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

April 2011

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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 April 2011;
- Surface Water quality results for April 2011;
- Groundwater depth and quality results for April 2011; and
- Meteorological report for April 2011.

The April 2011 dust deposition results were generally lower than or similar to March 2011 with the exception of CD1 which increased. 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 May 2011 at sites A, D and F. There was no access to site B and site C. At the time of sample collection, there was no water discharge observed from the site. Results show generally good quality water with both 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 slightly acidic range.

Groundwaters were sampled for normal monthly monitoring on 2 May 2011. Groundwater depths decreased at all monitoring bores this month, indicating water toward the surface. EC and pH remained relatively steady at all sites.

The meteorological station data recovery for the month was 100% with the exception of wind speed which was unavailable for April due to wind sensor damage. Recorded rainfall on site for April was 206.6 mm, which was higher than that recorded at the BOM Peats Ridge Station and higher than the Peats Ridge long-term average for April. Results are detailed below:

Rocla Calga Quarry	206.6 mm
BOM Peats Ridge*	165.8 mm
BOM Gosford*	224.0 mm
BOM Peats Ridge Long term mean for April*	126.8 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, 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 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 April 2011 and the project average. Results are in g/m^2.month.

Table 1: Dust Deposition results: 1-April 2011 to 2-May 2011

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	**4.8**	4.8	<0.1	100	1.8
CD2c	0.9	0.9	<0.1	100	1.2
CD3	0.6	0.6	<0.1	100	0.5
CD4	0.1	0.1	<0.1	100	0.4
CD5	0.1	0.1	<0.1	100	0.4
CD6	0.2	0.2	<0.1	100	0.5

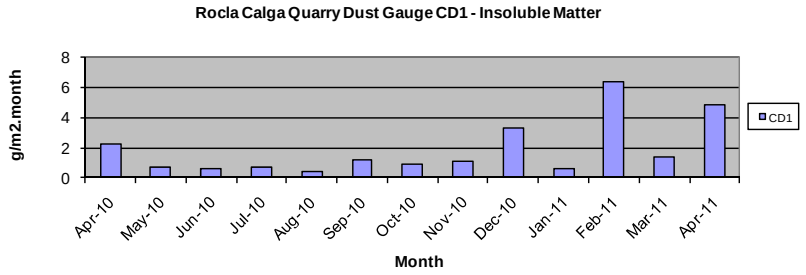
Insoluble Solids marked with an * indicate an excessively contaminated gauge. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen and seeds) and insects. Results in bold indicate insoluble solids levels above 3.7 g/m^2.month; the Development Consent's annual average amenity criteria at residential locations. The current rolling annual average is calculated from May 2010 to April 2011.

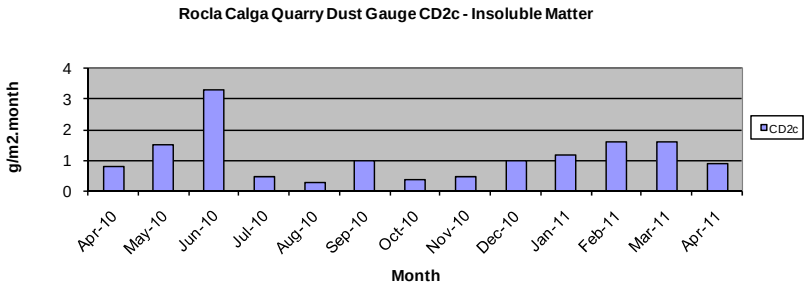
NA= Not Available.

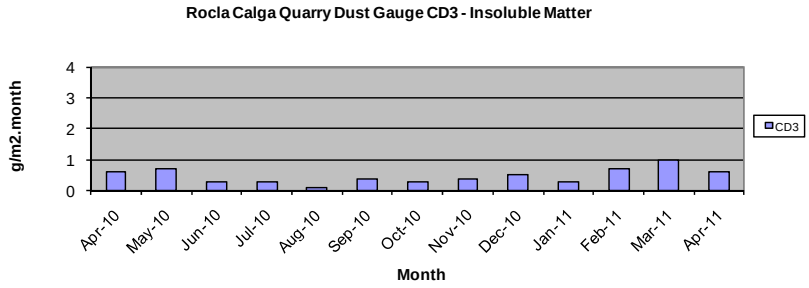
CD1 was installed on the 1 May 2006. CD2a was discontinued at the start of August 2006 due to quarry operations "mining out" the site of the gauge. The replacement gauge, Site CD2b, was located in a position adjacent to the boundary between B. Kashouli and F. & J. Gazzana in conformance with the Air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

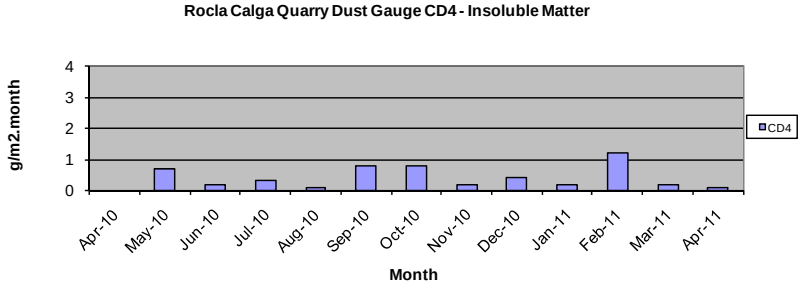
Dust deposition charts for all dust gauge sites appear in **Figure 1** below. The laboratory analysis is provided in **Appendix 1.**

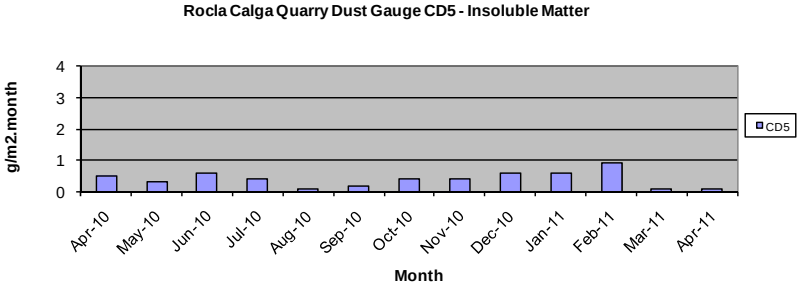
Figure 1: Dust Deposition Charts

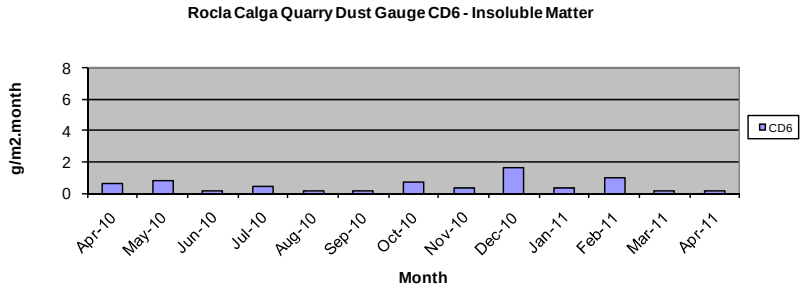












2.2 Water Monitoring

2.2.1 Surface Waters

Monthly surface water monitoring was conducted on the 2 May 2011 and results are listed in **Table 2**. The laboratory analysis sheets for both sampling events are provided in **Appendix 1.**

Table 2: Monthly surface water monitoring – April 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	5.50	74	31	<5	<5
B	NO ACCESS							
C	NO ACCESS							
D	Dam	Clear	Clear	5.25	90	64	<5	<5
F	Dam	Clear	Clear	5.30	73	49	12	<5

At the time of sampling, there were no water discharges off site from any sampling location. Samples were collected at sites A, D and F. There was no access to site B and site C. 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.

2.2.2 Groundwaters

Groundwaters were sampled on 2 May 2011. 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 decreased at all monitoring bores this month, indicating water moving toward the surface. Longer term monitoring is required to fully evaluate groundwater depth trends.

EC and pH remained relatively steady at all sites this month. Detailed biannual water quality monitoring was conducted this month and is next due in October 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 (µS/cm) This report
CQ1	Voutos	* Monitor	20.59	19.81	4.30	150
CQ3	Voutos	* Monitor	10.53	10.33	5.64	80
CQ4	Voutos	* Monitor	8.78	8.08	4.68	100
CQ5	Gazzana	DIP Only	8.69	5.94	4.44	160
CQ6	Gazzana	DIP Only	16.00	10.50	4.40	170
CQ7	Gazzana	* Monitor	6.89	5.92	4.65	110
CQ8	Gazzana	* Monitor	11.03	5.74	4.31	160
CQ9	Gazzana	DIP Only	10.10	8.08	4.59	120
CQ10	Voutos	* Monitor	NI	22.61	4.41	180
CQ11S	Gazzana	* Monitor	NI	9.56	4.38	170
CQ11D	Gazzana	* Monitor	NI	10.75	4.93	150
CQ12	Gazzana	* Monitor	NI	4.26	4.22	150
CQ13	Kashouli	* Monitor	NI	13.27	4.97	210
CP3	Gazzana	Domestic	10.40	8.32	4.53	160
CP4	Kashouli	Domestic	13.63	8.25	4.53	220
CP5	Kashouli	Domestic	16.61	7.88	4.25	240
CP6	Kashouli	Domestic	16.27	10.18	4.20	210
CP7	Kashouli	Production	8.56	1.91	5.32	150
CP8	Rozmanec	Domestic	22.17	19.85	4.29	150
MW7	Rocla Bore	* Monitor	15.76	15.41	4.33	130
MW8	Rocla Bore	* Monitor	9.82	7.76	4.72	100
MW9	Rocla Bore	* Monitor	22.44	21.91	4.41	110
MW10	Rocla Bore	* Monitor	15.41	12.91	4.43	160
MW13	Rocla Bore	DIP Only	NI	7.36	4.54	120
MW16	Rocla Bore	DIP Only	NI	7.93	4.53	130

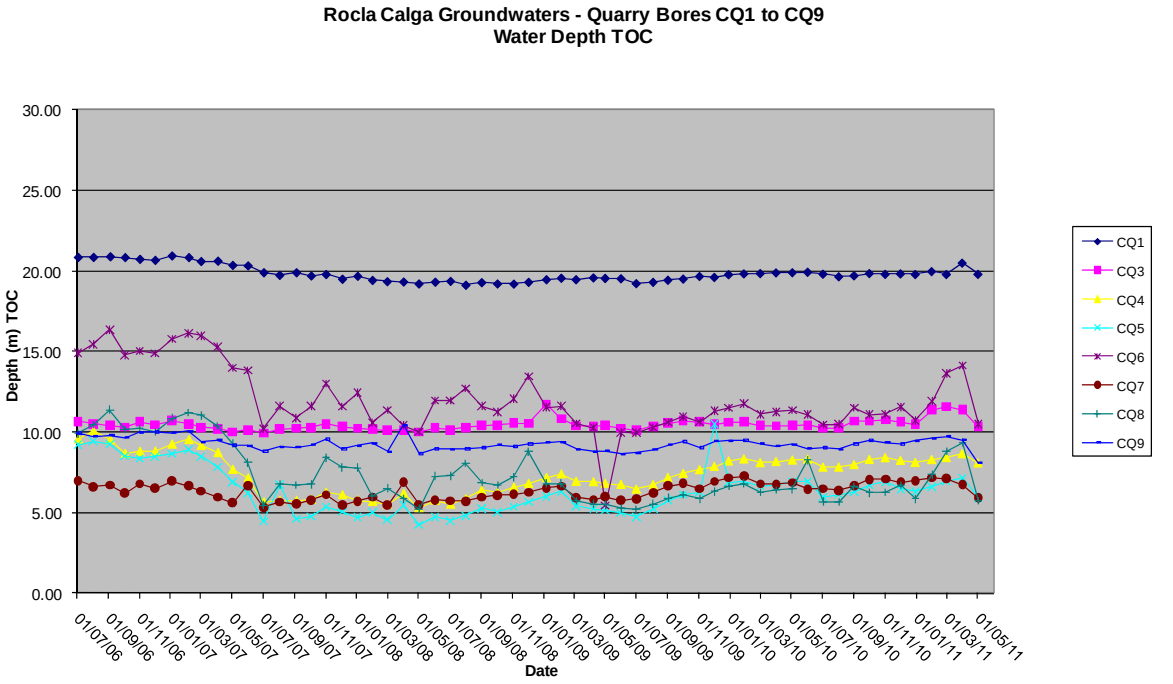
Notes:
TOC = Water level measured from top of bore case to water.
NM = Not Monitored – unable to sample water due to access restrictions.
NR = Not Required by resident.
* = Logger Installed.
NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements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

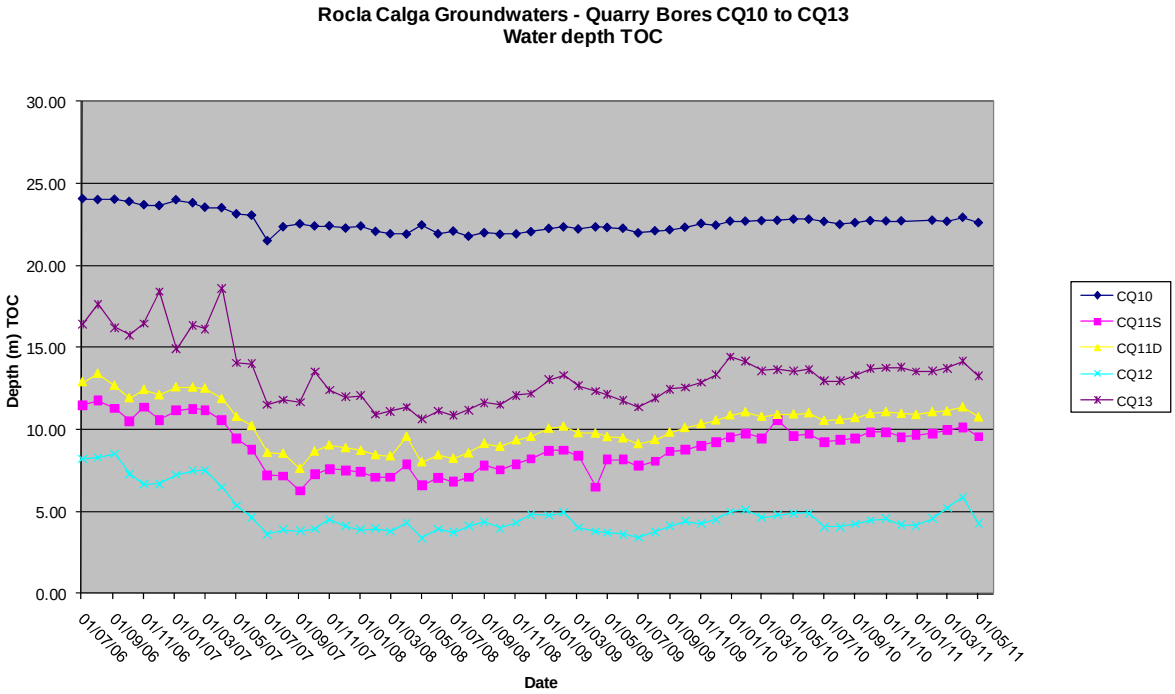
Shading is used to indicate the following trends in water depth (compared to the last reading):

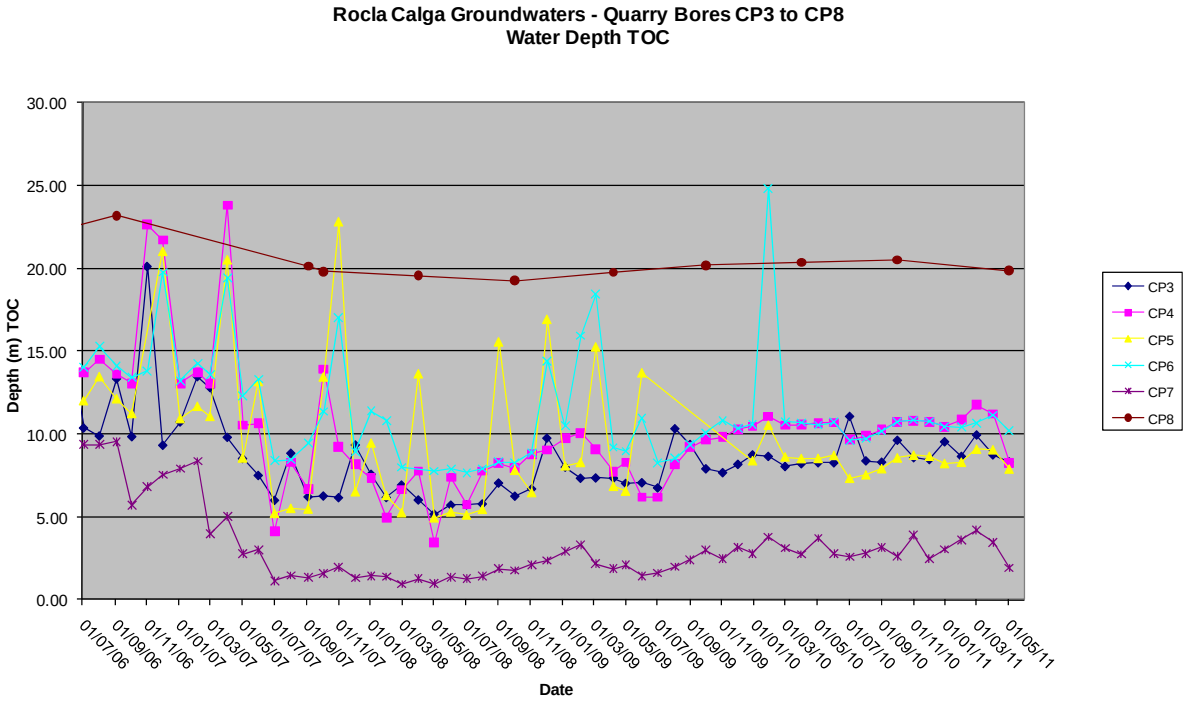
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

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
Depth (m) TOC
30.00
25.00
20.00
15.00
10.00
5.00
0.00
01/07/06
01/09/06
01/11/06
01/01/07
01/03/07
01/05/07
01/07/07
01/09/07
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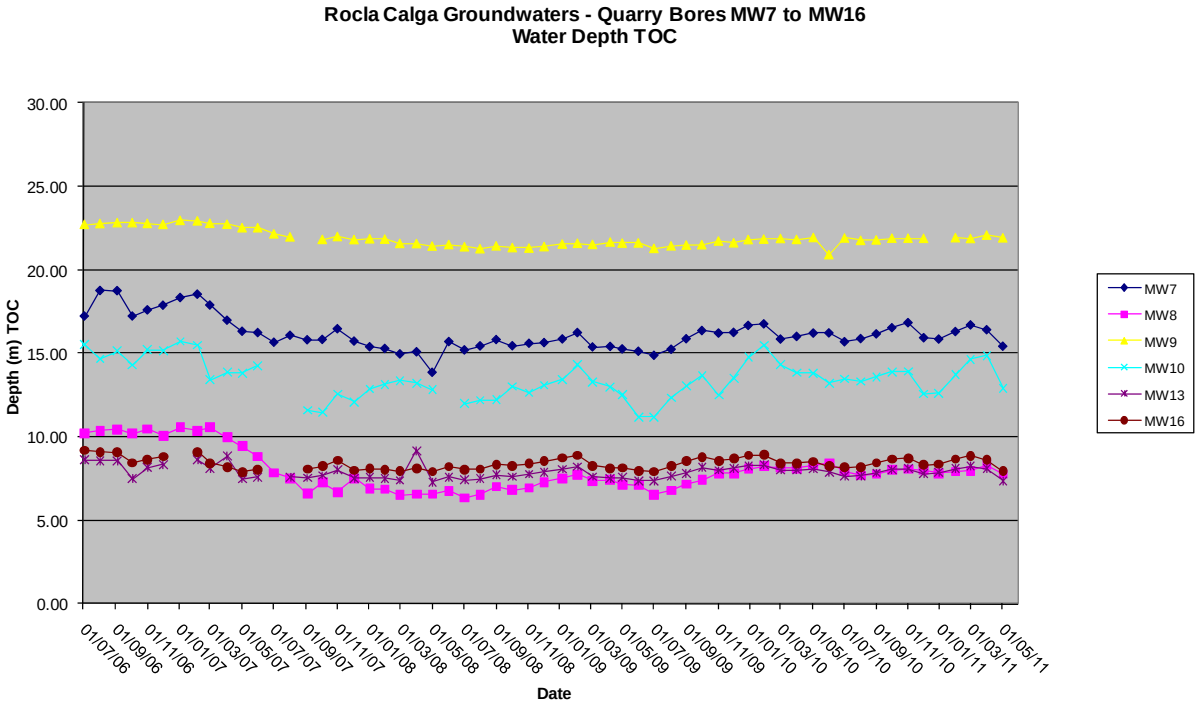
Date
CP3
CP4
CP5
CP6
CP7
CP8


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
01/07/06
01/09/06
01/11/06
01/01/07
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01/09/10
01/11/10
01/01/11
01/03/11
01/05/11
Date
MW7
MW8
MW9
MW10
MW13
MW16

2.3 Meteorological Monitoring

The Rocla Calga Quarry weather station data recovery in April was 100% with the exception of wind speed which was unavailable for the entire month due to a damaged wind sensor. 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 April 2011 shows rainfall recorded at the Rocla Calga Quarry was higher than that recorded at nearby Peats Ridge and slightly lower than Gosford BOM stations. Recorded rainfall at Rocla Calga Quarry was higher than the Peats Ridge long term mean rainfall for April. The rainfall comparison is provided below:

Rocla Calga Quarry	206.6 mm
BOM Peats Ridge*	165.8 mm
BOM Gosford*	224.0 mm
BOM Peats Ridge Long term mean for April*	126.8 mm

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

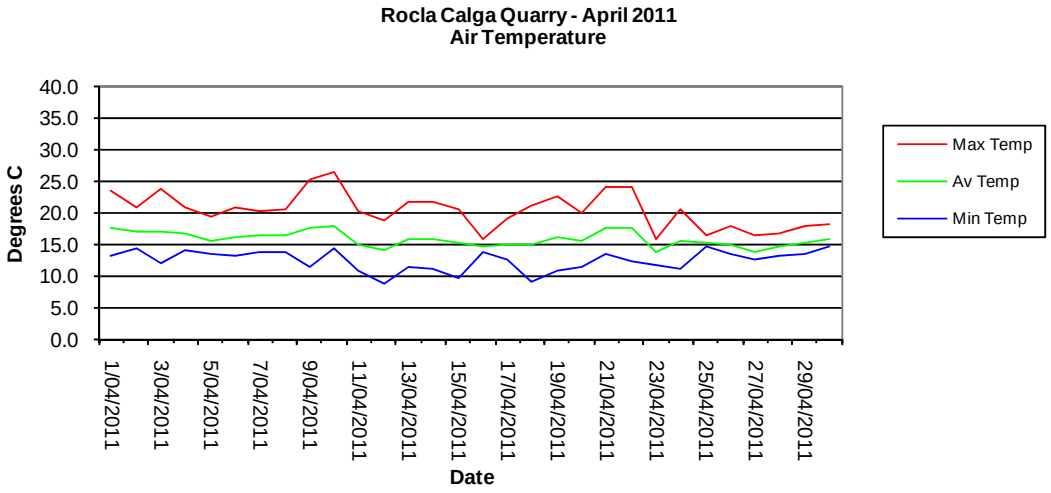
Results are displayed in the following table and figures.

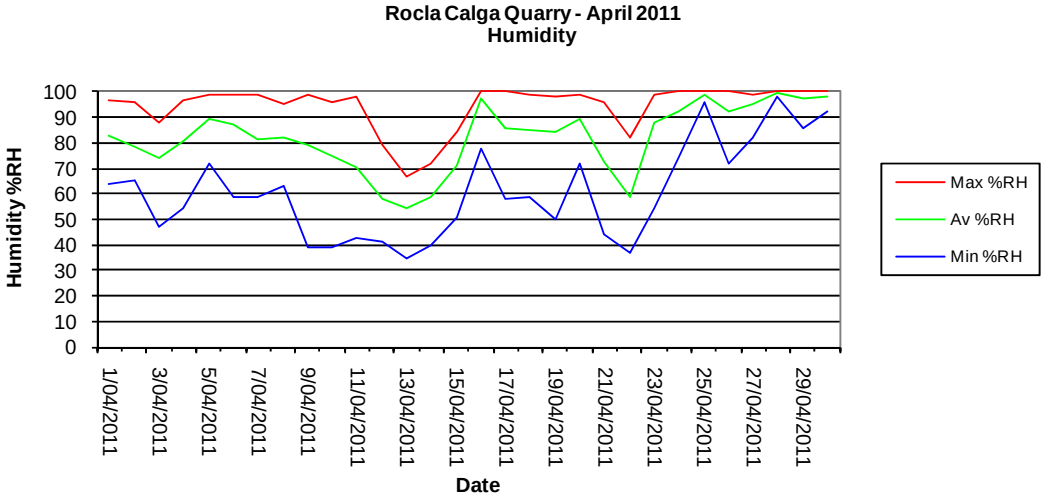
2.3.1 Monthly Meteorological Data Summary

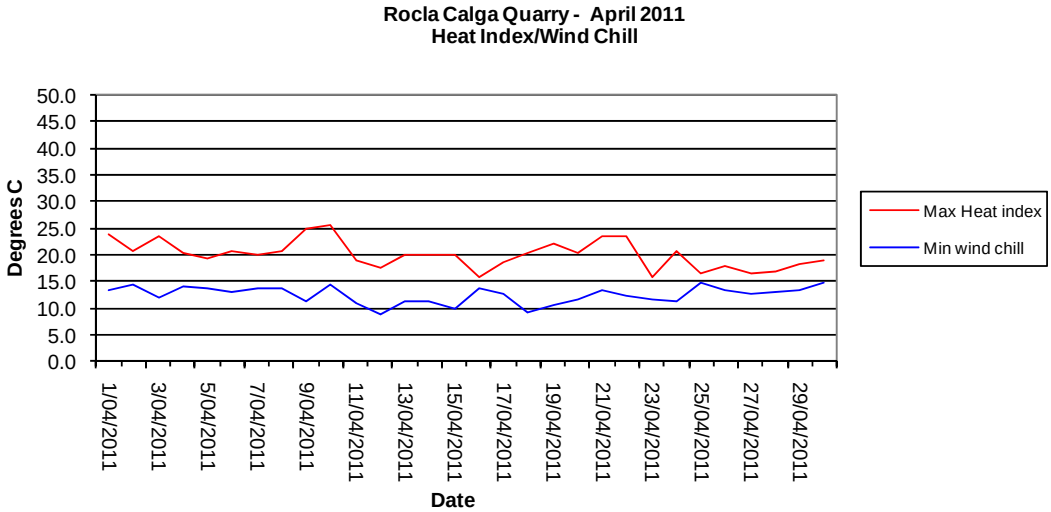
Summary **Apr-11** **Rocla - Calga**

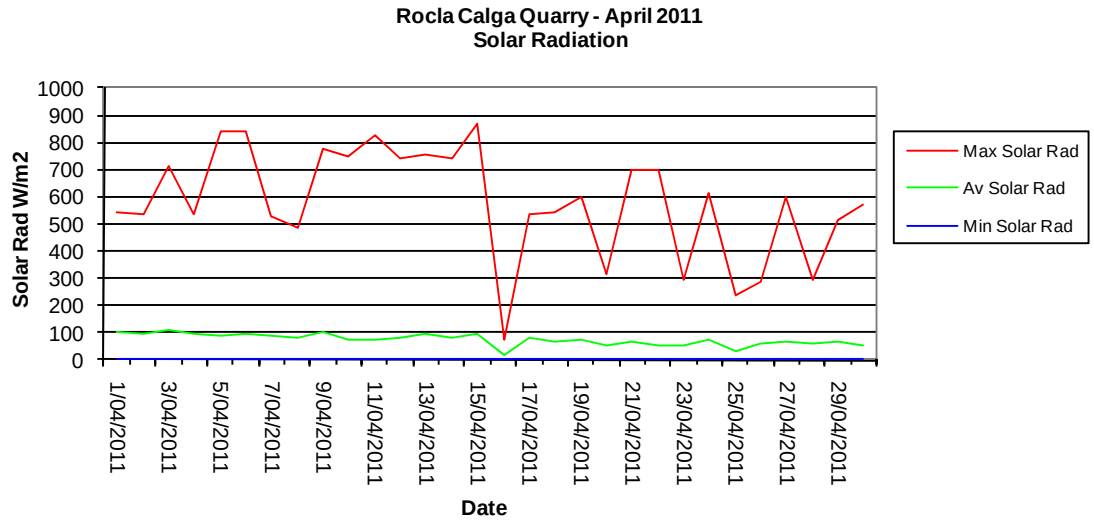
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/04/2011	13.3	17.6	23.4	64	83	97	0.2	1.6				13.4	23.9	1018.0	1021.8	1024.8	0	104.9	542	94.7	99.9	100
2/04/2011	14.3	17.1	20.8	65	79	96	0.0	1.4				14.4	20.9	1016.0	1020.3	1024.0	0	96.5	539	90.4	99.2	100
3/04/2011	11.9	17.1	23.7	47	74	88	0.0	1.6				11.9	23.7	1020.6	1023.0	1024.7	0	113.5	710	95.6	99.9	100
4/04/2011	14.1	16.8	20.8	54	81	97	4.0	1.5				14.1	20.3	1023.5	1025.9	1028.4	0	98.3	539	95.3	99.6	100
5/04/2011	13.5	15.5	19.3	72	90	99	5.6	1.2				13.6	19.4	1026.9	1028.7	1030.1	0	91.3	842	87.7	99.2	100
6/04/2011	13.1	16.0	20.8	59	88	99	5.8	1.4				13.1	20.6	1027.2	1028.5	1029.6	0	96.8	838	92.4	99.4	100
7/04/2011	13.8	16.5	20.3	59	81	99	2.0	1.4				13.8	20.2	1028.1	1029.2	1030.3	0	92.0	529	90.9	98.7	100
8/04/2011	13.7	16.3	20.6	63	82	95	0.0	1.2				13.7	20.7	1026.4	1028.4	1030.5	0	81.5	488	82.2	98.4	100
9/04/2011	11.3	17.6	25.2	39	79	99	0.2	1.5				11.3	25.1	1016.4	1021.8	1026.3	0	103.8	776	91.8	99.4	100
10/04/2011	14.3	17.9	26.3	39	75	96	11.4	1.1				14.4	25.7	1007.1	1010.9	1016.1	0	71.6	751	94.4	99.9	100
11/04/2011	10.8	15.1	20.2	43	71	98	0.0	1.1				10.9	18.9	1007.9	1009.8	1011.9	0	75.8	823	89.8	99.0	100
12/04/2011	8.9	14.1	18.8	41	58	79	0.2	1.2				8.9	17.5	1010.9	1012.5	1015.2	0	80.4	743	86	99.4	100
13/04/2011	11.3	15.9	21.6	35	54	67	0.0	1.6				11.3	20.2	1010.8	1013.3	1015.0	0	92.3	757	90.1	98.9	100
14/04/2011	11.1	15.8	21.6	40	59	72	0.0	1.6				11.2	20.2	1010.0	1012.2	1014.0	0	82.3	740	89.5	99.3	100
15/04/2011	9.8	15.2	20.5	51	71	84	0.0	1.7				9.9	19.9	1013.3	1015.4	1017.3	0	98.1	867	95	99.7	100
16/04/2011	13.7	14.7	15.7	78	98	100	104.2	0.2				13.7	15.9	1015.6	1018.3	1021.4	0	14.8	77	68.7	98.6	100
17/04/2011	12.6	15.0	19.0	58	86	100	2.0	1.1				12.6	18.8	1021.2	1022.8	1024.2	0	83.2	533	62.3	94.9	100
18/04/2011	9.1	14.9	21.1	59	85	99	0.2	1.0				9.1	20.5	1018.3	1020.9	1023.5	0	68.9	545	90.9	99.5	100
19/04/2011	10.8	16.1	22.6	50	84	98	0.2	1.1				10.8	22.3	1017.5	1019.1	1020.9	0	76.5	601	82.2	98.5	100
20/04/2011	11.5	15.6	19.9	72	90	99	0.2	0.8				11.6	20.4	1014.9	1017.2	1019.4	0	55.1	319	78.9	98.6	100
21/04/2011	13.5	17.5	24.0	44	72	96	0.2	1.0				13.5	23.7	1010.4	1012.7	1015.0	0	65.2	701	85.7	99.0	100
22/04/2011	12.4	17.7	24.0	37	59	82	0.0	1.1				12.4	23.7	1008.6	1011.9	1016.0	0	55.0	697	94.2	99.9	100
23/04/2011	11.6	13.8	15.8	54	88	99	1.8	0.9				11.6	16.0	1016.3	1019.9	1022.4	0	53.3	296	98.5	99.9	100
24/04/2011	11.2	15.4	20.4	74	92	100	0.2	1.0				11.2	20.8	1021.5	1022.6	1023.9	0	74.9	613	99.7	100.0	100
25/04/2011	14.7	15.3	16.3	96	99	100	19.0	0.4				14.7	16.7	1022.8	1025.3	1027.8	0	29.4	237	90.9	99.7	100
26/04/2011	13.5	15.1	17.9	72	93	100	8.2	0.8				13.5	17.8	1026.9	1028.6	1030.0	0	58.9	286	97.7	99.9	100
27/04/2011	12.7	13.9	16.3	82	95	99	11.4	0.9				12.7	16.4	1027.1	1028.6	1030.3	0	70.6	602	92.1	99.5	100
28/04/2011	13.2	14.7	16.8	98	99	100	21.0	0.7				13.2	17.0	1023.6	1025.2	1026.9	0	60.1	292	93.6	99.8	100
29/04/2011	13.4	15.4	17.8	86	98	100	3.6	0.9				13.4	18.2	1022.2	1023.5	1025.2	0	67.4	515	85.4	99.4	100
30/04/2011	14.7	15.9	18.3	92	98	100	5.0	0.7				14.7	18.9	1018.6	1020.5	1022.5	0	51.3	570	88.3	98.3	100
Monthly	8.9	15.8	26.3	35	82	100	206.6	33.7				8.9	25.7	1007.1	1020.6	1030.5	0	75.5	867	62.3	99.2	100

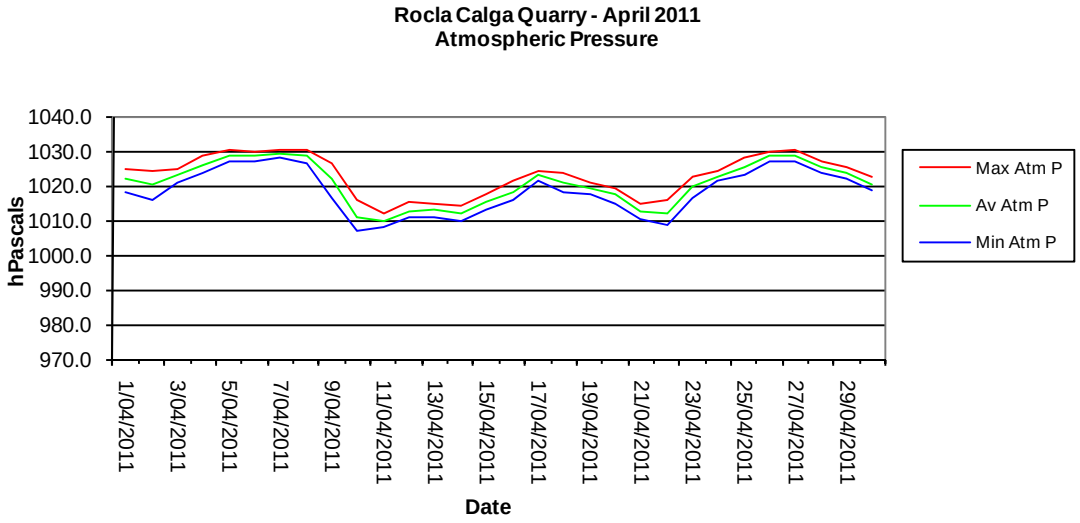
2.3.2 Monthly Weather Charts

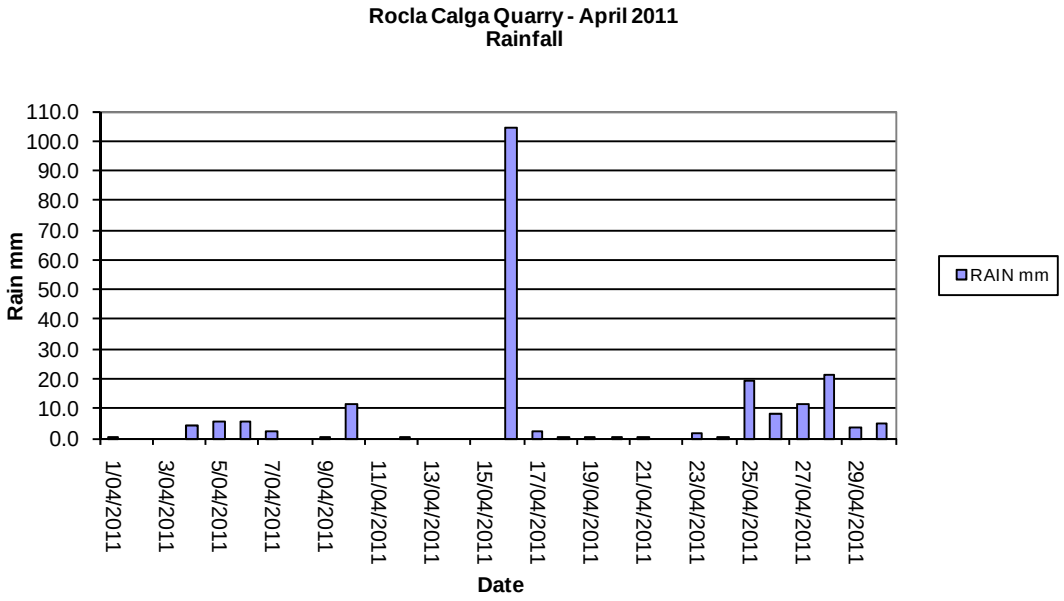


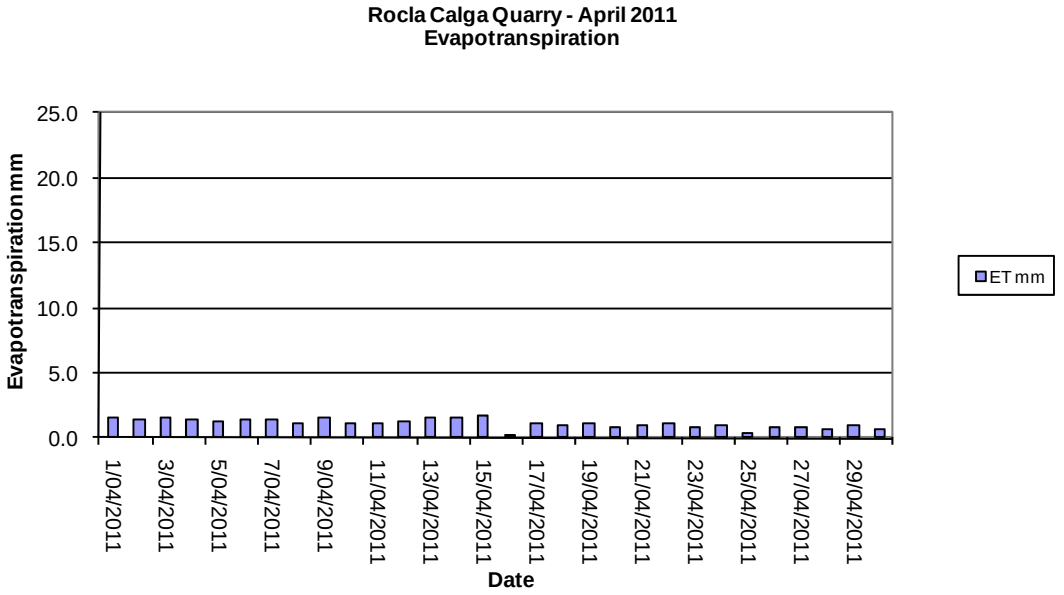


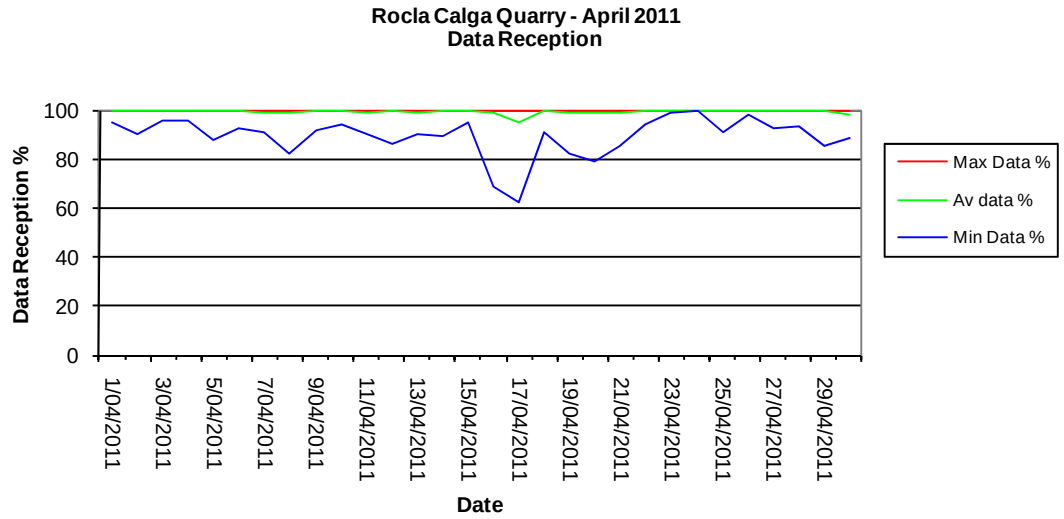



Rocla Calga Quarry - April 2011
Solar Radiation
Solar Rad W/m2
1000
900
800
700
600
500
400
300
200
100
0
1/04/2011
3/04/2011
5/04/2011
7/04/2011
9/04/2011
11/04/2011
13/04/2011
15/04/2011
17/04/2011
19/04/2011
21/04/2011
23/04/2011
25/04/2011
27/04/2011
29/04/2011
Date
Max Solar Rad
Av Solar Rad
Min Solar Rad


Rocla Calga Quarry - April 2011
Atmospheric Pressure
hPascals
1040.0
1030.0
1020.0
1010.0
1000.0
990.0
980.0
970.0
1/04/2011
3/04/2011
5/04/2011
7/04/2011
9/04/2011
11/04/2011
13/04/2011
15/04/2011
17/04/2011
19/04/2011
21/04/2011
23/04/2011
25/04/2011
27/04/2011
29/04/2011
Date
Max Atm P
Av Atm P
Min Atm P


Rocla Calga Quarry - April 2011
Rainfall
Rain mm
110.0
100.0
90.0
80.0
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1/04/2011
3/04/2011
5/04/2011
7/04/2011
9/04/2011
11/04/2011
13/04/2011
15/04/2011
17/04/2011
19/04/2011
21/04/2011
23/04/2011
25/04/2011
27/04/2011
29/04/2011
Date
RAIN mm


Rocla Calga Quarry - April 2011
Evapotranspiration
Evapotranspiration mm
25.0
20.0
15.0
10.0
5.0
0.0
1/04/2011
3/04/2011
5/04/2011
7/04/2011
9/04/2011
11/04/2011
13/04/2011
15/04/2011
17/04/2011
19/04/2011
21/04/2011
23/04/2011
25/04/2011
27/04/2011
29/04/2011
Date
ET mm


Rocla Calga Quarry - April 2011
Data Reception
Data Reception %
100
80
60
40
20
0
1/04/2011
3/04/2011
5/04/2011
7/04/2011
9/04/2011
11/04/2011
13/04/2011
15/04/2011
17/04/2011
19/04/2011
21/04/2011
23/04/2011
25/04/2011
27/04/2011
29/04/2011
Date
Max Data %
Av data %
Min Data %

2.3.3 Monthly Windrose Plot

A windrose is not provided this month due to the unavailability of wind data.

Appendix 1

Laboratory Certificates

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EN1101002**	Page	: 1 of 4
Client	: **CARBON BASED ENVIRONMENTAL**	Laboratory	: Environmental Division Newcastle
Contact	: MS RENAE MIKKA	Contact	: Peter Keyte
Address	: 47 BOOMERANG ST CESSNOCK NSW, AUSTRALIA 2325	Address	: 5 Rosegum Road Warabrook NSW Australia 2304
E-mail	: cbased1@bigpond.com	E-mail	: peter.keyte@als.com.au
Telephone	: +61 49904443	Telephone	: 61-2-4968-9433
Facsimile	: +61 02 49904442	Facsimile	: +61-2-4968 0349
Project	: ROCLA CALGA DUSTS	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 02-MAY-2011
Sampler	: ----	Issue Date	: 10-MAY-2011
Site	: ----		
Quote number	: SY/269/10 V2	No. of samples received	: 6
		No. of samples analysed	: 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

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

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.

Signatories	*Position*	*Accreditation Category*
Peter Keyte	Newcastle Manager	Newcastle

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.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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/m².mth. Period sampled: 01/04/2011 - 02/05/2011.**

Analytical Results

Sub-Matrix: **DUST**

Compound	CAS Number	LOR	Unit	Client sample ID: CD1	CD2C	CD3	CD4	CD5
				Client sampling date / time: 02-MAY-2011 15:00	02-MAY-2011 15:00	02-MAY-2011 15:00	02-MAY-2011 15:00	02-MAY-2011 15:00
				EN1101002-001	EN1101002-002	EN1101002-003	EN1101002-004	EN1101002-005
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	4.8	0.9	0.6	0.1	0.1
Ash Content (mg)	----	1	mg	88	17	11	2	2
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	<0.1	<0.1	<0.1	<0.1	<0.1
Combustible Matter (mg)	----	1	mg	<1	<1	<1	<1	<1
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	4.8	0.9	0.6	0.1	0.1
Total Insoluble Matter (mg)	----	1	mg	88	17	11	2	2

Analytical Results

Sub-Matrix: DUST			Client sample ID	CD6	----	----	----	----
			Client sampling date / time	02-MAY-2011 15:00	----	----	----	----
Compound	CAS Number	LOR	Unit	EN1101002-006	----	----	----	----
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	0.2	----	----	----	----
Ash Content (mg)	----	1	mg	3	----	----	----	----
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	<0.1	----	----	----	----
Combustible Matter (mg)	----	1	mg	<1	----	----	----	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	0.2	----	----	----	----
Total Insoluble Matter (mg)	----	1	mg	3	----	----	----	----

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1108954**	Page	: 1 of 3
Client	: **CARBON BASED ENVIRONMENTAL**	Laboratory	: Environmental Division Sydney
Contact	: MS RENAE MIKKA	Contact	: Client Services
Address	: 47 BOOMERANG ST CESSNOCK NSW, AUSTRALIA 2325	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
E-mail	: cbased1@bigpond.com	E-mail	: sydney@alsglobal.com
Telephone	: +61 49904443	Telephone	: +61-2-8784 8555
Facsimile	: +61 02 49904442	Facsimile	: +61-2-8784 8500
Project	: ROCLA QUARRY	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 02-MAY-2011
Sampler	: CBE	Issue Date	: 05-MAY-2011
Site	: ----		
		No. of samples received	: 3
Quote number	: SY/269/10 V2	No. of samples analysed	: 3

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

NATA Accredited Laboratory 825

This document is issued in accordance with NATA accreditation requirements.

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.

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics
Hoa Nguyen	Inorganic Chemist	Sydney Inorganics
Peter Keyte	Newcastle Manager	Newcastle

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.

Where moisture determination has been performed, results are reported on a dry weight basis.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insuffient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

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

Analytical Results

Sub-Matrix: WATER				Client sample ID	A	D	F	----	----
				Client sampling date / time	02-MAY-2011 16:15	02-MAY-2011 16:15	02-MAY-2011 16:15	----	----
Compound	CAS Number	LOR	Unit		ES1108954-001	ES1108954-002	ES1108954-003	----	----
EA005: pH									
pH Value	----	0.01	pH Unit		5.50	5.25	5.30	----	----
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		74	90	73	----	----
EA015: Total Dissolved Solids									
^ Total Dissolved Solids @180°C	GIS-210-010	5	mg/L		31	64	49	----	----
EA025: Suspended Solids									
^ Suspended Solids (SS)	----	5	mg/L		<5	<5	12	----	----
EP020: Oil and Grease (O&G)									
^ Oil & Grease	----	5	mg/L		<5	<5	<5	----	----

Appendix 2

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

Peats Ridge, New South Wales
April 2011 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	Fr	12.7	22.3	0.4	1.0					16.1	88	2	NW	4		21.2	70	4	E	4	
2	Sa	13.9	20.9	0	2.6					16.1	90	4	NNW	4							
3	Su	10.4	24.4	0	1.6					17.4	72	3	E	4		22.0	60	3	NE	4	
4	Mo	13.2	21.2	0.4	3.4					17.2	79	4	S	9		20.2	58	0	E	4	
5	Tu	13.7	20.0	10.0	1.4					15.1	91	8	SW	4		18.9	72	6	E	4	
6	We	11.8	21.0	2.2	2.0					20.0	53	8	W	4		19.8	64	4	S	4	
7	Th	12.7	19.6	4.0	2.0					16.7	84	2	S	4		19.1	64	6	S	4	
8	Fr	11.7	19.7	0.4	2.4					15.1	84	7	NW	4		17.1	96	8	ESE	4	
9	Sa	11.2	25.4	1.6	0.6					16.4	95	0	NE	4		23.0	49	1	E	4	
10	Su	14.4	26.6	0	5.2					20.8	51	3	WNW	9		19.5	79	8	SW	4	
11	Mo	10.3	20.3	10.2	3.2					13.8	83	5	NW	4		18.9	54	2	WSW	9	
12	Tu	8.3	20.0	0	2.8					15.0	61	1	NW	4							
13	We	8.8	22.6	0	3.2					15.9	54	1	W	9		20.4	39	2	W	4	
14	Th	9.6	22.1	0	3.0					16.2	62	0	W	9		20.6	44	6	SW	4	
15	Fr	9.1	20.6	0	3.2					15.2	69	5	SW	4		19.4	55	4	SE	9	
16	Sa	13.3	15.6	25.8	8.6					14.6	98	8	SW	4		15.4	96	8	E	4	
17	Su	13.5	20.1	46.8						15.6	87	3	SW	4		18.7	62	2	S	4	
18	Mo	9.2	20.8	0.2	1.8					16.7	85	1	WSW	4		19.4	68	4	W	4	
19	Tu	11.3	23.0	0	2.0					15.0	91	1	NW	4		22.0	54	5	W	4	
20	We	12.7	20.0	0	2.2					15.3	96	7	NW	4		19.3	75	8	NW	4	
21	Th	14.4	24.0	0.2	0.6					18.5	73	0	W	4		22.8	51	3		Calm	
22	Fr	12.1	25.3	0	2.4					21.0	50	3	N	4		23.7	42	3	SW	4	
23	Sa	10.2	16.8	0.2	4.1					13.2	91	8	SW	4		16.0	91	6	SW	4	
24	Su	10.6	22.0	0.4	0.2					16.6	86	8	WSW	4		19.5	80	5	E	4	
25	Mo	13.8	16.6	1.6	1.2					15.4	98	8	W	4		16.0	96	8	S	4	
26	Tu		18.2	32.4																	
27	We	11.3	18.1	2.6	1.0					14.9	91	6	S	4		15.4	86	7	S	4	
28	Th	12.7	17.6	14.0	1.6					14.7	98	8	WSW	4		16.7	89	5	S	4	
29	Fr	12.8	19.1	10.4	1.6					14.8	96	2	S	4		18.2	83	8	S	9	
30	Sa	14.2	19.6	2.0	1.4					15.2	99	8	S	4		19.4	81	5	ESE	4	
Statistics for April 2011																					
Mean		11.9	20.8		2.4					16.2	81	4		4		19.4	68	4		4	
Lowest		8.3	15.6		0.2					13.2	50	0	#	4		15.4	39	0		Calm	
Highest		14.4	26.6	46.8	8.6					21.0	99	8	#	9		23.7	96	8	#	9	
Total				165.8	66.3																

Gosford, New South Wales
April 2011 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	Fr	13.8	23.9	5.0			ENE	20	16:47	17.8	88		N	6		23.3	62		ENE	6	
2	Sa	12.8	22.7	0.2			S	30	11:00	19.5	90		SSW	6		20.8	61		SSE	17	
3	Su	11.0	23.8	0			ESE	19	12:50	19.5	70		ENE	2		22.8	53		ENE	6	
4	Mo	13.3	22.4	0.2			ESE	31	13:27	20.6	72		SSE	9		21.4	50		SSE	13	
5	Tu	15.4	21.6	14.8			S	31	14:49	17.4	97		W	4		18.1	85		SSE	7	
6	We	12.6	22.5	6.0			SSW	30	15:28	17.4	99		N	2		21.7	59		SSE	13	
7	Th	14.2	22.2	4.2			SE	26	14:19	19.4	68		SSE	7		21.1	55		SSE	11	
8	Fr	12.4	21.7	0.2			NNE	20	13:20	18.0	81			Calm		18.7	98		NW	7	
9	Sa	10.2	26.2	1.8			ENE	20	15:16	19.7	92			Calm		25.1	48		NE	7	
10	Su	10.7	28.6	0.2			N	35	12:10	22.2	51		N	11		23.7	60			Calm	
11	Mo	11.0	22.0	8.4			NNW	26	12:15	15.4	87			Calm		20.8	41		NW	9	
12	Tu	6.3	21.3	0			NNW	37	11:43	16.7	52		N	13		20.9	35		NW	11	
13	We	6.3	23.8	0			N	39	11:15	17.7	48		NNW	15		22.9	32		NNW	11	
14	Th	9.4	23.7	0			N	28	12:27	18.5	53		NNW	6		22.9	38		NNE	4	
15	Fr	8.2	22.3	0			SSW	26	13:31	17.7	59		E	6		21.0	54		SSE	9	
16	Sa	15.3	18.8	39.0			SW	31	13:02	15.9	99		NNW	7		16.8	99		SSE	11	
17	Su	13.9	21.8	65.6			ESE	24	14:22	18.7	68		NNE	4		20.3	52		SSE	9	
18	Mo	8.6	22.4	0.4			ESE	19	13:03	17.3	87			Calm		21.3	57		ESE	7	
19	Tu	9.5	24.4	0			SSE	11	13:40	19.1	83			Calm		23.6	49			Calm	
20	We	10.3	21.9	0.2			N	13	13:04	15.7	100			Calm		20.5	81		NNW	2	
21	Th	11.6	25.9	0			W	19	09:55	20.4	67		N	7		25.2	39		WNW	6	
22	Fr	9.9	26.4	0.2			NNW	31	11:16	17.5	93			Calm		25.2	39		S	9	
23	Sa	9.6	18.7	0.8			NNW	19	06:11	13.7	98		N	4		17.9	86		S	6	
24	Su	11.5	23.0	0.8			SE	17	13:38	17.7	93		ESE	6		21.4	74		S	4	
25	Mo	14.3	18.6	1.2			SE	22	11:44	18.4	99			Calm		16.9	98		S	4	
26	Tu	13.9	20.7	39.2			SE	30	15:20	16.4	100			Calm		20.0	67		SE	11	
27	We	12.9	19.4	0.8			SSE	24	12:26	16.8	87		SE	7		17.2	86		SSE	6	
28	Th	13.9	19.5	17.8			SSW	17	12:15	17.5	98		NNW	4		19.1	86		SW	2	
29	Fr	12.8	21.0	11.8			SSE	24	11:59	17.9	92		NNE	2		19.2	87		SSE	7	
30	Sa	13.9	21.7	5.6			ESE	22	15:01	17.9	99		NNE	2		20.9	76		SE	6	
Statistics for April 2011																					
	Mean	11.7	22.4							17.9	82			4		21.0	63			7	
	Lowest	6.3	18.6							13.7	48			Calm		16.8	32			Calm	
	Highest	15.4	28.6	65.6			N	39		22.2	100		NNW	15		25.2	99		SSE	17	
	Total			224.4																	