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

May 2012

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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;
- Groundwaters; and
- Meteorological Station.

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

- Dust Deposition results for May 2012;
- Surface Water quality results for May 2012;
- Groundwater depth and quality results for May 2012; and
- Meteorological report for May 2012.

The May 2012 dust deposition results for insoluble solids were generally similar to or lower than compared to those of April 2012. All sites, on a rolling annual average basis, are currently below the Air Quality Management Plan exceedance 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 31 May 2012 at sites A, D and F. Site C was inaccessible and unable to be sampled and Site B was dry at the time of sampling this month. At the time of sample collection, there was no water discharge observed from the site. Results show generally good water quality with all sites sampled maintaining low Electrical Conductivity, Total Dissolved Solids and Total Suspended Solids. Oil and Grease was not detected at any of the sites. pH levels remained stable and were within the slightly acidic range.

Groundwaters were sampled for normal monthly monitoring on 31 May 2012. Groundwater depths generally increased across the bores compared to last month. pH and EC remained relatively stable.

The meteorological station data recovery for the month was approximately 100%. Recorded rainfall on site for April was 22.6mm, which was similar to that recorded at the BOM Peats Ridge Station and lower than the Peats Ridge long-term average for May. Results are detailed below:

Rocla Calga Quarry	22.6 mm
BOM Peats Ridge*	24.4 mm
BOM Gosford*	35.2 mm
BOM Peats Ridge Long term mean for May*	95.9 mm

*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, OEH (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 waters are sampled in accordance with Australian Standards AS5667.1 "Guidance on the Design of Sample Programs, Sampling Techniques and the Preservation and Handling of Samples", AS5667.6 "Water Quality Sampling—Guidance on sampling of rivers and streams" and AS5667.4 "Water Quality Sampling—Guidance on sampling from lakes, natural and man-made". Surface water monitoring 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.

Groundwaters are sampled in accordance with Australian Standards AS5667.1 "Guidance on the Design of Sample Programs, Sampling Techniques and the Preservation and Handling of Samples" and AS5667.11 "Water Quality Sampling—Guidance on sampling of ground waters". Groundwater monitoring sites are sampled 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.

The locations of monitoring points are provided in **Figure 1**.

Figure 1: Rocla Calga Quarry environmental monitoring locations

2.0 Monthly Results

2.1 Dust Deposition Gauges

Table 1 displays the results for May 2012 and the project 12 month rolling average. Results are in g/m^2.month.

Table 1: Dust Deposition results: 2 May 2012 – 31 May 2012 (29 days)

Site	Monthly Insoluble Solids g/m^2.month	Monthly Ash Residue g/m^2.month	Monthly Combustible Matter g/m^2.month	Monthly Ash Residue/ Insoluble Solids %	Rolling Annual Average Insoluble Solids g/m^2.month
CD1	1.0	1.0	<0.1	100	1.7
CD2c	1.3	1.2	0.1	92	0.9
CD3	0.6	0.6	<0.1	100	0.7
CD4	0.2	0.2	<0.1	100	0.5
CD5	0.2	0.2	<0.1	100	0.3
CD6	0.2	0.2	<0.1	100	0.5

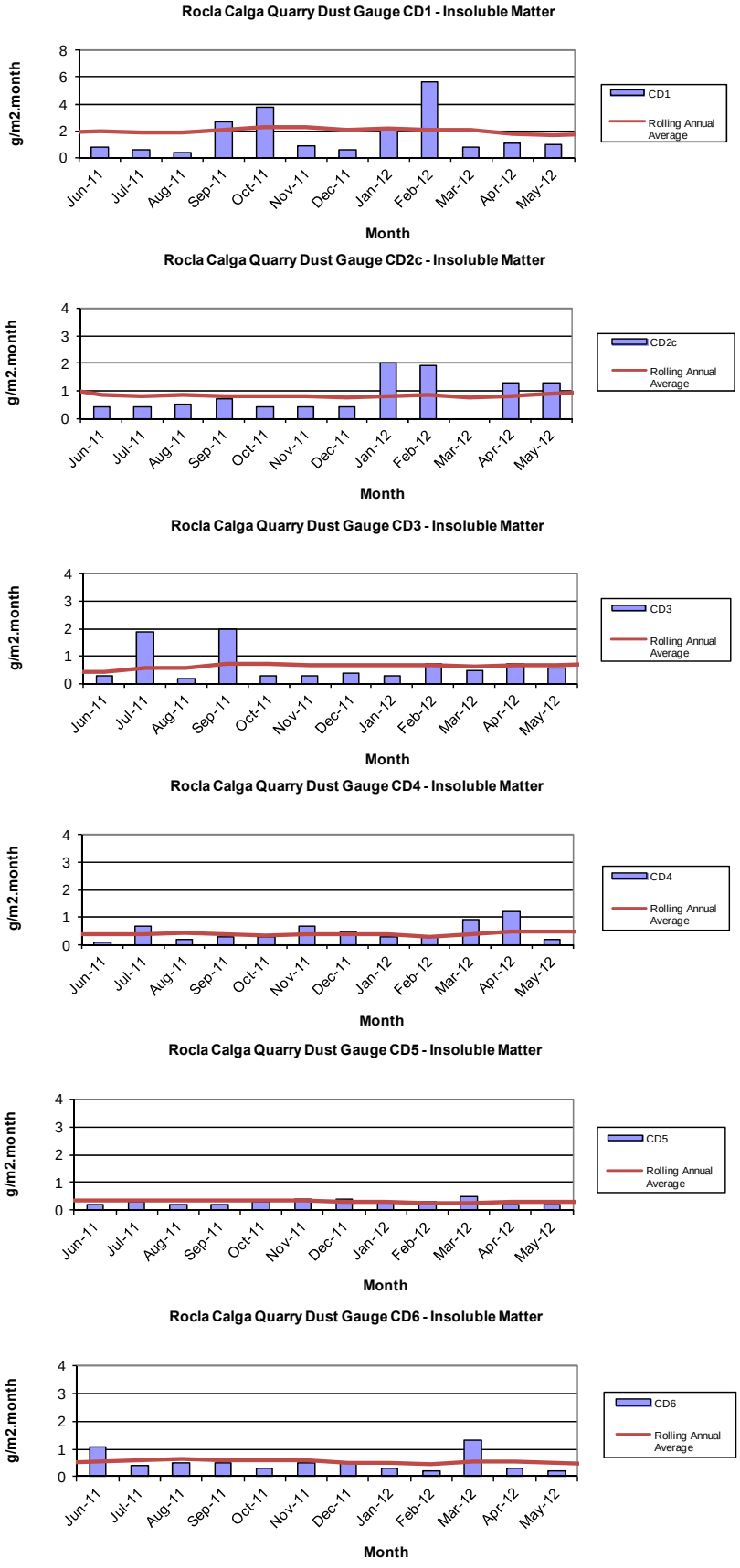
Insoluble Solids marked with an * indicate an excessively contaminated gauge. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen and seeds) and insects. Results in bold indicate insoluble solids levels above 3.7 g/m^2.month; the Development Consent's annual average amenity criteria at residential locations. The current rolling annual average is calculated from June 2011 to May 2012.

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. CD2b was discontinued at the end of January 2010 due to contamination of the gauge by non-quarry related vehicle movements on a track adjacent to the gauge. The replacement gauge, CD2c, was located on a rehabilitated section of land between the extraction area and adjacent resident.

Dust deposition charts for all dust gauge sites appear in **Figure 2** below. The laboratory analysis is provided in **Appendix 1.**

Figure 2: Dust Deposition Charts



2.2 Surface Water Monitoring

Monthly surface water monitoring was conducted on the 31 May 2012 and results are listed in **Table 2**. The laboratory analysis sheets are provided in **Appendix 1.**

Table 2: Monthly surface water monitoring – May 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	Still	Clear	Clear	5.83	56	32	8	<5
B	Dry							
C	No Access							
D	Slow	Clear	Clear	5.66	105	64	5	<5
F	Still	Clear	Clear	5.97	61	36	5	<5

At the time of sampling, there were no water discharges off site from any sampling location observed. Samples were collected at sites A, D and F. Site C was inaccessible and unable to be sampled this month and Site B was dry at the time of sampling. The samples were collected and analysed for a monthly sampling event. Results show pH within the slightly acidic range, low Electrical Conductivity, low Total Dissolved Solids, low Total Suspended Solids and no detectable Oil and Grease.

2.3 Groundwater Monitoring

Groundwaters were sampled on 31 May 2012. 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 3 to 6.**

Groundwater depth generally increased across the sampled groundwater bores compared to last month indicating water moving away from the surface. Exceptions were CP3 and CP8 which decreased in water depth.

pH levels were generally stable compared to last month. EC levels remained low and relatively stable compared to last month.

Table 3: Groundwater Quality Data

Reference	Bore	Type	Depth to water TOC (m) April 06	Depth to water TOC (m) This report	pH This report	Electrical Conductivity (µS/cm) This report
CQ1	Voutos	* Monitor	20.59	18.93	8.2	160
CQ3	Voutos	* Monitor	10.53	10.06	7.0	110
CQ4	Voutos	* Monitor	8.78	9.37	5.5	70
CQ5	Gazzana	DIP Only	8.69	5.75	5.2	130
CQ6	Gazzana	DIP Only	16.00	10.20	5.1	190
CQ7	Gazzana	* Monitor	6.89	6.11	5.3	90
CQ8	Gazzana	* Monitor	11.03	5.40	5.1	140
CQ9	Gazzana	DIP Only	10.10	8.82	5.2	100
CQ10	Voutos	* Monitor	NI	21.65	5.5	120
CQ11S	Gazzana	* Monitor	NI	8.97	5.3	150
CQ11D	Gazzana	* Monitor	NI	10.26	5.6	140
CQ12	Gazzana	* Monitor	NI	3.88	5.2	130
CQ13	Kashouli	* Monitor	NI	11.59	6.0	190
CP3	Gazzana	Domestic	10.40	7.13	5.4	140
CP4	Kashouli	Domestic	13.63	8.09	5.8	170
CP5	Kashouli	Domestic	16.61	5.45	4.8	200
CP6	Kashouli	Domestic	16.27	7.88	4.9	200
CP7	Kashouli	Production	8.56	1.56	5.2	220
CP8	Rozmanec	Domestic	22.17	16.68	5.2	140
MW7	Rocla Bore	* Monitor	15.76	14.92	5.2	110
MW8	Rocla Bore	* Monitor	9.82	6.39	5.0	80
MW9	Rocla Bore	* Monitor	22.44	24.53	5.4	80
MW10	Rocla Bore	* Monitor	15.41	11.79	5.0	120
MW13	Rocla Bore	DIP Only	NI	7.64	5.0	90
MW16	Rocla Bore	DIP Only	NI	8.30	5.2	110

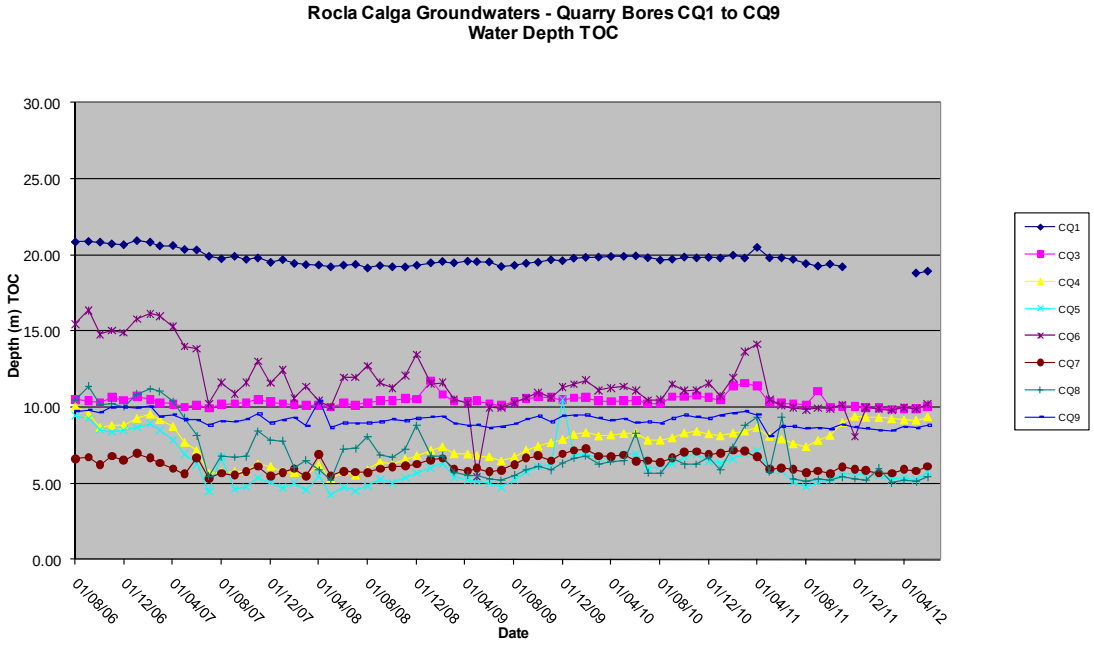
Notes:
TOC = Water level measured from top of bore case to water.
NM = Not Monitored – unable to sample water due to access restrictions.
NR = Not Required by resident.
* = Logger Installed.
NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements taken by Carbon Based Environmental Pty Limited.

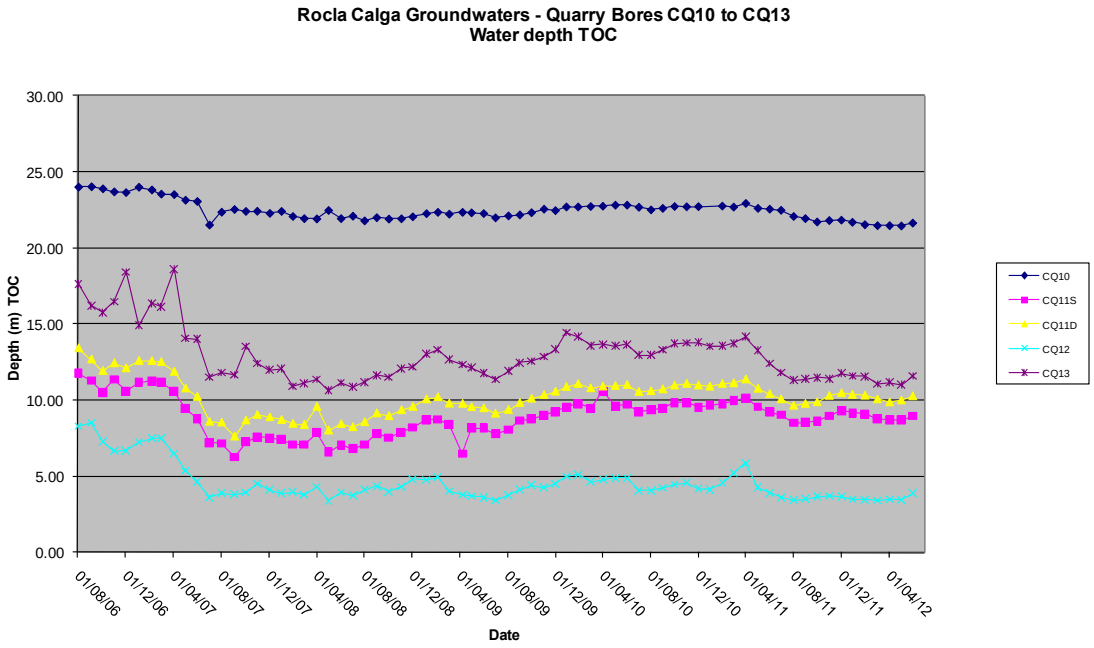
Shading is used to indicate the following trends in water depth (compared to the last reading):

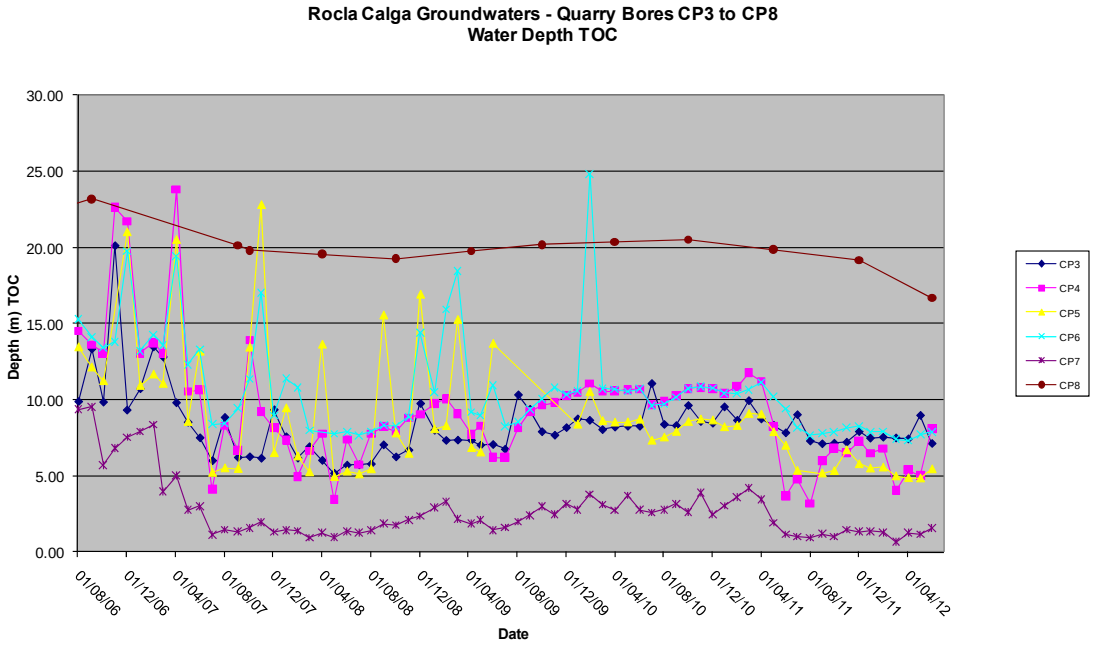
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

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

Figures 3 to 6: 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
01/08/06
01/12/06
01/04/07
01/08/07
01/12/07
01/04/08
01/08/08
01/12/08
01/04/09
01/08/09
01/12/09
01/04/10
01/08/10
01/12/10
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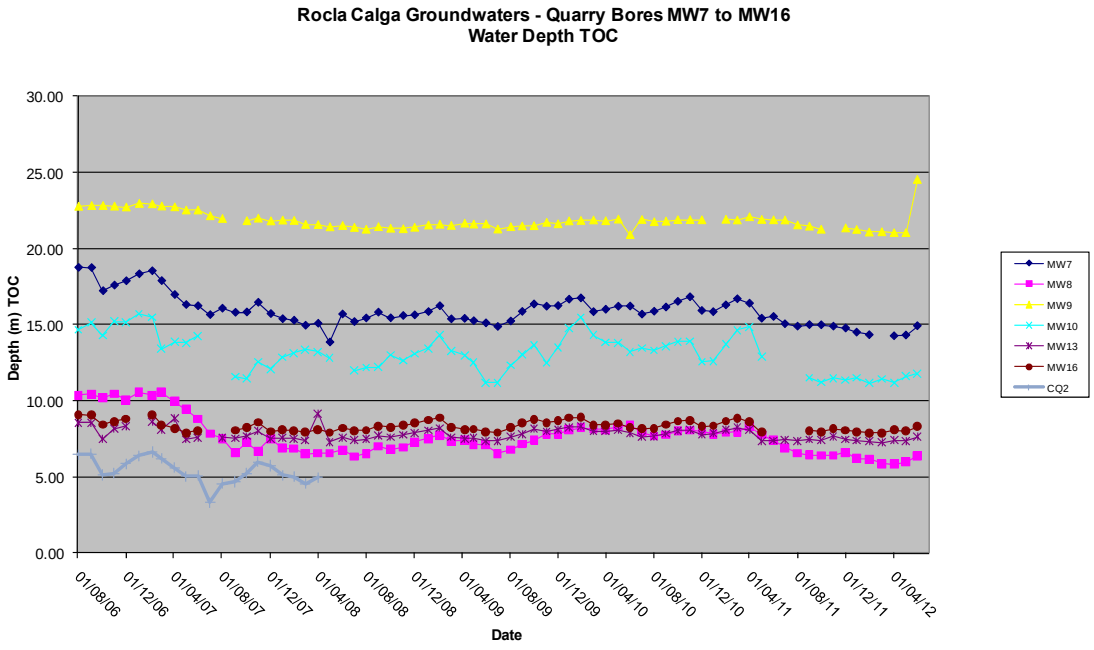
01/12/11
01/04/12
Date
CP3
CP4
CP5
CP6
CP7
CP8


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
01/08/06
01/12/06
01/04/07
01/08/07
01/12/07
01/04/08
01/08/08
01/12/08
01/04/09
01/08/09
01/12/09
01/04/10
01/08/10
01/12/10
01/04/11
01/08/11
01/12/11
01/04/12
Date
MW7
MW8
MW9
MW10
MW13
MW16
CQ2

2.4 Meteorological Monitoring

The Rocla Calga Quarry weather station data recovery in May 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 May 2012 shows that rainfall recorded at the Rocla Calga Quarry was similar to that recorded at nearby Peats Ridge BOM station and lower than the Gosford BOM station recorded rainfall. Recorded rainfall at Rocla Calga Quarry was lower than the Peats Ridge long term mean rainfall for May. The rainfall comparison is provided below:

Rocla Calga Quarry	22.6 mm
BOM Peats Ridge*	24.4 mm
BOM Gosford*	35.2 mm
BOM Peats Ridge Long term mean for May*	95.9 mm

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

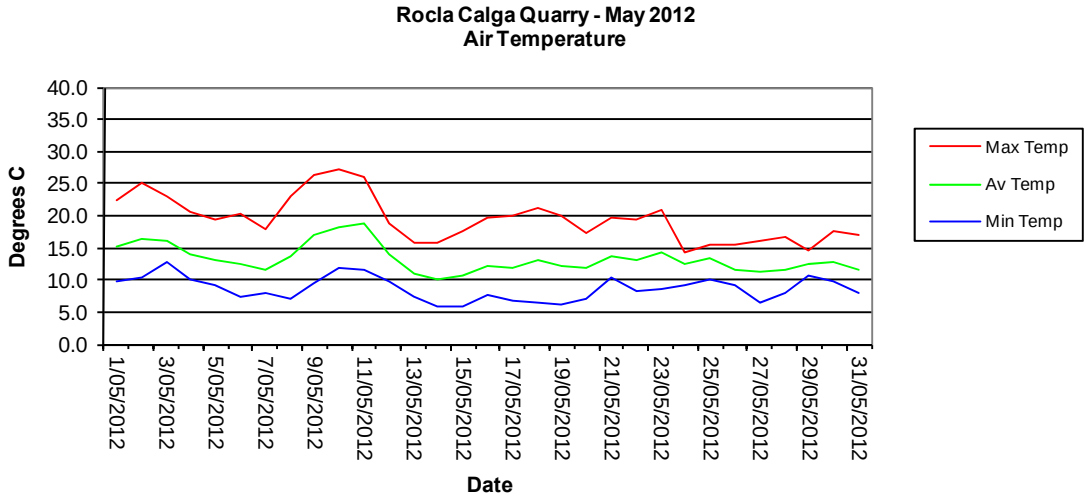
Results are displayed in the following table and figures.

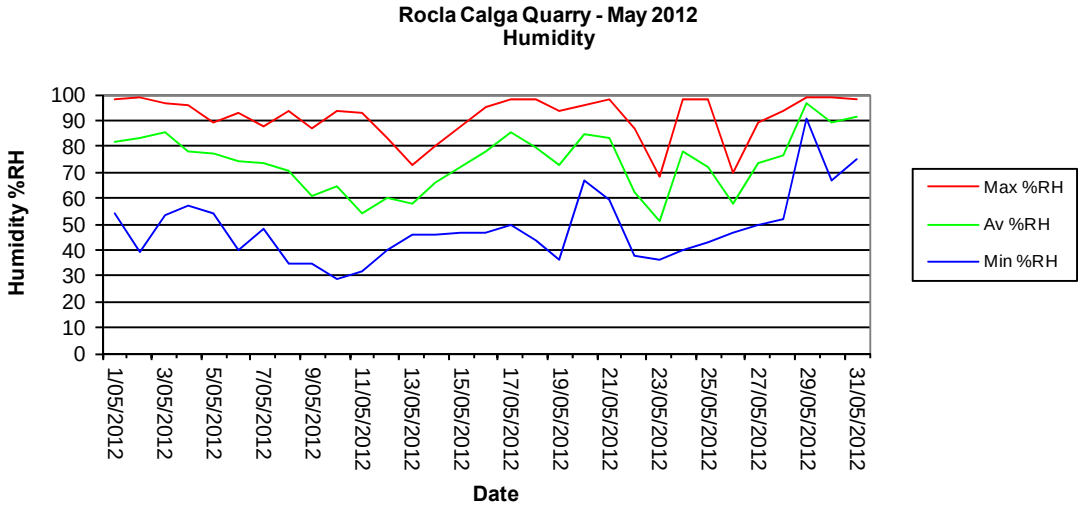
2.4.1 Monthly Meteorological Data Summary

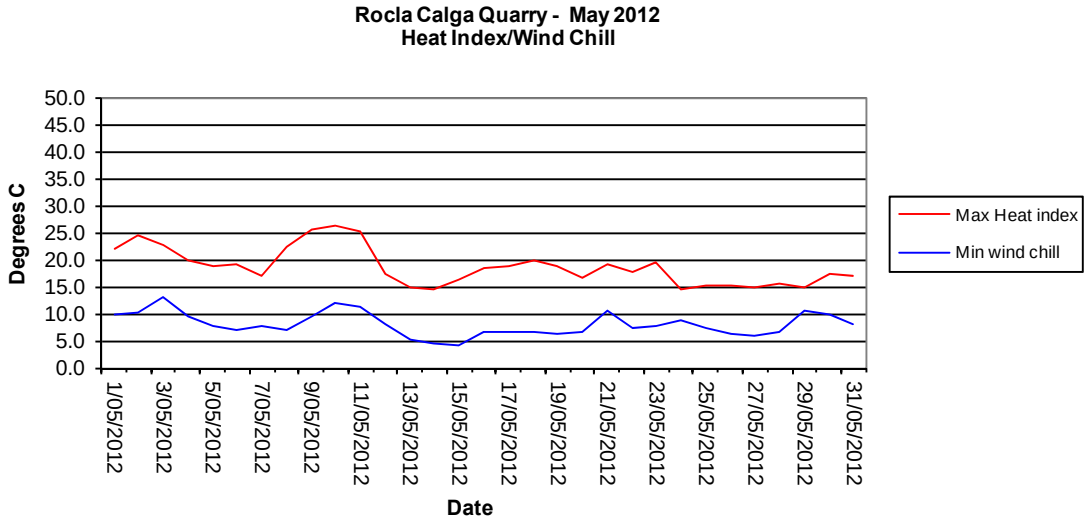
Summary May-12 Rocla - Calga

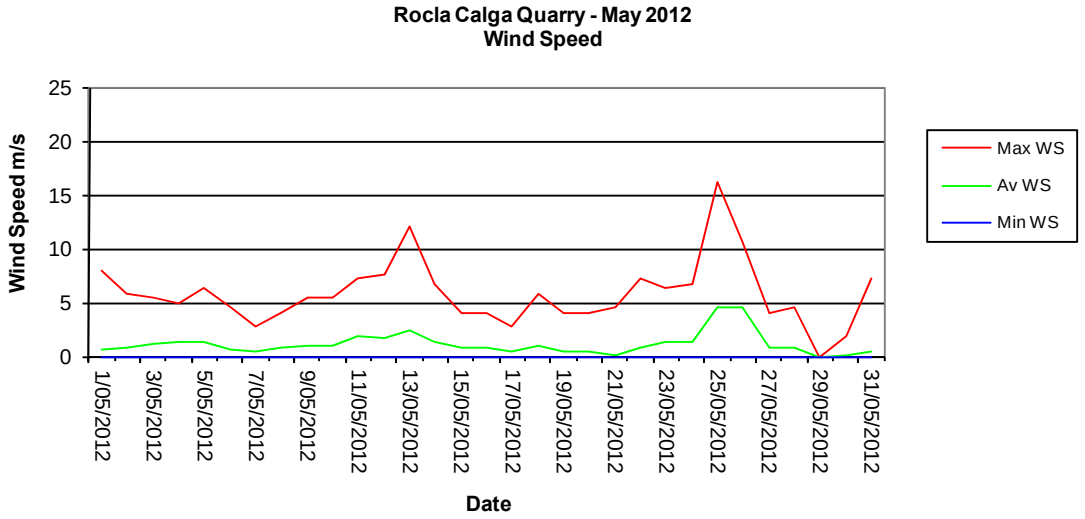
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/05/2012	9.7	15.1	22.4	54	82	98	0.0	1.1	0	0.6	8	9.8	22.0	1022.4	1024.5	1026.8	0	59.2	301	75.4	96.4	100
2/05/2012	10.3	16.4	25.1	39	83	99	1.6	0.9	0	0.8	5.8	10.3	24.5	1017.5	1020.1	1023.3	0	49.1	383	80.4	96.4	100
3/05/2012	12.9	16.0	22.9	53	85	97	0.4	1.0	0	1.1	5.4	12.9	22.7	1016.0	1017.7	1019.2	0	57.1	481	84.8	97.4	100
4/05/2012	10.1	14.0	20.5	57	78	96	0.0	1.3	0	1.3	4.9	9.6	19.9	1015.9	1018.0	1020.2	0	60.7	385	95.6	99.7	100
5/05/2012	9.1	13.0	19.4	54	77	89	0.0	1.1	0	1.4	6.3	7.8	18.7	1012.7	1015.1	1017.3	0	41.7	379	93	99.5	100
6/05/2012	7.5	12.5	20.2	40	74	93	0.2	1.0	0	0.7	4.5	7.1	19.1	1013.8	1015.5	1018.0	0	50.1	427	94.4	99.7	100
7/05/2012	7.9	11.7	17.8	48	74	88	0.0	1.2	0	0.5	2.7	7.6	16.8	1015.2	1016.7	1018.3	0	69.3	307	87.4	99.0	100
8/05/2012	7.1	13.6	22.9	35	70	94	0.0	1.0	0	0.8	4	6.8	22.2	1015.8	1017.2	1018.9	0	49.7	407	87.4	98.8	100
9/05/2012	9.6	17.1	26.4	35	61	87	0.0	1.5	0	1.0	5.4	9.6	25.6	1017.7	1019.4	1020.9	0	48.2	411	92.4	99.5	100
10/05/2012	12.0	18.2	27.3	29	65	94	0.0	1.4	0	1.0	5.4	12.1	26.1	1018.2	1019.7	1021.5	0	47.6	391	90.6	99.5	100
11/05/2012	11.7	18.8	25.9	32	54	93	0.0	2.3	0	2.0	7.2	11.3	25.2	1012.9	1016.1	1018.7	0	65.1	460	93.6	99.3	100
12/05/2012	9.9	14.1	18.7	40	60	83	0.0	1.8	0	1.6	7.6	8.2	17.2	1013.1	1014.8	1016.6	0	60.4	320	88	98.9	100
13/05/2012	7.5	11.1	15.9	46	58	73	0.0	1.8	0	2.4	12.1	5.1	14.7	1011.8	1014.0	1017.3	0	51.2	381	93	98.8	100
14/05/2012	5.9	10.2	15.8	46	66	80	0.0	1.1	0	1.3	6.7	4.5	14.5	1017.1	1020.9	1023.8	0	43.9	430	94.4	99.5	100
15/05/2012	5.8	10.8	17.7	47	72	88	0.0	1.1	0	0.9	4	4.2	16.3	1021.3	1022.9	1024.2	0	47.7	398	84.8	95.9	100
16/05/2012	7.7	12.0	19.7	47	78	95	0.0	0.9	0	0.7	4	6.6	18.4	1021.7	1023.3	1024.8	0	48.9	353	90.1	97.2	100
17/05/2012	6.8	12.0	19.9	50	86	98	0.0	0.6	0	0.4	2.7	6.6	18.9	1021.2	1023.2	1024.7	0	43.2	380	88	98.5	100
18/05/2012	6.5	13.0	21.1	44	80	98	0.2	1.1	0	0.9	5.8	6.5	19.8	1020.1	1022.6	1024.9	0	50.3	446	90.6	96.6	100
19/05/2012	6.3	12.1	19.9	36	73	94	0.0	1.1	0	0.5	4	6.4	18.9	1019.9	1021.7	1023.1	0	51.6	327	81.9	92.9	100
20/05/2012	7.2	11.8	17.2	67	85	96	0.0	0.8	0	0.5	4	6.7	16.7	1022.9	1024.2	1025.9	0	44.9	303	85.7	93.9	100
21/05/2012	10.4	13.8	19.8	59	83	98	0.2	0.8	0	0.0	4.5	10.5	19.2	1020.5	1023.0	1025.0	0	46.4	334	90.4	96.9	100
22/05/2012	8.4	13.1	19.3	38	62	87	0.0	1.3	0	0.9	7.2	7.5	17.7	1019.7	1022.2	1023.7	0	46.3	393	84.5	96.5	100
23/05/2012	8.7	14.2	20.9	36	51	68	0.0	1.6	0	1.3	6.3	7.8	19.3	1019.0	1021.9	1024.4	0	46.9	353	90.6	97.8	100
24/05/2012	9.1	12.6	14.3	40	78	98	12.6	0.9	0	1.3	6.7	8.6	14.4	1013.0	1018.4	1021.1	0	20.4	142	84.8	96.9	100
25/05/2012	10.2	13.3	15.4	43	72	98	1.6	2.1	0	4.5	16.1	7.4	15.2	1008.7	1010.8	1013.1	0	47.1	366	78.7	95.0	100
26/05/2012	9.1	11.7	15.4	47	58	70	0.0	2.6	0	4.5	10.7	6.1	15.3	1010.5	1013.3	1017.0	0	42.5	353	88.3	97.1	100
27/05/2012	6.6	11.2	16.0	50	73	89	0.0	1.1	0	0.8	4	5.8	14.9	1017.0	1019.7	1022.8	0	45.8	348	85.7	96.7	100
28/05/2012	7.9	11.6	16.7	52	77	94	0.4	1.0	0	0.8	4.5	6.7	15.7	1022.6	1025.5	1028.2	0	43.9	382	85.7	95.5	100
29/05/2012	10.6	12.4	14.7	91	97	99	4.6	0.5	0	0.0	0	10.6	14.8	1028.0	1030.5	1032.4	0	39.9	243	70.5	92.6	100
30/05/2012	9.8	12.9	17.5	67	90	99	0.8	0.6	0	0.1	1.8	9.8	17.2	1031.4	1033.1	1034.4	0	50.7	358	76.3	95.5	100
31/05/2012	8.1	11.6	17.1	75	91	98	0.0	0.7	0	0.5	7.2	8.2	16.9	1029.2	1031.5	1033.4	0	46.9	237	69.6	93.8	100
Monthly	5.8	13.3	27.3	29	74	99	22.6	37.3	0	1.1	16.1	4.2	26.1	1008.7	1020.6	1034.4	0	48.9	481	69.6	97.2	100

2.4.2 Monthly Weather Charts








Rocla Calga Quarry - May 2012
Wind Speed
Wind Speed m/s
25
20
15
10
5
0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
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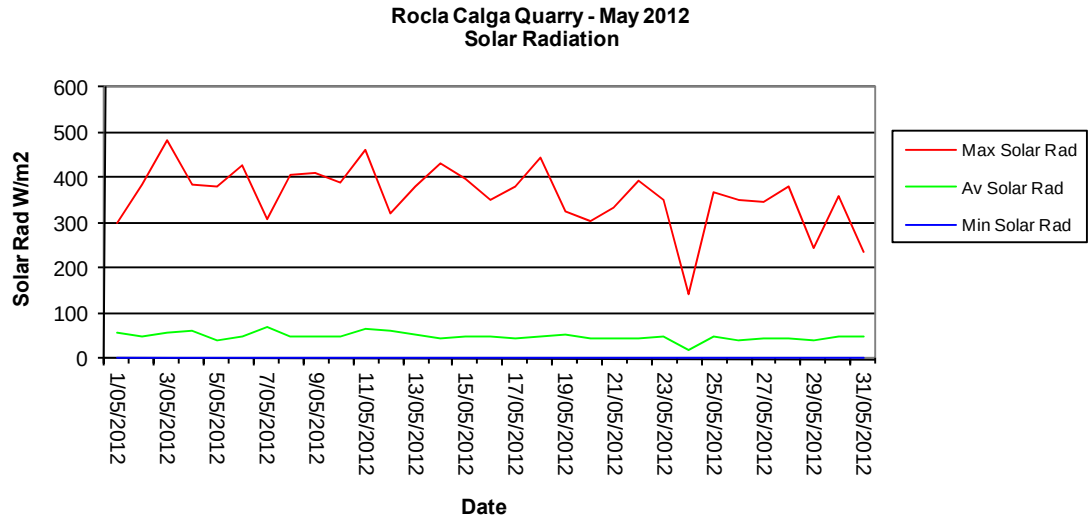
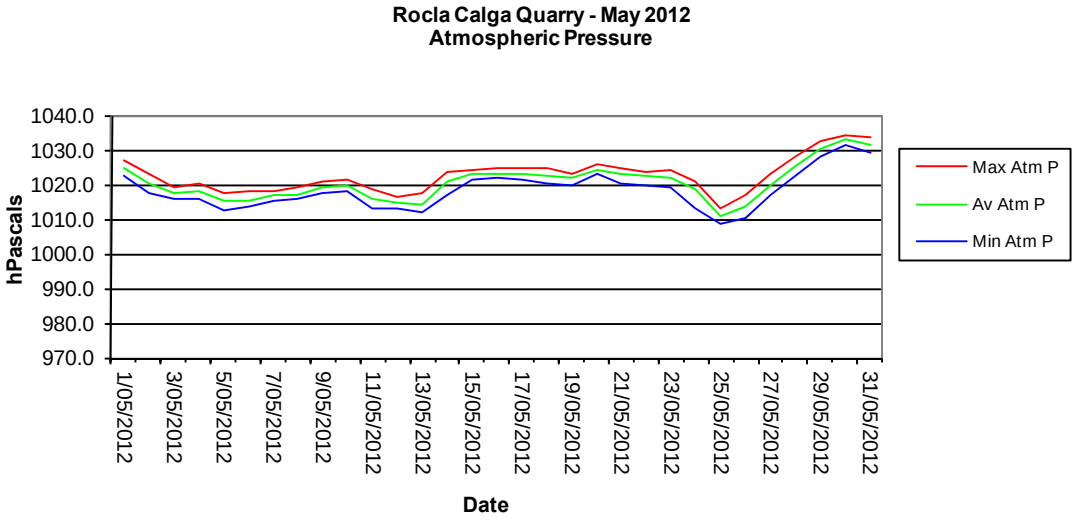
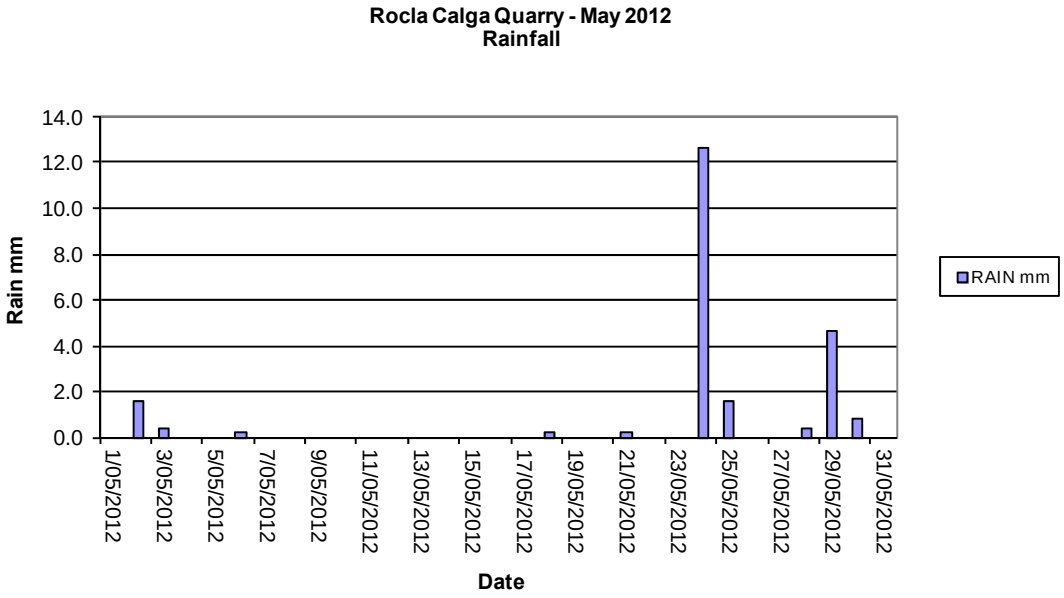
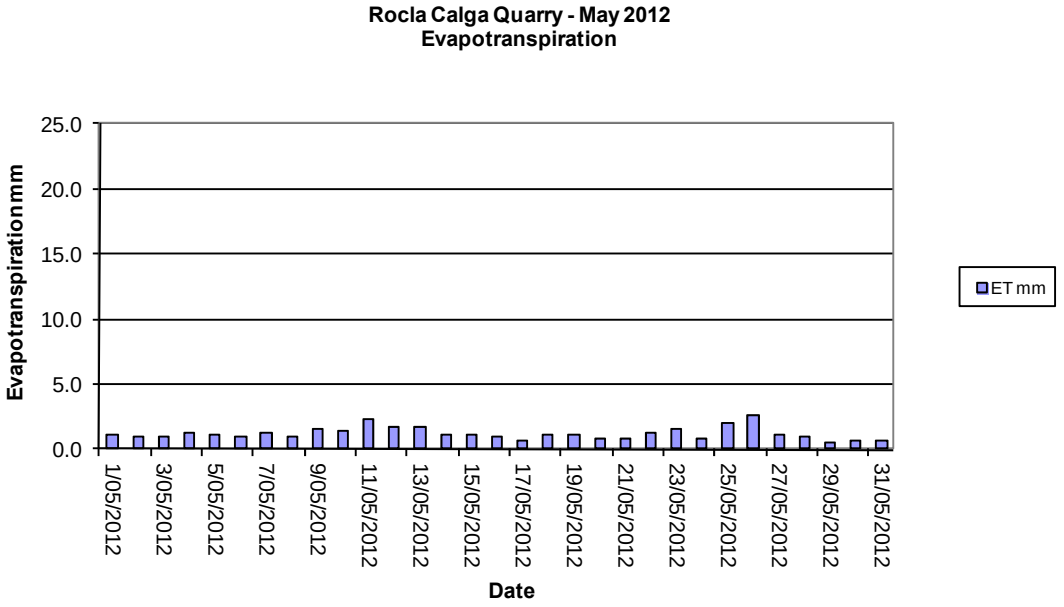
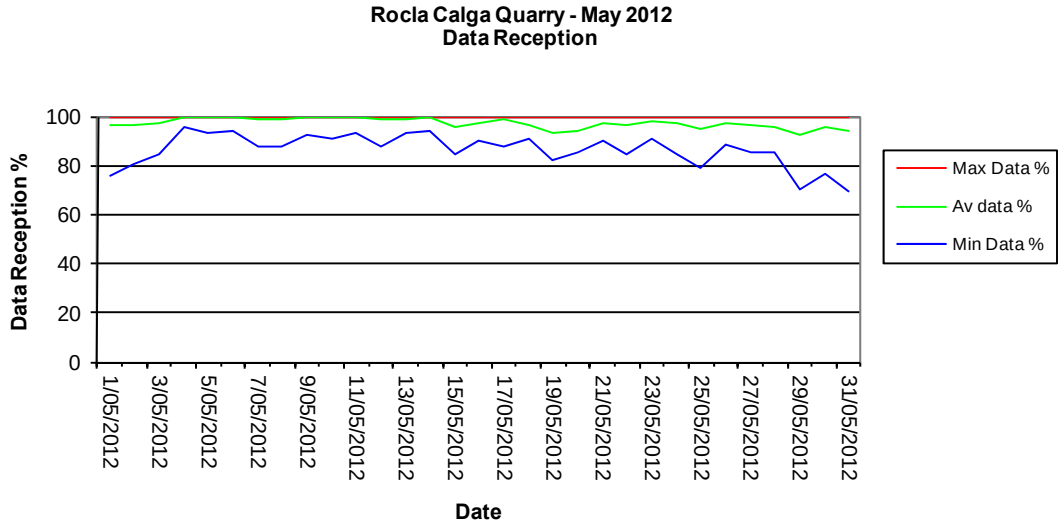
29/05/2012
31/05/2012
Date
Max WS
Av WS
Min WS


Rocla Calga Quarry - May 2012
Solar Radiation
Solar Rad W/m2
600
500
400
300
200
100
0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
21/05/2012
23/05/2012
25/05/2012
27/05/2012
29/05/2012
31/05/2012
Date
Max Solar Rad
Av Solar Rad
Min Solar Rad


Rocla Calga Quarry - May 2012
Atmospheric Pressure
hPascals
1040.0
1030.0
1020.0
1010.0
1000.0
990.0
980.0
970.0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
21/05/2012
23/05/2012
25/05/2012
27/05/2012
29/05/2012
31/05/2012
Date
Max Atm P
Av Atm P
Min Atm P


Rocla Calga Quarry - May 2012
Rainfall
Rain mm
14.0
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
21/05/2012
23/05/2012
25/05/2012
27/05/2012
29/05/2012
31/05/2012
Date
RAIN mm

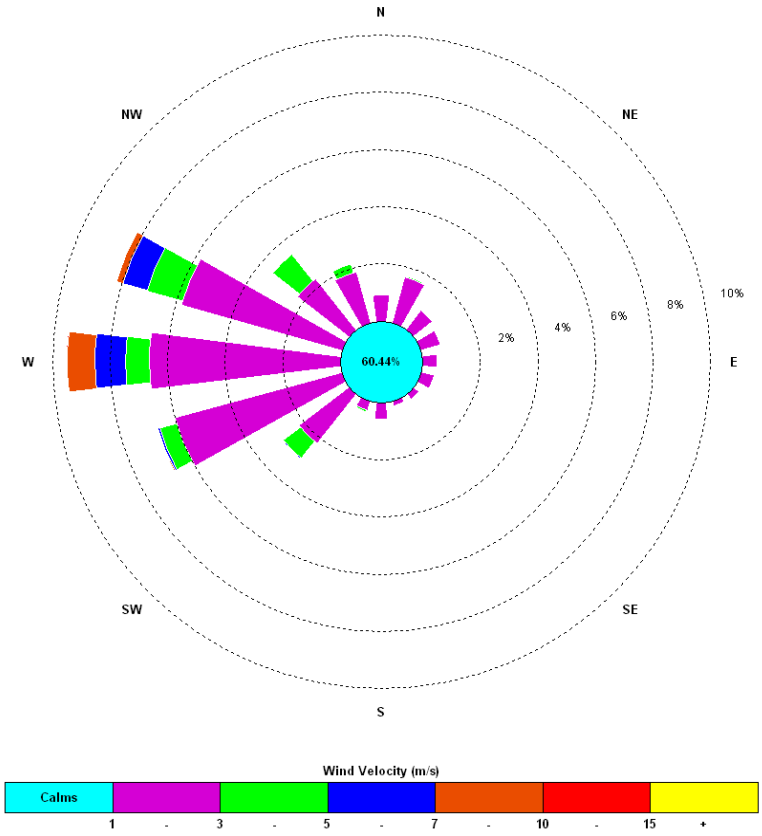

Rocla Calga Quarry - May 2012
Evapotranspiration
Evapotranspiration mm
25.0
20.0
15.0
10.0
5.0
0.0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
21/05/2012
23/05/2012
25/05/2012
27/05/2012
29/05/2012
31/05/2012
Date
ET mm


Rocla Calga Quarry - May 2012
Data Reception
Data Reception %
100
80
60
40
20
0
1/05/2012
3/05/2012
5/05/2012
7/05/2012
9/05/2012
11/05/2012
13/05/2012
15/05/2012
17/05/2012
19/05/2012
21/05/2012
23/05/2012
25/05/2012
27/05/2012
29/05/2012
31/05/2012
Date
Max Data %
Av data %
Min Data %

2.4.3 Monthly Windrose Plot

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

00:15, 1 May 2012 – 23:45, 31 May 2012



The predominant winds were from the W, with strongest winds from the W and WNW. The maximum wind speed was 16.1 m/s from the WNW.

Appendix 1

Laboratory Certificates

Appendix 2

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

Peats Ridge, New South Wales
May 2012 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	Tu	8.4	20.7	0	1.2					15.5	87	3	ESE	4		19.0	63	5	NE	9	
2	We	10.2	24.8	0	0.6					17.5	75	0	W	9		19.3	92	4	E	4	
3	Th	13.1	20.6	1.4	1.0					14.3	92	6	W	11		17.5	77	0	E	4	
4	Fr	8.4	20.0	0	1.2					12.4	78	3	E	4		18.7	63	4	E	4	
5	Sa	8.7	18.4	0	1.6					12.9	73	3	SW	4		16.4	68	7	SW	4	
6	Su	7.4	19.1	0	2.0					12.4	70	0	NW	4		18.5	43	1	NW	4	
7	Mo	6.2	16.8	0	1.0					11.5	70	8	W	4		15.7	57	7	W	4	
8	Tu	7.2	21.2	0	1.6					13.5	69	0	E	4		20.5	42	1	W	4	
9	We	10.3	24.9	0	1.4					16.6	55	0	NW	4		23.0	52	0	NW	4	
10	Th	14.0	26.6	0	1.2					19.5	52	0	SW	9		25.4	36	0	SW	4	
11	Fr	12.6	25.8	0	2.2					20.1	48	5	NW	9		25.4	34	3	NW	4	
12	Sa	9.6	17.7	0	2.0					15.1	49	5	NW	4		17.1	46	0	SW	4	
13	Su	4.2	16.3	0	3.2					11.8	50	0	SSW	19		14.3	52	1	W	4	
14	Mo	3.6	15.2	0	1.2					10.0	62	0	SW	4		14.4	51	3	SSW	4	
15	Tu	5.3	16.7	0	1.4					11.1	64	0	W	4							
16	We	7.9	18.1	0	1.4					12.7	72	2	SW	9		16.2	60	3	SW	4	
17	Th	6.2	19.5	0	1.6					13.2	83	0	NW	4		18.4	51	5	NE	4	
18	Fr	6.9	20.1	0	1.0					13.4	89	0	NW	4		19.8	45	0	NW	4	
19	Sa	8.6	18.5	0	1.6					13.0	56	4	NW	9		17.5	55	6		Calm	
20	Su	6.2	17.3	0	1.6					11.8	84	7	W	4		15.8	73	3	E	4	
21	Mo	8.9	18.6	0	0.8					13.1	93	0	NW	4		17.4	67	2	N	4	
22	Tu	8.0	19.0	0	1.2					12.6	65	0	W	9		18.7	39	0	NW	4	
23	We	5.8	20.1	0	1.8					14.0	57	0	NW	4		19.5	43	0	N	9	
24	Th	8.5	17.3	0	1.4					17.0	48	7	N	4		14.2	97	8	NW	4	
25	Fr	10.8	15.2	12.2	1.4					13.3	89	8	NW	4		14.3	42	3	NW	28	
26	Sa	7.8	15.7	0.2	2.0					10.7	48	0	WNW	28		13.3	56	5	WSW	19	
27	Su	6.7	15.4	0	1.8					11.8	69	3	SW	19		14.5	58	3	S	4	
28	Mo	7.6	16.2	0	1.0					11.2	72	1	SW	4		14.5	54	4	SW	9	
29	Tu	10.1	14.1	5.4	2.0					11.6	97	8	SW	4		13.7	89	8	S	4	
30	We	10.2	16.7	5.0	0.8					12.1	94	7	SW	4		16.1	70	2	S	4	
31	Th	7.8	15.6	0.2	0.6					10.7	94	7	E	4		14.8	86	7	ESE	4	
Statistics for May 2012																					
	Mean	8.3	18.8		1.4					13.4	71	2		6		17.5	58	3		5	
	Lowest	3.6	14.1		0.6					10.0	48	0	#	4		13.3	34	0		Calm	
	Highest	14.0	26.6	12.2	3.2					20.1	97	8	WNW	28		25.4	97	8	NW	28	
	Total			24.4	44.8																

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.

IDCJDW2110.201205 Prepared at 13:01 UTC on 14 Jun 2012

Gosford, New South Wales
May 2012 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	Tu	8.1	22.1	0			NW	24	12:06	16.0	98			Calm		21.4	54		NE	7	
2	We	8.3	23.7	0			ENE	17	14:29	16.2	99			Calm		22.4	67		ENE	7	
3	Th	14.4	21.7	1.0			SE	15	14:35	17.5	97		NNE	4		19.4	63		ESE	6	
4	Fr	8.4	20.5	0			SSE	24	12:31	14.3	81		ENE	4		18.6	69		SSW	2	
5	Sa	8.7	21.0	0			ESE	24	14:36	14.1	73		W	7		19.0	59		E	4	
6	Su	5.4	20.5	0.2			N	17	09:22	13.7	80		N	6		19.7	45		WNW	2	
7	Mo	6.2	18.6	0			SE	13	14:12	11.6	98			Calm		17.9	54		S	4	
8	Tu	4.5	22.5	0			N	19	10:46	13.9	98			Calm		20.7	49			Calm	
9	We	5.6	25.6	0.2			NNE	13	14:20	14.0	99			Calm		24.2	53		ENE	2	
10	Th	8.2	27.9	0			SW	15	13:17	16.1	100			Calm		24.8	43		W	4	
11	Fr	8.6	27.5	0.2			N	28	11:04	17.1	99		NNW	2		25.6	42		NW	2	
12	Sa	8.1	19.5	0			SSE	20	10:58	17.5	64		W	9		18.8	37		SE	6	
13	Su	2.3	18.2	0			WNW	37	12:20	13.4	53		NNW	6		16.2	45		NW	13	
14	Mo	5.5	17.4	0			NE	39	08:36	12.9	56		ENE	7		16.2	47		SE	11	
15	Tu	4.0	18.8	0			WNW	24	05:22	13.5	61		ESE	7		18.2	49		SW	2	
16	We	6.6	19.9	0.2			S	20	09:32	15.0	67		WNW	7		17.7	58		SSE	4	
17	Th	5.3	19.5	0			SSE	17	10:16	12.9	99			Calm		15.6	87			Calm	
18	Fr	5.0	22.0	0.2			N	17	13:02					Calm		20.4	45		NW	6	
19	Sa	3.9	21.3	0.2			NW	11	11:23	11.1	100			Calm		18.5	49			Calm	
20	Su	4.5	18.6	0			S	22	12:01	14.6	90		E	4		17.9	75		SSE	9	
21	Mo	9.3	20.0	0.8			N	22	12:24	14.8	99			Calm		18.8	70		NE	4	
22	Tu	4.7	20.4	0.2			N	24	10:01	14.6	64		N	11		19.5	36		NW	6	
23	We	3.3	21.7	0.2			NW	22	12:44	11.8	98			Calm		20.7	43		NNE	9	
24	Th	3.9	14.6	0			S	9	12:25	10.8	100			Calm						Calm	
25	Fr	10.8	16.9	9.8			NW	33	15:09					Calm		16.7	40		NNW	11	
26	Sa	5.0	17.8	0.2			NNW	33	09:34	13.1	46		N	13		15.9	47		N	9	
27	Su	4.1	18.3	0			SSW	20	11:48	13.4	73		SSE	7		16.9	50		SE	9	
28	Mo	8.5	18.3	1.8			N	22	04:08	14.0	60		WSW	7		17.2	53		SE	11	
29	Tu	10.6	17.3	4.6			NNE	17	13:45	13.9	100		N	6		14.6	100			Calm	
30	We	10.7	18.5	15.4			SSW	24	11:49				NW	6		17.4	70		S	7	
31	Th	7.7	17.1	0			SSE	13	12:09					Calm		16.0	98			Calm	
Statistics for May 2012																					
	Mean	6.8	20.2							14.1	83			3		18.9	56			5	
	Lowest	2.3	14.6							10.8	46			Calm		14.6	36			Calm	
	Highest	14.4	27.9	15.4			NE	39		17.5	100		N	13		25.6	100		NW	13	
	Total			35.2																	

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.

IDCJDW2048.201205 Prepared at 13:00 UTC on 14 Jun 2012