during the warmer months and decreasing during autumn and winter. This is a common trend and is seen consistently in the Hunter Valley.

The annual average PM_{10} concentrations for Beresfield and Blackhill were 14 $\mu g/m^3$ and 13 $\mu g/m^3$ respectively for the 12 months to April 2012. These values are below the OEH annual average PM_{10} goal of 30 $\mu g/m^3$.

TSP measurements from the Blackhill site show that concentrations were below the OEH annual average TSP goal of 90 $\mu g/m^3$. It should be noted that the goal refers to an annual average and not a 24-hour average as measured by the high volume air sampler. The annual average TSP concentration for the 12 months to April 2012 was 24 $\mu g/m^3$.

These measurements will include all background sources relevant to that location, including contributions from the Donaldson mining operations.

3 CONTINUOUS MONITORING

3.1 DustTrak Monitoring at Blackhill

Monitoring data was not available for April 2012.

3.2 DustTrak Monitoring at Weakleys Drive

Monitoring data was not available for April 2012.

3.3 DustTrak $PM_{2.5}$ Monitoring at Blackhill

$PM_{2.5}$ monitoring was not carried out in April 2012.

4 DUST DEPOSITION MONITORING

Dust deposition monitoring is carried out each month via a network consisting of twelve (12) gauges. The results for April 2012 are shown in **Table 3**, in conjunction with results for the previous eleven months in order to provide an annual average for that period.

A summary of the complete data set from June 2000 is provided in **Appendix A**.

Table 3: Dust deposition monitoring for the 12-month period to April 2012

Month	Monthly dust deposition rate (g/m²/month)											
	DG1	DG2	DG3	DG4	DG5A	DG6	DG7	DG8	DG9	DG10	DG11	DG12
Apr-11	0.7	0.6#	4.9#	0.8#	1.1#	0.7	0.9#	2.1#	0.8#	1.0#	0.3#	0.7#
May-11	0.4	1.1#	5.4#	0.7#	0.4	0.5#	0.6#	1.5#	0.4	0.4#	0.6#	0.7#
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Jul-11	0.6	0.5	1.6	<0.1	0.4	0.3	0.3	1.8	0.8	0.5	0.9	0.7
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3#	0.4#	0.8#	0.5	0.6#	+	0.6#	1.5#	0.6#	2.3#	0.7#	0.7#
Oct-11	1	1.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2#	2	0.9	~	0.9	1.4	5.5	0.8#	1.2	1.2#	1.4
Jan-12	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7^	0.4#	0.4#	0.5#	~	1.4#	0.5#	1.2#	0.8#$	0.3#^	0.6#&	1.1#
Mar-12	0.8#^	0.3^	0.7#	0.6#	~	0.6#	0.4#	5.6	1.2	0.6#	0.7#	1.3#
Apr-12	1.3#^	1.1#^	1#	0.9#	~	1#	0.8#	2.6#	1.3#	1.1#	1.4#	1.4#
Annual Average	**0.8**	**0.8**	**1.8**	**0.8**	**0.6**	**0.9**	**0.8**	**2.1**	**0.8**	**0.8**	**0.9**	**1.0**

Data supplied by RCA Laboratories. # Insects/bird droppings reported. ^ Grass and Grass Seeds. & Tree Litter $Invalid. * No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

The highest dust deposition measurement recorded in April 2012 was 2.6 g/m²/month at DG8.

It is noted that the OEH goal for dust deposition is expressed as an annual average and the annual average deposition rates for the gauges in the network are all significantly below the goal of 4 g/m²/month, indicating nuisance dust in the vicinity of the mine is not an issue.

5 METEOROLOGICAL MONITORING

A monthly plot of the rainfall data collected in April 2012 is shown in **Figure 6**. Plots for temperature, wind speed, wind direction and solar radiation are not available for this month, due to malfunction of these instruments.

The graph shown in **Figure 6** indicates that the rain gauge was recording appropriately. Data maxima and minima all appeared to be sensible for this site during April. Total rainfall for the month was 143.8 mm. This is consistent with Bureau of Meteorology weather stations in the area.

APPENDIX A

Dust Deposition Data

Dust deposition (g/m²/month)												
Month	D1	D2	D3	D4	D5A	D6	D7	D8	D9	D10	D11	D12
Jun-00	0.7	0.5	0.5	0.7	0.8	0.4	3.8	3.2	0.5	0.7	-	-
Jul-00	0.4	0.4	0.5	0.7	0.8	0.5	0.8	1.5	0.4	0.4	-	-
Aug-00	0.9	0.6	1.0	1.2	1.1	1.0	3.4	0.7	0.7	0.6	-	-
Sep-00	0.8	0.9	1.1	0.9	1.3	1.0	2.2	1.0	1.0	0.8	-	-
Oct-00	0.4	0.6	1.1	0.9	0.9	0.8	5.3	0.9	0.6	0.5	-	-
Nov-00	5.2	0.7	1.4	0.8	1.0	0.4	24.1	9.4	1.1	0.6	-	-
Dec-00	2.8	1.4	1.9	1.3	1.1	0.8	2.1	2.5	0.9	0.9	-	-
Jan-01	0.7	1.7	1.4	1.8	0.7	1.3	1.1	2.4	1.1	0.6	-	-
Feb-01	0.9	3.1	2.0	0.5	0.9	0.7	0.7	6.7	1.3	0.5	1.0	-
Mar-01	0.8	2.1	1.3	0.6	0.7	0.6	0.6	5.5	0.6	0.6	1.5	-
Apr-01	0.8	0.7	1.3	0.5	0.7	0.4	0.3	5.1	0.7	0.6	0.8	-
May-01	0.2	0.2	0.4	0.4	0.3	0.3	0.6	1.8	0.6	0.8	0.9	-
Jun-01	0.5	0.4	0.5	1.0	1.0	0.4	0.4	8.8	0.7	0.6	0.6	-
Jul-01	0.5	0.3	1.8	0.5	0.8	-	16.3	4.9	0.9	0.7	0.7	-
Aug-01	0.4	0.4	0.8	0.8	1.0	1.7	1.0	-	1.0	1.8	1.1	-
Sep-01	0.7	1.0	1.7	1.1	1.7	0.7	-	6.0	1.1	1.3	1.7	-
Oct-01	1.1	0.6	4.6	0.9	0.7	0.9	1.2	1.9	0.9	0.6	1.7	-
Nov-01	0.9	1.0	1.1	1.1	0.8	1.1	6.0	5.5	1.3	1.9	2.3	-
Dec-01	4.9	0.9	4.2	0.9	1.3	1.9	1.2	3.1	1.2	9.7	1.8	-
Jan-02	0.8	1.0	1.5	1.3	1.1	1.4	1.3	1.5	1.1	0.9	1.5	-
Feb-02	1.1	1.1	0.9	0.3	0.4	0.5	3.1	5.1	0.5	0.5	0.9	-
Mar-02	1.7	2.1	1.6	0.7	0.7	0.8	1.0	18	1.0	0.9	1.7	-
Apr-02	1.0	0.4	1.0	0.8	0.8	0.6	0.9	10.1	0.5	0.7	1.0	-
May-02	0.6	0.6	6.0	0.7	0.4	1.2	0.9	3.1	0.7	0.2	1.0	-
Jun-02	1.4	0.4	1.7	0.6	0.5	0.8	0.6	2.1	0.6	0.5	1.0	-
Jul-02	0.7	0.7	-	0.8	0.8	0.7	1.2	-	1.1	0.5	1.0	-
Aug-02	1.3	0.8	1.4	1.2	1.1	1.2	1.5	-	1.5	0.9	1.6	-
Sep-02	0.5	1.2	1.1	0.8	0.5	0.7	5.1	9.3	1.6	0.6	1.0	-
Oct-02	2.2	1.4	5.2	1.5	1.5	1.4	1.4	3.4	-	1.5	3.1	-
Nov-02	2.8	1.8	3.7	1.6	0.1	1.8	2.1	3.5	2.1	2	1.9	-
Dec-02	2.0	-	2.5	1.5	3.0	1.5	1.8	4.1	1.6	1.2	1.9	-
Jan-03	2.1	1.5	2.7	1.5	1.0	1.9	2.2	2.5	1.1	1.0	1.6	-
Feb-03	1.4	1.1	2.6	1.1	0.9	1.2	1.7	5.9	1.2	1.0	1.5	-
Mar-03	0.8	0.5	1.2	1.2	0.6	2.1	1.5	3.4	-	3.6	9.5	-
Apr-03	0.5	1.0	0.6	1.0	0.7	0.5	1.1	8.0	-	2.0	1.0	-
May-03	0.5	0.4	0.6	0.2	0.2	0.6	1.3	1.6	0.5	0.8	1.2	-
Jun-03	0.5	0.6	0.8	0.8	0.4	0.6	0.8	0.7	0.9	0.7	0.7	-
Jul-03	0.3	0.4	0.4	0.6	0.4	0.5	0.7	0.5	0.5	0.5	0.7	-
Aug-03	0.8	0.2	0.7	1.1	0.5	1.3	1.8	2.1	1.3	0.7	0.9	-
Sep-03	0.6	0.7	1.1	0.7	0.8	1.7	1.4	1.3	2.5	0.9	1.3	-
Oct-03	-	0.9	1.4	0.9	0.7	1.9	1.0	1.4	0.6	0.8	1.3	-
Nov-03	2.6	0.8	1.0	1.1	0.4	1.3	1.5	1.5	-	0.8	1.3	-
Dec-03	1.0	1.0	1.4	1.3	1.1	1.5	1.6	2.0	1.8	0.9	1.4	-
Jan-04	8.5	1.5	2.1	1.5	1.3	2.6	1.4	2.2	1.7	1.5	1.7	-
Feb-04	1.2	1.0	1.7	1.4	0.7	3.1	1.6	2.2	-	1.5	2.3	-
Mar-04	0.4	0.6	6.6	1.2	0.7	1.9	1.1	12.1	4.8	1.5	1.1	-

Apr-04	0.6	1.0	0.8	0.8	0.6	1.9	0.8	1.4	0.9	1.2	1.1	-
May-04	0.2	0.9	2.2	0.9	0.8	0.7	0.9	1.4	1.2	0.9	1.5	-
Jun-04	0.4	0.6	0.7	0.9	0.6	1.4	1.0	0.9	1.0	1.0	0.8	-
Jul-04	0.4	0.6	5.3#	0.6	0.5	2.9	1.0	1.1	0.9	0.6	1.2	-
Aug-04	0.5	0.5	0.5	1.3	0.7	1.1	1.1	1.4	-	1.0	1.0	-
Sep-04	0.6	0.6	0.8	2.2	1.0	1.0	0.9	4.4	0.9	16.7	1.1	-
Oct-04	0.7	0.9	1.2	0.9	0.8	1.4	1.0	10.5	1.0	1.0	0.8	-
Nov-04	0.8	0.7	1.3	1.9	0.7	0.9	1.0	3.0	1.1	1.1	1.6	-
Dec-04	2.0	1.4	3.6	1.5	1.3	2.2	3.2	7.9	1.8	5.5	2.5	-
Jan-05	1.2	1.0	3.7	1.6	1.4	4.0	2.3	2.7	2.6	2.5	2.8	-
Feb-05	1.2	1.2	1.8	1.6	1.3	2.0	1.7	-	2.3	1.5	2.3	-
Mar-05	1.3	0.9	1.4	0.9	0.9	3.0	1.2	7.7	-	0.8	1.3	-
Apr-05	1.1	0.7	0.9	0.8	0.7	0.9	1.4	3.3	1.1	0.8	0.9	-
May-05	0.7	8.6	1.1	0.8	0.7	0.8	0.9	4.4	1.2	0.8	1.1	-
Jun-05	1.3	0.8	1.3	1.3	0.8	1.2	1.2	1.3	1.5	2.5	0.9	-
Jul-05	1.0	0.5	0.5	0.7	0.4	1.6	0.7	1.2	0.8	4.3	1.1	-
Aug-05	0.6	0.6	0.8	1.0	0.8	0.9	0.7	1.0	0.9	1.0	0.9	-
Sep-05	0.6	0.7	0.8	0.7	0.7	1.2	1.3	1.3	1.0	0.9	1.1	-
Oct-05	0.8	0.9	1.3	0.9	0.8	1.4	1.2	1.9	1.3	1.1	1.3	-
Nov-05	-	2.3	2.3	2.0	1.7	1.2	2.0	3.2	1.6	1.4	2.2	-
Dec-05	1.9	3.2	2.3	3.3	2.6	3.4	2.3	-	1.3	2.1	3.9	-
Jan-06	1.0	2.1	1.7	1.0	23.	3.5	-	2.7	1.1	-	1.5	-
Feb-06	2.2	1.0	0.9	1.2	1.1	1.7	1.1	2.9	-	2.3	1.8	-
Mar-06	0.7	0.6	2.3	0.7	0.6	0.9	1.0	1.4	0.7	0.8	1.5	-
Apr-06	0.6	0.7	1.1	0.8	0.6	1.1	0.8	1.0	1.0	1.8	1.5	-
May-06	1.0	3.1	1.0	-	1.1	1.4	1.1	4.1	-	7.0	1.5	-
Jun-06	0.4	0.3	0.7	0.5	0.4	0.6	0.7	0.8	0.6	0.9	0.9	-
Jul-06	0.3	0.3	1	1.3	0.4	0.7	0.7	2.7	-	0.6	0.6	-
Aug-06	0.9	0.6	0.8	0.7	0.7	0.8	0.7	1.7	-	3.7	0.9	-
Sep-06	1.6	0.7	1.1	1.7	0.7	1	0.9	1.3	1.2	0.8	1.6	-
Oct-06	2	1.4	1.6	1.8	0.9	1.8	1.2	1.8	1.5	1.8	1.9	-
Nov-06	4.3	2.2	3	2.3	2.3	5.3	2.4	3.3	2.3	2.3	2.9	-
Dec-06	1.2	3.4	1.9	2.3	2.3		2.1	2.1		4.9	3.9	-
Jan-07	2	0.9	1.5	0.7	0.7	1.7	1.1		1.2	1.7	0.9	-
Feb-07	1.7	0.9	1.6	0.7	0.6	1	1.8	1.7	1.1	1.2	1.7	-
Mar-07	1.3	0.9	1.7	0.8	1.2	0.6	2.2	1.7	1	0.9	1.7	-
Apr-07	0.5	0.7	0.9	0.6	4.8	1.2	0.5	2.7	0.5	0.8	0.9	-
May-07	0.8	0.5	0.6	1.2	0.6	0.6	0.7	1.9	0.5	0.7	0.8	-
Jun-07	0.6	0.5	0.7	1.1	0.1	0.5	0.1	0.5	0.1	0.4	0.3	-
Jul-07	0.5	0.4	0.6	2.1	0.5	0.8	0.6	0.6	0.4	0.5	0.7	-
Aug-07	1.5	0.4	0.7	1	0.7	0.7	0.5	1	0.6	0.6	0.7	-
Sep-07	1.3	0.5	1.8	1	0.7	0.9	0.9	1.3	1	0.7	1.6	-
Oct-07	4.2	0.9	1.1	1.4	1.1	1.7	1.8	1.7	1.6	1.4	2.2	-
Nov-07	0.8	0.8	1.1	0.9	1.1	1.1	1.1	1.7	0.6	0.8	1.5	-
Dec-07	1.3	0.8	3	0.7	0.5	0.8	0.5	1.1	0.3	0.8	0.6	-
Jan-08	2.6	0.8	3.7	0.5	0.5	0.5	0.4	2.2	0.8	0.3	0.8	-
Feb-08	0.4	0.1	14	0.1	0.1	0.3	0.1	0.3	0.2	0.2	0.3	-

Mar-08	4.5	0.6	9.2[+]	0.6	2.9	2.1	0.6	1.5	0.5	1	0.9	-
April-08	0.4[#]	0.4[#]	0.8[#]	0.4[#]	0.4[#]	0.8[#]	1.1[#]	1.7[#]	1.2	1.1[#]	1.1[#]	-
May-08	1.1	2.4[#]	0.9	1.4	0.9	0.9	0.7	2.7	1[#]	1.1	1.3[#]	-
June-08	0.2	0.4[#]	0.1	0.5	0.1[#]	0.1	0.3	0.5[#]	0.1	0.8	0.2	-
July-08	0.4	0.7[#]	1.3[#]	0.6	0.8[#]	0.9	0.8	1	0.7	0.5	1.1	-
Aug-08	1	0.5	0.7	0.6	0.5	1.9	0.8	1	1	0.9	1.4	-
Sep-08	0.6	1	1.3	0.7	0.6	0.9	0.6	0.9	0.9	0.9	1.8	-
Oct-08	1	0.5	1	1.3	1.3	1.2	1	1.4	0.8	1.6	1.8	-
Nov-08	0.8	1.4	2.7	2.5	0.9	1.2	0.8	2.4	1.1	1	1.7	-
Dec-08	0.4	0.4	0.6	0.5	0.3	1.1	0.6	15	0.9	0.7	1.2	-
Jan-09	1.1	3[#]	1.6	0.8	0.9	1.4	0.7	1.5	0.9	0.9	5[+]	-
Feb-09	0.4	4.4	1.5	1.1	0.9	1.6	0.8	1.2	1.4	2.5	1.2	-
Mar-09	2.8	5.8	2.7	2.4	1.9	2.1	2.5	2.4	2.3	5.7	2.7	-
Apr-09	2	0.8	0.8	0.6	0.6	3.2	1.1	1.1	1	0.6	0.9	-
May-09	0.6	1.6	0.8	2.4	0.9	5.6 [+]	1.4	1.1	1.3	0.7	1.5	-
Jun-09	0.4	1.3	0.8	0.5	0.5	3.3	0.9	0.6	1	3.4	0.7	-
Jul-09	0.2	1.0	0.6	0.4	0.3	3.8	0.5	0.6	0.6	0.3	0.6	-
Aug-09	0.8	3.6	0.8	1.2	1.0	1.8	0.8	1.8	1.3	0.8	1.0	-
Sep-09	1.0	1.8[#]	1.8	8.3 [+]	1	1.8	0.9[#]	1.8[#]	1.7[#]	0.7	1.4[#]	-
Oct-09[+]	4.3	9[#]	5.2[#]	11.3[#]	3.2	3.8[#]	2.4[#]	6.8[#]	3.0[#]	2.2	3.2[#]	5.7[#]
Nov-09	0.8[#]	1.7[#]	1.4[#]	1.3[#]	0.7[#]	2.1[#]	1.3[#]	8.0[#]	*	1.0[#]	*	2.3
Dec-09	1.4[#]	4.0[#]	1.6[#]	2.4[#]	1.7[#]	1.8	1.6	2.6[#]	1.7[#]	1.7[#]	2.2[#]	1.7
Jan-10	0.6[#]	0.8[#]	5.6[#]	1.2[#]	2.4[#]	1.2[#]	0.8[#]	1.4[#]	1.3[#]	0.8[#]	1.3[#]	1.1[#]
Feb-10	1.9[#]	11.3[+]	1.9[#]	1.4[#]	1.5[#]	1.1[#]	1.2[#]	1.6[#]	1.1[#]	0.8[#]	1.8[#]	1.3[#]
Mar-10	0.6[#]	0.6[#]	3.2[#]	1[#]	4.1[#]	0.6[#]	0.6[#]	1.2	0.6	0.2[#]	0.8[#]	1.1[#]
Apr-10	0.8[#]	1.8[#]	2.4[#]	0.7[#]	+	0.3	0.6[#]	0.9[#]	0.6[#]	0.4[#]	0.8[#]	0.8[#]
May-10	0.8	4.9[#]	3.0[#]	1.1	1.2	1.0	0.7	1.3	1.0[#]	0.5	1.1[#]	0.8
Jun-10	0.3	2.2[#]	3.0[#]	0.6[#]	0.2	1.2[#]	0.5	0.5[#]	0.6	0.7[#]	0.7[#]	0.4[#]
Jul-10	0.6[#]	1.1[#]	0.7[#]	0.7	0.5	0.3	0.5[#]	0.6[#]	0.7	0.2[#]	0.8	0.5
Aug-10	0.4	0.5[#]	1.9[#]	0.8[#]	0.2[#]	0.7[#]	0.5[#]	0.5[#]	0.6	0.5[#]	0.7[#]	0.4[#]
Sep-10	0.6[#]	2.6[#]	1.6[#]	1.0[#]	0.5[#]	1.1[#]	0.5[#]	1.0[#]	0.9[#]	0.6[#]	0.8[#]	0.9[#]
Oct-10	0.9[#]	1.6[#]	0.9[#]	0.5[#]	0.4[#]	0.5	1.0[#]	1.3[#]	1.2[#]	2.0[#]	1.2[#]	0.4[#]
Nov-10	0.9[#]	3.5[#]	0.9[#]	1.4[#]	1.1[#]	0.9	0.6[#]	0.9[#]	*	0.9[#]	0.8[#]	1.1[#]
Dec-10	1.0[#]	0.7[#]	0.9[#]	1.1[#]	0.5[#]	0.4[#]	0.6[#]	2.4[#]	1.0[#]	0.5	1.0[#]	1.4[#]
Jan-11	1.0[#]	0.7[#]	1.8[#]	1.2[#]	0.6[#]	0.7	0.9[#]	1.3[#]	1.0[#]	0.5[#]	1.5[#]	1.0
Feb-11	0.7	4.1[+]	0.9	1.0	0.7	0.7	1.0[#]	1.2	*	0.6	1.4	1.4
Mar-11	0.5	2.9[#]	+	0.9	1.7[#]	0.8	0.9[#]	1.9[#]	*	0.8[#]	1.2[#]	1.3[#]
Apr-11	0.7	0.6[#]	4.9[#]	0.8[#]	1.1[#]	0.7	0.9[#]	2.1[#]	0.8[#]	1.0[#]	0.3[#]	0.7[#]
May-11	0.4	1.1[#]	5.4[#]	0.7[#]	0.4	0.5[#]	0.6[#]	1.5[#]	0.4	0.4[#]	0.6[#]	0.7[#]
Jun-11	0.7	1.1	1.7	0.9	0.7	0.8	0.6	1.2	0.7	0.9	0.8	1.1
Aug-11	0.4	0.1	0.6	0.7	0.5	0.4	0.5	2.4	1	1	0.6	0.8
Sep-11	1.3[#]	0.4[#]	0.8[#]	0.5	0.6[#]	+	0.6[#]	1.5[#]	0.6[#]	2.3[#]	0.7[#]	0.7[#]
Oct-11	11	11.2	0.6	1.3	~	1	1.4	1.5	1.4	1.3	1.4	1.1
Nov-11	0.5	1	0.8	0.5	~	0.4	*	1.1	0.5	0.4	0.9	0.9
Dec-11	1.1	1.2[#]	2	0.9	~	0.9	1.4	5.5	0.8[#]	1.2	1.2[#]	1.4
Jan-11	0.9	0.6	0.4	0.6	~	3.6	1.2	1.4	0.6	0.9	1.1	1.1
Feb-12	0.7[~]	0.4[#]	0.4[#]	0.5[#]	~	1.4[#]	0.5[#]	1.2[#]	0.8[#&]	0.3[#^]	0.6[#&]	1.1[#]

Mar-12	0.8#^	0.3^	0.7#	0.6#	~	0.6#	0.4#	5.6	1.2	0.6#	0.7#	1.3#
Apr-12	1.3#^	1.1#^	1#	0.9#	~	1#	0.8#	2.6#	1.3#	1.1#	1.4#	1.4#

Data supplied by RCA Laboratories. * Insects/bird droppings reported. ^ Grass and Grass Seeds. & Tree Litter. ¹Invalid. ~ No recording, funnel damaged. ~ Unable to access site. Readings considered invalid have been removed when calculating the annual average.

APPENDIX B

Figures

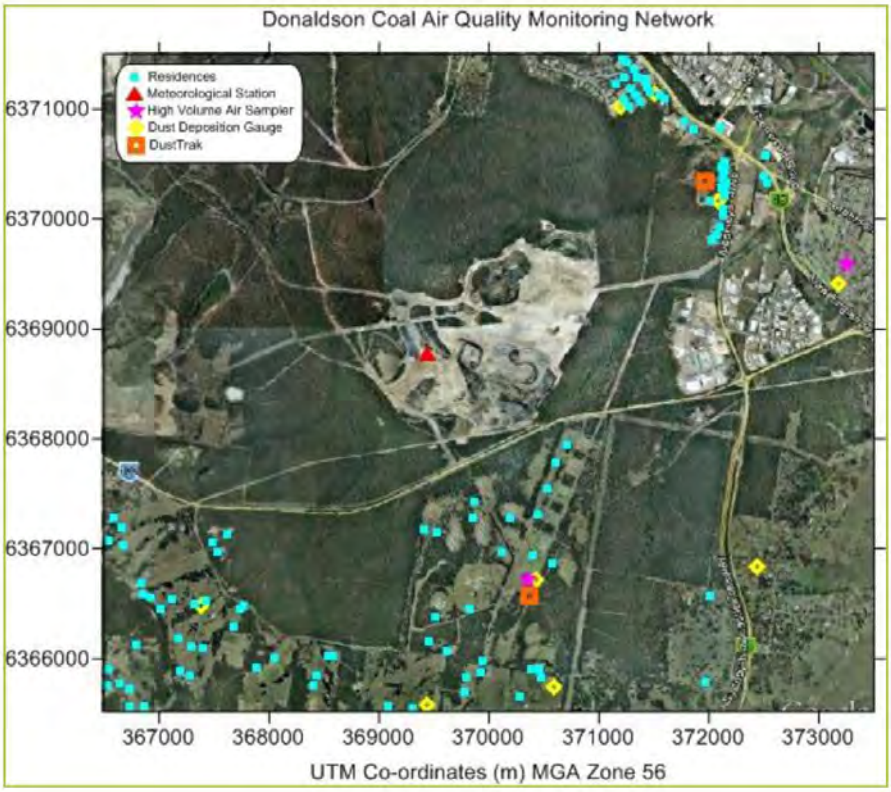

Figure 1: Project Location

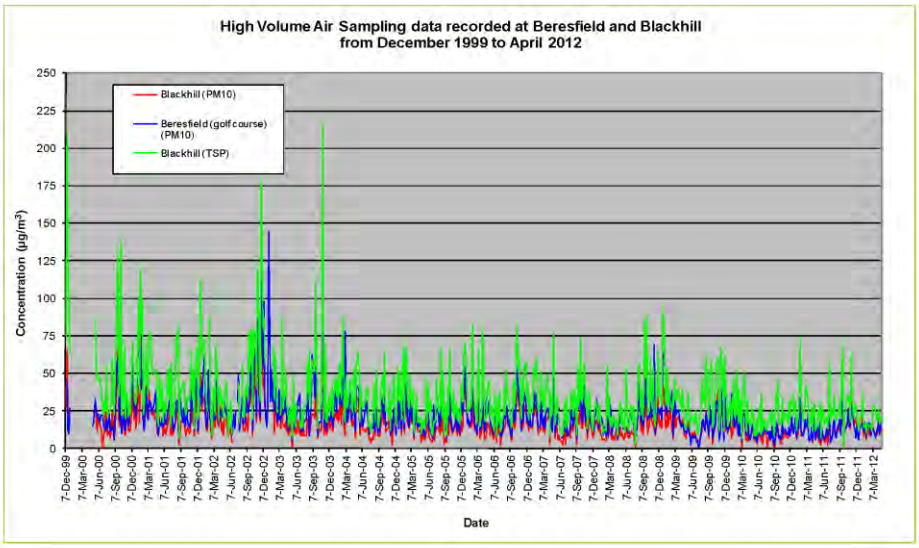

Figure 2: High Volume Air Sampling data

No Monitoring was avaliable for this site in April 2012.

Figure 3: DustTrak sampling data - Blackhill site

No Monitoring was avaliable for this site in April 2012.

Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak $PM_{2.5}$ monitoring data

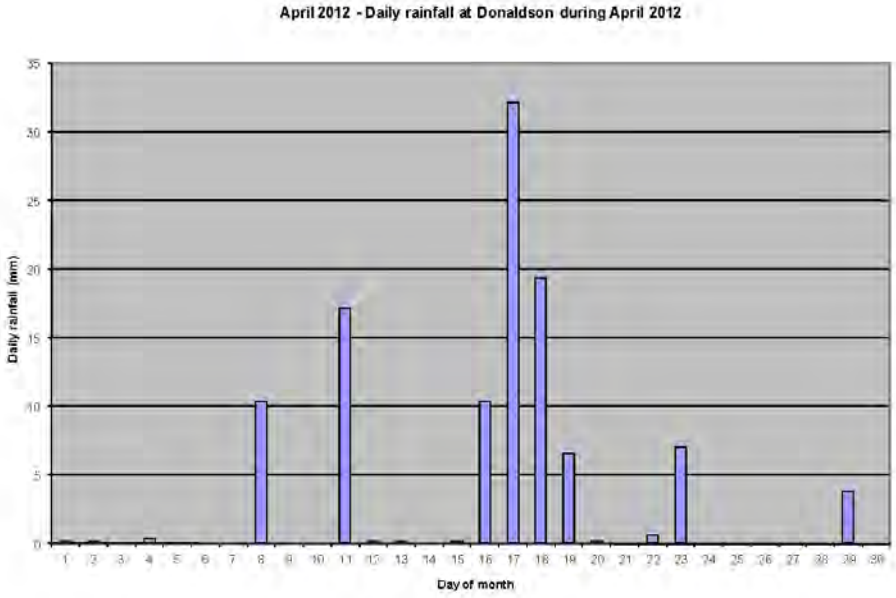

Figure 6: Meteorological conditions

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