



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

**ROCLA QUARRY PRODUCTS
CALGA QUARRY**

ENVIRONMENTAL MONITORING

**DUST DEPOSITION GAUGES, SURFACE AND
GROUND WATERS AND METEOROLOGICAL
STATION**

AUGUST 2009

A handwritten signature in black ink that reads 'Colin Davies'.

Colin Davies BSc MEIA CENVP
Environmental Scientist
11 September 2009

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EXECUTIVE SUMMARY

Carbon Based Environmental is contracted by Rocla Quarry Products to conduct environmental monitoring at the Calga Sand Quarry.

The monitoring includes;

- Dust Deposition Gauges;
- Surface Waters;
- Ground Waters; and
- Meteorological Station.

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

- Dust Deposition results for August 2009;
- Surface Water quality results for August 2009;
- Ground Water depth and quality results for August 2009; and
- Meteorological report for August 2009.

The August 2009 dust deposition results were generally similar to July 2009. All sites, on a year to date average basis, are currently below the Air Quality Management Plan exceedence level of 3.7g/m².month. Results were found to be representative of dust levels as determined by the Australian Standard.

Surface water samples were collected for the normal monthly sampling event on the 1 September 2009 at sites A, C and F. Sites B and D were not flowing. At the time of sample collection, there was no water discharge observed from the site. Results show generally good quality water with most sites sampled maintaining pH within the slightly acidic range, low Electrical Conductivity, low Total Dissolved Solids and Total Suspended Solids and no detectable Oil and Grease.

Groundwaters were sampled for normal monthly monitoring on 1 September 2009. Groundwater depths increased at the majority of monitoring bores this month, indicating water moving away from the surface. pH and EC levels remained relatively steady.

The meteorological station data recovery for the month was approximately 100%. The predominant winds were from the WNW-WSW, with strongest winds from the WSW. Recorded rainfall on site for August was 3.6mm, similar to that recorded at the BOM Peats Ridge Station and below the Peats Ridge long-term average for August. Results are detailed below:

Rocla Calga Quarry	3.6mm
BOM Peats Ridge*	2.8mm
BOM Gosford*	4.2mm
BOM Peats Ridge Long term mean for August*	81.0mm

*Data sourced from Bureau of Meteorology (BOM) website (www.bom.gov.au)

Note: Differences in the daily rainfall readings between BOM and the Rocla station may occur due to BOM stations reporting rainfall at 9am and the Rocla station recording rainfall at midnight.

1.0 SAMPLING PROGRAM

Rocla Calga Quarry conducts environmental monitoring in accordance to Development Consent, DEC (EPA) licence and Environmental Management Plans. Carbon Based Environmental are contracted to undertake dust deposition gauge, surface and groundwater and meteorological monitoring for the project. Carbon Based Environmental commenced monitoring from the April 2006 monitoring period.

Dust deposition gauges are operated to the Australian Standard AS3580.10.1 “Methods for Sampling and Analysis of Ambient Air Method 10.1 Determination of Particulates—Deposited Matter—Gravimetric Method”. Sampling is undertaken every 30 +/- 2 days and each gauge is analysed for insoluble solids and ash residue. The results are reported as g/m².month.

Surface water sites include local streams and dams. Basic analysis including pH, Electrical Conductivity, Total Suspended Solids, Total Dissolved Solids and Total Oil and Grease is conducted monthly at Sites A and F (dams), and when Sites B, C and D are flowing. Additional samples are collected when daily rainfall exceeds 50mm.

Groundwater sites are monitored at least bi-monthly for water quality and at least quarterly for water level. Groundwater monitoring loggers continuously record water levels in a selection of bores.

Meteorological monitoring is conducted at the quarry and displayed on the site computer with a real time display. Wind parameters are measured according to Australian Standard AS 2923 “Ambient Air— Guide for Measurement of Horizontal Wind for Air Quality Applications”.

The weather stations have the following sensor configuration;

- Air temperature
- Humidity
- Rainfall
- Atmospheric pressure
- Evaporation
- Solar radiation
- Wind speed
- Wind direction

Carbon Based Environmental continued to operate the monitoring equipment and utilise site collections at their existing locations.

2.0 MONTHLY RESULTS

2.1 DUST DEPOSITION GAUGES

Table 1 displays the results for August 2009 and the project average. Results are in g/m².month.

Table 1: Dust Deposition results: 03-Aug-2009 to 01-Sep-2009

Site	Monthly Insoluble Solids	Monthly Ash Residue	Monthly Combustible Matter	Monthly Ash Residue/ Insoluble Solids %	Current Project Average Insoluble Solids
CD1	1.3	0.6	0.7	46	1.3
CD2b	3.6*	2.1	1.5	58	1.7
CD3	1.0	0.5	0.5	50	0.8
CD4	1.4	0.7	0.7	50	1.0
CD5	0.4	0.2	0.2	50	0.8
CD6	0.8	0.3	0.5	38	1.1

Insoluble Solids marked with an * indicate an excessively contaminated gauge. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen, seeds), and insects. Results in bold indicate insoluble solids levels above 3.7 g/m².month, the Development Consent annual average amenity criteria at residential locations. Project average was calculated from the 28 October 2005 (start of the Development Consent period) from results supplied by Rocla or from the installation date of the gauges.

CD2b was contaminated with bird droppings and insects.

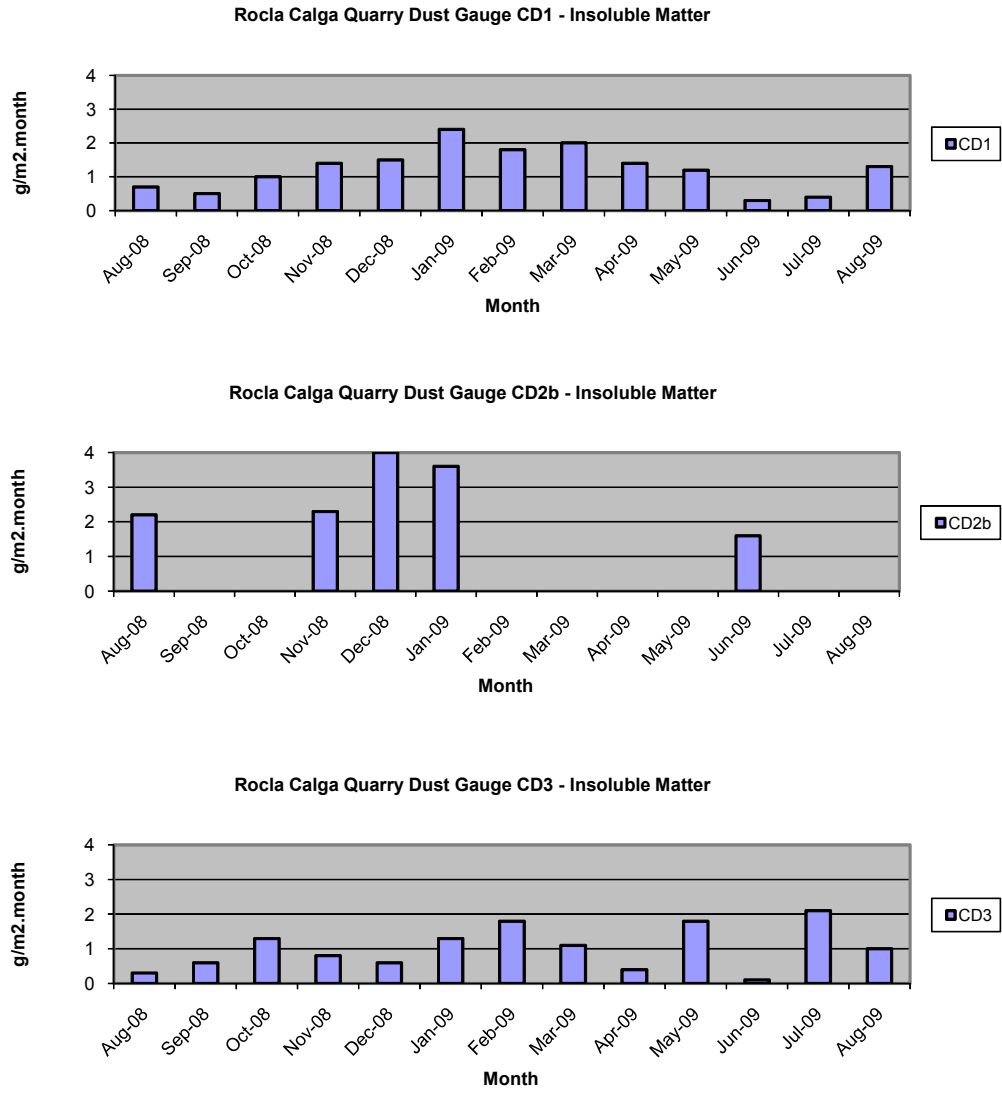
NA= Not Available.

CD1 was installed on the 1 May 2006. CD2a was discontinued at the start of August 2006 due to quarry operations “mining out” the site of the gauge. The replacement gauge, Site CD2b, was located in a position adjacent to the boundary between B. Kashouli and F. & J. Gazzana in conformance with the Air Quality Management Plan. CD4 was installed on 3 October 2006, to gauge air quality impacts to the south of the site operations, as were CD5 and CD6 which were installed on the 14 December 2006.

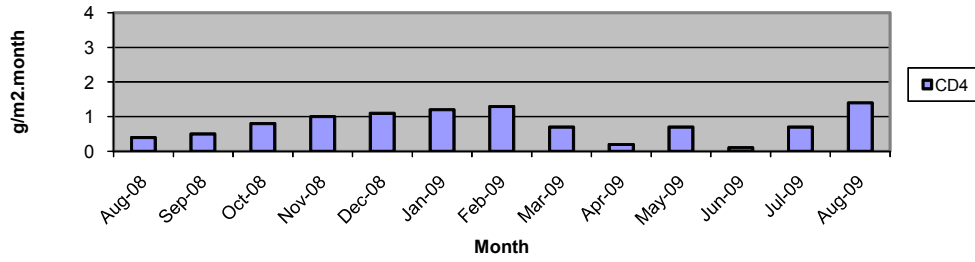
Dust deposition charts for all dust gauge sites appear in **Figure 1** below. The laboratory analysis is provided in **Appendix 1**.

The predominant winds were from the WNW-WSW, with strongest winds from the WSW.

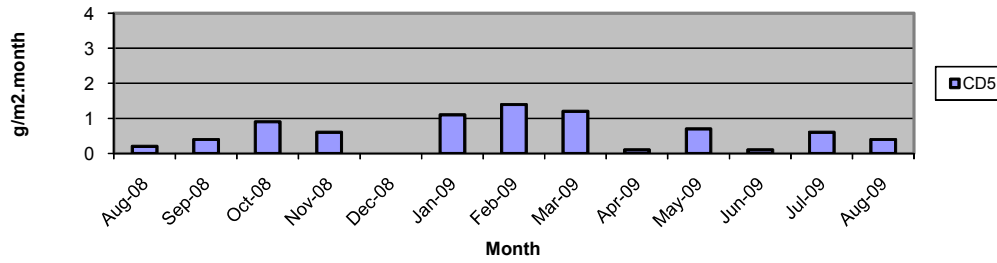
Figure 1: Dust Deposition Charts



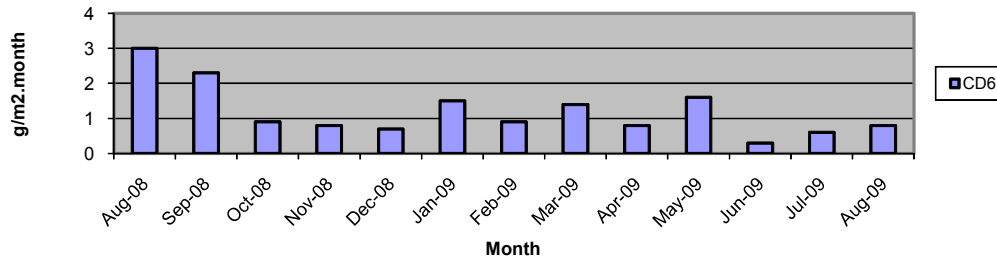
Rocla Calga Quarry Dust Gauge CD4 - Insoluble Matter



Rocla Calga Quarry Dust Gauge CD5 - Insoluble Matter



Rocla Calga Quarry Dust Gauge CD6 - Insoluble Matter



2.2 WATER MONITORING

2.2.1 Surface Waters

Monthly surface water monitoring was conducted on the 1 September 2009 and results are listed in **Table 2**. The laboratory analysis sheets are provided in **Appendix 1**.

Table 2: Monthly surface water monitoring – August grab sample results

Site	Observed Flow Rate	Water Colour	Turbidity	pH	EC (µS/cm)	TDS (mg/L)	TSS (mg/L)	Oil and Grease (mg/L)
A	Dam	Clear	Clear	5.25	70	40	4	<5
B	Not flowing	---	---	---	---	---	---	---
C	Trickle	Clear	Clear	5.23	106	51	3	<5
D	Not flowing	---	---	---	---	---	---	---
F	Dam	Clear	Clear	5.75	71	48	6	<5

At the time of sampling, there were no water discharges off site from any sampling location.

Site C was flowing at the time of sampling, and two samples were taken from dams A and F. The samples were collected and analysed for a monthly sampling event. Results show generally good water quality with slightly acidic pH, low Electrical Conductivity, low Total Dissolved Solids and Total Suspended Solids and no detectable Oil and Grease.

2.2.2 Ground Waters

Groundwaters were sampled on 1 September 2009. Water quality tests for pH and electrical conductivity were conducted by Carbon Based Environmental Pty Limited. For water quality purposes, water was purged from the bore until constant pH (+/- 0.1 pH units) and Electrical Conductivity (+/- 5%) was obtained between samples. Data is displayed in **Table 3** and **Figures 2 to 5**.

Groundwater depths increased at the majority of monitoring bores this month, indicating water moving away from the surface. The CP series of bores generally show larger increases and decreases in depth to water due to pumping from the bores. Longer term monitoring is required to fully evaluate groundwater depth trends.

pH and EC levels generally remained steady. Detailed biannual water quality monitoring was conducted during April 2009 and is next due in October 2009.

Table 3: Ground Water Quality Data

Reference	Bore	Type	Depth to water TOC (m) April 06	Depth to water TOC (m) This report	pH This report	Electrical Conductivity (uS/cm) This report
CQ1	Voutos	* Monitor	20.59	19.45	4.3	110
CQ3	Voutos	* Monitor	10.53	10.56	6.0	130
CQ4	Voutos	* Monitor	8.78	7.18	5.0	70
CQ5	Gazzana	DIP Only	8.69	5.75	4.3	150
CQ6	Gazzana	DIP Only	16.00	10.60	4.5	180
CQ7	Gazzana	* Monitor	6.89	6.65	4.5	80
CQ8	Gazzana	* Monitor	11.03	5.90	4.4	140
CQ9	Gazzana	DIP Only	10.10	9.22	4.4	100
CQ10	Voutos	* Monitor	NI	22.18	4.4	150
CQ11S	Gazzana	* Monitor	NI	8.67	4.6	130
CQ11D	Gazzana	* Monitor	NI	9.82	5.9	110
CQ12	Gazzana	* Monitor	NI	4.12	4.3	120
CQ13	Kashouli	* Monitor	NI	12.45	5.3	160
CP3	Gazzana	Domestic	10.40	9.37	4.6	130
CP4	Kashouli	Domestic	13.63	9.21	4.7	180
CP5	Kashouli	Domestic	16.61	NM	4.3	240
CP6	Kashouli	Domestic	16.27	9.37	4.3	200
CP7	Kashouli	Production	8.56	2.41	4.6	240
CP8	Rozmanec	Domestic	22.17	NR	NR	NR
MW7	Rocla Bore	* Monitor	15.76	15.86	4.5	100
MW8	Rocla Bore	* Monitor	9.82	7.15	4.7	70
MW9	Rocla Bore	* Monitor	22.44	21.48	4.6	80
MW10	Rocla Bore	* Monitor	15.41	13.04	4.5	110
MW13	Rocla Bore	DIP Only	NI	7.81	4.6	90
MW16	Rocla Bore	DIP Only	NI	8.53	4.5	100

Notes:

TOC = Water level measured from top of bore case to water.

NM = Not Monitored – unable to sample water due to access restrictions.

NR = Not Required by resident.

* = Logger Installed.

NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements taken by Carbon Based Environmental Pty Limited.

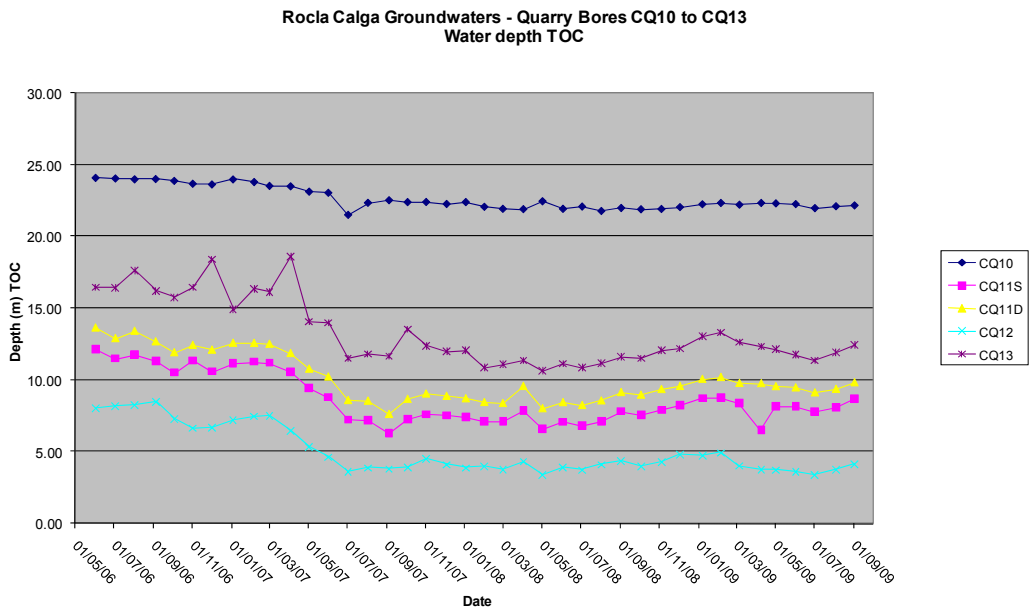
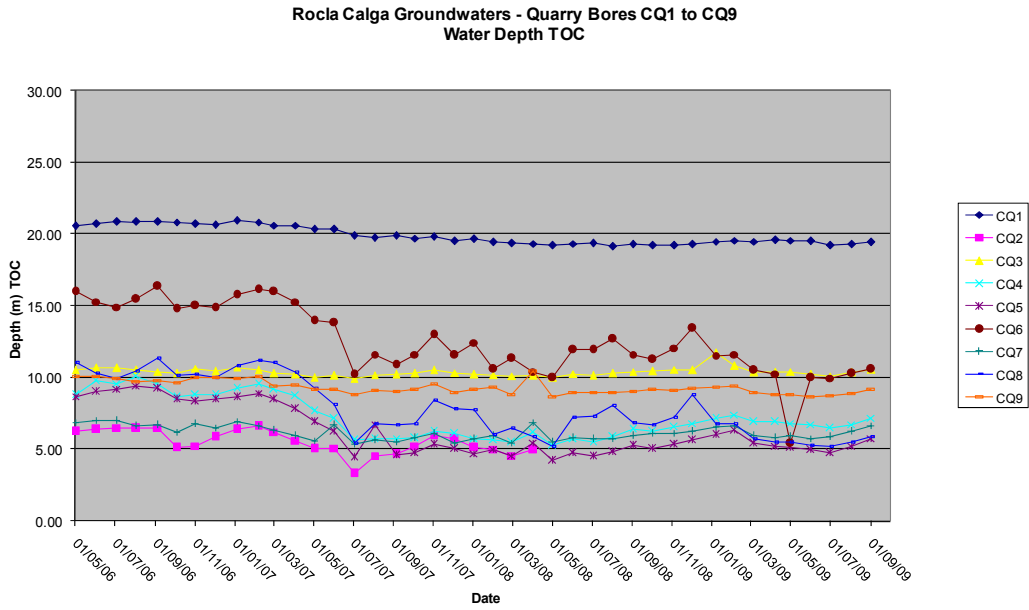
CP5 is broken and could not be dipped for depth.

Shading is used to indicate the following trends in water depth (compared to last reading):

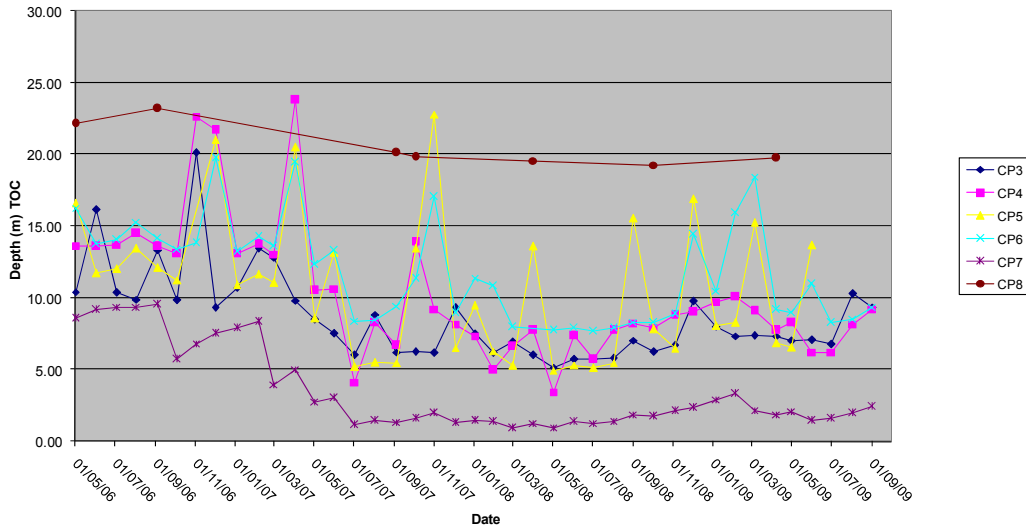
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

Available groundwater loggers were downloaded and will be forwarded to the Rocla Calga Quarry groundwater consultant.

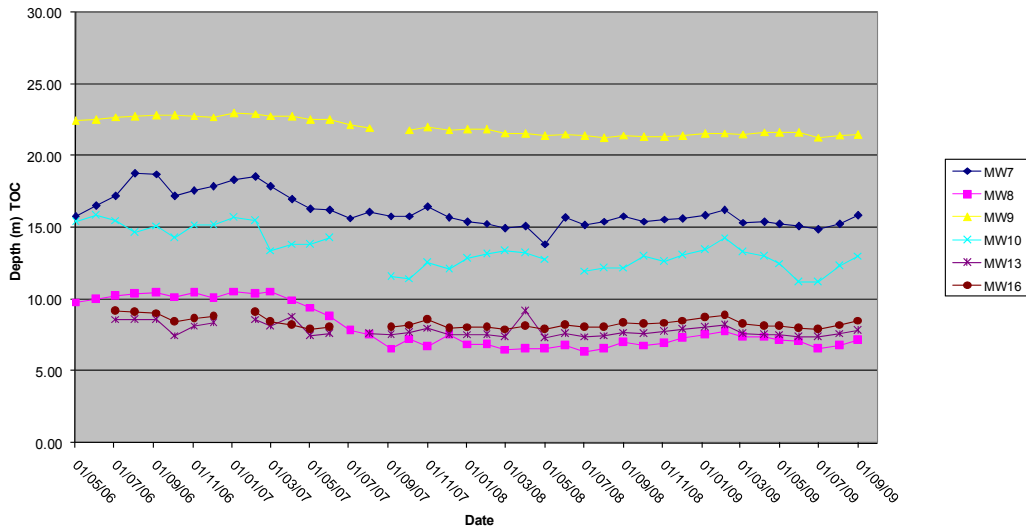
Figures 2 to 5: Groundwater Depth Charts.



Rocla Calga Groundwaters - Quarry Bores CP3 to CP8
Water Depth TOC



Rocla Calga Groundwaters - Quarry Bores MW7 to MW16
Water Depth TOC



2.3 METEOROLOGICAL MONITORING

The Rocla Calga Quarry weather station data recovery in August was approximately 100%. The weather station data follows and includes;

- Monthly data numerical summary;
- Weather charts of air temperature, humidity, heat index and wind chill, atmospheric pressure, solar radiation, evapotranspiration, rain, wind speed and data reception; and
- Wind rose (frequency distribution diagram of wind speed and direction).

Monthly weather statistics from two nearby Bureau of Meteorology (BOM) stations, Peats Ridge and Gosford are included in **Appendix 2** for comparison purposes.

Data for August 2009 shows similar rainfall at the Rocla Calga Quarry station compared to the nearby Peats Ridge BOM station and Gosford BOM station. The rainfall comparison is provided below:

Rocla Calga Quarry	3.6mm
BOM Peats Ridge*	2.8mm
BOM Gosford*	4.2mm
BOM Peats Ridge Long term mean for August*	81.0mm

*Data sourced from Bureau of Meteorology (BOM) website (www.bom.gov.au)

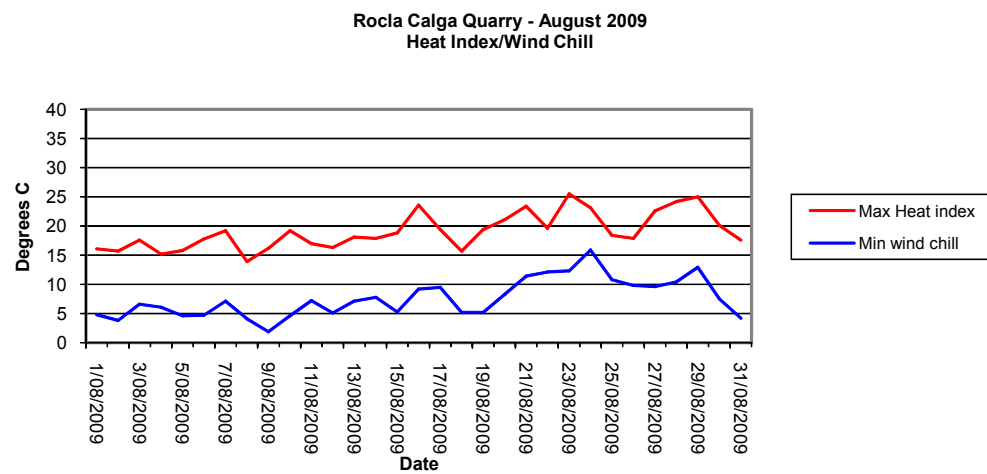
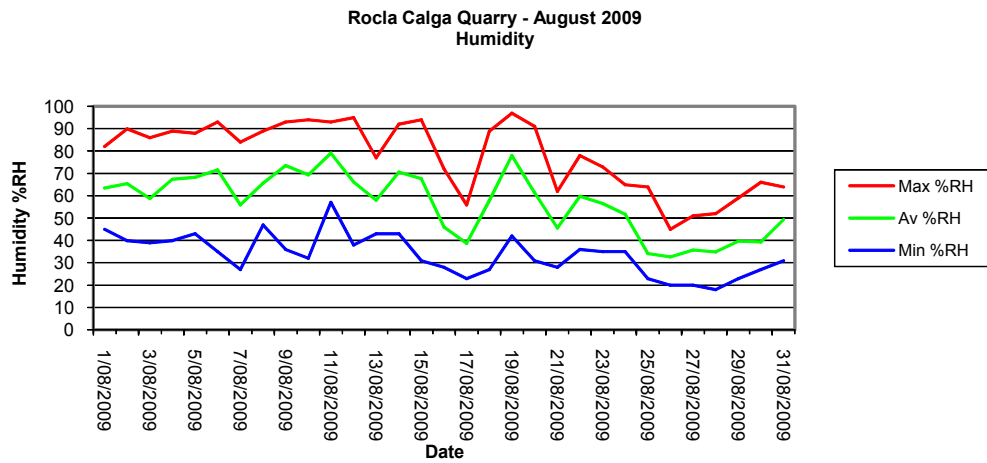
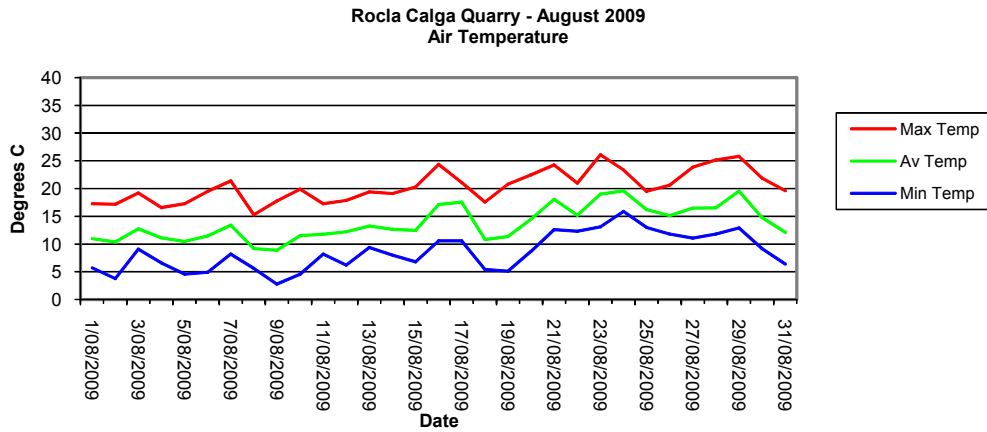
Results are displayed in the following table and figures.

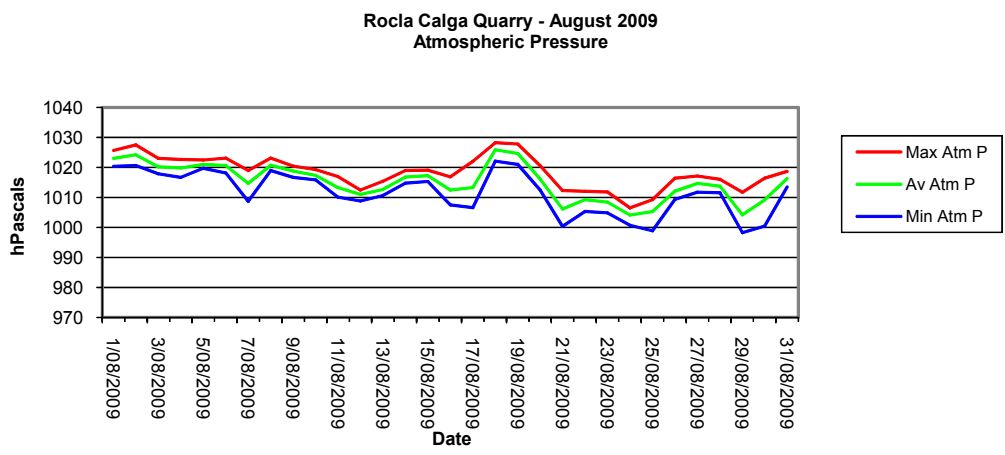
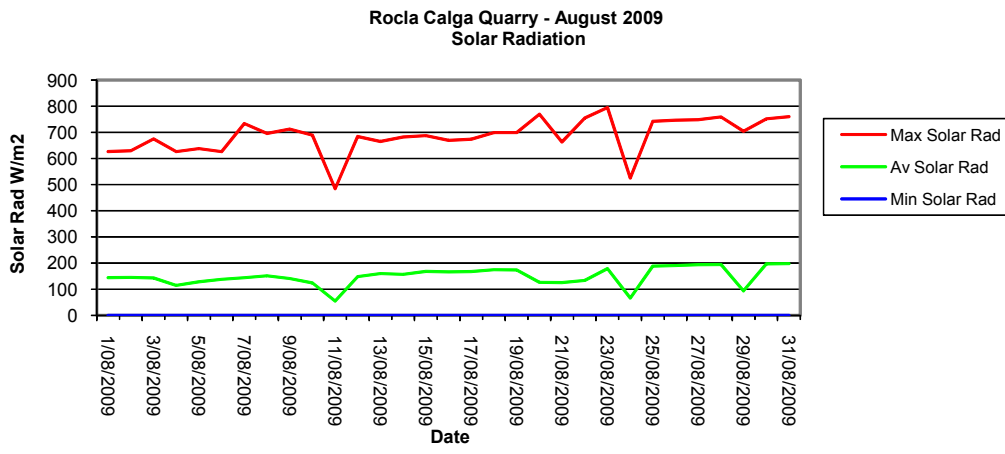
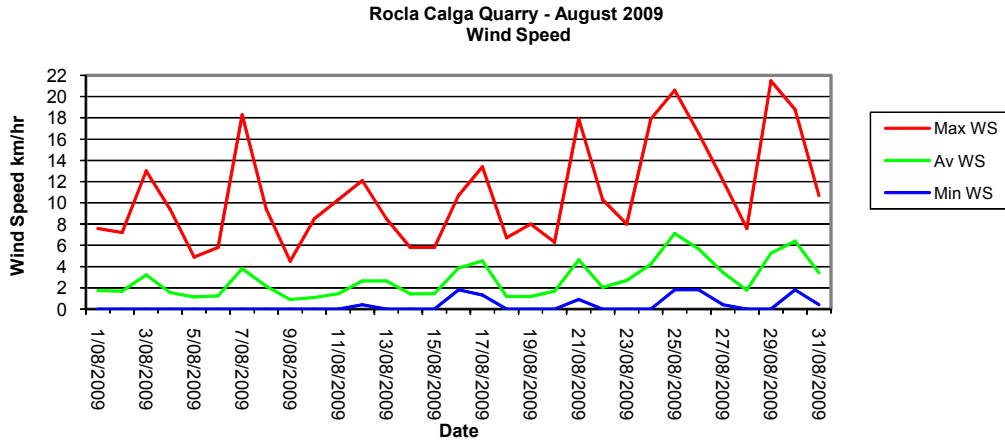
2.3.1 Monthly Meteorological Data Summary

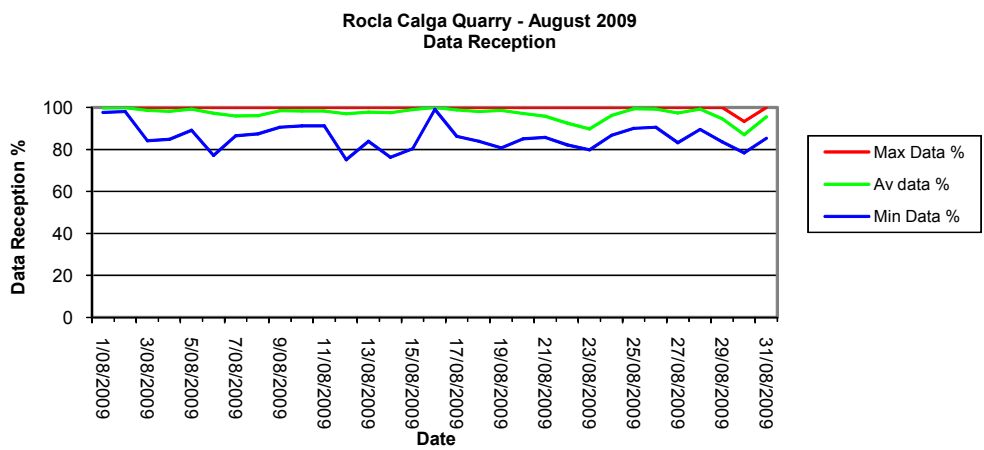
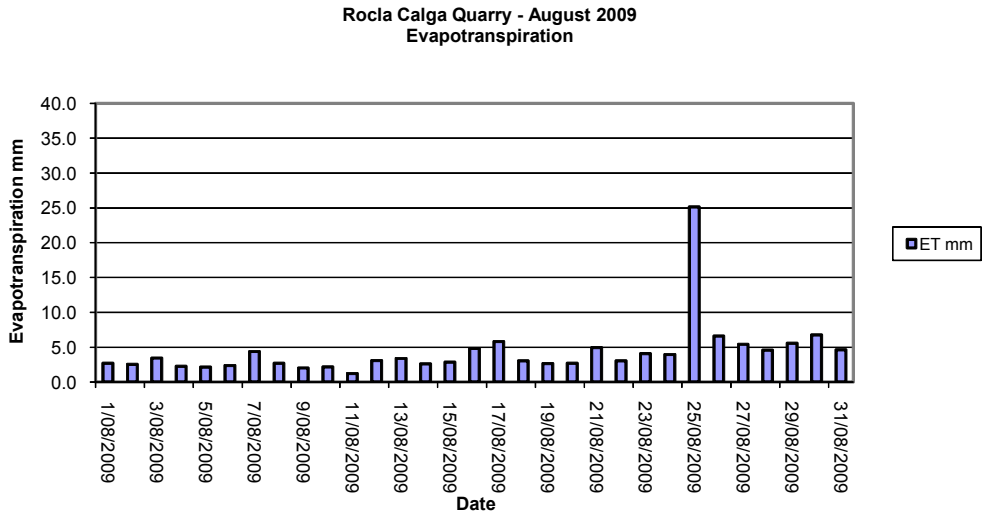
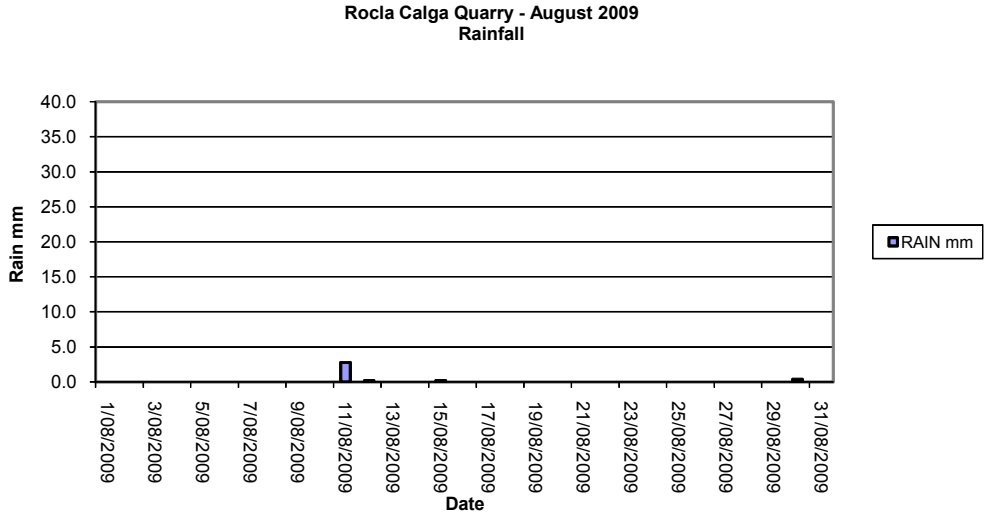
Summary Aug-09 Rocla - Calga

Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/08/2009	5.7	11.0	17.3	45	63	82	0.0	2.7	0	1.7	7.6	4.8	16.1	1020.4	1023.1	1025.7	0	143.3	626	97.7	99.8	100
2/08/2009	3.8	10.4	17.2	40	65	90	0.0	2.6	0	1.7	7.2	3.8	15.7	1020.7	1024.2	1027.5	0	145.0	629	98	99.9	100
3/08/2009	9.1	12.8	19.2	39	59	86	0.0	3.4	0	3.2	13	6.6	17.6	1017.9	1020.2	1023	0	142.2	675	84.2	98.6	100
4/08/2009	6.6	11.1	16.6	40	67	89	0.0	2.3	0	1.5	9.4	6.1	15.2	1016.7	1019.9	1022.7	0	113.9	626	84.8	98.2	100
5/08/2009	4.6	10.5	17.3	43	68	88	0.0	2.1	0	1.1	4.9	4.6	15.8	1019.7	1021.0	1022.5	0	128.3	638	89.2	99.2	100
6/08/2009	4.9	11.5	19.5	35	72	93	0.0	2.4	0	1.2	5.8	4.7	17.8	1018.2	1020.7	1023.1	0	137.3	626	77.2	97.3	100
7/08/2009	8.2	13.4	21.4	27	56	84	0.0	4.4	0	3.8	18.3	7.1	19.2	1008.7	1014.7	1019	0	144.2	734	86.5	96.0	100
8/08/2009	5.6	9.2	15.3	47	66	89	0.0	2.7	0	2.1	9.4	4.1	13.9	1019	1020.8	1023.1	0	150.8	696	87.4	96.1	100
9/08/2009	2.8	8.9	17.8	36	74	93	0.0	2.0	0	0.9	4.5	1.9	16.2	1016.7	1018.8	1020.5	0	140.5	713	90.6	98.4	100
10/08/2009	4.6	11.5	19.9	32	69	94	0.0	2.2	0	1.1	8.5	4.6	19.2	1015.9	1017.3	1019.3	0	124.1	690	91.2	98.3	100
11/08/2009	8.2	11.8	17.3	57	79	93	2.8	1.2	0	1.4	10.3	7.2	17	1010.1	1013.3	1017	0	54.3	484	91.2	98.3	100
12/08/2009	6.2	12.2	17.9	38	66	95	0.2	3.1	0.4	2.6	12.1	5.1	16.3	1008.8	1011.1	1012.5	0	147.8	684	75.1	97.1	100
13/08/2009	9.4	13.3	19.4	43	58	77	0.0	3.4	0	2.6	8.5	7.1	18.1	1010.7	1012.7	1015.4	0	159.1	665	83.9	97.8	100
14/08/2009	8	12.7	19.1	43	71	92	0.0	2.6	0	1.4	5.8	7.8	17.9	1014.8	1016.8	1019	0	156.9	682	76.3	97.5	100
15/08/2009	6.8	12.5	20.3	31	68	94	0.2	2.8	0	1.4	5.8	5.3	18.8	1015.3	1017.3	1019.1	0	167.6	687	80.4	99.0	100
16/08/2009	10.6	17.1	24.4	28	46	72	0.0	4.8	1.8	3.9	10.7	9.2	23.6	1007.5	1012.5	1016.9	0	166.0	670	99.1	100.0	100
17/08/2009	10.6	17.6	21.1	23	39	56	0.0	5.8	1.3	4.5	13.4	9.5	19.4	1006.6	1013.3	1022	0	167.0	674	86.3	98.8	100
18/08/2009	5.4	10.8	17.6	27	58	89	0.0	3.1	0	1.2	6.7	5.2	15.7	1022.1	1025.9	1028.3	0	174.7	699	83.9	98.1	100
19/08/2009	5.1	11.4	20.8	42	78	97	0.0	2.7	0	1.2	8	5.2	19.4	1021	1024.7	1027.8	0	172.8	699	80.7	98.6	100
20/08/2009	8.7	14.5	22.5	31	61	91	0.0	2.7	0	1.7	6.3	8.3	21.1	1012.4	1016.1	1020.6	0	125.3	770	85.1	97.1	100
21/08/2009	12.6	18.1	24.3	28	46	62	0.0	5.0	0.9	4.6	17.9	11.4	23.4	1000.4	1006.2	1012.3	0	125.1	663	85.7	95.8	100
22/08/2009	12.3	15.2	21	36	60	78	0.0	3.1	0	2.1	10.3	12.1	19.6	1005.3	1009.3	1012	0	132.9	755	82.2	92.6	100
23/08/2009	13.1	19.0	26.1	35	57	73	0.0	4.1	0	2.7	8	12.3	25.5	1004.9	1008.5	1011.9	0	178.3	795	79.8	89.8	100
24/08/2009	15.9	19.6	23.4	35	52	65	0.0	4.0	0	4.2	17.9	15.9	23.1	1000.8	1004.2	1006.5	0	66.1	525	86.8	96.3	100
25/08/2009	13	16.2	19.5	23	34	64	0.0	25.2	1.8	7.1	20.6	10.8	18.4	998.9	1005.4	1009.3	0	187.5	742	90.1	99.4	100
26/08/2009	11.8	15.2	20.6	20	33	45	0.0	6.6	1.8	5.6	16.5	9.8	17.9	1009.4	1012.2	1016.4	0	190.0	747	90.6	99.2	100
27/08/2009	11.1	16.5	23.9	20	36	51	0.0	5.4	0.4	3.4	12.1	9.6	22.6	1011.8	1014.7	1017.2	0	193.4	749	83.3	97.4	100
28/08/2009	11.8	16.5	25.2	18	35	52	0.0	4.6	0	1.8	7.6	10.4	24.2	1011.6	1013.8	1016.1	0	194.7	759	89.5	99.2	100
29/08/2009	12.9	19.6	25.8	23	40	59	0.0	5.6	0	5.3	21.5	12.9	25	998.3	1004.2	1011.8	0	93.6	704	83.6	94.7	100
30/08/2009	9.2	14.8	21.9	27	39	66	0.4	6.8	1.8	6.4	18.8	7.5	20.1	1000.5	1009.2	1016.4	0	196.8	752	78.4	87.1	93.3
31/08/2009	6.4	12.1	19.6	31	49	64	0.0	4.6	0.4	3.4	10.7	4.2	17.6	1013.5	1016.3	1018.7	0	197.4	760	85.4	95.6	100
Monthly	2.8	13.8	26.1	18	57	97	3.6	134.0	0	2.8	21.5	1.9	25.5	998.3	1015.1	1028.3	0	148.9	795	75.1	97.1	100

2.3.2 Monthly weather charts



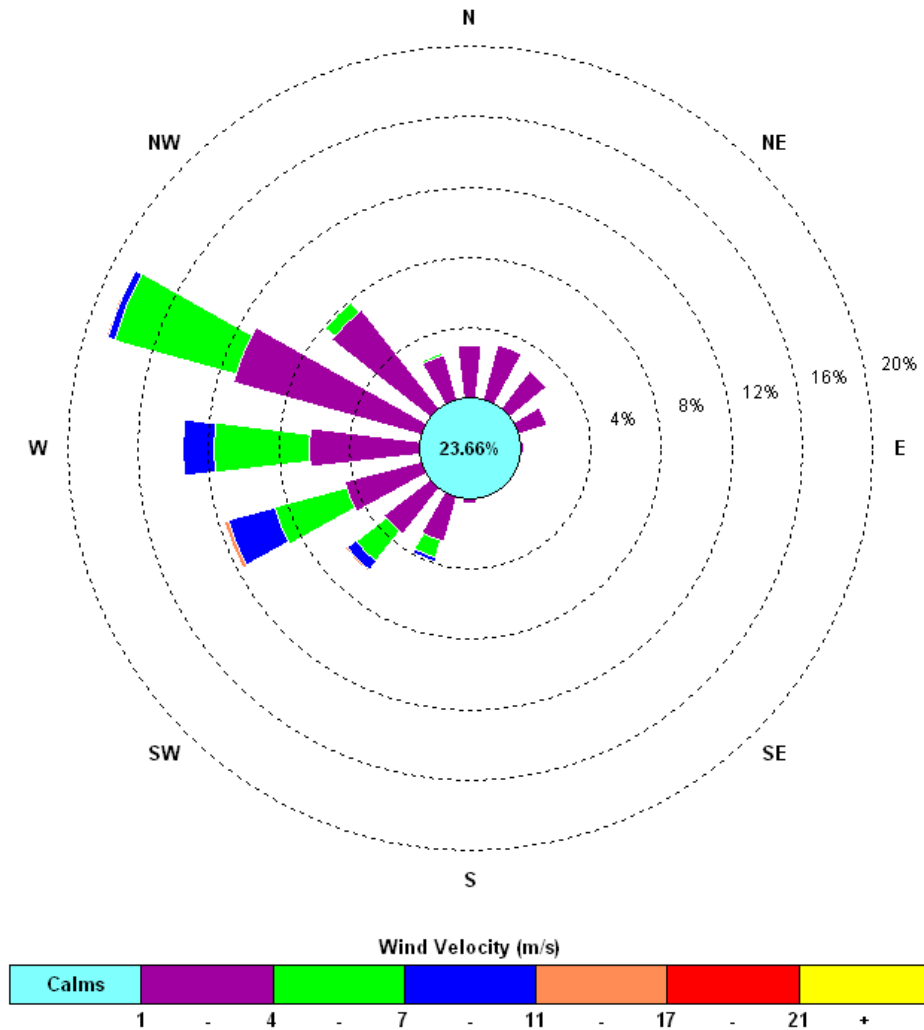




2.3.3 Windrose plot

Frequency plot of the average wind speed and average direction over each 15 minute sampling period. Wind is considered calm when less than a 15 minute average of 1m/s.

00:00, 1 August 2009 – 23:45, 31 August 2009



The windrose shows predominant winds were from the WNW-WSW, with strongest winds from the WSW. The maximum wind speed was 21.5 m/s from the NW.

APPENDIX 1
LABORATORY CERTIFICATES

APPENDIX 2

ADDITIONAL BUREAU OF METEOROLOGY DATA FROM PEATS RIDGE AND GOSFORD MONITORING STATIONS

Peats Ridge, New South Wales
August 2009 Daily Weather Observations



Australian Government
Bureau of Meteorology

Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C					km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Sa	5.7	18.2	0	1.4				8.8	60	0	NW	4								
2	Su	4.6	18.6	0	1.8				11.2	66	0	WNW	4				17.7	45	0	W	4
3	Mo	7.1	20.1	0	2.0				12.7	61	2	NW	4				19.0	47	7	S	2
4	Tu	7.3	18.2	0	2.0				12.8	75	8	SSW	4				16.4	49	2	NW	4
5	We	4.9	17.9	0	2.2				10.3	72	5	NW	4				16.6	39	0	NW	4
6	Th	4.9	19.6	0	1.6				12.1	69	7	NW	4				18.3	42	2	NE	4
7	Fr	8.9	22.1	0	1.4				14.9	50	6	NW	9				21.6	30	2	WNW	19
8	Sa	4.2	15.1	0	3.4				9.6	54	2	WSW	19				14.5	49	2	SW	4
9	Su	4.9	17.8	0	2.2				10.4	60	3	NW	4				16.3	46	6	NW	4
10	Mo	5.3	19.5	0	1.8				13.9	51	6	NW	4				15.0	73	7	NE	4
11	Tu	9.3	17.2	0.2	1.4				13.0	80	8	NE	4				15.8	68	1	NE	4
12	We	7.1	19.0	1.6	1.2				12.9	64	1	NW	9				17.3	48	5	WNW	4
13	Th	6.9	20.5	0	2.4				13.6	62	0	NW	4								
14	Fr	6.1	20.1	0	3.4				13.5	62	0	SE	4				19.5	48	1	NW	4
15	Sa	5.5	21.0	0	1.2				15.0	60	0	WNW	9				16.5	63	0	SSE	4
16	Su	8.4	24.7	0	3.0				16.6	46	0	N	4				23.8	33	0	NNW	4
17	Mo	12.9	22.4	0	4.0				18.3	47	2	SW	4				20.5	20	0	SSW	6
18	Tu	3.8	18.5	0	4.8				11.9	45	0	W	2				17.1	31	0	SW	2
19	We	4.8	20.1	0	2.2				14.5	68	0	S	2				17.6	54	0	E	4
20	Th	8.4	22.9	0	2.4				16.4	54	8	NW	4				20.6	46	6	N	2
21	Fr	12.3	24.9	0	2.6				19.1	41	1	NW	19				24.3	35	4	NE	2
22	Sa	10.7	21.2	0	3.8				13.8	61	8	NW	4				15.2	67	0	WSW	4
23	Su	11.6	26.3	0	2.2				19.6	56	2	NW	9				25.2	42	3	NNW	4
24	Mo	13.1	25.6	0	3.4				25.1	45	2	NW	9				20.7	49	7	NW	19
25	Tu	14.0	19.6	0	4.4				15.5	37	0	WSW	46				17.2	33	2	NW	4
26	We	11.7	20.8	0	6.0				13.9	44	0	SW	19				19.5	36	0	WNW	19
27	Th	9.2	24.7	0	5.2				15.6	50	0	NW	4				24.0	31	0	NW	4
28	Fr	7.3	25.2	0	3.8				18.6	38	0	NW	4				23.6	33	1	NW	9
29	Sa	12.0	26.0	0.4	3.2				15.6	63	8	ESE	4				24.0	53	4	WNW	9
30	Su	12.2	18.8	0.6	4.2				15.2	44	2	W	9				17.2	39	0	SW	9
31	Mo	3.3	20.6	0	3.4				12.7	58	0	NW	9				19.5	48	0	W	9
Statistics for August 2009																					
Mean		8.0	20.9		2.8				14.4	56	2		7				19.1	44	2		6
Lowest		3.3	15.1		1.2				8.8	37	0	#	2				14.5	20	0	#	2
Highest		14.0	26.3	1.6	6.0				25.1	80	8	WSW	46				25.2	73	7	#	19
Total				2.8	88.0																

Observations were drawn from Peats Ridge (Waratah Road) (station 061351)

The closest station with pressure observations is at Norah Head, about 32 km to the east. The closest station with sunshine observations is at Williamtown, about 82 km to the northeast.

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Gosford, New South Wales
August 2009 Daily Weather Observations



Date	Day	Temps		Rain	Evap	Sun	Max wind gust			9am						3pm					
		Min	Max				Dirn	Spd	Time	Temp	RH	Cld	Dirn	Spd	MSLP	Temp	RH	Cld	Dirn	Spd	MSLP
		°C	°C				mm	mm	hours	km/h	local	°C	%	eighths	km/h	hPa	°C	%	eighths	km/h	hPa
1	Sa	2.7	18.9	0			NNW	22	13:07	12.1	73			Calm		18.5	39		NW	9	
2	Su	1.7	19.3	0			SW	19	12:02	9.8	91			Calm		18.5	36		WNW	6	
3	Mo	2.7	21.1	0.2			NW	30	11:13	13.7	61		N	11		20.3	38		SSE	6	
4	Tu	5.6	19.0	0			NNW	24	13:28	11.1	100			Calm		17.6	48		NNW	4	
5	We	2.1	19.2	0			S	19	11:42	9.2	99			Calm		18.8	38		NNW	2	
6	Th	2.3	20.1	0			NE	17	12:45	9.6	99			Calm		18.4	52		ENE	11	
7	Fr	4.0	23.9	0.2			NNW	39	13:52	10.9	100			Calm		23.3	26		NNW	15	
8	Sa	4.0	16.4	0			WNW	22	09:21	10.8	51		NW	9		15.1	52		SE	9	
9	Su	0.6	19.3	0			SSE	15	15:27	9.1	94		NE	2		17.5	44		ENE	4	
10	Mo	1.8	19.1	0.2			ENE	15	12:58	7.6	100			Calm		18.5	54		ENE	7	
11	Tu	5.9	18.4	0			NNW	20	15:58	10.5	99			Calm		17.5	76		NNW	6	
12	We	3.8	20.7	2.2			N	31	12:39	13.1	81		N	6		19.9	31		NNW	7	
13	Th	5.9	21.6	0			SW	20	10:14	15.4	57		N	7		21.2	38		NW	6	
14	Fr	4.8	20.3	0			NNW	26	09:43	14.7	63		NW	11		20.2	45		S	6	
15	Sa	3.6	21.8	0			SSW	17	12:30	13.3	85		E	4		21.4	32		NW	4	
16	Su	3.8	25.3	0.2			N	28	11:00	14.2	93			Calm		24.9	28		NNE	9	
17	Mo	10.0	23.7	0			W	30	13:58	20.0	43		WNW	7		22.8	23		NNW	6	
18	Tu	4.2	19.4	0			NW	20	09:42	14.1	39		NW	9		17.7	43		ESE	9	
19	We	2.5	19.8	0			NE	22	14:44	12.3	84		E	2		18.0	53		NE	11	
20	Th	5.2	24.0	0			NNW	19	11:29	11.7	100			Calm		23.5	32		NE	4	
21	Fr	5.3	25.3	0.2			NW	39	22:05	17.0	73			Calm		25.3	32		N	11	
22	Sa	10.8	21.0	0			NNW	19	12:43	14.2	80			Calm		19.4	49		NE	9	
23	Su	7.4	27.1	0			ENE	20	15:58	19.0	73			Calm		26.7	36		N	9	
24	Mo	11.9	27.0	0			NNW	35	10:15	26.1	41		NW	9		22.0	39		NW	9	
25	Tu	10.1	20.6	0			NW	46	05:09	17.8	29		N	9		19.8	23		NW	15	
26	We	7.9	23.2	0			N	41	10:32	16.0	34		NNW	13		22.4	17		WNW	6	
27	Th	6.6	24.9	0			N	30	00:15	17.1	37		NNW	13		24.4	26		NE	6	
28	Fr	4.1	25.0	0			NE	20	14:45	17.1	47		ESE	6		23.3	24		ENE	11	
29	Sa	9.7	27.3	0.2			NNE	52	18:08	13.1	100			Calm		27.3	37		N	9	
30	Su	13.1	19.8	0.8			SW	37	03:24	16.2	30		WNW	9		18.9	26		W	11	
31	Mo	1.8	21.8	0			N	37	11:28	14.1	44		N	9		20.7	29		W	11	
Statistics for August 2009																					
Mean		5.4	21.8							13.9	70			4		20.8	37			8	
Lowest		0.6	16.4							7.6	29			Calm		15.1	17		NNW	2	
Highest		13.1	27.3	2.2			NNE	52		26.1	100		NNW	13		27.3	76		#	15	
Total				4.2																	

Observations were drawn from Gosford (Narara Research Station) AWS (station 061087)

The closest station with pressure observations is at Norah Head about 27 km to the northeast. The closest station with cloud and evaporation data is at Peats Ridge about 15 km to the northwest. The closest station with sunshine observations is at Sydney Airport about 59 km to the south.

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