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

OCTOBER 2009

Colin Davies BSc MEIA CEnvP
Environmental Scientist
24 November 2009

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 October 2009;
- Surface Water quality results for October 2009;
- Ground Water depth and quality results for October 2009; and
- Meteorological report for October 2009.

The October 2009 dust deposition results were generally lower than September 2009. All sites, on a year to date average basis, are currently below the Air Quality Management Plan exceedence level of 3.7g/m^2.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 2 November 2009 at sites A, C, D and F. Site B was not flowing. At the time of sample collection, there was no water discharge observed from the site. Samples were also collected from sites B, D, F and Site Inflow on 26 October 2009 during a high rainfall event. 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 2 November 2009. Groundwater depth trends were mixed with some bores showing an increase in water depth and some showing a decrease in water depth. pH and EC levels remained relatively steady.

The meteorological station data recovery for the month was approximately 100%. The predominant winds were split from the W-SSW and E-ENE, with strongest winds from the W-WSW. Recorded rainfall on site for October was 156.2mm, similar to that recorded at the BOM Peats Ridge Station and above the Peats Ridge long-term average for October. Results are detailed below:

Rocla Calga Quarry	156.2mm
BOM Peats Ridge*	145.7mm
BOM Gosford*	165.8mm
BOM Peats Ridge Long term mean for October*	92.5mm

*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/m^2.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 October 2009 and the project average. Results are in g/m^2.month.

Table 1: Dust Deposition results: 01-Oct-2009 to 02-Nov-2009

Site	Monthly Insoluble Solids	Monthly Ash Residue	Monthly Combustible Matter	Monthly Ash Residue/ Insoluble Solids %	Current Project Average Insoluble Solids
CD1	1.9	1.2	0.7	63	1.7
CD2b	1.8	0.9	0.9	50	1.7
CD3	1.1	0.6	0.5	55	1.3
CD4	1.1	0.5	0.6	45	1.1
CD5	0.9	0.6	0.3	67	0.9
CD6	1.9	1.3	0.6	68	1.5

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/m^2.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.

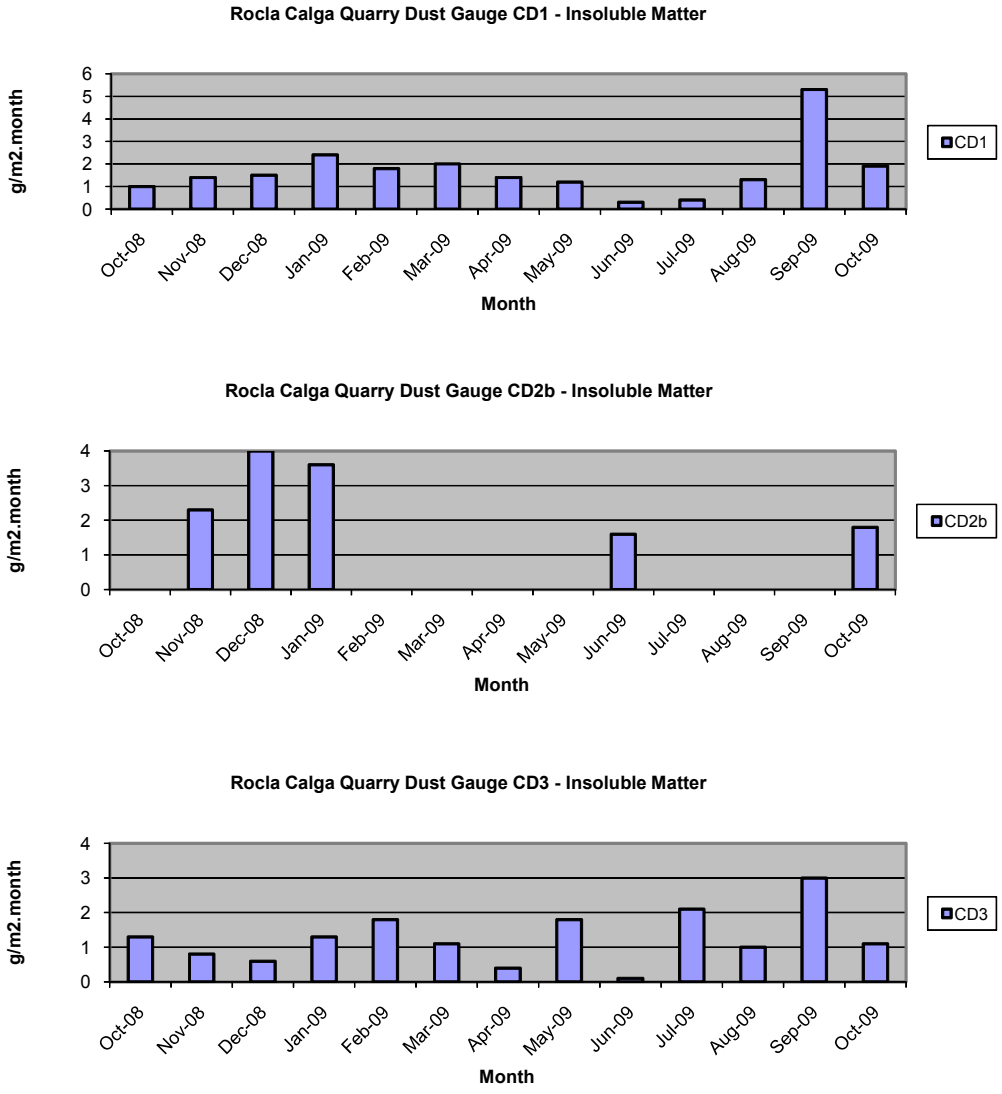
NA= Not Available.

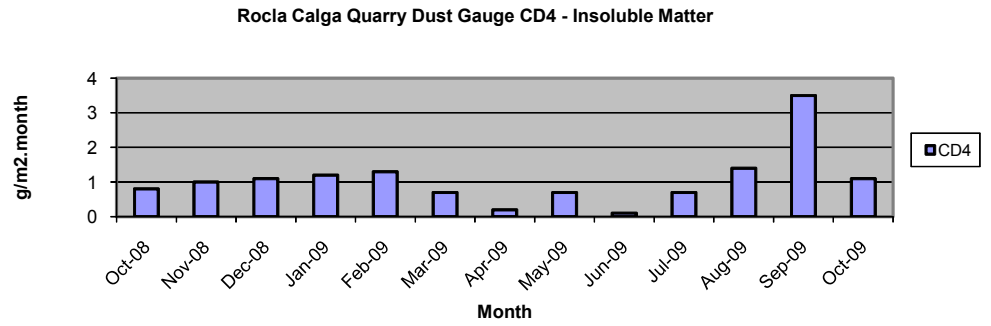
CD1 was installed on the 1 May 2006. CD2a was discontinued at the start of August 2006 due to quarry operations "mining out" the site of the gauge. The replacement gauge, Site CD2b, was located in a position adjacent to the boundary between B. Kashouli and F. & J. Gazzana in conformance with the Air 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.

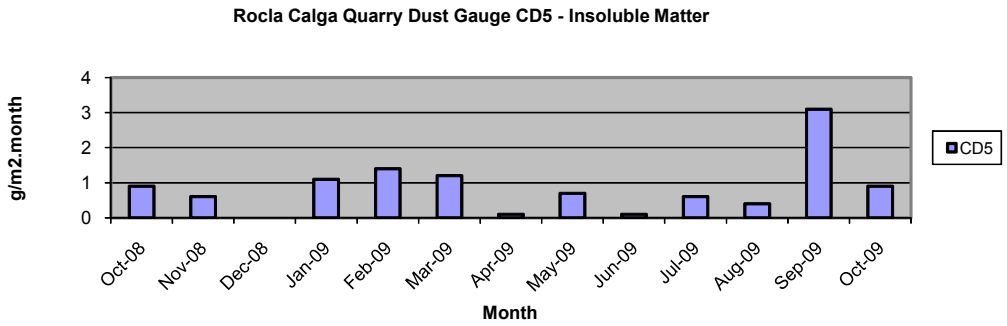
Dust deposition charts for all dust gauge sites appear in **Figure 1** below. The laboratory analysis is provided in **Appendix 1.**

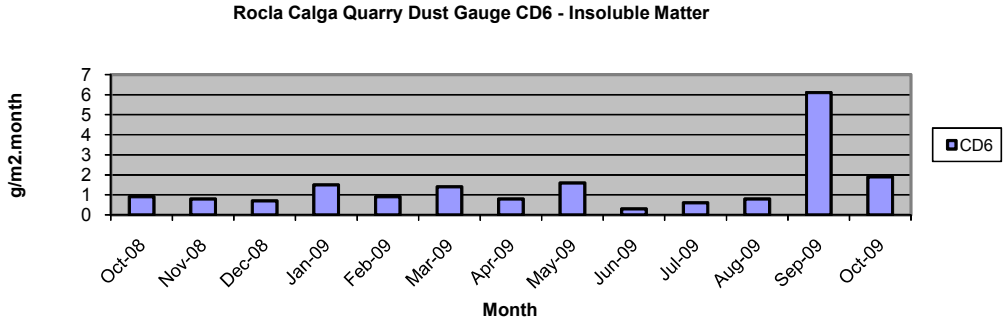
The predominant winds were split from the W-SSW and E-ENE, with strongest winds from the W-WSW.

Figure 1: Dust Deposition Charts




Rocla Calga Quarry Dust Gauge CD4 - Insoluble Matter
g/m2.month
0
1
2
3
4
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
CD4


Rocla Calga Quarry Dust Gauge CD5 - Insoluble Matter
g/m2.month
0
1
2
3
4
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
CD5


Rocla Calga Quarry Dust Gauge CD6 - Insoluble Matter
g/m2.month
0
1
2
3
4
5
6
7
Oct-08
Nov-08
Dec-08
Jan-09
Feb-09
Mar-09
Apr-09
May-09
Jun-09
Jul-09
Aug-09
Sep-09
Oct-09
Month
CD6

2.2 Water Monitoring

2.2.1 Surface Waters

Monthly surface water monitoring was conducted on the 2 November 2009 and results are listed in **Table 2**. Additional sampling was conducted during a high rainfall event on 26 October 2009. The laboratory analysis sheets for both sampling events are provided in **Appendix 1.**

Table 2: Monthly surface water monitoring – October 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	7.38	77	90	4	<5
B	Not flowing	---	---	---	---	---	---	---
C	Trickle	Clear	Clear	7.06	102	91	<1	<5
D	Trickle	Clear	Clear	5.49	137	114	4	<5
F	Dam	Clear	Clear	5.19	79	77	6	<5

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

Sites C and D were 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 pH within the slightly acidic/alkaline range, low Electrical Conductivity, low Total Dissolved Solids and Total Suspended Solids and no detectable Oil and Grease. The pH at sites A and C increased slightly compared to the previous month.

2.2.2 Ground Waters

Groundwaters were sampled on 2 November 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 depth trends were mixed with some bores showing an increase in water depth and some showing a decrease in water depth. 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 October 2009 and is next due in April 2010.

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	19.68	4.4	110
CQ3	Voutos	* Monitor	10.53	10.64	5.7	110
CQ4	Voutos	* Monitor	8.78	7.66	4.7	70
CQ5	Gazzana	DIP Only	8.69	6.25	4.0	150
CQ6	Gazzana	DIP Only	16.00	10.64	4.1	190
CQ7	Gazzana	* Monitor	6.89	6.49	4.2	80
CQ8	Gazzana	* Monitor	11.03	5.86	4.0	150
CQ9	Gazzana	DIP Only	10.10	9.04	4.1	100
CQ10	Voutos	* Monitor	NI	22.56	4.6	140
CQ11S	Gazzana	* Monitor	NI	9.00	4.3	140
CQ11D	Gazzana	* Monitor	NI	10.34	5.5	110
CQ12	Gazzana	* Monitor	NI	4.27	4.1	130
CQ13	Kashouli	* Monitor	NI	12.86	4.9	170
CP3	Gazzana	Domestic	10.40	7.67	4.4	140
CP4	Kashouli	Domestic	13.63	9.80	4.3	210
CP5	Kashouli	Domestic	16.61	NM	4.0	230
CP6	Kashouli	Domestic	16.27	10.82	3.9	210
CP7	Kashouli	Production	8.56	2.46	4.5	230
CP8	Rozmanec	Domestic	22.17	NR	NR	NR
MW7	Rocla Bore	* Monitor	15.76	16.20	4.1	100
MW8	Rocla Bore	* Monitor	9.82	7.82	4.3	70
MW9	Rocla Bore	* Monitor	22.44	21.72	4.6	80
MW10	Rocla Bore	* Monitor	15.41	12.48	4.0	110
MW13	Rocla Bore	DIP Only	NI	7.98	4.5	90
MW16	Rocla Bore	DIP Only	NI	8.55	4.2	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.

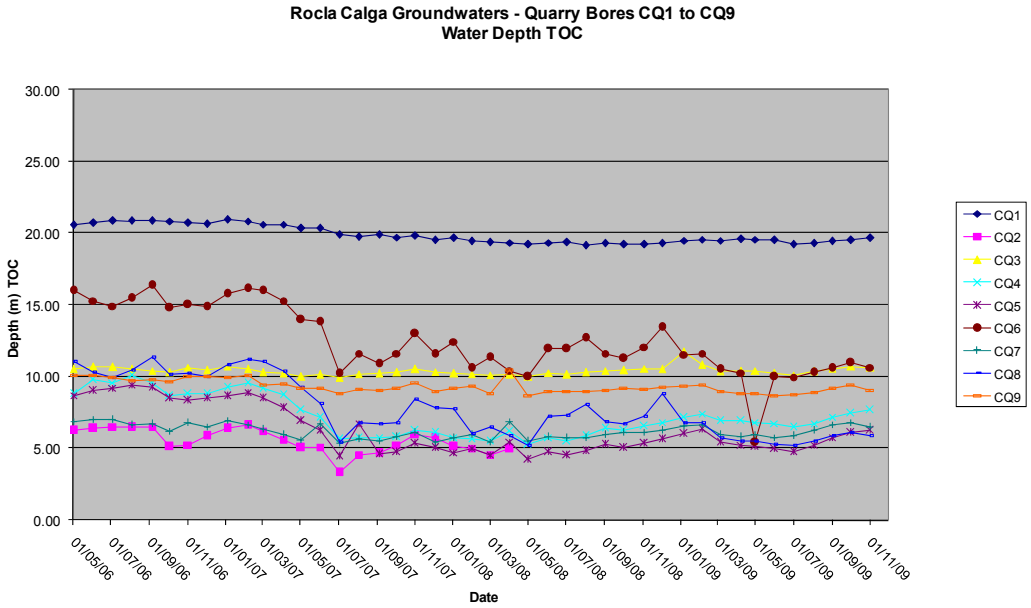
CP5 is broken and could not be dipped for depth.

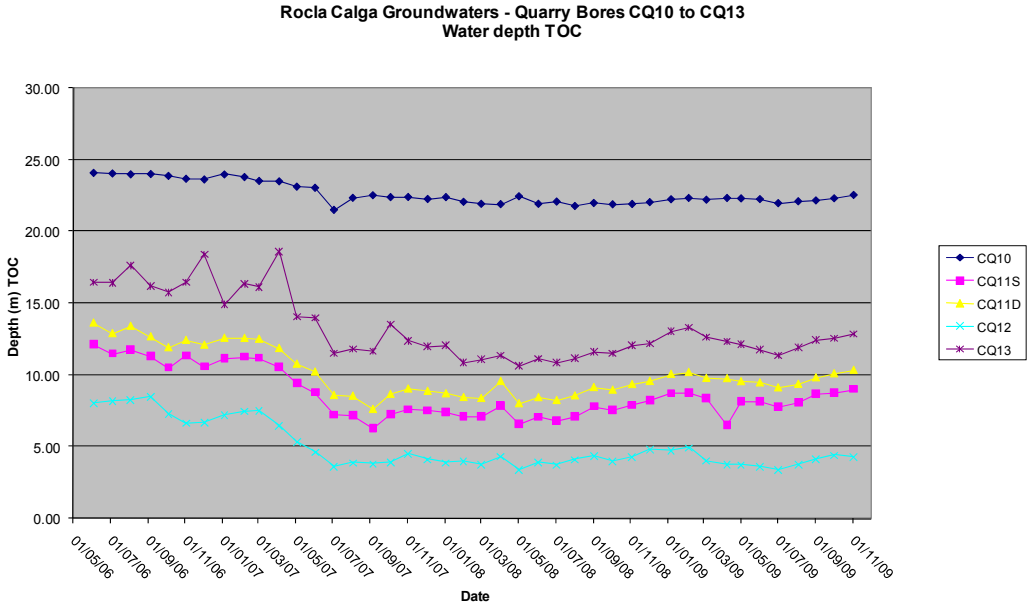
Shading is used to indicate the following trends in water depth (compared to last reading):

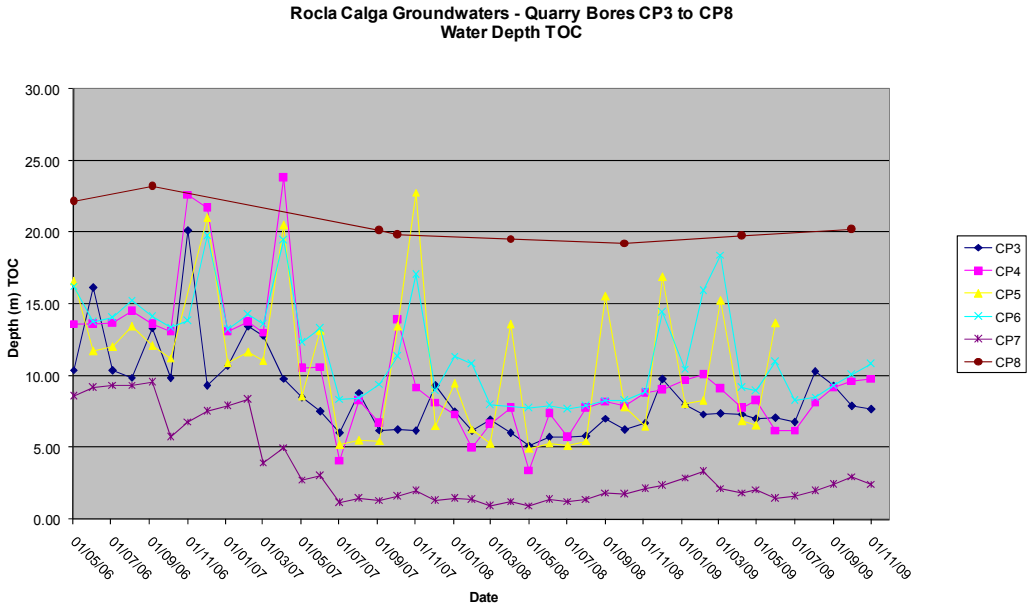
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

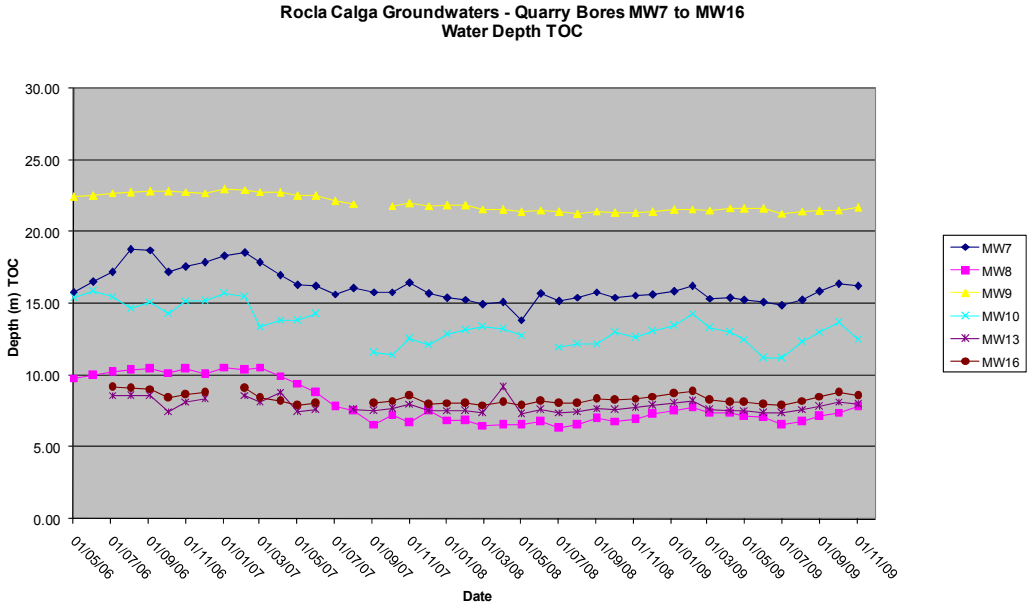
Available groundwater loggers were downloaded and will be forwarded to the Rocla Calga Quarry groundwater consultant.

Figures 2 to 5: Groundwater Depth Charts.






Rocla Calga Groundwaters - Quarry Bores CP3 to CP8
Water Depth TOC
Depth (m) TOC
30.00
25.00
20.00
15.00
10.00
5.00
0.00
01/05/06
01/07/06
01/09/06
01/11/06
01/01/07
01/03/07
01/05/07
01/07/07
01/09/07
01/11/07
01/01/08
01/03/08
01/05/08
01/07/08
01/09/08
01/11/08
01/01/09
01/03/09
01/05/09
01/07/09
01/09/09
01/11/09
Date
CP3
CP4
CP5
CP6
CP7
CP8


Rocla Calga Groundwaters - Quarry Bores MW7 to MW16
Water Depth TOC
Depth (m) TOC
30.00
25.00
20.00
15.00
10.00
5.00
0.00
01/05/06
01/07/06
01/09/06
01/11/06
01/01/07
01/03/07
01/05/07
01/07/07
01/09/07
01/11/07
01/01/08
01/03/08
01/05/08
01/07/08
01/09/08
01/11/08
01/01/09
01/03/09
01/05/09
01/07/09
01/09/09
01/11/09
Date
MW7
MW8
MW9
MW10
MW13
MW16

2.3 METEOROLOGICAL MONITORING

The Rocla Calga Quarry weather station data recovery in October 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 October 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	156.2mm
BOM Peats Ridge*	145.7mm
BOM Gosford*	165.8mm
BOM Peats Ridge Long term mean for October*	92.5mm

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

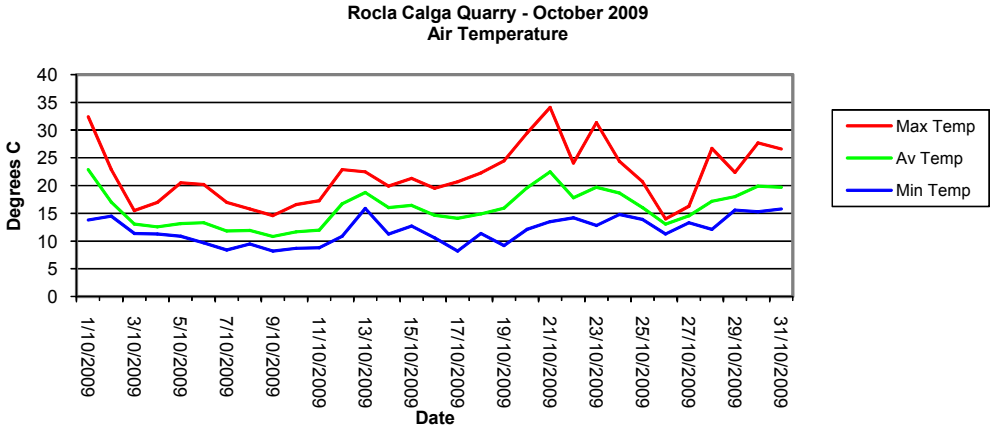
Results are displayed in the following table and figures.

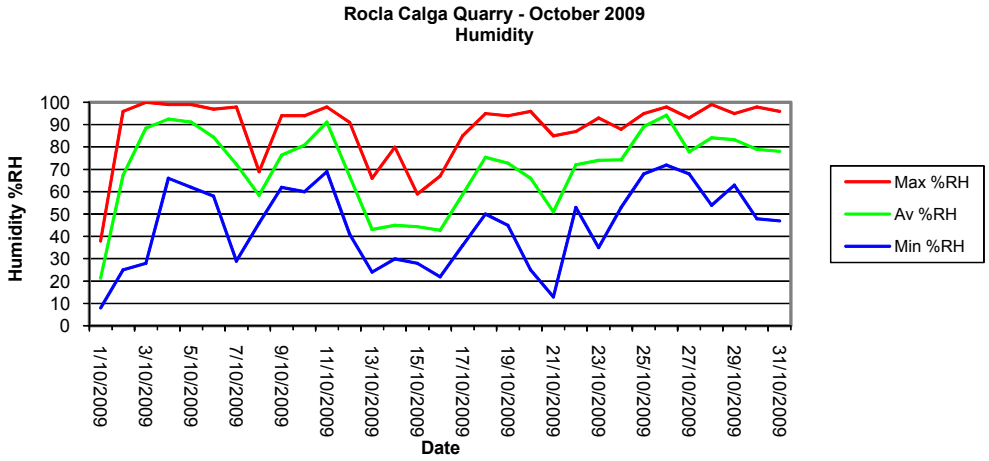
2.3.1 Monthly Meteorological Data Summary

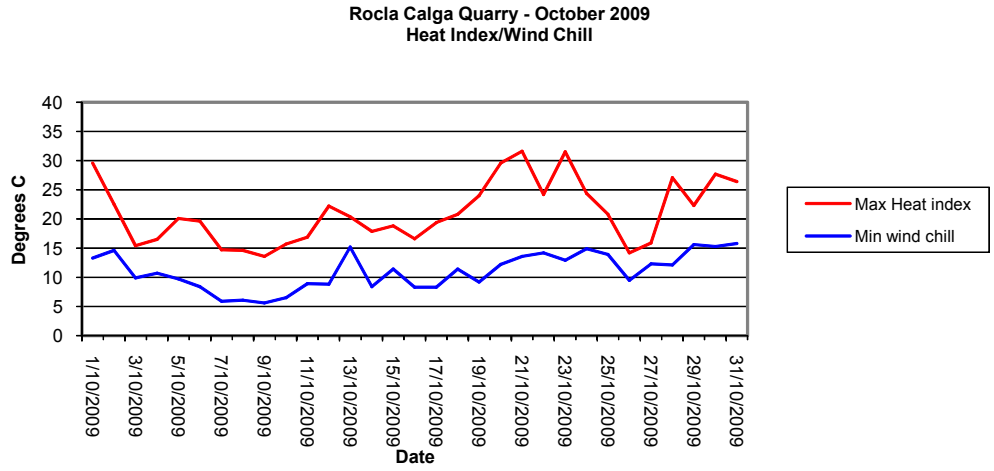
Summary Oct-09 Rocla - Calga

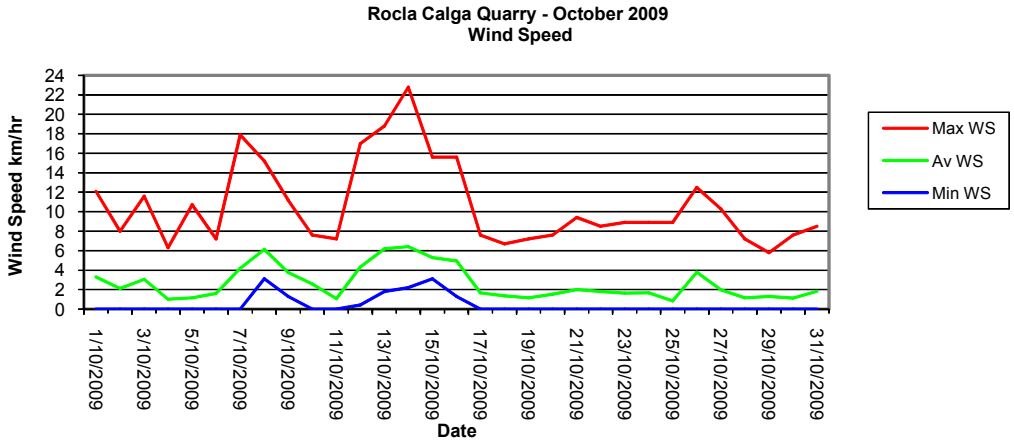
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/10/2009	13.8	22.9	32.4	8	21	38	0.0	7.8	0	3.3	12.1	13.3	29.6	1006.4	1010.3	1013.7	0	249.4	846	84.2	94.9	100
2/10/2009	14.5	17.0	22.9	25	67	96	9.0	3.2	0	2.1	8	14.6	22.5	1005.2	1008.7	1012.6	0	147.9	878	86.3	97.7	100
3/10/2009	11.4	13.1	15.5	28	88	100	18.4	0.9	0	3.0	11.6	9.9	15.4	1003.8	1011.5	1018.7	0	31.7	162	79.5	95.6	100
4/10/2009	11.3	12.6	17	66	93	99	3.8	1.0	0	1.0	6.3	10.7	16.5	1018.1	1019.5	1021.2	0	72.9	552	65.8	89.4	100
5/10/2009	10.9	13.2	20.5	62	91	99	12.4	1.7	0	1.1	10.7	9.7	20.1	1015.5	1018.3	1020.2	0	120.8	883	71.1	91.5	100
6/10/2009	9.7	13.3	20.2	58	84	97	8.8	3.0	0	1.6	7.2	8.4	19.6	1014.2	1017.2	1019.7	0	202.2	1015	82.2	94.4	100
7/10/2009	8.4	11.8	17	29	72	98	1.2	4.0	0	4.2	17.9	5.9	14.7	1010.6	1013.5	1015.7	0	201.8	932	82.7	95.3	100
8/10/2009	9.5	11.9	15.8	46	58	69	0.0	4.6	3.1	6.1	15.2	6.1	14.6	1014.4	1018.8	1024.1	0	151.6	751	78.1	96.5	100
9/10/2009	8.2	10.8	14.6	62	76	94	1.0	2.5	1.3	3.8	11.2	5.6	13.6	1023.4	1025.3	1027.9	0	138.9	709	88.3	99.3	100
10/10/2009	8.7	11.7	16.6	60	81	94	0.4	2.6	0	2.6	7.6	6.5	15.7	1025.8	1027.5	1029.5	0	151.0	770	89.5	97.4	100
11/10/2009	8.8	11.9	17.3	69	91	98	8.4	1.4	0	1.1	7.2	8.9	16.9	1016	1021.7	1026.7	0	104.2	698	69.3	92.8	100
12/10/2009	10.9	16.7	22.9	41	67	91	0.0	4.0	0.4	4.3	17	8.8	22.2	1001.3	1008.4	1015.8	0	157.5	855	91.5	99.1	100
13/10/2009	15.9	18.8	22.5	24	43	66	0.0	7.8	1.8	6.2	18.8	15.2	20.4	997.7	999.9	1001.7	0	289.4	948	95.6	99.7	100
14/10/2009	11.3	16.0	19.9	30	45	80	0.4	7.3	2.2	6.4	22.8	8.4	17.9	998.9	1001.7	1007.1	0	243.3	1046	92.4	99.7	100
15/10/2009	12.7	16.4	21.3	28	44	59	0.0	6.4	3.1	5.3	15.6	11.4	18.8	1005.3	1007.5	1010.8	0	215.8	1056	88.6	99.0	100
16/10/2009	10.6	14.6	19.5	22	43	67	0.0	7.3	1.3	4.9	15.6	8.3	16.6	1009.2	1012.0	1017.2	0	308.6	981	88.6	97.9	100
17/10/2009	8.2	14.1	20.7	36	59	85	0.0	4.9	0	1.7	7.6	8.3	19.4	1017.2	1020.0	1023.6	0	282.5	1033	86	96.3	100
18/10/2009	11.4	14.9	22.3	50	75	95	0.4	3.2	0	1.4	6.7	11.4	20.8	1023.1	1024.9	1026.9	0	192.4	1193	81	96.7	100
19/10/2009	9.2	15.9	24.5	45	73	94	0.0	4.7	0	1.1	7.2	9.2	24	1022.4	1024.7	1026.5	0	283.8	1060	76.9	97.6	100
20/10/2009	12.1	19.6	29.5	25	66	96	0.0	5.6	0	1.5	7.6	12.2	29.6	1016	1020.2	1025.2	0	302.3	970	73.1	96.3	100
21/10/2009	13.5	22.5	34.1	13	51	85	0.0	6.7	0	2.0	9.4	13.6	31.6	1014.8	1017.8	1021.2	0	308.7	987	46.8	84.1	100
22/10/2009	14.2	17.8	24.1	53	72	87	0.0	3.5	0	1.8	8.5	14.2	24.2	1019.9	1021.8	1024.2	0	182.6	977	59.6	89.6	100
23/10/2009	12.8	19.7	31.4	35	74	93	0.0	5.1	0	1.6	8.9	12.9	31.5	1012.6	1017.2	1021.7	0	288.7	953	71.1	94.5	100
24/10/2009	14.8	18.7	24.4	53	74	88	0.0	4.2	0	1.7	8.9	14.9	24.4	1013.7	1016.6	1018.7	0	229.8	1046	81.3	97.0	100
25/10/2009	13.9	16.0	20.7	68	89	95	10.4	1.0	0	0.8	8.9	13.9	20.8	1013.9	1015.0	1017.4	0	73.5	417	74.6	94.3	100
26/10/2009	11.3	13.1	14	72	94	98	81.0	0.6	0	3.8	12.5	9.5	14.2	1017.2	1022.0	1026.8	0	35.1	188	78.7	93.1	100
27/10/2009	13.3	14.5	16.3	68	78	93	0.4	1.5	0	2.0	10.3	12.3	15.9	1025.3	1026.8	1029	0	67.1	310	47.4	85.7	100
28/10/2009	12.1	17.2	26.7	54	84	99	0.2	4.1	0	1.2	7.2	12.1	27.1	1019.6	1023.4	1025.8	0	254.5	1137	65.2	89.0	100
29/10/2009	15.6	18.0	22.4	63	83	95	0.0	2.1	0	1.3	5.8	15.6	22.3	1021.6	1023.5	1025.4	0	121.4	585	65.5	91.7	100
30/10/2009	15.3	19.9	27.7	48	79	98	0.0	4.4	0	1.1	7.6	15.3	27.7	1018.4	1021.3	1023.8	0	257.9	1069	69	94.2	100
31/10/2009	15.8	19.7	26.6	47	78	96	0.0	4.1	0	1.8	8.5	15.8	26.4	1021.1	1022.5	1024.1	0	223.4	1055	81.9	95.0	100
Monthly	8.2	16.0	34.1	8	71	100	156.2	121.1	0	2.6	22.8	5.6	31.6	997.7	1017.4	1029.5	0	190.0	1193	46.8	94.7	100

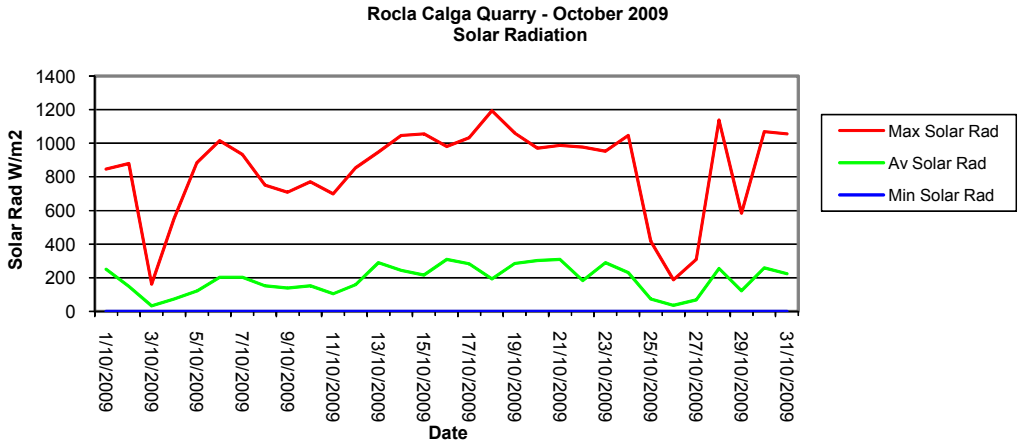
2.3.2 Monthly weather charts

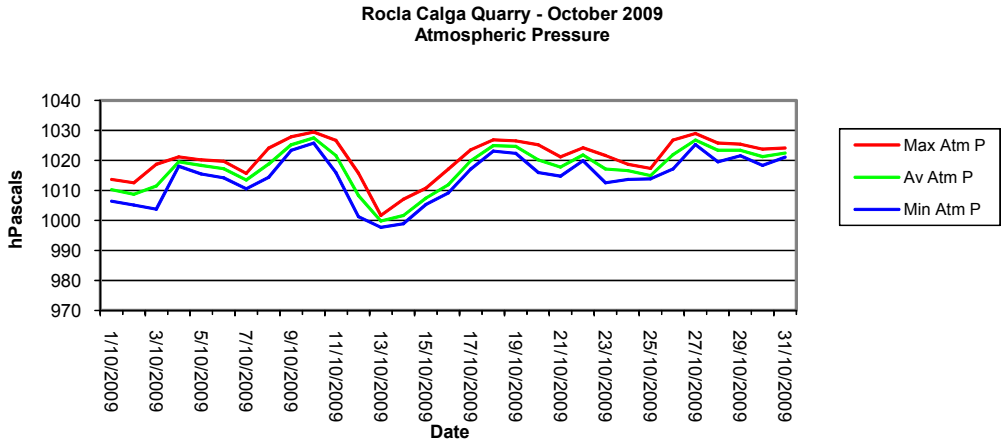


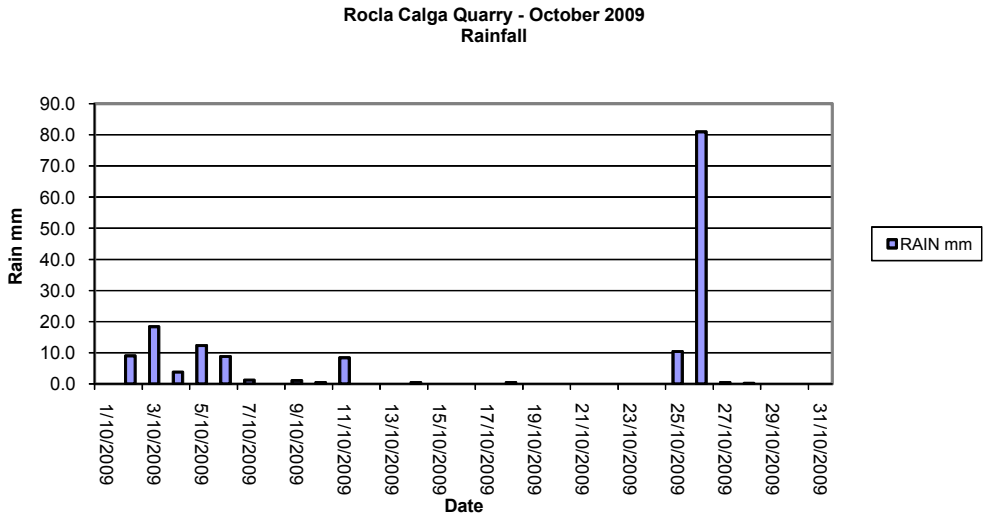


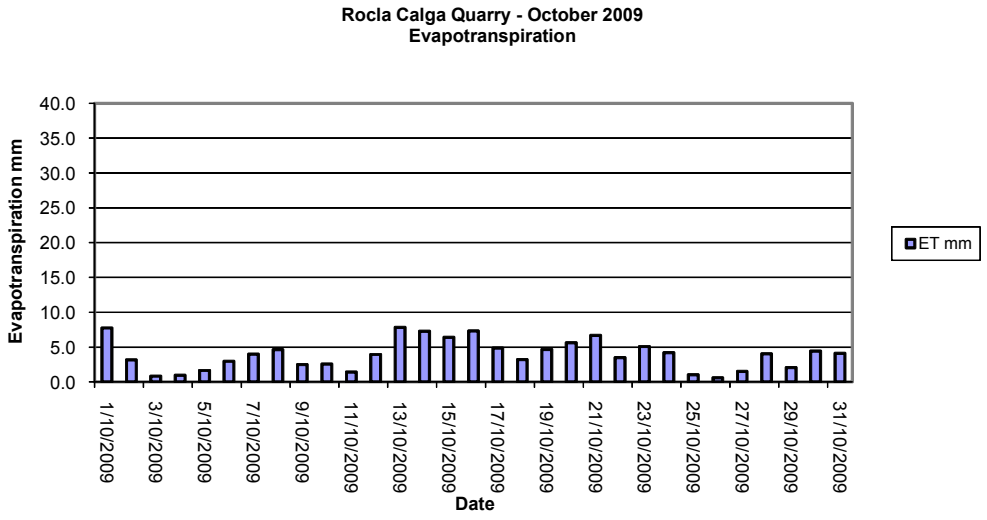


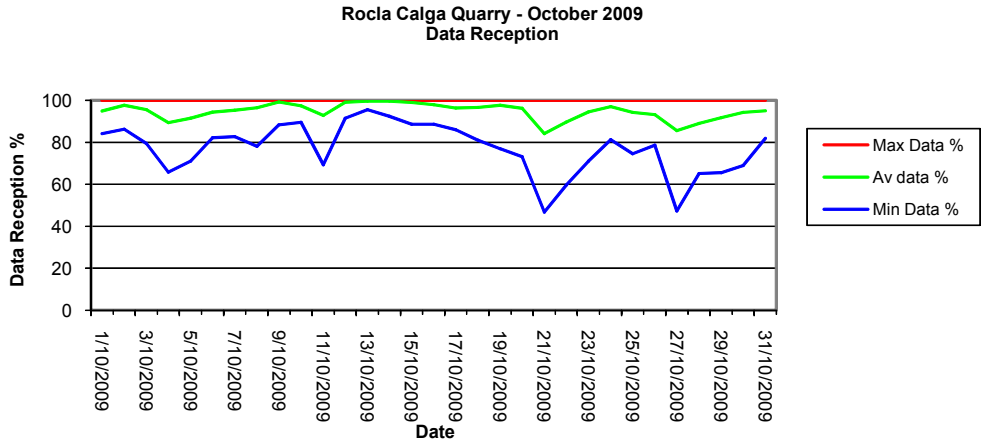

Rocla Calga Quarry - October 2009
Wind Speed
Wind Speed km/hr
24
22
20
18
16
14
12
10
8
6
4
2
0
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
Max WS
Av WS
Min WS


Rocla Calga Quarry - October 2009
Solar Radiation
Solar Rad W/m2
1400
1200
1000
800
600
400
200
0
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
Max Solar Rad
Av Solar Rad
Min Solar Rad


Rocla Calga Quarry - October 2009
Atmospheric Pressure
hPascals
1040
1030
1020
1010
1000
990
980
970
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
Max Atm P
Av Atm P
Min Atm P

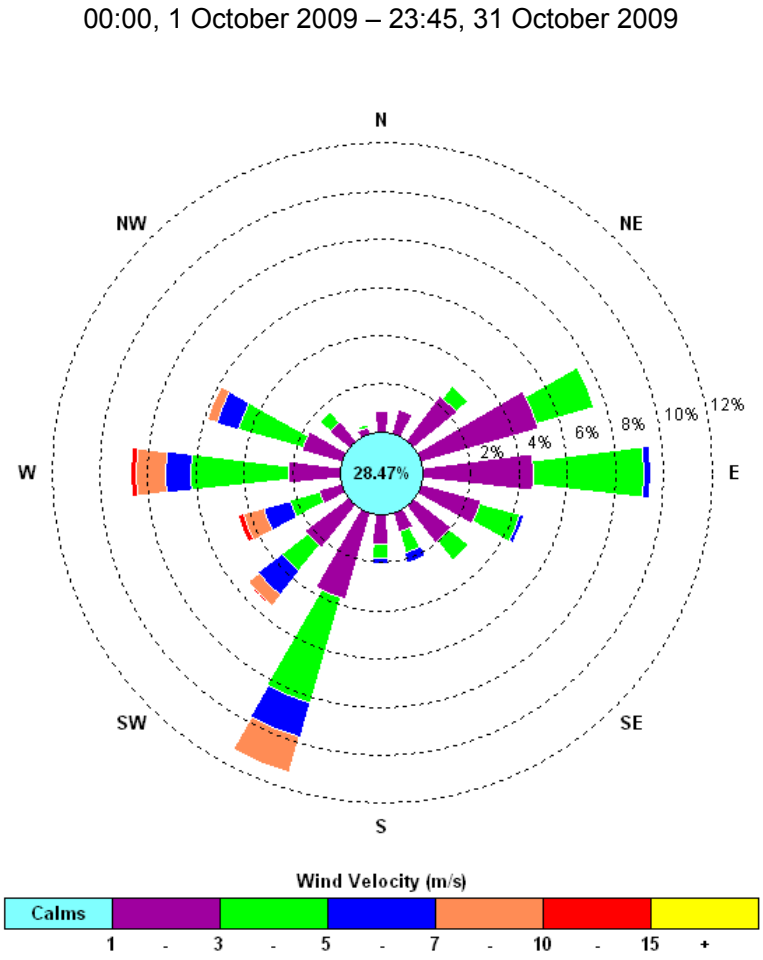

Rocla Calga Quarry - October 2009
Rainfall
Rain mm
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
RAIN mm


Rocla Calga Quarry - October 2009
Evapotranspiration
Evapotranspiration mm
40.0
35.0
30.0
25.0
20.0
15.0
10.0
5.0
0.0
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
ET mm


Rocla Calga Quarry - October 2009
Data Reception
Data Reception %
100
80
60
40
20
0
1/10/2009
3/10/2009
5/10/2009
7/10/2009
9/10/2009
11/10/2009
13/10/2009
15/10/2009
17/10/2009
19/10/2009
21/10/2009
23/10/2009
25/10/2009
27/10/2009
29/10/2009
31/10/2009
Date
Max Data %
Av data %
Min Data %

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.



The predominant winds were split from the W-SSW and E-ENE, with strongest winds from the W-WSW.The maximum wind speed was 22.8 m/s from the SW.

Appendix 1

Laboratory Certificates

Appendix 2

Additional Bureau of Meteorology Data from Peats Ridge and Gosford Monitoring Stations

Peats Ridge, New South Wales
October 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	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Th	12.2	32.3	0	6.8					23.9	23	2	WSW	9		31.9	11	0	NW	4	
2	Fr	13.2	22.2	0	7.0					17.8	72	5	SSW	4		19.7	67	6	ENE	9	
3	Sa	13.1	13.4	18.6	3.4					13.6	96	8	SW	4		12.5	97	8	SW	4	
4	Su	10.9	17.1	14.0	2.0					12.4	95	8	SW	9		15.1	71	8	E	9	
5	Mo	11.1	17.7	3.0	1.0					12.7	44	8	NE	4							
6	Tu	8.8	19.9	16.2	2.6					12.1	89	1	SW	9							
7	We	10.1	17.8	3.4	3.0					13.0	66	2	WSW	9		16.0	39	7	SW	19	
8	Th	7.3	16.9	1.0	3.8					11.9	58	5	SW	28		15.6	49	5	SSW	28	
9	Fr	7.2	14.3	0	4.0					11.0	70	6	SSW	37							
10	Sa	8.1	16.8	5.6	1.2					10.1	83	8	SW	19		15.2	72	7	ESE	9	
11	Su	8.2	17.8	4.0	3.6					12.4	95	3	SSE	4		14.2	85	8	SSE	9	
12	Mo	10.2	23.2	3.8	1.2					17.7	59	3	NW	9		21.5	57	8	N	4	
13	Tu	13.4	23.3	0.2	3.8					17.1	60	8	WNW	9		22.4	25	3	NW	7	
14	We	10.8	21.3	0	7.8					17.4	43	0	NW	9		17.2	42	1	SW	9	
15	Th	11.1	21.7	0	5.6					16.2	50	2	WNW	4		20.3	35	6	NW	9	
16	Fr	9.1	22.6	0	5.4					14.3	38	0	W	4		21.2	38	0	N	6	
17	Sa	6.7	19.9	0	6.4					13.6	56	0	S	4		19.4	51	0	S	4	
18	Su	11.1	19.7	0	4.8					13.9	83	7	S	4		19.0	60	0	ESE	4	
19	Mo	7.7	22.9	0	4.0					16.9	68	0	NE	4							
20	Tu	9.9	29.7	0	4.0					17.3	82	0	E	4		28.0	34	0	NE	4	
21	We	14.2	33.6	0	7.4					24.1	34	0	NW	4		31.9	28	3	NE	9	
22	Th	15.1	22.5	0	7.2					16.3	80	8	SE	4		22.0	62	3	E	4	
23	Fr	11.8	32.1	0	4.0					16.6	84	6	NE	4		25.6	62	4	S	4	
24	Sa	14.3	24.1	2.6	2.4					18.9	76	7	S	4		21.8	64	3	ESE	9	
25	Su	13.2	19.9	0	4.8					18.2	82	7	E	9		15.5	94	8	SSW	4	
26	Mo	11.9	13.9	52.9						13.9	91	8	NE	9		12.6	95	8	SE	4	
27	Tu	11.4	17.6	19.2	0.2					13.8	81	8	SE	4		14.5	87	8	E	2	
28	We	10.8	24.8	0.4	0.4					17.2	79	7	NE	4		23.6	67	0	NE	4	
29	Th	15.3	21.2	0	2.8					18.1	85	7	NE	4		20.2	73	7	SE	4	
30	Fr	15.2	25.1	0.4	1.8					18.6	88	5	SE	4		24.5	60	1	E	6	
31	Sa	16.2	24.7	0.4	3.6					19.1	88	6	E	4		22.3	63	2	NE	4	
Statistics for October 2009																					
	Mean	11.3	21.6		3.9					15.8	70	4		7		20.1	58	4		7	
	Lowest	6.7	13.4		0.2					10.1	23	0	#	4		12.5	11	0	E	2	
	Highest	16.2	33.6	52.9	7.8					24.1	96	8	SSW	37		31.9	97	8	SSW	28	
	Total			145.7	116.0																

Gosford, New South Wales
October 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	mm	mm	hours		km/h	local	°C	%	eighths		km/h	hPa	°C	%	eighths		km/h	hPa
1	Th	5.9	34.0	0			N	35	12:12	26.3	17		ESE	6		33.2	6		NNW	13	
2	Fr	10.2	22.6	0			S	28	07:17	19.9	66		SSE	13		19.6	71		SE	13	
3	Sa	14.7	15.0	13.8			SE	33	16:18	14.7	100		S	9		14.1	100		W	6	
4	Su	12.2	18.7	15.0			SSE	20	13:19	13.8	100			Calm		18.2	63		ESE	9	
5	Mo	12.0	20.5	4.0			NW	20	22:28	14.5	100			Calm		20.0	61		E	9	
6	Tu	10.1	20.5	8.6			SE	26	12:02	15.6	76		WNW	11		19.5	62		SE	11	
7	We	10.2	19.6	7.0			NNW	35	13:19	14.0	82		SE	7		19.4	27		WSW	11	
8	Th	8.1	18.1	1.6			SSE	54	11:09	12.9	57		S	9		17.0	46		SE	19	
9	Fr	8.9	17.1	0.4			SSE	44	14:18	13.6	65		WSW	9		14.9	73		SSE	13	
10	Sa	9.2	17.5	3.6			ESE	31	10:45	13.2	88		W	6		14.0	100		NNW	6	
11	Su	8.1	17.7	23.4			ENE	17	16:31					Calm		15.6	91		WNW	6	
12	Mo	7.1	25.5	2.8			N	43	17:37	15.9	93		SSE	2		22.7	64			Calm	
13	Tu	12.9	24.7	0			NNW	46	11:32	19.8	47		NNW	15		24.0	25		NNW	15	
14	We	8.6	23.3	0			N	56	10:01	19.0	38		NNW	15		14.7	74		WNW	7	
15	Th	8.4	23.7	1.2			NNW	35	13:29	17.8	43		NNW	15		22.8	26		WNW	11	
16	Fr	9.3	21.5	0			SSW	33	13:55	16.0	39		W	9		21.4	22		SE	11	
17	Sa	5.9	20.8	0			SSE	28	14:28	16.7	47		SSE	7		20.1	49		SE	13	
18	Su	11.2	20.6	1.2			E	24	13:53	15.9	91		ESE	2		19.7	63		SE	13	
19	Mo	6.9	23.0	0.4			SE	26	11:36	16.8	75			Calm		22.0	50		NE	11	
20	Tu	9.1	27.1	0			E	24	13:08	19.0	79		E	4		25.7	55		ESE	9	
21	We	9.2	34.3	0			SSE	33	20:20	22.1	60			Calm		33.7	13		E	7	
22	Th	17.1	22.5	0			S	31	00:04	18.1	74			Calm		21.1	65		SE	9	
23	Fr	12.0	28.6	0			SSW	24	20:42	19.3	81		N	9		25.3	60		SE	13	
24	Sa	16.5	23.9	0			ESE	24	14:40	20.1	67		SE	11		22.5	64		ESE	13	
25	Su	15.4	21.5	0			ESE	24	13:55	20.0	87		E	4		15.9	100		SE	11	
26	Mo	14.2	16.2	68.4			SE	39	09:16	15.3	100		SSE	11		14.7	100		SE	9	
27	Tu	14.0	19.8	14.0			SE	28	23:05	15.1	100			Calm		17.5	77		SE	2	
28	We	11.8	25.1	0.2			ENE	24	14:55	19.4	75		N	7		24.5	61		ENE	7	
29	Th	15.4	22.5	0.2			SE	19	16:19	19.1	97		SE	7		21.6	73		ESE	4	
30	Fr	14.4	25.8	0			ENE	24	16:54	21.3	76		SE	4		24.9	57		NE	11	
31	Sa	15.4	24.6	0			NE	26	11:29	21.1	83		NE	6		23.5	64		ENE	9	
Statistics for October 2009																					
	Mean	11.1	22.5							17.5	73			6		20.8	60			9	
	Lowest	5.9	15.0							12.9	17			Calm		14.0	6			Calm	
	Highest	17.1	34.3	68.4			N	56		26.3	100		NNW	15		33.7	100		SE	19	
	Total			165.8																	