



# Dixon Sand

Resources Road Resource Management

Resource Management Plan

Appendix -



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Version 1.0

Client: Dixon Sand (No. 1) Pty Ltd

Prepared by: Project Environmental Services Pty Ltd



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Name of Operation	Haerses Road Quarry, Maroota
Name of Operator	Dixon Sand (No. 1) Pty Ltd
Development Consent / Project Approval #	DA165-7-2005 (Mod 4) – Haerses Road Quarry
Annual Review Start Date	1 July 2021
Annual Review End Date	30 June 2022
Name of Authorised reporting officer	Hunsamon Churcher
Title of Authorised reporting officer	Environmental Advisor
Signature of Authorised reporting officer	<i>J. Hunsamon</i>
Date	30/09/2021



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Prepared by:	Hunsamon Churcher	Date:	30/09/2021



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Annual Review	This document (also formerly known as 'Annual Environmental Management Report')
Biodiversity Stewardship Agreements	BSA
Biodiversity Conservation Trust	BCT
DA250-09-01	Development Consent DA250-09-01 for the Old Northern Road quarry
DA165-7-2005	Development Consent DA165-7-2005 for the Haerses Road quarry
Dixon Sand	Dixon Sand (No.1) Pty Ltd
DRG	Department of Planning, Industry and Environment – Resources Regulator
DPE	Department of Planning and Environment
DPE (Resources Regulator)	Department of Planning, Industry and Environment – Resources Regulator
DPE Water	Department of Planning, Industry and Environment – Water Division
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
EP&A Act	NSW <i>Environment Planning and Assessment Act 1979</i>
EPL12513	Environment Protection Licence 12513 for the Haerses Road quarry
LALC	Local Aboriginal Land Council
MTSGS	Maroota Tertiary Sands Groundwater Source
NRAR	Department of Planning, Industry and Environment – Natural Resources Access Regular
PIRMP	Pollution Incident Response Management Plan
PM10	Particulate matter <10um
SCBGS	Sydney Central Basin Groundwater Source
TEOM	Tapered Element Oscillating Microbalance
TSP	Total suspended particulates
WAL	Water Access License

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All Conditions of the relevant approval(s) were complied with?		
Haerses Road Quarry	DA165-7-2005	No
	EPL12513	No
	WAL 25941	Yes
	WAL 25956	Yes

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Relevant Approval	Condition #	Condition description (summary)	Compliance Status	Section addressed in Annual Review
DA 165-7-2005 EPL 12513	Condition 9 of Schedule 3 Condition O3.6	The average annual dust deposition criteria of 4.0 g/m <sup>2</sup> /month have been exceeded	Non-compliant	Section 11.1
DA 164-7-2005	Cond. 12 of Sch.5	Submission of Annual Review later than end of March 2022, however DPE approved an alternative date	Non-compliant	Sections 2.2 and 11.1

### Compliance Status Key

Risk Level	Colour code	Description
High	Non-compliant	Non-compliance with potential for significant environmental consequences, regardless of the likelihood of occurrence
Medium	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>Potential for serious environmental consequences, but is unlikely to occur, or</li> <li>Potential for moderate environmental consequences, but is likely to occur</li> </ul>
Low	Non-compliant	Non-compliance with: <ul style="list-style-type: none"> <li>Potential for moderate environmental consequences, but is unlikely to occur, or</li> <li>Potential for low environmental consequences, but is likely to occur</li> </ul>
Administrative non-compliances	Non-compliant	Only to be applied where the non-compliance does not result in any risk of environmental harm (e.g. submitting a report to government later than required under approval conditions)

## 1 Introduction

### 1.1 Overview

Dixon Sand Pty Ltd (Dixon Sand) operates two sand quarries at Old Northern Road (Lots 29 and 196 DP 752025 and Lots 1 and 2 DP 547255) and at Haerses Road (Lot 170 DP 664766, Lot 170 DP 664767, Lots A and B DP 407341, Lots 176 and 177 DP 752039 and Lot 216 DP 752039) in Maroota, New South Wales. The quarries are located approximately 40 kilometres north of Parramatta. The locations of the quarries are shown in Figure 1.

Extraction commenced at Haerses Road quarry in 2006. Sand is being transferred to Old Northern Road quarry for processing, blending and sales. Products are also permitted to be sold directly to the market from Haerses Road quarry. Modification to the development approval under Section 75W of the *Environmental Planning and Assessment Act 1979* was granted on 22 January 2018 which permits the expansion of the extraction areas. DA165-7-2005 Modification 4 permits a varied sequence of extraction and the most recent Modification 5 permits the relocation of the approved and to construct site facilities. Current extractions are occurring in Stage 1, Stage 2 and Cells 1A, 1B and 2B.

Environmental Monitoring locations for Haerses Road quarry are shown in Figure 2.

### 1.2 Scope

The objective of this Annual Review is to report on the overall environmental performance and management of the operations and compliance of Haerses Road Quarry with the consent conditions issued by the Secretary of NSW Department of Planning and Environment (DPE). The reporting period is from 01 July 2021 to 30 June 2022, which is in line with the reporting period for Old Northern Road Quarry. Reporting for the rehabilitation assessment and ecological monitoring extends outside the specified period due to seasonal timing requirement for surveys.

The following consent conditions outline the requirement of the Annual Review.

Condition 15 of the Development Consent states:

*By the end of March each year, or other timing as may be agreed by the Secretary, the Applicant must submit a review to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:*

- (a) *describe the development (including any progressive rehabilitation) that was carried out in the previous calendar year, and the development that is proposed to be carried out over the current calendar year;*
- (b) *include a comprehensive review of the monitoring results and complaints records of the development over the previous calendar year, which includes a comparison of these results against the:*
  - *relevant statutory requirements, limits or performance measures/criteria;*
  - *requirements of any plan or program required under this consent;*
  - *monitoring results of previous years; and*
  - *relevant predictions in the documents listed in condition 2(a) of Schedule 2;*
- (c) *evaluate and report on:*
  - *the effectiveness of the air quality and noise management systems; and*
  - *compliance with the performance measures, criteria and operating conditions in this consent.*

- (d) identify any non-compliance over the past calendar year, and describe what actions were (or are being) taken to ensure compliance;
- (e) identify any trends in the monitoring data over the life of the development;
- (f) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies;
- (g) describe what measures will be implemented over the current calendar year to improve the performance of the development.

The Applicant must ensure that copies of the Annual Review are submitted to Council and are available to the Community Consultative Committee (see condition 8 of Schedule 5) and any interested person upon request.

Dixon Sand requested approval from the DPE for the submission deadline of the Annual Review to be adjusted to reflect the financial year reporting. Approval was granted by the DPE on 9 February 2018 to submit the Annual Review by the end of September each year.

This Annual Review will report on the environmental performance in relation to the requirements of DA165-7-2005 (Modification 4), Environment Protection License (EPL) # 12513 and Water Access Licenses (WALs) 25941 and 25956. The Annual Review has been prepared in accordance with *Post-approval requirements for State Significant mining developments – Annual Review Guideline* (DP&E, 2015).

## Haerses Road Quarry

Development consent was granted by the Minister for Planning on 14 February 2006 (DA165-7-2005) for the extraction of sand from Dixon Sand's properties at Lot 170 DP 664767, Lots A and B DP 407341, and Lots 176 and 177 DP 752039 Haerses Road in Maroota. Haerses Road quarry is approximately two kilometres south of the existing Old Northern Road quarry. Sand extracted from the Haerses Road site has been trucked, processed and stockpiled at the existing processing plant on Lot 196 DP 752025 (Lot 196) at Old Northern Road quarry. The development involves the blending and processing of variable quality sands from the Haerses Road site at the plant on Lot 196, and uses the existing processing plant and ancillary facilities such as the workshop, weighbridge and office, as well as the existing haul roads via the intersection with Old Northern Road. Direct sale of sandstone products (sand and sandstone block products) to local and regional markets from Haerses Road site commenced in 2015.

Under the original DA165-7-2005 Haerses Road quarry is permitted a maximum extraction quantity of 250,000 tonnes per annum, of which 190,000 tonnes may be transported to the Old Northern Road quarry for processing per annum.

Dixon Sand lodged a modification application to modify DA165-7-2005 to expand the quarry extraction area, process products on site and to extend the life of the quarry (Modification 1). Approval for DA165-7-2005 Modification 1 was granted on 22 January 2018.

A modification under Section 4.55(1) of the *Environment Planning and Assessment Act 1979* (EP&A Act) was subsequently lodged to correct an administrative error in Appendix 2 of the development consent. Approval for DA165-7-2005 Modification 2 was granted on 29 January 2019.

DA165-7-2005 Modification 3 was lodged to seek approval to increase:

- the extraction rate from 250,000 tpa to 495,000 tpa,

- overall truck movements from 56 movements to 180 movements per day,
- the disturbance footprint by 1 hectare in Stage 5 and accessing an additional 250,000 tonnes of resource,
- the maximum rate of VENM/ENM importation from 100,000 tpa to 250,000 tpa, for the purposes of site rehabilitation and reprocessing to produce blended products,
- altering some site plant and equipment, and
- increasing the number of full-time employees.

Modification 3 was approved on 23 July 2021.

DA165-7-2005 Modification 4 was lodged to seek approval to change the consented initial sequence of extraction to allow Dixon Sand to next access the more commercially viable sand in extraction Cell 1B instead of Cell 2A.

Modification 4 was granted on 30 June 2021.

Modification 5 was lodged to seek approval to:

- relocate the approved site office, workshop and weighbridge to a new site infrastructure location within the Tertiary Sand Extraction Area Stage 2 south of the current approved location,
- construct additional buildings (first aid room, lunchroom, weighbridge office, sandstone cutting shed), associated hardstand areas and carpark within the new site infrastructure envelope,
- introduce a new extraction method within the Sandstone Extraction Areas A and B involving sandstone cutting using an excavator fitted with a hydraulic circular saw attachment (enclosed or hollow drum saw) to produce large blocks of sandstone to supplement the approved dozer ripping extraction method,
- carried out final cutting of the large blocks of extracted sandstone using additional stone cutting saws (wet cutting) within a new dedicated sandstone cutting shed,
- increase the footprint of the site infrastructure envelope to accommodate new buildings, and
- updating figures associated with Porters Road Biobank site and Conceptual Final Landform.

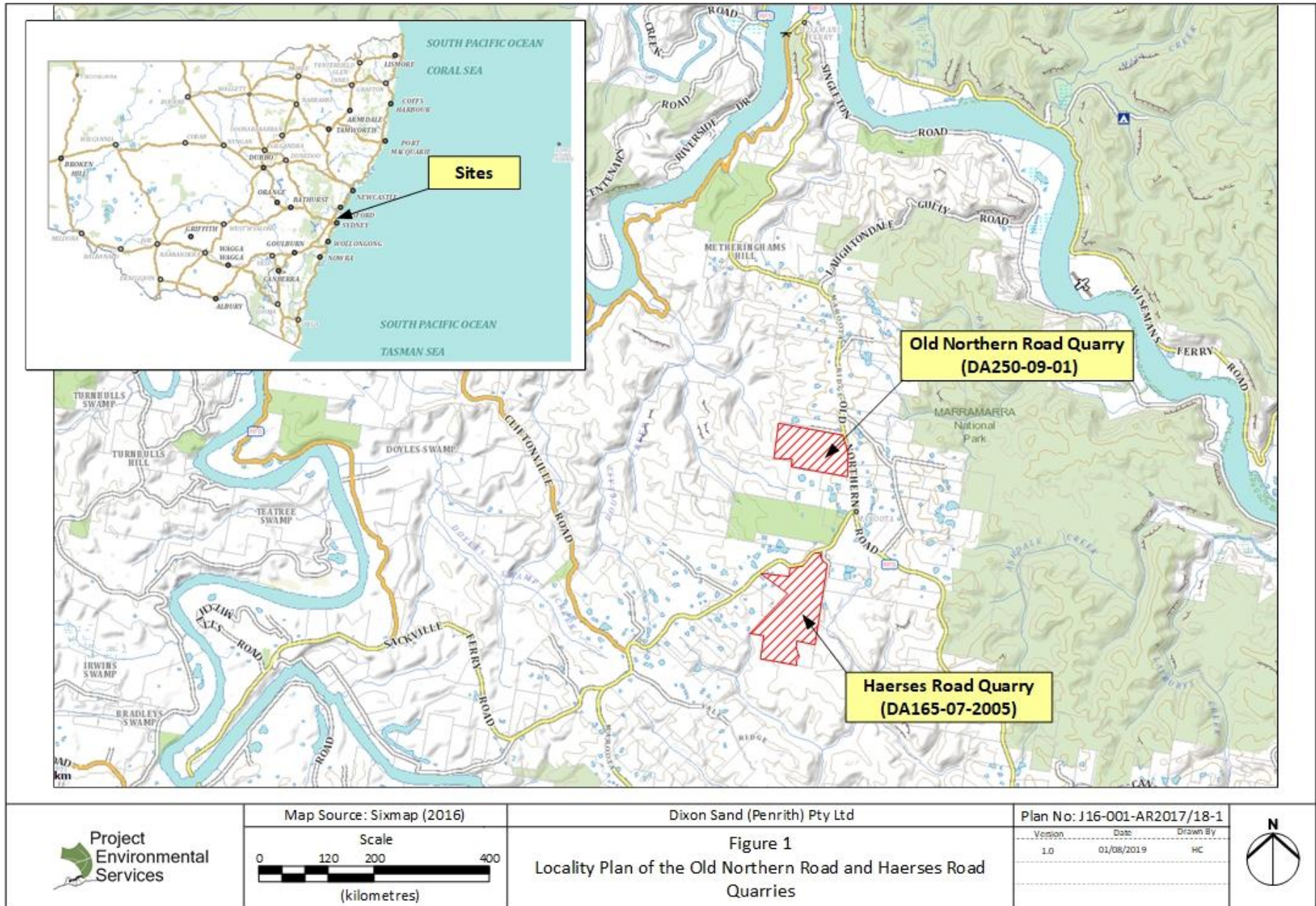
Modification 5 was approved on 29 June 2022.

A summary of the development consents and modifications is provided in Table 3.

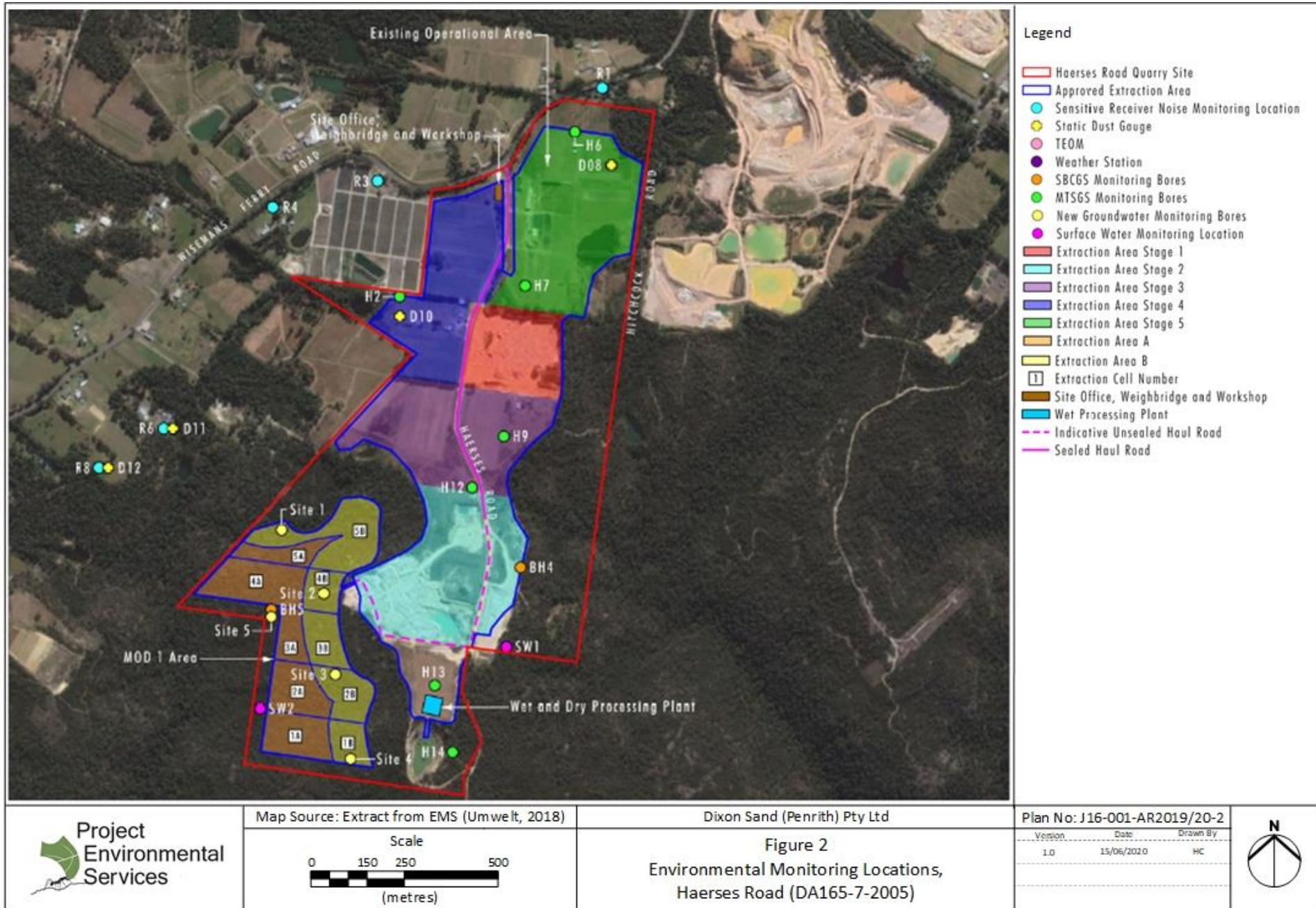
For the purpose of the reporting period which falls within this Annual Review, Development consent DA165-07-2005 Modifications 3 and 4 are most applicable to the timeframe and is the consent used for the assessment of Dixon Sand's environmental compliance and performance.

S r s R d r r D s s d M d s

Development Consents	Status	Date of Determination	Comments
DA165-7-2005	Approved and superseded by Modification 1	14 February 2006	Approval for sand extraction, processing and rehabilitation for extraction stages 1 to 6 (inclusive)
DA165-7-2005 Modification 1	Approved and superseded by Modification 2	22 January 2018	Approval for the expansion of the quarry and additional sand extraction in Cells 1 to 5 (inclusive).
DA165-7-2005 Modification 2	Approved and superseded by Modification 4	29 January 2019	Correction applied to an administrative error in Appendix 2 of DA165-7-2005 Modification 1 consent conditions.
DA165-7-2005 Modification 4	Approved and superseded by Modification 3	30 June 2021	Approval for altering the sequence of approved extraction cell, by accessing Cell 1B instead of Cell 2A. Modification 4 was approved before Modification 3
DA165-7-2005 Modification 3	Approved and superseded by Modification 5	23 July 2021	Approval for the increased in extraction rate, truck movements, VENM/ENM importation quantity, expansion of disturbance footprint in Stage 5, and modifying site plant, equipment and number of employees.
DA165-7-2005 Modification 5	Approved and current	29 June 2022	Approval to construct approved and new site infrastructure and administration buildings (including sandstone cutting shed, weighbridge, weighbridge office, First Aid and lunchroom and carpark) to a new location







## 2.1.1. Haerses Road Quarry

### 2.1.1.1. Overview

All bulk sand truck movements from the Haerses Road quarry since commencement of extraction in November 2006 have delivered raw product to the Old Northern Road quarry for processing. Products have also been sold directly from Haerses Road quarry since 2015.

A total of 180,000 tonnes of product has been extracted at Haerses Road quarry, of which 175,000 tonnes were transferred to Old Northern Road and 5,000 tonnes of sandstone products have been sold directly to local and regional markets from the Haerses Road quarry during this reporting period. The quarry received a total of 4,960 tonnes of ENM/VENM during this reporting period. Table 4 provides a summary of the annual production quantities, truck movement, direct sales and material transfers between Haerses Road and Old Northern Road quarries during the reporting period.

Table 4: Summary of annual production quantities, truck movement, direct sales and material transfers between Haerses Road and Old Northern Road quarries during the reporting period.

Month	Production (tonnes)	Transfers to Old Northern Road (tonnes)	Total Extraction (tonnes)	Direct Sales (tonnes)	ENM/VENM Received (tonnes)	Material Transfers to Old Northern Road (tonnes)	Material Transfers from Old Northern Road (tonnes)
Jul 2021	5,600	341.85	5,942	341.85	2,656	66	<20
Aug 2021	630	932	1,562	932	0	40	<20
Sep 2021	9,052.5	1,304.56	10,357	1,304.56	1,152	80	<20
Oct 2021	11,040.5	3,813.12	14,854	3,813.12	1,152	98	<20
Nov 2021	9,585	2,412.47	11,997	2,412.47	0	78	<20
Dec 2021	11,537.5	2,230.42	13,768	2,230.42	0	100	<20
Jan 2022	16,275.5	631.94	16,907	631.94	0	88	<20
Feb 2022	13,307	1,103	14,410	1,103	0	86	<20
Mar 2022	15,781.5	1,361.9	17,143	1,361.9	0	118	<20
Apr 2022	21,454	1,212.1	22,666	1,212.1	0	90	<20
May 2022	13,809	1278.95	15,088	1278.95	0	132	<20
Jun 2022	14,535	3,494.89	18,030	3,494.89	0	138	<20
<b>Total</b>	<b>180,000</b>	<b>175,000</b>	<b>180,000</b>	<b>5,000</b>	<b>4,960</b>	<b>4,960</b>	<b>&lt;20</b>

Note \*: Total Extraction at Haerses Road equates to the sum of (1) Total transfers from Haerses Road to Old Northern Road and (2) sales from Haerses Road.

**16. Condition 16 of Schedule 2 of DA 165-7-2005 requires Dixon Sand to submit calendar year annual production data to the DRG (now MEG) using the standard form, and include a copy of this data in the Annual Review.**

Condition 16 of Schedule 2 of DA 165-7-2005 requires Dixon Sand to submit calendar year annual production data to the DRG (now MEG) using the standard form, and include a copy of this data in the Annual Review.

The DRG (now MEG) Minerals Return forms require reporting of extractive materials for the financial year, and not for the calendar year as specified in the consent condition above.

The Minerals Return form for the financial year 2020 – 2021 was submitted to DRG (now MEG) on 25 October 2021. During the period of this Annual Review, Dixon Sand is awaiting the 2021 – 2022 Mineral Return form to be made available (anticipate this will occur around October 2022). The same production data contained in Table 4 will form the basis for calculations for MEG Minerals Return reporting. The forms will be completed and submitted to the DRG within the specified deadline.

□

**4. Proposed Recommendations for 2020-2021 Annual Review and relevant actions undertaken by Dixon Sand are summarised in Table 5.**

The proposed recommendations contained in the previous 2020-2021 Annual Review and relevant actions undertaken by Dixon Sand are summarised in Table 5.

**Table 5: Summary of Recommendations and Actions Undertaken by Dixon Sand**

Recommendations	Actions Undertaken
<b>Noise Monitoring</b>	
<ul style="list-style-type: none"> <li>Should extraction re-commence in the extraction cells A and B (approved during DA 165-7-2006 Modification 1), noise monitoring will revert back to 6-monthly frequency.</li> </ul>	<ul style="list-style-type: none"> <li>Extraction recommenced in cells A and B of the approved extraction area under DA Mod 1. Noise monitoring frequency has been reverted back to 6-monthly.</li> </ul>
<b>Ground and Surface Water Management</b>	
<ul style="list-style-type: none"> <li>Review and submission of buffer zone groundwater monitoring data to be undertaken as per NRAR's recommendation.</li> <li>Water sampling and laboratory analysis of surface water at SW1 and SW2 to continue when there is sufficient flow after rain events</li> </ul>	<ul style="list-style-type: none"> <li>Reviewed groundwater data submitted to NRAR (and DPE-Water) on a 6-monthly basis as recommended by NRAR.</li> <li>Sampling at SW1 and SW2 undertaken when possible. Sampling was not possible after some storm events due to excessive rainfall leading to unsafe access to the sampling locations.</li> </ul>
<b>Vegetation Clearing</b>	
<ul style="list-style-type: none"> <li>Continue to implement the pre-clearing survey and multistage habitat tree felling procedures prior to any vegetation felling.</li> </ul>	<ul style="list-style-type: none"> <li>Pre-clearing survey and multistage habitat tree felling procedures implemented.</li> </ul>

Rehabilitation and Restoration	
<p><b>Screening and Rehabilitation</b></p> <ul style="list-style-type: none"> <li>• Undertake screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders</li> <li>• Spread out screened material to final landform to enable rehabilitation to Class 4 Agriculture.</li> <li>• First agricultural planting event</li> </ul> <p><b>Monitoring and Maintenance</b></p> <ul style="list-style-type: none"> <li>• Continue to monitor the native vegetation growth to the west of the water storage dam.</li> </ul> <p><b>Disturbed Area Rehabilitation</b></p> <ul style="list-style-type: none"> <li>• Remediate the disturbed area resulting from roadworks utilising appropriate rehabilitation methodologies for vegetation screening.</li> </ul> <p><b>Bush Regeneration</b></p> <ul style="list-style-type: none"> <li>• Continue bush regeneration maintenance in the previously disturbed area</li> </ul> <p><b>Vegetation Monitoring</b></p> <ul style="list-style-type: none"> <li>• Continue monitoring of vegetation quadrats for establishment of baseline data.</li> </ul> <p><b>Weed Management</b></p> <ul style="list-style-type: none"> <li>• Continue with weed management as per the recommendations contained in the Bush Regenerator and Ecologist's reports.</li> </ul> <p><b>Feral Fauna Monitoring</b></p> <ul style="list-style-type: none"> <li>• Continue with feral fauna species monitoring and implement any actions as required.</li> </ul> <p><b>Biobanking</b></p> <ul style="list-style-type: none"> <li>• Monitoring and Management of the Haerses Road and Porters Road biobank sites to be undertaken in accordance with the Biobanking Agreement and BCD reporting</li> </ul>	<ul style="list-style-type: none"> <li>• Stage 1 rehabilitation postponed due to unfavourable wet conditions on site.</li> <li>• Native vegetation growth to the west of the water storage dam monitored.</li> <li>• Remediation postponed in this area till 2022 – 2023 monitoring period due to unfavourable site conditions.</li> <li>• On-going regeneration maintenance undertaken</li> <li>• Baseline survey undertaken</li> <li>• Ongoing weed management undertaken as per Bush Regenerator and Ecologist's reports.</li> <li>• Feral fauna species monitoring undertaken</li> <li>• Haerses Road and Porters Road biobank sites are currently subject to Passive Management in accordance with the Biobanking Agreement. Passive Monitoring and Management Report submitted to BCD.</li> </ul>

## 1.1.1 Air Quality Management Plan

### 1.1.1.1 Introduction

#### 1.1.1.1.1 Objectives and Scope

The objectives, criteria limits, procedures, response, reporting and responsibilities of air quality management are contained in the Haerses Road quarry Air Quality Management Plan.

The following potential sources of dust generated from Haerses Road quarry and mitigation measures have been identified in Table 6.

Table 6: Potential sources of dust generated from Haerses Road quarry and mitigation measures

Potential Sources	Mitigation Measures
<ul style="list-style-type: none"> <li>• topsoil stripping;</li> <li>• ripping with a bulldozer;</li> <li>• extraction with an excavator and truck;</li> <li>• sandstone cutting with saw attachment</li> <li>• crushing and screening</li> <li>• wind erosion from stockpiles;</li> <li>• loading sand products into trucks;</li> <li>• vehicle movement and haulage on site;</li> <li>• product transportation along unsealed haul roads; and</li> <li>• occasional haul road grading.</li> </ul>	<ul style="list-style-type: none"> <li>• minimising the area of disturbance by only clearing areas immediately prior to extraction;</li> <li>• progressive rehabilitation;</li> <li>• stabilising topsoil stockpiles by planting with a cover crop of non-invasive cereal or legumes;</li> <li>• using a water cart to suppress dust on unsealed roads, during dry conditions on days of operation;</li> <li>• sealing Haerses Road;</li> <li>• limiting vehicle speed to 20 km/hr on internal unsealed access tracks;</li> <li>• ensuring all loads leaving the site are covered; and</li> <li>• regularly maintaining mobile and fixed equipment to minimise exhaust emissions.</li> <li>• Utilisation of wet technique for sandstone cutting</li> </ul>

### 1.1.1.2 Air Quality Monitoring

Condition 10 of Schedule 3, DA165-7-2005 require Dixon Sand to operate a continuous air quality monitoring system to minimise the impacts at sensitive receivers such as the Maroota Public School. The following air quality criteria are to be complied with:

- dust deposition - 4g/m<sup>2</sup>/month (annual average) or 2g/m<sup>2</sup>/month increase;
- total suspended particulate matter (TSP) – 90µg/ m<sup>3</sup> (annual mean); and
- particulate matter <10µm (PM10):
  - 50 µg/m<sup>3</sup> (average for 24 hour period)
  - 30 µg/m<sup>3</sup> (annual mean).

The NSW Environment Protection Authority (EPA) also requires the automatic alarm system of the Tapered Element Oscillating Microbalance (TEOM) continuous dust monitoring device to be set at a PM10 trigger value which triggers specific dust mitigation measure:

- 42 µg/m<sup>3</sup> (average for rolling 24 hour period for wind directions between 180° and 240°)

Table 7 lists the relevant PM10 and Total suspended particulates (TSP) criteria as required by the Development Consent and Environment Protection Licence.

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**Table 7: PM10 and TSP criteria**

Source	Condition	Criteria	Notes
EPL12513	M2.3	42 µg/m <sup>3</sup> with prevailing wind direction from 180°-240°	Rolling average 24-hour PM10 criteria for enacting management plan strategies to notify the EPA, reduce dust emissions immediately and cease operations
DA165-7-2005	Sch. 3, Cond. 9	30 µg/m <sup>3</sup>	Annual average – long term impact assessment
EPL12513	O3.6		
DA165-7-2005	Sch. 3, Cond. 9	50 µg/m <sup>3</sup>	24 hour average – short term impact assessment
EPL12513	O3.6		
EPL12513	O3.3	42 µg/m <sup>3</sup>	Trigger value for PM <sub>10</sub> automatic alarm and management plan strategies
DA165-7-2005	Sch. 3, Cond. 9	90 µg/m <sup>3</sup>	Annual average criteria for TSP
EPL12513	O3.6		

□

**Results**

**Dust**

Monthly climatic measurements were recorded by the weather station located adjacent to the Maroota Public School, in accordance with Condition M4.1 of EPL 12513. These results are shown in Table 8.

**Monthly Meteorological Data**

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Average Temperature (°C)	11.5	13.2	15.2	16.8	17.2	19.9	21.8	20.4	19.4	17.4	14.3	11.3
Total Monthly Rainfall (mm)	19.2	64.0	20.8	43.0	175.8	108.8	107.2	273.8	520.2	114.4	76.0	3.8

Data presented in Table 8 shows that the highest monthly rainfall of 520.2 mm was recorded in March 2022 and the lowest monthly rainfall of 3.8 mm was recorded in June 2022. The total annual rainfall recorded during this reporting period is 1527 mm, representing a higher annual rainfall than the previous 5 reporting periods (1090.4 mm for 2020–2021, 313.2 mm for 2019-2020, 165.2 mm for 2018-2019, 372.8 mm in 2017-2018 and 924 mm in 2016-2017 reporting period).

From the recorded monthly temperature data, January 2022 experienced the highest average temperature at 21.8°C with June 2022 experiencing the lowest average temperature at 11.3°C.

Fluctuations in temperatures and rainfalls are generally influenced largely by the El-Nino and La-Nina climatic cycle.

**Dust Deposition**

Four dust deposition gauges are located at Haerses Road quarry. Table 9 lists the locations of these dust gauges.

**Summary of Dust Deposition Gauge Locations**

Dust Gauge ID	Location
D08&D09	Hitchcock Road, Olive Grove
D10	Haerses Road (EPL#12513, Monitoring Point 3)
D11	Haerses Road Receiver R6
D12	Haerses Road Receiver R8 (located on the boundary of R7 and R8)

Dust deposition results are collected and analysed monthly by a NATA accredited laboratory. Table 10 presents the monthly dust deposition results between July 2021 and June 2022. Table 11 contains the calculated annual averages for the deposited dust.

The monthly laboratory results for dust deposition for this reporting period is presented in Appendix A.

Charts 1 to 4 illustrate the annual average dust deposition results for the reporting periods of 2018-2019, 2019-2020, 2020-2021 and 2021-2022 respectively.

Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022

Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.4	1.1	0.8	0.8*	1.7*	0.7	1.2	0.5*	1.0	0.3*	0.2	0.5	0.4
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.4*	8.8*	4.5*	7.0*	2	0.2	0.4	1*	1.4	0.9	1.5*	1.1*	7.8*
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.3*	1.5	0.4	1.2*	1.9*	0.3	2.2*	2.2*	0.8*	0.5	0.6	0.8*	1.0*
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.3	0.8	0.1	0.4	0.2	0.1	0.5*	0.5	0.3	0.2*	0.5*	0.3	0.1

- x.x\* Vegetation / algae present in dust gauge
- x.x\* Insects / Spider web present in dust gauge
- x.x\* Bird dropping present in dust gauge
- x.x\* Ash present in dust gauge
- x.x\* Sand present in dust gauge
- x.x\* Dust present in dust gauge

Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022

Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.4	0.8	0.8	0.8	1.0	0.9	1.0	0.9	0.9	0.9	0.8	0.8	0.7
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.4	3.2	3.5	4.2	3.9	3.3	3.0	2.7	2.6	2.5	2.4	2.3	2.8
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.3	0.9	0.7	0.9	1.1	0.9	1.1	1.3	1.2	1.1	1.1	1.1	1.1
Dixon Sand - Haerses Road Quarry Annual Review 2021 – 2022	0.3	0.6	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.3	0.4	0.4	0.3



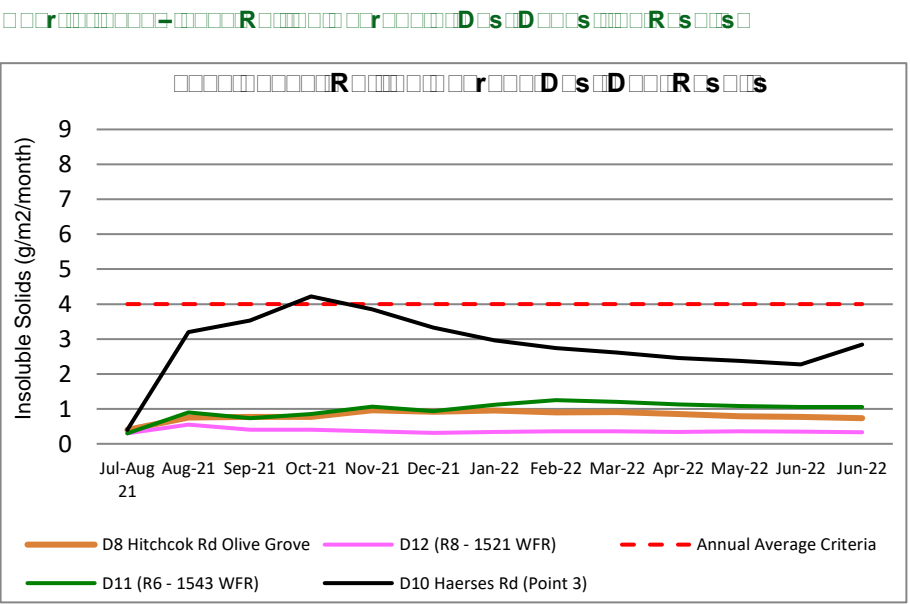
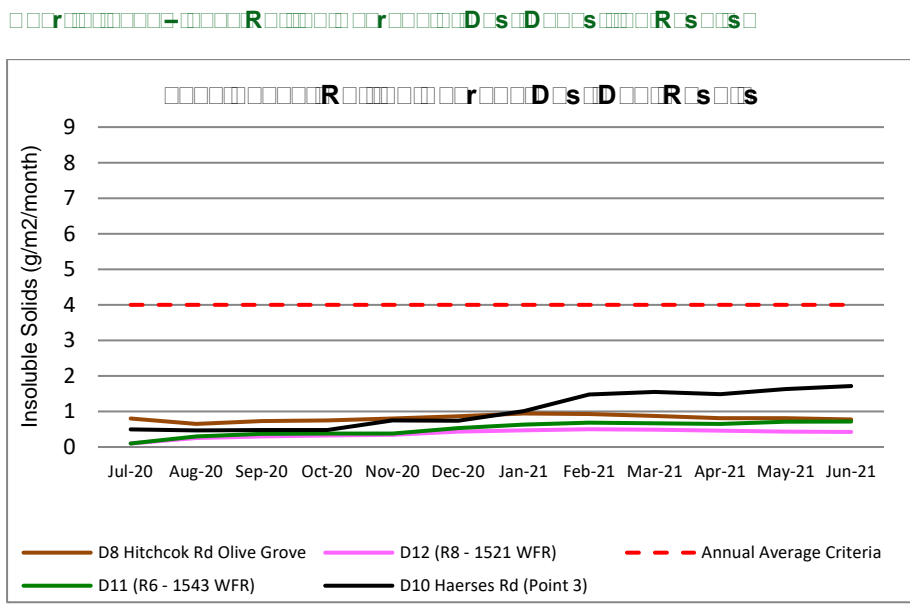
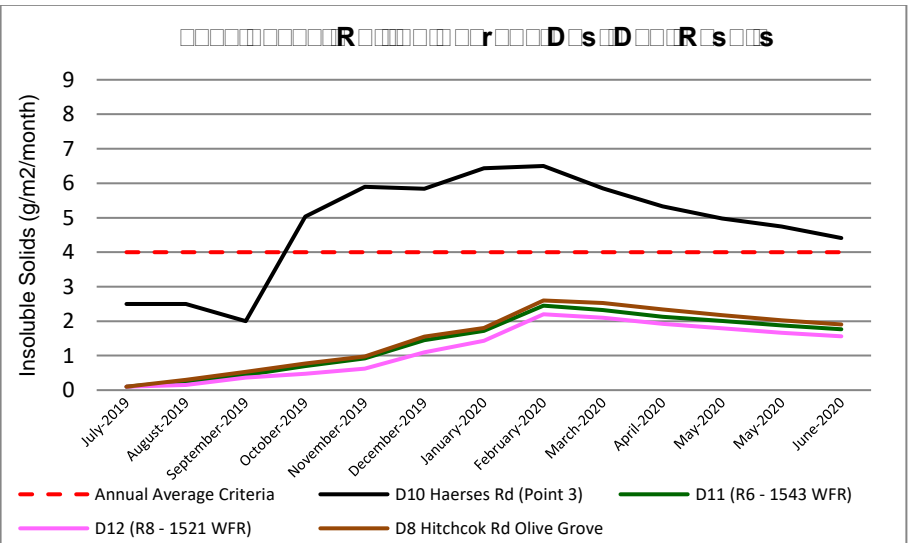
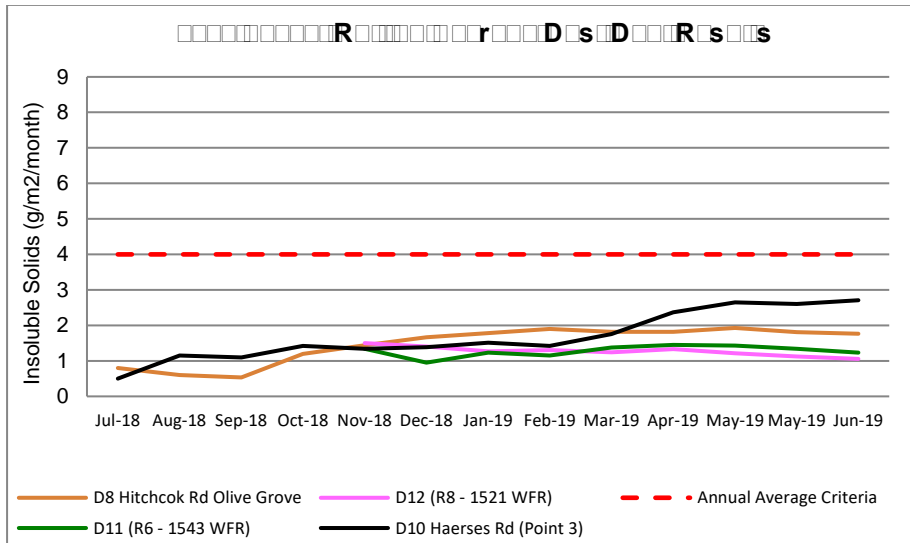
**PM<sub>10</sub>**

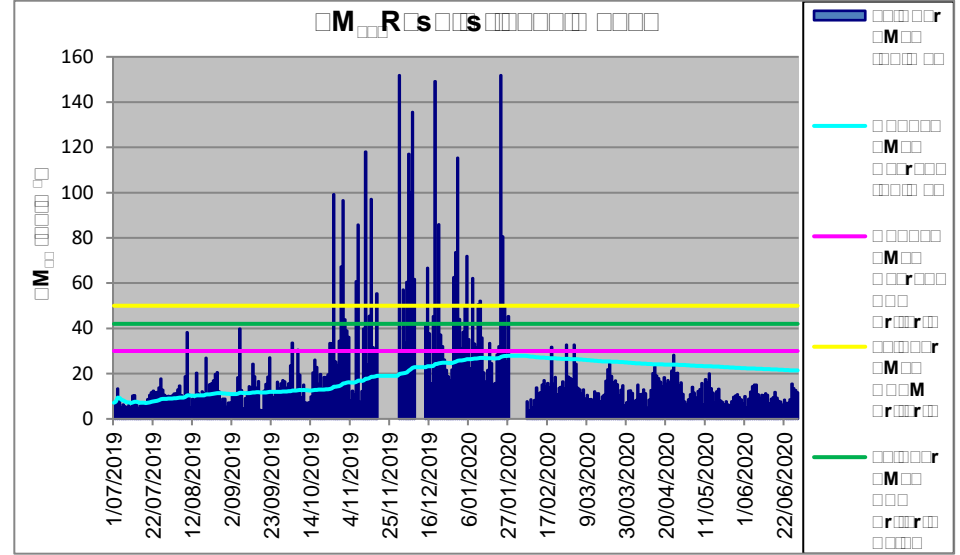
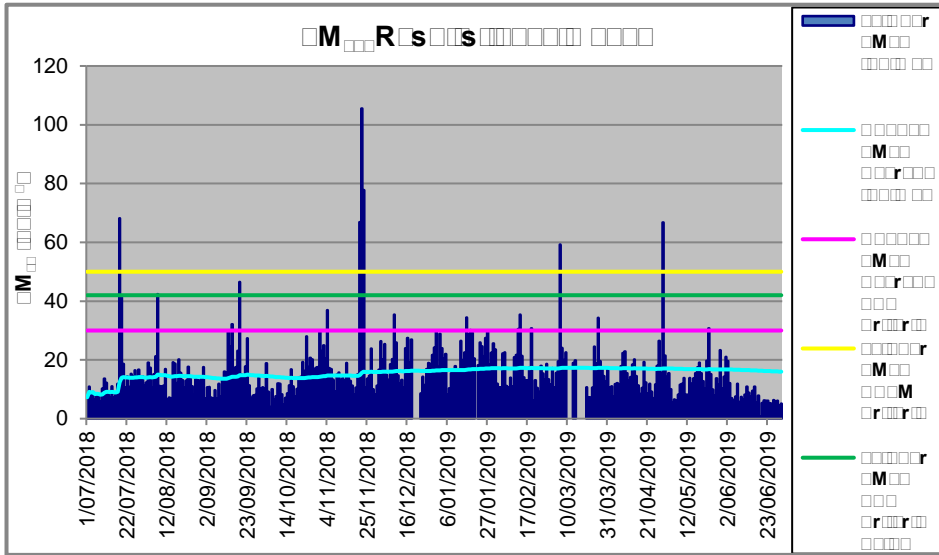
In accordance with Condition 10 of Schedule 3, DA165-7-2005, the concentration of particulates with an aerodynamic diameter less than ten microns (PM<sub>10</sub>) is monitored via the continuous dust monitor (TEOM) near Maroota Public School. The TEOM records data for the whole 360° angles, of which the 180° - 240° quadrant (southerly to south-westerly) indicate potential airborne contributions from Haerses Road Quarry. Chart 8 illustrates the PM<sub>10</sub> results for this reporting period, in comparison with relevant consent criteria. Charts 5 to 8 show the PM<sub>10</sub> results for the reporting periods of 2018-2019, 2019-2020, 2020-2021 and 2021-2022 respectively.

One PM<sub>10</sub> exceedance event occurred during this reporting period. The 24-hour average PM<sub>10</sub> exceeded the EPL rolling 24-hour average PM<sub>10</sub> of 42 ug/m<sup>3</sup> criteria.

Reporting of TSP results commenced in December 2017 and are shown in Charts 9 to 12. No TSP exceedance occurred in this reporting period.

A copy of the full reports containing TEOM, TSP and weather station data provided by CBased Environmental Pty Ltd are contained in Appendix B.



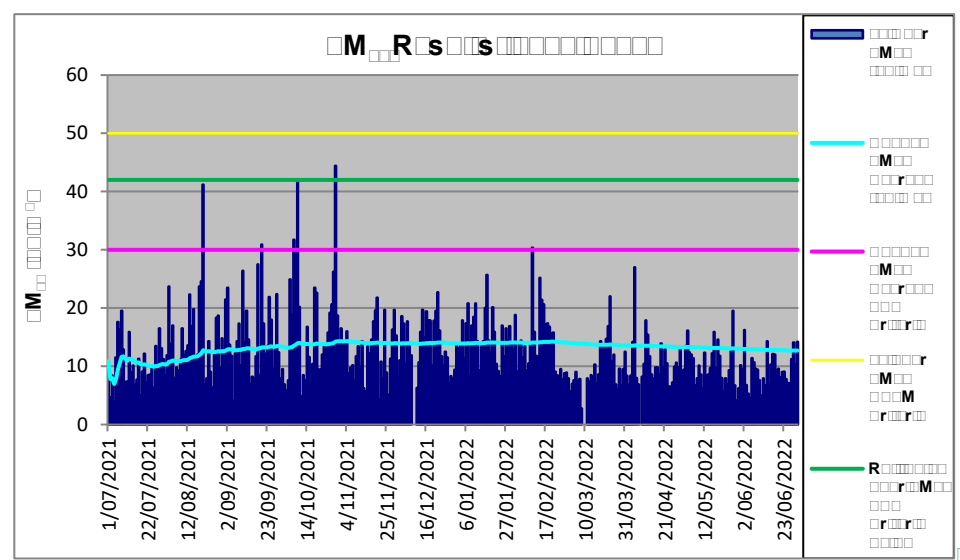
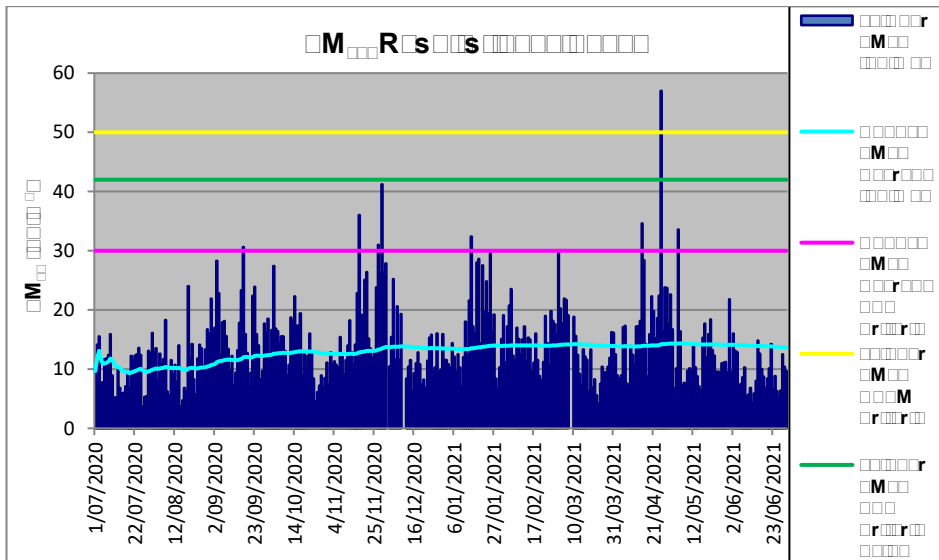


Legend for the first row of charts:

- Blue bar: M\_Rs
- Cyan line: M\_Rs
- Magenta line: M\_Rs
- Yellow line: M\_Rs
- Green line: M\_Rs

Legend for the second row of charts:

- Blue bar: M\_Rs
- Cyan line: M\_Rs
- Magenta line: M\_Rs
- Yellow line: M\_Rs
- Green line: M\_Rs

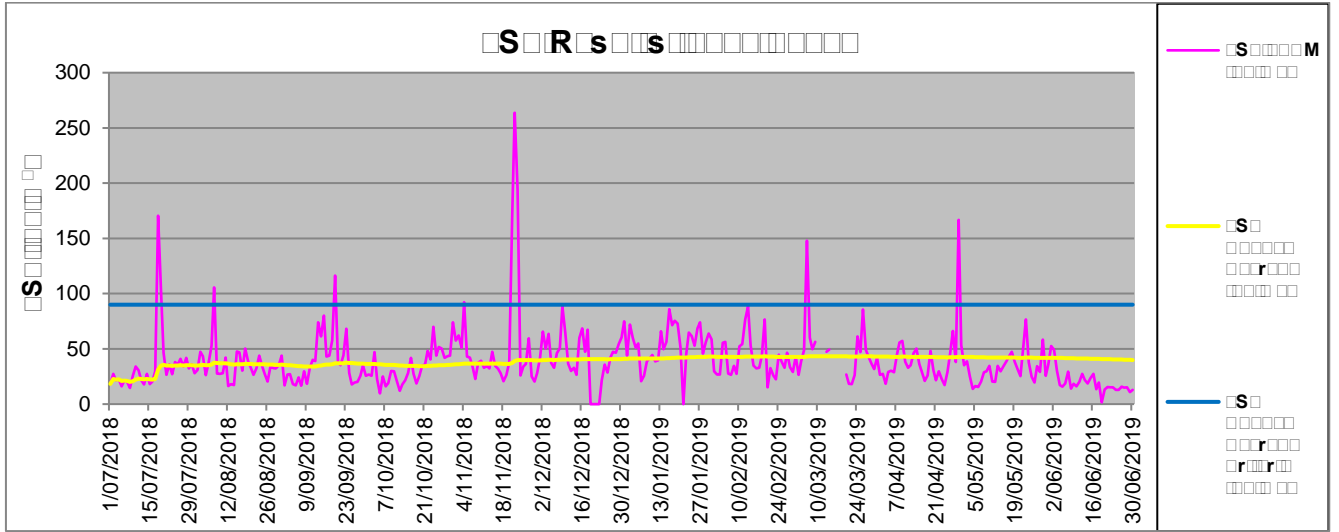


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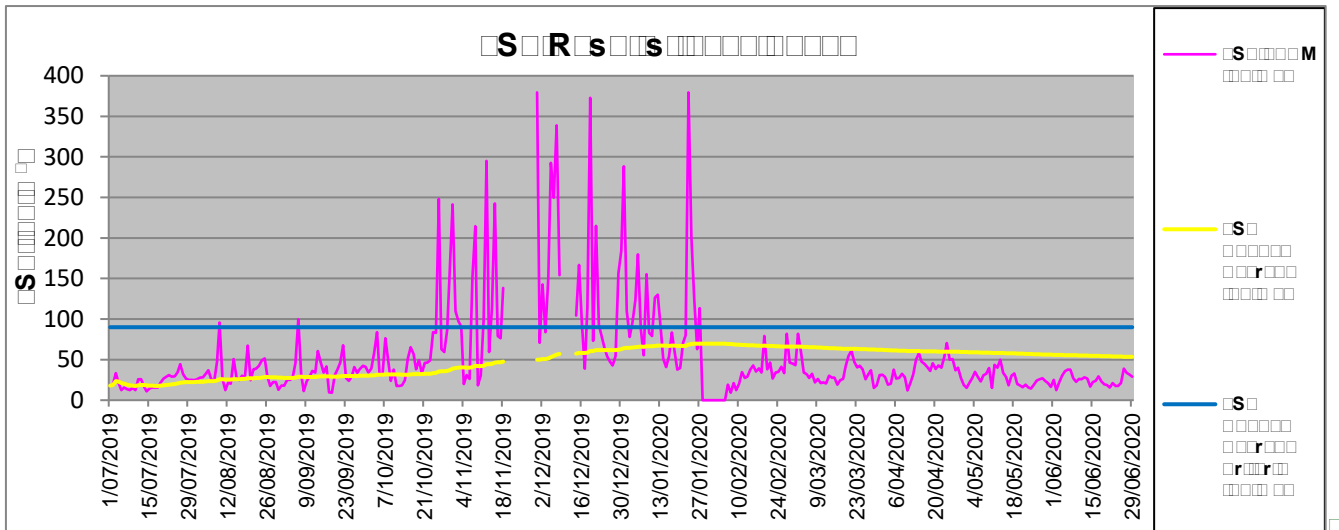
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- Green line: M\_Rs

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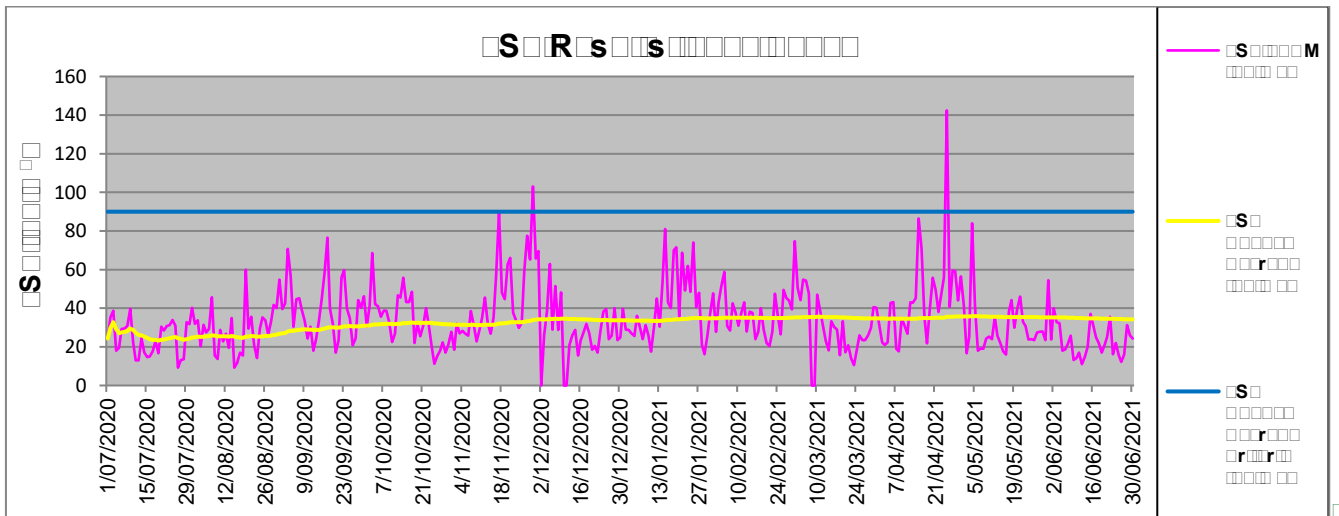
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- Magenta line: M\_Rs
- Yellow line: M\_Rs
- Green line: M\_Rs



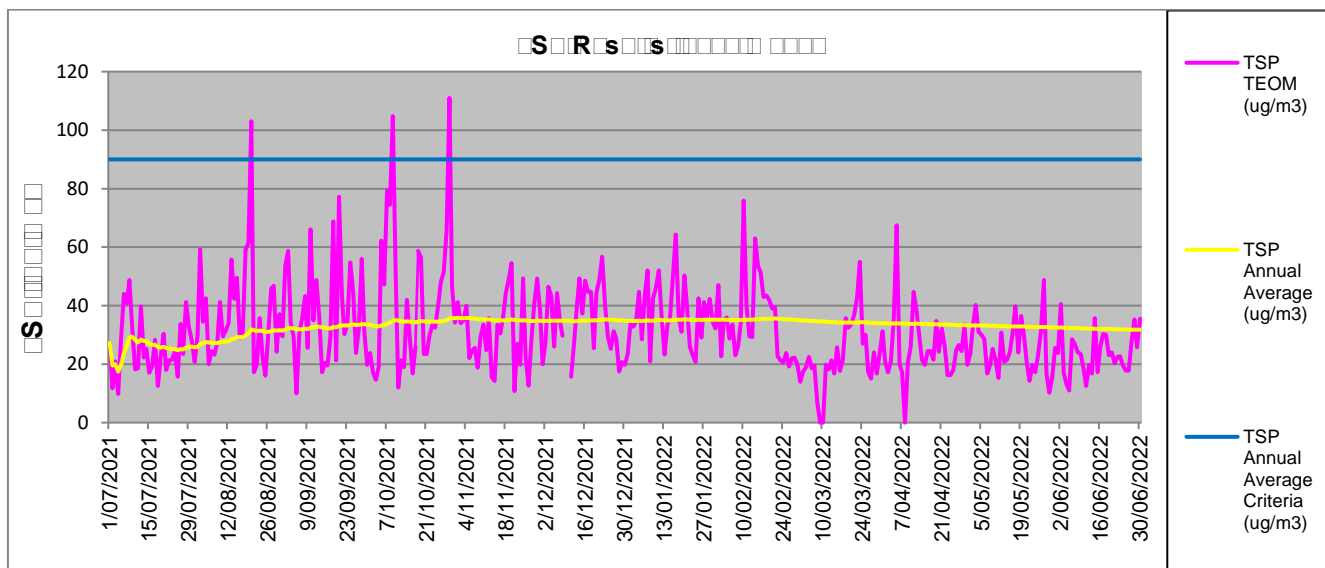
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S R s s d r r

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**Reporting Period 2021-2022**

Four dust deposition gauges monitor potential dust impacts from Haerses Road quarry.

Monthly results and annual dust deposition averages for D08 (Olive Grove, Hitchcock Road, D11 (Receiver R6) and D12 (Receiver R8) for the July 2021 to June 2022 period were in compliant. All annual averages were in compliant with the 4 g/m2/month criteria.

Elevated monthly dust deposition results were recorded for D10 (EPL Monitoring Point 3) across a number of months. One annual average exceedance at 4.2 g/m2/month was recorded for D10 in October 2021 and was reported to the DPE and EPA.

An Air Quality Assessment (ERM, 2019) undertaken for the Modification Report MR3 (Umwelt, 2019) specifies the annual average dust deposition of 1.5 g/m2/month. All dust gauges returned annual averages lower than the predicted level, except at D10 which concluded at 2.8 g/m2/month. The exceeded annual average dust deposition at D10 is not attributed to quarry operations but is due to a number of factors including paddock slashing and utilising the immediate paddock as helicopter staging area during local hazard reduction burns.

**Historical Data**

It can be seen from Charts 1 to 4 that the majority of the dust deposition results are in compliance over the previous 4 years of monitoring. Annual average dust deposition at dust gauge D10 were exceeded through the 2019 – 2020 and for one month during the 2021 – 2022 monitoring periods due to impacts from prolonged earthwork activities, exposed ground surface in the neighbouring property, paddock slashing and poor air quality from bushfires and hazard reduction burns.

**M**

**Reporting Period 2021-2022**

An Air Quality Assessment (ERM, 2019) undertaken for the Modification Report MR3 (Umwelt, 2019) specifies the long term annual average PM10 concentration to be 13.8 µg/m<sup>3</sup>, based on a 5-year average data collected at the TEOM located adjacent to the Maroota Public School. The annual average PM10 concentration for this reporting period is 12.7 µg/m<sup>3</sup> which is lower than the long-term average.

The 24-hour average PM<sub>10</sub> levels (dark blue columns on Chart 8) remained below the 24 hour EPL management level of 42 µg/m<sup>3</sup> (green line on Chart 8) and the 24 hour NEPM short term criteria level of 50 µg/m<sup>3</sup> (yellow line on Chart 8), except on 29 October during this reporting period. Table 12 lists the elevated PM<sub>10</sub> level and explanation.

**Historical Data**

It can be seen from Charts 5 to 8 that all the annual average PM10 results recorded at the TEOM comply with the annual average PM10 criteria of 30µg/m<sup>3</sup> over the previous four years of annual review reporting.

A number of 24-hour average PM10 exceedances were recorded over the last four reporting periods with causes attributed to activities not related to quarry operations. Exceedances during the 2018 - 2019 were attributed to a number of non-quarry related causes including scheduled hazard reduction burns, forecasted gusty winds, and storm cells and dust storms passing through Sydney. Exceedance in 2020 – 2021 was due to a number of scheduled RFS hazard reductions burns in Sydney. Exceedance in 2021 – 2022 was due to warm and windy conditions exacerbated by a local bushfire in South Maroota.

The rolling annual PM<sub>10</sub> average for the 2021 - 2021 reporting period was 12.7 µg/m<sup>3</sup>, which was lower than the EPA criterion of 30µg/m<sup>3</sup> and comparable to the annual average of 13 µg/m<sup>3</sup> contained in the Modification Report MR 3 (Umwelt, 2019). This annual average is significantly lower than the previous reporting periods which recorded 13.7 µg/m<sup>3</sup> (2020 – 2021), 21.3 µg/m<sup>3</sup> (2019 – 2020), 16.0 µg/m<sup>3</sup> (2018 - 2019) and 15.3 µg/m<sup>3</sup> (2017 – 2018). The higher annual PM10 averages over the past earlier 4 reporting years were due to relatively dryer and dustier conditions compared to historical records and were highly influenced by cumulative poor air quality associated with local, regional and interstate bushfires and backburning operations.

**S s d d r s**

**Reporting Period 2021-2022**

The Total Suspended Particles (TSP) results are reported in Charts 9 to 12 inclusive. The annual average TSP for this reporting period is 31.8 µg/m<sup>3</sup> which is lower than the annual average TSP criteria of 90 µg/m<sup>3</sup> set out by the consent and EPL. The elevated TSP values were a reflection of high PM10 values.

**Historical Data**

Reporting of TSP commenced in December 2017. Historical annual average TSP values were 38.3 µg/m<sup>3</sup> (2017-2018), 40.0 µg/m<sup>3</sup> (2018-2019) and 53.4 µg/m<sup>3</sup> (2019-2020) and 34.3 µg/m<sup>3</sup> (2020-2021). The higher annual average TSP value recorded in 2019-2020 were attributed to cumulative effects of poor air quality associated with bushfires in the local, regional and inter-state areas.

Table 1: Summary of Air Quality Incidents

Incident ID	Date	Parameter	Criteria	Description
1	29 Oct 2021	Rolling 24-hour average PM10 values reached 44.4 µg/m3	EPL 12513 Condition M2.3 Rolling 24-hour average PM10 criteria of 42 µg/m3	A Trigger Alarm was received at 5:01 pm on 29/10/2021 alerting that the rolling 24 hr average PM10 level has reached 42.8 µg/m3 and continuing to rise. Quarry operations at Haerses Road Quarry had already ceased at the time the alarm was received. No quarry operations were undertaken the following day.  Adverse weather warning was issued by the Bureau of Meteorology for 29/10/2021 which forecasted warm and windy conditions. The poor air quality was exacerbated by a local bushfire in South Maroota.  The DPE and EPA were not notified of this event as the criteria is stipulated by specific EPL 12513 Condition M2.3 requirement.  This elevated 24 hr average PM10 did not breach any EPA or DPE consent conditions, or the 50 µg/m3 NEPM 24-hour Average PM10 criteria.

□

2.1.1.1 Dust Deposition

Dust Deposition

The EIS (ERM, 2005) prepared for the original DA 165-7-2005 predicted dust deposition during quarrying Stages 1 and 5 to be between 2.2 and 3.0 g/month/m<sup>2</sup> for all receptors. Stages 1, 2 east and 2 west are active extraction cells however, no extraction occurred in these locations during this monitoring period. Recent Air Quality Assessment undertaken for Modification Report MR 3 (Umwelt, 2019) predicted that quarry operations will not exceed the predicted EPA criterion of 2 g/m<sup>2</sup>/month and annual average of 4 g/m<sup>2</sup>/month.

The EA (Umwelt, 2016) prepared for DA 165-7-2005 (Modification 1) predicted that no privately owned receivers are projected to experience ground level concentration of dust deposition above the assessment criteria, due to emissions from the modification only (Extraction Cells 1A-B to 5A-B inclusive). The highest predicted impacts occur at receptors R1, R3 and R13 with predicted incremental annual average dust deposition of 0.04 g/month/m<sup>2</sup>. The Modification Report MR 3 (Umwelt, 2019) determined that quarry operations proposed under Modification 3 would not result in the EPA dust deposition criteria to be exceeded.

Monthly dust deposition at D8 ranged from 0.2 to 1.7 to g/m<sup>2</sup>/month which in line with the predicted air quality impacts.

Monthly dust deposition at D10 ranged from 0.2 to 8.8 g/m<sup>2</sup>/month, with four months returning elevated dust deposition results of 8.8 g/m<sup>2</sup>/month (August 2021), 4.5 g/m<sup>2</sup>/month (September 2021), 7.0 g/m<sup>2</sup>/month (October 2021) and 7.8 g/m<sup>2</sup>/month (June 2022). Field observations for these elevated monthly dust results indicated that vegetation and algae and bird droppings were present in the dust gauge during these elevated levels, in conjunction with the adjacent paddock being slashed and tilled thus leaving a large area of exposed earth.

Monthly dust deposition at D11 ranged from 0.3 to 2.2 to g/m<sup>2</sup>/month and the annual average dust deposition being 1.1 g/m<sup>2</sup>/month, which is in line with the predicted dust impacts, and compliant with the annual average criteria of 4.0 g/m<sup>2</sup>/month.

Monthly dust deposition at D12 ranged from 0.1 to 0.8 g/m<sup>2</sup>/month with the annual average dust deposition being 0.3 g/m<sup>2</sup>/month, which is in line with the predicted dust impacts and compliant with the annual average criteria of 4.0 g/m<sup>2</sup>/month.

**M**

Earlier PM10 predictions contained in the EIS (ERM, 2005) prepared for the original DA 165-7-2005 showed ground level concentrations of 24-hour average PM10 of 13 µg/m<sup>3</sup> and an annual average PM10 to be 12 µg/m<sup>3</sup>. Recent Air Quality Assessment undertaken for Modification Report MR 3 (Umwelt, 2019) specifies a slightly higher 24-hour average PM10 of 13.8 µg/m<sup>3</sup> and an annual average PM10 to be 12 µg/m<sup>3</sup>. The Modification Report MR 3 (Umwelt, 2019) also predicted that under worst-case operational scenarios, the predicted combined background and quarry increment particulate levels would remain below the 24-hour average PM10 criteria of 50 µg/m<sup>3</sup> which has been complied with during this reporting period.

**S s d d r S**

TSP predictions contained in the EIS (ERM, 2005) prepared for the original DA 165-7-2005 showed ground level concentrations of 24-hour average TSP of 26 µg/m<sup>3</sup> and an annual average TSP to be 25 µg/m<sup>3</sup>. The EA (Umwelt, 2016) prepared for DA 165-7-2005 (Modification 1) predicted that no privately owned receivers will experience TSP above the assessment criteria. The highest predicted TSP will occur at receiver R4 as a result of Modification 1 extraction where the predicted incremental 24-hour TSP concentration is 1.5 µg/m<sup>3</sup>. Further to this, the Modification Report MR 3 (Umwelt, 2019) predicted an annual average TSP concentration of 34.5 µg/m<sup>3</sup> which was calculated based on the assumption that 40% of the TSP is PM10.

During this monitoring period, the annual average of TSP of 31.8 µg/m<sup>3</sup> was recorded, which is lower than the predicted levels in the Air Quality Assessment undertaken for the Modification Report MR 3 (Umwelt, 2019).

**s r r d r s**

No changes to the environmental procedures are proposed or deemed necessary for air quality management. In the event significant amount of visible dust is present on the premise, follow the steps outlined in the Air Quality Management Plan.

**s M**

**s S r s d M s r s**

The objectives, criteria limits, procedures, response, reporting and responsibilities of noise management are contained in the Noise Management Plan.

The potential sources of noise from Haerses Road quarry and mitigation measures have been identified in Table 13.



Table 14: Noise Management Plan (NMP) Measures

Source	Measures
<ul style="list-style-type: none"> <li>Extraction by bulldozers and excavators;</li> <li>Moving of materials and stockpiling by dump trucks and excavators;</li> <li>Truck haulage including bogie trucks, truck and dogs;</li> <li>Wet/dry processing of sand; and</li> </ul>	<ul style="list-style-type: none"> <li>Construction of noise bunds in strategic locations as stipulated in the EIS/EAs and consent conditions;</li> <li>Compliance with approved hours of operation;</li> <li>Regular maintenance of road surfaces, vehicles and equipment to reduce noise emissions; and</li> <li>Enforcement of speed limits for trucks and limited use of exhaust brakes in residential and school areas.</li> <li>Enforcement of a 20km/h speed limit on quarry access road and haul roads.</li> <li>Switch off plant when not in use and use of automatic idle shutdown.</li> <li>Sealed sections of Haerses Road</li> </ul>

□

The Noise Management Plan requires attended noise monitoring to be undertaken every six months during the first two years of operation once extraction in Modification 1 area has commenced. After two years a review of the monitoring results will be undertaken and if deemed appropriate, approval will be sought from the DPE to revert to annual attended noise monitoring for the remainder of operations in the Mod 1 extraction area.

Extraction in the newly approved extraction cells under Modification 1 recommenced during this reporting period (Extraction Cells 1A, 1B and 2B) and therefore, noise monitoring frequency reverted back to 6-monthly and were undertaken in December 2021 and June 2022.

The main sources of noise generated from Haerses Road quarry during the attended noise monitoring were sand processing and truck loading (utilising a screen, front end loaders and dump trucks).

□

Table 15: Noise Criteria

Haerses Road's new noise criteria determined during DA Modification 3 are listed in Table 14. The locations of noise receivers are displayed in Figure 3. Noise criteria in Table 14 do not apply if the quarry has an agreement with the relevant landowner to exceed the noise criteria. Dixon Sand currently has a noise agreement in place with the following receivers:

- R2 (E. H. Ramm),
- identified receivers on Hitchcock Road to the east of Haerses Road quarry, and
- R12 (F. & J. Roberts)

Approved hours of operation are contained in Table 15. Noise monitoring for the quarry is based on these criteria.

Environmental Assessment Report

Condition	Details																				
DA165-7-2005, Condition 3 of Schedule 3	<p>The Applicant must ensure that operational noise generated by the development (excluding acoustic bund construction) does not exceed the criteria in Table 2 at any residence on privately-owned land.</p> <p><i>Table 2: Operational noise criteria dB(A)</i></p> <table border="1"> <thead> <tr> <th rowspan="2">Receiver</th> <th>Day</th> <th colspan="2">Shoulder (6.00 am to 7.00 am)</th> </tr> <tr> <th><i>L<sub>Aeq</sub> (15 minute)</i></th> <th><i>L<sub>Aeq</sub> (15 minute)</i></th> <th><i>L<sub>A(max)</sub></i></th> </tr> </thead> <tbody> <tr> <td>R05, R06</td> <td>41</td> <td>35</td> <td rowspan="4">52</td> </tr> <tr> <td>R03</td> <td>40</td> <td>37</td> </tr> <tr> <td>R13, R14</td> <td>40</td> <td>36</td> </tr> <tr> <td>All other receivers</td> <td>40</td> <td>35</td> </tr> </tbody> </table> <p>Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the <i>NSW Noise Policy for Industry</i>.</p> <p>However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.</p> <p><i>Note:</i></p> <ul style="list-style-type: none"> <li>Should an agreement with a landowner be terminated for any reason, the Applicant must comply with the noise criteria in Table 2.</li> </ul>	Receiver	Day	Shoulder (6.00 am to 7.00 am)		<i>L<sub>Aeq</sub> (15 minute)</i>	<i>L<sub>Aeq</sub> (15 minute)</i>	<i>L<sub>A(max)</sub></i>	R05, R06	41	35	52	R03	40	37	R13, R14	40	36	All other receivers	40	35
Receiver	Day		Shoulder (6.00 am to 7.00 am)																		
	<i>L<sub>Aeq</sub> (15 minute)</i>	<i>L<sub>Aeq</sub> (15 minute)</i>	<i>L<sub>A(max)</sub></i>																		
R05, R06	41	35	52																		
R03	40	37																			
R13, R14	40	36																			
All other receivers	40	35																			

Environmental Assessment Report

Condition	Details													
DA165-7-2005, Condition 1 of Schedule 3	<p>The Applicant must comply with the operating hours set out in Table 1.</p> <p><i>Table 1: Operating hours</i></p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Permissible Hours</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Quarrying operations (excluding truck arrival, loading and dispatch)</td> <td>7.00 am to 6.00 pm Monday to Saturday</td> </tr> <tr> <td>At no time on Sundays or public holidays</td> </tr> <tr> <td rowspan="2">Truck arrival, loading and dispatch</td> <td>6.00 am to 6.00 pm Monday to Saturday</td> </tr> <tr> <td>At no time on Sundays or public holidays</td> </tr> <tr> <td rowspan="2">Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road</td> <td>8.00 to 5.00 pm Monday to Friday</td> </tr> <tr> <td>At no time on Saturdays, Sundays or public holidays</td> </tr> <tr> <td>Maintenance</td> <td>At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations</td> </tr> </tbody> </table>	Activity	Permissible Hours	Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday	At no time on Sundays or public holidays	Truck arrival, loading and dispatch	6.00 am to 6.00 pm Monday to Saturday	At no time on Sundays or public holidays	Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road	8.00 to 5.00 pm Monday to Friday	At no time on Saturdays, Sundays or public holidays	Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations
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	At no time on Saturdays, Sundays or public holidays													
Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations													
DA165-7-2005, Condition 2 of Schedule 3	<p>The following activities may be carried out outside the hours specified in condition 1 above:</p> <ol style="list-style-type: none"> <li>delivery or dispatch of materials as requested by the NSW Police Force or other public authorities; and</li> <li>emergency work to avoid the loss of lives, property or to prevent environmental harm.</li> </ol> <p>In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.</p>													

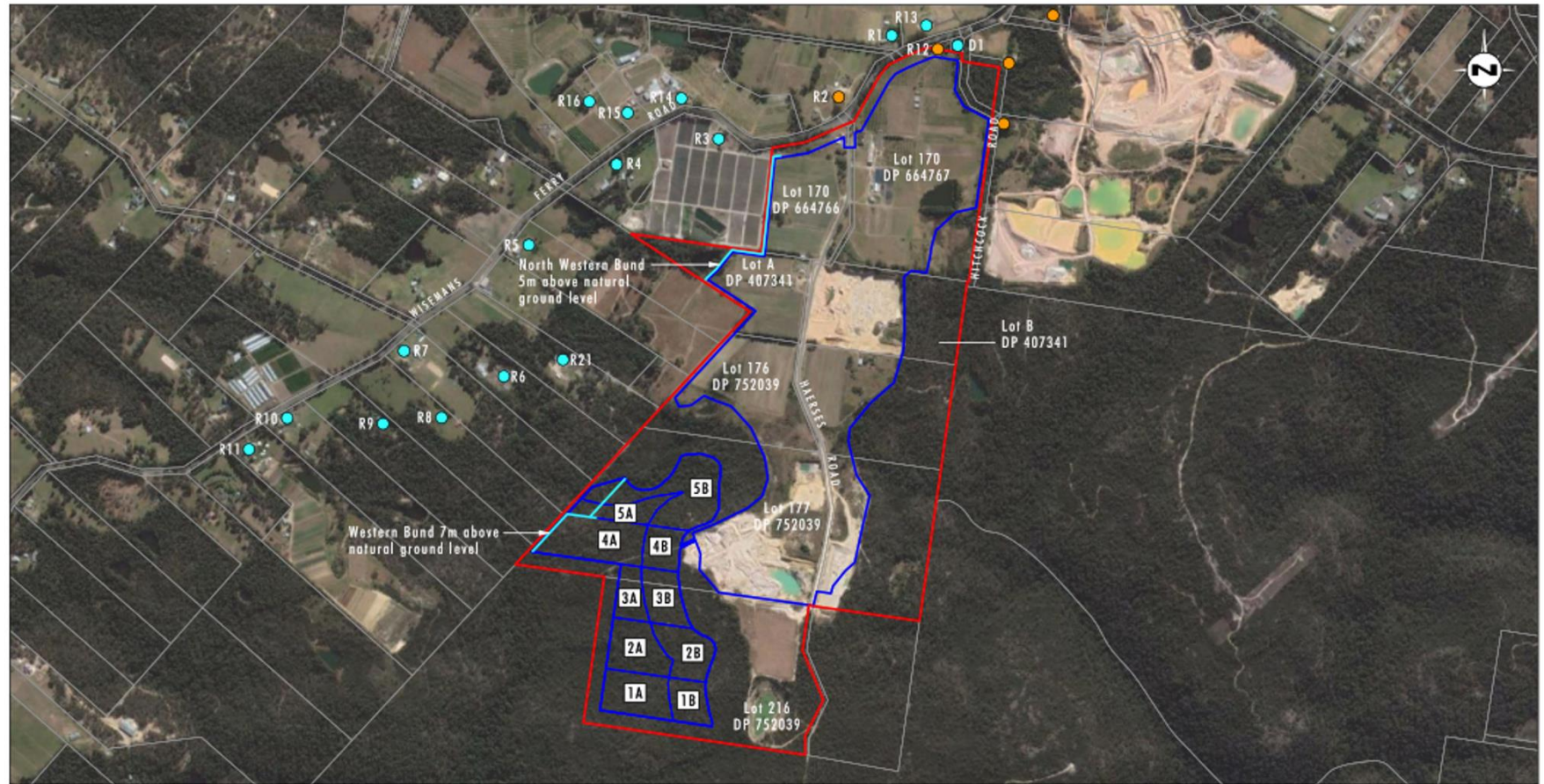


Image Source: Google Earth (Sep 2017)  
 Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2014), ERM (2017)

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**Legend**

- Haerses Road Quarry Site
- Approved Extraction Area
- 1 Extraction Cell Number
- Noise Receiver Location
- Noise Receiver with Private Agreement
- Acoustic Bund

File Name (A4): R08/4272\_013.dgn  
 20180413 10.08

Figure 3

**Haerses Road Quarry  
 Noise Receiver Locations  
 and Acoustic Bunds**

**Results**

Attended noise monitoring for Haerses Road quarry was undertaken in December 2021 and June 2022. Attended noise monitoring was conducted at receivers (where permission to enter the property was granted) and at-source, in accordance with the staging requirement of the Noise Management Plan. In instances where extraneous noise such as road traffic and insects were found to be the dominant noise sources, noise levels were obtained at alternative locations closer to the quarry. Predicted noise levels are then extrapolated from the near-distance location to the sensitive receiver locations.

During the December 2021 and June 2022 monitoring, Quarry operations were inaudible at all residential receivers prior to 7:00am, with other noise sources such as traffic noise, creek flowing and rooster calls being the dominant noise sources. No L<sub>Amax</sub> noise levels were attributable to quarry operations during the shoulder period. During daytime monitoring, quarry noises were also inaudible at the nominated receivers.

On-site noise measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were taken to determine the L<sub>Aeq15min</sub> to establish representative sound power levels of the quarry operation to facilitate calculation of extrapolated noise levels at receivers where background noise was too high to enable quarry noise contribution to be determined. Extrapolated noise results were calculated and are presented in Table 16. The full noise monitoring reports for December 2021 and June 2022 are contained in Appendix D.

Table 16: Predicted noise levels at receivers and at-source

Receiver	Source		December 2021	December 2022	Notes
	Source	Receiver	LAeq15min	LAeq15min	
R12	35	40	27	29	Predicted noise levels correlate well with measured noise levels and all locations shown to comply with noise limits.
R3	37	40	29	31	
R4	35	40	32	31	
R6	35	41	32	36	
R7	35	40	33	32	
R8	35	40	36	33	
R13, R14	36	40	See Figure 4	See Figure 4	
All other receivers	40	40	See Figure 4	See Figure 4	

\*Note: A noise agreement between Dixon Sand and receivers R2, receivers located on Hitchcock Road and R12 are in place and therefore the noise criteria do not apply to these receivers.

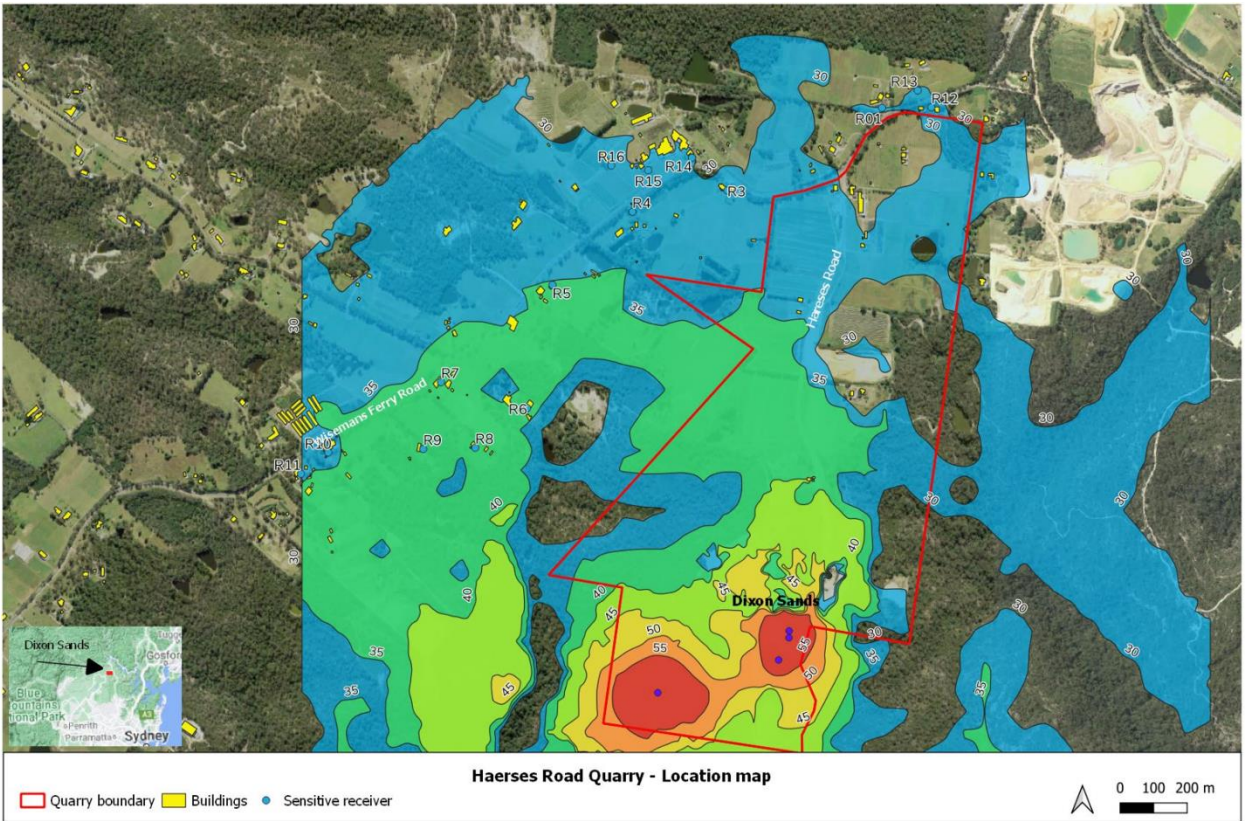


Figure 4 – Extrapolated noise levels from Haerses Road quarry, based on on-site measurements (December 2021).

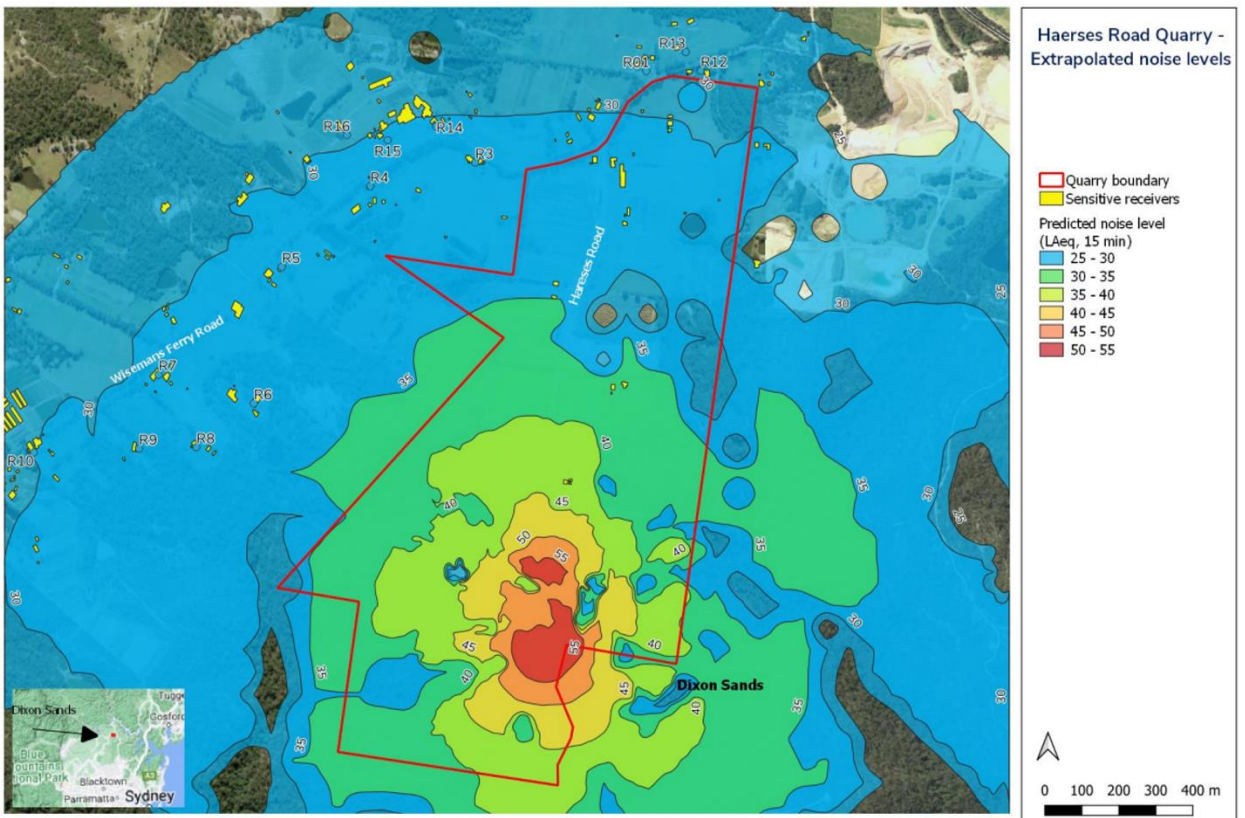


Figure 5 – Extrapolated noise levels from Haerses Road quarry, based on on-site measurements (June 2022).

RESULTS

Results of attended noise monitoring and extrapolated noise levels indicate that Haerses Road quarry operations are compliant with shoulder and daytime noise criteria under the meteorological conditions at the time of monitoring.

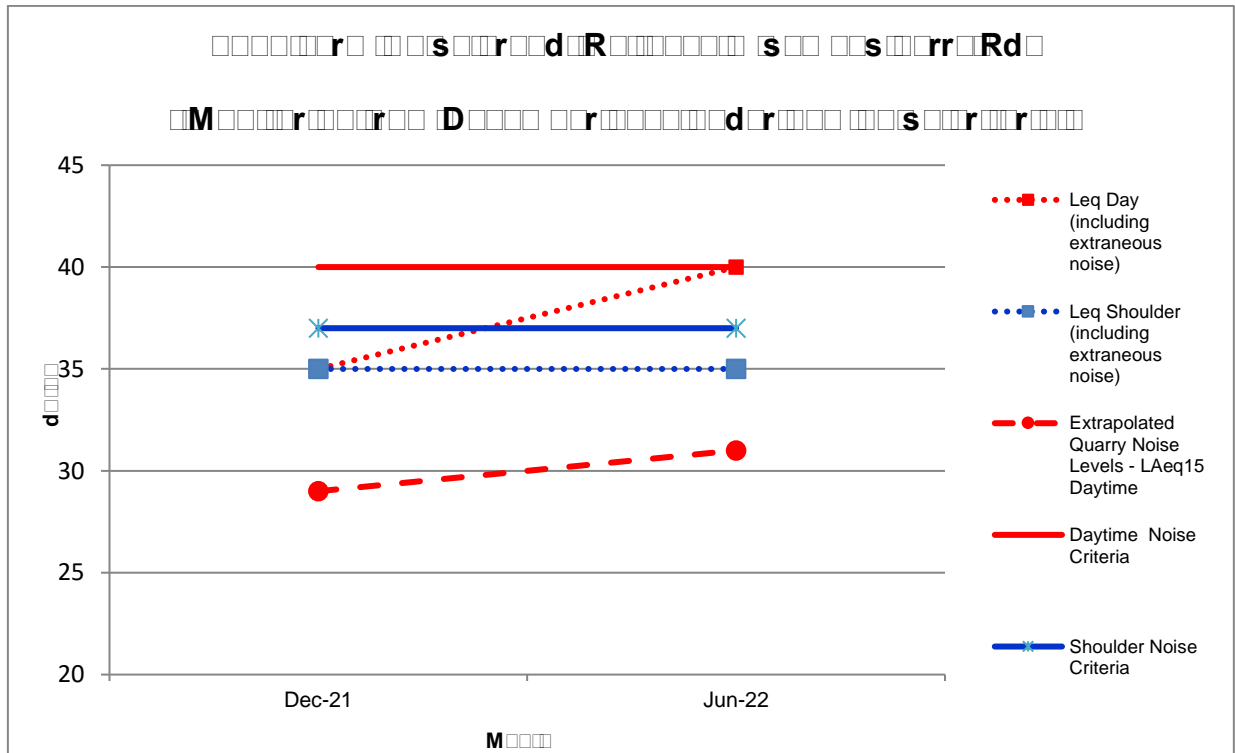
DISCUSSION

During this monitoring period, extraction recommenced in the new Modification 1 extraction area.

Dixon Sand has a noise agreement in place with receiver R2, R12 and properties belonging to PF Formations along Hitchcock Road and therefore, noise criteria do not apply at these locations.

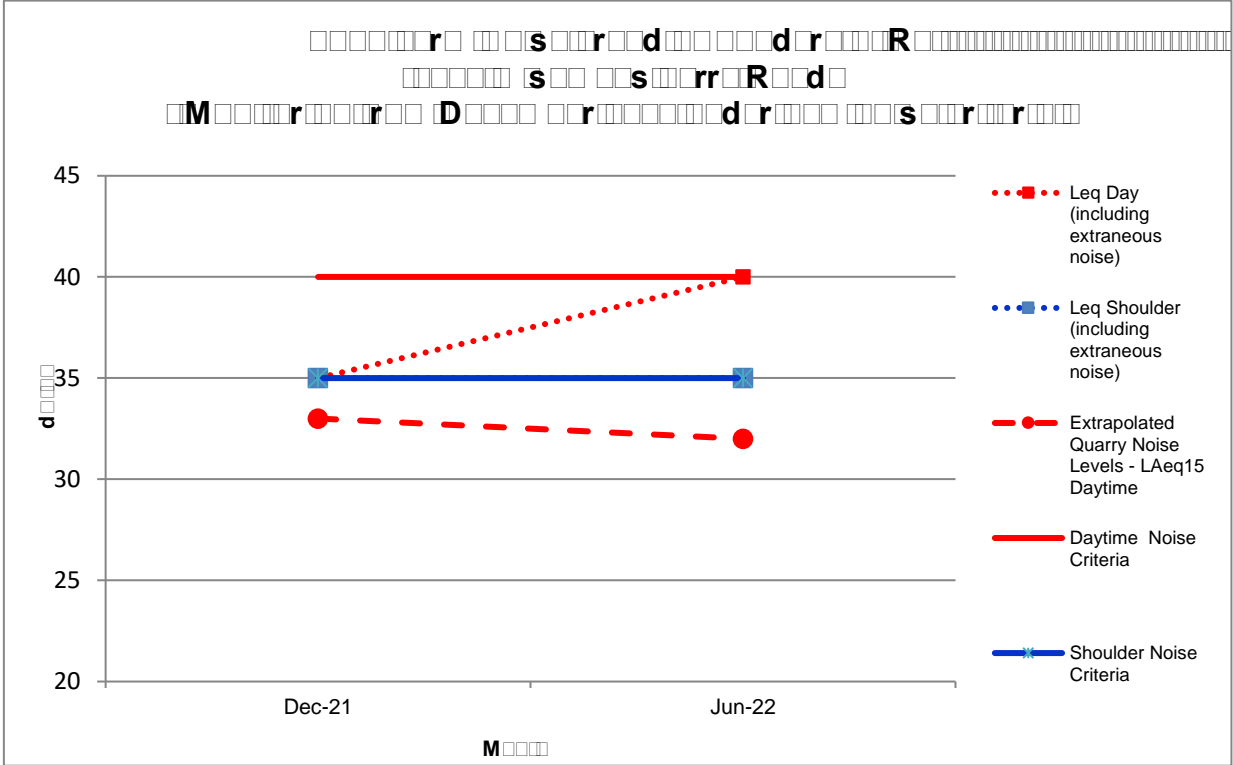
New noise criteria were established during DA Modification 3. Therefore, this marks the starting point for a new long term trend for quarry noise. Attended noise monitoring results and extrapolated noise levels from the December 2021 and June 2022 monitoring are displayed in Charts 13 to 17, inclusive. All attended noise monitoring results and extrapolated noise levels are compliant for both shoulder and daytime period at all receivers.

Additional noise results, to be obtained from future noise monitoring, will be required to establish new noise trends for quarry operations.

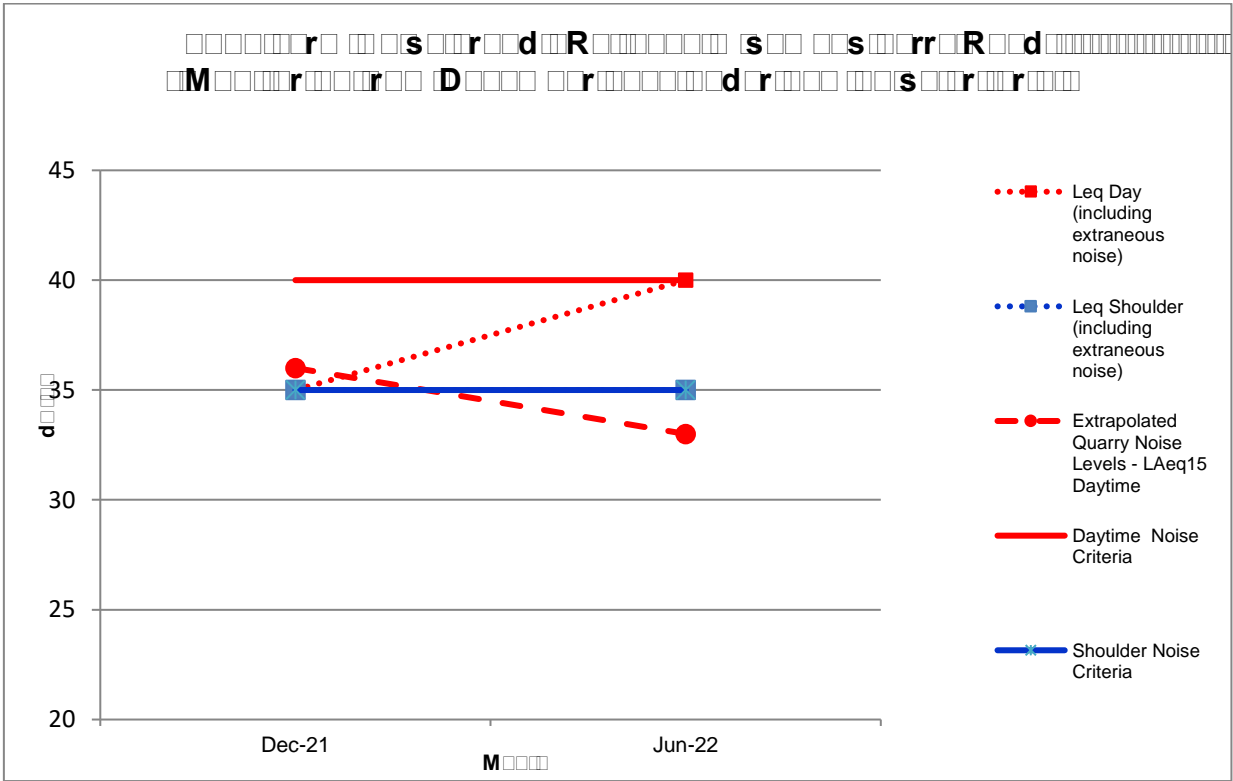


RECEIVER R2





Residual Noise



Residual Noise





## Disruption of quarry operations

The EIS (ERM, 2005) prepared for the original development consent DA 165-7-2005 contains predictions for noise impacts during quarry operations in the following extraction Stages:

- Stage 1,
- Stage 4 (scenario a),
- Stage 4 (scenario b), and
- Stage 5.

The EA (Umwelt, 2016) prepared for development consent DA 165-7-2005 (Modification 1) contains predictions for noise impacts for quarry activities in the newly approved extraction cells:

- early extraction in Cells 4,
- early extraction in Cells 5,
- clearing, pre-stripping and early extraction for Cell 1,
- clearing, pre-stripping and early extraction for Cell 3, and
- bund construction in Cell 4.

The Modification report MR3 (Umwelt, 2019) prepared for DA Modification 3 included a new Noise Impact Assessment which considered the potential noise emissions of the Quarry against the Project Noise Trigger Levels established in accordance with the Noise Policy for Industry (EPA 2017) which considered noise emissions over the remaining life of the Quarry including the proposed Modification under this DA Modification.

During this monitoring period, the main source of noise from quarry operations on Lot 216 were mobile sand processing and loading of haulage trucks for transfer to Old Northern Road quarry (front end loaders, mobile screener and haulage trucks) and extraction operation in the Modification 1 area. Extrapolated daytime noise levels for receivers R3, R4, R6, R7, R8 and other receivers from noise monitoring in December 2021 and June 2022 are several decibels below the predicted daytime noise impacts in the Modification Report (Umwelt, 2019) and noise criteria. This result is as predicted and in line with the NIA in the Modification Report (Umwelt, 2019) where noise modelling results are based on worst-case meteorological conditions and conservatively modelled scenarios demonstrating that noise emission from quarry operations can be managed to maintain compliance with the Project Noise Trigger Levels throughout the life of the quarry.

Future noise monitoring results will enable a better understanding of the actual noise impacts associated with quarry operations in the new extraction cells of Modification 1 as the quarry moves into different extraction cells.

## Construction of bund walls

Undertake noise monitoring in accordance with the Noise Management Plans and continue with the 6-monthly monitoring frequency.

Noise bund walls are to be constructed and maintained as per the strategies outlined in the Haerses Road Acoustic Bund Construction Noise Management Plan.

**10.2.1 Vehicle Movements**

**10.2.1.1 Monthly Movement Registers**

**10.2.1.1.1 Movement Registers**

Vehicle movements are recorded in the truck register. Records have been sent to Council and Section 94 Contribution payments made.

There were no exceedances of permitted vehicle movements during the reporting period.

**10.2.1.1.2 Monthly Movement Registers**

Observations of road conditions and maintenance requirements are inclusive in the monthly site inspection checklists. An example of the monthly site inspection checklist is attached in Appendix E.

**10.2.1.1.3 Monthly Movement Registers**

Liaison between Dixon Sand and the representative of Maroota Public School is conducted on a regular basis during the Community Consultative Committee meetings which are held bi-annually. Details of the CCC meetings and community engagement and contributions are discussed further in Section 8.

**10.2.2 Road Related Complaints**

Dixon Sand received no traffic related complaints for Haerses Road Quarry during this reporting period.

A copy of the complaint register is contained in Appendix L.

**10.2.3 Compliance**

Assessment of compliance with the relevant conditions is summarised in Table 17.

**10.2.3.1 Road Related Complaints**

Dixon Sand	Road Related Complaints	Compliance	Notes
Condition 8 of Schedule 2	Truck movements at the site (i.e. either arrival or dispatch), including truck movements between the site and the Old Northern Road Quarry, must not exceed: (a) 180 per day; and (b) 20 between 6.00 am and 7.00 am.	Yes	Refer to Truck Record
Condition 10 of Schedule 2	The Applicant must: (a) maintain accurate records of all VENM and ENM received at the site (including the date, time and quantity received); and (b) include a copy of this data in the Annual Review.	Yes	VENM/ENM importation during this reporting period is recorded in the VENM/ENM Material Transport Register. Refer to Section 5.4.2
Condition 15 of Schedule 2	The Applicant must pay Council a monthly financial contribution toward the maintenance of local roads used for haulage of quarry products. The contribution must be determined in accordance with <i>The Hills Shire Council Contributions Plan No. 6 Extractive Industries</i> , or any subsequent relevant contributions plan adopted by Council.	Yes	Refer to Appendix J for an example of s.94 monthly contribution for sales from Haerses Road Quarry. Note these contributions are not inclusive of products sold at Old Northern Road Quarry.

<span style="float: left;">D</span> <span style="float: right;">s</span>																
Condition 1 of Schedule 3	The Applicant must comply with the operating hours set out in Table 1.	Yes	Refer to truck record													
<p><i>Table 1: Operating hours</i></p> <table border="1"> <thead> <tr> <th>Activity</th> <th>Permissible Hours</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Quarrying operations (excluding truck arrival, loading and dispatch)</td> <td>7.00 am to 6.00 pm Monday to Saturday</td> </tr> <tr> <td>At no time on Sundays or public holidays</td> </tr> <tr> <td rowspan="2">Truck arrival, loading and dispatch</td> <td>6.00 am to 6.00 pm Monday to Saturday</td> </tr> <tr> <td>At no time on Sundays or public holidays</td> </tr> <tr> <td rowspan="2">Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road</td> <td>8.00 to 5.00 pm Monday to Friday</td> </tr> <tr> <td>At no time on Saturdays, Sundays or public holidays</td> </tr> <tr> <td>Maintenance</td> <td>At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations</td> </tr> </tbody> </table>				Activity	Permissible Hours	Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday	At no time on Sundays or public holidays	Truck arrival, loading and dispatch	6.00 am to 6.00 pm Monday to Saturday	At no time on Sundays or public holidays	Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road	8.00 to 5.00 pm Monday to Friday	At no time on Saturdays, Sundays or public holidays	Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations
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Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations															
Condition 2 of Schedule 3	The following activities may be carried out outside the hours specified in condition 1 above: (a) delivery or dispatch of materials as requested by the NSW Police Force or other public authorities; and (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.	Yes	Condition not triggered													
Condition 20 of Schedule 3	Prior to carrying out any development, the Applicant must upgrade Haerses Road to meet the requirements for 'internal haul roads', under Baulkham Hills Development Control Plan No. 16 – Extractive Industries, to the satisfaction of Council.	Yes	Completed													

D	M	d	s
<p>Condition 21 of Schedule 3</p>	<p>The Applicant must:</p> <p>(a) maintain safe access to the site for the public and emergency services for the duration of the development; and</p> <p>(b) reinstate the extracted length of Haerses Road to the satisfaction of Council.</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>The Applicant must ensure that the final alignment and design of Haerses Road is approved by Council prior to the commencement of the development.</li> <li>The Applicant must bear the full costs associated with the design, survey and construction of the road works, including the relocation of utilities, if required.</li> <li>All works are to be in accordance with Council's Design Guidelines and Work Specifications for Subdivisions and Developments.</li> <li>Following the reconstruction of Haerses Road, the Applicant must rehabilitate any temporary access roads that were established on site.</li> </ul>	<p>Yes</p>	<p>Ongoing</p> <p>Condition not yet triggered</p> <p>Completed</p> <p>Completed</p> <p>Completed</p> <p>Condition not yet triggered</p>
<p>Condition 22 of Schedule 3</p>	<p>Prior to carrying out any development, the Applicant must:</p> <p>(a) provide for appropriate sight distances at the intersection of Haerses Road and Wisemans Ferry Road, by clearing and/or loping vegetation along the eastern approach of Wisemans Ferry Road; and</p> <p>(b) provide warning signage ("Truck Turning") on the eastern and western approaches of Wisemans Ferry Road,</p> <p>to the satisfaction of TfNSW.</p>	<p>Yes</p>	<p>Completed</p>

<p>Condition 23 of Schedule 3</p>	<p>Within 12 months of the commencement of the development, the Applicant must construct a Type 'AUR' treatment at the intersection of Haerses Road and Wisemans Ferry Road to the satisfaction of TfNSW. Until the intersection works have been completed to the satisfaction of TfNSW, the Applicant must limit the number of trucks entering the site to 15 truck movements per day.                      Notes:                      • <i>Prior to the Construction Certificate being released the Applicant must:</i>                      - <i>enter into a Memorandum of Understanding with the TfNSW that the Type 'AUR' intersection treatment shall be fully constructed and handed over to the TfNSW within 12 months of the commencement of the development; and</i>                      - <i>issue a bank guarantee in favour of the TfNSW for the total cost of the intersection works (the cost to be determined following the approval of detailed design plans by the TfNSW).</i>                      • <i>The Applicant shall ensure that the intersection works comply with the TfNSW Road Design Guide.</i>                      • <i>The Applicant shall bear the full costs associated with the design, survey and construction of the works, including the relocation of utilities, if required.</i></p>	<p>Yes</p>	<p>Completed</p>
<p>Condition 24 of Schedule 3</p>	<p>Prior to transporting any quarry products derived from quarrying operations within the Mod 1 extraction area, the Applicant must construct a channelised right-turn 'CHR' treatment at the intersection of Haerses Road and Wisemans Ferry Road to the satisfaction of TfNSW. The Applicant must:                      (a) submit detailed design plans to TfNSW for approval prior to the issue of a construction certificate by Council or the commencement of road works; and                      (b) design and construct the intersection treatment in accordance with the <i>Austrroads Guide to Road Design</i>.</p>	<p>Yes</p>	<p>Completed in May 2021</p>
<p>Condition 24A of Schedule 3</p>	<p>The Applicant must monitor trucks queuing within the right turn bay at the quarry intersection on Wisemans Ferry Road and, in the instance that there are trucks regularly queuing at the intersection, extend the length of the right turn bay to the satisfaction of TfNSW.</p>	<p>Yes</p>	<p>Monitoring of truck queuing at the intersection is undertaken during monthly site inspection</p>
<p>Condition 25 of Schedule 3</p>	<p>Prior to commencement of the works referred to in condition 24 above, the Applicant must prepare and implement a Traffic Control Plan for the development to the satisfaction of the TfNSW.</p>	<p>Yes</p>	<p>Completed by Civil Contractor</p>



**Environmental Management**

The production and truck movement data outlined above is evidence that Dixon Sand has operated in compliance with the consent conditions during the 2021 - 2022 reporting period.

No traffic related complaint was received by Haerses Road Quarry during this reporting period.

□

**Environmental Monitoring**

The findings show that mitigation measures proposed in the EIS and Management Plans are being implemented adequately. The permitted truck movements and hours of operations have been adhered to.

**Environmental Management Procedures**

No changes to the environmental procedures are proposed or deemed necessary for road and traffic management.

**Environmental Management**

**Environmental Management**

During this reporting period, refuelling of plant and machinery at Haerses Road quarry was carried out using a fuel truck. A spill kit is located on site. Maintenance and servicing of Haerses Road quarry plant and machinery were undertaken in the dedicated workshop located at the Old Northern Road Quarry. Chemicals, hazardous materials, hydrocarbon wastes and diesel fuel are stored in appropriate bunded and/or designated areas. Spill response kits and fire extinguishers are located at vantage locations in the workshop.

Glass, paper, cardboard and plastic (general solid waste – non-putrescible) were recycled via Council’s fortnightly scheduled bin collection service. Food waste and other general solid waste (putrescible) were disposed of and collected via Council’s weekly scheduled bin collection. No additional wastes were generated at Haerses Road quarry during this reporting period. No building or putrescible wastes have been disposed of on the site.

The amount of waste transported off site from Haerses Road for disposal, recycled and processed during the monitoring period is contained in Table 18.

Table 18: Waste Tracking Register

Waste Type	Disposal/Recycling Method	Volume
Putrescible	The Hills Shire Council Waste Contractor weekly pickup (1 x 240L Red bin)	Approx. 26 m <sup>3</sup>
Recyclables	The Hills Shire Council Waste Contractor fortnightly pickup (1 x 240L Yellow bin)	Approx. 13 m <sup>3</sup>
General Waste – Non-putrescible	Skip bins provided by a licensed Waste Contractor	0 m <sup>3</sup>

The waste tracking registers are contained in Appendix M.

### Excavated Natural Material (ENM) and Virgin Excavated Natural Material (VENM)

Condition 9 of Schedule 2 of DA165-7-2005 permits the importation of up to 250,000 tonnes of Excavated Natural Material (ENM) and Virgin Excavated Natural Material (VENM) per calendar year to Haerses Road quarry. Importation of VENM commenced in June 2019 with the following quantity of ENM and VENM imported:

- A total of *nil* tonnes of VENM/ENM was imported to Haerses Road Quarry during the 2022 calendar year,
- A total of 8,662 tonnes of VENM/ENM was imported to Haerses Road Quarry during the 2021 calendar year, and
- A total of 4,960 tonnes of VENM was imported to Haerses Road Quarry during the 2021 – 2022 financial year (Annual Review reporting period).

A copy of the ENM / VENM Material Transport Register is contained in Appendix M. The **VENM / ENM Material Transport Register** records:

- Transport Company name
- Truck Registration number
- Date of transport
- Material tip time
- Testing Certificate demonstrating compliance with the Waste Classification
- Quantity of material received
- Total annual quantity

### Waste Management Procedures

No changes to the waste management procedure are proposed.

Continue efforts to minimise waste generation and maximise recycling and reuse of materials are to be undertaken such as labelling of bins for waste segregation, waste reduction posters and toolbox talks to raise awareness.



## Monitoring

### Monitoring

DA165-7-2005 Modification 1 requires 13 additional monitoring wells to be installed (in clusters) in the 100m buffer zone to the Maroota Tertiary Sand Groundwater Source (MTSGS) in the expanded extraction area. These new monitoring bores have been installed in May 2018 and are an addition to the nine existing bores. Groundwater monitoring for bores in the buffer zone commenced in July 2018.

### Monitoring

Out of the fourteen boreholes originally installed at Haerses Road quarry, six of the original boreholes are currently active and being monitored. Boreholes H1, H4, H5, H8, H10, H11 and H13 have been decommissioned due to their locations being obsolete or in the active quarry operational areas. Monitoring ceased at borehole H3 due the bore running dry. In 2011 two additional boreholes BH4 and BH5 were added to Haerses Road quarry water monitoring program. Additional 13 boreholes (Cluster bores located in the MTSGS 100m buffer) were required to be installed by DA165-7-2005 Modification 1. Cluster bores in the MTSGS buffer zone were installed in May 2018 with groundwater levels (utilising continuous data loggers) and quality monitoring program commencing in July 2018 with continuous data loggers installed. Active groundwater bores at the Haerses Road quarry are listed in Table 19. The adopted 20<sup>th</sup> and 80<sup>th</sup> percentile water levels as site specific trigger values in the Soil and Water Management Plan are listed in Table 20.

### Monitoring

Monitoring Bore	Location	Monitoring
H2	Stage 4, adjacent to the dam	MTSGS
H6	Stage 5, northern boundary	MTSGS
H7	Stage 5, southern boundary	MTSGS
H9	Stage 3, behind tomato vines	MTSGS
H12	Stage 3, adjacent to the shed	MTSGS
H14	Fire trail, south of quarry boundary	MTSGS
BH4	South-west of quarry, outside Stage 2.	SCBGS
BH5	Stage 2, western boundary	SCBGS
BH01A	100m MTSGS Buffer – Site 1	Perched groundwater in weathered Hawkesbury sandstone
BH01B	100m MTSGS Buffer – Site 1	Perched groundwater in unweathered Hawkesbury sandstone
BH01C	100m MTSGS Buffer – Site 1	SCBGS
BH02A	100m MTSGS Buffer – Site 2	Perched groundwater in weathered Hawkesbury sandstone
BH02B	100m MTSGS Buffer – Site 2	Perched groundwater in unweathered Hawkesbury sandstone
BH02C	100m MTSGS Buffer – Site 2	SCBGS

BH03A	100m MTSGS Buffer – Site 3	Perched groundwater in weathered Hawkesbury sandstone
BH03B	100m MTSGS Buffer – Site 3	Perched groundwater in unweathered Hawkesbury sandstone
BH03C	100m MTSGS Buffer – Site 3	SCBGS
BH05B	Lot 216, adjacent to BH5	Perched groundwater in unweathered Hawkesbury sandstone
BH06A	100m MTSGS Buffer – Site 4	Perched groundwater in weathered Hawkesbury sandstone
BH06B	100m MTSGS Buffer – Site 4	Perched groundwater in unweathered Hawkesbury sandstone
BH06C	100m MTSGS Buffer – Site 4	SCBGS

Monitoring Results for H-Series Boreholes

Monitoring Point	Monitoring Point	Monitoring Point	Monitoring Point	Monitoring Point	Monitoring Point
H2	178.1	179.4	180.0	180.9	182.4
H6	179.4	181.2	181.4	182.4	184.7
H7	178.2	180.2	180.4	180.5	182.6
H9	182.6	184.9	185.0	185.3	186.9
H12	178.2	181.0	181.1	181.2	184.0
H14	171.9	174.7	174.9	175.1	177.2
BH4	139.3	140.5	140.6	140.7	141.2
BH5	121.4	123.2	123.2	123.3	123.4

Groundwater Quality Monitoring Results

Groundwater quality analyses for H-series bores, BH4 and BH5 were undertaken 6-monthly in December 2021 and June 2022, in accordance with the Soil and Water Management Plan. Groundwater quality monitoring for the were undertaken on a monthly basis. Groundwater samples were obtained and analysed by a NATA qualified laboratory for analysis of electrical conductivity and total suspended solids. pH measurements were undertaken in the field due to short sample holding time. The baseline groundwater quality statistics and trigger values for H-series, BH4 and BH5 are listed in Table 21 below.

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Table 21: Summary of Groundwater Monitoring Data

Monitoring Point	2021			2022		
	Jan	Jul	Dec	Jan	Jul	Dec
H2	4.3	4.4	4.6	56	69	108
H6	4.2	4.3	4.4	161	182	205
H7	4.2	4.3	4.4	114	189	298
H9	4.4	4.6	4.7	116	127	145
H12	4.5	4.6	4.8	133	182	210
H14	4.3	4.6	4.7	94	117	193
BH4	4.4	4.7	4.9	89	97	114
BH5	5.1	5.6	6.1	126	137	158

Table 22: Summary of Surface Water Monitoring Data

The EPL 12513 does not require any surface water monitoring and no surface water discharge is permitted at Haerses Road quarry. The Soil and Water Management Plan stipulates the requirement to monitor surface water quality at the Little Cattai Creek – “SW1” (located east of Stage 2 east extraction cell) and a tributary of Stone Chimney Creek – “SW2” (located west of the extraction Cell 1A) to achieve surface water quality baseline data downstream of quarry operations. Monitoring at these locations were to commence in September 2018 however, due to prolonged drought conditions and the fact that these monitoring points are located in ephemeral tributaries, water samples can only be obtained when there has been sufficient rainfall to generate flows in the tributaries. Up until the last reporting period of 2020 – 2021, only four sampling events for SW1 and SW2 were carried out. Since then, 3 additional sampling events were carried out during this 2021 – 2022 reporting period. The surface water quality statistics presented in Table 22 were derived from these seven sampling events and consequently, these trigger values represent the interim baseline values which will be subjected to on-going review once additional surface water quality results have been obtained.

□

Table 23: Summary of Surface Water Quality Data

Parameter	SW1		SW2		SW1		SW2		SW1	
	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul	Jan	Jul
pH	5.5	5.1	6.0	5.2	6.5	5.8	6.6	5.9	6.7	6.1
TSS (mg/L)	5.0	5.0	7.8	13.2	12.0	16.0	58.8	41.6	90.0	84.0
Turbidity (NTU)	82.1	9.0	97.0	25.7	193.0	54.4	357.4	95.9	475.0	160.0

□

**11.1.2.1 Groundwater Extraction Limits**

Extraction limits for Haerses Road quarry are defined by DA165-7-2005 and listed in Table 23 below.

**Table 23: Groundwater Extraction Limits**

Groundwater Extraction Limits	
Condition 19 of Schedule 2	The Applicant must not undertake any extraction within 2 metres of the highest recorded wet weather groundwater level of both the MTSGS and the SCBGS.
Condition 20 of Schedule 2	<p>Within 6 months of the determination of Modification 1, the Applicant must:</p> <ul style="list-style-type: none"> <li>(a) establish the highest recorded wet weather groundwater levels for the site based on all available local and site-specific groundwater monitoring data; and</li> <li>(b) engage a suitably qualified and experienced person to prepare a Maximum Extraction Depth Map (contour map or similar) for the development to ensure compliance with condition 19 above and submit this map to the Secretary for approval.</li> </ul> <p>Within 14 days of the approval of the Maximum Extraction Depth Map, the Applicant must submit a copy of the approved map and the supporting groundwater monitoring data to DPE Water.</p>
Condition 21 of Schedule 2	The Applicant must comply with the extraction depths specified in the approved Maximum Extraction Depth Map, to the satisfaction of the Secretary.
Condition 22 of Schedule 2	<p>The Applicant must review and update the Maximum Extraction Depth Map:</p> <ul style="list-style-type: none"> <li>(a) annually, for the duration of the baseline groundwater monitoring program (see condition 17 of Schedule 3); and</li> <li>(b) within 3 months of the completion of each Independent Environmental Audit (see condition 13 of Schedule 5), to the satisfaction of the Secretary.</li> </ul>

□

**11.1.3 Results**

**11.1.3.1 Groundwater Levels**

Chart 19 depicts the long term recorded groundwater levels which commenced in June 2003 for H-series, BH4 and BH5. Charts 20 to 40 (inclusive) illustrate the groundwater levels for all bores during this reporting period.

**11.1.3.2 Groundwater pH**

Chart 41 depicts the long term recorded groundwater pH which commenced in June 2003. Charts 42 to 53 (inclusive) illustrate the groundwater pH across all bores during this reporting period.

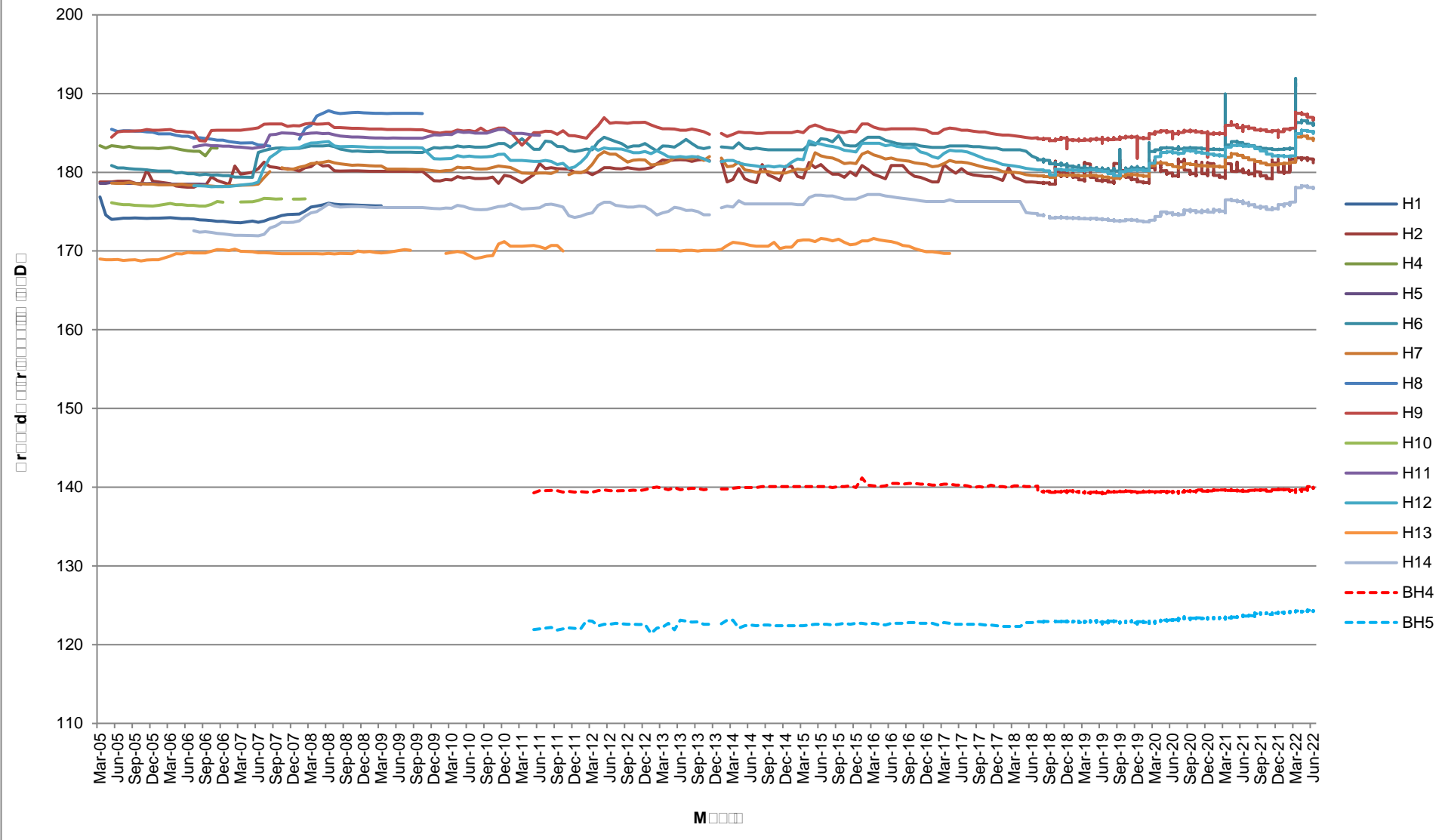
Chart 54 depicts the long term recorded groundwater electrical conductivity commencing June 2003. Charts 55 to 67 (inclusive) illustrate the groundwater electrical conductivity across all bores during this reporting period.

As cluster bores 06A, 06B and 06C were decommissioned in October 2021, no pH and EC results are presented.

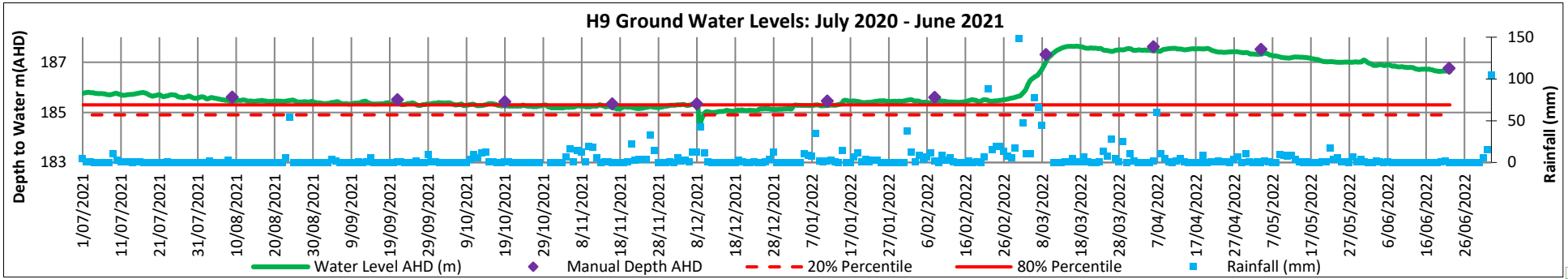
**11.1.3.3 Groundwater Quality**

Table 24 contains the laboratory analyses results for water samples obtained at SW1 and SW2 in November 2021 and February 2022.

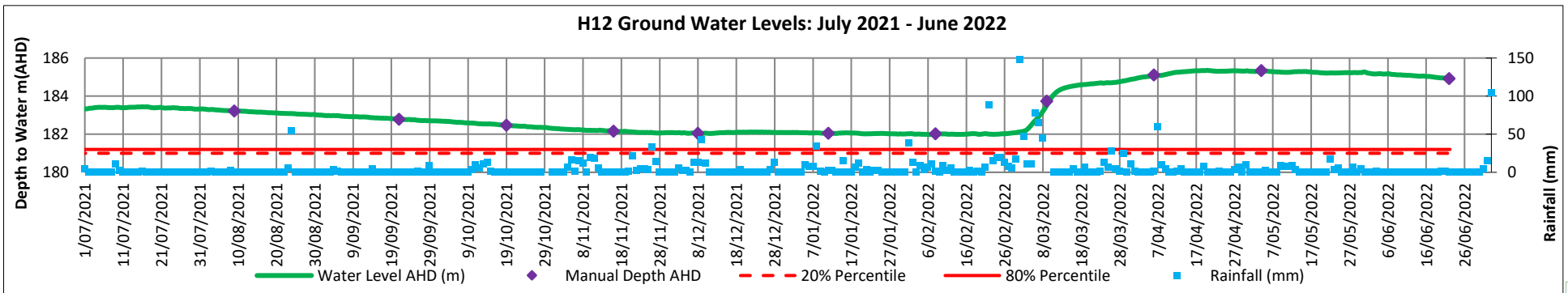
**Haerses Road Long Term Groundwater Levels 2006 - June 2022**  
**H-Series, BH4 and BH5**



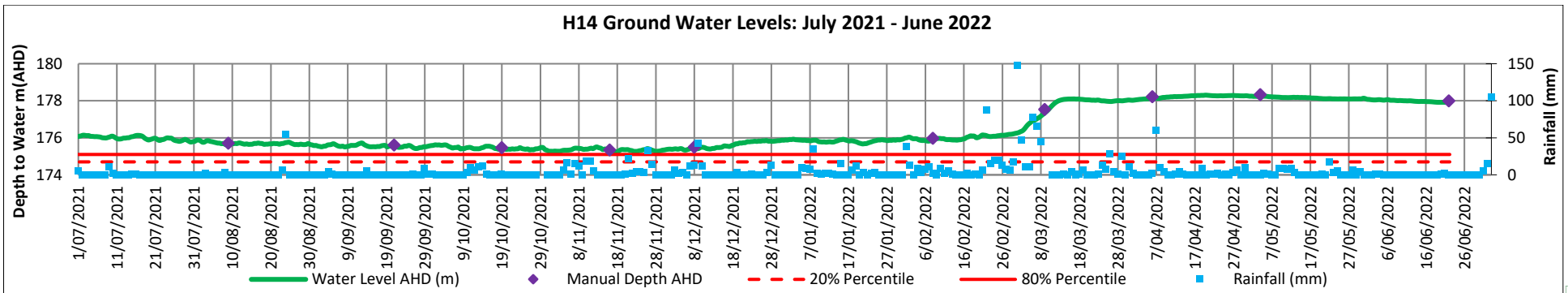




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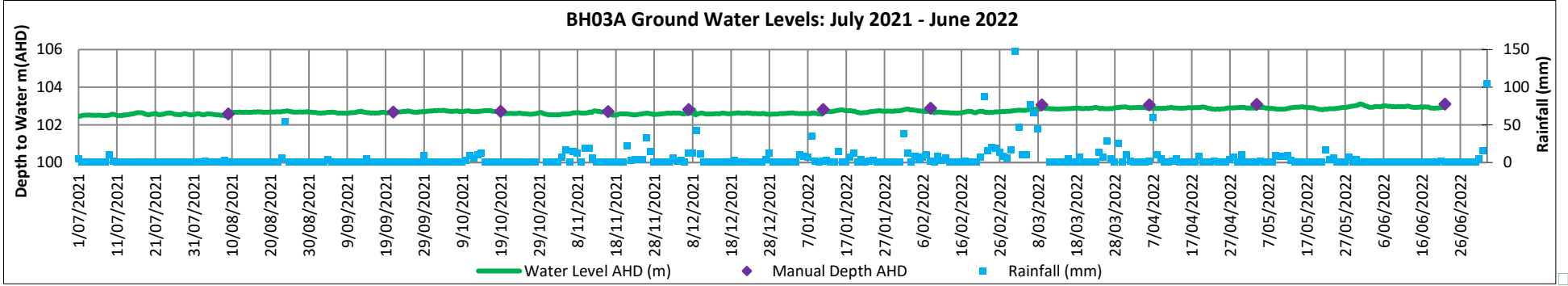


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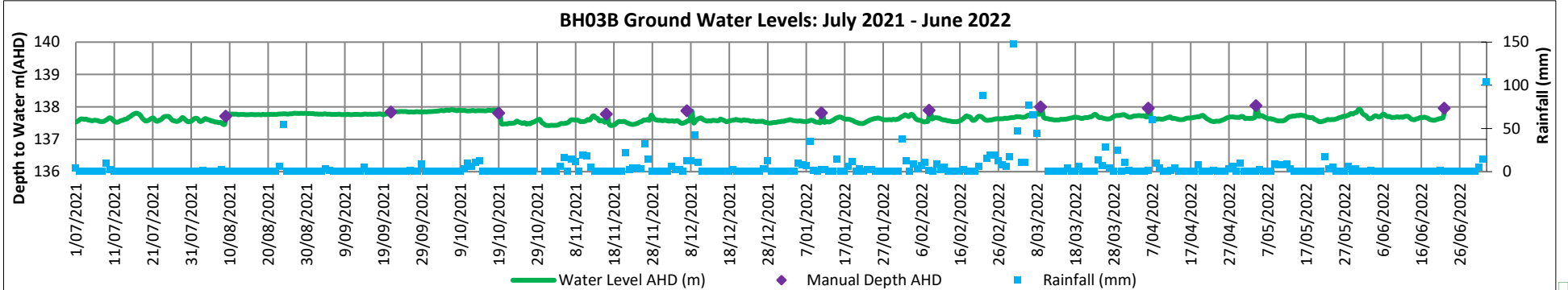




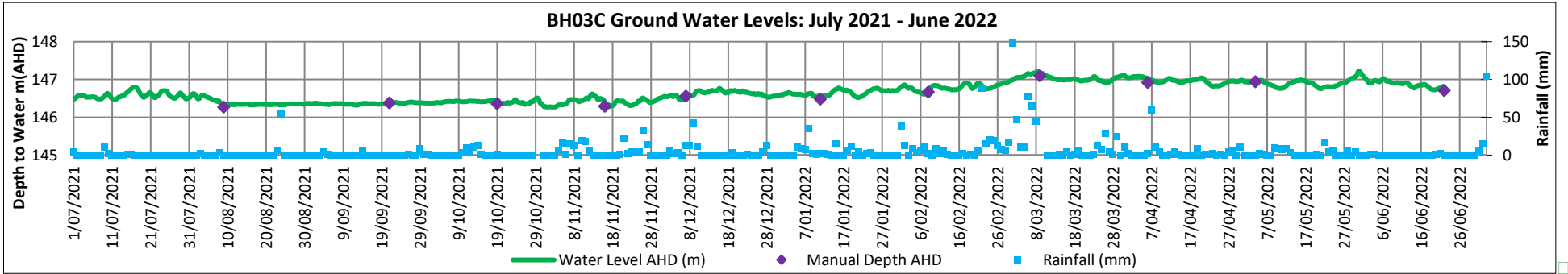




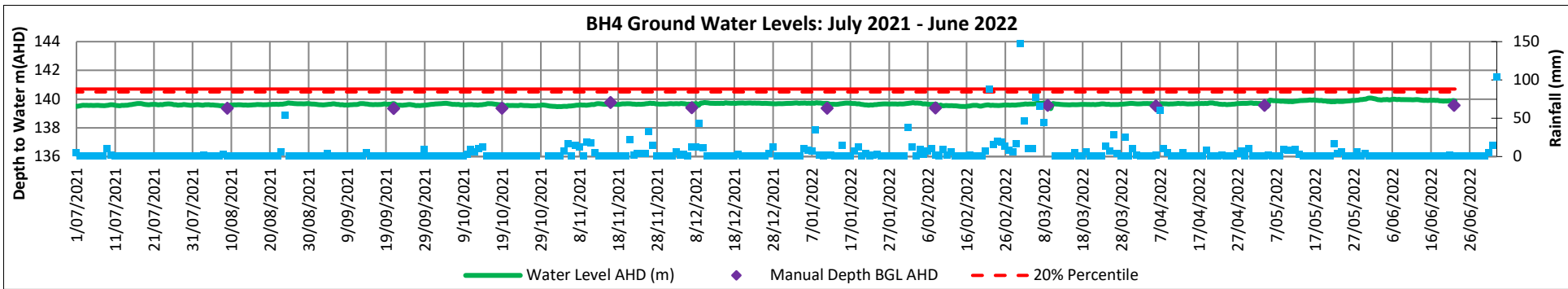
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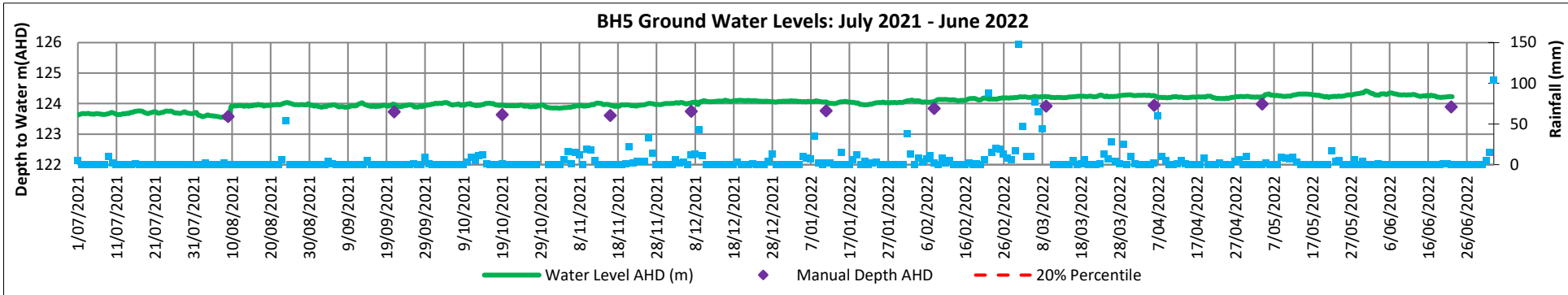
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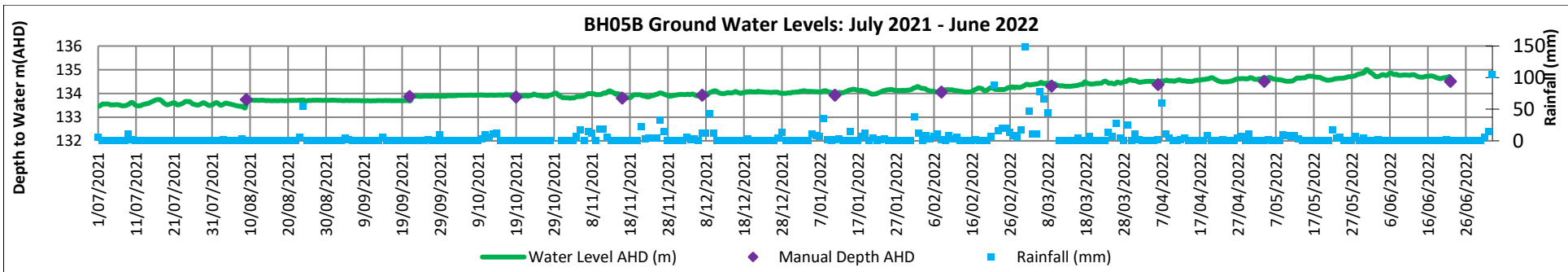
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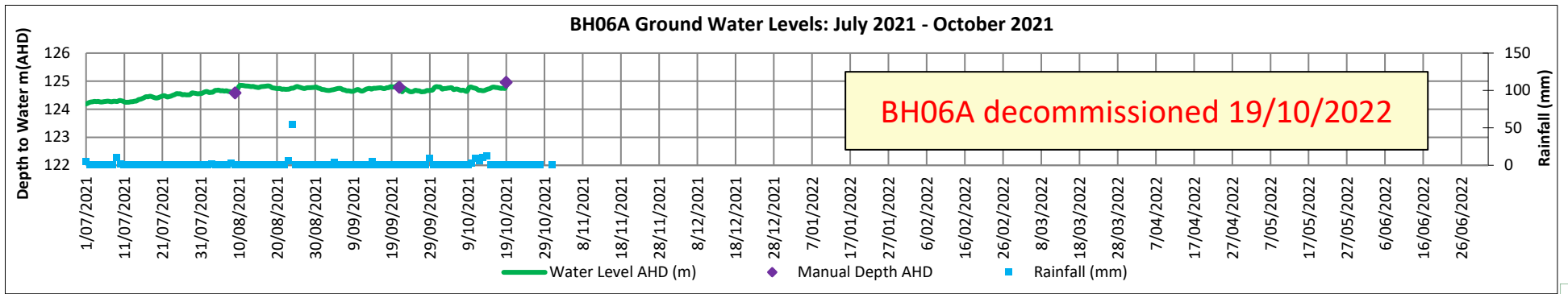
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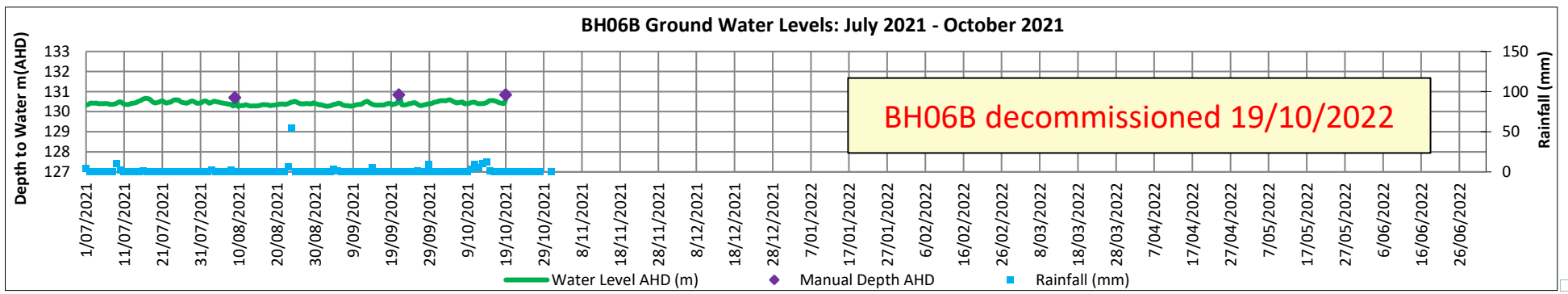
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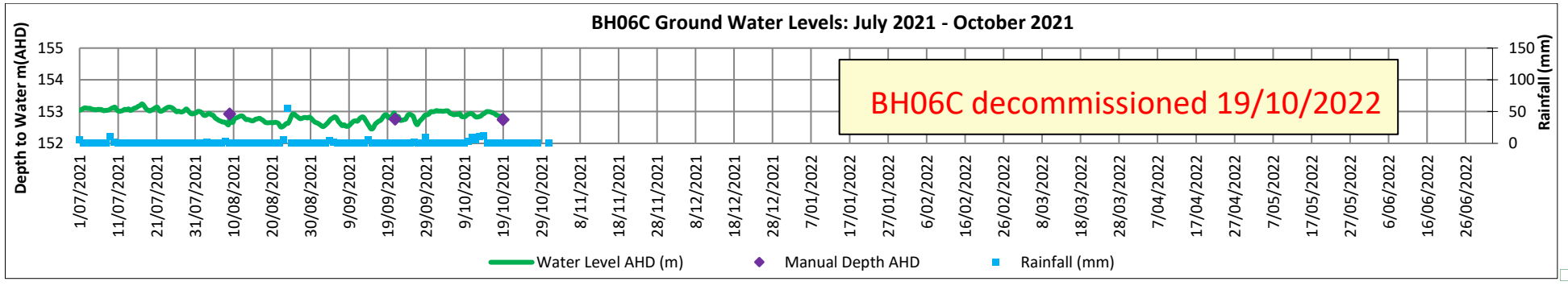
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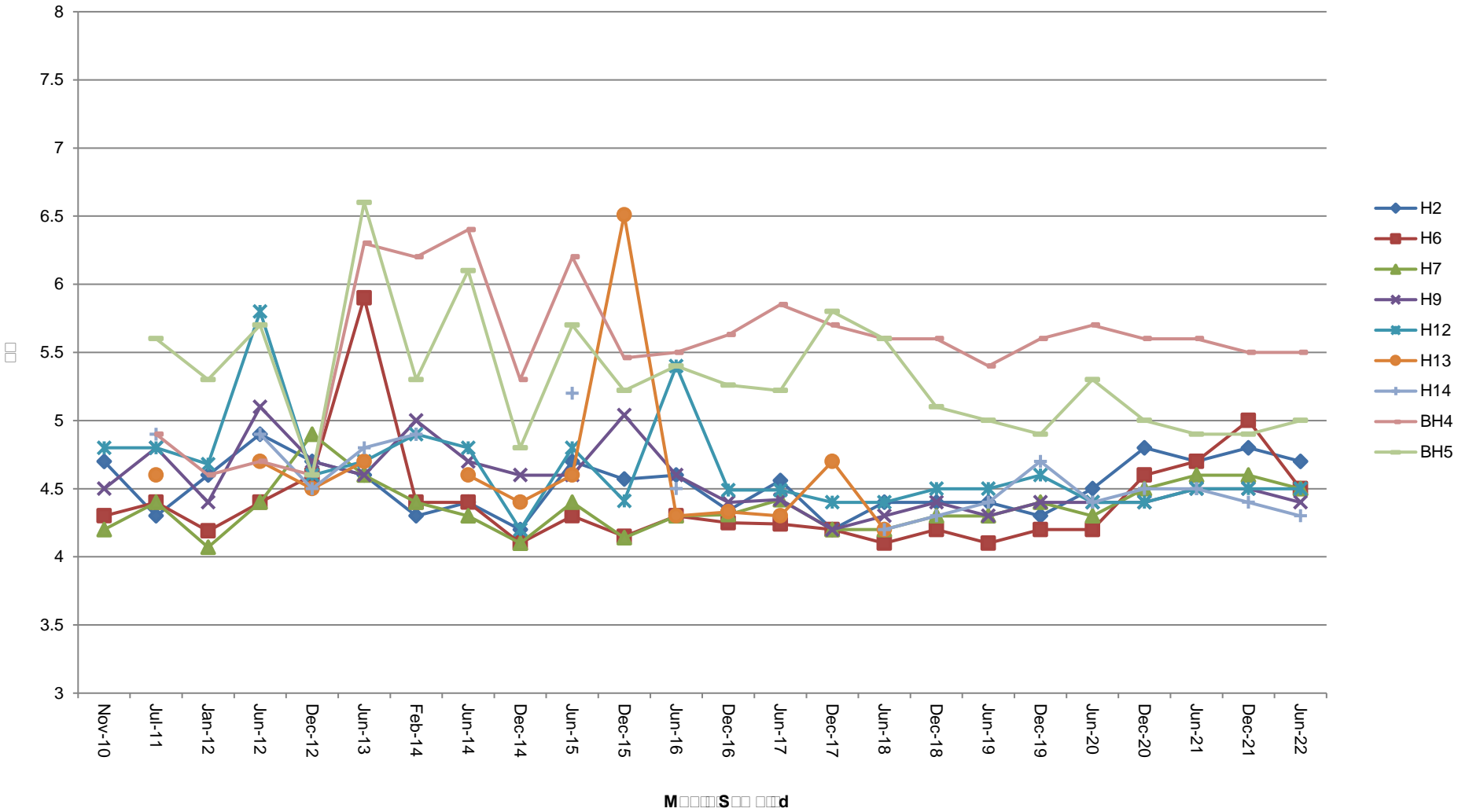


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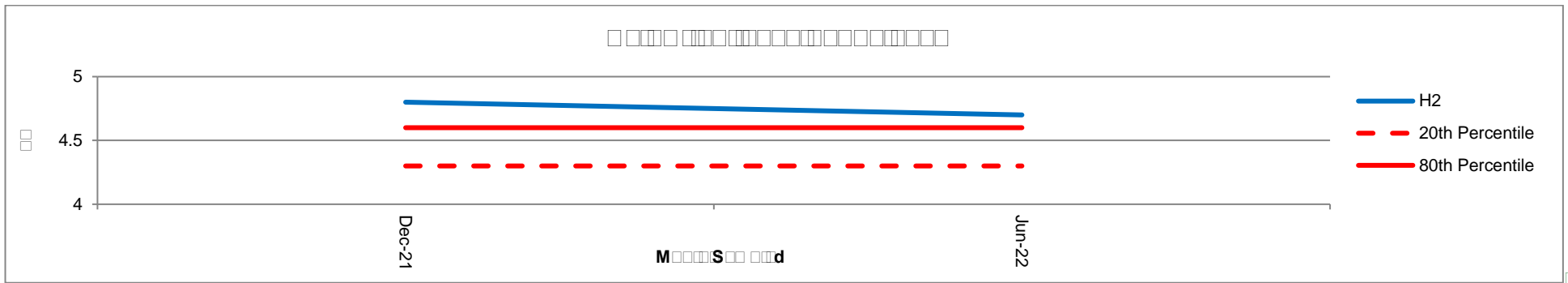


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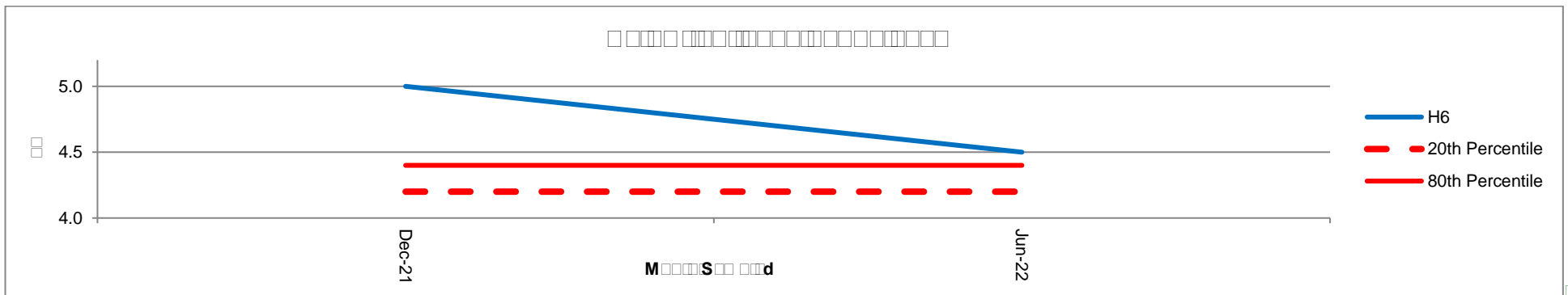
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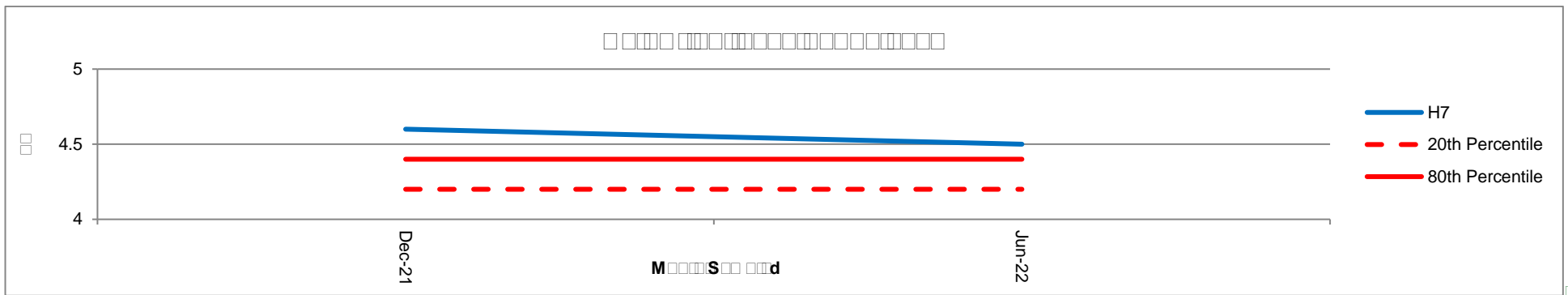
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Residuals

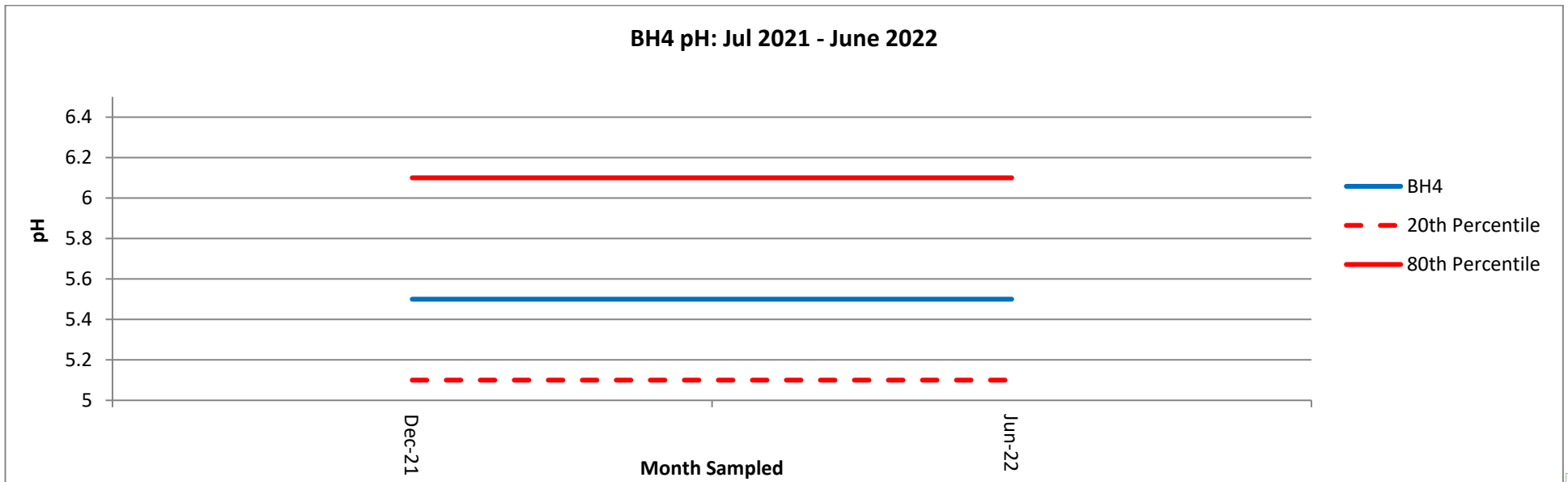


Residuals

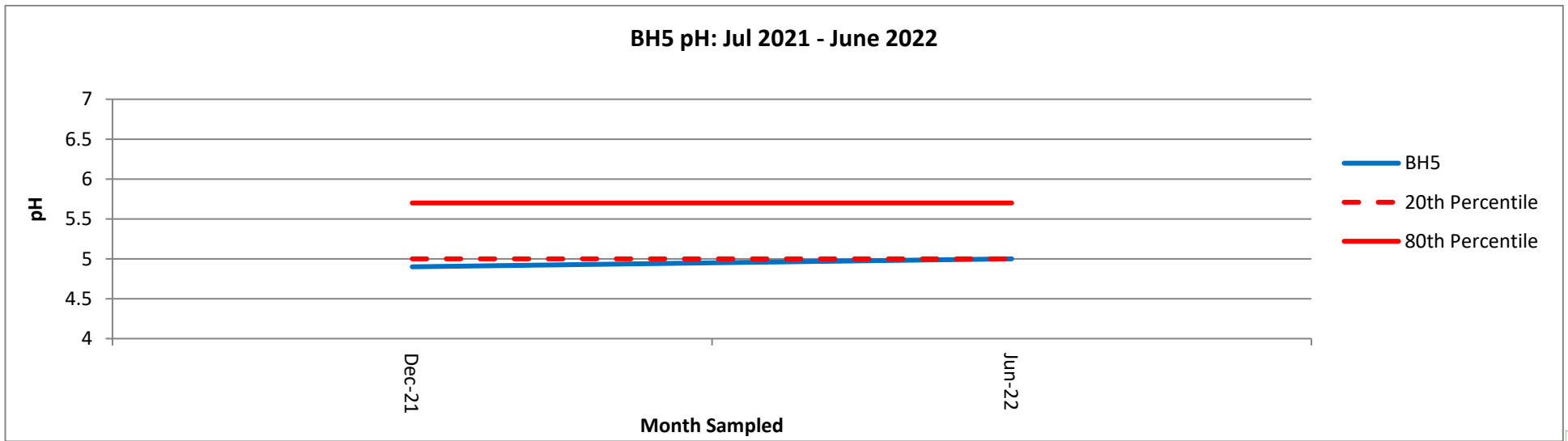


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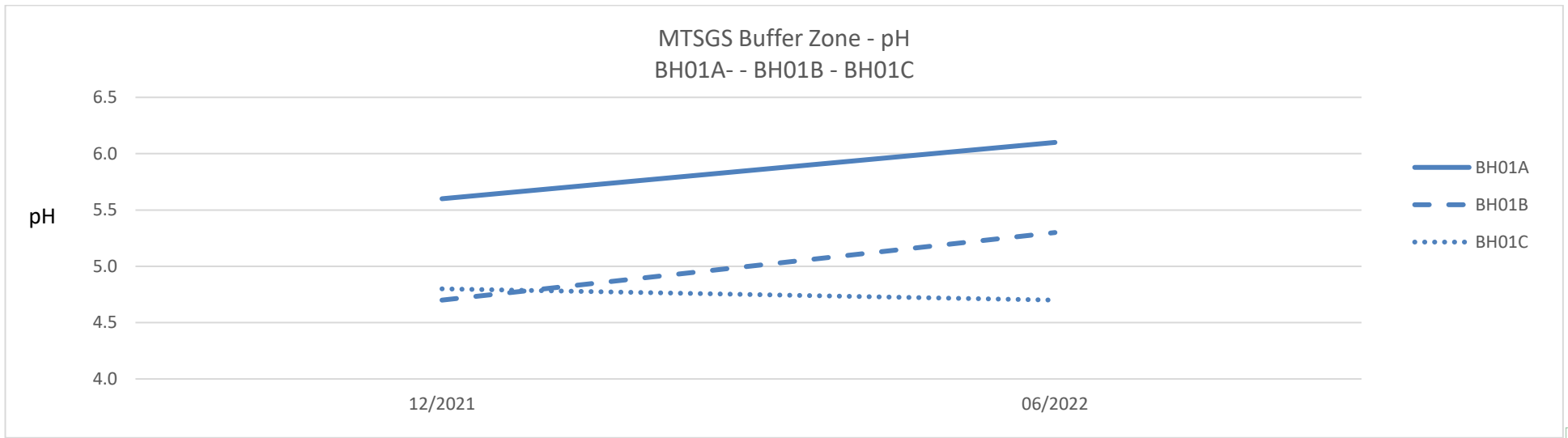


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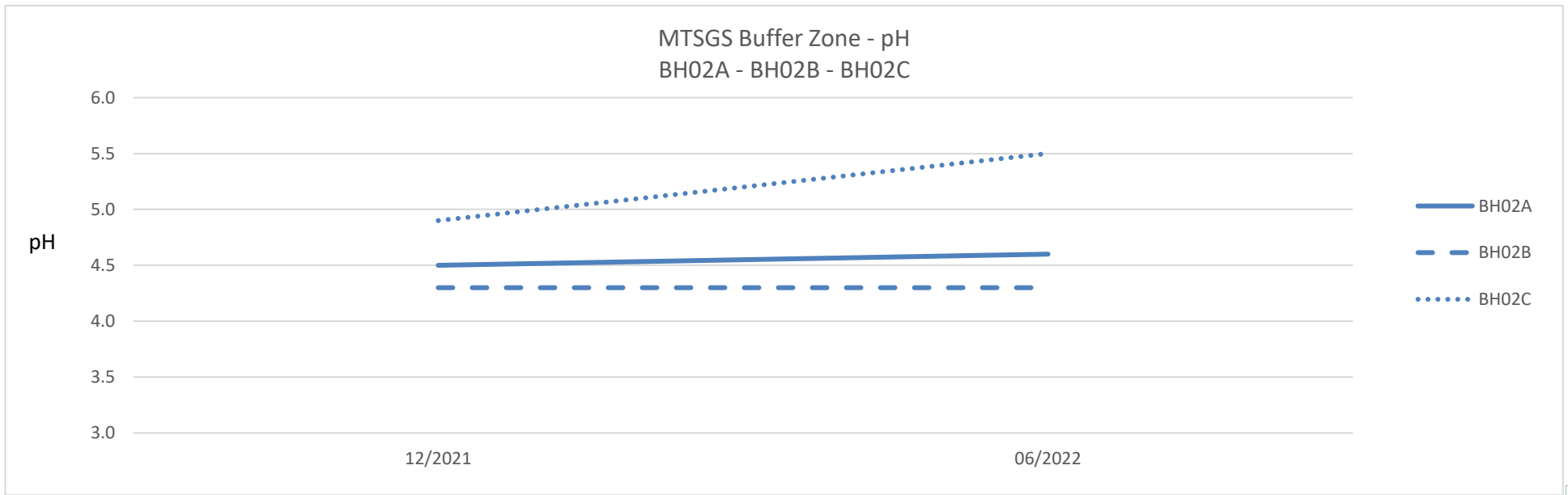


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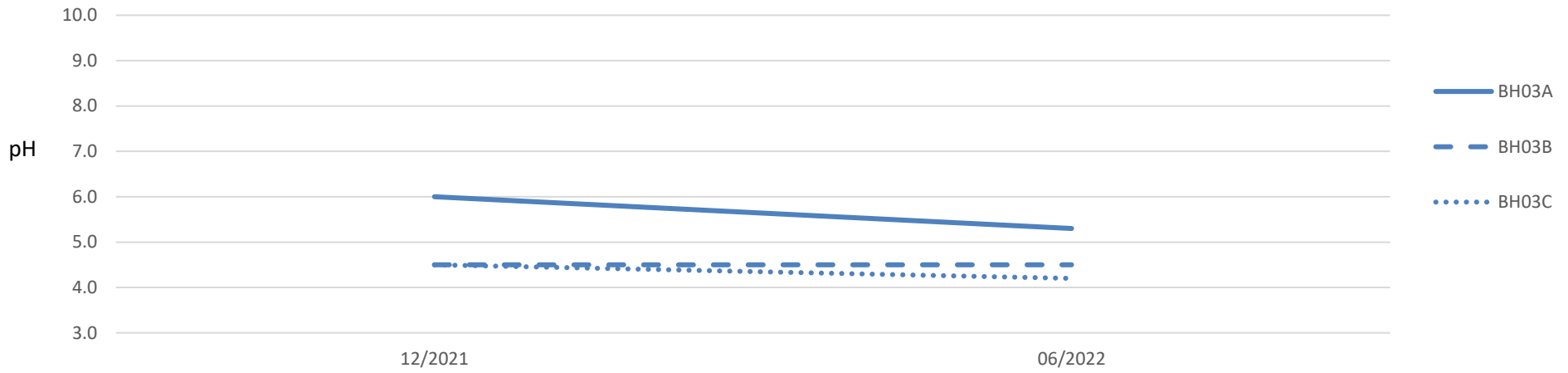


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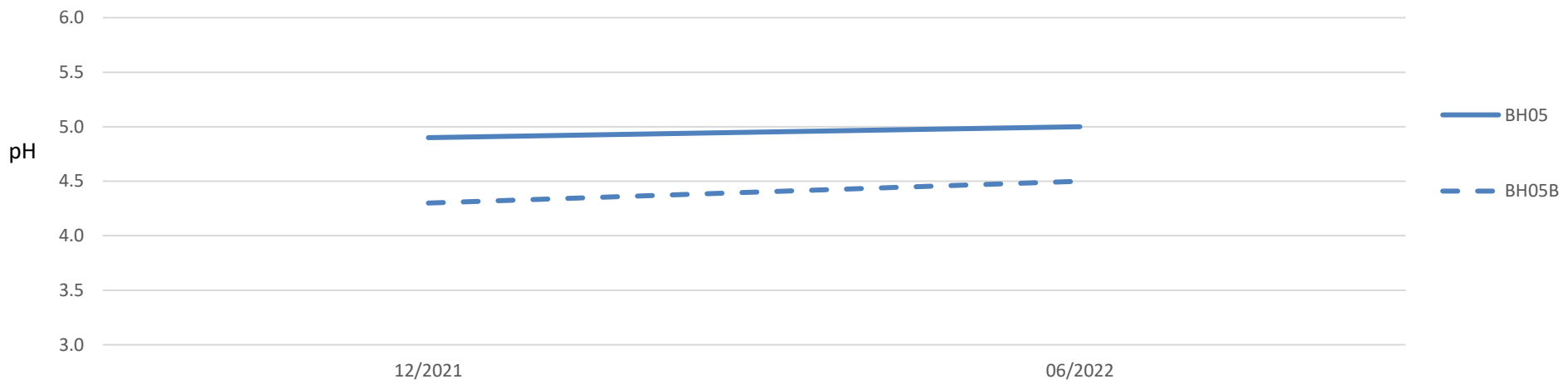


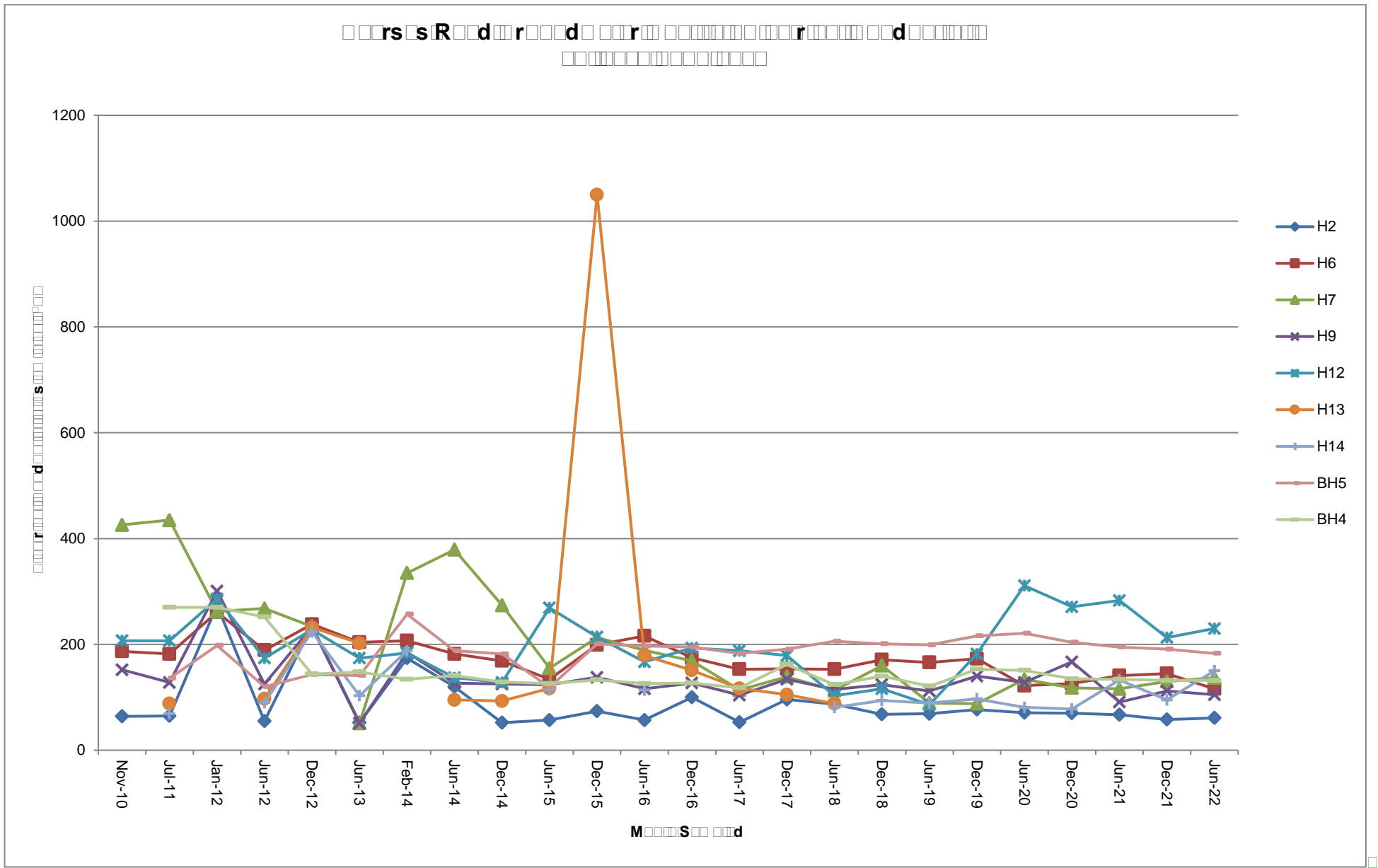
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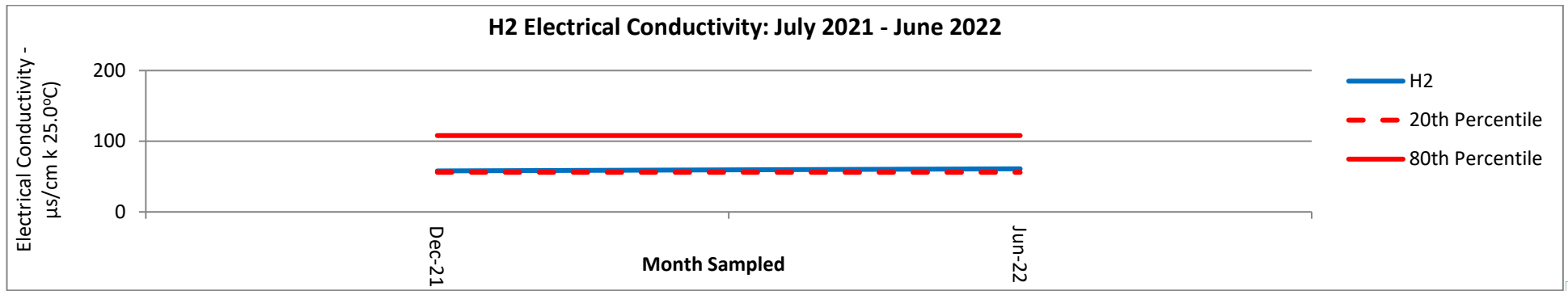
MTSGS Buffer Zone - pH  
BH03A - BH03B - BH03C



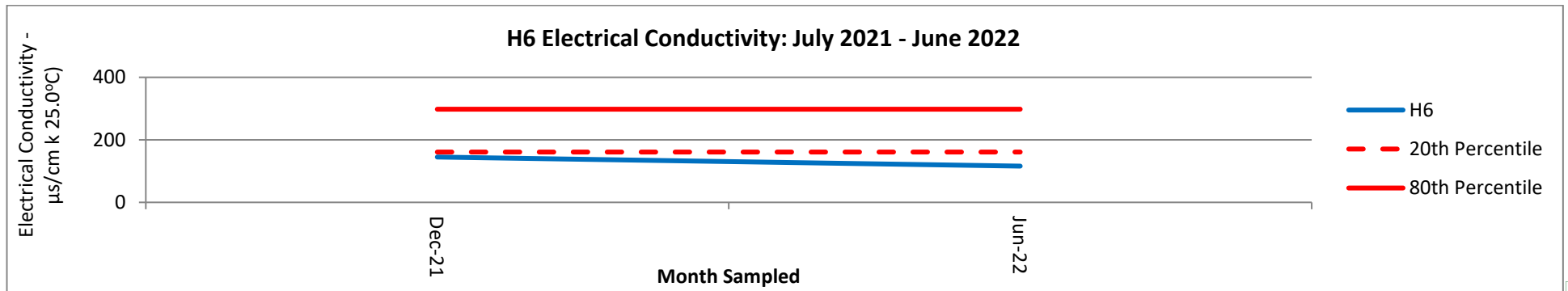
MTSGS Buffer Zone - pH  
BH05A - BH05B



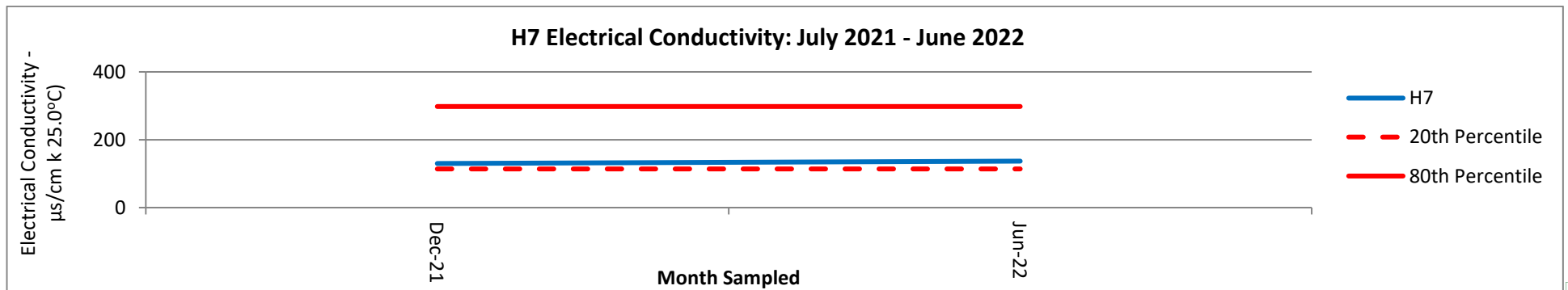




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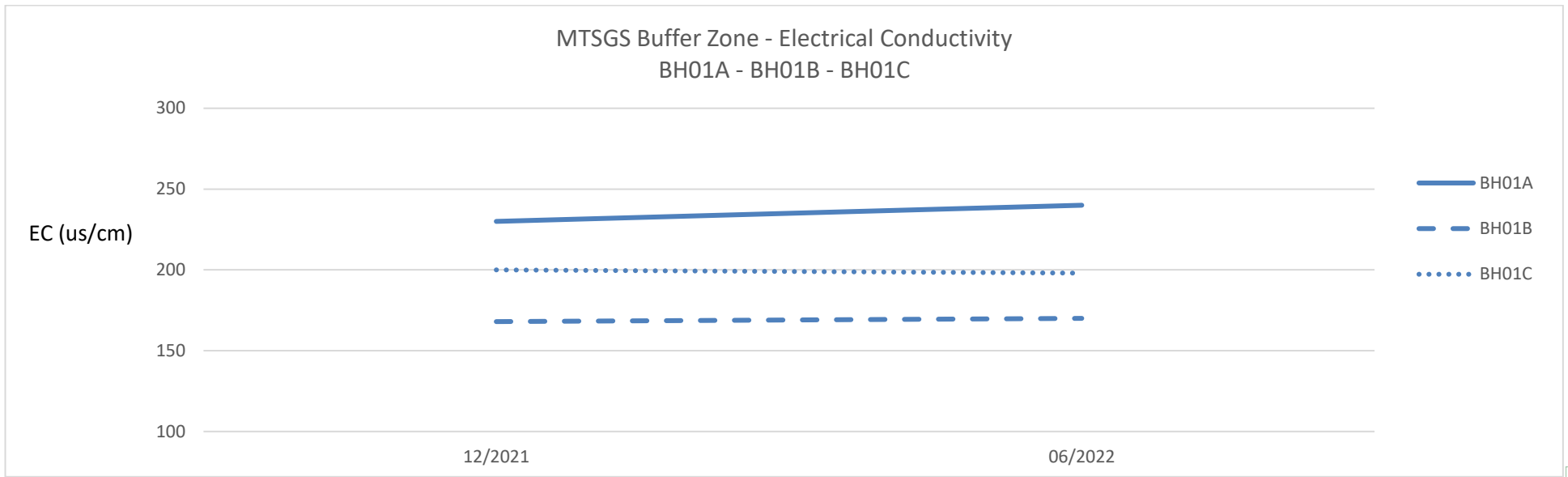
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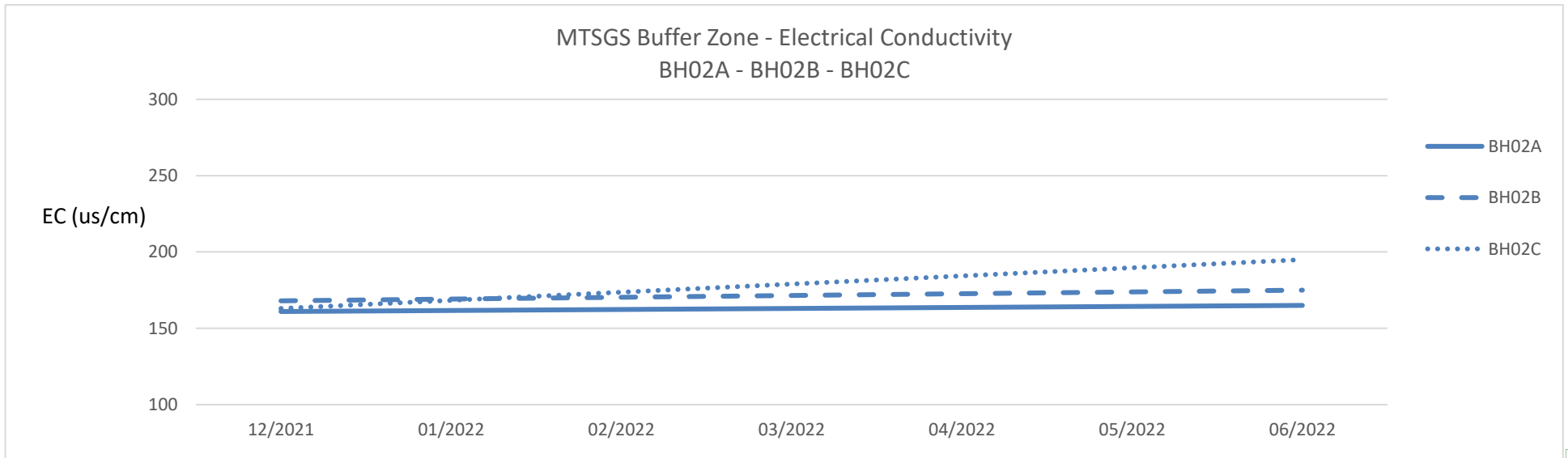
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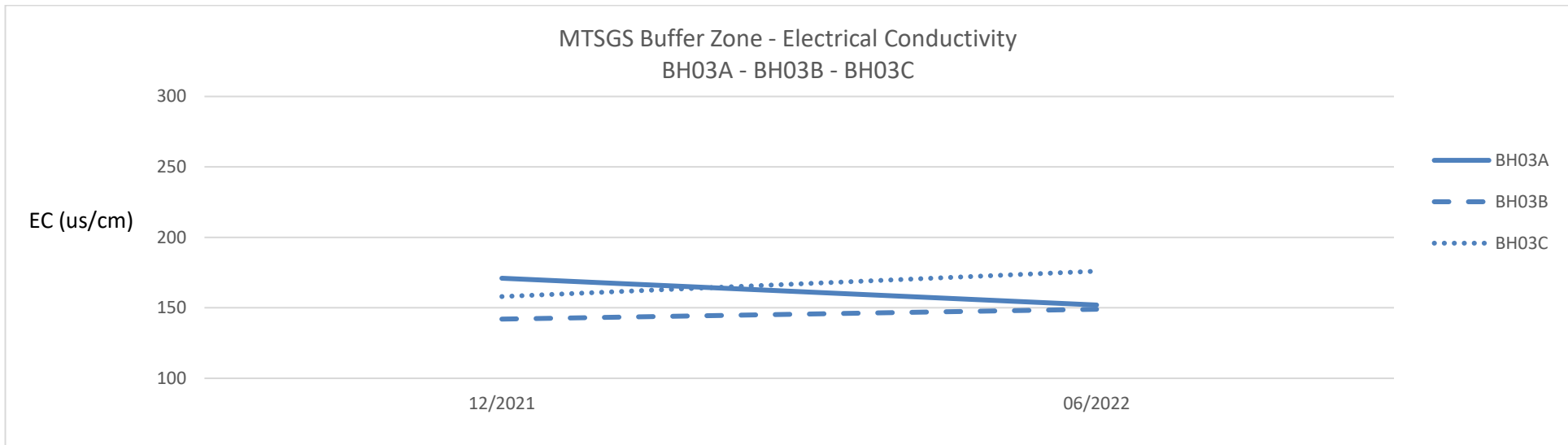




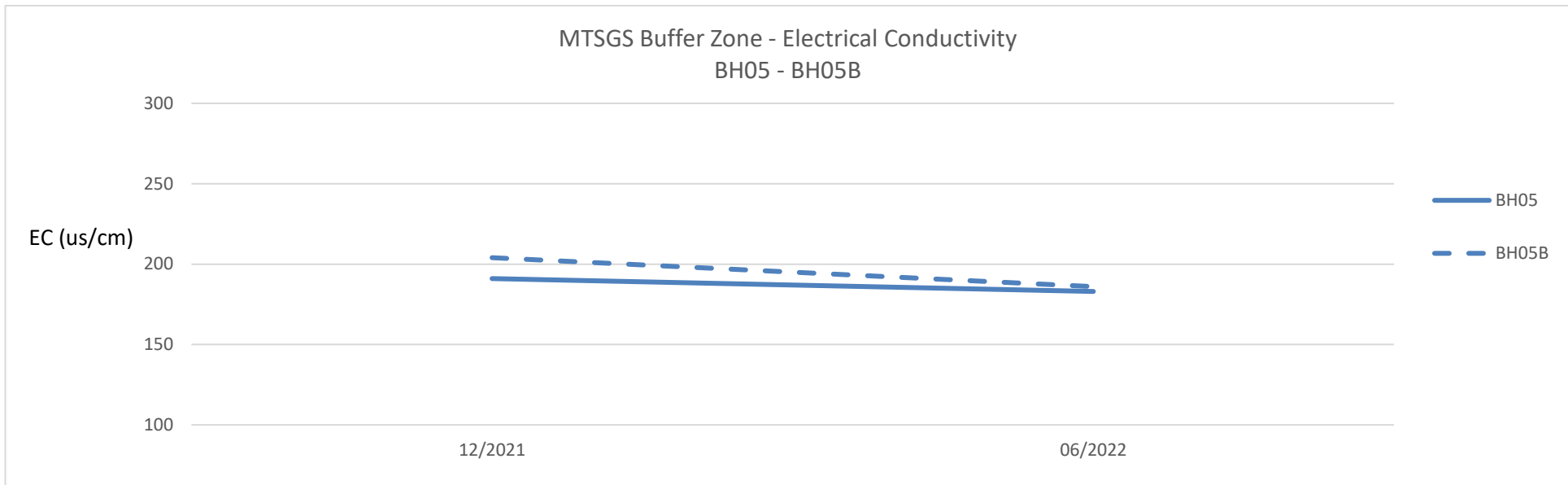
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**Groundwater Monitoring Results**

Date	pH		Sulphate (mg/L)		Chloride (mg/L)	
	Sample 1	Sample 2	Sample 1	Sample 2	Sample 1	Sample 2
10/02/2020	6.70	5.88	12	14	82.1	25.3
10/08/2020	6.58	5.79	n/a	44	279	105
26/10/2020	6.33	5.84	5	16	107	54.4
05/01/2021	n/a	5.68	n/a	5	n/a	9
10/11/2021	n/a	5.06	n/a	84	n/a	160
26/11/2021	n/a	6.12	n/a	32	n/a	59.3
25/02/2022	5.49	5.06	90	13	475	27.1

Note: n/a denotes to parameter not being analysed due to invalid sample from insufficient water sample or lack of water for sampling.

**Analyses**

**Groundwater Monitoring**

During the 2021 – 2022 reporting period, groundwater levels for H-series boreholes indicated a strong relationship between water levels, existing ground moisture content and rainfall events. This is evident since the commencement of the groundwater monitoring program in 2005 shown on Chart 18. Fluctuations of water levels in the H-series boreholes directly correlate to the recharge from surface infiltration and percolation after rain events. This is clearly demonstrated in the months of February and March 2022 where rising water levels were a result of aquifer recharge after significant rainfall events (refer to Charts 19 to 24 inclusive). Lower water levels were observed over the previous 3 reporting periods due to extended drought conditions with less than average annual rainfall being evident.

Minor water level fluctuations have been recorded during this reporting period for Boreholes BH4 and BH5 which monitor the SBCGS however, there has been a relatively stable trend since the commission of these boreholes in 2011. A slight rise in groundwater levels in Borehole 5 has been observed and directly linked to wet weather.

Twelve boreholes have been drilled and monitoring wells installed in the 100 metre MTSGS buffer zone. One additional monitoring well was installed next to the existing BH5. Groundwater monitoring of these thirteen bores have commenced since July 2018. The minor reduction in groundwater levels were due to monthly sampling of water using the low-flow pump out methodology for laboratory analysis (refer to Charts 25 to 33 inclusive, 36 to 39 inclusive). Condition 17 of Schedule 3 of DA 165-7-2005 requires that prior to commencing quarry operations within the MTSGS buffer zone, Dixon Sand is to complete a baseline groundwater monitoring program which includes monthly monitoring of groundwater levels and quality within the MTSGS buffer zone for a period of no less than 2 years. The 2-year baseline period was met at the end of July 2020. The assessment of the 2-year groundwater levels for the bores installed in the 100 metre MTSGS buffer zone is discussed further in Section 6.8.

### Groundwater Quality

pH and electrical conductivity (EC) results for H-series, BH4 and BH5 have remained relatively stable from 2010 to the current reporting period, showing minimal fluctuations with occasional occurrences of anomalies due to human-induced environmental change such as application of fertiliser (from cropping) directly adjacent to the monitoring bore (refer to Charts 40 and 52). Elevated pH and EC results in H13 during 2015 were a result of influence from direct application of fertiliser in the immediate area surrounding the monitoring well. Water quality parameters obtained from H13 during this reporting period have returned to levels similar those previously recorded. Borehole H13 have since been decommissioned due to its location being the designated area for the processing plant and material stockpiles on Lot 216. Borehole H14 was unblocked in May 2018 and groundwater depth and quality sampling have resumed.

The assessment of the 2-year groundwater quality for the bores installed in the 100 metre MTSGS buffer zone will be further discussed in Section 6.8.

□

### Surface Water Quality

Due to these nominated monitoring points being ephemeral tributaries, water samples were only able to be collected when there has been sufficient rainfall to generate flows in the tributaries and when it is safe to undertake sampling. Despite recorded wet weather during this monitoring period, surface water sampling at SW1 and SW2 was not always possible due to heavy rainfall affecting safe site access. Table 24 presents the pH, total suspended solids and turbidity of water samples obtained from SW1 and SW2 since the commencement of surface water monitoring. Additional data is still required to enable baseline surface water quality to be established.

## REGULATORY COMPLIANCE

A review of the Maximum Extraction Depth Map (MEDM) was undertaken within 3 months of the Independent Environmental Audit in accordance with Condition 22(b) of Schedule 2 of DA 165-7-2005 and was submitted on 3<sup>rd</sup> April 2020. The MEDM (March 2020) was approved by the DPE on 2 October 2020.

Condition 22(a) of Schedule 2 of DA 165-7-2005 requires Dixon Sand to review and update the MEDM annually, for the duration of the baseline groundwater monitoring program within the MTSGS buffer zone which commenced in July 2018. Additional review of the MEDM was undertaken on 30 June 2022 by Dixon Sand as part of the Annual Review. No change was considered necessary.

The next review of the MEDM will be undertaken within 3 months of the IEA which is scheduled for late 2022.

## WATER ACCESS LICENSES

The Annual Returns for Water Access Licenses (WALs) 25941 and 25956 for the 2021 – 2022 reporting period were submitted to WaterNSW in June and July 2022. The total water usage for each WAL is listed in Table 25 below.

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Water balance related monitoring in Table 26 applied to the quarry during the monitoring period.

Water Storage	Volume (ML)
WAL 25941	0
WAL 25956	0

### Water balance related monitoring in Table 26 applied to the quarry during the monitoring period.

The following water balance related monitoring in Table 26 applied to the quarry during the monitoring period.

Water balance related monitoring in Table 26 applied to the quarry during the monitoring period.

Monitoring	Results
Water inventories on site will be monitored by continuous level monitoring instrumentation	Groundwater levels are monitored using continuous data loggers.
The number of Water Cart fills per month	Water Cart records kept
Monthly water transfer volumes between water storages (based on rated pump capacity and run time)	No water transfers between water storages during this reporting period.
Monthly clean water import volumes;	No clean water imports for quarry operations during this reporting period.  A total of zero megalitres of water was utilised in accordance with the WALs by onsite farmers for crop irrigation purposes.
Monthly processing plant water consumption (if constructed) (either metered or based on rated pump capacity and run time).	Wet processing plant not yet commissioned at the quarry.
Surface water related complaints	No surface water related complaints received during this reporting period.
Assessment of the overall effectiveness of the Water Management System	Overall, the Water Management System at Haerses Road quarry has shown to be effective during this reporting period.

Sandstone extraction in Stage 2 west concluded in the 2018 – 2019 reporting period. Extraction in the Modification 1 extraction area was undertaken during this reporting period.

Future water balance monitoring data will be entered into a tracking spreadsheet to allow Dixon Sand to assess the adequacy of water inventories for ongoing production.

**Maroota Tertiary Sands Groundwater Source (MTSGS) buffer zone**

**Monitoring Program**

Condition 17 of Schedule 3 of DA 165-7-2005 requires Dixon Sand to complete a baseline groundwater monitoring program which includes monthly monitoring of groundwater levels and quality within the Maroota Tertiary Sands Groundwater Source (MTSGS) buffer zone for a period no less than 2 years prior to commencing quarrying operations within the MTSGS buffer zone. This is to be undertaken in consultation with DPE Water and to the satisfaction of the Secretary.

Dixon Sand has completed the abovementioned groundwater monitoring program in July 2020 and engaged Mr Peter Dundon from Dundon Consulting Pty Ltd to carry out a review and presentation of baseline groundwater levels and quality data. Consultation with DPE Water was undertaken through a series of meetings during the consultation process for DA 165-7-2005 Modification 1 which resulted in the required scope of works outlined in Conditions 16 and 17.

The review by Mr Dundon concluded that there is a clear distinction between the Maroota Sands groundwater and perched groundwater within the Hawkesbury Sandstone. It was therefore unlikely that any excavation of Hawkesbury Sandstone within the buffer zone around the Maroota Sands approved area will cause any disturbance to the groundwater remaining in the Maroota Sands after sand extraction had been completed down to the approved depth. There was no evidence to suggest that extraction could not safely proceed within the temporary 100m buffer zone along the eastern margin of the Hawkesbury Sandstone resource.

Dixon Sand submitted the abovementioned report containing the reviewed baseline data of monitoring bores within the MTSGS buffer zone to DPE Water on 4 September 2020. Multiple correspondences were exchanged between Dixon Sand and NRAR regarding the on-going actions and requirement for the baseline monitoring program. On 24 May 2021 Dixon Sand received the following recommendations from NRAR:

- Download and review datalogger from all bores included in the monitoring program at a minimum of monthly frequency, and
- Periodic (6 monthly) review of the data to identify potential changes and submission of the groundwater monitoring data (excel) to NRAR no later than one month following the end of each reporting period.

Dixon Sand received the DPE's endorsement on 11 June 2021 acknowledging that the Baseline Groundwater Monitoring Program meets the relevant conditions of consent and that the pre-extraction requirements relating to the MTSGS buffer zone and Buffer Groundwater Monitoring Program have been met and extraction can therefore occur (subject to other relevant consent conditions being met).

**Current groundwater management measures are considered adequate.**

Monitoring of the extraction limit will continue in order to ensure compliance. The Maximum Extraction Depth Map will require review following the next Independent Environmental Audit scheduled in 2022.

Review and submission of buffer zone groundwater monitoring data to be undertaken as per NRAR's recommendation.

Water sampling and laboratory analysis of surface water at SW1 and SW2 to continue when there is sufficient flow after rain events and safe access.

## Monitoring and Reporting

### Vegetation Clearing

Vegetation clearing was undertaken in Modification 1 extraction cells 1A, 1B and 2B during this reporting period.

Any future vegetation clearing to be undertaken in accordance with the pre-clearing survey and multi-stage habitat tree clearing protocols implemented by Dixon Sand. Appropriate briefing and induction will be provided to the relevant staff prior to any vegetation being cleared.

### Rehabilitation and Weed Management

Rehabilitation and weed management at Haerses Road quarry were undertaken on a monthly basis by a bush regeneration contractor, Bush-It Pty Ltd.

Approximately 104.5 hours were spent on bush regeneration works at Haerses Road Quarry, equating to approximately 15% of the time spent between Old Northern Road Quarry and Haerses Road Quarry.

Bush regeneration and weed management were carried at the following locations:

- Perimeter edge of Haerses Road Biobanking Site under the BCT agreement, and
- Original Translocation and Planting area located east of Stage 2 west (Lot 177 DP 752039)

No bush regeneration work has been carried out at the Porters Road Biobank Site under the BCT agreement due to the current passive management status.

Bush regeneration works involved mechanical and chemical methodologies.

Figures 6 and 7 illustrate the areas where bush regeneration works have been completed during this reporting period.

The Annual Rehabilitation Report provided by the contractor for the 2021 – 2022 reporting period is attached as Appendix G.



Figure 6: Bush regeneration and weed management works area at Haerses Road Quarry (source: BushIT 2022).

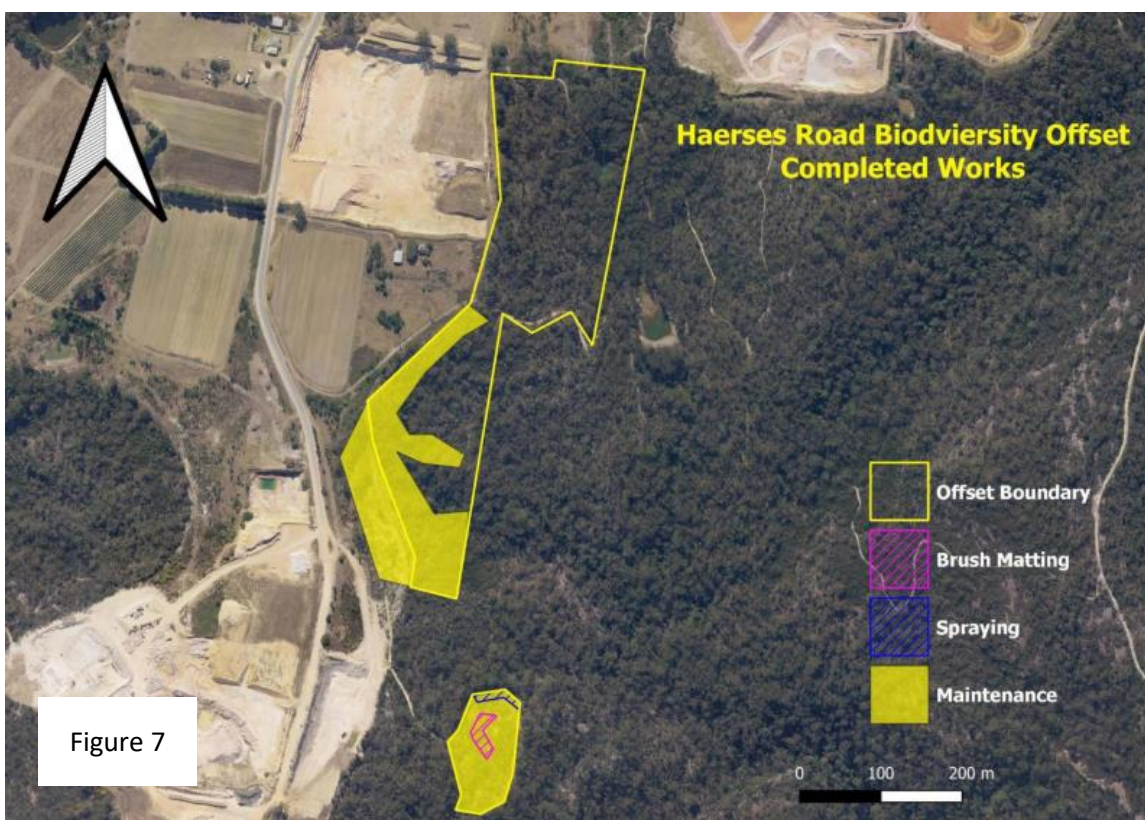


Figure 7: Activities undertaken at Haerses Road Translocation area and Biodiversity Offset Area (source: BushIT 2022).

### Recent above average rainfall has provided ideal condition for exotic grasses through the open areas of the Translocation site to flourish.

Recent above average rainfall has provided ideal condition for exotic grasses through the open areas of the Translocation site to flourish. Maintenance works at the areas shown in Figure 6 focused on controlling infestations of whiskey grass, African love grass and couch. The growth of *Kunzea ambigua* and other canopy trees were managed in order to assist regeneration at groundcover stratum.

### Haerses Road and Porters Road Biobank Sites are currently undergoing 'passive' management.

Haerses Road and Porters Road Biobank Sites are currently undergoing 'passive' management. However, as the western perimeter of Haerses Road biobank site borders exotic grassland containing several different invasive perennial grass and exotic annual species, weed management have occurred in the area highlighted in Figure 6.

No bush regeneration work was carried out at Porters Road biobank site.

More information on the BSA sites is provided in Section 7.4.

### The Haerses Road and Wisemans Ferry Road intersection upgrade works have severely impacted access for maintenance of this area during the reporting period.

The Haerses Road and Wisemans Ferry Road intersection upgrade works have severely impacted access for maintenance of this area during the reporting period. Assisted rehabilitation to this area is required. Weed management and further bush regeneration will follow.

### Dixon Sand engaged South East Environmental to undertake annual biodiversity and rehabilitation monitoring and reporting for Haerses Road Quarry.

Dixon Sand engaged South East Environmental to undertake annual biodiversity and rehabilitation monitoring and reporting for Haerses Road Quarry. Progress assessment were made against the commitments in the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan (BRMP). The Biodiversity and Rehabilitation Management Report (South East Environmental, 2022) aimed to:

- Identify native flora and fauna species, populations and ecological communities known to or likely to occur within the Haerses Road site,
- describe the native vegetation and habitats within the Haerses Road site,
- describe the current condition of the threatened flora and its habitat found within the Haerses Road site,
- determine the legislative and conservation significance of species, populations and ecological communities known or likely to occur within the Haerses Road site with reference to the Commonwealth *EPBC Act* 1999 and the NSW *BC Act* 2016,
- recommend appropriate biodiversity and environmental management measures that should be implemented to reach criteria for monitoring success set by the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan, and
- provide an independent monitoring report for inclusion as part of the external reporting for the quarry Annual Review.

Figure 8 shows the buffer zones at Haerses Road Quarry.

Figure 9 shows the location of Haerses Road quarry, in relation to the biobank sites.

Figure 10 displays the areas delegated as the Haerses Road Biobank site (BSA 414).

Figure 11 displays the areas delegated as the Porters Road Biobank site (BSA 415).

Annual vegetation survey and baseline monitoring were undertaken for this reporting period.

Rehabilitation work at Haerses Road quarry is in the early stages and will increase with both intensity and measurable criteria within the next reporting period.



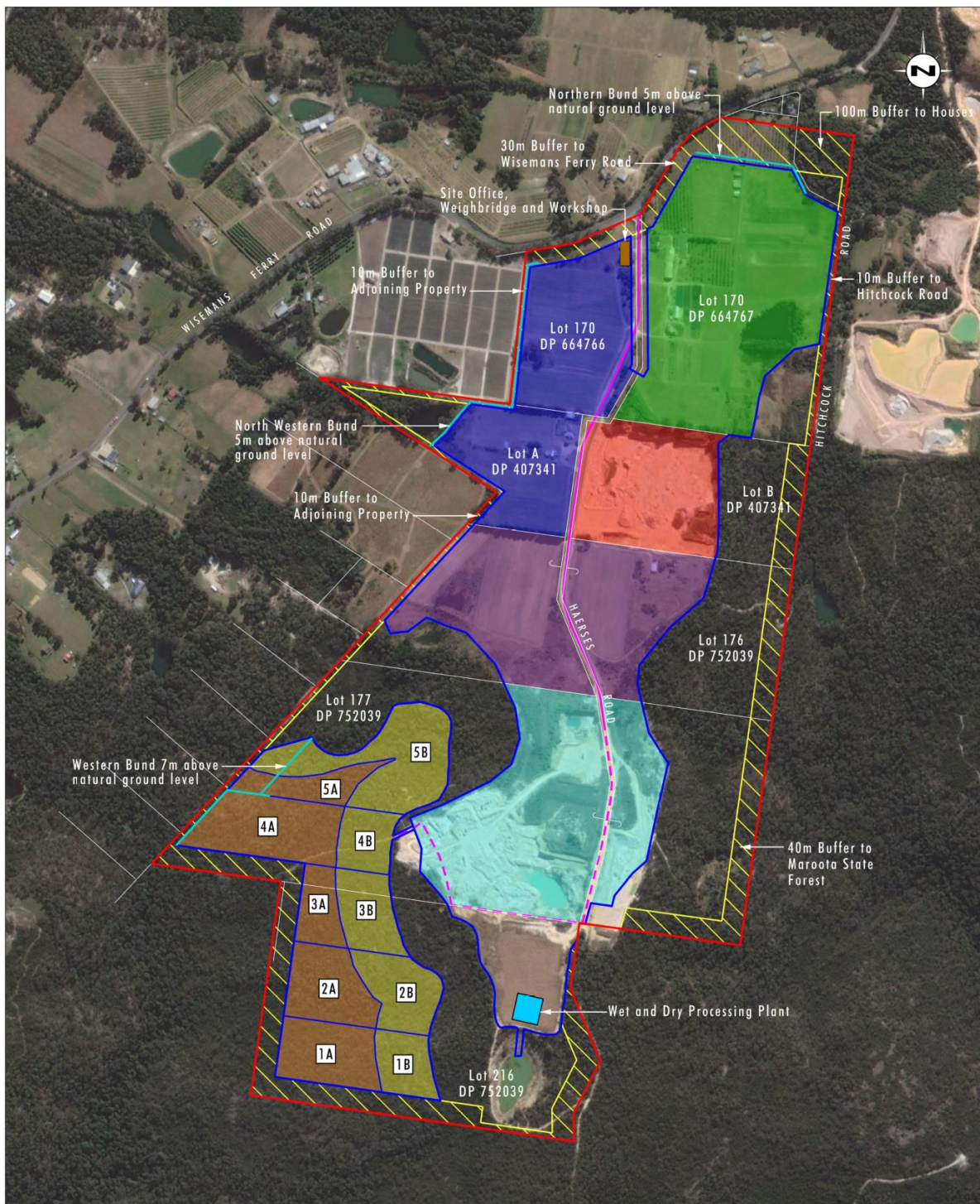


Image Source: Google Earth (Sep 2017)  
 Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2014)

0 100 250 500m  
 1:10 000

**Legend**

- ▭ Haerses Road Quarry Site
- ▭ Approved Extraction Area
- ▭ Extraction Area Stage 1
- ▭ Extraction Area Stage 2
- ▭ Extraction Area Stage 3
- ▭ Extraction Area Stage 4
- ▭ Extraction Area Stage 5
- ▭ Extraction Area A
- ▭ Extraction Area B
- 1 Extraction Cell Number
- ▭ Site Office, Weighbridge and Workshop
- ▭ Wet Processing Plant
- - - Indicative Unsealed Ha
- ▬ Sealed Haul Road
- ▬ Acoustic Bund
- ▬ Buffer Zone

File Name (A4): R06/4272\_042.dgn  
 20180608 10.10

**Figure 8**  
**Buffer Zones,**  
**Haerses Road Quarry**

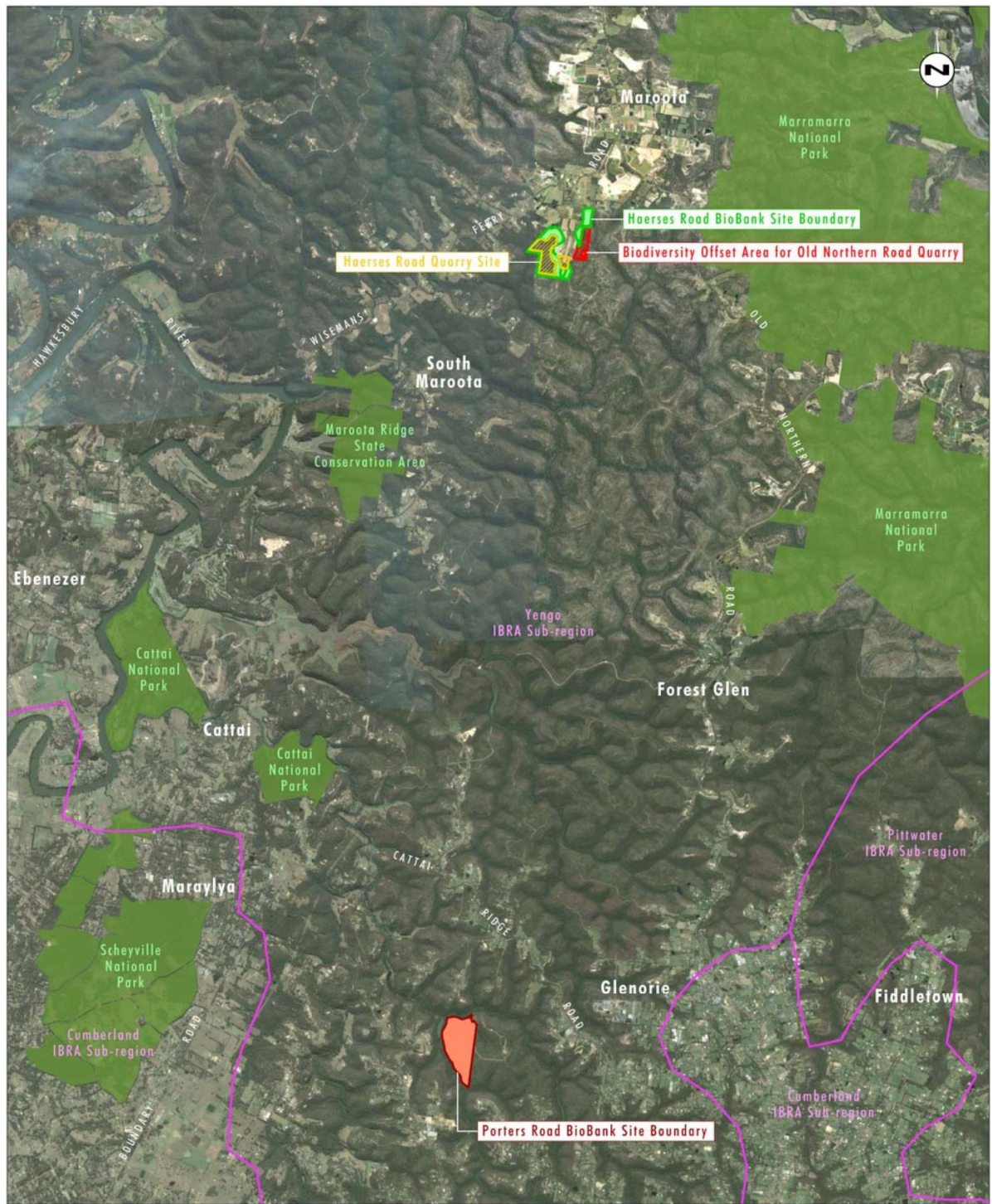
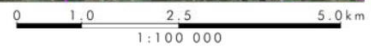


Image Source: Google Earth (2016)



**Legend**

- Haerses Road Quarry Site
- Biodiversity Offset Area for Old Northern Road Quarry
- Haerses Road BioBank Site Boundary
- Porters Road BioBank Site Boundary
- National Park and Conservation Area
- IBRA Sub-region

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20180525 10.58

**Figure 9**  
**Haerses Road and Porters Road**  
**BioBank Sites and HR BOA**

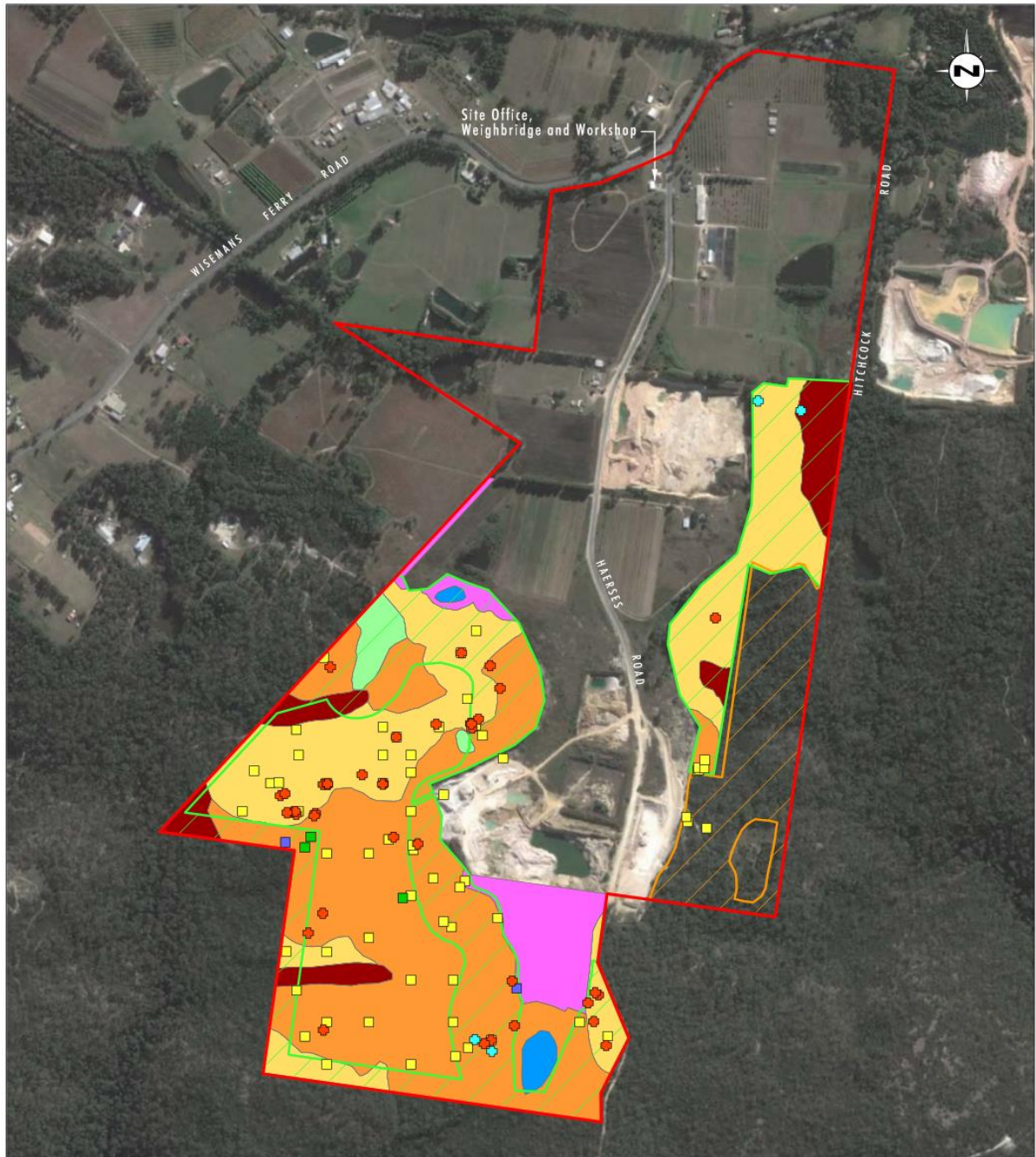


Image Source: Google Earth - DigitalGlobe (May 2016)  
 Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2014)

0 100 250 500m  
 1:10 000

**Legend**

- Haerses Road Quarry Site
- Biodiversity Offset Area for Old Northern Road Quarry
- Haerses Road BioBank Site Boundary
- Cleared
- Dam
- Zone 1: PCT 978 - HN560 – Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion – Moderate to Good Condition
- Zone 2: PCT 1083 - HN566 – Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion – Moderate to Good Condition
- Zone 3: PCT 1134 - HN582 – Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion – Moderate to Good Condition
- Zone 4: PCT 1181 - HN586 – Smooth-barked Apple – Red Bloodwood – Sydney Peppermint Heathy Open Forest on Slopes of Dry Sandstone Gullies of Western and Southern Sydney, Sydney Basin Bioregion – Moderate to Good Condition
- Dural Land Snail
- Eastern pygmy-possum
- Darwinia biflora*
- Grevillea parviflora subsp supplicans*
- Tetratheca glandulosa*

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 20180525 11.10

**Figure 10**  
**Haerses Road BioBank Site**  
**and HRBOA**

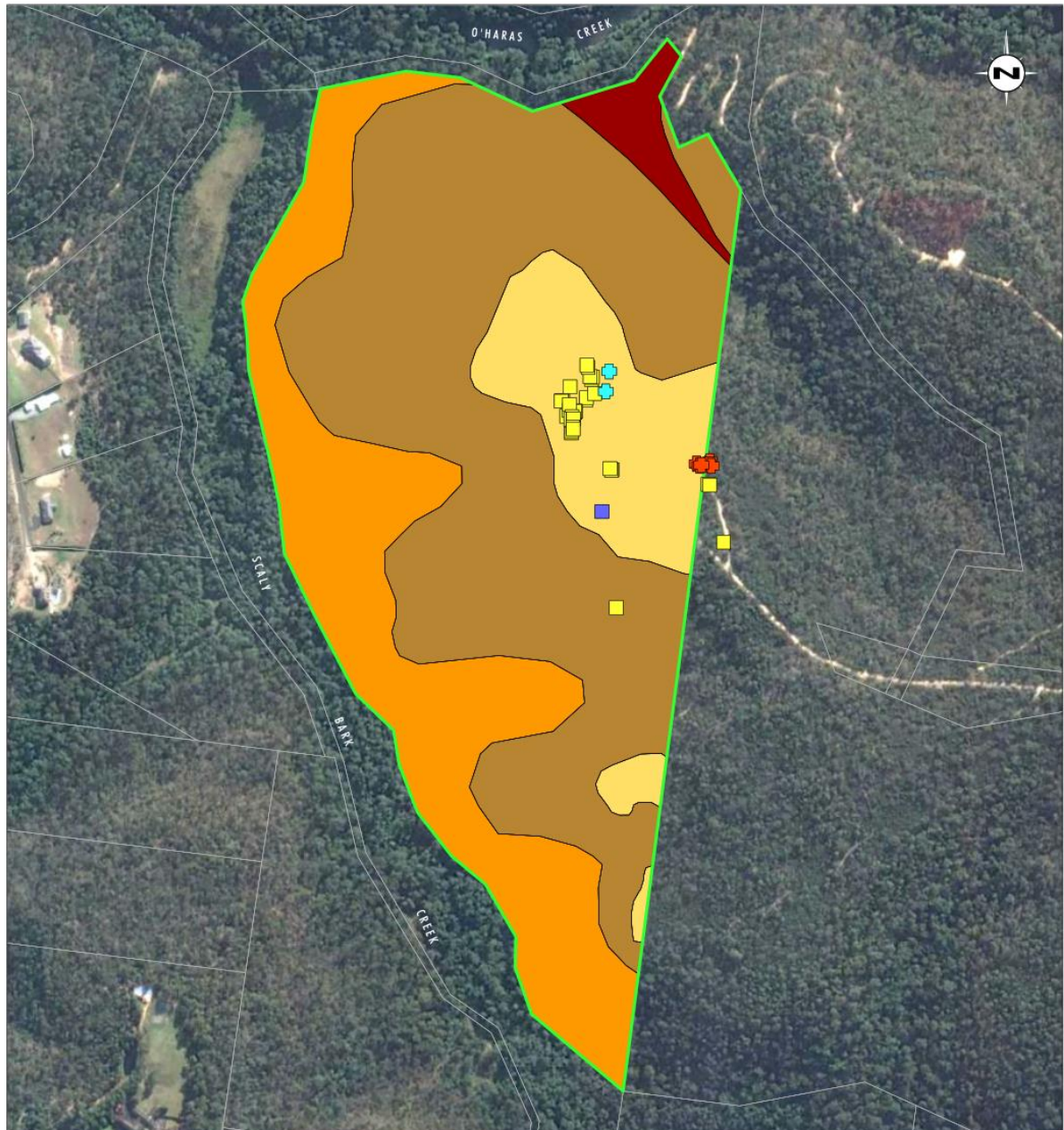


Image Source: Google Earth (2015)  
 Data Source: LPI (2011), Umwelt (2017), South East Environmental (2016, 2017)  
 Note: Site within Baulkham Hills Local Government Area and Yengo IBRA Subregion Boundary

0 100 200 400m  
 1:7 500

**Legend**

- Porters Road BioBank Site Boundary
- Zone 1: PCT 1083 - HN566 - Red Bloodwood - scribbly gum heathy woodland on sandstone plateaux of the Sydney Basin - Moderate to Good Condition
- Zone 2: PCT 1134 - HN582 - Scribbly Gum - Hairpin Banksia - Dwarf Apple heathy woodland on hinterland sandstone plateaux of the Central Coast, Sydney Basin Bioregion - Moderate to Good Condition
- Zone 3: PCT 1181 - HN586 - Smooth-barked Apple - Red Bloodwood - Sydney Peppermint heathy open forest on slopes of dry sandstone gullies of western and southern Sydney, Sydney Basin Bioregion - Moderate to Good Condition
- Zone 4: PCT 1237 - HN596 - Sydney Blue Gum - Blackbutt - Smooth-barked Apple moist shrubby open forest on shale ridges of the Hornsby Plateau, Sydney Basin Bioregion - Moderate to Good Condition
- Dural Land Snail
- Eastern pygmy-possum
- Darwinia biflora*
- Tetrathecha glandulosa*

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 20180525 11.08

**Figure 11**  
**Porters Road BioBank Site**

### Site Rehabilitation

Approximately 5.68 hectares of Stage 1 has been disturbed for sand extraction. The remaining area to the east comprised of remnant native vegetation. Extraction has concluded for the eastern section (approximately 3 hectares) which is in the process of rehabilitation to agricultural land. The eastern area of Stage 1 is currently being utilised for material stockpile for rehabilitation. Extraction was being carried out within the western portion of Stage 1.

Conditions during this reporting period was not favourable to commence rehabilitation. Above average rainfall led to extremely wet grounds prohibiting safe machinery access. It is proposed that over the next reporting period, these stockpiles will be screened to remove rock fragments larger than 150mm in diameter. The material will then be spread across the site to achieve final landform and to enable rehabilitation to Agriculture Class 4.

### Site Rehabilitation

Stage 2 extraction cell is still an active quarry extraction area. Rehabilitation has commenced in Stage 2 west where sandstone extraction took place and concluded. The farm dam constructed in this area which will form a permanent water infrastructure for the property, in accordance with the Soil and Water Management Plan.

Soil containing native vegetation seed bank from the extraction cells A and B was spread over the area between the dam and native vegetation on the western boundary. The natural regeneration process has started with a good diversity ground cover species emerging. In addition, the threatened *Darwinia biflora* and *Tetratheca glandulosa* have emerged with *Darwinia biflora* being prolific across the area. Emergence of *Acacia bynoeana* has also been observed in the area immediately surrounding the dam.

### Site Rehabilitation

Vegetation clearing and extraction have commenced in extraction Cell 1A in December 2019 following the completion of the pre-commencement conditions. No rehabilitation has taken place in extraction Cell 1A. Extraction in these cells were suspended during the 2020 – 2021 reporting period whilst awaiting the outcome of DA165-7-2005 Modification 4 application for the alteration of extraction sequence.

Extraction recommenced during this 2021 – 2022 reporting period, with Cells 1A, 1B and 2B being active cells.

### Site Rehabilitation

Baseline vegetation data was obtained during the previous reporting period in areas within the future extraction cells, as outlined in the Biodiversity and Rehabilitation Management Plan (V5, 2020). The Haerses Road Biodiversity and Rehabilitation management Plan outlines the annual monitoring of the extraction cells prior to disturbance for the purpose of providing baseline data for rehabilitation of the site post extraction.

A baseline monitoring site was not able to be established in Extraction Cells 1A and 1B due to commencement of extraction and current areas being subjected to disturbance. The monitoring location within cell 2B has been disturbed in preparation for material extraction and therefore monitoring at this site has concluded. The remaining three monitoring locations within cells 3, 4 and 5 were surveyed in September 2022 to collect further data which will contribute to the final rehabilitation of the quarry.

Information collected from these baseline monitoring sites was carried out in accordance with DPE Biodiversity Assessment Method, as approved via the *Biodiversity Conservation Act 2016* and the *Biodiversity Conservation Regulation 2017*. Photo monitoring points have been nominated within these baseline monitoring sites for ongoing monitoring and comparison purpose each year.

Within the three vegetation survey quadrats the following information was collected:

- Composition – native plant species richness by growth form,
- Structure – foliage cover of native and exotic species by growth form, and
- Function – number of large trees, tree stem size class, canopy species regeneration, length of fallen logs, percentage of leaf litter, number of trees with hollows and high threat exotic cover

Full details of the survey results can be found in the *Annual Biodiversity & Rehabilitation Management Report (South East Environmental, 2022)* contained in Appendix H.

### Supplementary buffer planting

Supplementary buffer planting commenced in 2016 utilising native species such as *Banksia*, *Melaleuca*, *Hakea* and *Acacia* to provide visual screening for motorist on Wisemans Ferry Road. Intersection upgrade works at the Haerses Road and Wisemans Ferry Road during early 2020 have caused some disturbance to the buffer areas. The resulting disturbance from the road works was unavoidable. Works associated with the intersection upgrade was completed and finalised in May 2021. Works associated with the reinstatement of buffer planting did not occur during this reporting period due to unfavourable weather condition.

Monitoring occurred throughout the reporting period for natural regeneration. The western side of the Haerses Road intersection has begun natural regeneration with a diversity of *Eucalyptus*, *Acacia* and *Leptospermum* species emerging. The eastern side of the intersection did not show signs of natural regeneration therefore further rehabilitation techniques will be required, with the aim to commence rehabilitation in the next reporting period.

Exotic species occur in the 30-metre buffer with Weeds of National Significance (WoNS) and High Threat Weeds (HTW) present. Weed management and control will commence during the next reporting period, with priority given to management of WoNS and HTW.

### Deerubbin LALC property

The translocation and original offset sites from 2006 are located to the west of the Deerubbin LALC property (formerly Maroota State Forest). A 40-metre buffer runs along the eastern and southern boundaries between the quarry and the Deerubbin LALC property. Rehabilitation of this area started in 2015 with continued regular regeneration works in this area, there has been no further disturbance to any areas of the buffer.

### Management Stewardship Agreements

Two Biodiversity Stewardship Agreements (BSA) were finalised for DA 165-7-2005. The two sites are located at Haerses Road and Porters Road. The BSA stipulates a requirement that management actions are to be implemented when the Agreement commences, and management actions that are to be undertaken when the Total Fund Deposit

is met, and Dixon Sand received the first annual management payment. Dixon Sand is yet to reach 80% of the Total Fund Deposit and therefore are undertaking the Passive Management of the biobank sites.

The annual inspection for Year 3 of the Haerses Road and Porters Road biobank sites were undertaken on 28 February 2022 for the purpose of annual reporting of passive management actions. The reports were submitted to the BSA Coordination Team on 11 March 2022.

Inspections were carried out against a number of management actions with the following outcome:

- **Dead timber** – N/A until active management,
- **Stock** – no stock kept or located on both properties.
- **Fire** – no fire within the BSA sites during previous 12 month period,
- **Disturbance** – no disturbance, burning or use of fertilisers, pesticides or herbicides within the BSA sites,
- **Disturbance to threatened species** – no disturbance to any threatened species habitat within 12 months. The Haerses Road Biobank site is fenced sign posted as environmental protection area to deter unauthorised persons from entering and disturbing significant habitat areas. The Porters Road biobank site can only be accessed via 2 locked gates to which only the property owner and RFS have keys for.
- **Dead timber or rocks** – no removal of dead timber or rocks from the sites. No storage or disposal of rubbish within the sites. Maintenance of tracks at Haerses Road site has occurred particularly following extreme rainfall events which cause damage to the track pavement. Work was carried out with care and no disturbance to native vegetation alongside these tracks. Fence regularly checked to ensure their visibility. Tracks at Porters Road site are 4-wheel drive access only and maintenance is not expected to be required unless emergency services require access.
- **Monitoring** – N/A until active management. Photo points established.

Photographic point monitoring forms part of the assessment with three photo locations being assessed for each biobank site.

Previously during the Year 1 inspection, it was noted that both biobank sites experienced ongoing drought condition in 2019 which resulted in loss of some shrubs and ground cover vegetation. During the Year 2 inspection, a return to average rainfall conditions throughout 2020 has assisted in increase in grass diversity, emergence of ground cover forbs and ferns, and vegetation growth. During the 2021 – 2022 period, increased shrub density has been noted in 2 out of 3 photographic point locations at Haerses Road site due to above average rainfall. A good increase in groundcover diversity was observed and shrub growth with increasing density and diversity were noted at Porters Road site. Low density of weed was detected growing on the margin of the Porters Road site.

The full annual management reports for Year 3 (2021 - 2022) of passive management for both biobanking sites are contained in Appendix I.

### Recommendations for bush regeneration, rehabilitation work and monitoring

The following recommendations for bush regeneration, rehabilitation work and monitoring have been made:

**Site**

- Undertake screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders
- Spread out screened material and stockpiled material to achieve final landform to enable rehabilitation to Class 4 Agriculture.
- First agricultural planting event

**S**

- Continue to monitor the native vegetation growth to the west of the water storage dam
- Dam wall repair / mitigation

**s s r r R d r r r r**

- Assisted rehabilitation of eastern side of Haerses Road intersection buffer area where disturbance has taken place

**r D r r r r r M r S r s**

- Continued bush regeneration maintenance in the previously disturbed area
- Baseline monitoring locations established

**r s d**

- Continued monitoring of vegetation quadrats for establishment of baseline data.

**d M**

- Continue with weed management as per the recommendations contained in the Bush Regenerator and Ecologist's reports.

**r s s R d d r r s R d S s**

- Monitoring and management of the Haerses Road and Porters Road biobank BSA sites to be undertaken in accordance with the Biobanking Agreement and BSA reporting.



## Community Consultative Committee (CCC)

### Community Consultative Committee (CCC)

Dixon Sand is required to adhere to the following community related consent conditions:

#### Community Consultative Committee (CCC)

D	R	S
<p>Condition 8 of Schedule 5</p>	<p>The Applicant must establish and operate a Community Consultative Committee (CCC) for the development to the satisfaction of the Secretary. The CCC must be established by 30 June 2018 and operated in general accordance with the Department's Community Consultative Committee Guidelines, November 2016 (or later version).</p> <p>Notes:</p> <ul style="list-style-type: none"> <li>The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent.</li> <li>In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community.</li> <li>The CCC established and operated prior to the approval of Modification 1 must continue to be operated in accordance with the procedures required by the consent prior to the approval of Modification 1 until such time as the CCC required by this condition is established.</li> <li>The Applicant may, with the approval of the Secretary, combine the function of this CCC with the functions of other CCCs in the area.</li> </ul>	<p>The current CCC members were re-appointed by the DP&amp;E on 1<sup>st</sup> March 2018 (note joint CCC for the Old Northern Road and Haerses Road quarries).</p>
<p>Condition 1(e) of Schedule 5</p>	<p>describe the procedures to be implemented to:</p> <ul style="list-style-type: none"> <li>keep the local community and relevant agencies informed about the operation and environmental performance of the development;</li> <li>receive, record, handle and respond to complaints;</li> <li>resolve any disputes that may arise during the course of the development;</li> <li>respond to any non-compliance;</li> <li>respond to emergencies; and</li> </ul>	<p>Refer to the Environmental Management Systems and Management Plans</p>

### Community Consultative Committee (CCC)

No complaints were received by Haerses Road quarry during the 2021 - 2022 reporting period.

## Complaints Monitoring Data

Long term complaints monitoring data commencing 2006 – 2007 is depicted in Chart 66 below. It must be noted that complaints were recorded for the Haerses Road and Old Northern Road quarries combined from the 2006 – 2007 to 2017 – 2018 monitoring periods, with complaints recorded separately for individual quarries from thereon.

A total of sixteen complaints have been received by Dixon sand since the 2006 – 2007 monitoring period to date.

The number of complaints were nil and one during the 2006 - 2007 and 2007 – 2008 monitoring periods respectively, with the one complaint being associated with a haulage truck driving in a dangerous manner.

During the 2008 – 2009 monitoring period, the number of complaints increased to six, with the majority associated with trucks driving in a dangerous manner or exceeding the school zone speed limit. One complaint was made in relation to the quarry generating excessive noise where the source of noise was identified to have been caused by a different operation.

From 2009 – 2010 to 2016 – 2017 monitoring periods, the number of complaints were minimal and fluctuated between nil and two. These complaints were associated with haulage trucks driving in a dangerous manner or exceeding the speed limit.

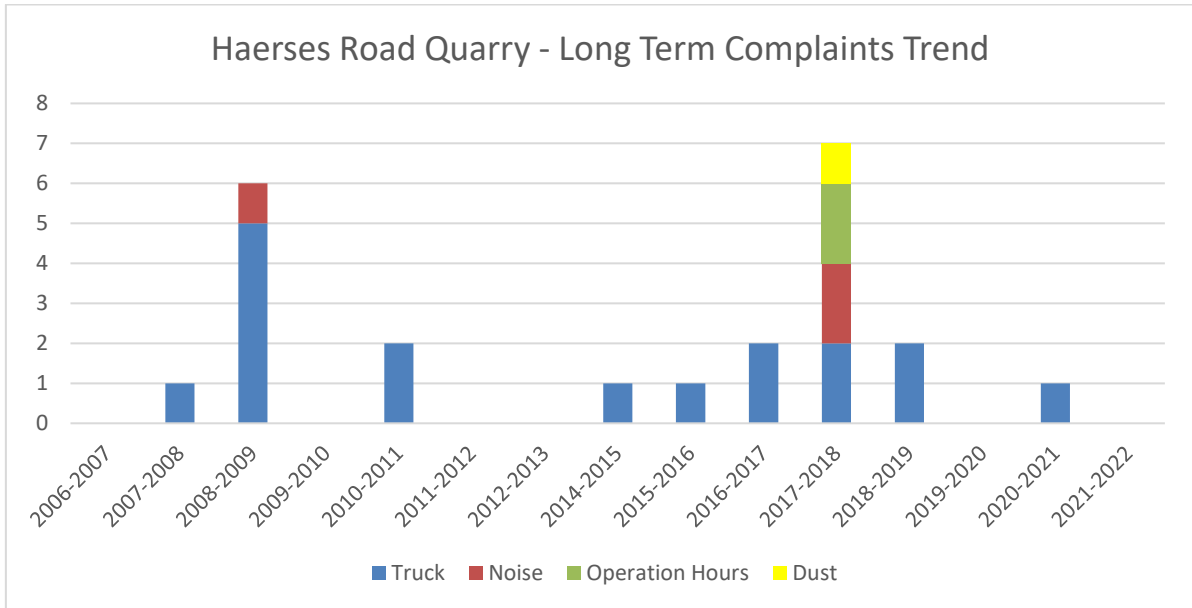
The 2016 – 2017 monitoring period recorded an increase in number of complaints to eight complaints which were associated with haulage trucks driving in a dangerous manner, excessive noise generation, operation outside of approved hours and excessive dust generation.

From this point, a downward trend in number of complaints can be observed. The number of complaints received reduced to two complaints during the 2018 – 2019 monitoring period which were associated with haulage trucks exceeding the speed limit. No complaints were received during this 2019 – 2020 monitoring period. One complaint was received during this 2020 – 2021 reporting period associated with a haulage truck driving in a dangerous manner.

Dixon Sand received no complaints regarding Haerses Road quarry operation during this reporting period.

The majority of the complaints were made by residents of Maroota, residents of neighbouring suburbs or local road users. One complaint was made by Dixon Sand Quarry Manager. Timing of events leading to complaints were mainly during quarry operation hours with the exception of complaints associated with operations outside of consented hours. The locations of haulage trucks driving in a dangerous manner, exceeding the speed limit, or excessively using engine brakes occurred mainly on Old Northern Road and Wisemans Ferry Road in the local areas.

Dixon Sand executed the steps to identify the validity of the complaints received and implemented appropriate actions outlined in the complaints procedure and Maroota Local Traffic Management Policy (inter-pit policy). Throughout the years, a number of complaints were identified to have been associated with other operations in or out of the area. All complaints have been closed out.



Complaints are categorized by type: Truck, Noise, Operation Hours, and Dust.

**Community Consultation and Meetings**

Two ordinary CCC meetings were held in the 20201 - 2022 reporting period, in accordance with the consent conditions and CCC Guidelines (2016). The CCC meetings were held on 10<sup>th</sup> November 2021 and on 13<sup>th</sup> May 2022.

This CCC meeting provided opportunity to address any issues that were brought up by the community and/or stakeholders. The meeting minutes are contained in Appendix K.

**Community Engagement and Outreach**

In addition to contacting Community Representatives of the CCC, the local community is provided with an opportunity to comment on Dixon Sand’s environmental performance through direct contact with quarry staff or through the contact portal via the company’s website.

**Staff and Community Interaction**

Dixon Sand staff made contact with local community members on a number of occasions. These include:

- Liaising with the neighbouring property owners to Haerses Road quarry regarding general maintenance,
- Notifying the Maroota Public School regarding noise monitoring undertaken in December 2021 and June 2022, and
- Bi-annual CCC meetings in November 2021 and May 2022

**Community Contributions**

Dixon Sand regularly makes contributions to a number of community initiatives such as:

- monetary contribution to the Maroota Public School,
- monetary contribution to the Cattai Public School,

- monetary contribution to the Royal Flying Doctor Service, and
- publication of environmental monitoring data, and provision of all current consents and site management plans for public viewing on the Dixon Sand website.

Dixon Sand typically donates time and machine resources to the annual Maroota Muster however, the event did not take place during the 2021 – 2022 reporting period due to COVID-19 restrictions.

## Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) can be defined as “using, conserving and enhancing the community’s resources so that the ecological processes, on which life depends, are maintained and the total quality of life, now and in the future, can be increased” (Commonwealth of Australia, 1992). The four principles of ESD are listed in Schedule 2 of the Environmental Planning and Assessment Regulation 2000 as follows:

- the precautionary principle;
- inter-generational equity;
- conservation of biological diversity and ecological integrity; and
- Improved valuation, pricing and incentive mechanisms.

Haerses Road quarry continues to manage all potential threats to the quality of the environment, determined with a reasonable degree of certainty through the use of scientific investigation and analysis of the individual and cumulative environmental impacts of the proposal.

Long-term environmental fluctuations have been, and will continue to be, monitored for the duration of extraction such as groundwater levels and quality, noise, air quality and threatened flora and fauna.

Threatened flora and fauna present on site is monitored annually to ensure they are not impacted by quarry activities. Similarly, noise and air quality monitoring will continue throughout the life of the developments. Mitigation measures are in place to minimise the potential adverse impacts likely to affect social and intergenerational equity. These measures relate to erosion and sediment control, surface and groundwater management, air quality control, and noise and waste management. Continual community relation strategies will ensure the community is well informed and has an effective means of voicing concerns and receiving feedback.

Dixon Sand aims to protect the biological diversity and ecological integrity of the sites through;

- progressive rehabilitation of the extracted areas using agricultural and native species;
- monitoring and maintenance of buffer areas to ecologically sensitive sites;
- establishment of native vegetation offset areas, biodiversity offset area and native rehabilitation areas to maximise native fauna habitats and enhance vegetation corridor for flora and fauna migration, and
- providing a final landform that integrates elements of the local area.

The value placed on environmental resources by Dixon Sand is represented as costs associated with the implementation of monitoring and mitigation measures throughout the life of the development consents.

## Social Management Procedures

No changes are proposed for the social management procedures.

## Environmental Management

### 1.1 Bushfire Management

DA165-7-2005 requires Dixon Sand to ensure the quarry is suitably equipped to respond to any fires on site. Dixon Sand is to assist the Rural Fire Service and emergency services to the extent practicable if there is a fire in the vicinity of the site.

During this monitoring period, the RFS utilised the non-quarry area in Stage 4 as a staging area for firefighting helicopter training and during hazard reduction burns.

A Bushfire Management Plan has been prepared for Haerses Road quarry.

An annual meeting between Dixon Sand and the representative of the Rural Fire Service was conducted before the start of the bushfire season in August 2021 on the quarry premise to:

- review the Bushfire Management Plans,
- review risk assessment and procedures in the event of a bushfire,
- discuss key dates for the 2021-2022 bushfire season and any specific season predictions,
- discuss any planned hazard reduction burns in the area including locations, size and dates,
- discuss any changes to quarry operations which may affect bushfire risks, and
- discuss the locations of static water supplies including waters storage ponds and standpipe.

The outcome of the meeting was communicated to Dixon Staff in the form of a toolbox talk.

### 1.2 Environmental Risk Assessment

The quarry management team is to ensure all personnel, including contractors, are provided with appropriate environmental training and awareness to ensure they understand their environmental awareness, responsibilities and how to mitigate the impacts. Training is undertaken using the following avenues:

- Compulsory site environmental induction for employees and contractors,
- Truck driver induction training,
- Pollution incident response management plan (PIRMP) and mock scenario training,
- Multi staged pre-clearing procedures and fauna handling and rescue procedures training,
- Environmental hazard identification workshop,
- Regular toolbox talks, and
- Bushfire Management and Emergency evacuation training.

**Dusts and odours**

**Relevant dusts and odours**

Details of the incidents and non-compliances are listed in Table 28 below.

**Relevant dusts and odours**

Incident No.	Date	Condition	Description
1	21 Sep – 19 Oct 2021	Condition 9 of Schedule 3 of DA 165-7-2005  and  Condition O3.6 of EPL 12513	<p><b>Dusts and odours</b></p> <p>DPE – reported on 28 October 2021 EPA – reported on 28 October 2021 (REF-NO-6821)</p> <p><b>Dusts and odours</b></p> <p>Dixon Sand received the laboratory report for dust deposition results on 27 October 2021. The report contains dust deposition results for the 21 September 2021 to 19 October 2021 monitoring period.</p> <p>The elevated monthly dust deposition level of 7.0 g/m<sup>2</sup>/month at dust gauge D10 has resulted in an annual average of 4.2 g/m<sup>2</sup>/month. This annual average has exceeded the 4 g/m<sup>2</sup>/month criteria contained in:</p> <ul style="list-style-type: none"> <li>• Table 3 of Condition 9 of Schedule 3 of the Development Consent, and</li> <li>• Condition O3.6 of EPL 12513</li> </ul> <p>The monthly dust deposition level of 7.0 g/m<sup>2</sup>/month comprised of 2.4 g/m<sup>2</sup>/month ash content and 4.6 g/m<sup>2</sup>/month combustible matter. Field observation noted vegetation and insects inside the dust gauge, and that the surrounding paddocks having been extensively slashed and bare earth left exposed.</p> <p><b>Sources</b></p> <p>The likely cause of the elevated monthly dust deposition levels which led to the annual average being exceeded is due to agricultural activities in the immediate area surrounding the dust gauge. The paddocks have been slashed and rotary hoed by the onsite farmer in preparation for crop plantation. This has resulted in a substantial area of exposed ground and bare earth.</p> <p>The closest active quarry operations during this monitoring period are located approximately 1 km to the south of the dust gauge on Lot 216. Onsite and neighbouring agricultural activities have been found to have contributed to the elevated dust deposition level on a number of occasions throughout the course of the dust monitoring program.</p> <p><b>Measures</b></p> <p>A request will be made to the farmer leasing the land to undertake dust generating activities during calm conditions where possible.</p>

	D	d	D
			Annual average of 4.2 g/m <sup>2</sup> /month for this monitoring period exceeded the annual average criteria of 4 g/m <sup>2</sup> /month contained in: <ul style="list-style-type: none"> <li>• Table 3 of Condition 9 of Schedule 3 of the Development Consent, and</li> <li>• Condition O3.6 of EPL 12513</li> </ul> The incident has been closed out, no further action required.
2	Submission of 2021-2022 Annual Review	Condition 12 of Schedule 5 of DA 165-7-2005	Dixon Sand is required to submit the Annual Review for the Quarry by the end of March each year. The submission of this Annual Review at the end of September is technically non-compliant with the deadline required by the consent condition. However, Dixon Sand requested approval from the DPE for the submission deadline of the Annual Review to be adjusted to reflect the financial year reporting. Approval was granted by the DPE on 9 February 2018 to submit the Annual Review by the end of September each year.

No archaeological artefacts or sites have been uncovered during this reporting period.

**S** **r**

Dixon Sand received one notice under Section 191 Improvement Notices of the *Work Health and Safety Act* 2011 from NSW Resources Regulator during this reporting period. The identified issue has been rectified and closed out.

**s s s d R s r s R**

D	R	d	d
24 Nov 2021	NTCE0009352 – Section 191 Improvement Notice	Guard missing on screens at Haerses Road	Guarding replaced – closed out

Independent Environmental Audit Report

Independent Environmental Audit Report

Condition 14 of Schedule 5 of DA 165-7-2005 requires:

*Within 12 weeks of commencing this audit, or as otherwise agreed by the Secretary, the Applicant must submit a copy of the audit report to the Secretary and any other NSW agency that requests it, together with its response to any recommendations contained in the audit report, and a timetable for the implementation of these recommendations as required. The Applicant must implement these recommendations, to the satisfaction of the Secretary.*

The appointment of R.W. Corkery and Co Pty Ltd (RWC) to carry out the Independent Environmental Audit (IEA) for Haerses Road quarry was approved by the Department of Planning and Environment (DPE) on 11<sup>th</sup> July 2019.

The IEA commenced on 22 October 2019 and the *Independent Environmental Audit: Haerses Road Quarry Report* (RW Corkery & Co, January 2020, Document No. 1022/01) issued on 10<sup>th</sup> January 2020.

The *Response and Action Plan for the Independent Environmental Audit 2019, Haerses Road Quarry* document was prepared to provide Dixon Sand's response and proposed actions toward the IEA findings, recommendations for non-compliances and suggested improvements as identified in *the Independent Environmental Audit: Old Northern Road Report* (RW Corkery & Co, January 2020, Document No. 1022/01). This Document was prepared in accordance with the *Independent Audit – Post Approval Requirements June 2018* (Department of Planning and Environment, 2018).

The IEA report and Response and Action Plan report were submitted to the DPE on 13<sup>th</sup> January 2020. The CCC members and other Agencies were provided a link to the reports published on Dixon Sand's website.

All proposed actions from the IEA 2019 have been implemented and closed out.

Dixon Sand recently sought endorsement from the DPE to engage RW Corkery & Co to undertake the 2022 IEA. The outcome of the 2022 IEA will be reported in the next 2022 – 2023 Annual Review.



## Rehabilitation of the quarry site

### Rehabilitation of the quarry site

#### Monitoring

- Continue with 6-monthly noise monitoring at nominated receivers as quarry operations are currently active in Modification 1 extraction cells.

#### Groundwater monitoring

- Continue with the review and submission of buffer zone groundwater monitoring data to be undertaken as per NRAR's recommendation.
- Water sampling and laboratory analysis of surface water at SW1 and SW2 to continue when there is sufficient flow after rain events

#### Vegetation management

- Continue to implement the pre-clearing survey and multistage habitat tree felling procedures prior to any vegetation felling.

#### Rehabilitation of the quarry site

##### Screening of stockpiled rehabilitation material

- Undertake screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders
- Spread out screened material and stockpiled material to achieve final landform to enable rehabilitation to Class 4 Agriculture.
- First agricultural planting event

##### Monitoring of native vegetation

- Continue to monitor the native vegetation growth to the west of the water storage dam
- Dam wall repair / mitigation

##### Assisted rehabilitation of eastern side of Haerses Road intersection buffer area

- Assisted rehabilitation of eastern side of Haerses Road intersection buffer area where disturbance has taken place

##### Continued bush regeneration maintenance in the previously disturbed area

- Continued bush regeneration maintenance in the previously disturbed area
- Baseline monitoring locations established

**Environmental Monitoring**

- Continued monitoring of vegetation quadrats for establishment of baseline data.

**Management**

- Continue with weed management as per the recommendations contained in the Bush Regenerator and Ecologist's reports.

**Haerses Road and Porters Road Biobanking Sites**

- Monitoring and management of the Haerses Road and Porters Road biobank sites to be undertaken in accordance with the Biobanking Agreement and BSA reporting.

**Outstanding Proposed Actions**

There are no outstanding proposed actions for the Independent Environmental Audit and DRG's Improvement Notice.

**Recommendations**

A number of recommendations and changes in environmental procedures have been proposed throughout this Annual Review of 2021 – 2022 reporting period.

In general, Dixon Sand has maintained acceptable environmental performance outcomes throughout the reporting period. The company has committed to ongoing endeavours to minimise environmental impacts and potential exceedances related to quarry operations.

## **Appendix A – Dust Deposition Reports**

## Report Number: 11322

Date Issued: 13/08/2021

Revision Number: 00

**Site/Job: Dixon Maroota - Dusts**

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 9/08/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	01/06/2021 11:47	09/08/2021 10:54	11322/1	Dust	Extended sampling period for all gauges due to Covid 19 restrictions
D10 Hearses Rd	01/06/2021 11:24	09/08/2021 11:29	11322/2	Dust	
D06 School	01/06/2021 10:37	09/08/2021 10:47	11322/3	Dust	
D05 Bund	01/06/2021 10:49	09/08/2021 10:36	11322/4	Dust	
D04 Rehab	01/06/2021 11:13	09/08/2021 10:05	11322/5	Dust	
D07 Mullock	01/06/2021 11:23	09/08/2021 10:16	11322/6	Dust	
D01(A) Front Gate	01/06/2021 10:57	09/08/2021 09:55	11322/7	Dust	
D11 Goldstien	01/06/2021 16:28	09/08/2021 13:43	11322/8	Dust	
D12 Ram	01/06/2021 11:39	09/08/2021 11:21	11322/9	Dust	

The sample(s) have been tested as received and the following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 13/08/2021.

## Test Report Number: 11322

Date Issued: 13/08/2021

Revision No: 00

### Results

Ambient Air	Method	Units	11322/1 D08&9 Hitchcock Rd Olive Grove 9/08/2021	11322/2 D10 Hearses Rd 9/08/2021	11322/3 D06 School 9/08/2021	11322/4 D05 Bund 9/08/2021	11322/5 D04 Rehab 9/08/2021
Number of Days	AS 3580.10.1	days	69	69	69	69	69
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	0.4	0.9	0.7	0.6
Ash	AS 3580.10.1	g/m2/mth	0.3	0.2	0.3	0.6	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.2	0.6	0.1	0.2
Calculated Rain	AS 3580.10.1	mm	73	68	73	76	29

Ambient Air	Method	Units	11322/6 D07 Mullock 9/08/2021	11322/7 D01(A) Front Gate 9/08/2021	11322/8 D11 Goldstien 9/08/2021	11322/9 D12 Ram 9/08/2021
Number of Days	AS 3580.10.1	days	69	69	69	69
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.3	2.7	0.3	0.3
Ash	AS 3580.10.1	g/m2/mth	0.2	2.4	<0.1	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.3	0.3	0.2
Calculated Rain	AS 3580.10.1	mm	69	71	69	71

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

Extended sampling period for all gauges due to Covid 19 restrictions prohibiting access.

## Sampling Report Number: 11322

Date Issued: 13/08/2021

Revision No: 00

Sampling Conditions: Cloudy 12-19°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11322/1	D08&9 Hitchcock Rd Olive Grove		D.Walker	09/08/2021 10:54	AS3580.10.1	CuSO4
11322/2	D10 Hearses Rd		D.Walker	09/08/2021 11:29	AS3580.10.1	CuSO4
11322/3	D06 School		D.Walker	09/08/2021 10:47	AS3580.10.1	CuSO4
11322/4	D05 Bund		D.Walker	09/08/2021 10:36	AS3580.10.1	CuSO4
11322/5	D04 Rehab		D.Walker	09/08/2021 10:05	AS3580.10.1	CuSO4
11322/6	D07 Mullock		D.Walker	09/08/2021 10:16	AS3580.10.1	CuSO4
11322/7	D01(A) Front Gate		D.Walker	09/08/2021 09:55	AS3580.10.1	CuSO4
11322/8	D11 Goldstien		D.Walker	09/08/2021 13:43	AS3580.10.1	CuSO4
11322/9	D12 Ram		D.Walker	09/08/2021 11;21	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11322/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
11322/2	D10 Hearses Rd	312538	6294576	Pellet in funnel, minor algae.
11322/3	D06 School	313518	6296537	Minor vegetation and algae.
11322/4	D05 Bund	313160	6296838	Minor vegetation.
11322/5	D04 Rehab	312385	6296932	Minor vegetation.
11322/6	D07 Mullock	312579	6296676	
11322/7	D01(A) Front Gate	313290	6297176	Minor dust.
11322/8	D11 Goldstien	312034	6294213	Minor insects
11322/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 13/08/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 11357

Date Issued: 31/08/2021

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd

Address: PO Box 4019

PITT TOWN NSW 2756

Contact

David Dixon

The following Dust Deposition sample(s) were received on 24/08/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	09/08/2021 10:54	24/08/2021 10:15	11357/1	Dust	
D10 Hearses Rd	09/08/2021 10:54	24/08/2021 11:02	11357/2	Dust	
D06 School	09/08/2021 10:54	24/08/2021 09:17	11357/3	Dust	
D05 Bund	09/08/2021 10:54	24/08/2021 09:39	11357/4	Dust	
D04 Rehab	09/08/2021 10:54	24/08/2021 09:56	11357/5	Dust	
D07 Mullock	09/08/2021 10:54	24/08/2021 10:05	11357/6	Dust	
D01(A) Front Gate	09/08/2021 10:54	24/08/2021 09:48	11357/7	Dust	
D11 Goldstien	09/08/2021 10:54	24/08/2021 10:48	11357/8	Dust	
D12 Ram	09/08/2021 10:54	24/08/2021 10:32	11357/9	Dust	

The sample(s) have been tested as received and the following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane

Approved by: Laboratory Manager

Results have been approved and report finalised on 31/08/2021.



## Test Report Number: 11357

Date Issued: 31/08/2021

Revision No: 00

### Results

Ambient Air	Method	Units	11357/1 D08&9 Hitchcock Rd Olive Grove 24/08/2021	11357/2 D10 Hearses Rd 24/08/2021	11357/3 D06 School 24/08/2021	11357/4 D05 Bund 24/08/2021	11357/5 D04 Rehab 24/08/2021
Number of Days	AS 3580.10.1	days	15	15	15	15	15
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.1	8.8	1.1	1.0	0.5
Ash	AS 3580.10.1	g/m2/mth	0.9	2.7	0.9	0.9	0.5
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	6.1	0.2	0.1	<0.1
Calculated Rain	AS 3580.10.1	mm	38	42	36	39	36

Ambient Air	Method	Units	11357/6 D07 Mullock 24/08/2021	11357/7 D01(A) Front Gate 24/08/2021	11357/8 D11 Goldstien 24/08/2021	11357/9 D12 Ram 24/08/2021
Number of Days	AS 3580.10.1	days	15	15	15	15
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.2	2.7	1.5	0.8
Ash	AS 3580.10.1	g/m2/mth	0.3	2.4	0.9	0.5
Combustible Matter	AS 3580.10.1	g/m2/mth	<0.1	0.3	0.6	0.3
Calculated Rain	AS 3580.10.1	mm	37	40	42	42

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

Short sample period to normalise schedule after Covid lockdown.

## Sampling Report Number: 11357

Date Issued: 31/08/2021

Revision No: 00

Sampling Conditions: Raining 8°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11357/1	D08&9 Hitchcock Rd Olive Grove		T.Walker	24/08/2021 10:15	AS3580.10.1	CuSO4
11357/2	D10 Hearses Rd		T.Walker	24/08/2021 11:02	AS3580.10.1	CuSO4
11357/3	D06 School		T.Walker	24/08/2021 09:17	AS3580.10.1	CuSO4
11357/4	D05 Bund		T.Walker	24/08/2021 09:39	AS3580.10.1	CuSO4
11357/5	D04 Rehab		T.Walker	24/08/2021 09:56	AS3580.10.1	CuSO4
11357/6	D07 Mullock		T.Walker	24/08/2021 10:05	AS3580.10.1	CuSO4
11357/7	D01(A) Front Gate		T.Walker	24/08/2021 09:48	AS3580.10.1	CuSO4
11357/8	D11 Goldstien		T.Walker	24/08/2021 10:48	AS3580.10.1	CuSO4
11357/9	D12 Ram		T.Walker	24/08/2021 10:32	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11357/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
11357/2	D10 Hearses Rd	312538	6294576	Vegetation
11357/3	D06 School	313518	6296537	Minor vegetation
11357/4	D05 Bund	313160	6296838	
11357/5	D04 Rehab	312385	6296932	
11357/6	D07 Mullock	312579	6296676	
11357/7	D01(A) Front Gate	313290	6297176	Minor sand
11357/8	D11 Goldstien	312034	6294213	
11357/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 31/08/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 11502

Date Issued: 29/09/2021

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 21/09/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	24/08/2021 10:15	21/09/2021 11:12	11502/1	Dust	
D10 Hearses Rd	24/08/2021 11:02	21/09/2021 11:44	11502/2	Dust	
D06 School	24/08/2021 09:17	21/09/2021 10:08	11502/3	Dust	
D05 Bund	24/08/2021 09:39	21/09/2021 10:21	11502/4	Dust	
D04 Rehab	24/08/2021 09:56	21/09/2021 10:50	11502/5	Dust	
D07 Mullock	24/08/2021 10:05	21/09/2021 11:01	11502/6	Dust	
D01(A) Front Gate	24/08/2021 09:48	21/09/2021 10:34	11502/7	Dust	
D11 Goldstien	24/08/2021 10:48	21/09/2021 14:24	11502/8	Dust	
D12 Ram	24/08/2021 10:32	21/09/2021 11:33	11502/9	Dust	

The sample(s) have been tested as received and the following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 29/09/2021.

## Test Report Number: 11502

Date Issued: 29/09/2021

Revision No: 00

### Results

Ambient Air	Method	Units	11502/1 D08&9 Hitchcock Rd Olive Grove 21/09/2021	11502/2 D10 Hearses Rd 21/09/2021	11502/3 D06 School 21/09/2021	11502/4 D05 Bund 21/09/2021	11502/5 D04 Rehab 21/09/2021
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.8	4.5	1.1	1.0	0.5
Ash	AS 3580.10.1	g/m2/mth	0.4	0.7	0.5	0.9	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.4	3.8	0.6	0.1	0.2
Calculated Rain	AS 3580.10.1	mm	38	34	40	38	36

Ambient Air	Method	Units	11502/6 D07 Mullock 21/09/2021	11502/7 D01(A) Front Gate 21/09/2021	11502/8 D11 Goldstien 21/09/2021	11502/9 D12 Ram 21/09/2021
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	2.6	0.4	0.1
Ash	AS 3580.10.1	g/m2/mth	0.3	2.1	0.1	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.5	0.3	0.1
Calculated Rain	AS 3580.10.1	mm	36	40	34	36

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11502

Date Issued: 29/09/2021

Revision No: 00

Sampling Conditions: Cloudy 12°-15°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11502/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	21/09/2021 11:12	AS3580.10.1	CuSO4
11502/2	D10 Hearses Rd		T & D.Walker	21/09/2021 11:44	AS3580.10.1	CuSO4
11502/3	D06 School		T & D.Walker	21/09/2021 10:08	AS3580.10.1	CuSO4
11502/4	D05 Bund		T & D.Walker	21/09/2021 10:21	AS3580.10.1	CuSO4
11502/5	D04 Rehab		T & D.Walker	21/09/2021 10:50	AS3580.10.1	CuSO4
11502/6	D07 Mullock		T & D.Walker	21/09/2021 11:01	AS3580.10.1	CuSO4
11502/7	D01(A) Front Gate		T & D.Walker	21/09/2021 10:34	AS3580.10.1	CuSO4
11502/8	D11 Goldstien		T & D.Walker	21/09/2021 14:24	AS3580.10.1	CuSO4
11502/9	D12 Ram		T & D.Walker	21/09/2021 11:33	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11502/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
11502/2	D10 Hearses Rd	312538	6294576	Insects, minor algae, slashing
11502/3	D06 School	313518	6296537	Minor vegetation, recent slashing
11502/4	D05 Bund	313160	6296838	Insects, minor vegetation, slashing, tilling
11502/5	D04 Rehab	312385	6296932	Minor vegetation
11502/6	D07 Mullock	312579	6296676	
11502/7	D01(A) Front Gate	313290	6297176	Minor sand and algae
11502/8	D11 Goldstien	312034	6294213	
11502/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 29/09/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 11586

Date Issued: 27/10/2021

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 19/10/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	21/09/2021 11:12	19/10/2021 11:01	11586/1	Dust	
D10 Hearses Rd	21/09/2021 11:44	19/10/2021 11:33	11586/2	Dust	
D06 School	21/09/2021 10:08	19/10/2021 10:09	11586/3	Dust	
D05 Bund	21/09/2021 10:21	19/10/2021 10:21	11586/4	Dust	
D04 Rehab	21/09/2021 10:50	19/10/2021 10:42	11586/5	Dust	
D07 Mullock	21/09/2021 11:01	19/10/2021 10:51	11586/6	Dust	
D01(A) Front Gate	21/09/2021 10:34	19/10/2021 10:29	11586/7	Dust	
D11 Goldstien	21/09/2021 14:24	19/10/2021 13:31	11586/8	Dust	
D12 Ram	21/09/2021 11:33	19/10/2021 11:23	11586/9	Dust	

The sample(s) have been tested as received and the following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 27/10/2021.



## Test Report Number: 11586

Date Issued: 27/10/2021

Revision No: 00

### Results

Ambient Air	Method	Units	11586/1 D08&9 Hitchcock Rd Olive Grove 19/10/2021	11586/2 D10 Hearses Rd 19/10/2021	11586/3 D06 School 19/10/2021	11586/4 D05 Bund 19/10/2021	11586/5 D04 Rehab 19/10/2021
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.8	7.0	1.0	1.5	3.7
Ash	AS 3580.10.1	g/m2/mth	0.5	2.4	0.6	1.0	1.9
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	4.6	0.4	0.5	1.8
Calculated Rain	AS 3580.10.1	mm	56	53	61	60	51

Ambient Air	Method	Units	11586/6 D07 Mullock 19/10/2021	11586/7 D01(A) Front Gate 19/10/2021	11586/8 D11 Goldstien 19/10/2021	11586/9 D12 Ram 19/10/2021
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	2.1	1.2	0.4
Ash	AS 3580.10.1	g/m2/mth	0.5	1.8	0.5	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.3	0.7	0.1
Calculated Rain	AS 3580.10.1	mm	52	63	54	52

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11586

Date Issued: 27/10/2021

Revision No: 00

Sampling Conditions: 23°-27°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11586/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	19/10/2021 11:01	AS3580.10.1	CuSO4
11586/2	D10 Hearses Rd		T & D.Walker	19/10/2021 11:33	AS3580.10.1	CuSO4
11586/3	D06 School		T & D.Walker	19/10/2021 10:09	AS3580.10.1	CuSO4
11586/4	D05 Bund		T & D.Walker	19/10/2021 10:21	AS3580.10.1	CuSO4
11586/5	D04 Rehab		T & D.Walker	19/10/2021 10:42	AS3580.10.1	CuSO4
11586/6	D07 Mullock		T & D.Walker	19/10/2021 10:51	AS3580.10.1	CuSO4
11586/7	D01(A) Front Gate		T & D.Walker	19/10/2021 10:29	AS3580.10.1	CuSO4
11586/8	D11 Goldstien		T & D.Walker	19/10/2021 13:31	AS3580.10.1	CuSO4
11586/9	D12 Ram		T & D.Walker	19/10/2021 11:23	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11586/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor insects
11586/2	D10 Hearses Rd	312538	6294576	Vegetation, insects - slashing
11586/3	D06 School	313518	6296537	
11586/4	D05 Bund	313160	6296838	Minor insects
11586/5	D04 Rehab	312385	6296932	Insects, algae
11586/6	D07 Mullock	312579	6296676	
11586/7	D01(A) Front Gate	313290	6297176	Minor sand
11586/8	D11 Goldstien	312034	6294213	Minor insects
11586/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 27/10/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 11703

Date Issued: 23/11/2021

Revision Number: 00

**Site/Job: Dixon Maroota - Dusts**

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 16/11/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	19/10/2021 11:01	16/11/2021 10:12	11703/1	Dust	
D10 Hearses Rd	19/10/2021 11:33	16/11/2021 10:46	11703/2	Dust	
D06 School	19/10/2021 10:09	16/11/2021 09:12	11703/3	Dust	
D05 Bund	19/10/2021 10:21	16/11/2021 09:24	11703/4	Dust	
D04 Rehab	19/10/2021 10:42	16/11/2021 09:46	11703/5	Dust	
D07 Mullock	19/10/2021 10:51	16/11/2021 09:58	11703/6	Dust	
D01(A) Front Gate	19/10/2021 10:29	16/11/2021 09:32	11703/7	Dust	
D11 Goldstien	19/10/2021 13:31	16/11/2021 12:26	11703/8	Dust	
D12 Ram	19/10/2021 11:23	16/11/2021 10:38	11703/9	Dust	

The sample(s) have been tested as received and the following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 23/11/2021.

## Test Report Number: 11703

Date Issued: 23/11/2021

Revision No: 00

### Results

Ambient Air	Method	Units	11703/1 D08&9 Hitchcock Rd Olive Grove 16/11/2021	11703/2 D10 Hearses Rd 16/11/2021	11703/3 D06 School 16/11/2021	11703/4 D05 Bund 16/11/2021	11703/5 D04 Rehab 16/11/2021
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.7	2.0	1.0	1.1	1.2
Ash	AS 3580.10.1	g/m2/mth	1.0	1.1	0.7	1.0	0.8
Combustible Matter	AS 3580.10.1	g/m2/mth	0.7	0.9	0.3	0.1	0.4
Calculated Rain	AS 3580.10.1	mm	103	102	102	115	116

Ambient Air	Method	Units	11703/6 D07 Mullock 16/11/2021	11703/7 D01(A) Front Gate 16/11/2021	11703/8 D11 Goldstien 16/11/2021	11703/9 D12 Ram 16/11/2021
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	6.6	2.3	1.9	0.2
Ash	AS 3580.10.1	g/m2/mth	5.9	2.0	1.2	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.7	0.3	0.7	<0.1
Calculated Rain	AS 3580.10.1	mm	115	109	110	112

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11703

Date Issued: 23/11/2021

Revision No: 00

Sampling Conditions: Cloudy 18°-22°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11703/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	16/11/2021 10:12	AS3580.10.1	CuSO4
11703/2	D10 Hearses Rd		T & D.Walker	16/11/2021 10:46	AS3580.10.1	CuSO4
11703/3	D06 School		T & D.Walker	16/11/2021 09:12	AS3580.10.1	CuSO4
11703/4	D05 Bund		T & D.Walker	16/11/2021 09:24	AS3580.10.1	CuSO4
11703/5	D04 Rehab		T & D.Walker	16/11/2021 09:46	AS3580.10.1	CuSO4
11703/6	D07 Mullock		T & D.Walker	16/11/2021 09:58	AS3580.10.1	CuSO4
11703/7	D01(A) Front Gate		T & D.Walker	16/11/2021 09:32	AS3580.10.1	CuSO4
11703/8	D11 Goldstien		T & D.Walker	16/11/2021 12:26	AS3580.10.1	CuSO4
11703/9	D12 Ram		T & D.Walker	16/11/2021 10:38	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11703/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor insects
11703/2	D10 Hearses Rd	312538	6294576	Minor insects, algae
11703/3	D06 School	313518	6296537	Minor insects
11703/4	D05 Bund	313160	6296838	Minor insects, vegetationm
11703/5	D04 Rehab	312385	6296932	
11703/6	D07 Mullock	312579	6296676	Minor sand
11703/7	D01(A) Front Gate	313290	6297176	
11703/8	D11 Goldstien	312034	6294213	Insetcs, algae, bird droppings in funnel
11703/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 23/11/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 11993

Date Issued: 22/12/2021

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 14/12/2021

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	16/11/2021 10:12	14/12/2021 11:06	11993/1	Dust	
D10 Hearses Rd	16/11/2021 10:46	14/12/2021 11:39	11993/2	Dust	
D06 School	16/11/2021 09:12	14/12/2021 10:59	11993/3	Dust	
D05 Bund	16/11/2021 09:24	14/12/2021 10:45	11993/4	Dust	
D04 Rehab	16/11/2021 09:46	14/12/2021 10:14	11993/5	Dust	
D07 Mullock	16/11/2021 09:58	14/12/2021 10:28	11993/6	Dust	
D01(A) Front Gate	16/11/2021 09:32	14/12/2021 09:58	11993/7	Dust	
D11 Goldstien	16/11/2021 12:26	14/12/2021 11:55	11993/8	Dust	
D12 Ram	16/11/2021 10:38	14/12/2021 11:24	11993/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 22/12/2021.



## Test Report Number: 11993

Date Issued: 22/12/2021

Revision No: 00

### Results

Deposited Matter	Method	Units	11993/1 D08&9 Hitchcock Rd Olive Grove 14/12/2021	11993/2 D10 Hearses Rd 14/12/2021	11993/3 D06 School 14/12/2021	11993/4 D05 Bund 14/12/2021	11993/5 D04 Rehab 14/12/2021
<b>Date Tested</b>	--	--	20/12/2021	20/12/2021	20/12/2021	20/12/2021	20/12/2021
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	0.2	0.4	1.1	0.4
Ash	AS 3580.10.1	g/m2/mth	0.4	0.1	0.2	0.6	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	0.1	0.2	0.5	0.1
Calculated Rain	AS 3580.10.1	mm	169	166	188	186	169

Deposited Matter	Method	Units	11993/6 D07 Mullock 14/12/2021	11993/7 D01(A) Front Gate 14/12/2021	11993/8 D11 Goldstien 14/12/2021	11993/9 D12 Ram 14/12/2021
<b>Date Tested</b>	--	--	20/12/2021	20/12/2021	20/12/2021	20/12/2021
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	1.5	0.3	0.1
Ash	AS 3580.10.1	g/m2/mth	0.4	1.5	0.2	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	<0.1	0.1	<0.1
Calculated Rain	AS 3580.10.1	mm	176	115	168	180

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11993

Date Issued: 22/12/2021

Revision No: 00

Sampling Conditions: Cloudy 22-27°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11993/1	D08&9 Hitchcock Rd Olive Grove		T.Walker	14/12/2021 11:06	AS3580.10.1	CuSO4
11993/2	D10 Hearses Rd		T.Walker	14/12/2021 11:39	AS3580.10.1	CuSO4
11993/3	D06 School		T.Walker	14/12/2021 10:59	AS3580.10.1	CuSO4
11993/4	D05 Bund		T.Walker	14/12/2021 10:45	AS3580.10.1	CuSO4
11993/5	D04 Rehab		T.Walker	14/12/2021 10:14	AS3580.10.1	CuSO4
11993/6	D07 Mullock		T.Walker	14/12/2021 10:28	AS3580.10.1	CuSO4
11993/7	D01(A) Front Gate		T.Walker	14/12/2021 09:58	AS3580.10.1	CuSO4
11993/8	D11 Goldstien		T.Walker	14/12/2021 11:55	AS3580.10.1	CuSO4
11993/9	D12 Ram		T.Walker	14/12/2021 11:24	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
11993/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
11993/2	D10 Hearses Rd	312538	6294576	
11993/3	D06 School	313518	6296537	
11993/4	D05 Bund	313160	6296838	Insects, algae
11993/5	D04 Rehab	312385	6296932	
11993/6	D07 Mullock	312579	6296676	
11993/7	D01(A) Front Gate	313290	6297176	
11993/8	D11 Goldstien	312034	6294213	
11993/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 22/12/2021.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12091

Date Issued: 19/01/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 11/01/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	14/12/2021 11:06	11/01/2022 11:13	12091/1	Dust	
D10 Hearses Rd	14/12/2021 11:39	11/01/2022 11:55	12091/2	Dust	
D06 School	14/12/2021 10:59	11/01/2022 11:05	12091/3	Dust	
D05 Bund	14/12/2021 10:45	11/01/2022 10:50	12091/4	Dust	
D04 Rehab	14/12/2021 10:14	11/01/2022 10:21	12091/5	Dust	
D07 Mullock	14/12/2021 10:28	11/01/2022 10:35	12091/6	Dust	
D01(A) Front Gate	14/12/2021 09:58	11/01/2022 10:07	12091/7	Dust	
D11 Goldstien	14/12/2021 11:55	11/01/2022 14:10	12091/8	Dust	
D12 Ram	14/12/2021 11:24	11/01/2022 11:41	12091/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 19/01/2022.

## Test Report Number: 12091

Date Issued: 19/01/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12091/1 D08&9 Hitchcock Rd Olive Grove 11/01/2022	12091/2 D10 Hearses Rd 11/01/2022	12091/3 D06 School 11/01/2022	12091/4 D05 Bund 11/01/2022	12091/5 D04 Rehab 11/01/2022
<b>Date Tested</b>	--	--	17/01/2022	17/01/2022	17/01/2022	17/01/2022	17/01/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.2	0.4	3.8	2.1	0.8
Ash	AS 3580.10.1	g/m2/mth	0.6	0.2	1.5	1.0	0.5
Combustible Matter	AS 3580.10.1	g/m2/mth	0.6	0.2	2.3	1.1	0.3
Calculated Rain	AS 3580.10.1	mm	104	107	99	94	90

Deposited Matter	Method	Units	12091/6 D07 Mullock 11/01/2022	12091/7 D01(A) Front Gate 11/01/2022	12091/8 D11 Goldstien 11/01/2022	12091/9 D12 Ram 11/01/2022
<b>Date Tested</b>	--	--	17/01/2022	17/01/2022	17/01/2022	17/01/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	1.8	2.2	0.5
Ash	AS 3580.10.1	g/m2/mth	0.5	1.4	0.6	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.4	1.6	0.3
Calculated Rain	AS 3580.10.1	mm	96	96	108	107

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12091

Date Issued: 19/01/2022

Revision No: 00

Sampling Conditions: Cloudy 24°-27°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12091/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	11/01/2022 11:13	AS3580.10.1	CuSO4
12091/2	D10 Hearses Rd		T & D.Walker	11/01/2022 11:55	AS3580.10.1	CuSO4
12091/3	D06 School		T & D.Walker	11/01/2022 11:05	AS3580.10.1	CuSO4
12091/4	D05 Bund		T & D.Walker	11/01/2022 10:50	AS3580.10.1	CuSO4
12091/5	D04 Rehab		T & D.Walker	11/01/2022 10:21	AS3580.10.1	CuSO4
12091/6	D07 Mullock		T & D.Walker	11/01/2022 10:35	AS3580.10.1	CuSO4
12091/7	D01(A) Front Gate		T & D.Walker	11/01/2022 10:07	AS3580.10.1	CuSO4
12091/8	D11 Goldstien		T & D.Walker	11/01/2022 14:10	AS3580.10.1	CuSO4
12091/9	D12 Ram		T & D.Walker	11/01/2022 11:41	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12091/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
12091/2	D10 Hearses Rd	312538	6294576	
12091/3	D06 School	313518	6296537	Insects
12091/4	D05 Bund	313160	6296838	Vegetation
12091/5	D04 Rehab	312385	6296932	
12091/6	D07 Mullock	312579	6296676	
12091/7	D01(A) Front Gate	313290	6297176	
12091/8	D11 Goldstien	312034	6294213	Minor vegetation
12091/9	D12 Ram	311750	6294159	Minor insects

Sampling procedures have been approved and report finalised on 19/01/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12230

Date Issued: 11/02/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
 Address: PO Box 4019  
 PITT TOWN NSW 2756  
 Contact: David Dixon

The following Dust Deposition sample(s) were received on 8/02/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	11/01/2022 11:13	08/02/2022 11:52	12230/1	Dust	
D10 Hearses Rd	11/01/2022 11:55	08/02/2022 12:08	12230/2	Dust	
D06 School	11/01/2022 11:05	08/02/2022 10:29	12230/3	Dust	
D05 Bund	11/01/2022 10:50	08/02/2022 10:47	12230/4	Dust	
D04 Rehab	11/01/2022 10:21	08/02/2022 11:09	12230/5	Dust	
D07 Mullock	11/01/2022 10:35	08/02/2022 11:21	12230/6	Dust	
D01(A) Front Gate	11/01/2022 10:07	08/02/2022 10:59	12230/7	Dust	
D11 Goldstien	11/01/2022 14:10	08/02/2022 14:16	12230/8	Dust	
D12 Ram	11/01/2022 11:41	08/02/2022 11:44	12230/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
 Laboratory Manager

Approved by:

Results have been approved and report finalised on 11/02/2022.



## Test Report Number: 12230

Date Issued: 11/02/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12230/1 D08&9 Hitchcock Rd Olive Grove 8/02/2022	12230/2 D10 Hearses Rd 8/02/2022	12230/3 D06 School 8/02/2022	12230/4 D05 Bund 8/02/2022	12230/5 D04 Rehab 8/02/2022
<b>Date Tested</b>	--	--	09/02/2022	09/02/2022	09/02/2022	09/02/2022	09/02/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	1.0	1.2	7.9	0.5
Ash	AS 3580.10.1	g/m2/mth	0.4	0.7	0.4	5.0	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.3	0.8	2.9	0.1
Calculated Rain	AS 3580.10.1	mm	126	129	139	135	124

Deposited Matter	Method	Units	12230/6 D07 Mullock 8/02/2022	12230/7 D01(A) Front Gate 8/02/2022	12230/8 D11 Goldstien 8/02/2022	12230/9 D12 Ram 8/02/2022
<b>Date Tested</b>	--	--	09/02/2022	09/02/2022	09/02/2022	09/02/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.8	1.8	2.2	0.5
Ash	AS 3580.10.1	g/m2/mth	0.5	1.5	1.0	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	0.3	1.2	0.3
Calculated Rain	AS 3580.10.1	mm	132	117	129	133



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12230

Date Issued: 11/02/2022

Revision No: 00

Sampling Conditions: Light showers, 23°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12230/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	08/02/2022 11:52	AS3580.10.1	CuSO4
12230/2	D10 Hearses Rd		T & D.Walker	08/02/2022 12:08	AS3580.10.1	CuSO4
12230/3	D06 School		T & D.Walker	08/02/2022 10:29	AS3580.10.1	CuSO4
12230/4	D05 Bund		T & D.Walker	08/02/2022 10:47	AS3580.10.1	CuSO4
12230/5	D04 Rehab		T & D.Walker	08/02/2022 11:09	AS3580.10.1	CuSO4
12230/6	D07 Mullock		T & D.Walker	08/02/2022 11:21	AS3580.10.1	CuSO4
12230/7	D01(A) Front Gate		T & D.Walker	08/02/2022 10:59	AS3580.10.1	CuSO4
12230/8	D11 Goldstien		T & D.Walker	08/02/2022 14:16	AS3580.10.1	CuSO4
12230/9	D12 Ram		T & D.Walker	08/02/2022 11:44	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12230/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor isnects
12230/2	D10 Hearses Rd	312538	6294576	Insects
12230/3	D06 School	313518	6296537	Insects
12230/4	D05 Bund	313160	6296838	Insects, vegetation, algae
12230/5	D04 Rehab	312385	6296932	
12230/6	D07 Mullock	312579	6296676	
12230/7	D01(A) Front Gate	313290	6297176	
12230/8	D11 Goldstien	312034	6294213	Minor vegetation
12230/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 11/02/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12408

Date Issued: 18/03/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 9/03/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	08/02/2022 11:52	09/03/2022 12:11	12408/1	Dust	
D10 Hearses Rd	08/02/2022 12:08	09/03/2022 14:55	12408/2	Dust	
D06 School	08/02/2022 10:29	09/03/2022 09:49	12408/3	Dust	
D05 Bund	08/02/2022 10:47	09/03/2022 10:58	12408/4	Dust	
D04 Rehab	08/02/2022 11:09	09/03/2022 11:30	12408/5	Dust	
D07 Mullock	08/02/2022 11:21	09/03/2022 11:42	12408/6	Dust	
D01(A) Front Gate	08/02/2022 10:59	09/03/2022 11:12	12408/7	Dust	
D11 Goldstien	08/02/2022 14:16	09/03/2022 14:25	12408/8	Dust	
D12 Ram	08/02/2022 11:44	09/03/2022 12:02	12408/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 18/03/2022.

## Test Report Number: 12408

Date Issued: 18/03/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12408/1 D08&9 Hitchcock Rd Olive Grove 9/03/2022	12408/2 D10 Hearses Rd 9/03/2022	12408/3 D06 School 9/03/2022	12408/4 D05 Bund 9/03/2022	12408/5 D04 Rehab 9/03/2022
<b>Date Tested</b>	--	--	16/03/2022	16/03/2022	16/03/2022	16/03/2022	16/03/2022
Number of Days	AS 3580.10.1	days	29	29	29	29	29
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.0	1.4	1.3	0.8	1.2
Ash	AS 3580.10.1	g/m2/mth	0.4	0.8	0.4	0.5	0.8
Combustible Matter	AS 3580.10.1	g/m2/mth	0.6	0.6	0.9	0.3	0.4
Calculated Rain	AS 3580.10.1	mm	288	288	287	288	288

Deposited Matter	Method	Units	12408/6 D07 Mullock 9/03/2022	12408/7 D01(A) Front Gate 9/03/2022	12408/8 D11 Goldstien 9/03/2022	12408/9 D12 Ram 9/03/2022
<b>Date Tested</b>	--	--	16/03/2022	16/03/2022	16/03/2022	16/03/2022
Number of Days	AS 3580.10.1	days	29	29	29	29
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	1.6	0.8	0.3
Ash	AS 3580.10.1	g/m2/mth	0.3	1.4	0.2	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.2	0.6	0.1
Calculated Rain	AS 3580.10.1	mm	288	115	287	287

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12408

Date Issued: 18/03/2022

Revision No: 00

Sampling Conditions: 100% cloudcover. Recent heavy rain, 24°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12408/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	09/03/2022 12:11	AS3580.10.1	CuSO4
12408/2	D10 Hearses Rd		T & D.Walker	09/03/2022 14:55	AS3580.10.1	CuSO4
12408/3	D06 School		T & D.Walker	09/03/2022 09:49	AS3580.10.1	CuSO4
12408/4	D05 Bund		T & D.Walker	09/03/2022 10:58	AS3580.10.1	CuSO4
12408/5	D04 Rehab		T & D.Walker	09/03/2022 11:30	AS3580.10.1	CuSO4
12408/6	D07 Mullock		T & D.Walker	09/03/2022 11:42	AS3580.10.1	CuSO4
12408/7	D01(A) Front Gate		T & D.Walker	09/03/2022 11:12	AS3580.10.1	CuSO4
12408/8	D11 Goldstien		T & D.Walker	09/03/2022 14:25	AS3580.10.1	CuSO4
12408/9	D12 Ram		T & D.Walker	09/03/2022 12:02	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12408/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Full
12408/2	D10 Hearses Rd	312538	6294576	Full. Funnel neck broken, funnel replaced
12408/3	D06 School	313518	6296537	Full, insects
12408/4	D05 Bund	313160	6296838	Full, minor vegetation
12408/5	D04 Rehab	312385	6296932	Full
12408/6	D07 Mullock	312579	6296676	Full
12408/7	D01(A) Front Gate	313290	6297176	Full
12408/8	D11 Goldstien	312034	6294213	Full, minor vegetation
12408/9	D12 Ram	311750	6294159	Full

Sampling procedures have been approved and report finalised on 18/03/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12573

Date Issued: 14/04/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 6/04/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	09/03/2022 12:11	06/04/2022 11:26	12573/1	Dust	
D10 Hearses Rd	09/03/2022 14:55	06/04/2022 11:58	12573/2	Dust	
D06 School	09/03/2022 09:49	06/04/2022 10:28	12573/3	Dust	
D05 Bund	09/03/2022 10:58	06/04/2022 10:44	12573/4	Dust	
D04 Rehab	09/03/2022 11:30	06/04/2022 11:08	12573/5	Dust	
D07 Mullock	09/03/2022 11:42	06/04/2022 11:16	12573/6	Dust	
D01(A) Front Gate	09/03/2022 11:12	06/04/2022 10:56	12573/7	Dust	
D11 Goldstien	09/03/2022 14:25	06/04/2022 14:05	12573/8	Dust	
D12 Ram	09/03/2022 12:02	06/04/2022 11:48	12573/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 14/04/2022.



## Test Report Number: 12573

Date Issued: 14/04/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12573/1 D08&9 Hitchcock Rd Olive Grove 6/04/2022	12573/2 D10 Hearses Rd 6/04/2022	12573/3 D06 School 6/04/2022	12573/4 D05 Bund 6/04/2022	12573/5 D04 Rehab 6/04/2022
<b>Date Tested</b>	--	--	12/04/2022	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.3	0.9	3.2	1.0	1.3
Ash	AS 3580.10.1	g/m2/mth	0.2	0.4	0.8	0.5	1.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.5	2.4	0.5	0.1
Calculated Rain	AS 3580.10.1	mm	131	130	120	124	126

Deposited Matter	Method	Units	12573/6 D07 Mullock 6/04/2022	12573/7 D01(A) Front Gate 6/04/2022	12573/8 D11 Goldstien 6/04/2022	12573/9 D12 Ram 6/04/2022
<b>Date Tested</b>	--	--	12/04/2022	12/04/2022	12/04/2022	12/04/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	0.5	0.5	0.2
Ash	AS 3580.10.1	g/m2/mth	0.8	0.7	0.1	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	<0.1	<0.1	0.4	<0.1
Calculated Rain	AS 3580.10.1	mm	123	116	159	169

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12573

Date Issued: 14/04/2022

Revision No: 00

Sampling Conditions: 100% Cloudcover, 18°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12573/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	06/04/2022 11:26	AS3580.10.1	CuSO4
12573/2	D10 Hearses Rd		T & D.Walker	06/04/2022 11:58	AS3580.10.1	CuSO4
12573/3	D06 School		T & D.Walker	06/04/2022 10:28	AS3580.10.1	CuSO4
12573/4	D05 Bund		T & D.Walker	06/04/2022 10:44	AS3580.10.1	CuSO4
12573/5	D04 Rehab		T & D.Walker	06/04/2022 11:08	AS3580.10.1	CuSO4
12573/6	D07 Mullock		T & D.Walker	06/04/2022 11:16	AS3580.10.1	CuSO4
12573/7	D01(A) Front Gate		T & D.Walker	06/04/2022 10:56	AS3580.10.1	CuSO4
12573/8	D11 Goldstien		T & D.Walker	06/04/2022 14:05	AS3580.10.1	CuSO4
12573/9	D12 Ram		T & D.Walker	06/04/2022 11:48	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12573/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Insects
12573/2	D10 Hearses Rd	312538	6294576	
12573/3	D06 School	313518	6296537	Vegetation
12573/4	D05 Bund	313160	6296838	Insects
12573/5	D04 Rehab	312385	6296932	
12573/6	D07 Mullock	312579	6296676	
12573/7	D01(A) Front Gate	313290	6297176	Full (smaller bottle size)
12573/8	D11 Goldstien	312034	6294213	Minor algae
12573/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 14/04/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12767

Date Issued: 12/05/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
 Address: PO Box 4019  
 PITT TOWN NSW 2756  
 Contact: David Dixon

The following Dust Deposition sample(s) were received on 4/05/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	06/04/2022 11:26	04/05/2022 11:31	12767/1	Dust	
D10 Hearses Rd	06/04/2022 11:58	04/05/2022 11:49	12767/2	Dust	
D06 School	06/04/2022 10:28	04/05/2022 10:23	12767/3	Dust	
D05 Bund	06/04/2022 10:44	04/05/2022 10:39	12767/4	Dust	
D04 Rehab	06/04/2022 11:08	04/05/2022 11:07	12767/5	Dust	
D07 Mullock	06/04/2022 11:16	04/05/2022 11:02	12767/6	Dust	
D01(A) Front Gate	06/04/2022 10:56	04/05/2022 10:47	12767/7	Dust	
D11 Goldstien	06/04/2022 14:05	04/05/2022 14:50	12767/8	Dust	
D12 Ram	06/04/2022 11:48	04/05/2022 11:23	12767/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
 Laboratory Manager

Authorised by:

Results have been approved and report finalised on 12/05/2022.



## Test Report Number: 12767

Date Issued: 12/05/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12767/1 D08&9 Hitchcock Rd Olive Grove 4/05/2022	12767/2 D10 Hearses Rd 4/05/2022	12767/3 D06 School 4/05/2022	12767/4 D05 Bund 4/05/2022	12767/5 D04 Rehab 4/05/2022
<b>Date Tested</b>	--	--	09/05/2022	09/05/2022	09/05/2022	09/05/2022	09/05/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.2	1.5	0.9	0.6	0.7
Ash	AS 3580.10.1	g/m2/mth	<0.1	0.5	0.3	0.2	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	1.0	0.6	0.4	0.4
Calculated Rain	AS 3580.10.1	mm	120	127	126	152	133

Deposited Matter	Method	Units	12767/6 D07 Mullock 4/05/2022	12767/7 D01(A) Front Gate 4/05/2022	12767/8 D11 Goldstien 4/05/2022	12767/9 D12 Ram 4/05/2022
<b>Date Tested</b>	--	--	09/05/2022	09/05/2022	09/05/2022	09/05/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.6	2.7	0.6	0.5
Ash	AS 3580.10.1	g/m2/mth	0.3	2.2	0.1	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	0.5	0.5	0.5
Calculated Rain	AS 3580.10.1	mm	135	115	126	131



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12767

Date Issued: 12/05/2022

Revision No: 00

Sampling Conditions: Fine 24°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12767/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	04/05/2022 11:31	AS3580.10.1	CuSO4
12767/2	D10 Hearses Rd		T & D.Walker	04/05/2022 11:49	AS3580.10.1	CuSO4
12767/3	D06 School		T & D.Walker	04/05/2022 10:23	AS3580.10.1	CuSO4
12767/4	D05 Bund		T & D.Walker	04/05/2022 10:39	AS3580.10.1	CuSO4
12767/5	D04 Rehab		T & D.Walker	04/05/2022 11:07	AS3580.10.1	CuSO4
12767/6	D07 Mullock		T & D.Walker	04/05/2022 11:02	AS3580.10.1	CuSO4
12767/7	D01(A) Front Gate		T & D.Walker	04/05/2022 10:47	AS3580.10.1	CuSO4
12767/8	D11 Goldstien		T & D.Walker	04/05/2022 14:50	AS3580.10.1	CuSO4
12767/9	D12 Ram		T & D.Walker	04/05/2022 11:23	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12767/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
12767/2	D10 Hearses Rd	312538	6294576	Minor vegetation
12767/3	D06 School	313518	6296537	Minor vegetation - Paddock slashed
12767/4	D05 Bund	313160	6296838	
12767/5	D04 Rehab	312385	6296932	
12767/6	D07 Mullock	312579	6296676	
12767/7	D01(A) Front Gate	313290	6297176	Full, minor sand
12767/8	D11 Goldstien	312034	6294213	
12767/9	D12 Ram	311750	6294159	Minor vegetation

Sampling procedures have been approved and report finalised on 12/05/2022.

Where method is "unknown" sampling procedures are not endorsed



## Report Number: 12860

Date Issued: 10/06/2022

Revision Number: 00

**Site/Job: Dixon Maroota - Dusts**

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 1/06/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	04/05/2022 11:31	01/06/2022 09:59	12860/1	Dust	
D10 Hearses Rd	04/05/2022 11:49	01/06/2022 10:31	12860/2	Dust	
D06 School	04/05/2022 10:23	01/06/2022 08:43	12860/3	Dust	
D05 Bund	04/05/2022 10:39	01/06/2022 08:58	12860/4	Dust	
D04 Rehab	04/05/2022 11:07	01/06/2022 09:29	12860/5	Dust	
D07 Mullock	04/05/2022 11:02	01/06/2022 09:41	12860/6	Dust	
D01(A) Front Gate	04/05/2022 10:47	01/06/2022 09:14	12860/7	Dust	
D11 Goldstien	04/05/2022 14:50	01/06/2022 10:54	12860/8	Dust	
D12 Ram	04/05/2022 11:23	01/06/2022 10:16	12860/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 10/06/2022.



## Test Report Number: 12860

Date Issued: 10/06/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12860/1 D08&9 Hitchcock Rd Olive Grove 1/06/2022	12860/2 D10 Hearses Rd 1/06/2022	12860/3 D06 School 1/06/2022	12860/4 D05 Bund 1/06/2022	12860/5 D04 Rehab 1/06/2022
<b>Date Tested</b>	--	--	8/06/2022	8/06/2022	8/06/2022	8/06/2022	8/06/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	1.1	1.3	0.9	0.5
Ash	AS 3580.10.1	g/m2/mth	<0.1	0.4	0.5	0.7	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.5	0.7	0.8	0.2	0.1
Calculated Rain	AS 3580.10.1	mm	84	83	85	82	76

Deposited Matter	Method	Units	12860/6 D07 Mullock 1/06/2022	12860/7 D01(A) Front Gate 1/06/2022	12860/8 D11 Goldstien 1/06/2022	12860/9 D12 Ram 1/06/2022
<b>Date Tested</b>	--	--	8/06/2022	8/06/2022	8/06/2022	8/06/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	5.5	0.8	0.3
Ash	AS 3580.10.1	g/m2/mth	0.3	5.0	0.4	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.5	0.4	0.1
Calculated Rain	AS 3580.10.1	mm	77	80	83	80



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12860

Date Issued: 10/06/2022

Revision No: 00

Sampling Conditions: Windy 9°-13°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12860/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	01/06/2022 09:59	AS3580.10.1	CuSO4
12860/2	D10 Hearses Rd		T & D.Walker	01/06/2022 10:31	AS3580.10.1	CuSO4
12860/3	D06 School		T & D.Walker	01/06/2022 08:43	AS3580.10.1	CuSO4
12860/4	D05 Bund		T & D.Walker	01/06/2022 08:58	AS3580.10.1	CuSO4
12860/5	D04 Rehab		T & D.Walker	01/06/2022 09:29	AS3580.10.1	CuSO4
12860/6	D07 Mullock		T & D.Walker	01/06/2022 09:41	AS3580.10.1	CuSO4
12860/7	D01(A) Front Gate		T & D.Walker	01/06/2022 09:14	AS3580.10.1	CuSO4
12860/8	D11 Goldstien		T & D.Walker	01/06/2022 10:54	AS3580.10.1	CuSO4
12860/9	D12 Ram		T & D.Walker	01/06/2022 10:16	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12860/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
12860/2	D10 Hearses Rd	312538	6294576	Minor insects
12860/3	D06 School	313518	6296537	
12860/4	D05 Bund	313160	6296838	
12860/5	D04 Rehab	312385	6296932	
12860/6	D07 Mullock	312579	6296676	
12860/7	D01(A) Front Gate	313290	6297176	Dust
12860/8	D11 Goldstien	312034	6294213	Minor vegetation
12860/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 10/06/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12999

Date Issued: 8/07/2022

Revision Number: 00

### Site/Job: Dixon Maroota - Dusts

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following Dust Deposition sample(s) were received on 29/06/2022

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	01/06/2022 09:59	29/06/2022 10:46	12999/1	Dust	
D10 Hearses Rd	01/06/2022 10:31	29/06/2022 11:16	12999/2	Dust	
D06 School	01/06/2022 08:43	29/06/2022 11:41	12999/3	Dust	
D05 Bund	01/06/2022 08:58	29/06/2022 11:54	12999/4	Dust	
D04 Rehab	01/06/2022 09:29	29/06/2022 12:20	12999/5	Dust	
D07 Mullock	01/06/2022 09:41	29/06/2022 12:31	12999/6	Dust	
D01(A) Front Gate	01/06/2022 09:14	29/06/2022 12:07	12999/7	Dust	
D11 Goldstien	01/06/2022 10:54	29/06/2022 11:05	12999/8	Dust	
D12 Ram	01/06/2022 10:16	29/06/2022 11:28	12999/9	Dust	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 8/07/2022.

## Test Report Number: 12999

Date Issued: 8/07/2022

Revision No: 00

### Results

Deposited Matter	Method	Units	12999/1 D08&9 Hitchcock Rd Olive Grove 29/06/2022	12999/2 D10 Hearses Rd 29/06/2022	12999/3 D06 School 29/06/2022	12999/4 D05 Bund 29/06/2022	12999/5 D04 Rehab 29/06/2022
<b>Date Tested</b>	--	--	5/07/2022	5/07/2022	5/07/2022	5/07/2022	5/07/2022
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	7.8	7.8	0.4	0.5
Ash	AS 3580.10.1	g/m2/mth	0.2	3.3	1.9	0.3	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	4.5	5.9	0.1	0.1
Calculated Rain	AS 3580.10.1	mm	6	6	5	5	5

Deposited Matter	Method	Units	12999/6 D07 Mullock 29/06/2022	12999/7 D01(A) Front Gate 29/06/2022	12999/8 D11 Goldstien 29/06/2022	12999/9 D12 Ram 29/06/2022
<b>Date Tested</b>	--	--	5/07/2022	5/07/2022	5/07/2022	5/07/2022
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.1	1.4	1.0	0.1
Ash	AS 3580.10.1	g/m2/mth	0.1	1.2	0.5	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	<0.1	0.2	0.5	<0.1
Calculated Rain	AS 3580.10.1	mm	5	5	6	6



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12999

Date Issued: 8/07/2022

Revision No: 00

Sampling Conditions: 13-16°C, fine

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12999/1	D08&9 Hitchcock Rd Olive Grove		D.Walker	29/06/2022 10:46	AS3580.10.1	CuSO4
12999/2	D10 Hearses Rd		D.Walker	29/06/2022 11:16	AS3580.10.1	CuSO4
12999/3	D06 School		D.Walker	29/06/2022 11:41	AS3580.10.1	CuSO4
12999/4	D05 Bund		D.Walker	29/06/2022 11:54	AS3580.10.1	CuSO4
12999/5	D04 Rehab		D.Walker	29/06/2022 12:20	AS3580.10.1	CuSO4
12999/6	D07 Mullock		D.Walker	29/06/2022 12:31	AS3580.10.1	CuSO4
12999/7	D01(A) Front Gate		D.Walker	29/06/2022 12:07	AS3580.10.1	CuSO4
12999/8	D11 Goldstien		D.Walker	29/06/2022 11:05	AS3580.10.1	CuSO4
12999/9	D12 Ram		D.Walker	29/06/2022 11:28	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12999/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
12999/2	D10 Hearses Rd	312538	6294576	Bird droppings, vegetation, algae
12999/3	D06 School	313518	6296537	Vegetation, algae, bird droppings in funnel
12999/4	D05 Bund	313160	6296838	
12999/5	D04 Rehab	312385	6296932	
12999/6	D07 Mullock	312579	6296676	
12999/7	D01(A) Front Gate	313290	6297176	
12999/8	D11 Goldstien	312034	6294213	Minor vegetation
12999/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 8/07/2022.

Where method is "unknown" sampling procedures are not endorsed



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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for July 2021 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of meteorological data was recovered for July 2021.

Approximately 100% of TEOM data was recovered for July 2021.



Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly calibration was originally scheduled for June but was rescheduled and conducted on 20 July 2021, with the next calibration due to be completed in September 2021. The calibration certificate is provided in [redacted] (when required).

- [redacted]
- [redacted]

Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for July 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

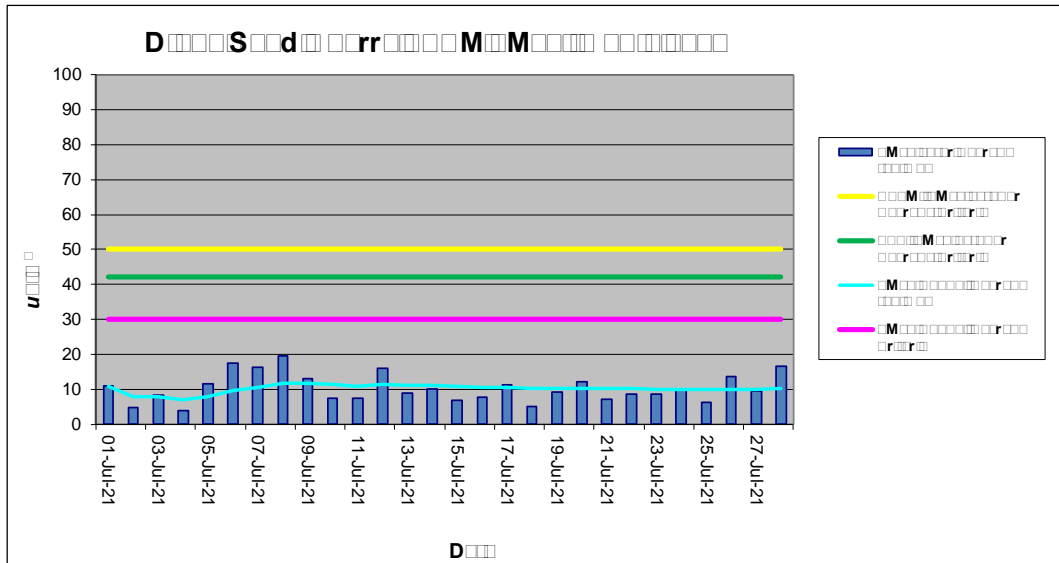
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D	M <sub>10</sub> (µg/m <sup>3</sup> )	M <sub>10</sub> (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )
1/07/2021	10.9	10.9	27.3	27.3
2/07/2021	4.7	7.8	11.8	19.5
3/07/2021	8.4	8.0	21.0	20.0
4/07/2021	3.9	7.0	9.8	17.4
5/07/2021	11.5	7.9	28.8	19.7
6/07/2021	17.6	9.5	44.0	23.8
7/07/2021	16.3	10.5	40.8	26.2
8/07/2021	19.5	11.6	48.8	29.0
9/07/2021	12.9	11.7	32.3	29.4
10/07/2021	7.3	11.3	18.3	28.3
11/07/2021	7.4	10.9	18.5	27.4
12/07/2021	15.9	11.4	39.8	28.4
13/07/2021	8.9	11.2	22.3	27.9
14/07/2021	10.1	11.1	25.3	27.7
15/07/2021	6.8	10.8	17.0	27.0
16/07/2021	7.7	10.6	19.3	26.5
17/07/2021	11.3	10.7	28.3	26.6
18/07/2021	5.0	10.3	12.5	25.8
19/07/2021	9.1	10.3	22.8	25.7
20/07/2021	12.1	10.4	30.4	25.9
21/07/2021	7.2	10.2	18.0	25.5
22/07/2021	8.5	10.1	21.3	25.3
23/07/2021	8.6	10.1	21.5	25.2
24/07/2021	9.7	10.1	24.3	25.1
25/07/2021	6.3	9.9	15.8	24.8
26/07/2021	13.5	10.0	33.8	25.1
27/07/2021	9.4	10.0	23.5	25.1
28/07/2021	16.5	10.3	41.3	25.6
29/07/2021	13.1	10.3	32.8	25.9
30/07/2021	11.2	10.4	28.0	25.9
31/07/2021	8.3	10.3	20.8	25.8

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

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TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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Meteorological Data

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted] (when required).

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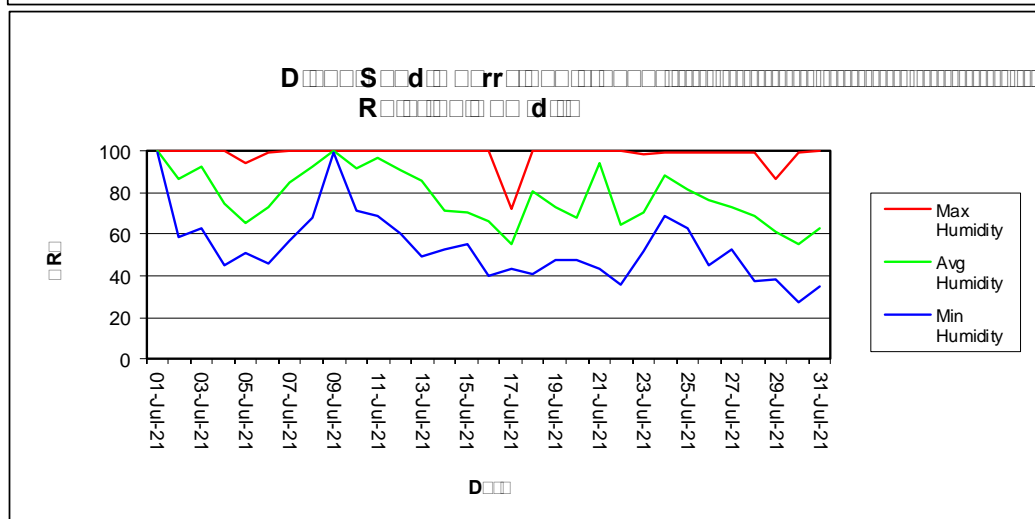
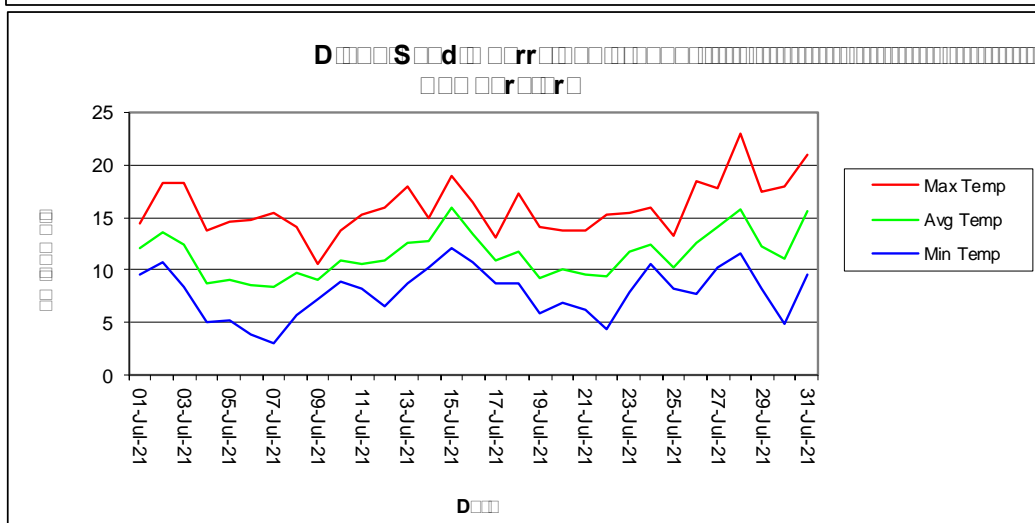
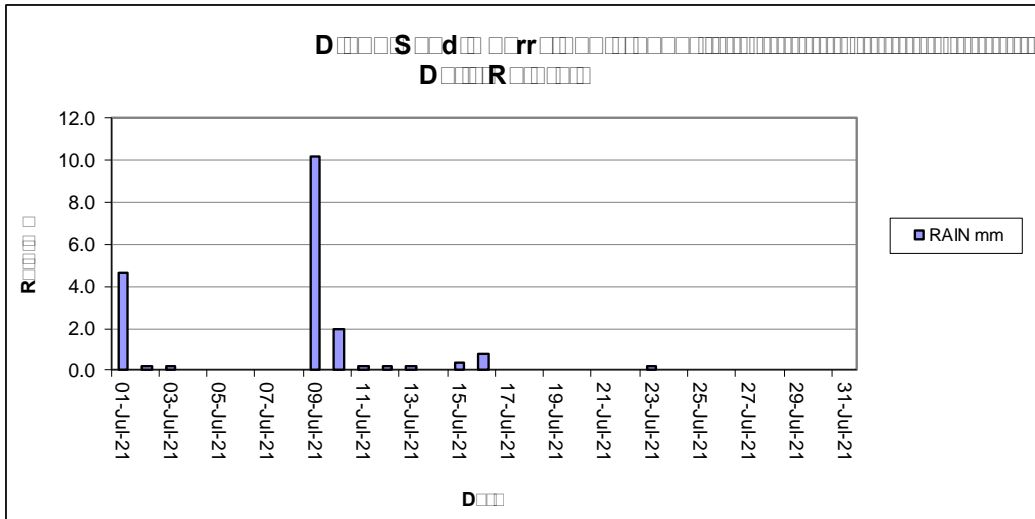
Meteorological Data Summary for July 2021

Date	M □□□□ □	□□□□□ □	M □□□□ □	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/07/2021	9.5	12.1	14.5	4.6	0.0	2.1	6.6	99.2	99.9	100.0	997.9	1002.4	1006.1
2/07/2021	10.7	13.5	18.3	0.2	0.1	4.0	15.9	58.5	86.8	100.0	995.8	997.2	998.3
3/07/2021	8.4	12.4	18.2	0.2	0.2	2.8	12.0	62.5	92.3	100.0	995.2	997.0	998.6
4/07/2021	5.1	8.7	13.8	0.0	0.1	2.9	17.2	45.0	74.9	99.7	998.4	1000.1	1002.6
5/07/2021	5.3	9.0	14.6	0.0	0.0	2.4	12.1	50.8	65.2	94.2	997.7	999.3	1000.6
6/07/2021	3.8	8.6	14.8	0.0	0.1	2.1	8.2	46.2	73.1	99.5	998.1	1000.1	1002.4
7/07/2021	3.1	8.5	15.4	0.0	0.0	2.0	7.0	57.0	85.1	100.0	1002.1	1003.3	1005.3
8/07/2021	5.7	9.7	14.1	0.0	0.0	1.8	7.9	67.7	92.6	100.0	997.9	1001.1	1003.6
9/07/2021	7.3	9.1	10.6	10.2	0.1	2.5	10.7	99.2	99.9	100.0	991.2	993.4	997.8
10/07/2021	8.9	10.8	13.7	2.0	0.6	7.1	19.6	71.2	91.8	100.0	991.8	997.5	1003.3
11/07/2021	8.3	10.5	15.3	0.2	0.1	4.1	13.7	68.3	96.4	100.0	1002.9	1004.3	1006.4
12/07/2021	6.6	10.9	15.9	0.2	0.0	3.1	12.4	60.6	91.0	100.0	998.5	1001.3	1003.7
13/07/2021	8.7	12.5	18.0	0.2	0.1	4.6	12.4	49.0	85.6	100.0	995.1	997.1	999.3
14/07/2021	10.2	12.7	15.0	0.0	0.2	5.3	14.4	52.8	71.3	100.0	987.4	991.6	995.5
15/07/2021	12.1	16.0	18.9	0.4	0.2	5.0	14.5	54.7	70.6	100.0	981.4	984.6	987.6
16/07/2021	10.8	13.4	16.4	0.8	0.2	7.3	27.5	40.3	65.8	100.0	974.4	977.5	981.4
17/07/2021	8.7	11.0	13.1	0.0	0.0	7.3	35.7	43.4	55.2	72.2	976.4	979.5	985.1
18/07/2021	8.7	11.8	17.2	0.0	0.1	3.5	11.8	41.0	80.6	100.0	984.9	991.6	996.9
19/07/2021	5.9	9.3	14.1	0.0	0.3	2.5	10.2	47.1	72.5	100.0	992.9	995.3	997.6
20/07/2021	6.9	10.1	13.7	0.0	0.0	4.8	20.2	47.1	67.8	100.0	985.9	988.9	992.9
21/07/2021	6.2	9.7	13.8	0.0	0.2	5.7	22.7	43.1	94.1	100.0	986.2	992.9	997.6
22/07/2021	4.3	9.4	15.3	0.0	0.1	3.4	13.7	35.5	64.8	100.0	991.9	995.4	998.4
23/07/2021	7.9	11.7	15.4	0.2	0.2	5.1	16.9	51.6	70.5	98.1	984.5	987.7	991.9
24/07/2021	10.5	12.4	16.0	0.0	0.2	6.7	34.3	68.3	88.3	99.4	981.2	982.6	984.5
25/07/2021	8.3	10.3	13.3	0.0	0.8	6.3	30.1	62.8	81.2	99.4	981.4	987.3	993.8
26/07/2021	7.7	12.6	18.5	0.0	0.7	5.6	16.0	44.9	76.0	99.4	992.5	995.1	997.6
27/07/2021	10.2	14.1	17.7	0.0	0.3	5.9	18.5	52.8	73.2	99.2	992.6	996.5	999.5
28/07/2021	11.5	15.8	23.0	0.0	0.4	8.1	28.0	37.0	68.5	99.2	983.0	987.7	992.9
29/07/2021	8.3	12.2	17.4	0.0	0.2	3.4	15.8	38.0	61.1	86.7	987.4	993.2	998.0
30/07/2021	4.8	11.1	17.9	0.0	0.1	4.5	13.3	26.9	55.3	99.4	996.3	998.1	1000.3
31/07/2021	9.5	15.5	20.9	0.0	0.2	7.2	19.9	35.1	62.6	100.0	988.4	992.2	996.4
<b>Monthly</b>	<b>3.1</b>	<b>11.5</b>	<b>23.0</b>	<b>19.2</b>	<b>0.0</b>	<b>4.5</b>	<b>35.7</b>	<b>26.9</b>	<b>77.9</b>	<b>100.0</b>	<b>974.4</b>	<b>993.9</b>	<b>1006.4</b>

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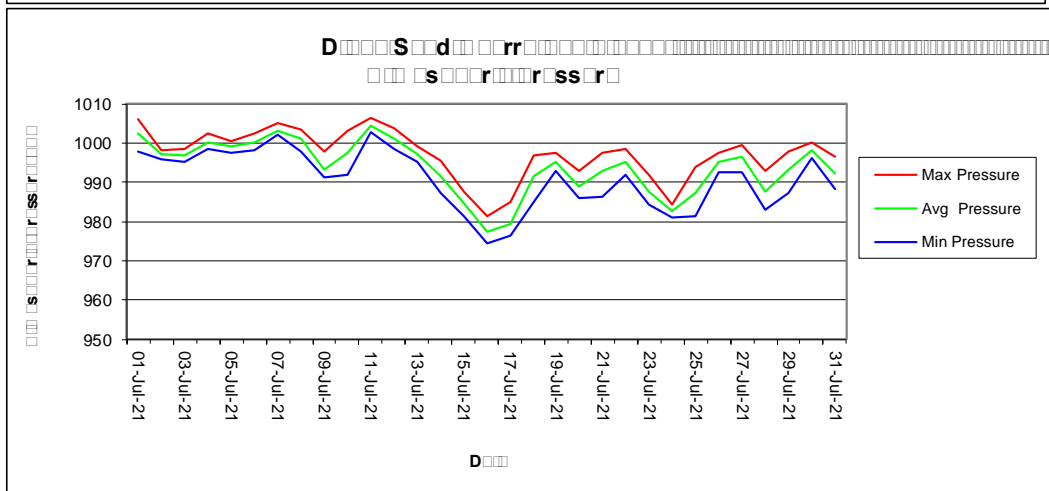
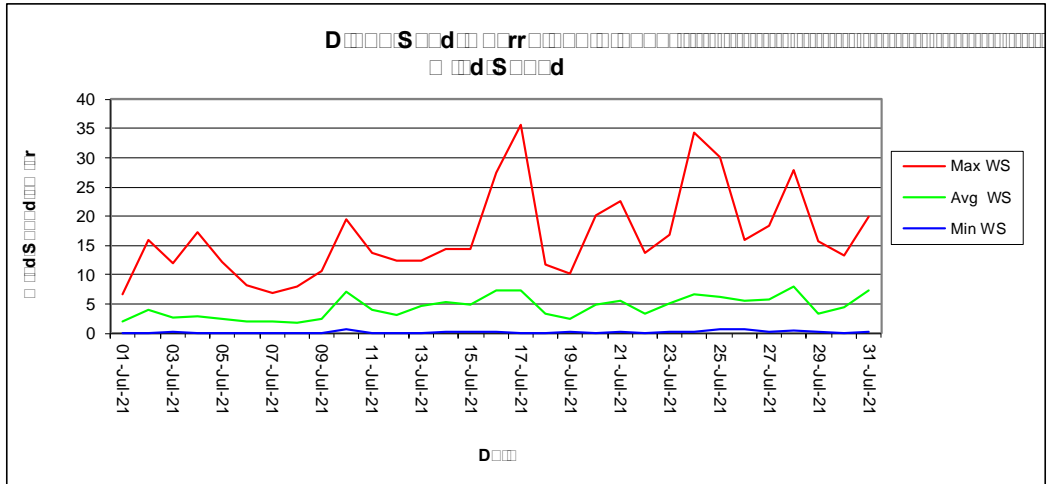
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Daily Rainfall, Temperature and Relative Humidity Charts

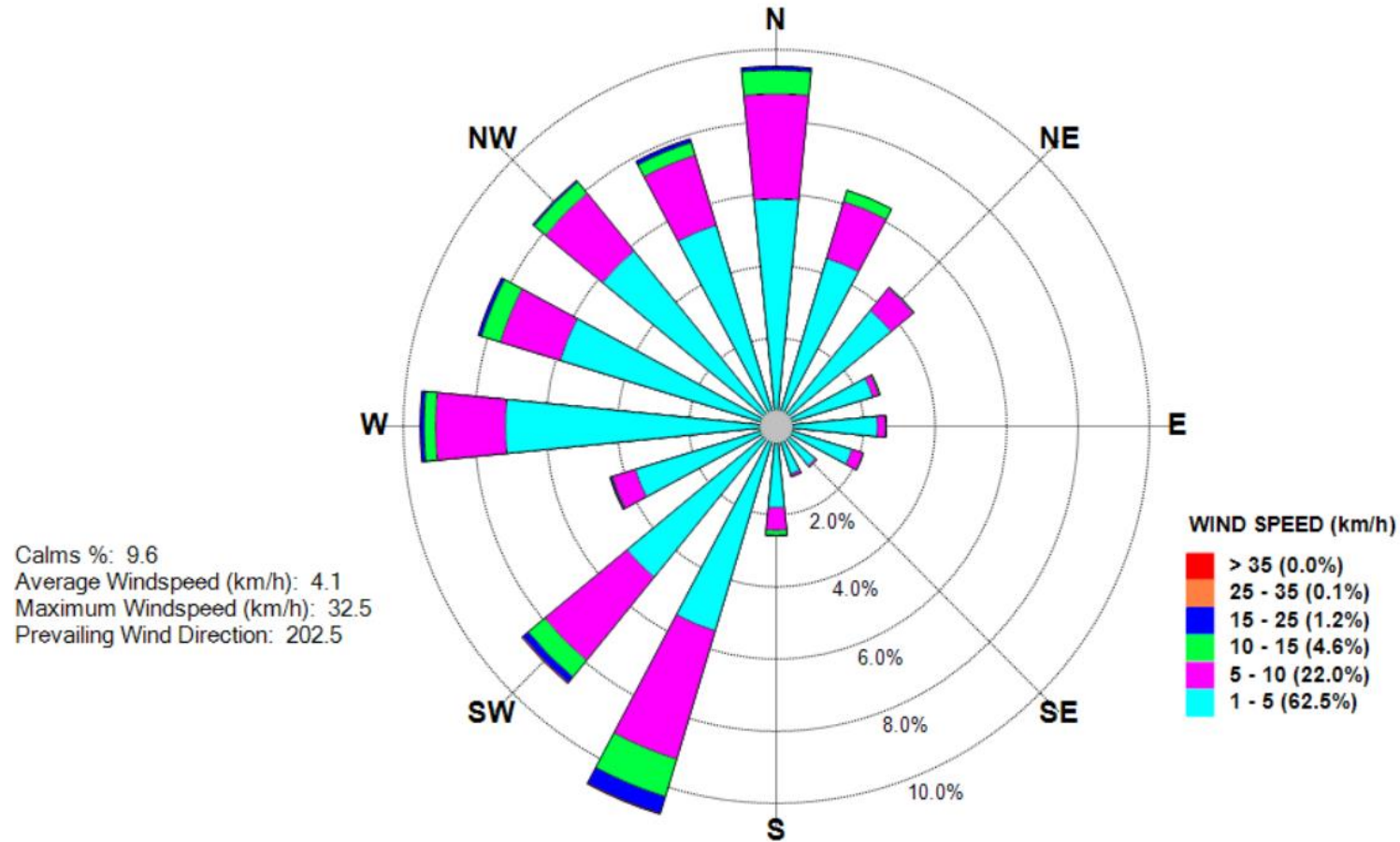




Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose JULY 2021





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*Colin Davies*

Colin Davies BSc MEIA CENVP  
Environmental Scientist  
Date: 30 September 2021

CBased Environmental Pty Ltd  
Unit 3, 2 Enterprise Crescent SINGLETON NSW 2330  
 (02) 65713334

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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for August 2021 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of meteorological data was recovered for August 2021.

Approximately 100% of TEOM data was recovered for August 2021.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “*Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser*”; and
- AS/NZS 3580.1.1 - “*Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment*”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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□

Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly calibration was originally scheduled for June 2021 but was rescheduled and conducted in July 2021, with the next calibration due to be completed in September 2021. The calibration certificate is provided in [redacted] (when required).

- [redacted]
- [redacted]

□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for August 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

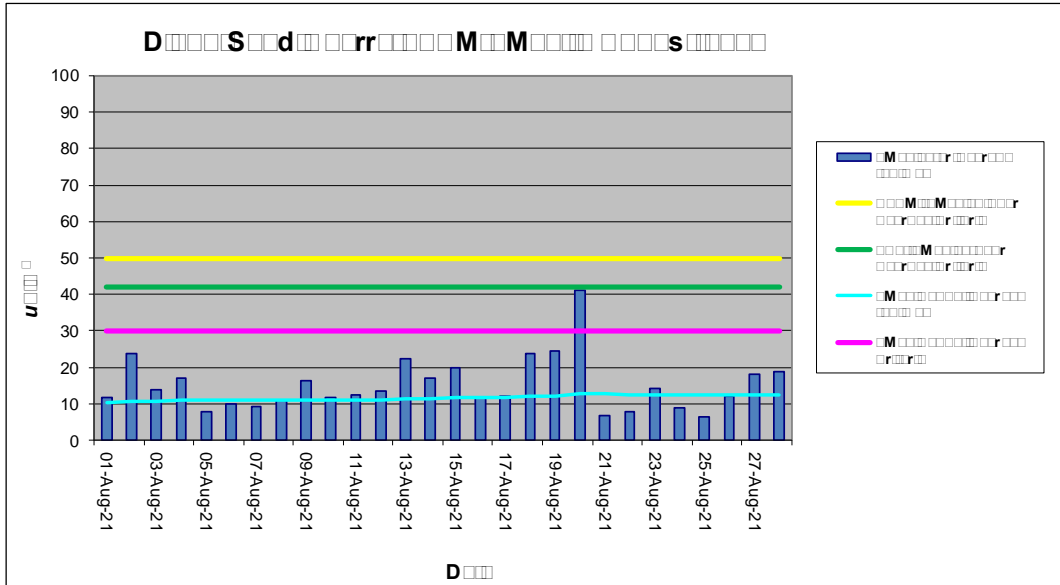
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D□□□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )	□□□□□□□□□□ □□□□ (µg/m <sup>3</sup> )	□□□□□□□□ □□□□□□□□ □□□□ (µg/m <sup>3</sup> )
1/08/2021	11.9	10.4	29.8	25.9
2/08/2021	23.7	10.8	59.3	26.9
3/08/2021	13.8	10.9	34.5	27.1
4/08/2021	17.0	11.0	42.5	27.6
5/08/2021	8.0	10.9	20.0	27.4
6/08/2021	9.8	10.9	24.5	27.3
7/08/2021	9.3	10.9	23.3	27.2
8/08/2021	11.1	10.9	27.8	27.2
9/08/2021	16.5	11.0	41.3	27.5
10/08/2021	11.8	11.0	29.5	27.6
11/08/2021	12.6	11.1	31.5	27.7
12/08/2021	13.6	11.1	34.0	27.8
13/08/2021	22.3	11.4	55.8	28.5
14/08/2021	16.9	11.5	42.3	28.8
15/08/2021	19.8	11.7	49.5	29.2
16/08/2021	11.6	11.7	29.0	29.2
17/08/2021	12.0	11.7	30.0	29.2
18/08/2021	23.7	11.9	59.3	29.8
19/08/2021	24.6	12.2	61.5	30.5
20/08/2021	41.2	12.8	103.0	31.9
21/08/2021	6.9	12.6	17.2	31.6
22/08/2021	7.9	12.6	19.8	31.4
23/08/2021	14.3	12.6	35.8	31.5
24/08/2021	9.0	12.5	22.5	31.3
25/08/2021	6.4	12.4	16.0	31.0
26/08/2021	12.2	12.4	30.5	31.0
27/08/2021	18.3	12.5	45.8	31.3
28/08/2021	18.7	12.6	46.8	31.5
29/08/2021	9.7	12.6	24.3	31.4
30/08/2021	14.8	12.6	37.0	31.5
31/08/2021	11.8	12.6	29.5	31.5

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

□



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

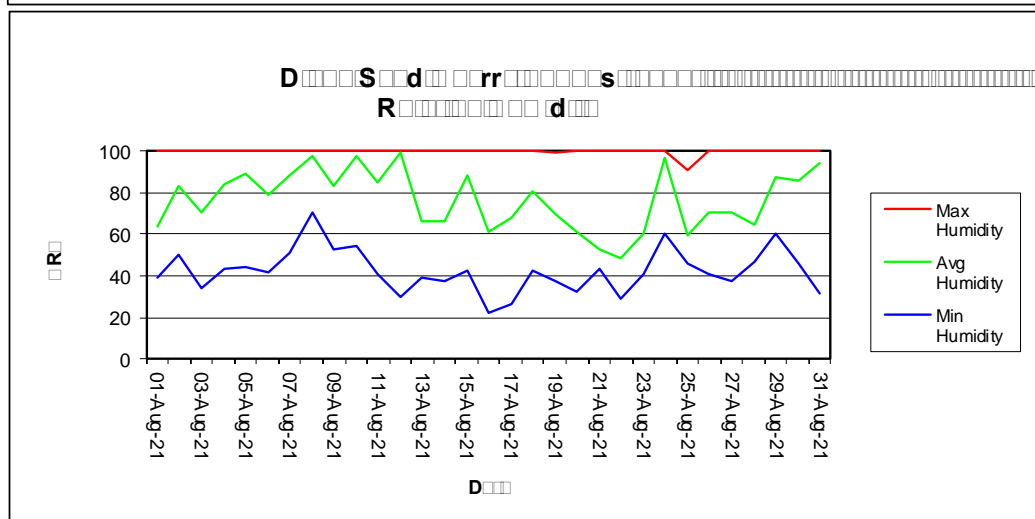
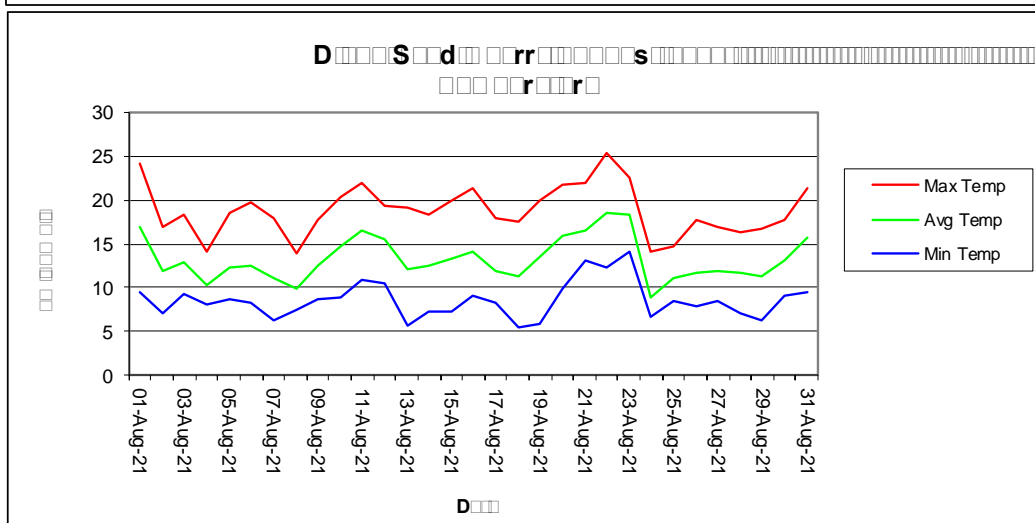
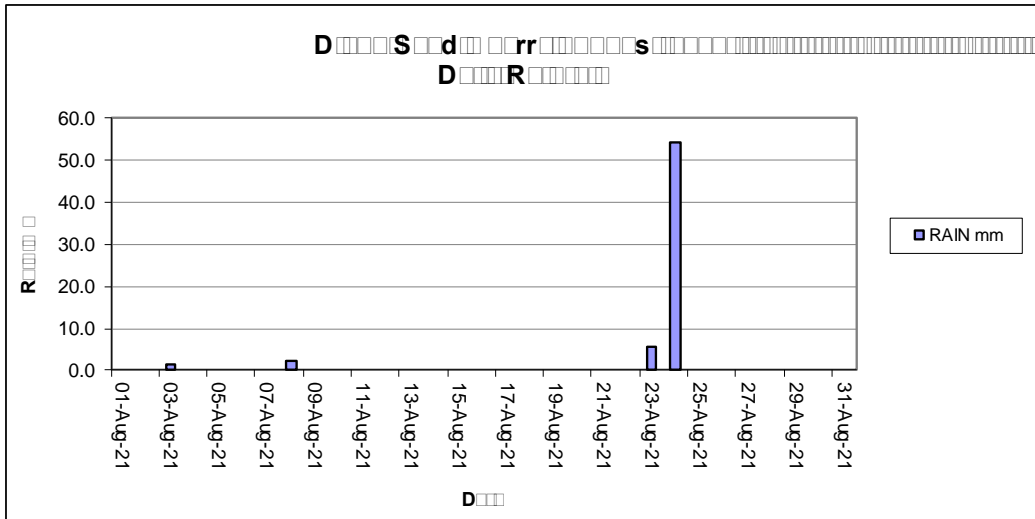
The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

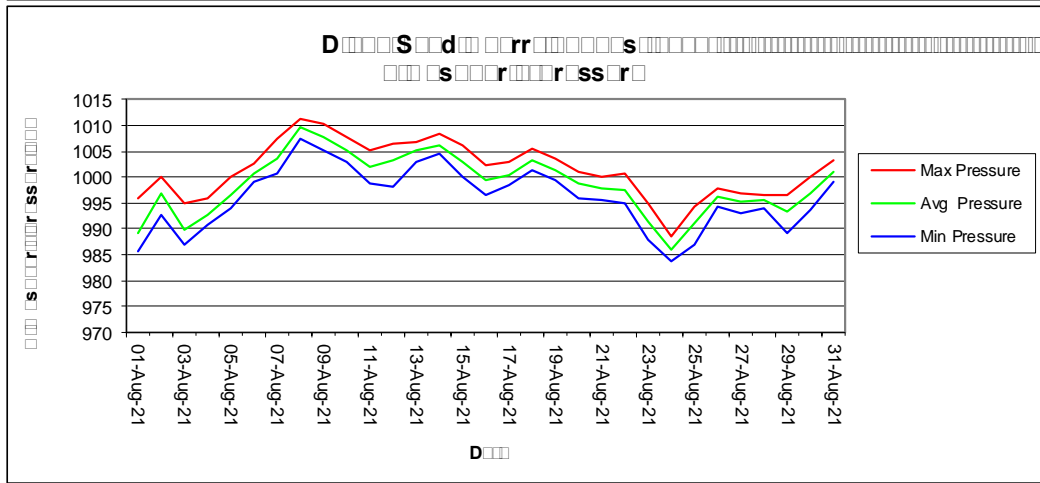
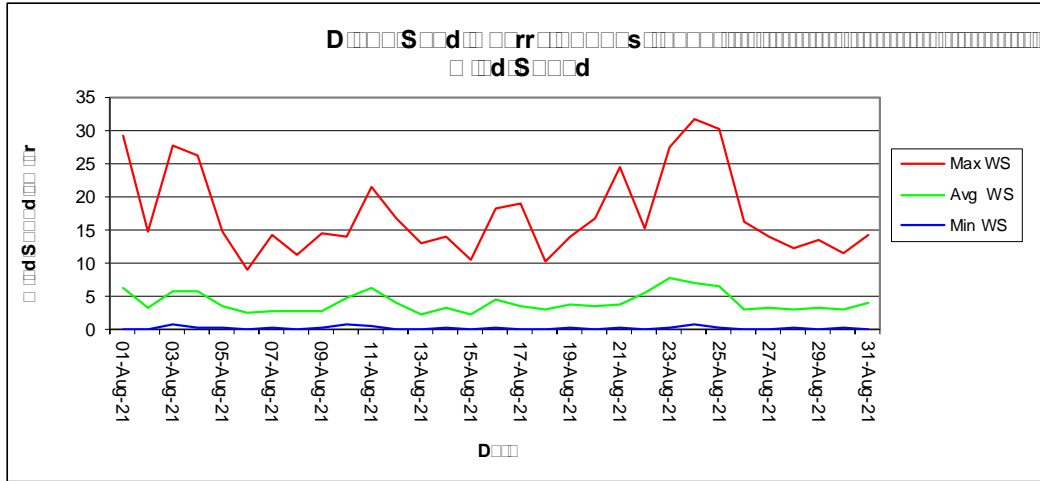
An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted] (when required).







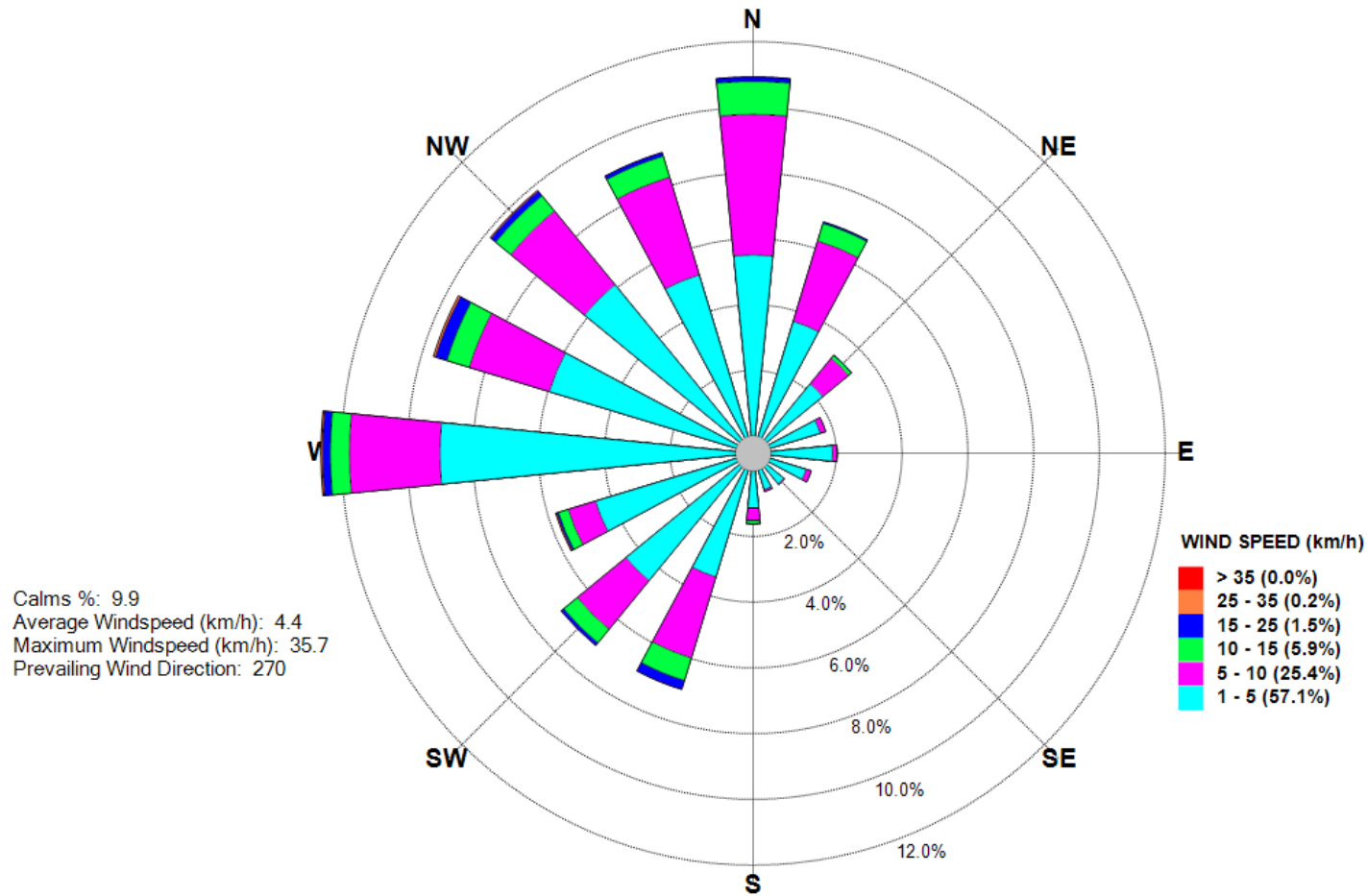
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose AUGUST 2021





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Colin Davies BSc MEIA CENVP  
 Environmental Scientist  
 Date: 25 October 2021

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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for September 2021 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of meteorological data was recovered for September 2021.

Approximately 100% of TEOM data was recovered for September 2021.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

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TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

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Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

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The quarterly TEOM calibration was conducted on 1 September 2021 with the next calibration due to be completed in December 2021. The calibration certificate is provided in [redacted] (when required).

- [redacted]
- [redacted]



Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for September 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

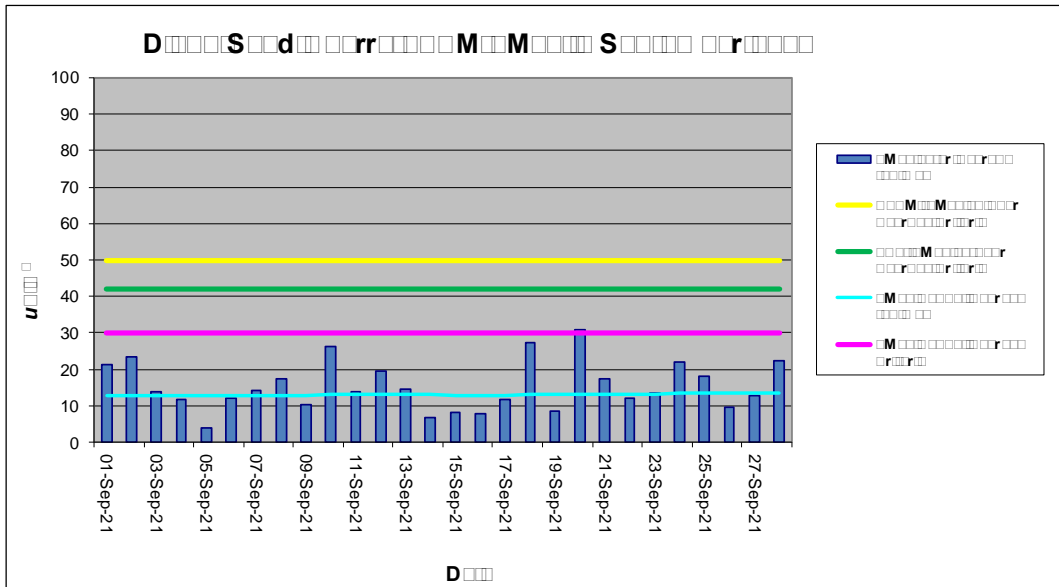
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D	M <sub>10</sub> (µg/m <sup>3</sup> )	M <sub>10</sub> (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )
1/09/2021	21.4	12.7	53.6	31.8
2/09/2021	23.5	12.9	58.8	32.3
3/09/2021	13.7	12.9	34.3	32.3
4/09/2021	11.8	12.9	29.5	32.2
5/09/2021	4.0	12.8	10.0	31.9
6/09/2021	12.2	12.8	30.5	31.9
7/09/2021	14.3	12.8	35.8	31.9
8/09/2021	17.3	12.8	43.3	32.1
9/09/2021	10.2	12.8	25.5	32.0
10/09/2021	26.4	13.0	66.0	32.5
11/09/2021	14.0	13.0	35.0	32.5
12/09/2021	19.5	13.1	48.8	32.7
13/09/2021	14.6	13.1	36.5	32.8
14/09/2021	6.9	13.0	17.3	32.6
15/09/2021	8.2	13.0	20.5	32.4
16/09/2021	7.8	12.9	19.5	32.3
17/09/2021	11.7	12.9	29.3	32.2
18/09/2021	27.5	13.1	68.8	32.7
19/09/2021	8.5	13.0	21.3	32.5
20/09/2021	30.9	13.2	77.3	33.1
21/09/2021	17.3	13.3	43.3	33.2
22/09/2021	12.1	13.3	30.3	33.2
23/09/2021	13.5	13.3	33.8	33.2
24/09/2021	21.9	13.4	54.8	33.4
25/09/2021	18.0	13.4	45.0	33.6
26/09/2021	9.5	13.4	23.8	33.5
27/09/2021	12.9	13.4	32.3	33.4
28/09/2021	22.4	13.5	56.0	33.7
29/09/2021	12.4	13.5	31.0	33.7
30/09/2021	7.9	13.4	19.8	33.5

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

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TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted] (when required).

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Meteorological Data Summary for September 2021

Date	M□□□□□ □	□□□□□□ □	M□□□□□ □	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/09/2021	11.7	16.9	24.4	0.0	0.1	4.1	12.8	23.9	75.4	100.0	1003.0	1005.8	1008.8
2/09/2021	10.5	15.6	21.6	0.0	0.1	3.5	13.6	65.0	89.0	100.0	1004.5	1006.9	1009.5
3/09/2021	11.3	16.9	24.0	0.0	0.4	4.4	14.8	37.1	76.4	99.5	999.0	1002.2	1005.9
4/09/2021	14.6	16.4	20.3	3.6	0.5	7.3	20.5	53.4	78.0	100.0	994.3	997.2	999.4
5/09/2021	9.2	13.5	16.8	1.0	0.4	5.9	20.2	32.8	82.2	100.0	991.2	994.8	999.2
6/09/2021	7.0	11.9	18.2	0.0	0.0	4.0	22.3	25.5	54.0	100.0	999.2	1003.1	1007.2
7/09/2021	7.5	14.4	23.0	0.0	0.2	3.4	11.7	17.2	60.6	100.0	1002.7	1005.4	1008.9
8/09/2021	9.7	15.1	21.1	0.0	0.1	3.3	12.8	37.9	64.4	99.3	1005.4	1007.9	1010.7
9/09/2021	11.2	18.2	27.0	0.0	0.3	4.7	22.4	12.7	38.4	67.4	998.9	1003.3	1006.6
10/09/2021	13.4	18.0	26.9	0.0	0.2	5.4	23.9	16.8	55.5	100.0	998.8	1000.6	1002.1
11/09/2021	11.2	19.5	27.5	0.2	0.0	6.4	19.8	17.5	90.7	100.0	989.7	994.7	1000.4
12/09/2021	15.1	21.7	28.4	0.0	0.1	7.0	32.1	11.9	48.0	100.0	982.8	986.2	989.7
13/09/2021	8.7	13.0	18.2	0.2	0.6	5.4	14.2	34.4	77.0	100.0	989.0	993.9	999.1
14/09/2021	7.7	10.3	14.2	5.0	1.0	7.1	19.5	58.6	79.7	100.0	998.4	1001.1	1003.5
15/09/2021	6.7	11.1	17.6	0.0	0.1	4.8	18.0	43.8	74.8	96.7	1000.8	1002.4	1003.8
16/09/2021	7.3	11.3	16.2	0.0	0.0	4.9	26.5	52.6	80.8	99.5	1000.1	1002.0	1003.9
17/09/2021	7.9	14.7	21.2	0.0	0.1	4.6	18.0	35.0	70.1	100.0	996.7	999.5	1002.4
18/09/2021	12.1	18.1	25.3	0.0	0.3	6.9	34.2	35.6	53.9	67.5	991.0	995.1	1001.0
19/09/2021	10.2	15.9	22.9	0.0	0.1	4.1	15.7	22.3	41.2	58.3	996.7	999.8	1002.8
20/09/2021	11.2	17.3	24.4	0.0	0.5	7.9	35.3	13.9	35.0	55.5	988.2	992.7	998.1
21/09/2021	7.5	10.9	15.5	0.2	0.3	5.8	29.0	28.0	53.1	77.5	991.7	996.4	1002.7
22/09/2021	5.7	12.3	19.5	0.2	0.1	4.0	16.7	32.7	66.5	96.3	1000.2	1001.7	1003.5
23/09/2021	9.6	17.6	25.9	0.0	0.2	3.5	14.6	26.8	51.1	94.6	994.3	997.8	1001.4
24/09/2021	13.2	19.1	25.3	0.0	0.3	5.5	29.9	24.7	42.2	60.7	989.4	992.6	996.3
25/09/2021	10.8	16.2	22.3	0.0	0.3	4.8	19.1	18.9	52.3	96.3	990.1	995.2	1001.9
26/09/2021	8.0	10.3	13.6	1.0	0.3	4.2	15.8	65.1	91.6	100.0	1001.9	1004.6	1006.2
27/09/2021	6.6	12.1	16.9	0.0	0.1	3.4	14.3	49.6	77.9	99.7	1000.1	1002.9	1005.6
28/09/2021	9.0	15.2	23.0	0.0	0.1	4.1	15.8	40.5	75.9	99.3	996.0	998.8	1001.5
29/09/2021	13.0	15.7	19.9	8.8	0.4	4.1	12.3	60.7	88.6	100.0	992.9	995.3	997.8
30/09/2021	13.2	18.1	24.3	0.6	0.2	5.0	17.0	45.2	75.3	100.0	987.9	990.1	992.8
<b>Monthly</b>	<b>5.7</b>	<b>15.2</b>	<b>28.4</b>	<b>20.8</b>	<b>0.0</b>	<b>5.0</b>	<b>35.3</b>	<b>11.9</b>	<b>66.6</b>	<b>100.0</b>	<b>982.8</b>	<b>999.0</b>	<b>1010.7</b>

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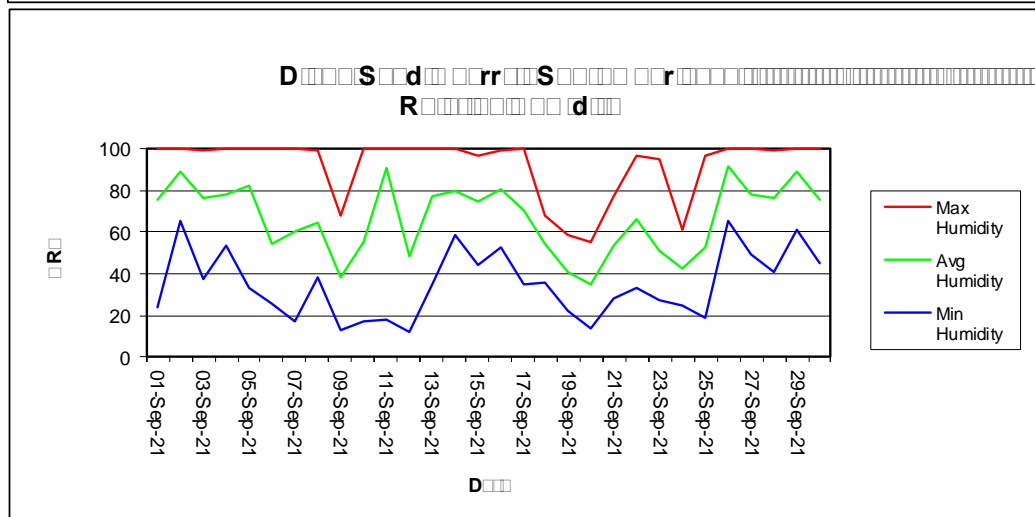
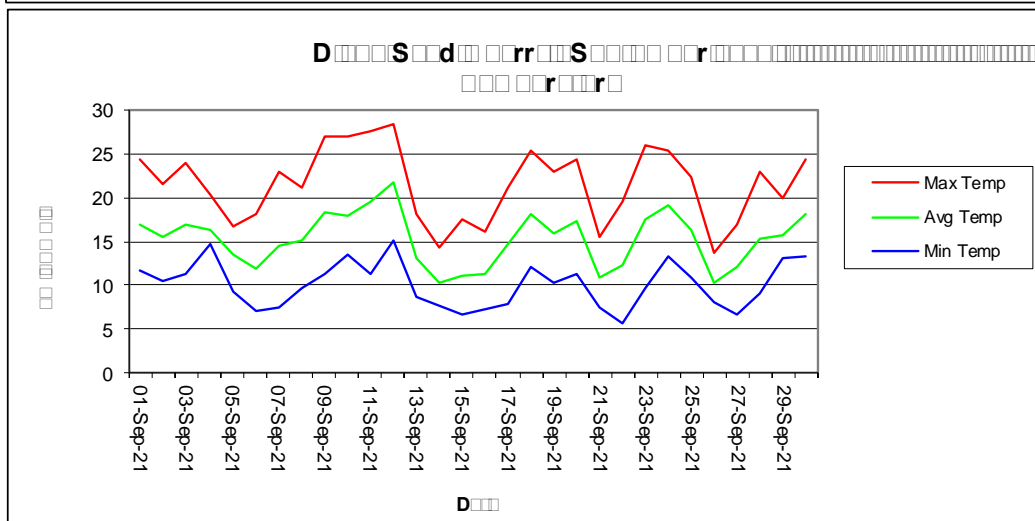
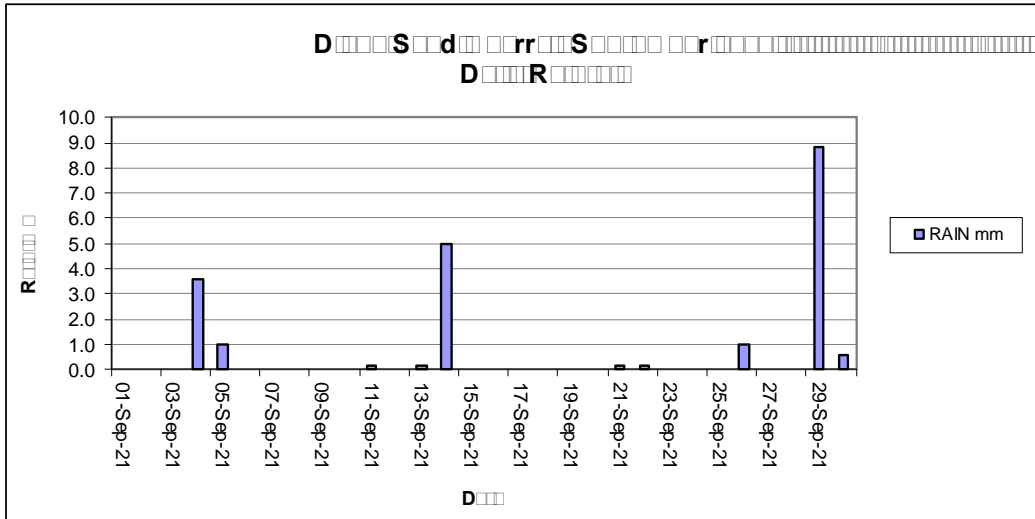
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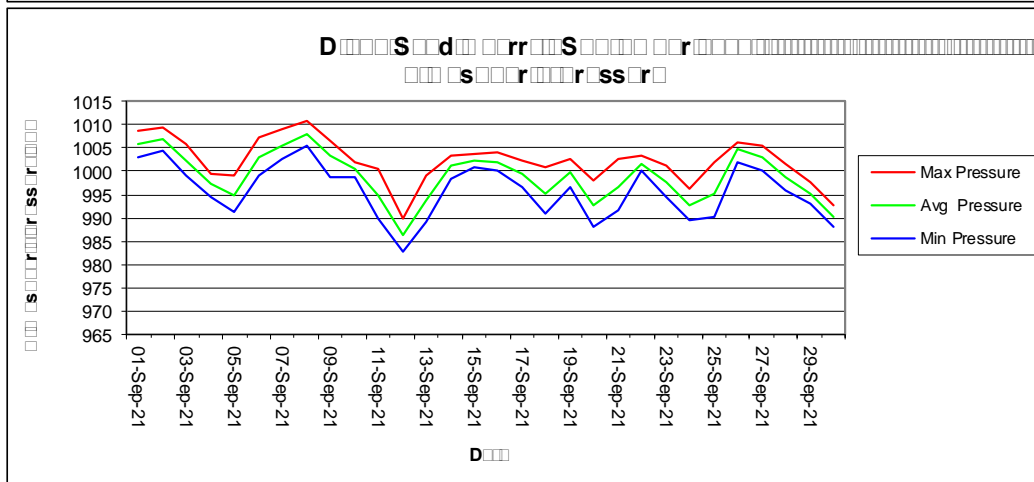
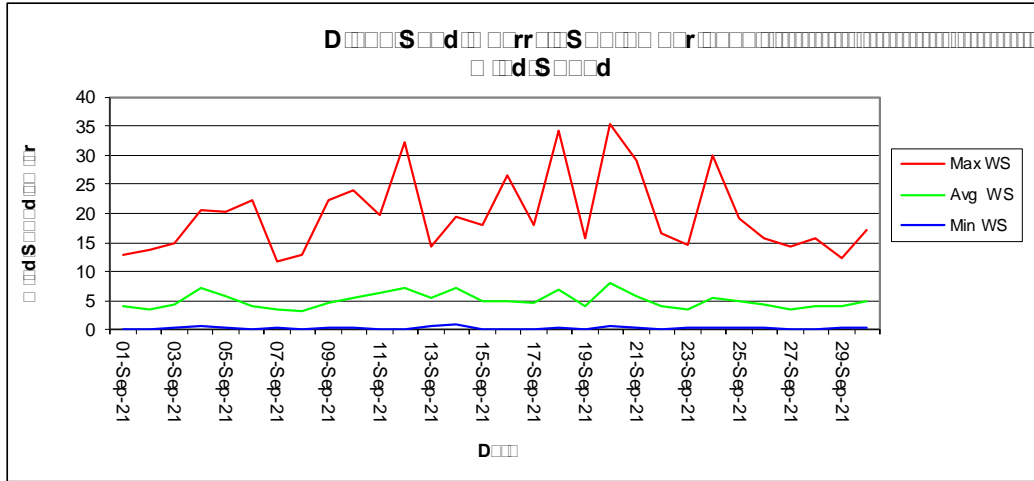
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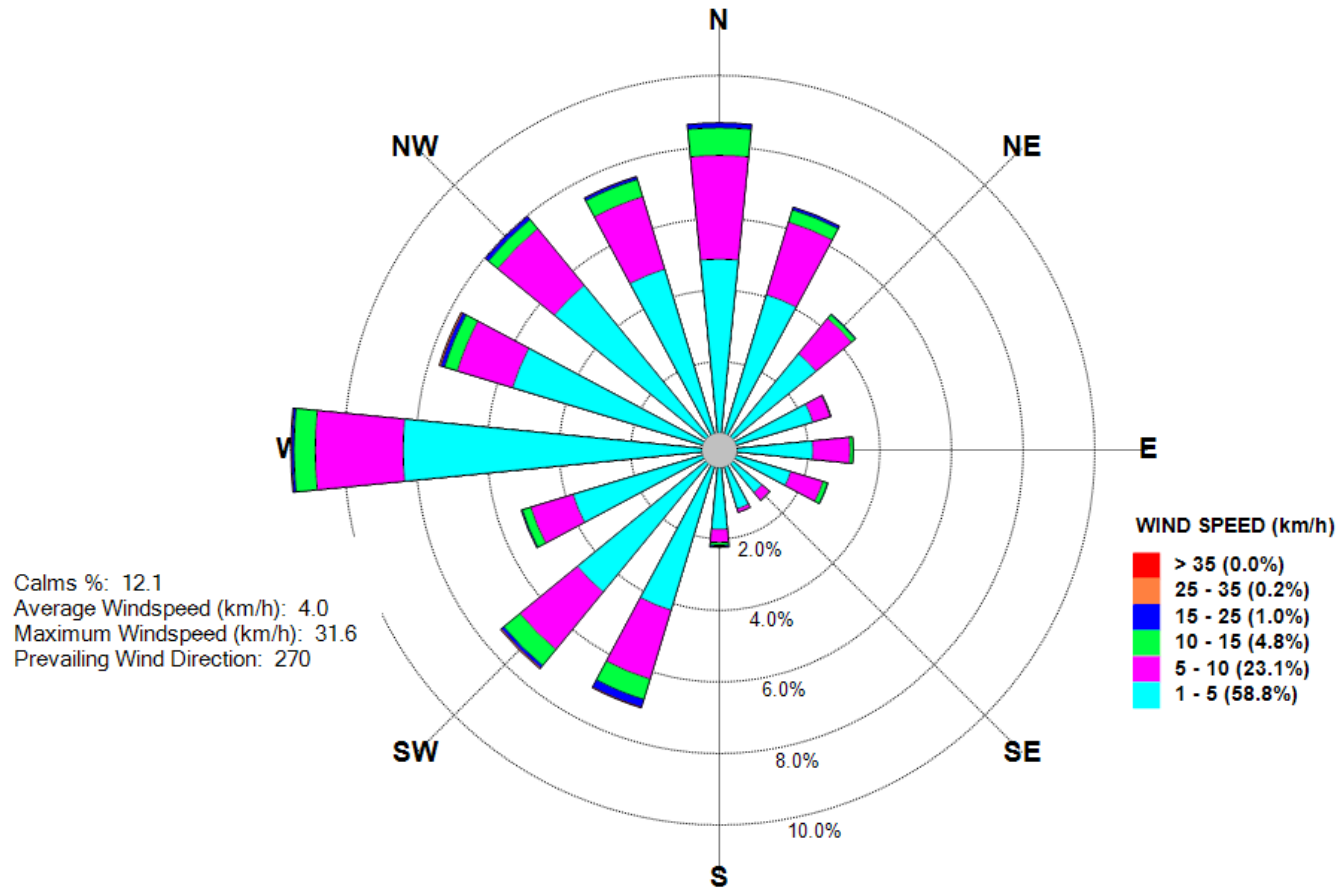
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose SEPTEMBER 2021





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Colin Davies BSc MEIA CENVP  
Environmental Scientist  
Date: 29 November 2021

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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for October 2021 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>, with the exception of 1 occurrence on 29/10/2021 (44.4 ug/m<sup>3</sup>)
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 98% of valid meteorological data was recorded for October 2021.

Approximately 100% of TEOM data was recovered for October 2021.



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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “*Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser*”; and
- AS/NZS 3580.1.1 - “*Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment*”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

□  
□

Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup>.

All TEOM PM<sub>10</sub> results were also below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup> with the exception of one occurrence (29/10/2021) highlighted yellow in [redacted]. A small bushfire was reported at South Maroota and the Rural Fire Service (RFS) also issued a fire danger warning with warm/windy conditions for this day. The RFS was also conducting Hazard Reduction burning on 9-10 October 2021 which may explain the elevated PM<sub>10</sub> levels recorded on 9 October 2021. These notifications are provided in [redacted].

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in September 2021 with the next calibration due to be completed in December 2021. The calibration certificate is provided in [redacted] (when required).

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Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for October 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

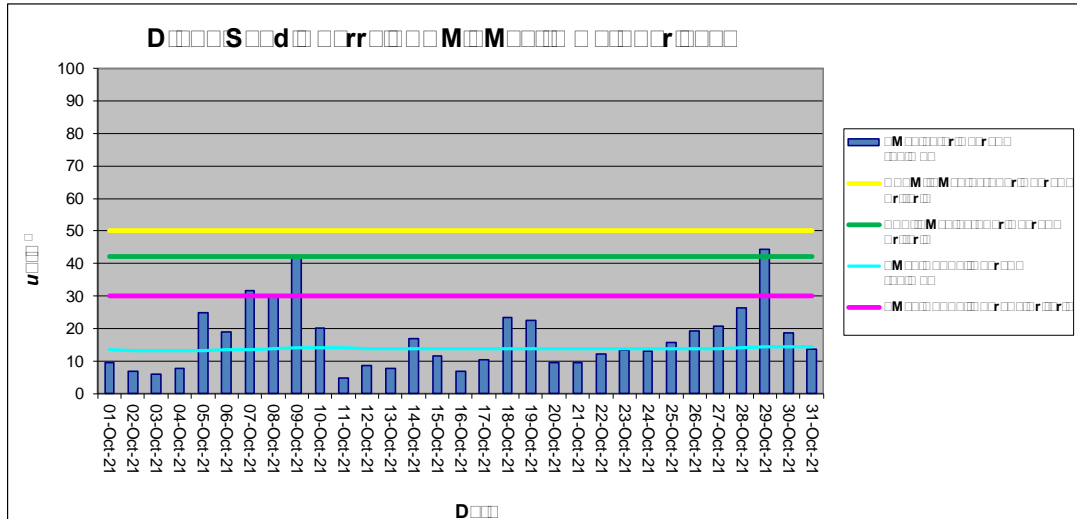
□

D	M <sub>10</sub> (µg/m <sup>3</sup> )	M <sub>10</sub> (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )
1/10/2021	9.5	13.4	23.8	33.4
2/10/2021	6.9	13.3	17.3	33.2
3/10/2021	5.9	13.2	14.7	33.0
4/10/2021	7.6	13.2	19.0	32.9
5/10/2021	24.9	13.3	62.3	33.2
6/10/2021	18.9	13.3	47.3	33.3
7/10/2021	31.7	13.5	79.3	33.8
8/10/2021	29.8	13.7	74.5	34.2
9/10/2021	41.9	14.0	104.8	34.9
10/10/2021	20.2	14.0	50.5	35.1
11/10/2021	4.8	13.9	12.0	34.8
12/10/2021	8.5	13.9	21.3	34.7
13/10/2021	7.6	13.8	19.0	34.6
14/10/2021	16.8	13.9	42.0	34.6
15/10/2021	11.6	13.8	29.0	34.6
16/10/2021	6.7	13.8	16.8	34.4
17/10/2021	10.4	13.7	26.0	34.3
18/10/2021	23.5	13.8	58.8	34.6
19/10/2021	22.6	13.9	56.5	34.8
20/10/2021	9.4	13.9	23.5	34.7
21/10/2021	9.4	13.8	23.5	34.6
22/10/2021	12.0	13.8	30.0	34.5
23/10/2021	13.4	13.8	33.5	34.5
24/10/2021	13.0	13.8	32.5	34.5
25/10/2021	15.8	13.8	39.5	34.5
26/10/2021	19.2	13.9	48.0	34.6
27/10/2021	20.6	13.9	51.5	34.8
28/10/2021	26.2	14.0	65.5	35.0
29/10/2021	□□□□	14.3	111.0	35.7
30/10/2021	18.7	14.3	46.8	35.8
31/10/2021	13.7	14.3	34.3	35.7

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

□



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted] (when required).

Dixon Sand Quarry Environmental Monitoring Project – October 2021

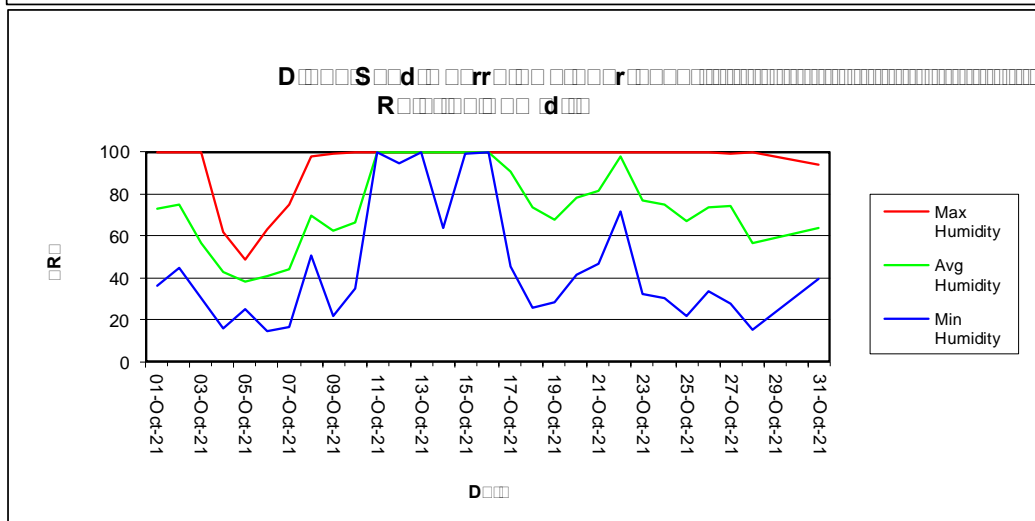
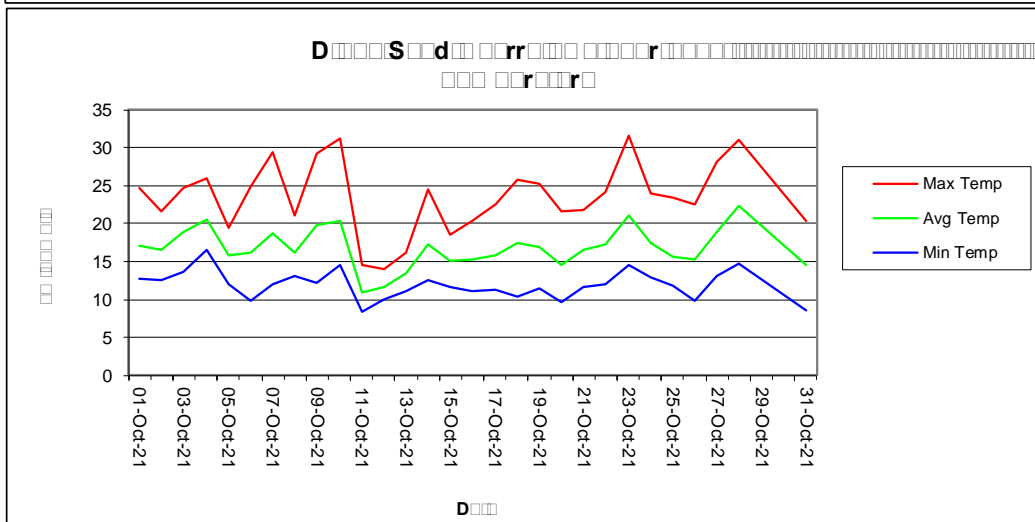
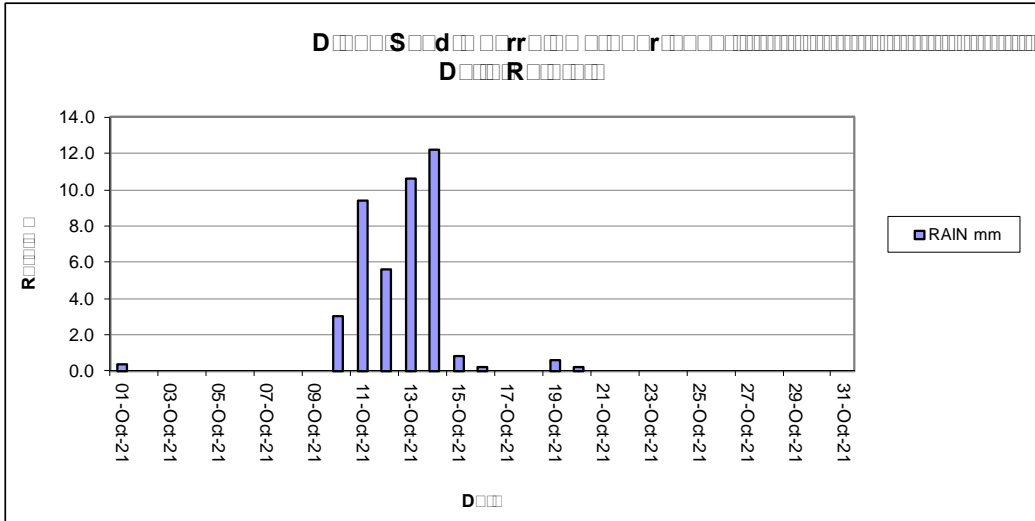


Meteorological Data Summary for October 2021

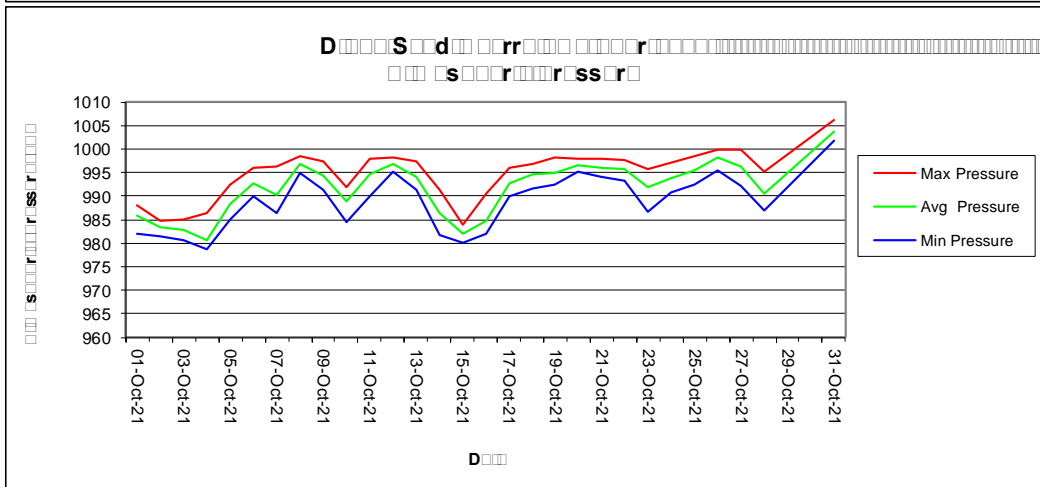
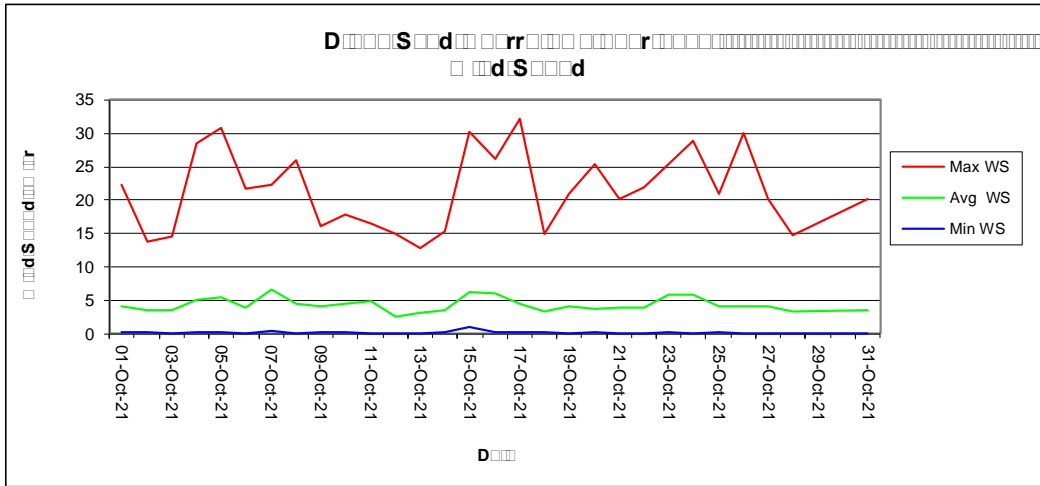
Date	M ☐☐☐☐☐ ☐	☐☐☐☐☐☐☐ ☐	M ☐☐☐☐☐ ☐	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/10/2021	12.7	17.1	24.7	0.4	0.2	4.1	22.3	36.2	72.7	100.0	981.9	985.8	988.2
2/10/2021	12.6	16.6	21.7	0.0	0.3	3.5	13.7	44.6	74.6	99.6	981.4	983.3	984.9
3/10/2021	13.6	18.9	24.7	0.0	0.0	3.5	14.6	30.5	56.6	100.0	980.7	982.9	985.0
4/10/2021	16.5	20.5	26.0	0.0	0.2	5.1	28.4	15.8	42.7	62.0	978.6	980.8	986.4
5/10/2021	12.0	15.8	19.5	0.0	0.3	5.5	30.9	25.0	38.3	48.5	985.0	988.3	992.6
6/10/2021	9.9	16.1	24.8	0.0	0.1	3.9	21.8	14.7	41.1	63.1	989.9	992.8	996.0
7/10/2021	12.0	18.8	29.4	0.0	0.5	6.7	22.2	16.6	44.0	74.6	986.4	990.3	996.4
8/10/2021	13.1	16.1	21.0	0.0	0.1	4.6	25.9	50.5	69.6	97.7	995.0	996.9	998.5
9/10/2021	12.2	19.8	29.3	0.0	0.2	4.1	16.1	22.0	62.6	99.3	991.4	994.4	997.3
10/10/2021	14.5	20.3	31.3	3.0	0.2	4.4	17.9	35.0	66.6	100.0	984.4	988.8	992.0
11/10/2021	8.4	10.9	14.5	9.4	0.0	4.9	16.5	100.0	100.0	100.0	990.1	994.7	998.0
12/10/2021	10.1	11.7	14.0	5.6	0.0	2.6	15.0	94.4	99.6	100.0	995.3	996.9	998.3
13/10/2021	11.2	13.5	16.1	10.6	0.1	3.2	12.8	99.4	99.9	100.0	991.3	994.1	997.4
14/10/2021	12.6	17.3	24.6	12.2	0.2	3.6	15.4	63.5	99.6	100.0	981.8	986.3	991.5
15/10/2021	11.7	15.0	18.6	0.8	1.0	6.3	30.2	99.2	100.0	100.0	980.0	982.0	984.0
16/10/2021	11.1	15.3	20.3	0.2	0.2	6.0	26.1	100.0	100.0	100.0	982.1	984.7	990.5
17/10/2021	11.3	15.8	22.6	0.0	0.2	4.5	32.2	45.5	90.6	100.0	990.1	992.8	996.0
18/10/2021	10.3	17.5	25.7	0.0	0.2	3.3	14.9	26.1	73.7	100.0	991.6	994.7	996.9
19/10/2021	11.4	17.0	25.3	0.6	0.0	4.1	21.0	28.6	67.6	100.0	992.4	995.0	998.2
20/10/2021	9.6	14.6	21.6	0.2	0.2	3.8	25.4	41.4	78.1	100.0	995.1	996.7	998.1
21/10/2021	11.7	16.5	21.8	0.0	0.1	4.0	20.2	46.8	81.2	100.0	994.0	996.1	997.9
22/10/2021	12.0	17.3	24.1	0.0	0.0	3.8	22.0	71.6	97.5	100.0	993.4	995.9	997.6
23/10/2021	14.5	21.0	31.6	0.0	0.2	5.9	25.4	32.6	76.5	100.0	986.8	991.9	995.9
24/10/2021	13.0	17.5	24.0	0.0	0.1	5.9	28.8	30.2	74.8	100.0	990.9	993.8	997.2
25/10/2021	11.8	15.7	23.4	0.0	0.2	4.2	21.0	21.6	67.2	100.0	992.6	995.4	998.4
26/10/2021	9.8	15.3	22.6	0.0	0.0	4.0	30.1	33.7	73.6	99.5	995.6	998.3	1000.0
27/10/2021	13.1	19.0	28.1	0.0	0.0	4.0	20.2	27.6	73.9	99.2	992.2	996.3	999.8
28/10/2021	14.7	22.4	31.0	0.0	0.1	3.4	14.8	15.2	56.7	99.6	986.9	990.6	995.1
29/10/2021													
30/10/2021													
31/10/2021	8.5	14.6	20.3	0.0	0.1	3.4	20.2	39.5	63.5	93.8	1001.7	1003.6	1006.1
<b>Monthly</b>	<b>8.4</b>	<b>16.8</b>	<b>31.6</b>	<b>43.0</b>	<b>0.0</b>	<b>4.4</b>	<b>32.2</b>	<b>14.7</b>	<b>73.9</b>	<b>100.0</b>	<b>978.6</b>	<b>991.9</b>	<b>1006.1</b>

29/10/2021 - 30/10/2021 data was flat lining and met sensor needed to be power cycled, but unit eventually recovered





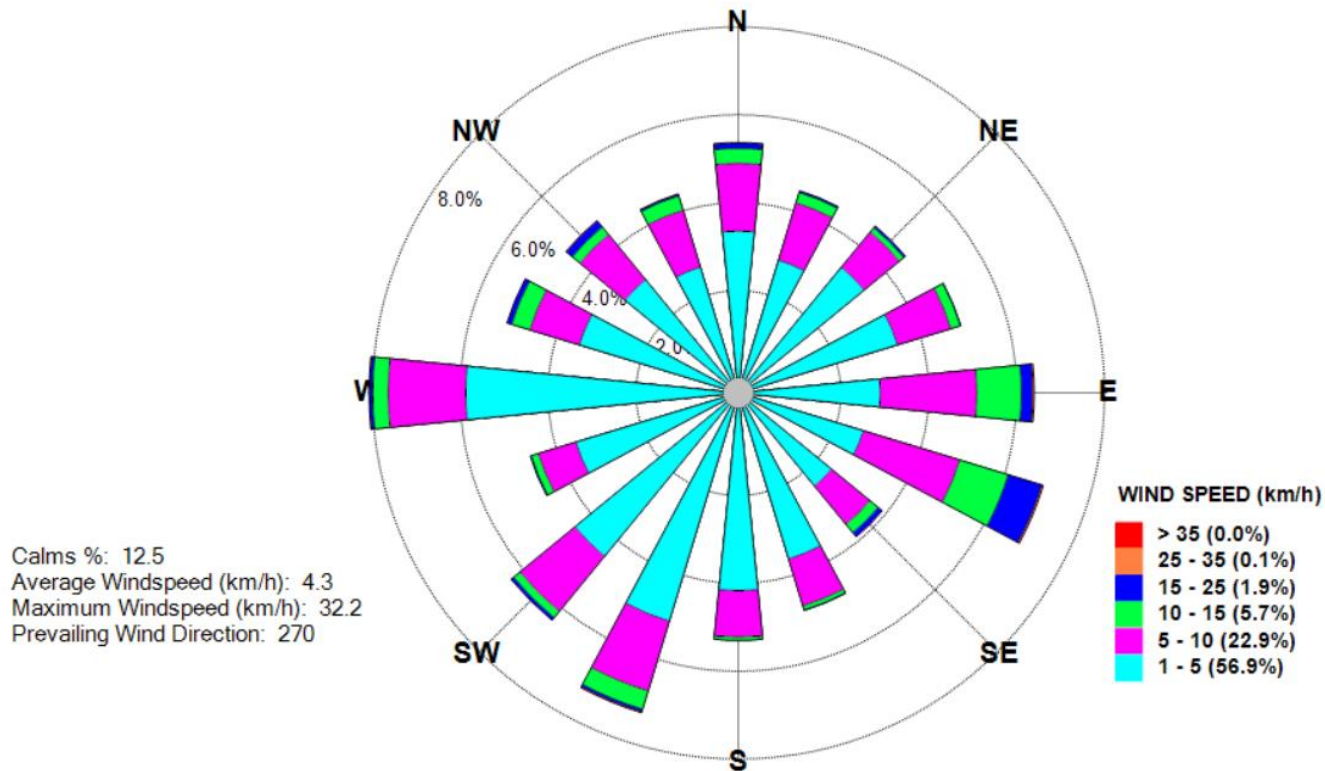
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose OCTOBER 2021





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Calibration Documents (when required)

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NSW Rural Fire Service

Favourites · 28 October at 16:29 ·

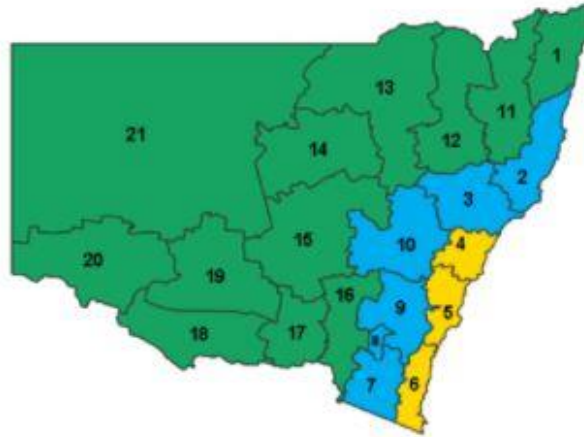


Warm and windy conditions forecast for tomorrow, 29 October, will result in elevated fire danger for parts of NSW. Fire permits will be suspended for areas with Very High Fire Danger ratings. If you have conducted a burn over previous days please check to ensure that it is extinguished and safe. Report unattended fires to Triple Zero (000).

## KNOW THE FIRE DANGER RATING FOR YOUR AREA

Check your area at [www.rfs.nsw.gov.au/fdr](http://www.rfs.nsw.gov.au/fdr)

- 1 Far North Coast
- 2 North Coast
- 3 Greater Hunter
- 4 Greater Sydney Region
- 5 Illawarra/Shoalhaven
- 6 Far South Coast
- 7 Monaro Alpine
- 8 ACT
- 9 Southern Ranges
- 10 Central Ranges
- 11 New England
- 12 Northern Slopes
- 13 North Western
- 14 Upper Central West Plains
- 15 Lower Central West Plains
- 16 Southern Slopes
- 17 Eastern Riverina
- 18 Southern Riverina
- 19 Northern Riverina
- 20 South Western
- 21 Far Western



**FIRE DANGER RATING**

<span style="color: green;">■</span> Low - Moderate	<span style="color: blue;">■</span> High	<span style="color: yellow;">■</span> Very High
<span style="color: orange;">■</span> Severe	<span style="color: red;">■</span> Extreme	<span style="color: red;">■</span> Catastrophic

**DON'T BE THE FIRE RISK TO YOUR COMMUNITY.**

[www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au) | 1800 679 737



NSW Rural Fire Service

★ Favourites · 29 October at 15:20 · 🌐



ADVICE: Sackville Ferry Rd Fire, South Maroota. #NSWRFS firefighters are on scene at a bush fire burning near Sackville Ferry Rd at South Maroota. A water bombing helicopter has been sent to assist firefighters. Currently no homes are at threat.



# ADVICE

**Sackville Ferry Rd  
South Maroota (The Hills LGA)**



www.rfs.nsw.gov.au  
Fires Near Me NSW  
1800 679 737

PREPARE ACT SURVIVE

**Sackville Ferry Rd, South Maroota**  
Updated: 29 Oct 2021 14:46

ALERT LEVEL:	Advice
LOCATION:	115 Sackville Ferry Rd, South Maroota, NSW 2708
COUNCIL AREA:	The Hills
STATUS:	Out of control
TYPE:	Bush Fire
FIRE:	Yes
SIZE:	Site
RESPONSIBLE AGENCY:	Rural Fire Service



## Marine Wind Warning Summary

IDN20400

Australian Government Bureau of Meteorology  
New South Wales

### Marine Wind Warning Summary for New South Wales

Issued at 4:05 pm EDT on Friday 29 October 2021  
for the period until midnight EDT Saturday 30 October 2021.

#### Wind Warnings for Friday 29 October

**Gale Warning** for the following areas:  
Batemans Coast and Eden Coast

**Strong Wind Warning** for the following areas:  
Sydney Enclosed Waters, Byron Coast, Hunter Coast, Sydney Coast and Illawarra Coast

#### Wind Warnings for Saturday 30 October

**Gale Warning** for the following areas:  
Batemans Coast and Eden Coast

**Strong Wind Warning** for the following areas:  
Macquarie Coast, Hunter Coast, Sydney Coast and Illawarra Coast

The next marine wind warning summary will be issued by 4:10 am EDT Saturday.

Check the latest [Coastal Waters Forecast](#) or [Local Waters Forecast](#) for information on wind, wave and weather conditions for these coastal zones.

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This page was created at **17:46 on Friday 29 October 2021 (AEDT)**



## NOTICE OF SCHEDULED HAZARD REDUCTION BURN

We wish to advise you that the proposed Smiths Lane Hazard Reduction, which is in the vicinity of Cattai Ridge Road and Smith Lane Glenorie (see map overleaf) has been scheduled, subject to weather conditions, for this:

**Saturday 09 October 2021.**

This will consist of prescribed burning of vegetation to reduce the bush fire fuel and assist in reducing the intensity and adverse impact of bush fires in extreme weather conditions. The prescribed burn will be undertaken by the NSW Rural Fire Service.

Should weather conditions be unfavourable to complete the prescribed burn, **this notice will remain valid for 4 weeks** and will go ahead as soon as weather permits.

As the prescribed burn will generate smoke, hot embers and heat, it is important that you consider the following:

- **IMPORTANT:** If you have electronically operated or locked gates please leave them open on the day of the HR so that crews can access the area if and when needed;
- Keep doors and windows closed to prevent smoke entering homes;
- Keep outdoor furniture under cover to prevent ember burns;
- Retract pool covers to prevent ember damage;
- Remove washing from clothes lines;
- Ensure pets have a protected area;
- If you are driving a vehicle, slow down, keep windows up and turn headlights on; and
- If you have asthma or a lung condition, reduce outdoor activities. If smoke levels are high and if shortness of breath or coughing develops, take your reliever medicine or seek medical advice

Should any further information be required, please contact The Hills District Office on 02 9654 1244. You can also obtain additional information on prescribed burning and property preparedness by accessing the NSW Rural Fire Service website at [www.rfs.nsw.gov.au](http://www.rfs.nsw.gov.au).

Thank you for your cooperation,

District Officer

**Postal address**

The Hills District Rural Fire Service  
PO Box 35  
KENTHURST NSW 2156

**Street address**

The Hills District Rural Fire Service  
1A Angus Road  
KENTHURST NSW 2156

**www.rfs.nsw.gov.au**

T (02) 9654 1244  
F (02) 9654 2268  
E [thehills.fcc@rfs.nsw.gov.au](mailto:thehills.fcc@rfs.nsw.gov.au)



Keep doors and windows closed to prevent smoke entering homes  
Keep outdoor furniture under cover to prevent ember burns  
Retract pool covers to prevent ember damage  
Remove washing from clotheslines  
Ensure pets have a protected area  
Vehicles must slow down, keep windows up, turn headlights on  
Sightseers must keep away from burns for their own safety  
If you have asthma or a lung condition, reduce outdoor activities if smoke levels are high and if shortness of breath or coughing develops, take your reliever medicine or seek medical advice

For health information relating to smoke from bush fires and hazard reduction burning, [visit the NSW Health website \(http://www.health.nsw.gov.au/environment/factsheets/Pages/bushfire-smoke.aspx\)](http://www.health.nsw.gov.au/environment/factsheets/Pages/bushfire-smoke.aspx) or the [Asthma Foundation \(http://www.asthmafoundation.org.au/Bushfires.aspx\)](http://www.asthmafoundation.org.au/Bushfires.aspx).

The following hazard reduction burns are planned by NSW land managers (such as National Parks and Wildlife Service, Forestry Corporation NSW, Crown Lands and Local Government Authorities) and fire agencies (NSW Rural Fire Service and Fire and Rescue NSW) over coming days, weather permitting.

## Hazard Reduction Events

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<b>Due Date</b>	11/10/2021 to 25/10/2021
<b>LGA</b>	Coffs Harbour
<b>Location</b>	ORARA WAY NANA GLEN
<b>Tenure</b>	Private
<b>HR By</b>	Private, NSW Rural Fire Service
<b>Size</b>	8.11 ha
<b>Due Date</b>	11/10/2021 to 18/10/2021
<b>LGA</b>	Tenterfield
<b>Location</b>	
<b>Tenure</b>	Local Govt
<b>HR By</b>	Tenterfield, NSW Rural Fire Service
<b>Size</b>	2.81 ha
<b>Due Date</b>	11/10/2021 to 04/11/2021
<b>LGA</b>	Mid-Coast
<b>Location</b>	TAMWORTH STREET
<b>Tenure</b>	Private
<b>HR By</b>	Private, NSW Rural Fire Service
<b>Size</b>	8.91 ha

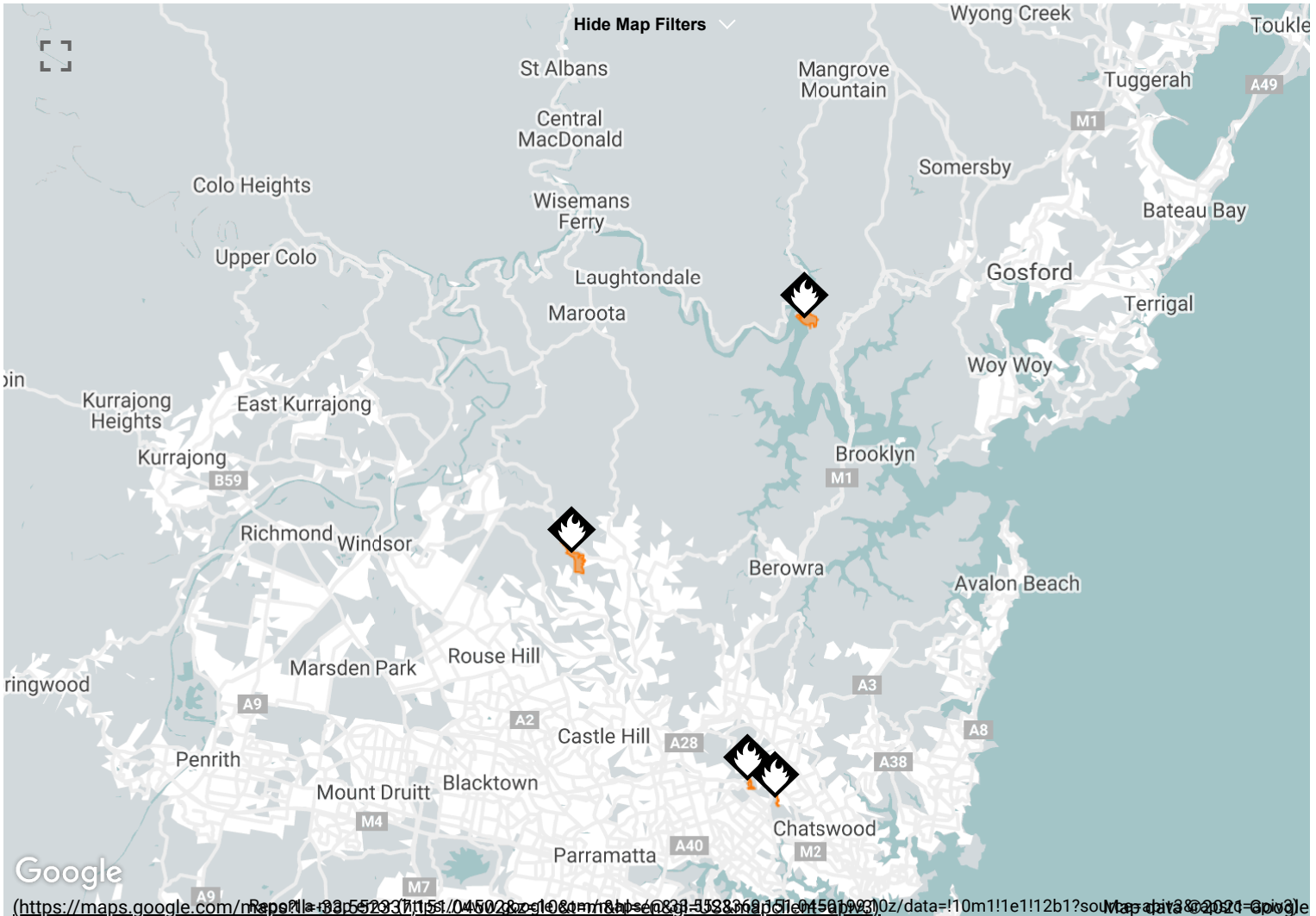


Search for suburb or postcode

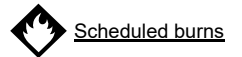
Info | Map | Events 4

Last update: 11/10/2021 at 8:30 AM

Use My Location



[View all events in table view](#)



[Home \(https://www.rfs.nsw.gov.au\)](https://www.rfs.nsw.gov.au) [Fire information \(https://www.rfs.nsw.gov.au/fire-information\)](https://www.rfs.nsw.gov.au/fire-information)

[Hazard Reductions \(https://www.rfs.nsw.gov.au/fire-information/hazard-reductions\)](https://www.rfs.nsw.gov.au/fire-information/hazard-reductions)

## Hazard Reduction

Hazard reduction is just one way of preparing for bush fires – it doesn't remove the threat of fire, and it doesn't remove the need for you and your family to be prepared.

There are different types of hazard reduction including controlled burning, mechanical clearing like slashing undergrowth, or even reducing the ground fuel by hand.

You can see a list of planned hazard reduction burns below. This list may change at short notice depending on the weather at the time.

If there is a hazard reduction burn planned for your area, take the following steps:

**Due Date** 11/10/2021 to 04/11/2021

**LGA** Mid-Coast

**Location** TAMWORTH STREET

**Tenure** Private

**HR By** Private, NSW Rural Fire Service

**Size** 0 ha

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**Due Date** 10/10/2021 to 17/10/2021

**LGA** Bellingen

**Location**

**Tenure** Private

**HR By** Private, NSW Rural Fire Service

**Size** 2.9 ha

**Due Date** 09/10/2021 to 10/10/2021

**LGA** Dubbo

**Location** DUNEDOO ROAD DUBBO

**Tenure** Other State Govt

**HR By** Local Land Services, NSW Rural Fire Service

**Size** 75.3 ha

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**Due Date** 09/10/2021 to 12/10/2021

**LGA** Wollongong

**Location** LAURINA CRESCENT

**Tenure** National Park

**HR By** NSW National Parks and Wildlife Service

**Size** 11.94 ha



**Due Date** 09/10/2021 to 10/10/2021  
**LGA** Wollongong  
**Location** BOURKE  
**Tenure** Other State Govt, Crown Land  
**HR By** Department of Planning, Industry & Environment - Crown Lands,  
WaterNSW, NSW Rural Fire Service  
**Size** 2.95 ha

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**Due Date** 09/10/2021 to 10/10/2021  
**LGA** Wollongong  
**Location** FLAT ROCK  
**Tenure** Private, Crown Land  
**HR By** Department of Planning, Industry & Environment - Crown Lands,  
Private, NSW Rural Fire Service  
**Size** 12.11 ha

**Due Date** 09/10/2021 to 10/10/2021  
**LGA** Wollongong  
**Location** FLAT ROCK  
**Tenure** Private, Crown Land  
**HR By** Department of Planning, Industry & Environment - Crown Lands,  
Private, NSW Rural Fire Service  
**Size** 0 ha

**Due Date** 09/10/2021 to 10/10/2021  
**LGA** The Hills  
**Location** SMITHS LANE AND CATTAI RIDGE RD GLENORIE NSW  
**Tenure** Private, Crown Land  
**HR By** Department of Planning, Industry & Environment - Crown Lands,  
Private, NSW Rural Fire Service  
**Size** 142.15 ha

<b>Due Date</b>	09/10/2021 to 11/10/2021
<b>LGA</b>	Central Coast
<b>Location</b>	MORGANS RD
<b>Tenure</b>	Private, Crown Land
<b>HR By</b>	Department of Planning, Industry & Environment - Crown Lands, Private, NSW Rural Fire Service
<b>Size</b>	98.81 ha

<b>Due Date</b>	09/10/2021 to 10/10/2021
<b>LGA</b>	Mid-Coast
<b>Location</b>	BOOLAMBAYTE
<b>Tenure</b>	Private, National Park, Crown Land
<b>HR By</b>	Department of Planning, Industry & Environment - Crown Lands, Private, NSW National Parks and Wildlife Service
<b>Size</b>	57.27 ha

<b>Due Date</b>	09/10/2021 to 11/10/2021
<b>LGA</b>	Dubbo
<b>Location</b>	CWST-BURKS HR-LMZ-GOONOO NP
<b>Tenure</b>	National Park
<b>HR By</b>	NSW National Parks and Wildlife Service
<b>Size</b>	27.38 ha

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<b>Due Date</b>	09/10/2021 to 11/10/2021
<b>LGA</b>	Dubbo
<b>Location</b>	CWST-BURKS HR-LMZ-GOONOO NP
<b>Tenure</b>	National Park
<b>HR By</b>	NSW National Parks and Wildlife Service
<b>Size</b>	667.9 ha

<b>Due Date</b>	09/10/2021 to 13/10/2021
<b>LGA</b>	Ryde
<b>Location</b>	MARS CREEK
<b>Tenure</b>	Private, National Park
<b>HR By</b>	Private, NSW National Parks and Wildlife Service
<b>Size</b>	20.58 ha

<b>Due Date</b>	08/10/2021 to 14/10/2021
<b>LGA</b>	Wingecarribee
<b>Location</b>	FITZROY FALLS OFFICE
<b>Tenure</b>	National Park
<b>HR By</b>	NSW National Parks and Wildlife Service
<b>Size</b>	0.91 ha

<b>Due Date</b>	08/10/2021 to 12/10/2021
<b>LGA</b>	Ku-ring-gai, Ryde
<b>Location</b>	BLAXLAND RD
<b>Tenure</b>	National Park
<b>HR By</b>	NSW National Parks and Wildlife Service
<b>Size</b>	13 ha

<b>Due Date</b>	07/10/2021 to 15/10/2021
<b>LGA</b>	Cootamundra-Gundagai
<b>Location</b>	ARTC MAIN SOUTHERN RAIL LINE, OLYMPIC WAY TO DIRNASEER RD, FRAMPTON
<b>Tenure</b>	Other State Govt, Crown Land
<b>HR By</b>	Department of Planning, Industry & Environment - Crown Lands, NSW Trains, NSW Rural Fire Service
<b>Size</b>	102.51 ha

<b>Due Date</b>	17/10/2021 to 18/10/2021
<b>LGA</b>	Clarence Valley
<b>Location</b>	SHERWOOD ROAD SHERWOOD
<b>Tenure</b>	Private
<b>HR By</b>	Private, NSW Rural Fire Service
<b>Size</b>	19.2 ha

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## **Fire information (<https://www.rfs.nsw.gov.au/fire-information>)**

**Fires Near Me (<https://www.rfs.nsw.gov.au/fire-information/fires-near-me>)**

**Major Fire Updates (<https://www.rfs.nsw.gov.au/fire-information/major-fire-updates>)**

**Hazard Reductions (<https://www.rfs.nsw.gov.au/fire-information/hazard-reductions>)**

Smoke from hazard reduction (<https://www.rfs.nsw.gov.au/fire-information/hazard-reductions/smoke-from-hazard-reduction>)

Managing smoke and its impact on the community (<https://www.rfs.nsw.gov.au/fire-information/hazard-reductions/managing-smoke-and-its-impact-on-the-community>)

**Fire Danger Ratings and Total Fire Bans (<https://www.rfs.nsw.gov.au/fire-information/fdr-and-tobans>)**

**Bush Fire Danger Period and Fire Permits (<https://www.rfs.nsw.gov.au/fire-information/BFDP>)**

**Prevent bush fire arson (<https://www.rfs.nsw.gov.au/fire-information/prevent-bush-fire-arson>)**

**Report a cigarette butt tosser (<https://www.rfs.nsw.gov.au/fire-information/cigarette-form>)**

**Emergency information (<https://www.rfs.nsw.gov.au/fire-information/emergency-information>)**

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AND-  
MEDIA/STAY-  
UP-  
TO-  
\(HTTPS://WWW.RF](https://www.rfs.nsw.gov.au/fire-information/fires-near-me)

[Contact \(<https://www.rfs.nsw.gov.au/about-us/contact-us>\)](https://www.rfs.nsw.gov.au/about-us/contact-us)   [Sitemap \(<https://www.rfs.nsw.gov.au/sitemap>\)](https://www.rfs.nsw.gov.au/sitemap)  
[Copyright/Privacy \(<https://www.rfs.nsw.gov.au/about-us/privacy>\)](https://www.rfs.nsw.gov.au/about-us/privacy)



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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for November 2021 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of valid meteorological data was recorded for November 2021.

Approximately 100% of TEOM data was recovered for November 2021.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser”; and
- AS/NZS 3580.1.1 - “Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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**Results**

**Monitoring**

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in September 2021 with the next calibration due to be completed in December 2021. The calibration certificate is provided in [redacted] (when required).

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Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for November 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

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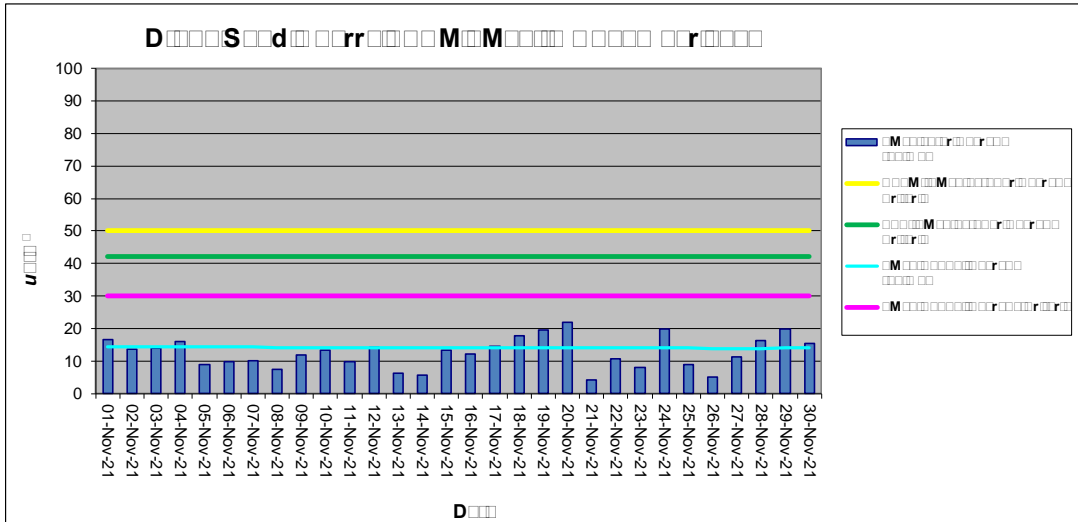
D	M <sub>10</sub> (µg/m <sup>3</sup> )	M <sub>10</sub> (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )
1/11/2021	16.5	14.3	41.3	35.8
2/11/2021	13.6	14.3	34.0	35.8
3/11/2021	14.0	14.3	35.0	35.8
4/11/2021	16.0	14.3	40.0	35.8
5/11/2021	8.8	14.3	22.0	35.7
6/11/2021	9.8	14.2	24.5	35.6
7/11/2021	10.2	14.2	25.5	35.5
8/11/2021	7.5	14.2	18.8	35.4
9/11/2021	11.7	14.1	29.3	35.4
10/11/2021	13.4	14.1	33.5	35.3
11/11/2021	9.9	14.1	24.8	35.3
12/11/2021	14.3	14.1	35.8	35.3
13/11/2021	6.2	14.0	15.5	35.1
14/11/2021	5.7	14.0	14.3	35.0
15/11/2021	13.4	14.0	33.5	35.0
16/11/2021	12.2	14.0	30.5	34.9
17/11/2021	14.6	14.0	36.5	34.9
18/11/2021	17.7	14.0	44.3	35.0
19/11/2021	19.6	14.0	49.0	35.1
20/11/2021	21.8	14.1	54.5	35.2
21/11/2021	4.3	14.0	10.8	35.1
22/11/2021	10.8	14.0	27.0	35.0
23/11/2021	7.9	14.0	19.8	34.9
24/11/2021	19.7	14.0	49.3	35.0
25/11/2021	8.9	14.0	22.3	34.9
26/11/2021	5.1	13.9	12.7	34.8
27/11/2021	11.3	13.9	28.3	34.7
28/11/2021	16.3	13.9	40.8	34.8
29/11/2021	19.7	13.9	49.3	34.9
30/11/2021	15.3	14.0	38.3	34.9

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m<sup>3</sup> are highlighted in yellow

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TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted] (when required).

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Meteorological Data Summary for November 2021

Date	M □□□□ □	□□□□□ □	M □□□□ □	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/11/2021	11.6	17.0	22.7	0.0	0.0	3.5	15.7	40.2	67.2	89.9	1002.4	1004.1	1005.8
2/11/2021	13.5	18.2	22.9	0.0	0.2	6.3	29.0	50.5	74.0	99.3	1003.3	1005.3	1007.0
3/11/2021	14.2	18.8	24.1	0.0	0.1	4.9	18.7	38.8	69.3	99.2	1000.4	1003.4	1006.5
4/11/2021	15.8	16.8	18.2	6.4	0.1	2.6	11.3	75.4	94.0	100.0	999.0	1000.4	1001.9
5/11/2021	15.8	17.3	20.9	16.2	0.0	3.5	17.2	68.4	93.7	100.0	997.2	999.0	1000.9
6/11/2021	13.9	18.9	26.2	0.8	0.1	4.0	22.1	42.6	85.4	100.0	988.8	992.8	998.0
7/11/2021	16.6	18.2	22.0	14.6	0.4	3.7	14.4	67.7	95.7	100.0	985.5	988.5	990.5
8/11/2021	16.2	18.8	24.9	12.0	0.0	3.5	18.2	52.1	90.6	100.0	986.3	988.2	991.4
9/11/2021	16.2	19.1	24.6	0.2	0.0	4.3	23.2	50.5	87.4	100.0	989.3	991.1	993.0
10/11/2021	15.9	17.5	19.0	18.8	0.0	2.5	15.0	99.3	99.9	100.0	984.6	987.9	991.4
11/11/2021	13.2	16.4	19.8	18.2	0.0	3.4	14.4	99.3	100.0	100.0	982.9	984.7	986.5
12/11/2021	10.7	16.9	26.3	5.2	0.5	6.0	37.2	41.4	84.6	100.0	972.7	977.8	983.8
13/11/2021	13.2	15.6	17.5	0.0	0.5	7.3	31.7	45.5	87.3	100.0	978.2	980.3	986.7
14/11/2021	10.7	14.7	21.0	0.2	0.1	4.8	21.7	32.4	73.4	100.0	983.5	986.4	988.4
15/11/2021	11.9	15.6	21.1	0.2	0.1	5.9	25.0	52.0	93.4	99.7	984.9	987.9	992.9
16/11/2021	11.0	14.7	20.7	0.0	0.0	4.0	19.4	55.7	89.6	100.0	992.0	995.8	1002.1
17/11/2021	10.6	15.3	20.0	0.0	0.0	4.0	22.4	51.8	77.1	100.0	999.9	1001.9	1003.9
18/11/2021	12.8	19.2	26.5	0.0	0.0	3.6	19.9	33.2	72.7	100.0	992.9	997.5	1001.9
19/11/2021	16.7	21.6	26.2	0.0	0.1	4.9	17.5	45.8	63.1	100.0	990.0	991.9	994.0
20/11/2021	15.3	17.7	21.8	0.8	0.1	3.3	22.0	96.6	99.6	100.0	989.1	991.2	994.8
21/11/2021	13.8	14.5	15.4	22.0	0.2	4.0	11.1	100.0	100.0	100.0	993.0	995.5	999.2
22/11/2021	13.5	15.4	18.9	2.2	0.1	4.2	12.3	73.9	99.3	100.0	998.5	1000.5	1002.3
23/11/2021	14.4	17.1	21.0	4.0	0.0	2.6	12.8	99.3	100.0	100.0	997.1	999.4	1001.5
24/11/2021	16.8	20.4	27.5	4.0	0.0	3.1	16.9	100.0	100.0	100.0	992.2	995.3	998.9
25/11/2021	18.9	21.1	24.6	3.4	0.1	3.1	11.6	99.4	100.0	100.0	985.9	989.5	993.8
26/11/2021	13.9	16.3	21.0	32.6	0.2	5.5	19.2	100.0	100.0	100.0	986.0	989.9	994.5
27/11/2021	12.8	13.8	15.7	14.0	0.6	5.7	17.7	100.0	100.0	100.0	994.1	997.8	1001.2
28/11/2021	12.5	14.6	18.4	0.0	0.3	4.2	12.6	73.1	97.2	100.0	999.8	1001.0	1002.5
29/11/2021	12.5	16.4	20.5	0.0	0.1	3.2	11.8	99.3	100.0	100.0	996.8	999.1	1001.1
30/11/2021	15.9	18.3	21.5	0.0	0.0	2.5	10.9	99.2	100.0	100.0	995.3	996.9	998.8
<b>Monthly</b>	<b>10.6</b>	<b>17.2</b>	<b>27.5</b>	<b>175.8</b>	<b>0.0</b>	<b>4.1</b>	<b>37.2</b>	<b>32.4</b>	<b>89.8</b>	<b>100.0</b>	<b>972.7</b>	<b>994.0</b>	<b>1007.0</b>

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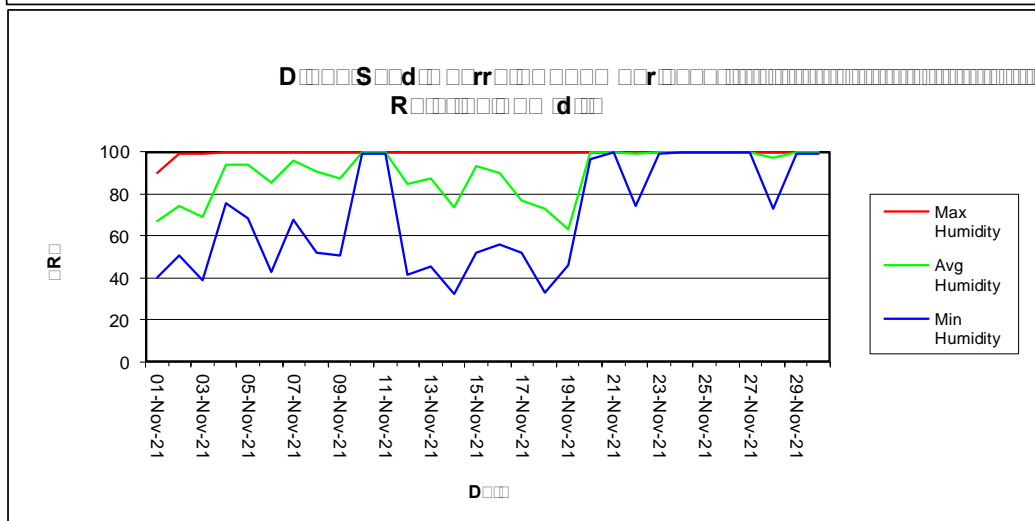
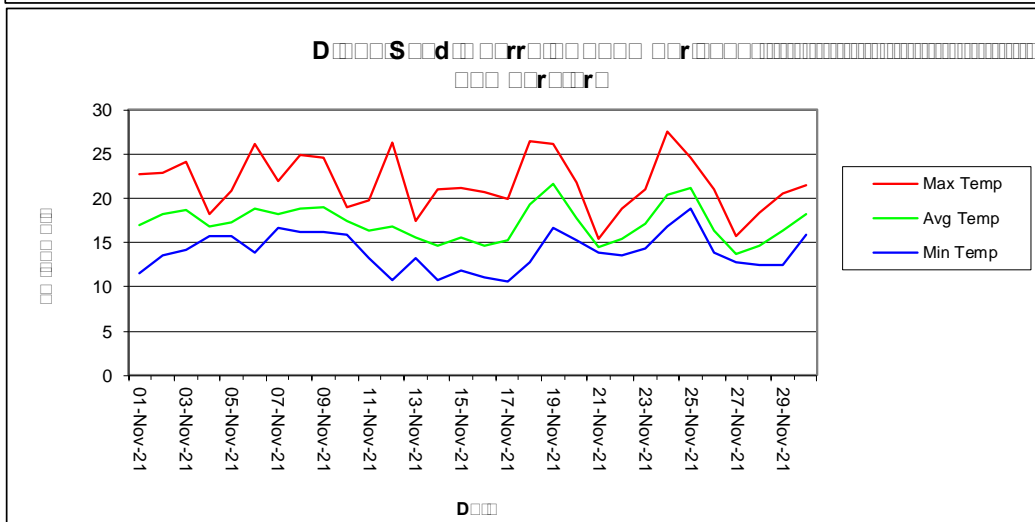
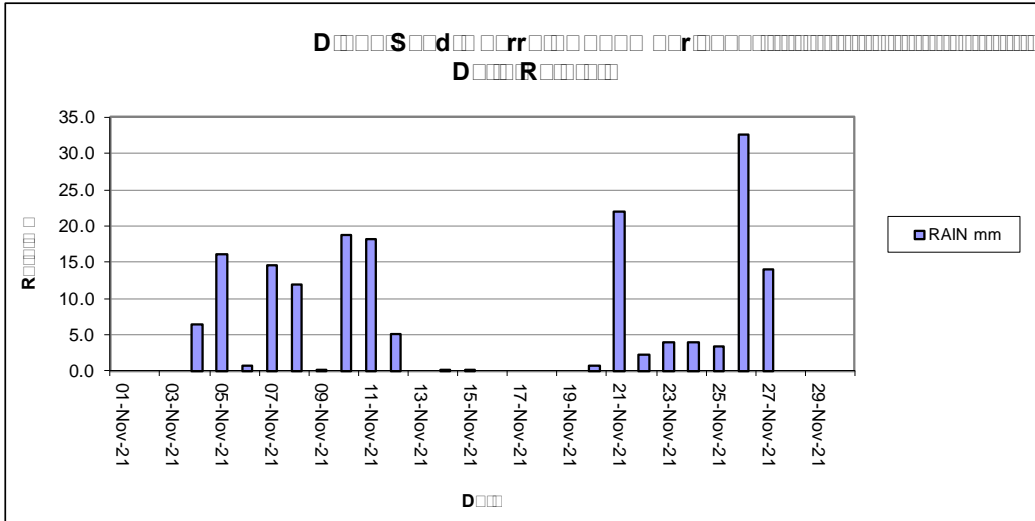
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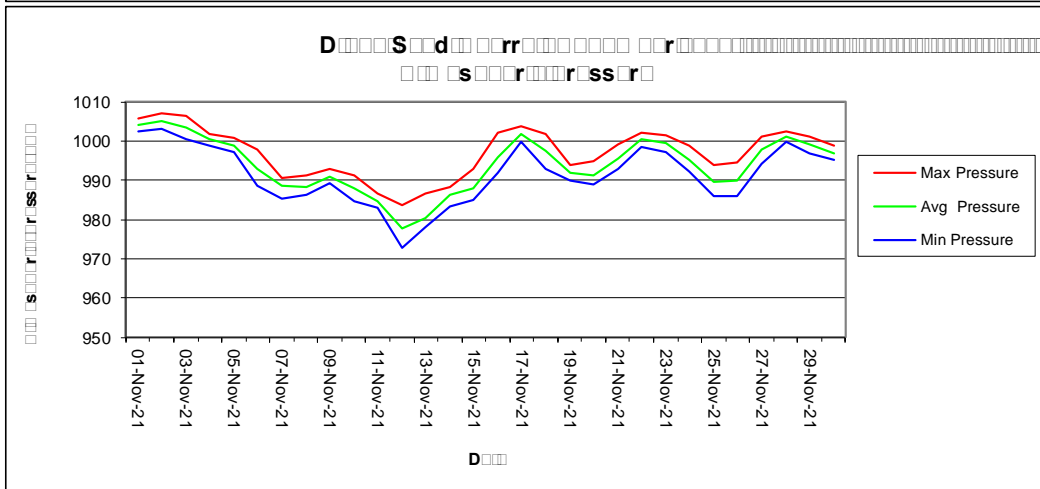
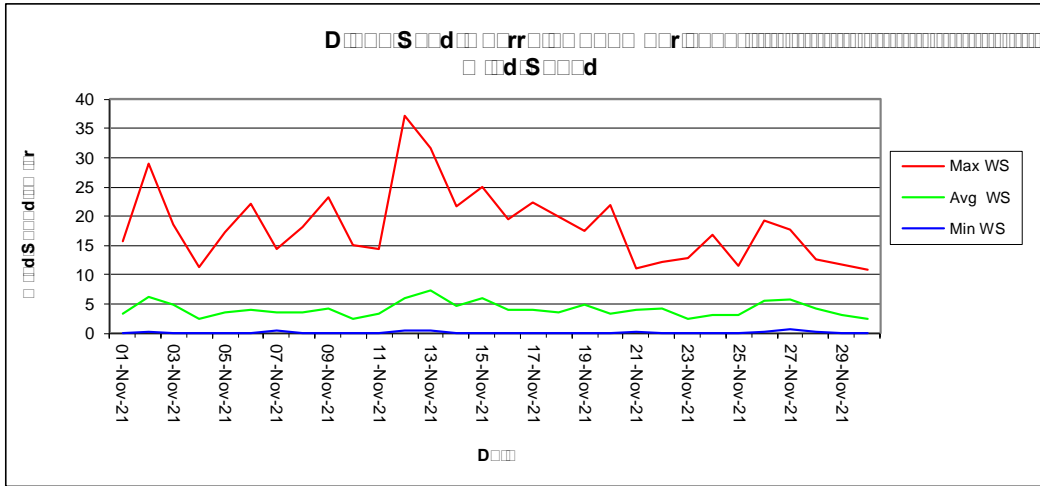
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Daily Rainfall, Temperature and Relative Humidity Charts

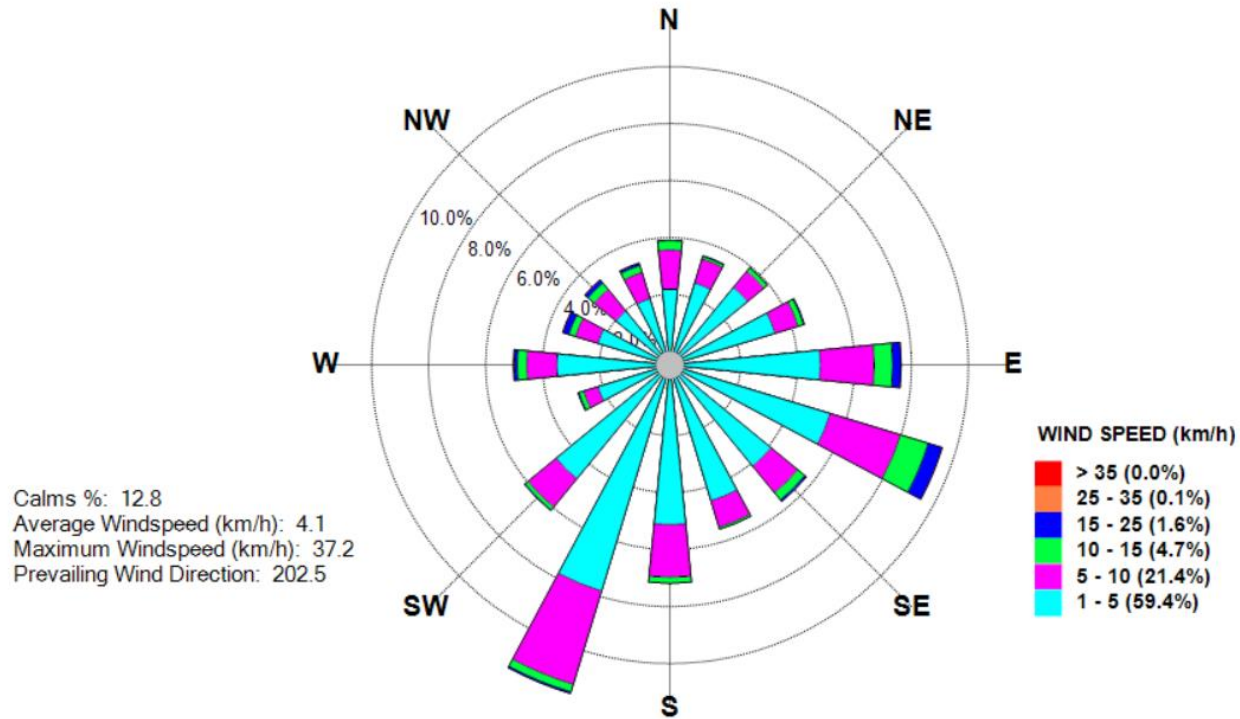


Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose NOVEMBER 2021





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Colin Davies BSc MEIA CENVP  
 Environmental Scientist  
 Date: 20 January 2022

CBased Environmental Pty Ltd  
 Unit 3, 2 Enterprise Crescent SINGLETON NSW 2330  
 ☎ (02) 65713334

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Approximately 100% of TEOM data was recovered for December 2021.



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- AS/NZS 3580.1.1 - “*Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment*”.

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□□□□□□□□ □□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□□ <b>d</b> □□	□□□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted on 9 December 2021 with the next calibration due to be completed in March 2022. The calibration certificate is provided in [redacted] (when required).

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Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for December 2021 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

□

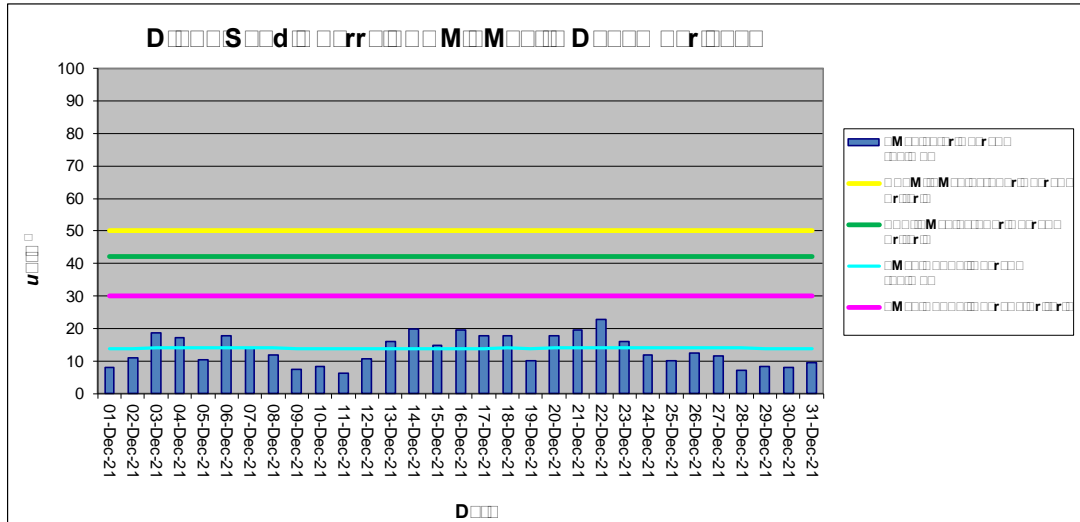
D	M <sub>10</sub> (µg/m <sup>3</sup> )	M <sub>10</sub> (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )	S (µg/m <sup>3</sup> )
1/12/2021	8.0	13.9	20.0	34.8
2/12/2021	11.0	13.9	27.5	34.7
3/12/2021	18.6	13.9	46.5	34.8
4/12/2021	17.3	13.9	43.3	34.9
5/12/2021	10.4	13.9	26.0	34.8
6/12/2021	17.7	13.9	44.3	34.9
7/12/2021	14.0	13.9	35.0	34.9
8/12/2021	11.9	13.9	29.8	34.8
9/12/2021	No Valid Data	13.9	No Valid Data	34.8
10/12/2021	No Valid Data	13.9	No Valid Data	34.8
11/12/2021	6.3	13.9	15.8	34.7
12/12/2021	10.7	13.9	26.8	34.7
13/12/2021	15.9	13.9	39.8	34.7
14/12/2021	19.7	13.9	49.3	34.8
15/12/2021	14.9	13.9	37.3	34.8
16/12/2021	19.4	14.0	48.5	34.9
17/12/2021	17.9	14.0	44.8	34.9
18/12/2021	17.9	14.0	44.8	35.0
19/12/2021	10.2	14.0	25.5	35.0
20/12/2021	17.8	14.0	44.5	35.0
21/12/2021	19.5	14.0	48.8	35.1
22/12/2021	22.7	14.1	56.8	35.2
23/12/2021	16.1	14.1	40.3	35.2
24/12/2021	11.7	14.1	29.3	35.2
25/12/2021	10.1	14.1	25.3	35.2
26/12/2021	12.5	14.1	31.3	35.1
27/12/2021	11.5	14.0	28.8	35.1
28/12/2021	7.0	14.0	17.5	35.0
29/12/2021	8.3	14.0	20.8	34.9
30/12/2021	7.9	13.9	19.8	34.8
31/12/2021	9.4	13.9	23.5	34.8

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

"No Valid Data" – regularly scheduled calibration conducted 9-10 December 2021

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 are highlighted in yellow



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria  
  
  
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The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in . Charts of meteorological parameters are presented in and . A windrose is provided in . This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in (when required).

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Meteorological Data Summary for December 2021

Date	M□□□□□	□□□□□□	M□□□□□	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/12/2021	17.8	20.5	24.7	0.2	0.2	3.6	12.5	65.3	95.6	100.0	993.9	995.2	996.7
2/12/2021	17.1	21.1	27.3	0.0	0.1	3.6	19.9	74.0	97.8	100.0	994.0	995.9	997.6
3/12/2021	17.3	21.0	31.3	5.8	0.0	4.8	26.3	100.0	100.0	100.0	993.1	994.7	996.4
4/12/2021	15.2	17.7	21.0	1.8	0.1	3.2	11.3	79.6	98.2	100.0	992.5	994.4	999.1
5/12/2021	13.4	15.0	16.9	2.6	0.1	3.7	20.0	97.5	99.7	100.0	998.7	1000.7	1002.5
6/12/2021	12.6	16.8	20.0	0.2	0.0	2.3	10.9	99.3	99.5	99.9	995.2	998.1	1001.9
7/12/2021	15.5	19.0	28.9	12.2	0.1	3.5	16.9	41.9	92.7	100.0	988.8	991.6	995.4
8/12/2021	15.1	16.8	18.8	12.4	0.0	3.5	22.3	93.5	99.4	100.0	989.6	992.7	994.9
9/12/2021	14.8	17.6	24.2	42.4	0.0	3.8	23.0	93.2	99.9	100.0	986.1	989.0	993.5
10/12/2021	11.0	15.2	19.7	11.2	0.4	3.9	17.9	99.7	100.0	100.0	985.5	987.5	991.9
11/12/2021	14.0	16.2	19.5	0.2	1.0	5.6	19.8	99.6	100.0	100.0	991.5	994.5	998.0
12/12/2021	11.8	16.6	23.0	0.0	0.5	5.2	18.8	81.5	99.9	100.0	994.8	996.7	998.5
13/12/2021	13.0	18.1	26.0	0.0	0.0	4.0	23.9	60.9	99.5	100.0	992.1	994.8	997.1
14/12/2021	13.8	19.3	26.5	0.0	0.0	3.6	18.1	99.7	100.0	100.0	992.7	994.0	995.6
15/12/2021	15.0	22.7	32.6	0.0	0.4	4.5	21.0	30.1	92.4	100.0	987.9	991.7	994.2
16/12/2021	17.1	19.9	25.3	0.0	0.1	4.3	23.8	73.7	99.4	100.0	990.1	993.1	997.8
17/12/2021	16.1	19.8	25.1	0.0	0.2	4.3	18.9	60.8	92.0	100.0	993.2	996.2	998.4
18/12/2021	17.1	26.4	35.9	0.0	0.2	5.8	22.9	39.9	96.2	100.0	988.8	992.5	995.8
19/12/2021	19.6	24.8	32.9	2.8	0.5	6.7	34.0	38.1	92.0	100.0	986.9	990.2	995.2
20/12/2021	19.4	24.0	30.1	0.2	0.2	4.5	20.2	53.6	79.8	100.0	990.2	992.0	994.0
21/12/2021	20.1	24.9	35.1	0.0	0.0	4.1	19.1	44.5	94.6	100.0	987.9	990.8	993.1
22/12/2021	20.2	22.5	28.8	0.0	0.2	4.7	24.1	59.9	89.3	100.0	989.5	991.2	993.3
23/12/2021	17.9	21.3	26.4	0.6	0.0	2.6	10.7	55.2	93.3	100.0	989.0	991.7	993.2
24/12/2021	18.8	21.9	27.0	0.0	0.0	4.6	22.0	60.9	91.0	100.0	991.4	993.5	995.4
25/12/2021	19.0	23.9	31.4	0.0	0.0	3.9	21.3	35.5	82.2	100.0	991.0	993.3	995.2
26/12/2021	17.4	21.7	27.8	0.2	0.0	3.7	18.7	85.9	99.3	100.0	991.9	993.6	996.0
27/12/2021	14.9	17.0	21.3	3.4	0.4	4.7	17.1	60.7	89.0	100.0	995.4	997.0	999.1
28/12/2021	13.1	15.5	20.0	12.6	0.1	4.5	26.4	65.1	95.1	100.0	997.7	998.8	1000.2
29/12/2021	12.5	17.1	22.6	0.0	0.2	3.7	13.3	53.5	76.4	100.0	995.9	997.7	999.4
30/12/2021	13.9	19.9	26.3	0.0	0.0	3.1	14.9	46.2	73.0	99.3	993.8	996.2	998.1
31/12/2021	16.2	21.6	27.8	0.0	0.1	4.6	24.6	38.7	71.5	99.2	992.4	994.5	996.3
<b>Monthly</b>	<b>11.0</b>	<b>19.9</b>	<b>35.9</b>	<b>108.8</b>	<b>0.0</b>	<b>4.2</b>	<b>34.0</b>	<b>30.1</b>	<b>93.2</b>	<b>100.0</b>	<b>985.5</b>	<b>994.0</b>	<b>1002.5</b>

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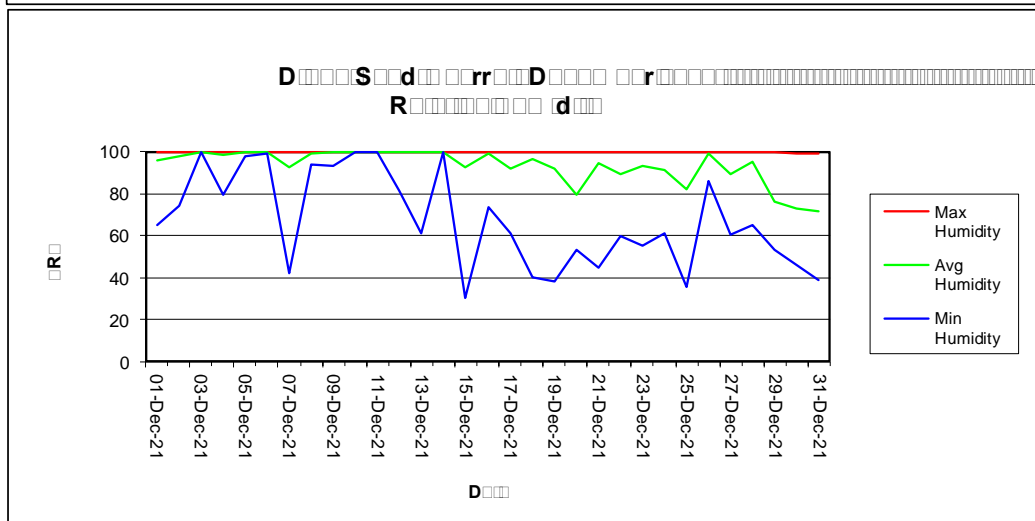
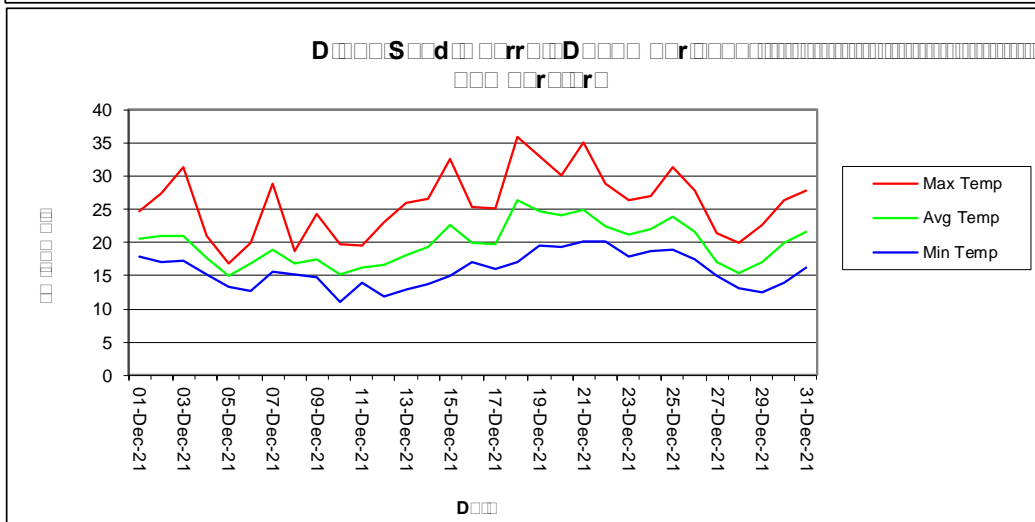
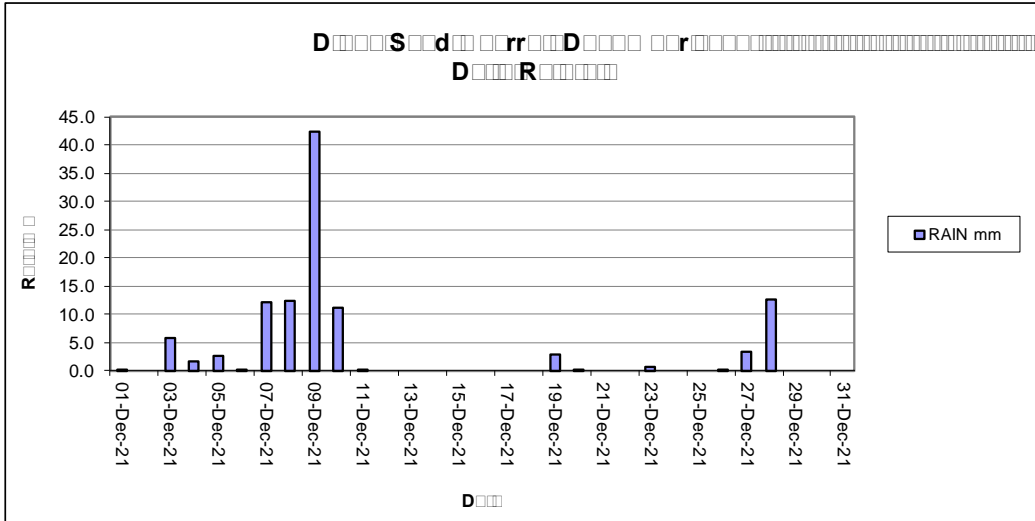
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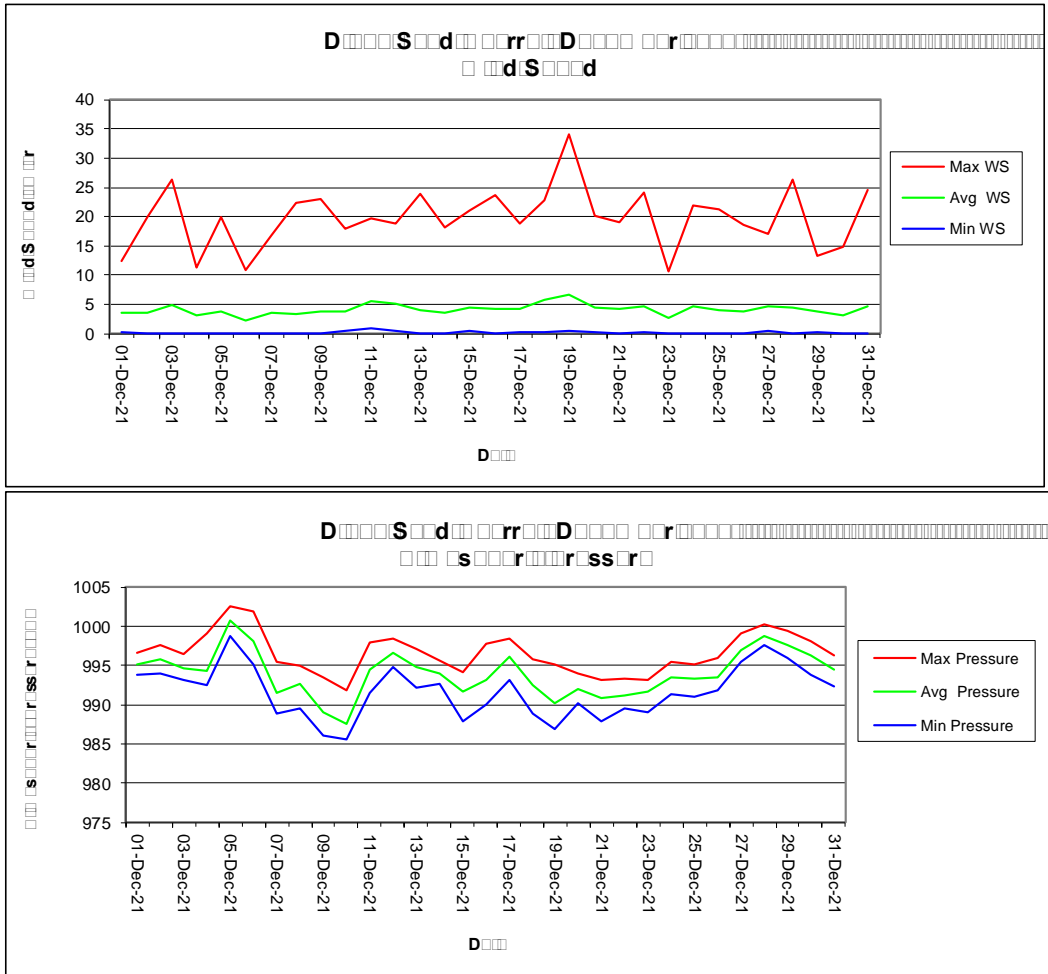
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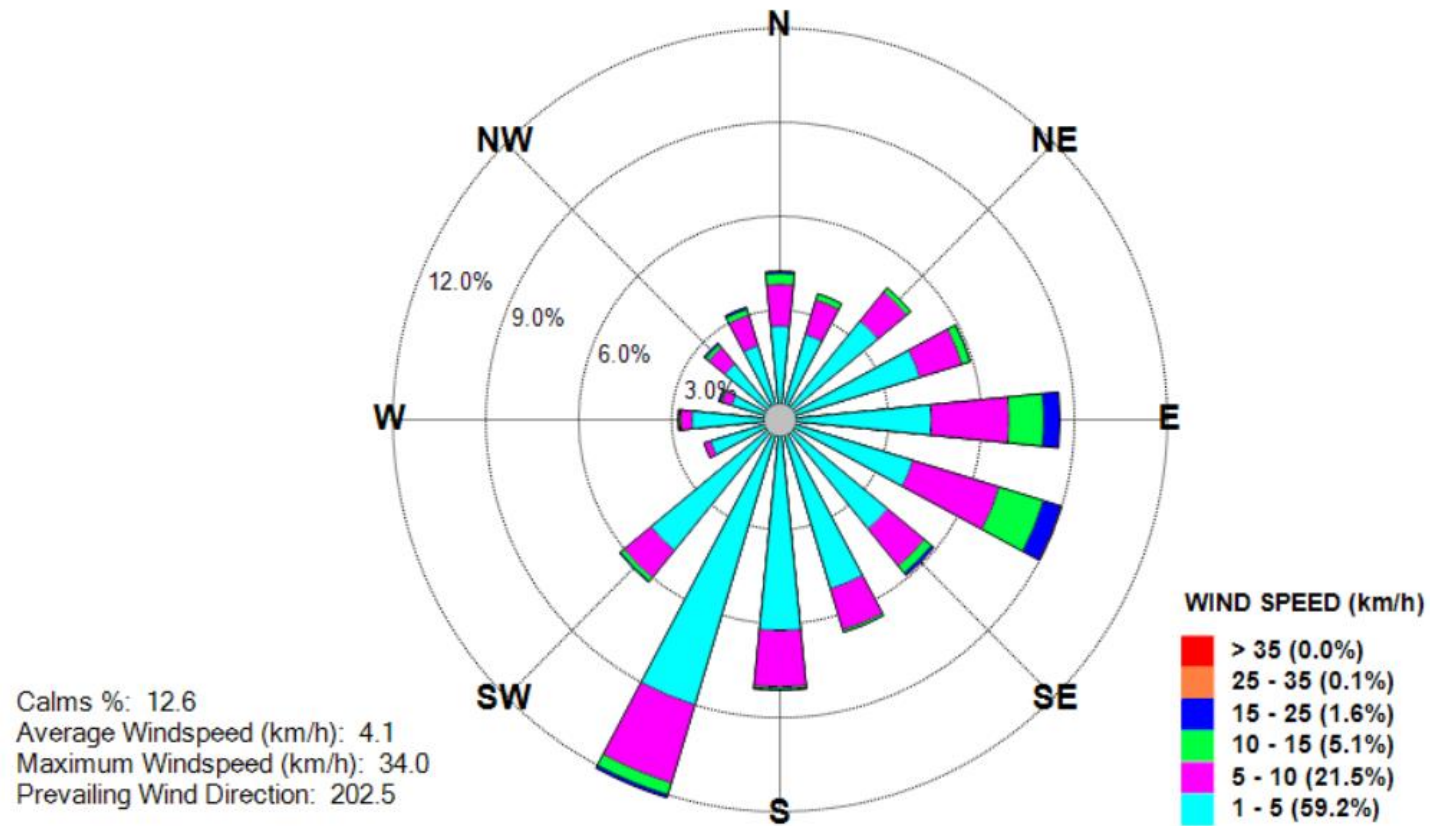
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose DECEMBER 2021







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*Colin Davies*

Colin Davies BSc MEIA CENVP  
 Environmental Scientist  
 Date: 23 February 2022

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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for January 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of valid meteorological data was recorded for January 2022.

Approximately 100% of TEOM data was recovered for January 2022.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser”; and
- AS/NZS 3580.1.1 - “Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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□□□□□□**R**□**s**□□□**s**□

□□□□□□**M**□□**M**□□□

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in □□□□□□ and a chart of the data is provided in □□□□r□□□.

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in December 2021 with the next calibration due to be completed in March 2022. The calibration certificate is provided in □□□□□d□□□□ (when required).

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□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for January 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

□

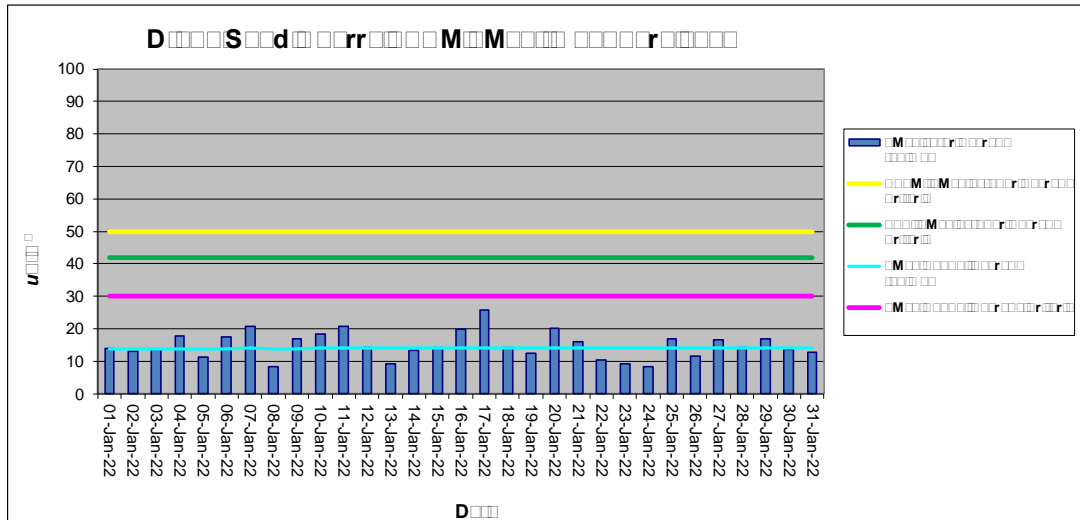
D□□□□	□M□□□□□□□□ □□□□□□□□□□ (µg/m <sup>3</sup> )□	□M□□□□□□□□□□ □□□□□□□□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□□□ □S□□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□□□ □S□□□□ (µg/m <sup>3</sup> )□
1/01/2022	13.9	13.9	34.8	34.8
2/01/2022	13.1	13.9	32.8	34.8
3/01/2022	13.8	13.9	34.5	34.8
4/01/2022	17.9	13.9	44.8	34.8
5/01/2022	11.4	13.9	28.5	34.8
6/01/2022	17.4	13.9	43.5	34.8
7/01/2022	20.8	14.0	52.0	34.9
8/01/2022	8.4	13.9	21.0	34.8
9/01/2022	17.0	14.0	42.5	34.9
10/01/2022	18.5	14.0	46.3	34.9
11/01/2022	20.8	14.0	52.0	35.0
12/01/2022	14.3	14.0	35.8	35.0
13/01/2022	9.3	14.0	23.3	35.0
14/01/2022	13.4	14.0	33.5	35.0
15/01/2022	14.3	14.0	35.8	35.0
16/01/2022	20.0	14.0	50.0	35.0
17/01/2022	25.7	14.1	64.3	35.2
18/01/2022	14.4	14.1	36.0	35.2
19/01/2022	12.4	14.1	31.0	35.2
20/01/2022	20.1	14.1	50.3	35.2
21/01/2022	15.9	14.1	39.8	35.3
22/01/2022	10.4	14.1	26.0	35.2
23/01/2022	9.2	14.1	23.0	35.2
24/01/2022	8.3	14.0	20.8	35.1
25/01/2022	17.0	14.1	42.5	35.1
26/01/2022	11.6	14.0	29.0	35.1
27/01/2022	16.5	14.1	41.3	35.1
28/01/2022	14.4	14.1	36.0	35.1
29/01/2022	16.9	14.1	42.3	35.2
30/01/2022	13.8	14.1	34.5	35.2
31/01/2022	12.9	14.1	32.3	35.2

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

“No Valid Data” – when displayed, indicates when no valid 1 hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted]s and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in February 2022. The screening and system check certificates are provided in [redacted]d [redacted] (when required).

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Meteorological Data Summary for January 2022

Date	M□□□□□	□□□□□□	M□□□□□	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/01/2022	17.6	21.9	27.2	0.0	0.0	3.4	14.3	51.1	78.5	99.2	989.8	992.4	994.7
2/01/2022	17.9	23.6	30.2	0.0	0.1	4.5	15.4	46.5	73.9	99.4	987.1	989.5	991.5
3/01/2022	18.5	22.4	27.7	0.0	0.0	3.7	16.6	44.6	77.3	99.8	988.7	990.2	991.6
4/01/2022	17.8	21.8	27.1	0.0	0.2	4.1	21.6	52.1	81.8	100.0	989.8	991.0	992.5
5/01/2022	18.3	20.9	24.6	10.0	0.0	4.2	15.9	84.0	98.8	100.0	990.2	991.4	992.5
6/01/2022	20.7	22.3	25.4	7.8	0.1	5.8	22.4	78.7	93.9	100.0	991.1	992.8	994.5
7/01/2022	18.9	23.4	27.3	7.2	0.4	6.0	34.2	74.4	91.8	100.0	988.9	992.0	994.2
8/01/2022	18.6	22.7	31.3	34.6	0.5	5.0	25.4	52.5	85.8	100.0	988.1	990.3	994.4
9/01/2022	19.3	21.1	23.6	1.6	0.1	2.4	8.0	86.1	98.1	100.0	993.0	995.8	997.6
10/01/2022	20.8	23.2	28.2	0.4	0.0	3.9	21.0	72.9	93.1	100.0	996.4	998.0	999.5
11/01/2022	20.9	23.0	27.4	1.8	0.0	2.6	10.3	68.9	94.4	100.0	996.0	998.3	1000.2
12/01/2022	18.0	21.6	27.3	2.2	0.2	3.3	16.9	51.0	87.8	100.0	996.8	998.5	999.9
13/01/2022	17.8	21.0	26.0	0.4	0.1	3.0	11.8	61.1	91.5	100.0	994.3	997.0	999.5
14/01/2022	18.8	22.7	28.4	0.0	0.0	3.0	15.2	57.0	88.3	100.0	987.5	990.3	994.7
15/01/2022	19.3	24.0	31.5	14.6	0.0	3.5	16.2	45.2	82.0	100.0	982.2	985.4	987.5
16/01/2022	19.1	22.9	29.3	0.0	0.1	3.4	15.8	63.7	90.1	100.0	984.6	988.2	991.8
17/01/2022	20.3	24.3	31.5	0.0	0.1	3.1	12.4	45.9	87.9	100.0	988.5	990.5	992.0
18/01/2022	19.0	22.0	24.2	6.4	0.0	2.5	8.8	78.2	96.5	100.0	989.7	992.6	995.0
19/01/2022	16.3	18.0	20.7	11.8	0.5	4.7	17.3	85.9	98.8	100.0	994.3	999.1	1004.3
20/01/2022	16.1	19.0	23.3	0.2	0.5	3.6	12.0	50.0	76.0	99.7	1003.2	1006.2	1008.6
21/01/2022	15.2	18.6	23.1	3.4	0.1	3.1	21.6	51.5	88.7	100.0	1005.9	1007.1	1008.5
22/01/2022	16.1	19.3	24.3	0.2	0.3	3.7	20.7	49.3	85.6	100.0	1000.1	1002.6	1006.0
23/01/2022	15.7	19.3	24.8	2.0	0.1	2.4	11.8	66.0	92.8	100.0	994.4	997.0	1000.0
24/01/2022	17.4	20.1	25.5	2.6	0.0	3.2	16.6	59.5	91.4	100.0	990.7	993.2	995.5
25/01/2022	18.3	21.2	25.9	0.0	0.0	3.9	20.1	65.0	84.5	99.5	989.3	991.2	992.5
26/01/2022	17.6	21.4	26.1	0.0	0.0	4.0	26.7	45.9	77.4	99.3	991.5	993.4	995.4
27/01/2022	17.2	21.4	25.3	0.0	0.0	3.7	18.4	51.2	75.8	95.5	993.6	995.1	996.8
28/01/2022	18.7	23.5	29.1	0.0	0.0	4.1	15.7	62.6	96.6	100.0	992.5	995.0	997.3
29/01/2022	19.2	23.7	30.7	0.0	0.2	5.3	16.5	49.2	83.8	99.8	992.4	994.7	996.3
30/01/2022	20.4	23.4	27.5	0.0	0.1	5.7	16.9	57.2	82.8	99.4	991.4	994.1	996.0
31/01/2022	19.4	23.6	30.2	0.0	0.0	3.6	22.4	48.4	84.4	99.6	985.0	989.0	993.2
<b>Monthly</b>	<b>15.2</b>	<b>21.8</b>	<b>31.5</b>	<b>107.2</b>	<b>0.0</b>	<b>3.8</b>	<b>34.2</b>	<b>44.6</b>	<b>87.4</b>	<b>100.0</b>	<b>982.2</b>	<b>994.3</b>	<b>1008.6</b>

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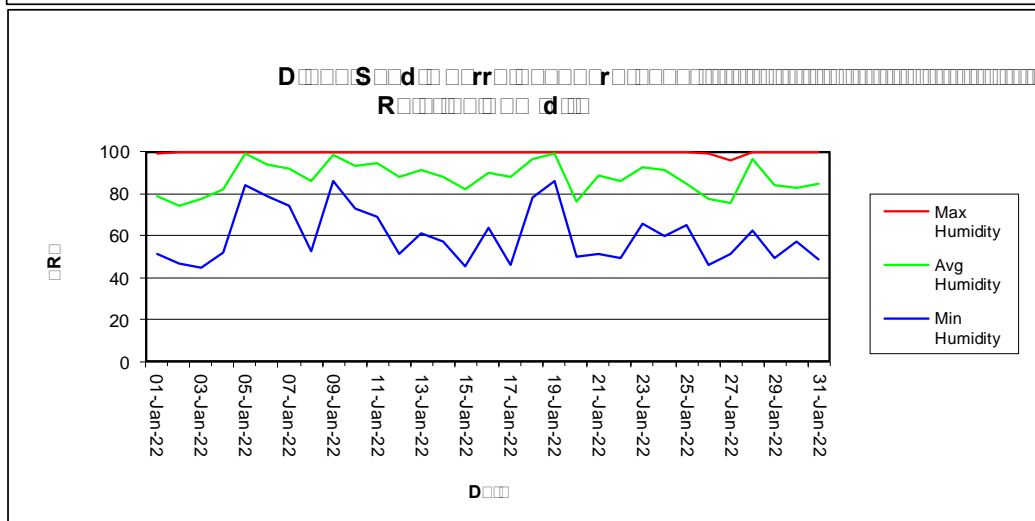
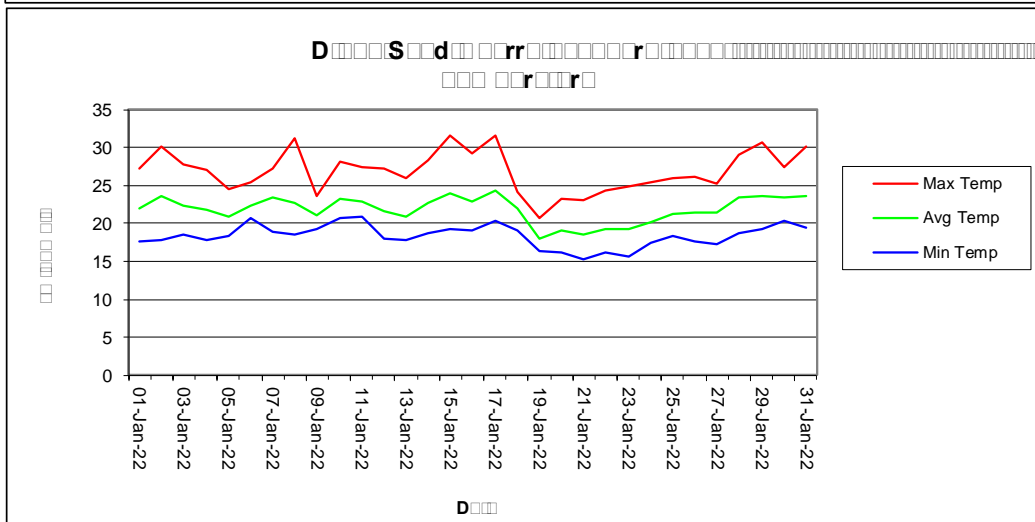
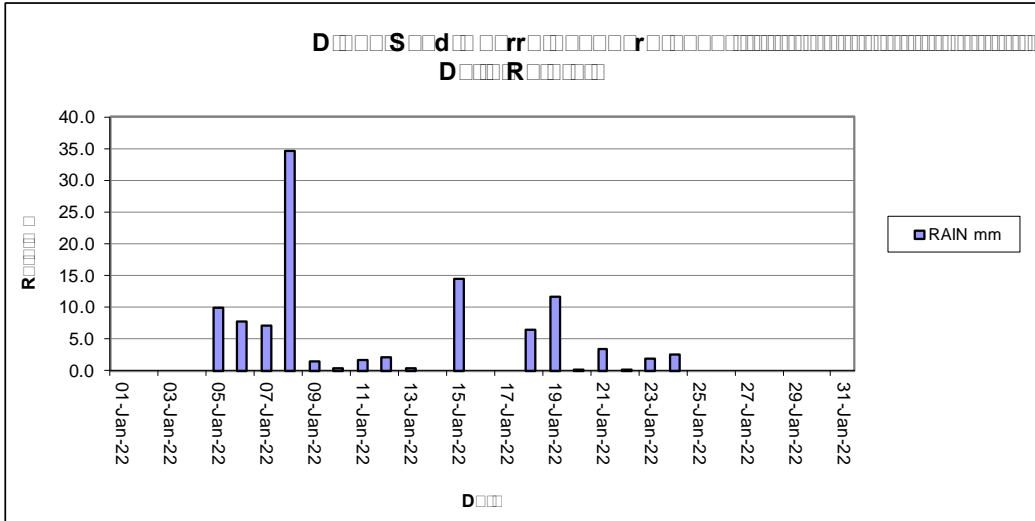
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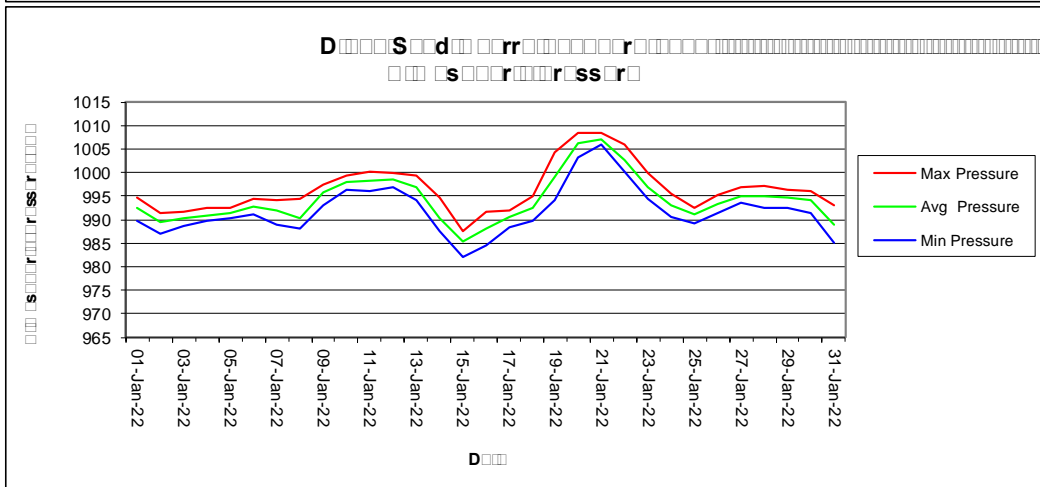
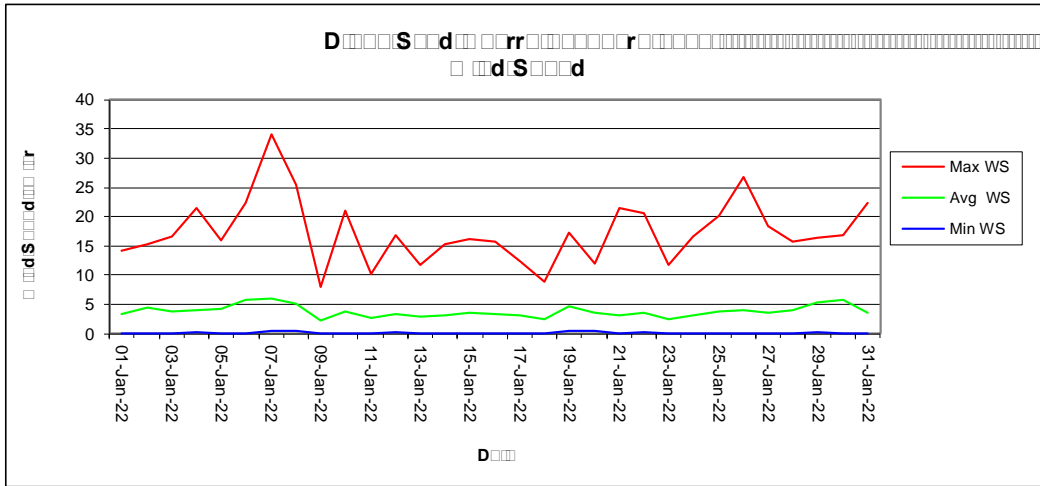
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Daily Rainfall, Temperature and Relative Humidity Charts

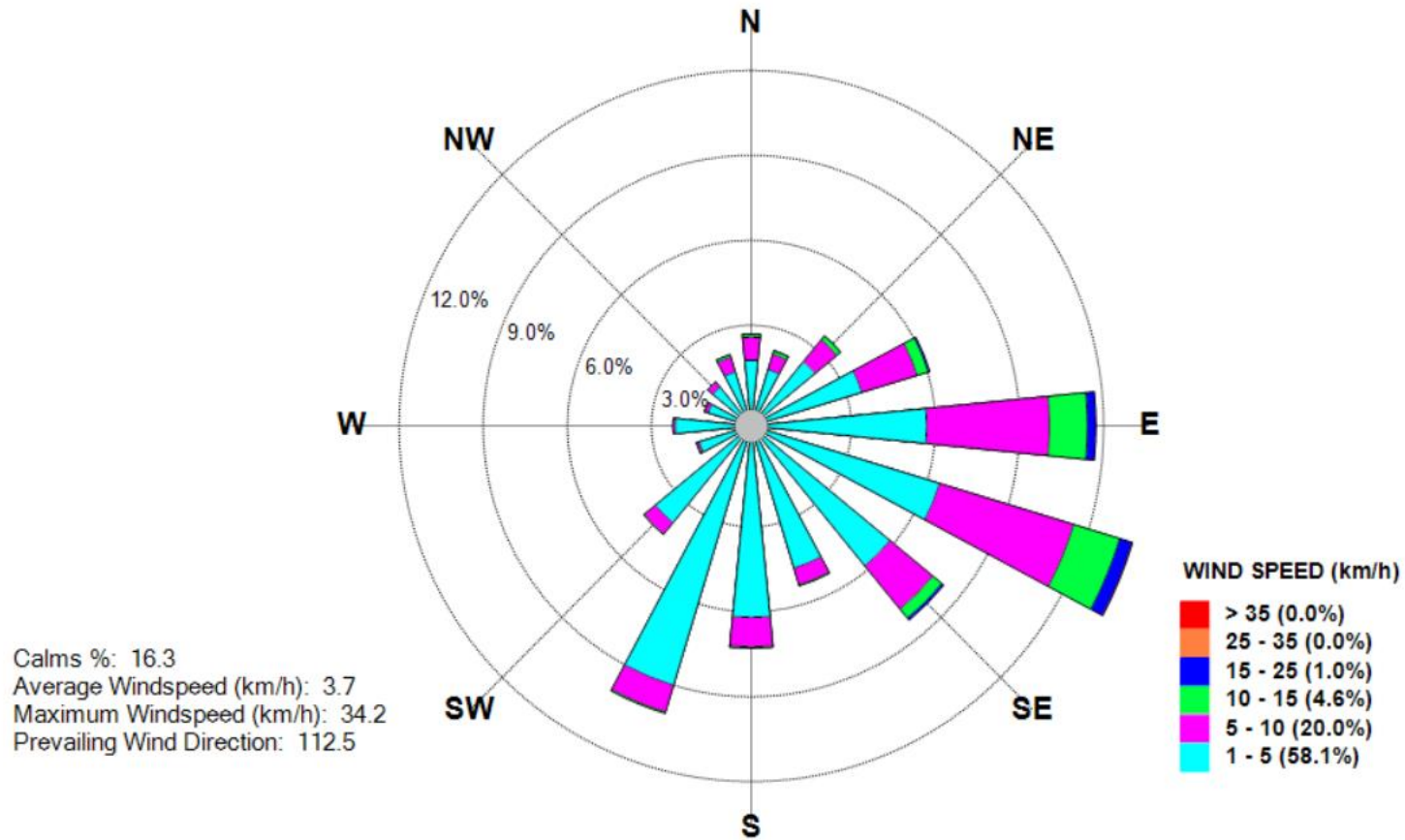




Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose JANUARY 2022





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Colin Davies BSc MEIA CENVP  
Environmental Scientist  
Date: 31 March 2022

CBased Environmental Pty Ltd  
Unit 3, 2 Enterprise Crescent SINGLETON NSW 2330  
☎ (02) 65713334

□□□□ **S**□□ □ **r**□□

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for February 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results.

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 100% of valid meteorological data was recorded for February 2022.

Approximately 100% of TEOM data was recovered for February 2022.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “*Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser*”; and
- AS/NZS 3580.1.1 - “*Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment*”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b>	<b>S</b> □□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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Results

Monitoring

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in December 2021 with the next calibration due to be completed in March 2022. The calibration certificate is provided in [redacted] (when required).

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□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for February 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

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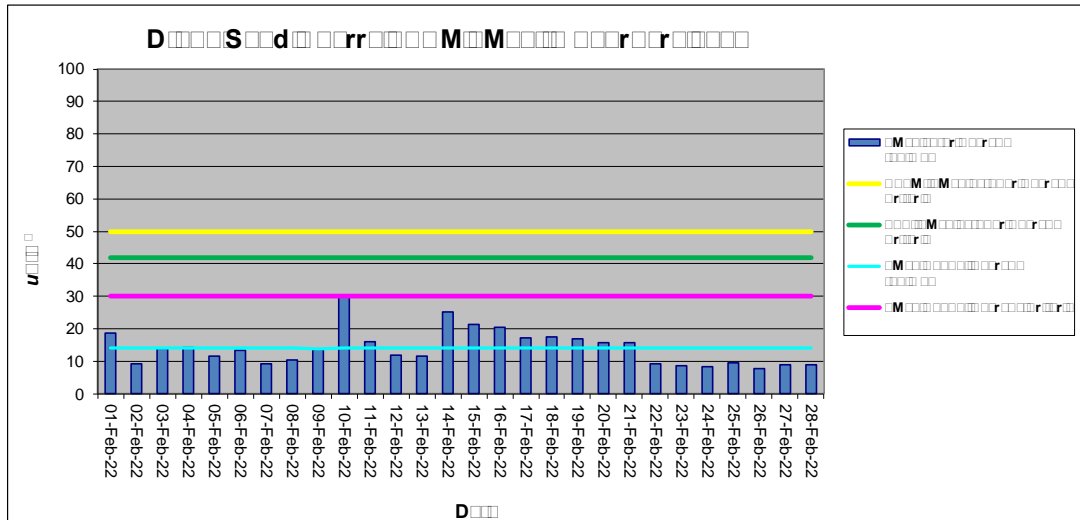
D□□□□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□□□□□□ □□□□□□ □S□□□ (µg/m <sup>3</sup> )□	□□□□□□ □□□□□□ □S□□□ (µg/m <sup>3</sup> )□
1/02/2022	18.8	14.1	47.0	35.2
2/02/2022	9.1	14.1	22.8	35.1
3/02/2022	14.1	14.1	35.3	35.2
4/02/2022	14.4	14.1	36.0	35.2
5/02/2022	11.5	14.0	28.8	35.1
6/02/2022	13.4	14.0	33.5	35.1
7/02/2022	9.2	14.0	23.1	35.1
8/02/2022	10.5	14.0	26.3	35.0
9/02/2022	13.7	14.0	34.3	35.0
10/02/2022	30.4	14.1	75.9	35.2
11/02/2022	15.9	14.1	39.8	35.2
12/02/2022	11.8	14.1	29.5	35.2
13/02/2022	11.7	14.1	29.3	35.2
14/02/2022	25.2	14.1	63.0	35.3
15/02/2022	21.4	14.1	53.5	35.4
16/02/2022	20.6	14.2	51.5	35.4
17/02/2022	17.2	14.2	43.0	35.5
18/02/2022	17.4	14.2	43.5	35.5
19/02/2022	16.8	14.2	42.0	35.5
20/02/2022	15.6	14.2	39.0	35.6
21/02/2022	15.8	14.2	39.5	35.6
22/02/2022	9.1	14.2	22.8	35.5
23/02/2022	8.5	14.2	21.3	35.5
24/02/2022	8.2	14.2	20.5	35.4
25/02/2022	9.5	14.1	23.8	35.3
26/02/2022	7.7	14.1	19.3	35.3
27/02/2022	8.8	14.1	22.0	35.2
28/02/2022	8.9	14.1	22.3	35.2

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

"No Valid Data" – when displayed, indicates when no valid 1 hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

M...D...

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted in March 2021 and is next due in March 2022. The screening and system check certificates are provided in [redacted] (when required).



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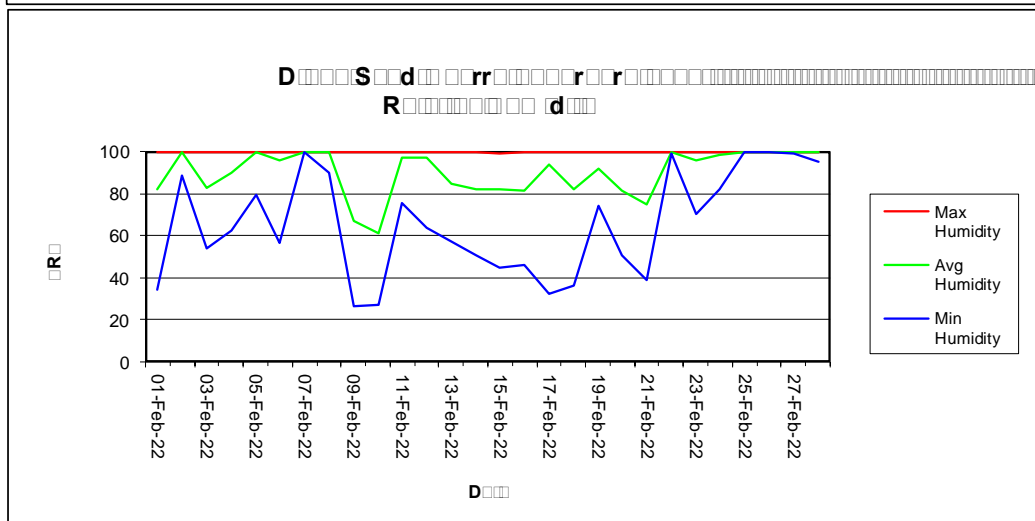
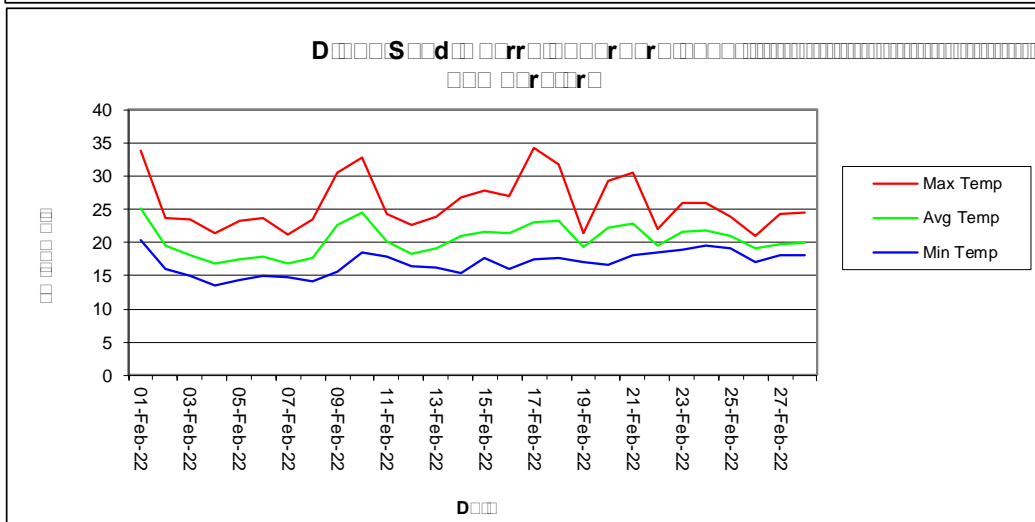
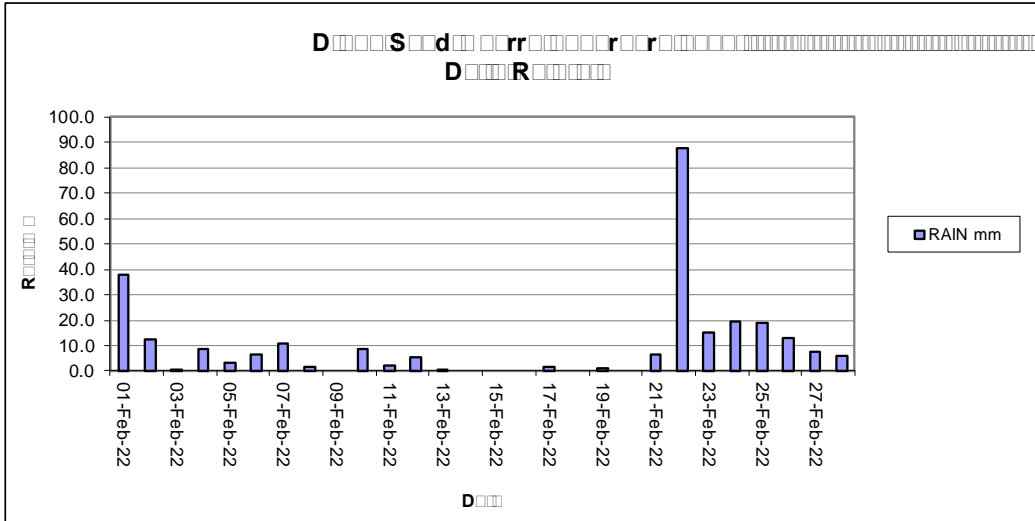
Meteorological Data Summary for February 2022

Date	M□□□□□	□□□□□□	M□□□□□	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/02/2022	20.4	25.0	33.8	37.8	0.3	3.0	10.5	34.5	82.3	100.0	979.1	982.7	986.5
2/02/2022	16.0	19.6	23.7	12.4	0.3	3.6	11.8	88.5	99.4	100.0	981.5	985.3	989.2
3/02/2022	14.9	18.1	23.4	0.2	0.4	4.5	19.9	54.2	82.7	100.0	986.7	988.2	991.5
4/02/2022	13.6	16.8	21.3	8.4	0.5	4.9	21.1	62.6	89.7	100.0	991.6	995.0	998.6
5/02/2022	14.3	17.5	23.3	3.2	0.1	4.0	21.9	79.3	99.5	100.0	997.2	998.7	1000.3
6/02/2022	14.9	17.9	23.7	6.6	0.4	3.3	19.1	56.3	95.6	100.0	999.8	1001.8	1003.3
7/02/2022	14.8	16.9	21.2	10.6	0.0	3.9	14.0	99.9	100.0	100.0	999.1	1001.0	1002.7
8/02/2022	14.1	17.6	23.5	1.6	0.1	3.9	15.1	89.9	99.4	100.0	992.2	995.6	999.2
9/02/2022	15.7	22.6	30.5	0.0	0.0	3.7	15.3	26.2	67.2	100.0	989.7	991.4	993.2
10/02/2022	18.6	24.4	32.7	8.4	0.2	3.6	44.2	27.0	61.3	100.0	990.5	992.1	996.0
11/02/2022	17.8	20.1	24.2	2.2	0.2	3.7	12.3	75.3	97.0	100.0	993.9	996.2	997.8
12/02/2022	16.4	18.2	22.7	5.4	0.1	3.8	19.8	63.6	97.1	100.0	995.9	998.2	1000.9
13/02/2022	16.2	19.1	23.8	0.4	0.0	3.7	14.3	56.9	84.7	100.0	1000.0	1001.6	1003.3
14/02/2022	15.4	21.0	26.7	0.0	0.1	3.7	16.0	50.8	82.2	100.0	1002.3	1003.7	1005.2
15/02/2022	17.6	21.6	27.9	0.0	0.2	4.3	20.0	44.9	82.1	99.7	1000.6	1002.7	1004.6
16/02/2022	16.1	21.3	26.9	0.0	0.0	3.9	11.9	46.3	81.4	100.0	993.7	997.8	1001.3
17/02/2022	17.4	23.2	34.2	1.8	0.3	4.4	15.8	32.5	94.1	100.0	986.2	990.1	994.1
18/02/2022	17.7	23.2	31.7	0.0	0.0	4.2	21.0	36.4	81.8	100.0	988.3	991.0	997.0
19/02/2022	17.1	19.4	21.4	0.8	0.0	3.0	10.6	74.2	91.8	100.0	997.0	998.7	1001.2
20/02/2022	16.6	22.2	29.2	0.0	0.0	3.8	19.0	50.8	81.7	100.0	986.3	991.2	997.1
21/02/2022	18.0	22.9	30.6	6.4	0.0	5.5	24.6	38.9	74.7	100.0	985.9	989.1	994.5
22/02/2022	18.4	19.5	22.1	87.8	0.0	2.5	10.3	99.3	100.0	100.0	993.4	996.5	998.8
23/02/2022	18.9	21.6	25.9	15.0	0.1	4.1	17.4	70.0	95.9	100.0	996.7	998.2	999.7
24/02/2022	19.6	21.9	25.9	19.4	0.2	3.9	13.3	81.9	98.6	100.0	995.4	997.0	998.6
25/02/2022	19.2	21.0	23.8	19.2	0.0	2.1	13.8	99.4	100.0	100.0	993.3	994.9	996.2
26/02/2022	17.1	19.1	20.9	12.8	0.1	2.8	17.1	100.0	100.0	100.0	994.0	995.1	996.3
27/02/2022	18.0	19.7	24.2	7.6	0.0	2.5	18.4	99.2	100.0	100.0	992.6	994.3	995.8
28/02/2022	18.0	20.0	24.4	5.8	0.0	3.1	17.0	95.3	99.9	100.0	992.5	993.8	995.0
<b>Monthly</b>	<b>13.6</b>	<b>20.4</b>	<b>34.2</b>	<b>273.8</b>	<b>0.0</b>	<b>3.7</b>	<b>44.2</b>	<b>26.2</b>	<b>90.0</b>	<b>100.0</b>	<b>979.1</b>	<b>995.1</b>	<b>1005.2</b>

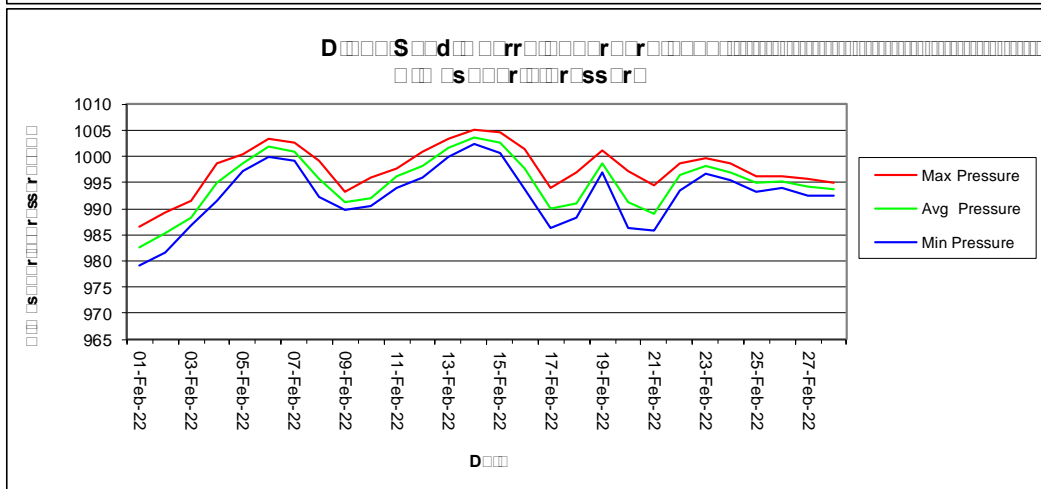
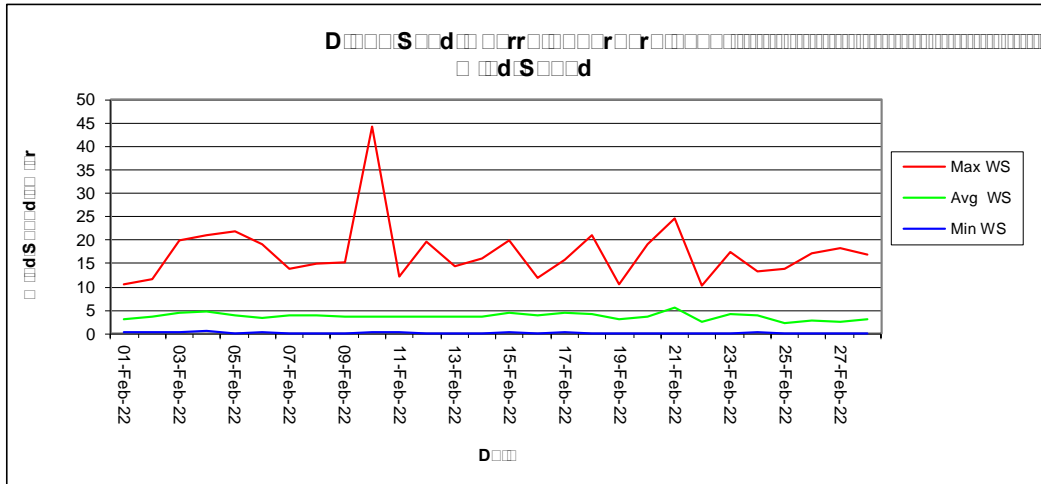
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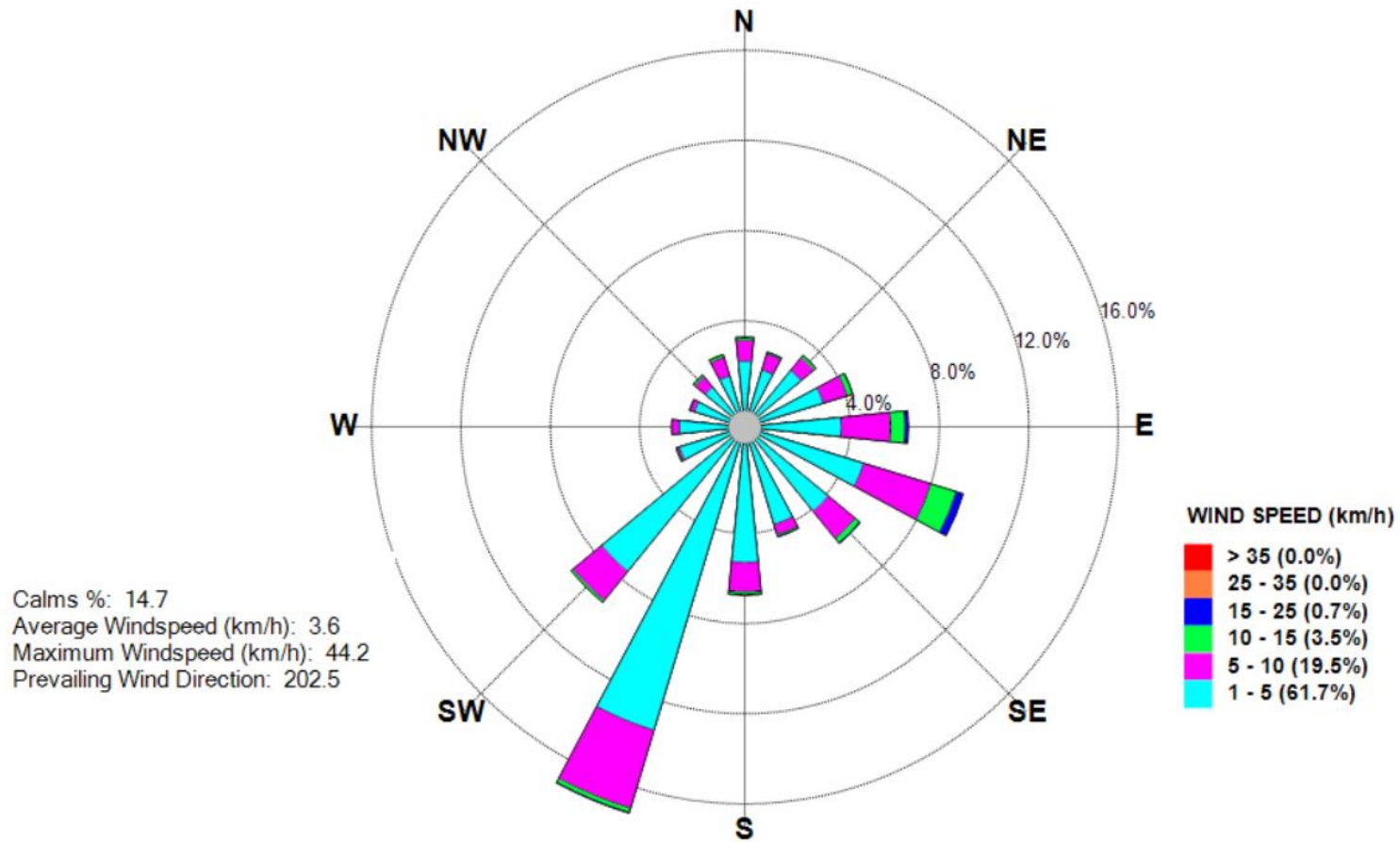
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose FEBRUARY 2022





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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for March 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 72% of valid meteorological data was recorded for March 2022. Loss of valid data was due to a faulty humidity sensor and a power outage occurring 9-10 March 2022.

Approximately 100% of TEOM data was recovered for February 2022.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “*Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser*”; and
- AS/NZS 3580.1.1 - “*Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment*”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> □ <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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**Results**

**Monitoring**

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [Table 1](#) and a chart of the data is provided in [Figure 1](#).

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted on 16 March 2022 with the next calibration due to be completed in June 2022. The calibration certificate is provided in [Table 2](#) (when required).

- [Table 2](#)
- [Table 3](#)



□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for March 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

□

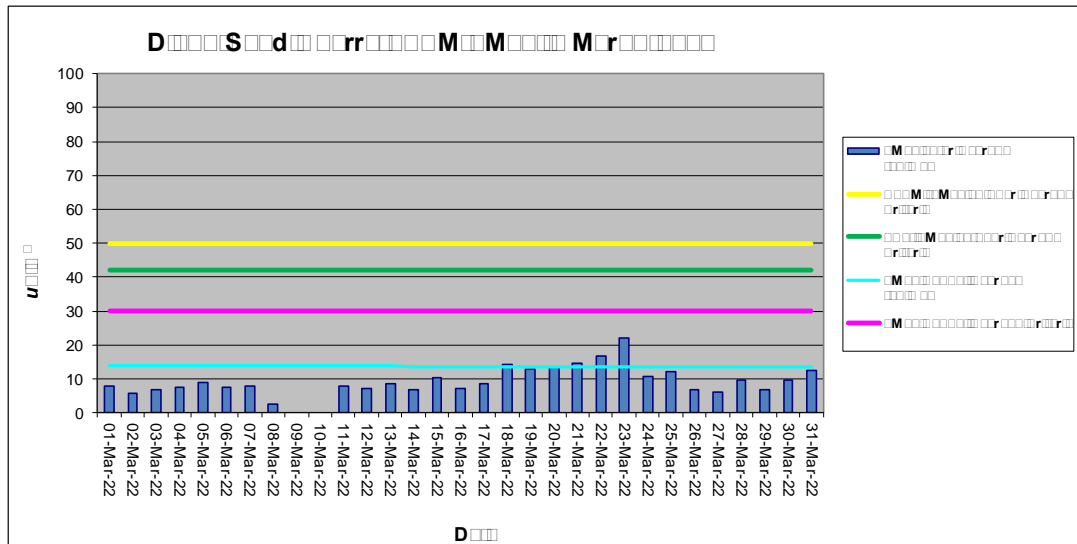
D□□□□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□M□□□□ □□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□S□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□
1/03/2022	7.9	14.0	19.8	35.1
2/03/2022	5.6	14.0	14.0	35.0
3/03/2022	7.0	14.0	17.5	34.9
4/03/2022	7.6	14.0	19.0	34.9
5/03/2022	9.0	13.9	22.5	34.8
6/03/2022	7.4	13.9	18.5	34.8
7/03/2022	7.8	13.9	19.5	34.7
8/03/2022	2.7	13.8	6.9	34.6
9/03/2022	No Valid Data	13.8	No Valid Data	34.6
10/03/2022	No Valid Data	13.8	No Valid Data	34.6
11/03/2022	7.9	13.8	19.9	34.5
12/03/2022	7.3	13.8	18.3	34.5
13/03/2022	8.5	13.8	21.3	34.4
14/03/2022	6.7	13.7	16.8	34.3
15/03/2022	10.3	13.7	25.8	34.3
16/03/2022	7.1	13.7	17.6	34.2
17/03/2022	8.6	13.7	21.5	34.2
18/03/2022	14.3	13.7	35.8	34.2
19/03/2022	13.0	13.7	32.5	34.2
20/03/2022	13.4	13.7	33.5	34.2
21/03/2022	14.7	13.7	36.8	34.2
22/03/2022	16.9	13.7	42.3	34.2
23/03/2022	22.0	13.7	55.0	34.3
24/03/2022	10.8	13.7	27.0	34.3
25/03/2022	12.0	13.7	30.0	34.3
26/03/2022	6.9	13.7	17.3	34.2
27/03/2022	6.0	13.7	15.0	34.1
28/03/2022	9.6	13.6	24.0	34.1
29/03/2022	6.7	13.6	16.8	34.0
30/03/2022	9.5	13.6	23.8	34.0
31/03/2022	12.5	13.6	31.3	34.0

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

“No Valid Data” – when displayed, indicates when no valid 1 hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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M...r...D...

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted on 16 March 2022 and is next due in March 2023. The screening and system check certificates are provided in [redacted] (when required).

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Meteorological Data Summary for March 2022

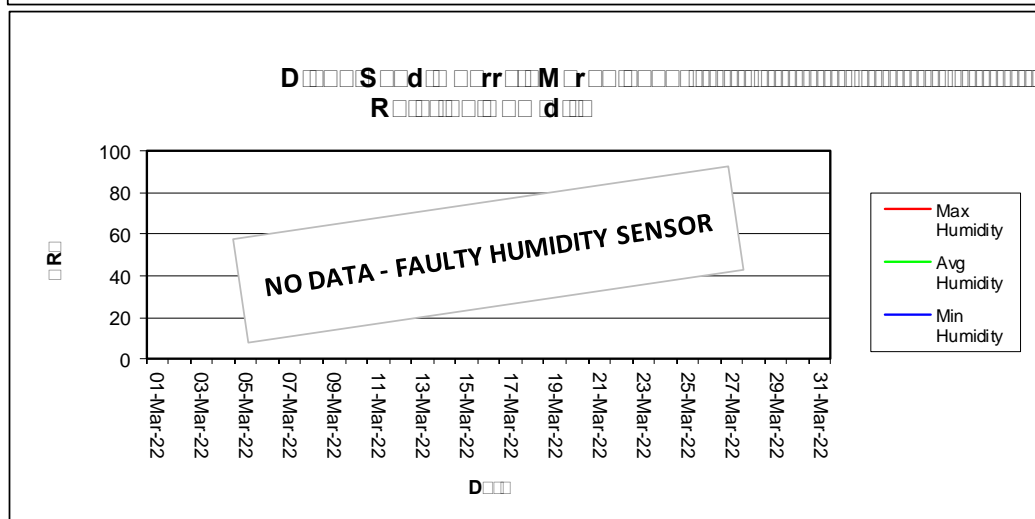
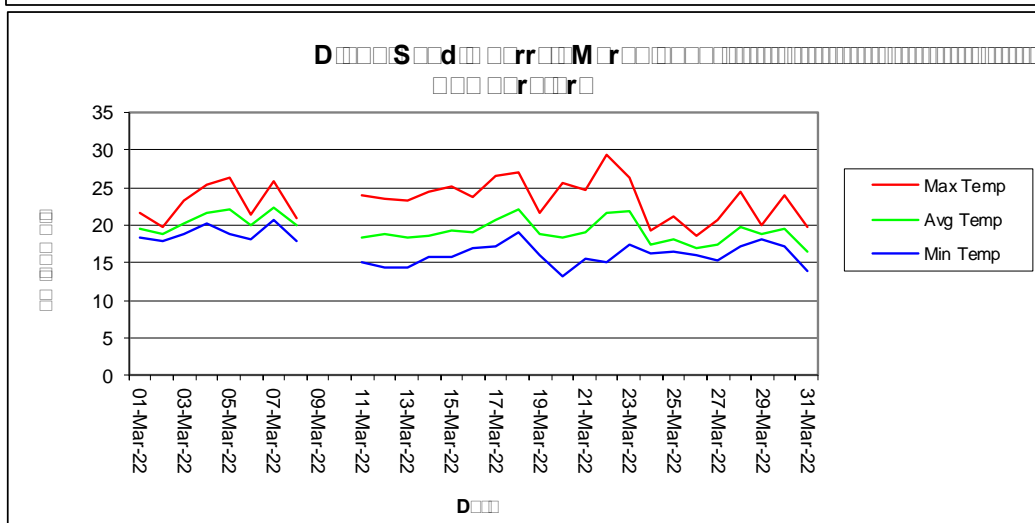
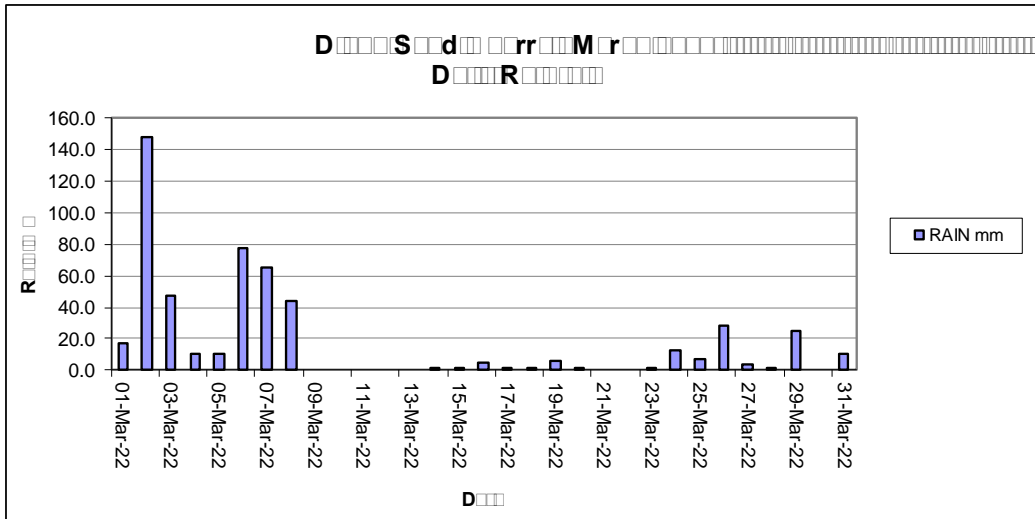
Date	M □□□□ □ □□□□ □	M □□□□ □ □□□□ □	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure	
1/03/2022	18.4	19.5	21.5	16.8	0.3	5.1	23.7				990.5	991.9	993.6
2/03/2022	17.9	18.8	19.8	147.8	0.0	3.3	18.0				988.3	990.0	991.9
3/03/2022	18.9	20.2	23.2	46.8	0.1	3.9	16.4				988.4	989.6	991.7
4/03/2022	20.3	21.7	25.4	10.4	0.2	2.6	10.7				990.0	991.0	992.1
5/03/2022	18.7	22.1	26.2	10.4	0.1	3.2	20.9				983.6	987.2	990.6
6/03/2022	18.0	19.9	21.4	77.2	0.1	4.5	14.9				983.8	986.7	989.4
7/03/2022	20.6	22.4	25.9	65.4	0.2	4.2	13.7				986.9	987.9	989.3
8/03/2022	17.9	20.0	20.8	44.2	0.0	5.4	25.9				984.6	985.8	987.7
9/03/2022													
10/03/2022													
11/03/2022	15.1	18.3	23.9	0.0	0.1	4.2	22.5				998.2	999.5	1001.6
12/03/2022	14.3	18.8	23.4	0.0	0.0	3.0	19.2				1000.1	1002.1	1004.2
13/03/2022	14.3	18.4	23.2	0.0	0.0	2.8	17.9				1001.5	1003.0	1005.0
14/03/2022	15.8	18.5	24.4	0.4	0.0	2.1	12.8				1000.5	1001.7	1002.8
15/03/2022	15.7	19.2	25.2	0.2	0.0	3.3	17.4				1000.2	1001.5	1003.3
16/03/2022	16.8	19.1	23.8	4.4	0.0	3.4	18.0				997.8	999.8	1001.5
17/03/2022	17.1	20.6	26.5	0.2	0.1	2.6	14.9				994.7	997.3	999.7
18/03/2022	19.1	22.0	26.9	0.6	0.0	2.8	15.6				995.2	996.6	998.6
19/03/2022	15.9	18.7	21.7	6.2	0.1	2.8	12.8				996.7	998.9	1000.4
20/03/2022	13.2	18.3	25.5	0.2	0.0	2.8	14.0				995.1	997.1	999.8
21/03/2022	15.4	19.0	24.6	0.0	0.2	3.3	15.9				994.5	996.4	998.2
22/03/2022	15.1	21.6	29.3	0.0	0.0	3.6	14.3				987.7	991.6	995.4
23/03/2022	17.4	21.9	26.2	0.8	0.3	4.3	16.6				985.7	990.1	995.8
24/03/2022	16.3	17.3	19.2	13.2	0.0	2.3	9.9				994.6	996.0	997.8
25/03/2022	16.5	18.1	21.1	7.0	0.1	2.2	10.9				996.2	998.6	1001.4
26/03/2022	16.0	16.8	18.5	28.0	0.0	3.5	12.6				999.6	1000.8	1002.4
27/03/2022	15.3	17.3	20.6	4.2	0.2	2.5	9.8				995.5	998.1	1000.7
28/03/2022	17.1	19.8	24.5	0.8	0.1	2.3	11.0				991.3	993.3	995.5
29/03/2022	18.1	18.9	20.0	24.6	0.0	2.7	9.9				990.4	991.6	993.0
30/03/2022	17.2	19.5	23.9	0.0	0.4	4.9	13.4				988.7	990.3	991.7
31/03/2022	13.8	16.3	19.7	10.4	0.3	7.8	24.9				990.6	994.4	998.6
<b>Monthly</b>	<b>13.2</b>	<b>19.4</b>	<b>29.3</b>	<b>520.2</b>	<b>0.0</b>	<b>3.5</b>	<b>25.9</b>	<b>0.0</b>	<b>#DIV/0!</b>	<b>0.0</b>	<b>983.6</b>	<b>994.8</b>	<b>1005.0</b>

Power outage - unit offline and faulty humidity sensor

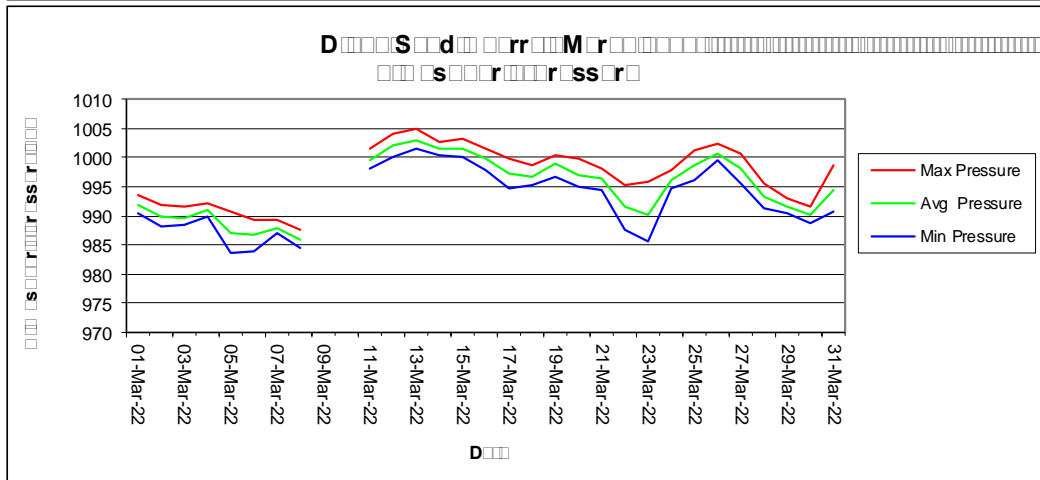
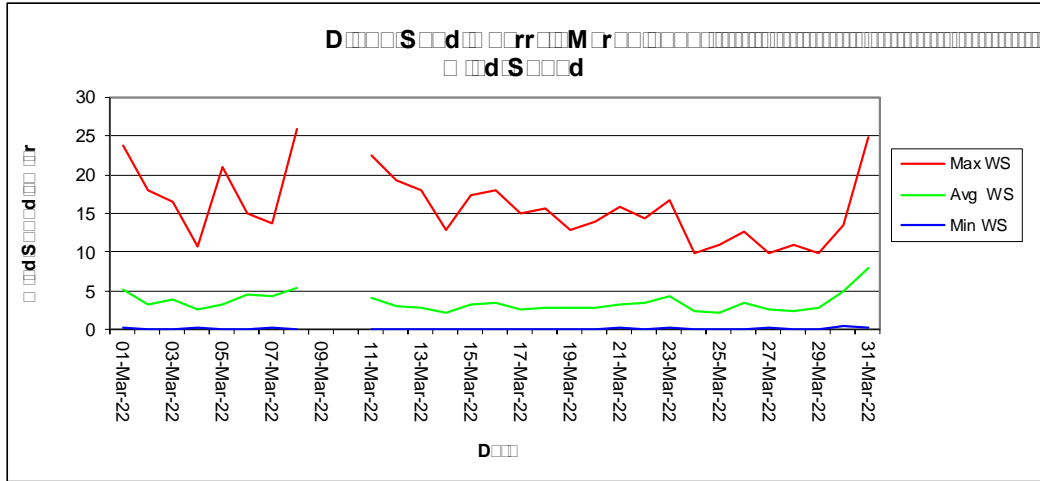
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Daily Rainfall, Temperature and Relative Humidity Charts

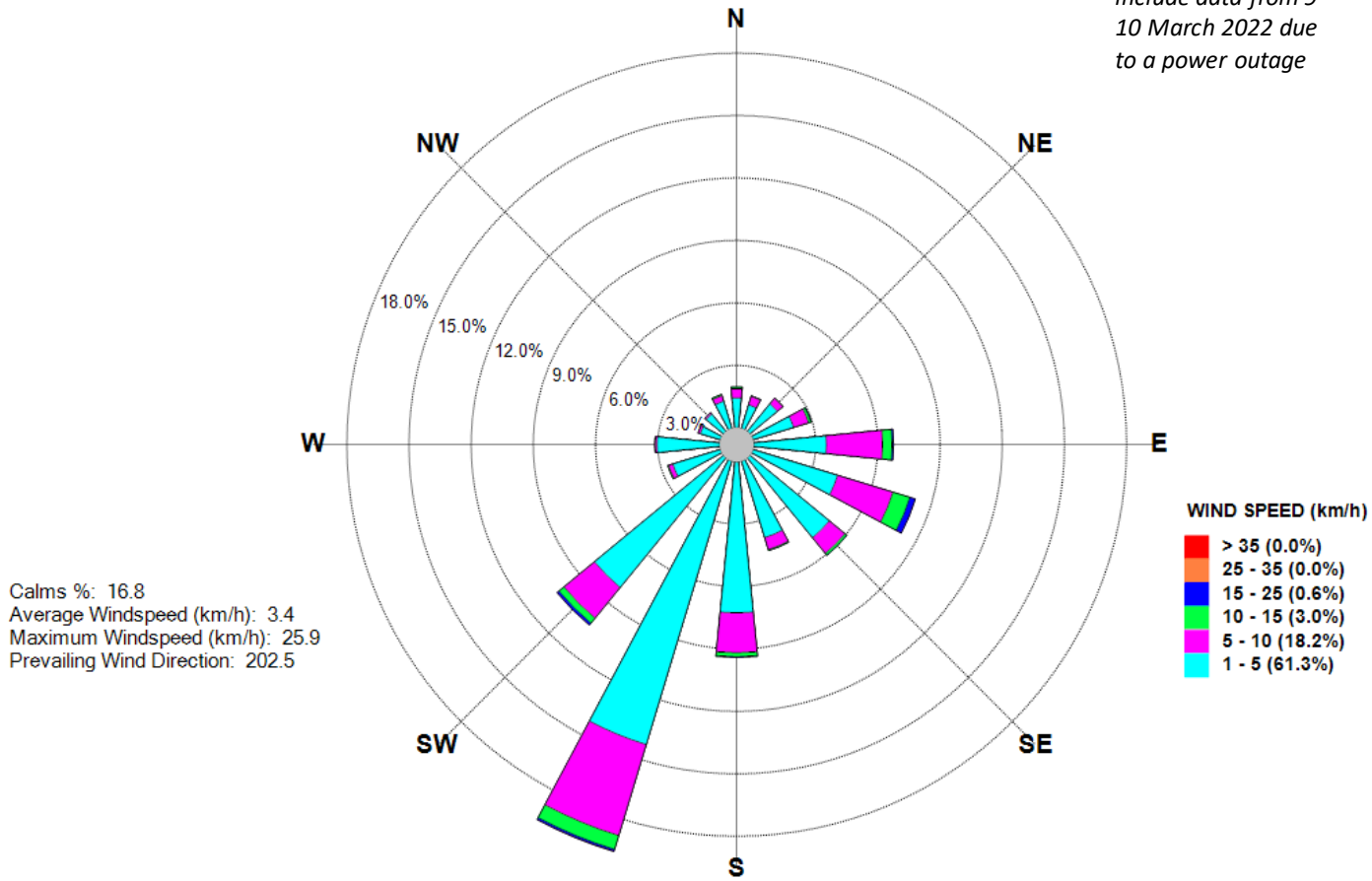


Wind Speed and Atmospheric Pressure Charts

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### Dixon Sand Quarry - Windrose MARCH 2022\*

\*Windrose does not include data from 9-10 March 2022 due to a power outage





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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for April 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 75% of valid meteorological data was recorded for April 2022. Loss of valid data was due to a faulty humidity sensor.

Approximately 100% of TEOM data was recovered for April 2022.



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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser”; and
- AS/NZS 3580.1.1 - “Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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□

**Results**

**Monitoring**

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in March 2022 with the next calibration due to be completed in June 2022. The calibration certificate is provided in [redacted] (when required).

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□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for April 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

□

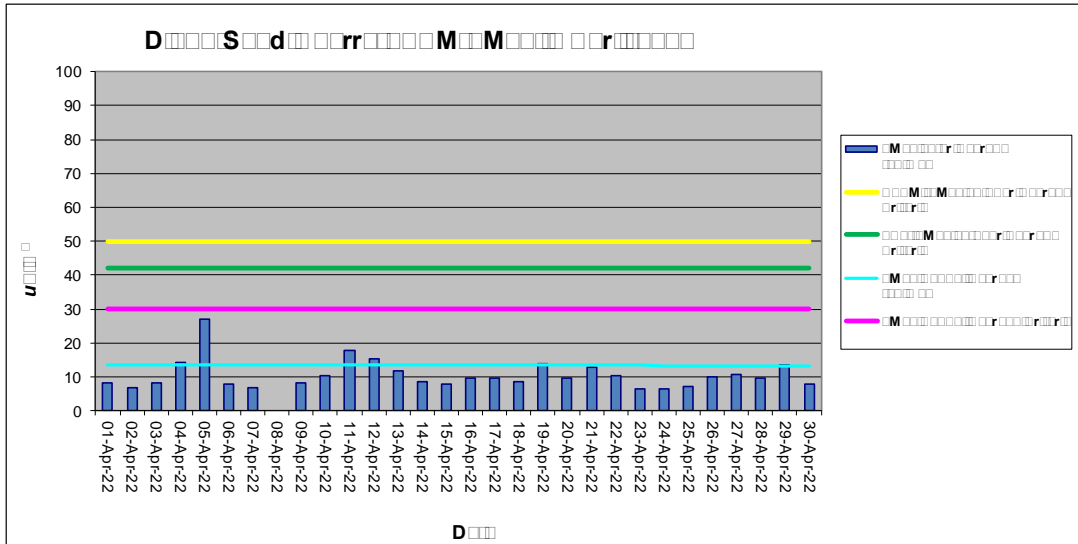
D□□□□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□M□□□□ □□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□S□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□ □S□□□□□□ (µg/m <sup>3</sup> )□
1/04/2022	8.4	13.6	20.9	33.9
2/04/2022	6.9	13.5	17.3	33.9
3/04/2022	8.4	13.5	21.0	33.8
4/04/2022	14.2	13.5	35.5	33.8
5/04/2022	27.0	13.6	67.5	34.0
6/04/2022	8.0	13.6	20.0	33.9
7/04/2022	6.9	13.5	17.3	33.8
8/04/2022	No Valid Data	13.5	No Valid Data	33.8
9/04/2022	8.2	13.5	20.5	33.8
10/04/2022	10.4	13.5	26.0	33.8
11/04/2022	17.9	13.5	44.8	33.8
12/04/2022	15.4	13.5	38.5	33.8
13/04/2022	11.7	13.5	29.3	33.8
14/04/2022	8.6	13.5	21.5	33.8
15/04/2022	7.9	13.5	19.8	33.7
16/04/2022	9.8	13.5	24.5	33.7
17/04/2022	9.8	13.5	24.5	33.6
18/04/2022	8.6	13.4	21.5	33.6
19/04/2022	13.9	13.4	34.8	33.6
20/04/2022	9.7	13.4	24.3	33.6
21/04/2022	12.9	13.4	32.3	33.6
22/04/2022	10.5	13.4	26.3	33.5
23/04/2022	6.5	13.4	16.3	33.5
24/04/2022	6.5	13.4	16.3	33.4
25/04/2022	7.2	13.4	18.0	33.4
26/04/2022	9.9	13.3	24.8	33.3
27/04/2022	10.6	13.3	26.5	33.3
28/04/2022	9.8	13.3	24.5	33.3
29/04/2022	13.4	13.3	33.5	33.3
30/04/2022	7.9	13.3	19.8	33.3

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

“No Valid Data” – when displayed, indicates when no valid 1 hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

24 hr  
 Annual Average  
 Criteria

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted March 2022 and is next due in March 2023. The screening and system check certificates are provided in [redacted] (when required).

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Meteorological Data Summary for April 2022

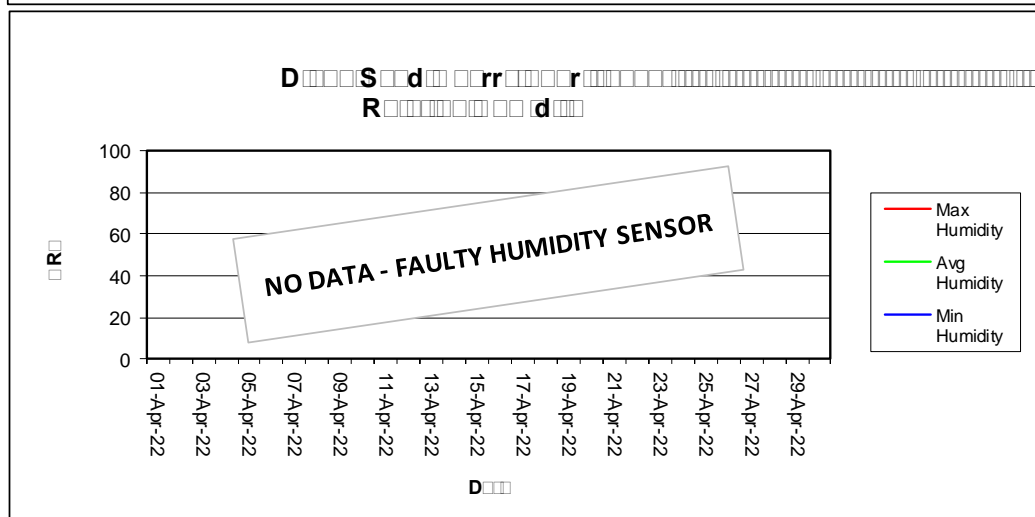
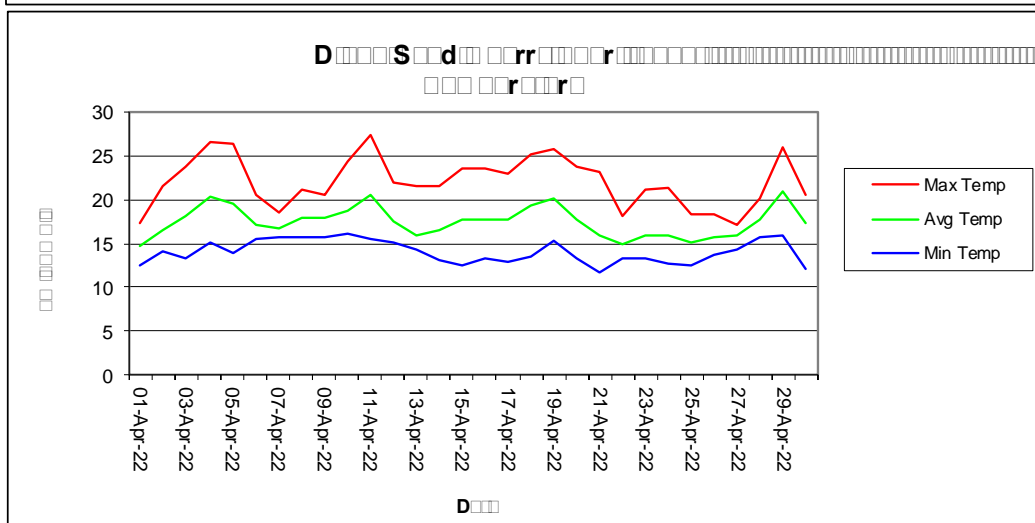
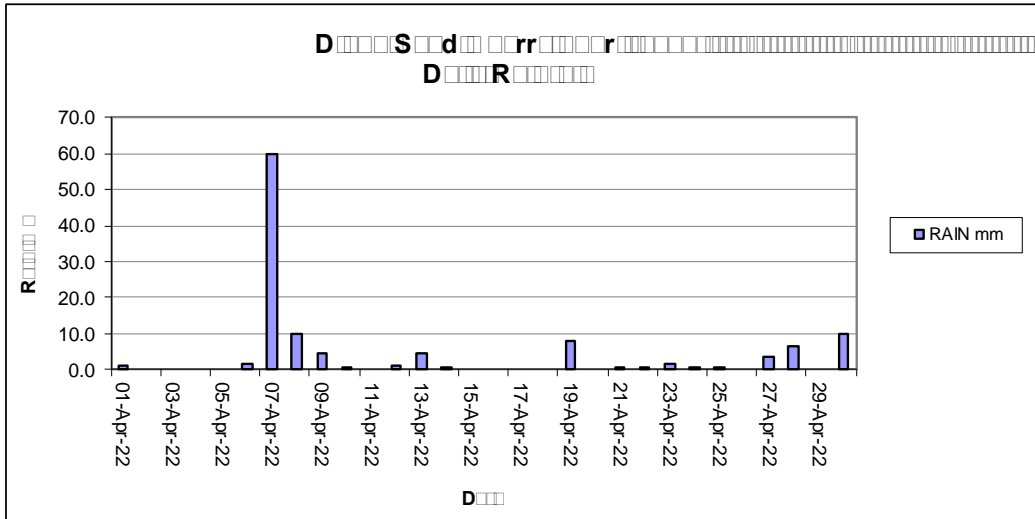
Date	M □□□□ □	□□□□ □	M □□□□ □	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/04/2022	12.4	14.6	17.3	1.4	1.8	8.5	24.1				994.4	996.0	998.1
2/04/2022	14.0	16.4	21.5	0.0	0.1	4.4	18.0				991.9	993.3	994.9
3/04/2022	13.3	18.1	23.8	0.0	0.0	4.6	19.3				991.0	992.5	993.9
4/04/2022	15.2	20.4	26.5	0.0	0.1	3.4	20.4				991.4	993.3	995.0
5/04/2022	13.8	19.5	26.4	0.0	0.0	2.7	16.6				993.9	995.4	997.4
6/04/2022	15.6	17.1	20.6	1.6	0.1	3.5	15.3				995.8	997.5	999.1
7/04/2022	15.7	16.7	18.6	60.0	0.5	5.5	25.6				997.3	999.6	1001.9
8/04/2022	15.8	17.9	21.2	10.0	0.1	5.4	25.3				1000.4	1002.0	1003.5
9/04/2022	15.8	17.8	20.5	4.4	0.0	2.8	11.5				1001.4	1002.7	1004.7
10/04/2022	16.1	18.8	24.3	0.2	0.1	2.8	10.2				998.0	1000.2	1002.2
11/04/2022	15.6	20.5	27.3	0.0	0.1	2.9	13.1				995.5	997.7	999.9
12/04/2022	15.1	17.5	21.9	1.2	0.1	3.1	14.0				999.0	1000.4	1002.1
13/04/2022	14.2	15.9	21.5	4.4	0.3	4.6	22.5				999.9	1002.4	1005.1
14/04/2022	13.0	16.6	21.6	0.6	0.2	3.2	15.0				1003.4	1004.9	1006.5
15/04/2022	12.5	17.6	23.5	0.0	0.1	2.8	14.7				1000.4	1002.5	1005.2
16/04/2022	13.3	17.7	23.6	0.0	0.1	2.7	15.0				999.2	1000.6	1002.1
17/04/2022	12.9	17.7	23.0	0.0	0.0	2.8	16.6				997.5	999.5	1001.3
18/04/2022	13.4	19.3	25.2	0.0	0.5	3.5	12.7				996.0	997.7	999.2
19/04/2022	15.4	20.1	25.8	7.8	0.4	4.9	20.2				989.6	993.9	997.1
20/04/2022	13.3	17.7	23.8	0.0	0.0	3.0	11.7				989.5	995.0	999.4
21/04/2022	11.6	15.9	23.2	0.4	0.0	2.6	12.3				999.5	1003.0	1006.8
22/04/2022	13.2	14.9	18.2	0.4	0.1	3.3	9.7				1006.5	1008.9	1010.6
23/04/2022	13.3	15.9	21.2	1.6	0.1	3.0	14.5				1008.6	1010.0	1011.4
24/04/2022	12.6	15.9	21.4	0.2	0.0	2.6	14.1				1008.3	1010.1	1012.0
25/04/2022	12.5	15.1	18.4	0.4	0.1	1.6	8.0				1004.4	1007.0	1009.2
26/04/2022	13.7	15.6	18.3	0.0	0.0	1.7	8.7				999.8	1002.1	1004.4
27/04/2022	14.2	15.9	17.2	3.4	0.0	1.3	5.5				997.9	999.3	1001.2
28/04/2022	15.8	17.7	20.1	6.4	0.3	3.1	11.3				998.0	999.4	1001.0
29/04/2022	16.0	21.0	25.9	0.0	0.3	4.6	14.4				997.9	999.9	1002.2
30/04/2022	12.0	17.3	20.5	10.0	0.2	4.5	17.7				994.8	997.7	1001.6
<b>Monthly</b>	<b>11.6</b>	<b>17.4</b>	<b>27.3</b>	<b>114.4</b>	<b>0.0</b>	<b>3.5</b>	<b>25.6</b>	<b>0.0</b>	<b>#DIV/0!</b>	<b>0.0</b>	<b>989.5</b>	<b>1000.1</b>	<b>1012.0</b>

Faulty humidity sensor

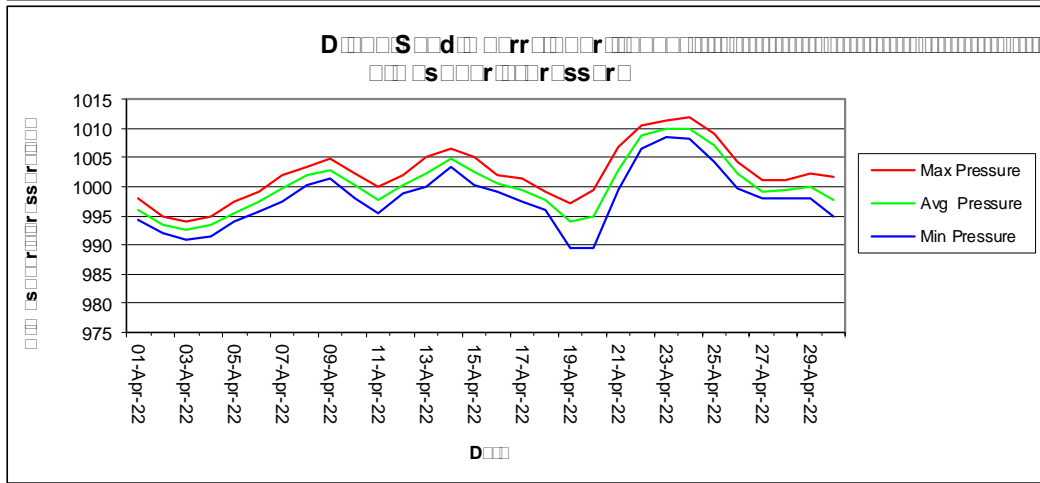
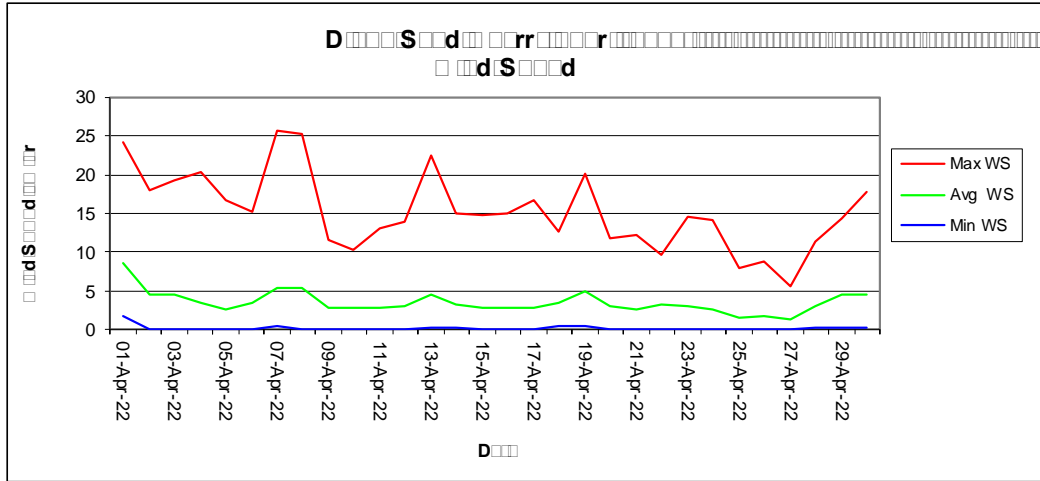
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Daily Rainfall, Temperature and Relative Humidity Charts

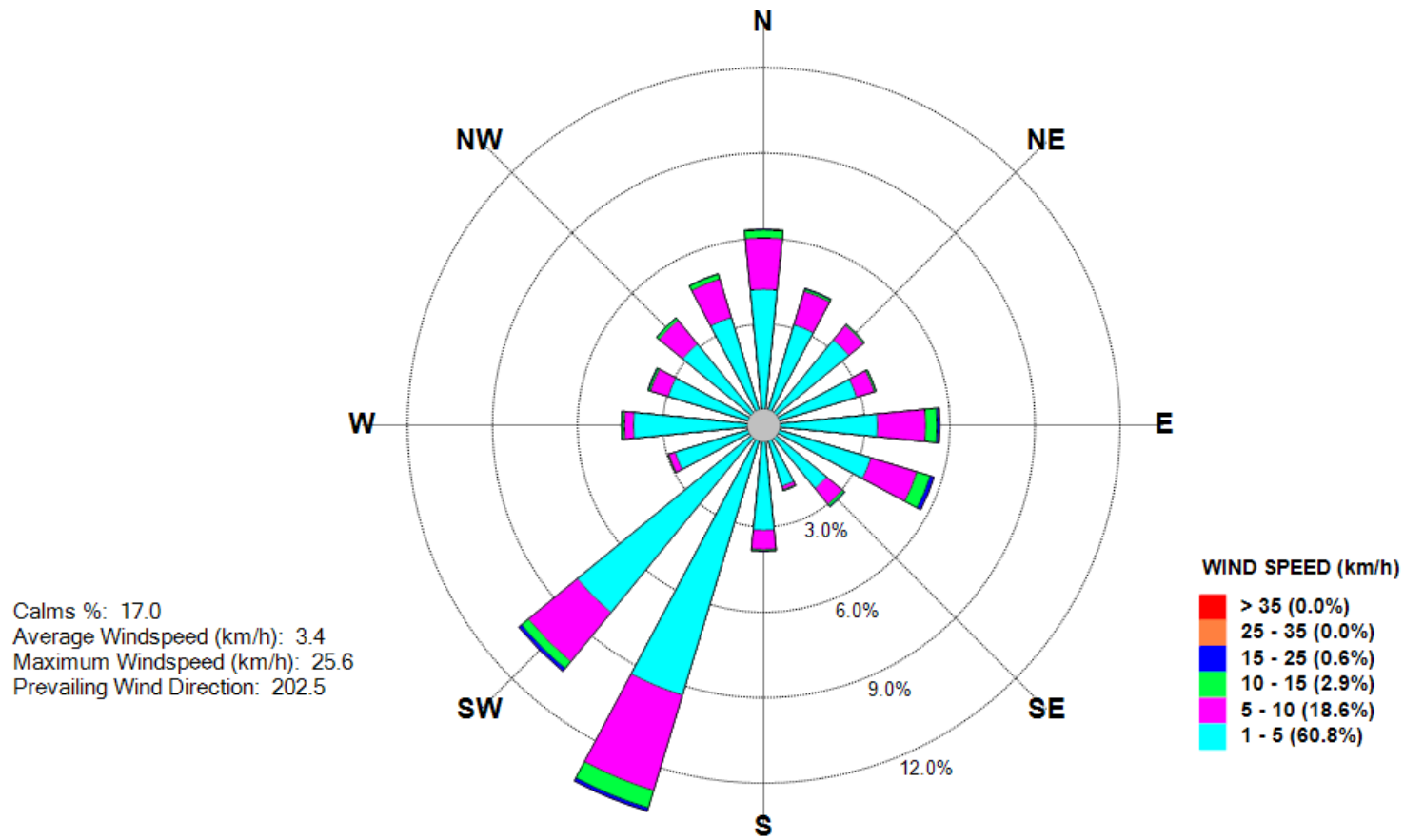


Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose APRIL 2022







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*Colin Davies*

Colin Davies BSc MEIA CENVP  
Environmental Scientist  
Date: 30 June 2022

CBased Environmental Pty Ltd  
Unit 3, 2 Enterprise Crescent SINGLETON NSW 2330  
☎ (02) 65713334

□□□□ **S**□□ □ **r**□□

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

The monitoring programme includes:

- One continuous TEOM PM<sub>10</sub> monitor; and
- One continuous Meteorological Station.

This monthly report for May 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
- The annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m<sup>3</sup>; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m<sup>3</sup>.

Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has not yet been collected.

Approximately 77% of valid meteorological data was recorded for May 2022. Loss of valid data was due to a faulty humidity sensor.

Approximately 100% of TEOM data was recovered for May 2022.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser”; and
- AS/NZS 3580.1.1 - “Methods for Sampling and Analysis of Ambient Air Part 1.1 Guide to Siting Air Monitoring Equipment”.

TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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**Results**

**Monitoring**

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in March 2022 with the next calibration due to be completed in June 2022. The calibration certificate is provided in [redacted] (when required).

- [\[redacted\]](#)
- [\[redacted\]](#)

Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for May 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

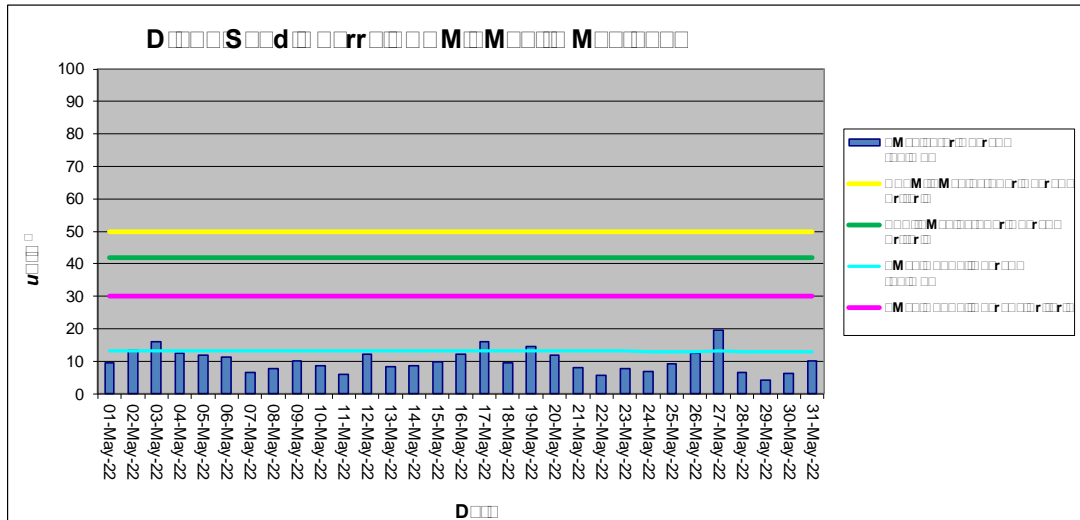
Date	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	PM <sub>10</sub> (µg/m <sup>3</sup> )	TSP (µg/m <sup>3</sup> )
1/05/2022	9.4	13.3	23.5	33.2
2/05/2022	13.5	13.3	33.8	33.2
3/05/2022	16.1	13.3	40.3	33.2
4/05/2022	12.4	13.3	31.0	33.2
5/05/2022	12.0	13.3	30.0	33.2
6/05/2022	11.4	13.3	28.5	33.2
7/05/2022	6.7	13.3	16.8	33.2
8/05/2022	7.9	13.2	19.8	33.1
9/05/2022	10.1	13.2	25.3	33.1
10/05/2022	8.6	13.2	21.5	33.0
11/05/2022	6.1	13.2	15.3	33.0
12/05/2022	12.3	13.2	30.8	33.0
13/05/2022	8.3	13.2	20.9	32.9
14/05/2022	8.6	13.2	21.5	32.9
15/05/2022	9.7	13.2	24.3	32.9
16/05/2022	12.2	13.1	30.5	32.9
17/05/2022	15.9	13.2	39.8	32.9
18/05/2022	9.6	13.1	24.0	32.9
19/05/2022	14.6	13.2	36.5	32.9
20/05/2022	11.8	13.1	29.5	32.9
21/05/2022	8.0	13.1	20.0	32.8
22/05/2022	5.7	13.1	14.3	32.8
23/05/2022	7.9	13.1	19.8	32.7
24/05/2022	6.9	13.1	17.3	32.7
25/05/2022	9.3	13.1	23.3	32.7
26/05/2022	12.6	13.1	31.5	32.6
27/05/2022	19.5	13.1	48.8	32.7
28/05/2022	6.7	13.1	16.8	32.7
29/05/2022	4.1	13.0	10.3	32.6
30/05/2022	6.2	13.0	15.5	32.5
31/05/2022	10.2	13.0	25.5	32.5

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

“No Valid Data” – when displayed, indicates when no valid 1-hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted March 2022 and is next due in March 2023. The screening and system check certificates are provided in [redacted] (when required).

Dixon Sand Quarry Environmental Monitoring Project – May 2022

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Meteorological Data Summary for May 2022

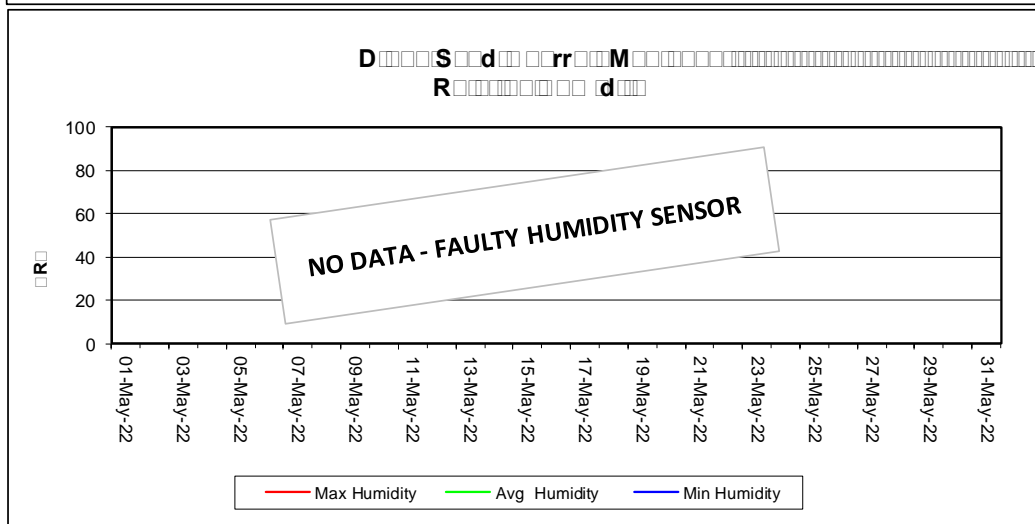
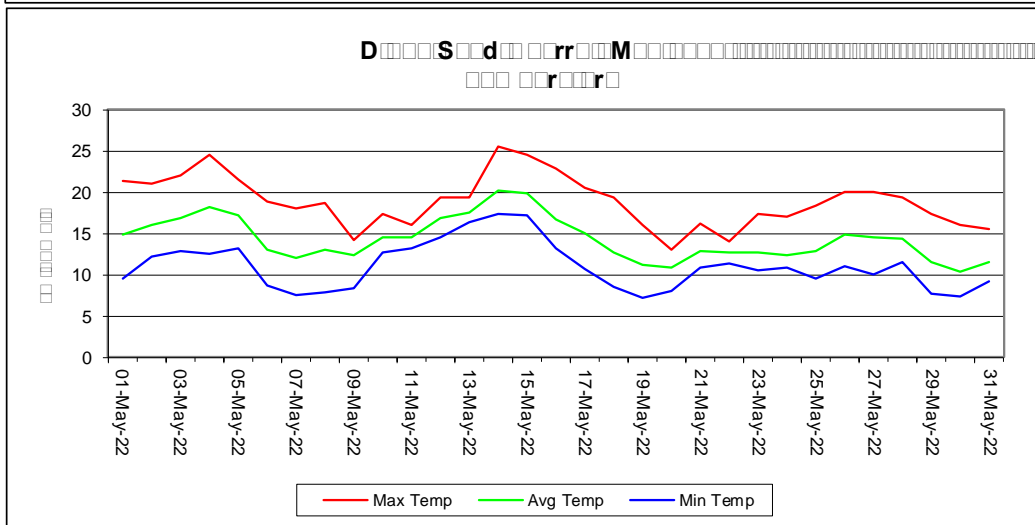
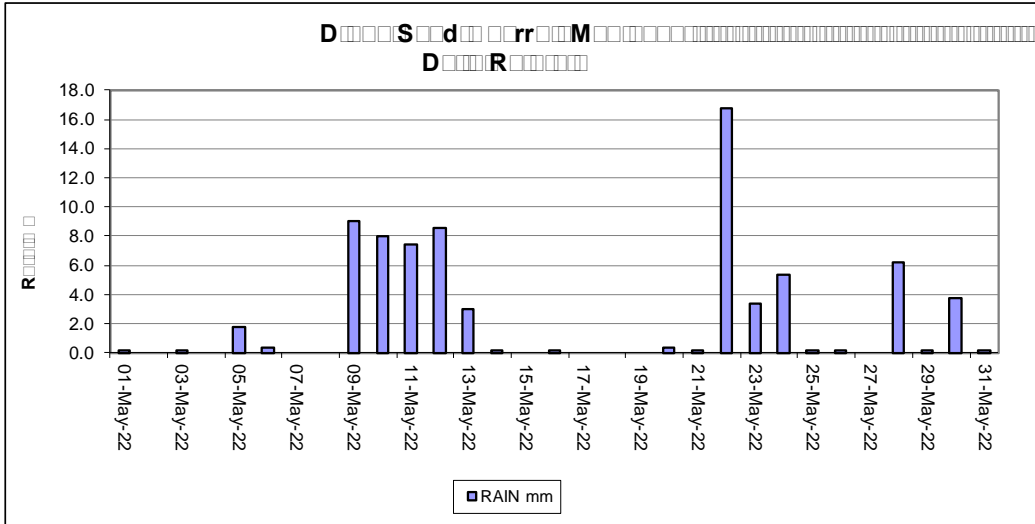
Date	M□□□□□	□□□□□□	M□□□□□	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/05/2022	9.6	14.8	21.4	0.2	0.0	1.9	6.8				1000.5	1002.0	1003.5
2/05/2022	12.2	16.0	21.0	0.0	0.0	2.1	9.2				1001.4	1002.5	1004.1
3/05/2022	12.9	16.9	22.0	0.2	0.0	2.4	10.8				997.8	1000.1	1002.2
4/05/2022	12.6	18.1	24.5	0.0	0.3	3.6	11.8				993.0	995.3	997.9
5/05/2022	13.2	17.3	21.5	1.8	0.3	2.7	10.0				991.7	993.1	995.5
6/05/2022	8.7	13.0	18.9	0.4	0.0	1.9	10.5				995.5	998.1	1000.3
7/05/2022	7.5	12.0	18.0	0.0	0.2	3.2	11.3				999.3	1000.9	1002.3
8/05/2022	7.9	13.1	18.7	0.0	0.0	2.5	9.4				1001.3	1003.3	1005.9
9/05/2022	8.4	12.4	14.2	9.0	0.2	2.8	10.6				1005.3	1007.1	1009.1
10/05/2022	12.7	14.6	17.4	8.0	0.0	2.3	7.7				1007.8	1008.9	1010.6
11/05/2022	13.2	14.6	16.0	7.4	0.0	1.8	8.0				1003.2	1006.6	1009.0
12/05/2022	14.6	16.8	19.4	8.6	0.0	2.4	11.8				997.2	999.6	1003.2
13/05/2022	16.4	17.5	19.3	3.0	0.0	2.4	6.7				994.7	996.9	999.0
14/05/2022	17.3	20.1	25.5	0.2	0.2	3.6	15.9				992.9	994.9	996.9
15/05/2022	17.2	19.9	24.6	0.0	0.0	2.4	11.0				991.0	993.1	994.8
16/05/2022	13.2	16.8	22.8	0.2	0.1	2.7	11.1				992.5	994.3	996.6
17/05/2022	10.7	15.0	20.6	0.0	0.1	2.3	14.9				996.4	998.0	999.9
18/05/2022	8.6	12.7	19.3	0.0	0.0	2.3	14.0				997.4	999.3	1002.1
19/05/2022	7.2	11.2	16.0	0.0	0.1	1.9	7.2				1001.9	1005.1	1008.9
20/05/2022	8.1	10.8	13.0	0.4	0.3	3.5	10.3				1008.3	1010.4	1012.4
21/05/2022	10.9	12.9	16.2	0.2	0.5	4.1	11.2				1008.6	1010.2	1011.8
22/05/2022	11.4	12.7	14.0	16.8	0.2	3.0	15.0				1006.0	1007.5	1009.0
23/05/2022	10.5	12.7	17.4	3.4	0.0	2.6	9.6				1006.6	1007.6	1008.8
24/05/2022	10.8	12.5	17.0	5.4	0.0	2.5	11.7				1005.4	1006.8	1008.4
25/05/2022	9.5	12.9	18.3	0.2	0.0	1.8	6.5				1001.0	1003.3	1005.9
26/05/2022	11.0	14.8	20.0	0.2	0.1	2.6	11.0				998.1	999.8	1001.4
27/05/2022	10.1	14.6	20.0	0.0	0.1	2.2	8.9				995.0	997.3	999.3
28/05/2022	11.5	14.4	19.4	6.2	0.1	2.3	8.7				989.0	991.4	995.1
29/05/2022	7.7	11.5	17.4	0.2	0.0	2.1	11.0				984.7	987.2	989.8
30/05/2022	7.4	10.4	16.0	3.8	0.6	6.1	25.0				969.4	977.2	984.8
31/05/2022	9.2	11.6	15.6	0.2	0.5	6.5	29.5				970.7	977.4	984.3
<b>Monthly</b>	<b>7.2</b>	<b>14.3</b>	<b>25.5</b>	<b>76.0</b>	<b>0.0</b>	<b>2.8</b>	<b>29.5</b>	<b>0.0</b>	<b>#DIV/0!</b>	<b>0.0</b>	<b>969.4</b>	<b>999.2</b>	<b>1012.4</b>

Faulty humidity sensor

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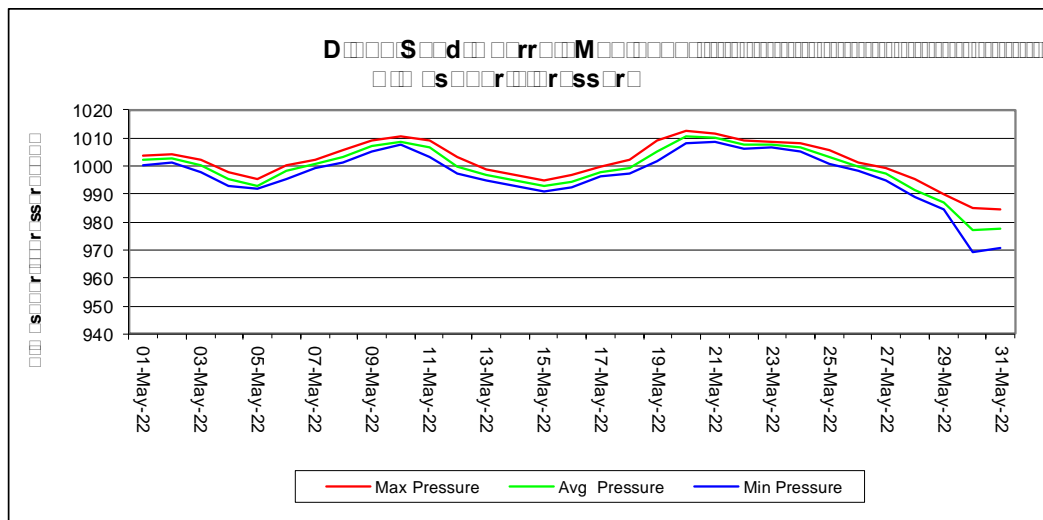
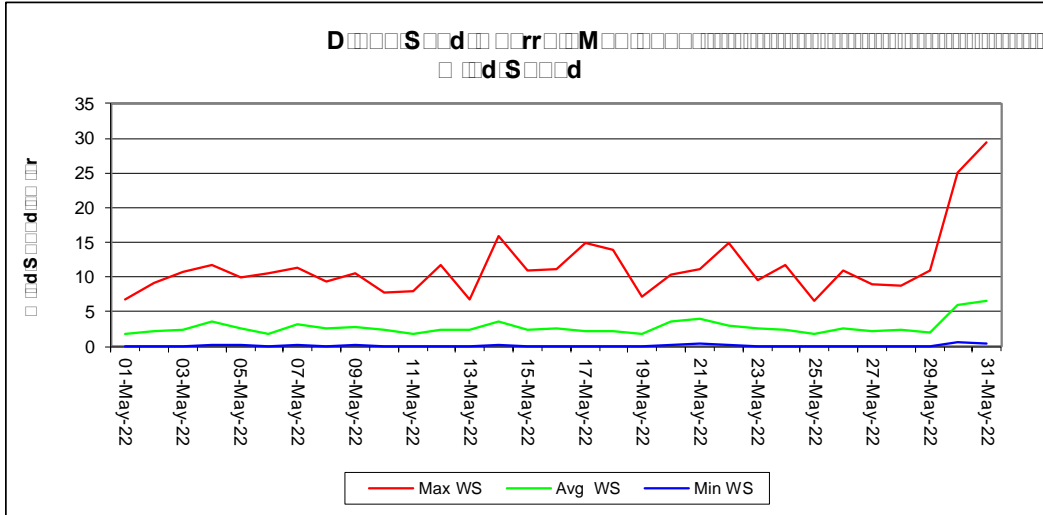
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Daily Rainfall, Temperature and Relative Humidity Charts

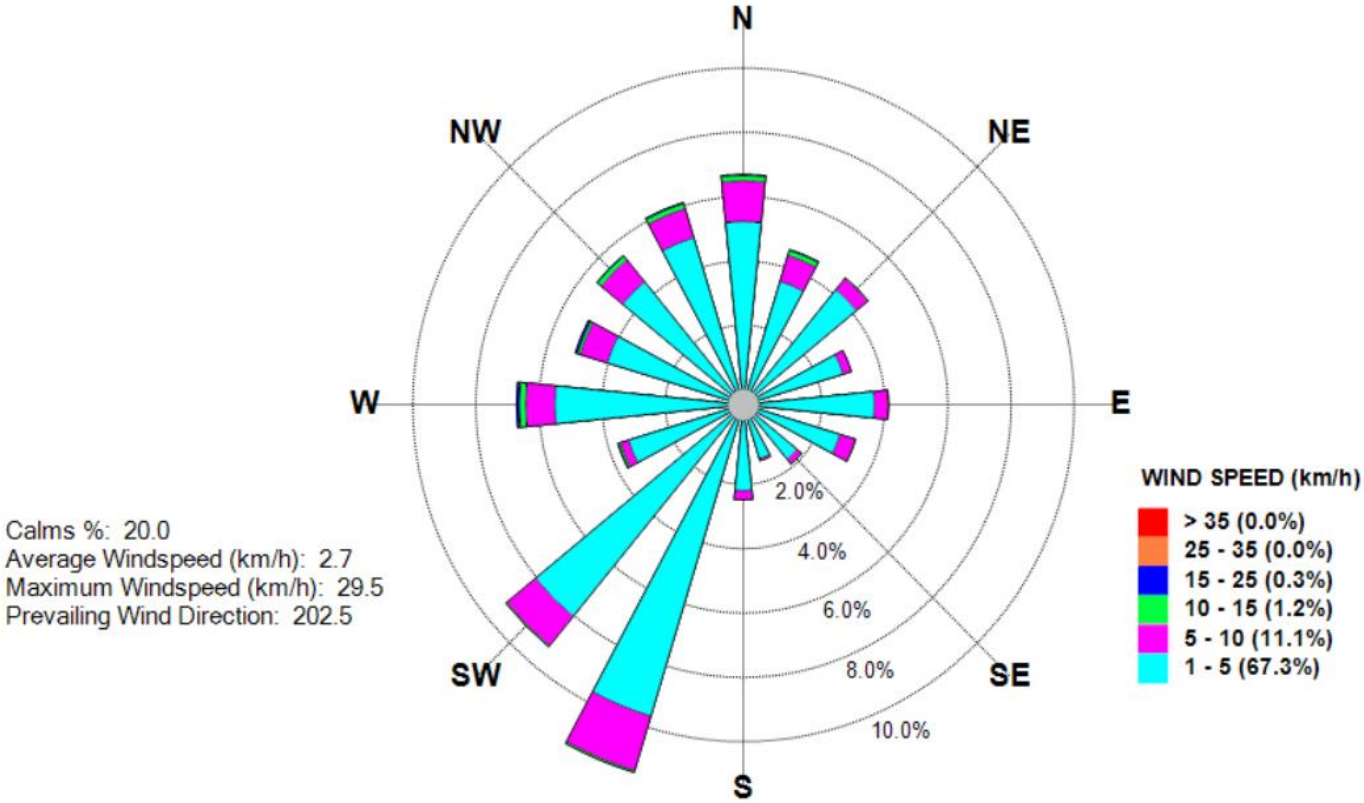




Wind Speed and Atmospheric Pressure Charts

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# Dixon Sand Quarry - Windrose MAY 2022





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Colin Davies BSc MEIA CENVP  
Environmental Scientist  
Date: 20 July 2022

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CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM<sub>10</sub>) and meteorological monitoring for the Dixon Sand Quarry. The information is required to assess air quality levels. The results for the TEOM and meteorological site are included in this report.

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- One continuous Meteorological Station.

This monthly report for June 2022 was prepared by CBased Environmental and includes the following:

- TEOM (PM<sub>10</sub>) monitoring results; and
- Meteorological results

In accordance with Schedule 3, Condition 7 of the Dixon Sand development Consent and the Dixon Sand EPL;

- 24-hour average results were below the NEPM 24-hour maximum criteria of 50ug/m<sup>3</sup>;
- 24-hour average results were below the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>;
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Note: Based on the available data, statements in **green** indicate current conformance to Dixon Sand Quarry Air Quality Impact Assessment criteria, statements in **red** indicate possible non-conformance. Year to date annual average for PM<sub>10</sub> is calculated from 1 July 2021 for TEOM's coinciding with the Dixon Sand project year. An annual amount of data has now been collected.

Approximately 77% of valid meteorological data was recorded for June 2022. Loss of valid data was due to a faulty humidity sensor.

Approximately 100% of TEOM data was recovered for June 2022.

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The TEOM is sited and operated to the applicable Australian Standard and/or OEH (EPA) approved methods. The following Australian Standards were used:

- AS3580.9.8 - “*Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM<sub>10</sub> continuous direct mass method using a tapered element oscillating microbalance analyser*”; and
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TEOM PM<sub>10</sub> results are 24-hour averages at midnight and are reported as µg/m<sup>3</sup> corrected to 0 degrees C and 101.3kPa.

All laboratory analysis was conducted by a National Association of Testing Authorities (NATA) accredited laboratory.

Air Quality monitoring site descriptions and locations are provided in □□□□□□.

□□□□□□□□ Dixon Sand Air Quality Monitoring Description and Locations

<b>M</b> □□□□□ <b>r</b> □	<b>S</b> □□□□□□ <b>d</b> □□	□□□□□□□□ <b>D</b> <b>s</b> <b>r</b> □□□□□□□□
TEOM PM <sub>10</sub>	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

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**Results**

**Monitoring**

24-hour average TEOM PM<sub>10</sub> results from the AQMS data collection software are provided in [redacted] and a chart of the data is provided in [redacted].

During the monitoring period, individual 24-hour TEOM PM<sub>10</sub> results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m<sup>3</sup> and the Dixon Sand Quarry EPL limit of 42ug/m<sup>3</sup>.

At present, the current TEOM PM<sub>10</sub> annual average is below the Dixon Sand Quarry annual average PM<sub>10</sub> criteria of 30ug/m<sup>3</sup>. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m<sup>3</sup>. The TSP is calculated by multiplying the PM<sub>10</sub> by 2.5. Note: the annual average is calculated from 1 July 2021 and therefore an annual amount of data has now been collected.

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□□□□□□□□ Average Daily 24-hr TEOM PM<sub>10</sub> and TSP Results for June 2022 from AQMS and Annual Average PM<sub>10</sub> calculated from the 1 July 2021.

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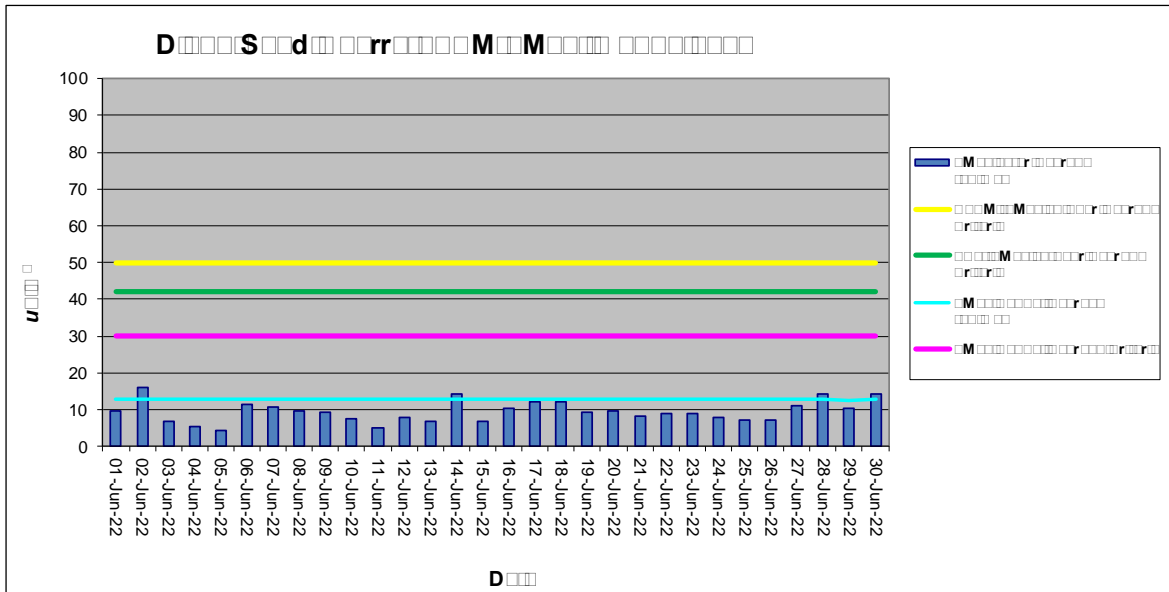
D□□□□	□M□□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□M□□□□ □□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□S□□□ (µg/m <sup>3</sup> )□	□□□□□□□□ □□□□□□□□ □□□□□□□□ (µg/m <sup>3</sup> )□
1/06/2022	9.5	13.0	23.8	32.5
2/06/2022	16.2	13.0	40.5	32.5
3/06/2022	6.8	13.0	17.0	32.5
4/06/2022	5.3	13.0	13.3	32.4
5/06/2022	4.4	12.9	11.0	32.3
6/06/2022	11.4	12.9	28.5	32.3
7/06/2022	10.7	12.9	26.8	32.3
8/06/2022	9.6	12.9	24.0	32.3
9/06/2022	9.4	12.9	23.5	32.3
10/06/2022	7.6	12.9	19.0	32.2
11/06/2022	5.0	12.9	12.5	32.2
12/06/2022	7.9	12.9	19.8	32.1
13/06/2022	6.7	12.8	16.8	32.1
14/06/2022	14.3	12.8	35.8	32.1
15/06/2022	6.9	12.8	17.3	32.0
16/06/2022	10.3	12.8	25.8	32.0
17/06/2022	12.1	12.8	30.3	32.0
18/06/2022	12.0	12.8	30.0	32.0
19/06/2022	9.2	12.8	23.0	32.0
20/06/2022	9.6	12.8	24.0	32.0
21/06/2022	8.1	12.8	20.3	31.9
22/06/2022	9.0	12.8	22.5	31.9
23/06/2022	9.1	12.8	22.8	31.9
24/06/2022	7.8	12.7	19.5	31.9
25/06/2022	7.1	12.7	17.8	31.8
26/06/2022	7.1	12.7	17.8	31.8
27/06/2022	11.2	12.7	28.0	31.8
28/06/2022	14.1	12.7	35.3	31.8
29/06/2022	10.3	12.7	25.8	31.8
30/06/2022	14.2	12.7	35.5	31.8

\*Calculated from PM10

\*\*Calculated from PM10 Annual Average

“No Valid Data” – when displayed, indicates when no valid 1-hour data is available to calculate a 24hr average

Note: results above the Dixon Sand EPL criteria limit of 42 ug/m3 highlighted in yellow, when applicable



TEOM PM<sub>10</sub> 24 hr, Annual Average and Criteria

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Meteorological Data

The weather station logs data at 5-minute intervals and sends the data to a web database by NextG telemetry. The data is accessible from the web site <http://console.teledata.com.au/index.html>.

A summary of monthly results is presented in [redacted]. Charts of meteorological parameters are presented in [redacted] and [redacted]. A windrose is provided in [redacted]. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

An annual physical screening and system check of the meteorological station was conducted March 2022 and is next due in March 2023. The screening and system check certificates are provided in [redacted] (when required).



Dixon Sand Quarry Environmental Monitoring Project – June 2022

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Meteorological Data Summary for June 2022

Date	M□□□□□	□□□□□□	M□□□□□	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/06/2022	6.4	9.4	13.1	0.0	0.0	4.6	22.4				984.5	989.0	996.5
2/06/2022	5.8	9.8	14.7	0.0	0.2	2.2	6.6				996.1	998.8	1001.0
3/06/2022	6.3	9.2	12.2	1.0	0.4	4.1	15.5				990.6	994.5	998.3
4/06/2022	7.3	11.0	16.5	0.4	0.3	4.0	18.1				989.7	991.9	994.0
5/06/2022	8.8	11.4	14.9	0.0	0.4	7.0	21.9				986.4	990.6	993.7
6/06/2022	8.0	11.4	15.2	0.2	0.5	6.5	22.2				982.8	987.4	991.9
7/06/2022	7.2	10.4	14.5	0.0	0.4	5.1	20.3				989.1	991.2	992.7
8/06/2022	6.0	8.9	14.3	0.0	0.3	3.6	15.5				992.5	994.5	996.7
9/06/2022	5.0	9.2	15.0	0.0	0.0	4.2	16.1				991.8	994.0	995.5
10/06/2022	7.3	10.7	16.3	0.0	0.2	3.4	15.6				992.4	994.3	995.8
11/06/2022	7.4	10.3	15.8	0.0	0.1	3.5	23.4				991.7	994.0	996.3
12/06/2022	7.1	10.9	15.8	0.0	0.3	3.8	14.1				990.4	993.2	997.4
13/06/2022	5.9	10.6	15.5	0.0	0.2	2.6	8.1				997.4	1000.5	1002.7
14/06/2022	4.6	10.1	15.8	0.0	0.0	2.8	14.3				1000.2	1002.0	1004.3
15/06/2022	8.9	12.9	18.0	0.0	0.5	5.1	14.7				996.8	998.7	1000.9
16/06/2022	10.5	13.8	19.5	0.0	0.2	4.2	13.6				994.7	997.0	998.2
17/06/2022	8.9	12.4	17.6	0.0	0.2	2.8	13.9				996.8	999.1	1002.1
18/06/2022	8.0	12.0	17.1	0.0	0.2	4.9	14.6				1001.9	1004.2	1006.2
19/06/2022	8.6	11.9	17.6	0.0	0.2	3.8	16.8				1004.6	1005.7	1007.6
20/06/2022	10.0	12.1	16.5	0.8	0.1	3.0	10.2				1001.5	1003.1	1005.1
21/06/2022	7.0	12.6	18.8	1.4	0.2	4.3	17.1				997.8	999.9	1001.7
22/06/2022	7.5	11.5	16.4	0.0	0.1	2.4	7.4				1000.6	1003.3	1005.1
23/06/2022	7.1	11.6	17.5	0.0	0.1	2.4	8.1				1000.4	1002.6	1004.6
24/06/2022	9.0	12.9	17.5	0.0	0.3	3.4	16.4				996.9	998.9	1000.4
25/06/2022	10.2	13.6	18.6	0.0	0.2	3.3	11.7				999.3	1001.2	1003.3
26/06/2022	9.8	13.6	18.8	0.0	0.1	3.0	14.3				1001.9	1003.4	1004.7
27/06/2022	7.0	10.3	14.3	0.0	0.0	3.9	17.2				1003.0	1006.1	1009.3
28/06/2022	5.8	9.3	13.4	0.0	0.0	4.0	13.0				1007.6	1009.0	1010.8
29/06/2022	8.2	11.6	15.8	0.0	0.4	3.6	15.0				1001.7	1004.5	1007.7
30/06/2022	10.6	12.4	15.6	0.0	0.2	2.6	8.6				1000.8	1002.9	1004.8
<b>Monthly</b>	<b>4.6</b>	<b>11.3</b>	<b>19.5</b>	<b>3.8</b>	<b>0.0</b>	<b>3.8</b>	<b>23.4</b>	<b>0.0</b>	<b>#DIV/0!</b>	<b>0.0</b>	<b>982.8</b>	<b>998.5</b>	<b>1010.8</b>

Faulty humidity sensor

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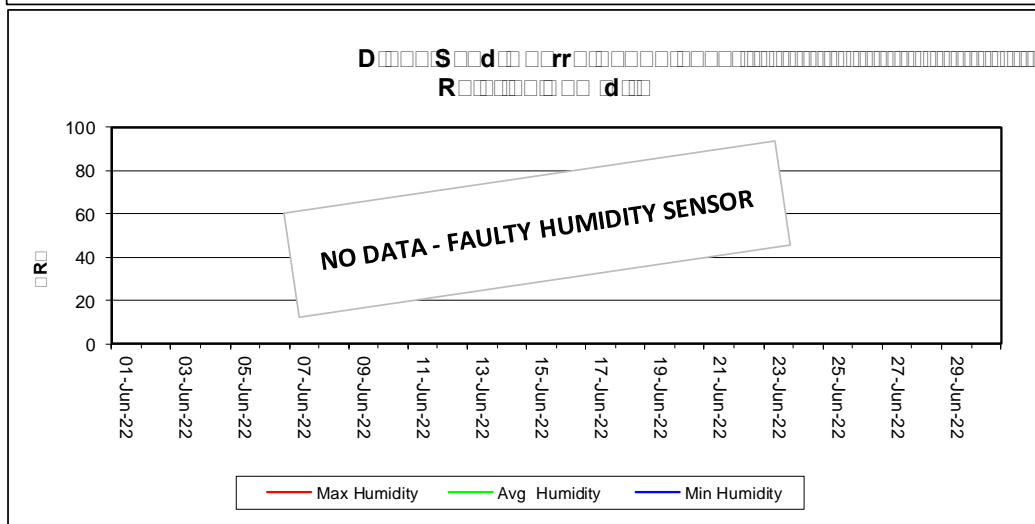
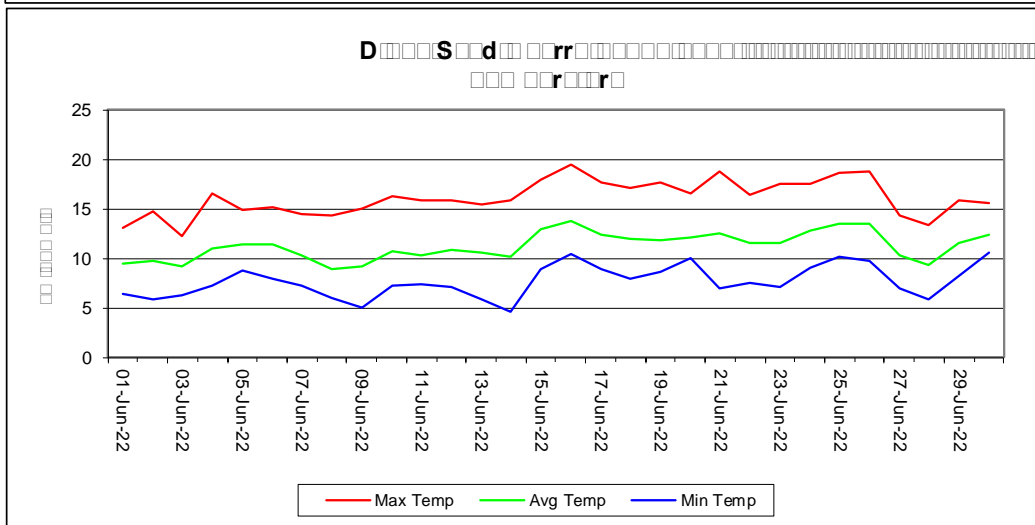
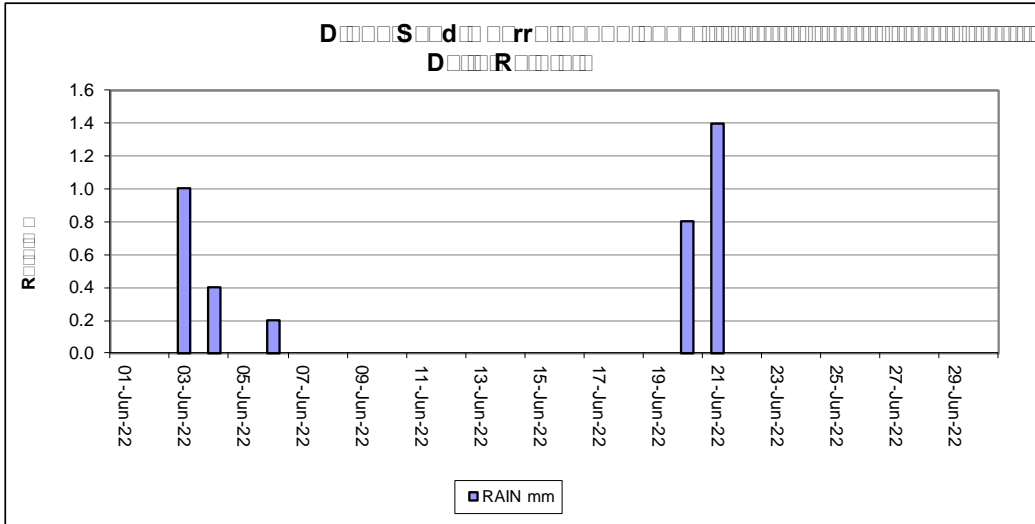
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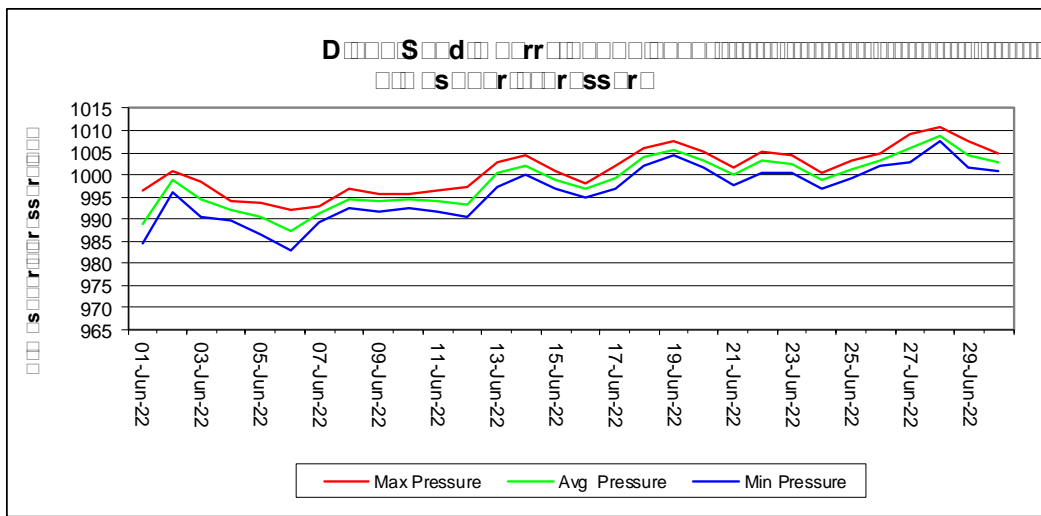
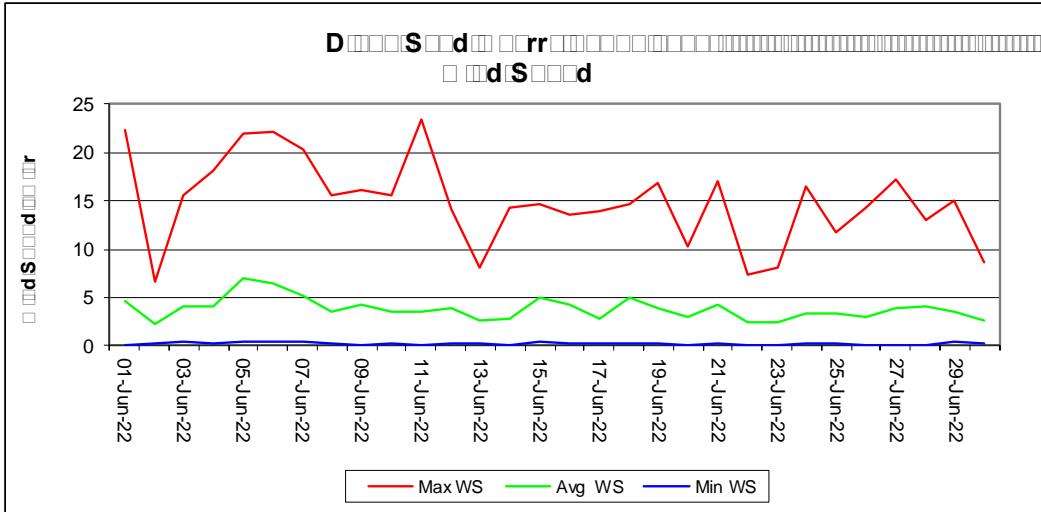
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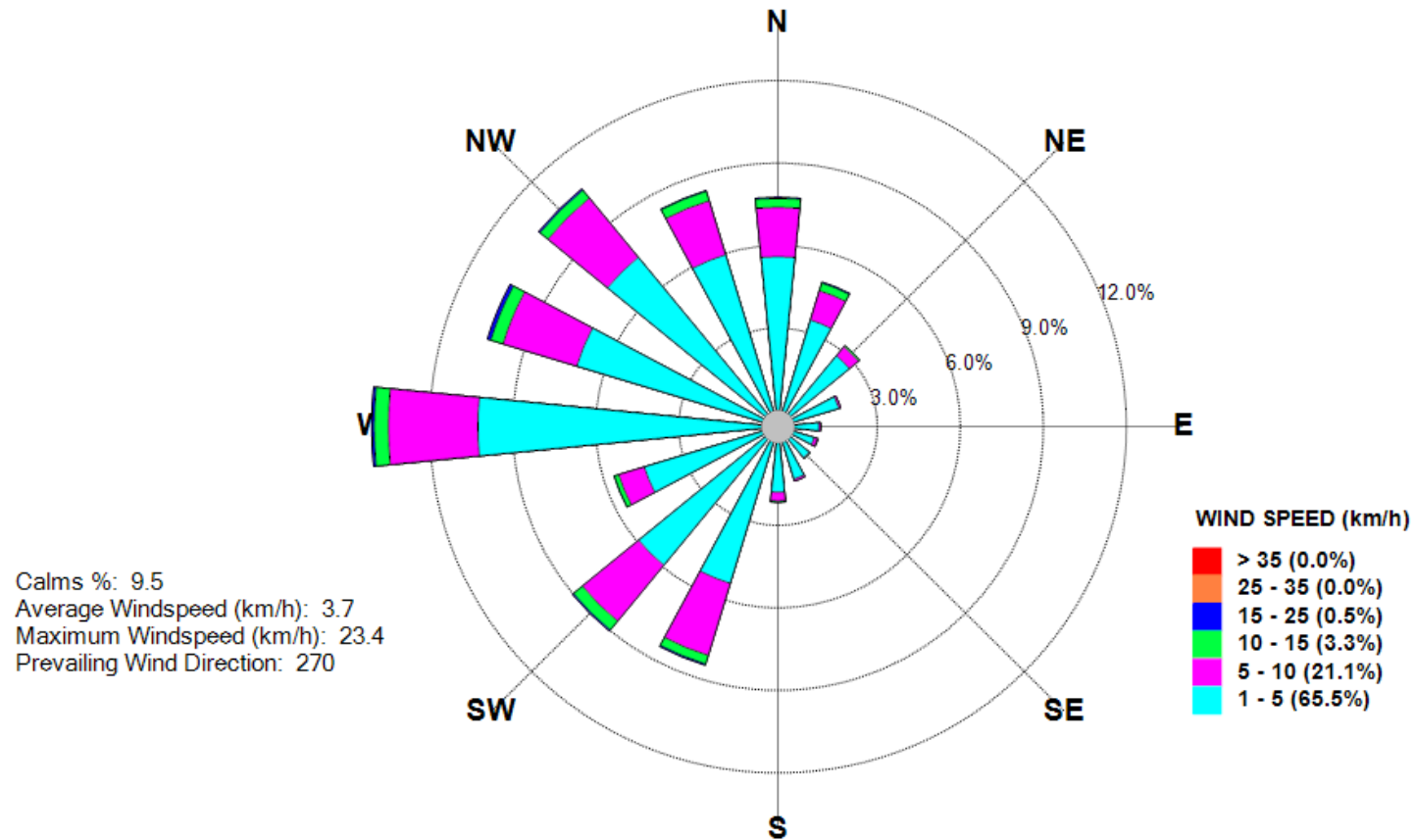
Daily Rainfall, Temperature and Relative Humidity Charts



Wind Speed and Atmospheric Pressure Charts

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## Dixon Sand Quarry - Windrose JUNE 2022



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## Report Number: 11899

Date Issued: 20/12/2021

Revision Number: 00

### Site/Job: Haerses Road H 6 Mnth Ground Water

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following groundwater sample(s) were received on 8/12/2021

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
H6	8/12/2021	11899/1	Water	
H7	8/12/2021	11899/2	Water	
H9	8/12/2021	11899/3	Water	
H12	8/12/2021	11899/4	Water	
BH4	8/12/2021	11899/5	Water	
H14	8/12/2021	11899/6	Water	
H2	8/12/2021	11899/7	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Approved by:

Results have been approved and report finalised on 20/12/2021.

## Test Report Number: 11899

Date Issued: 20/12/2021

Revision No: 00

### Results

Field Analysis	Method	Units	11899/1 H6 8/12/2021	11899/2 H7 8/12/2021	11899/3 H9 8/12/2021	11899/4 H12 8/12/2021	11899/5 BH4 8/12/2021
Depth to Water	AS5667.11	m(bTOC)	12.05	12.74	8.33	10.42	37.68
Temperature	Temp	°C	18.0	18.4	17.9	18.6	18.6
pH	APHA 4500-H B	pH Units	5.0	4.6	4.5	4.5	5.5
Electrical Conductivity	APHA 2510 B	µS/cm	145	130	112	213	132

Field Analysis	Method	Units	11899/6 H14 8/12/2021	11899/7 H2 8/12/2021
Depth to Water	AS5667.11	m(bTOC)	9.11	2.21
Temperature	Temp	°C	18.1	18.3
pH	APHA 4500-H B	pH Units	4.4	4.8
Electrical Conductivity	APHA 2510 B	µS/cm	95.0	58.0

Total Dissolved Solids	Method	Units	11899/1 H6 8/12/2021	11899/2 H7 8/12/2021	11899/3 H9 8/12/2021	11899/4 H12 8/12/2021	11899/5 BH4 8/12/2021
Total Dissolved Solids	AS3550.4	mg/L	82	90	71	143	68

Total Dissolved Solids	Method	Units	11899/6 H14 8/12/2021	11899/7 H2 8/12/2021
Total Dissolved Solids	AS3550.4	mg/L	59	50



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11899

Date Issued: 20/12/2021

Revision No: 00

Sampling Conditions: Cloudy, 18°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11899/1	H6		T & D.Walker	8/12/2021 10:48 AM	AS5667.11, Pump	AS5667.1
11899/2	H7		T & D.Walker	8/12/2021 11:14 AM	AS5667.11, Pump	AS5667.1
11899/3	H9		T & D.Walker	8/12/2021 11:49 AM	AS5667.11, Pump	AS5667.1
11899/4	H12		T & D.Walker	8/12/2021 12:06 PM	AS5667.11, Pump	AS5667.1
11899/5	BH4		T & D.Walker	8/12/2021 12:30 PM	AS5667.11, Pump	AS5667.1
11899/6	H14		T & D.Walker	8/12/2021 12:52 PM	AS5667.11, Bail	AS5667.1
11899/7	H2		T & D.Walker	8/12/2021 11:31 AM	AS5667.11, Pump	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
11899/1	H6	
11899/2	H7	
11899/3	H9	
11899/4	H12	
11899/5	BH4	
11899/6	H14	Unable to pump due to bend in pvc
11899/7	H2	

Sampling procedures have been approved and report finalised on 20/12/2021.

Where method is "unknown" sampling procedures are not endorsed

## Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Road H 6 Mnth Ground Water

Well ID	GPS-Easting	GPS-Northing	Survey Date	Surveyed AHD (m)	Depth to Screen (m)
H6	312989	6295066			
H7	312855	6294643			
H9	312796	6294232			
H12	312709	6294090			
BH4	312843	6293870			
H14	312659	6293363			
H2	312515	6294585			

Well ID	Date Well Measured	Case Height (monument) (m)	Depth to bottom m(bTOC)	Recharge Rate	Approximate Volume (L)
H6	28/10/2019	0.78	15.75	Slow	3
H7	28/10/2019	0.81	16.67	Fast	5
H9	28/10/2019	0.78	16.23	Slow	14
H12	28/10/2019	0.86	17.04	Fast	9.62
BH4	28/10/2019	0.64	>60	Moderate	>45
H14	28/10/2019	0.84	13.97	Fast	7
H2	28/10/2019	0.69	5.79	Slow	5

Note: NATA accreditation does not cover information provided in this section

\*Where indicated AHD from ground level (m) estimated based on handheld GPS

## Report Number: 11901

Date Issued: 20/12/2021

Revision Number: 00

### Site/Job: Haerses Road 6 Monthly Ground Water

Client: Dixon Sand (No.1) Pty Ltd

Address: PO Box 4019

PITT TOWN NSW 2756

Contact:

David Dixon

The following groundwater sample(s) were received on 8/12/2021

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
BH01A	7/12/2021	11901/1	Water	
BH01B	7/12/2021	11901/2	Water	
BH01C	7/12/2021	11901/3	Water	
BH02A	7/12/2021	11901/4	Water	
BH02B	7/12/2021	11901/5	Water	
BH02C	7/12/2021	11901/6	Water	
BH03A	7/12/2021	11901/7	Water	
BH03B	7/12/2021	11901/8	Water	
BH03C	7/12/2021	11901/9	Water	
BH05B	7/12/2021	11901/10	Water	
BH06A	7/12/2021	11901/11		BH6 series decommissioned
BH06B	7/12/2021	11901/12		BH6 series decommissioned
BH06C	7/12/2021	11901/13		BH6 series decommissioned
BH5	7/12/2021	11901/14	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane

Laboratory Manager

Approved by:

Results have been approved and report finalised on 20/12/2021.

## Test Report Number: 11901

Date Issued: 20/12/2021

Revision No: 00

### Results

Field Analysis	Method	Units	11901/1 BH01A 7/12/2021	11901/2 BH01B 7/12/2021	11901/3 BH01C 7/12/2021	11901/4 BH02A 7/12/2021	11901/5 BH02B 7/12/2021
Depth to Water	AS5667.11	m(bTOC)	9.60	14.84	6.19	24.87	18.67
Temperature	Temp	°C	17.3	17.2	16.9	18.0	18.2
pH	APHA 4500-H B	pH Units	5.6	4.7	4.8	4.5	4.3
Electrical Conductivity	APHA 2510 B	µS/cm	230	168	200	161	168

Field Analysis	Method	Units	11901/6 BH02C 7/12/2021	11901/7 BH03A 7/12/2021	11901/8 BH03B 7/12/2021	11901/9 BH03C 7/12/2021	11901/10 BH05B 7/12/2021
Depth to Water	AS5667.11	m(bTOC)	15.90	57.01	22.22	13.56	19.72
Temperature	Temp	°C	17.9	18.9	18.3	18.1	18.0
pH	APHA 4500-H B	pH Units	4.9	6.0	4.5	4.5	4.3
Electrical Conductivity	APHA 2510 B	µS/cm	163	171	142	158	204

Field Analysis	Method	Units	11901/14 BH5 7/12/2021
Depth to Water	AS5667.11	m(bTOC)	29.58
Temperature	Temp	°C	18.2
pH	APHA 4500-H B	pH Units	4.9
Electrical Conductivity	APHA 2510 B	µS/cm	191

Total Dissolved Solids	Method	Units	11901/1 BH01A 7/12/2021	11901/2 BH01B 7/12/2021	11901/3 BH01C 7/12/2021	11901/4 BH02A 7/12/2021	11901/5 BH02B 7/12/2021
Total Dissolved Solids	AS3550.4	mg/L	144	95	92	80	66

Total Dissolved Solids	Method	Units	11901/6 BH02C 7/12/2021	11901/7 BH03A 7/12/2021	11901/8 BH03B 7/12/2021	11901/9 BH03C 7/12/2021	11901/10 BH05B 7/12/2021
Total Dissolved Solids	AS3550.4	mg/L	103	90	84	106	96

Total Dissolved Solids	Method	Units	11901/14 BH5 7/12/2021
Total Dissolved Solids	AS3550.4	mg/L	108

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Accredited for compliance with ISO/IEC 17025 – Testing.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 11901

Date Issued: 20/12/2021

Revision No: 00

Sampling Conditions: Cloudy, 18°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
11901/1	BH01A		T & D.Walker	7/12/2021 3:19 PM	AS5667.11, Pump	AS5667.1
11901/2	BH01B		T & D.Walker	7/12/2021 3:34 PM	AS5667.11, Pump	AS5667.1
11901/3	BH01C		T & D.Walker	7/12/2021 3:46 PM	AS5667.11, Bail	AS5667.1
11901/4	BH02A		T & D.Walker	7/12/2021 2:42 PM	AS5667.11, Pump	AS5667.1
11901/5	BH02B		T & D.Walker	7/12/2021 3:02 PM	AS5667.11, Pump	AS5667.1
11901/6	BH02C		T & D.Walker	7/12/2021 2:52 PM	AS5667.11, Bail	AS5667.1
11901/7	BH03A		T & D.Walker	7/12/2021 1:20 PM	AS5667.11, Bail	AS5667.1
11901/8	BH03B		T & D.Walker	7/12/2021 1:39 PM	AS5667.11, Bail	AS5667.1
11901/9	BH03C		T & D.Walker	7/12/2021 1:57 PM	AS5667.11, Bail	AS5667.1
11901/10	BH05B		T & D.Walker	7/12/2021 2:30 PM	AS5667.11, Pump	AS5667.1
11901/11	BH06A		T & D.Walker	7/12/2021	Unknown	AS5667.1
11901/12	BH06B		T & D.Walker	7/12/2021	Unknown	AS5667.1
11901/13	BH06C		T & D.Walker	7/12/2021	Unknown	AS5667.1
11901/14	BH5		T & D.Walker	7/12/2021 2:13 PM	AS5667.11, Pump	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
11901/1	BH01A	
11901/2	BH01B	
11901/3	BH01C	
11901/4	BH02A	
11901/5	BH02B	
11901/6	BH02C	
11901/7	BH03A	
11901/8	BH03B	
11901/9	BH03C	
11901/10	BH05B	
11901/11	BH06A	
11901/12	BH06B	
11901/13	BH06C	
11901/14	BH5	

Sampling procedures have been approved and report finalised on 20/12/2021.

Where method is "unknown" sampling procedures are not endorsed



## Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Road 6 Monthly Ground Water

Well ID	GPS-Easting	GPS-Northing	Survey Date	Surveyed AHD (m)	Depth to Screen (m)
BH01A	312186	6293968			
BH01B	312190	6293971			
BH01C	312184	6293972			
BH02A	312305	6293793			
BH02B	312315	6293800			
BH02C	312303	6293801			
BH03A	312341	6293579			
BH03B	312342	6293588			
BH03C	312341	6293583			
BH05B	312160	6293752			
BH06A	312379	6293346			
BH06B	312376	6293360			
BH06C	312371	6293363			
BH5	312159	6293753			

Well ID	Date Well Measured	Case Height (monument) (m)	Depth to bottom m(bTOC)	Recharge Rate	Approximate Volume (L)
BH01A	28/10/2019	1.05	>60	Slow	>100
BH01B	28/10/2019	0.92	40.92	Slow	50
BH01C	28/10/2019	1.01	11.02	Medium	6
BH02A	28/10/2019	0.81	>60	Slow	>65
BH02B	28/10/2019	0.77	42.57	Slow	30
BH02C	28/10/2019	0.98	16.12	Slow	<1
BH03A	28/10/2019	0.87	>60	Slow	>5
BH03B	28/10/2019	1.05	23.75	Slow	3
BH03C	28/10/2019	1.08	15.98	Slow	4
BH05B	28/10/2019	0.97	33.87	Medium	27
BH06A	28/10/2019	0.99	>60	Slow	>43
BH06B	28/10/2019	1.11	39.10	Slow	8
BH06C	28/10/2019	1.06	16.03	Slow	3
BH5	28/10/2019	0.57	>60	Fast	>60

Note: NATA accreditation does not cover information provided in this section

\*Where indicated AHD from ground level (m) estimated based on handheld GPS



## Report Number: 12973

Date Issued: 30/06/2022

Revision Number: 00

### Site/Job: Haerses Road H 6 Mnth Ground Water

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following groundwater sample(s) were received on 22/06/2022

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
H6	22/06/2022	12973/1	Water	
H7	22/06/2022	12973/2	Water	
H9	22/06/2022	12973/3	Water	
H12	22/06/2022	12973/4	Water	
BH4	22/06/2022	12973/5	Water	
H14	22/06/2022	12973/6	Water	
H2	22/06/2022	12973/7	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 30/06/2022.

## Test Report Number: 12973

Date Issued: 30/06/2022

Revision No: 00

### Results

Field Analysis	Method	Units	12973/1 H6 22/06/2022	12973/2 H7 22/06/2022	12973/3 H9 22/06/2022	12973/4 H12 22/06/2022	12973/5 BH4 22/06/2022
<b>Date Tested</b>	--	--	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Depth to Water	AS5667.11	m(bTOC)	8.78	9.74	7.07	7.55	37.51
Temperature	Temp	°C	16.1	17.2	16.2	17.3	18.1
pH	APHA 4500-H B	pH Units	4.5	4.5	4.4	4.5	5.5
Electrical Conductivity	APHA 2510 B	µS/cm	116	137	105	230	132

Field Analysis	Method	Units	12973/6 H14 22/06/2022	12973/7 H2 22/06/2022
<b>Date Tested</b>	--	--	22/06/2022	22/06/2022
Depth to Water	AS5667.11	m(bTOC)	6.61	1.38
Temperature	Temp	°C	18.5	15.3
pH	APHA 4500-H B	pH Units	4.3	4.7
Electrical Conductivity	APHA 2510 B	µS/cm	150	61.0

Total Dissolved Solids	Method	Units	12973/1 H6 22/06/2022	12973/2 H7 22/06/2022	12973/3 H9 22/06/2022	12973/4 H12 22/06/2022	12973/5 BH4 22/06/2022
<b>Date Tested</b>	--	--	27/06/2022	27/06/2022	27/06/2022	27/06/2022	27/06/2022
Total Dissolved Solids	AS3550.4	mg/L	74	79	72	141	85

Total Dissolved Solids	Method	Units	12973/6 H14 22/06/2022	12973/7 H2 22/06/2022
<b>Date Tested</b>	--	--	27/06/2022	27/06/2022
Total Dissolved Solids	AS3550.4	mg/L	87	60

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12973

Date Issued: 30/06/2022

Revision No: 00

Sampling Conditions: Fine, 13°- 18°C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12973/1	H6		T & D.Walker	22/06/2022 8:29 AM	AS5667.11, Pump	AS5667.1
12973/2	H7		T & D.Walker	22/06/2022 9:14 AM	AS5667.11, Pump	AS5667.1
12973/3	H9		T & D.Walker	22/06/2022 10:09 AM	AS5667.11, Pump	AS5667.1
12973/4	H12		T & D.Walker	22/06/2022 10:27 AM	AS5667.11, Pump	AS5667.1
12973/5	BH4		T & D.Walker	22/06/2022 10:48 AM	AS5667.11, Pump	AS5667.1
12973/6	H14		T & D.Walker	22/06/2022 11:27 AM	AS5667.11, Bail	AS5667.1
12973/7	H2		T & D.Walker	22/06/2022 9:31 AM	AS5667.11, Pump	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
12973/1	H6	
12973/2	H7	
12973/3	H9	
12973/4	H12	
12973/5	BH4	0.10m knot in logger string (removed)
12973/6	H14	
12973/7	H2	

Sampling procedures have been approved and report finalised on 30/06/2022.

Where method is "unknown" sampling procedures are not endorsed

## Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Road H 6 Mnth Ground Water

Well ID	GPS-Easting	GPS-Northing	Survey Date	Surveyed AHD (m)	Depth to Screen (m)
H6	312989	6295066			
H7	312855	6294643			
H9	312796	6294232			
H12	312709	6294090			
BH4	312843	6293870			
H14	312659	6293363			
H2	312515	6294585			

Well ID	Date Well Measured	Case Height (TOC) (m)	Depth to bottom m(bTOC)	Recharge Rate	Approximate Volume (L)
H6	28/10/2019	0.78	15.75	Slow	3
H7	28/10/2019	0.81	16.67	Fast	5
H9	28/10/2019	0.78	16.23	Slow	14
H12	28/10/2019	0.86	17.04	Fast	9.62
BH4	28/10/2019	0.64	>60	Moderate	>45
H14	28/10/2019	0.84	13.97	Fast	7
H2	28/10/2019	0.69	5.79	Slow	5

Note: NATA accreditation does not cover information provided in this section

\*Where indicated AHD from ground level (m) estimated based on handheld GPS

## Report Number: 12974

Date Issued: 30/06/2022

Revision Number: 00

### Site/Job: Haerses Road 6 Monthly Ground Water

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following groundwater sample(s) were received on 22/06/2022

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
BH01A	22/06/2022	12974/1	Water	
BH01B	22/06/2022	12974/2	Water	
BH01C	22/06/2022	12974/3	Water	
BH02A	22/06/2022	12974/4	Water	
BH02B	22/06/2022	12974/5	Water	
BH02C	22/06/2022	12974/6	Water	
BH03A	22/06/2022	12974/7	Water	
BH03B	22/06/2022	12974/8	Water	
BH03C	22/06/2022	12974/9	Water	
BH05B	22/06/2022	12974/10	Water	
BH5	22/06/2022	12974/11	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.  
The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 30/06/2022.

## Test Report Number: 12974

Date Issued: 30/06/2022

Revision No: 00

### Results

Field Analysis	Method	Units	12974/1 BH01A 22/06/2022	12974/2 BH01B 22/06/2022	12974/3 BH01C 22/06/2022	12974/4 BH02A 22/06/2022	12974/5 BH02B 22/06/2022
<b>Date Tested</b>	--	--	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Depth to Water	AS5667.11	m(bTOC)	8.81	15.17	5.64	23.48	18.21
Temperature	Temp	°C	16.8	17.0	17.2	17.7	17.7
pH	APHA 4500-H B	pH Units	6.1	5.3	4.7	4.6	4.3
Electrical Conductivity	APHA 2510 B	µS/cm	240	170	198	165	175

Field Analysis	Method	Units	12974/6 BH02C 22/06/2022	12974/7 BH03A 22/06/2022	12974/8 BH03B 22/06/2022	12974/9 BH03C 22/06/2022	12974/10 BH05B 22/06/2022
<b>Date Tested</b>	--	--	22/06/2022	22/06/2022	22/06/2022	22/06/2022	22/06/2022
Depth to Water	AS5667.11	m(bTOC)	14.72	56.72	22.14	13.41	19.14
Temperature	Temp	°C	17.5	18.9	18.4	18.3	17.7
pH	APHA 4500-H B	pH Units	5.5	5.3	4.5	4.2	4.5
Electrical Conductivity	APHA 2510 B	µS/cm	195	152	149	176	186

Field Analysis	Method	Units	12974/11 BH5 22/06/2022
<b>Date Tested</b>	--	--	22/06/2022
Depth to Water	AS5667.11	m(bTOC)	29.43
Temperature	Temp	°C	17.8
pH	APHA 4500-H B	pH Units	5.0
Electrical Conductivity	APHA 2510 B	µS/cm	183

Total Dissolved Solids	Method	Units	12974/1 BH01A 22/06/2022	12974/2 BH01B 22/06/2022	12974/3 BH01C 22/06/2022	12974/4 BH02A 22/06/2022	12974/5 BH02B 22/06/2022
<b>Date Tested</b>	--	--	27/06/2022	27/06/2022	29/06/2022	29/06/2022	29/06/2022
Total Dissolved Solids	AS3550.4	mg/L	148	135	106	98	75

Total Dissolved Solids	Method	Units	12974/6 BH02C 22/06/2022	12974/7 BH03A 22/06/2022	12974/8 BH03B 22/06/2022	12974/9 BH03C 22/06/2022	12974/10 BH05B 22/06/2022
<b>Date Tested</b>	--	--	29/06/2022	29/06/2022	29/06/2022	29/06/2022	29/06/2022
Total Dissolved Solids	AS3550.4	mg/L	130	110	76	70	102

Total Dissolved Solids	Method	Units	12974/11 BH5 22/06/2022
<b>Date Tested</b>	--	--	29/06/2022
Total Dissolved Solids	AS3550.4	mg/L	90



## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.



## Sampling Report Number: 12974

Date Issued: 30/06/2022

Revision No: 00

Sampling Conditions: Fine, 13°- 18°C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12974/1	BH01A		T & D.Walker	22/06/2022 2:52 PM	AS5667.11, Bail	AS5667.1
12974/2	BH01B		T & D.Walker	22/06/2022 3:03 PM	AS5667.11, Bail	AS5667.1
12974/3	BH01C		T & D.Walker	22/06/2022 3:12 PM	AS5667.11, Bail	AS5667.1
12974/4	BH02A		T & D.Walker	22/06/2022 2:11 PM	AS5667.11, Bail	AS5667.1
12974/5	BH02B		T & D.Walker	22/06/2022 2:20 PM	AS5667.11, Bail	AS5667.1
12974/6	BH02C		T & D.Walker	22/06/2022 2:28 PM	AS5667.11, Bail	AS5667.1
12974/7	BH03A		T & D.Walker	22/06/2022 1:19 PM	AS5667.11, Bail	AS5667.1
12974/8	BH03B		T & D.Walker	22/06/2022 1:33 PM	AS5667.11, Bail	AS5667.1
12974/9	BH03C		T & D.Walker	22/06/2022 1:40 PM	AS5667.11, Bail	AS5667.1
12974/10	BH05B		T & D.Walker	22/06/2022 1:51 PM	AS5667.11, Bail	AS5667.1
12974/11	BH5		T & D.Walker	22/06/2022 1:59 PM	AS5667.11, Bail	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
12974/1	BH01A	
12974/2	BH01B	
12974/3	BH01C	
12974/4	BH02A	
12974/5	BH02B	
12974/6	BH02C	
12974/7	BH03A	
12974/8	BH03B	
12974/9	BH03C	
12974/10	BH05B	
12974/11	BH5	

Sampling procedures have been approved and report finalised on 30/06/2022.

Where method is "unknown" sampling procedures are not endorsed

## Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Road 6 Monthly Ground Water

Well ID	GPS-Easting	GPS-Northing	Survey Date	Surveyed AHD (m)	Depth to Screen (m)
BH01A	312186	6293968			
BH01B	312190	6293971			
BH01C	312184	6293972			
BH02A	312305	6293793			
BH02B	312315	6293800			
BH02C	312303	6293801			
BH03A	312341	6293579			
BH03B	312342	6293588			
BH03C	312341	6293583			
BH05B	312160	6293752			
BH5	312159	6293753			

Well ID	Date Well Measured	Case Height (TOC) (m)	Depth to bottom m(bTOC)	Recharge Rate	Approximate Volume (L)
BH01A	28/10/2019	1.05	>60	Slow	>100
BH01B	28/10/2019	0.92	40.92	Slow	50
BH01C	28/10/2019	1.01	11.02	Medium	6
BH02A	28/10/2019	0.81	>60	Slow	>65
BH02B	28/10/2019	0.77	42.57	Slow	30
BH02C	28/10/2019	0.98	16.12	Slow	<1
BH03A	28/10/2019	0.87	>60	Slow	>5
BH03B	28/10/2019	1.05	23.75	Slow	3
BH03C	28/10/2019	1.08	15.98	Slow	4
BH05B	28/10/2019	0.97	33.87	Medium	27
BH5	28/10/2019	0.57	>60	Fast	>60

Note: NATA accreditation does not cover information provided in this section

\*Where indicated AHD from ground level (m) estimated based on handheld GPS

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## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2100148**  
**Client** : **DIXON SAND ( PENRITH ) PTY LTD**  
**Contact** : **HUNNY CHURCHER**  
**Address** :  
**Telephone** : **02 4566 8348**  
**Project** : **Haerses Road Quarry**  
**Order number** : ----  
**C-O-C number** : ----  
**Sampler** : **Ben Grogan**  
**Site** : ----  
**Quote number** : **EN/333**  
**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** : 05-Jan-2021 14:50  
**Date Analysis Commenced** : 06-Jan-2021  
**Issue Date** : 08-Jan-2021 11:57



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

### Signatories

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

<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 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 Results

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

				Sample ID	SW2	----	----	----	----
				Sampling date / time	05-Jan-2021 11:23	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2100148-001	-----	-----	-----	-----	-----
				Result	----	----	----	----	----
<b>EA005P: pH by PC Titrator</b>									
pH Value	----	0.01	pH Unit	<b>5.68</b>	----	----	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>									
Suspended Solids (SS)	----	5	mg/L	<5	----	----	----	----	----
<b>EA045: Turbidity</b>									
Turbidity	----	0.1	NTU	<b>9.0</b>	----	----	----	----	----

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2143027**  
**Client** : **DIXON SAND ( PENRITH ) PTY LTD**  
**Contact** : **HUNNY CHURCHER**  
**Address** :  
**Telephone** : **02 4566 8348**  
**Project** : **Haerses Road Quarry**  
**Order number** : ----  
**C-O-C number** : ----  
**Sampler** : **Mick Munnoch**  
**Site** : ----  
**Quote number** : **EN/333**  
**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** : 26-Nov-2021 11:40  
**Date Analysis Commenced** : 26-Nov-2021  
**Issue Date** : 02-Dec-2021 10:56



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, unless the sampling was conducted by ALS. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

### *Signatories*

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

<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 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 Results

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

			Sample ID	SW2	----	----	----	----
			Sampling date / time	26-Nov-2021 08:30	----	----	----	----
Compound	CAS Number	LOR	Unit	ES2143027-001	-----	-----	-----	-----
				Result	----	----	----	----
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	<b>6.12</b>	----	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	<b>95</b>	----	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	<b>32</b>	----	----	----	----
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	<b>59.3</b>	----	----	----	----

## CERTIFICATE OF ANALYSIS

**Work Order** : **ES2206656**  
**Client** : **DIXON SAND ( PENRITH ) PTY LTD**  
**Contact** : **HUNNY CHURCHER**  
**Address** :  
**Telephone** : **02 4566 8348**  
**Project** : **Haersas Road Quarry**  
**Order number** : ----  
**C-O-C number** : ----  
**Sampler** : **Mick Munnoch**  
**Site** : ----  
**Quote number** : **EN/333**  
**No. of samples received** : **2**  
**No. of samples analysed** : **2**

**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** : 25-Feb-2022 17:00  
**Date Analysis Commenced** : 26-Feb-2022  
**Issue Date** : 04-Mar-2022 17:24



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

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Accreditation Category</i>
Ankit Joshi	Senior Chemist - Inorganics	Sydney Inorganics, Smithfield, 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 Results

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

				Sample ID				
				SW1	SW2	----	----	----
				25-Feb-2022 12:10	25-Feb-2022 12:20	----	----	----
Compound	CAS Number	LOR	Unit	ES2206656-001	ES2206656-002	-----	-----	-----
				Result	Result	---	---	---
<b>EA005P: pH by PC Titrator</b>								
pH Value	----	0.01	pH Unit	5.49	5.06	----	----	----
<b>EA010P: Conductivity by PC Titrator</b>								
Electrical Conductivity @ 25°C	----	1	µS/cm	43	80	----	----	----
<b>EA025: Total Suspended Solids dried at 104 ± 2°C</b>								
Suspended Solids (SS)	----	5	mg/L	90	13	----	----	----
<b>EA045: Turbidity</b>								
Turbidity	----	0.1	NTU	475	27.1	----	----	----

## Report Number: 12800

Date Issued: 6/05/2022

Revision Number: 00

### Site/Job: Haerses Rd - Monthly Surface water

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following water sample(s) were received on 5/05/2022

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1	5/05/2022	12800/1	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.  
The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)

Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 6/05/2022.

## Test Report Number: 12800

Date Issued: 6/05/2022

Revision No: 00

### Results

Field Analysis	Method	Units	12800/1 Basin 1 5/05/2022
<b>Date Tested</b>	--	--	04/05/2022
Temperature	Temp	°C	22.3
pH	APHA 4500-H B	pH Units	4.9
Electrical Conductivity	APHA 2510 B	µS/cm	104
Turbidity	APHA 2130 B	NTU	5.5

Solids	Method	Units	12800/1 Basin 1 5/05/2022
<b>Date Tested</b>	--	--	05/05/2022
Total Suspended Solids	AS3550.4	mg/L	<5

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.

## Sampling Report Number: 12800

Date Issued: 6/05/2022

Revision No: 00

### Sampling Conditions:

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12800/1	Basin 1		T.Walker	5/05/2022 12:50 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12800/1	Basin 1			No flow, not discharging, No visible oils.

Sampling procedures have been approved and report finalised on 6/05/2022.

Where method is "unknown" sampling procedures are not endorsed

## Report Number: 12975

Date Issued: 30/06/2022

Revision Number: 00

### Site/Job: Haerses Rd- 6 Monthly Surface water

Client: Dixon Sand (No.1) Pty Ltd  
Address: PO Box 4019  
PITT TOWN NSW 2756  
Contact: David Dixon

The following water sample(s) were received on 22/06/2022

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Stage 1 Pit Sump	22/06/2022	12975/1	Water	
Stage 2 West Sediment	22/06/2022	12975/2	Water	
Stage 2 West Pit Sump	22/06/2022	12975/3	Water	
Stage 2 East Sediment Dam	22/06/2022	12975/4	Water	
Basin 1 - Mod 1	22/06/2022	12975/5	Water	
Basin 4	22/06/2022	12975/6	Water	

The sample(s) have been tested as received and results relate specifically to the samples tested.

The following reports are included:

- Test Report
- Sampling Report
- Chain of Custody (if available)



Anthony Crane  
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 30/06/2022.

## Test Report Number: 12975

Date Issued: 30/06/2022

Revision No: 00

### Results

Physicals	Method	Units	12975/1 Stage 1 Pit Sump 22/06/2022	12975/2 Stage 2 West Sediment 22/06/2022	12975/3 Stage 2 West Pit Sump 22/06/2022	12975/4 Stage 2 East Sediment Dam 22/06/2022	12975/5 Basin 1 - Mod 1 22/06/2022
<b>Date Tested</b>	--	--	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Temperature	Temp	°C	12.0	14.1	13.7	13.2	15.2
pH	APHA 4500-H B	pH Units	6.4	6.4	5.3	6.3	4.6
Electrical Conductivity	APHA 2510 B	µS/cm	<50.0	54.0	<50.0	<50.0	139
Turbidity	APHA 2130 B	NTU	4.5	15	26	24	1.8

Physicals	Method	Units	12975/6 Basin 4 22/06/2022
<b>Date Tested</b>	--	--	23/06/2022
Temperature	Temp	°C	13.5
pH	APHA 4500-H B	pH Units	5.9
Electrical Conductivity	APHA 2510 B	µS/cm	<50.0
Turbidity	APHA 2130 B	NTU	35

Solids	Method	Units	12975/1 Stage 1 Pit Sump 22/06/2022	12975/2 Stage 2 West Sediment 22/06/2022	12975/3 Stage 2 West Pit Sump 22/06/2022	12975/4 Stage 2 East Sediment Dam 22/06/2022	12975/5 Basin 1 - Mod 1 22/06/2022
<b>Date Tested</b>	--	--	23/06/2022	23/06/2022	23/06/2022	23/06/2022	23/06/2022
Total Suspended Solids	AS3550.4	mg/L	<5	10	16	19	<5

Solids	Method	Units	12975/6 Basin 4 22/06/2022
<b>Date Tested</b>	--	--	23/06/2022
Total Suspended Solids	AS3550.4	mg/L	21

## Report Comments:

# Where present, indicates NATA accreditation does not cover the performance of this service.

Results in **bold** indicate an exceedance of the relevant guideline.

When considering the pass or fail of tests the measurement of uncertainty of each parameter must be considered.

<https://www.vgt.com.au/measurement-uncertainty>

[NT]: Not tested

Location Analysed : Field and 4/30 Glenwood Dr Thornton NSW 2322.



## Sampling Report Number: 12975

Date Issued: 30/06/2022

Revision No: 00

Sampling Conditions: Fine, 13 - 17°C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
12975/1	Stage 1 Pit Sump		T & D.Walker	22/06/2022 9:54 AM	AS5667.4 Lake, Grab	AS5667.1
12975/2	Stage 2 West Sediment		T & D.Walker	22/06/2022 1:05 PM	AS5667.4 Lake, Grab	AS5667.1
12975/3	Stage 2 West Pit Sump		T & D.Walker	22/06/2022 12:48 PM	AS5667.4 Lake, Grab	AS5667.1
12975/4	Stage 2 East Sediment Dam		T & D.Walker	22/06/2022 11:09 AM	AS5667.4 Lake, Grab	AS5667.1
12975/5	Basin 1 - Mod 1		T & D.Walker	22/06/2022 12:14 PM	AS5667.4 Lake, Grab	AS5667.1
12975/6	Basin 4		T & D.Walker	22/06/2022 11:43 AM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
12975/1	Stage 1 Pit Sump			
12975/2	Stage 2 West Sediment			
12975/3	Stage 2 West Pit Sump			
12975/4	Stage 2 East Sediment Dam			
12975/5	Basin 1 - Mod 1			Trickle discharge
12975/6	Basin 4			

Sampling procedures have been approved and report finalised on 30/06/2022.

Where method is "unknown" sampling procedures are not endorsed

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**Dixon Sand (No.1) Pty Ltd**

**Haerses Road Quarry, Maroota**

**Noise monitoring report  
December 2021**

**Doc no. 19020-NV-RP-7-2**





**Dixon Sand (No.1) Pty Ltd**  
**Haerses Road Quarry, Maroota**

<b>Title</b>	Noise monitoring report
<b>Document no.</b>	19020-NV-RP-7-2
<b>Revision</b>	2
<b>Date</b>	20 December 2021
<b>Author</b>	John Hutchison
<b>Reviewer</b>	Scott Hughes

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Revision history

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0	20 December 2021	Draft report to client
1	24 January 2022	Amended following client comments
2	22 February 2022	Amended to incorporate client comments



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## Definition of terms

<b>Background noise</b>	The underlying level of noise present in the ambient noise, excluding the noise source under investigation.
<b>Decibel (dB)</b>	A measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm (to base 10) of the ratio of a given sound power to a reference power.
<b>dB(A)</b>	Unit used to measure 'A-weighted' sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.
<b>dB(C)</b>	Unit used to measure 'C-weighted' sound pressure levels, an adjustment made to sound level to approximate low frequency noise between 10 Hz and 200 Hz.
<b>EPA</b>	Environment Protection Authority
<b>Extraneous noise</b>	Noise resulting from activities that are not typical of the area such as construction, and traffic generated by holiday periods or special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.
<b>Noise level statistics</b>	<p><math>L_{A90}</math> – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise.</p> <p><math>L_{Aeq}</math> – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period.</p> <p><math>L_{A1}</math> – The A-weighted sound pressure level exceeded 1% of the monitoring period.</p> <p><math>L_{Amax}</math> – The maximum A-weighted noise level associated with the measurement period.</p>
<b>RBL</b>	The Rating Background Level for each period is the medium value of the ABL values for the period over all the days measured. There is therefore an RBL value for each period (day, evening and night)
<b>Receiver</b>	The land use at which noise is heard
<b>SLM</b>	Sound Level Meter
<b>Sound Power Level (SWL)</b>	The A-weighted sound power level is a logarithmic ratio of the acoustic power output of a source relative to $10^{-12}$ watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.
<b>Sound Pressure Level (SPL)</b>	<p>This is the level of noise, usually expressed in dB(A), as measured by a standard sound level meter (SLM) with a pressure microphone. The sound pressure level in dB(A) gives a close indication of the subjective loudness of noise.</p> <p>A technical definition for the sound pressure level, in decibels, is 20 times the logarithm (base 10) of the ratio of any two quantities related to a given sound pressure to a reference pressure (typically <math>20 \mu\text{Pa}</math> equivalent to 0 dB).</p>
<b>Tonal noise</b>	Noise with perceptible and definite pitch or tone



## 1. Introduction

Dixon Sand (No.1) Pty Ltd operates the Haerses Road Quarry in Maroota, NSW (the Quarry). The Quarry is located off Wisemans Ferry Road, as illustrated in Figure 1.

Operations at the quarry include extraction of sand and sandstone blocks, processing by screening and grading and loading of trucks for shipment.

The Quarry operates under Development Consent DA 165-7-2005 and Environment Protection Licence (EPL) 12513, which set noise limits for its operation. Extraction in the areas described in Modification 1 of the development consent and utilisation of the processing plant area commenced in December 2019 and require attended noise monitoring on a six-monthly basis to ensure compliance with the conditions.

Hutchison Weller was commissioned by Dixon Sand to undertake the six-monthly noise monitoring in accordance with the conditions of consent, EPL and requirements of the Noise Management Plan.

This document outlines the consent conditions, monitoring methodology and results of the monitoring undertaken on 20 December 2021.

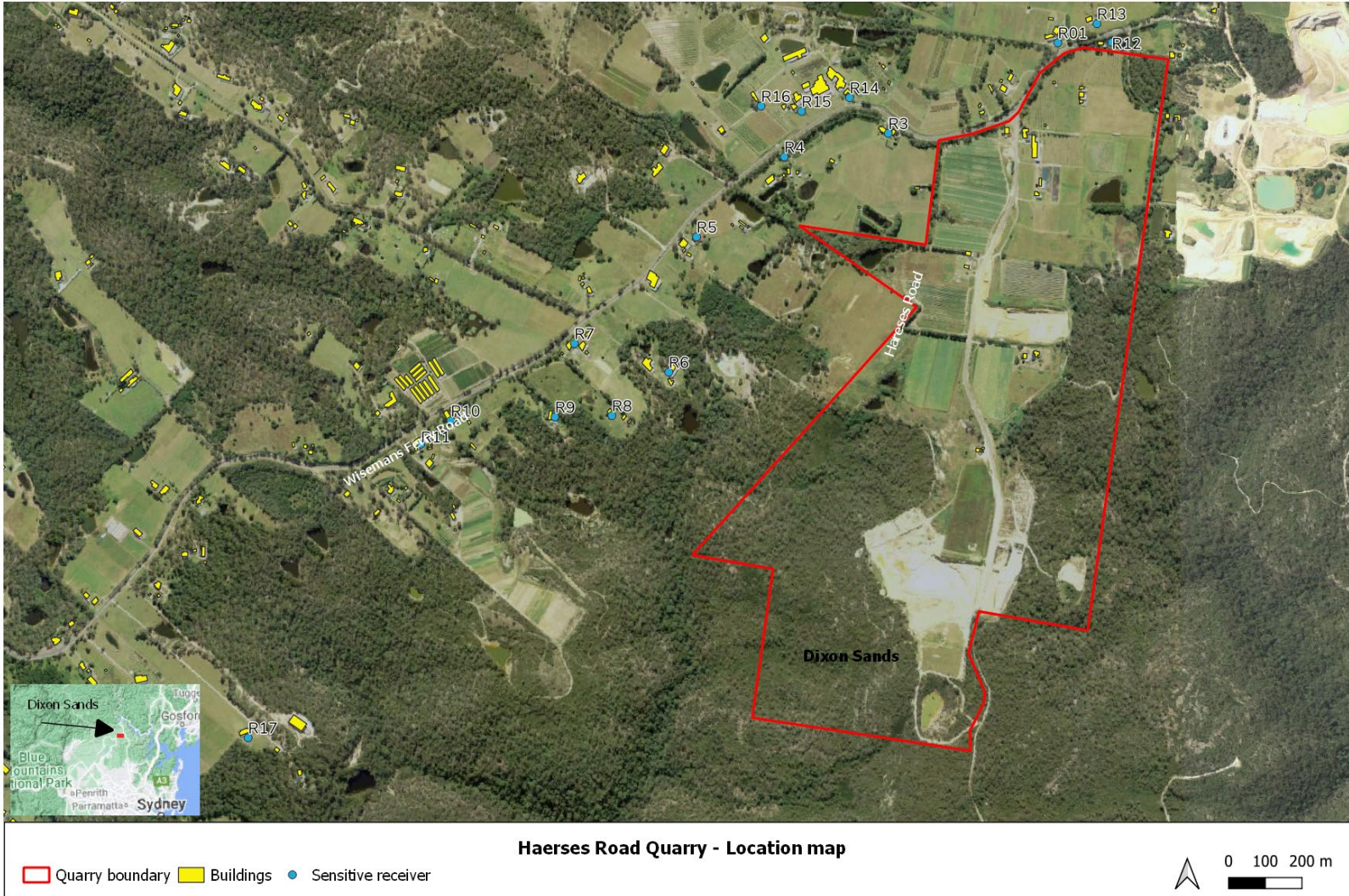


Figure 1 Location of the Quarry





## 2. Noise compliance criteria

Conditions 1 and 2 of Schedule 3 of development consent DA 165-7-2005 outline the Quarry operating hours and condition 3 defines the noise criteria for compliance.

1. The Applicant must comply with the operating hours set out in Table 1.

**Table 1 Operating hours**

<b>Activity</b>	<b>Permissible hours</b>
Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Truck arrival, loading and dispatch	6.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road	8.00 am to 5.00 pm Monday to Friday. At no time on Saturdays, Sundays, or public holidays
Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations.

2. The following activities may be carried out outside the hours specified in condition 1 above:
  - (a) delivery or dispatch of materials as requested by the NSW Police Force or other public authorities; and
  - (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

3. The Applicant must ensure that the noise generated by the development (excluding acoustic bund construction) does not exceed the criteria in Table 2 at any residence on privately-owned land.

**Table 2 Noise criteria dB(A)**

<b>Receiver</b>	<b>Day</b>	<b>Shoulder (6.00 am to 7.00 am)</b>	
	<b>LAeq (15 minute)</b>	<b>LAeq (15 minute)</b>	<b>LAmx</b>
R05, R06	41	35	52
R03	40	37	
R13, R14	40	36	
All other receivers	40	35	

Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry.

However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Agreements are currently in place between Dixon Sand and adjacent private landowners including:

- Residential receivers identified as R2 and R12 in the planning consent and
- All identified receivers to the east of Haerses Road quarry on Hitchcock Road



### 3. Monitoring methodology

Operator-attended noise monitoring was undertaken on 7 December 2021 by John Hutchison of Hutchison Weller, an independent acoustic specialist. Monitoring locations included those described in the Quarry Noise Management Plan, as illustrated in Figure 1, and summarised in Table 3.

**Table 3 Monitoring locations**

Receiver	Address	Description
R3	1643 Wisemans Ferry Road	Private residence adjacent plant nursery
R4	1617 Wisemans Ferry Road	No access granted – levels extrapolated instead
R6	1543 Wisemans Ferry Road	No access granted – levels extrapolated instead
R8	1521 Wisemans Ferry Road	Private residence. Monitoring conducted at boundary between R7 and R8 since no access granted to R8.
HAS1	Haerses Road Quarry	Close to equipment within Haerses Road boundary

Monitoring was conducted in general accordance with the Noise Policy for Industry and Section 6 of the Noise Management Plan.

At-receiver monitoring locations were within 30 metres of residential dwellings, whilst onsite measurement locations were selected for safe access and to be representative of the operations, without extraneous noise from sources such as traffic and insects.

Instrumentation included a Bruel & Kjaer Class 1 sound level meter (SLM), serial no. 3008237, field-calibrated prior to and following monitoring. The SLM was within current calibration, next due January 2022.

Monitoring was undertaken with the SLM set on a tripod at 1.5 metres above ground and measuring A-weighted sound pressure levels under fast response. Each measurement period was 15 minutes and recorded the LAeq, LA90 and LAmx statistics.

Meteorological data was recorded during each monitoring period adjacent to the Maroota public school, including wind speed, direction, temperature, relative humidity, and sigma-theta (to establish the Pascall-Guifford stability category). This data was used to establish whether meteorological conditions were suitable for monitoring.

Where extraneous noise such as road traffic or insects were the dominant noise sources, making it impractical to discern the contribution of the Quarry to ambient noise levels, noise levels measured at alternative locations closer to the Quarry were utilised, in line with procedures outlines in Noise Policy for Industry. This involved extrapolation from the near-distance location to the sensitive receiver location.



## **4. Monitoring results**

### **4.1 Attended measurements**

Results of noise monitoring for each location are presented in Table 4.

The main sources of noise from quarry operations were sand processing and truck loading (screening, front end loaders, trucks) and rock sawing.

In all cases, the Haerses Road quarry was compliant with the project noise objectives.

Quarry operations were inaudible at all residential receivers prior to 7am, with traffic noise in all cases the dominant source of noise. No L<sub>Amax</sub> noise levels were attributable to the quarry in the shoulder period.

During the day period, quarry noise was inaudible at two monitoring locations, R3 and R7.

On-site measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were undertaken over 15-minute periods to establish representative sound power levels of the operation to allow extrapolation to receiver locations where background noise was too high to discern quarry noise contributions. This is discussed further in Section 4.3.

### **4.2 Modifying factors**

No tonal, impulsive, or low frequency noise characteristics were observed during the monitoring period. Therefore, application of modifying factors is not appropriate in this instance.



Table 4 Monitoring results

Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmx			
Shoulder (6.00am to 7.00am)	6:03AM	R3	37	50.6	38.2	67.4	<35	Traffic on Wisemans Ferry Road is dominant source of noise with pass-bys of around 53 to 58 dBA. The LMax resulted from a noisy truck. No quarry-related activity audible. No LAmx attributable to the quarry.	Light breeze from NE @ 1-2km/h Temperature 11°C Clear sky Neutral conditions to unstable (C to A class)
	6.30am	R7 (R8)	35	47.6	38.8	66.4	<35	Traffic on Wisemans Ferry Road is dominant source of noise ~ 45 - 58 dBA. No quarry-related activity audible. The LAmx was a rooster. No LAmx values attributable to the quarry	
Day (7.00am to 6.00pm)	8:00am	HAS1	N/A	62.1	-	-	62	Measurement around 52 metres from screen (Super reclaimer 10XS) ~ 62dBA and Volvo loader increased to ~63 dBA. Truck pass-by (onsite) briefly 71 dBA	Light breeze from NW @ 3 km/h Temperature 17 °C Clear sky Unstable conditions (A class)
	8.18am			51	-	66	51	FEL loading truck at 130 Metres. 51 dBA Screen shielded from microphone by sand pile.	
	8.35am			73	-	-	73	Rock saw cutting sandstone blocks. Blade starts at surface ~ 75 dBA then reduces noise as it sinks into ground – 72 dBA	
	9.26AM	R3	40	49.8	39.9	67.2	<35	Quarry inaudible. Wisemans Ferry Road dominant with light and heavy vehicles at 54 - 58 dBA. Lmax from engine brakes at 67 dBA	Light breeze from NW @ 7km/h Temperature 19°C Clear sky Unstable conditions (A- to B- class)
	9.55AM	R8	40	44.3	35.9	69.2	<35	Traffic on Wisemans Ferry Road dominant ~ 48 – 51 dBA Quarry inaudible even during breaks in traffic at 35 dBA.	



### 4.3 Extrapolated measurements

A conclusive noise level attributable to the Quarry was not possible in all locations due to ambient noise levels affected by road traffic. Therefore, measurements captured on-site without substantial influence from this source were used to calculate sound pressure levels at each receiver.

Calculations were based on ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*, which accounts for geometric spreading, air, and ground absorption as well as barrier effects, assuming worst case meteorology of a gentle breeze from source to receiver and stable conditions.

Based on measurements described in Table 4, extrapolated noise results for each receiver are presented in Table 5 and illustrated in Figure 2. Results are shown for all equipment operating (screen / loader and rock saw).

Extrapolated results demonstrate the Quarry is compliant with the criteria for shoulder and daytime operations when all observed equipment is operating.

Table 5 Extrapolated monitoring results

Receiver	Noise criteria	Extrapolated noise level, LAeq, 15 minute	Comment
R12	40	27	Predicted levels correlate well with measured levels and all locations shown to comply with noise limits.
R3	40	29	
R4	40	32	
R6	41	32	
R7	40	33	
R8	40	36	
All other receivers	40	See Figure 2	

### 4.4 Compliance summary

Results of attended monitoring and extrapolated noise levels demonstrate observed operations during shoulder and day periods were compliant with the noise criteria at each receiver under the meteorological conditions at the time.

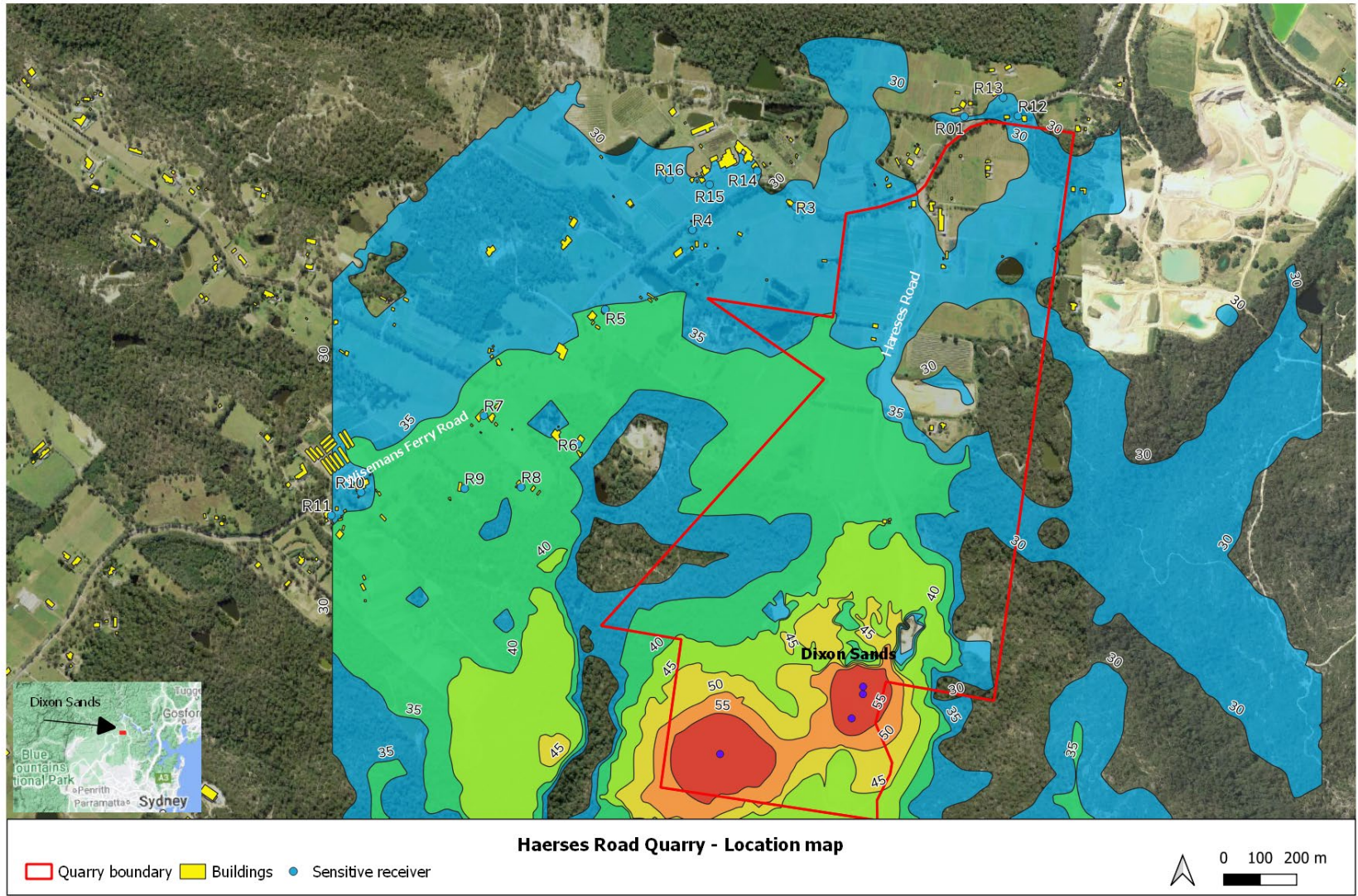


Figure 2 Extrapolated noise levels from Haerses Road quarry based on on-site measurements.

Dixon Sand (No.1) Pty Ltd

Haerses Road Quarry, Maroota

Noise monitoring report  
June 2022

Doc no. 19020-NV-RP-8-0





Dixon Sand (No.1) Pty Ltd  
Haerses Road Quarry, Maroota

Title	Noise monitoring report
Document no.	19020-NV-RP-8-0
Revision	0
Date	22 August 2022
Author	John Hutchison
Reviewer	Scott Hughes

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#### Revision history

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0	22 August 2022	Draft report to client
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## Definition of terms

<p>□□□□□r□□□□d□ □□□s□□</p>	<p>The underlying level of noise present in the ambient noise, excluding the noise source under investigation.</p>
<p>D□□□□□□□□□□</p>	<p>A measure of sound equivalent to 20 times the logarithm (to base 10) of the ratio of a given sound pressure to a reference pressure, and 10 times the logarithm (to base 10) of the ratio of a given sound power to a reference power.</p>
<p>d□□□□</p>	<p>Unit used to measure 'A-weighted' sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.</p>
<p>d□□□□□</p>	<p>Unit used to measure 'C-weighted' sound pressure levels, an adjustment made to sound level to approximate low frequency noise between 10 Hz and 200 Hz.</p>
<p>□□□□</p>	<p>Environment Protection Authority</p>
<p>□□r□□□□□s□□□s□□</p>	<p>Noise resulting from activities that are not typical of the area such as construction, and traffic generated by holiday periods or special events such as concerts or sporting events. Normal daily traffic is not considered to be extraneous.</p>
<p>□□s□□□□□□□□ s□□□s□□□s□</p>	<p> <p><math>L_{A90}</math> – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise.</p> <p><math>L_{Aeq}</math> – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period.</p> <p><math>L_{A1}</math> – The A-weighted sound pressure level exceeded 1% of the monitoring period.</p> <p><math>L_{Amax}</math> – The maximum A-weighted noise level associated with the measurement period.</p> </p>
<p>R□□</p>	<p>The Rating Background Level for each period is the medium value of the ABL values for the period over all the days measured. There is therefore an RBL value for each period (day, evening and night)</p>
<p>R□□□□□r□</p>	<p>The land use at which noise is heard</p>
<p>S□M□</p>	<p>Sound Level Meter</p>
<p>S□□□d□□□□r□ □□□□□S□□□□</p>	<p>The A-weighted sound power level is a logarithmic ratio of the acoustic power output of a source relative to <math>10^{-12}</math> watts and expressed in decibels. Sound power level is calculated from measured sound pressure levels and represents the level of total sound power radiated by a sound source.</p>
<p>S□□□d□□r□□□r□ □□□□□S□□□□</p>	<p>This is the level of noise, usually expressed in dB(A), as measured by a standard sound level meter (SLM) with a pressure microphone. The sound pressure level in dB(A) gives a close indication of the subjective loudness of noise.</p> <p>A technical definition for the sound pressure level, in decibels, is 20 times the logarithm (base 10) of the ratio of any two quantities related to a given sound pressure to a reference pressure (typically <math>20 \mu\text{Pa}</math> equivalent to 0 dB).</p>
<p>□□□□□□s□□</p>	<p>Noise with perceptible and definite pitch or tone</p>



## 1.□ Introduction

Dixon Sand (No.1) Pty Ltd operates the Haerses Road Quarry in Maroota, NSW (the Quarry). The Quarry is located off Wisemans Ferry Road, as illustrated in Figure 1.

Operations at the quarry include extraction of sand and sandstone blocks, processing by screening and grading and loading of trucks for shipment.

The Quarry operates under Development Consent DA 165-7-2005 and Environment Protection Licence (EPL) 12513, which set noise limits for its operation. Extraction in the areas described in Modification 1 of the development consent and utilisation of the processing plant area commenced in December 2019 and require attended noise monitoring on a six-monthly basis to ensure compliance with the conditions.

Hutchison Weller was commissioned by Dixon Sand to undertake the six-monthly noise monitoring in accordance with the conditions of consent, EPL and requirements of the Noise Management Plan.

This document outlines the consent conditions, monitoring methodology and results of the monitoring undertaken on 15 June 2022.

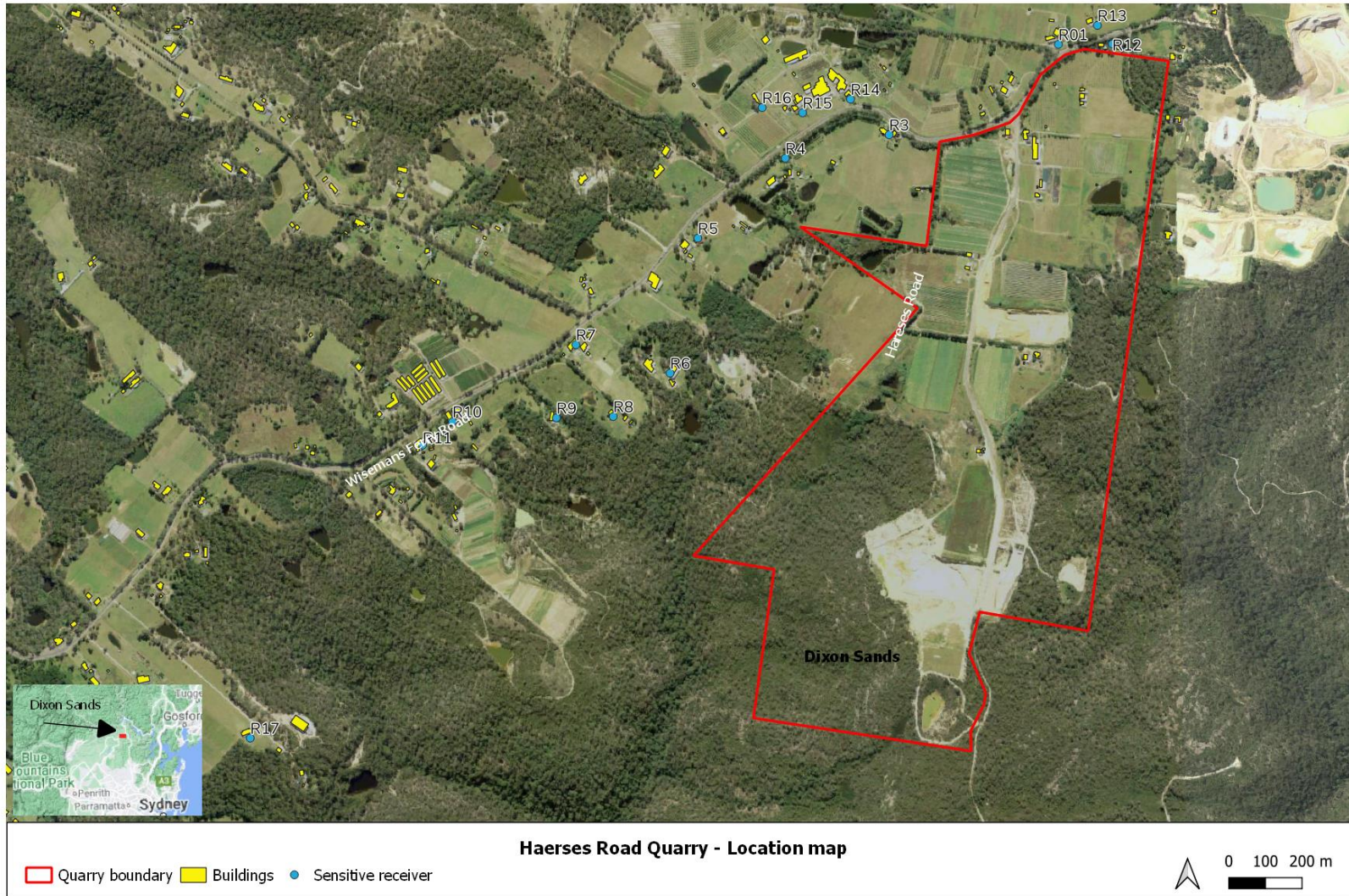


Figure 1 Location of the Quarry



## 2.□ Noise compliance criteria

Conditions 1 and 2 of Schedule 3 of development consent DA 165-7-2005 outline the Quarry operating hours and condition 3 defines the noise criteria for compliance.

1. The Applicant must comply with the operating hours set out in Table 1.

**Table 1 Operating hours**

Activity	Permissible hours
Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Truck arrival, loading and dispatch	6.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays
Acoustic bund construction and road and intersection works on Haerses Road and Wisemans Ferry Road	8.00 am to 5.00 pm Monday to Friday. At no time on Saturdays, Sundays, or public holidays
Maintenance	At any time, provided that these activities are not audible at any privately-owned residence outside of permissible hours for quarrying operations.

2. The following activities may be carried out outside the hours specified in condition 1 above:
  - (a) delivery or dispatch of materials as requested by the NSW Police Force or other public authorities; and
  - (b) emergency work to avoid the loss of lives, property or to prevent environmental harm.

In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.

3. The Applicant must ensure that the noise generated by the development (excluding acoustic bund construction) does not exceed the criteria in Table 2 at any residence on privately-owned land.

**Table 2 Noise criteria dB(A)**

Receiver	Day	Shoulder (6.00 am to 7.00 am)	
	LAeq (15 minute)	LAeq (15 minute)	LAmix
R05, R06	41	35	52
R03	40	37	
R13, R14	40	36	
All other receivers	40	35	

Noise generated by the development must be measured in accordance with the relevant requirements and exemptions (including certain meteorological conditions) of the NSW Noise Policy for Industry.

However, the noise criteria in Table 2 do not apply if the Applicant has an agreement with the relevant landowner to exceed the noise criteria, and the Applicant has advised the Department in writing of the terms of this agreement.

Agreements are currently in place between Dixon Sand and adjacent private landowners including:

- Residential receivers identified as R2 and R12 in the planning consent and
- All identified receivers to the east of Haerses Road quarry on Hitchcock Road



### 3. Monitoring methodology

Operator-attended noise monitoring was undertaken on 15 June 2022 by John Hutchison of Hutchison Weller, an independent acoustic specialist. Monitoring locations included those described in the Quarry Noise Management Plan, as illustrated in Figure 1 and summarised in Table 3.

**Table 3 Monitoring locations**

Receiver	Address	Description
R3	1643 Wisemans Ferry Road	Private residence adjacent plant nursery
R4	1617 Wisemans Ferry Road	No access granted – levels extrapolated instead
R6	1543 Wisemans Ferry Road	Private residence. Monitoring conducted on the southeastern side of the residence facing the quarry.
R8	1521 Wisemans Ferry Road	Private residence. Monitoring conducted at boundary between R7 and R8 since no access granted to R8.
HAS1	Haerses Road Quarry	Close to equipment within Haerses Road boundary

Monitoring was conducted in general accordance with the Noise Policy for Industry and Section 6 of the Noise Management Plan.

At-receiver monitoring locations were within 30 metres of residential dwellings, whilst onsite measurement locations were selected for safe access and to be representative of the operations, without extraneous noise from sources such as traffic and insects.

Instrumentation included a Bruel & Kjaer Class 1 sound level meter (SLM), serial no. 3008237, field-calibrated prior to and following monitoring. The SLM was within current calibration, next due January 2024.

Monitoring was undertaken with the SLM set on a tripod at 1.5 metres above ground and measuring A-weighted sound pressure levels under fast response. Each measurement period was 15 minutes and recorded the LAeq, LA90 and LMax statistics.

Meteorological data was recorded during each monitoring period adjacent to the Maroota public school, including wind speed, direction, temperature, relative humidity, and sigma-theta (to establish the Pasquill-Gifford stability category). This data was used to establish whether meteorological conditions were suitable for monitoring.

Where extraneous noise such as road traffic or insects were the dominant noise sources, making it impractical to discern the contribution of the Quarry to ambient noise levels, noise levels measured at alternative locations closer to the Quarry were utilised, in line with procedures outlined in Noise Policy for Industry. This involved extrapolation from the near-distance location to the sensitive receiver location.



## 4.□ Monitoring results

### 4.1□ Attended measurements

Results of noise monitoring for each location are presented in Table 4.

The main sources of noise from quarry operations were sand processing and truck loading (screening, front end loaders, trucks) and rock sawing.

In all cases, the Haerses Road quarry was compliant with the project noise objectives.

Quarry operations were inaudible at all residential receivers prior to 7am, with traffic noise in all cases the dominant source of noise. No LAmax noise levels were attributable to the quarry in the shoulder period.

During the day period, quarry noise was inaudible at all monitoring locations.

On-site measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were undertaken over 15-minute periods to establish representative sound pressure levels of the operation to allow extrapolation to receiver locations where background noise was too high to discern quarry noise contributions. This is discussed further in Section 4.3.

### 4.2□ Modifying factors

No tonal, impulsive, or low frequency noise characteristics were observed at any residential monitoring location during the monitoring period. Therefore, application of modifying factors is not appropriate in this instance.



**Table 4 Monitoring results**

Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmix			
Shoulder (6.00am to 7.00am)	6:03AM	R3	37	49.1	37.9	63.7	<35	Traffic on Wisemans Ferry Road is dominant source of noise with pass-bys of around 56 – 59 dBA. No quarry-related activity audible. No LAmix attributable to the quarry.	Calm to light breeze from NW @ 5 – 10 km/h Temperature 10°C Clear sky Extremely unstable conditions (A class)
	6:24 AM	R6	35	44.8	43.0	60.1	<35	Distant road traffic ~46-49 dBA Local creek flowing continuously ~ 43 dBA Quarry inaudible.	
	6.47 AM	R7 (R8)	35	51.0	42.0	70.3	<35	Traffic on Wisemans Ferry Road is dominant source of noise ~ 54 - 59 dBA. No quarry-related activity audible. Roosters crowing ~ 57 dBA. Car revved 70 dBA No LAmix values attributable to the quarry	
Day (7.00am to 6.00pm)	8:18 AM	HAS1	N/A	60	-	-	60	Loader working in pit ~ 58 – 60 dBA at 50- 60 metres Impact wrench (working on saw blades) – 66 dbA intermittent	Calm to light breeze from SW @ 2 – 4 km/h Temperature 12°C Clear sky Extremely unstable conditions (A class)
	9.40 AM			58.7	53.1	66.6	58	Rock saw operating 50 metres from measurement point: - 58 dBA (engine) - 52 dBA low idel - Blades 61 – 62 dBA (~58m) Cut for around 10 mins, idling for 2 mins, cutting again.	
	10.00am			71	-	-	71	36 tonne excavator working a stockpile: ~73 dBA @ 18 m traversing back and forth	





Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmix			
	10.09 AM	R3	40	48.5	40.3	61.2	<40	Quarry inaudible. Wisemans Ferry Road dominant with light and heavy vehicles at 58 dBA. During break in traffic a pump in nearby paddock was audible ~40 dBA	Calm to light breeze from WNW @ 3 –8 km/h Temperature 14°C Clear sky Extremely unstable conditions (A class)
	10.31 AM	R6	41	44.0	42.3	57.6	<41	Quarry inaudible. Distant traffic ~46 -48 dBA Nearby creek 42-43 dBA	
	11.00 AM	R8	40	51.1	42.3	75.5	<40	Traffic on Wisemans Ferry Road dominant ~ 50 – 51 dBA Generator next door ~ 42 dBA Quarry inaudible Goats in the paddock – occasional bleats (LAmix)	



### 4.3 □ Extrapolated measurements

A conclusive noise level attributable to the Quarry was not possible in all locations due to ambient noise levels affected by road traffic and other ambient sounds. Therefore, measurements captured on-site without substantial influence from this source were used to calculate sound pressure levels at each receiver.

Calculations were based on ISO 9613-2:1996 *Acoustics — Attenuation of sound during propagation outdoors — Part 2: General method of calculation*, which accounts for geometric spreading, air, and ground absorption as well as barrier effects, assuming worst case meteorology of a gentle breeze from source to receiver and stable conditions.

Based on measurements described in Table 4, extrapolated noise results for each receiver are presented in Table 5 and illustrated in Figure 2. Results are shown for all equipment operating (screen / loader and rock saw).

Extrapolated results demonstrate the Quarry is compliant with the criteria for shoulder and daytime operations when all observed equipment is operating.

**Table 5 Extrapolated monitoring results**

Receiver	Noise criteria	Extrapolated noise level, LAeq, 15 minute	Comment
R12	40	29	Predicted levels correlate well with measured levels and all locations shown to comply with noise limits.
R3	40	31	
R4	40	31	
R6	41	36	
R7	40	32	
R8	40	33	
All other receivers	40	See Figure 2	

### 4.4 □ Compliance summary

Results of attended monitoring and extrapolated noise levels demonstrate observed operations during shoulder and day periods were compliant with the noise criteria at each receiver under the meteorological conditions at the time.

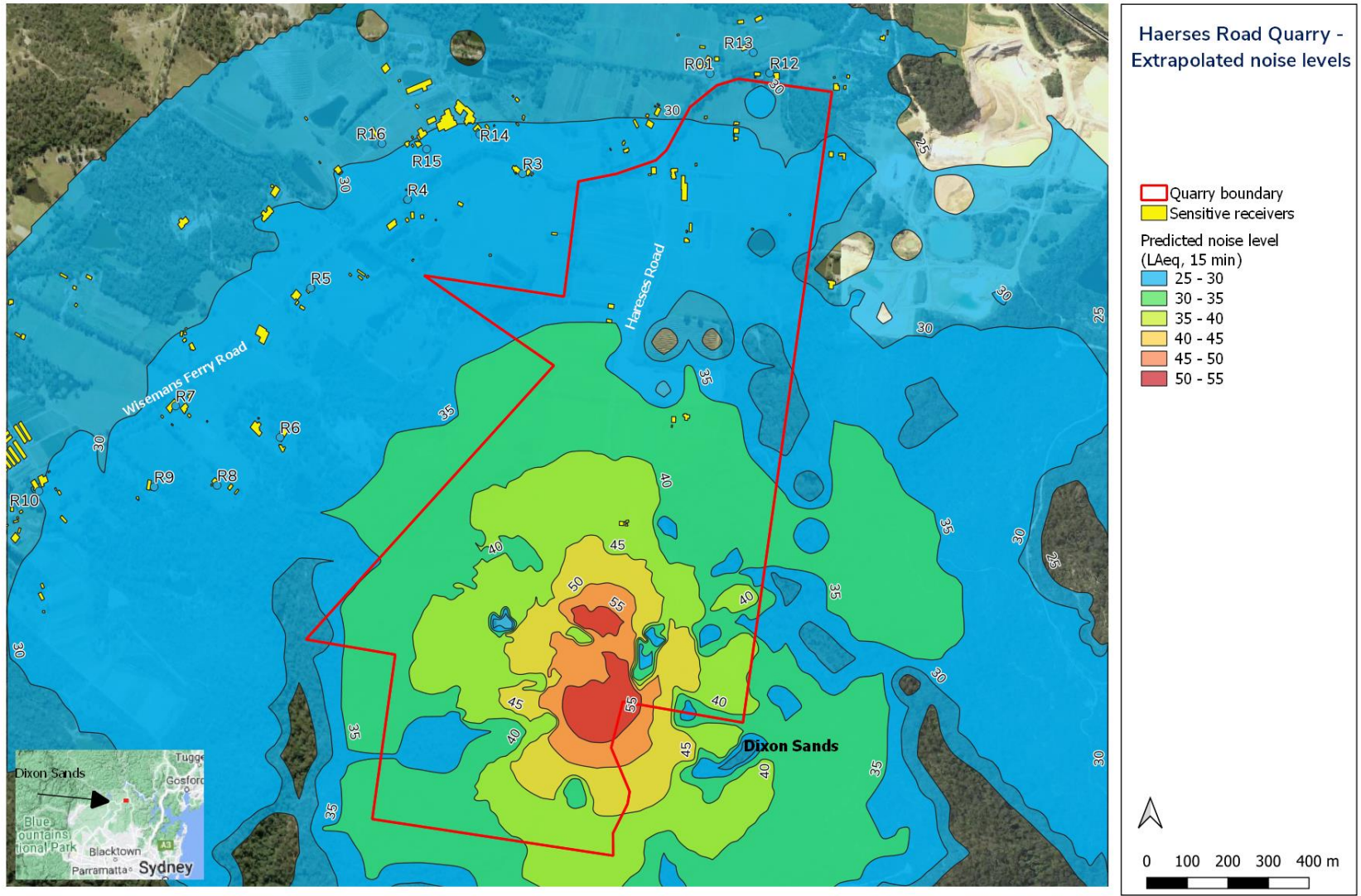


Figure 2 Extrapolated noise levels from Haerses Road quarry based on on-site measurements.

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HAERSES ROAD QUARRY  
DIXON SAND, MAROOTA  
MONTHLY SITE CONDITION CHECKLIST

This checklist is to be completed monthly by the Environmental Officer.  
Completed checklists are to be retained and included in the Annual Review.

Date of inspection: 30/06/2022  
Inspection by: melissa mass  
Measured monthly rainfall (mm) 31/05/2022 - 30/06/2022 Rainfall = 3.8 mm

	Yes (✓) No (○) NA	Comments	Actions	Actions Complete (Date/Sign)
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SEDIMENT CONTROLS

Site checked for potential erosion or transport of sediment batters, vehicle access points, pavations, haul roads, vegetation clearing etc.	✓	No erosion issues or transport of sediment noted		M.M.
Effectiveness and capacity of Erosion and Sediment controls checked (drains, basins, filters etc.)	✓	Drains Basins etc. all clear		M.M.
Stockpiles located and maintained correctly	✓			
Tree clearance restricted to required area	✓			

WATER QUALITY AND QUANTITY

Monthly water quality samples collected from monitoring bores. Samples tested for pH and electrical conductivity	✓	Sampling and analysis undertaken by V&T		M.M.
Monthly surface water monitoring of the in-pit sump	N/A			
Monthly monitoring of groundwater quality at 13 bores	✓	undertaken by V&T		M.M.
Monthly depth measurement of all groundwater bores and comparison with rainfall	✓	undertaken by V&T		M.M.
Monthly inspection of drainage & sediment controls including water storages, pumps, pipes and dams' walls	✓			
Any Fuel or oil spills reported and maintained	✓	No spills recorded this month		M.M.
Fuels/chemicals stored in bunded areas	✓	EPA approved bunding		M.M.

AIR QUALITY

Monitoring station (TEOM) and continuous automatic meteorological station are maintained and operating in the vicinity of the Maroota Public School	✓	TEOM and weather Station managed by CBASD		M.M.
On site dust suppression	✓	Regular use of water cart when required		M.M.

Loads covered entering and leaving site	✓	In compliance with TMP	M.M.
Drop height of material minimised during truck loading and unloading	✓		
Active extraction areas minimised within the project area through progressive clearing and rehabilitation	✓		
Cessation or restriction of dust generating activities during period of high winds	✓	In accordance with EPL recruitments	M.M.
<b>NOISE</b>			
Compliance with approved hours of operation	✓	In accordance with NMP and TMP	M.M.
No complaints received from surrounding residences	✓	No complaints this period	M.M.
Annual attended and unattended monitoring	✓	undertaken by Hutchison and Weller	M.M.
Use of one of a dozer or front end loader (not both) operating in Cell 4 and Cell 5 during early extraction, clearing or construction of bund walls, to minimise noise	N/A		
The use of noisy equipment scheduled at the least sensitive time of day	✓		
Plant switched off when not in use	✓	In accordance with NMP	M.M.
In the wet processing plant area, stockpiles are located along to western boundary of the area to shield loading and unloading activities	✓	Stockpiles located in western area of processing area	M.M.
Additional noise monitoring at the potentially most affected locations near the south-western end of the site, such as Location R6 and R8, when extraction operations are being conducted in the additional reaction area	✓	undertaken by Hutchison and Weller	M.M.
<b>FLORA &amp; FAUNA/ REHABILITATION</b>			
Sightings of threatened species reported	N/A		
No disturbance of buffer/conservation areas	✓		
All buffer/conservation area fencing/markings intact	✓		
Rehabilitation undertaken to schedule	✓		
Success of rehabilitation of buffers, conservation areas & rehabilitation areas	✓		
Flora and fauna monitoring program undertaken to schedule	✓		
<b>ARCHAEOLOGY</b>			
Stop work if sites located – CEH notified	✓		
<b>WASTE AND SITE CONDITION</b>			

No rubbish visible or buried on site	✓		
Recyclables removed by licensed Contractors	✓	By council contractors	M.M.
Putrescible waste covered and regularly removed	✓		
<b>ROADS AND TRANSPORT</b>			
Monthly inspection of haul roads, site access road and Haerses Road/site access road intersection	✓		
Weekly inspection of Haerses Road/site access road intersection and sand/clay removed as necessary	✓		
Continuous recording of the amount of quarry products transported from the site and total truck movements	✓	Refer to truck records	M.M.
Truck movements have not exceeded 56 per day, or 20 between 6:00 am and 7:00 am	✓	Refer to truck records	M.M.
ighbridge/log book records retained and recorded	✓	Refer to truck records	M.M.
<b>REPORTING</b>			
Complaints register maintained	✓	updated and published monthly	M.M.
Environmental incidents reported to EPA and DPIE	✓	No incidents to report this period	M.M.
Monitoring results and statements of compliance with Development Consent and EPL conditions provided in the Annual Review and EPL Annual Return	✓	Submitted on the 29/09/2021	M.M.
Staff and Contractors undergo relevant environmental inductions. Sighting of training/induction records	✓		
<b>PIRMP / SPILL KIT</b>			
Spill kits inspected and used items replaced	✓		
Copy of PIRMP flowchart available in each Spill Kit	✓		

Signed: M.M. (Environmental Officer or Delegate)







Jan 2022						
Day	Total Sale Trucks (laden)	Total Sale Sold from Haerses (t)	No. of Transfers to ONR (laden)	Total Transfer to ONR (t)	Total Trucks VENM/ENM (laden)	TOTAL TRUCK MOVEMENT (unladen + laden)
1/01/2022						
2/01/2022						
3/01/2022						
4/01/2022			16	504		32
5/01/2022			18	567		36
6/01/2022			19	598.5		38
7/01/2022						0
8/01/2022						0
9/01/2022						0
10/01/2022			33	1039.5		66
11/01/2022	1	26	35	1102.5		72
12/01/2022	2	33.86	35	1102.5		74
13/01/2022	1	22.7	37	1165.5		76
14/01/2022	1	11.38	33	1039.5		68
15/01/2022						0
16/01/2022						0
17/01/2022			35	1102.5		70
18/01/2022			25	808.5		50
19/01/2022			34	1130.5		68
20/01/2022			33	1106		66
21/01/2022						0
22/01/2022			33	1039.5		66
23/01/2022						0
24/01/2022	1	29				2
25/01/2022	4	126				8
26/01/2022						0
27/01/2022	8	228	36	1134		88
28/01/2022	3	97	39	1228.5		84
29/01/2022			22	473		44
30/01/2022						0
31/01/2022	2	58	34	1134		72
<b>TOTAL</b>	23	631.9	517	16275.5	0	

Denotes Saturday  
 Denotes Sunday  
 Denotes Public Holiday

Max Daily Truck 88  
 Max Daily Limit 180

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Dixon Sand (No.1) – Haerses Road  
(Haerses Road DA 165-7-2005)



Annual Report

July 2021 – June 2022

Bush Regeneration Works

Author: Jeff Gibbs & Zoe Ridgway

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This report summarises the assisted bush regeneration work undertaken by Bush-it Pty Ltd for Dixon Sand (No.1) Pty Ltd between July 2021 and June 2022 in accordance with Haerses Road DA 165-7-2005. A total of 104.5 hours (\$5,949.19 excluding GST) were worked throughout the year with an average team size of four per visit.

Dixon Sand (Penrith) Pty Ltd operate a mineral sand quarry on the Old Northern Road at Maroota, NSW. Under the Haerses Road DA 165-7-2005, Bush-it manages the vegetation of approximately 8.7 hectares on Haerses Road.

The Haerses Road (HR) offset is a strip of remnant native vegetation that is attached to the Haerses Road Biodiversity Offset Area. It is example of intact bushland with an area of rehabilitated open forest at the southern end herein referred to as the (2009) translocation area. The visual screen is a 30m wide vegetation buffer adjoining Wisemans Ferry Road. The vegetation at the Haerses Road offset site is managed under a biodiversity stewardship agreement between Dixon Sand and NSW Office of Environment and Heritage.

This agreement offers permanent protection for the native vegetation and any threatened species at Haerses Road. It also enables Dixon Sand to manage and enhance the biodiversity values of this land with the help of Bush-it Pty Ltd.

This financial year saw record levels of rainfall with a total of 1633.5mm (Maroota weather station Old Telegraph Rd - 067014), some 709.9mm above the annual average of 923.6. The rainfall in March was the highest on record (since 1925), that is, 581.2mm. The bulk of the rainfall was over the warmer months and this was fortunate as the majority of the works were scheduled and worked in the cooler months, in particular September when we worked consecutive days.

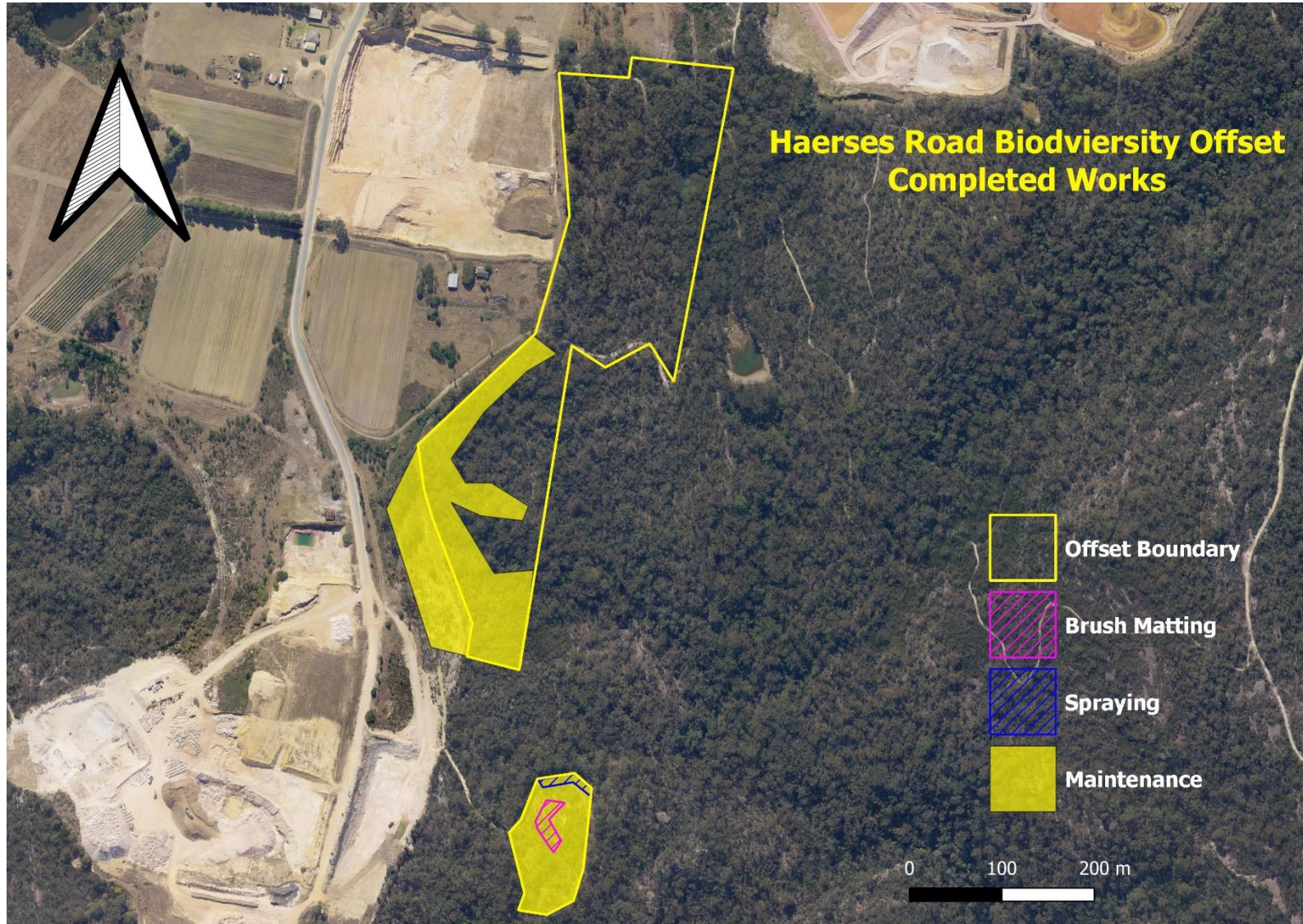
In carrying out our work for Dixon Sand, Bush-it:

- Practices low impact weed management techniques such as manual removal in plant communities containing threatened species.
- Regularly identifies and maps the density and extent of weed infestations especially those covering an area of greater than 25 m<sup>2</sup>
- Undertakes appropriate, targeted weed control activities to ensure minimum disturbance to natives and minimum off-target damage.
- Conducts site specific induction training for staff working at the quarry, including field identification of all threatened species.
- Routinely assesses the effectiveness of the control programs and in response makes necessary modifications.

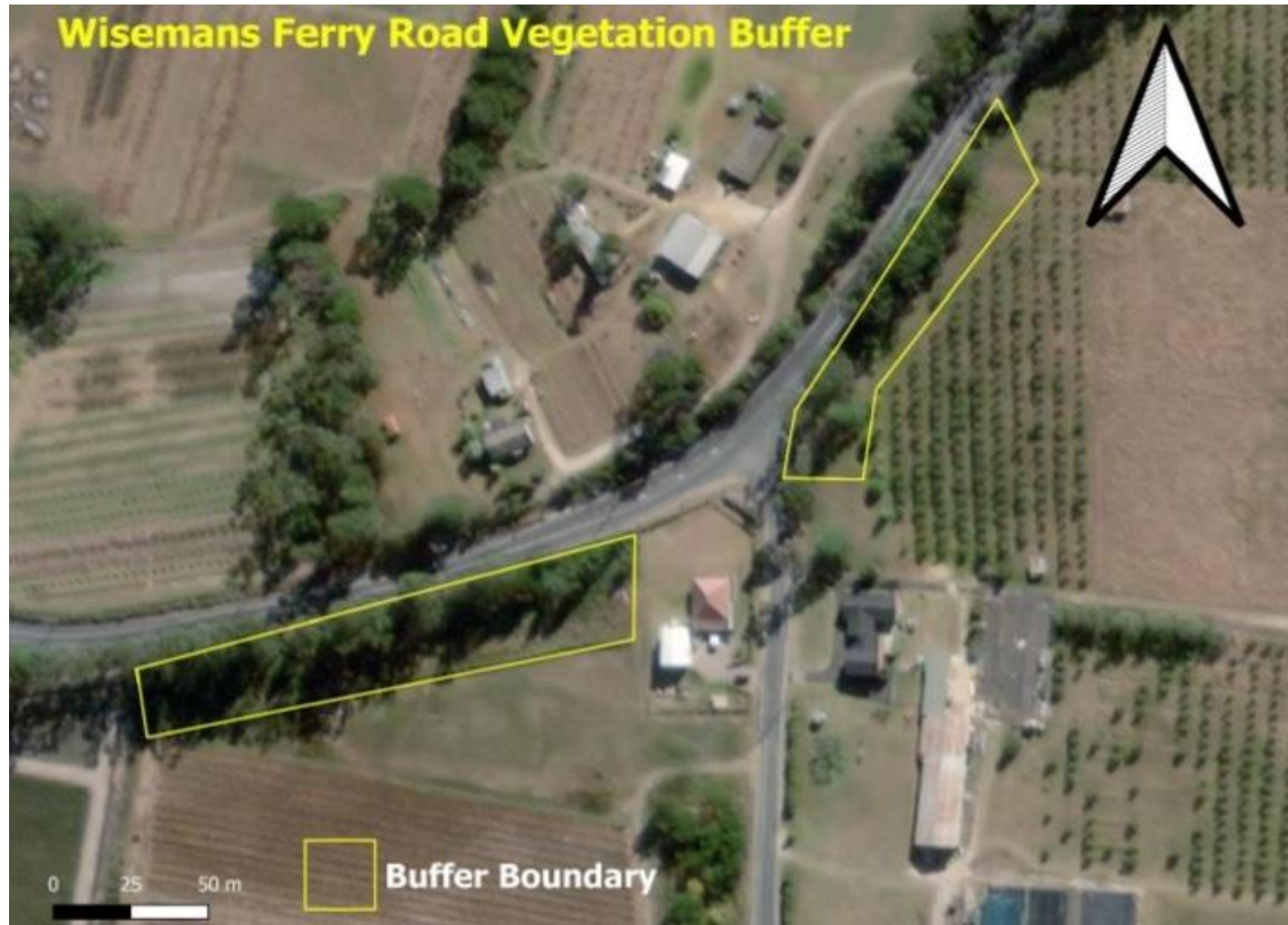
- We undertake monthly inspections noting the presence of weeds in drainage lines, and along access tracks.
- And we follow industry standard protocols for bushland hygiene by ensuring all our tools, boots and equipment are clean before entering the work site.





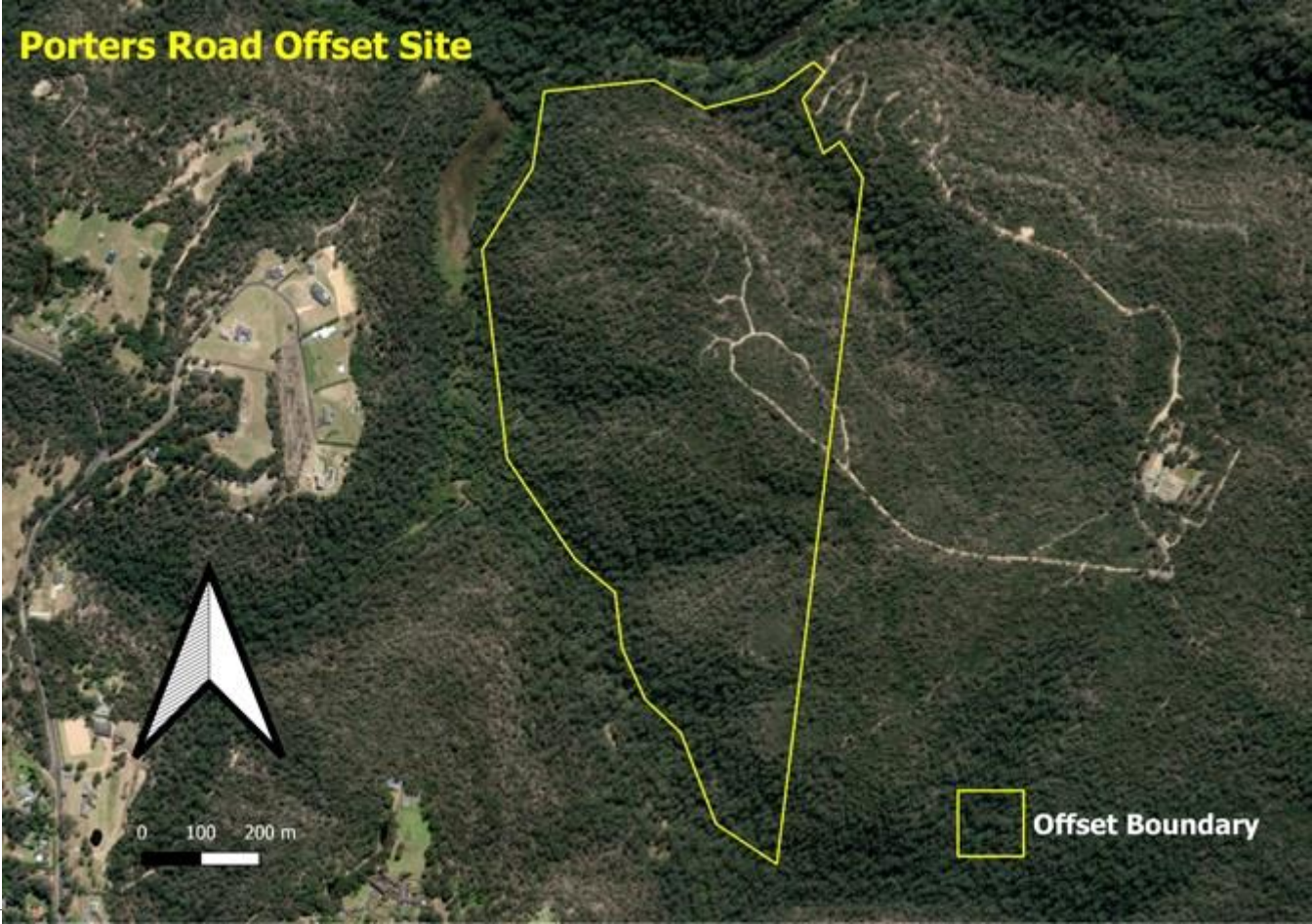


□□□□□□□□+ Activities undertaken at Haerses Rd for 2021-2022.



As the lack of illustration suggests no works were undertaken in the buffer along Wisemans Ferry Rd

# Porters Road Offset Site



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□□□□□□□□□□ Porters Rd Offset Site (BCT) still under passive management

## SCOPE

Haerses Road (HR) offset site is 'passively' managed under a BCT agreement according to HR DA 165-7-2005.

The vegetation communities represented at HR offset include Sydney Sandstone Ridgetop Woodland and Sydney Sandstone Gully Forest.

The dominant canopy species along the top of the site include *Corymbia gummifera* and *Eucalyptus racemosa*. While on the lower portions of the site, *Angophora costata* and *Eucalyptus piperita* overshadow an understorey of *Syncarpia glomulifera* and *Ceratopetalum gummiferum*.

The HR offset is bordered along its western edge by an exotic grassland containing several different species of invasive perennial grass and numerous exotic annuals. The drainage line bisecting the site is also a vector for water and wind dispersed perennial brush weeds like crofton and lantana.

The open areas of the (2009) translocation site support a mix of exotic and native grasses interspersed with thickets of *Pallaea* fern. The forested areas are largely overgrown by *Kunzea ambigua*. Indeed, this species really dominates the translocation site.

The maintenance work in this area is spent controlling infestations of whiskey, African love grass and couch. Regeneration is assisted by managing the growth of *K.ambigua* and other canopy trees that inhibit light filtering its way to the ground.

## RESOURCES – 104.5 HOURS

Most of the hours spent working at the HR offset were used to control incursions of exotic grasses and annuals along the western boundary.

We successfully prevented the establishment of any new infestations and pursued crofton and lantana down the drainage lines. A small infestation of turkey rhubarb was removed before it had the opportunity to seed and cobbler's pegs was routinely brush cut and sprayed along the top edge.

Following above average rainfall this year, we saw a flourish of exotic grasses through the open areas of the (2009) translocation site and much of our time here was spent chipping out tussocks of whisky and love grass. Manual removal is a method we are using because, we are keen to discover if disturbing the soil in this manner, will stimulate native regeneration.



□□□□r□□□□□Culling assertive natives has encouraged understorey shrubs and groundcovers.□

The remaining hours at (2009) translocation site were spent cutting back thickets of *Kunzea* and culling canopy trees where smaller shrubs and groundcovers are struggling to get sunlight. ( Figures 3 and 4) In the thickly forested areas of the translocation area, an infestation of common couch has also been targeted with a monocot specific herbicide.

## RECOMMENDATIONS

Regular select spraying of herbicide and hand removal of seeding annuals is required to control incursions around the perimeter of the HR offset area.

Monitor and manage competitive native shrubs and trees in the (2009) translocation area, especially *K. ambigua* where it overshadows or encroaches on ground dwelling plants. Bush-it will selectively cull or cut back growth to encourage the most diverse assemblage of plants possible.

Monitor and manage invasive grasses in the translocation area, especially common couch that has vigorously established itself.

## SCOPE

The roadwork undertaken by Roads and Maritime Services (RMS) at the corner of Haerses Road and Wisemans Ferry Road in February 2020 severely impacted our ability to work in this area. The road widening and resurfacing closed off our access, and in the intervening period, thickets of blackberry and turkey rhubarb flourished.

In consultation with South-East Environmental in November, 2020 it was decided the Buffer Strip should be stripped back and capped with crushed sandstone containing a native seedbank. Once this work has been completed, Bush-it will attend to weeds.

## RESOURCES – 0 HOURS

Bush-it awaits the resurfacing of the Buffer Strip by Dixon Quarries.



## WEED SPECIES CONTROLLED AT HAERSES RD

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Bridal Creeper	<i>Asparagus asparagoides</i>
Turkey Rhubarb	<i>Rumex sagittatus</i>
Moth vine	<i>Araujia sericifera</i>
Lantana	<i>Lantana camara</i>
Blackberry	<i>Rubus fruticosus agg.</i>
Ochna	<i>Ochna serrulata</i>
Wild Tobacco	<i>Solanum mauritianum</i>
Crofton weed	<i>Ageratina adenophora</i>
Bidens - Cobblers Peg	<i>Bidens pilosa</i>
Fleabane	<i>Conyza spp.</i>
Catsear, flatweed	<i>Hypochaeris radicata</i>
Fireweed	<i>Senecio madagascariensis</i>
Paddy's Lucerne	<i>Sida rhombifolia</i>
Blackberry Nightshade	<i>Solanum nigrum</i>
Sowthistle	<i>Sonchus oleraceus</i>
Purple Top	<i>Verbena bonariensis</i>
Panic Veldtgrass	<i>Ehrharta erecta</i>
Paspalum	<i>Paspalum dilatatum</i>
Couch common	<i>Cynodon dactylon</i>
Briza- Quaking Grass- Blowfly Grass	<i>Briza maxima</i>
Cudweed	<i>Gnaphalium spp.</i>
African Lovegrass	<i>Eragrostis curvula</i>
Buffalo Grass	<i>Stenotaphrum secundatum</i>
Flatweed	<i>Hypochaeris sp</i>
Paspalum (tussock)	<i>Paspalum quadrifarium</i>
Vetch	<i>Vicia spp</i>
Whisky grass	<i>Andropogon virginicus</i>
Summer grass	<i>Digitaria sanguinalis</i>
Periwinkle	<i>Vinca major</i>
Castor Oil	<i>Ricinus communis</i>
Stinking Roger	<i>Tagetes spp.</i>
Pigeon Grass	<i>Setaria spp.</i>
Pampas Grass	<i>Cortaderia selloana</i>
Ink weed	<i>Phytolacca octandra</i>
Chickweed	<i>Stellaria media</i>
Parramatta grass	<i>Sporobolus africanus</i>
Rhodes grass	<i>Chloris gayana</i>
Paspalum, large	<i>Paspalum urvillei</i>
Black-eyed Susan	<i>Thunbergia alata</i>
Spear thistle	<i>Cirsium vulgare</i>
Bamboo, rhizomatous	<i>Phyllostachys spp</i>



## REGISTER OF HERBICIDE RECORDS\*

Date	Operator name	Herbicide name	Wind description	Direction	Notes	Application method	Qty	Volume	Start time	End time
12/08/2021	Jeff Gibbs	Starane, Fluroxypyr-meptyl	1 - Light Air	W	Used to suppress flowering Crofton	Spray	15	5	9:01	10:01
23/09/2021	Tim Baker	Round-up, Glyphosate	1 - Light Air	SE	Targeted Couch	Spray	300	15	8:01	10:01
21/01/2022	Jeff Gibbs	Round-up, Glyphosate	3 - Gentle Breeze	E	Used with an admixture of 'Chemwet' to control exotic grass.	Spray	100	10	11:01	13:01
14/02/2022	Jeremy Houghton	Round-up, Glyphosate	2 - Light Breeze	NE	Used to control paspalum	Spray	75	5	9:01	10:01

\* Consistently high rainfall and overcast conditions precluded herbicide spraying as seen below.

## DISTRIBUTION OF HOURS ACROSS MANAGEMENT ZONES AND MONTHLY RAINFALL

	Jan	Feb	Sun	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
Admin	1	1	6	2.5	3.5	1	1	2	0.5	0	10	1	27.5
HR - Offset Site (BCT site)	0	0	7	0	0	0	0	10	0	0	0	0	17
HR - Translocation area	0	5	14	0	0	0	0	25	6	0	8	0	53
HR - Visual Screen Buffer	0	0	0	0	0	0	0	0	0	0	0	0	0
HR - Porters Rd Offset Site (BCT site)	0	0	0	0	0	0	0	0	0	0	0	0	0
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sept	Oct	Nov	Dec	Total
<b>Monthly Rainfall</b>	<b>30.4</b>	<b>66.4</b>	<b>23</b>	<b>47.4</b>	<b>183.6</b>	<b>129.3</b>	<b>112</b>	<b>250.6</b>	<b>581.2*</b>	<b>115.8</b>	<b>87.6</b>	<b>6.2</b>	<b>1052.3</b>
Median	27.4	23.1	41.2	51.8	70.2	76.6	70.9	83.2	88.5	55.3	43.7	52	906
Highest	250.6	497.4	174	220.3	208.3	375	395.5	464.9	581.2	467.2	370.1	445.4	1773.6

\* Highest on record



**ANNUAL  
BIODIVERSITY  
&  
REHABILITATION  
MANAGEMENT  
REPORT  
HAERSES ROAD MAROOKA  
2022**

Prepared for Dixon Sand Pty Ltd

September 2022 V.1



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**Annual Biodiversity  
&  
Rehabilitation Management  
Report  
Haerses Road Maroota  
2022  
Dixon Sand Pty Ltd**

This assessment has been prepared by

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Melissa Mass

September 2022 V.1

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Date

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## Abbreviations

<b>Abbreviation</b>	<b>Description</b>
<b>BAM</b>	Biodiversity Assessment Method
<b>BC Act</b>	<i>Biodiversity Conservation Act 2016</i>
<b>BCT</b>	Biodiversity Conservation Trust
<b>EEC</b>	Endangered Ecological Community
<b>EP&amp;A Act</b>	<i>Environmental Planning and Assessment Act 1979</i>
<b>EPBC Act</b>	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
<b>HRBOA</b>	Haerses Road Biodiversity Offset Area
<b>HTW</b>	High Threat Weed
<b>KPI</b>	Key Performance Indicators
<b>KTP</b>	Key Threatening Process
<b>LEP</b>	Local Environmental Plan
<b>Mod 1</b>	Modification 1
<b>Mod 2</b>	Modification 2
<b>NSW OEH</b>	New South Wales Office of Environment and Heritage
<b>ONR</b>	Old Northern Road
<b>PCT</b>	Plant Community Type
<b>SEPP</b>	State Environmental Planning Policy
<b>THSC</b>	The Hills Shire Council
<b>VIS</b>	Vegetation Information System
<b>WoNS</b>	Weed of National Significance

# 1 INTRODUCTION

---

This report presents the findings of the annual monitoring of the biodiversity value and rehabilitation effort within the Dixon Sand operation at Haerses Road Maroota. The Biodiversity Biobank offset at Porters Road Kenthurst and within the Haerses Road site is not addressed in detail within this report. A separate report is submitted to the Biodiversity Conservation Trust (BCT) throughout the reporting period addressing these areas.

## 1.1 BACKGROUND

Dixon Sand Pty Ltd operates a sand extraction and processing operation across 71 hectares on Lot 170 DP664766, Lot 170 DP664767, Lot A and B DP407341, Lot 176 and 177 DP752039 and Lot 216 DP752039 Haerses Road Maroota. The quarry operates in compliance to Development Consent 165-7-2005 issued by the Minister for Planning in 2006. The development consent was modified on the 22 January 2018 (Mod 1) and again on 29 January 2019 (Mod 2).

The development consent for the extraction and processing at Haerses Road permits operations to continue until 14 February 2046.

## 1.2 OBJECTIVES

The objectives of this Annual Biodiversity and Rehabilitation Management Report is to describe the current condition of the Haerses Road site and to advise Dixon Sand on the appropriate management measures required to be implemented in order to meet the expectations of the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan v5 (2020) prepared by Umwelt (Australia) Pty Ltd.

This report will:

- identify native flora and fauna species, populations and ecological communities known to or likely to occur within the Haerses Road site;
- describe the native vegetation and habitats within the Haerses Road site;
- describe the current condition of the threatened flora and its habitat found within the Haerses Road site;
- determine the legislative and conservation significance of species, populations and ecological communities known or likely to occur within the Haerses Road site with reference to the Commonwealth *EPBC Act 1999* and the *NSW BC Act 2016*;
- recommend appropriate biodiversity and environmental management measures that should be implemented to reach criteria for monitoring success set by the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan v5 (2020);
- provide an independent monitoring report for inclusion as part of the external reporting for the quarry Annual Review.

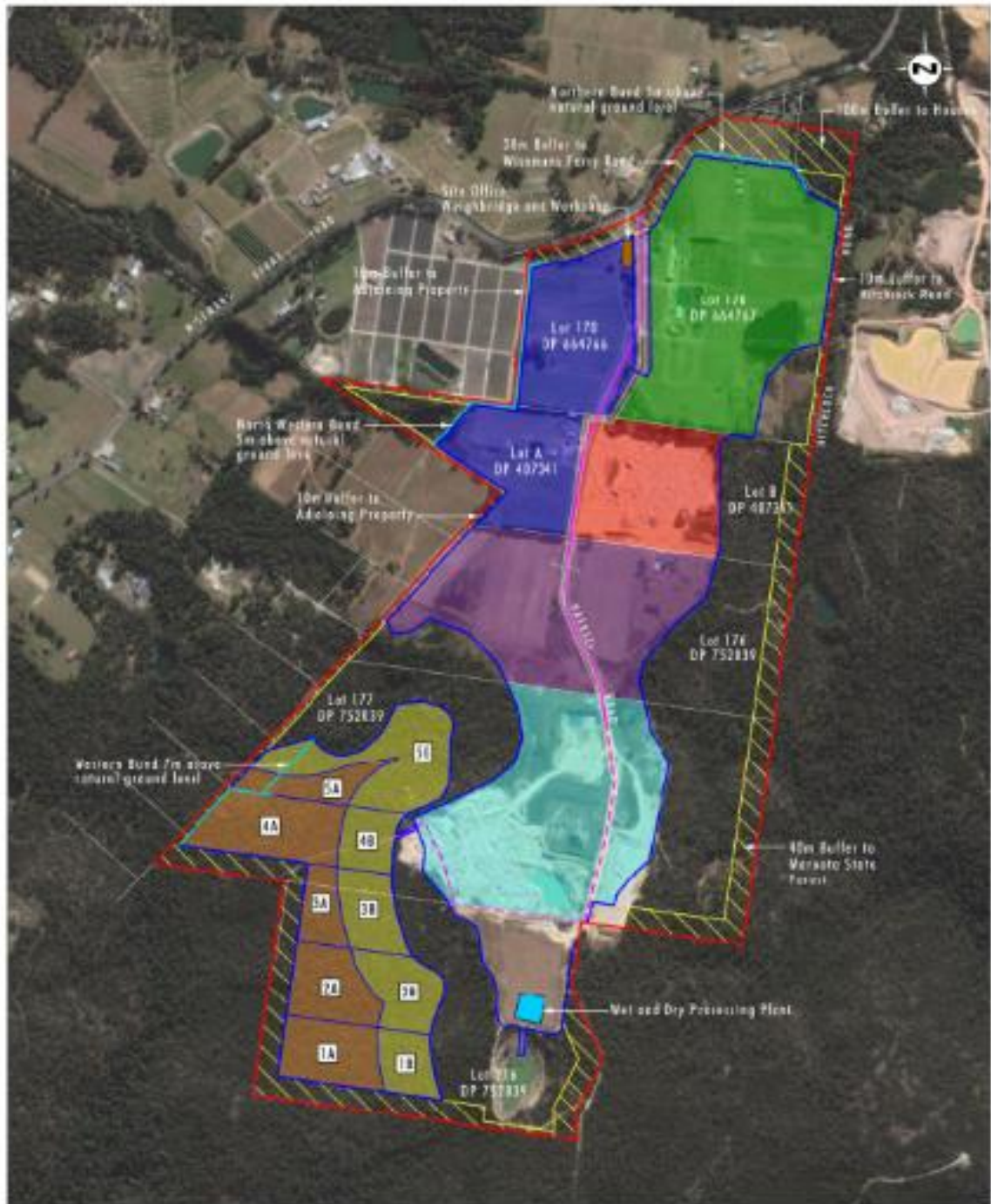


Image Source: Google Earth (Sep 2017)  
 Map Source: Mc Ashby Morgan & Associates Pty Ltd (2018)

Legend					
	Haerses Road Quarry Site		Extraction Area Stage 5		Indicative Unsealed Road
	Approved Extraction Area		Extraction Area A		Sealed Road
	Extraction Area Stage 1		Extraction Area B		Acoustic Bed
	Extraction Area Stage 2		Extraction Cell Number		Buffer Zone
	Extraction Area Stage 3		Site Office, Weighbridge and Workshop		
	Extraction Area Stage 4		Wet Processing Plant		

FIGURE 1.2  
 Haerses Road Quarry

File Name (A4): 106/4273\_043.dwg  
 30/08/2019 10:10

Image 1. Haerses Road Quarry site (source Umwelt Australia 2019)



## 2 METHODOLOGY

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### 2.1 SITE HISTORY

#### 2.1.1 Extraction area stage 1

Extraction area stage 1 is Lot B of DP407341 comprising of 9.5416ha. Approximately 5.68ha have been disturbed for sand extraction while the remaining 3.86ha is remnant native vegetation. Currently 3ha are in the process of agricultural rehabilitation with work continuing into the next reporting period.

#### 2.1.2 Extraction area stage 2

Extraction area stage 2 is within Lot 177 of DP752039, utilising approximately 14.38ha of the 39.4956ha lot. Extraction is continuing in this area however approximately 2ha of rehabilitation has begun in earnest.

#### 2.1.3 Extraction area A and B

Extraction areas A and B extend across Lot 177 of DP752039 and Lot 216 DP752039. Current extraction is underway in Cell 1A, 1B and 2B. Rehabilitation of these areas has not taken place within this reporting period, and is unlikely to take place in the next reporting period. The use and storage of soil with native seed bank and translocation of removed vegetation is worthy of discussion in this report to monitor success of the current process in use.

#### 2.1.4 Wisemans Ferry Road buffer area

Assisted screen planting within the Wisemans Ferry Road buffer area took place in 2016 to supplement the existing native vegetation which was present. The buffer area is to be 30m wide extending along the boundary of Wisemans Ferry Road for the purpose of providing a visual screen to motorists. During the upgrade to the Haerses Road intersection in early 2020 the buffer area was disturbed by civil contractors. This work was deemed as essential. Natural recruitment is evident in some locations within the buffer area although some assisted rehabilitation is likely to be required within the next monitoring period.

#### 2.1.5 Maroota State Forest buffer area

The Maroota State Forest buffer area extends along the southern, eastern and western boundaries of extraction area A and B as well as the southern and eastern boundary of Lot B of DP407341, Lot 176 of DP752039 and Lot 177 of DP752039. Buffer areas are fenced along the boundary of extraction area A and B. An area within the Maroota State Forest buffer area was previously disturbed and is under current active rehabilitation management to restore a Scribbly Gum, Hairpin Banksia, Dwarf Apple heathy woodland. Rehabilitation is in advanced stages with weed management continuing.

### 2.2 FIELD SURVEY

The Biobanking offset areas are subject to separate reporting for the BCT providing annual photo monitoring, information regarding active management actions and reporting any disturbance within the site. To date, passive management is taking place throughout all locations of Biobanking offset.

Baseline monitoring locations within each vegetation community at Haerses Road have been established. Monitoring locations have been undertaken in a manner consistent with the

Biodiversity Assessment Method (BAM) survey as described within Appendix 4 of the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan v5 2020. Details and results of the field survey can be found within Chapter 3 of this report.

### 2.3 CRITERIA TO MONITOR SUCCESS OF REHABILITATION

The Key Performance Indicators (KPI) to measure success of the biodiversity and rehabilitation effort of the Haerses Road site have been outlined by Umwelt (Australia) 2019. The following tables depict the performance and completion criteria required for both native vegetation areas and agricultural land.

**Table 1.** Performance and completion criteria for Haerses Road Quarry (taken from Umwelt (Australia) 2019)

<i>Rehabilitation Performance and Completion Criteria</i>	
<i>Native Vegetation</i>	Revegetation areas contain flora species assemblages characteristic and ground cover is within OEH benchmark of the target native vegetation communities
	Second generation tree seedlings are present or likely to be, based on monitoring in comparable older rehabilitation sites (i.e. evidence of fruiting of native species observed)
	More than 75 percent of trees are healthy and growing as indicated by long term monitoring
	Ground cover species are characteristic of target vegetation communities
	The presence of weeds is within OEH benchmark of the target native vegetation communities
<i>Agricultural Land</i>	Rehabilitated land is compatible with proposed agricultural land use as demonstrated by soil assessment
	Landform comprised broad gentle slopes between 2-5%
<i>Weeds and Pests</i>	Land capable of supporting suitable sterile cover crop
	Regular inspections indicate a decline in weed diversity, density and abundance and a decline in signs of feral animal activity
	The presence of weeds is within OEH benchmark of the target native vegetation communities
	There is no evidence of significant damage resulting from feral animal activity

### 3 RESULTS

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Annual vegetation surveys were undertaken for the Haerses Road Quarry site during this reporting period. Rehabilitation work has continued in extraction area stage 2 with rehabilitation of agricultural land in extraction area stage 1 set to begin in earnest over the next reporting period. Further rehabilitation work will also take place within the Wisemans Ferry Road buffer area within the next reporting period.

#### 3.1 EXTRACTION AREA STAGE 1

Extraction of sand products is still taking place within the western portion of extraction area stage 1. The eastern portion of the extraction area remains exhausted and is currently awaiting the start of rehabilitation works. These works are expected to begin during the 2022-2023 reporting period if weather becomes favorable.

The eastern area of the site is currently being used to stockpile material for rehabilitation. It is expected that within the next reporting period these stockpiles will be screened to remove rock fragments larger than 150mm in diameter. The material will then be spread across the site in preparation for agricultural use.



**Image 2.** Extraction area stage 1 stockpile locations



**Image 3.** Extraction area stage 1 active rehabilitation area (Image sourced from Google Earth Pro 2022)

### 3.2 EXTRACTION AREA STAGE 2

Extraction area stage 2 is still in active operation however rehabilitation of the previous sandstone extraction area has commenced.

The construction of a farm dam has taken place to fill the void and make the area beneficial for agricultural use. The expanse between the dam and native vegetation to the west has been spread with soil from extraction area A and B which contains native seed bank. The natural regeneration process has begun in earnest with a good diversity of ground cover species emerging. Threatened flora species *Darwinia biflora* and *Tetratheca glandulosa* have emerged with *Darwinia biflora* being prolific across the site. *Acacia bynoeana* has also emerged in the compact soils immediately surrounding the dam.

The dam wall has sunk slightly on the western edge which will require remediation work to take place for structural integrity. All efforts will be undertaken to avoid the emerging threatened flora species.



**Image 4.** Extraction area stage 2 dam



**Image 5.** Stage 2 rehabilitation area west of the dam



**Image 6.** Extraction area stage 2 active rehabilitation area



**Image 7.** Emerging *Darwinia biflora* in stage 2 rehabilitation area



**Image 8.** *Acacia bynoeana* emerging on the dam wall in stage 2 rehabilitation area

### 3.3 EXTRACTION AREA A AND B

Sand and sandstone extraction is currently in active operation within Cell 1A, 1B and 2B within Lot 216 DO 752039.

Offsetting requirements for these areas incorporate vegetation conservation areas within the Haerses Road envelope and Porters Road at Kenthurst. Both of these conservation management areas are still in passive management phase.

Baseline vegetation data was obtained during the previous reporting period in areas within the future extraction cells as outlined within the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan v5 2020. The Haerses Road Quarry Biodiversity and Rehabilitation Management Plan outlines the annual monitoring of the extraction cells prior to disturbance for the purpose of providing baseline data for rehabilitation of the site post extraction. Each cell (A & B combined) is to have a monitoring location established within it. Cell 1 (A & B) had already begun extraction so therefore establishing a monitoring site was not possible. The monitoring location within cell 2B has been disturbed in preparation for material extraction therefore monitoring of this site will not continue. The remaining three monitoring locations, within Cells 3 – 5, were surveyed in September 2022 to collect further monitoring data which will contribute to the final rehabilitation of the site. Information collected was in line with the DPIE Biodiversity Assessment Methods as approved via the *Biodiversity Conservation Act 2016* and the *Biodiversity Conservation Regulation 2017*.

The survey sites were selected for ongoing survey monitoring to reflect upon the two dominant vegetation communities identified within the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan v5 2020. The PCT 978 previously identified within extraction cell 5b was not able to be located. A secondary, and larger, area of this PCT occurs within the Biodiversity Offset Area which is outside of the survey area required for this annual report. A small area of PCT1181 was located within Extraction Cell 2A. This area of PCT is not large enough to be encompassed by the vegetation survey undertaken, therefore, part of this PCT is within quadrat 3 where transition between PCT 1181, PCT 1083 and PCT 1134 occurs.

Within the three vegetation survey quadrats the following information was collected:

- Composition – native plant species richness by growth form
- Structure – foliage cover of native and exotic species by growth form
- Function –
  - Number of large trees
  - Tree stem size class
  - Canopy species regeneration
  - Length of fallen logs
  - Percentage of litter cover
  - Number of trees with hollows
  - High threat exotic cover

A photo was taken at the start of each quadrat. Each 12 month period a photo will be taken in the same location with the same aspect for comparison purposes.

Flora identified onsite has been listed within Appendix A.





**Image 9.** Quadrat 1 start midline point

**Table 2.** Survey summary from Haerses Road monitoring survey site quadrat 1.

1083 - Red Bloodwood – Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin, Sydney Basin Bioregion				
AGD Zone 56 Easting – 0312510 Northing – 06296390 Midline - 0°				
Vegetation Layer	Height Range	Vegetation Layer		
Trees	15 – 20m	<i>Corymbia gummifera, Eucalyptus haemastoma, Eucalyptus punctata, Angophora hispida, Eucalyptus oblonga</i>		
Shrubs	0.5 – 2m	<i>Grevillea buxifolia, Persoonia levis, Phyllanthus hirtellus, Lambertia Formosa, Calytrix tetragona</i>		
Groundcover	0.1 – 0.5m	<i>Lomandra multiflora, Entolasia stricta, Actinotus minor, Billardiera scandens, Cyathochaeta diandra</i>		
Stem Class	Hollows			
Dbh	Eucalyptus	Non-Eucalypt	<20cm	>20cm
80cm+				
50-79cm	✓		4	2
30-49cm	✓		2	
20-29cm	✓			
10-19cm	✓			
5-9cm	✓			
<5cm	✓			
Composition & Structure	Composition Count		Structure cover %	
Trees	5		40	
Shrubs	26		70	
Grasses etc	13		30	
Forbs	8		10	
Ferns	0		0	
Other	3		1	
High Threat Weeds	0		0	
Ecosystem Functions				
Length of habitat logs	25m			
Litter cover	35%			
Bare ground cover	0%			
Cryptogam cover	15%			
Rock cover	5%			
Overstorey foliage cover	30%			
Mid-storey foliage cover	60%			
Groundcover foliage cover	25%			



**Image 10.** Quadrat 2 centre midline point

**Table 3.** Survey summary from Haerses Road monitoring survey site quadrat 2.

1134 – Scribbly Gum – Hairpin Banksia – Dwarf Apple heathy woodland on sandstone plateaux of the Central Coast, Sydney Basin Bioregion				
AGD Zone 56 Easting – 0312226 Northing – 06293607 Midline - 190°				
Vegetation Layer	Height Range	Vegetation Layer		
Trees	15 – 20m	<i>Eucalyptus haemastoma</i> , <i>Angophora hispida</i> , <i>Eucalyptus squamosal</i> , <i>Banksia serrata</i>		
Shrubs	0.5 – 2m	<i>Banksia ericifolia</i> , <i>Grevillea buxifolia</i> , <i>Persoonia lanceolata</i> , <i>Lambertia Formosa</i> , <i>Petrophile pulchella</i> , <i>Banksia spinulosa</i>		
Groundcover	0.1 – 0.5m	<i>Lomandra multiflora</i> , <i>Cyathochaeta diandra</i> , <i>Lepidosperma neesii</i> , <i>Actinotus minor</i>		
Stem Class			Hollows	
Dbh	Eucalyptus	Non-Eucalypt	<20cm	>20cm
80cm+				
50-79cm				
30-49cm	✓		2	
20-29cm	✓			
10-19cm	✓			
5-9cm	✓			
<5cm	✓			
Composition & Structure		Composition Count		Structure cover %
Trees		4		20
Shrubs		22		70
Grasses etc		9		50
Forbs		3		5
Ferns		1		0.1
Other		2		0.1
High Threat Weeds		0		0
Ecosystem Functions				
Length of habitat logs		12.5m		
Litter cover		10%		
Bare ground cover		0%		
Cryptogam cover		10%		
Rock cover		0%		
Overstorey foliage cover		10%		
Mid-storey foliage cover		40%		
Groundcover foliage cover		50%		



**Image 11.** Quadrat 4 centre midline point

**Table 4.** Survey summary from Haerses Road monitoring survey site quadrat 4.

1083 - Red Bloodwood – Scribbly Gum heathy woodland on sandstone plateaux of the Sydney Basin, Sydney Basin Bioregion				
AGD Zone 56 Easting – 0312062 Northing – 06293587 Midline - 310°				
Vegetation Layer		Height Range	Vegetation Layer	
Trees		15 – 20m	<i>Corymbia gummifera, Eucalyptus haemastoma, Angophora hispida, Eucalyptus oblonga</i>	
Shrubs		0.5 – 2m	<i>Grevillea buxifolia, Persoonia levis, Banksia ericifolia, Lambertia Formosa, Petrophile pulchella, Leptospermum trinervium</i>	
Groundcover		0.1 – 0.5m	<i>Entolasia stricta, Lomandra obliqua, Actinotus minor, Caustis pentandra, Rytidosperma racemosum</i>	
Stem Class			Hollows	
Dbh	Eucalyptus	Non-Eucalypt	<20cm	>20cm
80cm+				
50-79cm	✓		1	1
30-49cm	✓		4	
20-29cm	✓			
10-19cm	✓			
5-9cm	✓			
<5cm	✓			
Composition & Structure		Composition Count		Structure cover %
Trees		5		40
Shrubs		25		50
Grasses etc		12		40
Forbs		13		10
Ferns		2		1
Other		3		1
High Threat Weeds		0		0
Ecosystem Functions				
Length of habitat logs		12 m		
Litter cover		20%		
Bare ground cover		0%		
Cryptogam cover		0%		
Rock cover		0%		
Overstorey foliage cover		30%		
Mid-storey foliage cover		40%		
Groundcover foliage cover		30%		

### 3.4 WISEMANS FERRY ROAD BUFFER AREA

Assisted buffer planting commenced in 2016 with a variety of native species such as *Banksia*, *Melaleuca*, *Hakea* and *Acacia* to complement the existing native vegetation which occurred onsite. During early 2020 the buffer area was disturbed by civil contractors for road widening and intersection upgrade. Unfortunately this has resulted in much of the existing native vegetation buffer being removed and disturbance to some of the planted buffer area.

The buffer has been monitored throughout the reporting period for natural species regeneration. The western side of the Haerses Road intersection has begun natural regeneration with a diversity of *Eucalyptus*, *Acacia* and *Leptospermum* species emerging. Continued monitoring of this area will continue to ensure the buffer meets the expectations of providing suitable vegetation screening from Wisemans Ferry Road.

The Eastern side of the Haerses Road intersection has not shown any signs of natural regeneration therefore further buffer screening will be required to take place during the next reporting period.

Exotic species occur in both areas with Weeds of National Significance (WoNS) and High Threat Weeds (HTW) present. Weed management and control will commence during the next reporting period with the WoNS and HTW being the species of targeted priority.



**Image 12.** Western side of Haerses Road within the Wisemans Ferry Road buffer area



**Image 13.** Eastern side of Haerses Road within the Wisemans Ferry Road buffer area

### 3.5 MAROOTA STATE FOREST BUFFER AREA

There has been no further disturbance to any areas of the Maroota State Forest buffer. Disturbance did take place in 2006 of a small area in the south eastern portion of Lot 177 in DP752039. This area has been under active rehabilitation since 2015. Bush-it undertake bush regeneration work on a regular basis in this area. An annual report is provided to Dixon Sand outlining the rehabilitation work undertaken with achievements outlined in detail.



## 4 DISCUSSION AND RECOMMENDATIONS

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The rehabilitation of the Haerses Road Quarry site has begun with work commencing in extraction area stage 1 and 2, work continuing in the Maroota State Forest buffer area and work due to recommence within the Wisemans Ferry Road buffer area within the next reporting period. Rehabilitation work is in the early stages and will increase with both intensity and measurable criteria within the next reporting period.

Vegetation surveys have been undertaken within the extraction A and B areas. The data collected will serve as baseline information for measurable and quantifiable analysis for future reporting periods. The vegetation condition recorded will provide specific data on the local vegetation biometric score which will assist in rehabilitation of the quarry areas once extraction is completed. This will provide a measure in which rehabilitation success can be evaluated against via the criteria outlined within the Haerses Road Biodiversity and Rehabilitation Management Plan v5 2020.

The coming twelve months should see the following rehabilitation effort take place:

### Extraction area stage 1

- Screening of stockpile material
- Final landform for active rehabilitation areas
- Stockpile material layered to create suitable agricultural terrain
- First agricultural planting event

### Extraction area stage 2

- Native vegetation growth to the west of the dam
- Dam wall repair/mitigation

### Wisemans Ferry Road buffer area

- Assisted rehabilitation of eastern side of Haerses Road intersection buffer area where disturbance has taken place

### Maroota State Forest buffer area

- Continued bush regeneration maintenance work in disturbed area
- Baseline monitoring locations established

### Extraction area A and B

- Continued monitoring of vegetation quadrats

It is not expected any new areas of rehabilitation will take place within the next reporting period as extraction across the site continues.

## 5 □ BIBLIOGRAPHY

---

Australian Government Com Law. 2014. *Environment Protection and Biodiversity Conservation Act 1999*. [ONLINE] Available at:

<http://www.comlaw.gov.au/Details/C2014C00506> [Accessed 5th September 2021].

Australian Government Com Law. 2018. *Biosecurity Act 2015*. [ONLINE] Available at:

<https://www.legislation.gov.au/Details/C2018C00363> [Accessed 6th September 2021].

Department of Lands Spatial Information Exchange. 2018. SIX Maps. [ONLINE] Available at:

<http://maps.six.nsw.gov.au/> [Accessed 6<sup>th</sup> September 2021].

New South Wales Consolidated Acts. 2017. *Biodiversity Conservation Act 2016*. [ONLINE]

Available at: [https://www.legislation.nsw.gov.au/~/\\_view/act/2016/63](https://www.legislation.nsw.gov.au/~/_view/act/2016/63) [Accessed 6th September 2021].

NSW Office of Environment and Heritage. 2018. *NSW BioNet*. [ONLINE] Available at:

<http://www.bionet.nsw.gov.au/> [Accessed 6th September 2021].

NSW Office of Environment and Heritage. 2018. *NSW BioNet Vegetation Classification*.

[ONLINE] Available at: <https://www.environment.nsw.gov.au/NSWVCA20PRapp/default.aspx> [Accessed 6th September 2021].

The Hills Shire Council (2019) *The Hills Local Environmental Plan 2019*. [ONLINE] Available at

<https://www.legislation.nsw.gov.au/view/html/inforce/current/epi-2019-0596> [Last accessed 6th September 2021].

South East Environmental 2020. *Haerses Road Annual Biodiversity and Rehabilitation Management Report 2020*. Unpublished report by South East Environmental.

Umwelt (Australia) Pty Ltd 2019. *Haerses Road Biodiversity and Rehabilitation Management Plan May 2019*. Unpublished report by Umwelt Teralba.

## 6 APPENDIX

## APPENDIX A – FLORA IDENTIFIED ONSITE AT HAERSES ROAD

Status	Botanical Name	Common Name	Plot 1	Plot 2	Plot 4
	<i>Acacia ulicifolia</i>	Prickly Moses			1
	<i>Actinotus minor</i>	Lesser Flannel Flower	2		2
	<i>Allocasuarina distyla</i>	Scrub She-oak		1	
	<i>Angophora hispida</i>	Dwarf Apple	1	2	1
	<i>Aristida warburgii</i>	Fine Leaf Wire Grass	2	2	1
	<i>Asplenium trichomanes</i>	Common Spleenwort			1
	<i>Austrostipa pubescens</i>	Spear Grass	1		1
	<i>Banksia ericifolia</i>	Heath Leaved Banksia	1	3	2
	<i>Banksia oblongifolia</i>	Fern-leaved Banksia		1	
	<i>Banksia serrata</i>	Old Man Banksia		1	
	<i>Banksia spinulosa</i>	Hairpin Banksia	1	2	1
	<i>Billardiera scandens</i>	Hairy Apple Berry	1		1
	<i>Boronia floribunda</i>	Pale Pink Boronia	1	1	1
	<i>Boronia ledifolia</i>	Sydney Boronia			1
	<i>Bossiaea scolopendria</i>	Sword Bossiaea	1	1	
	<i>Calytrix tetragona</i>	Common Fringe Myrtle	2	3	2
	<i>Cassytha glabella</i>	Slender Devils Twine	1	1	1
	<i>Caustis pentandra</i>	Thick Twist Rush	1	1	1
	<i>Cheilanthes sieberi</i>	Mulga Fern		1	2
	<i>Corymbia gummifera</i>	Red Bloodwood	2		1
	<i>Cyathochaeta diandra</i>	Sheath Rush	2	2	2
<b>V</b>	<i>Darwinia biflora</i>		2	1	2
	<i>Dillwynia floribunda</i>	Showy Parrot Pea			1
	<i>Dillwynia retorta</i>	Heathy Parrot Pea	2	1	1
	<i>Drosera peltata</i>	Sundew	1	1	1
	<i>Entolasia stricta</i>	Wiry Panic	2	2	2
	<i>Epacris pulchella</i>	Wallum Heath	1	1	1
	<i>Eucalyptus haemastoma</i>	Scribbly Gum	1	1	1
	<i>Eucalyptus oblonga</i>	Narrow-leaved Stringybark	1		1
	<i>Eucalyptus punctata</i>	Grey Gum	1		
	<i>Eucalyptus squamosa</i>	Scaly Gum		1	1
	<i>Gonocarpus teucroides</i>	Raspwort	1		
	<i>Goodenia bellidifolia</i>	Daisy-leaved Goodenia	1		1
	<i>Goodenia hederacea</i>	Forest Goodenia	1		
	<i>Grevillea buxifolia</i>	Grey Spider Flower	2	1	1
<b>En</b>	<i>Grevillea parviflora subsp supplicans</i>	Small-flowered Grevillea	1		
	<i>Grevillea speciosa</i>	Red Spider Flower	1	1	1
	<i>Hakea dactyloides</i>	Broad Leaved Hakea	1		1
	<i>Hakea sericea</i>	Needlebush	1	1	1
	<i>Hibbertia aspera</i>	Rough Guinea Flower			1
	<i>Hibbertia diffusa</i>	Wedge Guinea Flower	1		
	<i>Isopogon anemonifolius</i>	Broad-leaved Drumsticks	1	1	1
	<i>Juncus usitatus</i>	Common Rush		1	
	<i>Lambertia formosa</i>	Mountain Devil	2	1	2
	<i>Lepidosperma laterale</i>	Variable Swordsedge	1		2
	<i>Lepidosperma neesii</i>	Stiff Rapier-sedge		1	

	<i>Leptospermum trinervium</i>	Flaky-barked Tea-tree	2	2	2
	<i>Leucopogon microphyllus</i>	Small Leaved White Beard	1	1	
	<i>Lomandra brevis</i>	Tufted Mat-rush	1		1
	<i>Lomandra filiformis</i>	Wattle Mat-rush		2	
	<i>Lomandra Lomandra</i>	Spiny-headed Mat-rush	1		
	<i>Lomandra multiflora</i>	Many Flowered Mat-rush	2	1	2
	<i>Lomandra obliqua</i>	Fish Bones	1		2
	<i>Lomatia silaifolia</i>	Crinkle Bush	1		1
	<i>Micrantheum ericoides</i>	Micrantheum	1		1
	<i>Micromyrtus ciliata</i>	Fringed Heath-myrtle		2	
	<i>Mirbelia rubiifolia</i>	Heath Mirbelia	1	1	
	<i>Mitrasacme polymorpha</i>	Varied Mitrewort		1	
	<i>Patersonia sericea</i>	Silky Purple Flag	1		1
	<i>Persoonia lanceolate</i>	Lance Leaf Geebung		1	1
	<i>Persoonia levis</i>	Broad Leaved Geebung	1		1
	<i>Petrophile pulchella</i>	Conesticks	1	1	1
	<i>Phyllanthus hirtellus</i>	Thyme Spurge	1		1
	<i>Pultenaea villosa</i>	Hairy Bush-pea		1	
	<i>Rytidosperma racemosum</i>	Wallaby Grass	1		1
	<i>Scaevola ramosissima</i>	Purple Fan-flower	1	1	1
	<i>Schoenus ericetorum</i>	Heath Bog Rush		1	
<b>V</b>	<i>Tetratheca glandulosa</i>	Glandular Pink Bells	1		1
	<i>Thelymitra pauciflora</i>	Slender Sun Orchid			1
	<i>Themeda australis</i>	Kangaroo Grass	1		1
	<i>Xanthorrhoea resinosa</i>	Grass Tree	1	1	1

# **Appendix I – Annual Management Reports for Year 3 - Passive Management of Stewardship Sites**

## Environment

---

**From:** BCT BSA Annual Report Mailbox <BSA.AnnualReport@bct.nsw.gov.au>  
**Sent:** Friday, 11 March 2022 11:16 AM  
**To:** Environment  
**Subject:** Automatic reply: BA 414 & 415 Annual Passive Management Reports Submission

Thank you for submitting your BSA annual report to the NSW Biodiversity Conservation Trust (BCT). We acknowledge receipt of your annual report and it has been forwarded to a BCT staff member for review.

Sincerely,  
The BSA Coordination Team

## Environment

---

**From:** Environment  
**Sent:** Friday, 11 March 2022 11:12 AM  
**To:** 'bsa.annualreport@bct.nsw.gov.au'  
**Cc:** David Dixon; Mark Dixon; Melissa Mass  
**Subject:** BA 414 & 415 Annual Passive Management Reports Submission  
**Attachments:** BA414 Haerses Road Year 3 Annual Report - Passive Mngmt.zip; BA415 Porters Road Year 3 Annual Report - Passive Mngmt.zip

Hi,

Dixon Sand would like to submit the Year 3 Passive Management Annual Reports for the following biobank sites:

- ) BA414 Haerses Road
- ) BA415 Porters Road

Attached are signed PDF and unsigned word document copies of the reports as requested.

I trust that this satisfies the BCT's requirement.

Please do not hesitate to contact me should you require any clarification.

Kind Regards,

Hunny Churcher  
Environmental Officer  
Dixon Sand Pty Ltd  
P: 02 4566 8348  
m: 0405 844 207  
w: [www.dixonsand.com.au](http://www.dixonsand.com.au)

## Biodiversity Stewardship Site landholder annual report & BCT audit (passive management)

### Audit details

Biodiversity stewardship agreement year: **2022**

Reporting period: **2021-2022**

BCT site inspection date (if required):

BCT Auditor: **Vivian Hamilton**

BS agreement ID: **BA00414 Haerses Road**

Landowner/site contact details: **David Dixon, 0414 330 490**

Property address: **B/407341, 4610 Old Northern Road, Maroota**

BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
<b>1. Fire management</b>	1.1 Implementation of the fire for conservation management plan	N/A until under active management. No actions taken to date.  No fire within the BSA site boundary during the previous 12 month period. Last inspection 28/02/2022		
<b>2. Grazing management</b>	2.1 Exclusion of grazing by Stock	No stock kept or located on property. No unauthorised grazing of stock noted. Last inspection 28/02/2022		
	2.3 Removal of Stock when observed	N/A		
	2.1 & 2.2 Stock grazing in accordance with BSA restrictions	N/A		
	2.3 Removal of stock when contrary to BSA grazing restrictions	N/A		



BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
<b>3. Native vegetation management</b>	3.1 Retaining native vegetation	No disturbance to native vegetation in past 12 month period		
	3.2 Burning of native vegetation	No burning of native vegetation in past 12 month period		
	3.4 Restricted use of fertilisers, pesticides and herbicides.	No use of fertilisers, pesticides or herbicides within the BSA site during the past 12 month period		
	3.6.4 Management of supplementary planting areas	N/A		
	3.6.5 Local provenance of plants used for supplementary planting and audit template	N/A		
<b>4. Threatened species habitat management and enhancement</b>	4.1 Protection of threatened species breeding habitat	No disturbance to any threatened species breeding habitat in the past 12 month period. The Haerses Road BSA site is fenced and sign posted as an environmental protection area to deter unauthorised persons from entering and disturbing significant habitat areas		
<b>8. Management of human disturbance</b>	8.1 Removal, movement or use of dead timber	No removal, movement or use of dead timber within the BSA site in the past 12 month period		
	8.3 Removal or movement of rocks	No removal or movement of rocks in the past 12 month period		
	8.6 No storage or disposal of rubbish	No storage or disposal of rubbish within the BSA site in the past 12 month period		
	8.9 Maintenance of tracks and fences	Maintenance of tracks with the BSA site has occurred, particularly following extreme rainfall events which cause damage to the track pavement. Work has been carried out with care and no disturbance has occurred to native vegetation alongside these tracks. Fences are regularly checked to ensure they remain visible		

BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
9. Monitoring	9.2 Establishing and sampling photo-points	Photo points have been established. This is the third year of photo point monitoring.		
	9.4 Establishing vegetation integrity survey plots	Vegetation integrity survey plots have been established. The most recent survey was undertaken in July 2021		

### Additional site inspections

Management Actions		Landholder to complete	BCT annual report audit	
Description of additional site inspection or monitoring requirement	Required frequency	Completion dates, observations, actions undertaken and outcomes	Action completed Yes/No/N/A	Comments and recommendations by BCT
Inspection to determine percentage of living ground cover when grazing Stock.	Every 12 months	N/A		
Inspections to record grazing by Stock in accordance with Section 7A.2 of the management plan.	Every 3 months	N/A		
Inspections to document human disturbance, erosion or waste in accordance with Section 7A.2 of the management plan.	Every 6 months	The Haerses Road BSA site is inspected twice per year. During the last 12 month period the site was inspected during July 2021 and February 2022		
Inspection to document the condition of fences and gates in accordance with Section 7A.2 of the management plan.	Every 12 months	The fences at the Haerses Road BSA site are inspected regularly throughout the year with the last inspection occurring on the 28/02/2022		

### Details of incidents or events that have had an adverse effect on biodiversity values on biodiversity stewardship site (landholder to complete)

Description of incident or event (e.g. natural events)	Actions taken and/or recommended actions

**Details of incidents or events that have had an adverse effect on biodiversity values on biodiversity stewardship site (landholder to complete)**


**Any other comments or observations regarding the biodiversity stewardship site (landholder to complete)**

**Photo monitoring site 1.**

A good increase in ground cover diversity within the site given the ideal climatic conditions for plant growth during the previous 12 month period.



**Photo monitoring site 2.**

Ground cover density has increased dramatically at this site during this monitoring period. Shrub growth is increasing in density and diversity. Annual herbaceous weeds such as *Bidens pilosa* and *Conyza bonariensis* are present in low density. The woody weed *Lantana camara* has emerged within this monitoring location and is growing prolifically nearby on the margin of the BSA site.



**Photo monitoring site 3.**

A good increase in ground cover diversity within the site given the ideal climatic conditions for plant growth during the previous 12 month period. Small fallen shrubs noted to have perished during the 2018-2019 drought in the previous monitoring periods are now almost completely covered in ground cover growth and appear to be breaking down into organic material well.



### Landholder Annual Report signature and declaration

I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements specified in Section 7 of Attachment 4 of the Biodiversity Stewardship Agreement.

All landowners must sign this annual report. If the land that forms the Biodiversity Stewardship Site is owned by multiple persons landowners may confirm in writing to the BCT that another person can complete and submit the annual report on their behalf.

**Please submit a signed PDF version and a word version of your Annual Report submission to the BCT**

Signed



Signed

Date

11 / 03 / 2022

Date

### BCT approval of recommendations

Signature of auditor:

Authorisation signature:

Name of auditor:

Name of authorising officer:

Position of auditor:

Position of authorising officer:

Date:

Date:

To be completed by the landholder and submitted with both passive and active annual reports

<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>	
---	--

This template is to be completed to record the outcomes of each three and six-monthly inspection for documenting observations of livestock, human disturbance, erosion and rubbish dumping. The completed template must be submitted with the annual report.

<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b> <input type="checkbox"/> <b>Melissa Mass</b>	<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b> <input type="checkbox"/> <b>29/07/2021 and 28/02/2022</b>
--	---

<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
---

<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
<input type="checkbox"/>
<b>NO</b> <input type="checkbox"/>

<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
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<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
<input type="checkbox"/>
<b>NO</b> <input type="checkbox"/>
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<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
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<b>NO</b> <input type="checkbox"/>
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<input type="checkbox"/> <b>r</b> <input type="checkbox"/> <b>d</b>
<input type="checkbox"/>
<b>NO</b> <input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>
<input type="checkbox"/>

This template is to be completed to record the outcomes of the annual inspection of fencing, gates and signage. The completed template should be submitted with the annual report.

Inspector Name: Melissa Mass

Division:

Inspected On: 12/15/2023

YES

Comments:

N/A

Notes:

NO – in the process of ordering signs through the BCT





Take photographs at the photo-points specified in the agreement and submit this document with your annual report. If you have photos from year 1 of your agreement you can include these as a comparison.

Photo-point number: 1

Location co-ordinates: 312641E 6293338N

Photo orientation (degrees e.g 230 degrees): 0

Time and date taken: 1404, 28/02/2022



Photo-point number: 2

Location co-ordinates: 312446E 6294165N

Photo orientation (degrees e.g 230 degrees): 200

Time and date taken: 1415, 28/02/2022



Photo-point number: 3

Location co-ordinates: 312955E 6294224N

Photo orientation (degrees e.g 230 degrees): 200

Time and date taken: 1355, 28/02/2022



## Biodiversity Stewardship Site landholder annual report & BCT audit (passive management)

### Audit details

Biodiversity stewardship agreement year: **2022**

Reporting period: **2021-2022**

BCT site inspection date (if required):

BCT Auditor: **Vivian Hamilton**

BS agreement ID: **BA00415 Porters Road**

Landowner/site contact details: **David Dixon, 0414 330 490**

Property address: **1/565423, 143 Porters Road, Kenthurst**

BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
<b>1. Fire management</b>	1.1 Implementation of the fire for conservation management plan	N/A until under active management. No actions taken to date.  No fire within the BSA site boundary during the previous 12 month period. Last inspection 28/02/2022		
<b>2. Grazing management</b>	2.1 Exclusion of grazing by Stock	No stock kept or located on property. No unauthorised grazing of stock noted. Last inspection 28/02/2022		
	2.3 Removal of Stock when observed	N/A		
	2.1 & 2.2 Stock grazing in accordance with BSA restrictions	N/A		
	2.3 Removal of stock when contrary to BSA grazing restrictions	N/A		

BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
<b>3. Native vegetation management</b>	3.1 Retaining native vegetation	No disturbance to native vegetation in past 12 month period		
	3.2 Burning of native vegetation	No burning of native vegetation in past 12 month period		
	3.4 Restricted use of fertilisers, pesticides and herbicides.	No use of fertilisers, pesticides or herbicides within the BSA site during the past 12 month period		
	3.6.4 Management of supplementary planting areas	N/A		
	3.6.5 Local provenance of plants used for supplementary planting and audit template	N/A		
<b>4. Threatened species habitat management and enhancement</b>	4.1 Protection of threatened species breeding habitat	No disturbance to any threatened species breeding habitat in the past 12 month period. The Porters Road BSA site is accessed via two locked gates which only RFS and property owners have keys for.		
<b>8. Management of human disturbance</b>	8.1 Removal, movement or use of dead timber	No removal, movement or use of dead timber within the BSA site in the past 12 month period		
	8.3 Removal or movement of rocks	No removal or movement of rocks in the past 12 month period		
	8.6 No storage or disposal of rubbish	No storage or disposal of rubbish within the BSA site in the past 12 month period		
	8.9 Maintenance of tracks and fences	No maintenance of tracks has occurred. The tracks within the BSA site are suitable for 4wd vehicle only. Maintenance is not expected to be required unless emergency services require access.		
<b>9. Monitoring</b>	9.2 Establishing and sampling photo-points	Photo points have been established. This is the third year of photo point monitoring.		

BAM passive management actions		Annual report (landholder to complete)	BCT annual report audit	
Passive management actions as per Agreement	Management item description	Completion dates, actions undertaken and outcomes	Action completed Yes/No/N/A	Auditor comments and recommendations
	9.4 Establishing vegetation integrity survey plots	Vegetation integrity survey plots have not been established.		

### Additional site inspections

Management Actions		Landholder to complete	BCT annual report audit	
Description of additional site inspection or monitoring requirement	Required frequency	Completion dates, observations, actions undertaken and outcomes	Action completed Yes/No/N/A	Comments and recommendations by BCT
Inspection to determine percentage of living ground cover when grazing Stock.	Every 12 months	N/A		
Inspections to record grazing by Stock in accordance with Section 7A.2 of the management plan.	Every 3 months	N/A		
Inspections to document human disturbance, erosion or waste in accordance with Section 7A.2 of the management plan.	Every 6 months	The Porters Road site is currently inspected annually. There has been no human disturbance, erosion or waste noted within the site with last inspection being on the 28/02/2022		
Inspection to document the condition of fences and gates in accordance with Section 7A.2 of the management plan.	Every 12 months	The access into the Porters Road BSA site is via two locked RFS gates. The RFS may periodically inspect these gates and locks. The last inspection of the locked gates by the landowners representative was on the 28/02/2022		

Details of incidents or events that have had an adverse effect on biodiversity values on biodiversity stewardship site (landholder to complete)	
Description of incident or event (e.g. natural events)	Actions taken and/or recommended actions

**Details of incidents or events that have had an adverse effect on biodiversity values on biodiversity stewardship site (landholder to complete)**


**Any other comments or observations regarding the biodiversity stewardship site (landholder to complete)**

**Photo monitoring site 1.**

No change noted within the site over the past 12 month period



**Photo monitoring site 2.**

Shrub density has increased at this location during the past 12 month period.





**Photo monitoring site 3.**

Shrub density has increased at this location during the past 12 month period.



**Landholder Annual Report signature and declaration**

I hereby declare that the information supplied in this report is accurate and complies with the reporting requirements specified in Section 7 of Attachment 4 of the Biodiversity Stewardship Agreement.

All landowners must sign this annual report. If the land that forms the Biodiversity Stewardship Site is owned by multiple persons landowners may confirm in writing to the BCT that another person can complete and submit the annual report on their behalf.

Please submit a signed PDF version and a word version of your Annual Report submission to the BCT

Signed



Signed

Date

11 / 03 / 2022

Date

**BCT approval of recommendations**

Signature of auditor:

Authorisation signature:

Name of auditor:

Name of authorising officer:

Position of auditor:

Position of authorising officer:

Date:

Date:

To be completed by the landholder and submitted with both passive and active annual reports

**Responsible person**  **Responsible person**

This template is to be completed to record the outcomes of each three and six-monthly inspection for documenting observations of livestock, human disturbance, erosion and rubbish dumping. The completed template must be submitted with the annual report.

**Responsible person**  Melissa Mass

**Responsible person**  28/02/2022

**Responsible person**

**Responsible person**  **Responsible person**

NO

**Responsible person**

**Responsible person**  **Responsible person**

NO

**Responsible person**  **Responsible person**

NO

**Responsible person**  **Responsible person**

NO





Take photographs at the photo-points specified in the agreement and submit this document with your annual report. If you have photos from year 1 of your agreement you can include these as a comparison.

Photo-point number: 1

Location co-ordinates: 310779E 6278963N

Photo orientation (degrees e.g 230 degrees): 220

Time and date taken: 1525, 28/02/2022



Photo-point number: 2

Location co-ordinates: 310826E 6278524N

Photo orientation (degrees e.g 230 degrees): 90

Time and date taken: 1555, 28/02/2022



Photo-point number: 3

Location co-ordinates: 310700E 6279231N

Photo orientation (degrees e.g 230 degrees): 200

Time and date taken: 1620, 28/02/2022



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# DIXON SAND (No 1)

## SECTION 94 CONTRIBUTION

### SAND & SANDSTONE SALES JANUARY 2022

4	
5	
6	
7	
8	
10	
11	26.00
12	33.86
13	22.70
14	11.38
15	
17	
18	
19	
20	
21	
22	
24	29.00
25	126.00
27	228.00
28	97.00
29	
31	58.00

631.94 Tonnes @ \$1.09

\$688.81

## **Appendix K – Community Engagement and CCC Meeting Minutes**



# DIXON SAND

## MINUTES OF THE BI-ANNUAL COMMUNITY CONSULTATIVE COMMITTEE 10 NOVEMBER 2021 GLENORIE RSL CLUB - GLENORIE

	NAME	ORGANISATION
<b>PRESENT</b>	Lisa Andrews (LA)	Independent Chairperson
	Kristine McKenzie (KM) <i>via video-conference</i>	The Hills Shire Council Representative
	Daniel Giffney (DG) <i>via video-conference</i>	The Hills Shire Council Representative
	Pat Schwartz (PS)	Community Representative
	Farley Roberts (FR)	Community Representative
	Lisa Aylward (LAy)	Maroota Public School Representative <i>[left at 2.34pm]</i>
	Timothy Baker (TB)	Bush Regeneration Contractor (Bush-It)
	Hunny Churcher (HC) <i>via video-conference</i>	Environmental Officer, Dixon Sand
	Mark Dixon (MD)	Dixon Sand
	Melissa Mass (MM)	Dixon Sand - Ecologist
<b>APOLOGIES</b>	David Dixon (DD)	General Manager, Dixon Sand
	Jemma Roberts (JR)	Community Representative (alternate)

<b>WELCOME &amp; INTRODUCTION</b>	LA opened the meeting at 12.59pm following a light luncheon. All members were welcomed and LA advised that HC, KM & DG were participating via video-conferencing.							
<b>DECLARATIONS OF INTEREST</b>	LA declared that she is approved by the Department of Planning and Environment to chair the meeting and engaged by Dixon Sand.	<b>No changes to previous declarations by members.</b>						
<b>BUSINESS ARISING FROM PREVIOUS MEETING (12/5/21)</b>	<table border="1"> <thead> <tr> <th>Item</th> <th>Issue</th> <th>Responsibility</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Follow-up response from Robyn Preston MP regarding the school zone (LA wrote to Robyn Preston MP ON 17/5/21 and advised that the subject area is actually located in The Hills Shire Council LGA &amp; asked that she make representations to that Council. LA followed this matter up last week and her staffer said that she had forwarded the request through to The Hills Shire Council, but hadn't received a response as</td> <td>LA</td> </tr> </tbody> </table>	Item	Issue	Responsibility	1	Follow-up response from Robyn Preston MP regarding the school zone (LA wrote to Robyn Preston MP ON 17/5/21 and advised that the subject area is actually located in The Hills Shire Council LGA & asked that she make representations to that Council. LA followed this matter up last week and her staffer said that she had forwarded the request through to The Hills Shire Council, but hadn't received a response as	LA	
Item	Issue	Responsibility						
1	Follow-up response from Robyn Preston MP regarding the school zone (LA wrote to Robyn Preston MP ON 17/5/21 and advised that the subject area is actually located in The Hills Shire Council LGA & asked that she make representations to that Council. LA followed this matter up last week and her staffer said that she had forwarded the request through to The Hills Shire Council, but hadn't received a response as	LA						

	<p>yet. The staffer committed to chasing this up. Heldover.</p>		
	<p>2 Extending the length of the 60km zone at Cattai had been raised at a previous CCC and did not seem to have been addressed. Following the last meeting, LA looked up the previous discussions and included them as a postscript in the May minutes*.</p>	LA	
	<p>*QUOTE: PS further commented that the Eastbend committee had raised the issue of speed around the Cattai School, specifically where the speed goes from 80km to 40km during school times (from O’Brians Rd to Millers Rd or Threlkeld Dr – both sides of the school). Discussions on whether the speed should go from 80km to 60km to 40km or whether more signage should be erected, warning drivers of the upcoming school zone (40km). DD mentioned that it may be difficult to alter a main arterial road from 80km to 60km, stating it would require a robust argument with supporting technical data. Notwithstanding this, Dixon Sand is committed to safety and driver conduct.</p> <p>Further discussion about this matter. Other community groups recommended to make representations to the state member and Council.</p>		
<p><b>CORRESPONDENCE (as emailed with Meeting Notice on 29/10/21 with 4 additional items)</b></p>	<ul style="list-style-type: none"> <li>• 17/5/21 – Email to Robyn Preston MP informing that school zone area is located in The Hills Shire Council LGA.</li> <li>• 18/5/21 - Draft minutes sent to members for review</li> <li>• 26/5/21 - Email to members with the finalised minutes.</li> <li>• 29/9/21 – Email from HC advising that Dixon Sand has submitted the Annual Review 2020 – 2021 for Old Northern Road and Haerses Road Quarries to the DPIE.</li> <li>• 11/10/21 – Email to members advising that the CCC is planned to go ahead in person at Glenorie RSL as well as via video-conferencing. Details to be confirmed.</li> <li>• 29/10/21 – Email to CCC members with the Meeting Notice, Agenda and Correspondence Report for this meeting.</li> <li>• 29/10/21 – Email to Robyn Preston MP’s office requesting an update on the school zone issue.</li> <li>• 29/10/21 – Email response from Roby Preston MP’s office advising that a response from Council has not been received, however, the officer has chased up the matter.</li> <li>• 3/11/21 – Email to Council delegates with the Zoom meeting link.</li> <li>• 9/11/21 – Email to members with the reminder for this meeting.</li> </ul>		
<p><b>PROJECT REPORT, INCLUDING PRODUCTION/SALES</b></p>	<p>MD advised that he didn’t have the production figures, however, production has been strong, especially with the sale of sandstone blocks.</p>	<p><b>Questions asked and answered throughout the presentation.</b></p>	

<p><b>OLD NORTHERN ROAD QUARRY</b></p>	<p>KM enquired whether the shutdown to the Construction industry during COVID restrictions affected project with MD advising that most customers used the quarry as a buffer for material transport.</p> <p>KM asked if Dixon Sand had COVID procedures in place on site in relation to vaccinations. MD responded that Dixon Sand has a dedicated Safety Officer to ensure procedures are in place and compliance these requirements. HC advised that Dixon Sand had a campaign to have staff vaccinated and providing them time off during working hours to receive the vaccine.</p>	<p><b>See - Slide No. 7</b></p>
<p><b>HAERSES ROAD QUARRY</b></p>	<p>Development Consent Mod. 4 was approved on 29 June 2021.</p> <p>Changing the sequence of approved extraction within the Mod. 1 Friable Hawkesbury Sandstone resource. Approved Extraction Sequence: Cells 1A and 2A Proposed Extraction Sequence: Cells 1A and 1B</p> <p>Development Consent Mod. 3 was approved on 23 July 2021</p> <ul style="list-style-type: none"> <li>• Increase in rate of extraction and production from 250,000 to 495,000 tpa</li> <li>• Increase in importation of up to 250,000 tpa of VENM and/or ENM</li> <li>• Increase in daily truck movements from 56 trucks per day to 180 trucks per day</li> <li>• Small extension to Stage 5 Tertiary Sand Extraction Area</li> </ul> <p>Development Consent Mod. 5 (preparation of Scoping Letter) for:</p> <ul style="list-style-type: none"> <li>• Relocation of the approved site office, maintenance shed and weighbridge to an area away from residents along Wiseman Ferry Rd and closer to the main processing plant on Lot 177. This will reduce noise and visual impacts of shed closer to main road.</li> <li>• Minor increase in internal floor dimensions (approximately 1,400m<sup>2</sup> including awning).</li> <li>• Lodgement of Scoping document seeking Modification under Section 4.55(1A) of the EP&amp;A Act 1979.</li> </ul>	<p><b>See Maps – Slide Nos. 8 &amp; 10</b></p>
<p><b>ENVIRONMENTAL MONITORING RESULTS</b></p>	<p>The presentation showed the:</p> <ol style="list-style-type: none"> <li>1. Environmental Monitoring Locations</li> <li>2. TEOM – PM10 data</li> <li>3. Dust Deposition</li> <li>4. Noise</li> <li>5. Ground water and Surface Water</li> <li>6. Incidents/Exceedances</li> </ol>	<p><b>See Maps in Slides: 12, 13, 14 &amp; 15.</b></p>

<p><b>TEOM DATA</b></p>	<p>TEOM and Meteorological station records PM10 levels and weather data such as rain, temperature, wind etc.</p> <p><b>Monitoring Criteria</b></p> <ul style="list-style-type: none"> <li>○ Long term: Annual PM10 average (light blue line) should not exceed the annual average criteria (pink line – 30µg/m3)</li> <li>○ Short term: 24hr PM10 average (blue bars) should not exceed the 24hr PM10 NEPM Criteria (yellow line – 50µg/m3)</li> <li>○ Short term: If the 24hr PM10 EPL Criteria Level (green line – 42µg/m3) is exceeded by the 24hr PM10 average (blue bars), and the prevailing wind is from the specific quadrant Dixon Sand is required to: <ul style="list-style-type: none"> <li>• Notify EPA</li> <li>• Take immediate action to reduce PM10 levels</li> <li>• Stop works if levels do not fall below 42µg/m3 within 1 hour</li> </ul> </li> <li>○ TEOM station represent the EPL Points 1 and 3.</li> </ul>	<p><b>See Slides 17 for graph (July 2021 to October 2021)</b></p>												
<p><b>ELEVATED PM10</b></p>	<p>There were elevated PM10 levels recorded where the 42µg/m3 EPL criteria were in exceedance:</p> <ul style="list-style-type: none"> <li>• 8/10/21</li> <li>• 10/10/21; and</li> <li>• 29/10/21.</li> </ul> <p>HC explained that the levels were due to agricultural and weather conditions and not from activities on site. All incidents were reported with the EPA not taking any regulatory action.</p>	<p><b>See Slide 18.</b></p>												
<p><b>DEPOSITIONAL DUST DATA</b></p>	<p>Data and graphs explained for all sites for the monitoring period July 2021 to October 2021.</p> <table border="1" data-bbox="534 1317 1114 1731"> <thead> <tr> <th>Location</th> <th>Dust Gauge</th> </tr> </thead> <tbody> <tr> <td rowspan="4">Old Northern Road</td> <td>D1A Access road</td> </tr> <tr> <td>D4 Rehab area</td> </tr> <tr> <td>D5 Bundwall</td> </tr> <tr> <td>D7 Mullock Heap</td> </tr> <tr> <td rowspan="4">Haerses Road</td> <td>D8 Olive Grove</td> </tr> <tr> <td>D10 Haerses Road (EPL Point 3)</td> </tr> <tr> <td>D11 Receiver R6</td> </tr> <tr> <td>D12 Receiver R8</td> </tr> </tbody> </table>	Location	Dust Gauge	Old Northern Road	D1A Access road	D4 Rehab area	D5 Bundwall	D7 Mullock Heap	Haerses Road	D8 Olive Grove	D10 Haerses Road (EPL Point 3)	D11 Receiver R6	D12 Receiver R8	<p><b>See Slides 21-27</b></p> <p><b>Locations.</b></p>
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<p><b>DUST DEPOSITION EXCEEDANCE</b></p>	<p>The annual average dust exceedance at monitor D10 in October 2021 was due to agricultural activities occurring in the adjacent paddocks (north and south) of the dust monitor. Previous elevated monthly results were due to (1) RFS utilising the area immediately adjacent to the dust gauge for staging of fire-fighting appliances for the local hazard reduction burn and (2) RFS utilising the same area for training purposes.</p>	<p><b>See Slides 28 – 31, which includes photographs.</b></p>												

<b>NOISE MONITORING</b>	<p>The 6-monthly noise monitoring program and data was explained for ONR. Noise monitoring results demonstrated compliance with noise criteria apart from one reportable incident on 18/6/21:</p> <ul style="list-style-type: none"> <li>• Routine 6-monthly attended noise monitoring identified noise exceedances at a number of receivers: <ul style="list-style-type: none"> <li>o DA 250-09-01, Condition 3 of Schedule 3</li> <li>o EPL 3916, Conditions L4.1 and L4.2</li> </ul> </li> <li>• Noise criteria exceeded by 1 or 2 dBA</li> <li>• Cause of exceedance attributed to dozer ripping hard rock in the centre of the extraction pit on Lots 1 &amp; 2. Cause of exceedance rectified immediately</li> <li>• DPIE and EPA notified of the incident</li> </ul> <p>Section 11.1.3 of the Industrial Noise Policy (2000) specifies a “development will be deemed to be in non-compliance with a noise consent or licence condition if the monitored noise level is more than 2 dB above the statutory noise limit specified in the consent or license condition”. Therefore noise exceedances during this incident are NOT deemed a non-compliance.</p> <p>Noise Monitoring for HR; no non-compliances.</p>	<p><b>See Slides 32-38</b></p> <p><b>See Slides 37 &amp; 38.</b></p>
<b>GROUND WATER MONITORING</b>	<p>GW Monitoring wells:</p> <ul style="list-style-type: none"> <li>– 11 x BHs at ONR</li> <li>– 9 x BHs at HR (original extraction in Tertiary Sand)</li> <li>– 13 x BHs at HR (new – 100 MTSGS Buffer zone for Mod 1 extraction cells)</li> </ul> <p>GW levels: monthly + continuous data loggers</p> <p>GW quality sampling &amp; lab analysis:</p> <ul style="list-style-type: none"> <li>– 6 monthly sampling and testing.</li> </ul>	<p><b>Graphs explained - See Slides 40-54</b></p>
<b>SURFACE WATER MONITORING</b>	<p>ONR</p> <ul style="list-style-type: none"> <li>• SW19 = Surface water monitoring at creek on Lot 196</li> <li>• LDP1 = EPL 3916 Licenced Discharge Point at Weir of Main Water Channel</li> </ul> <p>HR</p> <ul style="list-style-type: none"> <li>• SW1 = Surface water monitoring at creek east of extraction Stage 2 East (inside the Biodiversity Offset Area)</li> <li>• SW2 = Surface water monitoring at creek west of extraction Cell 1A (Mod 1)</li> </ul>	<p><b>Graphs explained - See Slides 55-59</b></p>

	<p>Comment from PS, that she has observed that the western side of Little Cattai Creek is very low, which is unusual given the amount of rain that has been received. Whilst she is not drawing any conclusions from this observation, it is worth noting that there is only a small amount of water there. She will continue to monitor.</p>	
<p><b>BUSH REGENERATION WORKS</b></p>	<p>TB presented on the bush regeneration works:</p> <p><b>Old nursery site &amp; surrounds (ONR)</b> Bare areas brush matted with seeding shrubs earlier in the year. The area is heavily compacted and they have installed fast Bladey Grass into bare areas to assist recovery. Overall very little time is spent in this area.</p> <p><b>NVC – non topsoil section (ONR)</b> Recruitment and recovery witnessed is much slower with minimal microbial and mycorrhizal fungi. However, minimal organic matter vastly reduces the ability of weeds to colonise. We have culled assertive species i.e. <i>Grevillea buxifolia</i> and <i>allelopathic</i> canopy species to promote more light reaching the ground layer.</p> <p><b>NVC – filled section (ONR)</b> Good growth of more recent endangered species plantings and excellent natural recruitment from seed bank. Works have entailed mostly thinning <i>out</i> <i>Grevillea buxifolia</i> and <i>Banksia ericifolia</i>.</p> <p><b>Lot 2 (ONR)</b> Mostly primary/secondary weed control of Lantana in this section. Planted out buffer zone and area near the dam which was previously disturbed with colonising shrubs. Also commenced controlling Bamboo.</p> <p><b>Biodiversity Offset – (Haerses Rd )</b> Problematic species on disturbed edge next to access road predominantly. Relatively stable now with a dense buffer of competitive grasses and bracken fern.</p> <p><b>Future works</b> Bush-it looks forward to taking on further work at the Biobank sites and the maintenance of remnant ecosystems adjacent to Dixon Sand.</p>	<p><b>See photographs in Slides 60 - 67</b></p>
<p><b>BIODIVERSITY AND REHABILITATION</b></p>	<p>MM provided a comprehensive presentation on the Biodiversity and Rehabilitation annual report, monitoring results and threatened species update.</p> <p>Photographs and maps were shown and explained.</p> <p><b>Threatened Species Update</b> Biodiversity and Rehabilitation Annual Reports 2021</p>	<p><b>See Slides 68 - 75</b></p>



	<ul style="list-style-type: none"> <li>○ The Biodiversity and Rehabilitation Annual Reports for 2021 was completed in September and submitted with the Annual Review on the 29<sup>th</sup> September, 2021.</li> <li>○ The Annual Report identifies native flora and fauna within the Native Vegetation Corridor and the Haerses Road Biodiversity Offset Area, monitors the success of the rehabilitation area within the NVC and describes the current condition of threatened flora and their habitats within the Old Northern Road site and the HRBOA.</li> <li>○ The rehabilitation areas are thriving and increasing in diversity and density. Ideal growing conditions with favourable temperatures and regular rainfall has improved the overall biodiversity of the NVC and HRBOA sites.</li> </ul> <p>Photographs were shown of the threatened species in the rehabilitation areas, ONR and HRBOA.</p> <p>Discussions about the cloning of the cloning of <i>Melaleuca deanei</i>. DG enquired about the plants viability and the long term life of the species. MM was unsure, but would check with the herbarium.</p> <p><b>BCT Reporting</b> Annual Management Reports for year 2 were completed in February – Passive Management at Haerses Road and Porters Road continues.</p>	
<b>GENERAL BUSINESS</b>	<ul style="list-style-type: none"> <li>○ PS recommended the ecologists and field officers working in the area keep an eye out for koalas.</li> <li>○ LAy advised that she is now working at the school.</li> </ul>	
<b>MEETING SCHEDULE FOR 2022</b>	<p><i>It was agreed the 2022 meeting schedule will continue as previous years:</i></p> <ul style="list-style-type: none"> <li>🚦 Wednesday 4<sup>th</sup> May 2022; and</li> <li>🚦 Wednesday 9<sup>th</sup> November 2022.</li> </ul> <p>On site at <b>12.30pm</b> with a light lunch, followed by the CCC commencing at <b>1pm</b>.</p>	

***The meeting was closed at 2:59pm with the chair thanking all members for their attendance and MM for driving the video-conferencing and slide presentations. As this was the last CCC for 2021 – wishing everyone a safe and happy festive season.***

#### **ACTION ITEMS.**

<b>Item</b>	<b>Issue</b>	<b>Responsibility</b>
1	Follow-up response from Robyn Preston MP regarding the school zone (held over)	LA



# DIXON SAND

## MINUTES OF THE BI-ANNUAL COMMUNITY CONSULTATIVE COMMITTEE 13 MAY 2022 GLENORIE RSL CLUB - GLENORIE

	NAME	ORGANISATION
<b>PRESENT</b>	Lisa Andrews (LA)	Independent Chairperson
	Kristine McKenzie (KM)	The Hills Shire Council Representative
	Pat Schwartz (PS)	Community Representative
	Lisa Aylward (LAy)	Maroota Public School Representative <i>[arrived at 1.04pm]</i>
	Hunny Churcher (HC) <i>via video-conference</i>	Environmental Officer, Dixon Sand
	Mark Dixon (MD)	Dixon Sand
	Melissa Mass (MM)	Dixon Sand - Ecologist
<b>APOLOGIES</b>	David Dixon (DD)	General Manager, Dixon Sand
	Farley Roberts (FR)	Community Representative
	Jemma Roberts (JR)	Community Representative (alternate)
	Timothy Baker (TB)	Bush Regeneration Contractor (Bush-It)
	Robert Buckham (RB)	The Hills Shire Council Representative
	Jeff Gibbs (JG)	Bush-It alternate

<b>WELCOME &amp; INTRODUCTION</b>	LA opened the meeting at 1pm following a light luncheon. All members were welcomed and LA introduced HC who was participating via video-conferencing.							
<b>DECLARATIONS OF INTEREST</b>	LA declared that she is approved by the Department of Planning and Environment to chair the meeting and engaged by Dixon Sand.	<b>No changes to previous declarations by members.</b>						
<b>BUSINESS ARISING FROM PREVIOUS MEETING (12/5/21)</b>	<table border="1"> <thead> <tr> <th>Item</th> <th>Issue</th> <th>Responsibility</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Follow-up response from Robyn Preston MP regarding the school zone <i>(LA followed up Robyn Preston MP's office. Still no response; will send through any information received to CCC members). Heldover.</i></td> <td>LA</td> </tr> </tbody> </table>	Item	Issue	Responsibility	1	Follow-up response from Robyn Preston MP regarding the school zone <i>(LA followed up Robyn Preston MP's office. Still no response; will send through any information received to CCC members). Heldover.</i>	LA	
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<b>CORRESPONDENCE (as emailed with Meeting Notice on</b>	<ul style="list-style-type: none"> <li>18/11/21 - Draft minutes sent to members for review</li> </ul>							

<p><b>2/5/22 with 1 additional item)</b></p>	<ul style="list-style-type: none"> <li>• 27/11/21 - Email to members with the finalised minutes.</li> <li>• 25/3/22 – Email to members with proposed dates to reschedule May 2022 meeting. (Responses received).</li> <li>• 2/5/22 – Email to Roby Preston MP’s office requesting an update on the school zone issue. (2 years, since initial enquiry made.)</li> <li>• 2/5/22 – Email to CCC members with the Meeting Notice, Agenda and Correspondence Report for this meeting.</li> <li>• <a href="#">12/5/22 – Email to members with the reminder for this meeting.</a></li> </ul>	
<p><b>PROJECT REPORT, INCLUDING PRODUCTION/SALES</b></p> <p><b>OLD NORTHERN ROAD EXPANSION PROPOSAL</b></p> <p><b>HAERSES ROAD QUARRY</b></p>	<p>MD advised that the last six months have been very busy. There were record sales in April 2022.</p> <p>MD outlined that Dixon Sand is proposing to expand into Lot 1/DP204159 directly across from the existing intersection to allow for increased demand in spec and construction sands at the Old Northern Rd Quarry. The expansion of “spec” sand has assisted with its market in high performance sports grounds (including Brookvale Oval, Alliance Stadium, Sydney Football Stadium and various golf courses). Dixon Sand completed a preliminary environmental assessment for this site in 2015 and lodged an application with the Dept of Planning, however the SEARS have now lapsed and will be required to be resubmitted. Dixon Sand has been looking at access options for the site and plan to lodge a preliminary assessment shortly.</p> <p>KM asked if COVID has impacted on the site with MD responding, yes, a lot of staff have had it. KM asked if Dixon Sand were still able to operate during the ongoing wet weather. MD advised that the company and its customers have ‘buffer’ procedures in place there are a few days of supplies to meet customers’ demands and some have their own stock yards.</p> <p>Development Consent Mod. 5:</p> <ul style="list-style-type: none"> <li>• DPE currently finalising Assessment report, Notice of Modification and the revised Consent Conditions: <ul style="list-style-type: none"> <li>○ Relocation of the approved site office, maintenance shed and weighbridge to an area adjacent to Lot 177.</li> <li>○ Minor increase in internal floor dimensions (approx. 1,150 m2 plus awning) and Sandstone cutting in the proposed relocated workshop</li> <li>○ Modification under Section 4.55(1A) of EP&amp;A Act 1979</li> </ul> </li> </ul>	<p><b>Questions asked and answered throughout the presentation.</b></p> <p><b>See – Slides 6-11</b></p>

<b>ENVIRONMENTAL MONITORING RESULTS</b>	<p>The presentation showed the:</p> <ol style="list-style-type: none"> <li>1. Environmental Monitoring Locations</li> <li>2. TEOM – PM10 data</li> <li>3. Dust Deposition</li> <li>4. Noise</li> <li>5. Ground water and Surface Water</li> <li>6. Inspections and Administrative Matters.</li> </ol>	<b>See Maps in Slides: 12-17</b>												
<b>TEOM DATA</b>	<p>TEOM and Meteorological station records PM10 levels and weather data such as rain, temperature, wind etc.</p> <p><b>Monitoring Criteria</b></p> <ul style="list-style-type: none"> <li>○ Long term: Annual PM10 average (light blue line) should not exceed the annual average criteria (pink line – 30µg/m3)</li> <li>○ Short term: 24hr PM10 average (blue bars) should not exceed the 24hr PM10 NEPM Criteria (yellow line – 50µg/m3)</li> <li>○ Short term: If the 24hr PM10 EPL Criteria Level (green line – 42µg/m3) is exceeded by the 24hr PM10 average (blue bars), and the prevailing wind is from the specific quadrant Dixon Sand is required to: <ul style="list-style-type: none"> <li>• Notify EPA</li> <li>• Take immediate action to reduce PM10 levels</li> <li>• Stop works if levels do not fall below 42µg/m3 within 1 hour</li> </ul> </li> <li>• TEOM station represent the EPL Points 1 and 3.</li> </ul>	<b>See Slides 18-19</b>												
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<b>NOISE MONITORING</b>	<p>The 6-monthly noise monitoring program and data was explained for ONR. Noise monitoring results demonstrated compliance with noise criteria.</p> <p>Noise Monitoring for HR; no non-compliances.</p>	<b>See Slides 30-35 For location of monitoring sites and summary of data.</b>												
<b>GROUND WATER MONITORING</b>	<p>GW Monitoring wells:</p> <ul style="list-style-type: none"> <li>– 11 x BHs at ONR</li> <li>– 9 x BHs at HR (original extraction in Tertiary Sand)</li> </ul>	<b>Graphs explained - See Slides 36-50</b>												

	<p>– 13 x BHs at HR (new – 100 MTSGS Buffer zone for Mod 1 extraction cells)</p> <p>GW levels: monthly + continuous data loggers</p> <p>GW quality sampling &amp; lab analysis: – 6 monthly sampling and testing.</p>	
<b>SURFACE WATER MONITORING</b>	<p><b>ONR</b></p> <ul style="list-style-type: none"> <li>• SW19 = Surface water monitoring at creek on Lot 196</li> <li>• LDP1 = EPL 3916 Licenced Discharge Point at Weir of Main Water Channel</li> </ul> <p><b>HR</b></p> <ul style="list-style-type: none"> <li>• SW1 = Surface water monitoring at creek east of extraction Stage 2 East (inside the Biodiversity Offset Area)</li> <li>• SW2 = Surface water monitoring at creek west of extraction Cell 1A (Mod 1)</li> <li>• Basin 1 = Surface water monitoring at in-pit sump of the new extraction Cell 1A (Mod 1)</li> </ul>	<b>Graphs explained - See Slides 51-55</b>
<b>INSPECTION &amp; ADMINISTRATIVE MATTERS</b>	<ul style="list-style-type: none"> <li>○ DPE Site Compliance Inspection – both quarries</li> <li>○ HR EPBC Consent Condition Variation</li> <li>○ HR EPL 12513 Variation</li> </ul>	<b>56</b>
<b>BUSH REGENERATION WORKS</b>	<p>A summary of assisted bush regeneration work for the period November 2021 to May 2022. In the absence of a Bush-It representative, HC presented on the bush regeneration works:</p> <p><b>Rehabilitation of Lot 196</b></p> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>○ Machinery-compacted soils on North-facing aspect</li> <li>○ Extensive infestations of exotic tussock grass</li> </ul> <p><b>Achievements:</b></p> <ul style="list-style-type: none"> <li>○ Treatment of exotic grass to prevent seed-set and spread.</li> <li>○ Revegetation with shrubs and grasses that commenced in October 2021</li> </ul> <p><b>Future Works</b></p> <ul style="list-style-type: none"> <li>○ Continued revegetation with locally endemic shrubs and grasses</li> <li>○ Manual removal of couch grass and preparation of areas for translocation of soil and leaf litter gathered in remnant bush adjacent to the site.</li> </ul> <p><b>Assisted Regeneration - Native Vegetation Corridor (NVC)</b></p> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>○ Minimal microbial and mycorrhizal fungi</li> <li>○ Infestation of exotic grasses</li> </ul>	<b>See photographs in Slides 57-65</b>

	<p><b>Achievements</b></p> <ul style="list-style-type: none"> <li>○ Treatment of exotic grass has prevented seed-set and spread.</li> <li>○ Propagation of brush-matted material</li> </ul> <p><b>Future Work</b></p> <ul style="list-style-type: none"> <li>○ Continue to cull assertive shrub species to promote diversity</li> <li>○ 25 Melaleuca deanii to be planted in spring.</li> </ul> <p><b>Assisted Regeneration - Native Vegetation Corridor</b></p> <p>The 6 months to May has seen:</p> <ul style="list-style-type: none"> <li>○ Outstanding new growth of native species</li> <li>○ Encouraging growth of Melaleuca deanii plantings</li> <li>○ Excellent natural recruitment from the seed bank.</li> </ul> <p><b>Rehabilitation of Lot 2</b></p> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>○ Excess surface water flows and waterlogged soils</li> <li>○ Extensive infestation of bamboo, lantana and exotic grass</li> </ul> <p><b>Achievements</b></p> <ul style="list-style-type: none"> <li>○ Treatment of exotic grass to prevent seed-set and spread.</li> <li>○ Removal of bamboo and 'fern garden' regeneration</li> <li>○ Removal of lantana and recovery of native species</li> </ul> <p><b>Future Work</b></p> <ul style="list-style-type: none"> <li>○ Continued revegetation of disturbed grassy areas</li> <li>○ 200 native canopy trees to be planted using locally sourced seed</li> </ul> <p><b>Assisted Regeneration - Haerses Road Biodiversity Offset</b></p> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>○ Encroachment of invasive species along an extended edge and along drainage lines</li> </ul> <p><b>Achievements</b></p> <ul style="list-style-type: none"> <li>○ Treatment of exotic grass to prevent seed- set and spread.</li> <li>○ Manual treatment and minimal herbicide use has resulted in a dense buffer of native shrubs and canopy species.</li> </ul> <p><b>Future Work</b></p> <ul style="list-style-type: none"> <li>○ Continued monitoring for incursions along the leading edge</li> </ul> <p><b>Haerses Rd - Translocation</b></p> <p><b>Challenges</b></p> <ul style="list-style-type: none"> <li>○ Dominance of assertive native canopy species – Kunzea, Melaleuca and Acacia spp.</li> <li>○ Infestation by invasive exotic grasses</li> </ul>	
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	<p><b>Achievements</b></p> <ul style="list-style-type: none"> <li>○ Treatment of exotic grass to prevent seed-set and spread.</li> <li>○ Select thinning of assertive native canopy species has promoted understorey natives.</li> </ul> <p><b>Future Work</b></p> <ul style="list-style-type: none"> <li>○ Continued treatment of grasses</li> <li>○ Thinning of assertive native canopy</li> </ul>	
<b>BIODIVERSITY AND REHABILITATION</b>	<p>MM provided a comprehensive presentation on the Biodiversity and Rehabilitation annual report, monitoring results and threatened species update.</p> <p>Biodiversity and Rehabilitation Annual Report 2022</p> <ul style="list-style-type: none"> <li>○ The Biodiversity and Rehabilitation Annual Report identifies native flora and fauna within the Native Vegetation Corridor and the Haerses Road Biodiversity Offset Area, it monitors the success of the rehabilitation area within the NVC and describes the current condition of threatened flora and fauna and their habitats within the Old Northern Road site and the HRBOA.</li> <li>○ The 2021 Biodiversity and Rehabilitation Annual Report was completed in September and submitted with the Annual Review on the 29th of September.</li> <li>○ The results found the rehabilitation areas are thriving and increasing in diversity and density. Ideal growing conditions with favourable temperatures and regular rainfall has improved the overall biodiversity of the NVC and HRBOA sites.</li> <li>○ Survey work has begun for the preparation of the 2022 report.</li> </ul> <p>Photographs were shown of:</p> <ul style="list-style-type: none"> <li>● Threatened species in rehab areas</li> <li>● Other threatened species at ONR</li> <li>● Threatened species at HRBOA</li> <li>● Explanation of Bird calls ONR Rehab area</li> </ul> <p><b>BCT Reporting</b></p> <p>Annual Passive Management Report for year 3 was completed in February - Passive Management at Haerses Road and Porters Road continues.</p>	<p><b>See Slides 66 – 74</b></p> <p><b>Slide 75</b></p>
<b>GENERAL BUSINESS</b>	<ul style="list-style-type: none"> <li>○ PS raised the recent review of the DPE CCC guidelines, specifically the ability to conduct joint CCC meetings in an area to discuss cumulative impacts. PS mentioned that there is currently an SSD extractive application before DPE and the community are concerned about the cumulative impacts of another industry in the area contributing to traffic, dust, noise issues, etc.</li> </ul>	

	<ul style="list-style-type: none"> <li>○ LA commented that whilst the provision in the guidelines does allow for joint meetings, they are often difficult to arrange as companies have concerns with "commercial in confidence" information and consent conditions/licencing requirements vary for each development.</li> <li>○ MM advised that whilst there are a number of industries in the area, there is only one other CCC (PF Formation).</li> <li>○ PS commented on the environmental sensitivity of the land for the proposed new development, especially in relation to koala habitat.</li> <li>○ LA recommended that the issues mentioned by PS should be presented to DPE during the exhibition process. Reiterating that it is the responsibility of DPE to undertake cumulative impact and environmental assessments as part of the application process.</li> <li>○ KM informed the CCC that Council had received a complaint that a diesel pump had been running through the night. HC sought more information, ie which site, what date, etc.</li> <li>○ LAy advised that there have been a number of power blackouts in the area recently.</li> </ul>	<p><b>Action: KM to obtain further information to assist in the investigation of this complaint.</b></p>
<b>NEXT MEETING</b>	<p>📅 Wednesday 9<sup>th</sup> November 2022. On site at <b>12.30pm</b> with a light lunch, followed by the CCC commencing at <b>1pm</b> and possible site inspection.</p>	

***The meeting was closed at 2:53pm with the chair thanking all members for their attendance and MM for driving the video-conferencing and slide presentations.***

**ACTION ITEMS.**

<b>Item</b>	<b>Issue</b>	<b>Responsibility</b>
1	Follow-up response from Robyn Preston MP regarding the school zone (held over)	LA
2	KM to provide further information to HC on the diesel pump noise complaint	KM



## **Appendix L – Complaints Register**

**Dixon Sand (No. 1) Pty Ltd**  
**Haerses Road Quarry**  
**Complaints Register - Summary**

<b>Period</b>	<b>Number of Complaints received</b>	<b>Complaint Register Published on Website</b>
Jul 2021	0	4 Aug 2021
Aug 2021	0	22 Sep 2021
Sep 2021	0	25 Oct 2021
Oct 2021	0	11 Nov 2021
Nov 2021	0	6 Dec 2021
Dec 2021	0	11 Jan 2022
Jan 2022	0	21 Feb 2022
Feb 2022	0	14 Mar 2022
Mar 2022	0	26 Apr 2022
Apr 2022	0	17 May 2022
May 2022	0	6 June 2022
June 2022	0	8 July 2022
<b>Total No. of Complaints</b>	<b>0</b>	

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## Haerses Road Waste Tracking Register 2021-2022

Date	Waste Type	Amount	Measurement	Contractor	Disposal / Recycle	Receipt No
01/07/20 - 30/06/21	General Solid Waste - putrescible	26	cubic metre	Council Waste Contractor	Disposal	Council Rate
01/07/20 - 30/06/21	General Solid Waste - recyclable	13	cubic metre	Council Waste Contractor	Recycle	Council Rate
Total	Non-Putrescible skip	0	m3			
	Council Putrescible	26	m3			
	Council Recycle	13	m3			

## Haerses Road Quarry - Material Transport Register

Material	Source of Material	Transport Company	Registration No.	Transport Date	Tip Time	Batch No	Testing Certificate	Quantity (t)	Application
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	18/03/2021	7.30 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN41RN	18/03/2021	7.50 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN22IU	18/03/2021	8.20 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	EG0102	18/03/2021	8.40 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	ETHER GROUP	BAD950	18/03/2021	9.00 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	18/03/2021	9.05 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	18/03/2021	9.45 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN41RN	18/03/2021	10.30 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN22IV	18/03/2021	10.40 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	EGD102	18/03/2021	10.45 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	18/03/2021	11.10 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	18/03/2021	11.40 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	ETHER GROUP	BAD950	18/03/2021	11.45 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN22IU	18/03/2021	12.30 PM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN41RN	18/03/2021	12.40 PM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	18/03/2021	1.30 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	29/03/2021	7:50 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	29/03/2021	8:35 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	29/03/2021	8:55 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	29/03/2021	9:15 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	29/03/2021	10:00 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	29/03/2021	10:10 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	29/03/2021	10:35 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	29/03/2021	11:00 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	29/03/2021	11:30 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	29/03/2021	12:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	29/03/2021	12:20 PM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	29/03/2021	12:30 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	29/03/2021	1:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	29/03/2021	1:30 PM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	29/03/2021	2:15 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	30/03/2021	8:45 AM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	30/03/2021	8:50 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	30/03/2021	8:55 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	30/03/2021	9:10 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	30/03/2021	9:15 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	30/03/2021	10:50 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	30/03/2021	11:00 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	30/03/2021	11:05AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	30/03/2021	11:10 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	30/03/2021	11:15 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CI4420	30/03/2021	12:45 PM	1	120120_ENM_V1	31	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	30/03/2021	12:55 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	30/03/2021	1:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	30/03/2021	1:10 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	30/03/2021	1:15 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	10/05/2021	8:10 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	BTPETE	10/05/2021	8:10 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	DUKSHV	10/05/2021	8:15 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN14YU	10/05/2021	8:20 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	10/05/2021	8:30 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	10/05/2021	8:50 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	10/05/2021	10:15 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	BTPETE	10/05/2021	10:20 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN14YU	10/05/2021	10:30 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	10/05/2021	10:45 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	10/05/2021	10:55 AM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	10/05/2021	12:20 PM	1	120120_ENM_V1	30	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	BTPETE	10/05/2021	12:20 PM	1	120120_ENM_V1	30	Lot 216 DP 752039









VENM - Sandstone	Macquarie Park Site	BT Civil	CN85VK	11/10/2021	11:45:00 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN22IU	11/10/2021	11:50:00 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CO83MG	11/10/2021	11:55:00 AM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN34VK	11/10/2021	1:30:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	11/10/2021	1:35:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CJ74RJ	11/10/2021	1:45:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	WAZ408	11/10/2021	1:50:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN33VK	11/10/2021	1:55:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CN85VK	11/10/2021	2:00:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN41RN	11/10/2021	2:05:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN22IU	11/10/2021	2:10:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN35VK	11/10/2021	2:15:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CO83MG	11/10/2021	2:20:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG900	11/10/2021	2:45:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN32VK	11/10/2021	3:00:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	BTPETE	11/10/2021	3:30:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN34VK	11/10/2021	3:35:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CN40VU	11/10/2021	3:40:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	LEG950	11/10/2021	3:45:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	XN20EP	11/10/2021	3:50:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039
VENM - Sandstone	Macquarie Park Site	BT Civil	CG15MM	11/10/2021	4:00:00 PM	1	120120_ENM_V1	32	Lot 216 DP 752039

<b>Total Annual Quantity (2021 Calendar year) (t)</b>	<b>8,662.00</b>
<b>Total Quantity (FY 2021 - 2022) (t)</b>	<b>4,960.00</b>
<b>Total Annual Quantity (2022 Calendar year) (t)</b>	<b>-</b>

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