



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 2010**

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

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Colin Davies BSc MEIA CENVP  
Environmental Scientist  
26 November 2010

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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 October 2010;
- Surface Water quality results for October 2010;
- Groundwater depth and quality results for October 2010; and
- Meteorological report for October 2010.

The October 2010 dust deposition results were generally similar to September 2010. All sites, on a year to date average basis, are currently below the Air Quality Management Plan exceedence level of 3.7g/m<sup>2</sup>.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 November 2010 at sites A, C and F. Site B and D were dry. 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 low Electrical Conductivity, low Total Dissolved Solids, low Total Suspended Solids and no detectable Oil and Grease. pH levels remained stable and were within the neutral to slightly acidic range.

Groundwaters were sampled for normal monthly monitoring on 1 November 2010. 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 with the exception of CQ10 which showed a decrease in pH.

The meteorological station data recovery for the month was approximately 100%. The predominant winds were from the NE, with strongest winds from the SW and WSW. Recorded rainfall on site for October was 94.6mm, which was below 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	94.6mm
BOM Peats Ridge*	103.2mm
BOM Gosford*	86.2mm
BOM Peats Ridge Long term mean for October*	93.6mm

\*Data sourced from Bureau of Meteorology (BOM) website ([www.bom.gov.au](http://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<sup>2</sup>.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.

## 2.0 Monthly Results

### 2.1 Dust Deposition Gauges

**Table 1** displays the results for October 2010 and the project average. Results are in g/m<sup>2</sup>.month.

**Table 1: Dust Deposition results: 1-Oct-2010 to 1-Nov-2010**

Site	Monthly Insoluble Solids g/m <sup>2</sup> .month	Monthly Ash Residue g/m <sup>2</sup> .month	Monthly Combustible Matter g/m <sup>2</sup> .month	Monthly Ash Residue/ Insoluble Solids %	Rolling Annual Average Insoluble Solids g/m <sup>2</sup> .month
<b>CD1</b>	0.9	0.7	0.2	78	1.4
<b>CD2c</b>	0.4	0.3	0.1	75	1.2
<b>CD3</b>	0.3	0.2	0.1	67	0.7
<b>CD4</b>	0.8	0.3	0.5	38	0.8
<b>CD5</b>	0.4	0.1	0.3	25	0.8
<b>CD6</b>	0.7	0.2	0.5	29	0.8

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<sup>2</sup>.month, the Development Consent annual average amenity criteria at residential locations. The current rolling annual average is calculated from November 2009 to October 2010.

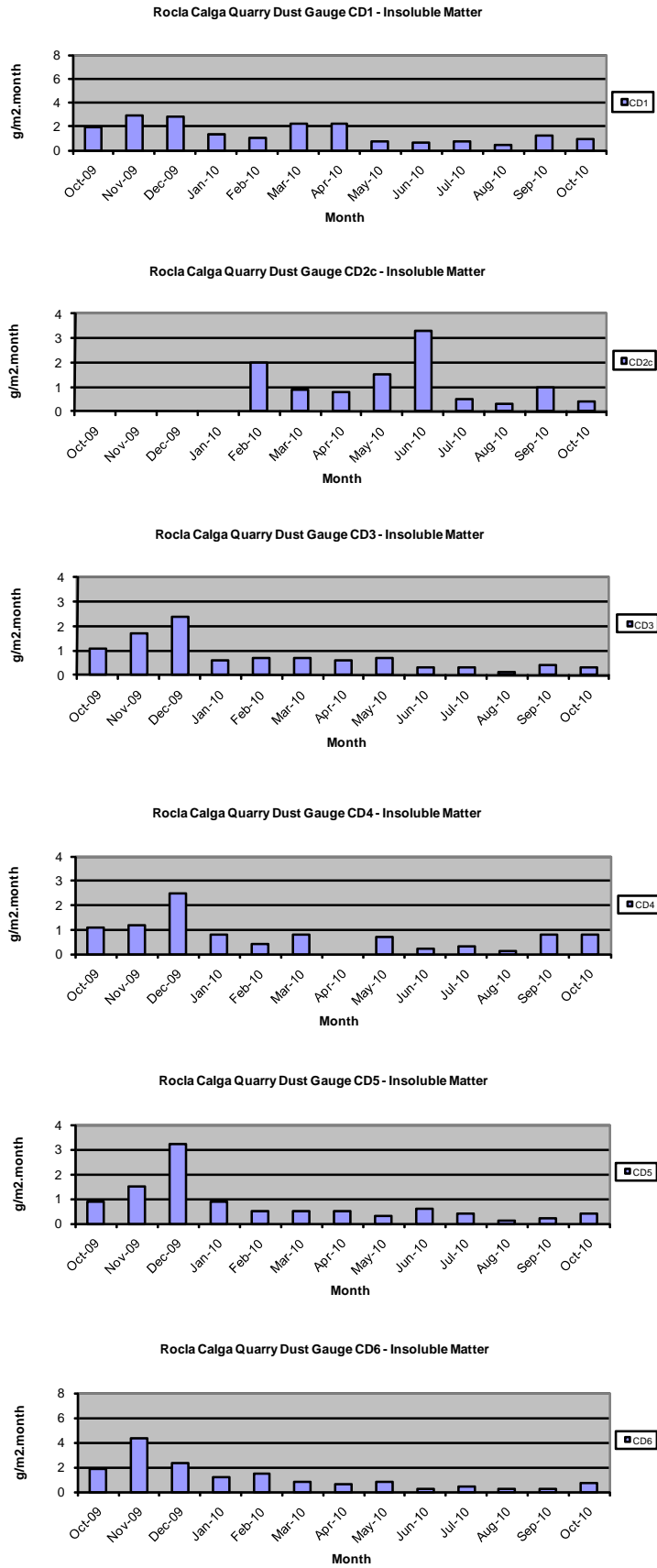
NA= Not Available.

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 1** below. The laboratory analysis is provided in **Appendix 1**.

The predominant winds were from the NE, with strongest winds from the SW and WSW.

Figure 1: Dust Deposition Charts



## 2.2 Water Monitoring

### 2.2.1 Surface Waters

Monthly surface water monitoring was conducted on the 1 November 2010 and results are listed in **Table 2**. The laboratory analysis sheets 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	Still	Clear	Clear	5.76	82	60	10	<5
B	Dry	---	---	---	---	---	---	---
C	Still	Clear	Clear	7.53	103	82	12	<5
D	Dry	---	---	---	---	---	---	---
F	Still	Clear	Clear	5.86	77	43	10	<5

At the time of sampling, there were no water discharges off site from any sampling location. Site B and D were dry at the time of sampling. The samples were collected and analysed for a monthly sampling event. Results show pH within the neutral to slightly acidic range, low Electrical Conductivity, low Total Dissolved Solids, low Total Suspended Solids and no detectable Oil and Grease.

### 2.2.2 Groundwaters

Groundwaters were sampled on 1 November 2010. 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 remained relatively steady at all sites with the exception of CQ10 which showed a decrease in pH. Detailed biannual water quality monitoring was conducted during October 2010 and is next due in April 2011.

**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 (uS/cm) This report
CQ1	Voutos	* Monitor	20.59	19.81	4.4	110
CQ3	Voutos	* Monitor	10.53	10.76	6.0	100
CQ4	Voutos	* Monitor	8.78	8.41	4.8	80
CQ5	Gazzana	DIP Only	8.69	6.90	4.3	150
CQ6	Gazzana	DIP Only	16.00	11.10	5.2	160
CQ7	Gazzana	* Monitor	6.89	7.09	4.5	90
CQ8	Gazzana	* Monitor	11.03	6.26	4.4	150
CQ9	Gazzana	DIP Only	10.10	9.35	4.4	100
CQ10	Voutos	* Monitor	NI	22.71	4.8	150
CQ11S	Gazzana	* Monitor	NI	9.84	4.5	140
CQ11D	Gazzana	* Monitor	NI	11.07	5.4	120
CQ12	Gazzana	* Monitor	NI	4.55	4.3	130
CQ13	Kashouli	* Monitor	NI	13.76	5.1	180
CP3	Gazzana	Domestic	10.40	8.57	4.6	130
CP4	Kashouli	Domestic	13.63	10.82	5.2	190
CP5	Kashouli	Domestic	16.61	8.71	4.3	250
CP6	Kashouli	Domestic	16.27	10.85	4.3	200
CP7	Kashouli	Production	8.56	3.89	4.6	150
CP8	Rozmanec	Domestic	22.17	NR	NR	NR
MW7	Rocla Bore	* Monitor	15.76	16.82	4.4	110
MW8	Rocla Bore	* Monitor	9.82	8.07	4.7	80
MW9	Rocla Bore	* Monitor	22.44	21.89	4.4	80
MW10	Rocla Bore	* Monitor	15.41	13.90	4.4	120
MW13	Rocla Bore	DIP Only	NI	8.08	4.6	90
MW16	Rocla Bore	DIP Only	NI	8.70	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.

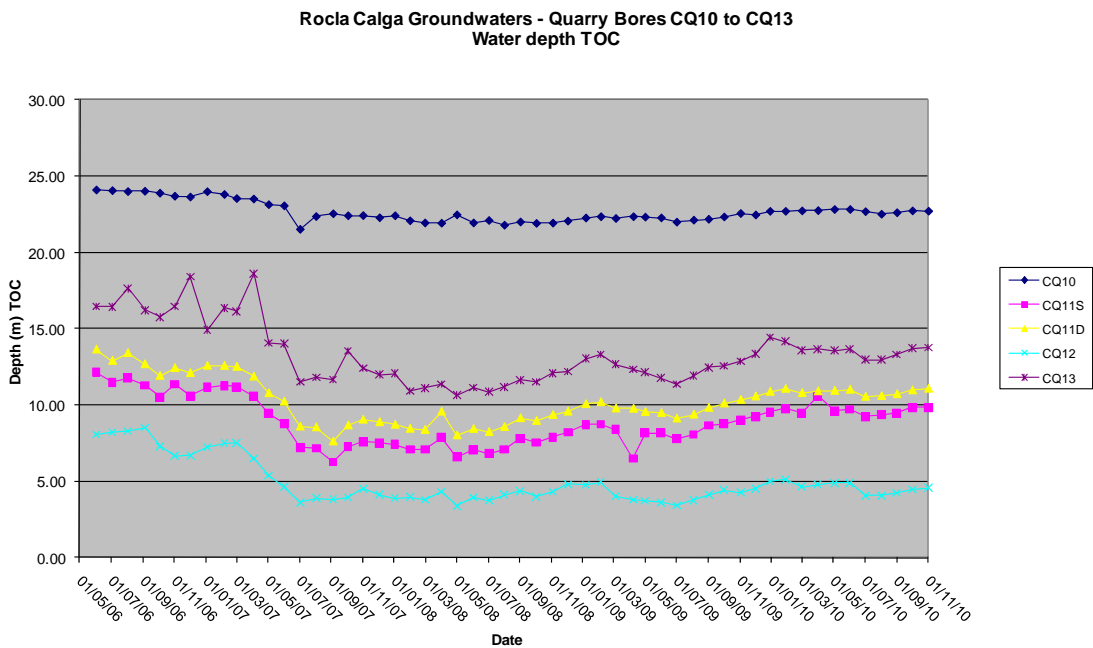
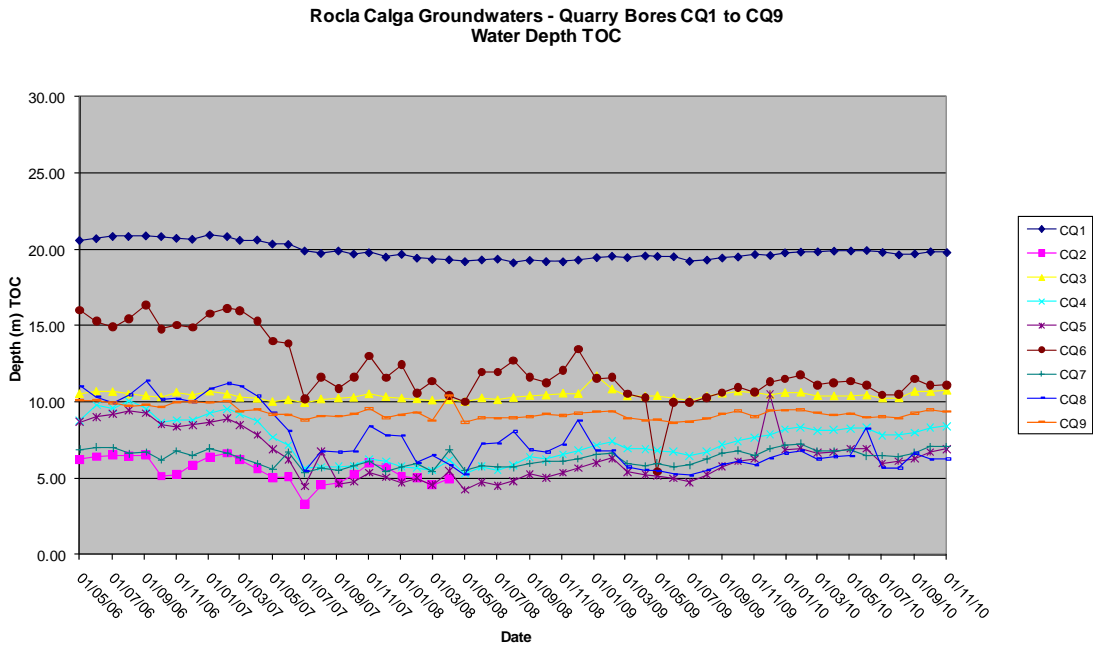
NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements taken by Carbon Based Environmental Pty Limited.

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

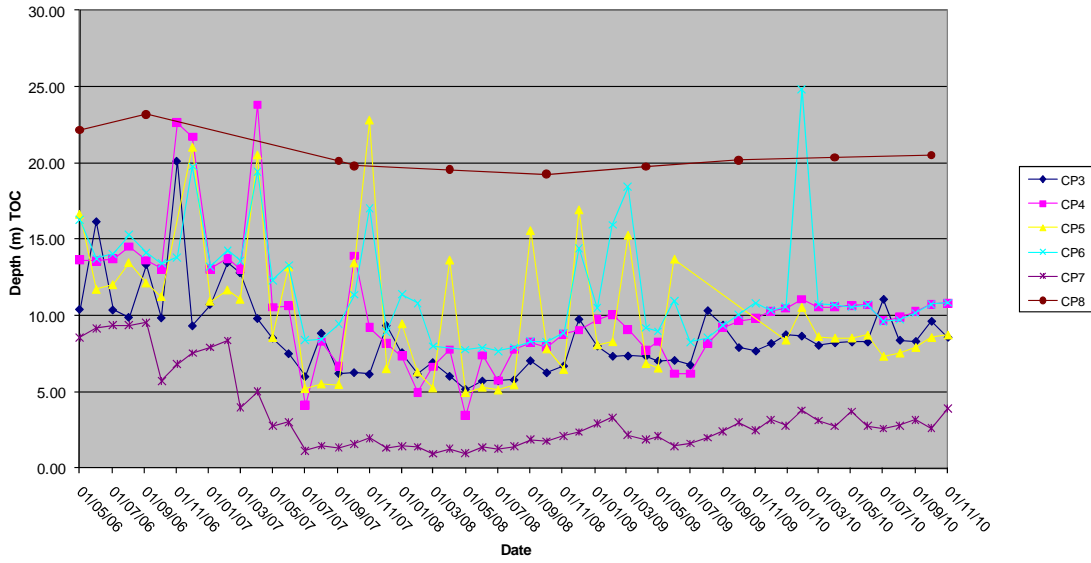
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

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

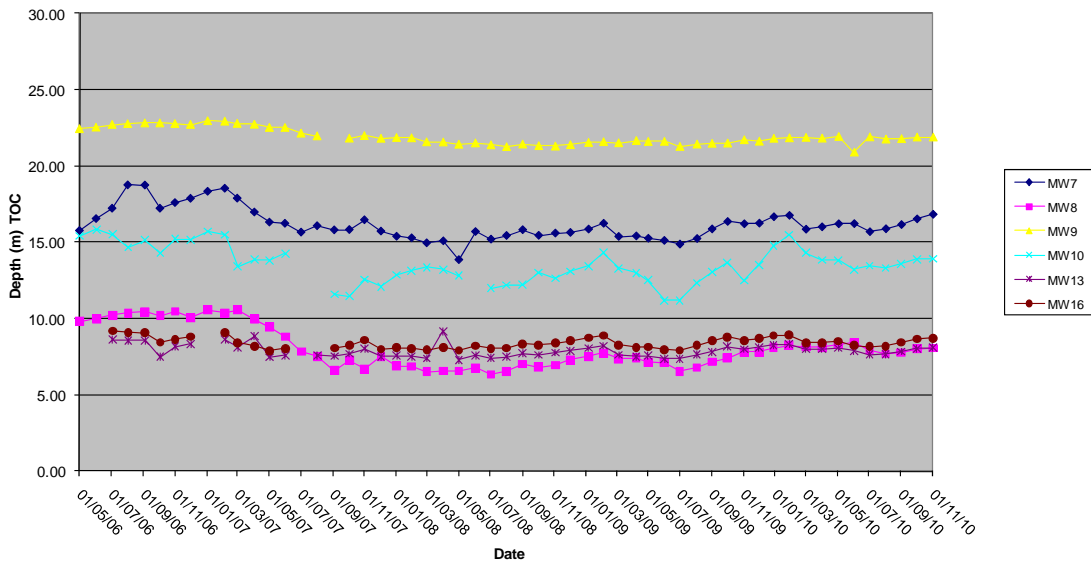
Figures 2 to 5: Groundwater Depth Charts.



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 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 2010 shows rainfall at the Rocla Calga Quarry below that which was recorded at nearby Peats Ridge BOM station and above that which was recorded at nearby Gosford BOM station. The rainfall comparison is provided below:

Rocla Calga Quarry	94.6mm
BOM Peats Ridge*	103.2mm
BOM Gosford*	86.2mm
BOM Peats Ridge Long term mean for October*	93.6mm

\*Data sourced from Bureau of Meteorology (BOM) website ([www.bom.gov.au](http://www.bom.gov.au))

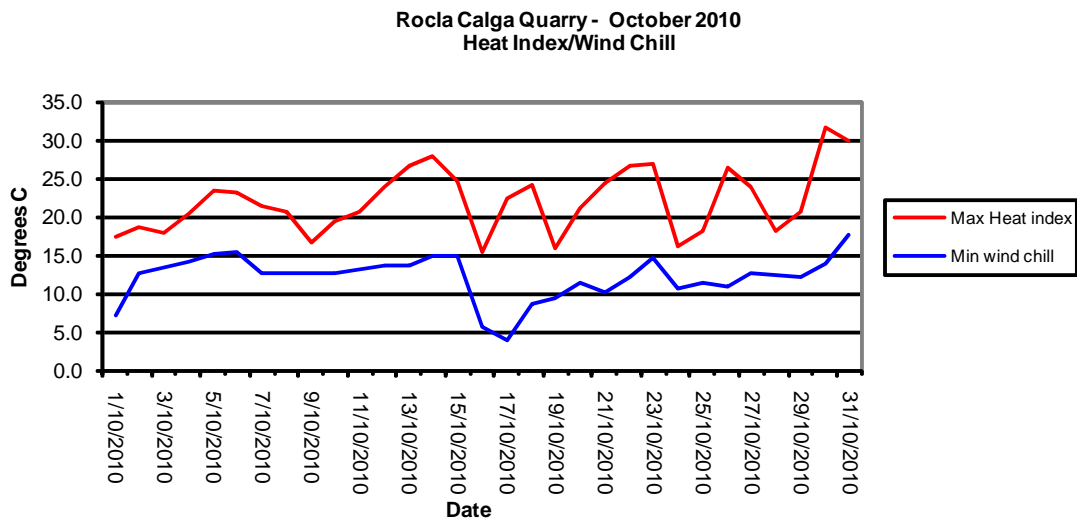
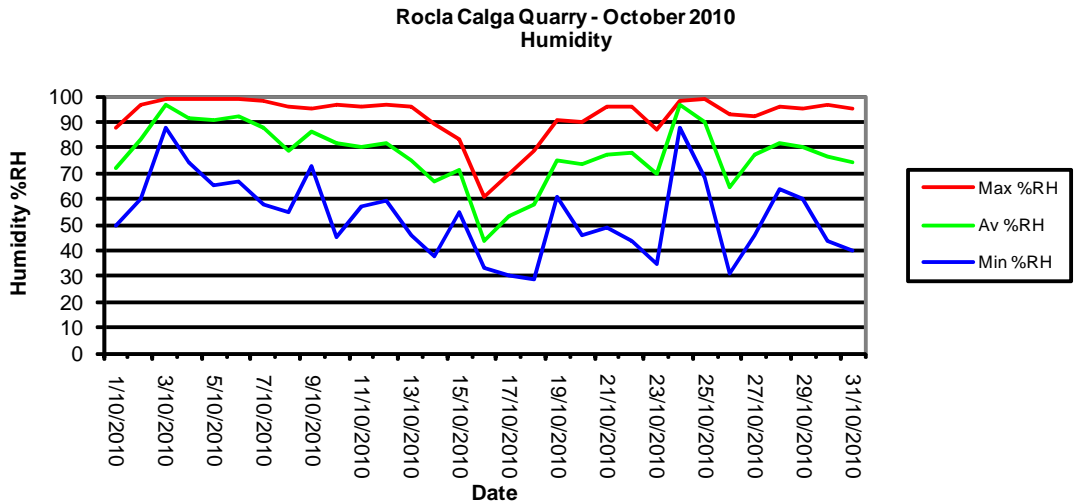
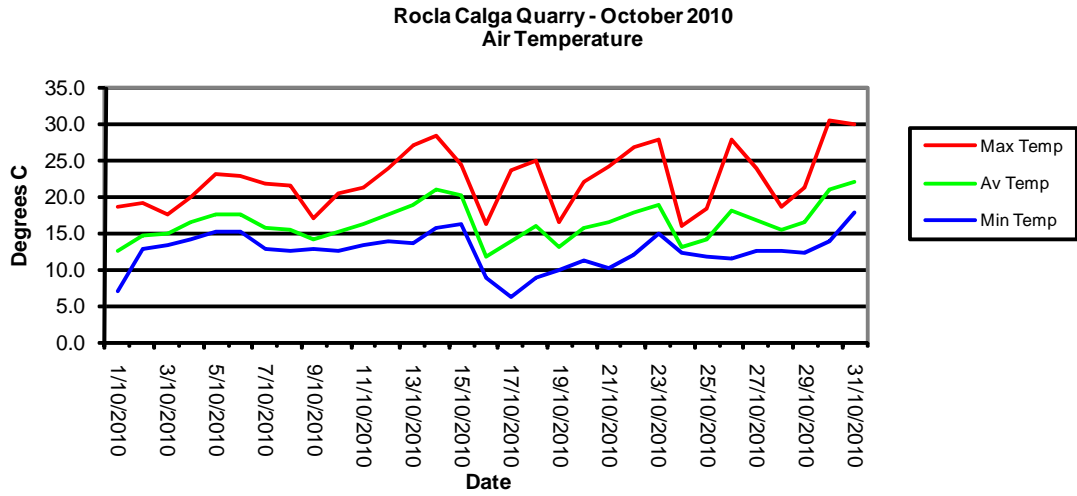
Results are displayed in the following table and figures.

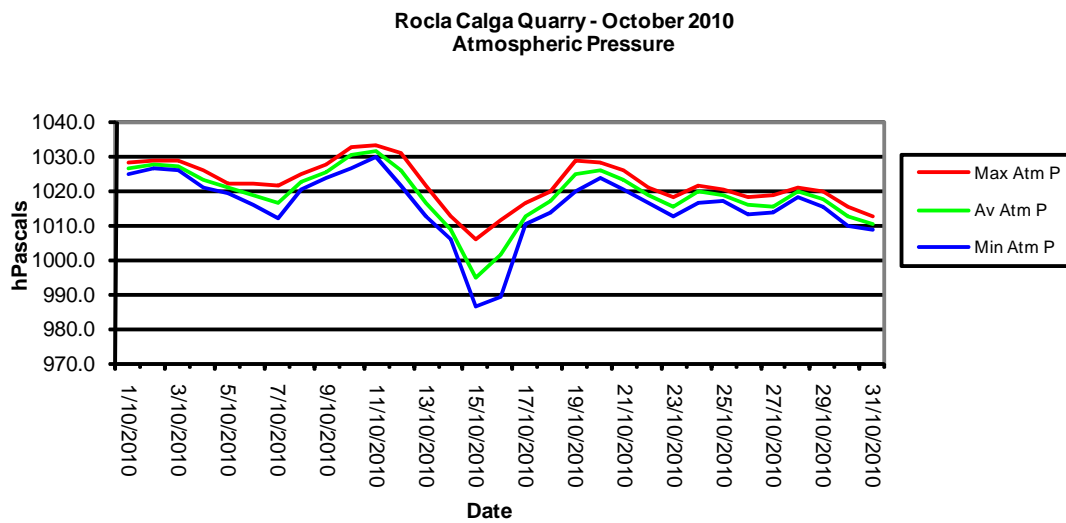
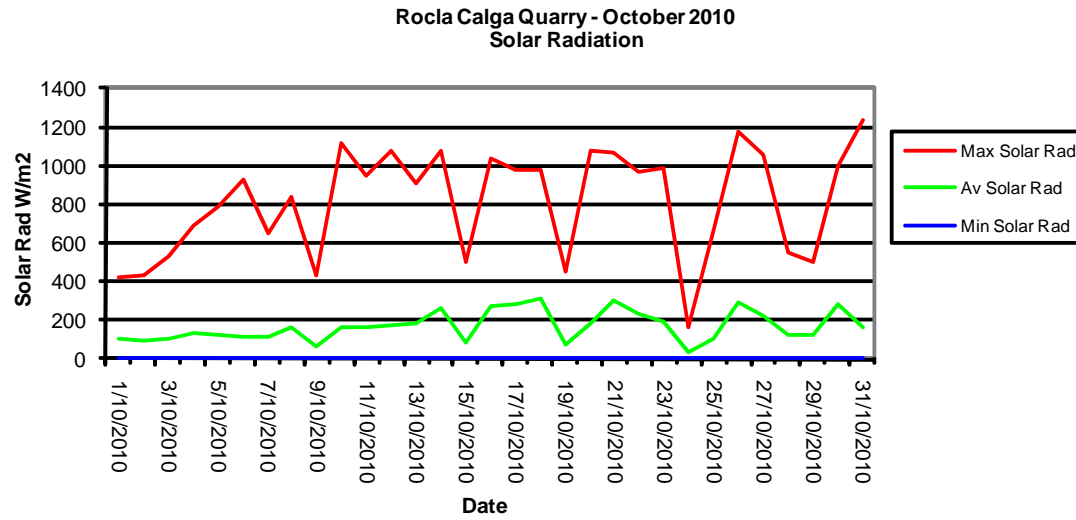
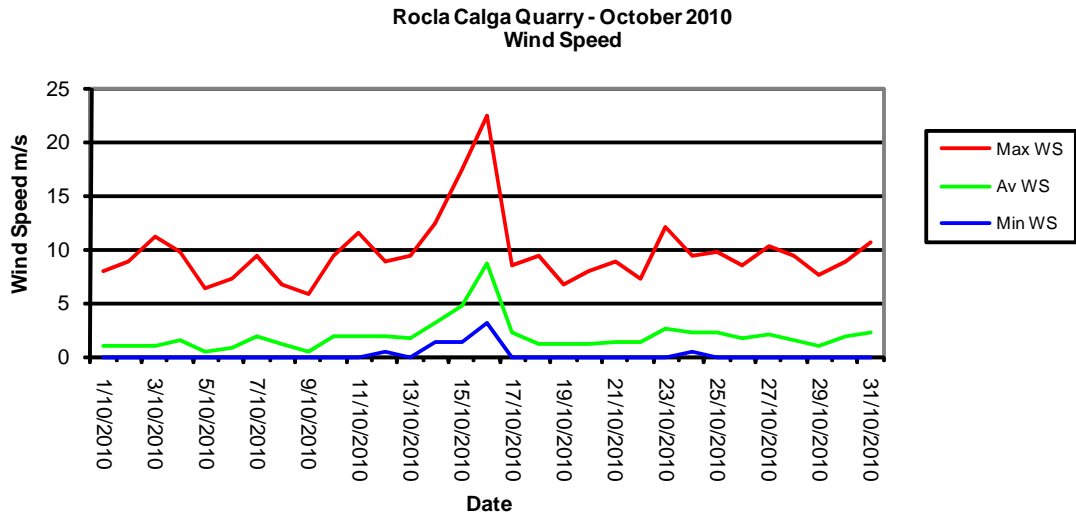
### 2.3.1 Monthly Meteorological Data Summary

Summary Oct-10 Rocla - Calga

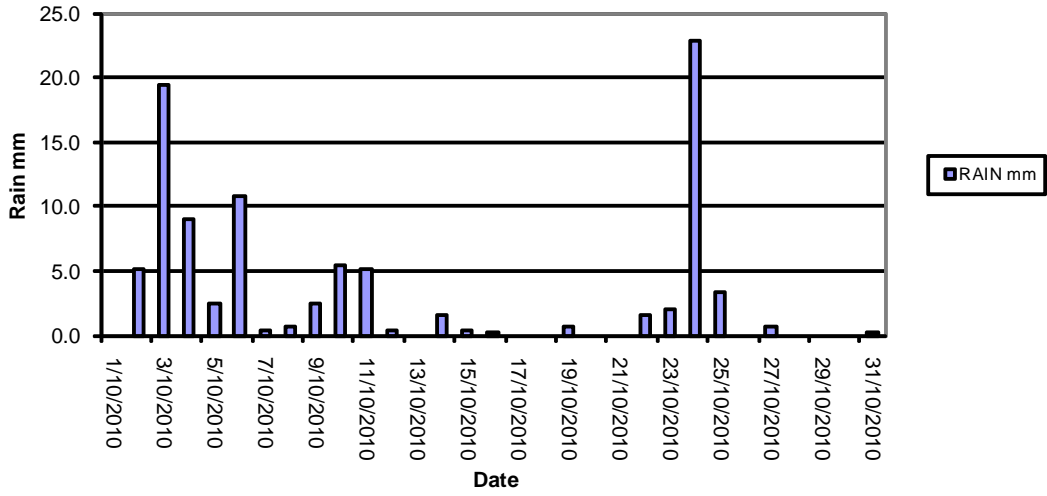
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/10/2010	7.0	12.6	18.6	50	72	88	0.0	2.0	0	1.0	8	7.1	17.5	1024.6	1026.3	1028.0	0	107.2	423	89.8	98.3	100
2/10/2010	12.7	14.5	19.2	60	83	97	5.2	1.6	0	1.0	8.9	12.7	18.6	1026.5	1027.6	1028.8	0	90.6	432	90.6	98.5	100
3/10/2010	13.3	15.0	17.5	88	96	99	19.4	1.4	0	1.0	11.2	13.3	17.8	1025.7	1027.0	1028.7	0	103.7	535	76.6	97.4	100
4/10/2010	14.1	16.3	20.0	74	92	99	9.0	2.1	0	1.5	9.8	14.1	20.4	1020.8	1023.1	1025.6	0	130.2	688	87.7	96.7	100
5/10/2010	15.2	17.4	23.1	65	90	99	2.4	1.9	0	0.4	6.3	15.2	23.4	1018.9	1020.8	1022.2	0	128.6	792	76.6	97.2	100
6/10/2010	15.2	17.6	22.8	67	92	99	10.8	1.8	0	0.9	7.2	15.3	23.2	1015.8	1018.8	1021.7	0	118.8	925	78.7	97.0	100
7/10/2010	12.7	15.6	21.7	58	87	98	0.4	2.0	0	1.9	9.4	12.7	21.3	1012.2	1016.4	1021.6	0	115.0	655	76.3	93.0	100
8/10/2010	12.5	15.4	21.4	55	79	96	0.6	2.7	0	1.2	6.7	12.6	20.6	1020.4	1022.3	1024.9	0	167.4	843	59.4	92.0	100
9/10/2010	12.7	14.2	16.9	73	86	95	2.4	1.0	0	0.5	5.8	12.7	16.7	1023.6	1025.3	1027.4	0	67.2	428	78.7	91.1	100
10/10/2010	12.6	15.1	20.5	45	82	97	5.4	3.0	0	1.9	9.4	12.6	19.4	1026.6	1030.1	1032.3	0	165.9	1114	75.7	90.5	100
11/10/2010	13.2	16.3	21.2	57	80	96	5.2	3.0	0	1.8	11.6	13.2	20.6	1029.8	1031.3	1033.2	0	165.2	953	75.4	93.2	100
12/10/2010	13.7	17.5	23.8	59	81	97	0.4	3.2	0.4	1.9	8.9	13.7	24.0	1021.5	1026.0	1030.6	0	178.2	1075	50.9	93.3	100
13/10/2010	13.6	18.9	27.0	46	75	96	0.0	3.4	0	1.7	9.4	13.6	26.7	1012.5	1016.4	1021.6	0	182.3	913	75.1	97.1	100
14/10/2010	15.7	20.9	28.4	38	67	89	1.6	5.1	1.3	3.1	12.5	14.9	28.0	1006.0	1008.9	1012.5	0	262.2	1082	80.4	93.4	100
15/10/2010	16.1	20.2	24.4	55	72	83	0.4	3.2	1.3	4.8	17.4	15.0	24.6	986.3	994.5	1005.8	0	88.7	498	85.7	94.0	100
16/10/2010	8.8	11.8	16.3	33	44	61	0.2	7.7	3.1	8.6	22.4	5.7	15.5	989.4	1001.5	1011.4	0	274.8	1034	91.5	96.9	100
17/10/2010	6.1	13.8	23.5	30	54	70	0.0	5.0	0	2.3	8.5	3.8	22.5	1010.2	1012.5	1016.4	0	285.3	974	96.8	99.4	100
18/10/2010	8.8	16.0	24.9	29	58	79	0.0	5.1	0	1.2	9.4	8.6	24.2	1013.7	1016.7	1019.7	0	307.8	978	86	98.4	100
19/10/2010	9.8	13.0	16.5	61	75	91	0.6	1.7	0	1.2	6.7	9.4	15.8	1019.7	1024.7	1028.4	0	78.2	447	96.2	99.1	100
20/10/2010	11.3	15.7	21.9	46	73	90	0.0	3.3	0	1.2	8	11.3	21.2	1023.5	1026.0	1028.3	0	186.8	1078	97.1	99.4	100
21/10/2010	10.1	16.5	24.2	49	77	96	0.0	4.7	0	1.4	8.9	10.2	24.3	1020.1	1022.8	1025.6	0	299.7	1065	94.4	99.6	100
22/10/2010	12.0	17.7	26.7	44	78	96	1.6	3.8	0	1.3	7.2	12.1	26.6	1016.4	1018.6	1020.9	0	230.4	965	93.9	99.6	100
23/10/2010	14.9	18.9	27.7	35	69	87	2.0	4.1	0	2.6	12.1	14.6	26.8	1012.4	1015.4	1017.9	0	194.1	988	98.5	100.0	100
24/10/2010	12.2	13.1	15.9	88	96	98	22.8	0.5	0.4	2.3	9.4	10.7	16.1	1016.5	1019.5	1021.6	0	37.9	159	84.5	96.6	100
25/10/2010	11.7	14.0	18.3	68	90	99	3.4	1.5	0	2.3	9.8	11.5	18.1	1017.2	1018.6	1020.1	0	104.7	659	94.4	99.5	100
26/10/2010	11.5	18.0	27.8	31	65	93	0.0	5.2	0	1.8	8.5	10.9	26.4	1013.1	1015.6	1017.9	0	297.4	1172	92.1	99.8	100
27/10/2010	12.5	16.8	23.8	46	77	92	0.6	3.9	0	2.1	10.3	12.6	24.0	1013.4	1015.2	1018.6	0	227.1	1055	88.9	99.5	100
28/10/2010	12.4	15.3	18.6	64	82	96	0.0	2.2	0	1.5	9.4	12.4	18.2	1018.0	1019.6	1021.0	0	122.1	549	97.1	99.6	100
29/10/2010	12.2	16.4	21.3	60	80	95	0.0	2.2	0	1.0	7.6	12.2	20.7	1015.3	1017.6	1019.9	0	126.4	506	94.4	99.7	100
30/10/2010	13.9	20.8	30.3	44	77	97	0.0	5.2	0	1.8	8.9	13.9	31.7	1009.9	1012.5	1015.5	0	286.0	993	92.4	99.9	100
31/10/2010	17.7	22.0	29.9	40	75	95	0.2	3.6	0	2.2	10.7	17.7	29.8	1008.4	1010.4	1012.3	0	159.8	1239	99.7	100.0	100
Monthly	6.1	16.4	30.3	29	78	99	94.6	97.1	0	1.9	22.4	3.8	31.7	986.3	1018.8	1033.2	0	170.6	1239	50.9	97.1	100

### 2.3.2 Monthly Weather Charts

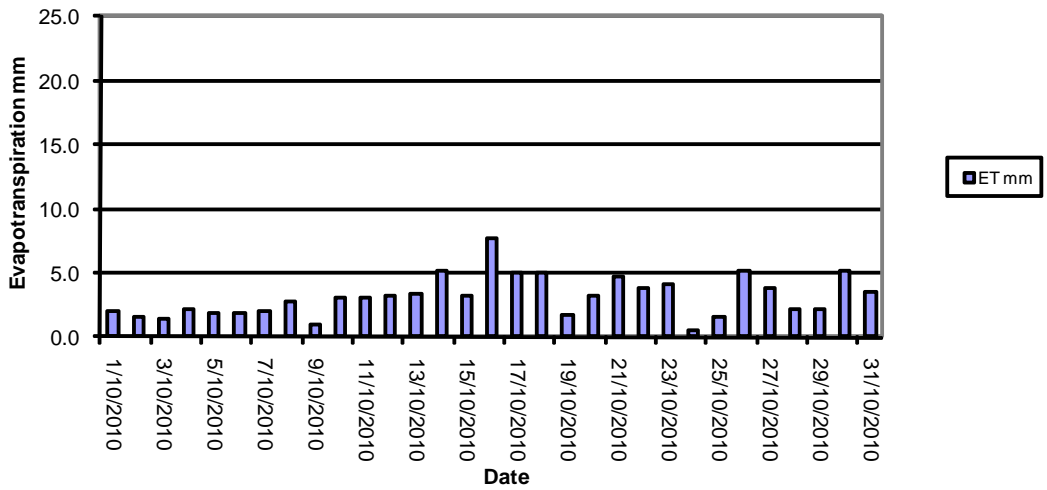




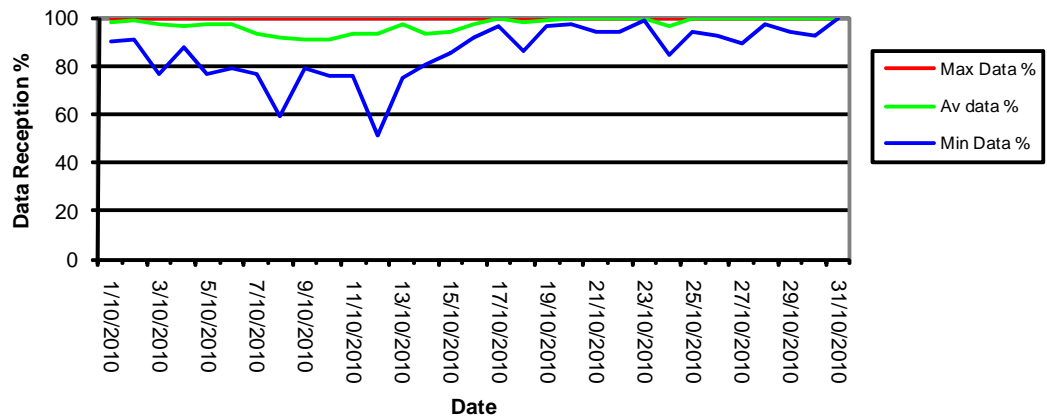
Rocla Calga Quarry - October 2010  
Rainfall



Rocla Calga Quarry - October 2010  
Evapotranspiration



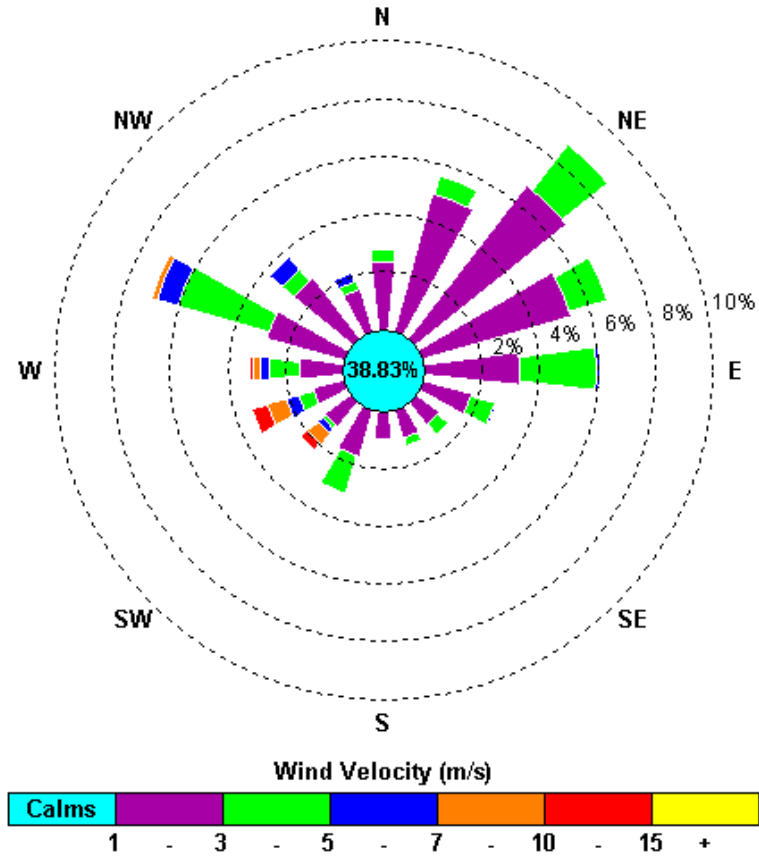
Rocla Calga Quarry - October 2010  
Data Reception



### 2.3.3 Monthly 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 October 2010 – 23:45, 31 October 2010



The predominant winds were from the NE, with strongest winds from the SW and WSW. The maximum wind speed was 22.4m/s from the WSW.

Appendix 1  
Laboratory Certificates



Environmental Division

**CERTIFICATE OF ANALYSIS**

<b>Work Order</b>	: <b>EN1002602</b>	Page	: 1 of 4
<b>Client</b>	: <b>CARBON BASED ENVIRONMENTAL</b>	Laboratory	: Environmental Division Newcastle
<b>Contact</b>	: MS RENAE MIKKA	Contact	: Peter Keyte
<b>Address</b>	: 47 BOOMERANG ST CESSNOCK NSW, AUSTRALIA 2325	Address	: 5 Rosegum Road Warabrook NSW Australia 2304
<b>E-mail</b>	: cbased1@bigpond.com	E-mail	: peter.keyte@als.com.au
<b>Telephone</b>	: +61 49904443	Telephone	: 61-2-4968-9433
<b>Facsimile</b>	: +61 02 49904442	Facsimile	: +61-2-4968 0349
<b>Project</b>	: ROCLA CALGA DUSTS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: ----		
<b>C-O-C number</b>	: ----	<b>Date Samples Received</b>	: 01-NOV-2010
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 09-NOV-2010
<b>Site</b>	: ----		
<b>Quote number</b>	: ----	<b>No. of samples received</b>	: 6
		<b>No. of samples analysed</b>	: 6

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. All pages of this report have been checked and approved for release.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results



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Accredited for compliance with ISO/IEC 17025.

**Signatories**

This document has been electronically signed by the authorized signatories indicated below. Electronic signing has been carried out in compliance with procedures specified in 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Peter Keyte	Newcastle Manager	Newcastle

**Environmental Division Newcastle**

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## General Comments

The analytical procedures used by the Environmental Division have been developed from established internationally recognized procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are employed in the absence of documented standards or by client request.

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Key : CAS Number = CAS registry number from database maintained by Chemical Abstracts Services. The Chemical Abstracts Service is a division of the American Chemical Society.

LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting

- **Analysis as per AS3580.10.1-2003. Samples passed through a 1mm sieve prior to analysis. NATA accreditation is not held for results reported in g/m<sup>2</sup>.mth.**



## Analytical Results

Sub-Matrix: DUST

				<i>Client sample ID</i>				
				<i>Client sampling date / time</i>				
				<b>CD1</b>	<b>CD2C</b>	<b>CD3</b>	<b>CD4</b>	<b>CD5</b>
				01-NOV-2010 14:00	01-NOV-2010 14:00	01-NOV-2010 14:00	01-NOV-2010 14:00	01-NOV-2010 14:00
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<b>EN1002602-001</b>	<b>EN1002602-002</b>	<b>EN1002602-003</b>	<b>EN1002602-004</b>	<b>EN1002602-005</b>
<b>EA120: Ash Content</b>								
Ash Content	----	0.1	g/m <sup>2</sup> .month	<b>0.7</b>	<b>0.3</b>	<b>0.2</b>	<b>0.3</b>	<b>0.1</b>
Ash Content (mg)	----	1	mg	<b>13</b>	<b>5</b>	<b>3</b>	<b>6</b>	<b>2</b>
<b>EA125: Combustible Matter</b>								
Combustible Matter	----	0.1	g/m <sup>2</sup> .month	<b>0.2</b>	<b>0.1</b>	<b>0.1</b>	<b>0.5</b>	<b>0.3</b>
Combustible Matter (mg)	----	1	mg	<b>3</b>	<b>3</b>	<b>2</b>	<b>8</b>	<b>5</b>
<b>EA141: Total Insoluble Matter</b>								
Total Insoluble Matter	----	0.1	g/m <sup>2</sup> .month	<b>0.9</b>	<b>0.4</b>	<b>0.3</b>	<b>0.8</b>	<b>0.4</b>
Total Insoluble Matter (mg)	----	1	mg	<b>16</b>	<b>8</b>	<b>5</b>	<b>14</b>	<b>7</b>



**Analytical Results**

Sub-Matrix: **DUST**

Client sample ID

**CD6**

Client sampling date / time

01-NOV-2010 14:00

Compound	CAS Number	LOR	Unit	EN1002602-006				
<b>EA120: Ash Content</b>								
Ash Content	----	0.1	g/m <sup>2</sup> .month	<b>0.2</b>	----	----	----	----
Ash Content (mg)	----	1	mg	<b>3</b>	----	----	----	----
<b>EA125: Combustible Matter</b>								
Combustible Matter	----	0.1	g/m <sup>2</sup> .month	<b>0.5</b>	----	----	----	----
Combustible Matter (mg)	----	1	mg	<b>9</b>	----	----	----	----
<b>EA141: Total Insoluble Matter</b>								
Total Insoluble Matter	----	0.1	g/m <sup>2</sup> .month	<b>0.7</b>	----	----	----	----
Total Insoluble Matter (mg)	----	1	mg	<b>12</b>	----	----	----	----



Environmental Division

**CERTIFICATE OF ANALYSIS**

<b>Work Order</b>	: <b>ES1021842</b>	<b>Page</b>	: 1 of 3
<b>Client</b>	: <b>CARBON BASED ENVIRONMENTAL</b>	<b>Laboratory</b>	: Environmental Division Sydney
<b>Contact</b>	: MS RENAE MIKKA	<b>Contact</b>	: Charlie Pierce
<b>Address</b>	: 47 BOOMERANG ST CESSNOCK NSW, AUSTRALIA 2325	<b>Address</b>	: 277-289 Woodpark Road Smithfield NSW Australia 2164
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<b>Telephone</b>	: +61 49904443	<b>Telephone</b>	: +61-2-8784 8555
<b>Facsimile</b>	: +61 02 49904442	<b>Facsimile</b>	: +61-2-8784 8500
<b>Project</b>	: ROCLA QUARRY	<b>QC Level</b>	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
<b>Order number</b>	: ----	<b>Date Samples Received</b>	: 01-NOV-2010
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 08-NOV-2010
<b>Sampler</b>	: CBE	<b>No. of samples received</b>	: 3
<b>Site</b>	: ----	<b>No. of samples analysed</b>	: 3
<b>Quote number</b>	: SY/269/10 V2		

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**Signatories**

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<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Inorganics
Hoa Nguyen	Inorganic Chemist	Inorganics
Peter Keyte	Newcastle Manager	Newcastle
Sarah Millington	Senior Inorganic Chemist	Inorganics

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### **General Comments**

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LOR = Limit of reporting

^ = This result is computed from individual analyte detections at or above the level of reporting



**Analytical Results**

Sub-Matrix: **WATER**

				<i>Client sample ID</i>					
				<b>A</b>	<b>C</b>	<b>F</b>	----	----	----
				<i>Client sampling date / time</i>	01-NOV-2010 14:00	01-NOV-2010 14:00	01-NOV-2010 14:00	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	<b>ES1021842-001</b>	<b>ES1021842-002</b>	<b>ES1021842-003</b>	----	----	----
<b>EA005: pH</b>									
pH Value	----	0.01	pH Unit	<b>5.76</b>	<b>7.53</b>	<b>5.86</b>	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>									
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>82</b>	<b>103</b>	<b>77</b>	----	----	----
<b>EA015: Total Dissolved Solids</b>									
^ Total Dissolved Solids @180°C	GIS-210-010	1	mg/L	<b>60</b>	<b>82</b>	<b>43</b>	----	----	----
<b>EA025: Suspended Solids</b>									
^ Suspended Solids (SS)	----	1	mg/L	<b>10</b>	<b>12</b>	<b>10</b>	----	----	----
<b>EP020: Oil and Grease (O&amp;G)</b>									
^ Oil & Grease	----	5	mg/L	<5	<5	<5	----	----	----

## Appendix 2

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



