CBased Environmental Pty Limited

ABN 62 611 924 264

Calga Quarry

Environmental Monitoring

Dust Deposition, Surface Water, Groundwater and Meteorological Data

May 2021

Colin Davies BSc MEIA CEnvP
Environmental Scientist
Date: 18 June 2021

Executive Summary

CBased Environmental is contracted by Hanson Quarry Products to conduct environmental monitoring at the Calga Sand Quarry.

The monitoring includes:

- Dust deposition;
- Surface water; and
- Meteorological data.

This report was prepared by CBased Environmental and includes the following results for May 2021:

- Dust deposition;
- Surface water quality; and
- Meteorological parameters.

The May 2021 dust deposition results for insoluble solids showed:

- Decreased levels when compared to April 2021.
- No excessively contaminated dust gauges; and
- Rolling annual averages below the Air Quality Management Plan criteria of 3.7g/m^2.month.

Monthly surface water samples were collected at sites A, C2, D and F. Sites B and C1 were not collected due to no access and not flowing. The samples that were collected were 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 were not detected at sites A, C2, D and F in May 2021.

The Calga Quarry weather station data recovery in May 2021 was approximately 90%. A summary of rainfall comparison is provided below.

Location	Rainfall (mm)
Calga Quarry	19.8mm
BOM Peats Ridge*	NA
BOM Gosford*	81.4mm
BOM Peats Ridge long-term mean for May*	89.7mm

Notes: *NA = Not Available*
**Data sourced from Bureau of Meteorology (BOM) website: www.bom.gov.au*
BOM stations report rainfall at 9am
Calga Quarry station reports rainfall at midnight.

1.0 Sampling Programme

Hanson Calga Quarry conducts environmental monitoring in accordance with Development Consent, OEH (EPA) licence and Environmental Management Plans. CBased Environmental are contracted to undertake dust deposition gauge, surface water, 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.

Six (6) dust deposition gauges are monitored as follows:

- CD1 – installed 1 May 2006. Gauges air quality impacts to the east of site operations;
- CD2c – located on a rehabilitated section of land between the extraction area and adjacent resident. Gauges air quality impacts to the north of site operations. Replaces former gauges CD2a and CD2b;
- CD3 – installed prior to May 2006. Gauges air quality impacts to the south of site operations;
- CD4 – installed 3 October 2006. Gauges air quality impacts to the south of site operations;
- CD5 – installed 14 December 2006. Gauges air quality impacts to the south of site operations; and
- CD6 installed 14 December 2006. Gauges air quality impacts to the south of the operations.

Dust gauge CD2a was discontinued at the start of August 2006 due to quarry operations "mining out" the site of the gauge. The replacement gauge, 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. 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. CD2b was replacement by dust gauge CD2c.

Surface water is 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. Laboratory analysis includes pH, electrical conductivity, total suspended solids, total dissolved solids and total oil and grease. Monitoring 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.

Groundwater is 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 station has the following sensor configuration:

- Air temperature;
- Humidity;
- Rainfall;
- Atmospheric pressure;
- Evaporation;
- Solar radiation;
- Wind speed; and
- 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**.

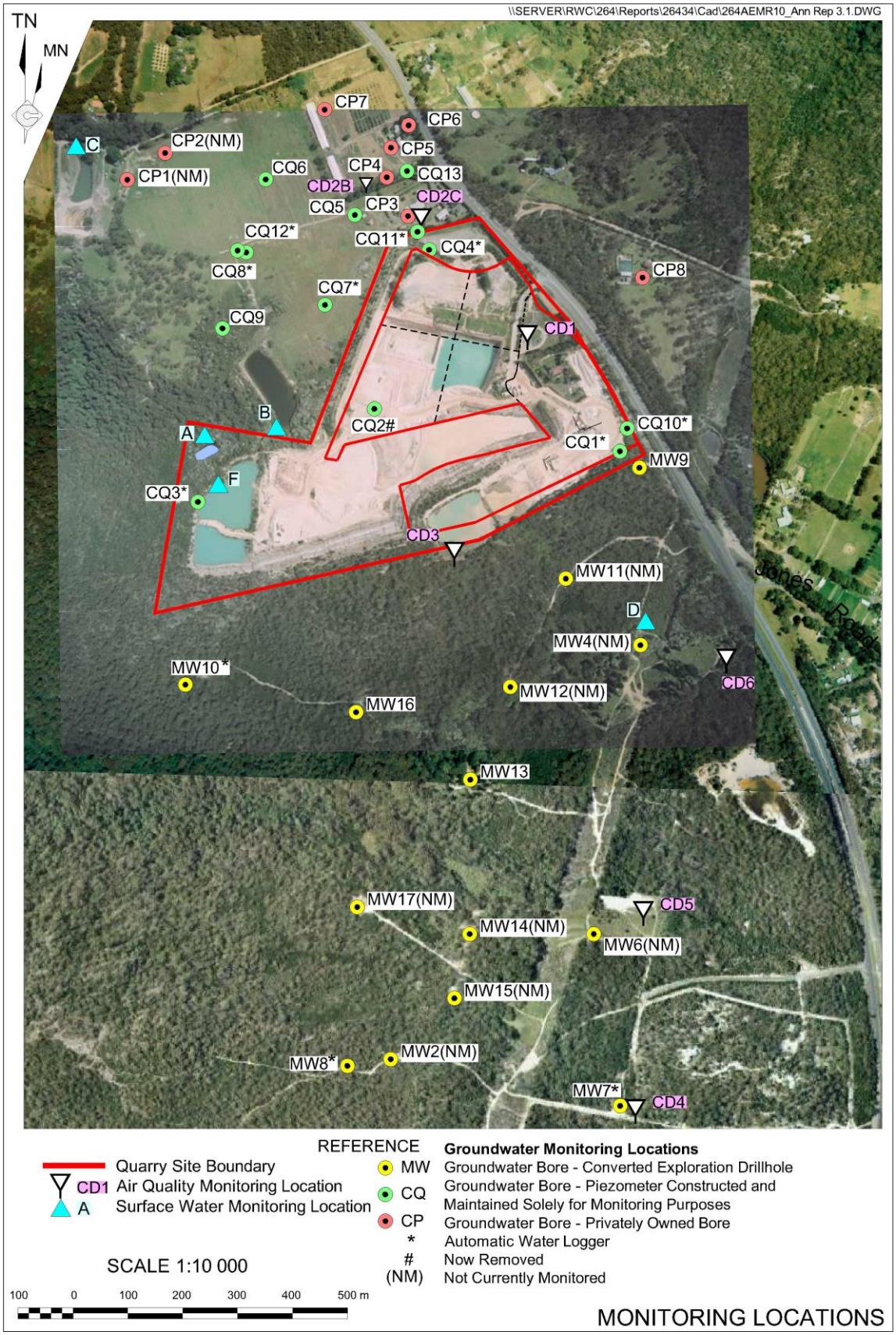


Figure 1: *Hanson Calga Quarry Environmental Monitoring Locations*

2.0 Results

2.1 Dust Deposition

The results for May 2021 and the project 12-month rolling average are provided **Table 1**.

Dust deposition charts for all dust gauge sites appear in **Figure 2** below. The field sheet, chain of custody documentation and laboratory analysis certificates are provided in **Appendix 1.**

Table 1: Dust Deposition Results: 3 May 2021 – 3 June 2021 (31 days)

Site	Monthly Insoluble Solids	Monthly Ash Residue	Monthly Combustible Matter	Monthly Ash Residue/ Insoluble Solids %	Rolling Annual Average Insoluble Solids
CD1	0.8	0.5	0.3	63	1.4
CD2c	0.3	0.2	0.1	67	0.8
CD3	0.6	0.1	0.5	17	1.2
CD4	0.3	0.1	0.2	33	0.7
CD5	0.1	0.1	<0.1	100	0.7
CD6	0.1	0.1	<0.1	100	0.6

Notes:
Units in g/m^2.month unless indicated
*Insoluble solid results 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 3.7g/m^2.month; the Development Consent's annual average amenity criteria at residential locations*
The current rolling annual average is calculated from June 2020 to May 2021

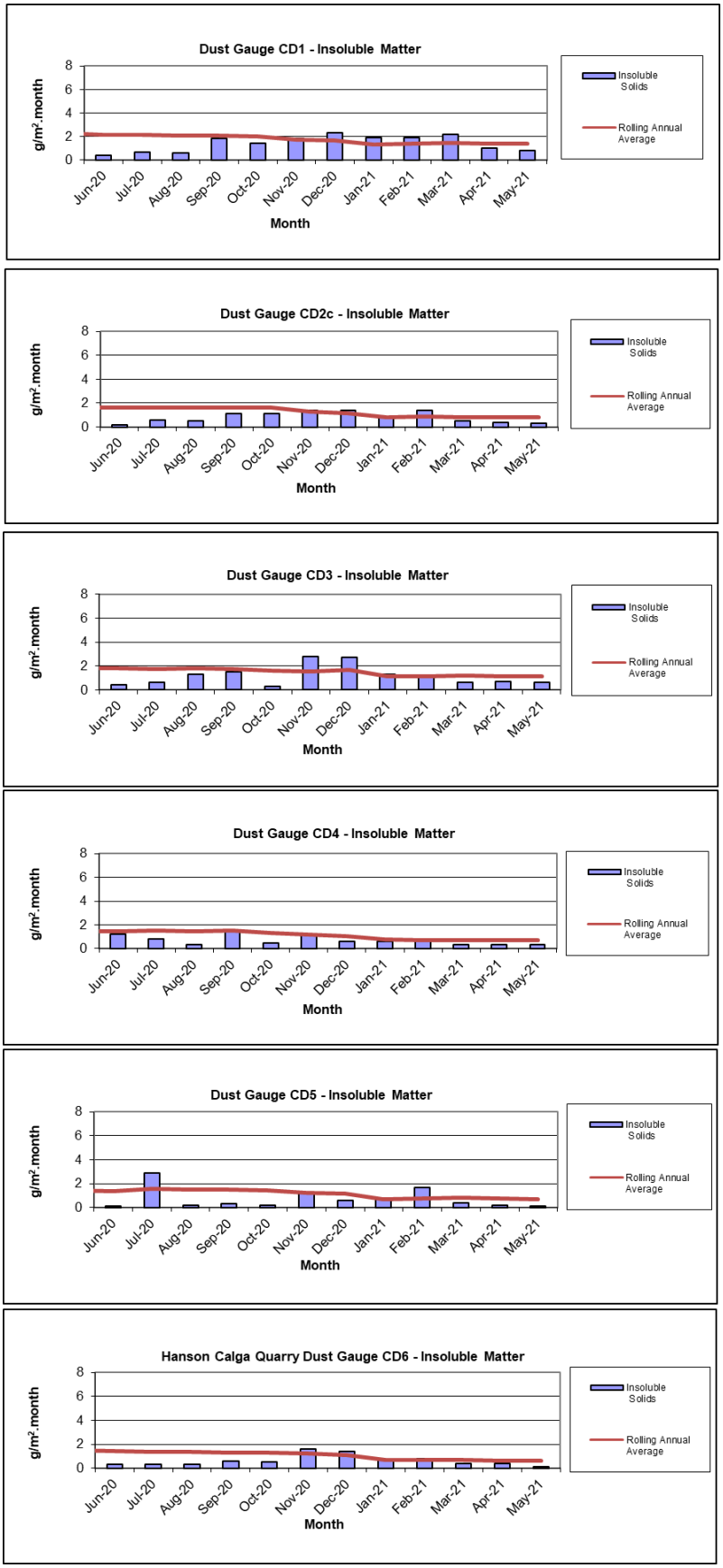


Figure 2: *Summary Monthly/Annual Dust Deposition Results for Insoluble Solids*

2.2 Surface Water (Monthly)

Monthly surface water monitoring was conducted on 3 May 2021 and results are provided in **Table 2**. The field sheet, chain of custody documentation and laboratory analysis certificates are provided in **Appendix 1.**

Samples were collected at sites A, C2, D and F.

Table 2: Monthly Surface Water Monitoring Results – May 2021

Site	**Observed Flow Rate*** (visual)	**Water Colour*** (visual)	**Turbidity*** (visual)	**pH**	**EC** (µS/cm)	**TDS** (mg/L)	**TSS** (mg/L)	**Oil and Grease** (mg/L)
A	Dam	Clear	Clear	5.89	56	40	6	<5
B	Not flowing							
C1	Too low to access							
C2	Trickle	Clear	Clear	6.10	105	63	<5	<5
D	No flow	Clear	Clear	5.38	90	66	<5	<5
F	Dam	Clear	Slight	9.02	68	52	16	<5

** Indicates field measurements. All other results are laboratory analysed*
EC = Electrical conductivity
TDS = Total dissolved solids
TSS = Total suspended solids

2.2.1 Non-Routine Surface Water Sampling

No non-routine surface water sampling was completed in May 2021.

2.3 Meteorological Data

The Calga Quarry weather station data recovery for May 2021 was approximately 90%.

The weather station data follows and includes:

- Monthly rainfall comparison between quarry data and BOM data. Refer to **Table 3**;
- Monthly data summary. Refer to **Table 4**;
- Weather charts of air temperature, humidity, heat index and wind chill, atmospheric pressure, solar radiation, evapotranspiration, rain, wind speed and data reception. Refer to **Figures 7 – 10**; and
- Wind rose (frequency distribution diagram of wind speed and direction). Refer to **Figure 10**.

A summary of rainfall comparison is provided in **Table 3**.

Table 3: Comparison of Local Rainfall – May 2021

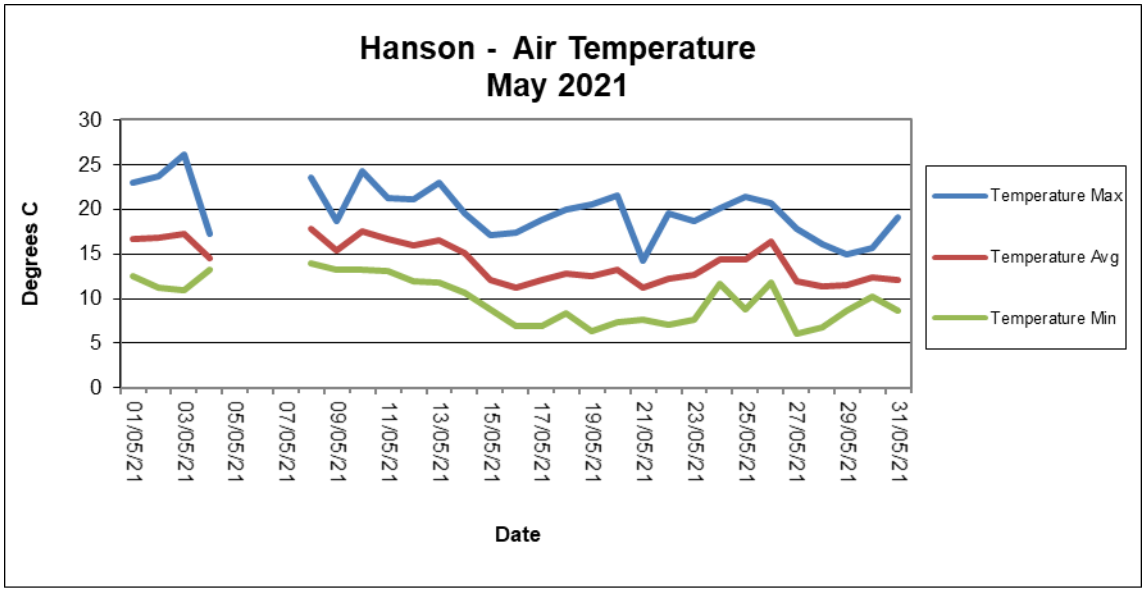
Location	Rainfall (mm)
Calga Quarry	19.8mm
BOM Peats Ridge*	NA
BOM Gosford*	81.4mm
BOM Peats Ridge long-term mean for May*	89.7mm

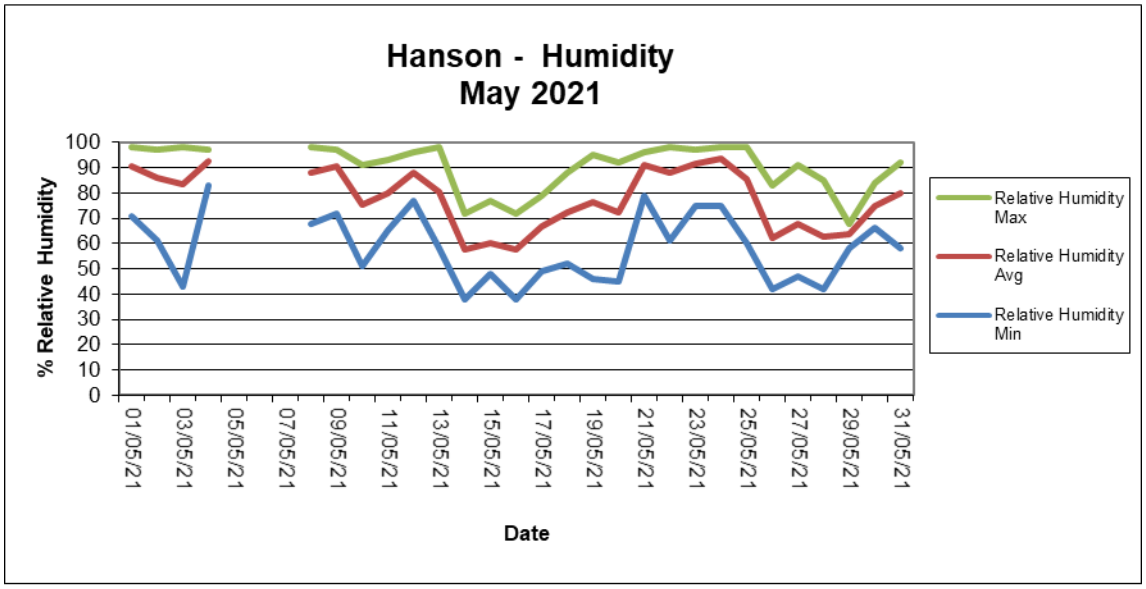
Notes: *NA = Not Available*
**Data sourced from Bureau of Meteorology (BOM) website: www.bom.gov.au*
BOM stations report rainfall at 9am
Calga Quarry station reports rainfall at midnight.

Table 5: Summary of Monthly Meteorological Data – May 2021

Date	Temperature Min	Temperature Avg	Temperature Max	Relative Humidity Min	Relative Humidity Avg	Relative Humidity Max	Rain	Evapotranspiration	Wind Speed Min	Wind Speed Avg	Wind Speed Max	Wind Chill Min	Heat Index Max	Atmospheric Pressure Min	Atmospheric Pressure Avg	Atmospheric Pressure Max	Solar Radiation Min	Solar Radiation Avg	Solar Radiation Max	Data Min	Data Avg	Data Max
1/05/2021	12.5	16.7	22.9	71.0	90.6	98.0	0.4	1.5	0.0	0.7	6.3	12.6	23.4	1024.1	1025.7	1027.5	0.0	98.3	795.0	67.8	84.8	96.5
2/05/2021	11.2	16.9	23.7	61.0	86.0	97.0	0.0	2.4	0.0	0.9	6.7	11.3	23.9	1020.7	1023.1	1025.5	0.0	148.1	703.0	86.1	93.0	97.8
3/05/2021	10.9	17.3	26.1	43.0	83.4	98.0	0.2	2.7	0.0	0.5	4.0	11.0	25.8	1013.5	1017.1	1020.7	0.0	164.1	660.0	67.8	87.8	100.0
4/05/2021	13.3	14.6	17.2	83.0	92.6	97.0	3.4	0.6	0.0	0.2	6.3	13.3	17.3	1011.8	1012.8	1013.8	0.0	36.6	218.0	57.4	82.8	99.1
5/05/2021																						
6/05/2021																						
7/05/2021																						
8/05/2021	13.9	17.9	23.6	68.0	88.2	98.0	0.2	1.9	0.0	0.4	4.9	13.9	24.2	1007.9	1010.2	1014.0	0.0	127.4	727.0	75.1	84.1	100.0
9/05/2021	13.2	15.4	18.7	72.0	90.4	97.0	1.2	0.8	0.0	0.1	2.7	13.2	18.8	1013.7	1014.8	1016.6	0.0	58.7	403.0	74.8	82.4	90.9
10/05/2021	13.2	17.5	24.2	51.0	75.3	91.0	0.0	2.4	0.0	0.7	7.6	13.2	24.1	1008.7	1011.2	1013.8	0.0	143.6	629.0	0.0	61.7	89.9
11/05/2021	13.1	16.7	21.3	65.0	79.9	93.0	0.6	2.1	0.0	0.7	6.7	13.1	21.3	1009.3	1012.0	1015.8	0.0	128.6	615.0	48.3	71.2	85.2
12/05/2021	11.9	16.0	21.1	77.0	88.1	96.0	6.4	1.6	0.0	0.6	4.9	11.9	21.5	1013.0	1015.2	1017.4	0.0	110.4	609.0	32.2	70.5	90.5
13/05/2021	11.8	16.5	22.9	58.0	80.5	98.0	0.4	2.5	0.0	1.0	8.9	11.8	23.0	1006.0	1009.2	1013.1	0.0	158.3	617.0	24.0	63.9	93.1
14/05/2021	10.6	15.2	19.6	38.0	57.8	72.0	0.0	4.0	0.4	3.4	9.8	10.5	18.4	1006.3	1009.1	1012.4	0.0	159.6	632.0	54.3	78.7	94.0
15/05/2021	8.8	12.1	17.1	48.0	60.1	77.0	0.0	3.3	0.0	3.2	17.0	8.2	15.8	1007.6	1011.0	1015.5	0.0	132.3	806.0	73.5	86.2	97.8
16/05/2021	7.0	11.2	17.4	38.0	57.8	72.0	0.0	3.0	0.4	1.9	8.0	6.1	15.9	1014.9	1016.7	1019.0	0.0	157.3	625.0	79.8	87.6	96.2
17/05/2021	6.9	12.1	18.8	49.0	66.5	79.0	0.0	2.7	0.0	1.3	6.3	5.9	17.9	1016.2	1019.7	1023.9	0.0	153.4	612.0	63.7	87.5	100.0
18/05/2021	8.4	12.8	19.9	52.0	72.5	88.0	0.0	2.4	0.0	0.8	5.8	8.4	19.2	1022.8	1024.5	1025.9	0.0	145.2	610.0	55.5	85.4	100.0
19/05/2021	6.3	12.4	20.5	46.0	76.2	95.0	0.0	2.4	0.0	0.7	5.4	6.3	19.5	1022.3	1024.3	1026.4	0.0	152.8	615.0	55.2	87.7	100.0
20/05/2021	7.3	13.3	21.6	45.0	72.3	92.0	0.0	2.5	0.0	0.7	6.3	7.3	20.5	1021.3	1023.4	1025.3	0.0	146.0	639.0	65.3	86.4	96.8
21/05/2021	7.7	11.2	14.2	79.0	91.0	96.0	1.2	0.5	0.0	0.3	4.0	7.8	14.3	1025.0	1026.1	1027.8	0.0	44.3	254.0	39.7	81.3	100.0
22/05/2021	7.1	12.2	19.5	61.0	88.1	98.0	0.2	1.9	0.0	0.4	4.5	7.2	19.1	1021.1	1023.4	1025.6	0.0	144.5	581.0	54.9	73.2	89.0
23/05/2021	7.7	12.7	18.7	75.0	91.6	97.0	4.0	1.5	0.0	0.4	5.8	7.8	18.4	1021.7	1023.6	1025.7	0.0	106.1	645.0	39.7	74.5	83.9
24/05/2021	11.7	14.3	20.1	75.0	93.3	98.0	1.4	1.0	0.0	0.5	5.4	11.7	20.2	1024.5	1025.6	1028.0	0.0	73.4	670.0	39.1	79.4	96.5
25/05/2021	8.8	14.4	21.4	60.0	85.5	98.0	0.2	2.2	0.0	1.0	8.5	8.8	21.2	1014.4	1020.4	1024.4	0.0	142.3	615.0	69.1	88.6	100.0
26/05/2021	11.8	16.4	20.7	42.0	62.1	83.0	0.0	3.2	0.0	2.4	8.9	11.5	19.8	1012.0	1014.3	1018.2	0.0	143.5	585.0	50.5	75.5	98.1
27/05/2021	6.1	11.9	17.8	47.0	67.6	91.0	0.0	2.6	0.0	1.2	7.2	6.1	16.7	1017.6	1019.4	1021.3	0.0	144.0	588.0	57.1	80.4	94.3
28/05/2021	6.8	11.4	16.1	42.0	62.6	85.0	0.0	3.1	0.0	2.4	13.4	6.8	14.8	1018.2	1021.2	1024.8	0.0	143.5	588.0	53.0	79.9	93.7
29/05/2021	8.6	11.5	14.9	58.0	63.8	68.0	0.0	2.8	2.7	4.1	12.1	5.6	14.0	1023.6	1024.5	1025.8	0.0	113.3	640.0	73.8	84.5	92.7
30/05/2021	10.2	12.3	15.7	66.0	74.8	84.0	0.0	2.3	0.0	2.7	9.4	7.8	15.1	1022.7	1023.7	1025.7	0.0	105.1	608.0	77.6	84.5	88.3
31/05/2021	8.6	12.1	19.1	58.0	79.8	92.0	0.0	2.0	0.0	0.8	4.5	8.5	18.5	1019.5	1021.6	1023.2	0.0	141.2	568.0	43.5	83.3	99.7
Monthly	6.1	14.1	26.1	38	78	98	19.8	61.9	0.0	1.2	17.0	5.6	25.8	1006.0	1018.7	1028.0	0.0	125.8	806.0	0.0	81.0	100.0
Unit	*Degrees Celcius (°C)*			*Percentage Relative Humidity*			*mm*	*mm*	*Metres per second (m/s)*			*°C*	*°C*	*Hector Pascals (hPa)*			*Watts per square metre (W/m²)*			*Percentage (%)*		

Insufficient data on 5, 6 and 7 May 2021 due to on site power outages.





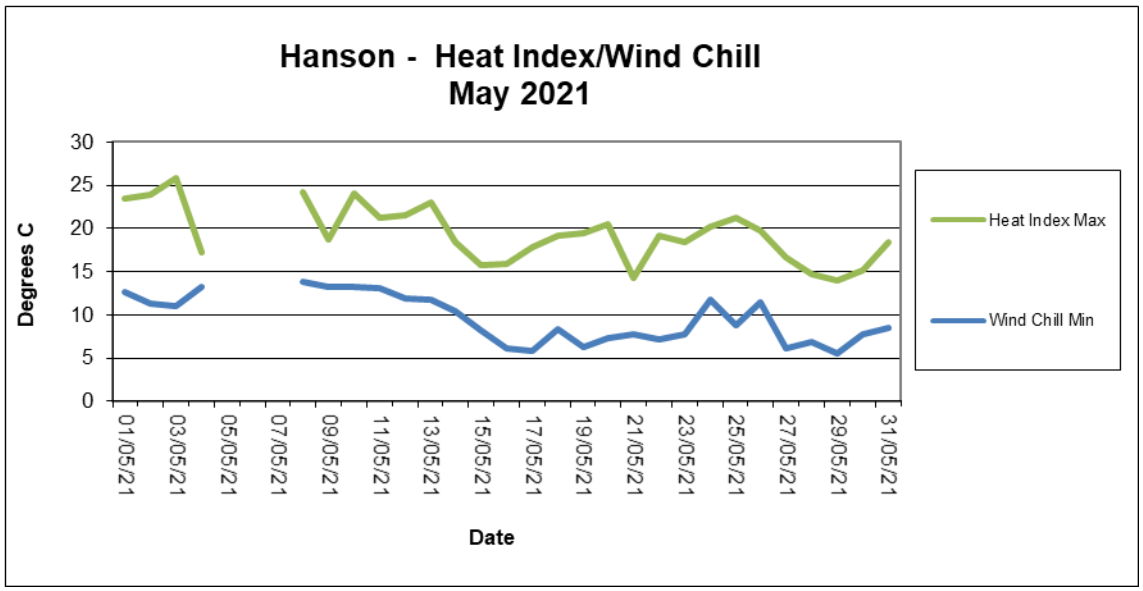
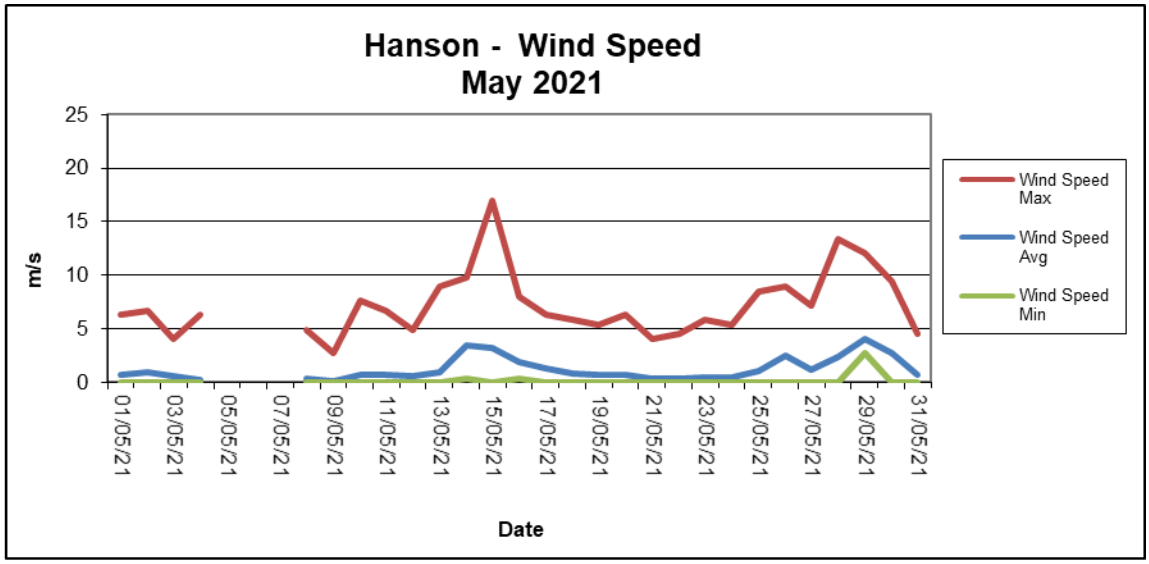
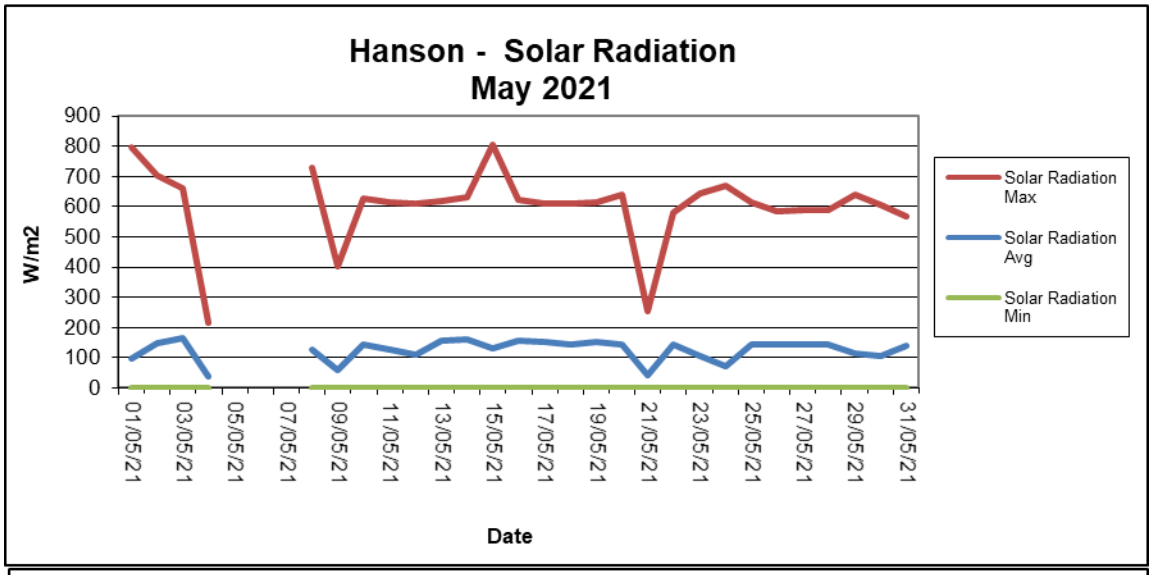


Figure 7 *Summary of Monthly Temperature, Humidity and Heat Index Results*





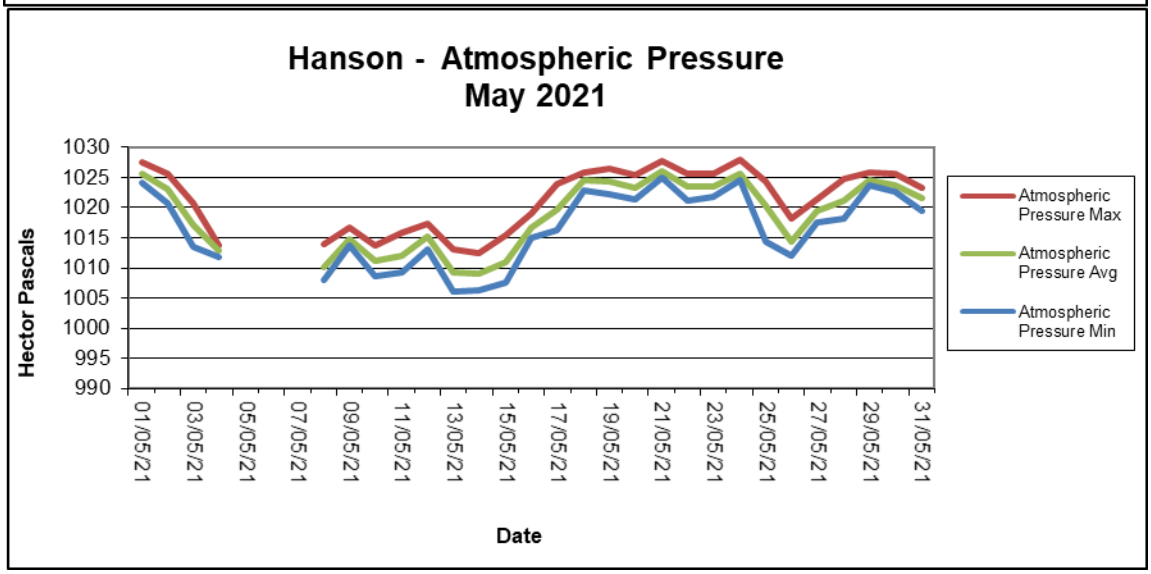
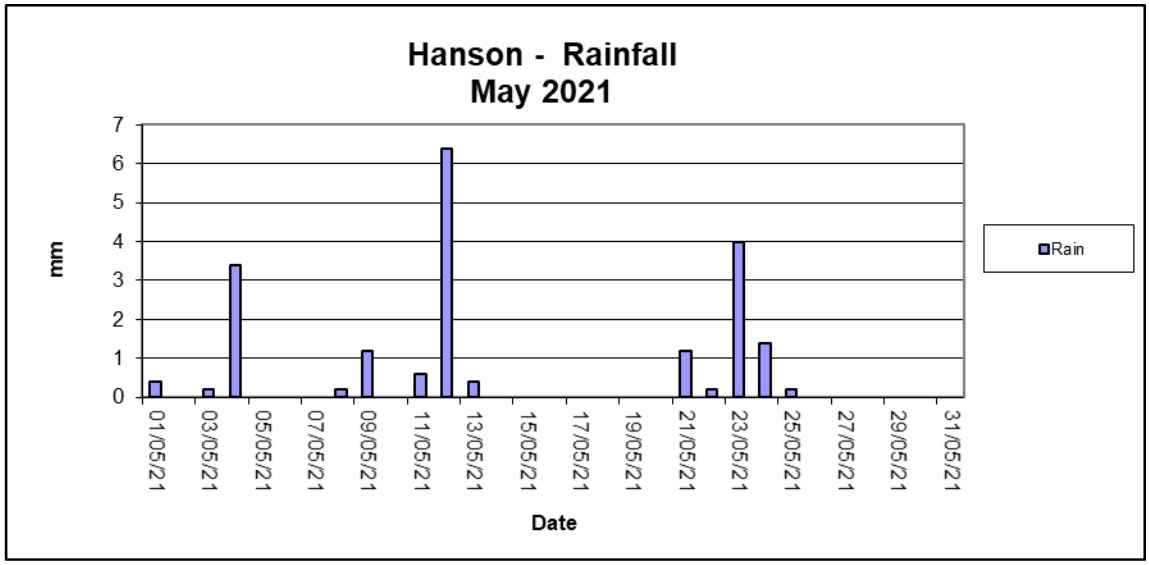
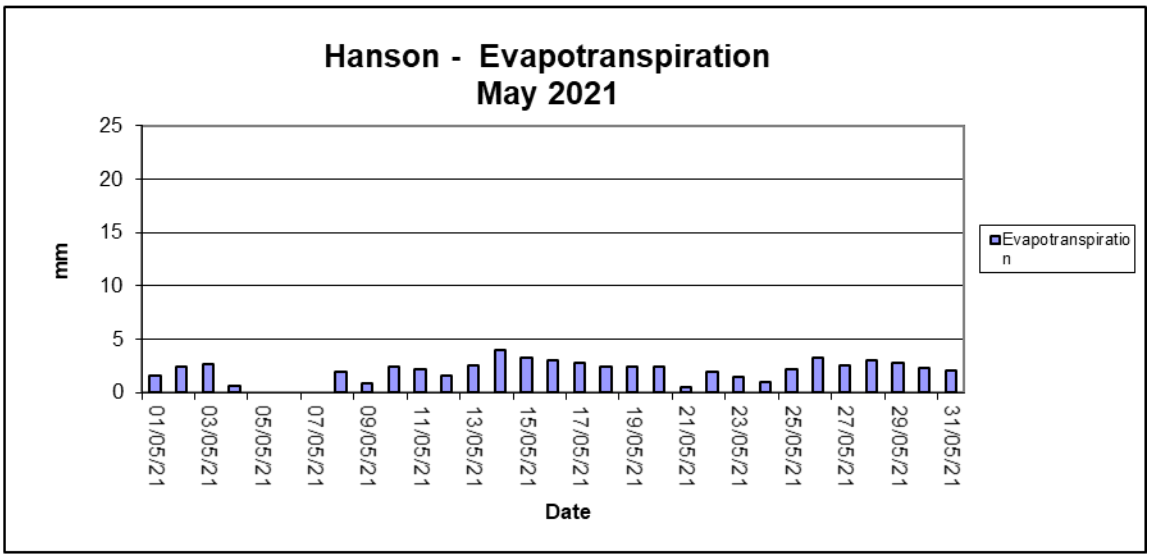


Figure 8 *Summary of Monthly Wind Speed, Solar Radiation and Atmospheric Pressure Results*





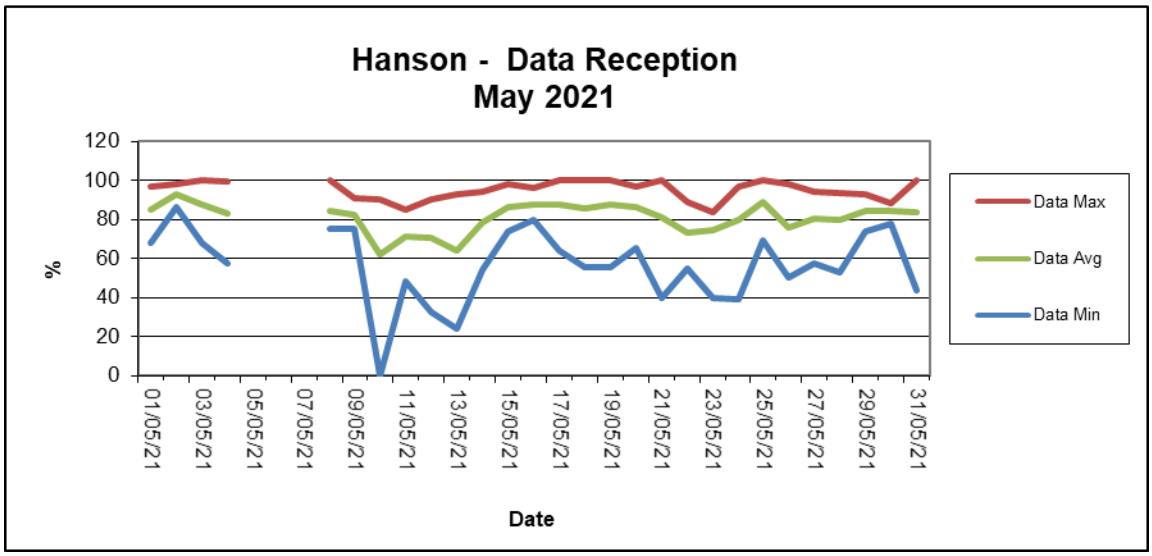


Figure 9 *Summary of Monthly Rainfall, Evapotranspiration and Data Reception Results*

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.

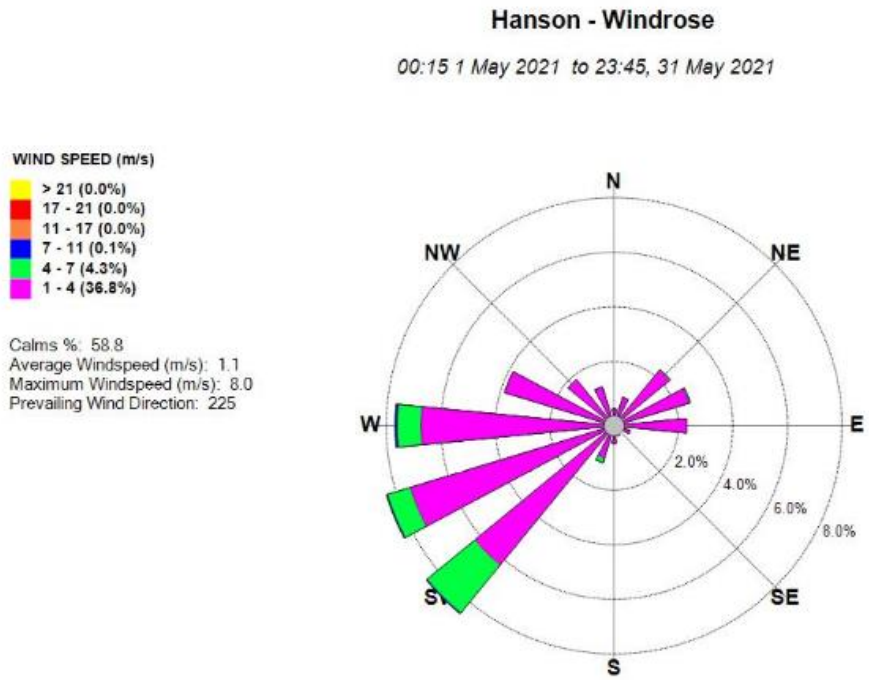


Figure 10: *Monthly Windrose Plot – May 2021*

The predominant wind for May was from the South-West with most frequent, strongest winds from the South-West. The maximum wind speed was 17.0 m/s from the South-West.

Appendix 1

Field Sheets

Chain of Custody Documentation

Laboratory Analysis Certificates

DEPOSITIONAL DUST MONITORING

Client: ..... **Hanson Calga Quarry** .....

Date Installed: 3.5.21

Date Collected: 3.6.21

Sampled By: Maddie + Alex

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	12:15	1200	✓		✓	✓	C S T	C O Bn Gn Gy	Y	Y	—	
CD2C	12:30	1000	✓		✓	✓	C S T	C O Bn Gn Gy				
CD3	9:15	1400	✓		✓✓	✓	C S T	C O Bn Gn Gy				
CD4	11:40	1200	✓		✓	✓	C S T	C O Bn Gn Gy				
CD5	11:10	1400	✓			✓	C S T	C O Bn Gn Gy				
CD6	10:15	1500	✓		✓	✓	C S T	C O Bn Gn Gy				

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

Colour: C=Colourless, 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: accounts@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 403-18
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: ALEX SMITH + MADDIE BROWN
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 DATA				CONTAINER DATA		Insoluable Solids	Ash Residue	Combustable Matte	NOTES
SAMPLE ID	MATRIX	DATE ON	DATE OFF	TYPE & PRESERVATIVE	NO.				
CD1	Dust	3.5.21	3.6.21			x	x	x	
CD2c	Dust	3.5.21	3.6.21			x	x	x	
CD3	Dust	3.5.21	3.6.21			x	x	x	
CD4	Dust	3.5.21	3.6.21			x	x	x	
CD5	Dust	3.5.21	3.6.21			x	x	x	
CD6	Dust	3.5.21	3.6.21			x	x	x	

RELINQUISHED BY:
NAME: Lelsa King DATE: 4.6.21
OF: CBased Environmental TIME: 12:00
NAME: DATE:
OF: TIME:

RECEIVED BY
NAME: KS DATE: 4.6.21
OF: ALS TIME: 12pm
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
EN2104758

Telephone : +61 2 4014 2500

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EN2104758**	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-Jun-2021 12:00
Order number	: ----	Date Analysis Commenced	: 08-Jun-2021
C-O-C number	: ----	Issue Date	: 16-Jun-2021 12:04
Sampler	: ALEX SMITH, Maddie Brown		
Site	:		
Quote number	: SYBQ/403/18 - COMPASS		
No. of samples received	: 6		
No. of samples analysed	: 6		

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, unless the sampling was conducted by ALS. 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*
Zoran Grozdanovski	Laboratory Operator	Newcastle - Inorganics, Mayfield West, NSW

General Comments

The analytical procedures used by ALS have been developed from established internationally recognised procedures such as those published by the USEPA, APHA, AS and NEPM. In house developed procedures are fully validated and are often at the 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)			Sample ID	CD1 03/05/21 - 03/06/21	CD2c 03/05/21 - 03/06/21	CD3 03/05/21 - 03/06/21	CD4 03/05/21 - 03/06/21	CD5 03/05/21 - 03/06/21
			Sampling date / time	03-Jun-2021 00:00	03-Jun-2021 00:00	03-Jun-2021 00:00	03-Jun-2021 00:00	03-Jun-2021 00:00
Compound	CAS Number	LOR	Unit	EN2104758-001	EN2104758-002	EN2104758-003	EN2104758-004	EN2104758-005
				Result	Result	Result	Result	Result
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	**0.5**	**0.2**	**0.1**	**0.1**	**0.1**
Ash Content (mg)	----	1	mg	**9**	**3**	**2**	**1**	**1**
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	**0.3**	**0.1**	**0.5**	**0.2**	<0.1
Combustible Matter (mg)	----	1	mg	**5**	**2**	**9**	**4**	<1
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	**0.8**	**0.3**	**0.6**	**0.3**	**0.1**
Total Insoluble Matter (mg)	----	1	mg	**14**	**5**	**11**	**5**	**1**

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)			Sample ID	**CD6 03/05/21 - 03/06/21**	----	----	----	----
			Sampling date / time	03-Jun-2021 00:00	----	----	----	----
Compound	CAS Number	LOR	Unit	**EN2104758-006**	--------	--------	--------	--------
				Result	----	----	----	----
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	**0.1**	----	----	----	----
Ash Content (mg)	----	1	mg	**2**	----	----	----	----
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	**0.1**	----	----	----	----
Total Insoluble Matter (mg)	----	1	mg	**2**	----	----	----	----

CBASED ENVIRONMENTAL PTY LIMITED

Date: 3.5.21.

Client : Hanson Calga

Project :

SURFACE WATERS

Site	Flow Rate	Odour	Sampling Time	Bottles	Water Turbidity	Water Colour	Comments
A	DAM	N	11:45	1x 250ml GP, 1x 500mL GP, 1x PG	C S T	C LO O B G	
B			11:30	1x 250ml GP, 1x 500mL GP, 1x PG	C S T	C LO O B G	NOT FLOWING
C1	DAM	—	11:05	1x 250ml GP, 1x 500mL GP, 1x PG	C S T	C LO O B G	too low to access - Sippery Banks
C2	TRICKLE	N	13:10	1x 250ml GP, 1x 500mL GP, 1x PG	C S T	C LO O B G	
D	NO FLOW	N	12:15	1x 250ml GP, 1x 500mL GP, 1x PG	C S T	C LO O B G	
F	DAM	N	11:35	1x 250ml GP, 1x 500mL GP, 1x PG	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: ALEX SMITH + LEESA KING.

CHAIN OF CUSTODY DOCUMENTATION

Australian Laboratory Services Pty Ltd

CLIENT: CBased Environmental Pty Ltd
POSTAL ADDRESS: PO Box 245 CESSNOCK NSW 2325
SEND REPORT TO: monitoringresults@cbased.com.au
SEND INVOICE TO: renae.mikka@cbased.com.au; accounts@cbased.com.au
DATA NEEDED BY: 5 working days
REPORT NEEDED BY: 5 working days
PROJECT ID: Hanson Quarry SW
QUOTE NO.: SYBQ-403-18
P.O. NO.:
COMMENTS/SPECIAL HANDLING/STORAGE OR DIPOSAL:

LABORATORY BATCH NO.:
SAMPLERS: CBased Environmental Pty Ltd Leesa + Alex
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:

FOR LAB USE ONLY
COOLER SEAL Yes ..... No ..... ice
Broken ..... Intact ... 4.3
COOLER TEMP: deg.C

Total unless specified

ANALYSIS REQUIRED

SAMPLE ID	MATRIX	DATE	TIME	TYPE & PRESERVATIVE	NO.	pH	EC	TSS	TDS	O + G	NOTES
A	Water	3.5.21	11:45	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x	
~~B~~	~~Water~~			~~1x 250mlGP,1x 500mLGP,1xPG~~		~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
~~C1~~	~~Water~~			~~1x 250mlGP,1x 500mLGP,1xPG~~		~~x~~	~~x~~	~~x~~	~~x~~	~~x~~	
C2	Water	3.5.21	13.10	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x	
D	Water	3.5.21	12.15	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x	
F	Water	3.5.21	11:35	1x 250mlGP,1x 500mLGP,1xPG		x	x	x	x	x	
				TOTAL BOTTLES:							

Environmental Division
Sydney
Work Order Reference
ES2116397
Telephone : 61-2-8784 8555

RELINQUISHED BY:		RECEIVED BY	
NAME: Leesa King	DATE: 3.5.21	NAME: MM	DATE: 03/05/21
OF: CBased Environmental	TIME: 15.00	OF:	TIME: 3pm
NAME:	DATE:	NAME:	DATE:
OF:	TIME:	OF:	TIME:

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

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AUSTRALIAN LABORATORY SERVICES P/L

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **ES2116397**	Page	: 1 of 2
Client	: **CBASED ENVIRONMENTAL PTY LTD**	Laboratory	: Environmental Division Sydney
Contact	: All Deliverables	Contact	: Helen Simpson
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	: 03-May-2021 15:00
Order number	: ----	Date Analysis Commenced	: 03-May-2021
C-O-C number	: ----	Issue Date	: 11-May-2021 11:33
Sampler	: CBased Environmental Pty Ltd Leesa + Alex		
Site	:		
Quote number	: SYBQ/403/18 - COMPASS		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

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Signatories

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

General Comments

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^ = 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.

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

Analytical Results

Sub-Matrix: WATER (Matrix: WATER)			Sample ID	A	C2	D	F	----
			Sampling date / time	03-May-2021 11:45	03-May-2021 13:10	03-May-2021 12:15	03-May-2021 11:35	----
Compound	CAS Number	LOR	Unit	ES2116397-001	ES2116397-002	ES2116397-003	ES2116397-004	--------
				Result	Result	Result	Result	----
EA005: pH								
pH Value	----	0.01	pH Unit	5.89	6.10	5.38	9.02	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	56	105	90	68	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	40	63	66	52	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	6	<5	<5	16	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	----

Inter-Laboratory Testing

Analysis conducted by ALS Newcastle - Water, NATA accreditation no. 825, site no. 1656 (Chemistry) 9854 (Biology).

(WATER) EA005: pH