



**CARBON BASED ENVIRONMENTAL  
PTY LIMITED**  
ABN 74 102 920 285



**WERRIS CREEK COAL**

**ENVIRONMENTAL MONITORING**

**HIGH VOLUME AIR SAMPLERS**  
**(PM10)**

**AND**

**WEATHER MONITORING**

**MARCH/APRIL 2005**

Colin Davies BSc MEIA CEnvP  
Environmental Scientist  
30 May 2005

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## EXECUTIVE SUMMARY

Carbon Based Environmental Pty Limited is contracted by Werris Creek Coal Pty Limited to conduct High Volume Air Sampling environmental monitoring for Fine Particulates (PM10) and meteorological monitoring at locations around the mining area.

The monitoring includes;

- Four PM10 monitors (sites Ryan, Patterson, Marquette and Eurunderee);
- One Meteorological Station (Mine Site).

The location of the monitors will be included in Figure 1 when provided by Werris Creek Coal.

This is the first report prepared by Carbon Based Environmental and includes the following;

- HVAS monitoring results for the March and April reporting period.

Summary:

- All individual PM10 24 hour average results, at all sites, were below the short term 24 hour impact criteria of 50ug/m<sup>3</sup>;
- Currently, all PM10 sites are below the long term impact and land acquisition annual impact criteria of 30ug/m<sup>3</sup>;

**Statements in green indicate conformance to criteria, statements in red indicate non-conformance to criteria.**

All sites commenced operation on the 25 March 2005, with the first HVAS run occurring on the 28 March 2005. 100% data recovery was achieved from 3 of the 4 HVAS sites. One run was not monitored at the Eurunderee site due to a power failure. The weather station recorded data up until the 19<sup>th</sup> April 2005 when a command was inadvertently sent from the site office instructing the station to stop logging data. Additional training was provided to site personnel to avoid this situation occurring again.

Weather conditions indicate 0 mm rainfall between the 25 March and the 19 April 2005. The long term median rainfall at Gunnedah for April is 32.5 mm. Wind was predominantly from the SE to SSE. Temperatures ranged from 7.3 to 31.4 with a mean of 19.9 degrees C.

# 1.0 SAMPLING PROGRAM

The High Volume Air Samplers are operated to the applicable Australian Standard, DEC(EPA) approved method or guideline. All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

The following Australian Standards were used:

AS3580.9.6. "Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM10 High Volume sampler with size selective inlet - Gravimetric method."

Sampling is scheduled for 24 hours every 6 days to the DEC(EPA) protocol. The results are reported as ug/m<sup>3</sup>.

The location of the High Volume Air Samplers was determined based on the Australian Standard AS 2922 Ambient Air – Guide for the Siting of Sampling Units.

Site locations are:

<b>PM10</b>	<b>Meteorological Station</b>
Ryan	Mine Site
Patterson	
Marquette	
Eurunderee	

## 2.0 REPORTING PERIOD RESULTS

The laboratory analysis certificates are provided in Appendix 1. Charts for individual sites follow.

Results currently indicate conformance to Air Quality Monitoring Program criteria.

### Werris Creek: High Volume Air Sampling Report

Month : March April 2005

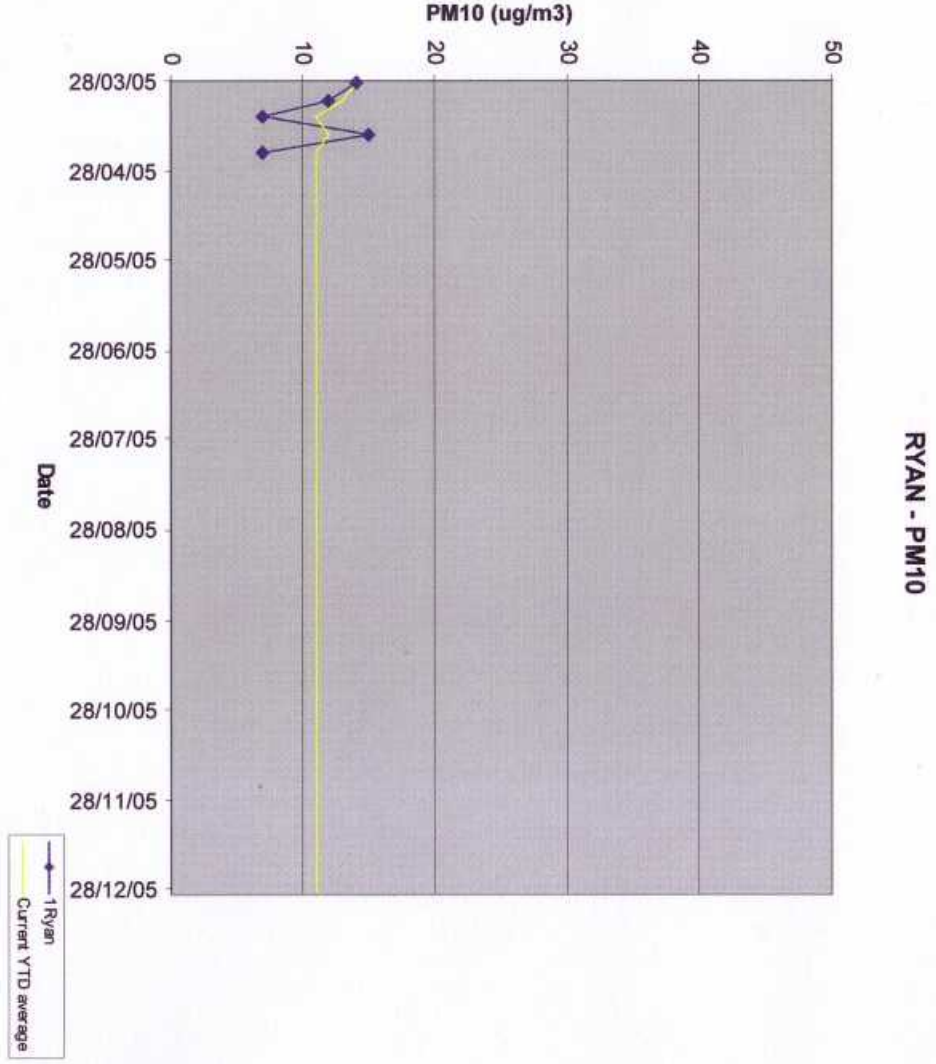
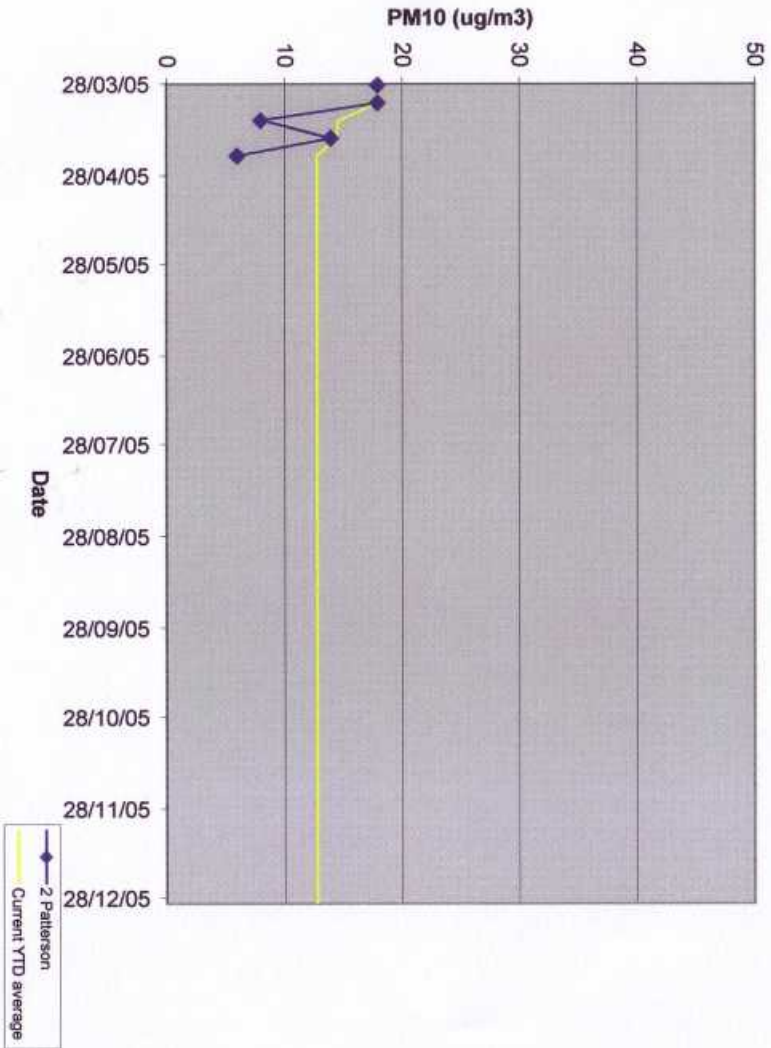
All results ug/m<sup>3</sup>

#### 1. PM10

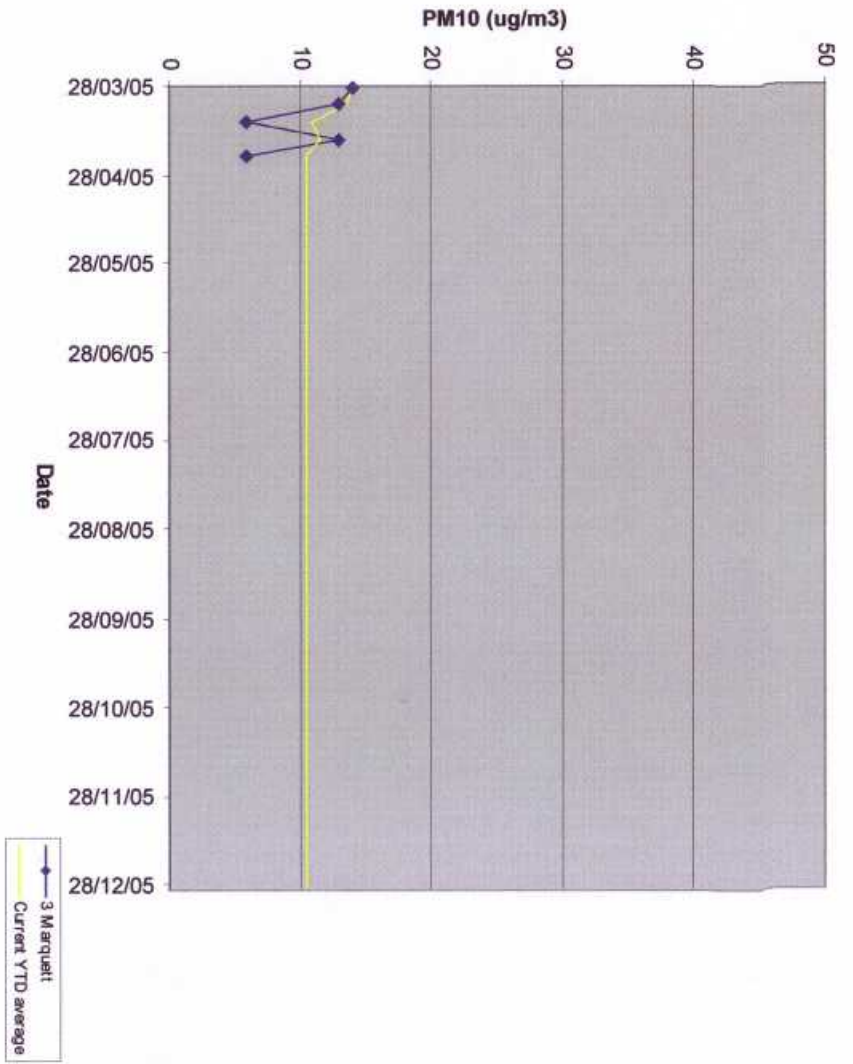
Site	Date	Result	Report Average	Annual Average
Ryan	28/03/2005	14		
	3/04/2005	12		
	9/04/2005	7		
	15/04/2005	15		
	21/04/2005	7	11.0	11.0
Patterson	28/03/2005	18		
	3/04/2005	18		
	9/04/2005	8		
	15/04/2005	14		
	21/04/2005	6	12.8	12.8
Marquette	28/03/2005	14		
	3/04/2005	13		
	9/04/2005	6		
	15/04/2005	13		
	21/04/2005	6	10.4	10.4
Eurunderee	28/03/2005	15		
	3/04/2005	13		
	9/04/2005	No data		
	15/04/2005	6		
	21/04/2005	8	10.5	10.5
Criteria		<50		<30

	Meets criteria
	Does not meet criteria
	Not applicable

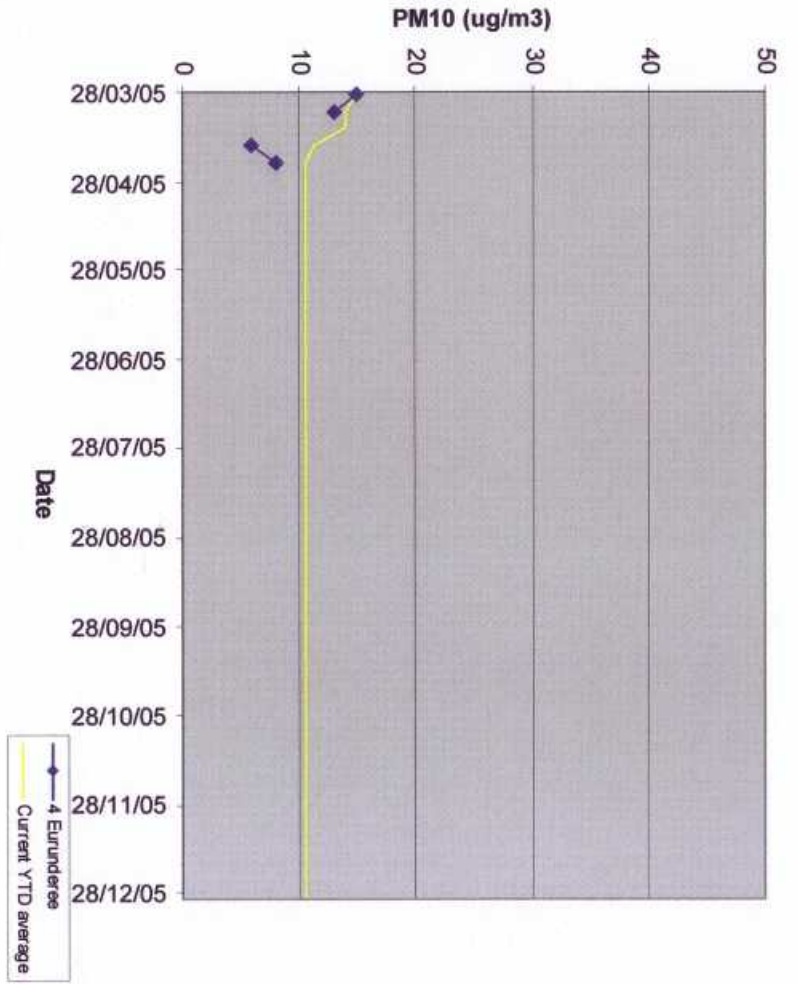
Note 1 Annual data based on the currently available data and not on an annual amount of data.



MARQUETT - PM10



EURUNDEREE - PM10



## METEOROLOGICAL MONITORING

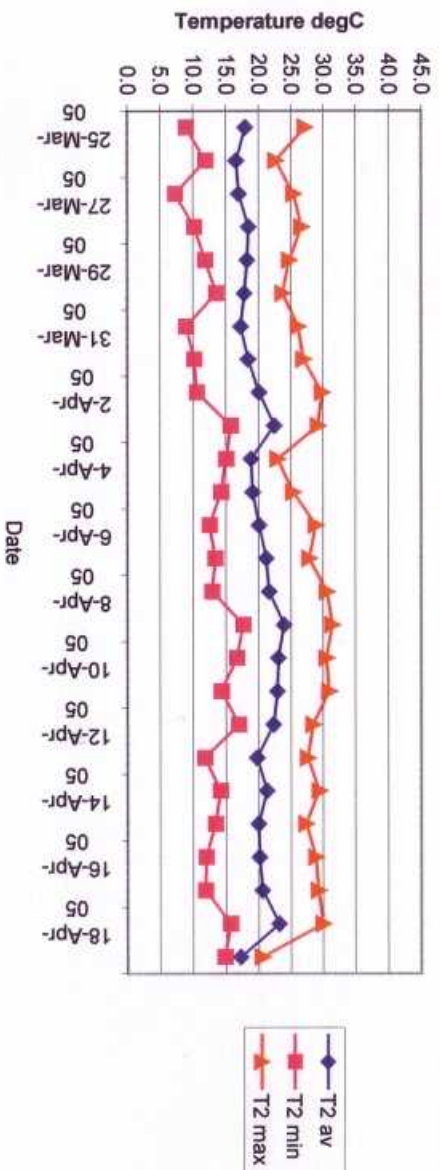
Meteorological data follows including;

- Monthly text data summary;
- Charts of temperature, humidity, rain, wind speed and battery volts.
- Wind rose (frequency distribution diagram of wind speed and direction)

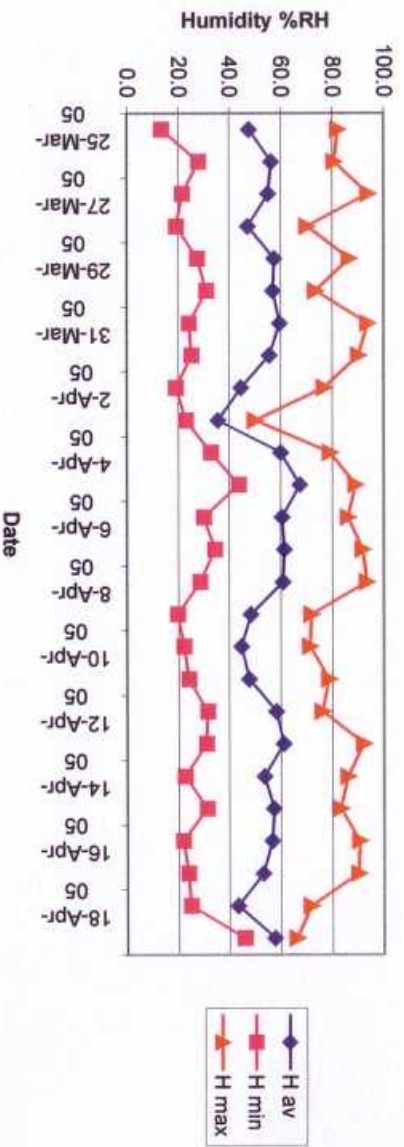
The station is configured to record the average data over each 10 minute interval.



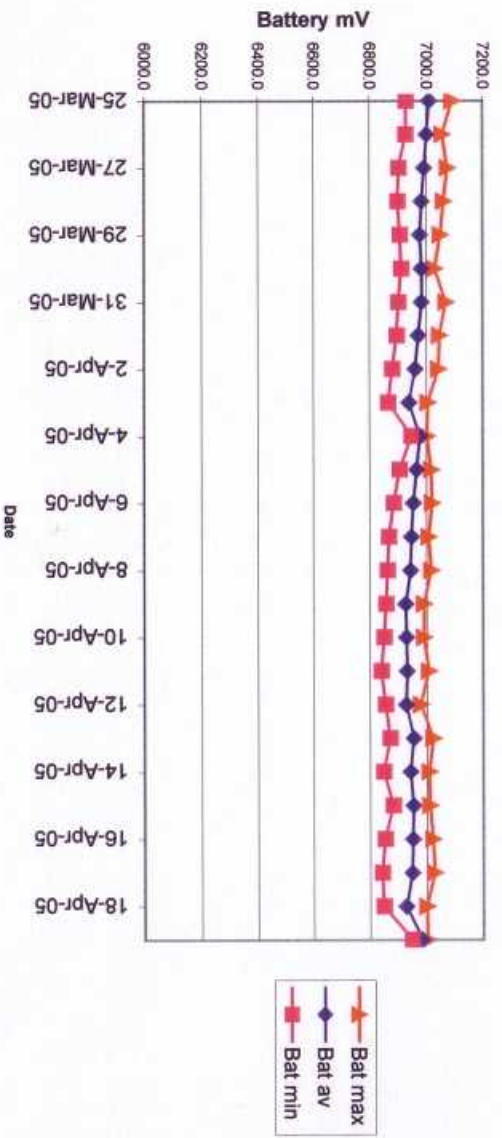
Werris Creek Weather Station Apr 2005  
Air Temperature

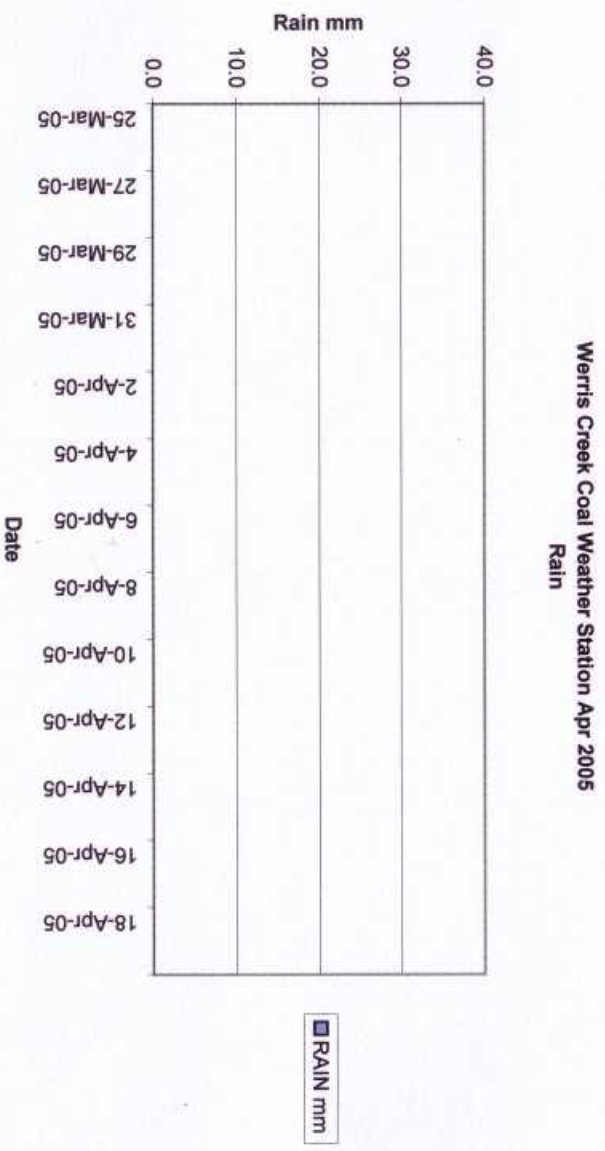
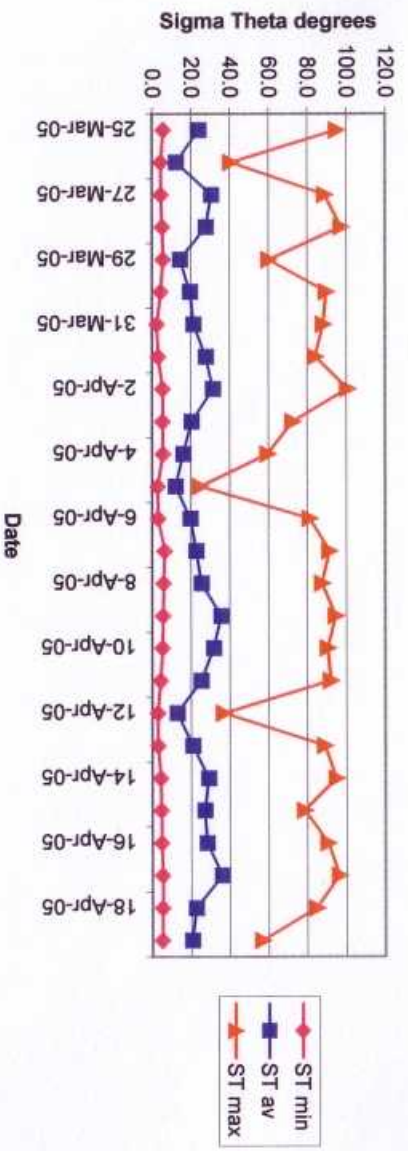
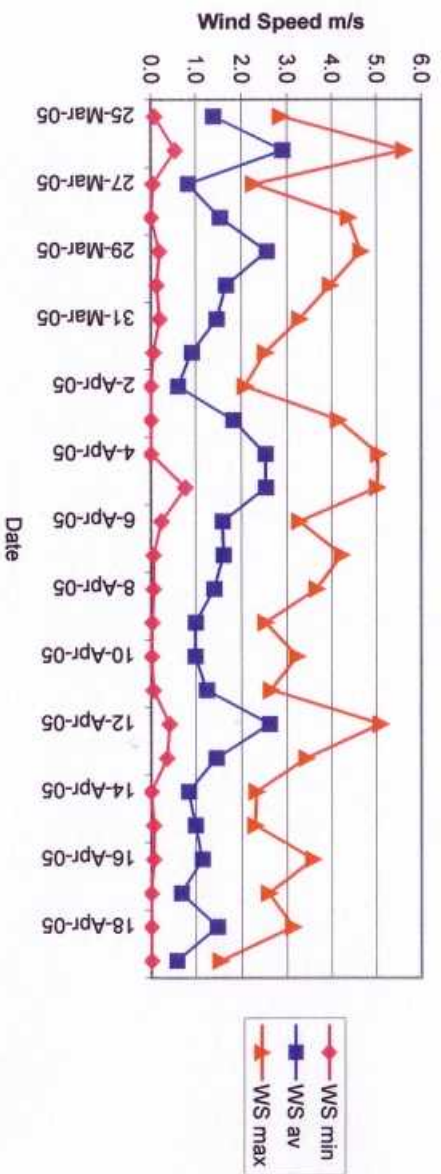


Werris Creek Coal Weather Station Apr 2005  
Humidity

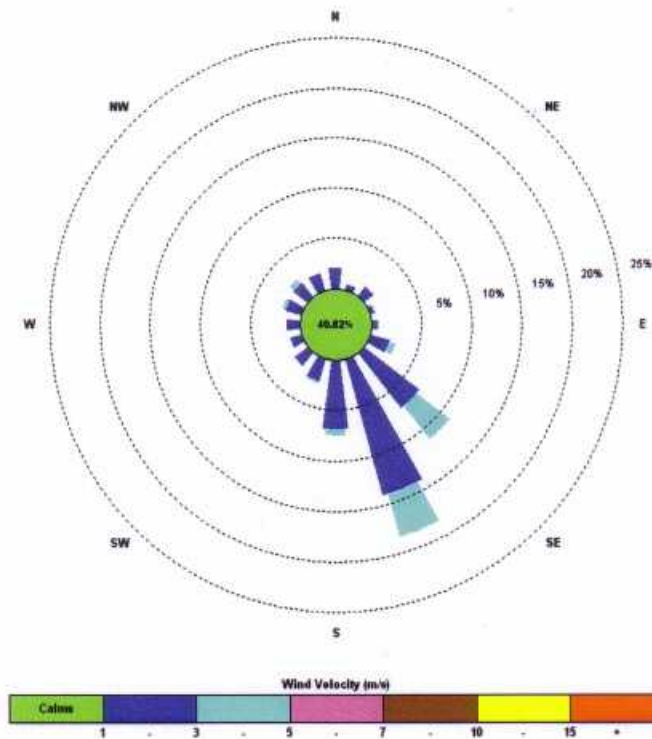


Werris Creek Coal Weather Station Apr 2005  
Battery





# MONTHLY WINDROSE SHOWING A FREQUENCY DISTRIBUTION OF WINDSPEED AND DIRECTION



**APPENDIX 1**

**LABORATORY CERTIFICATES**

**AND**

**CALIBRATION CERTIFICATES**  
**(SUPPLIED EVERY SECOND MONTH)**

# ACIRL Quality Testing Services Pty Ltd

(ABN 66 003 451 876)  
51 Darling Street, CARRINGTON, NSW 2294  
Phone : (02) 4969 4979 (02) 4961 3793  
Fax: (02) 4962 1850



**Origin:** Werris Creek

**Report :** NNW05-7918-03

Page 1 of 1

**Description :** Suspended Particulate Matter PM<sub>10</sub>- HVAS

**Date :** 26-Apr-05

**Report To :** Colin Davies - Carbon Based Enviro

**Copy to:** File

ID No.	Site	Filter	Run Date	PM10 <sup>3</sup> ug/m <sup>3</sup>
PM 10-1	Marquette	7631824	28-Mar-05	14
PM 10-2	Patterson	7631823	28-Mar-05	18
PM 10-3	Ryan	7631821	28-Mar-05	14
PM 10-4	Eurunderee	7631822	28-Mar-05	15

*Note : PM10 ug/m3 calculated to 0 Deg C and 101.3kPa  
Samples collected by Client  
Flow rates, calibrations & sample times supplied by Client  
Weather data - ex Hunter Valley Research Foundation, Maryville*

**Reported By:** D. Hafy

MANAGER

Determined in Accordance With:  
AS3580.9.6 (Gravimetric Determination Only)



This Laboratory is accredited by the National Association of Testing Authorities, Australia. The tests reported herein have been performed in accordance with its terms of accreditation. This document shall not be reproduced except in full.

NATA Accredited Laboratory  
No. 218

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51 Darling Street, CARRINGTON, NSW 2294  
Phone : (02) 4969 4979 (02) 4961 3793  
Fax: (02) 4962 1850



**Origin:** Werris Creek

**Report :** NNW05-7939-03

Page 1 of 2

**Description :** Suspended Particulate Matter PM<sub>10</sub> - HVAS

**Date :** 16-May-05

**Report To :** Colin Davies - Carbon Based Enviro

**Copy to:** File

ID No.	Site	Filter	Run Date	PM10 ug/m <sup>3</sup>
PM 10-1	Marquette	7631858	03-Apr-05	13
PM 10-1	Marquette	7631826	09-Apr-05	6
PM 10-1	Marquette	7631829	15-Apr-05	13
PM 10-1	Marquette	7631854	21-Apr-05	6
PM 10-2	Patterson	7631859	03-Apr-05	18
PM 10-2	Patterson	7631828	09-Apr-05	8
PM 10-2	Patterson	7631830	15-Apr-05	14
PM 10-2	Patterson	7631856	21-Apr-05	6
PM 10-3	Ryan	7631860	03-Apr-05	12
PM 10-3	Ryan	7631827	09-Apr-05	7
PM 10-3	Ryan	7631831	15-Apr-05	15
PM 10-3	Ryan	7631853	21-Apr-05	7
PM 10-4	Eurunderee	7631857	03-Apr-05	13

Note : PM10 ug/m3 calculated to 0 Deg C and 101.3kPa  
Samples collected by Client  
Flow rates, calibrations & sample times supplied by Client  
Weather data - ex Hunter Valley Research Foundation, Maryville

Reported By: D. Hafy

MANAGER

Determined in Accordance With:  
AS3580.9.6 (Gravimetric Determination Only)



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51 Darling Street, CARRINGTON, NSW 2294  
Phone : (02) 4969 4979 (02) 4961 3793  
Fax: (02) 4962 1850



ACIRL QUALITY TESTING SERVICES

**Origin:** Werris Creek

**Report :** NNW05-7939-03

Page 2 of 2

**Description :** Suspended Particulate Matter PM<sub>10</sub> - HVAS

**Date :** 16-May-05

**Report To :** Colin Davies - Carbon Based Enviro

**Copy to:** File

ID No.	Site	Filter	Run Date	PM10 ug/m <sup>3</sup>
PM 10-4	Eurunderee	7631825	15-Apr-05	6
'M 10-4	Eurunderee	7631832	21-Apr-05	8

Note : PM10 ug/m<sup>3</sup> calculated to 0 Deg C and 101.3kPa  
Samples collected by Client  
Flow rates, calibrations & sample times supplied by Client  
Weather data - ex Hunter Valley Research Foundation, Maryville

Reported By: \_\_\_\_\_

*D. Hafey*

MANAGER

Determined in Accordance With:  
AS3580.9.6 (Gravimetric Determination Only)



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No. 218

# CARBON BASED ENVIRONMENTAL PTY LIMITED

## HVAS CALIBRATION FORM

#1

HVAS Site: RYAN Serial No: 04-0888

Manometer No: M-300 Orifice Plate No: 300 Date Calibrated: 24/3/05

Temp deg C	$\Delta P$ mmH <sub>2</sub> O		Theoretical Flow m <sup>3</sup> /hr	Displayed Flow on machine
	Full	Half <i>Display</i>		
25	118	59 59	60	60
	161	80 80	70	70
	210	105 104	80	90

Runtime Meter: 18

Time : 12:15 PM

RUN Machine @ 68 on display

Telstra : 12:15 PM OK 4.

Calibrated according to AS2724.3-1984

Performed By: *CDM*

Date: 24-3-05

Next Due: May 05

# CARBON BASED ENVIRONMENTAL PTY LIMITED

## HVAS CALIBRATION FORM

#2 ~~Wanganui~~ Erundersee

HVAS Site: Wanganui Serial No: 04-0878

Manometer No: M-300 Orifice Plate No: 300 Date Calibrated: 24-3-05

Temp deg C	$\Delta P$ mmH <sub>2</sub> O			Theoretical Flow m <sup>3</sup> /hr	Displayed Flow on machine
	Full	Half	Display		
25°C	118	59	59	60	60
	161	80	80	70	70
	210	105	103	80	80

Runtime Meter: 4

Time 11:20 AM  
Telika 11:20 AM OK w/

RUN Machine @ 68 on display

Calibrated according to AS2724.3-1984

Performed By: [Signature]

Date: 24-3-05

Next Due: May 05

# CARBON BASED ENVIRONMENTAL PTY LIMITED

## HVAS CALIBRATION FORM

Patterson

HVAS Site: #3      Serial No: 04-0889  
 Manometer No: 300      Orifice Plate No: 300      Date Calibrated: 24-3-05

Temp deg C	$\Delta P$ mmH <sub>2</sub> O		Theoretical Flow m <sup>3</sup> /hr	Displayed Flow on machine
	Full	Half		
25°C	118	59	60	60
	161	80	70	70
	210	105	80	80

Runtime Meter: 4

Time 10:35 AM

RUN Machine @ 68 on display

Telstr 10:35 AM OK UY

Calibrated according to AS2724.3-1984

Performed By: GLH

Date: 24-3-05

Next Due: MAY 05

# CARBON BASED ENVIRONMENTAL PTY LIMITED

## HVAS CALIBRATION FORM

Marquette's.

HVAS Site: #4 Serial No: 04-0885  
 Manometer No: 300 Orifice Plate No: 300 Date Calibrated: 24-3-05

Temp deg C	$\Delta P$ mmH <sub>2</sub> O		Theoretical Flow m <sup>3</sup> /hr	Displayed Flow on machine
	Full	Half		
25°C	118	59	60	60
	161	80	70	70
	210	105	80	80

Runtime Meter: 5

Time 1:12 PM

RUN Machine @ 68 on display

Teliban 1:12 PM OK up

Calibrated according to AS2724.3-1984

Performed By: C. Daniel

Date: 24-3-05

Next Due: MAY 05