CBased Environmental Pty Limited
ABN 62 611 924 264

Calga Quarry

Environmental Monitoring

Dust Deposition Gauges, Surface and Ground Waters and Meteorological Station

September 2018

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Date: 19 October 2018

Executive Summary

CBased Environmental is contracted by Hanson 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 CBased Environmental and includes the following;

- Dust Deposition results for September 2018;
- Surface Water quality results for September 2018; and
- Meteorological report for September 2018.

The September 2018 dust deposition results for insoluble solids were generally similar when compared to August 2018. There were no excessively contaminated dust gauges this month. All sites, on a rolling annual average basis, are currently below the Air Quality Management Plan exceedance level of 3.7g/m^2.month. Results were found to be representative of dust levels as determined by the Australian Standard.

Monthly surface water samples were collected at sites A, C1, C2 and F. Sites 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 slightly acidic range, low Electrical Conductivity, low Total Dissolved Solids and low Total Suspended Solids. Oil and Grease was not detected at any sites in September 2018

Groundwater depth generally increased compared to July 2018, indicating water moving away from the surface. pH at all sites is in the acidic range and generally slightly decreased when compared to the previous results. EC levels were similar or increased slightly at a majority of groundwater sites when compared to the July 2018 results.

The Calga Quarry weather station data recovery in September 2018 was approximately 100%. Data for September 2018 shows that rainfall recorded at the Calga Quarry was similar to the Gosford BOM mean rainfall was well below the Peats Ridge long term rainfall for September.

The rainfall comparison is provided below:

Calga Quarry	47.2 mm
BOM Peats Ridge*	NA
BOM Gosford*	58.2 mm
BOM Peats Ridge Long term mean for September*	69.1 mm

*Data sourced from Bureau of Meteorology (BOM) website (www.bom.gov.au).
Note: Differences in the daily rainfall readings between BOM and the Calga station may occur due to BOM stations reporting rainfall at 9am and the Calga station recording rainfall at midnight.

Sampling Program

Hanson Calga Quarry conducts environmental monitoring in accordance to Development Consent, OEH (EPA) licence and Environmental Management Plans. CBased Environmental are contracted to undertake dust deposition gauge, surface and groundwater and meteorological monitoring for the project. CBased 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. 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 bi-monthly for depth and water quality. 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. Metrological parameters are measured according to Australian Standard AS3580.14 "*Methods for sampling and analysis of ambient air. Meteorological monitoring for ambient air quality monitoring applications*"

The weather stations have the following sensor configuration;

- Air temperature
- Humidity
- Rainfall
- Atmospheric pressure
- Evaporation
- Solar radiation
- Wind speed
- Wind direction

CBased Environmental continued to operate the monitoring equipment and utilise site collections at their existing locations.

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

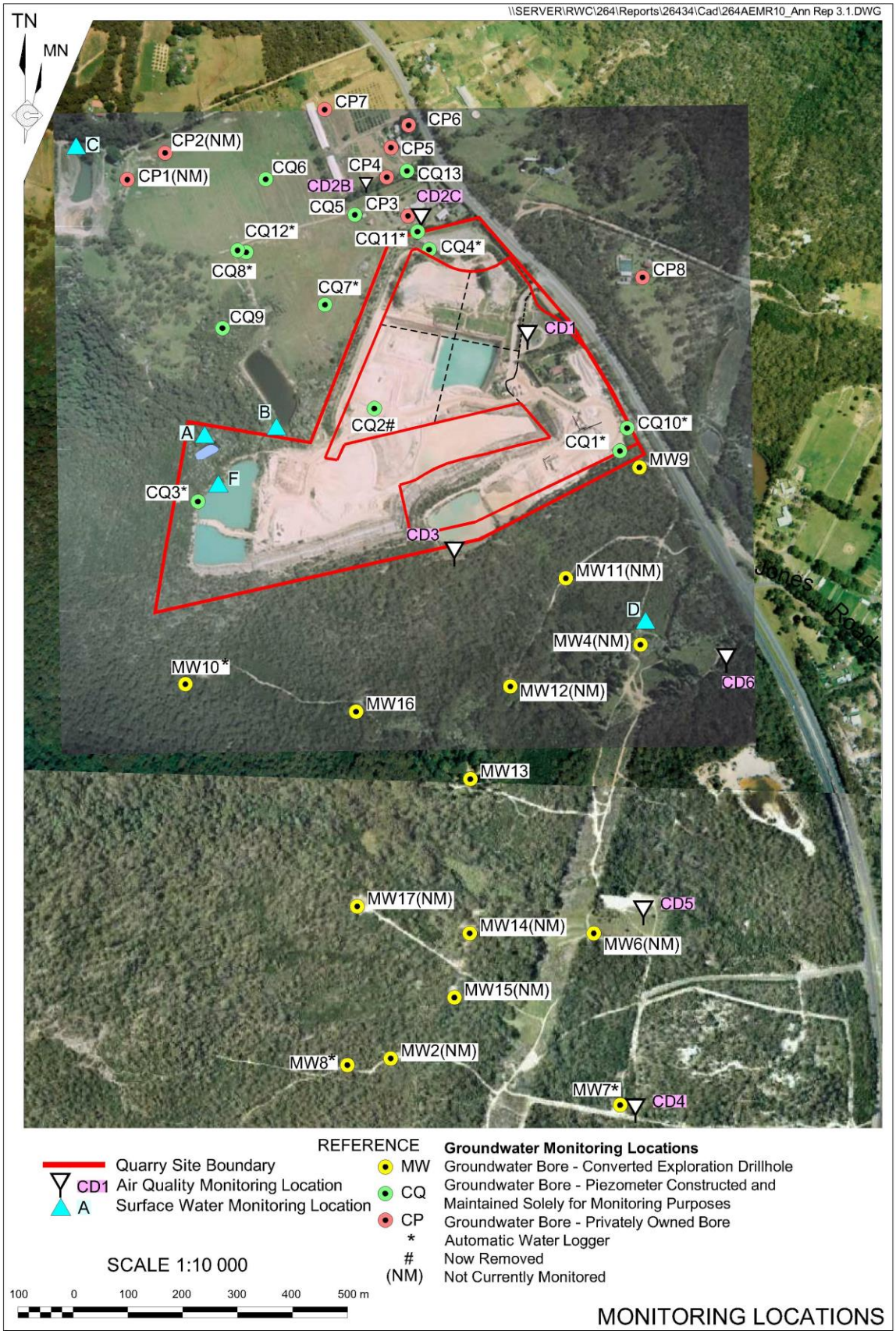


Figure 1: Hanson Calga Quarry environmental monitoring locations

2.0 Monthly Results

2.1 Dust Deposition Gauges

Table 1 displays the results for September 2018 and the project 12-month rolling average. Results are in g/m^2.month.

Table 1: Dust Deposition results: 3 September 2018 – 4 October 2018 (31 days)

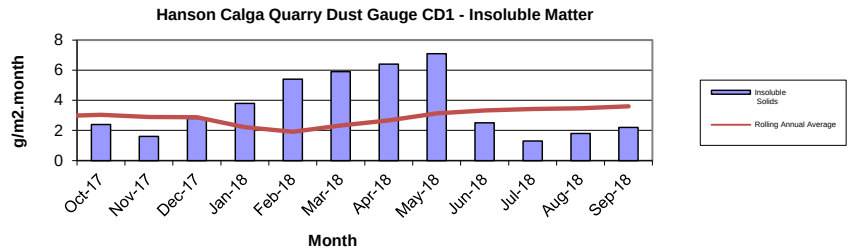
Site	Monthly Insoluble Solids *(g/m^2.month)*	Monthly Ash Residue *(g/m^2.month)*	Monthly Combustible Matter *(g/m^2.month)*	Monthly Ash Residue/ Insoluble Solids %	Rolling Annual Average Insoluble Solids *(g/m^2.month)*
CD1	2.2	1.9	0.3	86	3.6
CD2c	1.2	0.8	0.4	67	1.2
CD3	1.0	0.8	0.2	80	1.0
CD4	1.2	0.8	0.4	67	0.7
CD5	0.6	0.5	0.1	83	0.7
CD6	0.8	0.5	0.3	63	0.9

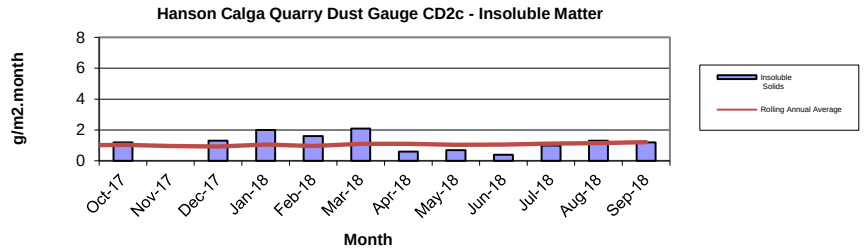
Insoluble Solids marked with an * indicate an excessively contaminated gauge. Contamination can include bird droppings, vegetation (such as plant matter, algae, pollen and seeds) and insects. Results in bold indicate insoluble solids levels above 3.7 g/m^2.month; the Development Consent's annual average amenity criteria at residential locations. The current rolling annual average is calculated from August 2017 to July 2018.

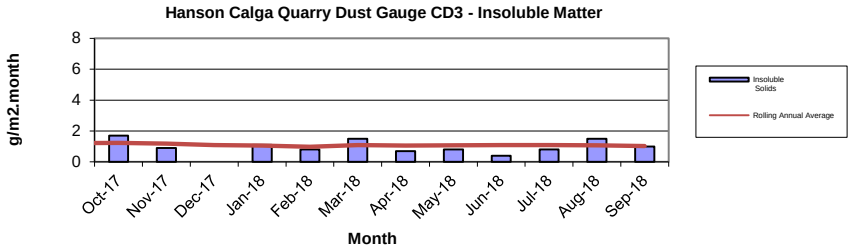
CD1 was installed on the 1 May 2006. CD2a was discontinued at the start of August 2006 due to quarry operations "mining out" the site of the gauge. The replacement gauge, Site CD2b, was located in a position adjacent to the boundary between B. Kashouli and F. & J. Gazzana in conformance with the Air Quality Management Plan. CD4 was installed on 3 October 2006, to gauge air quality impacts to the south of the site operations, as were CD5 and CD6 which were installed on the 14 December 2006. CD2b was discontinued at the end of January 2010 due to contamination of the gauge by non-quarry related vehicle movements on a track adjacent to the gauge. The replacement gauge, CD2c, was located on a rehabilitated section of land between the extraction area and adjacent resident.

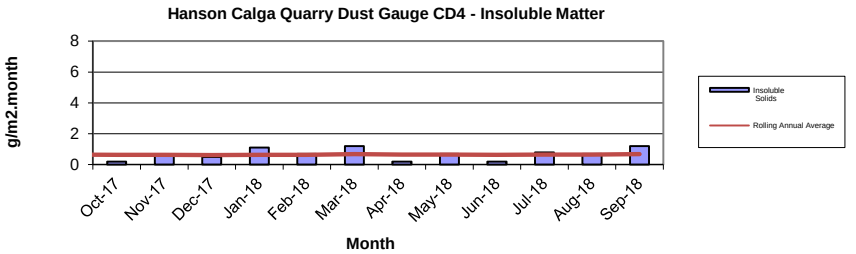
Dust deposition charts for all dust gauge sites appear in **Figure 2** below. The laboratory analysis is provided in **Appendix 1.**

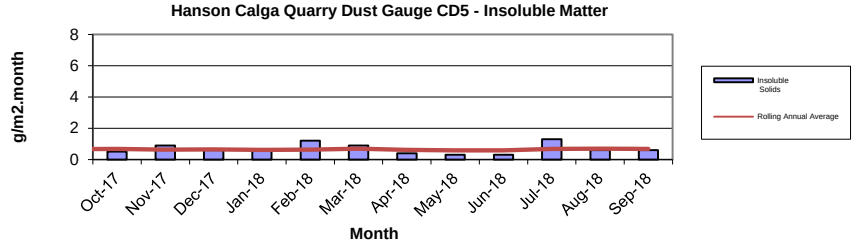
Figure 2: Dust Deposition Charts

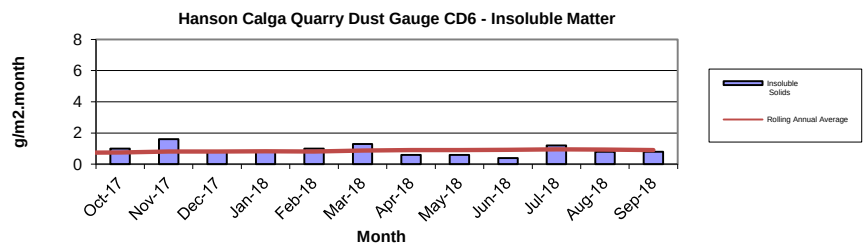












2.2 Surface Water Monitoring

Monthly surface water monitoring was conducted on the 4 October 2018 and results are listed in **Table 2**. The laboratory analysis sheets are provided in **Appendix 1.**

Table 2: Monthly surface water monitoring – September 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	5.90	183	94	8	<5
B	Dry							
C1	Dam	Clear	Clear	7.36	152	78	18	<5
C2	Trickle	Clear	Clear	6.56	182	96	5	<5
D	Dry							
F	Dam	Clear	Clear	4.7	154	100	<5	<5

Samples were collected at sites A, C1, C2 and F. Sites 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 slightly acidic range, low Electrical Conductivity, low Total Dissolved Solids and low Total Suspended Solids. Oil and Grease was not detected at any sites in September 2018

2.2.1 Non-Routine Surface Water Sampling

No non-routine sampling was undertaken during September 2018.

2.3 Groundwater Monitoring

Bi-monthly groundwaters were sampled on 4 October 2018. Water quality tests for pH and electrical conductivity were conducted by CBased Environmental Pty Limited. For water quality purposes, water was purged from the bore until constant pH (+/- 0.1 pH units) and Electrical Conductivity (+/- 5%) was obtained between samples. Data is displayed in **Table 3** and **Figures 3 to 6.**

Groundwater depth generally increased compared to July 2018, indicating water moving away from the surface. pH at all sites is in the acidic range and generally slightly decreased when compared to the previous results. EC levels were similar or increased slightly at a majority of groundwater sites when compared to the July 2018 results.

Bi-monthly groundwater monitoring is next scheduled for November 2018.

Table 3: Groundwater Quality Data

Reference	Bore	Type	Depth to water TOC *(m)* April 2006	Depth to water TOC *(m)* This report	pH This report	Electrical Conductivity *(µS/cm)* This report
CQ3	Voutos	* Monitor	10.53	11.40	6.03	113
CQ4	Voutos	* Monitor	8.78	11.97	5.03	114
CQ5	Gazzana	DIP Only	8.69	9.27	3.90	163
CQ6	Gazzana	DIP Only	16.00	Covered over in paddock		
CQ7	Gazzana	* Monitor	6.89	7.21	4.23	99
CQ8	Gazzana	* Monitor	11.03	7.89	4.66	126
CQ9	Gazzana	DIP Only	10.10	Blocked / Damaged		
CQ10	Voutos	* Monitor	NI	27.24	4.28	127
CQ11S	Gazzana	* Monitor	NI	12.68	5.21	146
CQ11D	Gazzana	* Monitor	NI	13.71	4.41	142
CQ12	Gazzana	* Monitor	NI	6.47	4.04	117
CQ13	Kashouli	* Monitor	NI	15.71	3.97	173
CP3	Gazzana	Domestic	10.40	Destroyed		
CP4	Kashouli	Domestic	13.63	13.22	4.37	166
CP5	Kashouli	Domestic	16.61	11.02	No power to pump	
CP6	Kashouli	Domestic	16.27	13.07	4.02	144
CP7	Kashouli	Production	8.56	8.58	4.28	96
CP8	Rozmanec	Domestic	22.17	23.80	4.11	123
MW7	Rocla Bore	* Monitor	15.76	17.72	4.07	107
MW8	Rocla Bore	* Monitor	9.82	8.94	4.39	65
MW9	Rocla Bore	* Monitor	22.44	24.59	4.22	84
MW10	Rocla Bore	* Monitor	15.41	13.71	4.02	113
MW13	Rocla Bore	DIP Only	NI	8.32	3.8	107
MW16	Rocla Bore	DIP Only	NI	8.91	4.11	101
MW17	Rocla Bore	DIP Only		No Access - tree across track		

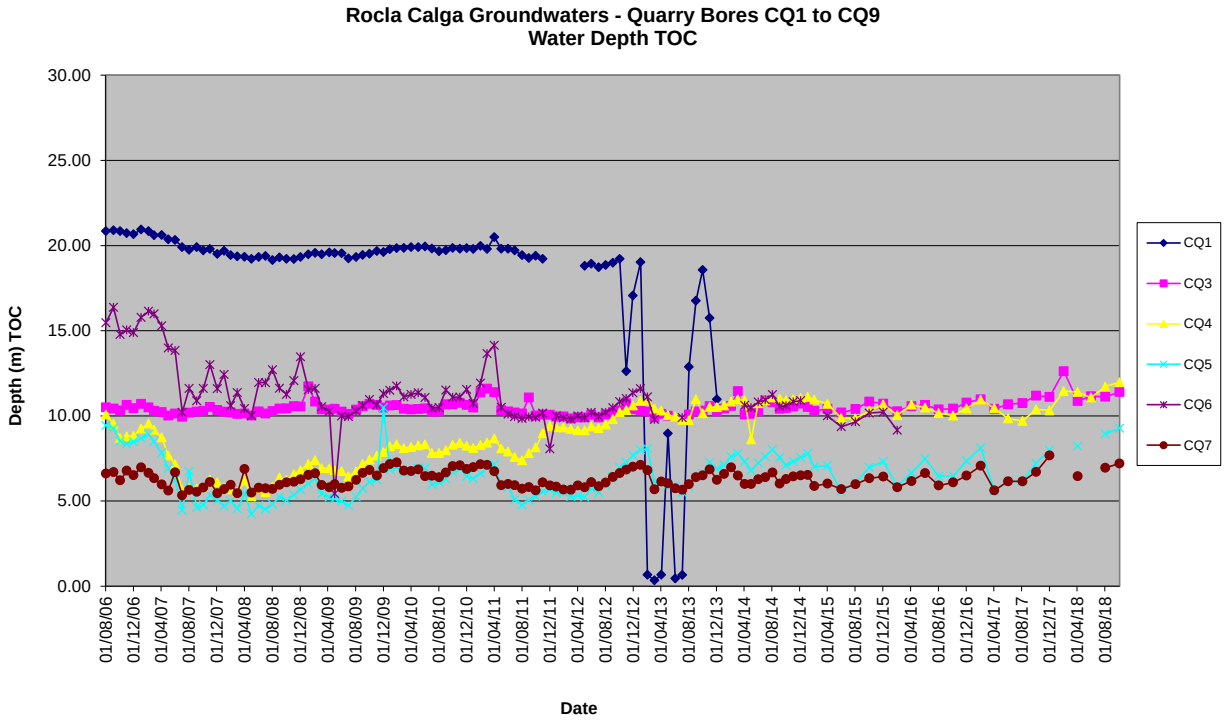
Notes:
TOC = Water level measured from top of bore case to water.
NM = Not Monitored – unable to sample water due to non-operational pump.
NR = Not Required by resident.
* = Logger Installed.
NI = These bores were not installed in April 2006 but are now operational. April 2006 was the first set of measurements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

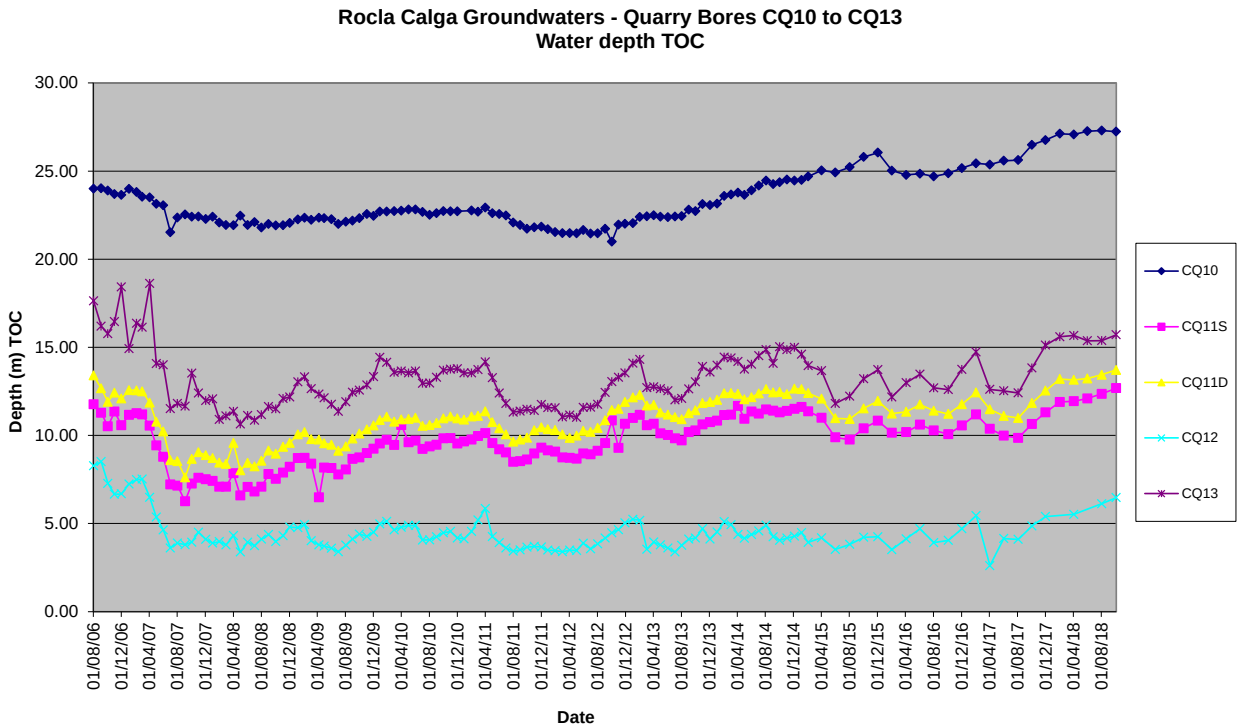
Shading is used to indicate the following trends in water depth (compared to the last reading):

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

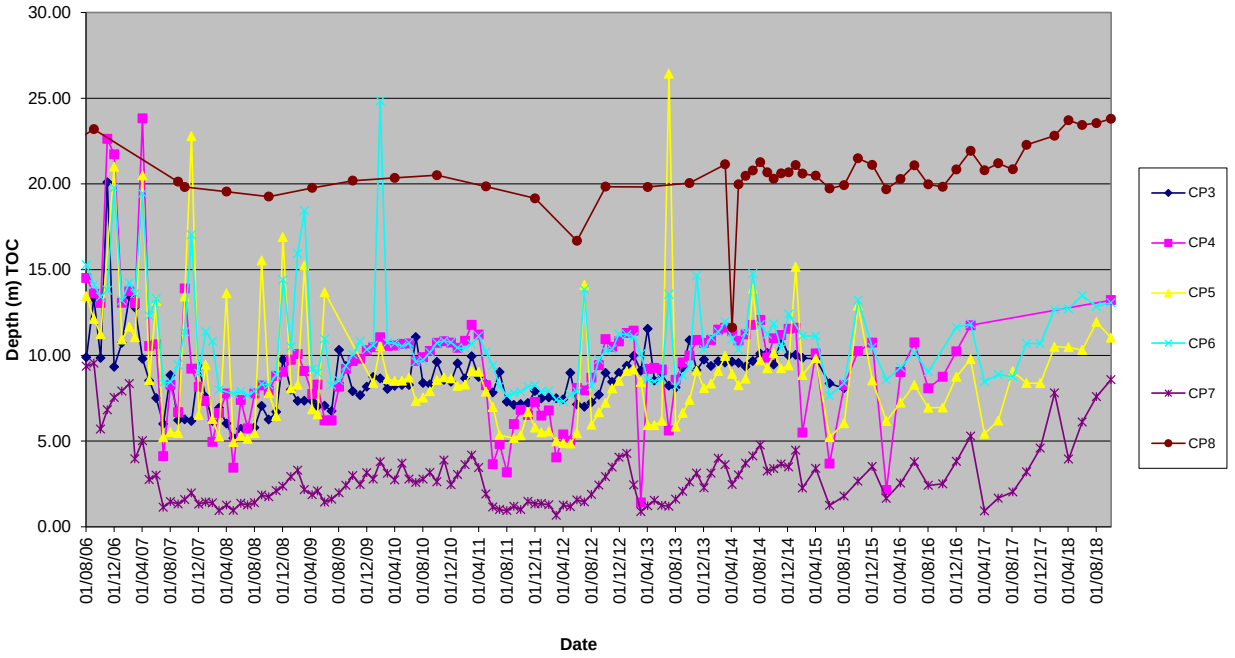
Available groundwater loggers were downloaded and will be forwarded to the Hanson Calga Quarry groundwater consultant.

Figures 3 to 6: Groundwater Depth Charts.

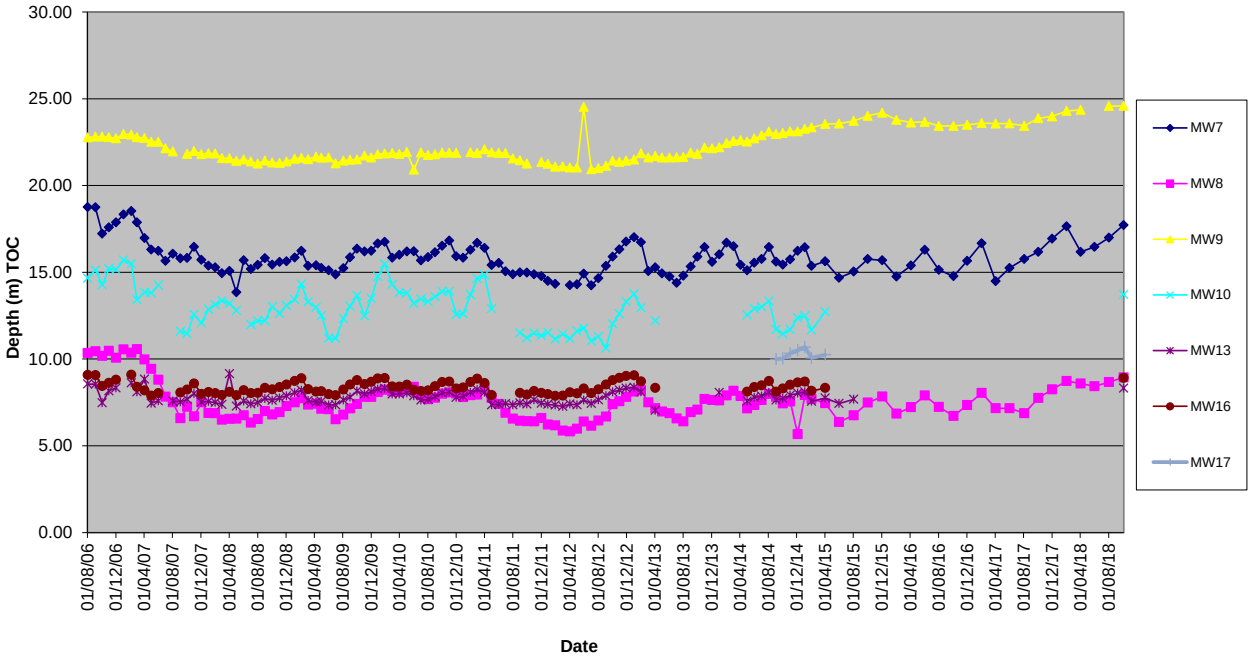




Rocla Calga Groundwaters - Quarry Bores CP3 to CP8
Water Depth TOC



Rocla Calga Groundwaters - Quarry Bores MW7 to MW17
Water Depth TOC



2.4 Meteorological Monitoring

The Calga Quarry weather station data recovery in September 2018 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).

An annual calibration was undertaken on the weather station during September 2018 and is next due in September 2019.

Monthly weather statistics from the nearby Bureau of Meteorology (BOM) at Peats Ridge station are no longer available. However, the long-term rainfall mean is available via a link on the Gosford BOM Daily Weather Observation page.

Data for September 2018 shows that rainfall recorded at the Calga Quarry was similar to the Gosford BOM mean rainfall was well below the Peats Ridge long term rainfall for September.

The rainfall comparison is provided below:

Calga Quarry	47.2 mm
BOM Peats Ridge*	NA
BOM Gosford*	58.2 mm
BOM Peats Ridge Long term mean for September*	69.1 mm

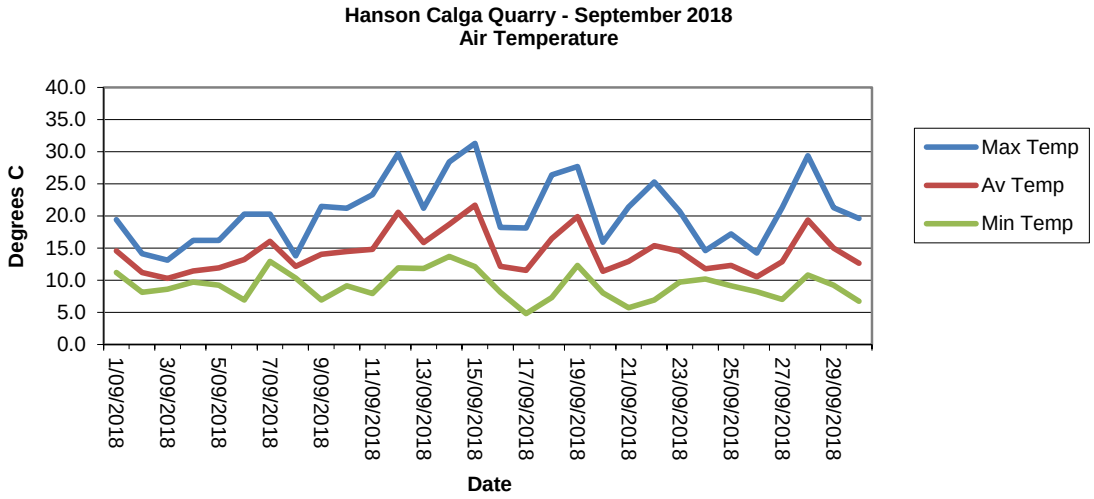
NA = Not Available
^Rain data not based on a full set of data.
*Data sourced from Bureau of Meteorology (BOM) website (www.bom.gov.au).

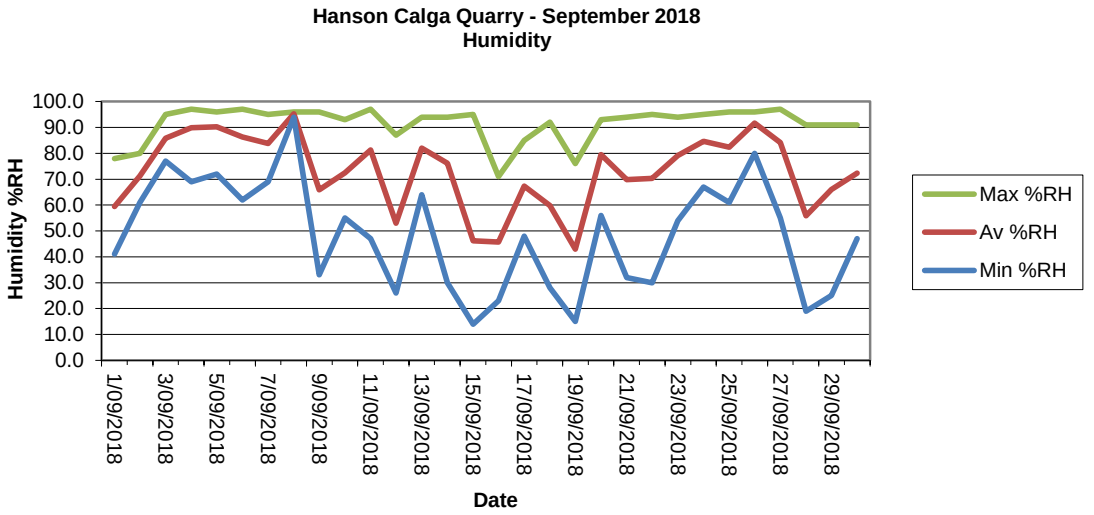
2.4.1 Monthly Meteorological Data Summary

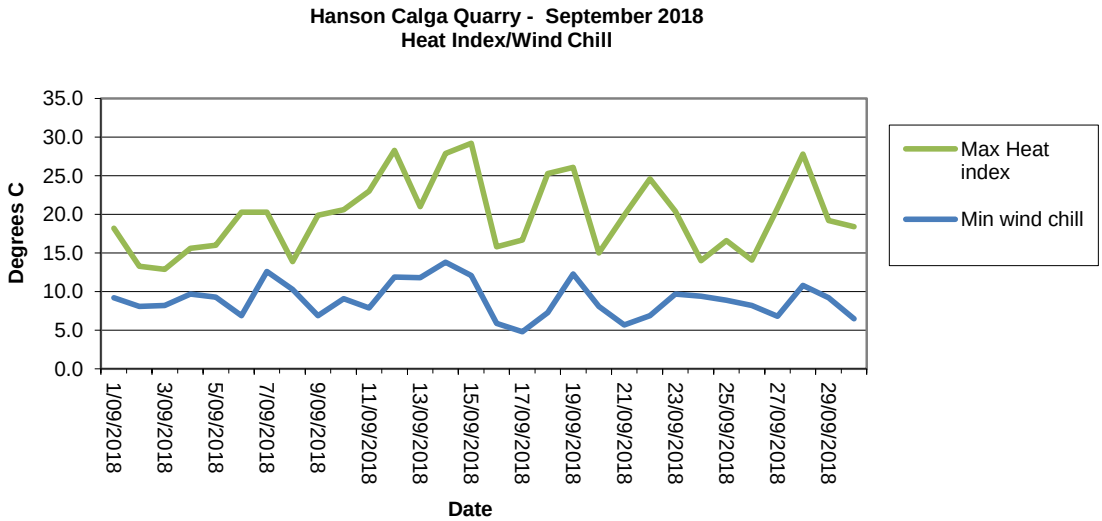
Summary **Sep-18** **Hanson - Calga**

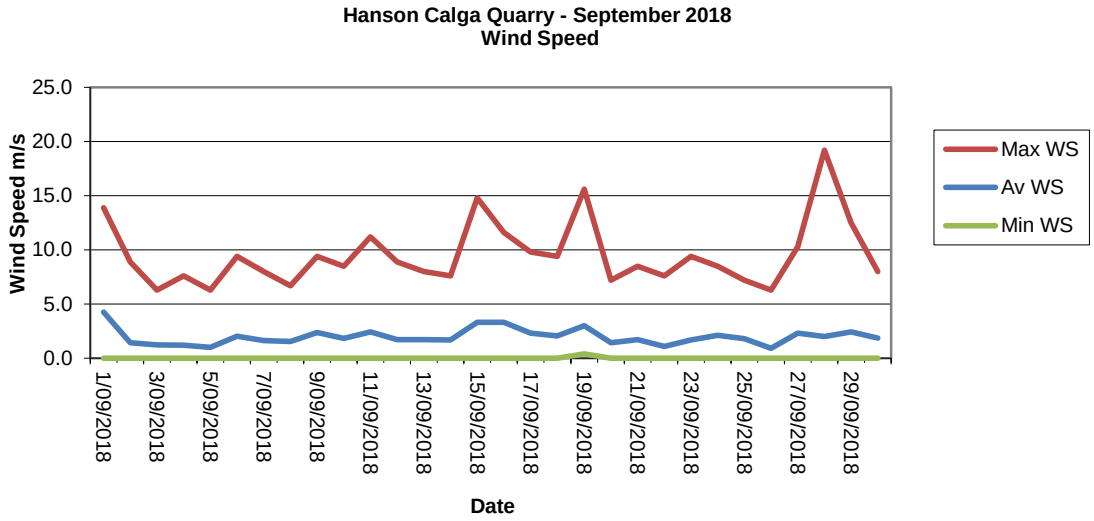
Date	Min Temp	Av Temp	Max Temp	Min %RH	Av %RH	Max %RH	RAIN mm	Min WS	Av WS	Max WS	Min wind chill	Max Heat index	Min Atm P	Av Atm P	Max Atm P	Min Data %	Av data %	Max Data %
1/09/2018	11.2	14.6	19.4	41.0	59.4	78.0	0.0	0.0	4.3	13.9	9.2	18.2	1001.2	1005.8	1011.3	0.0	39.6	51.4
2/09/2018	8.1	11.2	14.1	61.0	71.3	80.0	0.0	0.0	1.4	8.9	8.1	13.3	1010.7	1016.0	1021.4	38.2	43.5	48.9
3/09/2018	8.6	10.3	13.1	77.0	85.8	95.0	11.4	0.0	1.2	6.3	8.2	12.9	1020.9	1023.4	1025.5	0.0	45.0	92.6
4/09/2018	9.7	11.4	16.2	69.0	89.8	97.0	8.6	0.0	1.2	7.6	9.7	15.6	1023.9	1025.1	1026.4	0.0	41.1	93.2
5/09/2018	9.2	11.9	16.2	72.0	90.2	96.0	1.2	0.0	1.0	6.3	9.3	16.0	1020.1	1022.5	1025.1	0.0	50.2	94.5
6/09/2018	6.9	13.2	20.3	62.0	86.3	97.0	0.8	0.0	2.0	9.4	6.9	20.3	1012.4	1015.9	1020.3	0.0	51.6	82.2
7/09/2018	12.9	16.1	20.3	69.0	83.8	95.0	7.8	0.0	1.6	8.0	12.6	20.3	1010.4	1012.9	1015.5	0.0	60.5	100.0
8/09/2018	10.3	12.1	13.8	94.0	95.3	96.0	1.6	0.0	1.5	6.7	10.3	13.9	1014.3	1016.9	1019.9	71.7	92.2	98.8
9/09/2018	6.9	14.0	21.5	33.0	65.9	96.0	0.2	0.0	2.4	9.4	6.9	19.9	1016.6	1019.6	1022.3	82.8	88.5	91.1
10/09/2018	9.1	14.5	21.2	55.0	72.5	93.0	0.0	0.0	1.8	8.5	9.1	20.6	1022.1	1024.4	1026.5	47.1	78.5	97.8
11/09/2018	7.9	14.8	23.3	47.0	81.3	97.0	0.2	0.0	2.4	11.2	7.9	23.0	1016.5	1021.4	1025.4	71.7	89.5	100.0
12/09/2018	11.9	20.6	29.7	26.0	53.0	87.0	0.0	0.0	1.7	8.9	11.9	28.3	1012.4	1015.1	1016.9	82.8	95.4	100.0
13/09/2018	11.8	15.9	21.2	64.0	82.0	94.0	0.0	0.0	1.7	8.0	11.8	21.0	1016.4	1019.0	1020.8	65.8	85.6	100.0
14/09/2018	13.7	18.7	28.4	30.0	76.2	94.0	0.0	0.0	1.7	7.6	13.8	27.9	1012.8	1016.7	1020.5	54.5	75.7	99.1
15/09/2018	12.1	21.7	31.3	14.0	46.2	95.0	0.0	0.0	3.3	14.8	12.1	29.2	1002.3	1007.6	1013.0	68.6	83.4	93.5
16/09/2018	8.1	12.2	18.2	23.0	45.7	71.0	0.0	0.0	3.3	11.6	5.9	15.8	1010.6	1018.4	1024.4	65.5	83.8	93.2
17/09/2018	4.8	11.5	18.1	48.0	67.3	85.0	0.0	0.0	2.3	9.8	4.8	16.7	1021.7	1023.6	1026.2	53.2	73.9	93.5
18/09/2018	7.3	16.5	26.4	28.0	59.8	92.0	0.0	0.0	2.1	9.4	7.3	25.3	1012.1	1016.9	1021.9	57.5	75.0	89.5
19/09/2018	12.3	19.9	27.7	15.0	43.0	76.0	0.0	0.4	3.0	15.6	12.3	26.1	1006.9	1010.1	1015.5	42.8	73.2	90.5
20/09/2018	8.0	11.4	15.9	56.0	79.5	93.0	2.8	0.0	1.4	7.2	8.1	15.0	1015.1	1019.9	1025.6	53.5	84.3	100.0
21/09/2018	5.7	12.9	21.4	32.0	69.8	94.0	0.0	0.0	1.7	8.5	5.7	19.9	1024.9	1026.7	1028.6	36.6	85.6	100.0
22/09/2018	6.9	15.4	25.3	30.0	70.3	95.0	0.0	0.0	1.1	7.6	6.9	24.6	1022.2	1025.6	1028.6	56.3	89.2	100.0
23/09/2018	9.7	14.5	20.7	54.0	79.2	94.0	1.4	0.0	1.7	9.4	9.7	20.4	1023.3	1025.4	1028.7	72.9	84.2	88.9
24/09/2018	10.2	11.7	14.6	67.0	84.6	95.0	3.6	0.0	2.1	8.5	9.4	14.0	1028.0	1029.1	1030.7	54.2	74.5	95.1
25/09/2018	9.1	12.3	17.2	61.0	82.3	96.0	0.6	0.0	1.8	7.2	8.9	16.6	1024.0	1026.7	1029.1	43.4	81.1	98.8
26/09/2018	8.2	10.5	14.2	80.0	91.6	96.0	6.2	0.0	0.9	6.3	8.2	14.1	1021.1	1023.0	1025.0	49.5	76.6	99.1
27/09/2018	7.0	12.9	21.3	55.0	84.1	97.0	0.4	0.0	2.3	10.3	6.8	20.8	1017.2	1020.4	1023.7	48.3	79.7	100.0
28/09/2018	10.8	19.4	29.4	19.0	55.8	91.0	0.4	0.0	2.0	19.2	10.8	27.8	1011.4	1014.9	1018.2	10.5	74.1	98.8
29/09/2018	9.2	15.0	21.3	25.0	66.0	91.0	0.0	0.0	2.4	12.5	9.2	19.2	1014.0	1020.2	1028.1	60.6	77.8	95.4
30/09/2018	6.7	12.6	19.6	47.0	72.4	91.0	0.0	0.0	1.9	8.0	6.5	18.4	1028.1	1029.6	1031.3	67.4	81.7	94.5
Monthly	4.8	14.3	31.3	14	73	97	47.2	0	2.0	19.2	4.8	29.2	1001.2	1019.8	1031.3	0	73.8	100

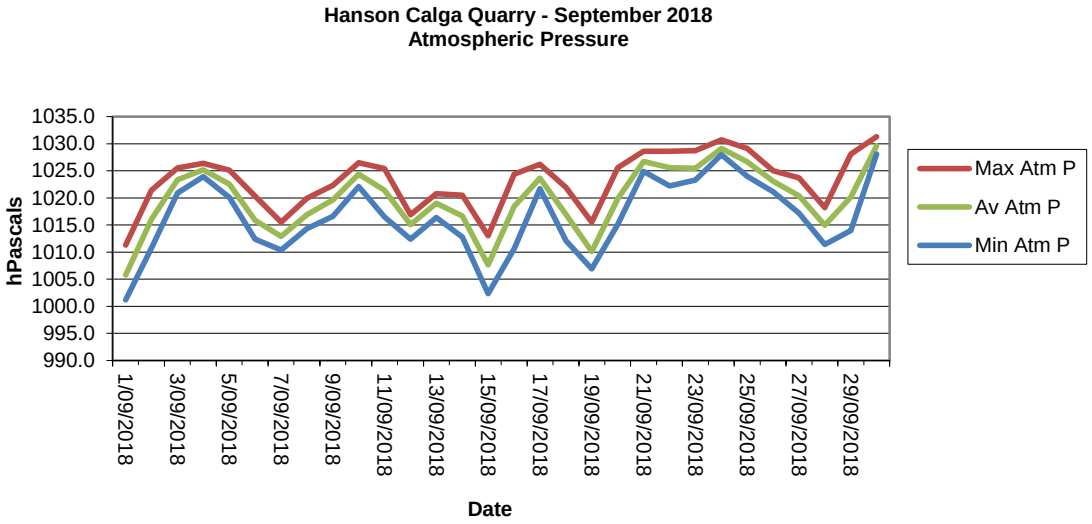
2.4.2 Monthly Weather Charts

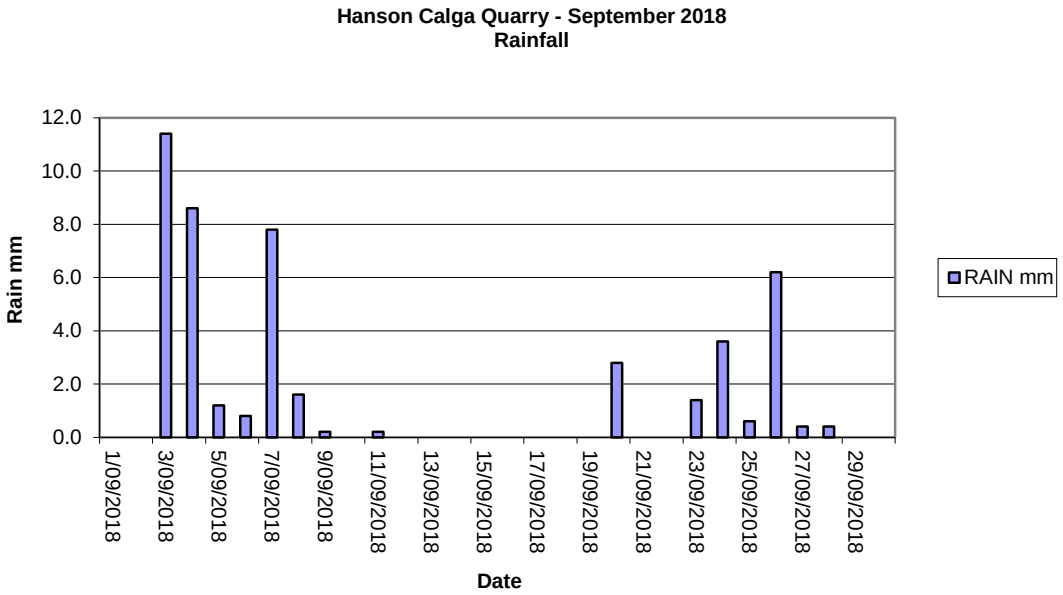


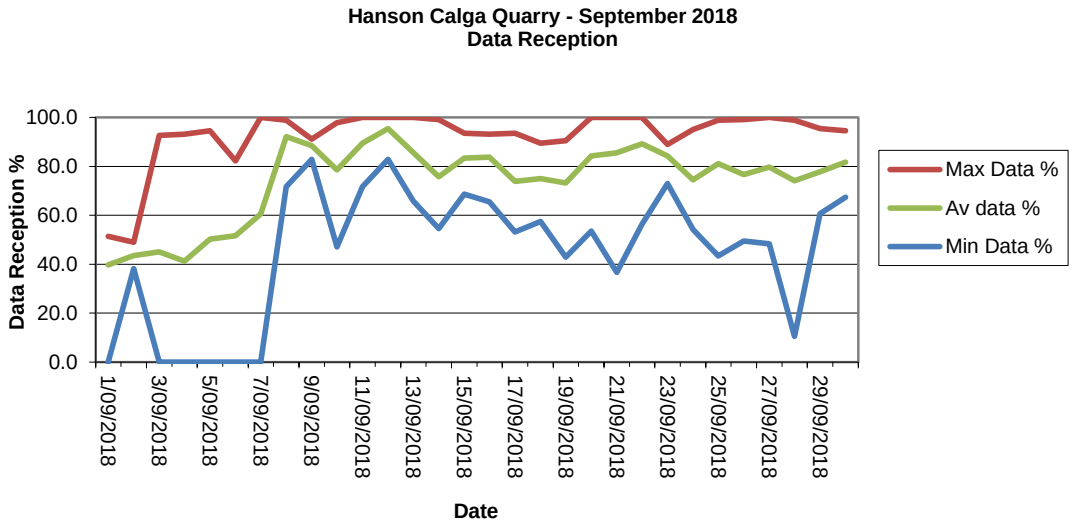





Hanson Calga Quarry - September 2018
Wind Speed
Wind Speed m/s
25.0
20.0
15.0
10.0
5.0
0.0
1/09/2018
3/09/2018
5/09/2018
7/09/2018
9/09/2018
11/09/2018
13/09/2018
15/09/2018
17/09/2018
19/09/2018
21/09/2018
23/09/2018
25/09/2018
27/09/2018
29/09/2018
Date
Max WS
Av WS
Min WS


Hanson Calga Quarry - September 2018
Atmospheric Pressure
hPascals
1035.0
1030.0
1025.0
1020.0
1015.0
1010.0
1005.0
1000.0
995.0
990.0
1/09/2018
3/09/2018
5/09/2018
7/09/2018
9/09/2018
11/09/2018
13/09/2018
15/09/2018
17/09/2018
19/09/2018
21/09/2018
23/09/2018
25/09/2018
27/09/2018
29/09/2018
Date
Max Atm P
Av Atm P
Min Atm P

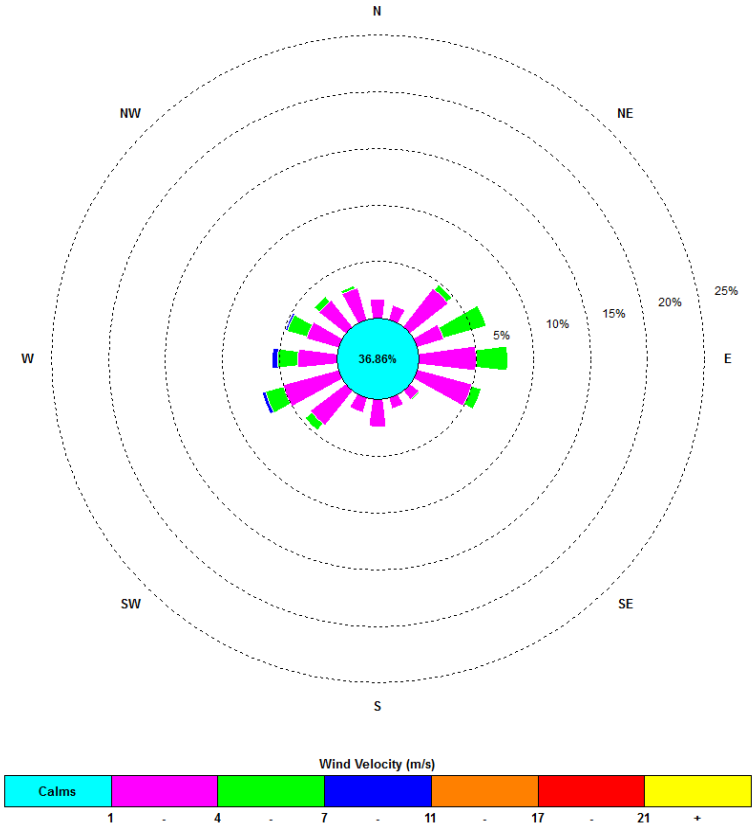

Hanson Calga Quarry - September 2018
Rainfall
Rain mm
12.0
10.0
8.0
6.0
4.0
2.0
0.0
1/09/2018
3/09/2018
5/09/2018
7/09/2018
9/09/2018
11/09/2018
13/09/2018
15/09/2018
17/09/2018
19/09/2018
21/09/2018
23/09/2018
25/09/2018
27/09/2018
29/09/2018
Date
RAIN mm


Hanson Calga Quarry - September 2018
Data Reception
Data Reception %
100.0
80.0
60.0
40.0
20.0
0.0
1/09/2018
3/09/2018
5/09/2018
7/09/2018
9/09/2018
11/09/2018
13/09/2018
15/09/2018
17/09/2018
19/09/2018
21/09/2018
23/09/2018
25/09/2018
27/09/2018
29/09/2018
Date
Max Data %
Av data %
Min Data %

2.4.3 Monthly Windrose Plot

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

0:00, 1 September 2018 – 23: 45, 30 September 2018



The predominant winds were from the E, with most frequent, strongest winds from the WSW. The maximum wind speed was 19.2 m/s from the WSW.

Appendix 1

Field Sheets

Chain of Custody

Laboratory Certificates

DEPOSITIONAL DUST MONITORING

Client: ..... **Hanson Calga Quarry** ..... Date Installed: 3.9.18 Collection Start Time: 9.00 Sampled By: Leesa + Jonas

Date Collected: 4.10.18 Collection Stop Time: 3.00 Sampling ID: Hanson

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	3.00	1600	✓		✓	✓	(C) S T	(C) O Bn Gn Gy	Y	Y		
CD2C	11.50	1000	✓✓		✓	✓	(C) S T	(C) O Bn Gn Gy	Y	Y		
CD3	9.05	1600	✓				(C) S T	(C) O Bn Gn Gy	Y	Y	—	
CD4	9.15	1600	✓✓✓		✓	✓	C S T	C O Bn Gn Gy	Y	Y		Spiders / Bugs
CD5	10.00	1600	✓✓			✓	(C) S T	(C) O Bn Gn Gy	Y	Y		
CD6	10.15	1600	✓			✓	(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				

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: _____

CHAIN OF CUSTODY DOCUMENTATION

Australian Laboratory Services Pty Ltd

CLIENT: CBased Environmental Pty Ltd

POSTAL ADDRESS: 47 Boomerang St CESSNOCK NSW 2325

SEND REPORT TO: monitoringresults@cbased.com.au

SEND INVOICE TO: admin@cbased.com.au, renae.mikka@cbased.com.au

DATA NEEDED BY: 7 working days

REPORT NEEDED BY: 7 working days

PROJECT ID: Hanson Calga Dusts

QUOTE NO.: SYBQ 222-16

P.O. NO.:

COMMENTS/SPECIAL HANDLING/STORAGE OR DIPOSAL:

FOR LAB USE ONLY

COOLER SEAL

Yes ..... No

Broken ..... Intact

COOLER TEMP: deg.C

Total unless specified

LABORATORY BATCH NO.:

SAMPLERS:CBased Environmental Pty Ltd

PHONE: 0265713334 E-MAIL: monitoringresults@cbased.com.au

REPORT FORMAT: HARD: Yes FAX: DISK: BULLETIN BOARD: E-MAIL: Yes

QC LEVEL: QCS1: QCS2: QCS3: Yes QCS4:

ANALYSIS REQUIRED

	SAMPLE ID	MATRIX	DATE ON	DATE OFF	CONTAINER DATA TYPE & PRESERVATIVE	NO.	Insoluable Solids	Ash Residue	Combustable Matte	NOTES
1	CD1	Dust	3.9.18	4.10.18			x	x	x	
2	CD2c	Dust					x	x	x	
3	CD3	Dust					x	x	x	
4	CD4	Dust					x	x	x	
5	CD5	Dust					x	x	x	
6	CD6	Dust					x	x	x	

RELINQUISHED BY:

NAME : Jonas Gelin DATE:

OF: CBased Environmental TIME: 16:00

NAME : DATE: 4.10.18

OF: TIME:

RECEIVED BY

NAME : DATE: 4-10-18

OF: ALS TIME: 4:30pm

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
Newcastle
Work Order Reference
EN1806525

Telephone : +61 2 4014 2500

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EN1806525**	Page	: 1 of 4
Client	: **CBASED ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Newcastle
Contact	: All Deliverables	Contact	:
Address	: Unit 3 2 Enterprise Cres Singleton NSW 2330	Address	: 5/585 Maitland Road Mayfield West NSW Australia 2304
Telephone	: +61 02 6571 3334	Telephone	: +61 2 4014 2500
Project	: Hanson Calga Dusts	Date Samples Received	: 04-Oct-2018 16:30
Order number	: ----	Date Analysis Commenced	: 08-Oct-2018
C-O-C number	: ----	Issue Date	: 10-Oct-2018 19:24
Sampler	: CBased Environmental Pty Ltd		
Site	:		
Quote number	: SYBQ/222/16 and PLANNED EVENTS		
No. of samples received	: 6		
No. of samples analysed	: 6		

ilac-MRA NATA
Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Dianne Blane	Laboratory Coordinator (2IC)	Newcastle - Inorganics, Mayfield West, NSW

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 insufficient 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation does not apply for results reported in g/m².mth as sampling data was provided by the client.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)				Client sample ID	CD1 03/09/18 - 04/10/18	CD2c 03/09/18 - 04/10/18	CD3 03/09/18 - 04/10/18	CD4 03/09/18 - 04/10/18	CD5 03/09/18 - 04/10/18
				Client sampling date / time	04-Oct-2018 00:00	04-Oct-2018 00:00	04-Oct-2018 00:00	04-Oct-2018 00:00	04-Oct-2018 00:00
Compound	CAS Number	LOR	Unit		EN1806525-001	EN1806525-002	EN1806525-003	EN1806525-004	EN1806525-005
					Result	Result	Result	Result	Result
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**1.9**	**0.8**	**0.8**	**0.8**	**0.5**
Ash Content (mg)	----	1	mg		**35**	**14**	**15**	**15**	**9**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.3**	**0.4**	**0.2**	**0.4**	**0.1**
Combustible Matter (mg)	----	1	mg		**5**	**7**	**3**	**6**	**2**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**2.2**	**1.2**	**1.0**	**1.2**	**0.6**
Total Insoluble Matter (mg)	----	1	mg		**40**	**21**	**18**	**21**	**11**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)				Client sample ID	**CD6 03/09/18 - 04/10/18**	**----**	**----**	**----**	**----**
				Client sampling date / time	04-Oct-2018 00:00	----	----	----	----
Compound	*CAS Number*	*LOR*	*Unit*		**EN1806525-006**	**--------**	**--------**	**--------**	**--------**
					Result	----	----	----	----
EA120: Ash Content									
Ash Content	----	0.1	g/m².month		**0.5**	**----**	**----**	**----**	**----**
Ash Content (mg)	----	1	mg		**9**	**----**	**----**	**----**	**----**
EA125: Combustible Matter									
Combustible Matter	----	0.1	g/m².month		**0.3**	**----**	**----**	**----**	**----**
Combustible Matter (mg)	----	1	mg		**6**	**----**	**----**	**----**	**----**
EA141: Total Insoluble Matter									
Total Insoluble Matter	----	0.1	g/m².month		**0.8**	**----**	**----**	**----**	**----**
Total Insoluble Matter (mg)	----	1	mg		**15**	**----**	**----**	**----**	**----**

CBased Environmental Pty Limited

Date: 4.10.18

Todays Collection	
Time Start:	8-30
Time Finish:	12.30

Client : Hanson Calga

Project :

SURFACE WATERS

Site	Flow Rate	Odour	Sampling Time	Bottles	Water Turbidity	Water Colour	Comments
A	DAM	NO	8.45	1x 250ml GP, 1x 500mL GP, 1x PG	(C) S T	C LO O B G	
B	DRY		~~9.00~~	~~1x 250ml GP, 1x 500mL GP, 1x PG~~	~~C S T~~	~~C LO O B G~~	
C1	DAM	NO	12.10	1x 250ml GP, 1x 500mL GP, 1x PG	(C) S T	(C) LO O B G	
C2	TRICKLE	NO	12.15	1x 250ml GP, 1x 500mL GP, 1x PG	(C) S T	(C) LO O B G	
D	DRY			~~1x 250ml GP, 1x 500mL GP, 1x PG~~	~~C S T~~	~~C LO O B G~~	
F	DAM	NO	8.30	1x 250ml GP, 1x 500mL GP, 1x PG	(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)

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

Signed:

Sampled by: Leesa + Jonas

CHAIN OF CUSTODY DOCUMENTATION

CLIENT: CBased Environmental Pty Ltd		LABORATORY BATCH NO.:	Australian Laboratory Services Pty Ltd
POSTAL ADDRESS: PO Box 245 CESSNOCK NSW 2325		SAMPLERS:CBased Environmental Pty Ltd	
SEND REPORT TO: monitoringresults@cbased.com.au	SEND INVOICE TO: renae.mikka@cbased.com.au	PHONE: 0265713334	E-MAIL: monitoringresults@cbased.com.au
DATA NEEDED BY: 5 working days	REPORT NEEDED BY: 5 working days	REPORT FORMAT: HARD: Yes FAX: DISK: BULLETIN BOARD:	E-MAIL: Yes
PROJECT ID: Hanson Quarry SW	QUOTE NO.: SYBQ-222-16	QC LEVEL: QCS1:	QCS2: QCS3: Yes QCS4:
P.O. NO.:	COMMENTS/SPECIAL HANDLING/STORAGE OR DIPOSAL:		

FOR LAB USE ONLY ice
COOLER SEAL Yes ..... 5.8 No .....
Broken ..... Intact ..
COOLER TEMP: deg.C

Total unless specified

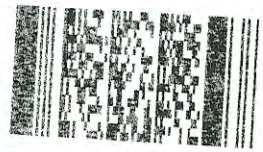
SAMPLE DATA				CONTAINER DATA		ANALYSIS REQUIRED																			
SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	Ph	EC	TSS	TDS	O + G															NOTES
A	Water	4.10.18	8.45	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x															
B	Water			~~1x 250mlGP,1x 500mLGP,1xPG~~		~~x~~	~~x~~	~~x~~	~~x~~	~~x~~															
C1	Water	4.10.18	12.10	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x															
C2	Water	1	12.15	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x															
D	Water			~~1x 250mlGP,1x 500mLGP,1xPG~~		~~x~~	~~x~~	~~x~~	~~x~~	~~x~~															
F	Water	4.10.18	8.30	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x															
				TOTAL BOTTLES:																					

RELINQUISHED BY:		RECEIVED BY			
NAME : Jonas Gelin	DATE: 4.10.18	NAME : KPaul	DATE: 4-10-18		METHOD OF SHIPMENT
OF: CBased Environmental	TIME: 1600	OF: ALS	TIME: 4:30pm		CONSIGNMENT NOTE NO.
NAME :	DATE:	NAME :	DATE:		TRANSPORT CO. NAME.
OF:	TIME:	OF:	TIME:		

*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 Reference
ES1829337



Telephone : + 61-2-8784 8555

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES1829337**	Page	: 1 of 2
Amendment	: **1**		
Client	: **CBASED ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: All Deliverables	Contact	: Customer Services ES
Address	: Unit 3 2 Enterprise Cres Singleton NSW 2330	Address	: 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone	: +61 02 6571 3334	Telephone	: +61-2-8784 8555
Project	: HANSON QUARRY SW	Date Samples Received	: 04-Oct-2018 16:28
Order number	: ----	Date Analysis Commenced	: 04-Oct-2018
C-O-C number	: ----	Issue Date	: 17-Oct-2018 11:30
Sampler	: CARBON BASED ENVIRONMENTAL PTY LTD		
Site	:		
Quote number	: SYBQ/222/16 and PLANNED EVENTS		
No. of samples received	: 4		
No. of samples analysed	: 4		

Accreditation No. 825
Accredited for compliance with
ISO/IEC 17025 - Testing

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

Signatories

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

Signatories	*Position*	*Accreditation Category*
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Neil Martin	Team Leader - Chemistry	Chemistry, Newcastle West, NSW

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 insufficient 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.

Where a result is required to meet compliance limits the associated uncertainty must be considered. Refer to the ALS Contact for details.

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
ø = ALS is not NATA accredited for these tests.
~ = Indicates an estimated value.

- Amendment (17/10/2018): This report has been amended following changes to the analytical data reported. The quality system is being utilised to resolve this issue. The specific data affected was the pH result for sample 002.

Analytical Results

Sub-Matrix: **WATER** (Matrix: **WATER**)				Client sample ID	**A**	**C1**	**C2**	**F**	**----**
				Client sampling date / time	04-Oct-2018 08:45	04-Oct-2018 12:10	04-Oct-2018 12:15	04-Oct-2018 08:30	----
Compound	*CAS Number*	*LOR*	*Unit*		**ES1829337-001**	**ES1829337-002**	**ES1829337-003**	**ES1829337-004**	**--------**
					Result	Result	Result	Result	----
EA005: pH									
pH Value	----	0.01	pH Unit		**5.90**	**7.36**	**6.56**	**4.70**	**----**
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		**183**	**152**	**182**	**154**	**----**
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		**94**	**78**	**96**	**100**	**----**
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		**8**	**18**	**5**	<5	**----**
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	**----**

C Based Environmental Pty Limited

Todays Collection	
Time Start:	8.35
Time Finish:	14.40

Date: 4.10.18

Client : Hanson Calga
Project :

GROUNDWATERS

Site	DEPTH	Typical Depth (m)	Odour	Water Turbidity	Water Colour	1		2		Bottles (Apr/Oct)	Downloaded Logger? (Y/N)*	
						pH	EC	pH	EC			
CQ3	11.40	10.94	NO	C S T	C LO O B G	6.02	112.8ms	6.03	112.6ms	1x 250ml GP, 1x 500mL GP, 1RP	YES	
CQ4	11.97	10.52	NO	C S T	C LO O B G	5.09	114.9ms	5.03	114.2ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
CQ5	9.27	7.06	NO	C S T	C LO O B G	3.90	160.5ms	3.90	163.4ms	1x 250ml GP, 1x 500mL GP, 1RP		Cowhair inside
~~CQ6~~				~~C S T~~	~~C LO O B G~~	Covered	Over in	Paddock		~~1x 250ml GP, 1x 500mL GP, 1RP~~		
CQ7	7.21	6.46	NO	C S T	C LO O B G	4.25	99.1ms	4.23	98.8ms	1x 250ml GP, 1x 500mL GP, 1RP	YES	
CQ8	7.89	6.24	NO	C S T	C LO O B G	4.64	125.6ms	4.66	126.2ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
CQ9				C S T	C LO O B G	Blocked	D	Annulus		~~1x 250ml GP, 1x 500mL GP, 1RP~~		
CQ10	27.24	26.41	NO	C S T	C LO O B G	4.30	127.4ms	4.28	127.1ms	1x 250ml GP, 1x 500mL GP, 1RP	YES	
CQ11S	12.68	11.02	Yes	C S T	C LO O B G	5.13	139.3ms	5.21	146.2ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
CQ11D	13.71	12.19	NO	C S T	C LO O B G	4.41	140.4ms	4.41	141.9ms	1x 250ml GP, 1x 500mL GP, 1RP	YES	
CQ12	6.47	4.44	NO	C S T	C LO O B G	4.06	115.4ms	4.04	117.2ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
CQ13	15.71	14.14	NO	C S T	C LO O B G	3.98	170.6ms	3.97	172.6ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
CP3				C S T	C LO O B G	GONE				~~1x 250ml GP, 1x 500mL GP, 1RP~~		
CP4	13.22		NO	C S T	C LO O B G	4.37	165.0ms	4.37	165.5ms	1x 250ml GP, 1x 500mL GP, 1RP		
CP5	11.02	8.59		~~C S T~~	~~C LO O B G~~					~~1x 250ml GP, 1x 500mL GP, 1RP~~		No power to pump
CP6	13.07	10.79	NO	C S T	C LO O B G	4.03	140.7ms	4.02	144.3ms	1x 250ml GP, 1x 500mL GP, 1RP		
CP7	8.58	3.78	NO	C S T	C LO O B G	4.41	90.5ms	4.28	96.2ms	1x 250ml GP, 1x 500mL GP, 1RP		
CP8	23.80	22.15	NO	C S T	C LO O B G	4.11	122.5ms	4.11	123.1ms	1x 250ml GP, 1x 500mL GP, 1RP		
MW7	17.72	16.11	NO	C S T	C LO O B G	4.12	105.1ms	4.07	106.9ms	1x 250ml GP, 1x 500mL GP, 1RP	YES	
MW8	8.94	7.86	NO	C S T	C LO O B G	4.40	63.2ms	4.39	64.5ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
MW9	24.59	23.87	NO	C S T	C LO O B G	4.21	85.5ms	4.22	84.4	1x 250ml GP, 1x 500mL GP, 1RP	NO	
MW10	13.71		NO	C S T	C LO O B G	4.02	111.7ms	4.02	112.8ms	1x 250ml GP, 1x 500mL GP, 1RP	NO	
MW13	8.32		NO	C S T	C LO O B G	3.82	107.1ms	3.80	107.4ms	1x 250ml GP, 1x 500mL GP, 1RP		
MW16	8.91		NO	C S T	C LO O B G	4.11	100.4ms	4.11	101.4ms	1x 250ml GP, 1x 500mL GP, 1RP		
MW17				~~C S T~~	~~C LO O B G~~	Paddock	Broken			~~1x 250ml GP, 1x 500mL GP, 1RP~~		

Turbidity: C=Clear, S= Slight, T=Turbid (CIRCLE)
pH/EC meter #: WQ57

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

*If unable to download logger please provide comment/ explanation above

Signed:

Sampled by: Leesa + Jonas

CBASED Environmental Pty Limited

ABN 62 611 924 264

Weather Station Field Check

Site: Hanson Calga AWS - Met Station

Date/Time: 07-09-2018 11:00 to 13:00

Checks Against Reference Sensors

Parameter	Units	Measurement		Difference	Allowable	Pass/Fail	Reference Description
		Site	Reference				
Temperature 1.35m	°C	19.6	19.70	0.10	± 0.5 C	PASS	Ref Temp Sensor
Humidity	%RH	72	70	2	± 2%	PASS	Ref RH Sensor
Rainfall	mm	3.0	3.0	0.0	± 0.5 mm	PASS	Glass Pipette
Wind Speed 10m	km/hr	14.0	14.0	0.0	± 5.4km/hr[1]	PASS	Ref Anemometer
Wind Direction 10m	Degrees	320	321	-1	± 5.0°	PASS	Sighting Compass

Allowable tolerances from NSW EPA Approved Methods AM-2 (AS2923-1987) and/or AM-4 (USEPA (2000) EPA 454/R-99-005)

[1] Allowable wind speed either: ± 5.4km/hr (AS2923-1987) or ± 0.2 m/s + 5% of observed (USEPA (2000) EPA 454/R-99-005)

Reference Sensor Specifications: *Calibration expires: 10-04-2019

Sensor	Serial Number	Specifications	Accuracy
*Temperature	180410N01	-40 to 5°C	+/- 0.3°C
		5 to 15°C	+/- 0.3°C
		15 to 65°C	+/- 0.3°C
*Humidity	180410N01	10 to 90%RH	+/- 2%RH
*Anemometer	180410N03	0 to 64km/hr	+/- 0.9m/s
**Rainfall	Standard number of tips	3.2mm	+/- 0.2mm
Compass	Sighting Compass	0 to 360 degree	+/- 5 Deg

0.2m/s= 0.7km/hr

** 100mL Glass pipette used.

Reference sensors were certified by Davis Instruments USA using a reference traceable to National Institute of Standards and Technology (NIST) and were "in calibration" when used.

Comments:

Please remove 3.0mm of rainfall from the records today (7/9/18) as this was added for calibration purposes.

NA=Not Available

The meteorological station meets the requirements of the Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.

The weather station has **PASSED** the field check. Next annual field check due: Sep-19

Checked by: C. Davies

CBASED Environmental Pty Limited
ABN 62 611 924 264

Weather Station Field Check
Annual Physical Screening

Site: Hanson Calga AWS - Met Station
Date: 07-09-2018 11:00 to 13:00

Check	Comments
Review recorded data	Data looks good, no apparent issues
Anemometer zero check	N/A
True north alignment	Yes WD sensor aligned to True North
Visual inspection for damage	No visual damage to sensors
Water or insect damage to equipment	Checked and no issues
Anemometer and wind vane	Davis Vantage Pro-No issues
Temperature and Humidity shields	Ok
Rain gauge	Cleaned, re-leveled and calibration checked
Battery and Solar panel condition	Ok, cleaned solar panel
Battery Storage level	Good, checked in Weatherlink
Logger system	Fully operational- upgraded to new USB logger, new software
Time and Date	Correct
Mast and guy wires	4 of 6 guy wires are rusty and will require replacement.
Cabinet and wiring	No visual damage

The weather station has **PASSED** the field check. Next field check due: Sept 2019

Describe any remedial action required:

Comments:

Mast and mast bolts in good condition.4 Guy wires rusty and need replacement, winders are OK.

Checked by:	C. Davies

CBASED Environmental Pty Limited
Unit 3, 2 Enterprise Crescent
SINGLETON NSW 2330