



CBased Environmental Pty Limited

ABN 62 611 924 264



Calga Quarry

Environmental Monitoring

Dust Deposition, Surface Water, Groundwater and Meteorological Data

February 2020

Colin Davies BSc MEIA CEnvP
Environmental Scientist
Date: 31 March 2020

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;
- Groundwater; and
- A meteorological data.

This report was prepared by CBased Environmental and includes the following results for February 2020:

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

The February 2020 dust deposition results for insoluble solids showed:

- Decreased levels when compared to January 2020;
- No excessively contaminated dust gauges; and
- Rolling annual averages below the Air Quality Management Plan criteria of 3.7g/m².month.

Monthly surface water samples were collected at sites A, C1, C2, D and F. B was 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 were not detected at any sites in February 2020.

The Calga Quarry weather station data recovery in February 2020 was approximately 100%. A summary of rainfall comparison is provided below.

Location	Rainfall (mm)
Calga Quarry	227.8mm
BOM Peats Ridge*	NA
BOM Gosford*	255.0mm
BOM Peats Ridge long-term mean for February*	154.3mm

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 to 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/m².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**.

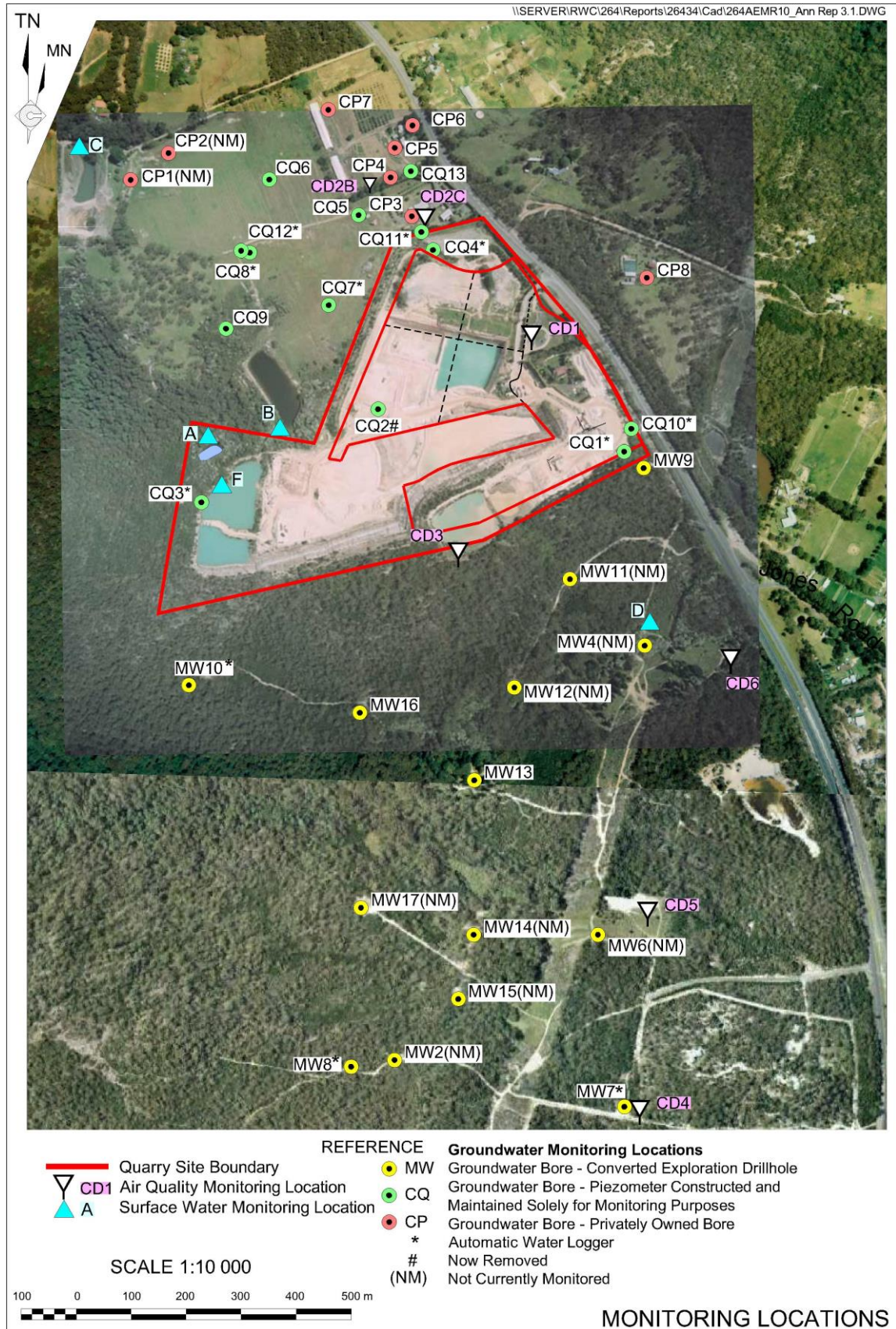


Figure 1: Hanson Calga Quarry Environmental Monitoring Locations

2.0 Results

2.1 Dust Deposition

The results for February 2020 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 February – 3 March 2020 (29 days)

Site	Monthly Insoluble Solids	Monthly Ash Residue	Monthly Combustible Matter	Monthly Ash Residue/ Insoluble Solids %	Rolling Annual Average Insoluble Solids
CD1	1.2	0.9	0.3	75	2.4
CD2c	1.0	0.5	0.5	50	1.8
CD3	0.8	0.4	0.4	50	2.0
CD4	1.1	0.5	0.6	45	1.6
CD5	0.8	0.4	0.4	50	1.6
CD6	0.8	0.4	0.4	50	1.7

Notes:

Units in g/m².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/m².month; the Development Consent's annual average amenity criteria at residential locations

The current rolling annual average is calculated from March 2019 to February 2020

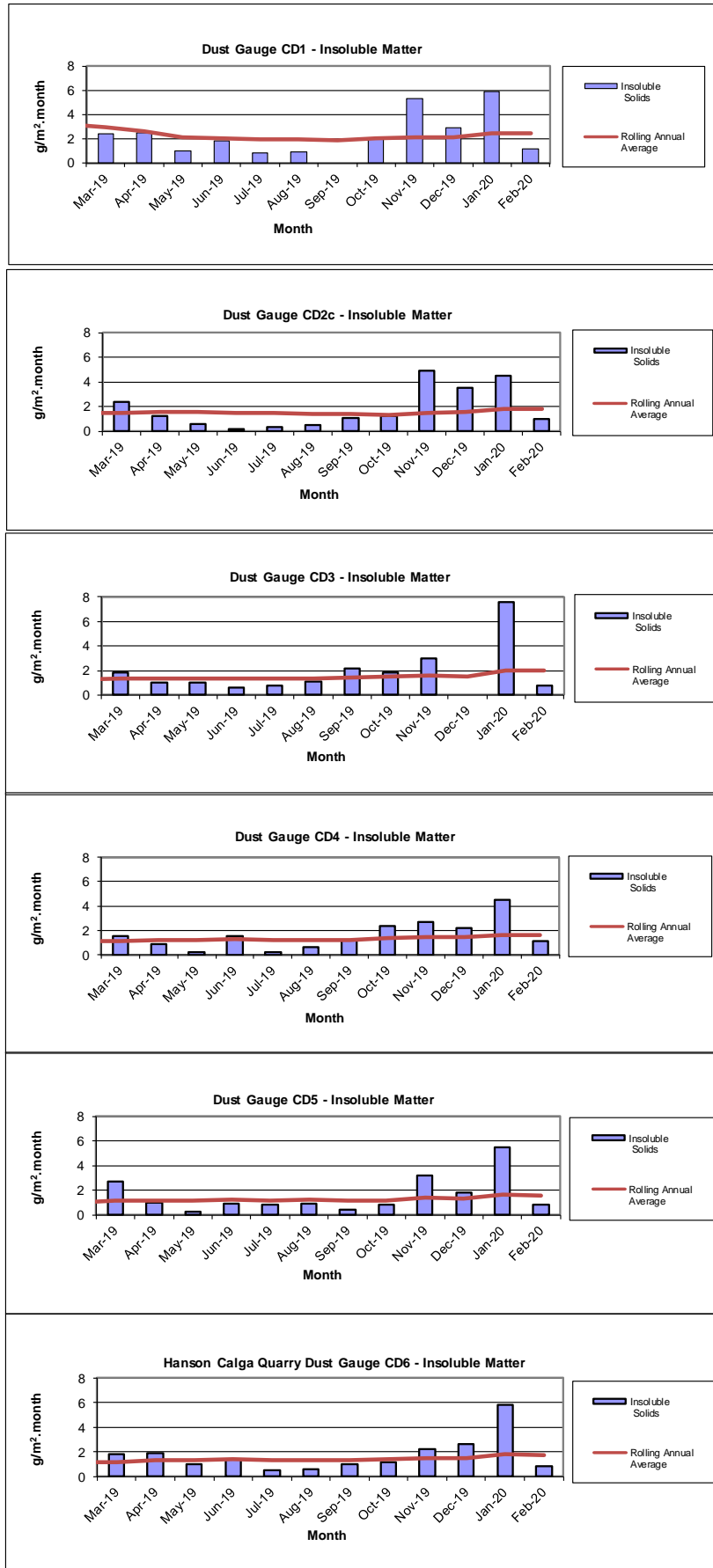


Figure 2: Summary Monthly/Annual Dust Deposition Results for Insoluble Solids

2.2 Surface Water (Monthly)

Monthly surface water monitoring was conducted on 3 February 2020 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, C1, C2, D and F. B was dry at the time of sampling. In summary, monitoring results showed:

- pH within the slightly acidic range;
- Low electrical conductivity;
- Low total dissolved solids;
- Low total suspended solids and
- Non-detectable traces of oil and grease.

Table 2: Monthly Surface Water Monitoring Results – February 2020

Site	Observed Flow Rate* (visual)	Water Colour* (visual)	Turbidity* (visual)	pH	EC ($\mu\text{S/cm}$)	TDS (mg/L)	TSS (mg/L)	Oil and Grease (mg/L)
A	Dam	Clear	Clear	5.76	104	66	11	<5
B	Dry							
C1	Dam	Clear	Clear	6.59	142	82	<5	<5
C2	Steady	Clear	Pale brown	6.15	130	88	7	<5
D	Trickle	Clear	Clear	5.42	130	88	7	<5
F	Dam	Clear	Clear	5.50	104	75	17	<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

A surface water sample was collected from 'Dam 1 (A)' on 4 February 2020 by CBased Environmental staff and laboratory analysed for pH. The field sheet, chain of custody documentation and laboratory analysis certificates are provided in **Appendix 1**.

'Dam 1 (A)' was further sampled on 7, 8, 10, 13, 19 and 27 February. On these occasions the sample was laboratory analysed for pH, EC, TDS, TSS, oil and grease. The field sheets, chain of custody documentation and laboratory analysis certificates are provided in **Appendix 1**.

Surface water samples were also collected from 'Dam 7 B/C', 'Dam 13 (B)', 'Point D Creek' and 'Point C Spillway' on 7 and 8 February 2020; simultaneously with sample 'Dam 1 (A)' on those days. These samples were laboratory analysed for pH, EC, TDS, TSS, oil and grease. The field sheet, chain of custody documentation and laboratory analysis certificates are provided in **Appendix 1**.

2.3 Groundwater (Bi-monthly)

Groundwater was sampled on during January 2020. It is scheduled to be undertaken during March 2020.

2.4 Meteorological Data

The Calga Quarry weather station data recovery for February 2020 was approximately 100%.

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 3 – 5**; and
- Wind rose (frequency distribution diagram of wind speed and direction). Refer to **Figure 6**.

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

Table 3: Comparison of Local Rainfall – February 2020

Location	Rainfall (mm)
Calga Quarry	227.8mm
BOM Peats Ridge*	NA
BOM Gosford*	255.0mm
BOM Peats Ridge long-term mean for February*	154.3mm

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.

An annual calibration was undertaken on the weather station during March 2019 and is next due in March 2020.

Table 4: Summary of Monthly Meteorological Data – February 2020

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
1/02/2020	18.6	21.9	29.4	48.0	73.5	92.0	0.0	5.3	0.0	2.7	12.5	18.3	30.1	1008.2	1010.3	1014.5	0.0	279.2	976.0	90.5	97.6	100.0
2/02/2020	17.7	21.4	27.7	55.0	82.5	96.0	2.6	3.7	0.0	1.8	8.9	17.8	28.2	1012.2	1014.5	1016.5	0.0	205.1	845.0	84.5	95.8	100.0
3/02/2020	20.2	24.3	32.8	53.0	80.6	97.0	0.8	4.8	0.0	2.3	11.2	20.2	37.0	1006.9	1011.0	1015.1	0.0	233.6	1010.0	91.2	96.9	100.0
4/02/2020	19.9	32.1	45.1	13.0	52.2	95.0	0.0	8.2	0.0	2.4	11.2	20.1	44.8	999.8	1004.4	1008.1	0.0	299.3	984.0	87.1	95.3	99.4
5/02/2020	19.8	22.6	27.2	47.0	61.3	71.0	0.0	5.8	1.3	3.1	11.6	19.8	27.4	1006.6	1013.8	1019.8	0.0	281.0	995.0	93.7	97.1	99.7
6/02/2020	18.2	19.5	20.8	70.0	87.0	97.0	6.6	0.9	0.0	0.6	6.3	18.2	21.9	1013.5	1016.2	1018.9	0.0	44.4	179.0	95.6	98.7	100.0
7/02/2020	19.6	23.8	30.9	63.0	84.6	98.0	1.0	2.9	0.0	2.0	8.9	19.3	35.6	1005.9	1010.4	1015.3	0.0	142.6	883.0	92.1	98.3	100.0
8/02/2020	21.1	23.0	27.2	70.0	86.0	96.0	2.0	2.8	0.0	1.7	10.7	21.1	29.0	1008.2	1011.1	1014.4	0.0	149.9	742.0	95.6	99.0	100.0
9/02/2020	19.7	21.5	24.4	76.0	86.3	96.0	2.0	1.6	0.0	1.3	6.7	19.8	25.5	1012.0	1013.3	1014.8	0.0	79.0	323.0	89.6	96.7	100.0
10/02/2020	20.1	26.7	34.1	50.0	74.8	97.0	0.0	6.3	0.0	2.8	10.7	20.2	39.9	998.4	1005.9	1012.5	0.0	296.3	964.0	68.8	90.5	97.8
11/02/2020	17.2	21.1	32.8	44.0	76.0	93.0	0.6	1.9	0.0	2.3	10.3	17.1	34.4	998.0	1008.0	1013.7	0.0	63.8	408.0	86.1	97.2	100.0
12/02/2020	17.2	18.9	22.9	58.0	78.6	94.0	1.0	1.9	0.0	1.7	7.6	17.3	22.9	1012.6	1014.8	1017.1	0.0	86.7	690.0	94.6	98.4	100.0
13/02/2020	17.3	21.0	26.3	54.0	75.9	93.0	0.0	4.6	0.0	2.2	9.8	17.3	26.4	1013.0	1015.1	1016.7	0.0	238.9	947.0	78.5	96.4	100.0
14/02/2020	17.2	22.2	28.7	56.0	78.5	96.0	0.0	4.5	0.0	2.1	9.8	17.2	29.7	1011.1	1013.2	1014.7	0.0	225.4	1027.0	63.1	90.3	100.0
15/02/2020	17.1	22.5	29.0	57.0	81.7	97.0	0.0	4.0	0.0	1.8	9.4	17.2	30.6	1004.9	1008.7	1012.6	0.0	212.9	894.0	59.9	84.4	100.0
16/02/2020	20.3	23.7	28.1	54.0	79.3	97.0	0.0	2.3	0.0	1.2	7.2	20.3	28.8	1000.8	1003.7	1005.2	0.0	115.4	408.0	75.4	88.8	100.0
17/02/2020	18.3	19.4	21.2	88.0	94.9	98.0	151.6	0.5	0.4	1.7	7.6	18.3	22.4	1002.8	1005.2	1007.4	0.0	22.4	151.0	80.1	90.6	97.2
18/02/2020	18.7	19.5	20.6	93.0	96.2	97.0	22.0	1.0	0.0	1.6	7.2	18.7	21.9	1004.4	1005.8	1007.3	0.0	69.3	237.0	68.5	91.1	97.2
19/02/2020	17.9	20.3	23.4	84.0	94.0	98.0	2.2	1.6	0.0	0.6	4.5	18.0	24.6	1001.1	1003.8	1006.4	0.0	102.5	442.0	89.6	92.7	97.2
20/02/2020	19.0	23.7	31.5	62.0	84.6	98.0	9.4	4.8	0.0	1.7	12.5	19.0	36.4	994.0	999.0	1002.5	0.0	270.0	1028.0	73.8	89.9	100.0
21/02/2020	18.3	24.0	32.1	34.0	66.3	90.0	0.0	6.7	0.0	1.9	9.4	18.3	31.6	1000.3	1003.6	1007.8	0.0	335.0	1029.0	83.0	93.3	99.4
22/02/2020	18.2	25.5	32.7	45.0	70.3	96.0	0.0	6.9	0.0	3.2	13.9	18.3	36.7	1001.5	1005.2	1008.4	0.0	312.7	1068.0	71.6	91.5	100.0
23/02/2020	21.8	32.0	41.0	19.0	42.0	89.0	7.0	8.9	0.0	3.4	21.0	21.8	41.1	994.6	998.7	1002.3	0.0	294.5	1014.0	64.4	89.0	99.1
24/02/2020	23.2	25.5	28.6	59.0	73.9	87.0	0.0	4.1	0.0	2.7	10.7	23.0	30.2	998.8	1005.0	1010.3	0.0	180.3	697.0	43.5	87.6	100.0
25/02/2020	22.3	24.3	27.7	73.0	87.1	94.0	0.0	2.2	0.0	1.5	5.4	22.4	30.6	1007.6	1009.7	1011.5	0.0	113.3	821.0	77.6	88.7	94.0
26/02/2020	22.9	27.2	36.6	41.0	78.1	97.0	3.0	4.8	0.0	1.8	11.2	23.0	42.7	1004.6	1007.3	1009.4	0.0	252.5	1030.0	76.7	86.7	93.1
27/02/2020	22.7	25.2	30.6	68.0	83.1	91.0	0.0	3.7	0.0	2.0	7.6	22.7	36.2	1006.8	1009.1	1011.2	0.0	182.3	873.0	79.5	84.2	90.9
28/02/2020	21.3	25.8	35.6	54.0	84.4	97.0	16.0	4.3	0.0	1.5	13.4	21.3	45.8	1004.5	1008.0	1010.7	0.0	233.1	1034.0	68.1	90.2	99.4
29/02/2020	21.4	23.9	27.5	71.0	83.3	94.0	0.0	3.4	0.0	2.0	8.5	21.4	29.9	1010.1	1012.4	1015.0	0.0	181.1	914.0	56.5	84.3	99.4
Monthly	17.1	23.5	45.1	13	79	98	227.8	114.4	0	2.0	21	17.1	45.8	994.0	1008.5	1019.8	0	189.7	1068	43.5	92.5	100
Unit	Degrees Celcius (°C)			Percentage Relative Humidity			mm	mm	Metres per second (m/s)			°C	°C	Hector Pascals (hPa)			Watts per square metre (W/m ²)			Percentage (%)		

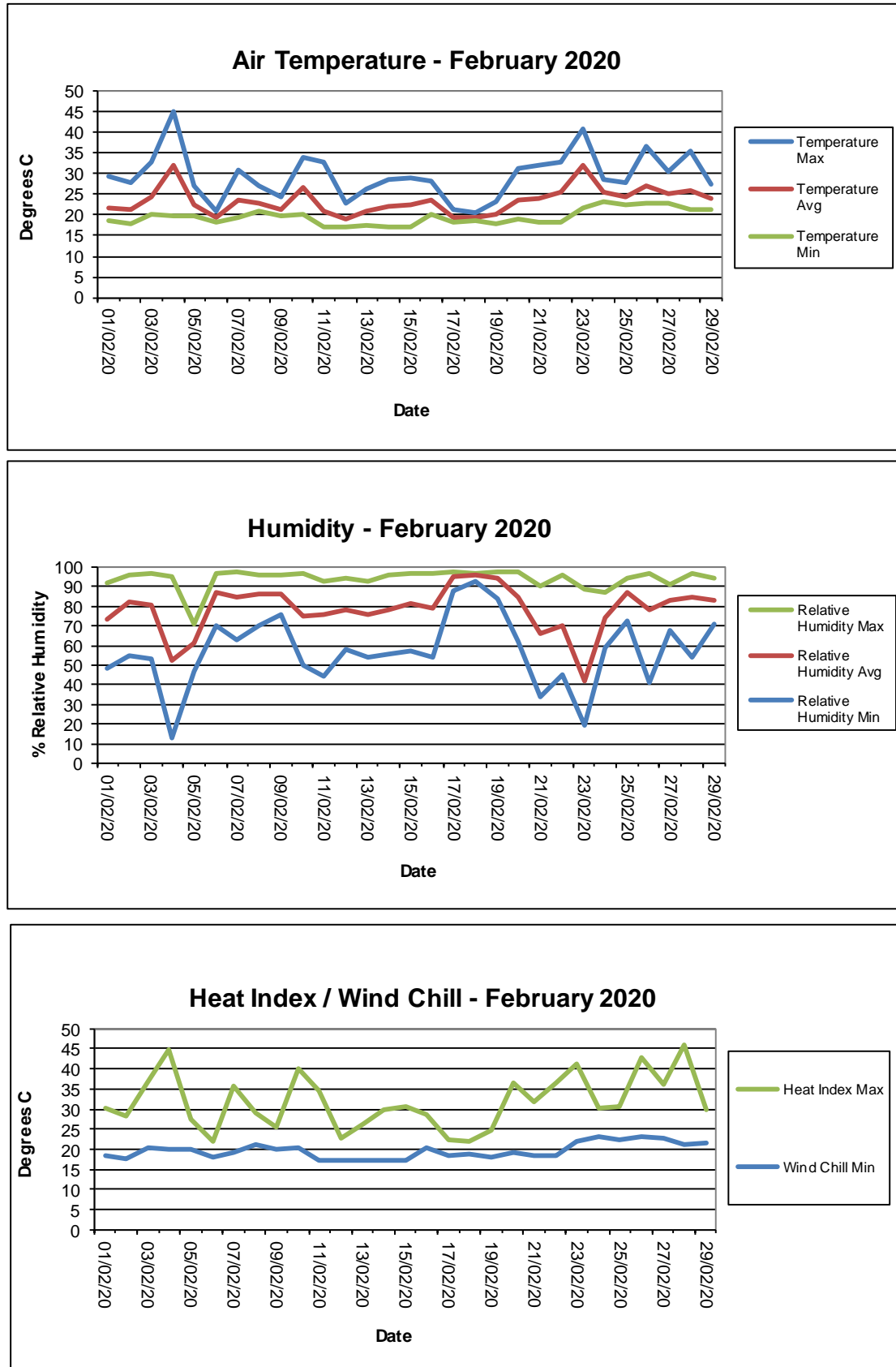


Figure 3 Summary of Monthly Temperature, Humidity and Heat Index Results

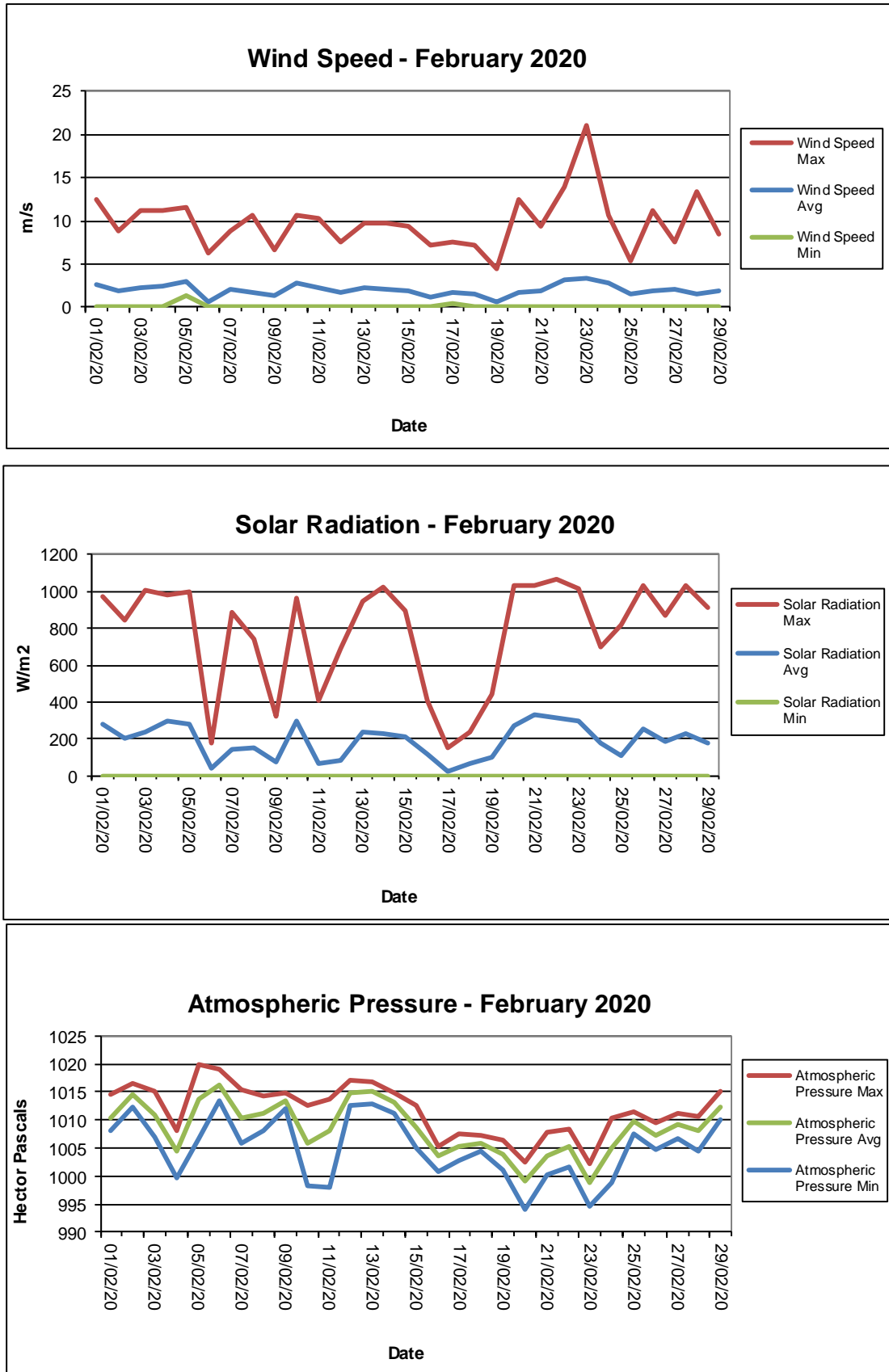


Figure 4 Summary of Monthly Wind Speed, Solar Radiation and Atmospheric Pressure Results

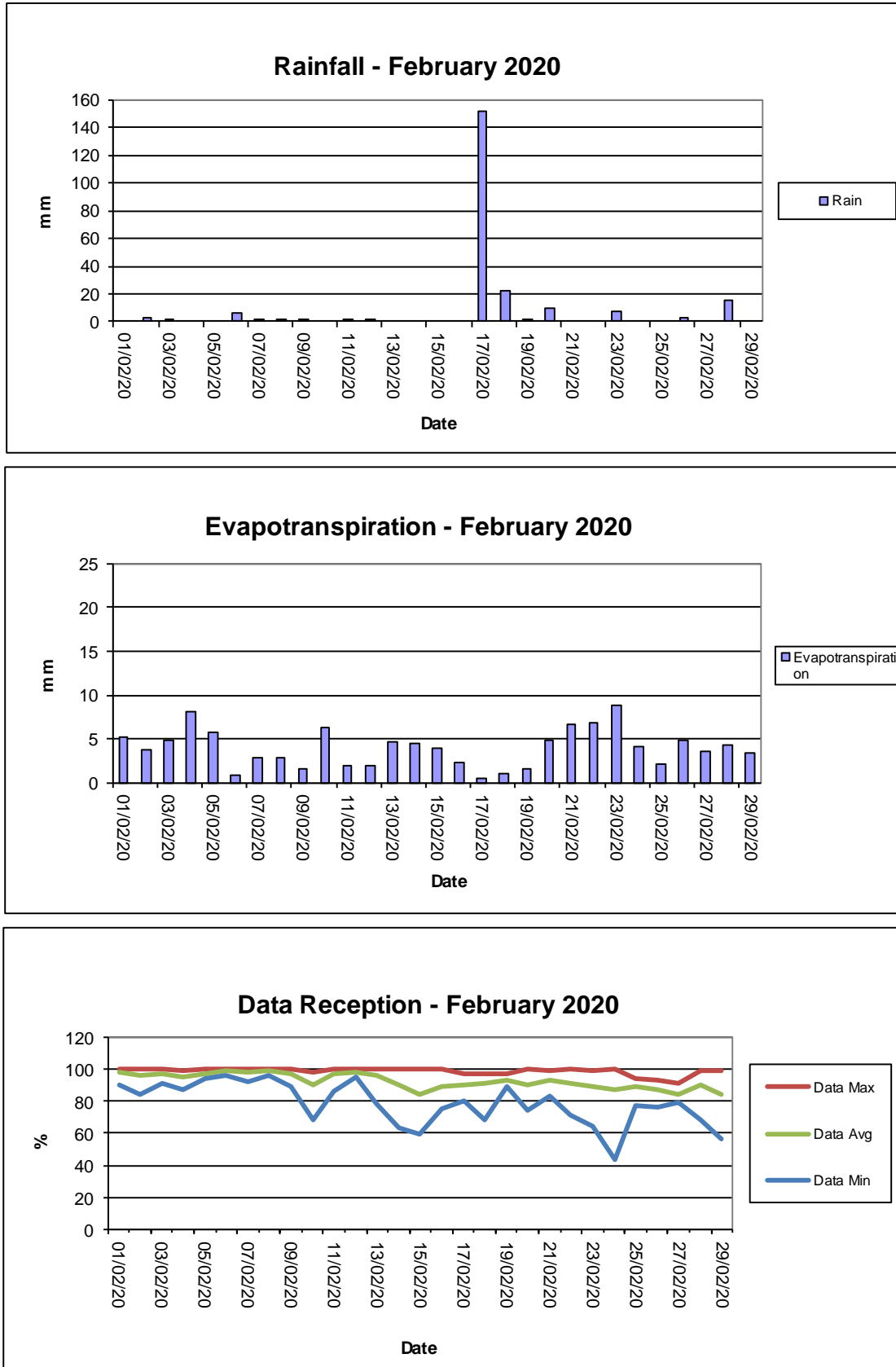


Figure 5 Summary of Monthly Rainfall, Evapotranspiration and Data Reception Results

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.

0:00, 1 February 2020 – 23: 45, 29 February 2020

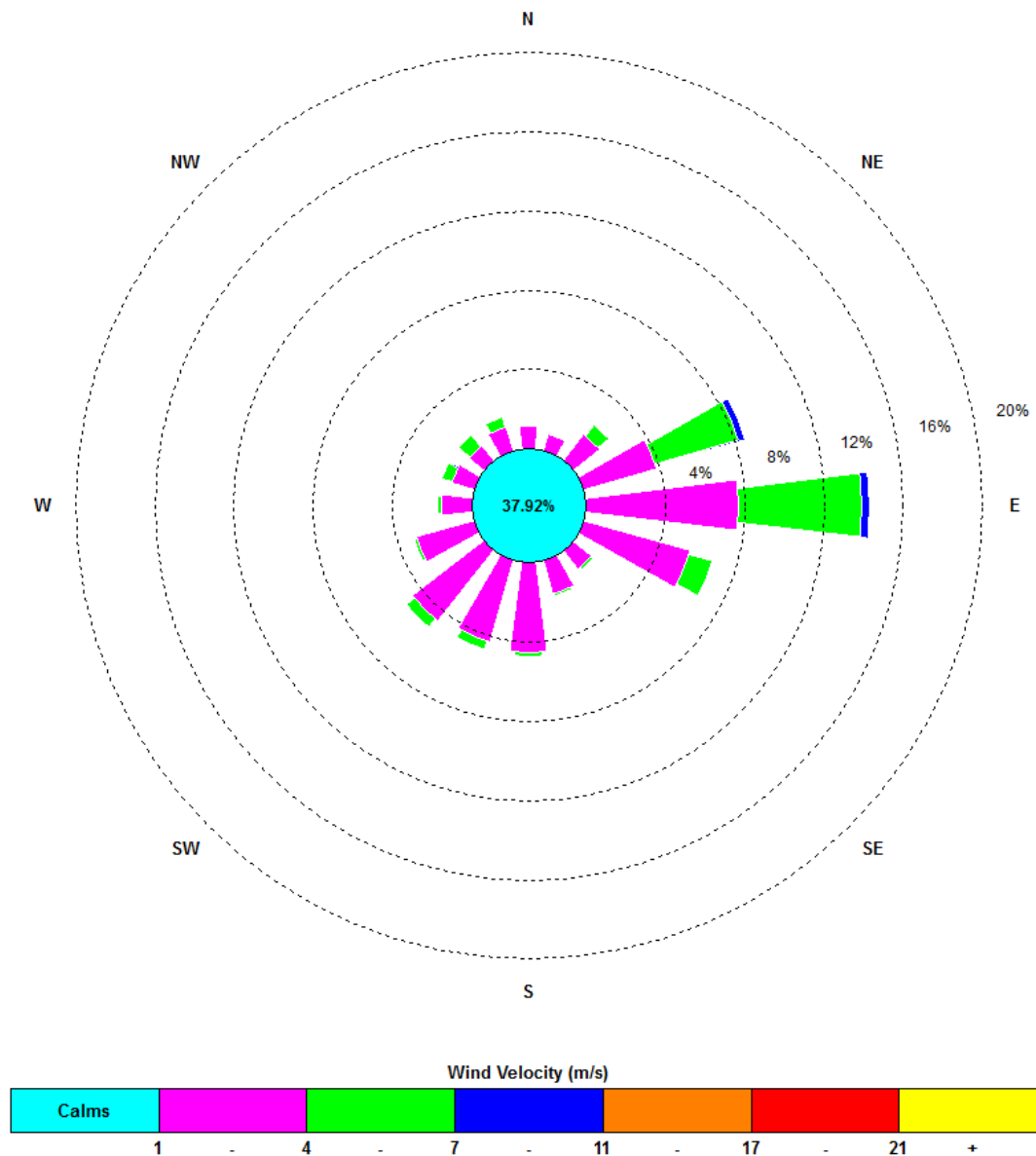


Figure 6: *Monthly Windrose Plot – February 2020*

The predominant wind for February was from the east, with most frequent, strongest winds also from the East. The maximum wind speed was 21.0m/s from the north-west.

Appendix 1

Field Sheets

Chain of Custody Documentation

Laboratory Analysis Certificates



Date Installed: 3.2.20
Date Collected: 3.3.20

Sampled By: ALEX + MADDIE

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

Hanson Calga DDG_FS_COC_V4

[illegible]**AUSTRALIAN LABORATORY SERVICES P/L**

CERTIFICATE OF ANALYSIS

Work Order : **EN2001420**
Client : **CBASED ENVIRONMENTAL PTY LTD**
Contact : All Deliverables
Address : Unit 3 2 Enterprise Cres
 Singleton NSW 2330
Telephone : +61 02 6571 3334
Project : Hanson Calga Dusts
Order number : ----
C-O-C number : ----
Sampler : Alex, Maddie Brown
Site :
Quote number : SYBQ/403/18 - COMPASS
No. of samples received : 6
No. of samples analysed : 6

Page : 1 of 4
Laboratory : Environmental Division Newcastle
Contact :
Address : 5/585 Maitland Road Mayfield West NSW Australia 2304

Telephone : +61 2 4014 2500
Date Samples Received : 03-Mar-2020 13:10
Date Analysis Commenced : 04-Mar-2020
Issue Date : 09-Mar-2020 16:44



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Jennifer Targett	Laboratory Technician	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 03/02/20 - 03/03/20	CD2c 03/02/20 - 03/03/20	CD3 03/02/20 - 03/03/20	CD4 03/02/20 - 03/03/20	CD5 03/02/20 - 03/03/20
Client sampling date / time				03-Mar-2020 00:00	03-Mar-2020 00:00	03-Mar-2020 00:00	03-Mar-2020 00:00	03-Mar-2020 00:00
Compound	CAS Number	LOR	Unit	EN2001420-001	EN2001420-002	EN2001420-003	EN2001420-004	EN2001420-005
				Result	Result	Result	Result	Result
EA120: Ash Content								
Ash Content	----	0.1	g/m ² .month	0.9	0.5	0.4	0.5	0.4
Ash Content (mg)	----	1	mg	15	9	6	9	7
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m ² .month	0.3	0.5	0.4	0.6	0.4
Combustible Matter (mg)	----	1	mg	5	8	8	10	7
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	1.2	1.0	0.8	1.1	0.8
Total Insoluble Matter (mg)	----	1	mg	20	17	14	19	14



Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST**
 (Matrix: **AIR**)

Client sample ID

				CD6	----	----	----	----
				03/02/20 - 03/03/20	----	----	----	----
				03-Mar-2020 00:00	----	----	----	----
<i>Compound</i>	<i>CAS Number</i>	<i>LOR</i>	<i>Unit</i>	EN2001420-006	-----	-----	-----	-----
				Result	----	----	----	----
EA120: Ash Content								
Ash Content	----	0.1	g/m ² .month	0.4	----	----	----	----
Ash Content (mg)	----	1	mg	7	----	----	----	----
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m ² .month	0.4	----	----	----	----
Combustible Matter (mg)	----	1	mg	6	----	----	----	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m ² .month	0.8	----	----	----	----
Total Insoluble Matter (mg)	----	1	mg	13	----	----	----	----



CBASED ENVIRONMENTAL PTY LIMITED

Date: 3.2.20

Client:
Project:

Hanson Caiga

SURFACE WATERS

Site	Flow Rate	Down	Sampling Time	Bottles	Water Turbidity	Water Colour	Comments
A	DAM	NO	10:10		CST	CLOOBG	
B	DRY		10:25		CST	CLOOBG	
C1	Dam	NO	3:00		CST	CLOOBG	
C2	Steady	NO	3:12		CST	CLOOBG	light Brown
D	Trickle	NO	11:50		CST	CLOOBG	
F	DAM	NO	10:00		CST	CLOOBG	

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

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

Signed:

Alij

Sampled by:

Leesa + Maddie

[illegible]

AUSTRALIAN LABORATORY SERVICES P/L

CERTIFICATE OF ANALYSIS

Work Order : **ES2003437**
Client : **CBASED ENVIRONMENTAL PTY LTD**
Contact : All Deliverables
Address : Unit 3 2 Enterprise Cres
Singleton NSW 2330
Telephone : +61 02 6571 3334
Project : Hanson Quarry SW
Order number : ----
C-O-C number : ----
Sampler : Leesa + Maddie
Site :
Quote number : SYBQ/403/18 - COMPASS
No. of samples received : 5
No. of samples analysed : 5

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 04-Feb-2020 16:04
Date Analysis Commenced : 04-Feb-2020
Issue Date : 10-Feb-2020 13:56



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Gregory Towers	Technical Officer	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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				A	C1	C2	D	F
Client sampling date / time				03-Feb-2020 10:10	03-Feb-2020 03:00	03-Feb-2020 03:10	03-Feb-2020 11:50	03-Feb-2020 10:00
Compound	CAS Number	LOR	Unit	ES2003437-001	ES2003437-002	ES2003437-003	ES2003437-004	ES2003437-005
				Result	Result	Result	Result	Result
EA005: pH								
pH Value	----	0.01	pH Unit	5.76	6.59	6.15	5.42	5.50
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	104	142	130	106	104
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	66	82	88	84	75
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	11	<5	7	<5	17
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5



CBASED ENVIRONMENTAL PTY LIMITED

Client : Hanson Calga Quarry
 Project : Surface Water Sampling

Site	Sampling Date	Sampling Time	Field pH	Odour	Bottles	Water Turbidity	Water Colour	Comments
Dam 1 (A)	4.2.20	9:15	5.90	NO	1x 1L SRT	9 ST	C LO O (B) G	

Sampled by: M. Brown

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

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

Signed: [Signature]

[illegible]

STEEL RIVER TESTING

WATER ANALYSIS REPORT

Client: Cbased Environmental Pty Ltd

Report No.: 20830-0

Page 1 of 1

Project No: Hanson Calga

Description: Received: 04-Feb-20

Date: 05-Feb-20

Report to: Colin Davies

Unit 3, 2 Enterprise Crescent, Singleton NSW 2330


Sample No	Sample Description		Sampled	pH	Conductivity µS/cm	TSS mg/L	TDS mg/L
46474	Dam 1 (A) @ 11:00am	9:15	04-Feb-20	6.0			
46475	Dam 1 (A) @ 12:00pm	9:15	04-Feb-20	6.1			
46476	Dam 1 (A) @ 1:00pm	9:15	04-Feb-20	6.0			
46477	Dam 1 (A) @ 2:00pm	9:15	04-Feb-20	6.1			
46478	Dam 1 (A) @ 3:00pm	9:15	04-Feb-20	6.2			
46479	Dam 1 (A) @ 4:00pm	9:15	04-Feb-20	5.9			
46480	Dam 1 (A) @ 5:00pm	9:15	04-Feb-20	6.0			



NATA Accredited Laboratory 18079
Accredited for compliance with
ISO/IEC 17025 - Testing

Note:

1. Sampled by Client - Analysed as Received
2. Recommended preservation time was exceeded for pH

Reported By: 
Jason Campbell - Manager

Determined in accordance with: APHA Methods for Conductivity (2510 B), pH (4500-H⁺ B), TSS (2540 D) & TDS (2540 C)
Refer Form F422 - Measurement Uncertainty

CERTIFICATE OF ANALYSIS

Work Order : **ES2004260**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR SHANE PESCU
Address : FARLEIGH-HABANA RD FARLEIGH
MACKAY QUEENSLAND 4741
Telephone : 02 4375 1151
Project : Hanson Calga Surface Water Monitoring
Order number : 4502684337
C-O-C number : ----
Sampler : SHANE PESCU
Site : ----
Quote number : TV/022/16
No. of samples received : 10
No. of samples analysed : 10

Page : 1 of 4
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 10-Feb-2020 09:20
Date Analysis Commenced : 10-Feb-2020
Issue Date : 17-Feb-2020 13:28



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



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.

- TDS by method EA-015 may bias high for all 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**)

Client sample ID

				Dam 1 (A)	Dam 7B/C	Dam 13 (B)	Point D Creek	Point C Spillway
Client sampling date / time				07-Feb-2020 12:04	07-Feb-2020 12:15	07-Feb-2020 12:28	07-Feb-2020 12:45	07-Feb-2020 13:05
Compound	CAS Number	LOR	Unit	ES2004260-001	ES2004260-002	ES2004260-003	ES2004260-004	ES2004260-005
				Result	Result	Result	Result	Result
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.17	6.05	6.73	6.37	6.22
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	72	75	71	53	83
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	64	80	99	52	63
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	6	32	50	84	32
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	<5	<5	<5	<5



Analytical Results

Sub-Matrix: WATER (Matrix: WATER)				Client sample ID	Dam 1 (A)	Dam 7B/C	Dam 13 (B)	Point D Creek	Point C Spillway
Client sampling date / time					08-Feb-2020 08:20	08-Feb-2020 08:30	08-Feb-2020 08:40	08-Feb-2020 08:55	08-Feb-2020 09:20
Compound	CAS Number	LOR	Unit		ES2004260-006	ES2004260-007	ES2004260-008	ES2004260-009	ES2004260-010
					Result	Result	Result	Result	Result
EA005P: pH by PC Titrator									
pH Value	----	0.01	pH Unit		5.84	5.87	6.61	6.45	6.31
EA010P: Conductivity by PC Titrator									
Electrical Conductivity @ 25°C	----	1	µS/cm		57	71	56	43	72
EA015: Total Dissolved Solids dried at 180 ± 5 °C									
Total Dissolved Solids @180°C	----	10	mg/L		58	67	79	61	66
EA025: Total Suspended Solids dried at 104 ± 2°C									
Suspended Solids (SS)	----	5	mg/L		22	30	26	41	76
EP020: Oil and Grease (O&G)									
Oil & Grease	----	5	mg/L		<5	<5	<5	<5	<5

CERTIFICATE OF ANALYSIS

Work Order : **ES2004261**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR SHANE PESCU
Address : FARLEIGH-HABANA RD FARLEIGH
MACKAY QUEENSLAND 4741
Telephone : 02 4375 1151
Project : Hanson Calga Surface Water Monitoring
Order number : 4502684337
C-O-C number : ----
Sampler : SHANE PESCU
Site : ----
Quote number : TV/022/16
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164
Telephone : +61-2-8784 8555
Date Samples Received : 10-Feb-2020 09:20
Date Analysis Commenced : 10-Feb-2020
Issue Date : 18-Feb-2020 07:28



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



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.

- 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**
 (Matrix: **WATER**)

Client sample ID

Discharge Dam 1 (A)
10022020

Client sampling date / time

10-Feb-2020 06:02

Compound	CAS Number	LOR	Unit	ES2004261-001				
				Result				
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	5.89	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	57	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	56	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	30	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order : **ES2004922**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR SHANE PESCU
Address : PO BOX 206
 BATHURST NSW,AUSTRALIA 2795
Telephone : 02 4375 1151
Project : HANSON CALGA QUARRY, SITE WATER DISCHARGE DAM 1
 (A)
Order number : 4502684337
C-O-C number : ----
Sampler : SHANE PESCU
Site : ----
Quote number : EN/222
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 13-Feb-2020 10:50

Date Analysis Commenced : 13-Feb-2020
Issue Date : 14-Feb-2020 15:46



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



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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				Discharge Dam 1 (A) 13022020	----	----	----	----
Client sampling date / time				13-Feb-2020 07:35	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2004922-001	-----	-----	-----	-----
Result					----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.30	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	73	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	51	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	27	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order : **ES2005662**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR SHANE PESCU
Address : PO BOX 206
 BATHURST NSW,AUSTRALIA 2795
Telephone : 02 4375 1151
Project : HANSON CALGA QUARRY, SITE WATER DISCHARGE DAM 1
 (A)
Order number : 4502688226
C-O-C number : ----
Sampler : SHANE PESCU
Site : ----
Quote number : EN/222
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 19-Feb-2020 11:00

Date Analysis Commenced : 19-Feb-2020
Issue Date : 25-Feb-2020 15:16



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, 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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				Discharge Dam 1 (A) 19022020	----	----	----	----
Client sampling date / time				19-Feb-2020 08:15	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2005662-001	-----	-----	-----	-----
				Result	----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	7.17	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	73	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	50	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	7	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----

CERTIFICATE OF ANALYSIS

Work Order : **ES2006851**
Client : **HANSON CONSTRUCTION MATERIALS PTY LTD**
Contact : MR SHANE PESCU
Address : 151 Peats Ridge Rd
 Calga 2250
Telephone : 02 4375 1151
Project : HANSON CALGA QUARRY, SITE WATER DISCHARGE DAM 1
 (A)
Order number : 4502691906
C-O-C number : ----
Sampler : SHANE PESCU
Site : ----
Quote number : EN/222
No. of samples received : 1
No. of samples analysed : 1

Page : 1 of 2
Laboratory : Environmental Division Sydney
Contact : Customer Services ES
Address : 277-289 Woodpark Road Smithfield NSW Australia 2164

Telephone : +61-2-8784 8555
Date Samples Received : 27-Feb-2020 14:10

Date Analysis Commenced : 27-Feb-2020
Issue Date : 04-Mar-2020 15:13



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.

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Inorganic Chemist	Sydney Inorganics, Smithfield, NSW
Ashesh Patel	Senior Chemist	Sydney Inorganics, Smithfield, 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.

Analytical Results

Sub-Matrix: **WATER**
 (Matrix: **WATER**)

Client sample ID

				DISCHARGE DAM 1 (A) 07022020	----	----	----	----
Client sampling date / time				27-Feb-2020 11:45	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2006851-001	-----	-----	-----	-----
Result					----	----	----	----
EA005P: pH by PC Titrator								
pH Value	----	0.01	pH Unit	6.80	----	----	----	----
EA010P: Conductivity by PC Titrator								
Electrical Conductivity @ 25°C	----	1	µS/cm	57	----	----	----	----
EA015: Total Dissolved Solids dried at 180 ± 5 °C								
Total Dissolved Solids @180°C	----	10	mg/L	38	----	----	----	----
EA025: Total Suspended Solids dried at 104 ± 2°C								
Suspended Solids (SS)	----	5	mg/L	25	----	----	----	----
EP020: Oil and Grease (O&G)								
Oil & Grease	----	5	mg/L	<5	----	----	----	----