Monthly Air Quality Monitoring – April 2020
Bass Point Quarry

Licensee
HANSON CONSTRUCTION MATERIALS PTY LTD
LOCKED BAG 5260
PARRAMATTA NSW 2124

Premises Details
HANSON CONSTRUCTION MATERIALS PTY LTD
BOOLLWARROO PARADE
SHELLHARBOUR
NSW 2529
LOT 16 DP 627783, LOT 78 DP 751290, LOT 22 DP 1010797

Project Approval: Ref 08_0143, January 28, 2014
Environmental Protection Licence (EPL) No: 2193*

* Listed in the EPA Public Register

Report Author: Chelsea Flood (Compliance Officer)
Date issued: 10.08.2020

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Figures

Tables

1. Air quality monitoring requirements

As per the Project Approval and Air Quality Management Plan (AQMP), the quarry is required to report on the following:

1.1. Particulate Matter

The quarry monitors two PM_{10} samplers (**Table 1**, **Figure 1**) and will gather representative data, to compare the results against the following tables:

Table 4: Long-Term Impact Assessment Criteria for Particulate Matter

Pollutant	***Averaging period***	***[d] Criterion***
Total suspended particulates (TSP)	Annual	[a] 90 µg/m^3
Particulate matter < 10 µm (PM_{10})	Annual	[a] 30 µg/m^3

Table 5: Short Term Impact Assessment Criteria for Particulate Matter

Pollutant	***Averaging period***	***[d] Criterion***
Particulate matter < 10 µm (PM_{10})	24 hour	[a] 50 µg/m^3

1.2. Dust Deposition Gauges

The quarry monitors two Dust Deposition Gauges (DDGs) (**Table 1**, **Figure 1**) and will compare the results against the following table:

Table 6: Long-Term Impact Assessment Criteria for Deposited Dust

Pollutant	***Averaging period***	***Maximum increase in deposited dust level***	***Maximum total deposited dust level***
[c] Deposited dust	Annual	[b] 2 g/m^2/month	[a] 4 g/m^2/month

1.3. Representative Meteorological Data

The quarry will gather representative meteorological data for the respective month including temperature, rainfall, wind speed and direction.

2. Air quality monitoring program

The Air Quality Management Plan was prepared by SLR Global Environmental solutions and details the assessment criteria, monitoring locations and procedures, and the compliance checking procedures for the subsequent reporting in accordance with the Department of Planning, Industry and Environment (DPIE) and the NSW Environment Protection Authority (EPA) requirements.

All monitoring locations conform to the requirements of *AS 3580.1.1:2016*, subject to local site constraints. Monitoring activities are outlined in **Table 1**, with site monitoring points shown in **Figure 1**. Note that Site No. PM10-1 is used as a management tool and not for compliance purposes, and as such, is not used to establish compliance monitoring for PM_{10}. In addition, though not part of the Bass Point Quarry air quality monitoring program, regional background data for 24 hour PM_{10} concentration is sourced from the Office of Environment and Heritage (OEH) Albion Park South Air Quality Monitoring Station (AQMS) as per the AQMP.

Table 1: Summary of the air quality monitoring program at Bass Point Quarry. Sites that are not monitored for compliance purposes (e.g. used as management tools only) are shaded pale grey.

Site No.	Location	Parameter	Instrument	Sampling frequency	Reporting frequency
DDG-1	Western Boundary	Dust Deposition	Dust Deposition Gauge (DDG)	30 days (± 2 days)	Monthly
DDG-2	West, on the amenity bund	Dust Deposition	Dust Deposition Gauge (DDG)	30 days (± 2 days)	Monthly
Automatic Weather Station	Kiama (Bombo Headland)	Meteorological Parameters	Automatic Weather Station (AWS)	Continuous	Monthly
PM10-1	West of the Main Site Office	PM_{10}	Beta Attenuation Monitor (BAM)	Continuous	Monthly
PM10-2	West, on the amenity bund	PM_{10}	Low Volume Air Sampler (LVAS)	1 in 6 day sampling	Monthly

Figure 1: Monitoring locations at the Bass Point Quarry. Air quality monitoring locations have been acronymised as follows: DDG1 – Dust Deposition Gauge 1; DDG2 – Dust Deposition Gauge 2; PM10-1 – Continuous PM_{10} Monitor; PM10-2 – Low Volume PM_{10} Sampler.

3. Monthly results

3.1. Particulate Matter – Particulate Matter < 10 µm (PM_{10})

The PM10-2 (LVAS) monitoring site is located on the site boundary (as per the AQMP). An exceedance of the 24 hour or annual average criteria at this monitoring point therefore does not necessarily mean that there has been an exceedance of the assessment criteria outlined in Project Approval 08_0143 Schedule 3 (which apply at any residence on privately-owned land). PM10-2 was relocated offsite in February 2020 to undertake a detailed investigation, however, the unit malfunctioned and was sent for repairs. The unit was being still under repair until mid-April. Therefore, only three samples were collected during April 2020 (**Figure 2**, **Table 2**). All three samples were below the 24 hour average PM_{10} criterion of 50 µg/m^3 and were hence compliant. Note that two of the samples (18/04/2020 and 30/04/2020) were below the limit of reporting (LOR) for the laboratory, i.e. smaller that the laboratory is permitted to report. In those cases, the limit of reporting has been graphed.

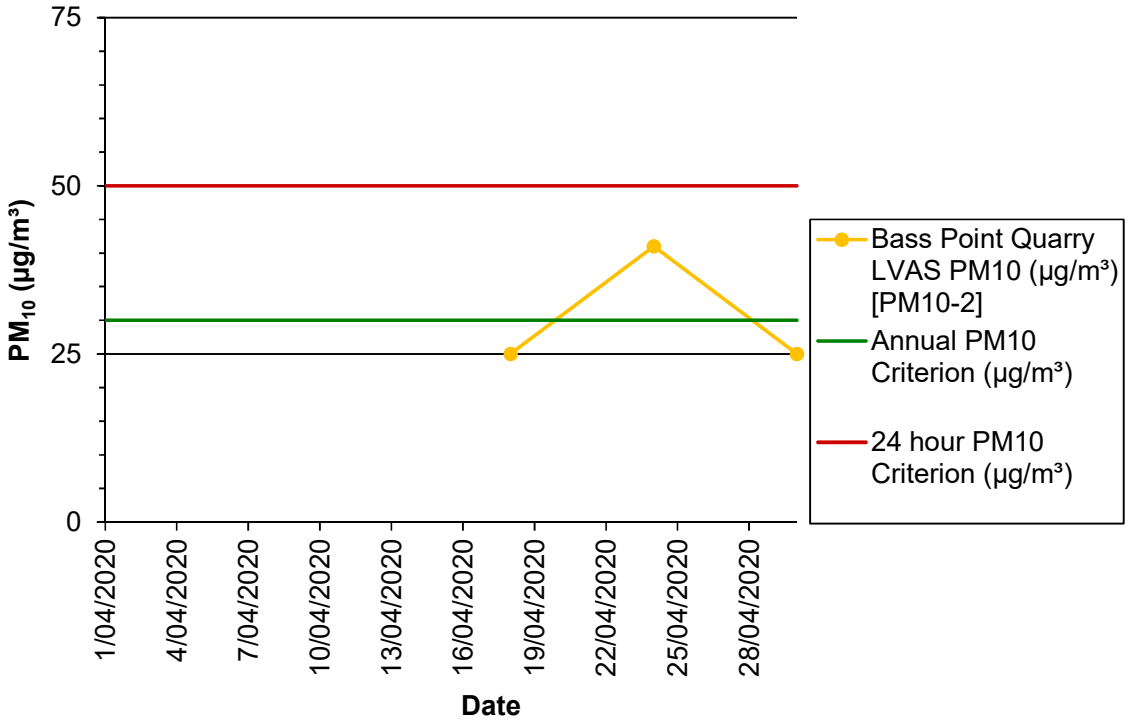


Figure 2: Twenty-four hour PM_{10} concentration (µg/m^3) as measured at PM10-2 during April 2020, compared to the annual criterion and 24 hour criterion (µg/m^3).

The 24 hour average PM_{10} reading at Albion Park South AQMS was below the 24 hour average PM_{10} criterion of 50 µg/m^3 for all sampling dates during April 2020 (**Figure 3**, **Table 2**) and was hence compliant.

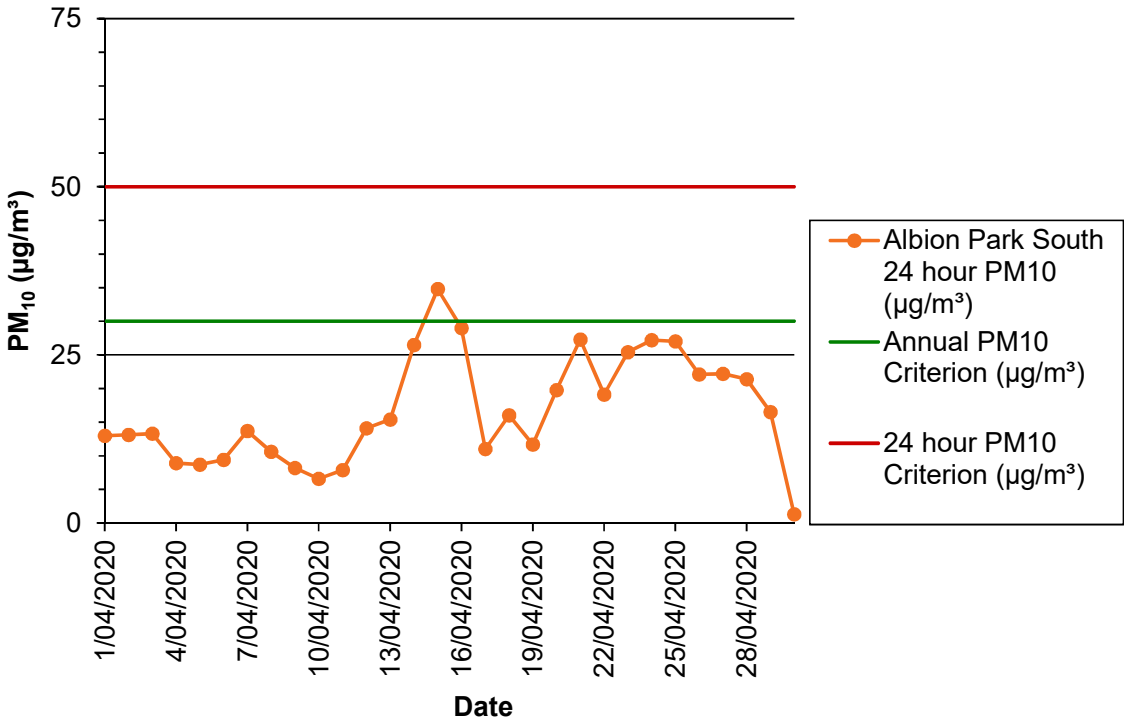


Figure 3: Twenty-four hour PM_{10} concentration (µg/m^3) as measured at Albion Park South AQMS during April 2020, compared to the annual criterion and 24 hour criterion (µg/m^3).

Hanson are required to report on the annual average 24 hour PM_{10} concentration for the identified periods: (i) calendar year, as part of the Environmental Management Annual Review. Annual average PM_{10} data is therefore not required as part of the April 2020 monthly report. However, as a management tool, Hanson have begun calculating the rolling annual average 24 hour PM_{10} for the monthly air quality reports.

The rolling annual average 24 hour PM_{10} for the PM10-2 site, as calculated using data up to and including April 2020, was 68.0 µg/m^3. This is above the annual PM_{10} criterion of 30 µg/m^3. Hanson are undertaking a more detailed investigation into the PM_{10} levels experienced at a relevant nearby residence/receiver, as is required under the site AQMP.

The rolling annual average 24 hour PM_{10} from the OEH Albion Park South AQMS, as calculated using data the 12 months up to and including April 2020, was 20.9 µg/m^3. This is slightly more than two-thirds of the 30 µg/m^3 annual limit as outlined in the Project Approval 08_0143.

As per the AQMP, the PM10-1 (E-BAM) monitoring site is located on-site and is significantly closer to the quarrying activities than the nearest sensitive receptors. An exceedance of the PM_{10} criterion recorded at this location (**Figure 4**, **Table 2**) therefore does not represent non-compliance with the criteria outlined in Project

Approval 08_0143 Schedule 3 (which apply at any residence on privately-owned land). In addition, PM10-1 is used as a management tool and not for compliance purposes, and as such, is not used to establish compliance monitoring for PM_{10}.

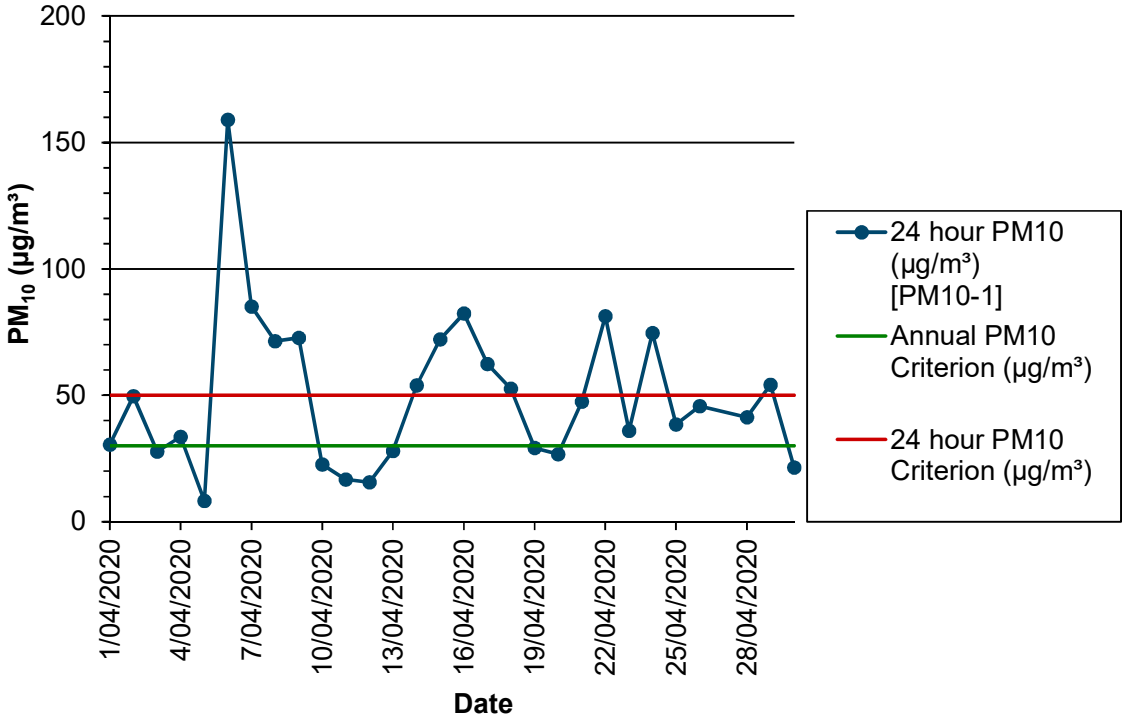


Figure 4: Twenty-four hour PM_{10} concentration (µg/m³) as measured at PM10-1 during April 2020, compared to the annual PM_{10} criterion and 24 hour PM_{10} criterion (µg/m³).

Table 2: Monitoring results for Particulate Matter – PM_{10} monitoring during April 2020. Prevailing wind conditions and climate data were measured at PM10-1. Apparent exceedances of the 24 hour PM_{10} criteria are shaded red. Note that as previously discussed, PM10-1 is not used for compliance monitoring; exceedances of the 24 hour PM_{10} criteria at this monitoring location are shaded orange.

Date	24 hour PM_{10} ($\mu g/m^3$) [PM10-1]	24 hour PM_{10} ($\mu g/m^3$) [PM10-2]	24 hour PM_{10} ($\mu g/m^3$) [Albion Park South]	24 hour PM_{10} Criterion ($\mu g/m^3$)	Mean Wind Speed (m/s)	Mode Wind Direction (°)	Mean Atm. Temp. (°C)	Mean Relative Humidity (%)	Mean Bar. Pressure (mmHg)	Comments
1/04/2020	31		13	50	2.1	ENE	21.4	88	761	PM10-2 malfunctioned in February 2020.
2/04/2020	50		13	50	4.3	N	21.1	90	757	
3/04/2020	28		13	50	3.2	N	21.3	83	753	
4/04/2020	34		9	50	5.4	W	21.0	63	748	
5/04/2020	8		9	50	3.0	W	18.1	49	757	
6/04/2020	159		9	50	2.0	SW	18.3	65	761	
7/04/2020	85		14	50	2.1	SW	17.9	69	764	
8/04/2020	72		11	50	2.0	SSW	16.8	84	765	
9/04/2020	73		8	50	1.9	SSW	19.1	80	767	
10/04/2020	23		7	50	3.7	NNW	18.1	85	760	
11/04/2020	17		8	50	4.8	W	19.5	47	751	
12/04/2020	16		14	50	2.6	SW	16.4	49	758	
13/04/2020	28		15	50	1.8	WSW	16.9	64	763	
14/04/2020	54		27	50	1.6	SSW	18.9	74	765	
15/04/2020	72		35	50	1.8	N	19.7	80	763	
16/04/2020	82		29	50	2.1	NNW	20.7	75	756	
17/04/2020	62		11	50	2.5	W	20.8	49	755	
18/04/2020	53	*<25*	16	50	0.5	N	18.2	52	757	
19/04/2020	29		12	50		N	17.6	69	758	
20/04/2020	27		20	50		N	17.3	70	758	
21/04/2020	48		27	50		N	19.2	63	760	
22/04/2020	81		19	50	0.4	N	20.3	49	760	
23/04/2020	36		25	50	2.4	SW	19.9	68	761	
24/04/2020	75	41	27	50	1.7	N	21.9	53	760	
25/04/2020	38		27	50	2.7	N	20.0	72	762	
26/04/2020	46		22	50	3.1	WNW	20.0	61	758	
27/04/2020			22	50	1.5	SSW	18.7	77	765	
28/04/2020	41		21	50	5.2	NNW	20.0	78	764	
29/04/2020	54		17	50	4.1	N	20.2	84	758	
30/04/2020	21	*<25*	1	50	2.2	W	15.2	81	753	

3.2. Particulate Matter – Total Suspended Particles (TSP)

Total Suspended Particles (TSP) is not currently monitored in the vicinity of the Bass Point Quarry. The SLR Global Environmental Solutions (formerly Heggies Pty Ltd) prepared report *Bass Point Quarry Expansion – Air Quality Impact Assessment* (2010) determined that the approximate PM_{10} to TSP ratio is 36.2% for the Illawarra region.

Hanson are required to report on the annual average TSP concentration for the calendar year, as part of the Environmental Management Annual Review. This annual average TSP data is therefore not required as part of the April 2020 monthly report. However, as a management tool, Hanson have begun calculating the rolling annual average TSP for the monthly air quality reports. In the absence of TSP readings, the 36.2% ratio has been applied to the Albion Park South AQMS rolling annual average 24 hour PM_{10} data (as per the AQMP) for April 2020 (**Table 3**). The rolling annual average TSP is therefore 57.6 µg/m^3; over half of the annual TSP criterion of 90 µg/m^3 identified in Project Approval 08_0143 Schedule 3.

Table 3: Calculation of Rolling Annual Average TSP (µg/m^3) for the month of April 2020.

Rolling annual average 24 hour PM_{10} (µg/m^3) [Albion Park South]	PM_{10} to TSP ratio	Calculated rolling annual average TSP	Annual TSP criterion
20.9 µg/m^3	36.2%	57.6 µg/m^3	90 µg/m^3

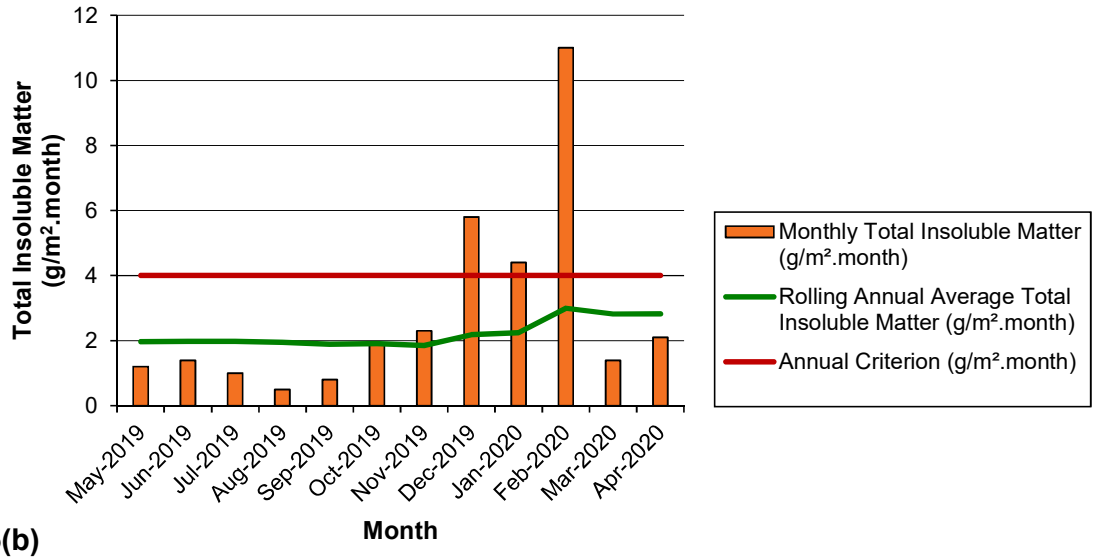
3.3. Dust Deposition Gauges

Monthly analyses of deposited dust samples collected at DDG-1 and DDG-2 are completed by NATA-accredited laboratory ALS Environmental. Monitoring results for the month of April 2020 indicate that dust deposition at DDG-1 and DDG-2 was less than the annual criterion of 4 g/m^2.month identified in Project Approval 08_0143 Schedule 3 and EPL-2193 (**Table 4**, **Figure 5(a)**, **Figure 5(b)**).

Table 4: Monthly Total Insoluble Matter (g/m^2.month) measured at the two Bass Point Quarry Dust Deposition Gauges (DDGs) during the period 13/03/2020 to 14/04/2020 (i.e. April 2020), and calculated rolling annual average Total Insoluble Matter (g/m^2.month).

Site	Monthly Total Insoluble Matter (g/m^2.month)	Rolling Annual Average Total Insoluble Matter (g/m^2.month)	Comments
DDG-1	2.1	2.8	
DDG-2	3.8	9.6	

5(a)



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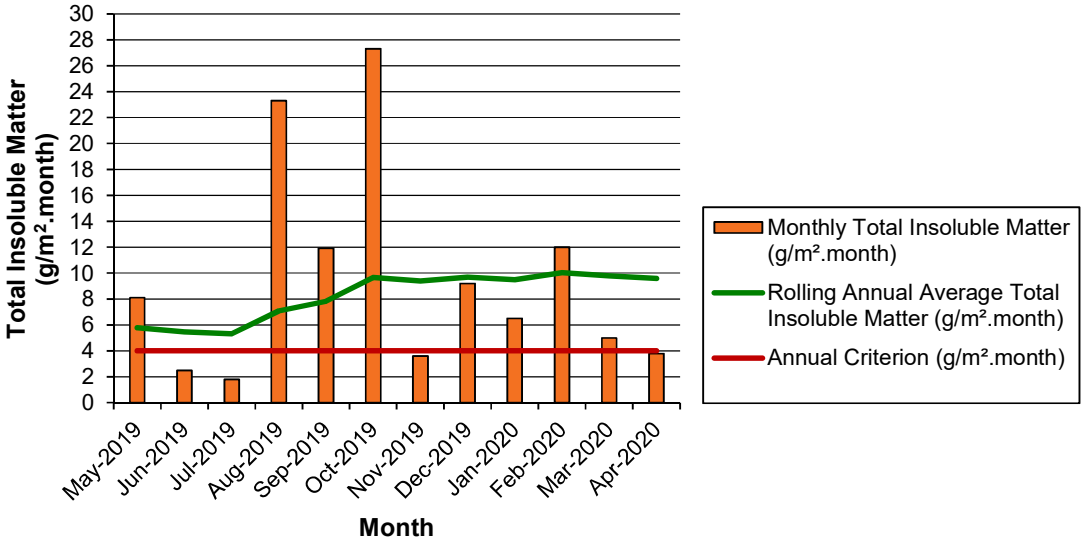


Figure 5: Total Insoluble Matter, rolling annual average, and annual criterion (g/m^2.month) for the Bass Point Quarry as measured at **(a)** DDG-1, and; **(b)** DDG-2; during the 12-month period to April 2020.

4. Representative Meteorological Data

Representative meteorological data has been sourced from the Bureau of Meteorology's (BOM) Kiama (Bombo Headland) Automatic Weather Station (AWS), as per the AQMP.

4.1. Monthly Meteorological Data Summary

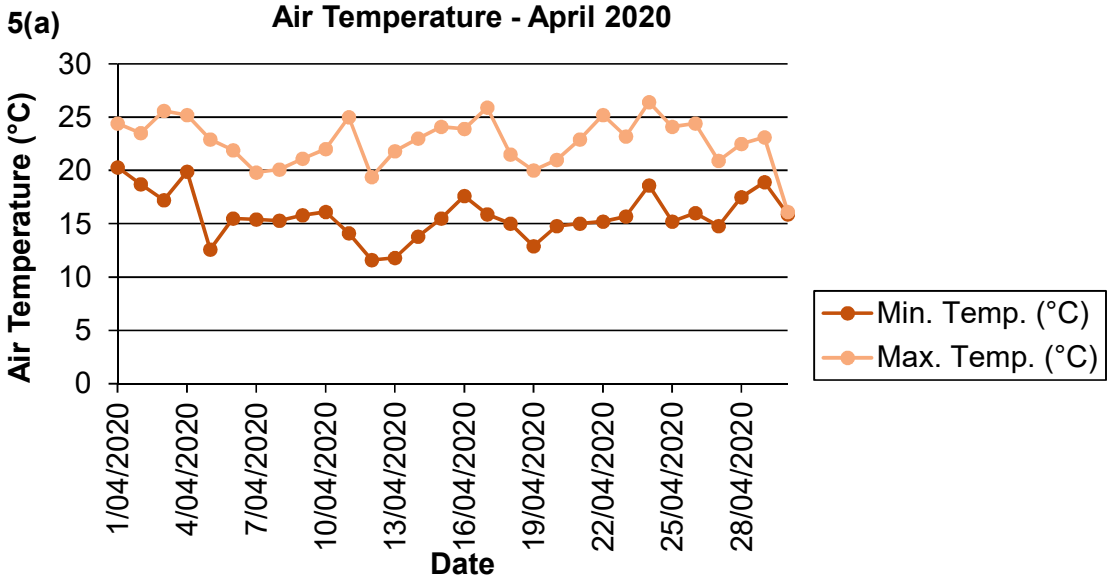
Table 5: Summary of representative meteorological data sourced from the BOM Kiama (Bombo Headland) AWS.

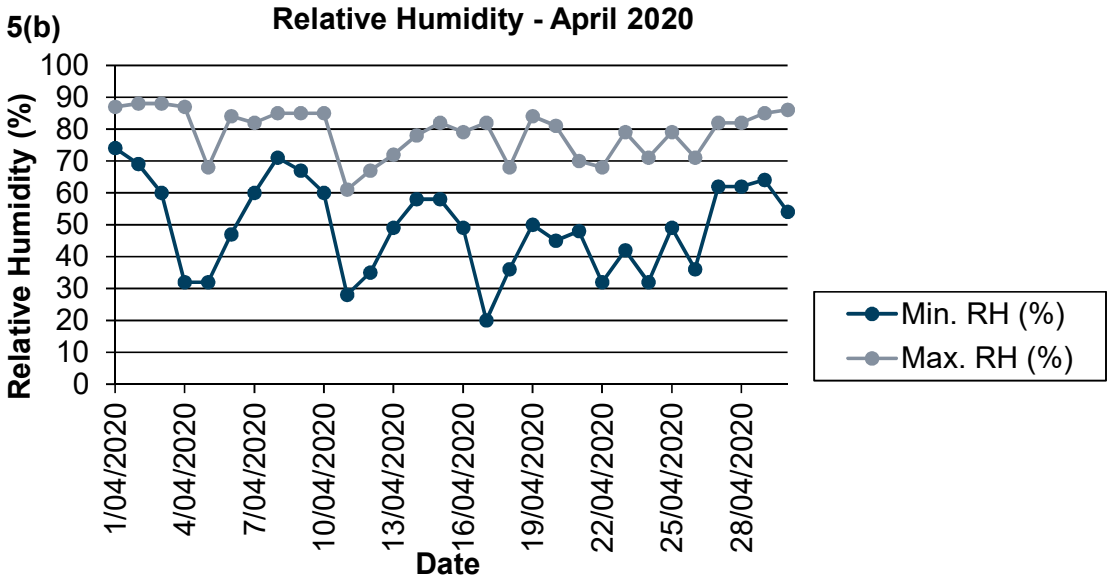
Date	Min. Temp. (°C)	Max. Temp. (°C)	Evapo-Transp. (mm)	Rainfall (mm)	Min. RH (%)	Max. RH (%)	Direction of maximum wind gust	Speed of maximum wind gust (km/h)	Time of maximum wind gust	Average 10 m Wind Speed (m/sec)	Solar Radiation (MJ/sq m)
1/04/2020	20.3	24.4	1.9	0.0	74	87	NNE	31	22:57	3.10	5.76
2/04/2020	18.7	23.5	2.1	5.2	69	88	NNE	39	23:31	3.47	5.84
3/04/2020	17.2	25.6	2.9	5.2	60	88	N	35	21:55	3.13	12.14
4/04/2020	19.9	25.2	4.7	2.4	32	87	NW	67	11:08	5.06	16.50
5/04/2020	12.6	22.9	3.8	0.0	32	68	WSW	35	14:02	2.87	17.82
6/04/2020	15.5	21.9	3.5	0.0	47	84	SSW	43	9:27	4.32	14.78
7/04/2020	15.4	19.8	3.0	0.8	60	82	S	39	6:03	4.07	15.69
8/04/2020	15.3	20.1	1.8	0.2	71	85	S	31	18:11	2.99	5.86
9/04/2020	15.8	21.1	2.8	5.2	67	85	SSE	41	11:05	3.35	15.93
10/04/2020	16.1	22.0	2.3	0.6	60	85	W	41	23:11	3.25	7.78
11/04/2020	14.1	25.0	5.9	6.8	28	61	WSW	69	12:49	6.97	15.36
12/04/2020	11.6	19.4	3.9	0.0	35	67	SW	52	0:19	4.57	16.74
13/04/2020	11.8	21.8	2.7	0.0	49	72	W	17	20:41	2.11	14.87
14/04/2020	13.8	23.0	2.8	0.0	58	78	NNE	17	11:39	2.14	16.40
15/04/2020	15.5	24.1	2.8	0.0	58	82	N	28	15:31	2.06	16.19
16/04/2020	17.6	23.9	2.2	0.0	49	79	S	56	22:45	2.59	2.85
17/04/2020	15.9	25.9	5.3	0.0	20	82	WSW	57	21:13	5.55	15.91
18/04/2020	15.0	21.5	3.8	0.0	36	68	WNW	41	1:10	3.93	15.74
19/04/2020	12.9	20.0	2.7	0.0	50	84	SSE	28	10:16	2.87	14.88
20/04/2020	14.8	21.0	1.9	0.0	45	81	N	22	12:42	2.15	2.89
21/04/2020	15.0	22.9	3.1	0.0	48	70	WNW	28	0:48	2.95	15.03
22/04/2020	15.2	25.2	3.5	0.0	32	68	SSW	31	10:49	2.59	15.09
23/04/2020	15.7	23.2	3.2	0.0	42	79	SSW	35	2:12	3.05	14.45
24/04/2020	18.6	26.4	3.2	0.0	32	71	WSW	30	10:03	2.06	14.77
25/04/2020	15.2	24.1	3.0	0.0	49	79	NNE	41	14:32	2.86	14.67
26/04/2020	16.0	24.4	3.2	0.0	36	71	WSW	46	16:47	3.59	4.74
27/04/2020	14.8	20.9	2.1	0.0	62	82	S	20	0:01	2.14	11.78
28/04/2020	17.5	22.5	2.6	1.0	62	82	N	48	16:48	4.10	9.89
29/04/2020	18.9	23.1	2.3	0.0	64	85	N	37	19:26	3.96	6.56
30/04/2020	15.9	16.1	1.6	8.6	54	86	WSW	48	23:42	3.21	1.00

Monthly	Min. Temp. (°C)	Max. Temp. (°C)	Evapo-Transp. (mm)	Rainfall (mm)	Min. RH (%)	Max. RH (%)	Direction of maximum wind gust	Speed of maximum wind gust (km/h)	Time of maximum wind gust	Average 10 m Wind Speed (m/sec)	Solar Radiation (MJ/sq m)
Mean	15.8	22.7	3.0	1.2	49	79	-	38	-	3.37	11.93
Lowest	11.6	16.1	1.6	0.0	20	61	W / NNE	17	20:41 / 11:39	2.06	1.00
Highest	20.3	26.4	5.9	8.6	74	88	WSW	69	12:49	6.97	17.82
Total	-	-	90.6	36.0	-	-	-	-	-	-	-

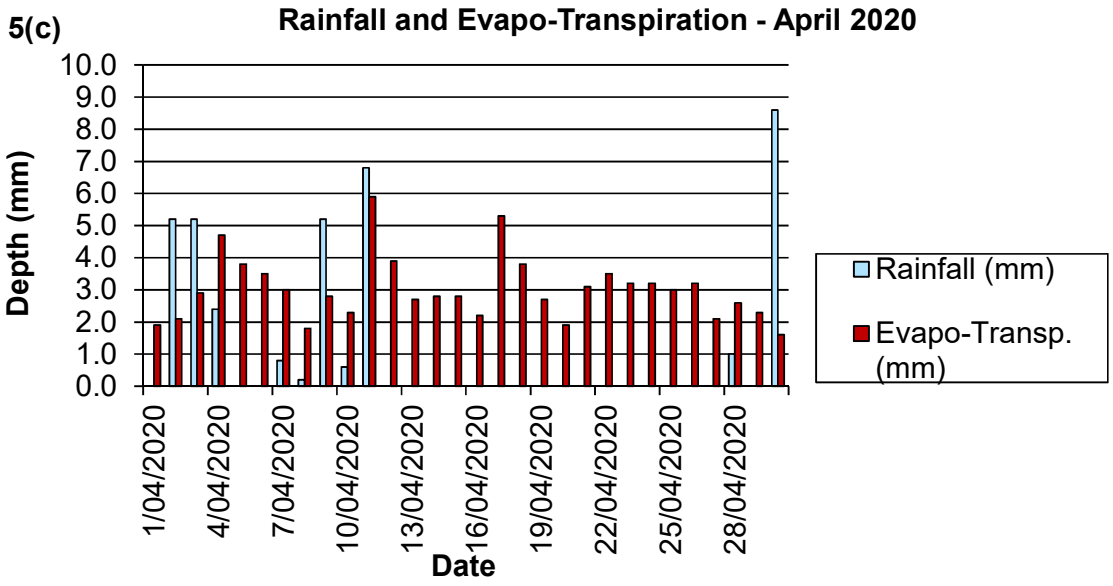
4.2. Monthly Weather Charts

Figure 6: Summary of representative meteorological data sourced from the BOM Kiama (Bombo Headland) AWS for **(a)** Air Temperature; **(b)** Relative Humidity; **(c)** Rainfall and Evapo-Transpiration; and, **(d)** Wind Speed and Direction. Note that wind speed and direction data was sourced from PM10-1.

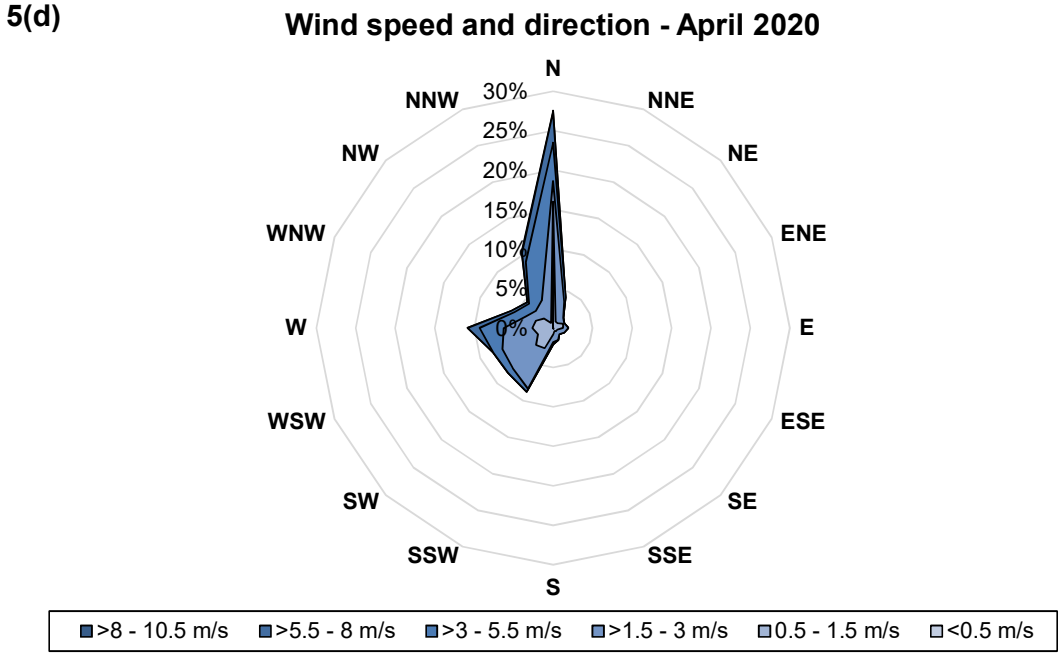




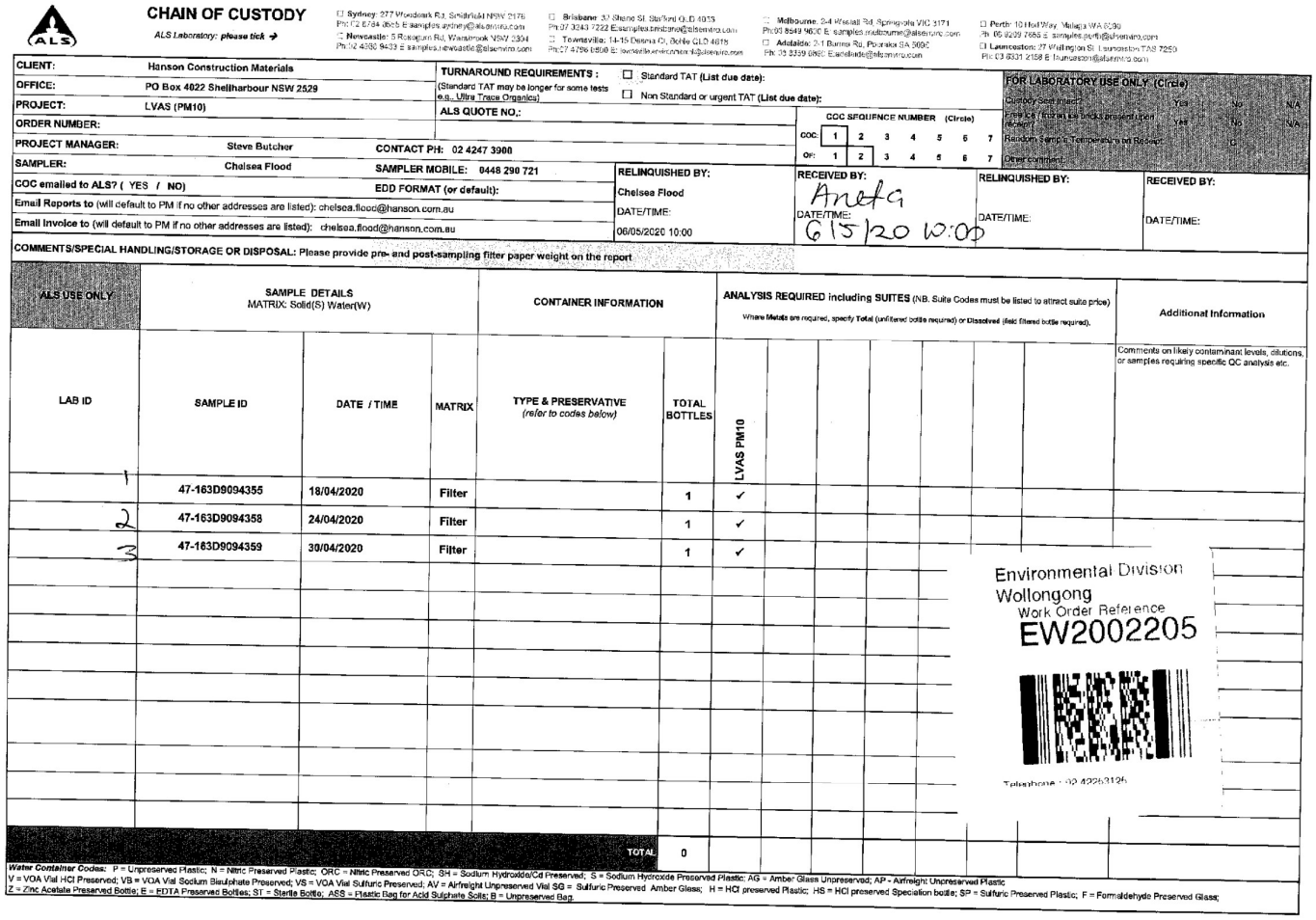
5(c)


Rainfall and Evapo-Transpiration - April 2020
Depth (mm)
10.0
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
1/04/2020
4/04/2020
7/04/2020
10/04/2020
13/04/2020
16/04/2020
19/04/2020
22/04/2020
25/04/2020
28/04/2020
Date
Rainfall (mm)
Evapo-Transp. (mm)

5(d)


Wind speed and direction - April 2020
N
NNE
NE
ENE
E
ESE
SE
SSE
S
SSW
SW
WSW
W
WNW
NW
NNW
30%
25%
20%
15%
10%
5%
0%
>8 - 10.5 m/s
>5.5 - 8 m/s
>3 - 5.5 m/s
>1.5 - 3 m/s
0.5 - 1.5 m/s
<0.5 m/s

Appendix 1
Chain of Custody & Laboratory Certificates



CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E: samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph: 02 4958 9433 E: samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph: 07 3243 7222 E: samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph: 07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 24 Westall Rd, Springvale VIC 3171 Ph: 03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 21 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E: adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	Hanson Construction Materials	**TURNAROUND REQUIREMENTS :** (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date):
OFFICE:	PO Box 4822 Shellharbour NSW 2529		☐ Non Standard or urgent TAT (List due date):
PROJECT:	LVAS (PM10)	**ALS QUOTE NO.:**	
ORDER NUMBER:			
PROJECT MANAGER:	Steve Butcher	**CONTACT PH:** 02 4247 3900	
SAMPLER:	Chelsea Flood	**SAMPLER MOBILE:** 0448 290 721	
COC emailed to ALS? (YES / NO)		**EDD FORMAT (or default):**	
Email Reports to (will default to PM if no other addresses are listed):	chelsea.flood@hanson.com.au		
Email Invoice to (will default to PM if no other addresses are listed):	chelsea.flood@hanson.com.au		

COC SEQUENCE NUMBER (Circle)
COC: 1 2 3 4 5 6 7
OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY: (Circle)
Custody Seal Intact? Yes No N/A
Free Ice / Frozen Ice Packs present Upon Receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comments:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Chelsea Flood	Anela		
DATE/TIME: 06/05/2020 10:00	DATE/TIME: 6/5/20 10:00	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL: Please provide pre- and post-sampling filter paper weight on the report

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).							Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	LVAS PM10							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	47-163D9094355	18/04/2020	Filter		1	✓							
2	47-163D9094358	24/04/2020	Filter		1	✓							
3	47-163D9094359	30/04/2020	Filter		1	✓							
				TOTAL	0								

Environmental Division
Wollongong
Work Order Reference
EW2002205

Telephone : +61 4226 3125

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP = Airfreight Unpreserved Plastic; V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass; Z = Zinc Acetate Preserved Bottle; E = EDTA Preserved Bottles; ST = Sterile Bottle; ASS = Plastic Bag for Acid Sulphate Soils; B = Unpreserved Bag.

ENFM 204

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW2002205**	Page	: 1 of 2
Client	: **HANSON CONSTRUCTION MATERIALS PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR STEVE BUTCHER	Contact	: Glenn Davies
Address	: BOOLLWARROO PDE SHELLHARBOUR NSW, AUSTRALIA 2529	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 4295 1355	Telephone	: 02 42253125
Project	: LVAS	Date Samples Received	: 06-May-2020 11:29
Order number	: ----	Date Analysis Commenced	: 12-May-2020
C-O-C number	: ----	Issue Date	: 15-May-2020 15:49
Sampler	: ----		
Site	: ----		
Quote number	: EN/333		
No. of samples received	: 3		
No. of samples analysed	: 3		

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*
Joel Mullarvey	Laboratory Technician	Newcastle - Inorganics, Mayfield West, NSW
Joel Mullarvey	Laboratory Technician	Newcastle, 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.

- **Analytical work for this work order will be conducted at ALS Newcastle.**
- NATA accreditation is not held for results reported in µg/m³. Air volume data was provided by the client.
- EA143-LV: Reporting of 'Initial' and 'Final' weights to 0.0001mg not covered by scope of NATA accreditation.
- The variation in LOR for µg/m³ results is due to the variation in sample volumes.

Analytical Results

Sub-Matrix: **FILTER** (Matrix: **AIR**)			Client sample ID	47-163D9094355 47-163D9094355	47-163D9094358 47-163D9094358	47-163D9094355 47-163D9094359	----	----
			Client sampling date / time	18-Apr-2020 15:00	24-Apr-2020 15:00	30-Apr-2020 15:00	----	----
Compound	CAS Number	LOR	Unit	EW2002205-001	EW2002205-002	EW2002205-003	-------	-------
				Result	Result	Result	---	---
EA143: Particulates in Air - LVAFs								
^ ø**PM10**	----	14	µg/m³	<25	41	<25	----	----
PM10 (mass per filter)	----	100	µg/filter	<100	162	<100	----	----
EA143: Total Suspended Particulates								
Initial Weight	----	0.0001	mg	165.4879	159.0479	160.1927	----	----
Final Weight	----	0.0001	mg	165.5751	159.2097	160.2389	----	----
Low Volume Air-Sampling Parameters								
ø **Volume**	----	1	L	4020	3980	4040	----	----

CHAIN OF CUSTODY

ALS Laboratory: please tick →

☐ Sydney: 277 Woodpark Rd, Smithfield NSW 2176 Ph: 02 8784 8555 E:samples.sydney@alsenviro.com
☐ Newcastle: 5 Rosegum Rd, Warabrook NSW 2304 Ph:02 4968 9433 E:samples.newcastle@alsenviro.com
☐ Brisbane: 32 Shand St, Stafford QLD 4053 Ph:07 3243 7222 E:samples.brisbane@alsenviro.com
☐ Townsville: 14-15 Desma Ct, Bohle QLD 4818 Ph:07 4796 0600 E: townsville.environmental@alsenviro.com
☐ Melbourne: 2-4 Westall Rd, Springvale VIC 3171 Ph:03 8549 9600 E: samples.melbourne@alsenviro.com
☐ Adelaide: 2-1 Burma Rd, Pooraka SA 5095 Ph: 08 8359 0890 E:adelaide@alsenviro.com
☐ Perth: 10 Hod Way, Malaga WA 6090 Ph: 08 9209 7655 E: samples.perth@alsenviro.com
☐ Launceston: 27 Wellington St, Launceston TAS 7250 Ph: 03 6331 2158 E: launceston@alsenviro.com

CLIENT:	Hanson Construction Materials	TURNAROUND REQUIREMENTS: (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
OFFICE:	Boollwarroo Pde Shellharbour NSW 2529		
PROJECT:	Bass Point Dust Monitoring	ALS QUOTE NO.:	WL/043/11
ORDER NUMBER:			
PROJECT MANAGER:	Steve Butcher	CONTACT PH:	02 4295 1352
SAMPLER:		SAMPLER MOBILE:	
COC emailed to ALS? (YES / NO)		EDD FORMAT (or default):	
Email Reports to :	steve.butcher@hanson.com.au		
Email Invoice to :	steve.butcher@hanson.com.au		

COC SEQUENCE NUMBER (Circle): COC: 1 2 3 4 5 6 7; OF: 1 2 3 4 5 6 7

FOR LABORATORY USE ONLY (Circle)
Custody Seal Intact? Yes No N/A
Free ice / frozen ice bricks present upon receipt? Yes No N/A
Random Sample Temperature on Receipt: °C
Other comment:

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Robert ,	Anett		
DATE/TIME: 14.4.20 15:20	DATE/TIME: 14.4.20	DATE/TIME:	DATE/TIME:

COMMENTS/SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS MATRIX: Solid(S) Water(W)			CONTAINER INFORMATION		ANALYSIS REQUIRED including SUITES (NB. Suite Codes must be listed to attract suite price) Where Metals are required, specify Total (unfiltered bottle required) or Dissolved (field filtered bottle required).								Additional Information
LAB ID	SAMPLE ID	DATE / TIME	MATRIX	TYPE & PRESERVATIVE (refer to codes below)	TOTAL BOTTLES	A04-3 (Total Insoluble Solids, Ash, Combustibles)								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
1	DDG 1	14.4.20 10:18	AIR	AG	1	✓								
2	DDG 2	9:05	AIR	AG	1	✓								
3	DDG 3	9:25	AIR	AG	1	✓								
				TOTAL	3									

Environmental Division Wollongong
Work Order Reference
EW2001891

Telephone : 02 4225 3125

Water Container Codes: P = Unpreserved Plastic; N = Nitric Preserved Plastic; ORC = Nitric Preserved ORC; SH = Sodium Hydroxide/Cd Preserved; S = Sodium Hydroxide Preserved Plastic; AG = Amber Glass Unpreserved; AP - Airfreight Unpreserved Plastic
V = VOA Vial HCl Preserved; VB = VOA Vial Sodium Bisulphate Preserved; VS = VOA Vial Sulfuric Preserved; AV = Airfreight Unpreserved Vial SG = Sulfuric Preserved Amber Glass; H = HCl preserved Plastic; HS = HCl preserved Speciation bottle; SP = Sulfuric Preserved Plastic; F = Formaldehyde Preserved Glass;
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ENFM 204

ALS Environmental

CERTIFICATE OF ANALYSIS

Work Order	: **EW2001891**	Page	: 1 of 2
Client	: **HANSON CONSTRUCTION MATERIALS PTY LTD**	Laboratory	: Environmental Division NSW South Coast
Contact	: MR STEVE BUTCHER	Contact	: Glenn Davies
Address	: BOOLLWARROO PDE SHELLHARBOUR NSW, AUSTRALIA 2529	Address	: 1/19 Ralph Black Dr, North Wollongong 2500 4/13 Geary Pl, North Nowra 2541 Australia NSW Australia
Telephone	: +61 02 4295 1355	Telephone	: 02 42253125
Project	: Bass Point Dust Monitoring	Date Samples Received	: 14-Apr-2020 15:40
Order number	: 4502712277	Date Analysis Commenced	: 16-Apr-2020
C-O-C number	: ----	Issue Date	: 22-Apr-2020 16:34
Sampler	: Robert DaLio		
Site	: ----		
Quote number	: WL/043/11 Bass Point Dust Monitoring		
No. of samples received	: 3		
No. of samples analysed	: 3		

ilac-MRA NATA

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

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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*
Jennifer Targett	Quality Coordinator	Newcastle - Inorganics, Mayfield West, NSW

RIGHT SOLUTIONS | RIGHT PARTNER

General Comments

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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 work for this work order will be conducted at ALS Newcastle.**
- Analysis as per AS3580.10.1-2016. Samples passed through a 1mm sieve prior to analysis. NATA accreditation is not held for results reported in g/m².mth.
- Sampling completed as per FWI-EN010 Sampling of Dust Depositon Gauges.

Analytical Results

Sub-Matrix: **DEPOSITIONAL DUST** (Matrix: **AIR**)			Client sample ID	DDG 1 13/03/2020 - 14/04/2020	DDG 2 13/03/2020 - 14/04/2020	DDG 3 13/03/2020 - 14/04/2020	----	----
			Client sampling date / time	14-Apr-2020 10:18	14-Apr-2020 09:05	14-Apr-2020 09:25	----	----
Compound	CAS Number	LOR	Unit	EW2001891-001	EW2001891-002	EW2001891-003	--------	--------
				Result	Result	Result	—	—
EA120: Ash Content								
Ash Content	----	0.1	g/m².month	1.7	3.7	3.0	----	----
Ash Content (mg)	----	1	mg	32	70	62	----	----
EA125: Combustible Matter								
Combustible Matter	----	0.1	g/m².month	0.4	0.1	0.8	----	----
Combustible Matter (mg)	----	1	mg	7	1	16	----	----
EA141: Total Insoluble Matter								
Total Insoluble Matter	----	0.1	g/m².month	2.1	3.8	3.8	----	----
Total Insoluble Matter (mg)	----	1	mg	39	71	78	----	----