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

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

The July 2011 dust deposition results were generally similar to June 2011 with the exception of CD3 and CD4 which increased slightly and CD6 which decreased. 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 1 August 2011 at sites A, D and F. Site B was dry and there was no access to 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. An additional high rainfall sampling event was undertaken on the 22 July 2011 at sites A, B, D, F and Inflow. Results are provided in Appendix 1.

Groundwaters were sampled for normal monthly monitoring on 1 August 2011. Groundwater depths decreased at most monitoring bores this month, indicating water moving toward the surface. The only exception was CP5 where depth increased. pH and EC remained relatively stable.

The meteorological station data recovery for the month was 100%. Recorded rainfall on site for July was 161.2 mm, which was similar to that recorded at the BOM Peats Ridge Station and higher than the Peats Ridge long-term average for July. Results are detailed below:

Rocla Calga Quarry	161.2 mm
BOM Peats Ridge*	162.4 mm
BOM Gosford*	240.6 mm
BOM Peats Ridge Long term mean for July*	67.9 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.

2.0 Monthly Results

2.1 Dust Deposition Gauges

Table 1 displays the results for July 2011 and the project average. Results are in g/m^2.month.

Table 1: Dust Deposition results: 30-June 2011 – 01-August 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	0.6	0.5	0.1	83	1.9
CD2c	0.4	0.1	0.3	25	0.8
CD3	1.9	1.6	0.3	84	0.6
CD4	0.7	0.6	0.1	86	0.4
CD5	0.3	0.1	0.2	33	0.3
CD6	0.4	0.3	0.1	75	0.6

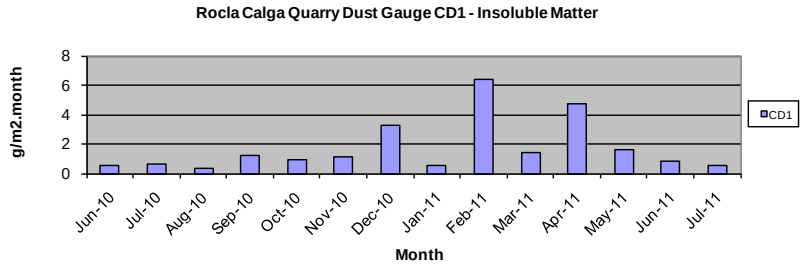
Insoluble Solids marked with an * indicate an excessively contaminated gauge. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen and seeds) and insects. Results in bold indicate insoluble solids levels above 3.7 g/m^2.month; the Development Consent's annual average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

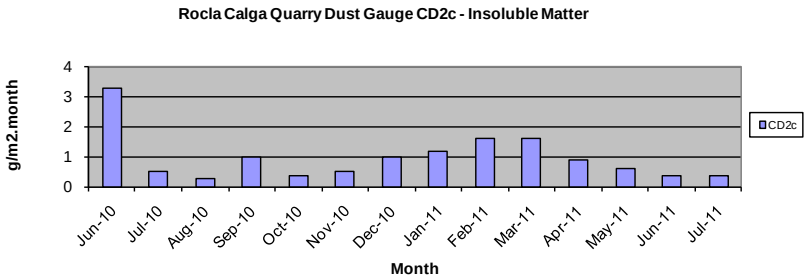
NA= Not Available.

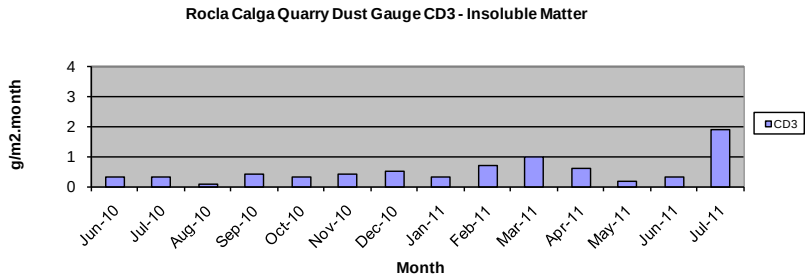
CD1 was installed on the 1 May 2006. CD2a was discontinued at the start of August 2006 due to quarry operations "mining out" the site of the gauge. The replacement gauge, Site CD2b, was located in a position adjacent to the boundary between B. Kashouli and F. & J. Gazzana in conformance with the Air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

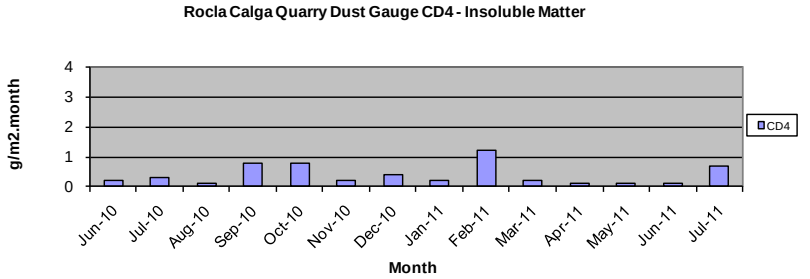
Dust deposition charts for all dust gauge sites appear in **Figure 1** below. The laboratory analysis is provided in **Appendix 1.**

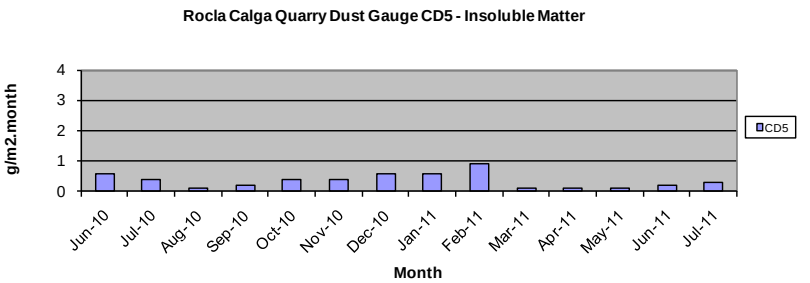
Figure 1: Dust Deposition Charts

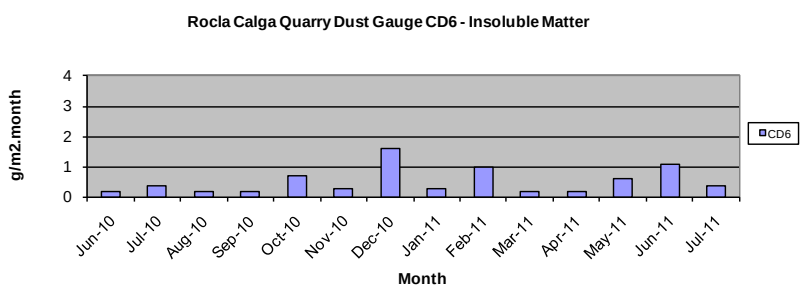












2.2 Water Monitoring

2.2.1 Surface Waters

Monthly surface water monitoring was conducted on the 1 August 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 – July 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	5.53	72	45	8	<5
B	DRY							
C	NO ACCESS							
D	Still	Clear	Clear	5.25	91	68	<5	<5
F	Still	Clear	Clear	5.84	65	54	11	<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. Site B was dry at the time of sampling and there was no access to 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.

An additional high rainfall surface water sampling event was undertaken on 22 July 2011 at sites A, B, D, F and Inflow dam. Results are provided in **Appendix 1**.

2.2.2 Groundwaters

Groundwaters were sampled on 1 August 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 most monitoring bores this month, indicating water moving toward the surface. The only exception was CP5 where depth increased. Longer term monitoring is required to fully evaluate groundwater depth trends.

pH and EC remained stable at all sites this month. Detailed biannual water quality monitoring was conducted in April 2011 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	19.43	4.39	120
CQ3	Voutos	* Monitor	10.53	10.14	6.19	140
CQ4	Voutos	* Monitor	8.78	7.39	4.65	90
CQ5	Gazzana	DIP Only	8.69	4.77	4.14	130
CQ6	Gazzana	DIP Only	16.00	9.84	4.23	170
CQ7	Gazzana	* Monitor	6.89	5.72	4.51	90
CQ8	Gazzana	* Monitor	11.03	5.10	4.46	140
CQ9	Gazzana	DIP Only	10.10	8.62	4.34	100
CQ10	Voutos	* Monitor	NI	22.08	4.68	180
CQ11S	Gazzana	* Monitor	NI	8.50	4.48	150
CQ11D	Gazzana	* Monitor	NI	9.64	4.80	140
CQ12	Gazzana	* Monitor	NI	3.43	4.01	130
CQ13	Kashouli	* Monitor	NI	11.32	4.99	190
CP3	Gazzana	Domestic	10.40	7.29	4.47	140
CP4	Kashouli	Domestic	13.63	3.18	5.08	210
CP5	Kashouli	Domestic	16.61	17.1	4.32	220
CP6	Kashouli	Domestic	16.27	7.66	4.30	220
CP7	Kashouli	Production	8.56	0.94	4.75	180
CP8	Rozmanec	Domestic	22.17	NR	NR	NR
MW7	Rocla Bore	* Monitor	15.76	14.89	4.39	110
MW8	Rocla Bore	* Monitor	9.82	6.56	4.86	80
MW9	Rocla Bore	* Monitor	22.44	21.55	4.62	80
MW10	Rocla Bore	* Monitor	15.41	NM	NM	NM
MW13	Rocla Bore	DIP Only	NI	7.36	4.77	100
MW16	Rocla Bore	DIP Only	NI	NM	NM	NM

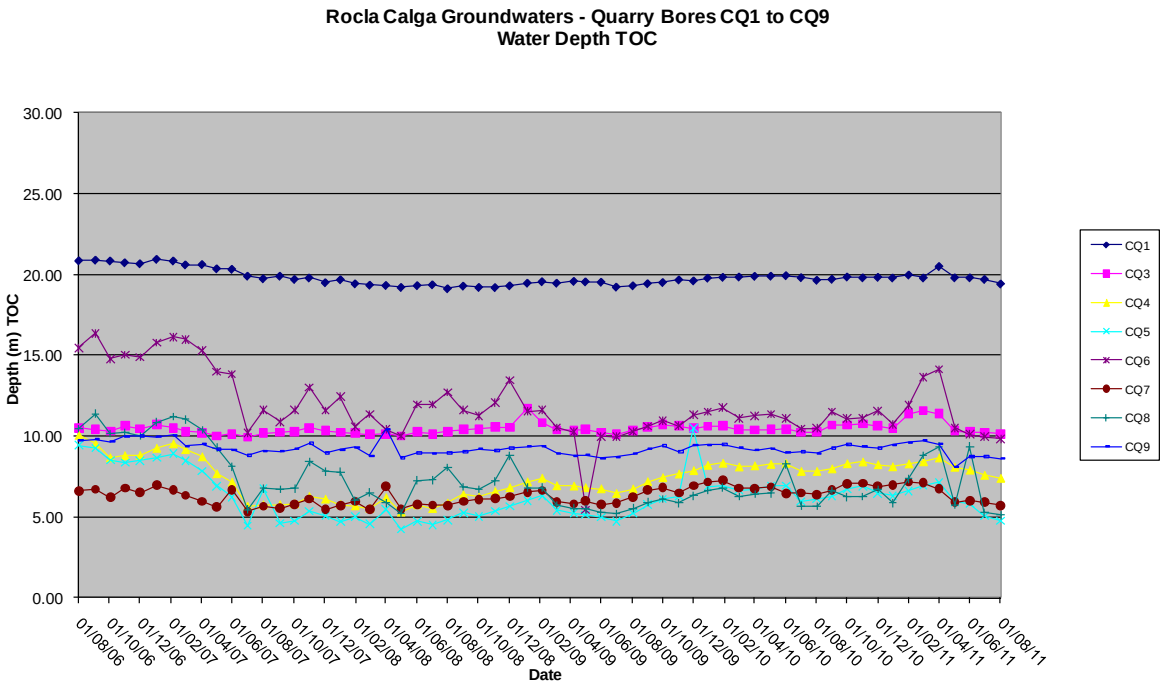
Notes:
TOC = Water level measured from top of bore case to water.
NM = Not Monitored – unable to sample water due to access restrictions.
NR = Not Required by resident.
* = Logger Installed.
NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements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

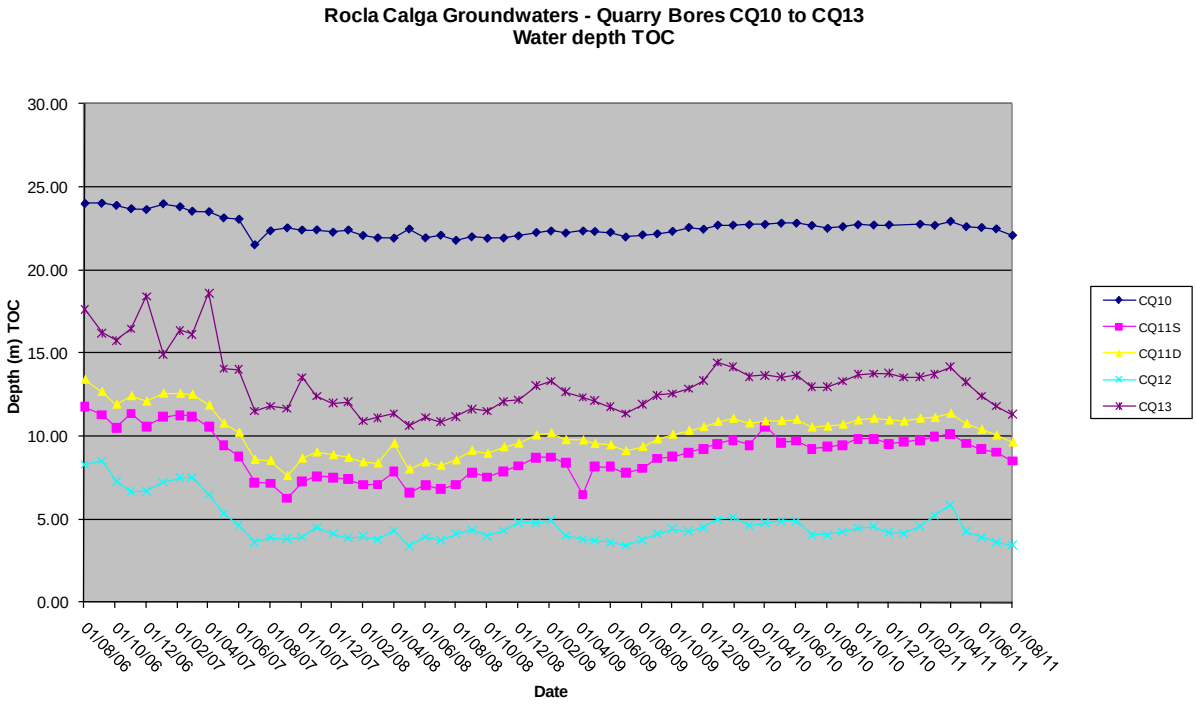
Shading is used to indicate the following trends in water depth (compared to the last reading):

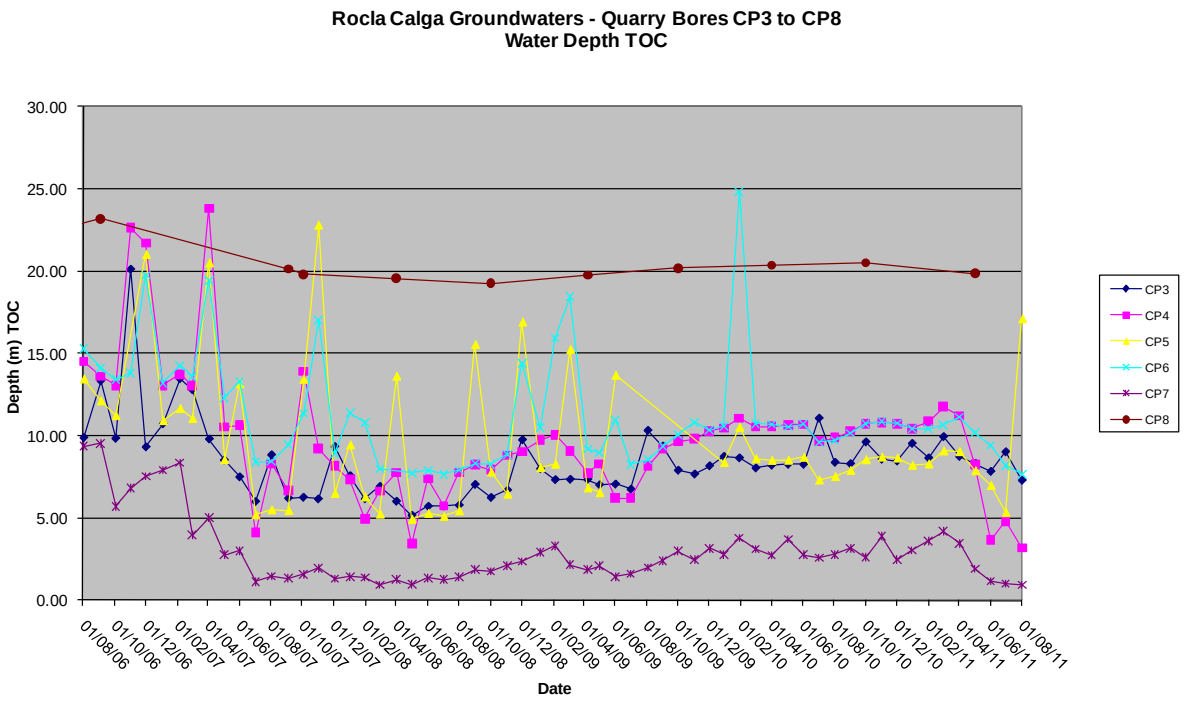
	Increase to ground water depth (water moved away from surface)
	Decrease to ground water depth (water moved towards surface)
	Stable water depth (+/- 0.01m)

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
01/08/06
01/10/06
01/12/06
01/02/07
01/04/07
01/06/07
01/08/07
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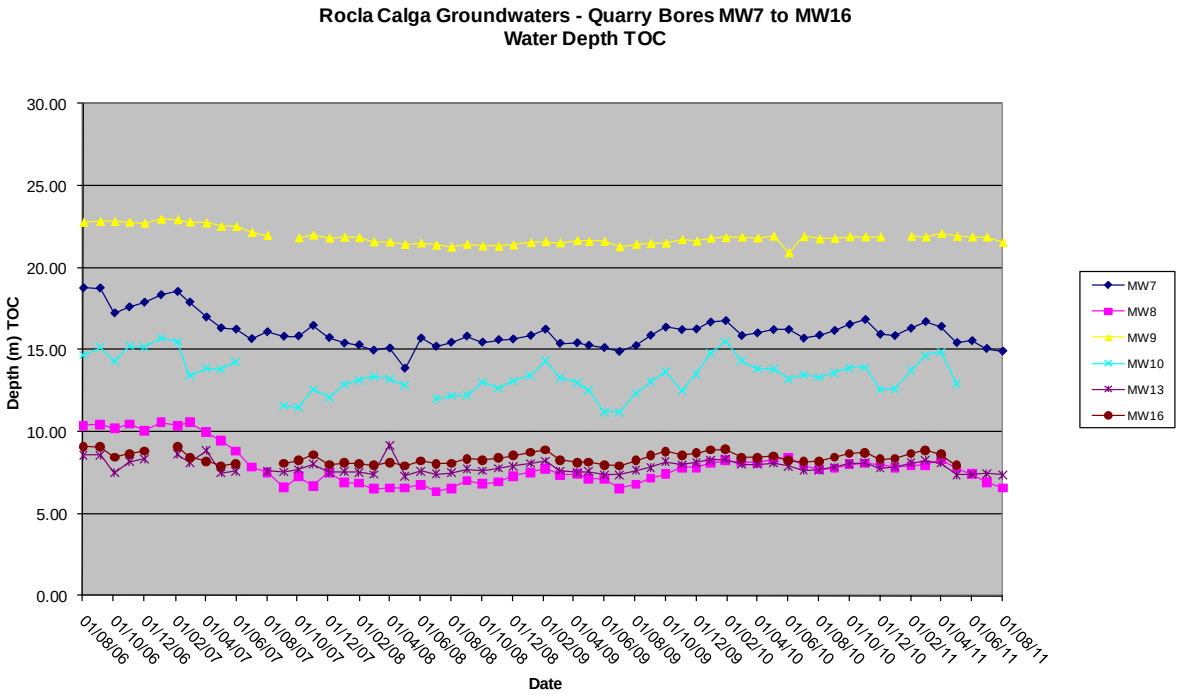
Date
CP3
CP4
CP5
CP6
CP7
CP8


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
01/08/06
01/10/06
01/12/06
01/02/07
01/04/07
01/06/07
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01/02/11
01/04/11
01/06/11
01/08/11
Date
MW7
MW8
MW9
MW10
MW13
MW16

2.3 Meteorological Monitoring

The Rocla Calga Quarry weather station data recovery in July 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 July 2011 shows rainfall recorded at the Rocla Calga Quarry was similar to that recorded at nearby Peats Ridge BOM station and lower than recorded at Gosford BOM station. Recorded rainfall at Rocla Calga Quarry was higher than the Peats Ridge long term mean rainfall for July. The rainfall comparison is provided below:

Rocla Calga Quarry	161.2 mm
BOM Peats Ridge*	162.4 mm
BOM Gosford*	240.6 mm
BOM Peats Ridge Long term mean for July*	67.9 mm

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

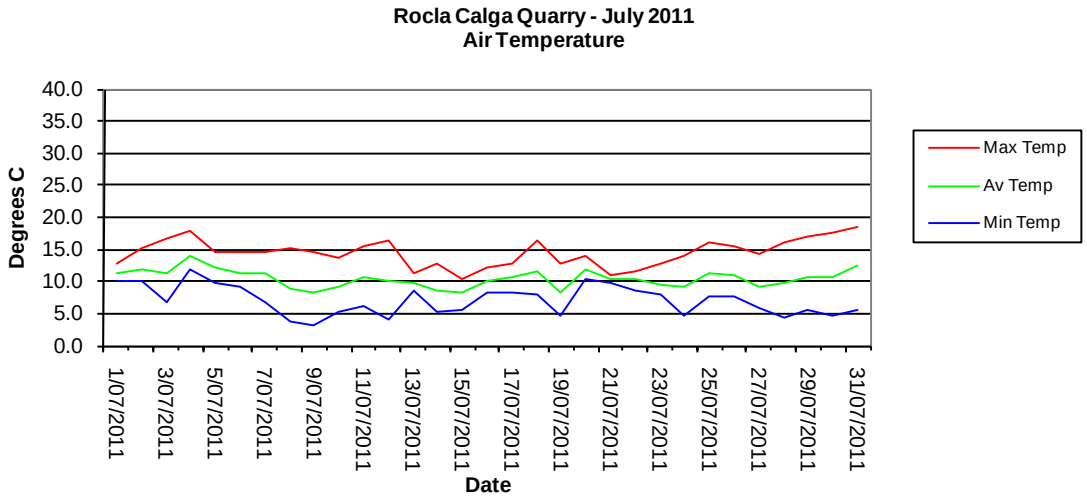
Results are displayed in the following table and figures.

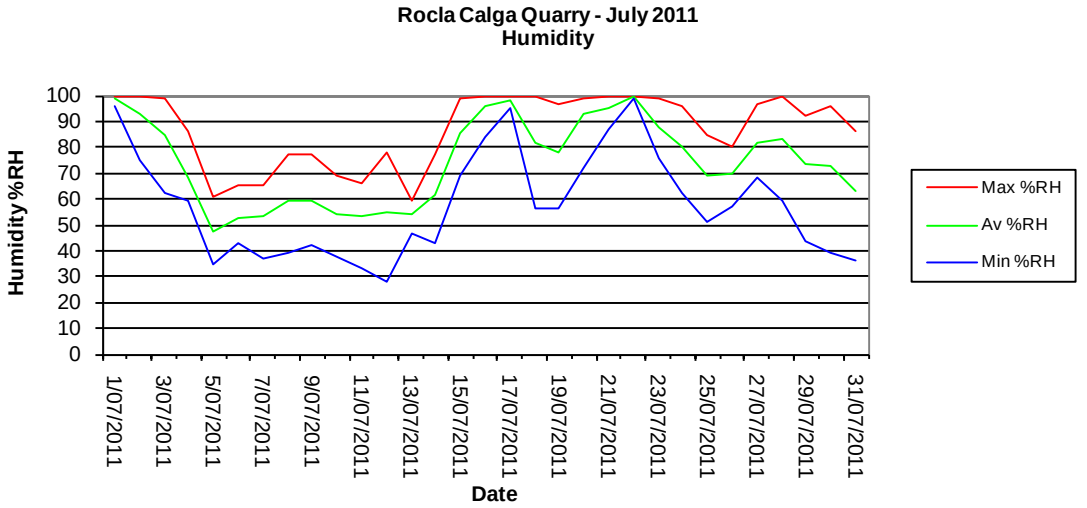
2.3.1 Monthly Meteorological Data Summary

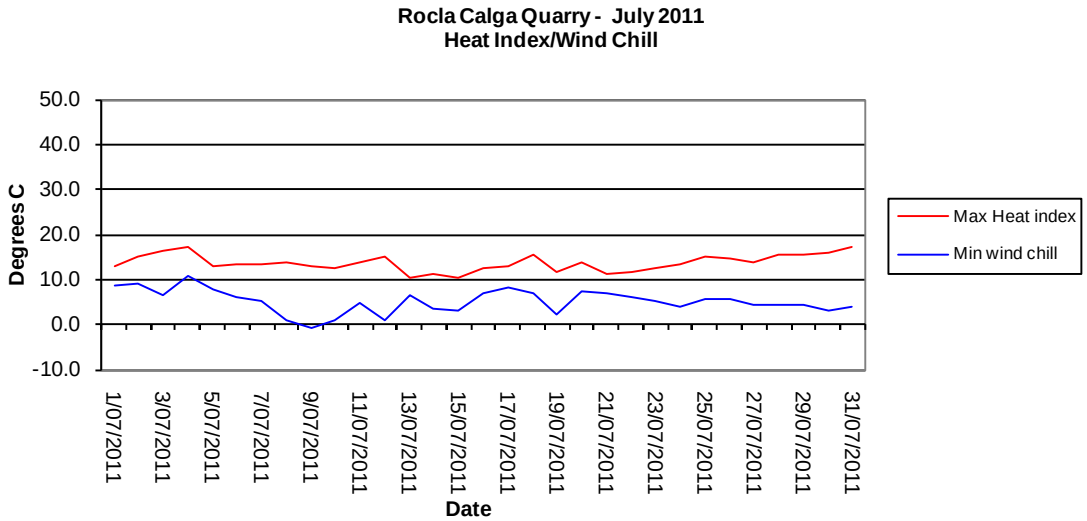
Summary **Jul-11** **Rocla - Calga**

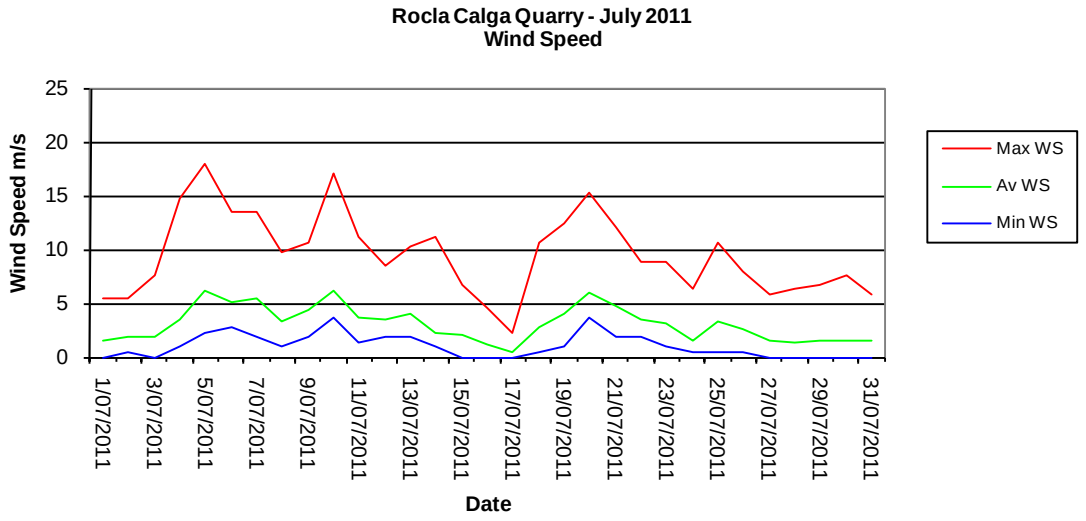
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	ET mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Solar Rad	Av Solar Rad	Max Solar Rad	Min Data %	Av data %	Max Data %
1/07/2011	10.1	11.3	12.7	96	99	100	5.2	0.4	0	1.6	5.4	8.8	12.8	1027.2	1029.4	1032.5	0	35.6	183	86.5	96.8	100
2/07/2011	10.2	11.8	15.2	75	93	100	0.0	0.6	0.4	1.8	5.4	9.1	15.0	1021.7	1024.4	1027.2	0	36.2	241	85.1	95.1	100
3/07/2011	6.8	11.4	16.8	62	85	99	0.4	0.8	0	1.9	7.6	6.6	16.2	1016.9	1019.7	1022.4	0	26.6	185	88.6	94.7	100
4/07/2011	11.8	14.1	18.0	59	68	86	2.0	1.8	0.9	3.6	14.8	10.7	17.3	1009.9	1012.6	1016.7	0	27.2	180	89.2	97.7	100
5/07/2011	9.8	12.1	14.6	35	48	61	0.0	3.5	2.2	6.1	17.9	7.6	13.0	1004.7	1008.4	1010.6	0	18.1	127	97.1	99.5	100
6/07/2011	9.2	11.3	14.6	43	53	65	0.0	2.7	2.7	5.0	13.4	6.2	13.2	1007.7	1009.2	1010.8	0	27.0	203	94.4	99.4	100
7/07/2011	6.8	11.2	14.7	37	53	65	0.0	2.9	1.8	5.5	13.4	5.3	13.2	1006.2	1012.3	1020.1	0	17.8	109	94.4	99.3	100
8/07/2011	3.9	8.8	15.2	39	59	77	0.0	1.7	0.9	3.2	9.8	0.9	13.8	1017.7	1020.0	1022.4	0	18.7	234	86.8	97.6	100
9/07/2011	3.1	8.4	14.6	42	60	77	0.0	1.9	1.8	4.4	10.7	-0.7	13.1	1015.6	1017.6	1019.2	0	18.5	214	95	99.0	100
10/07/2011	5.2	9.3	13.7	38	54	69	0.0	2.8	3.6	6.2	17	1.0	12.3	1010.9	1013.9	1017.5	0	17.5	153	95.9	99.7	100
11/07/2011	6.1	10.5	15.4	33	53	66	0.0	2.0	1.3	3.6	11.2	4.6	13.7	1011.9	1017.2	1021.8	0	19.0	167	79.5	98.9	100
12/07/2011	4.1	10.0	16.3	28	55	78	0.0	1.9	1.8	3.4	8.5	1.0	15.0	1017.4	1020.0	1022.3	0	19.1	180	92.7	99.8	100
13/07/2011	8.6	9.9	11.2	47	54	59	0.0	2.3	1.8	4.0	10.3	6.4	10.5	1016.2	1017.6	1019.8	0	26.9	108	86	99.8	100
14/07/2011	5.2	8.7	12.7	43	61	77	0.0	1.4	0.9	2.2	11.2	3.6	11.3	1019.5	1025.9	1031.8	0	25.2	148	100	100.0	100
15/07/2011	5.5	8.2	10.3	69	86	99	4.2	0.8	0	2.1	6.7	3.1	10.3	1031.7	1032.9	1034.6	0	44.6	224	95.6	99.8	100
16/07/2011	8.2	10.1	12.2	84	96	100	2.4	0.6	0	1.1	4.5	7.0	12.3	1026.8	1029.2	1032.2	0	48.4	278	86	98.6	100
17/07/2011	8.3	10.6	12.8	95	98	100	4.6	0.4	0	0.4	2.2	8.4	13.0	1020.4	1023.0	1026.5	0	41.5	251	94.7	99.5	100
18/07/2011	8.1	11.5	16.3	56	81	100	0.4	1.1	0.4	2.8	10.7	6.8	15.6	1014.5	1017.0	1020.4	0	32.4	156	89.8	99.2	100
19/07/2011	4.8	8.3	12.7	56	78	97	13.4	1.2	0.9	4.1	12.5	2.1	11.8	1009.1	1012.6	1015.7	0	28.5	244	91.5	99.5	100
20/07/2011	10.3	11.9	14.1	72	93	99	32.0	0.9	3.6	6.0	15.2	7.2	14.0	1008.4	1012.6	1016.2	0	34.8	236	90.9	99.4	100
21/07/2011	9.9	10.4	10.9	87	95	100	59.4	0.5	1.8	4.8	12.1	7.1	11.1	1013.6	1015.2	1017.1	0	18.9	162	86	98.2	100
22/07/2011	8.6	10.4	11.7	99	100	100	33.6	0.3	1.8	3.5	8.9	5.9	11.8	1015.9	1017.6	1019.7	0	27.6	226	92.1	99.6	100
23/07/2011	7.9	9.6	12.8	76	88	99	1.6	0.9	0.9	3.2	8.9	5.2	12.4	1018.4	1019.4	1020.7	0	37.5	275	100	100.0	100
24/07/2011	4.6	9.0	13.9	62	80	96	0.0	0.9	0.4	1.6	6.3	4.1	13.2	1016.9	1018.7	1020.1	0	49.9	341	100	100.0	100
25/07/2011	7.7	11.3	16.0	51	69	85	0.0	1.6	0.4	3.2	10.7	5.7	15.1	1014.4	1016.7	1018.2	0	36.1	344	99.7	100.0	100
26/07/2011	7.8	10.9	15.5	57	70	80	0.0	1.4	0.4	2.6	8	5.6	14.7	1017.4	1019.5	1023.5	0	34.3	441	93.3	99.6	100
27/07/2011	5.8	9.3	14.2	68	82	97	1.6	1.0	0	1.5	5.8	4.2	13.9	1023.1	1026.5	1029.1	0	43.6	419	95.9	99.9	100
28/07/2011	4.3	9.7	16.0	59	83	100	0.2	0.7	0	1.3	6.3	4.2	15.3	1025.2	1027.3	1029.2	0	28.0	421	78.7	98.9	100
29/07/2011	5.6	10.6	16.9	44	74	92	0.0	0.9	0	1.4	6.7	4.2	15.5	1022.9	1024.7	1026.4	0	27.5	493	71.6	98.7	100
30/07/2011	4.6	10.6	17.5	39	72	96	0.2	1.1	0	1.5	7.6	3.2	16.1	1019.9	1022.2	1024.3	0	26.7	475	92.7	99.9	100
31/07/2011	5.7	12.6	18.6	36	63	86	0.0	1.3	0	1.6	5.8	4.0	17.2	1018.8	1020.5	1022.2	0	33.2	469	98.2	99.9	100
Monthly	3.1	10.4	18.6	28	74	100	161.2	42.2	0	3.1	17.9	-0.7	17.3	1004.7	1019.5	1034.6	0	29.9	493	71.6	99.0	100

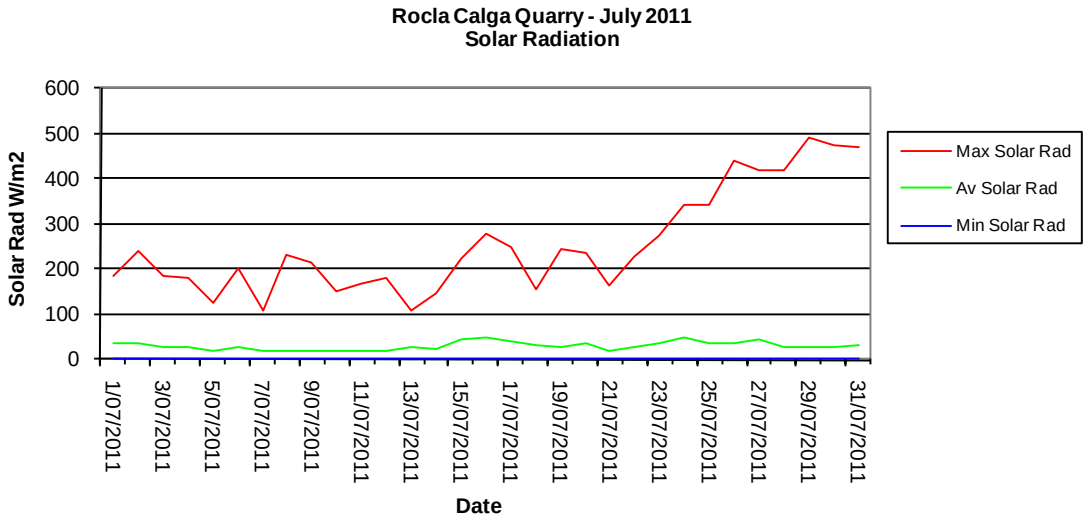
2.3.2 Monthly Weather Charts

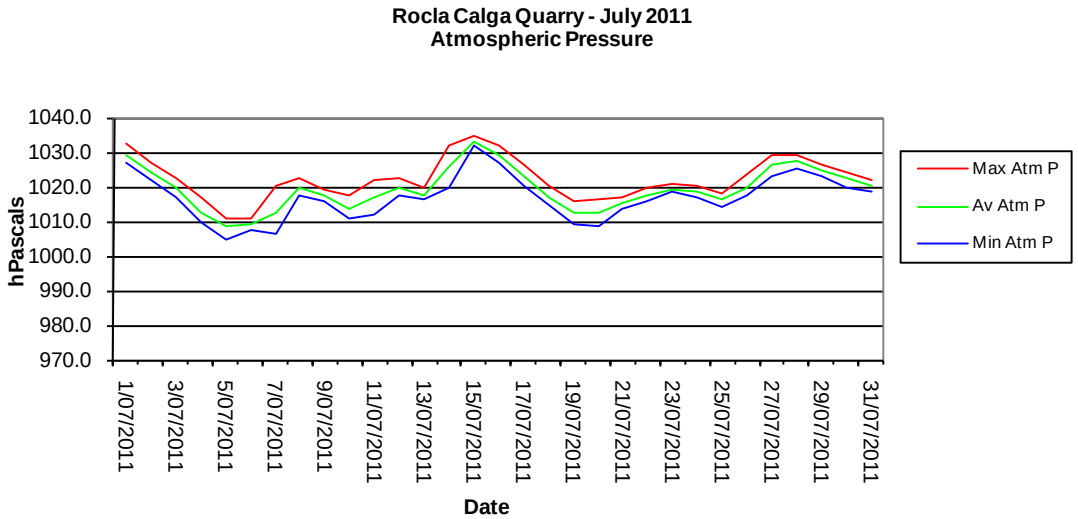


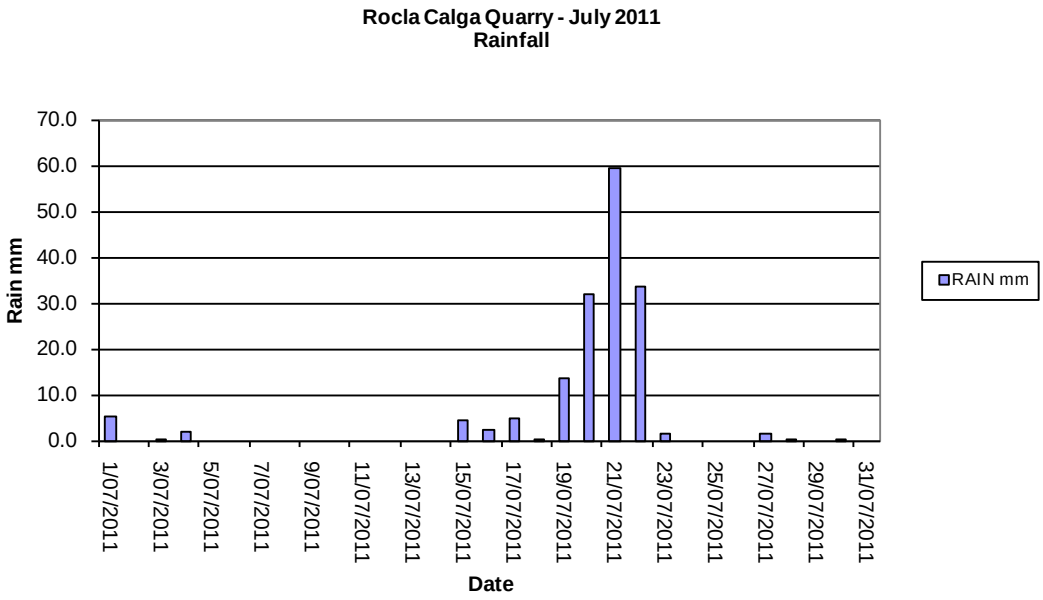


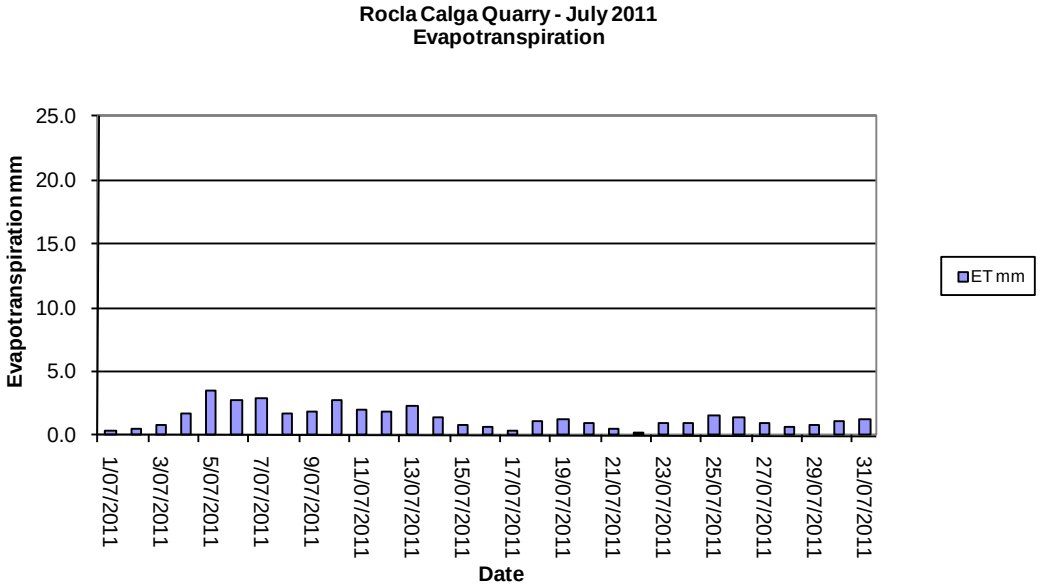


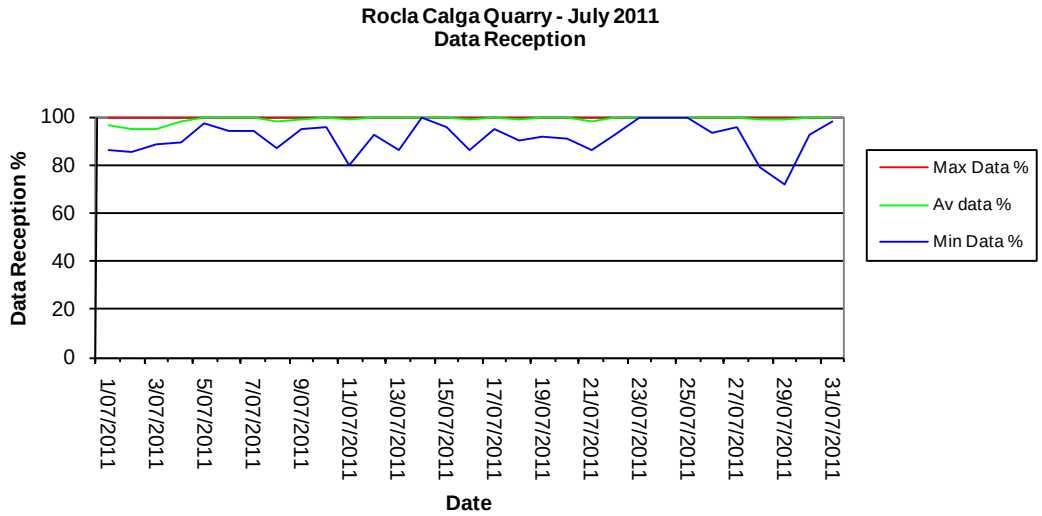

Rocla Calga Quarry - July 2011
Wind Speed
Wind Speed m/s
25
20
15
10
5
0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
Max WS
Av WS
Min WS


Rocla Calga Quarry - July 2011
Solar Radiation
Solar Rad W/m2
600
500
400
300
200
100
0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
Max Solar Rad
Av Solar Rad
Min Solar Rad


Rocla Calga Quarry - July 2011
Atmospheric Pressure
hPascals
1040.0
1030.0
1020.0
1010.0
1000.0
990.0
980.0
970.0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
Max Atm P
Av Atm P
Min Atm P


Rocla Calga Quarry - July 2011
Rainfall
Rain mm
70.0
60.0
50.0
40.0
30.0
20.0
10.0
0.0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
RAIN mm

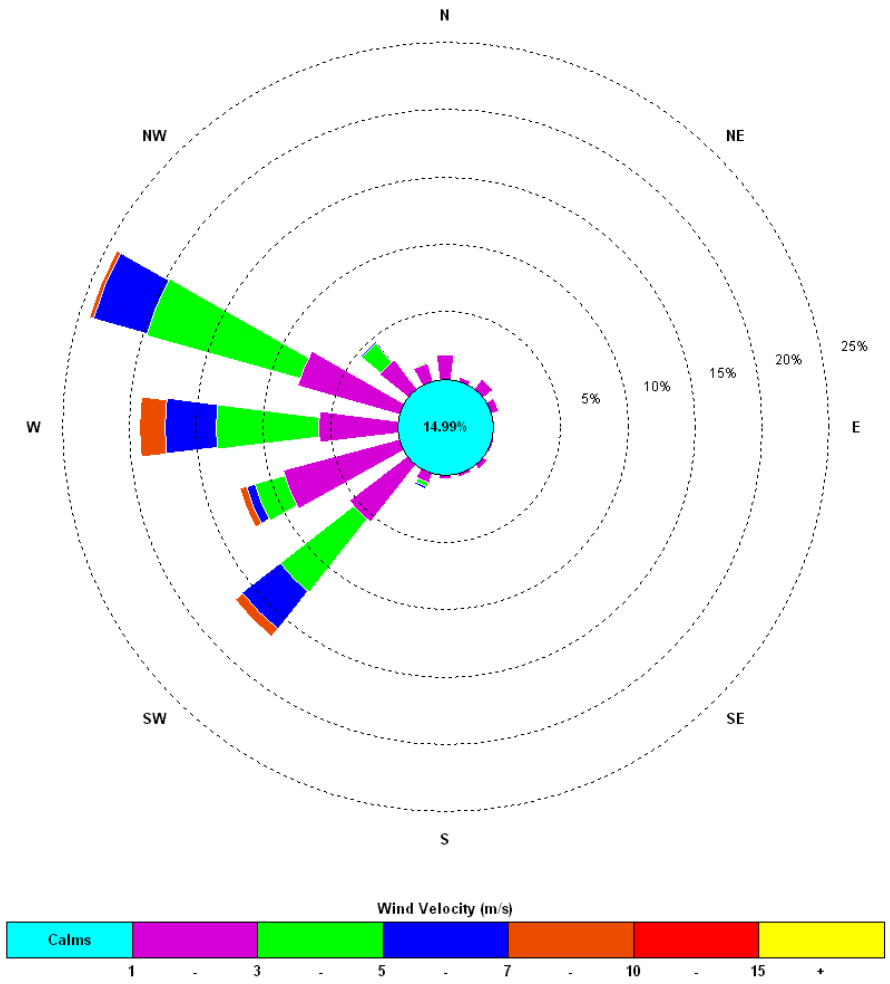

Rocla Calga Quarry - July 2011
Evapotranspiration
Evapotranspiration mm
25.0
20.0
15.0
10.0
5.0
0.0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
ET mm


Rocla Calga Quarry - July 2011
Data Reception
Data Reception %
100
80
60
40
20
0
1/07/2011
3/07/2011
5/07/2011
7/07/2011
9/07/2011
11/07/2011
13/07/2011
15/07/2011
17/07/2011
19/07/2011
21/07/2011
23/07/2011
25/07/2011
27/07/2011
29/07/2011
31/07/2011
Date
Max Data %
Av data %
Min Data %

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 to be calm when less than a 15 minute average of 1m/s.

00:00, 1 July 2011 – 23:45, 31 July 2011



The predominant winds were from the WNW, with strongest winds from the W. The maximum wind speed was 17.9m/s from the WSW.

Appendix 1

Laboratory Certificates

CARBON BASED ENVIRONMENTAL

DEPOSITIONAL DUST MONITORING

Client: ..... **Rocla Calga Quarry** .....

Date Installed: 30-6-11

Date Collected: 1-8-11

Collection Start Time: 8:55

Collection Stop Time: 1:50

Sampled By: Leesa & Raquel

Sampling ID: .....

Site	Time Collected	Water Level (mL)	Insoluble Material (✓ = slight, ✓✓ = mod etc)				Water Turbidity	Water Colour	Stand Level (Y/N)	Funnel Level (Y/N)	New Funnel Diameter (mm)	Comments
			Insects	Bird droppings	Vegetation	Dust						
CD1	8:55	1999	✓		✓	✓	C S T	C O Bn Gn Gy	Y	Y		
CD2C	1:50	1999	✓			✓	C S T	C O Bn Gn Gy	Y	Y		
CD3	9:35	1999				✓	C S T	C O Bn Gn Gy	Y	Y		
CD4	10:30	1999	✓			✓	C S T	C O Bn Gn Gy	Y	Y		
CD5	10:50	1999	✓			✓	C S T	C O Bn Gn Gy	Y	Y		
CD6	11:50	1999	✓	✓		✓	C S T	C O Bn Gn Gy	Y	Y		
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				
							C S T	C O Bn Gn Gy				

Turbidity: C=Clear, S= Slight, T=Turbid (CIRCLE)

Colour: C=Clear, O=Orange, Bn=Brown, Gn=Green, Gy = Grey (CIRCLE)

Report broken funnels and replacement diameters

Signed: LKing

CHAIN OF CUSTODY DOCUMENTATION

Australian Laboratory Services Pty Ltd

CLIENT: Carbon Based Environmental Pty Ltd
POSTAL ADDRESS: 47 Boomerang St CESSNOCK NSW 2325
SEND REPORT TO: Colin Davies, Renae Mikka SEND INVOICE TO: Carbon Based Environmental
DATA NEEDED BY: 7 working days REPORT NEEDED BY: 7 working days
PROJECT ID: Rocla Calga Dusts QUOTE NO.: SY/269/10
P.O. NO.: COMMENTS/SPECIAL HANDLING/STORAGE OR DIPOSAL:
also email cbased1@bigpond.com
Total unless specified

FOR LAB USE ONLY
COOLER SEAL
Yes ..... No .....
Broken ..... Intact ...
COOLER TEMP: deg.C

LABORATORY BATCH NO.:
SAMPLERS:Carbon Based Environmental Pty Ltd
PHONE: 0439604443 FAX: 0249904442 E-MAIL: cbased@bigpond.com, cbased1@bigpond.com
REPORT FORMAT: HARD: Yes FAX: DISK: BULLETIN BOARD: E-MAIL: Yes
QC LEVEL: QCS1: QCS2: QCS3: Yes QCS4:

ANALYSIS REQUIRED

SAMPLE DATA				*CONTAINER DATA		Insoluable Solids	Ash Residue	Combustable Matte	NOTES
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.				
CD1	Dust					x	x	x	
CD2c	Dust					x	x	x	
CD3	Dust					x	x	x	
CD4	Dust					x	x	x	
CD5	Dust					x	x	x	
CD6	Dust					x	x	x	

RELINQUISHED BY:
NAME : Colin Davies DATE: 1-8-11
OF: Carbon Based Environmental TIME: 3:00
NAME : DATE:
OF: TIME:

RECEIVED BY
NAME: DATE: 1/8
OF: TIME: 15:10
NAME : DATE:
OF: TIME:

METHOD OF SHIPMENT
CONSIGNMENT NOTE NO.
TRANSPORT CO. NAME.

*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinced Jar; S = Solvent Washed Acid Rinced Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.

AUSTRALIAN LABORATORY SERVICES P/L

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **EN1101938**	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	: 01-AUG-2011
Sampler	: ----	Issue Date	: 05-AUG-2011
Site	: ----		
		No. of samples received	: 6
Quote number	: SY/269/10 V2	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.

WORLD RECOGNISED ACCREDITATION

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: 30/06/2011 - 01/08/2011.**

Analytical Results

Sub-Matrix: DUST

			Client sample ID	CD1 30/06/11 - 01/08/11	CD2C 30/06/11 - 01/08/11	CD3 30/06/11 - 01/08/11	CD4 30/06/11 - 01/08/11	CD5 30/06/11 - 01/08/11
			Client sampling date / time	[01-AUG-2011]	[01-AUG-2011]	[01-AUG-2011]	[01-AUG-2011]	[01-AUG-2011]
Compound	CAS Number	LOR	Unit	EN1101938-001	EN1101938-002	EN1101938-003	EN1101938-004	EN1101938-005
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	0.5	0.1	1.6	0.6	0.1
Ash Content (mg)	----	1	mg	9	2	31	11	1
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	0.1	0.3	0.3	0.1	0.2
Combustible Matter (mg)	----	1	mg	3	5	4	2	4
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	0.6	0.4	1.9	0.7	0.3
Total Insoluble Matter (mg)	----	1	mg	12	7	35	13	5

Analytical Results

Sub-Matrix: DUST			Client sample ID	CD6 30/06/11 - 01/08/11	----	----	----	----
			Client sampling date / time	[01-AUG-2011]	----	----	----	----
Compound	CAS Number	LOR	Unit	EN1101938-006	----	----	----	----
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	0.3	----	----	----	----
Ash Content (mg)	----	1	mg	5	----	----	----	----
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	0.1	----	----	----	----
Combustible Matter (mg)	----	1	mg	3	----	----	----	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	0.4	----	----	----	----
Total Insoluble Matter (mg)	----	1	mg	8	----	----	----	----

CARBON BASED ENVIRONMENTAL PTY LIMITED

Todays Collection	
Time Start:	9.40
Time Finish:	1:40

Client : Rocla Calga

Project :

SURFACE WATERS

Date: 1-8-11

Site	Flow Rate	Odour	Sampling Time	Water Turbidity	Water Colour	Comments
A	Still	NIL	9.55	C S T	C LO O B G	
B				~~C S T~~	~~C LO O B G~~	DRY
C				~~C S T~~	~~C LO O B G~~	To Assess
D	Still	NIL	11.40	C S T	C LO O B G	
F	Still	NIL	9.40	C S T	C LO O B G	
				C S T	C LO O B G	
				C S T	C LO O B G	
				C S T	C LO O B G	
				C S T	C LO O B G	
				C S T	C LO O B G	

Turbidity: C=Clear, S= Slight, T=Turbid (CIRCLE)

Signed: LKing

Colour: C=Clear, LO=Light Orange, O=Orange, B=Brown, G=Green (CIRCLE)

Sampled by:

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1116303**	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	: 01-AUG-2011
Sampler	: CBE	Issue Date	: 08-AUG-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

WORLD RECOGNISED **ACCREDITATION**

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
Peter Keyte	Newcastle Manager	Newcastle
Sarah Millington	Senior Inorganic Chemist	Sydney Inorganics

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	[01-AUG-2011]	[01-AUG-2011]	[01-AUG-2011]	----	----
Compound	CAS Number	LOR	Unit	ES1116303-001	ES1116303-002	ES1116303-003	----	----
EA005: pH								
pH Value	----	0.01	pH Unit	5.53	5.25	5.84	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	72	91	65	----	----
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GIS-210-010	5	mg/L	45	68	54	----	----
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	8	<5	11	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	----	----

CHAIN OF CUSTODY DOCUMENTATION

Australian Laboratory Services Pty Ltd

CLIENT: Carbon Based Environmental Pty Ltd
POSTAL ADDRESS: 47 Boomerang St CESSNOCK NSW 2325
SEND REPORT TO: Colin Davies, Renae Mikka
SEND INVOICE TO: Carbon Based Environmental
DATA NEEDED BY: 7 working days
REPORT NEEDED BY: 7 working days
PROJECT ID: Rocla Quarry
QUOTE NO.: SY/ 269/10
P.O. NO.:
COMMENTS/SPECIAL HANDLING/STORAGE OR DIPOSAL:
also email results to cbased1@bigpond.com
Total unless specified
FOR LAB USE ONLY
COOLER SEAL
Yes ...... No ......
Broken ...... Intact ...
COOLER TEMP: deg.C

LABORATORY BATCH NO.:
SAMPLERS:Carbon Based Environmental Pty Ltd
PHONE: 0439604443
FAX: 0249904442
E-MAIL: cbased@bigpond.com, cbased1@bigpond.com
REPORT FORMAT: HARD: Yes FAX: DISK: BULLETIN BOARD: E-MAIL: Yes
QC LEVEL: QCS1: QCS2: QCS3: Yes QCS4:

SAMPLE DATA				*CONTAINER DATA		ANALYSIS REQUIRED					
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	Ph	EC	TSS	TDS	O + G	NOTES
A	**Water**					x	x	x	x	x	
~~B~~	~~**Water**~~					~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
~~C~~	~~**Water**~~					~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
D	**Water**					x	x	x	x	x	
F	**Water**					x	x	x	x	x	

RELINQUISHED BY:
NAME : Colin Davies DATE: 1·8·11
OF: Carbon Based Environmental TIME: 3·00
NAME : DATE:
OF: TIME:

RECEIVED BY
NAME : DATE: 1/8
OF: TIME: 15:10
NAME : DATE:
OF: TIME:

METHOD OF SHIPMENT
CONSIGNMENT NOTE NO.
TRANSPORT CO. NAME.

*Container Type and Preservative Codes: P = Neutral Plastic; N = Nitric Acid Preserved; C = Sodium Hydroxide Preserved; J = Solvent Washed Acid Rinced Jar; S = Solvent Washed Acid Rinced Glass Bottle; VC = Hydrochloric Acid Preserved Vial; VS = Sulfuric Acid Preserved Vial; BS = Sulfuric Acid Preserved Glass Bottle; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; O = Other.

AUSTRALIAN LABORATORY SERVICES P/L

Environmental Division
Sydney
Work Order
ES1116303

Telephone : + 61-2-8784 8555

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

CERTIFICATE OF ANALYSIS

Work Order	: **ES1116231**	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 RAIN EVENT	QC Level	: NEPM 1999 Schedule B(3) and ALS QCS3 requirement
Order number	: ----		
C-O-C number	: ----	Date Samples Received	: 26-JUL-2011
Sampler	: CBE	Issue Date	: 04-AUG-2011
Site	: ----		
		No. of samples received	: 5
Quote number	: SY/269/10 V2	No. of samples analysed	: 5

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
WORLD RECOGNISED ACCREDITATION

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

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

- **TDS by method EA-015 may bias high due to the presence of fine particulate matter which may pass through the prescribed GF/C paper.**

Analytical Results

Sub-Matrix: WATER			Client sample ID	A	B	D	F	INFLOW
			Client sampling date / time	22-JUL-2011 16:00	22-JUL-2011 16:00	22-JUL-2011 16:00	22-JUL-2011 16:00	22-JUL-2011 16:00
Compound	CAS Number	LOR	Unit	ES1116231-001	ES1116231-002	ES1116231-003	ES1116231-004	ES1116231-005
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.03	6.91	6.90	6.18	6.07
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	54	74	62	61	49
EA015: Total Dissolved Solids								
^ Total Dissolved Solids @180°C	GIS-210-010	5	mg/L	25	62	50	36	60
EA025: Suspended Solids								
^ Suspended Solids (SS)	----	5	mg/L	<5	8	171	28	50
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5

Appendix 2

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

Peats Ridge, New South Wales
July 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	9.1	13.0	1.2	0.6					10.1	97	8	SW	4		12.7	93	8	SW	4	
2	Sa	9.6	15.8	3.4	0.8					10.6	96	8	WNW	4		15.1	73	1	NW	4	
3	Su	7.8	17.6	0.2	0.6					12.6	86	4	NW	4		17.1	52	1	NW	9	
4	Mo	10.7	18.9	0	2.2					14.9	61	2	W	19		17.2	61	6	NW	19	
5	Tu	8.3	14.9	0	1.0					11.7	58	2	NW	9		13.7	38	1	WNW	28	
6	We	8.3	14.7	0	2.6					11.6	56	1	WSW	4		13.8	46	2	WNW	37	
7	Th	8.7	15.2	0	2.0					12.0	61	0	N	19		14.8	38	1	SW	9	
8	Fr	3.3	15.9	0	2.2					7.0	67	0	NW	19		15.5	43	0	SW	9	
9	Sa	2.9	15.1	0	1.8					6.3	79	0	NW	37		14.8	45	0	N	4	
10	Su	4.1	14.1	0	1.6					7.9	62	0	NNW	28		13.4	41	0	WSW	19	
11	Mo	5.9	15.7	0	1.8					11.1	59	0	NW	9		15.4	41	0	W	4	
12	Tu	3.9	17.4	0	2.4					7.5	64	0	WSW	9		16.9	44	1	NNW	4	
13	We	5.9	10.7	0	1.8					9.6	54	8	SW	19		10.6	59	8	W	4	
14	Th	3.6	12.7	0	1.0					9.8	66	0	NW	4		11.9	47	2	SW	4	
15	Fr	3.7	10.2	0.4	1.4					7.1	70	7	SW	9		10.2	89	8	SW	4	
16	Sa	7.3	13.7	7.0	0.8					9.1	95	8	W	4		12.3	76	7	ESE	4	
17	Su	8.4	13.2	1.4	0.2					10.4	97	8	E	4							
18	Mo	7.8	17.7	2.0	1.2					11.2	87	5	NW	4		15.8	55	3	W	4	
19	Tu	4.1	12.9	0	1.0					8.1	72	2	WNW	9		11.4	62	8	SW	19	
20	We	6.9	14.1	40.8	3.8					11.8	99	8	SSW	37		13.6	81	8	S	46	
21	Th	9.3	10.8	20.2	1.8					10.7	97	8	SSW	28		10.0	96	8	SW	9	
22	Fr	9.3	11.3	67.6						10.6	95	8	WNW	19		10.4	95	8	S	28	
23	Sa	6.8	12.7	16.4	1.6					8.5	95	7	SW	28		12.6	78	5	S	19	
24	Su	4.2	13.9	1.6	1.2					8.9	84	5	SW	4		12.1	84	7	S	4	
25	Mo	5.8	16.8	0	0.8					10.9	72	2	NW	4		15.6	55	3	NW	9	
26	Tu	7.8	16.1	0	1.4					11.1	70	0	WNW	19		14.8	66	7	SW	4	
27	We	3.7	14.3	0	1.8					7.9	75	3	SW	4		13.4	69	5	SW	4	
28	Th	6.0	17.1	0	0.6					10.1	89	0	NW	4		16.5	51	1	N	9	
29	Fr	6.8	18.3	0	1.2					11.6	67	0	NW	4		17.6	39	1	WNW	4	
30	Sa	5.2	18.9	0.2	1.6					11.2	61	0	NW	9		18.3	40	1	NW	9	
31	Su	7.6	20.2	0	1.0					12.6	62	3	WNW	4		19.6	42	3	WSW	4	
Statistics for July 2011																					
	Mean	6.5	15.0		1.5					10.1	75	3		12		14.2	59	3		11	
	Lowest	2.9	10.2		0.2					6.3	54	0	#	4		10.0	38	0	#	4	
	Highest	10.7	20.2	67.6	3.8					14.9	99	8	#	37		19.6	96	8	S	46	
	Total			162.4	43.8																

Gosford, New South Wales
July 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	9.6	14.3	1.6			NNW	19	08:27	12.1	98		NNW	7		13.5	99		SE	2	
2	Sa	9.7	18.6	7.0			W	20	11:13	13.3	94		NW	9		17.7	61		NNE	9	
3	Su	4.7	19.8	0.2			NE	20	14:39	9.3	99			Calm		19.0	54		N	9	
4	Mo	7.4	21.3	0			NNW	37	11:57	12.4	98		E	6		16.0	98			Calm	
5	Tu	4.8	17.3	1.2			N	48	11:12	12.9	66		N	9		16.3	32		NW	11	
6	We	3.8		0						12.1	63		NE	7							
7	Th																				
8	Fr																				
9	Sa																				
10	Su																				
11	Mo																				
12	Tu		18.8													18.6	39		NNW	7	
13	We		13.2				NW	26	11:10	8.6	88		NNW	2		12.9	46		NW	9	
14	Th	2.5	15.4	0			S	24	11:08	11.8	55		NW	11		13.2	40		SSE	11	
15	Fr	5.0	13.1	0			WSW	17	13:35	9.6	64		NNW	6		12.4	87		S	7	
16	Sa	8.0	16.5	5.8			SE	15	13:05	10.7	99			Calm		14.7	65		ESE	6	
17	Su	9.9	15.8	1.8			SE	11	15:00	11.8	100			Calm		14.9	95		SE	6	
18	Mo	7.3	19.4	1.8			N	26	12:58	14.0	81		N	13		17.8	52		WNW	7	
19	Tu	2.2	15.8	0			NNW	31	22:16	10.3	63		NNW	11		13.9	52		WNW	9	
20	We	8.7	16.6	55.8			WSW	39	02:08	13.8	99		ESE	9		14.8	92		SSE	13	
21	Th	11.2	12.5	36.6			WSW	28	15:07	12.3	98		SSW	9		11.4	98		NNW	11	
22	Fr	11.2	13.3	82.0			NW	33	16:26	12.2	98		NW	7		11.7	98		SE	4	
23	Sa	9.1	15.5	43.0			NE	48	15:11	10.6	98		NNW	9		14.0	76		S	7	
24	Su	6.0	16.1	1.2			WNW	20	10:49	11.5	80		N	6		14.7	60		SSE	4	
25	Mo	5.6	19.1	0.2			WSW	28	13:59	11.9	70		N	7		18.4	46		WNW	9	
26	Tu	4.6	18.3	0			ESE	19	12:50	12.4	72			Calm		16.2	63			Calm	
27	We	4.5	15.3	0			NNW	22	05:37	9.9	71		NW	9		13.1	98		SSE	4	
28	Th	3.2	19.1	2.2			N	19	14:30	9.6	99			Calm		18.5	50		N	9	
29	Fr	2.5	19.6	0.2			NNE	19	09:26	9.2	99		NE	4		18.1	48		SSE	4	
30	Sa	1.5	20.5	0			NW	20	13:43	8.3	99			Calm		19.4	34		ENE	7	
31	Su	2.9	21.4	0			N	20	10:58	12.1	90		N	7		20.7	39		ESE	6	
Statistics for July 2011																					
	Mean	6.1	17.1							11.3	85			5		15.7	64			6	
	Lowest	1.5	12.5							8.3	55			Calm		11.4	32			Calm	
	Highest	11.2	21.4	82.0			#	48		14.0	100		N	13		20.7	99		SSE	13	
	Total			240.6																	