JULY DUST MONITORING REPORT
CONCRUSH FACILITY, TERALBA

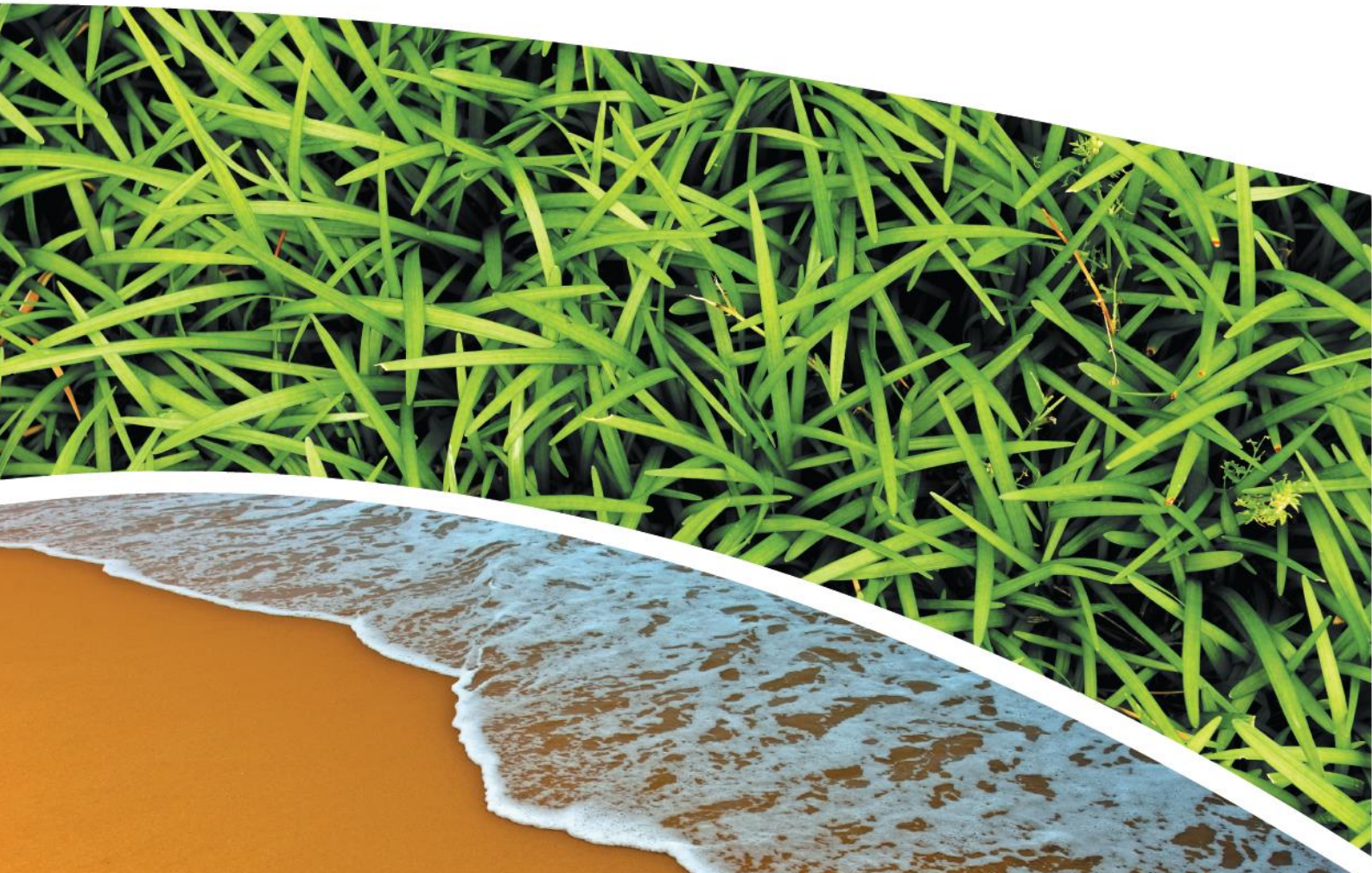
Prepared for CONCRUSH PTY LTD

Prepared by RCA Australia

RCA ref 13001a-415/0

AUGUST 2021

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL



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Contents

RCA ref 13001a-415/0

26 August 2021

Concrush Pty Ltd
21 Racecourse Road
Teralba NSW 2284

Attention: Mr Kevin Thompson

RCA AUSTRALIA
GEOTECHNICAL • ENVIRONMENTAL

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JULY DUST MONITORING REPORT
CONCRUSH FACILITY, TERALBA

1 INTRODUCTION

This report presents the findings of dust monitoring undertaken at the Concrush resource recovery facility, situated in Teralba.

The site is an operational facility over approximately half of the monitored area; the remainder of the site is currently vacant land and has been approved for an expansion to the operations. At the time of site attendance there had been works undertaken on the expansion component of the site comprising the removal of vegetation, grading of the site including placement of material recovered from excavations as part of the development including excavation of a proposed sediment basin. Soil has been placed on the expansion component of the site from an excavation of a further sediment basin on the existing portion of the site.

The monitoring undertaken has been detailed in an Operational Air Quality Management Plan (OAQMP, Ref [1]) which has been submitted as part of the approval process.

2 SITE IDENTIFICATION AND DESCRIPTION

The site is described as at 21 Racecourse Road, Teralba and part Lot 2, DP 220347. Additional site details are shown in **Table 1** and the site extent is shown in **Figure 1** below.

Table 1 *Site Details*

Current zoning (Ref [2])	IN1 – General Industrial
Current and proposed use	Current: Existing Concrush facility and vacant/unused land within the proposed expansion area Proposed: Expanded Concrush facility over entire portion of site.
Size of site	Approximately 4.8ha (existing Concrush facility 2.4ha)
Surrounding land use to the: **North**	Lot 1 DP220347 Industrial – car wreckers operated by others.
South	Part of Lot 2 DP220347 Industrial – scrap metal recycling yard operated by others
East	Racecourse Road and then Cockle Creek
West	Main Northern Rail line and then wetlands
Nearest sensitive receptor (human health)	Residential housing located approximately 360m south east across Cockle Creek.
Nearest sensitive receptor (environmental)	Cockle Creek located approximately 35m east and wetland approximately 30m west

Figure 1 *Project Site Location and Layout*

3 MONITORING DETAILS

A total of five (5) monitoring locations are situated on site as shown in **Figure 2** below. At four (4) of these locations (DG1-DG4) there are dust depositional bottles situated on stands installed in accordance with the relevant Australian Standard (Ref [3]). An additional, singular, dust gauge (DG5A) and a real time dust monitor are situated on the southern portion of the roof of the office adjacent to the weigh station.

Figure 2 *Approximate Placement of Dust Deposition Gauges and Real Time Monitor.*

Prior to the April monitoring round there were 'B' gauges that were managed by Concrush personnel to specifically monitor only the times that the Concrush facility is operational. A decision was made by Concrush management to cease the 'B' gauge monitoring due to inconsistent results through previous monitoring periods.

3.1 GUIDELINES

The NSW EPA guidelines (Ref [4]) nominates the criteria for depositional dust as detailed in **Table 2** below.

Table 2 *Depositional Dust: Impact Assessment Criteria*

Average Period	Maximum increase in deposited dust level	Maximum total deposited dust level	Sampling Frequency
Annual	2 g/m^2 /month	4 g/m^2/month	Monthly

The NSW EPA guidelines (Ref [4]) nominate additional criteria:

- $PM_{2.5}$ daily average 0.025mg/m^3, annual average 0.008 mg/m^3.
- PM_{10} daily average 0.05 mg/m^3, annual average 0.025 mg/m^3.
- TSP_{annual} average 0.09 mg/m^3.

It is noted that there is no relevant Australian Standard for the methodology employed by the real time monitor, nor is the methodology included in the NSW EPA guidelines (Ref [5]); however, concentrations recorded by the real time monitor are considered appropriate for comparative purposes to trigger a review of dust control measures.

3.2 WEATHER

The real time dust monitors recorded conditions every five (5) minutes[1] continuously Fthrough until the end of the month. The monitor provides data with regards to wind direction and speed, air temperature, relative humidity and air pressure. Of note: the real time dust monitor malfunctioned in June such that data recording was stopped; this was rectified part the way through July with the first recording taken at 3:10 p.m. 12th July 2021. Recording stopped after 4:10 p.m. on the 25th July and recommenced at 3:27 p.m. on the 28th July and continued until the end of the month with no further issues.

A summary of the July results is presented in **Table 3** below and **Figure 3**.

Table 3 *July Weather Summary Data*

	Maximum (date and time)	Minimum (date and time)
Wind Speed (m/s)	8.46 (17th July 3:00 p.m.)	0 (Multiple occasions)
Air Temperature (°C)	24.1 (28th July 3:27 p.m)	1 (6:55 a.m.,7:50 a.m.)
Relative Humidity (%)	100 (multiple occasions)	26.5 (30th July 3:30 p.m.)
Air Pressure (mBar)	1020.9 (30th July 9:15 a.m., 9:25 a.m.)	994.4 (16th July, 12:50 p.m., 1:05 p.m.)

[1] Data was not recorded at midnight for any of the days within the monitoring period.

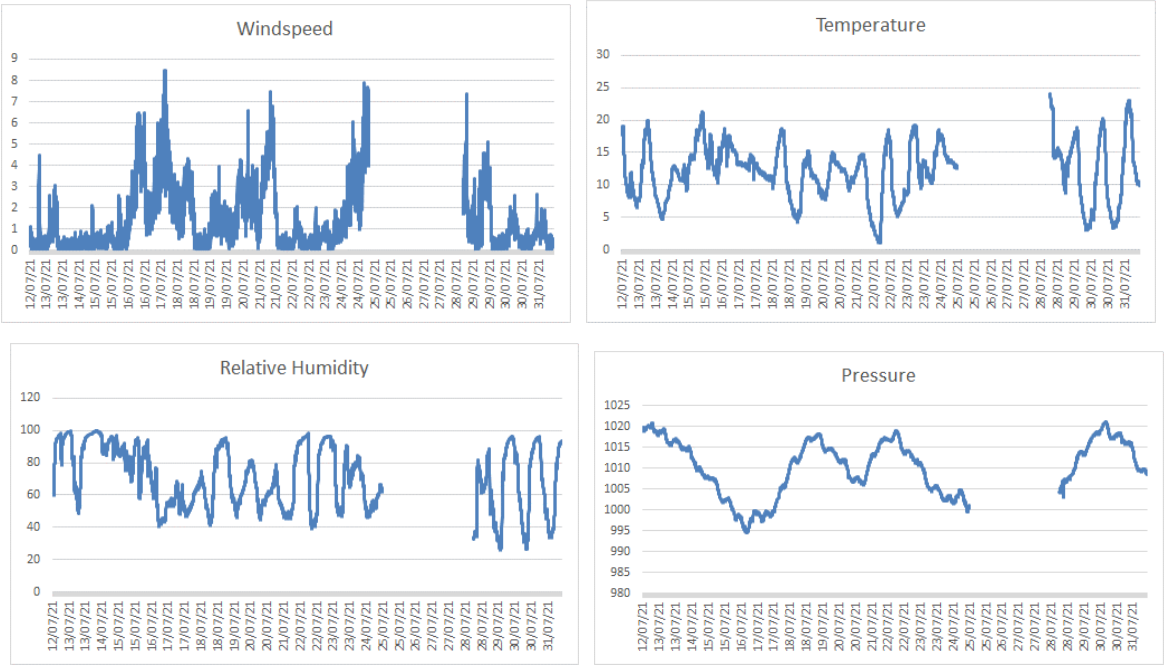

Figure 3 *Weather Summary 12th July – 31st July (noting missing data)*

The wind speed was below the 8m/s (18km/h, Ref [1]) threshold for application of dust suppression measures for the period of the monitoring period (12th July to 31st of July 2021).

The winds were predominantly from the north and west with the highest winds from the north west north and west. The wind rose for the monitoring period is shown as **Figure 4**.

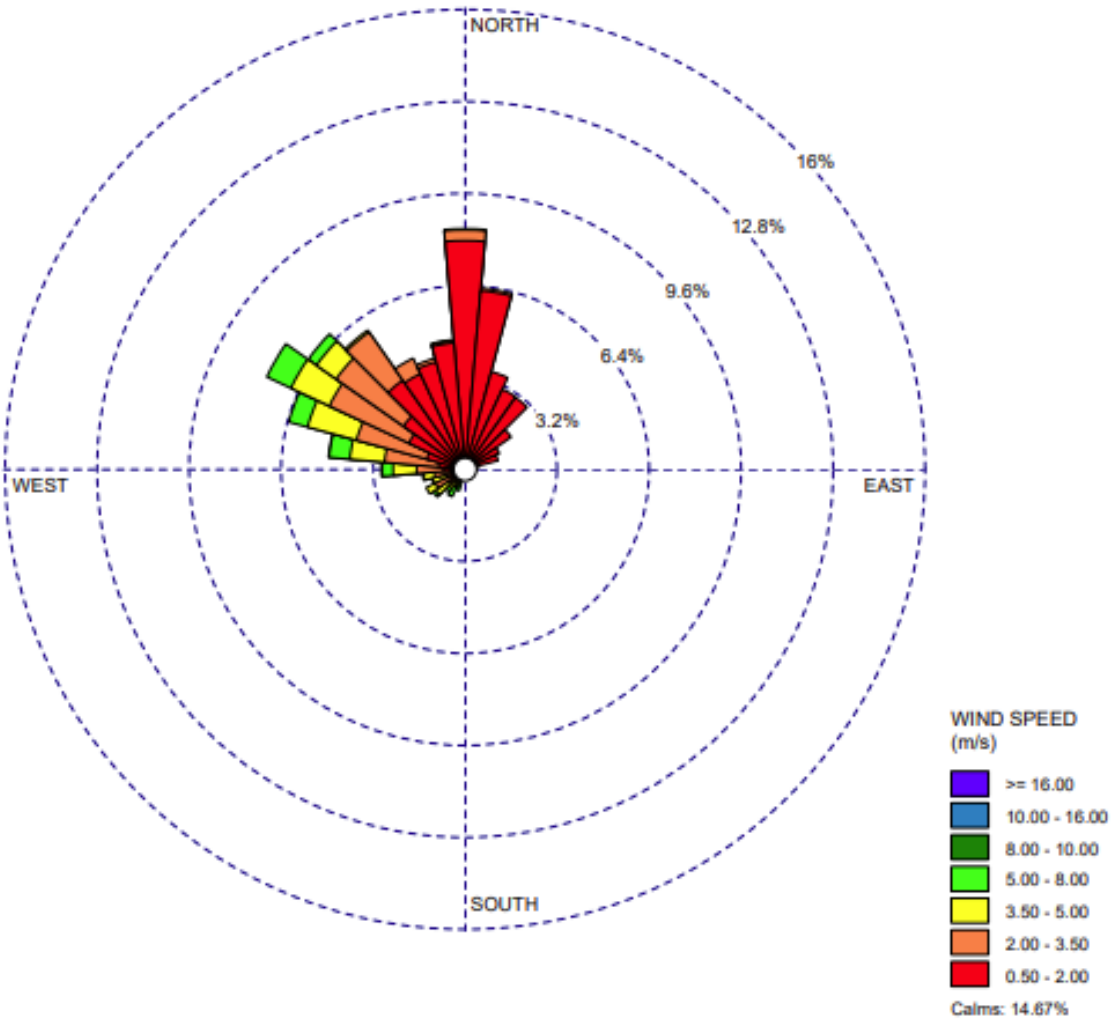

Figure 4 *Wind Rose 12th July – 31st July*

4 MONITORING RESULTS

4.1 DEPOSITIONAL DUST GAUGES

RCA collected the bottles from 7:05 a.m. to 10:30 a.m. on the 31st of July 2021 which was the 31st day following the previous collection of the gauges on the 30th of June 2021. All gauges and funnels were observed to be unbroken. The field sheet is included as **Appendix A**.

The results of the monitoring at each of the locations for this month is presented below in Error! Reference source not found.. Laboratory report sheets are included in **Appendix B** .

Table 4 *July Dust Monitoring Results*

	Water Volume (mL)	Insoluble Solids (g/m^2)	Ash (g/m^2)	Combustible Matter (g/m^2)
DG1A	300	**4.4**	3.0	1.4
DG2A	500	0.9	0.6	0.3
DG3A	500	0.7	0.5	0.2
DG4A	460	2.9	2.1	0.8
DG5A	480	0.8	0.6	0.2

BOLD identifies where results of the 'A' gauges are in excess of annual average criterion (Ref [4]) which does not apply to individual results.

All concentrations of the 'A' gauges are below the rolling annual (August 2020 to July 2021) average criterion (Ref [4]), as shown on **Figure 5** below. Concentrations at four (4) of the locations have decreased compared to the previous rounds; the concentration in D4A has increased, potentially due to excavation works being undertaken in proximity to the gauge. The July concentrations at D1A remain over the annual average Ref [4]) noting that the criterion (Ref [4]) does not apply to individual results. Of note: D5A has not been monitored for the entire year, being installed prior to the January 2021 monitoring round, with the current annual average below the annual average criterion (Ref [4]).

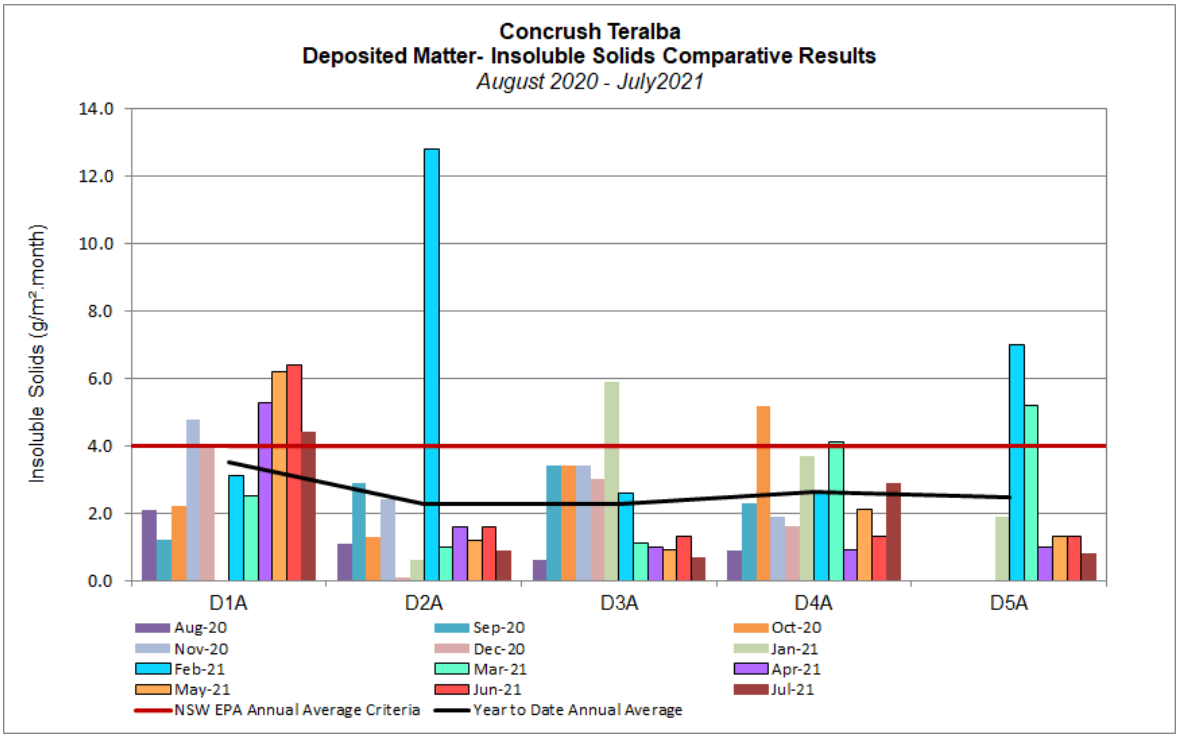

Figure 5 *Year to Date Dust Monitoring Results*

The majority of detected insoluble solids are related to 'ash' which comprises non-combustible matter and would include the types of particles that may originate from the Concrush site however would also be present in dust from other sources. Some coal dust, such as may be originating from adjacent sites, may also remain in the 'ash' component of the sample.

It is noted that Concrush personnel have previously observed birds ('willy wagtails') using the gauges as baths and this may have had some impact on the water and dust content of the gauges.

4.2 REAL TIME DUST MONITOR

The real time dust monitors recorded conditions every five (5) minutes continuously through until the end of the month. The monitor provides data with regards to $PM_{2.5}$, PM_{10} and PM_{total}. The PM_{total} concentration has been compared to the TSP annual average criterion.

A summary of the July results is presented in **Table 5** below and **Figure 6** below presents the $PM_{2.5}$ and PM_{10} data. Noting that the results have been not obtained by a listed approved method for air quality (Ref [5]) and not considered directly comparable with criteria (Ref [4]):

- The daily average of $PM_{2.5}$ for the period 12th July – 31st July is below the relevant criteria (Ref [4]).
- There were two (2) PM_{10} daily averages for the period 12th July – 31st July in excess of the relevant criteria.
- The annual average of the data for the period 12th July – 31st July is less than the relevant annual average criteria (Ref [4]) for $PM_{2.5}$, PM_{10} and PM_{total}.

Table 5 *July 12th to 31st Particle Summary Data*

	Maximum (date and time)	**Minimum (date and time)**	**Maximum Daily Average**
$PM_{2.5}$	0.114 (14th July 1:50p.m.)	0 (multiple occasions)	0.0059 (29th July)
PM_{10}	1.142 (21st July 2:20 p.m.)	0 (multiple occasions)	**0.073** (25th July)
PM_{total}	2.038 (21st July 2:40 p.m.)	0.008 (12th July 5:30 p.m.)	0.049 (24th July)

BOLD identifies where results are in excess of criteria (Ref [4]).

Concentrations in mg/m^3

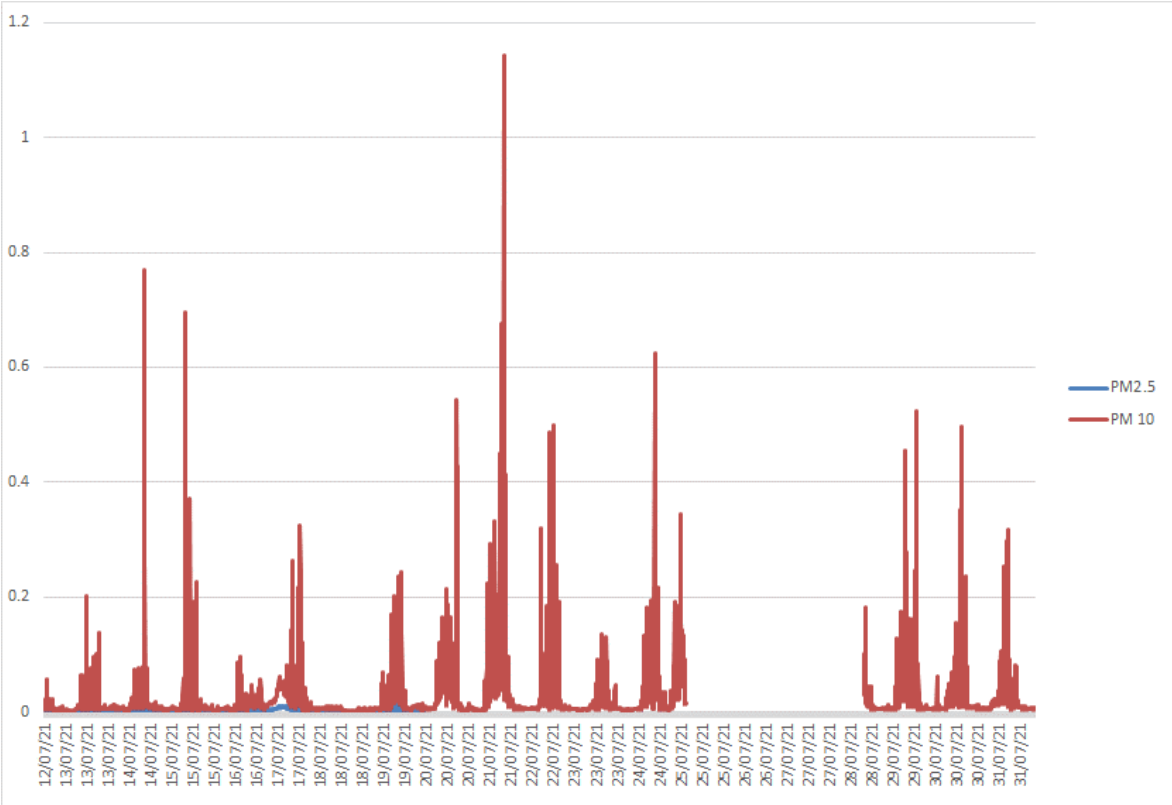

Figure 6 *$PM_{2.5}$ and PM_{10} 12th July – 31st July*

PM_{10} is the dominant particle size of those monitored by the real time monitor.

A summary of the July PM_{10} results in 15 minutes increments is presented **Figure 7** noting that this increment correlates with the alarms set to notify Concrush of:

- PM_{10} >0.05 mg/m^3
- Wind speed >5m/s.

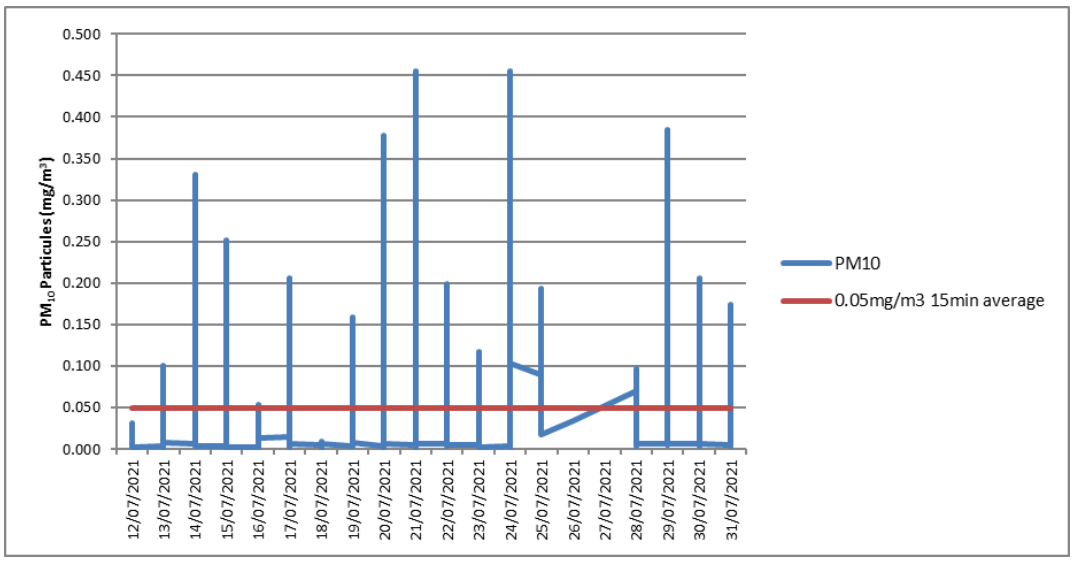

Figure 7 *PM_{10} 15 Minute Daily Average 12th July – 31st July (noting missing data)*

The PM_{10} 15 minutes daily average appears to coincide with the maximum and minimum 5 minutes data with the highest 15 minutes average recorded on the 21st July and lowest recorded on 12th July.

The data has also been graphed for an eight (8) hour average based on a work day cycle and a twenty-four (24) hour average in **Figure 8** and **Figure 9** below.

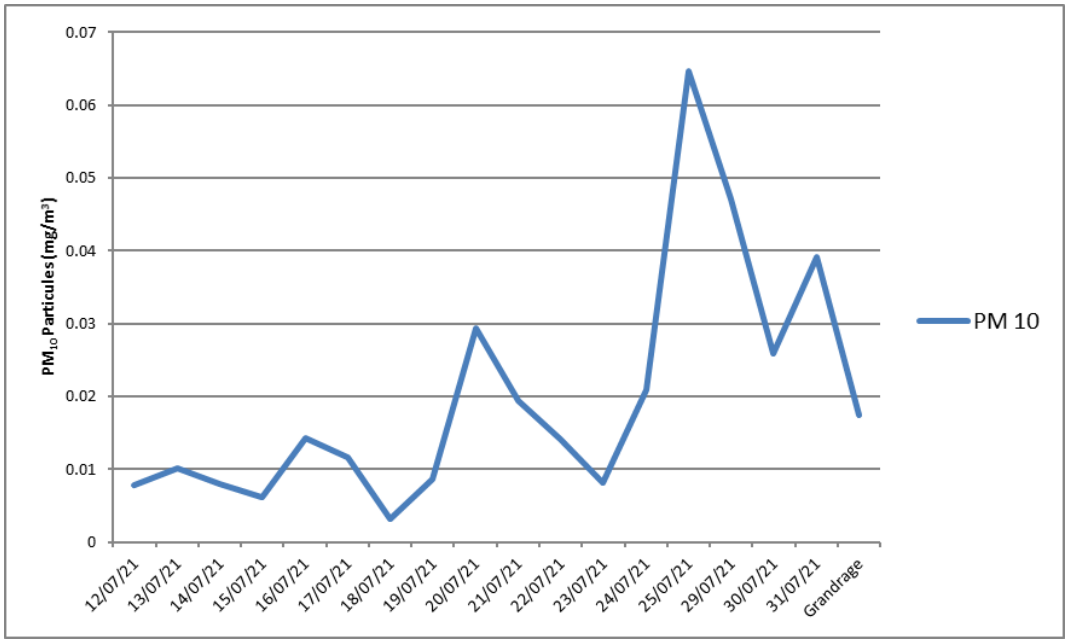

Figure 8 *PM_{10} 8 Hour Average 12st July – 31st July (noting missing data)*

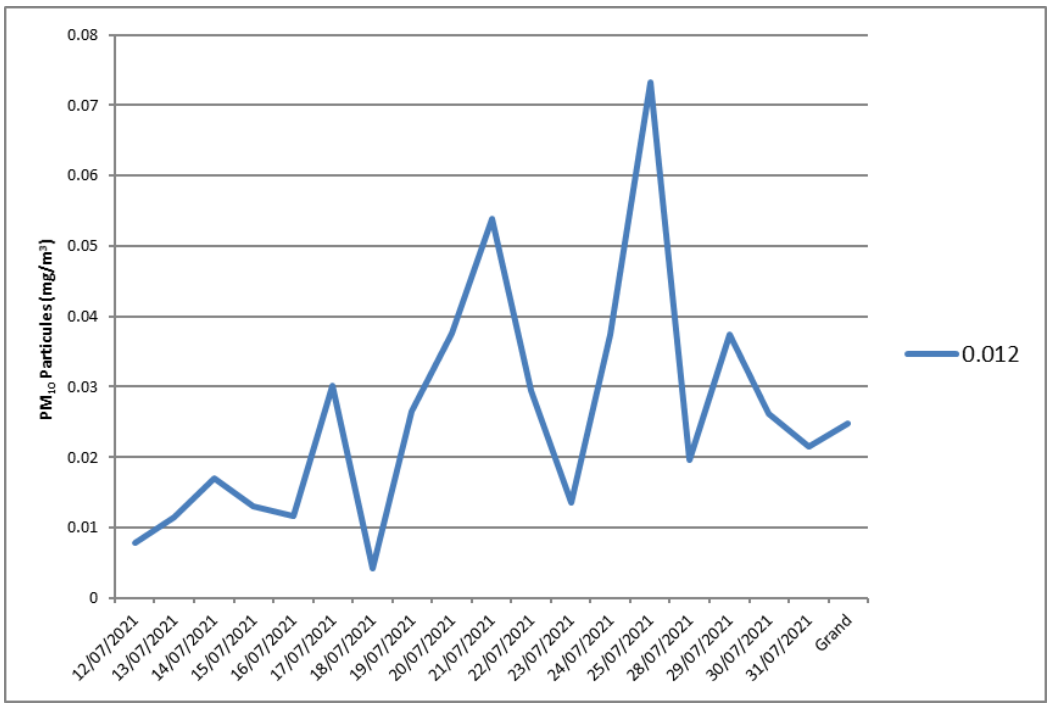

Figure 9 *PM_{10} 24 Hour Average 12st July – 31st July*

The higher PM_{10} 8 hours average and 24 hours average appear to coincide with lower relative humidity and slightly higher wind speeds, with the wind direction primarily a northerly origin during the higher recording within the limited July monitoring period.

5 ASSESSMENT OF DUST MANAGEMENT EFFECTIVENESS

The monitoring data for the month of July indicates some uncertainty with regards to the effectiveness of dust controls. It is noted that the OAQMP (Ref [1]) has not yet been fully implemented as the expansion component of the site has not yet been commenced.

All the depositional dust gauges indicate results which are below the relevant criterion (Ref [4]) however the annual average in 1A shows an increasing trend and may exceed the criterion (Ref [4]) in the future.

The real time monitor, which does not use a NSW EPA approved (Ref [5]) sampling methodology, indicated that was two (2) any periods which were in excess of the 24hr average criterion (Ref [4]) for PM_{10} in the period of July which were measured. It is noted that rainfall data was recorded at Nobbys Head on about a third of the days in July, some of which were very small quantities and as such it is considered that there would be an increased potential for dust generation at the site. However due to the malfunction with the monitor, there is insufficient data to provide comment on the effectiveness of on site dust control measures during July.

RCA's observations on the 31st of July regarding site activities that are associated with dust generation and suppression were:

- Movement of aggregate by frontend loader, excavators and trucks.
- Spraying of roads and stockpiles were not undertaken due to wet weather prior to site attendance by RCA personnel.

RCA observed some dust during the time of fieldwork refer to photographs taken during the period RCA were on site as shown in **Figure 10** below. The dust appeared to be due to moving of stockpiled materials.

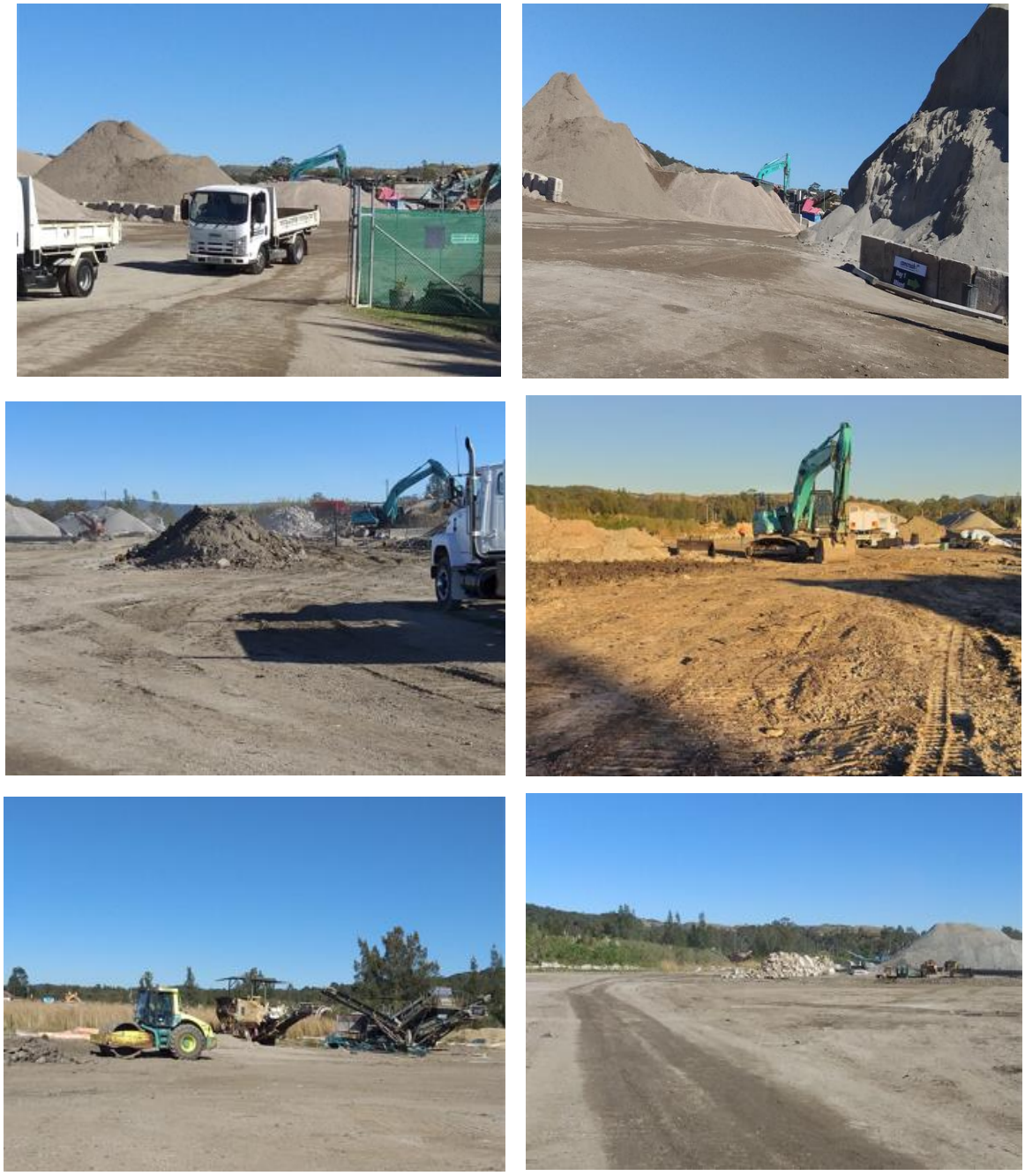

Figure 10 *Site Photographs 30th July 2021*

The wind at the time of inspection was from the north in the order of 0.5-2.6m/s and readings of $PM_{2.5}$ reached a maximum of 0.017mg/m^3, PM_{10} reached a maximum of 0.253 mg/m^3 and TSP reached a maximum of 0.304 mg/m^3.

6 LIMITATIONS

This report has been prepared for Concrush Pty Ltd in accordance with an agreement with RCA Australia (RCA). The services performed by RCA have been conducted in a manner consistent with that generally exercised by members of its profession and consulting practice.

This report has been prepared for the sole use of Concrush Pty Ltd. The report may not contain sufficient information for purposes of other uses or for parties other than Concrush Pty Ltd. This report shall only be presented in full and may not be used to support objectives other than those stated in the report without written permission from RCA Australia.

Yours faithfully

RCA AUSTRALIA

Adeleh Khoshzaban
Environmental Engineer

Fiona Brooker
Environmental Services Manager

REFERENCES

[1] RCA Australia, *Operational Air Quality Management Plan (OAQMP) for Expansion of the Concrush Resource Recovery Facility*, V2.0, July 2020.

[2] Lake Macquarie City Council Local Environmental Plan 2014, under the Environmental Planning and Assessment Act 1979, published 2014.

[3] AS/NZS 3580.1.1:2016 *Methods for sampling and analysis of ambient air: Guide to siting air monitoring equipment*, May 2016.

[4] NSW EPA, *Approved Methods for the Modelling and Assessment of Air Pollutants in NSW* January 2017.

[5] NSW EPA, *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*, January 2007.

Appendix A

Field Sheet

RCA LABORATORIES
• ENVIRONMENTAL •
CONSTRUCTION MATERIALS TESTING

STATIC DUST GAUGES - FIELD SHEET

ENV-F075-1

Client: Concrush

Location: 21 Racecourse Road, Teralba

Date On: **30/06/2021**

Date Off: **30/07/2021**

Job Number: 13001a

Month/Year: July

Technician: AKh

Field Sheet: Page 1 of 1

Field ID (Job No + Gauge No.)	**Lab ID** (To be entered by Lab Technician on receipt of samples)	**Time Serviced**	**Funnel Number** (if replaced)	**Approx. Volume**	**Notes**	**Comments**
DG1A		7:15		10%		IG
DG2A		7:25		10%		I
DG3A		8:45		10%		I
DG4A		10:30		10%		---
DG5A		7:05		10%		I

Notes:

A = Animals (frogs, lizards, snakes)
O = Organic Matter (specify)
B = Bird Droppings
F = Feathers
G = Grass (and seeds)
N = No foreign mater
T = Tree Litter (twigs, leaves, gum nuts)
I = Insects (and spiders)
MF = Invalid sample: Missing funnel
FB = Invalid sample: Broken funnel
EB = Invalid sample: Excess bird droppings
RN = Invalid sample: Refer to notes below

Appendix B

Laboratory Report Sheets

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ABN 53 063 515 711 Ph 02 4902 9200 – Fax 02 4902 9299
Email: administrator@rca.com.au Web www.rca.com.au

NATA Accredited Laboratory 9811
Corporate Site Number 18077
Accredited for compliance with ISO/IEC 17025-Testing

Concrush Pty Ltd
PO Box 362
Merewether NSW 2291

Attention Helen Milne

Project:	RCA ref 13001a-315/0		
Date:	20/08/2021		
Client reference:	Dust Report July 2021		
Received date:	30/07/2021	**Number of samples:**	5
Client order number:	N/A	**Testing commenced:**	30/07/2021

CERTIFICATE OF ANALYSIS

1 ANALYTICAL TEST METHODS

ANALYSIS	METHOD	UNITS	ANALYSING LABORATORY	NATA ANALYSIS / NON NATA
Dust Depositional Gauge (DDG)	ENV-LAB004*	g/m^2.month	RCA Laboratories - Environmental	NATA

***** The analytical procedures used by RCA Laboratories - Environmental are based on established internationally recognised procedures such as APHA and Australian Standards

2 RESULTS

ANALYSIS	UNITS	DG1A	DG2A	DG3A	DG4A
Depositional Dust Gauge (DDG)					
Sample Number	-	072113001a001	072113001a002	072113001a003	072113001a004
Date sample started	-	30/06/2021	30/06/2021	30/06/2021	30/06/2021
Date sample finished	-	30/07/2021	30/07/2021	30/07/2021	30/07/2021
Sampled By		Client	Client	Client	Client
Number of days	-	30	30	30	30
Notes	-	IT	IT	IT	IT
Insoluble solids	(g/m^2.month)	4.4	0.9	0.7	2.9
Ash	(g/m^2.month)	3.0	0.6	0.5	2.1
Combustible matter	(g/m^2.month)	1.4	0.3	0.2	0.8
Volume	mL	300	500	500	460

ANALYSIS	UNITS	DG5A
Depositional Dust Gauge (DDG)		
Sample Number	-	072113001a005
Date sample started	-	30/06/2021
Date sample finished	-	30/07/2021
Sampled By		Client
Number of days	-	30
Notes	-	I
Insoluble solids	(g/m^2.month)	0.8
Ash	(g/m^2.month)	0.6
Combustible matter	(g/m^2.month)	0.2
Volume	mL	480

Depositional Dust Gauge (DDG)

Analysis on samples is on an as received basis.

Depositional Dust Gauge (DDG) Qualifier Codes
I = Insects (eg. Ants, spiders
T = Tree Litter (eg. Twigs. Leaves, gumnuts)

Depositional Dust Gauge Quality Control

A blank crucible, containing no deposited matter, is analysed with every batch of 10 samples analysed. The acceptable mass difference between the first and second weighing of a blank crucible, at the indicated steps, in the analysis procedure is +/- 0.001g.

Blank Crucibles Analysis

METHOD STEP	PRE-DETERMINATION		DETERMINATION OF INSOLUBLE SOLIDS		DETERMINATION OF ASH AND COMBUSTIBLE MATTER	
	1st weighing	2nd weighing	1st weighing	2nd weighing	1st weighing	2nd weighing
Crucible No.	Mass of Crucible(g)	Mass of Crucible(g)	Mass of Crucible(g)	Mass of Crucible(g)	Mass of Crucible(g)	Mass of Crucible(g)
46	25.9997	25.9995	25.9994	25.9994	25.9989	25.9988

Please contact the undersigned if you have any queries.

Yours sincerely

Laura Schofield
Environmental Laboratory Manager
Robert Carr & Associates Pty Ltd Trading as
RCA Laboratories – Environmental

Neena Tewari
Senior Environmental Microbiologist
Robert Carr & Associates Pty Ltd Trading as
RCA Laboratories - Environmental

RCA Internal Quality Review

General

1. Laboratory QC results for Method Blanks, Duplicates and Laboratory Control Samples are included in this QC report where applicable. Additional QC data maybe available on request.
2. RCA QC Acceptance / Rejection Criteria are available on request.
3. Proficiency Trial results are available on request.
4. Actual PQLs are matrix dependant. Quoted PQLs may be raised where sample extracts are diluted due to interferences.
5. When individual results are qualified in the body of a report, refer to the qualifier descriptions that follow.
6. Samples were analysed on an 'as received' basis.
7. Sampled dates in this report are those listed on the COC or sample jars; if no sample dates are noted, the date the samples are received at the laboratory have been used.
8. All soil results are reported on a dry basis, unless otherwise stated. (ACID SULPHATE SOILS)
9. This report replaces any interim results previously issued.

Holding Times.

For samples received on the last day of holding time, notification of testing requirements should have been received at least 6 hours prior to sample receipt deadlines as stated on the Sample

Receipt Acknowledgment.

If the Laboratory did not receive the information in the required timeframe, and regardless of any other integrity issues, suitably qualified results may still be reported.

Holding times apply from the date of sampling, therefore compliance to these may be outside the laboratory's control.

##NOTE: pH duplicates are reported as a range NOT as RPD

QC - ACCEPTANCE CRITERIA

RPD Duplicates: Global RPD Duplicates Acceptance Criteria is 30% however the following acceptance guidelines are equally applicable:

Results <10 times the LOR: No Limit

Results between 10-20 times the LOR: RPD must lie between 0-50%

Results >20 times the LOR: RPD must lie between 0-30%

QC DATA GENERAL COMMENTS

1. Where a result is reported as a less than (<), higher than the nominated LOR, this is due to either matrix interference, extract dilution required due to interferences or contaminant levels within the sample, high moisture content or insufficient sample provided.

2. Duplicate data shown within this report that states the word "BATCH" is a Batch Duplicate from outside of your sample batch, but within the laboratory sample batch at a 1:10 ratio. The Parent and Duplicate data shown is not data from your samples.

3. Duplicate RPD's are calculated from raw analytical data thus it is possible to have two sets of data.

Glossary

UNITS

mg/kg: milligrams per Kilogram

ug/L: micrograms per litre

ppm: Parts per million

ppb: Parts per billion

%: Percentage

org/100ml: Organisms per 100 millilitres

NTU: Units

MPN/100mL: Most Probable Number of organisms per 100 millilitres

mg/L: milligrams per Litre

TERMS

Dry Where moisture has been determined on a solid sample the result is expressed on a dry basis.

LOR Limit of Reporting.

RPD Relative Percent Difference between two Duplicate pieces of analysis can be obtained upon request.

QCS Quality Control Sample - reported as value recovery

Method Blank In the case of solid samples these are performed on laboratory certified clean sands.

In the case of water samples these are performed on de-ionised water.

Duplicate A second piece of analysis from the same sample and reported in the same units as the result to show comparison.

Batch Duplicate A second piece of analysis from a sample outside of the clients batch of samples but run within the laboratory batch of analysis.

USEPA United States Environment Protection Authority

APHA American Public Health Association

COC Chain of Custody

CP Client Parent - QC was performed on samples pertaining to this report

NCP Non-Client Parent - QC performed on samples not pertaining to this report, QC is representative of the sequence or batch that client samples were analysed within

< indicates less than

> Indicates greater than

ND Not Detected

RCA LABORATORIES
• ENVIRONMENTAL • CONSTRUCTION MATERIALS TESTING

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92 Hill Street, Carrington NSW 2294
www.rca.com.au Email: labenviro@rca.com.au

ENV-F103-4

Client Name: Concrush Pty Ltd c/- RCA Enviro
Client Site: 21 Racecourse Road, Teralba

Contact Name: Adeleh Khoshzaban (RCA Enviro)
Phone Number: 0401 002 912

Email Report To: Adeleh.k@rca.com.au
Project Manager: Fiona Brooker (RCA Enviro)

Turnaround Required: × Standard (5 Day) 9th August 9/8/21

Date Required:

Expected Reporting Date: *(Laboratory Use Only)*

Page of

ANALYSIS REQUIRED

RCA Job Number: 13001a

SAMPLE INFORMATION

RCA Laboratories Environmental Sample Number	Client ID / Description	Date	Matrix	Total Samples	Depositional Dust	Notes:
072113001a001	DG1A - 30/ 06 /2021 - 30/ 07 /2021	30/07/21	W	1	X	
072113001a002	DG2A - 30/ 06 /2021 - 30/ 07 /2021	30/07/21	W	1	X	
072113001a003	DG3A - 30/ 06 /2021 - 30/ 07 /2021	30/07/21	W	1	X	
072113001a004	DG4A - 30/ 06 /2021 - 30/ 07 /2021	30/07/21	W	1	X	
072113001a005	DG5A- 30/ 06 /2021 - 30/ 07 /2021	30/07/21	W	1	X	

RELINQUISHED BY		RECEIVED BY		Laboratory use only (circle appropriate)
Name: Adeleh Khoshzaban	Date: 30/07/21	Name: [illegible]	Date: 30/7/21	Received in good condition: Yes No
Of: RCA	Time: 14:00	Of: RCALF	Time: 12:20	Chilled: Yes No