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APPENDIX B

Figures



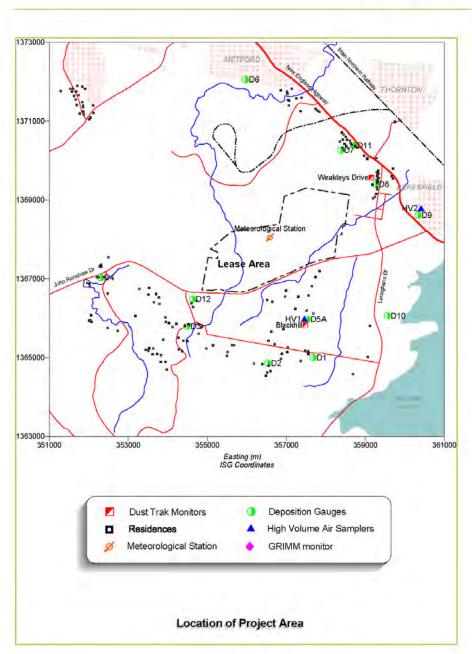


Figure 1: Project Location

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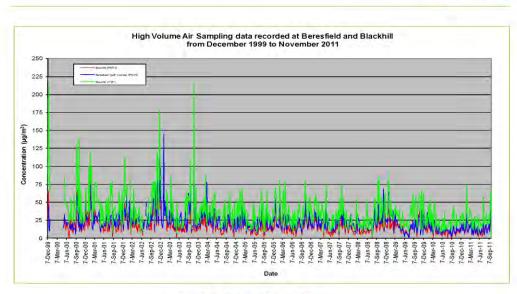


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – November 2011 Donaldson Coal | PAEHolmes Job 3003

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

Figure 3: DustTrak sampling data - Blackhill site

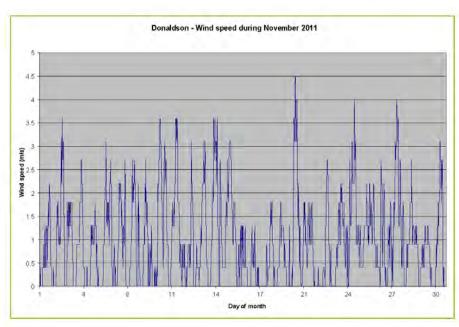
No Monitoring was avaliable for this site in November 2011 due to equipment malfunction

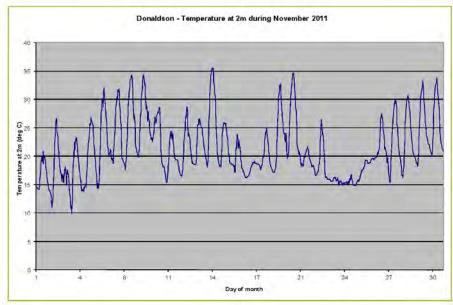
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak PM_{2.5} monitoring data

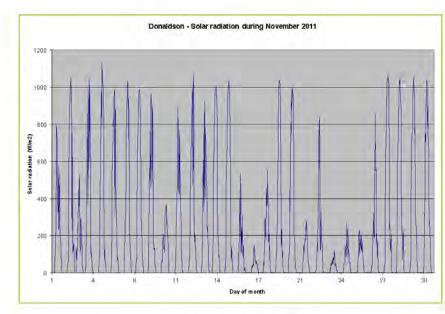






Appendix 2





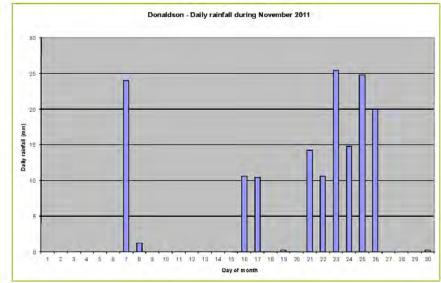


Figure 6: Meteorological conditions



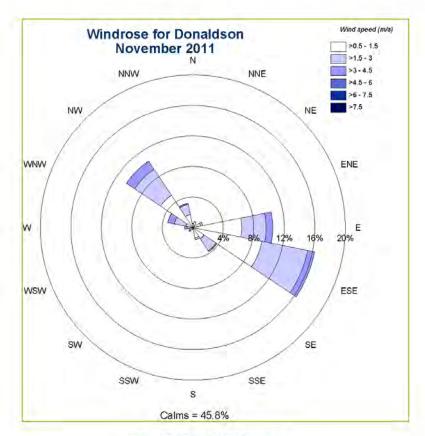


Figure 7: Windrose for November



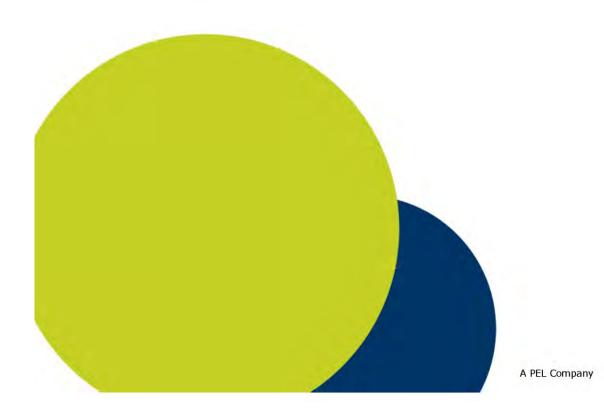
REPORT

DUST AND METEOROLOGICAL DATA – DECEMBER 2011

Donaldson Coal

Job No: 3003

19 March 2012



Report No. 737/07

DONALDSON COAL PTY LTD

Abel Underground Coal Mine Appendix 2



PROJECT TITLE: DUST AND METEOROLOGICAL DATA -

DECEMBER 2011

JOB NUMBER: 3003

PREPARED FOR: Phil Brown

DONALDSON COAL

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PAEHolmes ABN 86 127 101 642

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|--------------|-----------|---------------|-----------------|
| VERSION | DATE | PREPARED BY | REVIEWED BY |
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Figure 7: Windrose for December B-8



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 | PMio |
| | HVAS | TSP |
| | DustTrak | PM ₁₂ |
| | DustTrak (1 week per quarter) | PM₂₅ |
| 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

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 | Bangafield PM _{in} (pg/m²) | Blackhill PMis (ng/m²) | Blackhill TSP (μg/m²) |
|----------------|--|---------------------------|--------------------------|
| 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.

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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.

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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 | 8.0 | 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* | 0.84 | 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 | 8.0 | 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. \sim 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 $4 \text{ g/m}^2/\text{month}$, indicating nuisance dust in the vicinity of the mine is not an issue.

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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.

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APPENDIX A

Dust Deposition Data

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| | | | | | depositio | on (g/n | n²/mont | h) | | | | |
|------------------|-----|-----|-----|-----|-----------|------------|---------|-------|-----|-------|-----|------------|
| 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 | de. | - |
| Jul-00 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.5 | 0.8 | 1.5 | 0.4 | 0.4 | 2 | 14 |
| 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 | 8.0 | - | |
| Oct-00 | 0.4 | 0.6 | 1.1 | 0.9 | 0.9 | 0.8 | 5.3 | 0.9 | 0.6 | 0.5 | .0 | - |
| Nov-00 | 5.2 | 0.7 | 1.4 | 0.8 | 1.0 | 0.4 | 24.1 | 9.4 | 1.1 | 0.6 | - | 4 |
| Dec-00 | 2.8 | 1.4 | 1.9 | 1.3 | 1.1 | 0.8 | 2.1 | 2.5 | 0.9 | 0.9 | 4 | 3. |
| Jan-01 | 0.7 | 1.7 | 1.4 | 1.8 | 0.7 | 1.3 | 1.1 | 2.4 | 1.1 | 0.6 | 4 | - |
| Feb-01 | 0.9 | 3.1 | 2.0 | 0.5 | 0.9 | 0.7 | 0.7 | 6.7 | 1.3 | 0.5 | 1.0 | Ç, |
| Mar-01 | 0.8 | 2.1 | 1.3 | 0.6 | 0.7 | 0.6 | 0.6 | 5.5 | 0.6 | 0.6 | 1.5 | 2- |
| Apr-01 | 0.8 | 0.7 | 1.3 | 0.5 | 0.7 | 0.4 | 0.3 | 5.1 | 0.7 | 0.6 | 0.8 | 2 |
| 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 | 4 |
| Jul-01 | 0.5 | 0.3 | 1.8 | 0.5 | 0.8 | s. | 16.3 | 4.9 | 0.9 | 0.7 | 0.7 | 2 |
| Aug-01 | 0.4 | 0.4 | 0.8 | 0.8 | 1.0 | 1.7 | 1.0 | | 1.0 | 1.8 | 1.1 | 4 |
| Sep-01 | 0.7 | 1.0 | 1.7 | 1.1 | 1.7 | 0.7 | V- | 6.0 | 1.1 | 1.3 | 1.7 | Ç. |
| Oct-01 | 1.1 | 0.6 | 4.6 | 0.9 | 0.7 | 0.9 | 1.2 | 1.9 | 0.9 | 0.6 | 1.7 | A- |
| 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 | 2 |
| 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 | Q. |
| Mar-02 | 1.7 | 2.1 | 1.6 | 0.7 | 0.7 | 0.8 | 1.0 | 18 | 1.0 | 0.9 | 1.7 | 4 |
| 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 | ō. |
| Jun-02 | 1.4 | 0.4 | 1.7 | 0.6 | 0.5 | 0.8 | 0.6 | 2.1 | 0.6 | 0.5 | 1.0 | 4.1 |
| Jul-02 | 0.7 | 0.7 | - | 0.8 | 0.8 | 0.7 | 1.2 | 2 | 1.1 | 0.5 | 1.0 | 4 |
| Aug-02 | 1.3 | 0.8 | 1.4 | 1.2 | 1.1 | 1.2 | 1.5 | 4. | 1.5 | 0.9 | 1.6 | 4 |
| 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 | 9. |
| Feb-03 | 1.4 | 1.1 | 2.6 | 1.1 | 0.9 | 1.2 | 1.7 | 5.9 | 1.2 | 1.0 | 1.5 | 4 |
| Mar-03 | 0.8 | 0.5 | 1.2 | 1.2 | 0.6 | 2.1 | 1.5 | 3.4 | - | 3.6 | 9.5 | 2 |
| Apr-03 | 0.5 | 1.0 | 0.6 | 1.0 | 0.7 | 0.5 | 1.1 | 8.0 | 1 | 2.0 | 1.0 | 4 |
| May-03 | 0.5 | 0.4 | 0.6 | 0.2 | 0.2 | 0.6 | 1.3 | 1.6 | 0.5 | 0.8 | 1.2 | 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 | 2 |
| Jul-03 | 0.3 | 0.4 | 0.4 | 0.6 | 0.4 | 0.5 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | <u>k</u> |
| Aug-03 | 0.8 | 0.2 | 0.7 | 1.1 | 0.5 | 1.3 | 1.8 | 2.1 | 1.3 | 0.7 | 0.9 | 2 |
| Sep-03 | 0.6 | 0.7 | 1.1 | 0.7 | 0.8 | 1.7 | 1.4 | 1.3 | 2.5 | 0.9 | 1.3 | 2 |
| Oct-03 | - | 0.9 | 1.4 | 0.9 | 0.7 | 1.0 | 1.0 | 7 200 | | 4 - 1 | 1.3 | 1 |
| | | | | | | 1.9 | | 1.4 | 0.6 | 8.0 | | 2 |
| Nov-03 | 2.6 | 0.8 | 1.0 | 1.1 | 0.4 | 1.3 | 1.5 | 1.5 | 1.0 | 8.0 | 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 | 2.0 |
| Feb-04 Mar-04 | 0.4 | 0.6 | 6.6 | 1.4 | 0.7 | 3.1 1.9 | 1.6 | 12.1 | 4.8 | 1.5 | 1.1 | <i>S</i> . |



| 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 | 0 |
| Jun-04 | 0.4 | 0.6 | 0.7 | 0.9 | 0.6 | 1.4 | 1.0 | 0.9 | 1.0 | 1.0 | 8.0 | .9 |
| 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 | 40 |
| 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 | ju. |
| 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 | 9 |
| Feb-05 | 1.2 | 1.2 | 1.8 | 1.6 | 1.3 | 2.0 | 1.7 | - | 2.3 | 1.5 | 2.3 | 1. |
| Mar-05 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 3.0 | 1.2 | 7.7 | - | 0.8 | 1.3 | 1.6 |
| 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 | 4 |
| Nov-05 | | 2.3 | 2.3 | 2.0 | 1.7 | 1.2 | 2.0 | 3.2 | 1.6 | 1.4 | 2.2 | 4 |
| Dec-05 | 1.9 | 3.2 | 2.3 | 3.3 | 2.6 | 3.4 | 2.3 | (2) | 1.3 | 2.1 | 3.9 | 100 |
| 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 | 4 | 2.3 | 1.8 | 87 |
| 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 | 4 |
| May-06 | 1.0 | 3.1 | 1.0 | - | 1.1 | 1.4 | 1.1 | 4.1 | 1 | 7.0 | 1.5 | 9 |
| 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 | Sec. | 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 | 2 |
| 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 | 0 |
| Dec-06 | 1.2 | 3,4 | 1.9 | 2.3 | 2.3 | -15 | 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 | 1 |
| 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 | ,u |
| 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 | Q- |
| 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 | ů. |
| Feb-08 | 0.4 | 0.1 | 14 | 0.1 | 0.1 | 0.3 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | Ĺ |



| 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" | Ç. |
| May-08 | 1.1 | 2.4" | 0.9 | 1.4 | 0.9 | 0.9 | 0.7 | 2.7 | 1" | 1.1 | 1.3* | 9- |
| June-08 | 0.2 | 0.4" | 0.1 | 0.5 | 0.1" | 0.1 | 0.3 | 0.5" | 0.1 | 0.8 | 0.2 | 4 |
| July-08 | 0.4 | 0.7" | 1.3" | 0.6 | 0.8 | 0.9 | 0.8 | 1 | 0.7 | 0.5 | 1.1 | 40 |
| 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 | 9. |
| 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 | <u> </u> |
| Dec-08 | 0.4 | 0.4 | 0.6 | 0.5 | 0.3 | 1.1 | 0.6 | 15 | 0.9 | 0.7 | 1.2 | Q = |
| Jan-09 | 1.1 | 3" | 1.6 | 0.8 | 0.9 | 1.4 | 0.7 | 1.5 | 0.9 | 0.9 | 5+ | 4. |
| Feb-09 | 0.4 | 4.4 | 1.5 | 1.1 | 0.9 | 1.6 | 0.8 | 1.2 | 1.4 | 2.5 | 1.2 | .4 |
| Mar-09 | 2.8 | 5.8 | 2.7 | 2.4 | 1.9 | 2.1 | 2.5 | 2.4 | 2.3 | 5.7 | 2.7 | 2 |
| 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* | 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 |
| 1404-11 | 1.1 | 1.2# | 0.0 | 0.5 | ~ | 0.4 | - | 1.1 | 0.5 | 0.4 | 0.9 | 0.9 |

[&]quot; - 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 $23^{\rm rd}$ November 2009.]

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APPENDIX B

Figures



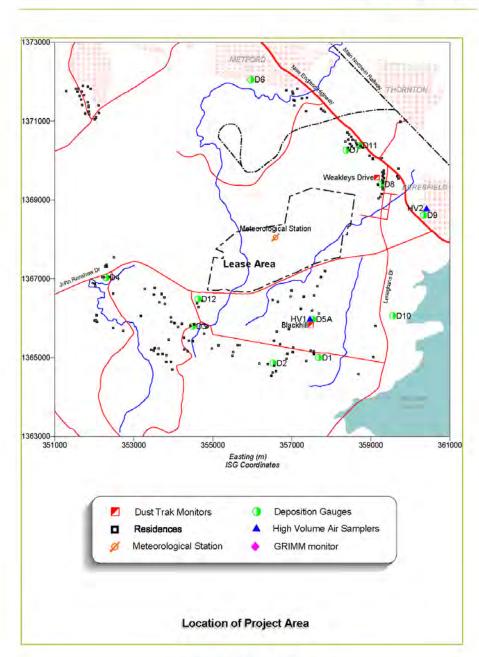


Figure 1: Project Location



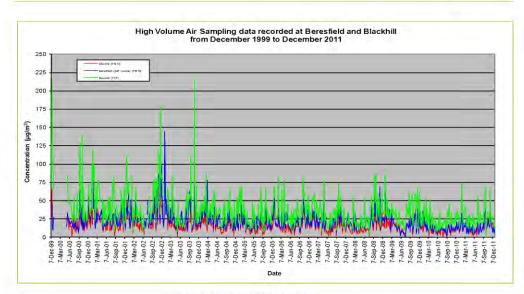


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – December 2011 Donaldson Coal | PAEHolmes Job 3003 B-3



No Monitoring was avaliable for this site in December 2011.

Figure 3: DustTrak sampling data - Blackhill site

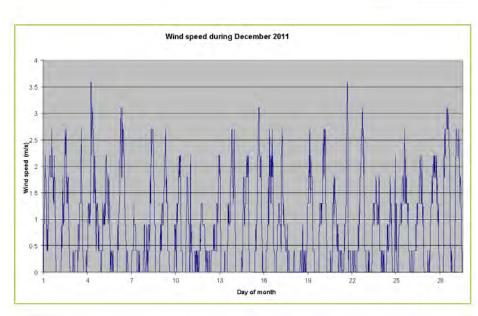
No Monitoring was avaliable for this site in December 2011.

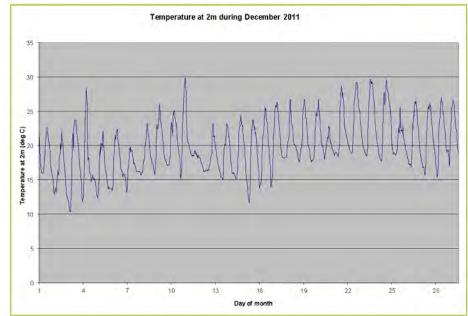
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak PM_{2.5} monitoring data



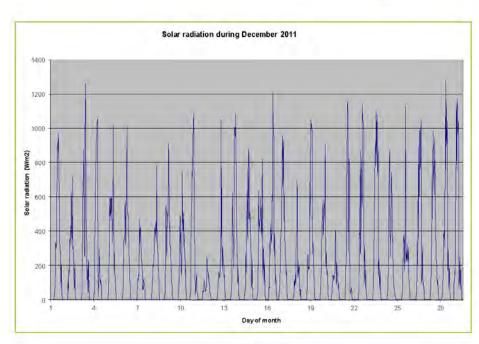




B-5

Dust and Meteorological Data – December 2011 Donaldson Coal | PAEHolmes Job 3003





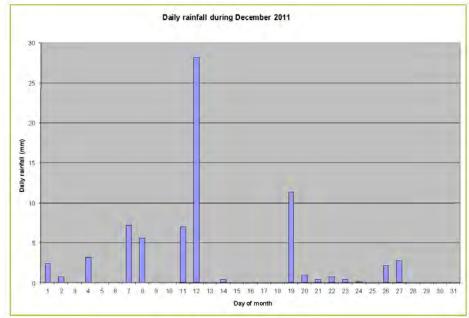


Figure 6: Meteorological conditions



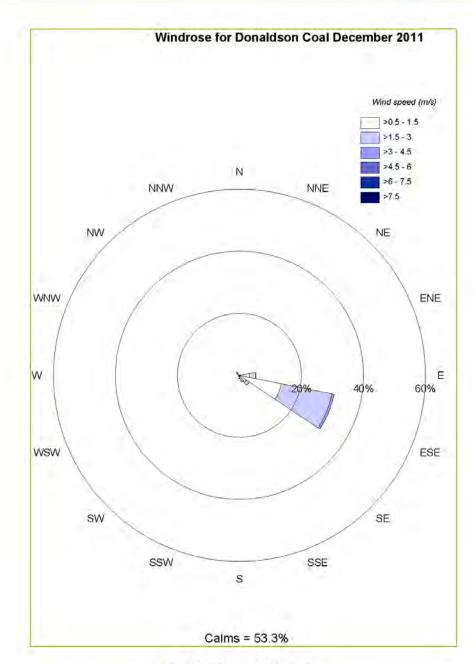


Figure 7: Windrose for December

Dust and Meteorological Data - December 2011 Donaldson Coal | PAEHolmes Job 3003



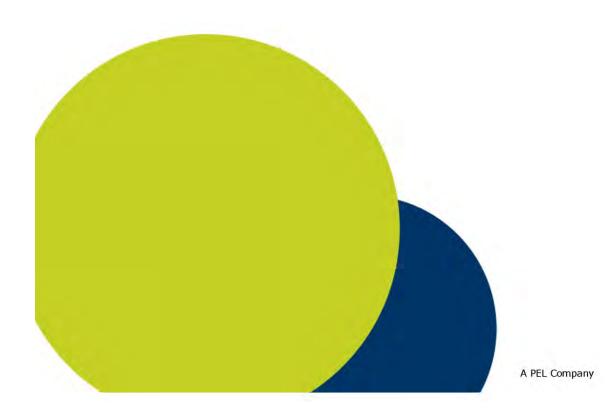
REPORT

DUST AND METEOROLOGICAL DATA – JANUARY 2012

Donaldson Coal

Job No: 3003

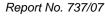
19 March 2012



DONALDSON COAL PTY LTD

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PROJECT TITLE: DUST AND METEOROLOGICAL DATA -

JANUARY 2012

JOB NUMBER: 3003

PREPARED FOR: Phil Brown

DONALDSON COAL

PREPARED BY: Daniel Cullen

APPROVED FOR RELEASE BY: Ronan Kellaghan

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DONALDSON COAL PTY LTD Abel Underground Coal Mine Appendix 2



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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 _{IG} |
| | HVAS | TSP |
| | DustTrak | PM ₁₂ |
| | 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

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 | Bengafield PM _{In} (pg/m²) | Blackfill PMix (pg/m²) | Bleckhill TSP (μg/m²) |
|----------------|--|---------------------------|--------------------------|
| 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.

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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.

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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 | se. | 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/m 2 /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 $4 \text{ g/m}^2/\text{month}$, indicating nuisance dust in the vicinity of the mine is not an issue.

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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.

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DONALDSON COAL PTY LTD Abel Underground Coal Mine Appendix 2



APPENDIX A

Dust Deposition Data

Appendix 2



| | | | | | depositi | | | | | | | |
|--------|-----|-----|-----|-----|----------|-----|------|------|-----|-----|-----|-------------|
| 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 | - | 14. |
| Aug-00 | 0.9 | 0.6 | 1.0 | 1.2 | 1.1 | 1.0 | 3.4 | 0.7 | 0.7 | 0.6 | - | - |
| Sep-00 | 8.0 | 0.9 | 1.1 | 0.9 | 1.3 | 1.0 | 2.2 | 1.0 | 1.0 | 8.0 | - | |
| Oct-00 | 0.4 | 0.6 | 1.1 | 0.9 | 0.9 | 0.8 | 5.3 | 0.9 | 0.6 | 0.5 | .6 | |
| Nov-00 | 5.2 | 0.7 | 1.4 | 0.8 | 1.0 | 0.4 | 24.1 | 9.4 | 1.1 | 0.6 | - | 7. |
| Dec-00 | 2.8 | 1.4 | 1.9 | 1.3 | 1.1 | 0.8 | 2.1 | 2.5 | 0.9 | 0.9 | 4 | <i>2</i> 5. |
| Jan-01 | 0.7 | 1.7 | 1.4 | 1.8 | 0.7 | 1.3 | 1.1 | 2.4 | 1.1 | 0.6 | 2 | - |
| Feb-01 | 0.9 | 3.1 | 2.0 | 0.5 | 0.9 | 0.7 | 0.7 | 6.7 | 1.3 | 0.5 | 1.0 | , Ç, — |
| Mar-01 | 8.0 | 2.1 | 1.3 | 0.6 | 0.7 | 0.6 | 0.6 | 5.5 | 0.6 | 0.6 | 1.5 | 4 |
| Apr-01 | 8.0 | 0.7 | 1.3 | 0.5 | 0.7 | 0.4 | 0.3 | 5.1 | 0.7 | 0.6 | 0.8 | 21 |
| 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 | ų. |
| Jul-01 | 0.5 | 0.3 | 1.8 | 0.5 | 0.8 | × | 16.3 | 4.9 | 0.9 | 0.7 | 0.7 | 2 |
| Aug-01 | 0.4 | 0.4 | 0.8 | 0.8 | 1.0 | 1.7 | 1.0 | +11 | 1.0 | 1.8 | 1.1 | 4 |
| Sep-01 | 0.7 | 1.0 | 1.7 | 1.1 | 1.7 | 0.7 | V 1 | 6.0 | 1.1 | 1.3 | 1.7 | Ç |
| Oct-01 | 1.1 | 0.6 | 4.6 | 0.9 | 0.7 | 0.9 | 1.2 | 1.9 | 0.9 | 0.6 | 1.7 | 2- |
| Nov-01 | 0.9 | 1.0 | 1.1 | 1.1 | 0.8 | 1.1 | 6.0 | 5.5 | 1.3 | 1.9 | 2.3 | . 4 |
| Dec-01 | 4.9 | 0.9 | 4.2 | 0.9 | 1.3 | 1.9 | 1.2 | 3.1 | 1.2 | 9.7 | 1.8 | - 21 |
| 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 | Ų. |
| 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 | 9 |
| Jun-02 | 1.4 | 0.4 | 1.7 | 0.6 | 0.5 | 0.8 | 0.6 | 2.1 | 0.6 | 0.5 | 1.0 | 4.1 |
| Jul-02 | 0.7 | 0.7 | G | 0.8 | 0.8 | 0.7 | 1.2 | 2 | 1.1 | 0.5 | 1.0 | 4 |
| Aug-02 | 1.3 | 0.8 | 1.4 | 1.2 | 1.1 | 1.2 | 1.5 | 2. | 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 | <u>.</u> |
| Dec-02 | 2.0 | 12 | 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 | 9 |
| Feb-03 | 1.4 | 1.1 | 2.6 | 1.1 | 0.9 | 1.2 | 1.7 | 5.9 | 1.2 | 1.0 | 1.5 | Α. |
| Mar-03 | 0.8 | 0.5 | 1.2 | 1.2 | 0.6 | 2.1 | 1.5 | 3.4 | 4 | 3.6 | 9.5 | 4 |
| Apr-03 | 0.5 | 1.0 | 0.6 | 1.0 | 0.7 | 0.5 | 1.1 | 8.0 | - | 2.0 | 1.0 | 2 |
| 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 | S. |
| Jul-03 | 0.3 | 0.4 | 0.4 | 0.6 | 0.4 | 0.5 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | ķ. |
| 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 | 9. |
| Oct-03 | | 0.9 | 1.4 | 0.9 | 0.7 | 1.9 | 1.0 | 1.4 | 0.6 | 0.8 | 1.3 | 14 |
| Nov-03 | 2.6 | 0.8 | 1.0 | 1.1 | 0.4 | 1.3 | 1.5 | 1.5 | 4 | 0.8 | 1.3 | 2 |
| 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 | 2 |
| Feb-04 | 1.2 | 1.0 | 1.7 | 1.4 | 0.7 | 3.1 | 1.6 | 2.2 | - | 1.5 | 2.3 | 2 |
| Mar-04 | 0.4 | 0.6 | 6.6 | 1.2 | 0.7 | 1.9 | 1.1 | 12.1 | 4.8 | 1.5 | 1.1 | 2. |

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| 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 | 9 |
| Jun-04 | 0.4 | 0.6 | 0.7 | 0.9 | 0.6 | 1.4 | 1.0 | 0.9 | 1.0 | 1.0 | 0.8 | ,0,- |
| 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 | 20 |
| 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 | Ψ. |
| 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 | 9 |
| Feb-05 | 1.2 | 1.2 | 1.8 | 1.6 | 1.3 | 2.0 | 1.7 | - | 2.3 | 1.5 | 2.3 | 4. |
| Mar-05 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 3.0 | 1.2 | 7.7 | 4 | 0.8 | 1.3 | 14 |
| 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 | 4 |
| Nov-05 | · Q | 2.3 | 2.3 | 2.0 | 1.7 | 1.2 | 2.0 | 3.2 | 1.6 | 1.4 | 2.2 | 4 |
| Dec-05 | 1.9 | 3.2 | 2.3 | 3.3 | 2.6 | 3.4 | 2.3 | 12. | 1.3 | 2.1 | 3.9 | 100 |
| Jan-06 | 1.0 | 2.1 | 1.7 | 1.0 | 23. | 3.5 | - | 2.7 | 1.1 | 4 | 1.5 | - |
| Feb-06 | 2.2 | 1.0 | 0.9 | 1.2 | 1.1 | 1.7 | 1.1 | 2.9 | (4) | 2.3 | 1.8 | 82 |
| Mar-06 | 0.7 | 0.6 | 2.3 | 0.7 | 0.6 | 0.9 | 1.0 | 1.4 | 0.7 | 0.8 | 1.5 | <u> </u> |
| 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 | 1. | 7.0 | 1.5 | 9, |
| 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 | Sa. | 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 | J. |
| 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 | ς. |
| 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 | (L) |
| 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 | R- |
| 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 | Ú. |
| 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 | 2 |
|------------------|------|-------|------|-------|------|-------|------|------------|------|------|------|----------|
| April-08 | 0.4" | 0.4" | 0.8" | 0.4" | 0.4" | 0.8* | 1.1" | 1.7" | 1.2 | 1.1* | 1.1" | 2 |
| May-08 | 1.1 | 2.4" | 0.9 | 1.4 | 0.9 | 0.9 | 0.7 | 2.7 | 1# | 1.1 | 1.3" | 9. |
| June-08 | 0.2 | 0.4" | 0.1 | 0.5 | 0.1" | 0.1 | 0.3 | 0.5" | 0.1 | 0.8 | 0.2 | ů. |
| July-08 | 0.4 | 0.7" | 1.3" | 0.6 | 0.8" | 0.9 | 0.8 | 1 | 0.7 | 0.5 | 1.1 | 20 |
| 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 | g. |
| 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 | <u> </u> |
| Dec-08 | 0.4 | 0.4 | 0.6 | 0.5 | 0.3 | 1.1 | 0.6 | 15 | 0.9 | 0.7 | 1.2 | 9 |
| Jan-09 | 1.1 | 3" | 1.6 | 0.8 | 0.9 | 1.4 | 0.7 | 1.5 | 0.9 | 0.9 | 5+ | 1. |
| Feb-09 | 0.4 | 4.4 | 1.5 | 1.1 | 0.9 | 1.6 | 0.8 | 1.2 | 1.4 | 2.5 | 1.2 | .4 |
| Mar-09 | 2.8 | 5.8 | 2.7 | 2.4 | 1.9 | 2.1 | 2.5 | 2.4 | 2.3 | 5.7 | 2.7 | 2 |
| 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* | 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* | 0.74 |
| 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 | - | | | 1 | ~ | 1 | | | | | | |
| | 0.5 | 11.2 | 0.6 | 1.3 | | | 1.4 | 1.5 | 1.4 | 1.3 | 1.4 | 1.1 |
| Nov-11 | 100 | 1 2# | 0.8 | 0.5 | ~ | 0.4 | 0.00 | 1.1 | 0.5 | 0.4 | 0.9 | 0.9 |
| Dec-11 Jan-11 | 0.9 | 0.6 | 0.4 | 0.9 | ~ | 3.6 | 1.4 | 5.5 1.4 | 0.8# | 0.9 | 1.2# | 1.4 |

^{* -} sample contaminated | + - sample invalid | *-Broken funnel | \sim - Site inaccessible

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[Note: Samples for November 2009 have been considered invalid, due to a widespread dust storm experienced on $23^{\circ d}$ November 2009.]

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APPENDIX B

Figures



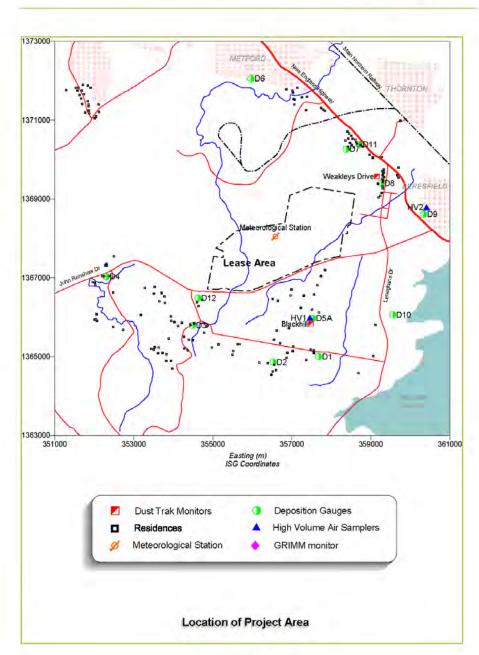
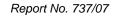


Figure 1: Project Location





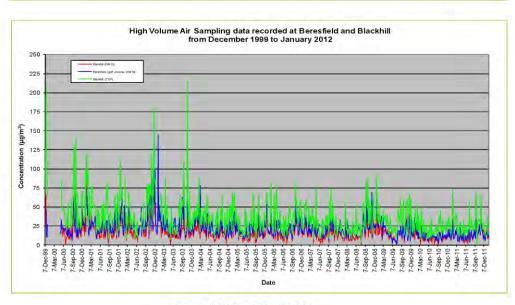


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – January 2012 Donaldson Coal | PAEHolmes Job 3003 B-3





No Monitoring was avaliable for this site in January 2012.

Figure 3: DustTrak sampling data - Blackhill site

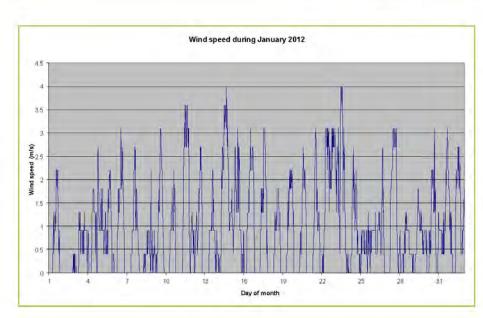
No Monitoring was avaliable for this site in January 2012.

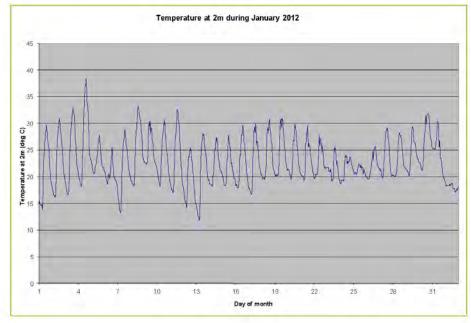
Figure 4: DustTrak sampling data - Weakleys Drive site

No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak PM_{2.5} monitoring data



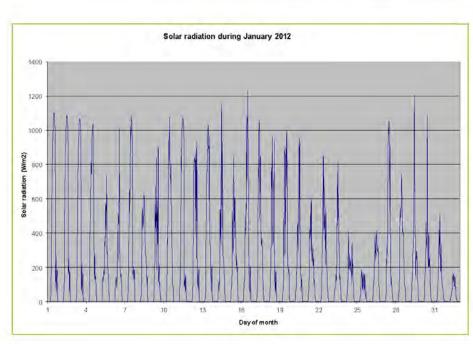




B-5

Dust and Meteorological Data – January 2012 Donaldson Coal | PAEHolmes Job 3003





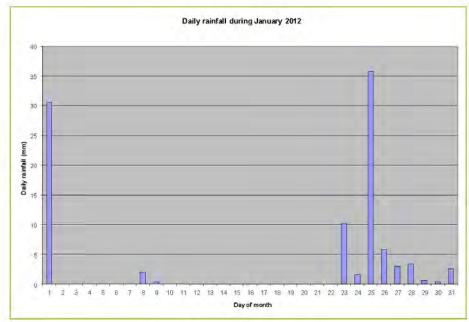
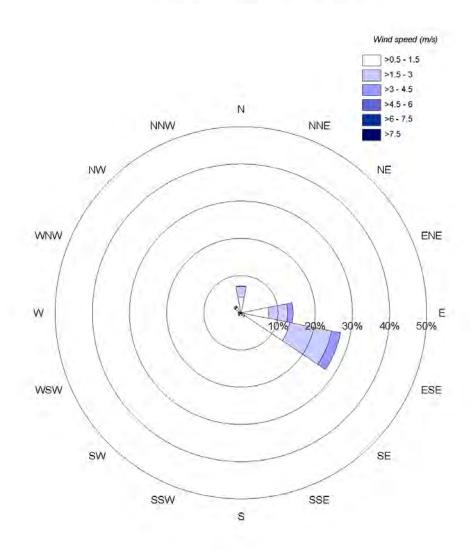


Figure 6: Meteorological conditions



Windrose for Donaldson Coal January 2012



Calms = 44.1%

Figure 7: Windrose for January

Dust and Meteorological Data - January 2012 Donaldson Coal | PAEHolmes Job 3003



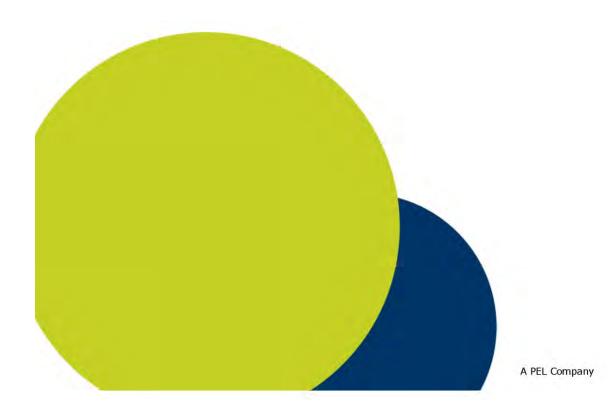
REPORT

DUST AND METEOROLOGICAL DATA – FEBRUARY 2012

Donaldson Coal

Job No: 3003

27 March 2012



DONALDSON COAL PTY LTD

Abel Underground Coal Mine Appendix 2

2011/2012 ANNUAL ENVIRONMENTAL MANAGEMENT REPORT

Report No. 737/07



PROJECT TITLE: DUST AND METEOROLOGICAL DATA -

FEBRUARY 2012

JOB NUMBER: 3003

PREPARED FOR: Phil Brown

DONALDSON COAL

PREPARED BY: Daniel Cullen

APPROVED FOR RELEASE BY: Jane Barnett

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| VERSION | DATE | PREPARED BY | REVIEWED BY |
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Dust and Meteorological Data – February 2012 Donaldson Coal | PAEHolmes Job 3003

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Abel Underground Coal Mine Appendix 2



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 _{IG} |
| | HVAS | TSP |
| | DustTrak | PM ₁₂ |
| | DustTrak (1 week per quarter) | PM₂₅ |
| 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

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 | Benestield PMs (pp/m²) | Blackfill PMo. (pg/m²) | Bleckhill TSP (μg/m²) |
|----------------|---------------------------|---------------------------|--------------------------|
| 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.

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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.

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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 | | | H | onthly | dust dep | osition | rate (g/ | m²/mon | th) | | | |
|-------------------|------|------|------|--------|----------|---------|----------|--------|-------|-------|-------|------|
| | 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* | 8.0 | 0.9* | 1.9* | * | 0.8* | 1.2* | 1.3* |
| Apr-11 | 0.7 | 0.6" | 4.9* | 0.8* | 1.11 | 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*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 DCS

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 $4 \text{ g/m}^2/\text{month}$, indicating nuisance dust in the vicinity of the mine is not an issue.

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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.

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APPENDIX A

Dust Deposition Data

Appendix 2



| | | | | Dust | depositi | on (g/r | n²/mont | th) | | | | |
|--------|-----|-----|-----|------|----------|---------|---------|------|-------|-----|----------------|-----|
| 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 | (- | B |
| Jul-00 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.5 | 0.8 | 1.5 | 0.4 | 0.4 | 2 | 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 | 8.0 | - | ÷ |
| Oct-00 | 0.4 | 0.6 | 1.1 | 0.9 | 0.9 | 0.8 | 5.3 | 0.9 | 0.6 | 0.5 | .6 | - |
| Nov-00 | 5.2 | 0.7 | 1.4 | 0.8 | 1.0 | 0.4 | 24.1 | 9.4 | 1.1 | 0.6 | - | b. |
| Dec-00 | 2.8 | 1.4 | 1.9 | 1.3 | 1.1 | 0.8 | 2.1 | 2.5 | 0.9 | 0.9 | 4 | gl. |
| Jan-01 | 0.7 | 1.7 | 1.4 | 1.8 | 0.7 | 1.3 | 1.1 | 2.4 | 1.1 | 0.6 | 2 | - |
| Feb-01 | 0.9 | 3.1 | 2.0 | 0.5 | 0.9 | 0.7 | 0.7 | 6.7 | 1.3 | 0.5 | 1.0 | Ç |
| Mar-01 | 0.8 | 2.1 | 1.3 | 0.6 | 0.7 | 0.6 | 0.6 | 5.5 | 0.6 | 0.6 | 1.5 | 2- |
| Apr-01 | 0.8 | 0.7 | 1.3 | 0.5 | 0.7 | 0.4 | 0.3 | 5.1 | 0.7 | 0.6 | 0.8 | 20 |
| 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 | 4 |
| Jul-01 | 0.5 | 0.3 | 1.8 | 0.5 | 0.8 | al . | 16.3 | 4.9 | 0.9 | 0.7 | 0.7 | 2 |
| Aug-01 | 0.4 | 0.4 | 0.8 | 0.8 | 1.0 | 1.7 | 1.0 | - | 1.0 | 1.8 | 1.1 | 4 |
| Sep-01 | 0.7 | 1.0 | 1.7 | 1.1 | 1.7 | 0.7 | | 6.0 | 1.1 | 1.3 | 1.7 | Ç. |
| Oct-01 | 1.1 | 0.6 | 4.6 | 0.9 | 0.7 | 0.9 | 1.2 | 1.9 | 0.9 | 0.6 | 1.7 | 2- |
| 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 | L. |
| 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 | Ģ. |
| Jun-02 | 1.4 | 0.4 | 1.7 | 0.6 | 0.5 | 0.8 | 0.6 | 2.1 | 0.6 | 0.5 | 1.0 | 4. |
| Jul-02 | 0.7 | 0.7 | 6 | 0.8 | 0.8 | 0.7 | 1.2 | 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 | L. |
| Dec-02 | 2.0 | | 2.5 | 1.5 | 3.0 | 1.5 | 1.8 | 4.1 | 1.6 | 1.2 | 1.9 | G- |
| Jan-03 | 2.1 | 1.5 | 2.7 | 1.5 | 1.0 | 1.9 | 2.2 | 2.5 | 1.1 | 1.0 | 1.6 | 0 |
| Feb-03 | 1.4 | 1.1 | 2.6 | 1.1 | 0.9 | 1.2 | 1.7 | 5.9 | 1.2 | 1.0 | 1.5 | 4 |
| Mar-03 | 0.8 | 0.5 | 1.2 | 1.2 | 0.6 | 2.1 | 1.5 | 3.4 | 4 | 3.6 | 9.5 | 4 |
| Apr-03 | 0.5 | 1.0 | 0.6 | 1.0 | 0.7 | 0.5 | 1.1 | 8.0 | | 2.0 | 1.0 | 4 |
| 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 | H. |
| Jul-03 | 0.3 | 0.4 | 0.4 | 0.6 | 0.4 | 0.5 | 0.7 | 0.5 | 0.5 | 0.5 | 0.7 | 4 |
| Aug-03 | 0.8 | 0.2 | 0.7 | 1.1 | 0.5 | 1.3 | 1.8 | 2.1 | 1.3 | 0.7 | 0.9 | 2 |
| Sep-03 | 0.6 | 0.7 | 1.1 | 0.7 | 0.8 | 1.7 | 1.4 | 1.3 | 2.5 | 0.9 | 1.3 | 2 |
| Oct-03 | - | 0.9 | 1.4 | 0.9 | 0.7 | 1.9 | 1.0 | 1.4 | 0.6 | 0.8 | 1.3 | 1 |
| | | | | | | | | | - 0.6 | | | 2 |
| Nov-03 | 2.6 | 0.8 | 1.0 | 1.1 | 0.4 | 1.3 | 1.5 | 1.5 | | 8.0 | 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 | . 2 |
| Feb-04 | 1.2 | 1.0 | 1.7 | 1.4 | 0.7 | 3.1 | 1.6 | 2.2 | (4 | 1.5 | 2.3 | 100 |

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| 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 | 9 |
| Jun-04 | 0.4 | 0.6 | 0.7 | 0.9 | 0.6 | 1.4 | 1.0 | 0.9 | 1.0 | 1.0 | 0.8 | ,0,- |
| 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 | 20 |
| 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 | Ψ. |
| 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 | 9 |
| Feb-05 | 1.2 | 1.2 | 1.8 | 1.6 | 1.3 | 2.0 | 1.7 | - | 2.3 | 1.5 | 2.3 | 4. |
| Mar-05 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 3.0 | 1.2 | 7.7 | 4 | 0.8 | 1.3 | 14 |
| 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 | 4 |
| Nov-05 | · Q | 2.3 | 2.3 | 2.0 | 1.7 | 1.2 | 2.0 | 3.2 | 1.6 | 1.4 | 2.2 | 4 |
| Dec-05 | 1.9 | 3.2 | 2.3 | 3.3 | 2.6 | 3.4 | 2.3 | 12. | 1.3 | 2.1 | 3.9 | 100 |
| Jan-06 | 1.0 | 2.1 | 1.7 | 1.0 | 23. | 3.5 | - | 2.7 | 1.1 | 4 | 1.5 | - |
| Feb-06 | 2.2 | 1.0 | 0.9 | 1.2 | 1.1 | 1.7 | 1.1 | 2.9 | (4) | 2.3 | 1.8 | 82 |
| Mar-06 | 0.7 | 0.6 | 2.3 | 0.7 | 0.6 | 0.9 | 1.0 | 1.4 | 0.7 | 0.8 | 1.5 | <u> </u> |
| 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 | 1. | 7.0 | 1.5 | 9, |
| 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 | Sa. | 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 | J. |
| 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 | ς. |
| 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 | (L) |
| 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 | R- |
| 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 | Ú. |
| Feb-08 | 0.4 | 0.1 | 14 | 0.1 | 0.1 | 0.3 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | |

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| 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# | Ç. |
| May-08 | 1.1 | 2.4" | 0.9 | 1.4 | 0.9 | 0.9 | 0.7 | 2.7 | 1" | 1.1 | 1.3" | ρ,- |
| 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 | ž. |
| 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 | μ. |
| Oct-08 | 1 | 0.5 | 1 | 1.3 | 1.3 | 1.2 | 1 | 1.4 | 0.8 | 1.6 | 1.8 | * |
| Nov-08 | 8.0 | 1.4 | 2.7 | 2.5 | 0.9 | 1.2 | 0.8 | 2.4 | 1.1 | 1 | 1.7 | 4 |
| Dec-08 | 0.4 | 0.4 | 0.6 | 0.5 | 0.3 | 1.1 | 0.6 | 15 | 0.9 | 0.7 | 1.2 | Ç = |
| Jan-09 | 1.1 | 3" | 1.6 | 0.8 | 0.9 | 1.4 | 0.7 | 1.5 | 0.9 | 0.9 | 5+ | 4. |
| Feb-09 | 0.4 | 4.4 | 1.5 | 1.1 | 0.9 | 1.6 | 0.8 | 1.2 | 1.4 | 2.5 | 1.2 | .6 |
| 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* | 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* | 1.14 |
| Feb-10 | 1.9* | 11.3* | 1.9* | 1.4" | 1.5" | 1.1* | 1.2" | 1.6" | 1.1* | 0.8* | 1.8" | 1.34 |
| 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* | 8.0 | 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* | 0.74 |
| 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#8 | 0.3*^ | 0.6#8 | 1.1 |

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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.

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APPENDIX B

Figures



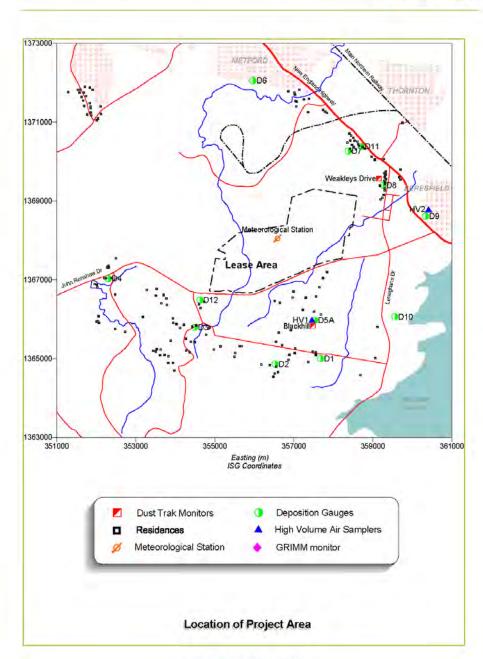


Figure 1: Project Location



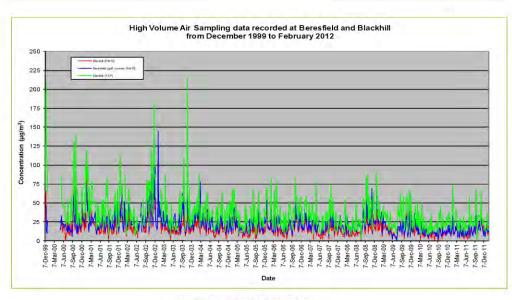


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – February 2012 Donaldson Coal | PAEHolmes Job 3003 B-3

DONALDSON COAL PTY LTD Abel Underground Coal Mine Appendix 2



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.

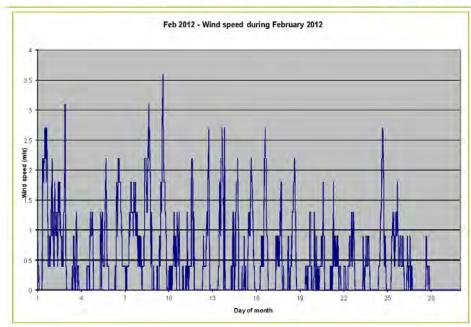
Figure 4: DustTrak sampling data - Weakleys Drive site

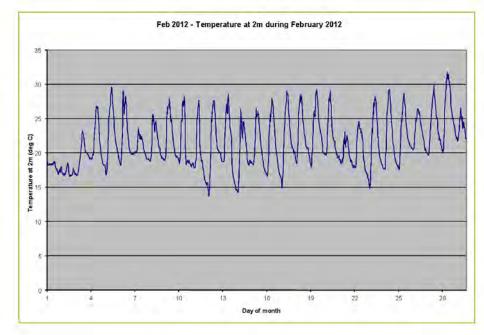
No PM2.5 monitoring was conducted during this month

Figure 5: DustTrak PM_{2.5} monitoring data

B-8



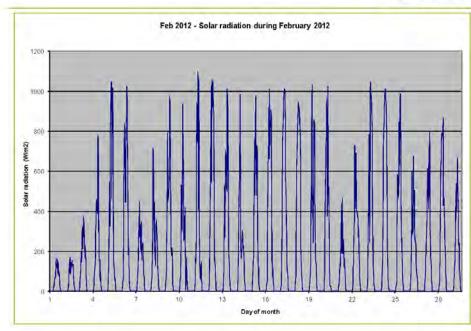




B-9

Dust and Meteorological Data - February 2012 Donaldson Coal | PAEHolmes Job 3003





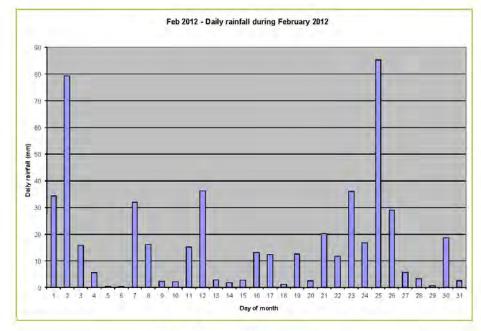
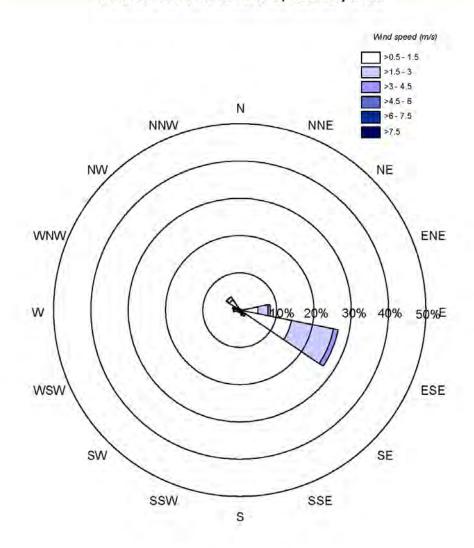


Figure 6: Meteorological conditions

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Windrose for Donaldson Coal, February 2012



Calms = 50.9%

Figure 7: Windrose for February 2012



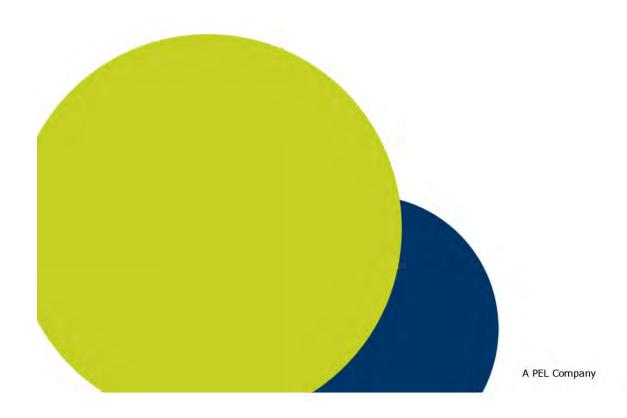
REPORT

DUST AND METEOROLOGICAL DATA - MARCH 2012

Donaldson Coal

Job No: 3003

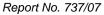
3 May 2012



DONALDSON COAL PTY LTD

Abel Underground Coal Mine Appendix 2

2011/2012 ANNUAL ENVIRONMENTAL MANAGEMENT REPORT





PROJECT TITLE: DUST AND METEOROLOGICAL DATA -

MARCH 2012

JOB NUMBER: 3003

PREPARED FOR: Phil Brown

DONALDSON COAL

PREPARED BY: Daniel Cullen

APPROVED FOR RELEASE BY: Jane Barnett

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| VERSION | DATE | PREPARED BY | REVIEWED BY |
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Dust and Meteorological Data – March 2012 Donaldson Coal | PAEHolmes Job 3003

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Figure 7: Windrose for March 2012B-10



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 _{IG} |
| | HVAS | TSP |
| | DustTrak | PM ₁₂ |
| | DustTrak (1 week per quarter) | PM₂₅ |
| 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

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 | Barresfield PMss (pg/m²) | Blackhill PMix (ng/m²) | Blackhill TSP (μg/m²) |
|----------------|-----------------------------|---------------------------|--------------------------|
| 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.

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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.

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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* | 1:14 | 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 | 8.0 | 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*8 | 0.3#^ | 0.6*8 | 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 | 8.0 | 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 $4 \text{ g/m}^2/\text{month}$, indicating nuisance dust in the vicinity of the mine is not an issue.

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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.

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APPENDIX A

Dust Deposition Data

Appendix 2



| | | | | Dust | depositi | on (g/n | n²/mont | :h) | | | | |
|--------|-----|-----|-----|------|----------|---------|---------|------|-----|-----|-----|------|
| 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 | - | В |
| Jul-00 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.5 | 0.8 | 1.5 | 0.4 | 0.4 | - | 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 | 8.0 | - | ÷ |
| Oct-00 | 0.4 | 0.6 | 1,1 | 0.9 | 0.9 | 0.8 | 5.3 | 0.9 | 0.6 | 0.5 | .6 | + |
| Nov-00 | 5.2 | 0.7 | 1.4 | 8.0 | 1.0 | 0.4 | 24.1 | 9.4 | 1.1 | 0.6 | 4 | 7 |
| Dec-00 | 2.8 | 1.4 | 1.9 | 1.3 | 1.1 | 0.8 | 2.1 | 2.5 | 0.9 | 0.9 | 4 | d. |
| 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 | Ç, - |
| Mar-01 | 0.8 | 2.1 | 1.3 | 0.6 | 0.7 | 0.6 | 0.6 | 5.5 | 0.6 | 0.6 | 1.5 | 2- |
| Apr-01 | 0.8 | 0.7 | 1.3 | 0.5 | 0.7 | 0.4 | 0.3 | 5.1 | 0.7 | 0.6 | 0.8 | 24 |
| 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 | 4 |
| Jul-01 | 0.5 | 0.3 | 1.8 | 0.5 | 0.8 | al . | 16.3 | 4.9 | 0.9 | 0.7 | 0.7 | 2 |
| Aug-01 | 0.4 | 0.4 | 0.8 | 0.8 | 1.0 | 1.7 | 1.0 | +1 | 1.0 | 1.8 | 1.1 | 4 |
| Sep-01 | 0.7 | 1.0 | 1.7 | 1.1 | 1.7 | 0.7 | S. | 6.0 | 1.1 | 1.3 | 1.7 | Ç |
| Oct-01 | 1.1 | 0.6 | 4.6 | 0.9 | 0.7 | 0.9 | 1.2 | 1.9 | 0.9 | 0.6 | 1.7 | a |
| 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 | 2 |
| 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 | g. |
| Mar-02 | 1.7 | 2.1 | 1.6 | 0.7 | 0.7 | 0.8 | 1.0 | 18 | 1.0 | 0.9 | 1.7 | 8 |
| 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 | Ģ. |
| Jun-02 | 1.4 | 0.4 | 1.7 | 0.6 | 0.5 | 0.8 | 0.6 | 2.1 | 0.6 | 0.5 | 1.0 | 4 |
| Jul-02 | 0.7 | 0.7 | 61 | 0.8 | 0.8 | 0.7 | 1.2 | 5 | 1.1 | 0.5 | 1.0 | 4 |
| Aug-02 | 1.3 | 0.8 | 1.4 | 1.2 | 1.1 | 1.2 | 1.5 | 4. | 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 | J. |
| 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 | 9. |
| Feb-03 | 1.4 | 1.1 | 2.6 | 1.1 | 0.9 | 1.2 | 1.7 | 5.9 | 1.2 | 1.0 | 1.5 | 8.1 |
| Mar-03 | 0.8 | 0.5 | 1.2 | 1.2 | 0.6 | 2.1 | 1.5 | 3.4 | 4 | 3.6 | 9.5 | 4 |
| Apr-03 | 0.5 | 1.0 | 0.6 | 1.0 | 0.7 | 0.5 | 1.1 | 8.0 | - | 2.0 | 1.0 | 4 |
| 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 | 82 |
| 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 | 5 |
| Sep-03 | 0.6 | 0.7 | 1.1 | 0.7 | 0.8 | 1.7 | 1.4 | 1.3 | 2.5 | 0.9 | 1.3 | 9. |
| 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 | 8.0 | 1.0 | 1.1 | 0.4 | 1.3 | 1.5 | 1.5 | - | 0.8 | 1.3 | 2 |
| 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 | 2 |
| Mar-04 | 0.4 | 0.6 | 6.6 | 1.2 | 0.7 | 1.9 | 1.1 | 12.1 | 4.8 | 1.5 | 1.1 | ø. |

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| 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 | 0 |
| Jun-04 | 0.4 | 0.6 | 0.7 | 0.9 | 0.6 | 1.4 | 1.0 | 0.9 | 1.0 | 1.0 | 0.8 | (A)- |
| 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 | 20 |
| 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 | ų. |
| 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 | 0 |
| Feb-05 | 1.2 | 1.2 | 1.8 | 1.6 | 1.3 | 2.0 | 1.7 | - | 2.3 | 1.5 | 2.3 | 4. |
| Mar-05 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 3.0 | 1.2 | 7.7 | - | 0.8 | 1.3 | 16 |
| Apr-05 | 1.1 | 0.7 | 0.9 | 0.8 | 0.7 | 0.9 | 1.4 | 3.3 | 1.1 | 0.8 | 0.9 | 12 |
| 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 | 4 |
| 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 | 19. | 1.3 | 2.1 | 3.9 | 30 |
| 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 | 14. | 2.3 | 1.8 | 87 |
| Mar-06 | 0.7 | 0.6 | 2.3 | 0.7 | 0.6 | 0.9 | 1.0 | 1.4 | 0.7 | 0.8 | 1.5 | ķ. |
| Apr-06 | 0.6 | 0.7 | 1.1 | 0.8 | 0.6 | 1.1 | 0.8 | 1.0 | 1.0 | 1.8 | 1.5 | 6 |
| May-06 | 1.0 | 3.1 | 1.0 | - | 1.1 | 1.4 | 1.1 | 4.1 | - | 7.0 | 1.5 | 9, |
| 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 | i _A | 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 | 2 |
| 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 | ψ. |
| Dec-06 | 1.2 | 3.4 | 1.9 | 2.3 | 2.3 | | 2.1 | 2.1 | | 4.9 | 3.9 | 4 |
| Jan-07 | 2 | 0.9 | 1.5 | 0.7 | 0.7 | 1.7 | 1.1 | | 1.2 | 1.7 | 0.9 | 9. |
| Feb-07 | 1.7 | 0.9 | 1.6 | 0.7 | 0.6 | 1 | 1.8 | 1.7 | 1.1 | 1.2 | 1.7 | 4 |
| Mar-07 | 1.3 | 0.9 | 1.7 | 0.8 | 1.2 | 0.6 | 2.2 | 1.7 | 1 | 0.9 | 1.7 | 2. |
| 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 | u. |
| 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 | 1 |
| 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 | A- |
| 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 | 4. |
| Jan-08 | 2.6 | 8.0 | 3.7 | 0.5 | 0.5 | 0.5 | 0.4 | 2.2 | 0.8 | 0.3 | 0.8 | u. |
| Feb-08 | 0.4 | 0.1 | 14 | 0.1 | 0.1 | 0.3 | 0.1 | 0.3 | 0.2 | 0.2 | 0.3 | |

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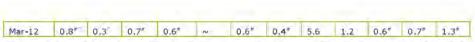
| Mar-08 | 4.5 | 0.6 | 9.2+ | 0.6 | 2.9 | 2.1 | 0.6 | 1.5 | 0.5 | 1 | 0.9 | - |
|----------|------|-------|------|-------|------|-------|------|------|-------|-------|-------|------|
| April-08 | 0.4" | 0.4" | 0.8" | 0.4" | 0.4* | 0.8 | 1.1" | 1.7" | 1.2 | 1.1* | 1.1# | Ç. |
| May-08 | 1.1 | 2.4* | 0.9 | 1.4 | 0.9 | 0.9 | 0.7 | 2.7 | 1" | 1.1 | 1.3" | ρ,- |
| June-08 | 0.2 | 0.4" | 0.1 | 0.5 | 0.1" | 0.1 | 0.3 | 0.5" | 0.1 | 0.8 | 0.2 | 4 |
| July-08 | 0.4 | 0.7* | 1,3" | 0.6 | 0.8" | 0.9 | 0.8 | 1 | 0.7 | 0.5 | 1.1 | ž. |
| 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 | μ. |
| Oct-08 | 1 | 0.5 | 1 | 1.3 | 1.3 | 1.2 | 1 | 1.4 | 0.8 | 1.6 | 1.8 | * |
| Nov-08 | 8.0 | 1.4 | 2.7 | 2.5 | 0.9 | 1.2 | 0.8 | 2.4 | 1.1 | 1 | 1.7 | 4 |
| Dec-08 | 0.4 | 0.4 | 0.6 | 0.5 | 0.3 | 1.1 | 0.6 | 15 | 0.9 | 0.7 | 1.2 | Ç = |
| Jan-09 | 1.1 | 3" | 1.6 | 0.8 | 0.9 | 1.4 | 0.7 | 1.5 | 0.9 | 0.9 | 5+ | 4. |
| Feb-09 | 0.4 | 4.4 | 1.5 | 1.1 | 0.9 | 1.6 | 0.8 | 1.2 | 1.4 | 2.5 | 1.2 | .6 |
| 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" | 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* | 1.14 |
| Feb-10 | 1.9* | 11.3* | 1.9" | 1.4" | 1.5* | 1.1* | 1.2" | 1.6" | 1.1* | 0.8* | 1.8" | 1.34 |
| 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* | 8.0 | 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* | 0.74 |
| 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 | N | 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#8 | 0.3*^ | 0.6#8 | 1.1 |

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

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APPENDIX B

Figures



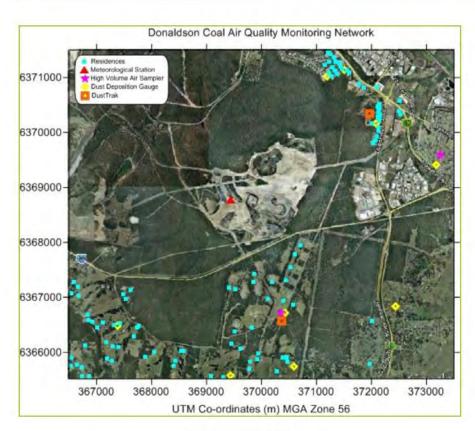


Figure 1: Project Location



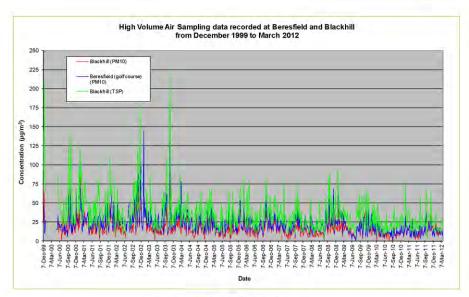


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – March 2012 Donaldson Coal | PAEHolmes Job 3003



No Monitoring was avaliable for this site in March 2012.

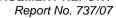
Figure 3: DustTrak sampling data - Blackhill site

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





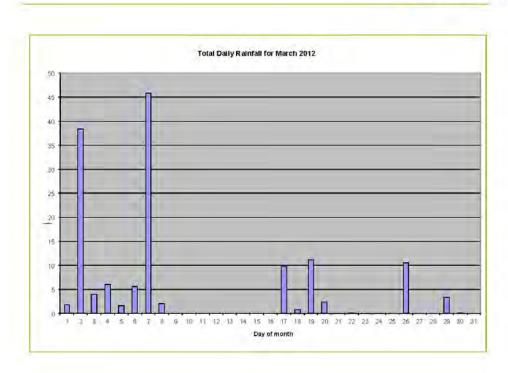


Figure 6: Meteorological conditions

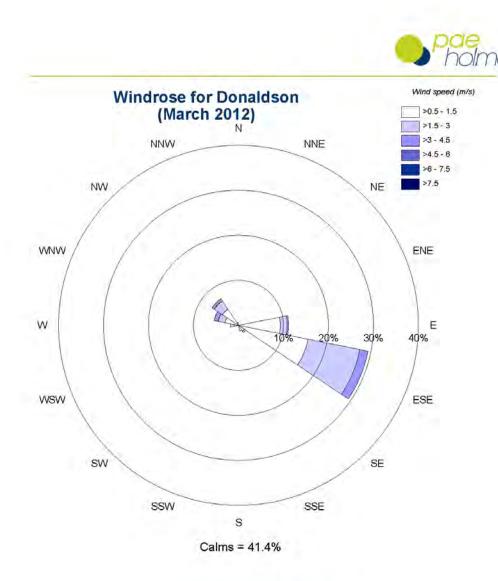


Figure 7: Windrose for March 2012



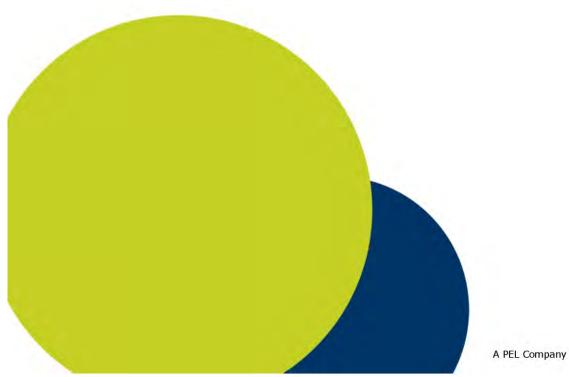
REPORT

DUST AND METEOROLOGICAL DATA - APRIL 2012

Donaldson Coal

Job No: 3003

28 May 2012



Report No. 737/07

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Abel Underground Coal Mine Appendix 2



PROJECT TITLE: DUST AND METEOROLOGICAL DATA -

APRIL 2012

JOB NUMBER: 3003

PREPARED FOR: Phil Brown

DONALDSON COAL

PREPARED BY: Daniel Cullen

APPROVED FOR RELEASE BY: Ronan Kellaghan

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| VERSION | DATE | PREPARED BY | REVIEWED BY |
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Dust and Meteorological Data - April 2012 Donaldson Coal | PAEHolmes Job 3003

Abel Underground Coal Mine Appendix 2

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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 | PMia |
| | HVAS | TSP |
| | DustTrak | PM ₁₀ |
| | DustTrak (1 week per quarter) | PM⊋ṣ |
| Weakleys Drive | DustTrak | PM _{to} |
| 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

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 | Benestield PMs (pg/m²) | Blackhill PMu (pg/m²) | Bleckhill TSP (μg/m²) |
|----------------|---------------------------|--------------------------|--------------------------|
| 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.

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Appendix 2



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.

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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 | 8.0 | 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#8 | 0.3*^ | 0.6*8 | 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#0 | 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 $4 \text{ g/m}^2/\text{month}$, indicating nuisance dust in the vicinity of the mine is not an issue.

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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.

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APPENDIX A

Dust Deposition Data

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| | | | | | depositio | | n²/mont | | | | | |
|------------------|-----|-----|-----|-----|-----------|------------|---------|------|-----|-----|-----|-------|
| 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 | 1- | - |
| Jul-00 | 0.4 | 0.4 | 0.5 | 0.7 | 0.8 | 0.5 | 0.8 | 1.5 | 0.4 | 0.4 | 2 | |
| 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 | 15 | - |
| Nov-00 | 5.2 | 0.7 | 1.4 | 0.8 | 1.0 | 0.4 | 24.1 | 9.4 | 1.1 | 0.6 | 16 | - |
| Dec-00 | 2.8 | 1.4 | 1.9 | 1.3 | 1.1 | 0.8 | 2.1 | 2.5 | 0.9 | 0.9 | 12 | B. |
| Jan-01 | 0.7 | 1.7 | 1.4 | 1.8 | 0.7 | 1.3 | 1.1 | 2.4 | 1.1 | 0.6 | 14 | - |
| Feb-01 | 0.9 | 3.1 | 2.0 | 0.5 | 0.9 | 0.7 | 0.7 | 6.7 | 1.3 | 0.5 | 1.0 | 2 - |
| 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 | 4 |
| 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 | Q. |
| Aug-01 | 0.4 | 0.4 | 0.8 | 0.8 | 1.0 | 1.7 | 1.0 | -0 | 1.0 | 1.8 | 1.1 | ()- x |
| Sep-01 | 0.7 | 1.0 | 1.7 | 1.1 | 1.7 | 0.7 | -1 | 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 | 1 |
| Nov-01 | 0.9 | 1.0 | 1.1 | 1.1 | 0.8 | 1.1 | 6.0 | 5.5 | 1.3 | 1.9 | 2.3 | ė, |
| 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 | 1 |
| Jul-02 | 0.7 | 0.7 | 6 | 0.8 | 0.8 | 0.7 | 1.2 | 2 | 1.1 | 0.5 | 1.0 | - |
| Aug-02 | 1.3 | 0.8 | 1.4 | 1.2 | 1.1 | 1.2 | 1.5 | 20 | 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 | Û |
| 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 | 1 |
| | | | | | | | | 1.5 | - | | | - |
| Nov-03 Dec-03 | 2.6 | 0.8 | 1.0 | 1.1 | 0.4 | 1.3 | 1.5 | | | 0.8 | 1.3 | - |
| | 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 Mar-04 | 0.4 | 0.6 | 6.6 | 1.4 | 0.7 | 3.1 1.9 | 1.6 | 12.1 | 4.8 | 1.5 | 1.1 | 2. |

Appendix 2



| 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 | 2 |
| Jun-04 | 0.4 | 0.6 | 0.7 | 0.9 | 0.6 | 1.4 | 1.0 | 0.9 | 1.0 | 1.0 | 8,0 | - |
| Jul-04 | 0.4 | 0.6 | 5.3# | 0.6 | 0.5 | 2.9 | 1.0 | 1.1 | 0.9 | 0.6 | 1.2 | 4 |
| Aug-04 | 0.5 | 0.5 | 0.5 | 1.3 | 0.7 | 1.1 | 1.1 | 1.4 | 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 | (E) |
| Jan-05 | 1.2 | 1.0 | 3.7 | 1.6 | 1.4 | 4.0 | 2.3 | 2.7 | 2.6 | 2.5 | 2.8 | 2 |
| Feb-05 | 1.2 | 1.2 | 1.8 | 1.6 | 1.3 | 2.0 | 1.7 | - | 2.3 | 1.5 | 2,3 | 4 |
| Mar-05 | 1.3 | 0.9 | 1.4 | 0.9 | 0.9 | 3.0 | 1.2 | 7.7 | 4 | 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 | 1 |
| 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 | (8) | 1.3 | 2.1 | 3.9 | - |
| Jan-06 | 1.0 | 2.1 | 1.7 | 1.0 | 23. | 3.5 | - | 2.7 | 1.1 | 4 | 1.5 | |
| Feb-06 | 2.2 | 1.0 | 0.9 | 1.2 | 1.1 | 1.7 | 1.1 | 2.9 | 4 | 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 | Ų. |
| 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 | 1 |
| 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 | 1 |
| 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 | 1 |
| Feb-07 | 1.7 | 0.9 | 1.6 | 0.7 | 0.6 | 1 | 1.8 | 1.7 | 1.1 | 1.2 | 1.7 | 1 |
| 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 | (i=) |
| Sep-07 | 1.3 | 0.5 | 1.8 | 1 | 0.7 | 0.9 | 0.9 | 1.3 | 1 | 0.7 | 1.6 | 2 |
| 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 | |

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| 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 | 2 |
| 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 | 4 |
| 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 | 2 |
| Jan-09 | 1.1 | 3" | 1.6 | 0.8 | 0.9 | 1.4 | 0.7 | 1.5 | 0.9 | 0.9 | 5+ | 4 |
| 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* | 1 |
| 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* |
| | | | | | V.6" | 1 | | | | | | - |
| Oct-11 | 11 | 11.2 | 0.6 | 1.3 | | | 1.4 | 1.5 | 1.4 | 1.3 | 1.4 | 1.1 |
| Nov-11 | 0.5 | 1 2# | 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 |

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| Mar-12 | 0.8* | 0.3 | 0.7" | 0.6* | iv: | 0.6* | 0.4" | 5.6 | 1.2 | 0.6" | 0.7* | 1.3* |
|--------|-------|-------|------|------|-----|------|------|------|------|------|------|------|
| Apr-12 | 1.3** | 1.1** | 1* | 0.9" | WL | 1" | 0.8" | 2.6" | 1.3" | 1.10 | 1.4* | 1.4 |

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

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APPENDIX B

Figures



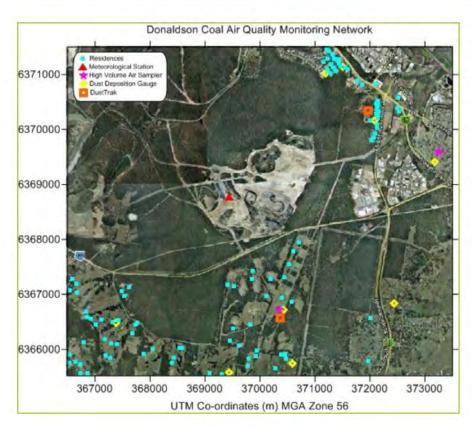


Figure 1: Project Location

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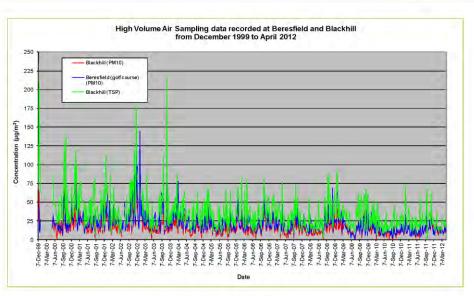


Figure 2: High Volume Air Sampling data

Dust and Meteorological Data – April 2012 Donaldson Coal | PAEHolmes Job 3003 Abel Underground Coal Mine Appendix 2

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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

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April 2012 - Daily rainfall at Donaldson during April 2012

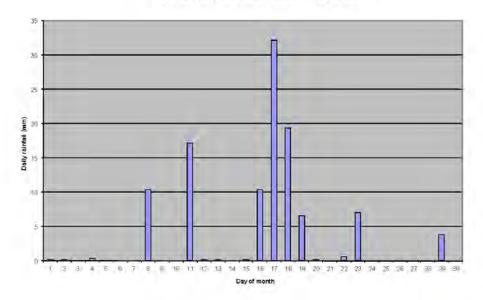


Figure 6: Meteorological conditions

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