

Dixon Quarry Group Haerses Road Quarry, Maroota

Annual Review 2024 – 2025

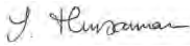
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Prepared by: Project Environmental Services Pt Ltd

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Name of Operator	Dixon Sand (No. 1) Pty Ltd
Development Consent / Project Approval #	DA165-7-2005 (Modification 6) – Haerses Road Quarry
Annual Review Start Date	1 July 2024
Annual Review End Date	30 June 2025
Name of Authorised reporting officer	Hunsamon Churcher
Title of Authorised reporting officer	Environmental Advisor
Signature of Authorised reporting officer	
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Table of Contents

- 1. Statement of Compliance 1
- 2. Introduction..... 2
 - 2.1 Project Background..... 2
 - 2.2 Scope of this document 2
 - 2.3 Haerses Road Quarry Approvals 3
- 3. Operations Summary 8
 - 3.1 Production and Vehicle Movements..... 8
 - 3.2 Submission of Quarry Production Data to MEG..... 9
- 4. Actions Required from Previous Annual Review 9
- 5. Environmental Performance 11
 - 5.1 Air Quality 11
 - 5.1.1 Dust Sources and Mitigation Measures 11
 - 5.1.2 Compliance Limits 11
 - 5.1.3 Results 12
 - 5.1.4 Analysis..... 19
 - 5.1.5 Discrepancies between Predicted and Actual Air Quality Impacts 21
 - 5.2 Noise Management..... 23
 - 5.2.1 Noise Sources and Mitigation Measures 23
 - 5.2.2 Compliance Limits 24
 - 5.2.3 Results 27
 - 5.2.4 Analysis..... 29
 - 5.2.5 Noise Trend..... 29
 - 5.2.6 Discrepancies between Predicted and Actual Noise Impacts..... 32
 - 5.2.7 Changes to Environmental Procedures..... 33
 - 5.3 Traffic and Transport..... 33
 - 5.3.1 Ongoing Management Measures 33
 - 5.3.2 Traffic Related Complaints 33
 - 5.3.3 Compliance 34
 - 5.3.4 Analysis..... 37
 - 5.3.5 Findings..... 38
 - 5.3.6 Changes to Environmental Procedures..... 38

5.4	Waste Management.....	38
5.4.1	Waste Generation	38
5.4.2	VENM and ENM Importation	39
5.4.3	Changes to Environmental Procedures.....	39
6.	Water Management.....	40
6.1	Monitoring and Compliance Limits	40
6.1.1	Groundwater Levels and Criteria / Trigger Levels	40
6.1.2	Groundwater Quality and Criteria / Trigger Levels	41
6.1.3	Surface Water Monitoring and Discharge Criteria	42
6.2	Extraction Limits.....	43
6.3	Results	43
6.4	Analyses	67
6.5	Review of Maximum Extraction Depth Map	69
6.6	Water Access License Usage	69
6.7	Water Balance Monitoring.....	69
6.8	Groundwater Monitoring Program for Bores located in the 100m MTSGS Buffer	70
6.9	Chages to Environmental Procedures	71
7.	Ecological Monitoring and Rehabilitation.....	71
7.1	Vegetation Clearing	71
7.2	Bush Regeneration and Weed Management	71
7.2.1	Haerses Road Biobank Site (Area A) and Porters Road Biobank Site	74
7.2.2	2009 Translocation Site and Original Offset (Area B).....	74
7.2.3	Old Dam in Stage 3 (Area C).....	75
7.2.4	Stage 2 West (Area D)	75
7.2.5	Wisemans Ferry Road 30 Metre Buffer (Area E).....	75
7.3	Ecological Monitoring.....	76
7.3.1	Stage 1 Extraction Cell.....	81
7.3.2	Stage 2 Extraction Cell	82
7.3.3	Extraction Cells A and B (Modification 1 area)	84
7.3.4	Wisemans Ferry Road 30 Metre Buffer	86
7.3.5	Buffer to Deerubbin Local Aboriginal Land Council Property.....	89
7.4	Management of Biodiversity Stewardship Sites	89

7.5	Change in Environmental Procedures	90
8.	Community and Social Impacts	92
8.1	Compliance	92
8.2	Complaints and Follow-up Actions.....	92
8.3	Community Consultative Committee, Meetings and Guidelines.....	94
8.4	Community and Stakeholder Liaison	94
8.5	Ecologically Sustainable Development	95
8.6	Changes to Social Monitoring Procedures.....	96
9.	Bushfire Management	96
9.1	Compliance	96
10.	Competency, Training and Awareness	97
11.	Incidents and Non-Compliances	98
11.1	Environmental Incidents and Non-Compliances	98
11.2	Notices issued by Resources Regulator	103
12.	Independent Environmental Audit.....	104
12.1	Independent Environmental Audit Requirements.....	104
13.	Proposed Actions to be completed in the next Reporting Period	105
13.1	Air Quality Monitoring Program	105
13.2	Vegetation Clearing	105
13.3	Rehabilitation and Bush Regeneration.....	105
14.	Audits and Improvement Notice	106
15.	Conclusion.....	106

Figures

Figure 1 – Locality Plan of the Haerses Road and Old Northern Road Quarries.....	6
Figure 2 – Environmental Monitoring Locations (DA165-7-2005)	7
Figure 3 – Haerses Road Quarry Nosie Receiver Locations and Acoustic Bunds	26
Figure 4 – Extrapolated noise levels from Haerses Road quarry, based on on-site measurements, December 2024	28
Figure 5 – Extrapolated noise levels from Haerses Road quarry, based on on-site measurements, June 2025	28
Figure 6 – Location of bush regeneration works within the western boundary of the biobank area, offset area, old dam in Stage 3 and Stage 2 west (source: BushIT 2025).	72

Figure 7 – Bush regeneration methodologies undertaken within the western boundary of the biobank area, offset area, old dam in Stage 3 and Stage 2 west (source: BushIT 2025)	73
Figure 8 – Location of bush regeneration works within the 30m buffer to Wisemans Ferry Road (source: BushIT, 2025)....	73
Figure 9 – Bush regeneration methodologies undertaken within the 30m buffer to Wisemans Ferry Road (source: BushIT 2025).....	74
Figure 10 – Buffer Zones, Haerses Road Biobank Quarry	77
Figure 11 – Haerses Road and Porters Road Biobank Site and HRBOA	78
Figure 12 – Haerses Road Biobank Site	79
Figure 13 – Porters Road Biobank Site	80

Tables

Table 1: Statement of Compliance	1
Table 2: Non-Compliances.....	1
Table 3: Summary of Haerses Road Quarry Development Consents and Modifications	5
Table 4: Production Data & Truck Movements at Haerses Road Quarry.....	8
Table 5: Summary of Recommendations and Actions from the previous 2023 – 2024 Annual Review.....	9
Table 6: Potential sources of dust and mitigation measures.....	11
Table 7: PM10 and TSP Criteria.....	12
Table 8: Monthly Total Rainfall and Averaged Temperatures.....	13
Table 9: Site location of dust deposition gauges.....	13
Table 10: Dust Deposition Results: 26 June 2024 – 25 June 2025.....	14
Table 11: Calculated Rolling Annual Averages of Dust Deposition: 26 June 2024 – 25 June 2025.....	14
Table 12: Elevated PM10 – EPL and NEPM Management criteria	20
Table 13: Potential sources of Noise and mitigation measures.....	23
Table 14: Haerses Road Noise Criteria	24
Table 15: Haerses Road Approved Hours of Operation.....	25
Table 16: Extrapolated Noise Monitoring results, December 2024 and June 2025.....	27
Table 17: Road and Traffic Compliance.....	34
Table 18: Haerses Road – Total Waste Generated, July 2024 to June 2025.....	38
Table 19: Groundwater monitoring bores for Haerses Road quarry site.....	40
Table 20: Baseline Groundwater Level Statistics and Trigger Values.....	41

Table 21: Baseline Groundwater Quality Statistics and Trigger Values	42
Table 22: Baseline surface water quality statistics and trigger values	42
Table 23: Haerses Road Quarry Extraction limits	43
Table 24: SW1 and SW2 laboratory results	67
Table 25: Water usage for Water Access Licences during the Financial Year 2024 – 2025.....	69
Table 26: Quarry Water Balance monitoring in accordance with Soil and Water Management Plan.	69
Table 27: Previously and newly adopted PCT classification for Vegetation Communities at Hearses Road Quarry	85
Table 28: Community related consent conditions	92
Table 29: Complaints received during the reporting period.....	93
Table 30: Environmental Non-compliances and Incidents	98
Table 31: Notices issued by Resources Regulator	103

Charts

Chart 1: 2021 – 2022 Rolling Average of Dust Deposition Results	
Chart 2: 2022 – 2023 Rolling Average of Dust Deposition Results	16
Chart 3: 2023 – 2024 Rolling Average of Dust Deposition Results	
Chart 4: 2024 – 2025 Rolling Average of Dust Deposition Results	16
Chart 5: 2021 - 2022 PM10 Results and Criteria	
Chart 6: 2022 – 2023 PM10 Results and Criteria	17
Chart 7: 2023 - 2024 PM10 Results and Criteria	
Chart 8: 2024 - 2025 PM10 Results and Criteria	17
Chart 9: 2021 - 2022 TSP Results and Criteria.....	18
Chart 10: 2022 - 2023 TSP Results and Criteria.....	18
Chart 11: 2023 - 2024 TSP Results and Criteria.....	18
Chart 12: 2024 - 2025 TSP Results and Criteria.....	19
Chart 13: Noise Monitoring Results – R3.....	30
Chart 14: Noise Monitoring Results – R4.....	30
Chart 15: Noise Monitoring Results – R6.....	31
Chart 16: Noise Monitoring Results – R7.....	31
Chart 17: Noise Monitoring Results – R8.....	32
Chart 18: Haerses Road Long Term Groundwater Levels for H-Series, BH4 and BH5.	44
Chart 19: H2 Groundwater Levels for July 2024 – June 2025.....	45

Chart 20: H6 Groundwater Levels for July 2024 – June 2025.....	45
Chart 21: H7 Groundwater Levels for July 2024 – June 2025.....	45
Chart 22: H9 Groundwater Levels for July 2024 – June 2025.....	46
Chart 23: H12 Groundwater Levels for July 2023 – June 2024.....	46
Chart 24: H14 Groundwater Levels for July 2023 – June 2024.....	46
Chart 25: BH01A Groundwater Levels for July 2024 – June 2025.....	47
Chart 26: BH01B Groundwater Levels for July 2024 – June 2025.....	47
Chart 27: BH01C Groundwater Levels for July 2024 – June 2025.....	47
Chart 28: BH02A Groundwater Levels for July 2024 – June 2025.....	48
Chart 29: BH02B Groundwater Levels for July 2024 – June 2025.....	48
Chart 30: BH02C Groundwater Levels for July 2024 – June 2025.....	48
Chart 31: BH4 Groundwater Levels for July 2024 – June 2025.	49
Chart 32: BH05 Groundwater Levels for July 2024 – June 2025.	49
Chart 33: BH05B Groundwater Levels for July 2024 – June 2025.....	49
Chart 34: BH07 Groundwater Levels for July 2024 – June 2025.	50
Chart 35: Haerses Road Long Term pH – H series, BH4 and BH5.....	51
Chart 36: H2 pH Results July 2024 – June 2025.	52
Chart 37: H6 pH Results July 2024 – June 2025.	52
Chart 38: H7 pH Results July 2024 – June 2025.	52
Chart 39: H9 pH Results July 2024 – June 2025.	53
Chart 40: H12 pH Results July 2024 – June 2025.	53
Chart 41: H14 pH Results July 2024 – June 2025.	53
Chart 42: BH4 pH Results July 2024 – June 2025.....	54
Chart 43: BH01A, BH01B and BH01C pH Results July 2024 – June 2025.....	54
Chart 44: BH02A, BH02B and BH02C pH Results July 2024 – June 2025.....	55
Chart 45: BH5 and BH05B pH Results July 2024 – June 2025.....	55
Chart 46: BH7 pH Results July 2024 – June 2025.....	56
Chart 47: Haerses Road Long Term Electrical Conductivity – H series, BH4 and BH5	57
Chart 48: H2 Electrical Conductivity Results July 2024 – June 2025.....	58
Chart 49: H6 Electrical Conductivity Results July 2024 – June 2025.....	58
Chart 50: H7 Electrical Conductivity Results July 2024 – June 2025.....	58
Chart 51: H9 Electrical Conductivity Results July 2024 – June 2025.....	59

Chart 52: H12 Electrical Conductivity Results July 2024 – June 2025.....	59
Chart 53: H14 Electrical Conductivity Results July 2024 – June 2025.....	59
Chart 54: BH4 Electrical Conductivity Results July 2024 – June 2025.	60
Chart 55: BH01A, BH01B and BH01C Electrical Conductivity Results July 2024 – June 2025.	60
Chart 56: BH02A, BH02B and BH02C Electrical Conductivity Results July 2024 – June 2025.	61
Chart 57: BH5 and BH05B Electrical Conductivity Results July 2024 – June 2025.	61
Chart 58: BH7 Electrical Conductivity Results July 2024 – June 2025.	62
Chart 59: Quarry water storage basins - pH.....	63
Chart 60: Quarry water storage basins – Electrical Conductivity	64
Chart 61: Quarry water storage basins – Turbidity.....	65
Chart 62: Quarry water storage basins – Total Suspended Solids.....	66
Chart 63: Long term complaints monitoring data.	94

Plates

Plate 1 – Continued final landform shaping in Stage 1 Extraction area (South East Environmental 2025).....	81
Plate 2 – Rehabilitation area in Stage 1, Google Imagery dated August 2024 (South East Environmental, 2025).....	82
Plate 3 – Farm dam located in Stage 2 west (South East Environmental, 2025).....	83
Plate 4 – Stage 2 west rehabilitation area west of the farm dam (South East Environmental, 2025).....	83
Plate 5 – Western side of 30m buffer to Wisemans Ferry Road in 2024 (South East Environmental, 2024).....	87
Plate 6 – Western side of 30m buffer to Wisemans Ferry Road in 2025 showing progress of vegetation establishment and weed management (South East Environmental, 2025).....	87
Plate 7 – Eastern side of 30m buffer to Wisemans Ferry Road in 2024 (South East Environmental, 2024).....	88
Plate 8 – Eastern side of 30m buffer to Wisemans Ferry Road in 2025 showing supplementary planting to assist in breaking up compacted soil (South East Environmental, 2025).....	88

Appendices

Appendix A	Dust Deposition Reports
Appendix B	PM10, TSP and Weather Station Reports
Appendix C	Groundwater and Surface Water Monitoring Data
Appendix D	Noise Compliance Report
Appendix E	Monthly Site Inspection
Appendix F	Waste and ENM/VENM Registers
Appendix G	Bush Regeneration Report
Appendix H	Annual Biodiversity & Rehabilitation Management Report
Appendix I	Section 94 Contribution
Appendix J	CCC Meeting Minutes
Appendix K	Complaints Register

Abbreviations

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
DCCEEW - Water	Department of Climate Change, Energy, the Environment and Water – Water Division
Dixon Sand	Dixon Sand (No.1) Pty Ltd
DPE	Department of Planning and Environment (now Department of Planning, Housing and Infrastructure)
DPE (Resources Regulator)	Department of Primary Industries and Regional Development – Resources Regulator
DPE Water	Department of Planning, Industry and Environment – Water Division (now DCCEEW – Water)
DPHI	Department of Planning, Housing and Infrastructure
DPIRD	Department of Primary Industries and Regional Development
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
MEG	Mining, Exploration and Geoscience, within the Department of Regional NSW (now NSW Resources, Department of Primary Industries and Regional Development)
MTSGS	Maroota Tertiary Sands Groundwater Source
NRAR	Department of Planning and Environment – Natural Resources Access Regular
PIRMP	Pollution Incident Response Management Plan
PM10	Particulate matter <10µm
SCBGS	Sydney Central Basin Groundwater Source
TEOM	Tapered Element Oscillating Microbalance
TSP	Total suspended particulates
WAL	Water Access License

1. Statement of Compliance

Table 1: Statement of Compliance

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

Table 2: Non-Compliances

Relevant Approval	Condition #	Condition description (summary)	Compliance Status	Section addressed in Annual Review
DA 164-7-2005	Cond. 12 of Sch.5	Submission of Annual Review later than end of March 2024, however DPHI 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: - Potential for serious environmental consequences, but is unlikely to occur, or - Potential for moderate environmental consequences, but is likely to occur		
Low	Non-compliant	Non-compliance with: - Potential for moderate environmental consequences, but is unlikely to occur, or - Potential for low environmental consequences, but is likely to occur		
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)		

2. Introduction

2.1 Project Background

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 Modification 5 permits the relocation of the approved and to construct site facilities. Modification 6 permits the relocation of the site office and sandstone cutting shed.

Current extractions are occurring in Stage 1, Stage 2 and Cells 1A, 1B, 2A, 2B, 3A and 3B.

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

2.2 Scope of this document

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, Housing and Infrastructure (DPHI). The reporting period is from 01 July 2024 to 30 June 2025, 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 12 of Schedule 5 of DA165-7-2005 (Modification 6) 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 DPHI for the submission deadline of the Annual Review to be adjusted to reflect the financial year reporting. Approval was granted by the DPHI 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 6), Environment Protection License (EPL) # 12513 (dated 12 September 2024) 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).

2.3 Haerses Road Quarry Approvals

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.

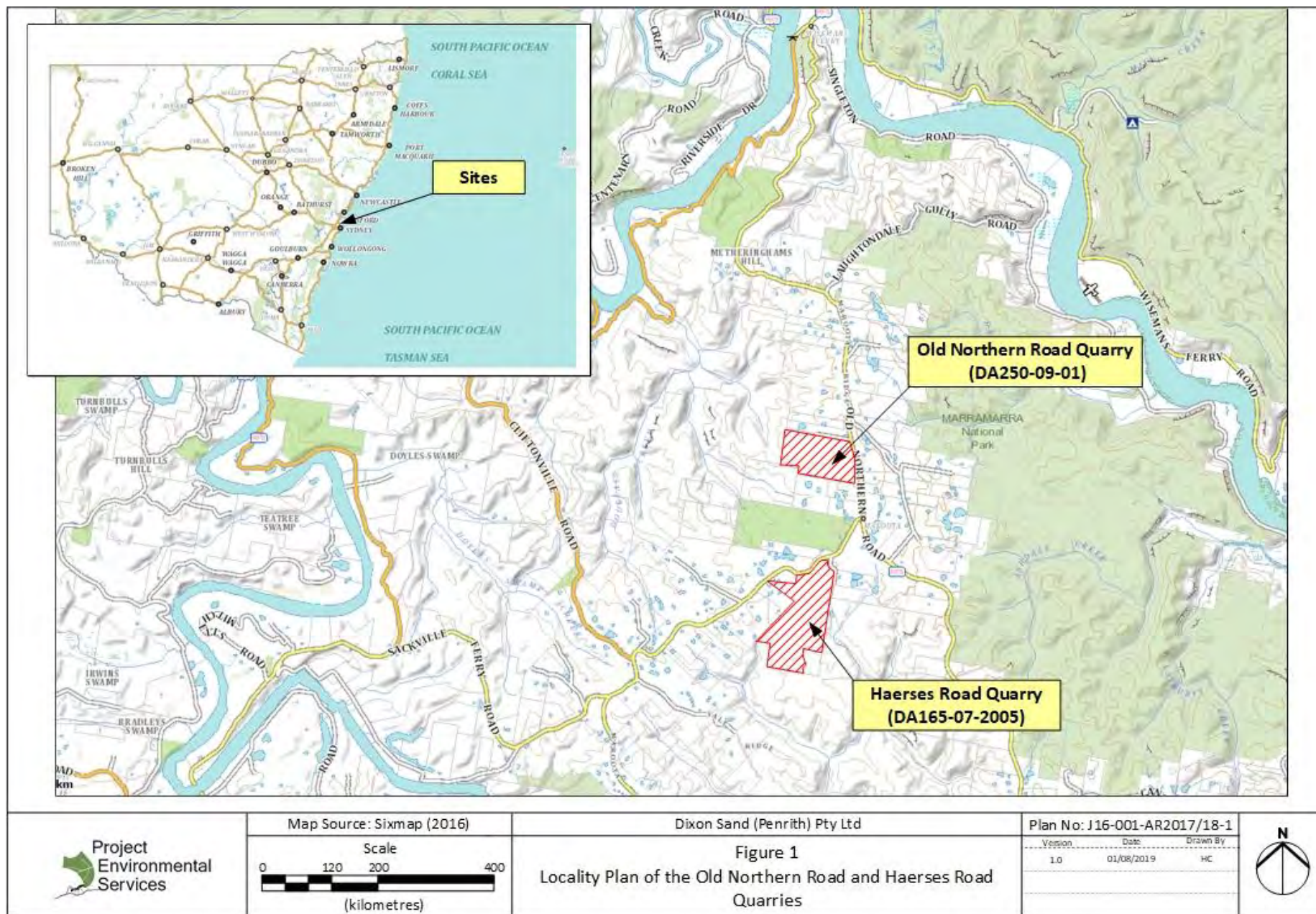
DA 165-7-2005 Modification 6 was lodged under section 4.55(3) of the EP&A Act to seek approval to relocate the approved site building envelope on Lot 177 approximately 90 metres to the north within Lot 176. Modification 6 was approved on 7 September 2023.

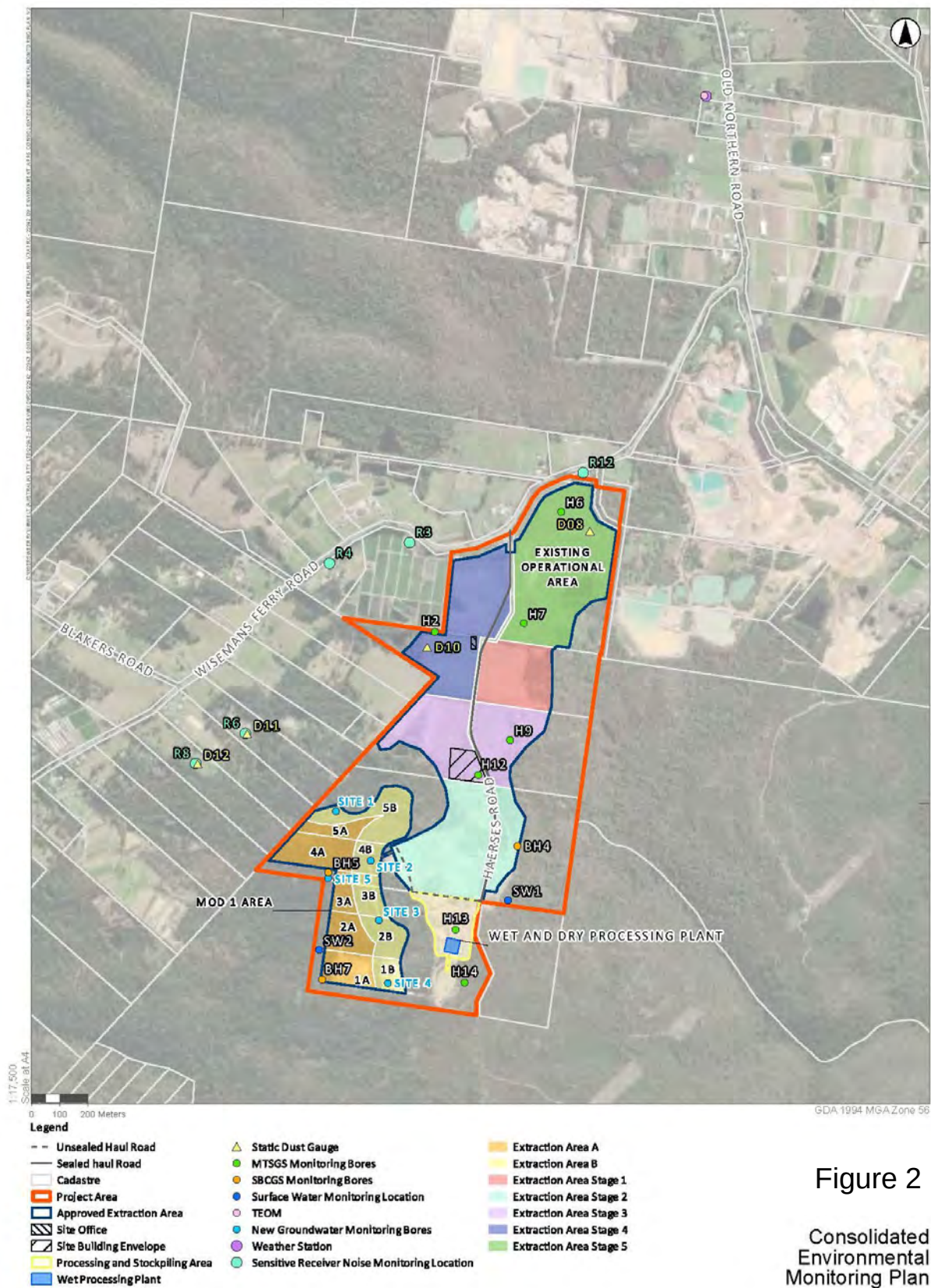
A summary of the development consent and modifications is provided in Table 3.

For the purpose of the reporting period which falls within this Annual Review, Development consent DA165-07-2005 Modification 6 is applicable to the timeframe and is the consent used for the assessment of Dixon Sand's environmental compliance and performance.

Table 3: Summary of Haerses Road Quarry Development Consents and Modifications

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 superseded by Modification 6	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
DA 165-7-2005 Modification 6	Approved and current	9 September 2023	Approval to relocate the previously approved site building envelope in Modification 5 on Lot 177 approximately 90m north within Lot 176. Relocation of the site office to Stage 4 extraction area





3. Operations Summary

3.1 Production and Vehicle Movements

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 **399,279.60** tonnes of product has been extracted at Haerses Road quarry, of which **188,375** tonnes were transferred to Old Northern Road and **210,904.60** tonnes of products have been sold directly to local and regional markets from the Haerses Road quarry during this reporting period. The quarry did not receive any 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: Production Data & Truck Movements at Haerses Road Quarry.

Month	Total Transfers from Haerses Rd to Old Northern Road Quarry (t)	Total Sales from Haerses Rd (t)	Total Extraction (t)	Total Processed Materials (t)	Total ENM / VENM received (t)	Max Total Daily Truck (inclusive of transfers, direct sales and ENM/VENM import, in and out bound)	Max Daily Morning Truck between 6:00-7:00am (in and out bound)
Jul 2024	17,615	18,878.26	36,493.26	18,878.26	0	134	18
Aug 2024	17,485	19,604.41	37,089.41	19,604.41	0	140	20
Sep 2024	17,274	17,200.53	34,474.53	17,200.53	0	140	20
Oct 2024	17,680	18,989.23	36,669.23	18,989.23	0	138	20
Nov 2024	19,511	19,450.96	38,961.96	19,450.96	0	140	20
Dec 2024	15,044	13,216.19	28,260.19	13,216.19	0	154	20
Jan 2025	17,160	13,494.19	30,654.19	13,494.19	0	138	16
Feb 2025	19,565	18,337.22	37,902.22	18,337.22	0	152	16
Mar 2025	17,420	18,378.97	35,798.97	18,378.97	0	140	18
Apr 2025	16,120	15,799.05	31,919.05	15,799.05	0	132	16
May 2025	12,285	17,964.92	30,249.92	17,964.92	0	154	16
Jun 2025	1,216	19,590.67	20,806.67	19,590.67	0	114	20
Totals / Maximum	188,375	210,904.60	399,279.60	210,904.60	0	154	20
Annual Limit	190,000		495,000	320,000	250,000		
Daily Max Criteria						180	20

3.2 Submission of Quarry Production Data to MEG

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

The DPIRD 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 2024 – 2025 was submitted on 1 August 2025.

4. Actions Required from Previous Annual Review

The proposed recommendations contained in the previous 2023 – 2024 Annual Review and relevant actions undertaken by Dixon Sand are summarised in Table 5.

Table 5: Summary of Recommendations and Actions from the previous 2023 – 2024 Annual Review.

Recommendation from the 2023 - 2024 Annual Review	Actions
Air Quality Monitoring Program	
Undertake consultation with the EPA regarding the review (and revision if required) of the current air quality monitoring locations. The Air Quality Management Plan will be updated accordingly.	Actioned – ongoing consultation with EPA regarding the review of the current air quality monitoring locations. EPA issued a notice of variation for EPL 12513 which included a Pollution Study and Reduction Programs (EPL 12513, Condition U1 Air Quality Monitoring). Dixon Sand submitted the draft Air Quality Monitoring Plan to the EPA on 12 November 2024. The draft Air Quality Monitoring Plan is currently being reviewed by the EPA.
Vegetation Clearing	
Continue to implement the pre-clearing survey and multistage habitat tree felling procedures prior to any vegetation felling.	Pre-clearing survey and multistage habitat tree felling procedures implemented.
Rehabilitation and Bush Regeneration	
Stage 1 Extraction Area - Undertake screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders - Final landform for active rehabilitation areas	Additional materials placed in Stage 1 for continue efforts to achieve final landform. Extraction is not yet completed

Recommendation from the 2023 - 2024 Annual Review	Actions
- Layering stockpile material to create suitable agricultural terrain - First agricultural planting event if final landform levels have been achieved Stage 2 Extraction Area - Continue to monitor the native vegetation growth to the west of the water storage dam in Stage 2 west Wisemans Ferry Road 30 metre Buffer Area - Assisted rehabilitation of eastern side of Haerses Road intersection buffer area where disturbance has taken place Buffer to Deerubbin LALC Property - Continue bush regeneration maintenance in the previously disturbed area - Baseline monitoring locations established Extraction Cells A and B - Continue monitoring of vegetation quadrats for establishment of baseline data.	- Agricultural planting will commence after suitable material has been placed to ensure cover crop can be supported. - Native vegetation growth to the west of the water storage dam being monitored. - Additional planting undertaken in the specified area and subject to ongoing monitoring. - On-going regeneration maintenance undertaken in the previously disturbed area - Baseline monitoring locations established. - Vegetation survey being undertaken in accordance with the Biodiversity and Rehabilitation Management Plan
Haerses Road and Porters Road Biobank 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	Ongoing weed management and reporting undertaken in accordance with the biobanking agreement with Biodiversity Conservation Trust.
Weed Management Continue with weed management as per the recommendations contained in the Bush Regenerator and Ecologist's reports.	Weed management undertaken as per the Bush Regenerator and Ecologist's reports and recommendation

5. Environmental Performance

5.1 Air Quality

5.1.1 Dust Sources and Mitigation Measures

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 and mitigation measures.

Potential Dust Sources	Mitigation Measures
• topsoil stripping; • ripping with a bulldozer; • extraction with an excavator and truck; • sandstone cutting with saw attachment • sandstone cutting within the designated sandstone cutting shed • crushing and screening • wind erosion from stockpiles; • loading sand products into trucks; • vehicle movement and haulage on site; • product transportation along unsealed haul roads; and • occasional haul road grading. • Rehabilitation and placement of VENM/ENM in the disturbed areas.	• minimising the area of disturbance by only clearing areas immediately prior to extraction; • progressive rehabilitation; • stabilising topsoil stockpiles by planting with a cover crop of non-invasive cereal or legumes; • using a water cart to suppress dust on unsealed roads, during dry conditions on days of operation; • sealing Haerses Road; • limiting vehicle speed to 20 km/hr on internal unsealed access tracks; • ensuring all loads leaving the site are covered; and • regularly maintaining mobile and fixed equipment to minimise exhaust emissions. • Utilisation of wet technique for sandstone cutting

5.1.2 Compliance Limits

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/m²/month (annual average) or 2g/m²/month increase;
- total suspended particulate matter (TSP) – 90µg/ m³ (annual mean); and
- particulate matter <10µm (PM10):
 - o 50 µg/m³ (average for 24-hour period)
 - o 30 µg/m³ (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/m³ (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.

Table 7: PM₁₀ and TSP Criteria.

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

5.1.3 Results

Climatic Data

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.

Table 8: Monthly Total Rainfall and Averaged Temperatures.

Month	Jul 2024	Aug 2024	Sep 2024	Oct 2024	Nov 2024	Dec 2024	Jan 2025	Feb 2025	Mar 2025	Apr 2025	May 2025	Jun 2025
Ave Temp (°C)	11.1	14.7	16.0	16.9	19.9	23.2 *	22.1 *	22.1 *	21.4 *	18.3 *	14.8 *	11.3
Total Rainfall (mm)	42.2	19.2	51.2	59.4	48.0	19.6	129.8	33.8	107.2	77.6	215.8	5.4

Note* data from Richmond RAAF Weather Station

Data presented in Table 8 shows that the highest monthly rainfall of 215.8 mm was recorded in May 2025 and the lowest monthly rainfall of 5.4 mm was recorded in June 2025. The total annual rainfall recorded during this reporting period is 809.2 mm which is drier in comparison to the previous reporting periods which recorded 872 mm (2023 – 2024), 915.4mm (2022 – 2023), 1527mm (2021 - 2022) and 1090.4mm (2020 - 2021).

From the recorded monthly temperature data, December 2024 experienced the highest average temperature at 23.2°C whilst July 2024 experienced the lowest average temperature at 11.1°C.

Fluctuations in temperatures and rainfalls are generally influenced largely by the El-Nino and La-Nina climatic cycle. A reduction in total rainfall has been observed during this reporting period which was directly influenced by the conclusion of the La-Nina climatic event.

Dust Deposition

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

Table 9: Site location of dust deposition gauges

Dust Gauge I.D.	Location Reference
D08	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 were collected and analysed monthly by a NATA accredited laboratory. Table 10 presents the monthly dust deposition results between 26 June 2024 and 25 June 2025. Table 11 contains the calculated rolling annual averages for the deposited dust.

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

Charts 1 to 4 illustrate the annual average dust deposition results for the reporting periods of 2021 – 2022, 2022 – 2023, 2023 – 2024 and 2024 – 2025 respectively.

Table 10: Dust Deposition Results: 26 June 2024 – 25 June 2025.

Dust Gauge Location	26/06/24 24/07/24	27/07/24 21/08/24	21/08/24 18/09/24	18/09/24 16/10/24	16/10/24 13/11/24	13/11/24 11/12/24	11/12/24 08/01/25	08/01/25 05/02/25	05/02/25 05/03/25	05/03/25 02/04/25	02/04/25 30/04/25	30/04/25 28/05/25	28/05/25 25/06/25
D08 Hitchcock Rd / Olive Grove	0.5	0.6	0.9	1.1	1.0	3.8	1.0	1.6	0.7	0.5	0.6	2.2	0.4
D10 Haerses Rd (Pt 3, EPL12513)	2.6	1.2	0.7	2.0	0.7	2.2	3.7	6.5	8.7	5.3	5.4	1.8	6.6
D11	1.2	0.6	0.3	0.6	0.7	1.1	1.6	1.8	0.9	0.9	0.7	2.7	0.5
D12	1.1	0.6	0.3	0.8	0.6	0.5	0.7	1.3	2.9	0.5	0.3	0.6	0.2

Note:

- 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
- ND Broken bottle – no data

Table 11: Calculated Rolling Annual Averages of Dust Deposition: 26 June 2024 – 25 June 2025.

Dust Gauge Location	26/06/24 24/07/24	27/07/24 21/08/24	21/08/24 18/09/24	18/09/24 16/10/24	16/10/24 13/11/24	13/11/24 11/12/24	11/12/24 08/01/25	08/01/25 05/02/25	05/02/25 05/03/25	05/03/25 02/04/25	02/04/25 30/04/25	30/04/25 28/05/25	28/05/25 25/06/25
D08 Hitchcock Rd / Olive Grove	1.0	0.9	1.0	1.0	0.9	1.1	1.1	1.2	1.2	1.1	1.0	1.2	1.1
D10 Haerses Rd (Pt 3, EPL12513)	7.0	6.9	6.2	6.3	6.2	6.2	6.4	5.9	5.0	4.5	4.6	3.5	3.6
D11	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.1	1.0
D12	0.7	0.7	0.7	0.7	0.7	0.6	0.6	0.7	0.8	0.8	0.8	0.8	0.8

TEOM PM₁₀

In accordance with Condition 10 of Schedule 3, DA165-7-2005, the concentration of particulates with an aerodynamic diameter less than ten microns (PM₁₀) 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° quadrat (southerly to south-westerly) indicate potential airborne contributions from Haerses Road Quarry. Chart 8 illustrates the PM₁₀ results for this reporting period, in comparison with relevant consent criteria. Charts 5 to 7 show the PM₁₀ results for the previous reporting periods of 2021 – 2022, 2022 – 2023 and 2023 – 2024 respectively.

The annual average PM₁₀ result for this reporting period is 14.8 µg/m³.

During the reporting period, the following PM₁₀ criteria has been complied with:

- o Annual average PM₁₀ criteria of 30 µg/m³.

During the reporting period, the following PM₁₀ criteria have been exceeded on one monitoring day:

- EPL 24-hour average PM₁₀ criteria of 42 µg/m³, and
- NEPM 24-hour maximum PM₁₀ criteria of 50 µg/m³

TSP

Reporting of TSP results commenced in December 2017. Charts 9 to 12 display TSP results during the 2021 – 2022, 2022 – 2023, 2023 – 2024 and 2024 – 2025 respectively.

No TSP exceedance occurred during this reporting period. The following TSP criteria has been complied with:

- o Annual average TSP criteria of 90 µg/m³

The annual average TSP for this reporting period is 37.0 µg/m³

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

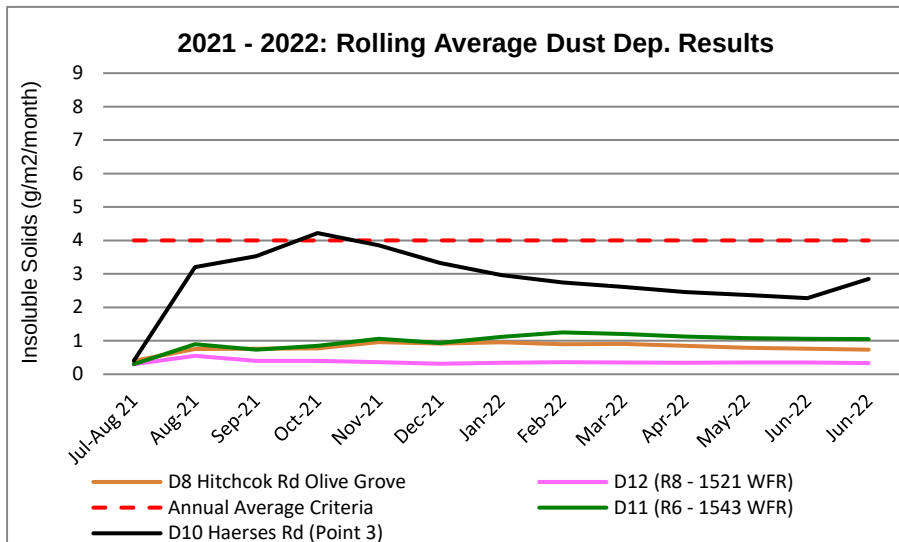


Chart 1: 2021 – 2022 Rolling Average of Dust Deposition Results

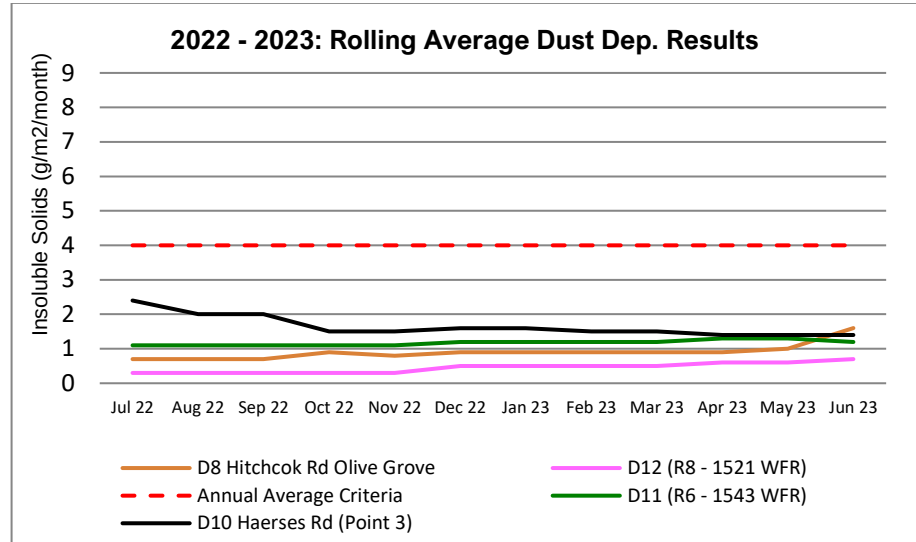


Chart 2: 2022 – 2023 Rolling Average of Dust Deposition Results

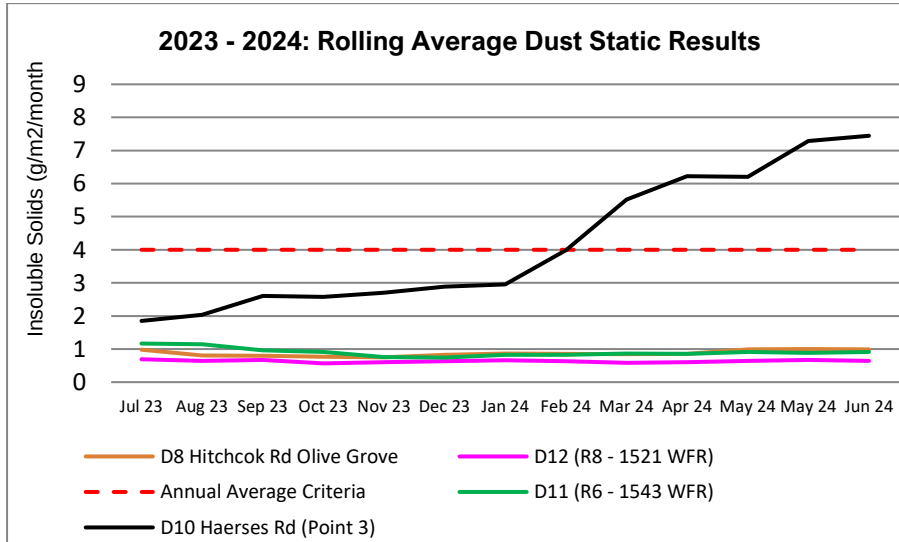


Chart 3: 2023 – 2024 Rolling Average of Dust Deposition Results

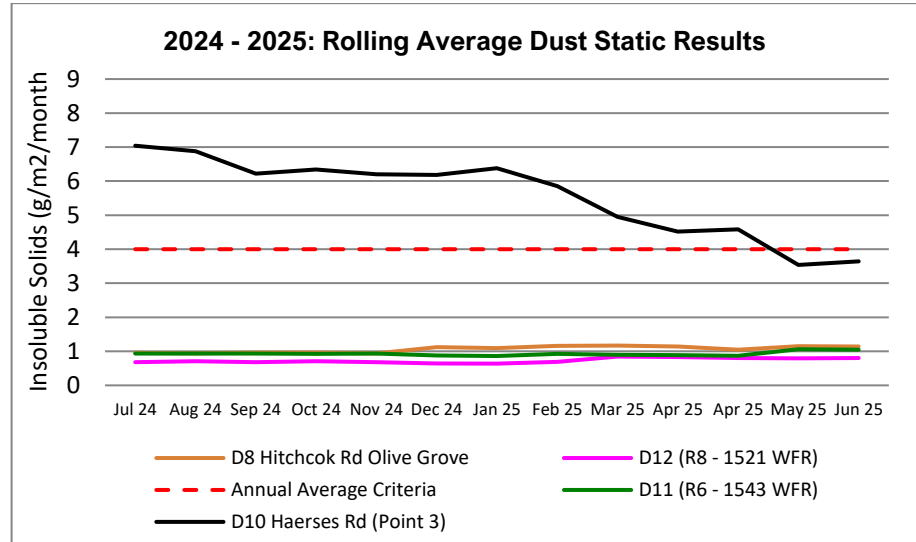


Chart 4: 2024 – 2025 Rolling Average of Dust Deposition Results

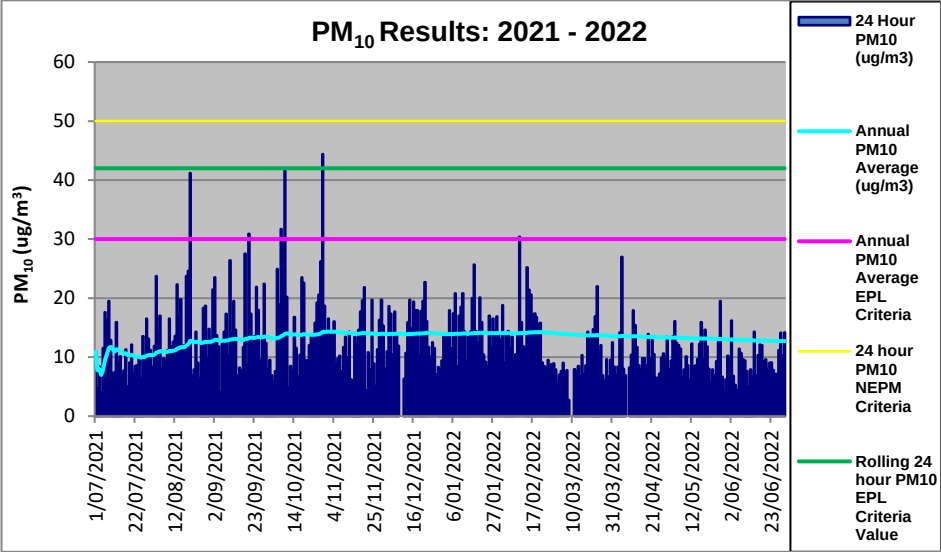


Chart 5: 2021 - 2022 PM10 Results and Criteria

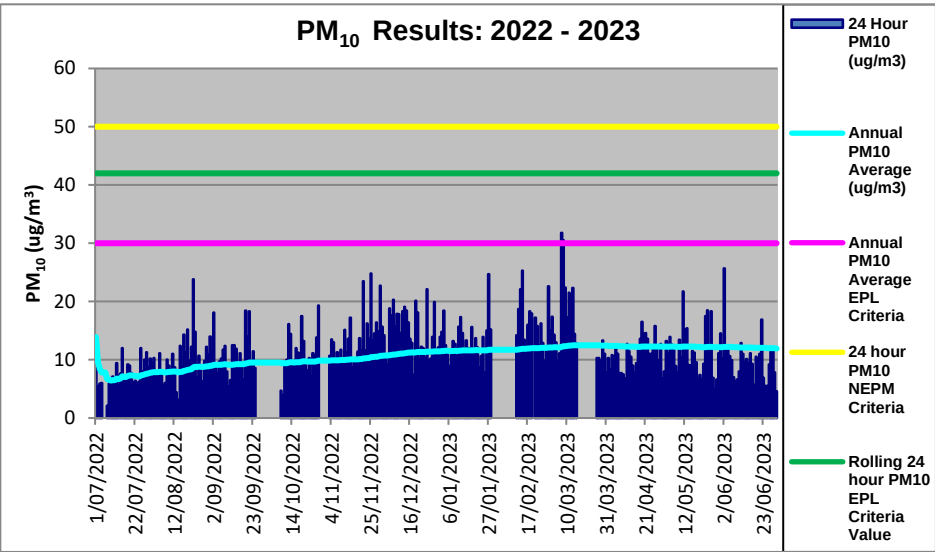


Chart 6: 2022 - 2023 PM10 Results and Criteria

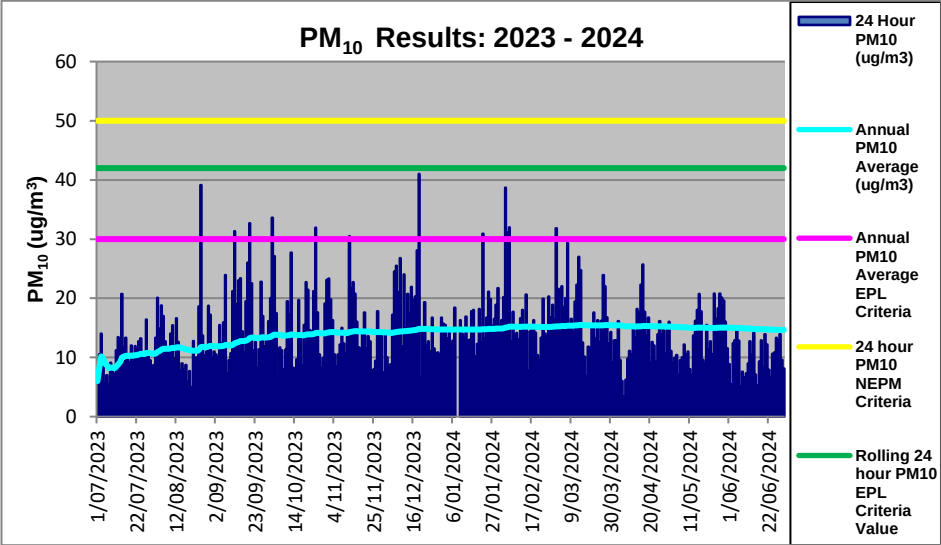


Chart 7: 2023 - 2024 PM10 Results and Criteria

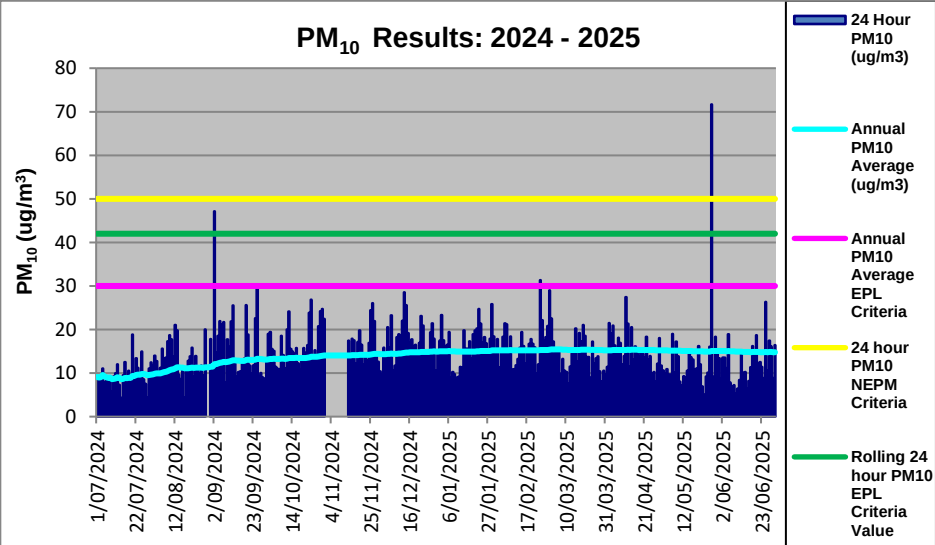


Chart 8: 2024 - 2025 PM10 Results and Criteria

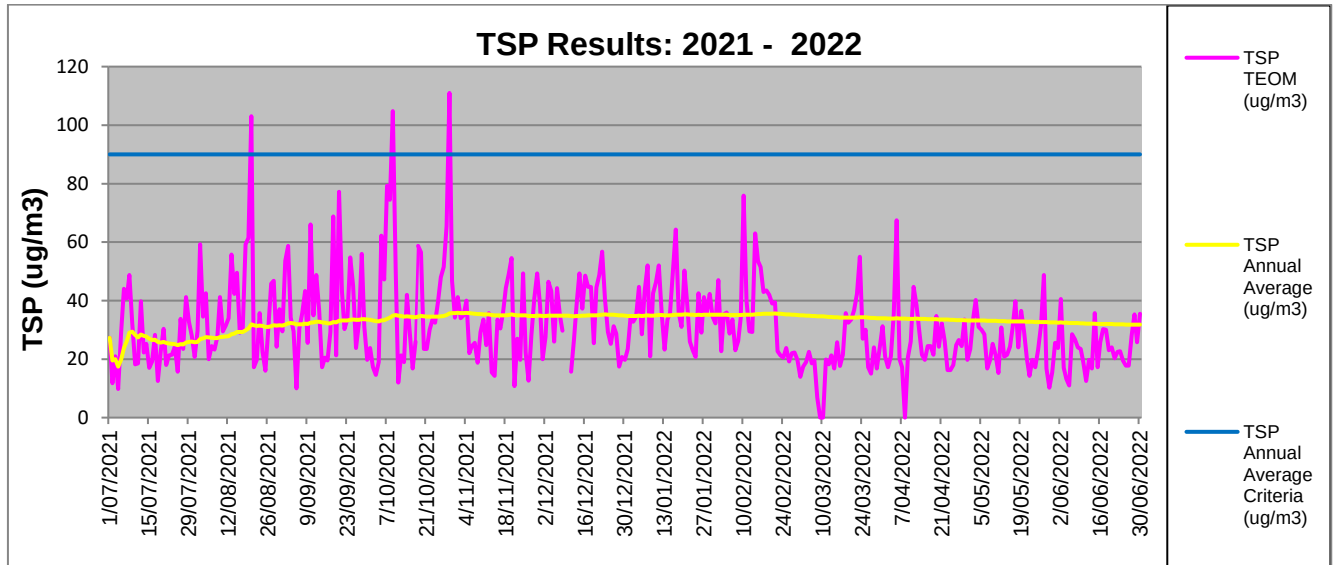


Chart 9: 2021 - 2022 TSP Results and Criteria

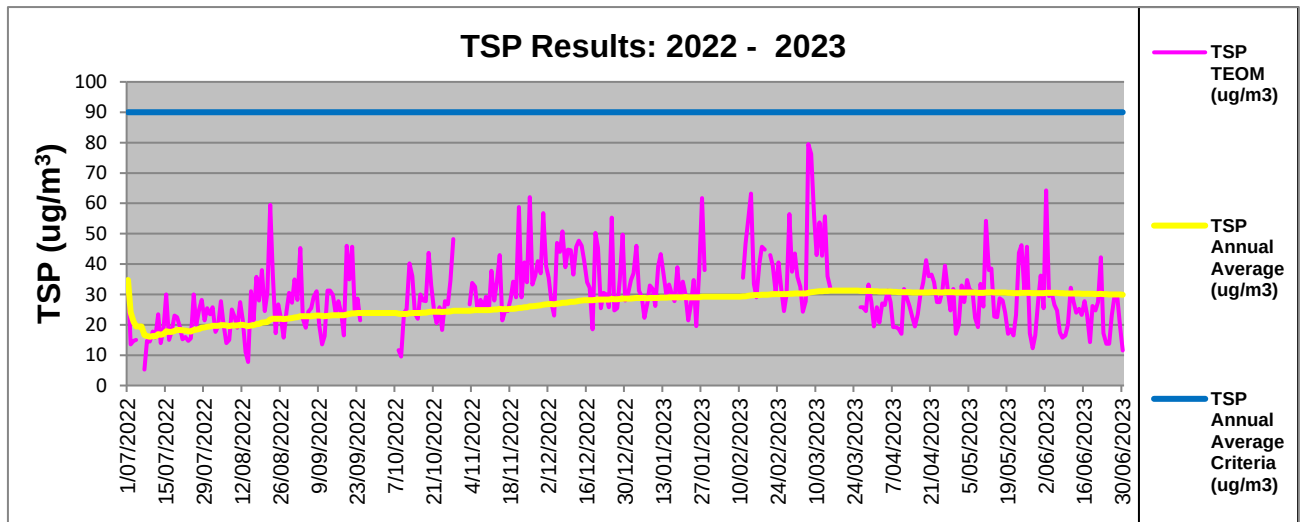


Chart 10: 2022 - 2023 TSP Results and Criteria

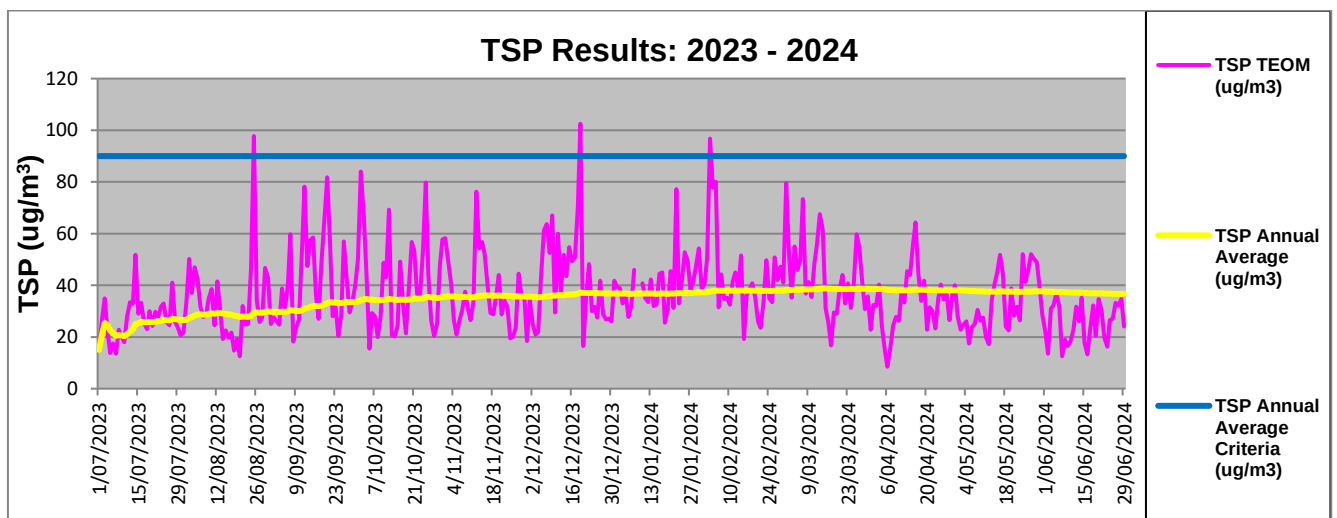


Chart 11: 2023 - 2024 TSP Results and Criteria

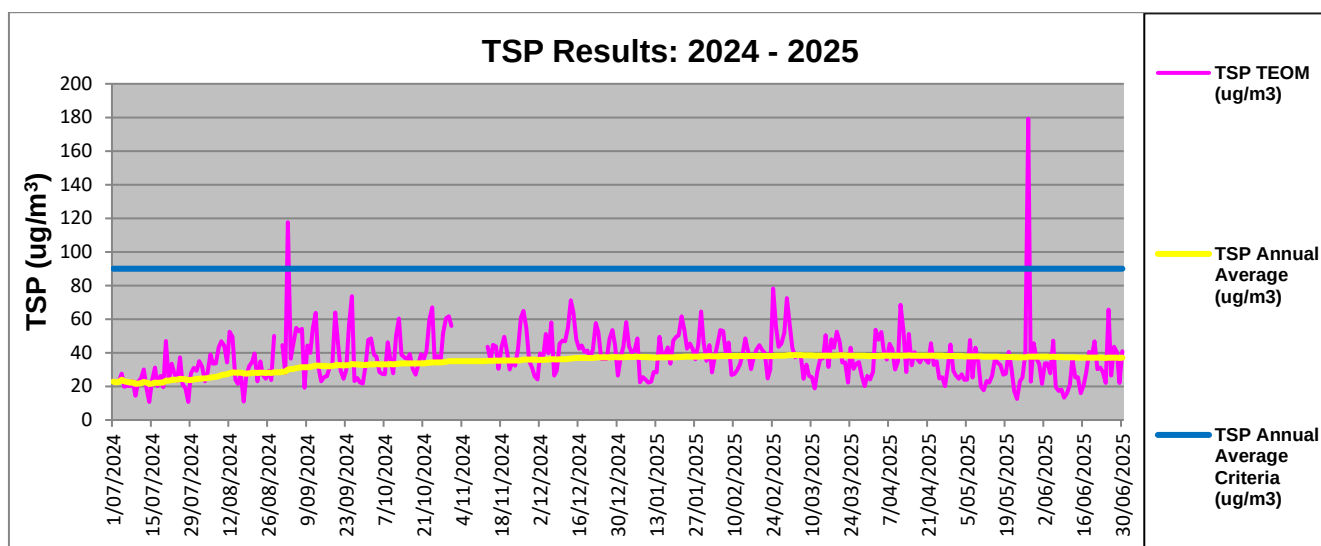


Chart 12: 2024 - 2025 TSP Results and Criteria

5.1.4 Analysis

Dust Deposition

Reporting Period 2024 - 2025

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

Monthly results and rolling annual average dust deposition averages dust gauges D08 (Olive Grove, Hitchcock Road), D11 (Receiver R6) and D12 (Receiver R8) for the July 2024 to June 2025 period were in compliant. All rolling annual averages were in compliant with the 4 g/m²/month criteria.

Monthly dust deposition results at D10 (EPL Monitoring Point 3) were elevated for five monitoring periods which resulted in the rolling annual averages exceeding the 4 g/m²/month criteria for the first eleven monitoring periods. Elevated monthly dust deposition results over the summer to early spring period, and early winter were attributed to a combination of property maintenance (paddock slashing) around the office precinct and farming activities in the adjacent land.

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. Rolling annual averages for D8, D11 and D12 were lower than this predicted level whilst the rolling annual averages for D10 exceeded this predicted impact for the whole duration of the reporting period.

Historical Data

It can be seen from Charts 1 to 3 that the majority of the dust deposition results are in compliance over the previous 4 years of monitoring. Annual averages dust deposition at dust gauge D10 were exceeded 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. Annual averages for D10 exceeded the 4.0 g/m²/month criteria for the last five months of the 2023 – 2024 monitoring period due to property maintenance involving paddock slashing for the site office precinct and farmers undertaking dust generating activities in the immediate neighbouring fields to the dust gauge. Annual averages for D10 exceeded the 4.0 g/m²/month criteria for the first eleven monitoring periods of the 2024 – 2025 monitoring period.

PM10**Reporting Period 2024 - 2025**

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 $\mu\text{g}/\text{m}^3$, 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 14.8 $\mu\text{g}/\text{m}^3$ which is slightly higher than the long-term average.

The rolling annual average PM10 values (light blue line on Chart 8) remained below the EPA long term criteria of 30 $\mu\text{g}/\text{m}^3$ (pink line on Chart 8) for this reporting period.

The 24-hour average PM10 levels (dark blue columns on Chart 8) remained below the 24-hour EPL management level of 42 $\mu\text{g}/\text{m}^3$ (green line on Chart 8) and the 24-hour NEPM short term criteria level of 50 $\mu\text{g}/\text{m}^3$ (yellow line on Chart 8) for the whole duration of this reporting period, except on two days. The 24-hour average PM10 level of 47.1 $\mu\text{g}/\text{m}^3$ exceeded the 24-hour EPL management level of 42 $\mu\text{g}/\text{m}^3$ on 2 September 2024 due to the forecasted cold front with strong west to south-westerly winds moving over New South Wales. The 24-hour average PM10 level of 71.7 $\mu\text{g}/\text{m}^3$ exceeded both the 24-hour EPL management level of 42 $\mu\text{g}/\text{m}^3$ and the 24-hour NEPM short term criteria level of 50 $\mu\text{g}/\text{m}^3$ on 27 May 2025 due to the forecasted dust storm moving across the Greater Sydney region. These two exceedances are a result of extra-ordinary events as defined by Note d, Table 3, Condition 9, Schedule 3 of DA 165-7-2008 which therefore do not constitute non-compliances.

Despite the elevated 24-hour average PM10 recorded on two days, the rolling annual average PM10 values (light blue line on Chart 8) remained below the EPA long term criteria of 30 $\mu\text{g}/\text{m}^3$ (pink line on Chart 8) for this reporting period.

Table 12: Elevated PM10 – EPL and NEPM Management criteria

Event No.	Exceedance Date	24-hour average PM10	Exceeded criteria	Comment
1	02/09/2024	47.1 $\mu\text{g}/\text{m}^3$	24-hour average PM10 EPL limit of 42 $\mu\text{g}/\text{m}^3$	This exceedance is attributed to the forecasted cold front generating strong westerly to south-westerly winds across NSW on 2 September 2024. This is considered an extra-ordinary event therefore does not constitute a non-compliance.
2	27/05/2025	71.7 $\mu\text{g}/\text{m}^3$	NEPM 24-hour average PM10 criteria of 50 $\mu\text{g}/\text{m}^3$ and 24-hour average PM10 EPL limit of 42 $\mu\text{g}/\text{m}^3$	This exceedance is attributed to the forecasted dust storm which originated from South Australia moving across the Greater Sydney area on 27 May 2025. This is considered an extra-ordinary event therefore does not constitute a non-compliance.

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/m³ 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 2020-2021 period were attributed to forecast windy conditions and a number of hazard reduction burns across the region. Exceedance during the 2021-2022 period was associated with forecasted warm and windy conditions together with a local bushfire event occurring in Maroota. There were no 24-hour average PM10 exceedances during the 2023-2024 reporting period.

The rolling annual PM10 average for the 2024-2025 reporting period is 14.8 µg/m³, which is lower than the EPA criterion of 30µg/m³ and slightly higher than the predicted annual average of 13 µg/m³ contained in the Modification Report MR 3 (Umwelt, 2019). This annual average is comparable to the recorded historical values of 14.6 µg/m³ (2023-2024), 12.0 µg/m³ (2022-2023), 12.7 µg/m³ (2021-2022), 13.7 µg/m³ (2020-2021) and much lower than the 21.3 µg/m³ (2019-2020). The cause of the previous higher annual average of recorded 21.3 µg/m³ (2019-2020) is attributed to higher frequency of extraordinary events such bushfire and hazard reduction burns.

Total Suspended Particles***Reporting Period 2024 - 2025***

The Total Suspended Particles (TSP) results are reported in Charts 9 to 12 inclusive. The annual average TSP for this reporting period is 37.0 µg/m³ which is lower than the annual average TSP criteria of 90 µg/m³ set out by the consent and EPL. 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/m³ (2017-2018), 40.0 µg/m³ (2018-2019), 53.4 µg/m³ (2019-2020), 34.3 µg/m³ (2020-2021), 31.8 µg/m³ (2021-2022), 29.9 µg/m³ (2022-2023) and 36.6 µg/m³ (2023-2024). 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, and regional and inter-state areas.

5.1.5 Discrepancies between Predicted and Actual Air Quality Impacts

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/m²/month for all receptors. During this reporting period, no extraction was undertaken in Stage 1, extraction was undertaken in Stage 2 west and stockpiling was undertaken in Stage 2 east. The most 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/m²/month and annual average of 4 g/m²/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 receivers R1, R3 and R13 with predicted incremental annual average dust deposition of 0.04 g/month/m². 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 0.4 to 3.8 g/m²/month which were generally in line with the predicted air quality impacts, with one elevated but compliant monthly dust deposition result. The rolling annual average dust deposition at D8 ranged from 0.9 to 1.2 g/m²/month which falls within the predicted dust levels.

Monthly dust deposition at D10 ranged from 0.7 to 8.7 g/m²/month with a number of monthly results exceeding the predicted air quality impacts. The rolling annual averages ranged from 3.5 to 7.0 g/m²/month with a number of the rolling annual averages exceeding the predicted dust levels.

Monthly dust deposition at D11 ranged from 0.3 to 1.8 g/m²/month with the rolling annual averages ranging from 0.9 to 1.1 g/m²/month, which fall within the predicted dust impact levels, and compliant with the annual average criteria of 4.0 g/m²/month.

Monthly dust deposition at D12 ranged from 0.2 to 2.9 g/m²/month with the rolling annual average dust deposition ranging from 0.6 to 0.8 g/m²/month, with all dust levels falling within the predicted dust impact levels and compliant with the annual average criteria of 4.0 g/m²/month.

PM10

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/m³ and an annual average PM10 to be 12 µg/m³. Recent Air Quality Assessment undertaken for Modification Report MR 3 (Umwelt, 2019) specifies a slightly higher 24-hour average PM10 of 13.8 µg/m³ and an annual average PM10 to be 12 µg/m³. 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/m³ which has been complied with during this reporting period except one exceedance on the 27th May 2025 which was attributed to the forecasted dust storm moving across the Greater Sydney area. This exceedance is categorised as an extra-ordinary event and therefore does not constitute a non-compliance.

Total Suspended Particle (TSP)

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/m³ and an annual average TSP to be 25 µg/m³. 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/m³. Further to this, the Modification Report MR 3 (Umwelt, 2019) predicted an annual average TSP concentration of 34.5 µg/m³ which was calculated based on the assumption that 40% of the TSP is PM10.

During this monitoring period, the annual average of TSP of 37.0 µg/m³ was recorded, which is slightly higher than the predicted levels in the Air Quality Assessment undertaken for the Modification Report MR 3 (Umwelt, 2019).

5.1.6 Changes to Environmental Procedures

Dixon Sand is currently liaising with the EPA regarding the suitability of a number of dust deposition gauges in the air quality monitoring program.

EPA issued a notice of variation for EPL 12513 which included a Pollution Study and Reduction Programs (EPL 12513, Condition U1 Air Quality Monitoring) in September 2024. Dixon Sand submitted the draft Air Quality Monitoring Plan to the EPA in November 2024. The draft Air Quality Monitoring Plan is currently being reviewed by the EPA.

The outcome of the review will be implemented, and the Air Quality Management Plan revised accordingly.

5.2 Noise Management

5.2.1 Noise Sources and Mitigation Measures

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 13: Potential sources of Noise and mitigation measures.

Potential Noise Sources	Mitigation Measures
- Extraction by bulldozers and excavators; - Moving of materials and stockpiling by dump trucks and excavators; - Truck haulage including bogie trucks, truck and dogs; - Wet/dry processing of sand; and - Sandstone cutting and processing in the sandstone cutting shed	- Construction of noise bunds in strategic locations as stipulated in the EIS/EAs and consent conditions; - Compliance with approved hours of operation; - Regular maintenance of road surfaces, vehicles and equipment to reduce noise emissions; and - Enforcement of speed limits for trucks and limited use of exhaust brakes in residential and school areas. - Enforcement of a 20km/h speed limit on quarry access road and haul roads. - Switch off plant when not in use and use of automatic idle shutdown. - Sealed sections of Haerses Road

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 DPHI to revert to annual attended noise monitoring for the remainder of operations in the Mod 1 extraction area.

During this reporting period, extraction has taken place in Stage 2 west (original extraction area) and Cells 1A, 1B, 2A, 2B, 3A and 3B (Modification 1 extraction area). Noise monitoring was undertaken in December 2024 and June 2025.

During the December 2024 monitoring, noise sources were generated from the following four distinct operational areas:

- Processing plant – washplant, 3 screens, front end loader and haulage trucks
- Quarry Stage 2: excavator on stockpile loading screen and front-end-loader servicing trucks

- Quarry Cell 1A/1B: rock saw, excavator popping out rock, grinder and dozer ripping, hammer
- Quarry Cell 2B: rock hammer

During the June 2025 monitoring, noise sources were generated from the following four distinct operational areas:

- Processing plant – washplant, 3 screens, front end loader and haulage trucks
- Quarry Stage 2: excavator on stockpile loading screen and 3 front-end-loader servicing trucks
- Quarry Cell 1A/1B: 2x rock saw, excavator popping out rock, grinder and hammer
- Quarry Cell 2B: rock saw, grinder

5.2.2 Compliance Limits

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
- PF1, PF2 and PF3 (receivers on Hitchcock Road to the east of Haerses Road quarry), and
- R12

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

Table 14: Haerses Road Noise Criteria

Consent	Conditions																				
DA165-7-2005, Condition 3 of Schedule 3	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. <i>Table 2: Operational noise criteria dB(A)</i> <table><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_{Aeq} (15 minute)</i></th><th><i>L_{Aeq} (15 minute)</i></th><th><i>L_A(max)</i></th></tr><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></table> 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>. 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. <i>Note:</i> • <i>Should an agreement with a landowner be terminated for any reason, the Applicant must comply with the noise criteria in Table 2.</i>	Receiver	Day	Shoulder (6.00 am to 7.00 am)		<i>L_{Aeq} (15 minute)</i>	<i>L_{Aeq} (15 minute)</i>	<i>L_A(max)</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_{Aeq} (15 minute)</i>	<i>L_{Aeq} (15 minute)</i>	<i>L_A(max)</i>																		
R05, R06	41	35	52																		
R03	40	37																			
R13, R14	40	36																			
All other receivers	40	35																			

Table 15: Haerses Road Approved Hours of Operation.

Consent Condition	Condition										
DA165-7-2005, Condition 1 of Schedule 3	The Applicant must comply with the operating hours set out in Table 1. <i>Table 1: Operating hours</i> <table> <tr> <th>Activity</th><th>Permissible Hours</th></tr> <tr> <td>Quarrying operations (excluding truck arrival, loading and dispatch)</td><td>7.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays</td></tr> <tr> <td>Truck arrival, loading and dispatch</td><td>6.00 am to 6.00 pm Monday to Saturday At no time on Sundays or public holidays</td></tr> <tr> <td>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 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> </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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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										
DA165-7-2005, 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. In such circumstances, the Applicant must notify the Secretary and affected residents prior to undertaking the activities, or as soon as is practical thereafter.										

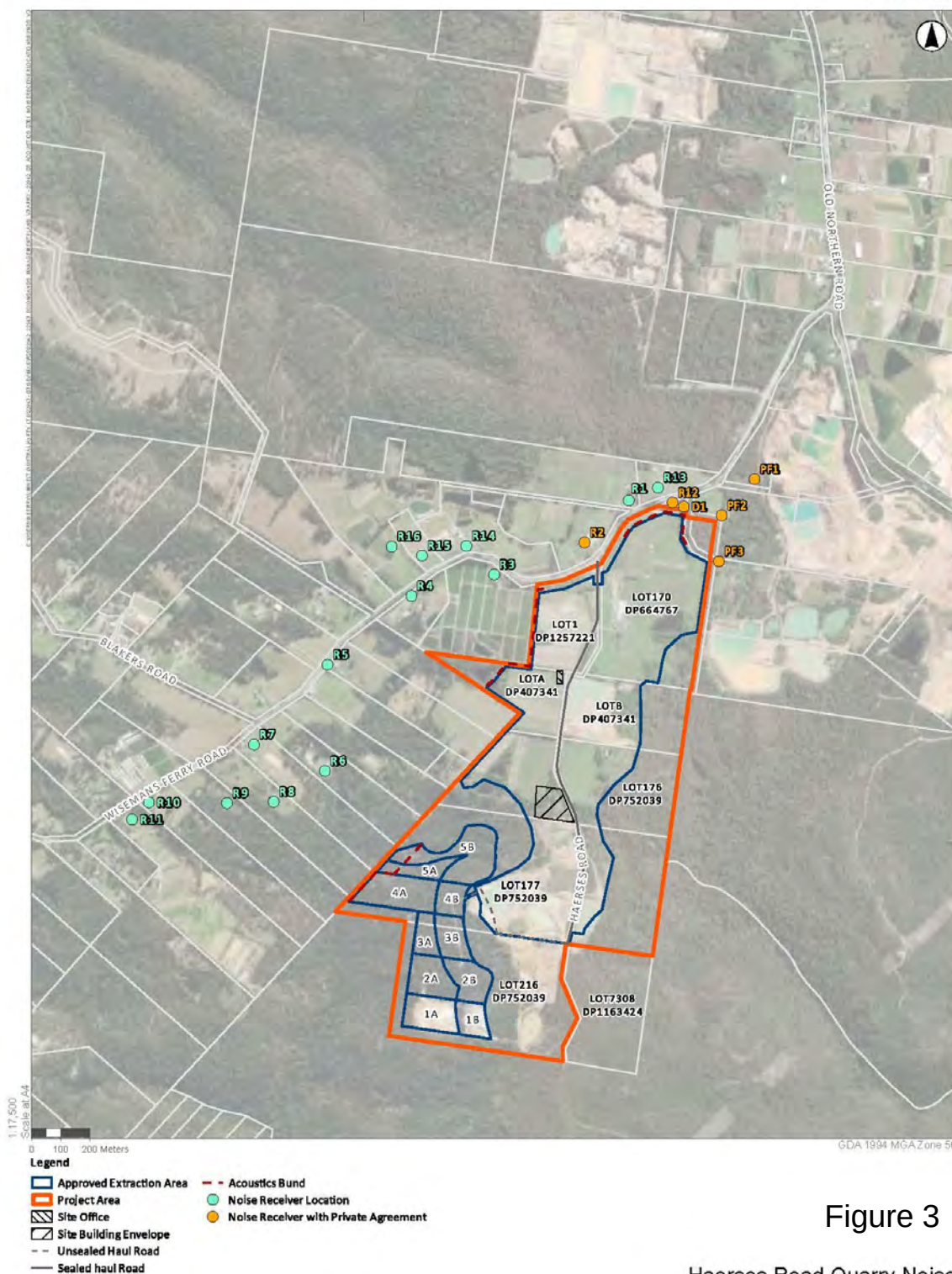


Figure 3

Haerses Road Quarry Noise Receiver Locations and Acoustic Bunds

Image Source: ESRI Basemap (2021) Data source: NSW LPI (2021), NSW/DSFI (2021), NPWS Estate (2019)

5.2.3 Results

Attended noise monitoring for Haerses Road quarry was undertaken in December 2024 and June 2025. 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 was 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 2024 monitoring, quarry operations were inaudible at all residential receivers prior to 7am, with traffic noise in all cases the dominant source of noise. No L_Amax noise levels were attributable to the quarry in the shoulder period. During shoulder period monitoring, quarry operations were predominantly inaudible to faintly audible. During daytime period, quarry noise ranged from being inaudible to intermittently audible at the monitoring locations.

During the June 2025 monitoring, quarry operations were inaudible to intermittently audible at residential receivers prior to 7am, with traffic noise on Wisemans Ferry Road in all cases the dominant source of noise. No L_Amax noise levels were attributable to the quarry in the shoulder period. During daytime period, quarry noise was inaudible to intermittently audible at monitoring locations. Similarly, ambient noise dominated over quarry related noise.

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_Aeq15min 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 2024 and June 2025 are contained in Appendix D.

Table 16: Extrapolated Noise Monitoring results, December 2024 and June 2025.

Receiver	Noise Criteria		Extrapolated Daytime noise level (L _A eq 15 min) December 2024	Extrapolated Daytime noise level (L _A eq 15 min) June 2025	Comment
	Shoulder (dBA)	Daytime (dBA)			
R3	37	40	40	38	All locations comply with noise limits. 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.
R4	35	40	40	38	
R6	35	41	41	41	
R8	35	40	42 [#]	41 [#]	
All other receivers	35	40	See Figure 4	See Figure 5	

[#]Note: The predicted noise level minus the project noise trigger level less than or equal to 2dBA

*Note: A noise agreement is in place between Dixon Sand and receivers R2, R12 and receivers located on Hitchcock Road (PF1, PF2 and PF3), therefore the noise criteria do not apply at these receivers.

Dixon Sand owns the property at Receiver D1 and therefore the noise criteria does not apply at this location

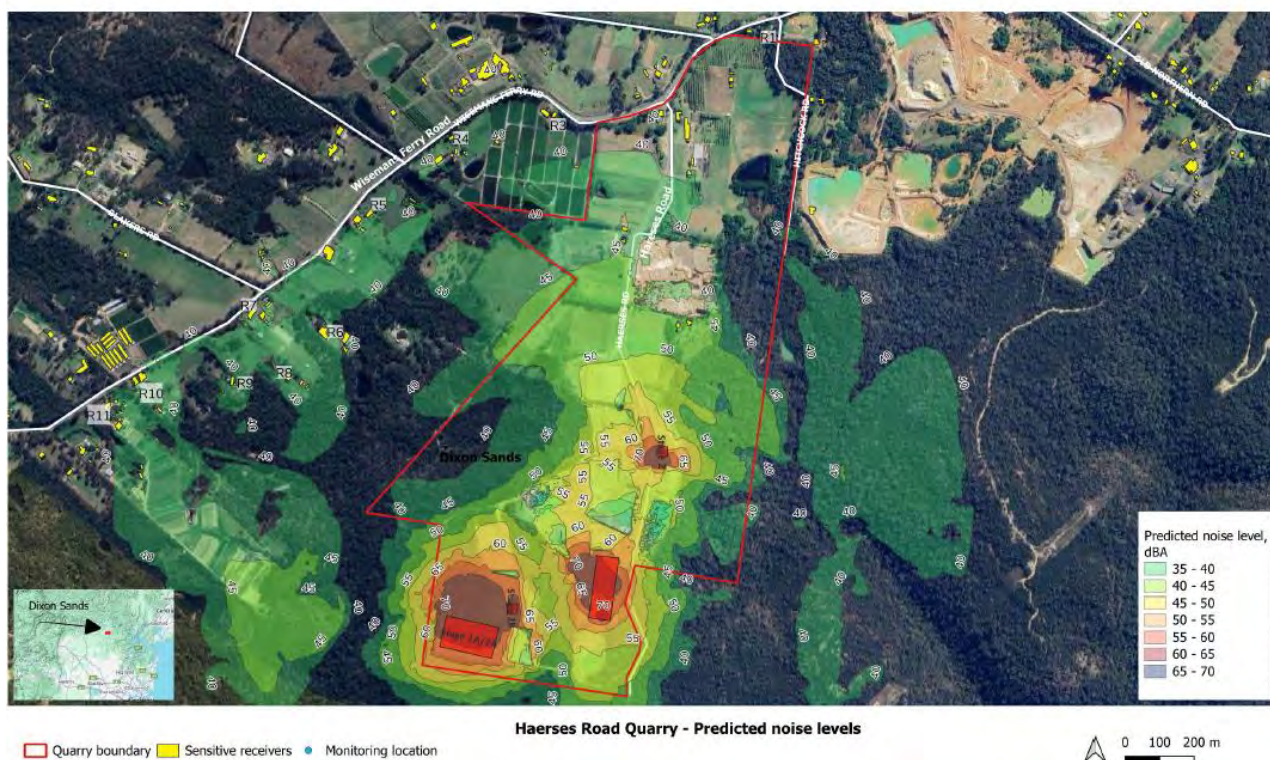


Figure 4 – Extrapolated noise levels from Haerses Road Quarry based on on-site measurements, December 2024.

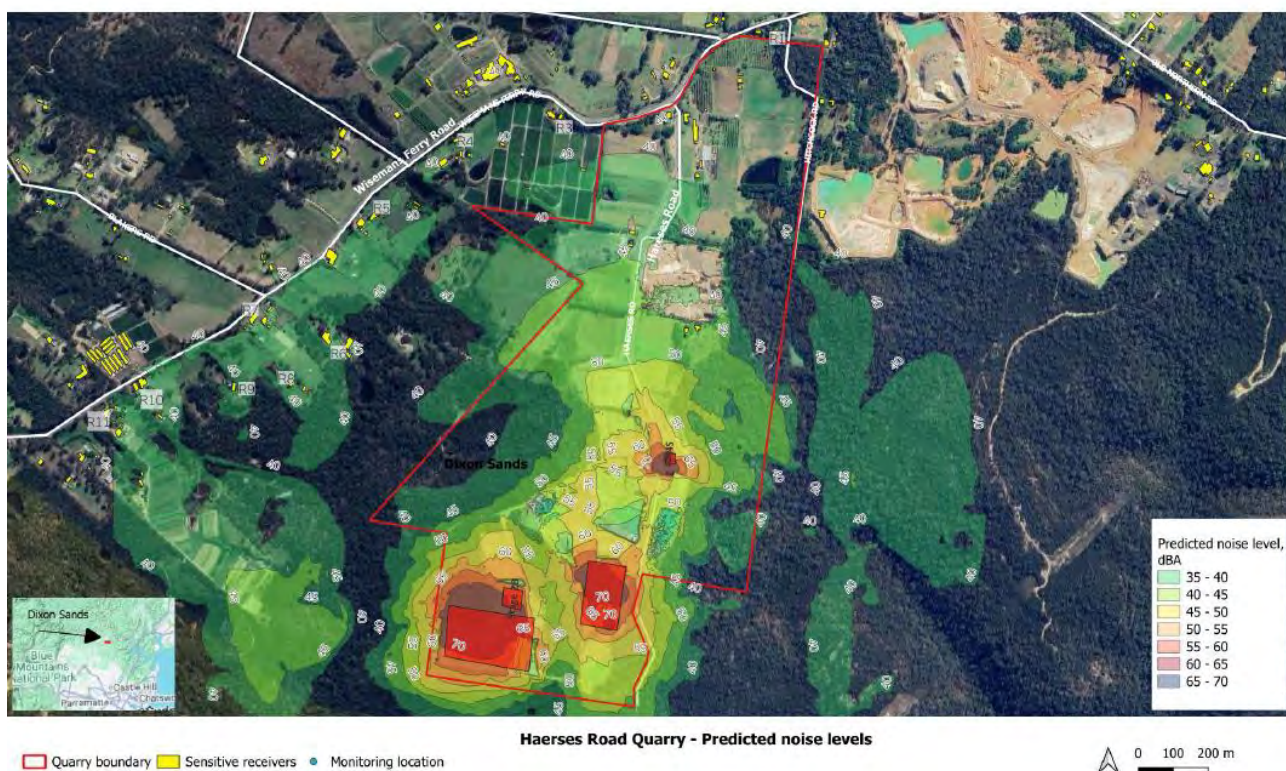


Figure 5 – Extrapolated noise levels from Haerses Road Quarry based on on-site measurements, June 2025.

5.2.4 Analysis

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 in December 2024 and June 2025. The daytime noise results are less than or equal to 2dB above the noise criteria. In accordance with Table 4.1 of the Noise Policy for Industry (EPA, 2017), if the predicted noise level minus the project noise trigger level is less than or equal to 2 dB, the significance of residual noise level is considered negligible and the total cumulative industrial noise level is not applicable.

5.2.5 Noise Trend

Dixon Sand has a noise agreement in place with receiver R2, R12 and properties owned by 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 2024 and June 2025 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 operations (within 2dB) at all receivers.

Future noise monitoring results will contribute to establishing new noise trends for quarry operations as extraction occurs in different extraction areas and depths.

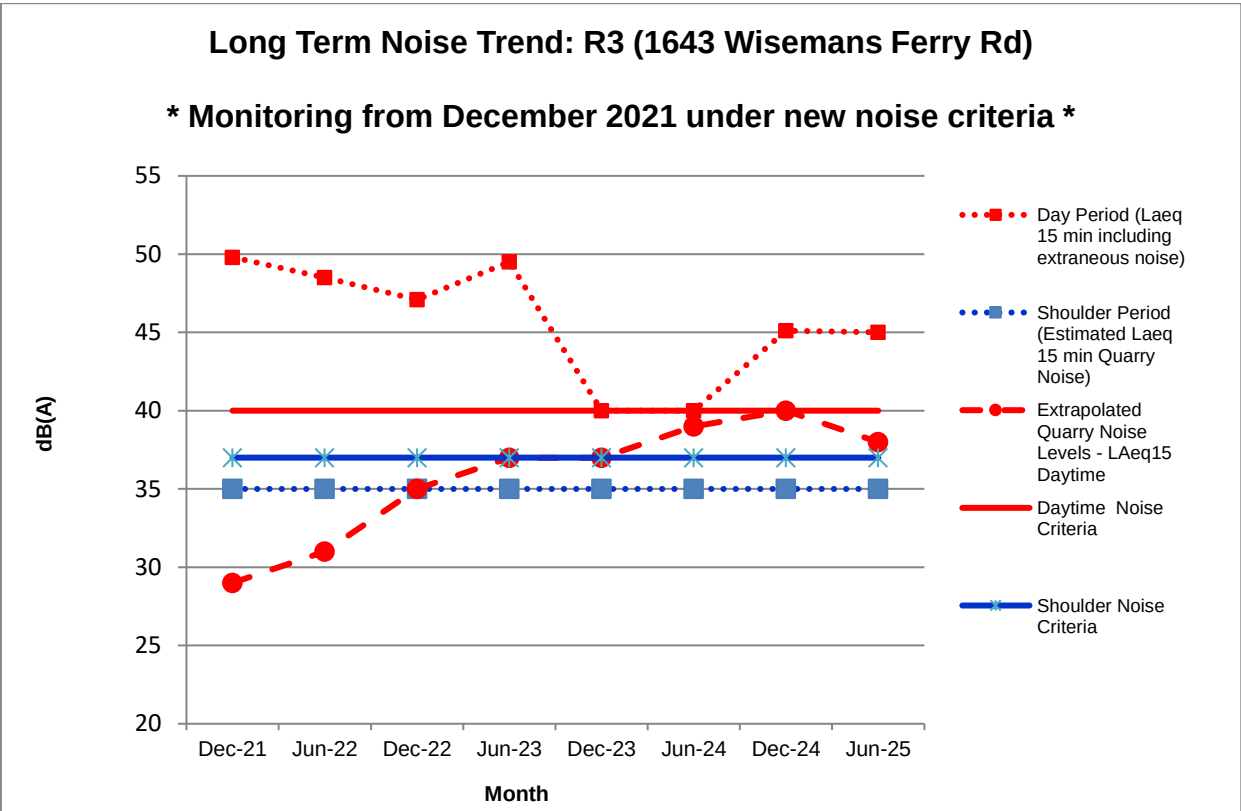


Chart 13: Noise Monitoring Results – R3

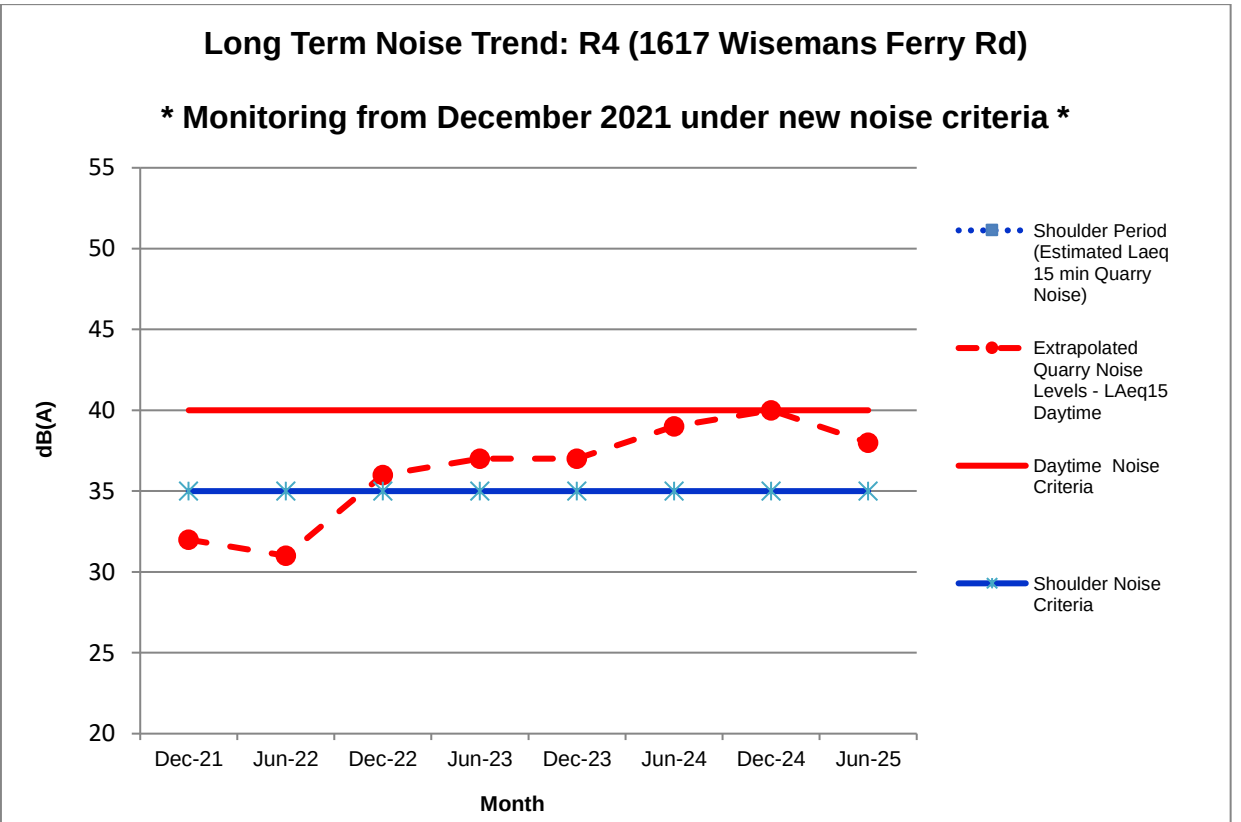


Chart 14: Noise Monitoring Results – R4

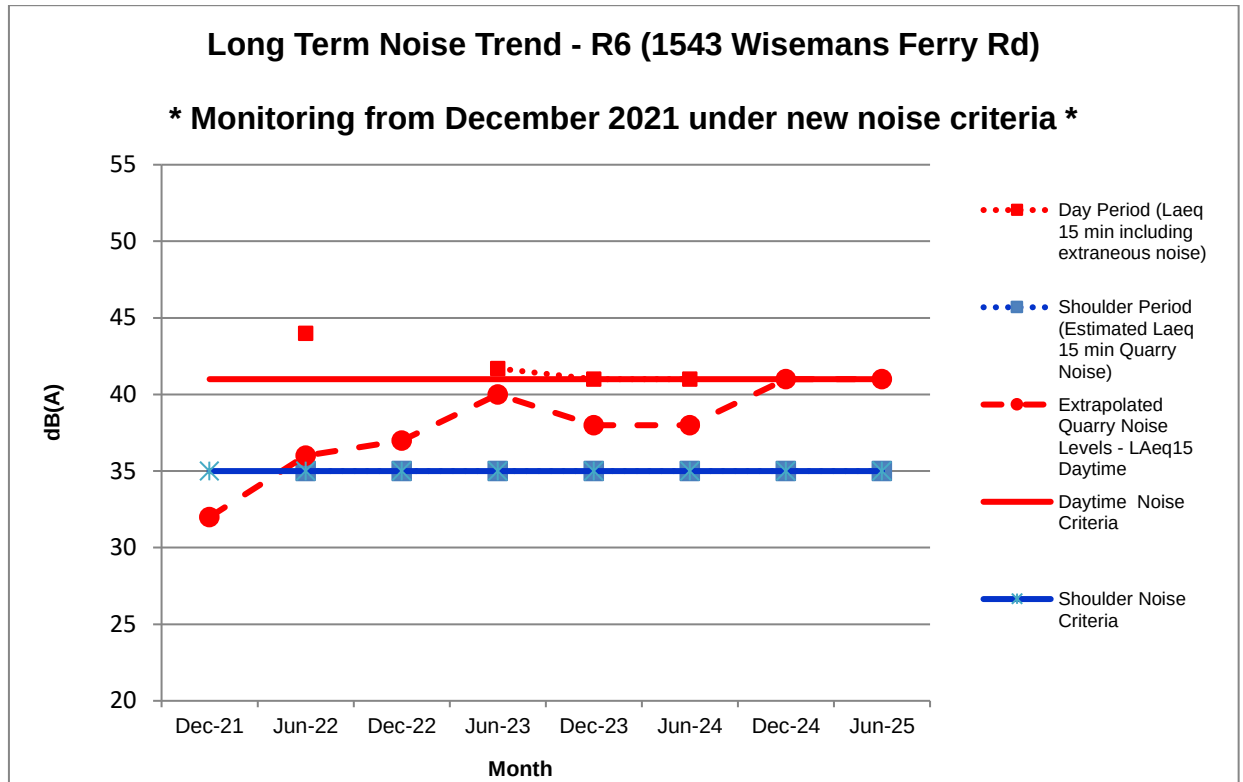


Chart 15: Noise Monitoring Results – R6

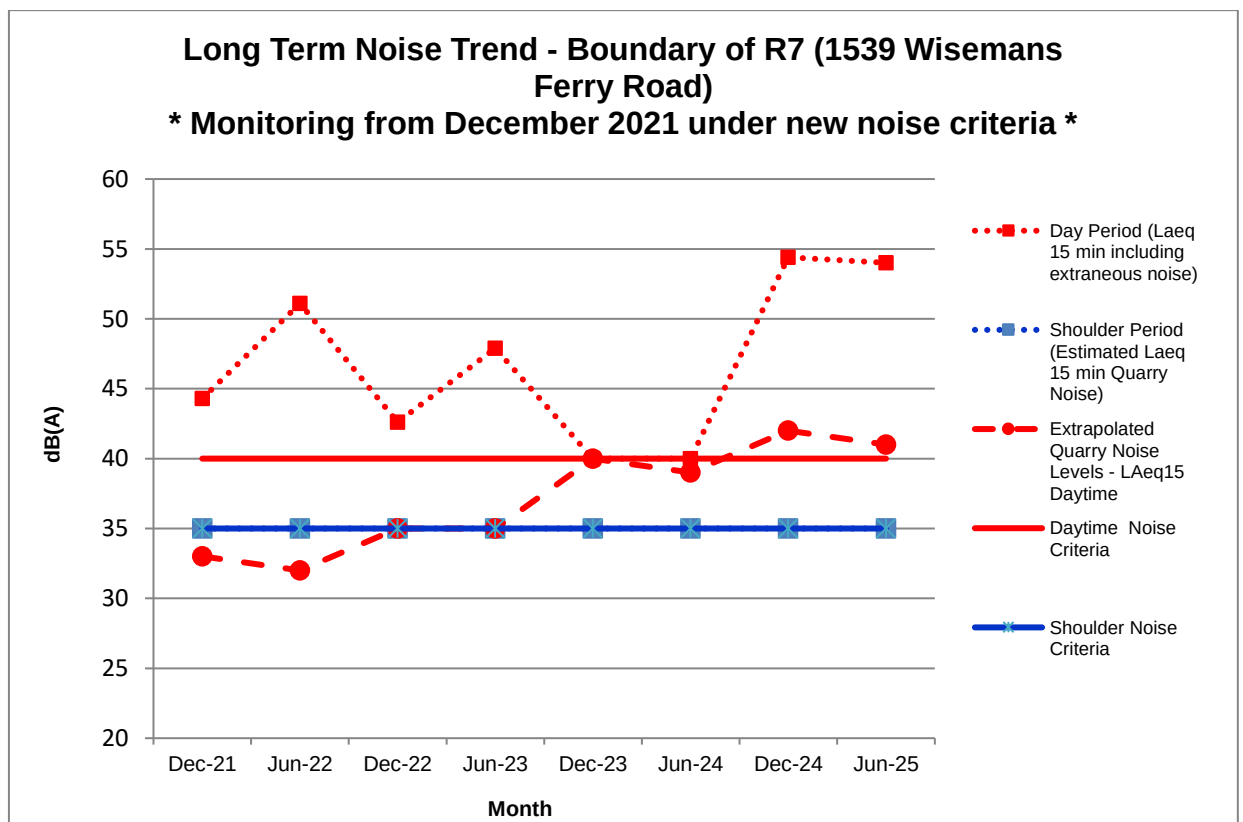


Chart 16: Noise Monitoring Results – R7

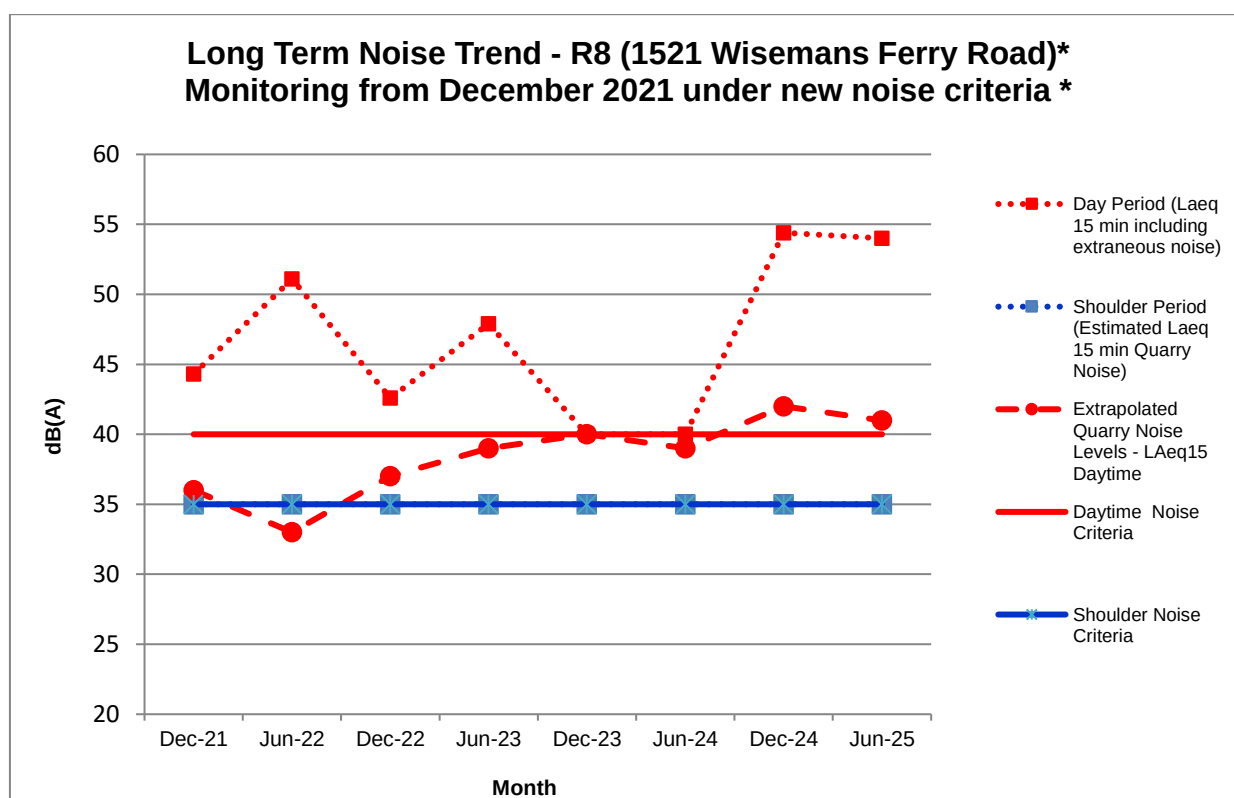


Chart 17: Noise Monitoring Results – R8

5.2.6 Discrepancies between Predicted and Actual Noise Impacts

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 screening and processing and loading of haulage trucks for transfer to Old Northern Road quarry (front end loaders, mobile

scraper and haulage trucks), extraction operation in the Modification 1 area, and stockpile management in Stage 2. There is a slight upward trend in the measured noise levels at receivers R3, R4, R6, R7 and R8 since the last reporting period due to quarry operations moving in the northward directions closer to the receivers. Nevertheless, extrapolated daytime noise levels for receivers R3, R4, R6, R7, R8 and other receivers from noise monitoring in December 2024 and June 2025 are compliant with the daytime noise criteria (within 2 dB). Shoulder period noise criteria remained in compliant during this reporting period. The complying noise levels are 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. Until quarry operations progress to Stage 4 of the Tertiary Sand Extraction Area (original extraction area), no change to the existing management and monitoring measures implemented by the Quarry are required.

Ongoing 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 and depths.

5.2.7 Changes to Environmental Procedures

No changes to environmental procedures in relation to noise management is required.

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.

5.3 Traffic and Transport

5.3.1 Ongoing Management Measures

Vehicle Movements

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.

Monthly Inspections

Observations of road conditions, maintenance requirements and the effectiveness of the Wisemans Ferry Road intersection upgrade are inclusive in the monthly site inspection checklists. An example of the monthly site inspection checklist is attached in Appendix E.

Community Liaison

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.

5.3.2 Traffic Related Complaints

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

A copy of the summary of complaint register is contained in Appendix K.

5.3.3 Compliance

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

Table 17: Road and Traffic Compliance.

DA165-7-2005 (Mod 2)	Condition	Compliance	Comments															
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 Table 4 in Section 3.1.															
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	No VENM/ENM importation during this reporting period. 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 I for a summary 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.															
Condition 1 of Schedule 3	The Applicant must comply with the operating hours set out in Table 1.	Yes	Refer to truck record															
<table><tr><td colspan="2">Table 1: Operating hours</td></tr><tr><td>Activity</td><td>Permissible Hours</td></tr><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></table>				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 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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Quarrying operations (excluding truck arrival, loading and dispatch)	7.00 am to 6.00 pm Monday to Saturday																	
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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																	
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															

DA165-7-2005 (Mod 2)		Condition	Compliance	Comments
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
Condition 21 of Schedule 3		The Applicant must: (a) maintain safe access to the site for the public and emergency services for the duration of the development; and (b) reinstate the extracted length of Haerses Road to the satisfaction of Council. Notes: • The Applicant must ensure that the final alignment and design of Haerses Road is approved by Council prior to the commencement of the development. • 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. • All works are to be in accordance with Council's Design Guidelines and Work Specifications for Subdivisions and Developments. • Following the reconstruction of Haerses Road, the Applicant must rehabilitate any temporary access roads that were established on site.	Yes	Ongoing Condition not yet triggered Completed Completed Completed Condition not yet triggered
Condition 22 of Schedule 3		Prior to carrying out any development, the Applicant must: (a) provide for appropriate sight distances at the intersection of Haerses Road and Wisemans Ferry Road, by clearing and/or lopping vegetation along the eastern approach of Wisemans Ferry Road; and (b) provide warning signage ("Truck Turning") on the eastern and western approaches of Wisemans Ferry Road, to the satisfaction of TfNSW.	Yes	Completed

DA165-7-2005 (Mod 2)	Condition	Compliance	Comments
Condition 23 of Schedule 3	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: • Prior to the Construction Certificate being released the Applicant must: - 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 - 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). • The Applicant shall ensure that the intersection works comply with the TfNSW Road Design Guide. • The Applicant shall bear the full costs associated with the design, survey and construction of the works, including the relocation of utilities, if required.	Yes	Completed
Condition 24 of Schedule 3	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 Austroads Guide to Road Design.	Yes	Completed in May 2021
Condition 24A of Schedule 3	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.	Yes	Monitoring of truck queuing at the intersection is undertaken during monthly site inspection. Refer to Appendix E.
Condition 25 of Schedule 3	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.	Yes	Completed by Civil Contractor
Condition 26 of Schedule 3	The Applicant must keep accurate records of all laden truck movements to and from the site (including time of arrival and dispatch) and publish a summary of these records on its website every 6 months.	Yes	Refer to Traffic Management Plan and Truck Records

DA165-7-2005 (Mod 2)	Condition	Compliance	Comments
Condition 27 of Schedule 3	The Applicant must: (a) ensure that all laden trucks have their loads covered when arriving at or leaving the site; (b) ensure that all laden trucks are cleaned of material that may fall from vehicles, before leaving the site; and (c) use its best endeavours to ensure that appropriate signage is displayed on all trucks used to transport product from the development so they can be easily identified by road users.	Yes	Refer to Traffic Management Plan
Condition 28 of Schedule 3	The Applicant must prepare a Traffic Management Plan for the development to the satisfaction of the Secretary. This plan must: (a) be prepared in consultation with the TfNSW and Council; (b) be submitted to the Secretary for approval within 6 months of the determination of Modification 1, unless otherwise agreed by the Secretary; (c) describe the processes in place to control the arrival and dispatch of trucks; (d) include a Drivers' Code of Conduct that details the safe and quiet driving practices that must be used by drivers travelling to and from the site, particularly in the vicinity of Maroota Public School; (e) describe the measures to be put in place to ensure compliance with the Drivers' Code of Conduct; (f) include specific measures to minimise the impact of heavy vehicles, including restrictions on routes and times (particularly in relation to peak hours, holiday periods and times immediately before and after school hours, i.e. 8.30 am – 9.00 am and 3.00 pm – 3.30 pm); and (g) propose measures to minimise the transmission of dust and tracking of material onto the surface of the public road from vehicles leaving the quarry. The Applicant must implement the approved Traffic Management Plan as approved by the Secretary.	Yes	Refer to Traffic Management Plan

5.3.4 Analysis

The production and truck movement data outlined above is evidence that Dixon Sand has operated in compliance with the consent conditions during the 2024 – 2025 reporting period.

The quarry did not receive any traffic related complaint was received by Haerses Road Quarry during this reporting period.

5.3.5 Findings

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.

5.3.6 Changes to Environmental Procedures

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

5.4 Waste Management

5.4.1 Waste Generation

During this reporting period, refuelling of plant and machinery at Haerses Road quarry was carried out using a fuel trailer. 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 on site.

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. Other bulky solid waste associated with the operations were disposed of in skip bins and transported offsite by a licensed waste transporter.

Printer ink cartridges and batteries were dropped off at the post office or Officeworks. Coffee pods were returned to the manufacturer to composting and package recycling.

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: Haerses Road – Total Waste Generated, July 2024 to June 2025.

Waste Type	Disposal / Recycling / Processing	Amount of Waste Generated
Putrescible	The Hills Shire Council Waste Contractor weekly pickup	Approx. 12.5 m ³
Recyclables	The Hills Shire Council Waste Contractor fortnightly pickup (1 x 240L Yellow bin)	Approx. 6.2 m ³
General Waste – Non-putrescible	Skip bins provided by a licensed Waste Contractor	50 m ³
Printer Cartridges	Drop off at Post Office or Officeworks	< 0.1 m ³
Coffee Pods	Returned to supplier for composting and package recycling	< 0.1 m ³
Batteries	Drop off at Post Office or Officeworks	< 0.1 m ³
Sewerage	Onsite Sewerage treatment	As per manufacturer's specification.

The waste tracking register is contained in Appendix F.

5.4.2 VENM and ENM Importation

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 2024 calendar year,
- A total of *nil* tonnes of VENM/ENM was imported to Haerses Road Quarry from January 2025 to June 2025,
- A total of *nil* tonnes of VENM/ENM was imported to Haerses Road Quarry during the 2024 - 2025 financial year (Annual Review reporting period).

A copy of the ENM / VENM Material Transport Register is contained in Appendix F. 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

5.4.3 Changes to Environmental 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.

6. Water Management

6.1 Monitoring and Compliance Limits

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.

6.1.1 Groundwater Levels and Criteria / Trigger Levels

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. A number of cluster bores were decommissioned, and one additional borehole installed following consultation with DCCEEW - Water. Active groundwater bores at the Haerses Road quarry are listed in Table 19. The adopted 20th and 80th percentile water levels as site specific trigger values in the Soil and Water Management Plan are listed in Table 20.

Table 19: Groundwater monitoring bores for Haerses Road quarry site.

Monitoring Bore	Location Reference	Aim of 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

Monitoring Bore	Location Reference	Aim of Monitoring
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
BH07	South-western corner of Extraction Cell 1A in Modification 1 area	SCBGS

Table 20: Baseline Groundwater Level Statistics and Trigger Values.

Monitoring Bore	Minimum	20 th Percentile	50 th Percentile	80 th Percentile	Maximum
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

6.1.2 Groundwater Quality and Criteria / Trigger Levels

Groundwater quality analyses for H-series bores, BH4 and BH5 were undertaken 6-monthly in December 2024 and June 2025, 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.

Table 21: Baseline Groundwater Quality Statistics and Trigger Values

Monitoring Bore	pH			Electrical Conductivity (µS/c)		
	20th Percentile	50th Percentile	80th Percentile	20th Percentile	50th Percentile	80th Percentile
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

6.1.3 Surface Water Monitoring and Discharge Criteria

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 stipulate 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 2020 – 2021 reporting, 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. No sampling had been taking during this 2024 – 2025 reporting period due to unsuitable sampling condition. 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.

Surface water quality monitoring for quarry basins commenced during the 2022 – 2023 reporting period and the preliminary data is presented in this Annual Review. Continued monitoring will enable an establishment of trend in water quality in these quarry basins. A copy of the surface water quality results for quarry basins are contained in Appendix C.

Table 22: Baseline surface water quality statistics and trigger values

Parameter	Minimum		20 th Percentile		50 th Percentile		80 th Percentile		Maximum	
	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2	SW1	SW2
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

6.2 Extraction Limits

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

Table 23: Haerses Road Quarry Extraction limits

DA165-7-2005 Conditions	Extraction limit
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	Within 6 months of the determination of Modification 1, the Applicant must: (a) establish the highest recorded wet weather groundwater levels for the site based on all available local and site-specific groundwater monitoring data; and (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. 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.
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	The Applicant must review and update the Maximum Extraction Depth Map: (a) annually, for the duration of the baseline groundwater monitoring program (see condition 17 of Schedule 3); and (b) within 3 months of the completion of each Independent Environmental Audit (see condition 13 of Schedule 5), to the satisfaction of the Secretary.

6.3 Results

Groundwater Levels

Chart 18 depicts the long term recorded groundwater levels which commenced in June 2003 for H-series, BH4 and BH5. Charts 19 to 34 (inclusive) illustrate the groundwater levels for all active bores during this reporting period.

Groundwater Quality

Chart 35 depicts the long term recorded groundwater pH which commenced in June 2003. Charts 36 to 46 (inclusive) illustrate the groundwater pH across all bores during this reporting period.

Chart 47 depicts the long term recorded groundwater electrical conductivity commencing June 2003. Charts 48 to 58 (inclusive) illustrate the groundwater electrical conductivity across all bores during this reporting period.

Surface Water Quality

Table 24 contains the laboratory analyses results for water samples obtained at SW1 and SW2 to date. Water quality results for quarry related water basins are displayed in Charts 59 to 62 (inclusive).

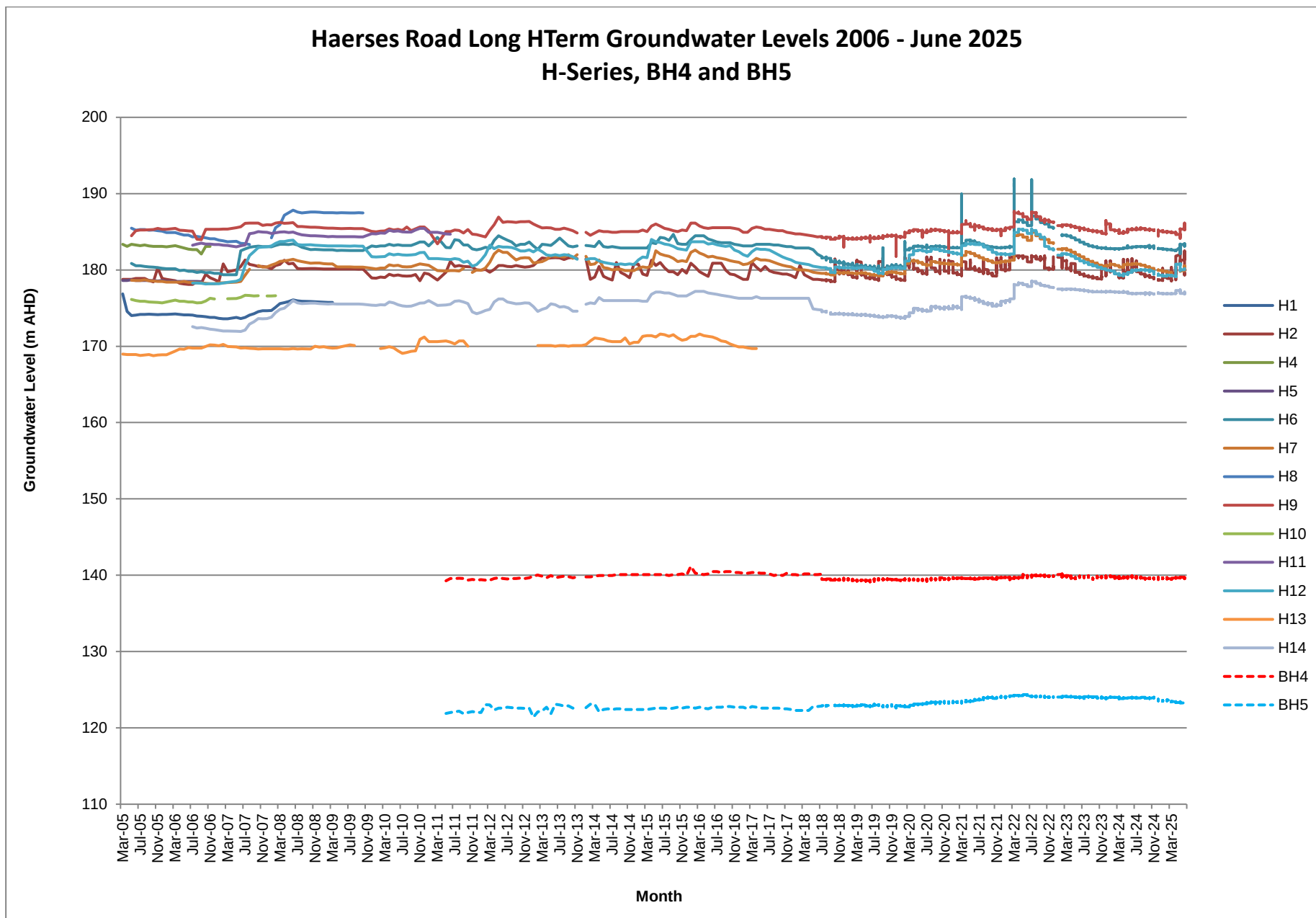


Chart 18: Haerses Road Long Term Groundwater Levels for H-Series, BH4 and BH5.

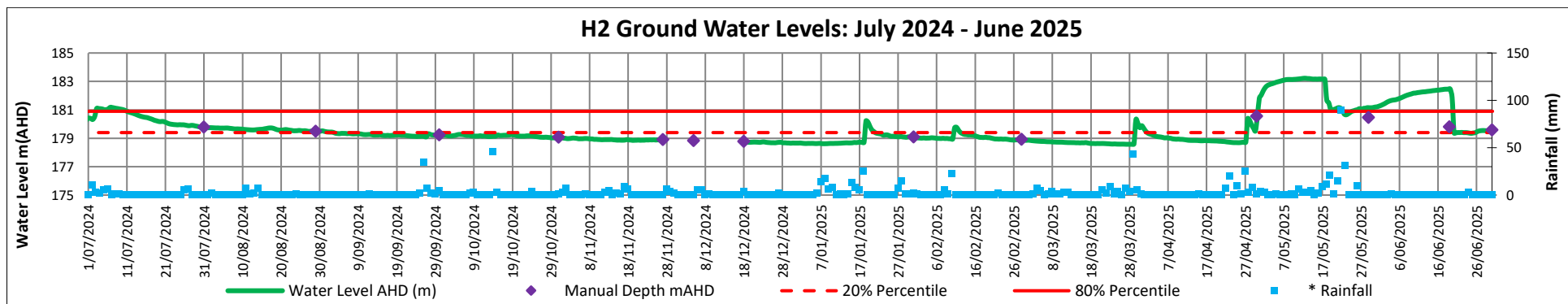


Chart 19: H2 Groundwater Levels for July 2024 – June 2025.

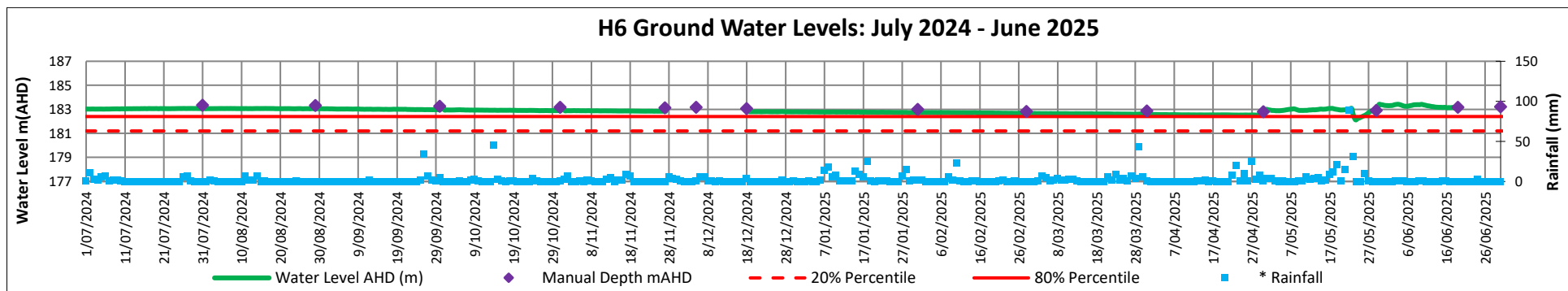


Chart 20: H6 Groundwater Levels for July 2024 – June 2025.

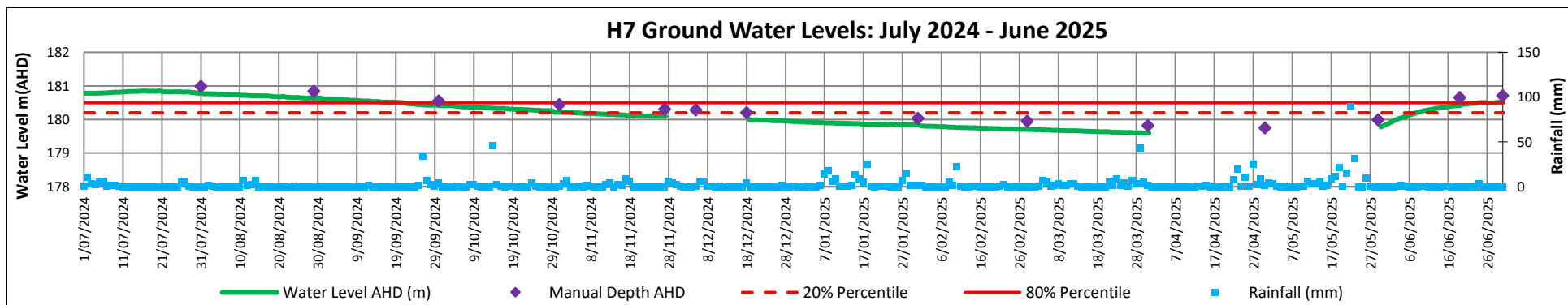


Chart 21: H7 Groundwater Levels for July 2024 – June 2025.

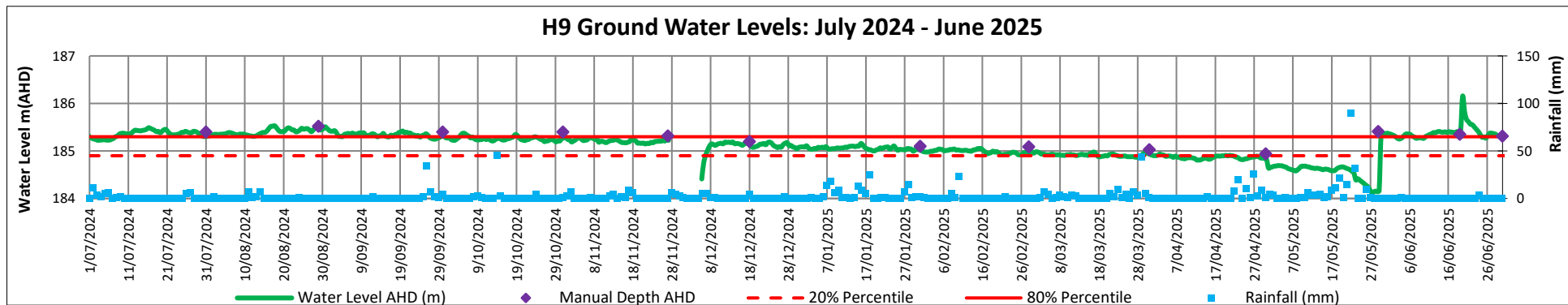


Chart 22: H9 Groundwater Levels for July 2024 – June 2025.

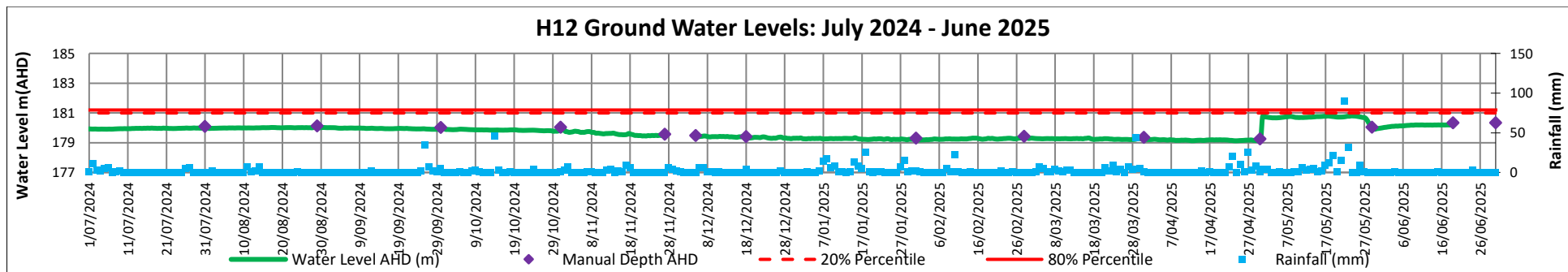


Chart 23: H12 Groundwater Levels for July 2023 – June 2024.

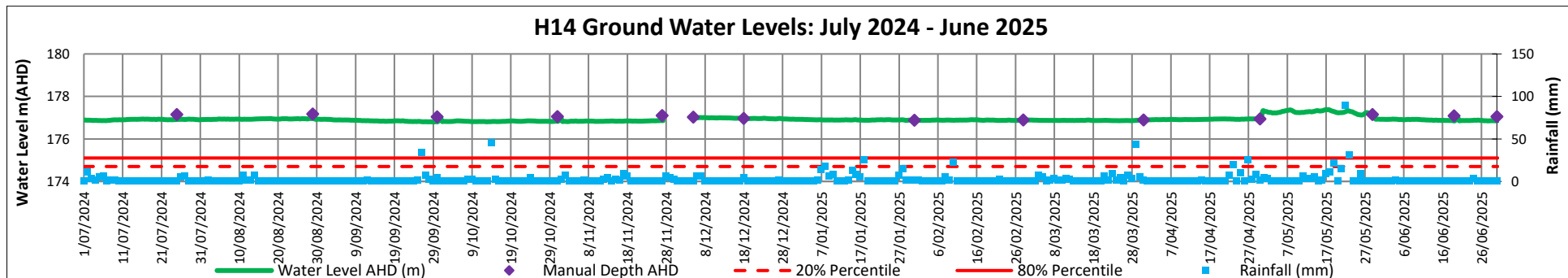


Chart 24: H14 Groundwater Levels for July 2023 – June 2024.

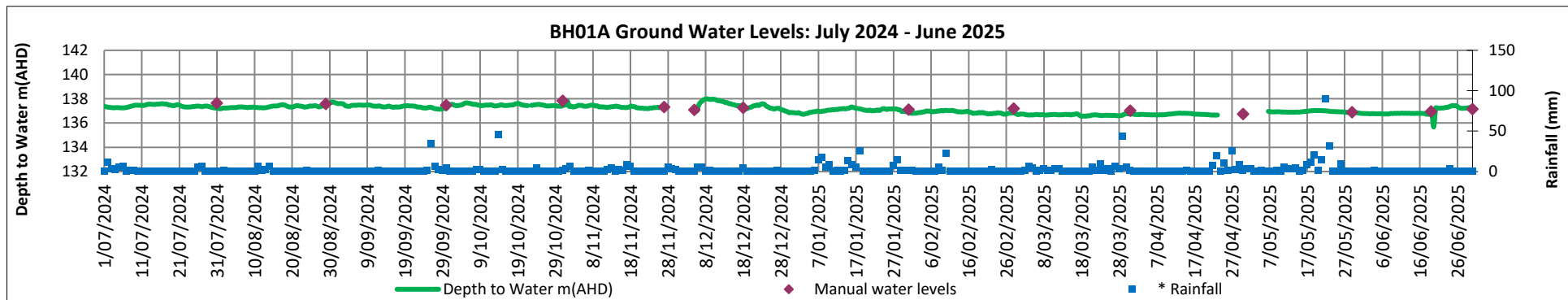


Chart 25: BH01A Groundwater Levels for July 2024 – June 2025.

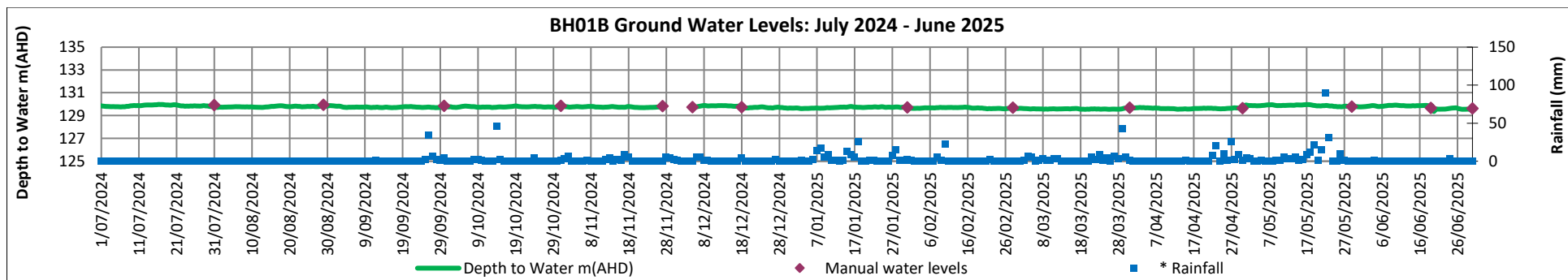


Chart 26: BH01B Groundwater Levels for July 2024 – June 2025.

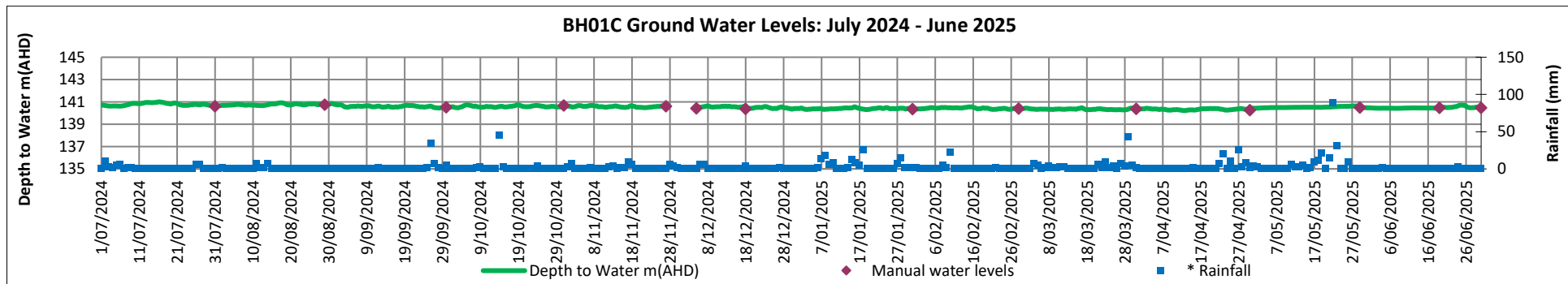


Chart 27: BH01C Groundwater Levels for July 2024 – June 2025.

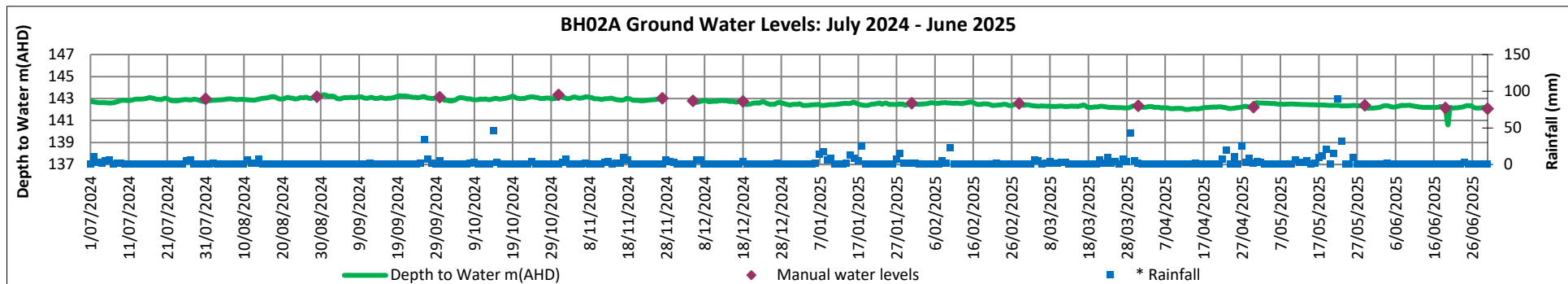


Chart 28: BH02A Groundwater Levels for July 2024 – June 2025.

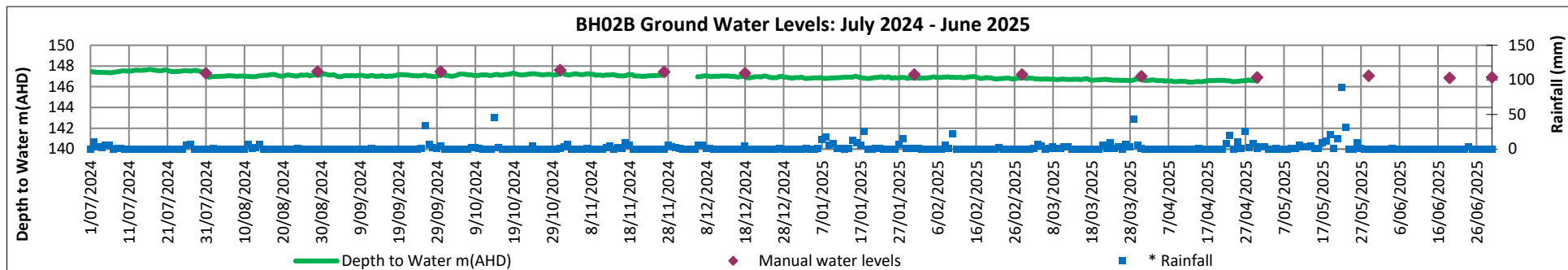


Chart 29: BH02B Groundwater Levels for July 2024 – June 2025.

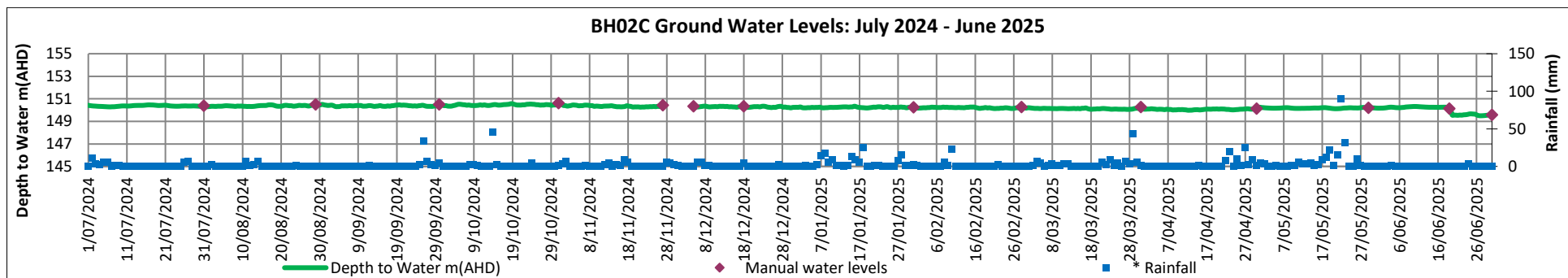


Chart 30: BH02C Groundwater Levels for July 2024 – June 2025.

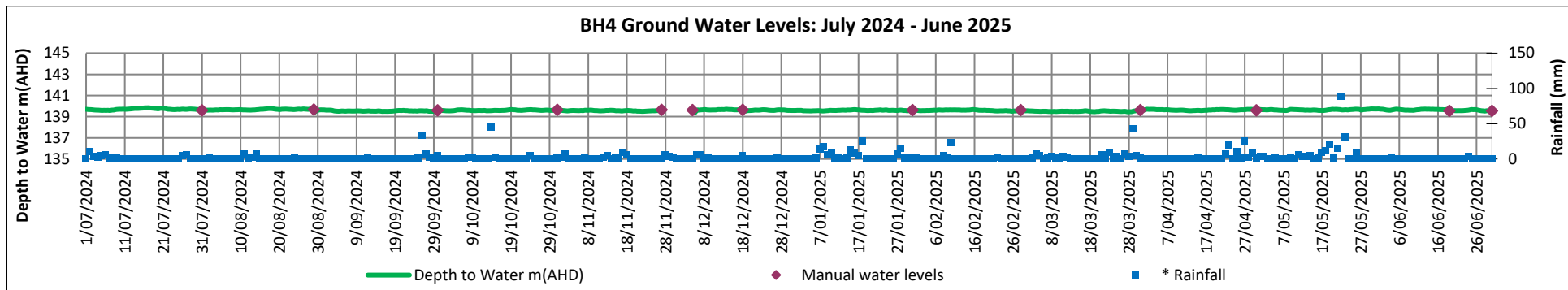


Chart 31: BH4 Groundwater Levels for July 2024 – June 2025.

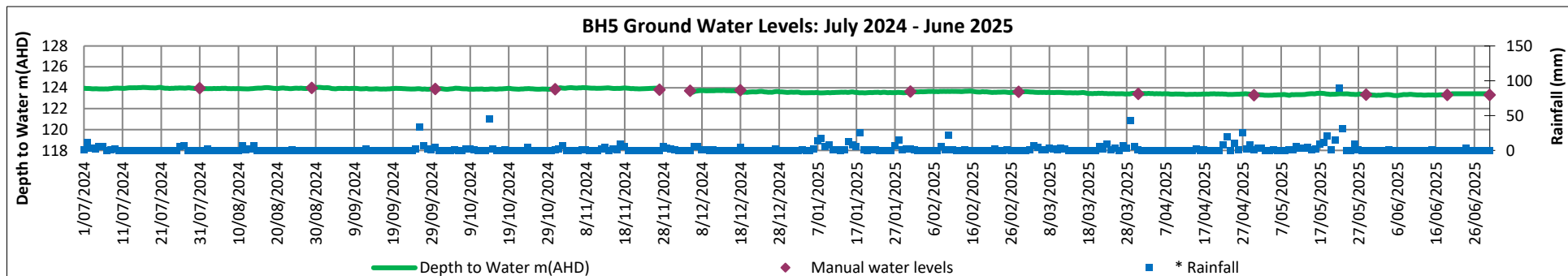


Chart 32: BH5 Groundwater Levels for July 2024 – June 2025.

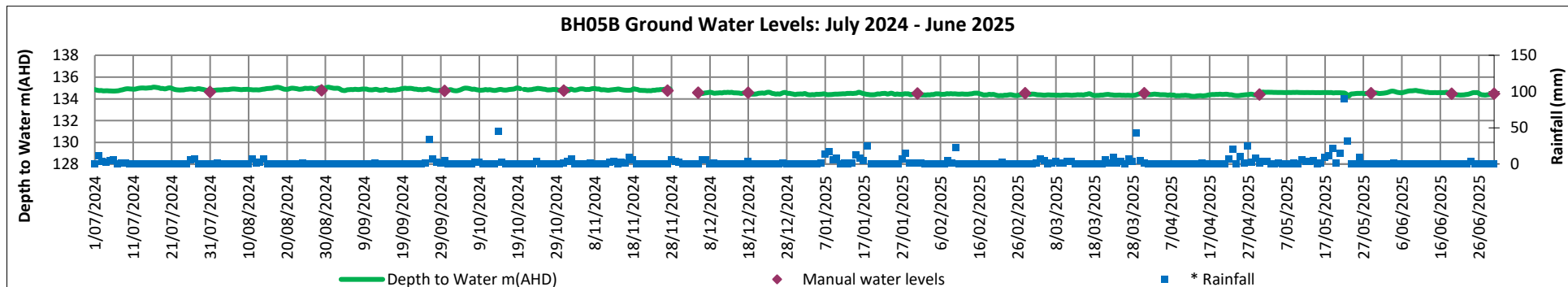


Chart 33: BH05B Groundwater Levels for July 2024 – June 2025.

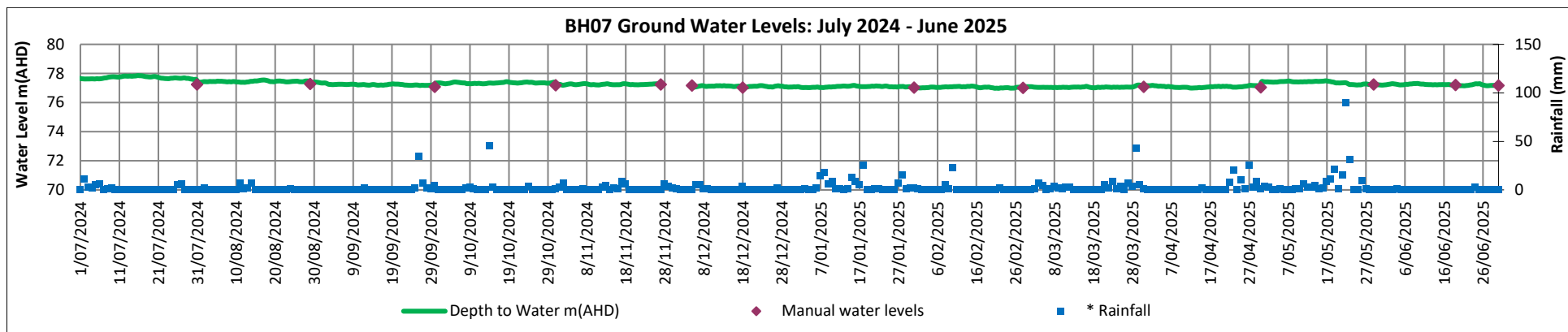


Chart 34: BH07 Groundwater Levels for July 2024 – June 2025.

Haerses Road Groundwater Quality - pH Nov 2010 - Jun 2025

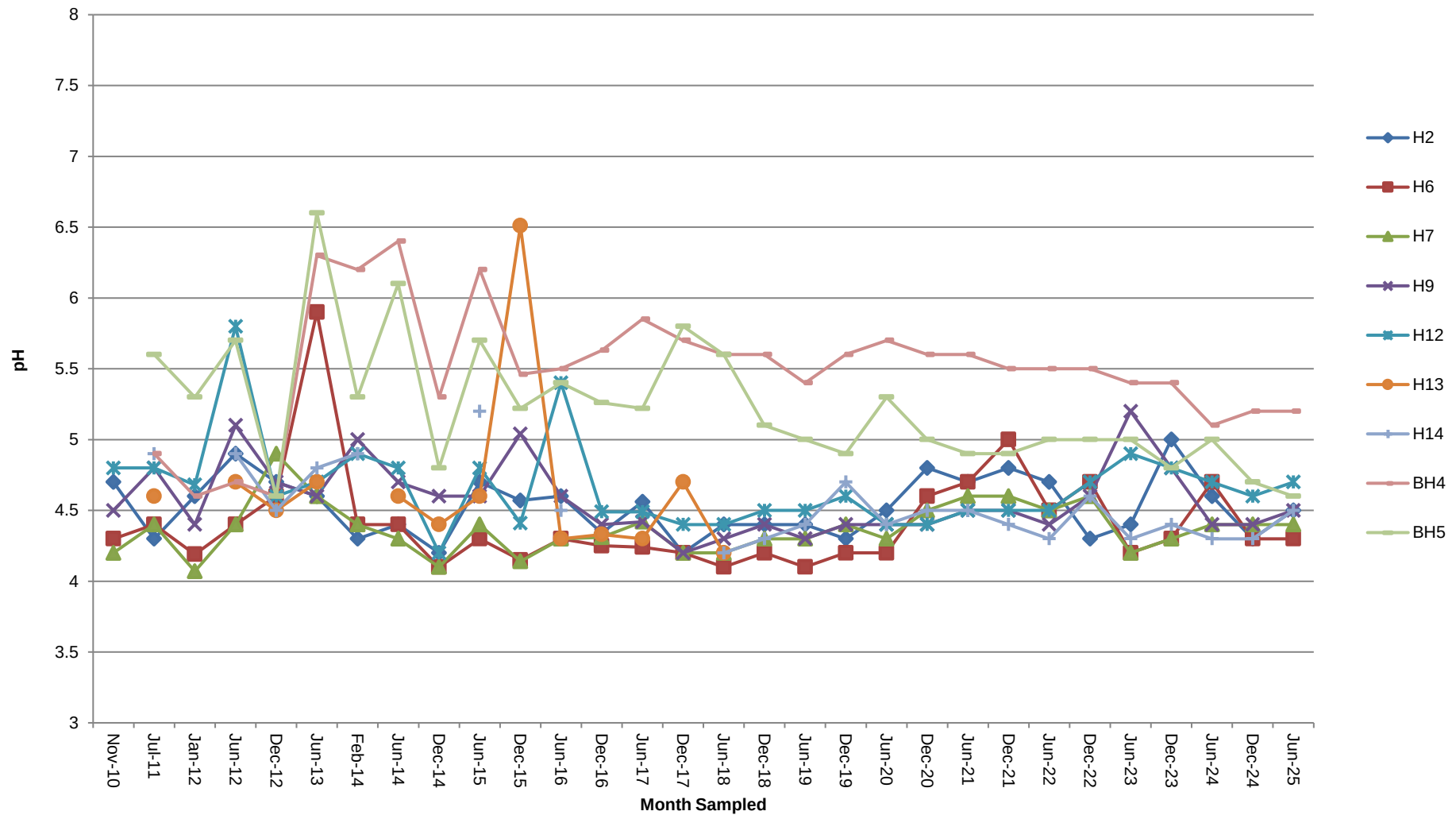


Chart 35: Haerses Road Long Term pH – H series, BH4 and BH5

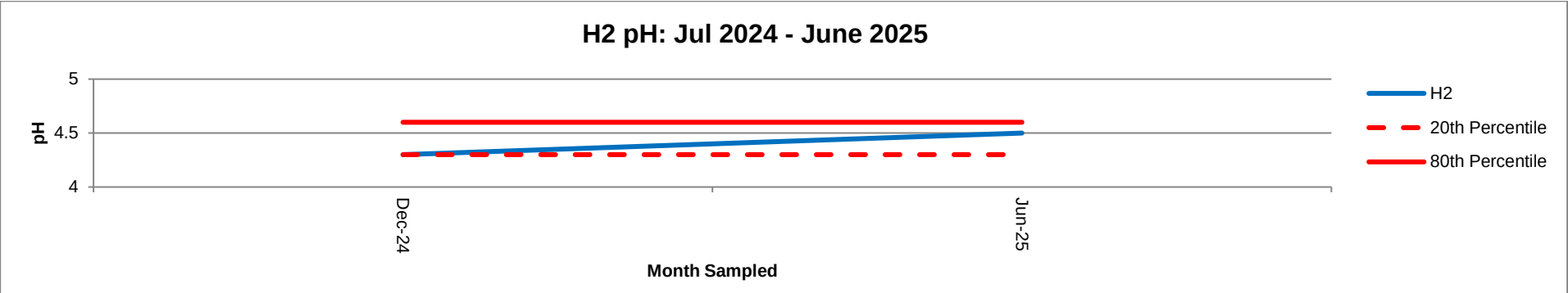


Chart 36: H2 pH Results July 2024 – June 2025.

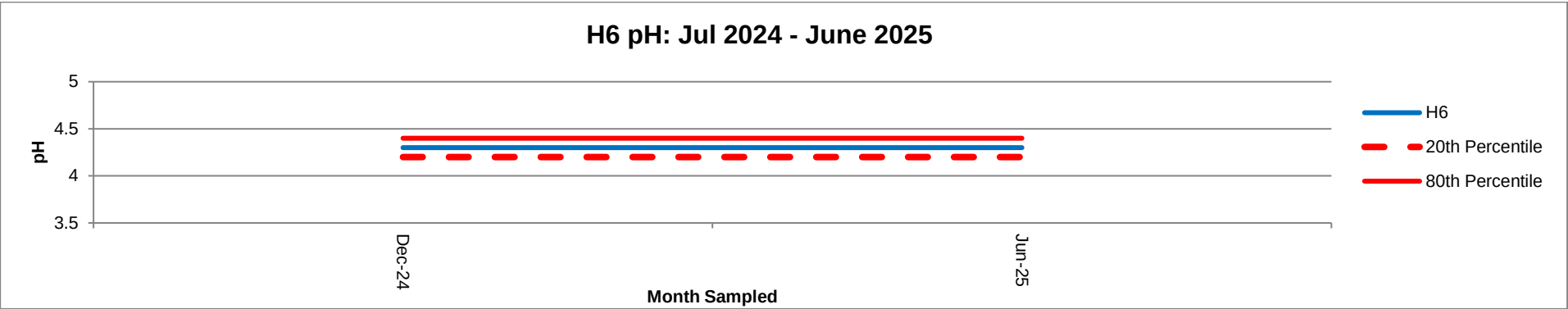


Chart 37: H6 pH Results July 2024 – June 2025.

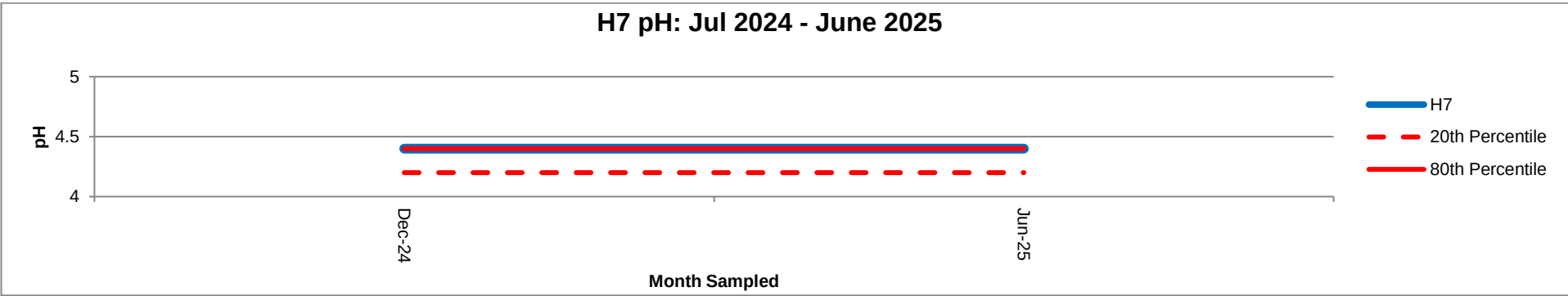


Chart 38: H7 pH Results July 2024 – June 2025.

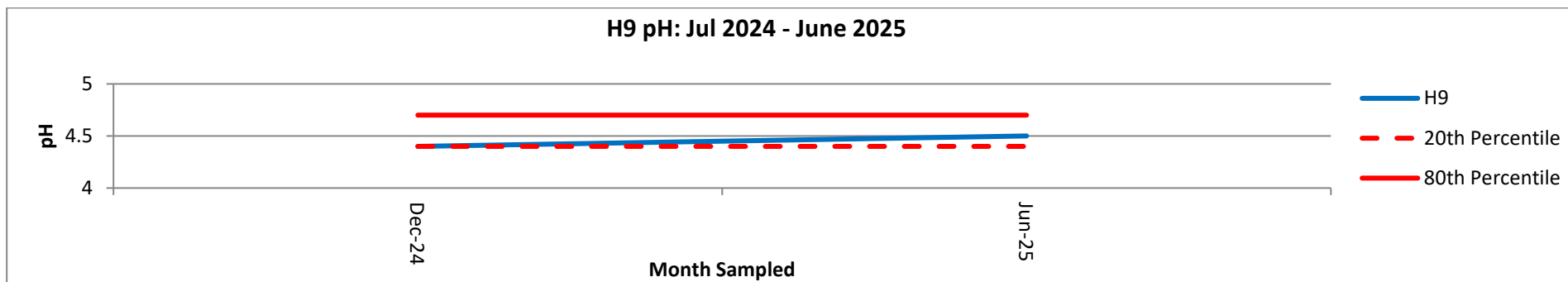


Chart 39: H9 pH Results July 2024 – June 2025.

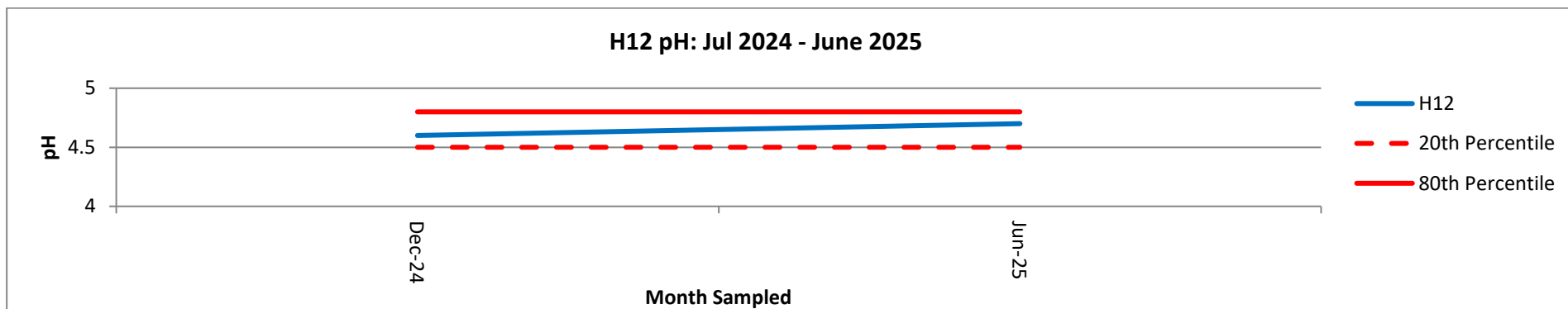


Chart 40: H12 pH Results July 2024 – June 2025.

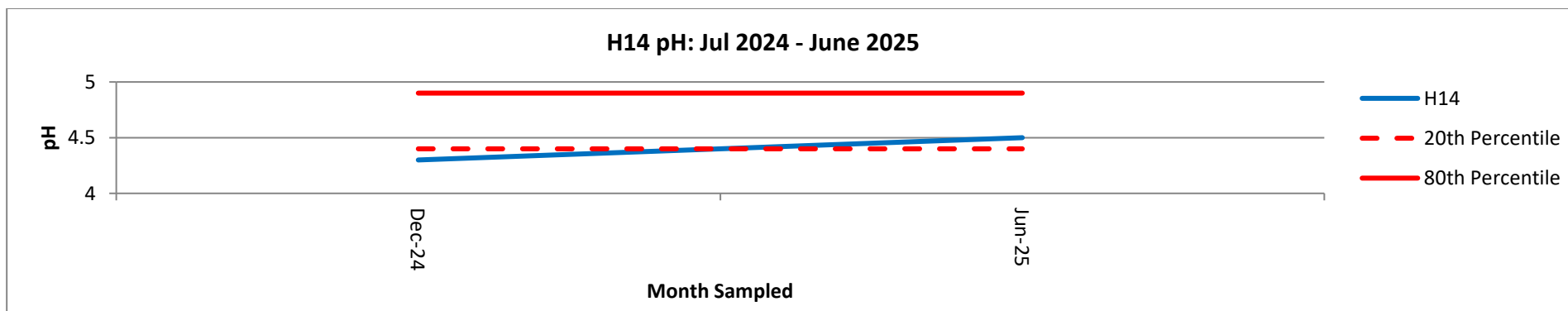


Chart 41: H14 pH Results July 2024 – June 2025.

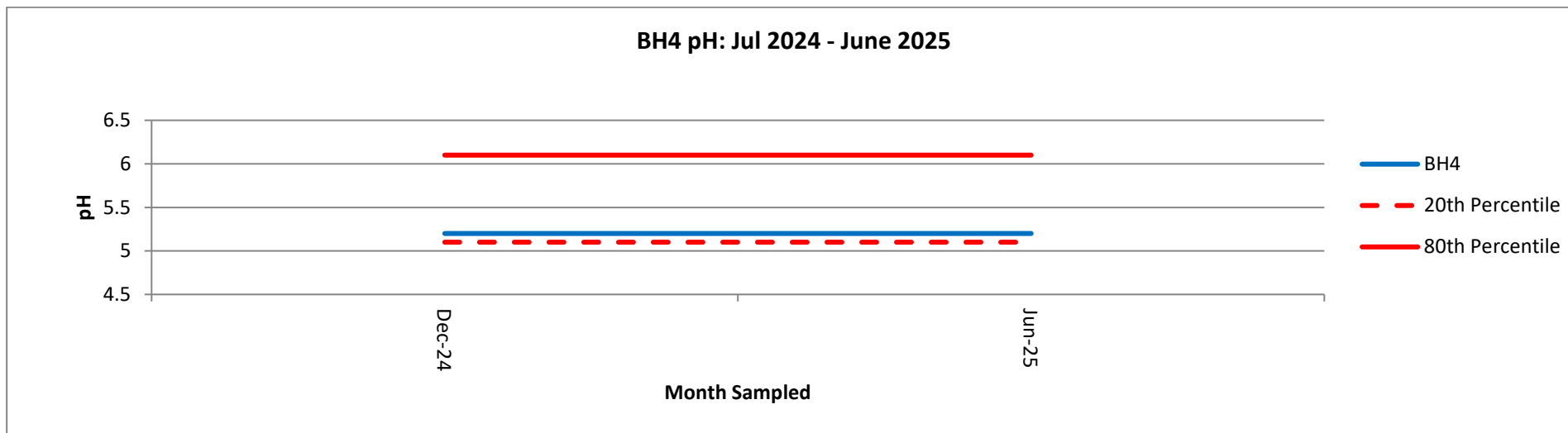


Chart 42: BH4 pH Results July 2024 – June 2025.

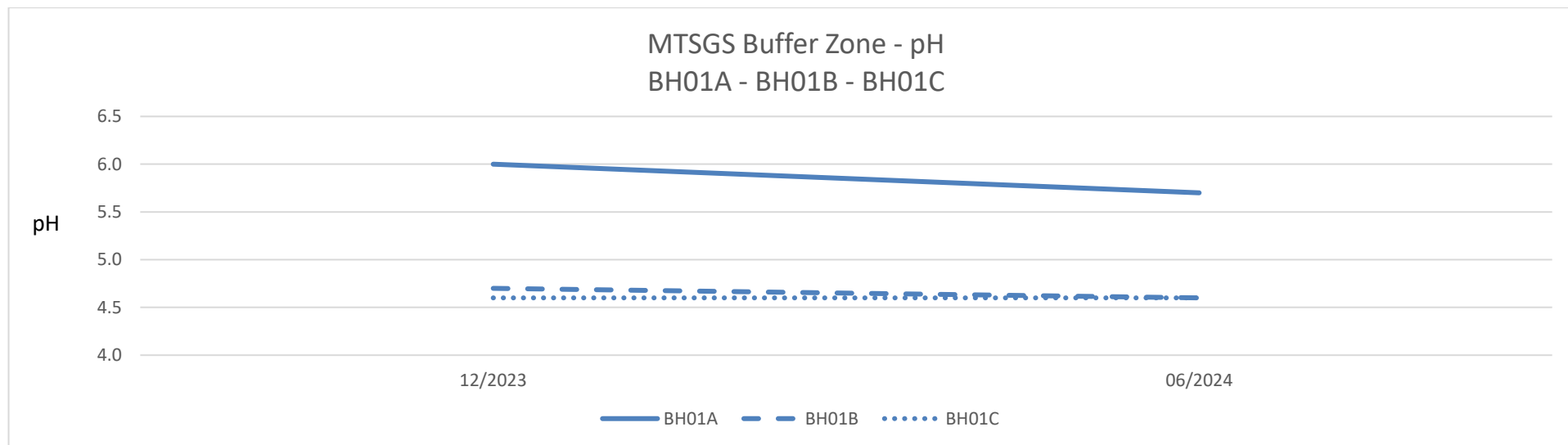


Chart 43: BH01A, BH01B and BH01C pH Results July 2024 – June 2025.

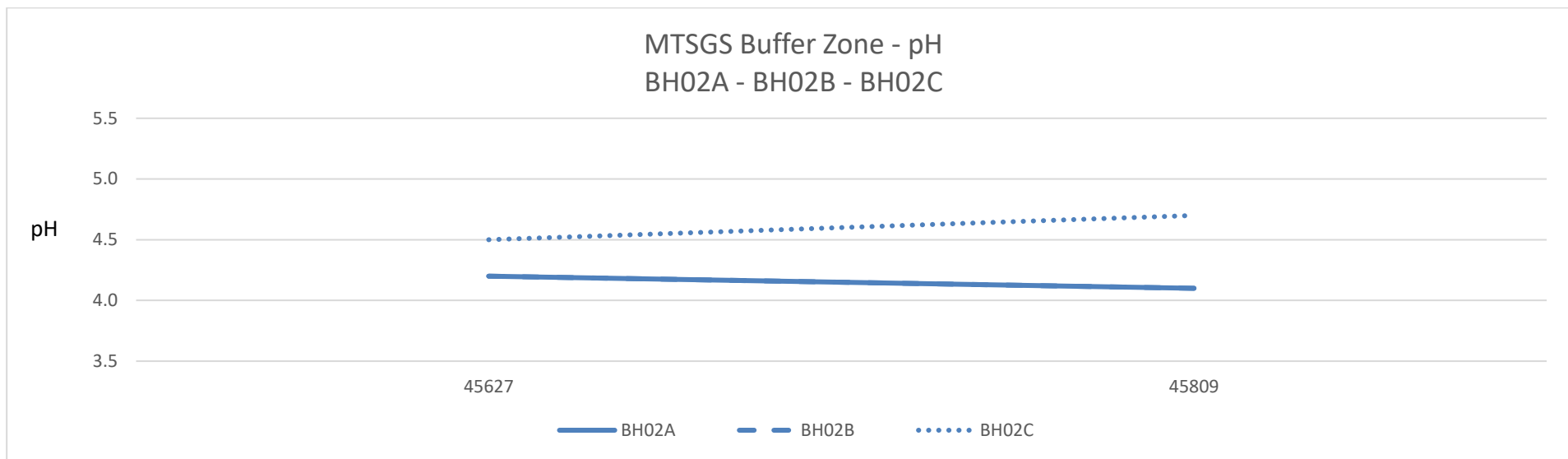


Chart 44: BH02A, BH02B and BH02C pH Results July 2024 – June 2025.

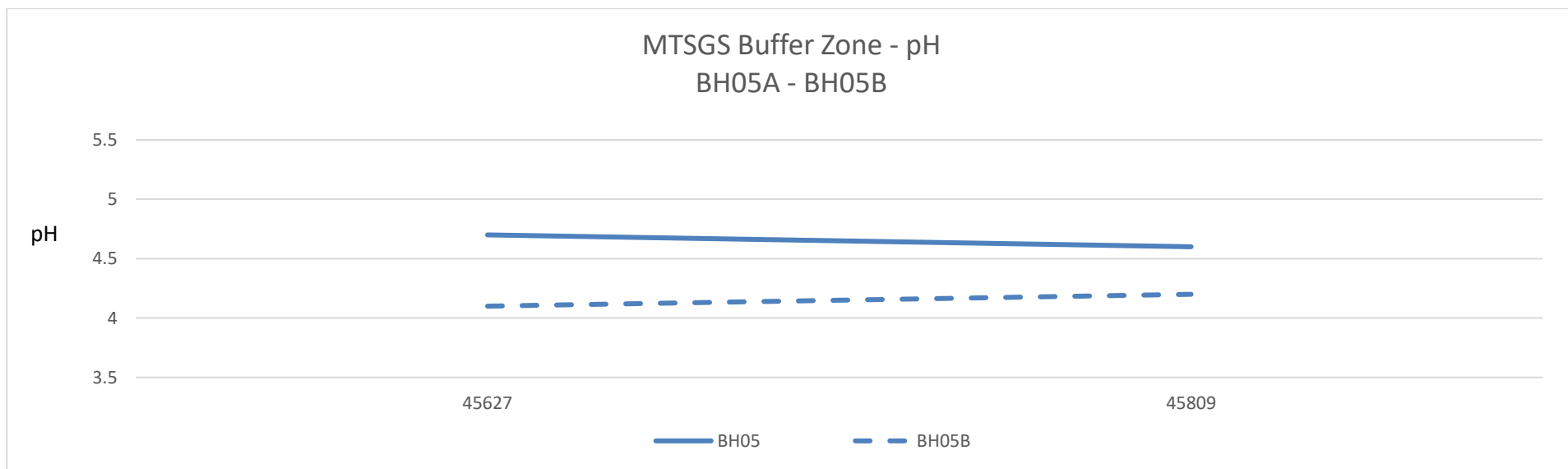


Chart 45: BH5 and BH05B pH Results July 2024 – June 2025.

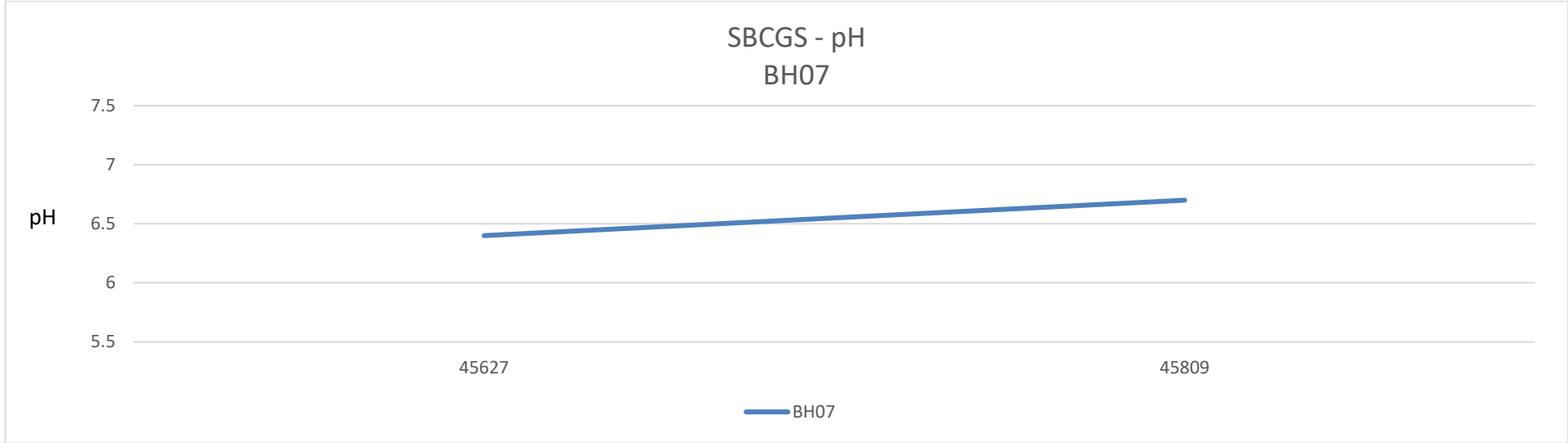


Chart 46: BH7 pH Results July 2024 – June 2025.

Haerses Road Long Term Electrical Conductivity Jul 2011 - Jun 2025

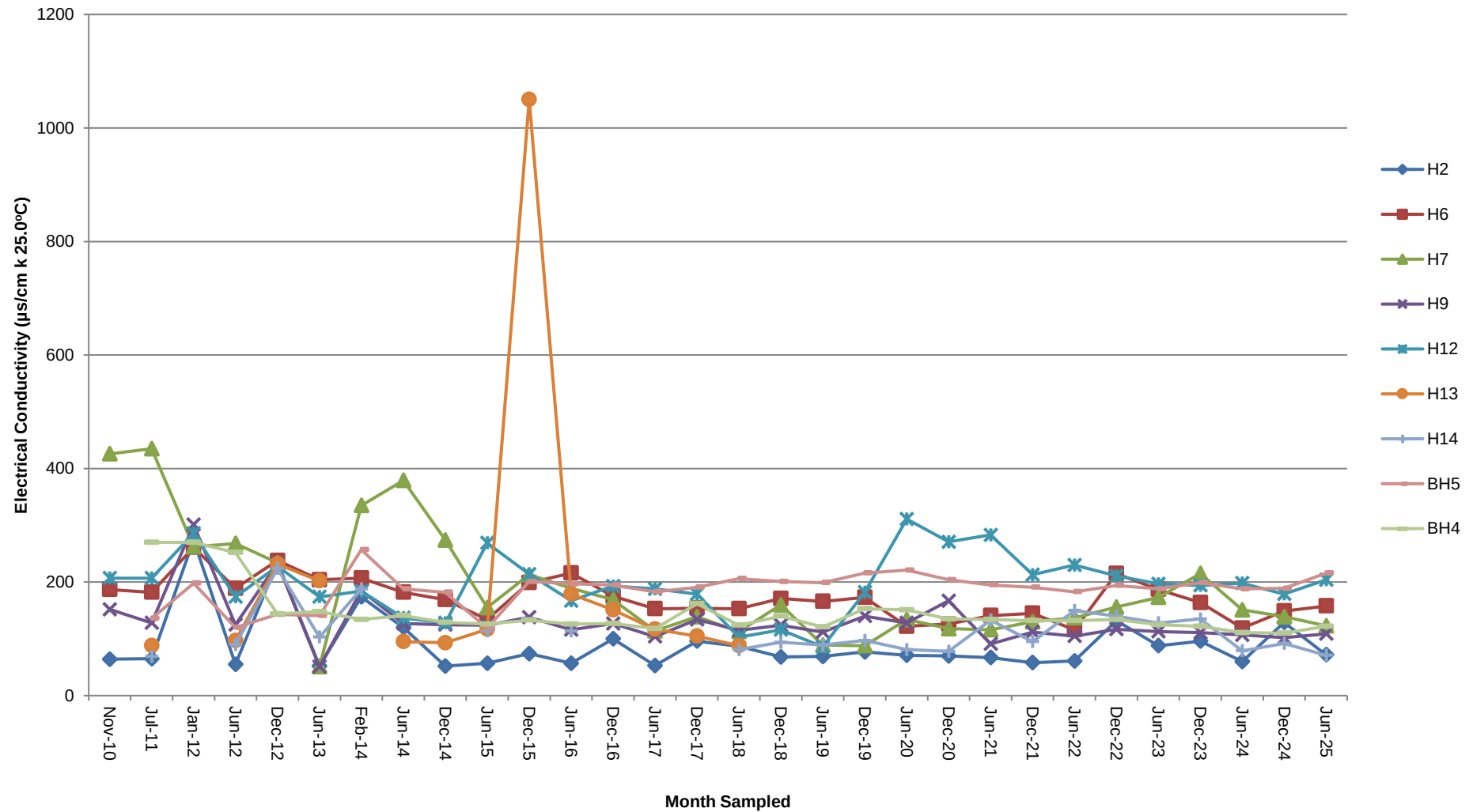


Chart 47: Haerses Road Long Term Electrical Conductivity – H series, BH4 and BH5

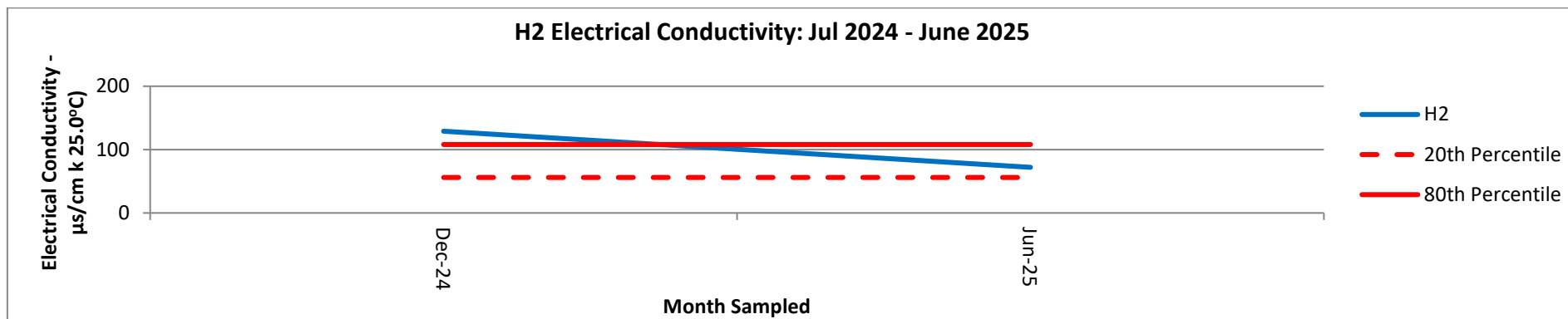


Chart 48: H2 Electrical Conductivity Results July 2024 – June 2025.

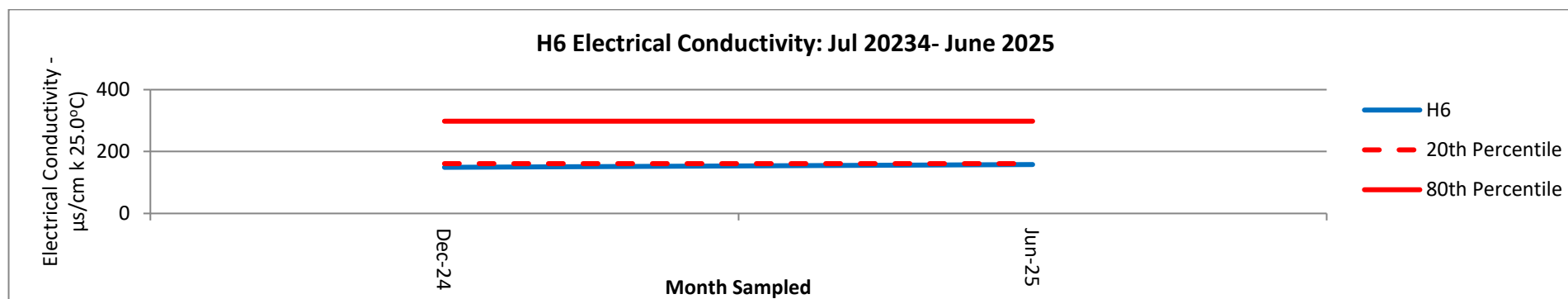


Chart 49: H6 Electrical Conductivity Results July 2024 – June 2025.

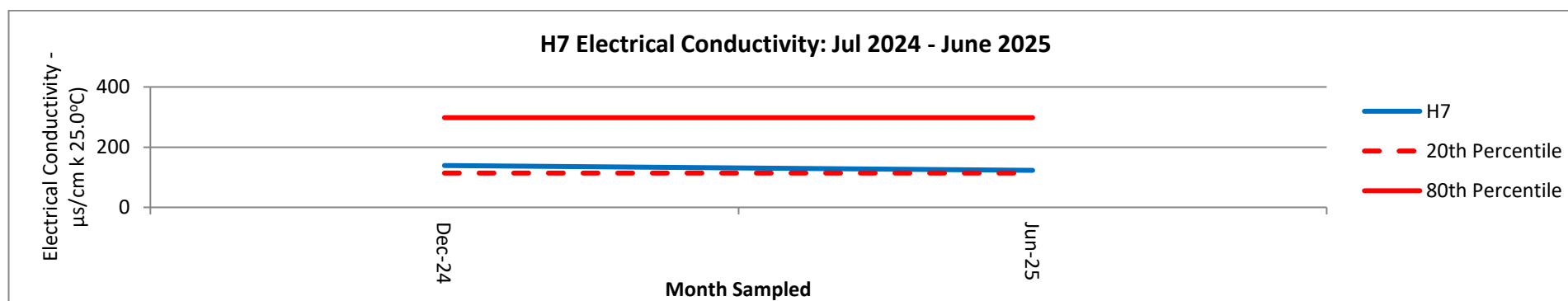


Chart 50: H7 Electrical Conductivity Results July 2024 – June 2025.

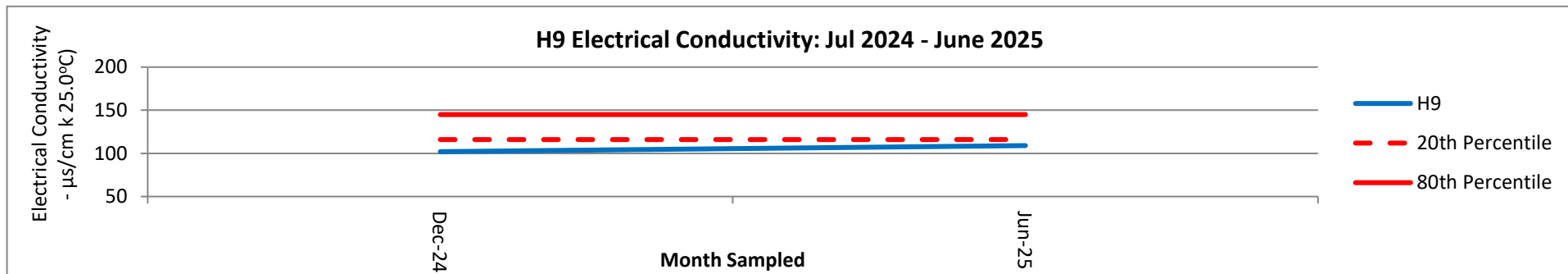


Chart 51: H9 Electrical Conductivity Results July 2024 – June 2025.

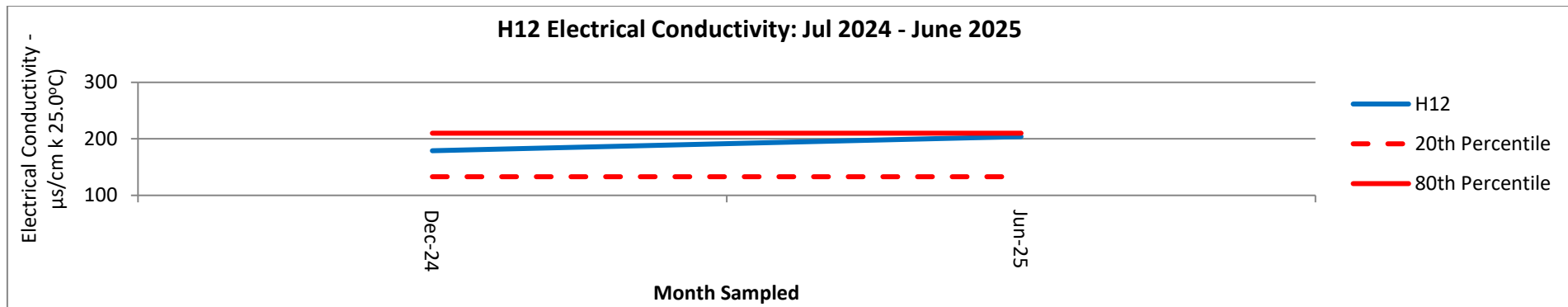


Chart 52: H12 Electrical Conductivity Results July 2024 – June 2025.

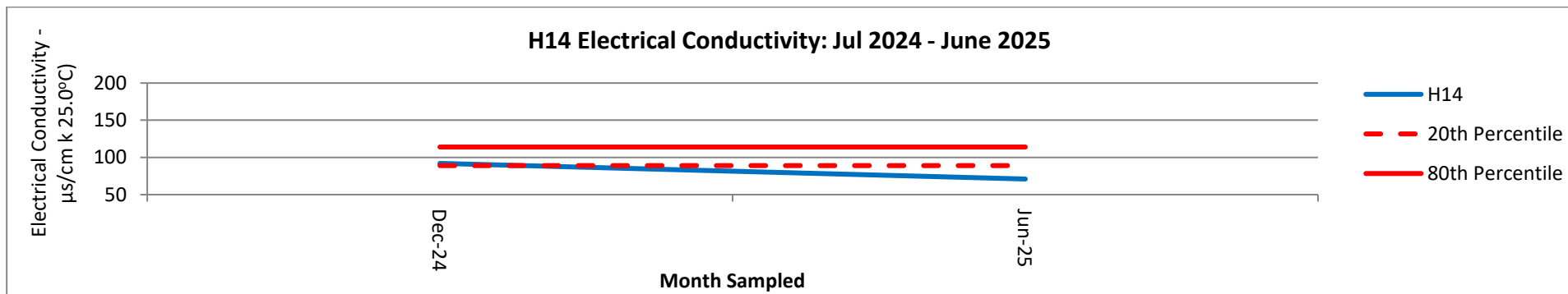


Chart 53: H14 Electrical Conductivity Results July 2024 – June 2025.

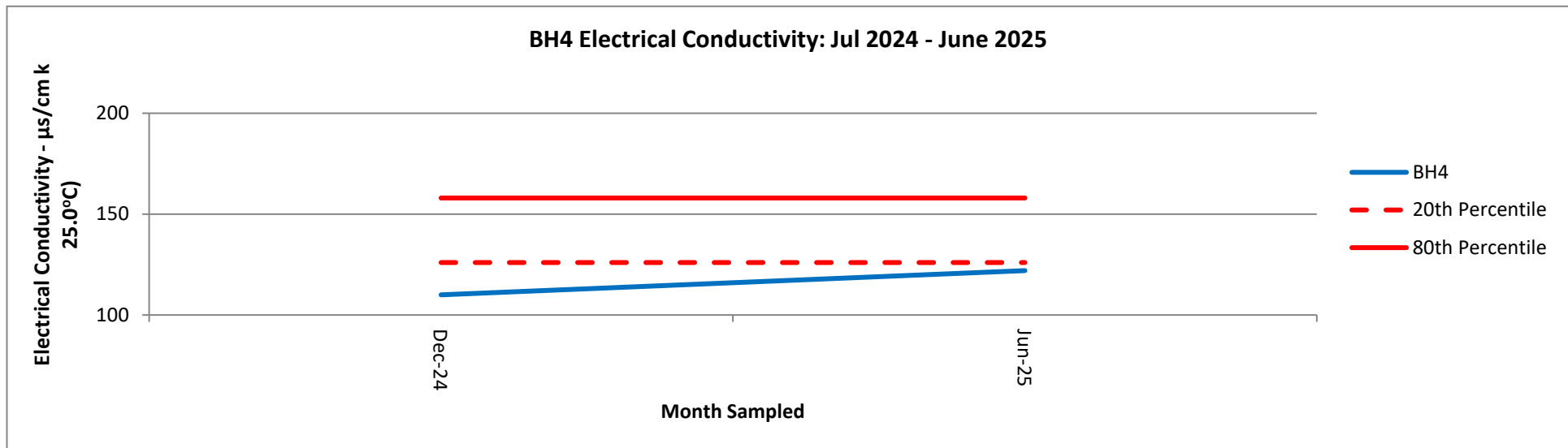


Chart 54: BH4 Electrical Conductivity Results July 2024 – June 2025.

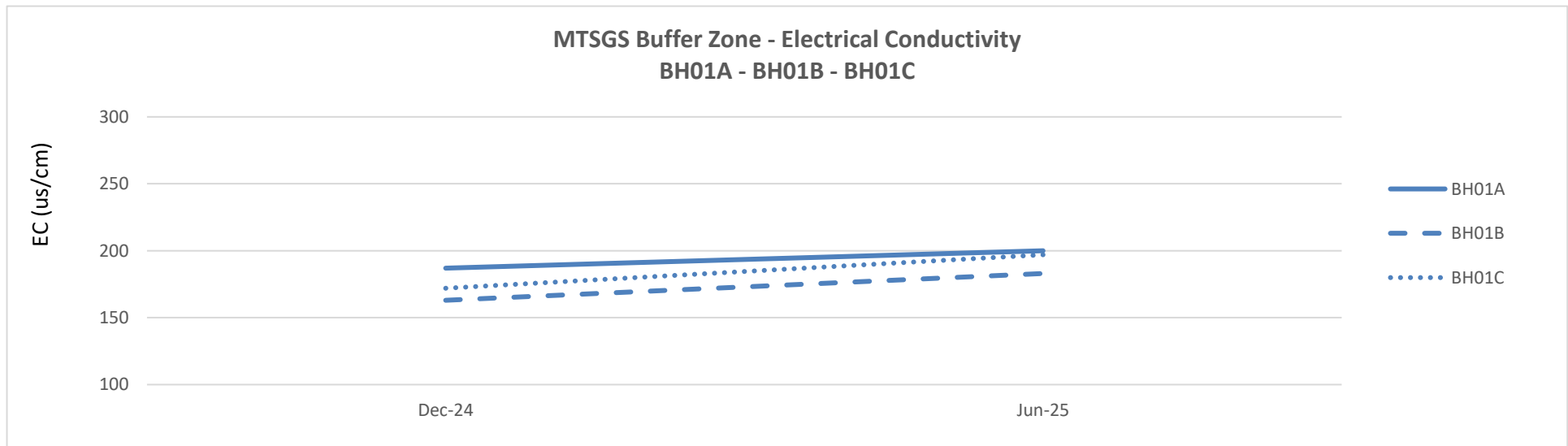


Chart 55: BH01A, BH01B and BH01C Electrical Conductivity Results July 2024 – June 2025.

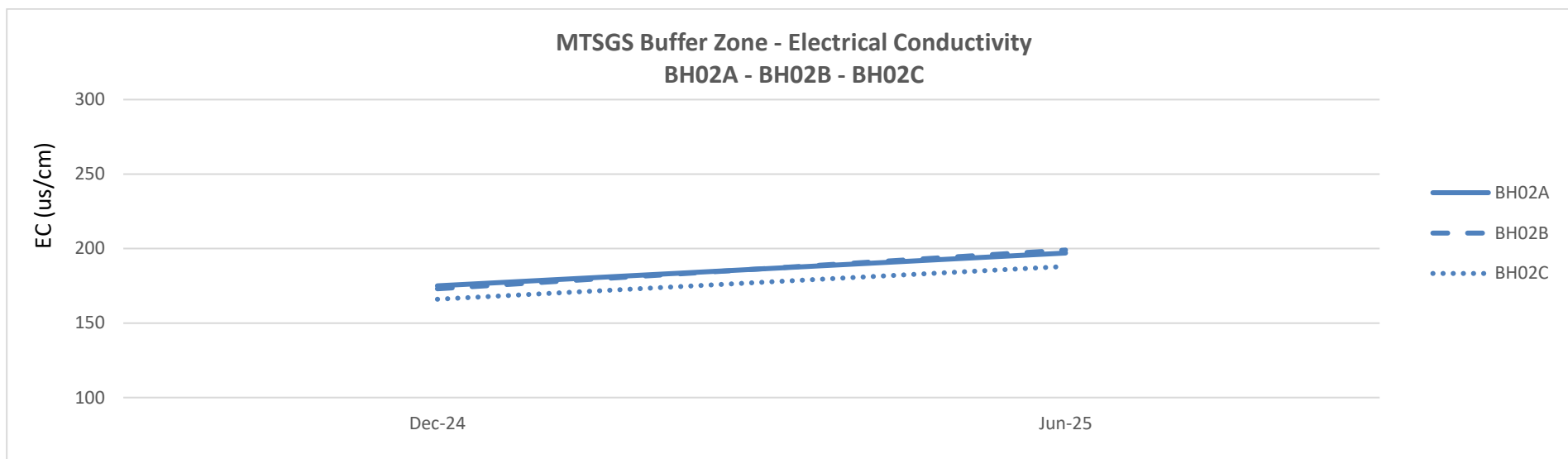


Chart 56: BH02A, BH02B and BH02C Electrical Conductivity Results July 2024 – June 2025.

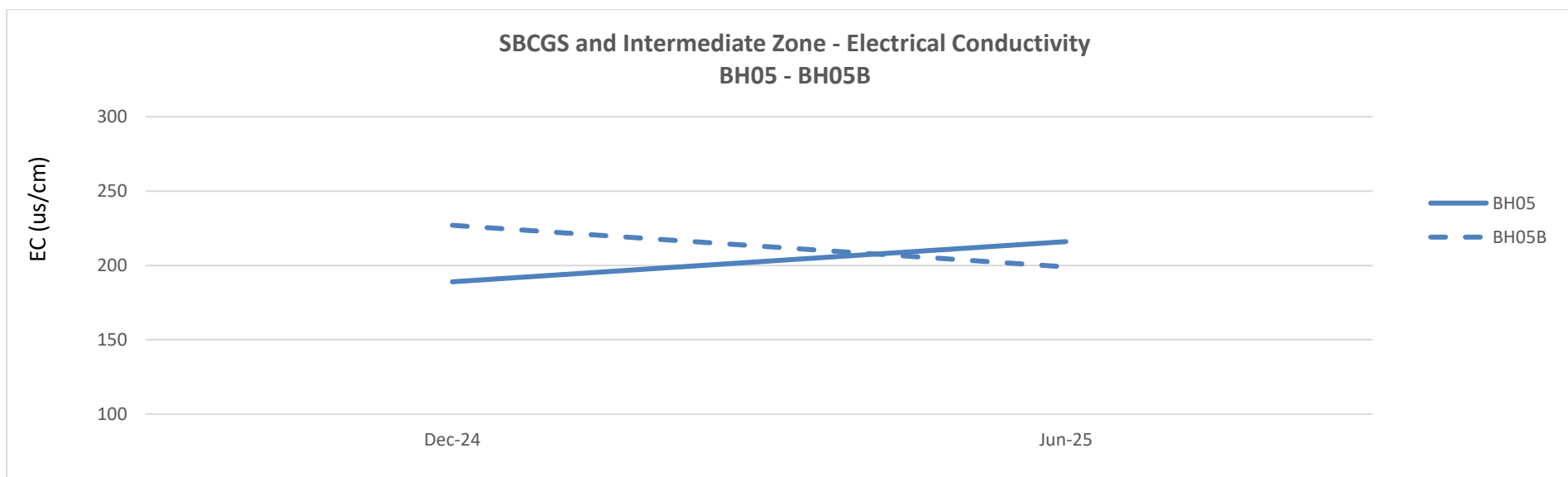


Chart 57: BH5 and BH05B Electrical Conductivity Results July 2024 – June 2025.

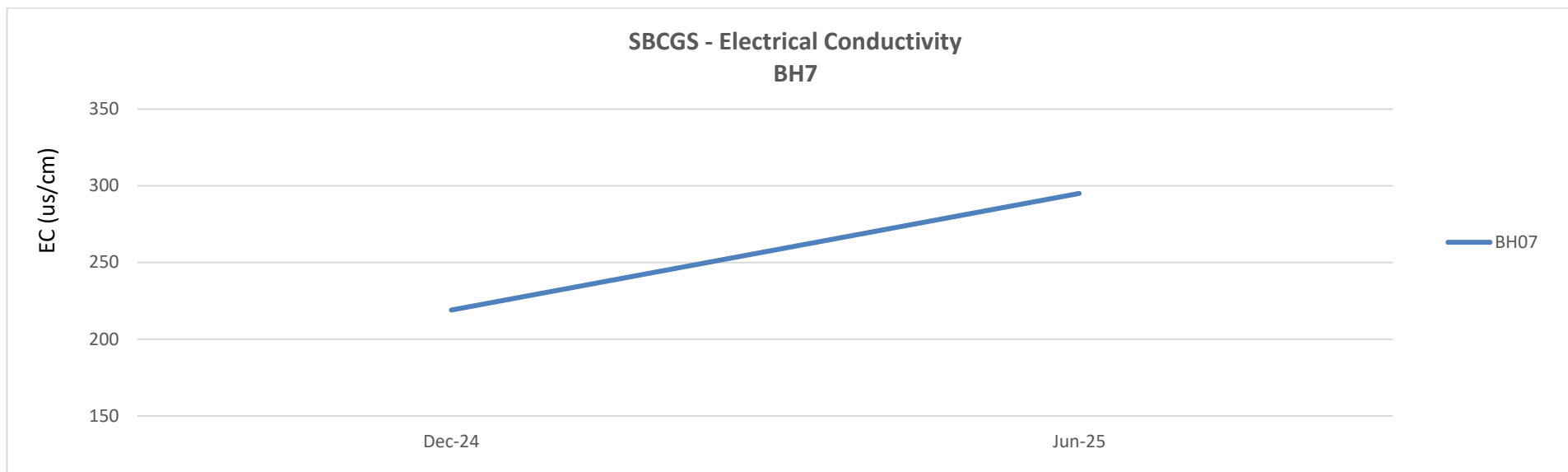


Chart 58: BH7 Electrical Conductivity Results July 2024 – June 2025.

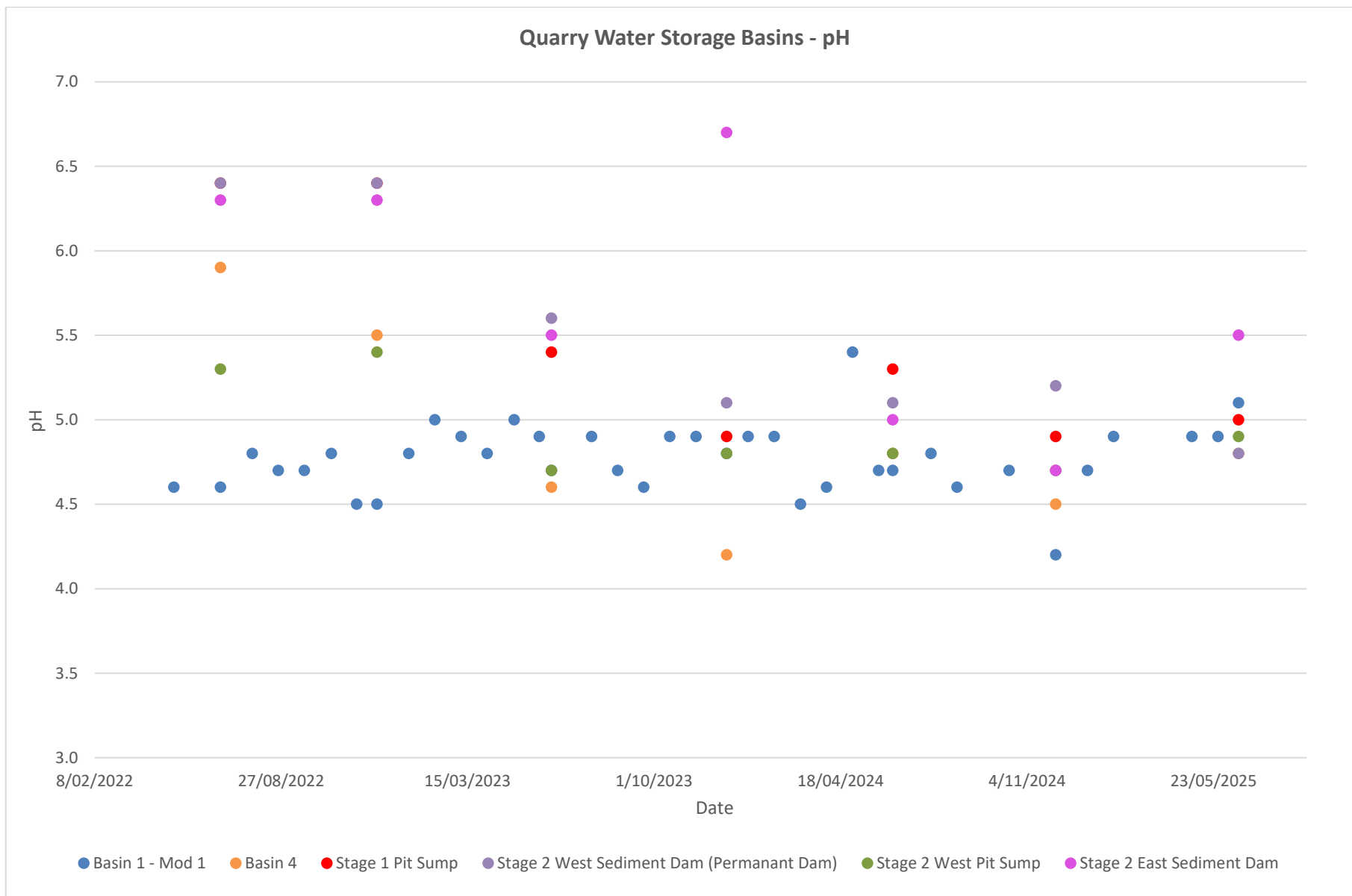


Chart 59: Quarry water storage basins - pH.

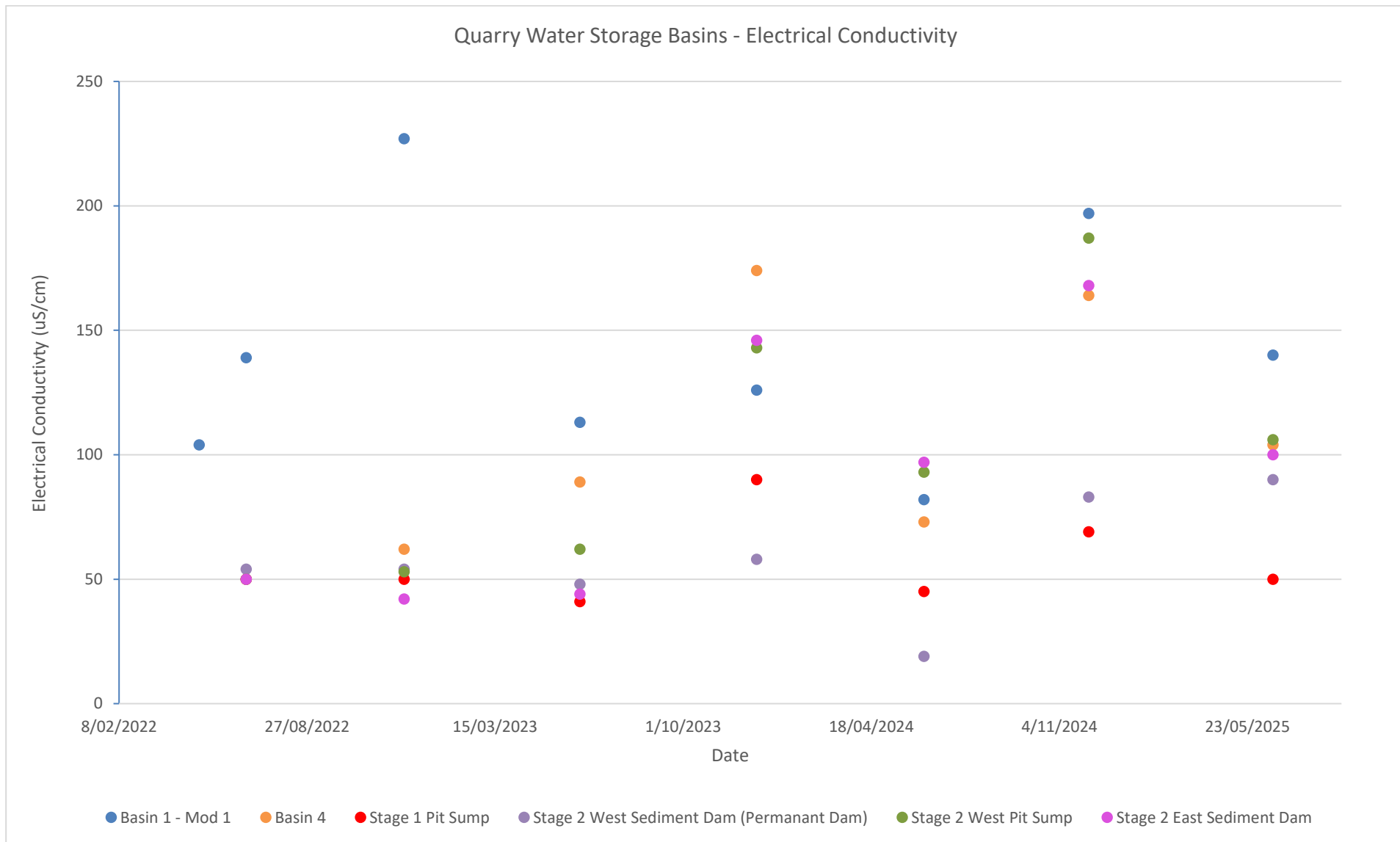


Chart 60: Quarry water storage basins – Electrical Conductivity

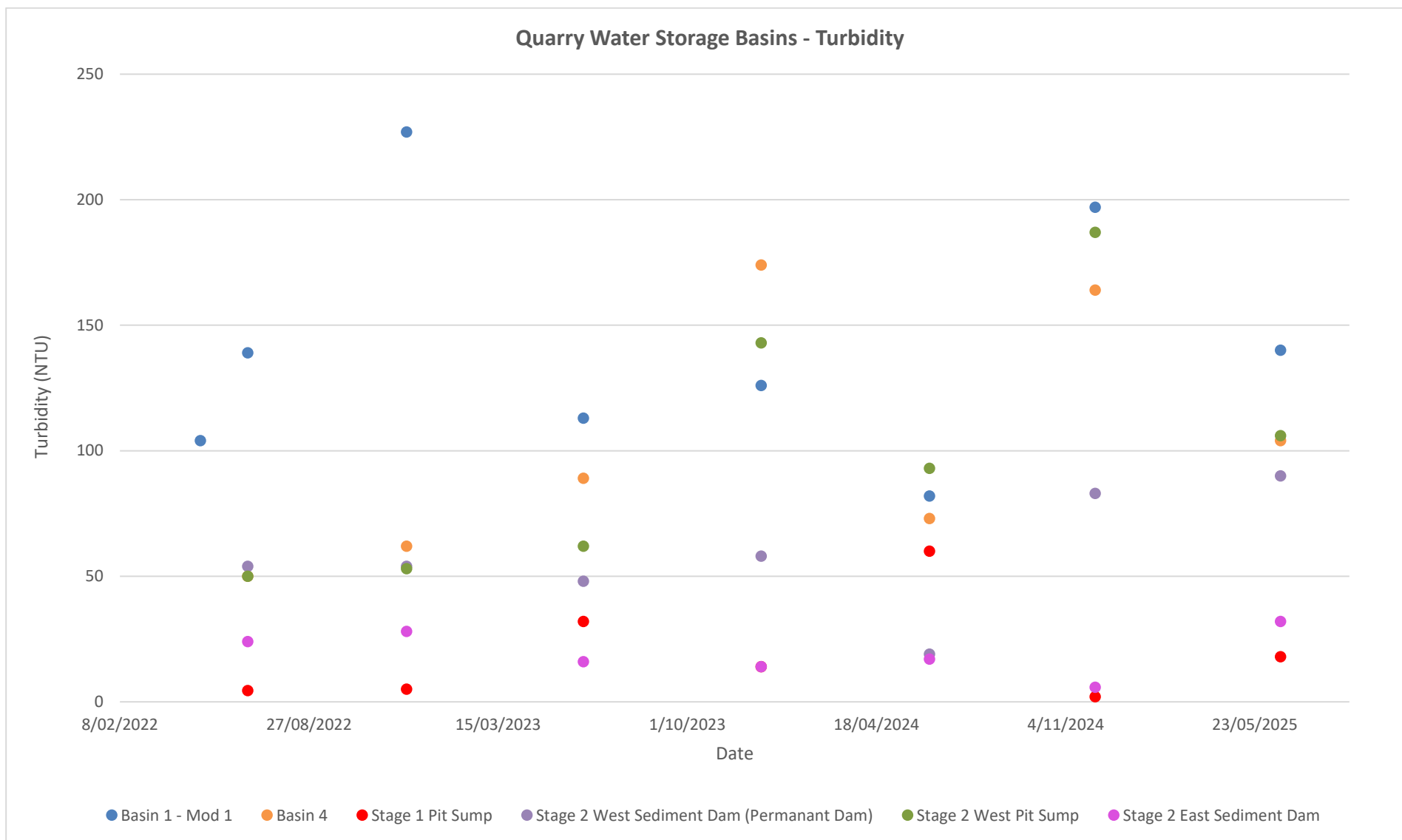


Chart 61: Quarry water storage basins – Turbidity

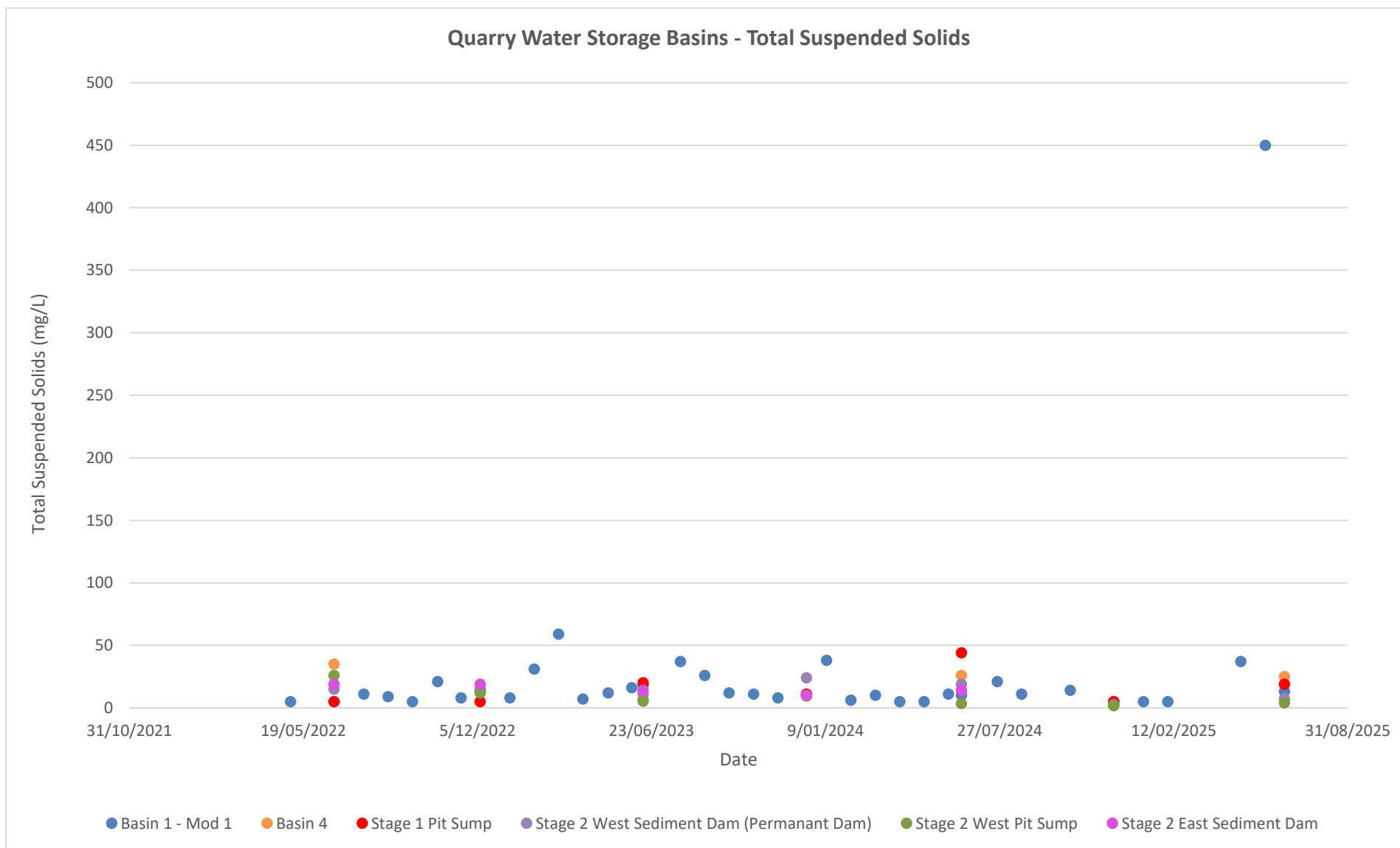


Chart 62: Quarry water storage basins – Total Suspended Solids

Table 24: SW1 and SW2 laboratory results

Sample Date	pH		Total Suspended Solids (mg/L)		Turbidity (NTU)	
	SW1	SW2	SW1	SW2	SW1	SW2
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.

6.4 Analyses

Groundwater Levels

During the 2024 – 2025 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 July 2022 where a sharp rise in water levels was a result of aquifer recharge after significant rainfall events (refer to Chart 18). In comparison, lower water levels were observed over the 2017 – 2018, 2018 – 2019 and 2019 - 2020 reporting periods due to extended drought conditions with less than average annual rainfall being evident. Since the 2020 – 2021 reporting period, rise in groundwater levels have been recorded with the La Nina climatic condition and the return of average rainfall.

Minor water level fluctuations have been recorded during this reporting period for Boreholes BH4, BH5 and the newly installed BH7 which monitor the SBCGS however, there has been a relatively stable trend since the commission of these boreholes in 2011.

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 has commenced since July 2018. Six boreholes in MTSGS buffer zone have been decommissioned and one new borehole installed. The minor reduction in groundwater levels was due to monthly sampling of water using the low flow pump out methodology for laboratory analysis (refer to Charts 25 to 30 inclusive, 32 to 34 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 35 and 47. 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 MTS GS buffer zone will be further discussed in Section 6.8.

Surface Water

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 some 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 or insufficient flow for sampling. 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.

Basin Water Quality

Surface water monitoring for quarry related water storage basins commenced in May 2022 to date, equating to approximately 3 years of monitoring. Charts 59 – 62 inclusive show pH, electrical conductivity, turbidity and total suspended solids result for five quarry related water storage basin which actively support quarry operations.

pH levels across the water storage dams generally fall within the slightly acidic range with occasional results returning results closer to the neutral end of the pH scale.

Electrical conductivity results are within the 0 – 250 uS/cm range.

Turbidity results are within 0 – 250 NTU.

Total suspended solid results range from 0 – 59 mg/L with one anomaly recorded at 450 mg/L possibly due to significant rainfall events which occurred in May 2025.

Overall, the pH, electrical conductivity, turbidity and total suspended solids result in the five water storage basins are influenced by quarry operations due water being transferred between the different basins and different stages of the quarry to support quarry operations.

6.5 Review of Maximum Extraction Depth Map

A review of the Maximum Extraction Depth Map (MEDM) was undertaken by WSP Golder 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 15 April 2023. The revised MEDM (April 2023) was approved by DPHI on 8 December 2023.

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 29 June 2025 by Dixon Sand as part of the Annual Review. No changes to the current MEDM (April 2023) are warranted. Additional monitoring data for BH07 will aid in the next review and revision of the MEDM to increase accuracy in the groundwater modelling across the site.

The next review of the MEDM will be undertaken within 3 months of the IEA which is scheduled for late 2025.

6.6 Water Access License Usage

The Annual Returns for Water Access Licences (WALs) 25941 and 25956 for the 2024 - 2025 reporting period were submitted to WaterNSW in July 2025. The total water usage and usage purposes for each WAL are listed in Table 25 below.

Table 25: Water usage for Water Access Licences during the Financial Year 2024 – 2025.

Water Access License Number	Annual Water Usage (Megalitres)	Usage Purpose
WAL 25941	2.8	Crop irrigation by onsite farmers
WAL 25956	8.5	Plant irrigation by onsite plant nursery
	20.2	Quarry operation

6.7 Water Balance Monitoring

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

Table 26: Quarry Water Balance monitoring in accordance with Soil and Water Management Plan.

Monitoring Item	Response
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)	Overall water transfer from the WAL access point to quarry operation recorded.

Monitoring Item	Response
Monthly clean water imports volumes;	A total of 20.2 megalitres of water was utilised for quarry operations in accordance with the WAL conditions.
Monthly processing plant water consumption (if constructed) (either metered or based on rated pump capacity and run time).	Wet processing plant not yet in operation 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.

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.

6.8 Groundwater Monitoring Program for Bores located in the 100m MTSGS Buffer

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 (now Department of Climate Change, Energy, the Environment and Water – Water Division) 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 (now DCCEEW – Water). On 4 September 2020. On 24 May 2021 Dixon Sand received the confirmation of satisfaction from NRAR.

Dixon Sand received the DPHI'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).

Subsequently, a number of cluster boreholes have been removed due to their location being in extraction area. These include BH03A – BH03B – BH03C cluster and BH06A – BH06B – BH06C cluster. After the recent review of the 6-monthly groundwater data for the 100m buffer to the MTSGS, Dixon Sand received a recommendation from DCCEEW - Water to replace the decommissioned monitoring boreholes BH06A, BH06B and BH06C with a new monitoring borehole targeting the SBCGS. Dixon Sand engaged WSP Golder to undertake an assessment of the most appropriate location and design specification for the new bore. It was proposed that the new monitoring bore be installed in the south-western corner of Extraction Cell 1A in the Modification 1 extraction area. This proposal was accepted by DWWECC - Water on 24 May 2023. BH07 was commissioned in August 2023.

6.9 Chages to Environmental Procedures

Current groundwater management measures are considered adequate.

7. Ecological Monitoring and Rehabilitation

7.1 Vegetation Clearing

One vegetation clearing event was undertaken during this reporting period. The remaining of Cell 3B in the Modification 1 area was cleared in April 2025.

All vegetation clearing were undertaken in accordance with the pre-clearing survey and multi-stage habitat tree clearing protocols. Appropriate briefing and induction were provided to the relevant staff prior to undertaking vegetation clearing.

7.2 Bush Regeneration 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 274 hours were spent on bush regeneration works at Haerses Road Quarry, equating to approximately 42% of the time spent between Haerses Road Quarry and Old Northern Road Quarry.

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

- Area A - western perimeter edge of Haerses Road Biobanking Site under the BCT agreement,
- Area B - original translocation and planting offset area located east of Stage 2 west (Lot 177 DP 752039),

- Area C - Old dam area in Stage 3 (south-western),
- Area D – area within Stage 2 west extraction
- Area E – 30m vegetation buffer from Wisemans Ferry Road.

Bush regeneration works involved mechanical and chemical methodologies.

Figures 6 to 9 (inclusive) illustrate the areas and methodologies where bush regeneration works have been completed during this reporting period.

The Annual Rehabilitation Report provided by the contractor for the 2024 - 2025 reporting period is attached as Appendix G.



Figure 6: Location of bush regeneration works within the western boundary of the biobank area, offset area, old dam in Stage 3 and Stage 2 west (source: BushIT 2025).

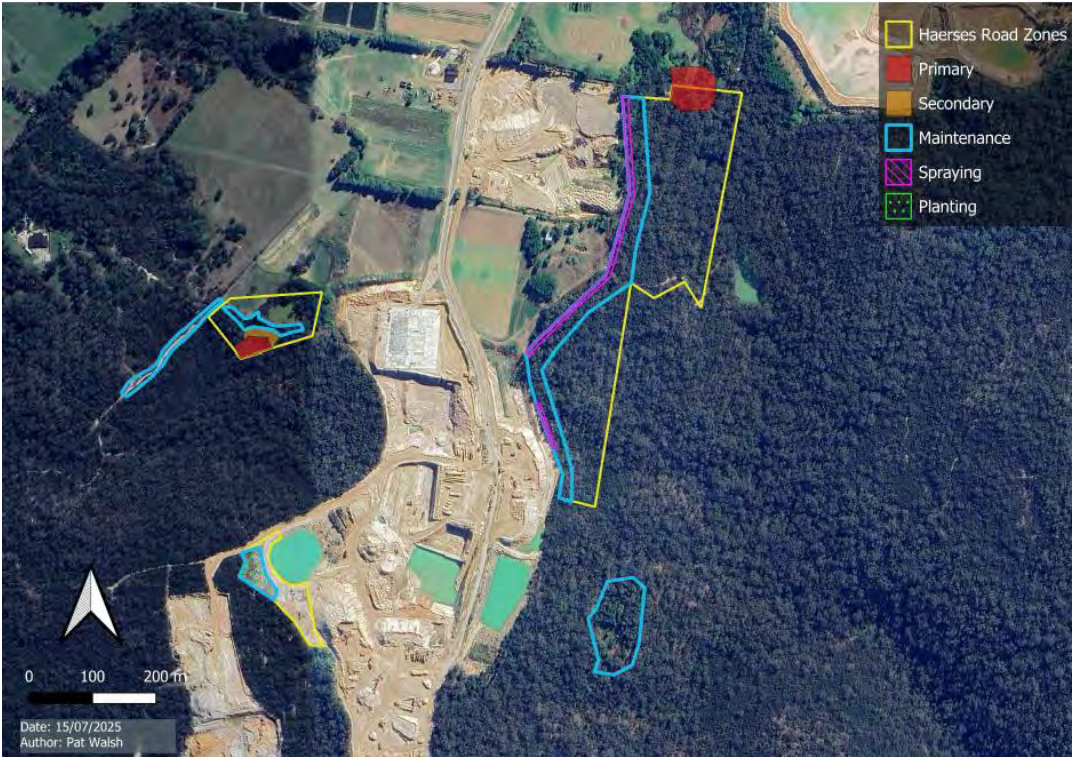


Figure 7: Bush regeneration methodologies undertaken within the western boundary of the biobank area, offset area, old dam in Stage 3 and Stage 2 west (source: BushIT 2025).



Figure 8: Location of bush regeneration works within the 30m buffer to Wisemans Ferry Road (source: BushIT 2025).



Figure 9: Bush regeneration methodologies undertaken within the 30m buffer to Wisemans Ferry Road (source: BushIT 2025).

7.2.1 Haerses Road Biobank Site (Area A) and Porters Road Biobank Site

During this reporting period, Porters Road Biobank Site reached its active management status in September 2024 whilst Haerses Road biobank site remains under passive management status.

Management actions contained within the Porters Road biobanking agreement have commenced during this reporting period. Bush regeneration (namely weed management) was undertaken for Porters Road biobank site in July 2025, which lie outside the reporting period of this Annual Review.

Even though Haerses Road biobank site is still under passive management, its western and northern perimeters border exotic grassland containing several different invasive perennial grass and exotic annual species, weed management through spraying, secondary and maintenance works have occurred in the area highlighted in Figure 7.

The annual active and passive management reports for both biobank sites were submitted to the BCT within the specified reporting deadlines.

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

7.2.2 2009 Translocation Site and Original Offset (Area B)

Rehabilitation works in the translocation and original offset areas began in 2009. During this reporting period, a combination of spraying and maintenance works were undertaken in the areas shown in Figure 7 which 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.

7.2.3 Old Dam in Stage 3 (Area C)

This area is located in close proximity to the western Haerses Road Biobank site and therefore, weed management at this location has been included as one of the primary management areas with works commencing in the previous reporting period. The area around the old farm dam located in Stage 3 has been subjected to historical neighbouring agricultural activities in the immediate area which resulted in encroachment of weed infestation particularly *Lantana camara* with other weeds such as *Ageratina adenophora* (Crofton weed) and *Andropogon virginicus* (Whisky grass) being present. Primary works continued from the previous year with significant reduction in the *Lantana camara* infestation. Management of Whiskey grass expanded to cover the groundwater monitoring network vehicle track which runs along the western boundary of the biobank site.

7.2.4 Stage 2 West (Area D)

This area has been subjected to revegetation work with good natural recruitment. Planting of 36 native shrubs and canopy species was undertaken in this area.

7.2.5 Wisemans Ferry Road 30 Metre Buffer (Area E)

The Haerses Road and Wisemans Ferry Road intersection upgrade works have severely impacted access for maintenance of this area during the 2020-2021 reporting period. Further assisted revegetation and rework to this area commenced since the completion of the intersection upgrade work and including during this reporting period. Supplementary planting, weed spraying and manual removal and maintenance works were carried out.

The works area is categorised into sandstone 'capped' (east of intersection) and 'uncapped' (west of intersection) areas.

In the capped areas, regular scans of Weeds of National Significance (WoNS) species were undertaken with a focus on *Cynodon dactylon* (Bermuda grass) management continuing from last year. During the 2022 - 2023 reporting period, this area was stripped back with the aid of quarry machinery, weed species removed and the area capped with crushed sandstone. Planting of approximately 240 native trees, shrubs and ground cover species was undertaken in this area during the 2022 – 2023 reporting period, followed by routine weed monitoring and treatment of exotic grasses such as Kikuyu and couch, and blackberry throughout the previous and previous reporting period. Since rework began in 2020, 50 plants were planted in the capped area during the previous reporting period. An additional dozen of *Angophora hispida* was planted along the swale.

In the uncapped area, Weeds of National Significance has managed with a focus on eradicating *Asparagus aethiopicus* (Asparagus fern), *Asparagus asparagoides* (Bridal creeper), *Rumex sagittatus* (Turkey rhubarb) and *Rubus fruticosus* (Blackberry). An additional 50 plants were supplementary planted in the uncapped area during this reporting period, with the aim of assisting break down of compact soil and promote soil enrichment. Additional 70 tubestocks of *Syncarpia glomulifera* and *Banksia ericifolia* were planted amongst last year's planting to close the gap in vegetation.

Overall, the status of the revegetation and screen planting continues to improve since the impact from the 2020 intersection upgrade works.

7.3 Ecological Monitoring

Dixon Sand engaged South East Environmental to undertake the annual biodiversity and rehabilitation monitoring and reporting for Haerses Road Quarry. Progress assessments 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, 2025) 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 v5 (2020), and
- provide an independent monitoring report for inclusion as part of the external reporting for the quarry Annual Review.

Figure 10 shows the buffer zones at Haerses Road Quarry.

Figure 11 shows the location of Haerses Road quarry, in relation to the biobank sites.

Figure 12 displays the areas delegated as the Haerses Road Biobank site (BSA 414).

Figure 13 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 over the next five-year period.

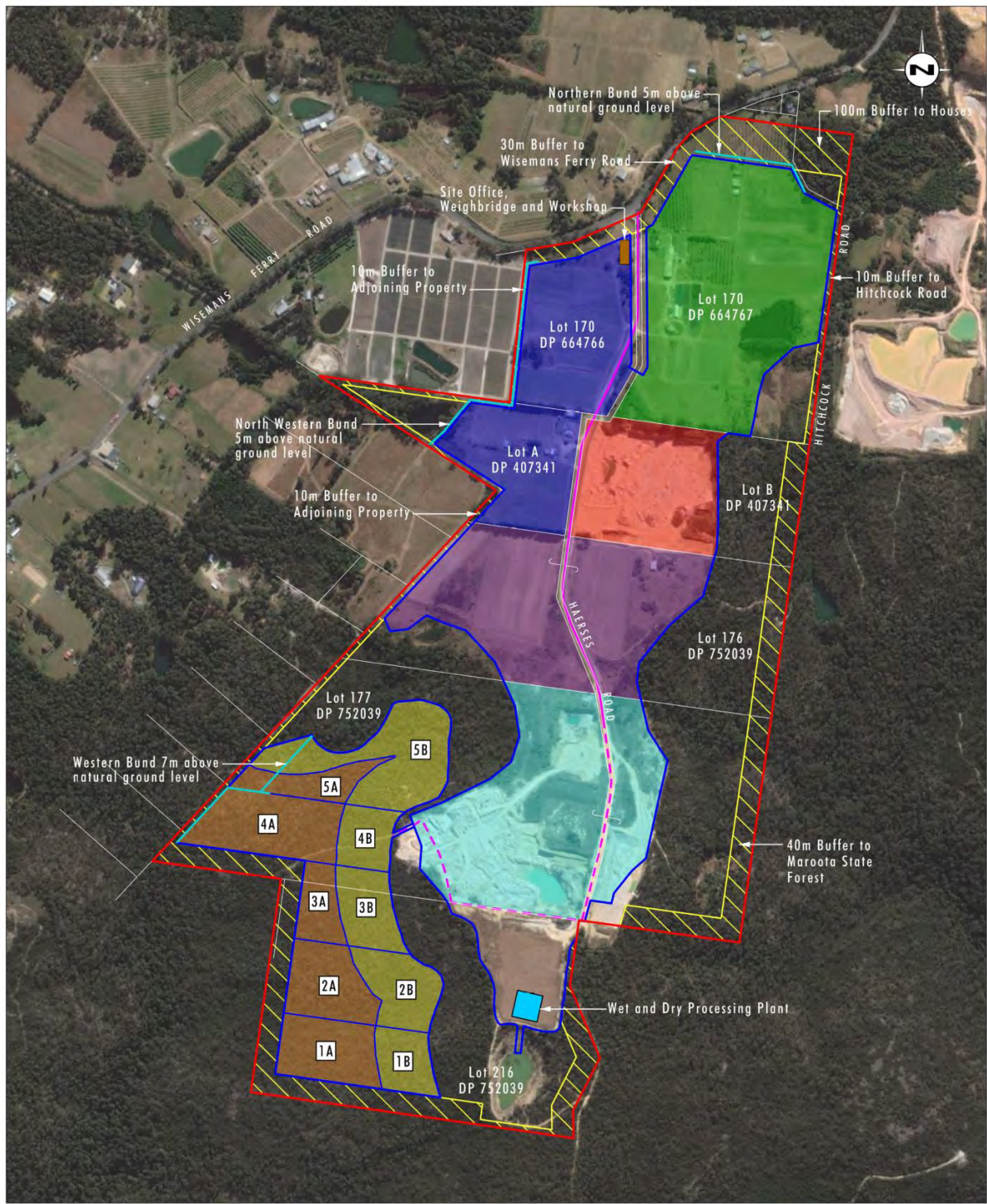


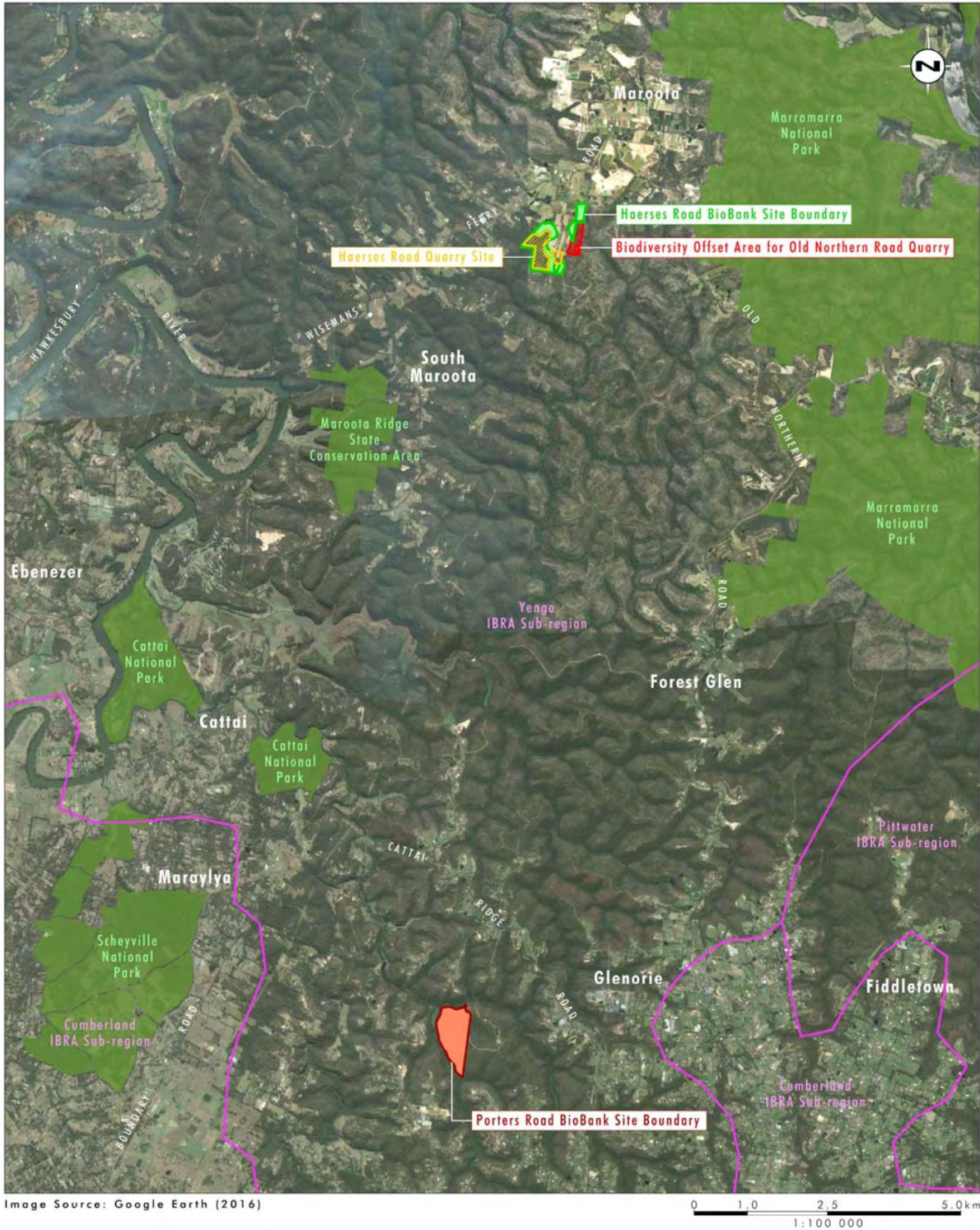
Image Source: Google Earth (Sep 2017)
Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2014)

Legend

- | | | |
|--------------------------|---------------------------------------|------------------------|
| Haerses Road Quarry Site | Extraction Area Stage 5 | Indicative Unsealed Ha |
| Approved Extraction Area | Extraction Area A | Sealed Haul Road |
| Extraction Area Stage 1 | Extraction Area B | Acoustic Bund |
| 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 | |

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20180608 10.10

Figure 10
Buffer Zones,
Haerses Road Quarry



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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Figure 11
Haerses Road and Porters Road
BioBank Sites and HRBOA

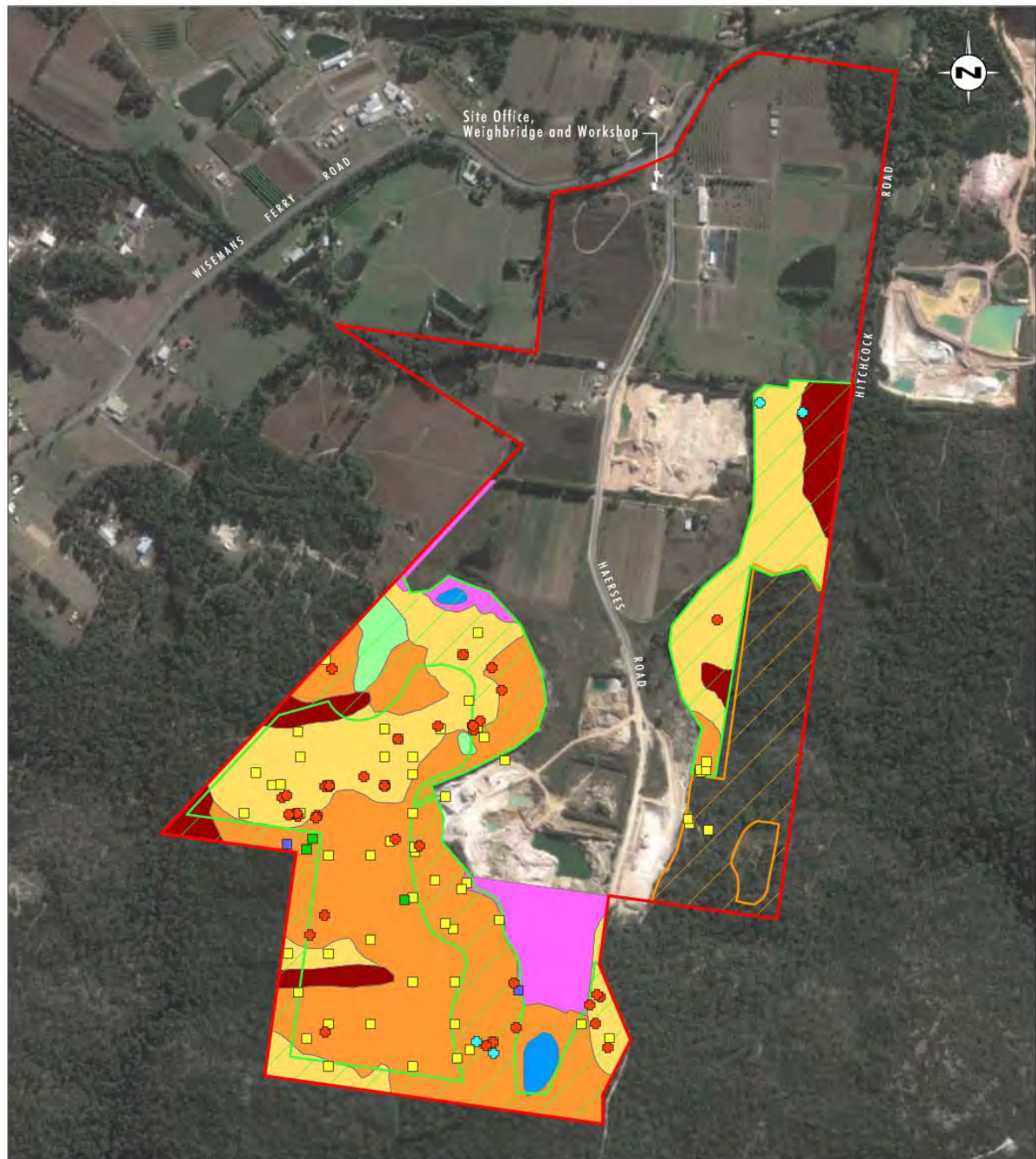


Image Source: Google Earth - DigitalGlobe (May 2016)
Data Source: Mc Kinlay Morgan & Associates Pty Ltd (2014)

Legend

- | | |
|--|--|
| Haerses Road Quarry Site | Dural Land Snail |
| Biodiversity Offset Area for Old Northern Road Quarry | Eastern pygmy-possum |
| Haerses Road BioBank Site Boundary | <i>Darwinia biffora</i> |
| Cleared | <i>Grevillea parviflora subsp supplicans</i> |
| Dam | <i>Tetratheca glandulosa</i> |
| 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 | |

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Figure 12
Haerses Road BioBank Site
and HRBOA

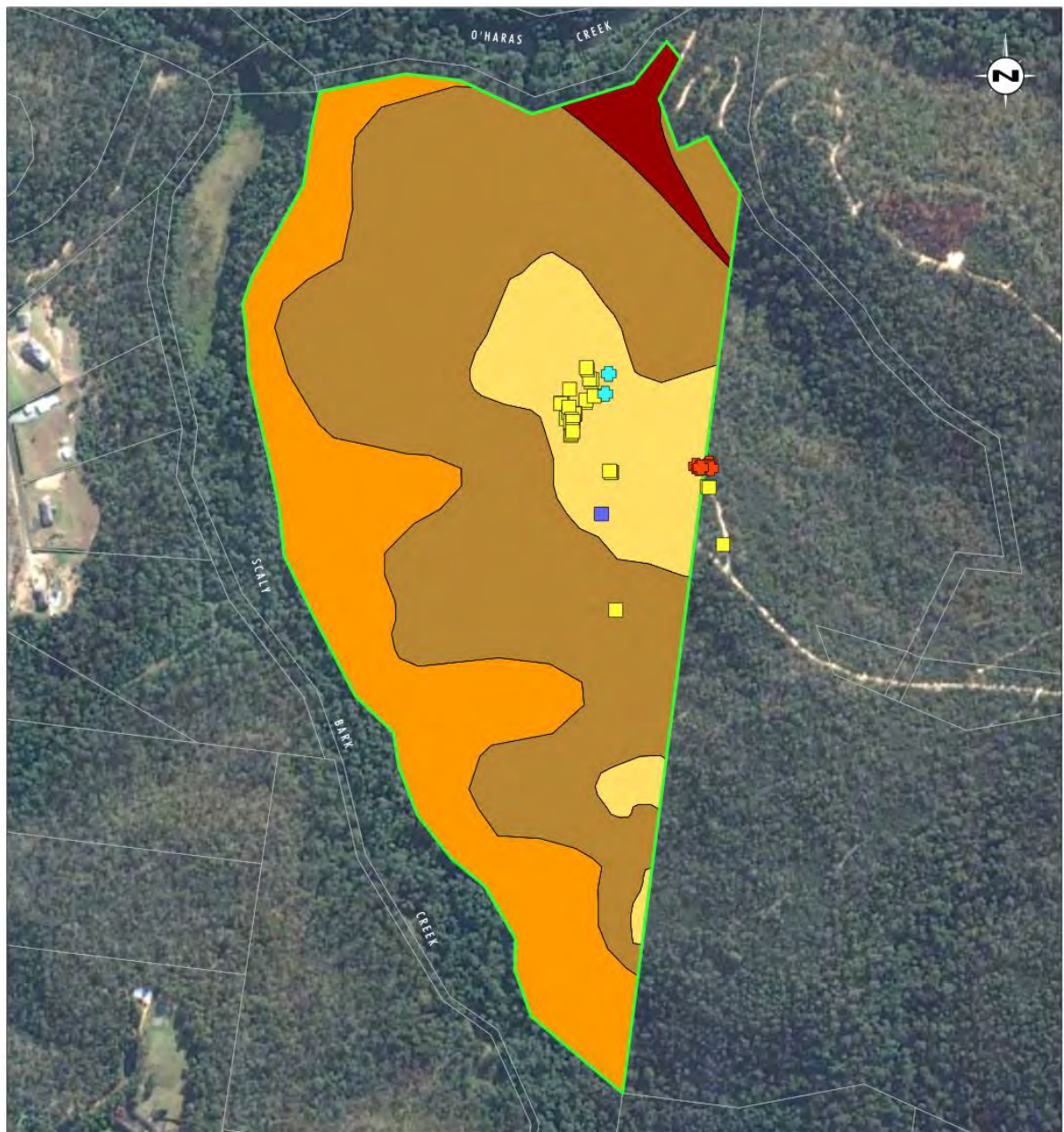


Image Source: Google Earth (2015)

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

Tetratheca glandulosa

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Figure 13
Porters Road BioBank Site

7.3.1 Stage 1 Extraction Cell

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 (refer to Plate 2). During this reporting period, rehabilitation work has continued in the eastern portion of Stage 1. A combination of imported VENM and ENM (after the reporting period) and overburden and interburden of clay and shale material from Extraction Cells A and B (Modification 1 area) have been utilised to fill in the void to achieve final landform height. Rehabilitation work is expected to continue during the next reporting period with the aim of rehabilitating the land to Agricultural Class 4 over the next two years.



Plate 1 – Continued final landform shaping in Stage 1 Extraction area (South East Environmental 2025).



Plate 2 - Rehabilitation area in Stage 1, Google Imagery dated August 2024 (South East Environmental, 2025).

7.3.2 Stage 2 Extraction Cell

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 (refer to Plate 3).

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 commenced 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 (refer to Plate 4). Emergence of *Acacia bynoeana* has also been observed in the area immediately surrounding the dam, as previously observed in the previous two reporting periods.



Plate 3 – Farm dam located in Stage 2 west (South East Environmental, 2025).



Plate 4 – Stage 2 west rehabilitation area west of the farm dam (South East Environmental, 2025).

7.3.3 Extraction Cells A and B (Modification 1 area)

Vegetation clearing and extraction commenced in extraction Cell 1A in December 2019 following the completion of the pre-commencement conditions. All native vegetation has been cleared and extraction currently taking place in Cells 1A, 1B, 2A, 2B, 3A and 3B.

No rehabilitation has been undertaken in Cells A and B of the Modification 1 area as the area is still undergoing active extraction.

7.3.3.1 Baseline Monitoring for Extraction Cells A and B

Baseline vegetation data was obtained during the previous reporting periods in areas within the future extraction cells, as outlined in the Biodiversity and Rehabilitation Management Plan (BRMP 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 locations within cell 2 and 3 have been disturbed in preparation for material extraction and therefore monitoring at these sites has concluded. Baseline monitoring in Cell 2A was previously undertaken in July 2023. The remaining two monitoring locations within cells 4 and 5 were surveyed previously in July 2024 and again in August 2025 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. The survey sites were selected for ongoing survey monitoring with the aim of representing the two dominant vegetation communities within the Haerses Road BRMP (v5, 2020).

The Haerses Road BRMP (v5, 2020) describes the following four vegetation communities being present in the surveyed:

- PCT978/HN560 – Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion (consistent with Coastal Upland Swamp in the Sydney Basin Bioregion EEC (*BC Act* and *EPBC Act*)) – 0.95 ha
- PCT 1083/HN566 – Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion – 10.53 ha
- PCT 1134/HN852 – Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion – 12.32 ha and
- 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 – 2.98 ha.

The endorsement of the Eastern NSW PCT Classification by the NSW State Government in 2023 resulted in a number of the previously assigned Haerses Road PCT classification being reviewed and reassigned during this reporting period. Table 24 summarise the previously and newly assigned PCT classification adopted at Haerses Road Quarry and during the flora survey for this reporting period.

Table 27: Previously and newly adopted PCT classification for Vegetation Communities at Haerses Road Quarry

Previous PCT Classification	Newly adopted PCT Classification	Justification
PCT 978 Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion	PCT3924 Sydney Coastal Upland Swamp Heath	PCT978 was split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered PCT3924
PCT1083 Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion	PCT3593 Sydney Coastal Sandstone Bloodwood Shrub	PCT1083 was also split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered as PCT3593
PCT1134 Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion	PCT3586 Northern Sydney Scribbly Gum Woodland	PCT1134 was amalgamated into PCT3586 Northern Sydney Scribbly Gum Woodland due to the strong association with the new PCT.
PCT1181 Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland	PCT3617 Sydney Hinterland Peppermint – Apple Forest	PCT 1181 was split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered as PCT3617

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

In summary, a reduction in groundcover species, specifically forbs and grasses were noted in all survey locations which could be a result of sporadic climatic conditions including drought over 2017-2020, extreme wet conditions in 2020-2023 and the return of near average rainfall and temperatures in 2023-2025. The slight decline in species is considered a normal fluctuation. Monitoring will continue into the future to determine if climatic conditions are the causes of species diversity increase or decline.

Threatened species have been recorded in the survey quadrats. *Darwinia biflora* and *Tetratheca glandulosa* are both found in abundance in Quadrats 1 and 4. *Grevillea parviflora subsp. supplicans* was located in Quadrat 4.

Full details of the survey results can be found in the *Annual Biodiversity & Rehabilitation Management Report (South East Environmental, 2025)* contained in Appendix H.

7.3.4 Wisemans Ferry Road 30 Metre Buffer

Supplementary buffer planting commenced in 2016 utilising native species such as *Banksia*, *Melaleuca*, *Hakea* and *Acacia* to provide visual screening for motorists on Wisemans Ferry Road. Intersection upgrade works at the Haerses Road and Wisemans Ferry Road during early 2020 have caused disturbance to the planted vegetation in 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 are categorised into two areas: the eastern and western buffer areas.

Assisted planting was undertaken during the previous 2022 – 2023 reporting period on the western section of the buffer area, utilising soil and mulch containing native seed bank. Currently a diverse *Eucalyptus*, *Acacia*, *Leptospermum* and native grass and forb species have emerged (refer to Plates 5 and 6). The success of revegetation in this western buffer area has so far outperformed the eastern area where the ground has been highly compacted. The eastern section of the buffer area has not shown any signs of natural regeneration due to the density of exotic pasture species dominating the area. Assisted rehabilitation planting has been carried previously and additional planting undertaken during this reporting period with the aim of breaking up compacted soil to allow vegetation establishment in the future (refer to Plates 6 and 7).

Exotic species occur in the 30-metre buffer with Weeds of National Significance (WoNS) and High Threat Weeds (HTW) present. Weed management and control has commenced in the 2022 – 2023 reporting period and have continued since. Significant progress has been achieved in decreasing the presence of weed in the 30m buffer and efforts of weed management will continue into the future, with priority given to management of WoNS and HTW.



Plate 5 – Western side of 30m buffer to Wisemans Ferry Road in 2024 (South East Environmental, 2024).



Plate 6 – Western side of 30m buffer to Wisemans Ferry Road in 2025 showing progress of vegetation establishment and weed management (South East Environmental, 2025).



Plate 7 – Eastern side of 30m buffer to Wisemans Ferry Road in 2024 (South East Environmental, 2024).



Plate 8 – Eastern side of 30m buffer to Wisemans Ferry Road in 2025 showing supplementary planting to assist in breaking up compacted soil (South East Environmental, 2025).

7.3.5 Buffer to Deerubbin Local Aboriginal Land Council 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.

7.4 Management of Biodiversity Stewardship Sites

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. During the reporting period, Dixon Sand has fulfilled the 80% payment of the Total Fund Deposit for the Porters Road biobank site which consequently entered into the Active Management Phase in September 2024. The Haerses Road biobank site is still under Passive Management Phase as the 80% of the Total Fund Deposit has not yet been achieved.

Haerses Road Biobank Site

The annual inspection for Year 6 of the Haerses Road biobank site was undertaken on 28 February 2025 for the purpose of annual reporting of passive management actions. The reports were submitted to the BSA Coordination Team on 14 March 2025.

Inspections were carried out against a number of management actions with the following outcome at both stewardship sites:

- **weed control** – N/A until active management,
- **grazing management** – no stock kept or located on both properties, no unauthorised grazing of stock,
- **fire management** – no fire within the Biobank site during previous 12-month period,
- **native vegetation management** – no disturbance, burning or use of fertilisers, pesticides or herbicides within the Biobank site,
- **threatened species habitat management and enhancement** – 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.
- **management of human disturbance** – 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.
- **Monitoring** – N/A until active management. Photo points established.

Porters Road Biobank Site

Year 1 Active Management for Porters Road biobank site cover the period of September 2024 to September 2025. The Year1 Active Management Report was submitted on 17 September 2025.

Implementation of the management actions contained in the biobanking agreement have commenced which included:

- **grazing management for conservation** – no stock kept or located on both properties, no unauthorised grazing of stock,
- **weed control** – Management of *Lantana camera* in Zones 1, 3 and 4 mainly along the track adjacent to O'Haras Creek
- **fire management** – no fire within the BSA sites during previous 12-month period. Dixon Sand has liaised with the RFS to schedule an ecological burn in the near future.
- **management of human disturbance** – no direct adverse human disturbance to biodiversity values within the Biobank site. However, motorbike tracks have been consistently observed along the tracks and trails. Signs and chains have been installed to deter public entry to the site. No waste has been stored or disposed of on site. Several historic wrecked cars are present at the bottom of the sandstone cliff and removal of these items would result in greater impacts.
- **native vegetation management** – no removal of native vegetation
- **Retention of dead timber** – no removal of dead or fallen timber or leaf litter from the site
- **Erosion control** – no erosion activities
- **Retention of rocks** – no removal of rocks from the site
- **Control of feral and overabundant native herbivores** – control program to be undertaken in accordance with Local Land Services' recommendations.
- **Vertebrate pest management** – control program to be undertaken in accordance with Local Land Services' recommendations.
- **Nutrient control** – no application of fertilisers and pesticides in the biobank site. Herbicide usage for weed management undertaken by qualified bush regenerator.
- **Installation of nest boxes** – not required during this reporting period
- **Monitoring** –Photo points established and monitored.

7.5 Change in Environmental Procedures

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

Stage 1 Extraction Area

- Continued screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders
- Continue importing VENM and ENM to assist with void filling if required
- Final landform for active rehabilitation areas
- Layering stockpile material to create suitable agricultural terrain

Stage 2 Extraction Area

- Continued monitoring the native vegetation growth and the supplemented planting to the west of the water storage dam in Stage 2 west
- Continued weed management in this area

2009 Translocation and Offset Area

- Continued management of competitive native shrubs and species particularly *Kunzea ambigua* to minimise overshadowing and encroachment of ground dwelling plants

Wisemans Ferry Road 30 metre Buffer Area

- Continued weed management in this area with a focus on WONS and High Threat species
- Undertake regular maintenance of the recent plantings

Buffer to Deerubbin LALC Property (formerly Maroota State Forest)

- Continued bush regeneration maintenance in the previously disturbed area
- Continued weed management in this area

Extraction Cells A and B

- Continued monitoring of vegetation quadrats for in Cells 4 and 5

Old Dam area in Stage 3 and track to groundwater monitoring network

- Undertake secondary and maintenance works on Lantana camera and *Ageratina adenophora* (Whiskey grass)

Haerses Road and Porters Road Biobank Sites

- Monitoring and management of the Haerses Road and Porters Road biobank BSA sites to be undertaken in accordance with the Biobanking Agreement, BCT reporting and directions given by the BCT.
- Whilst Haerses Road biobank site remains under Passive Management status, continued with management of perennial grasses along the western and northern boundary to reduce the edge effect.

It is not expected any new areas of rehabilitation will take place within the next reporting period as extraction across the site continues.

8. Community and Social Impacts

8.1 Compliance

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

Table 28: Community related consent conditions

Development Consent Condition	Requirement	Compliance
Condition 8 of Schedule 5	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). Notes: • The CCC is an advisory committee. The Department and other relevant agencies are responsible for ensuring that the Applicant complies with this consent. • In accordance with the guidelines, the Committee should comprise an independent chair and appropriate representation from the Applicant, Council and the local community. • 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. • The Applicant may, with the approval of the Secretary, combine the function of this CCC with the functions of other CCCs in the area.	The current CCC members were re-appointed by the DPHI on 1 st March 2018 (note joint CCC for the Old Northern Road and Haerses Road quarries).
Condition 1(e) of Schedule 5	describe the procedures to be implemented to: • keep the local community and relevant agencies informed about the operation and environmental performance of the development; • receive, record, handle and respond to complaints; • resolve any disputes that may arise during the course of the development; • respond to any non-compliance; • respond to emergencies; and	Refer to the Environmental Management Systems and Management Plans

8.2 Complaints and Follow-up Actions

No complaints were received for Haerses Road quarry during the 2024 - 2025 reporting period.

Table 29: Complaints received during the reporting period.

Complaint 1	
Date complaint received	Not Applicable – no complaint received during this reporting period.
Issue	
Recommended Action(s)	
Outcome	
Close out Date	

The summary of complaint register is contained in Appendix K.

8.2.1 Long Term Complaints Trend

Long term complaints monitoring data commencing 2006 – 2007 is depicted in Chart 68 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 has 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. There were no complaints during the 2021 – 2022 reporting period. One traffic complaint was received for the previous 2022 – 2023 reporting period.

Dixon Sand received no complaint 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. All complaints have been closed out.

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.

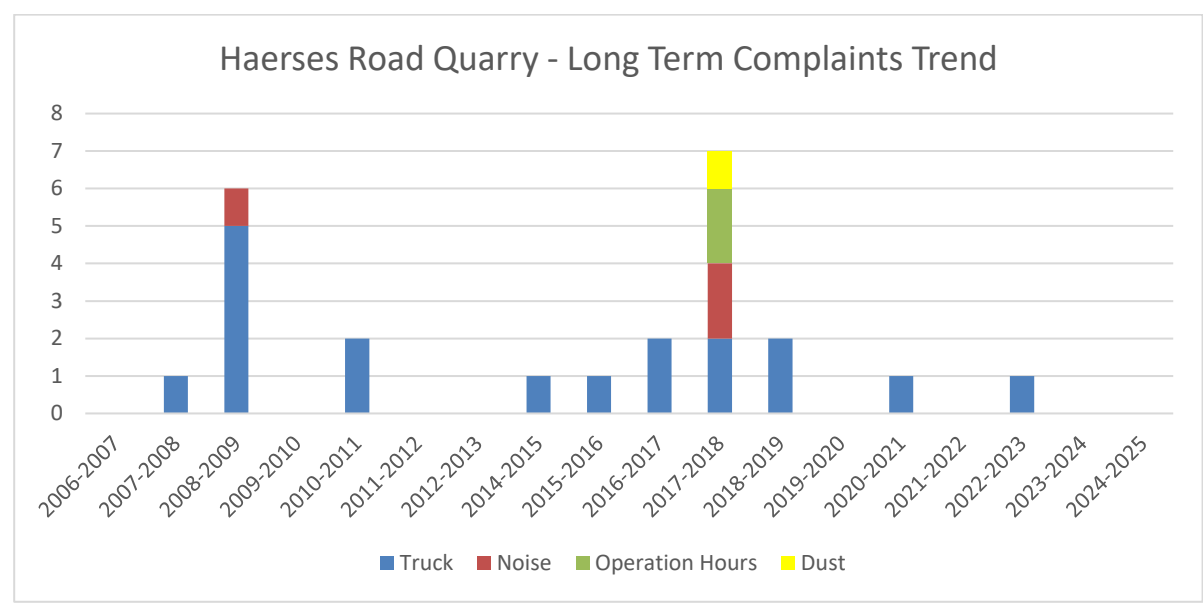


Chart 63: Long term complaints monitoring data.

8.3 Community Consultative Committee, Meetings and Guidelines

Two CCC meetings were held during the 2024 - 2025 reporting period, in accordance with the consent conditions and CCC Guidelines (2023). The ordinary bi-annual CCC meetings were held on 6th November 2024 and 7th May 2025.

The minutes from the ordinary CCC meetings are contained in Appendix J.

8.4 Community and Stakeholder Liaison

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.

Stakeholder Liaison and Correspondences

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

- Notifying the Maroota Public School regarding noise monitoring undertaken in December 2024 and June 2025 and other matters relating to ground maintenance on school ground or in proximity to the school,
- Liaising with the neighbouring property owner to the Old Northern Road quarry regarding general maintenance, and
- Bi-annual CCC meetings in November 2024 and May 2025.

Local Initiatives

Dixon Sand regularly makes monetary and resource contributions to a number of community initiatives and charities such as:

- monetary donation and participation in the Maroota Public School's Annual Maroota Muster Festival,
- monetary donation to Cattai Public School,
- monetary donation to Royal Flying Doctor Service,
- monetary donation to Last Post @ Wisemans Ferry for Anzac Day
- monetary donation to Castlereagh Christian Conference Centre
- monetary sponsorship of Nepean Area Disabilities Organisation
- monetary sponsorship of Sporting Individuals, teams and associations
- Anzac Day Memorial – Tribute Display
- Christmas appeal for the Salvation Army
- monetary donation to Glenorie Progress Association, and
- publication of environmental monitoring data, and provision of all current consents and site management plans for public viewing on the Dixon Sand website.

8.5 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 2021* as follows:

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

Dixon Sand's Old Northern Road Quarry continue 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 are 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.

8.6 Changes to Social Monitoring Procedures

No changes are proposed for the social management procedures.

9. Bushfire Management

9.1 Compliance

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.

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

10. Competency, Training and Awareness

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,
- Job Safety and Environmental Analysis,
- Environmental hazard identification workshop,
- Regular toolbox talks, and
- Bushfire Management and Emergency evacuation training.

11. Incidents and Non-Compliances

11.1 Environmental Incidents and Non-Compliances

Details of the incidents and non-compliances are listed in Table 30 below.

Table 30: Environmental Non-compliances and Incidents

Date of Incident	Applicable Condition(s)	Details, Cause and Mitigation of Incident
Submission of 2024 - 2025 Annual Review after March 2024	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 DPHI on 9 February 2018 to submit the Annual Review by the end of September each year. DPHI determined no breach of consent condition.
26 June 2024 - 24 July 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-72 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 2.6 g/m²/month - Rolling annual average dust deposition = 7.0 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached. No further action required by DPHI. Incident closed out.
24 July 2024 - 21 August 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 1.2 g/m²/month - Rolling annual average dust deposition = 6.9 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in.

Date of Incident	Applicable Condition(s)	Details, Cause and Mitigation of Incident
		Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
21 August 2024 - 18 September 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 0.7 g/m²/month - Rolling annual average dust deposition = 6.2 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
18 September 2024 - 16 October 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 2.0 g/m²/month - Rolling annual average dust deposition = 6.3 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
16 October 2024 - 13 November 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 0.7 g/m²/month - Rolling annual average dust deposition = 6.2 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in.

Date of Incident	Applicable Condition(s)	Details, Cause and Mitigation of Incident
		Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
13 November 2024 - 11 December 2024	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 2.2 g/m²/month - Rolling annual average dust deposition = 6.2 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
11 December 2024 - 8 January 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI notification and reporting not required as monthly dust deposition is compliant. Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 3.7 g/m²/month - Rolling annual average dust deposition = 6.4 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
8 January 2025 - 5 February 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-75 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 6.5 g/m²/month - Rolling annual average dust deposition = 5.9 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in.

Date of Incident	Applicable Condition(s)	Details, Cause and Mitigation of Incident
		Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached.
5 February 2025 - 5 March 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-76 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 8.7 g/m²/month - Rolling annual average dust deposition = 5.0 g/m²/month Elevated dust attributed to maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached. No further action required by DPHI. Incident closed out.
5 March 2025 - 2 April 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-78 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 5.3 g/m²/month - Rolling annual average dust deposition = 4.5 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached. No further action required by DPHI. Incident closed out.
2 April 2025 - 30 April 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-79 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 5.4 g/m²/month - Rolling annual average dust deposition = 4.6 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in.

Date of Incident	Applicable Condition(s)	Details, Cause and Mitigation of Incident
		Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached. No further action required by DPHI. Incident closed out.
27 May 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI not notified. The 24-hour average PM10 level reached 71.7 µg/m³ which exceeded the 50 NEPM µg/m³ maximum criteria, as required in Table 3 of Condition 9 of Schedule 3 of the DA. The elevated PM10 was attributed to the forecasted dust storm moving across the western Sydney region. Elevated dust results were also recorded at other dust monitoring stations located at Penrith, Prospect and Richmond. At the time, quarry grounds were saturated from rainfall events over the past week. EPA was notified and no further action required. The dust storm is considered an extra-ordinary event as defined in Note d of Table 3. Therefore, no consent condition has been breached. No further action required. Incident closed out.
28 May 2025 - 25 June 2025	Condition 9 of Schedule 3 of DA 165-7-2005	DPHI Notification and Reporting: DA-165-7-2005-PA-80 Dust deposition gauge D10 (Stage 4 Dam): - Monthly dust deposition = 6.6 g/m²/month - Rolling annual average dust deposition = 3.3 g/m²/month Elevated dust attributed to adjacent farming activities and regular maintenance (slashing) of the grass in the paddock of which the dust gauge is located in. Dust gauge D10 is located on land owned by the Quarry (Stage 4 extraction) and not on private residence. No consent breached. No further action required by DPHI. Incident closed out.

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

11.2 Notices issued by Resources Regulator

Dixon Sand received three Improvement Notices under the *Work Health and Safety Act 2011* from DPIRD (Resources Regulator) during this reporting period. The identified issues have been rectified and closed out.

Table 31: Notices issued by Resources Regulator

Date Issued	Notice Reference	Identified Issues	Status
2 Feb 2025	NTCE0016363 - Section 191 Improvement Notice	Electrical Engineering Control Plan, Mechanical Engineering Control and Safety Management System require revision and inclusion of a number of items	Closed out
17 Feb 2025	NTCE0016391 - Section 191 Improvement Notice	Mobile plant parking not controlled to reduce risk of unplanned movement or collision. Some roadway bunding inadequate. Overhead powerline crossing not managed.	Closed out
26 Feb 2025	NTCE0016516 - Section 191 Improvement Notice	No Overhead Powerline and Under Ground Powerline services plan, procedure for work near overhead power lines or cables, procedure for inadvertent contact. Electrical Engineering Control Plan does not include working near or travelling underneath overhead power lines.	Closed out

12. Independent Environmental Audit

12.1 Independent Environmental Audit Requirements

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 8th September 2022.

The IEA commenced on 18 October 2022 which covers the 3-year audit period between 23 October 2019 and 18 October 2022. The *Independent Environmental Audit: Haerses Road Report* (RW Corkery & Co, December 2022, Document No. 1021/02) was issued to Dixon Sand on 15th December 2022.

The *Response and Action Plan for the Independent Environmental Audit 2022, 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: Haerses Road Report* (RW Corkery & Co, December 2022, Document No. 1022/02).

The IEA report and Response and Action Plan report were submitted to the DPE on 16th January 2023. The CCC members were provided a link to the reports published on Dixon Sand's website.

All proposed actions associated with the Non-compliances from the IEA 2022 have been implemented and closed out.

The next IEA is scheduled to be undertaken late 2025.

13. Proposed Actions to be completed in the next Reporting Period

13.1 Air Quality Monitoring Program

- The air quality monitoring program and Air Quality Management Plan will be revised in accordance with the outcome of the ongoing consultation with the EPA.

13.2 Vegetation Clearing

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

13.3 Rehabilitation and Bush Regeneration

Stage 1 Extraction Area

- Continued screening of stockpiled rehabilitation material to remove unsuitable larger rocks and boulders
- Continue importing VEHN and ENM to assist with void filling if required
- Final landform for active rehabilitation areas
- Layering stockpile material to create suitable agricultural terrain

Stage 2 Extraction Area

- Continued monitoring the native vegetation growth and the supplemented planting to the west of the water storage dam in Stage 2 west
- Continued weed management in this area

2009 Translocation and Offset Area

- Continued management of competitive native shrubs and species particularly *Kunzea ambigua* to minimise overshadowing and encroachment of ground dwelling plants

Wisemans Ferry Road 30 metre Buffer Area

- Continued weed management in this area with a focus on WONS and High Threat species
- Undertake regular maintenance of the recent plantings

Buffer to Deerubbin LALC Property (formerly Maroota State Forest)

- Continued bush regeneration maintenance in the previously disturbed area
- Continued weed management in this area

Extraction Cells A and B

- Continued monitoring of vegetation quadrats for in Cells 4 and 5

Old Dam area in Stage 3 and track to groundwater monitoring network

- Undertake secondary and maintenance works on Lantana camera and Ageratina adenophora (Whiskey grass)

Haerses Road and Porters Road Biobank Sites

- Monitoring and management of the Haerses Road and Porters Road biobank BSA sites to be undertaken in accordance with the Biobanking Agreement, BCT reporting and directions given by the BCT.
- Whilst Haerses Road biobank site remains under Passive Management status, continued with management of perennial grasses along the western and northern boundary to reduce the edge effect.

14. Audits and Improvement Notice

There are no outstanding proposed actions for the Independent Environmental Audit and Resources Regulator issued Notices.

15. Conclusion

A number of recommendations and changes in environmental procedures have been proposed throughout this Annual Review of 2024 - 2025 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: 16572

Date Issued: 30/07/2024

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 24/07/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	26/06/2024 11:39	24/07/2024 11:41	16572/1	Dust	
D10 Hearses Rd	26/06/2024 12:54	24/07/2024 12:07	16572/2	Dust	
D06 School	26/06/2024 10:26	24/07/2024 10:37	16572/3	Dust	
D05 Bund	26/06/2024 10:43	24/07/2024 10:53	16572/4	Dust	
D04 Rehab	26/06/2024 11:12	24/07/2024 11:17	16572/5	Dust	
D07 Mullock	26/06/2024 11:26	24/07/2024 11:29	16572/6	Dust	
D01(A) Front Gate	26/06/2024 10:57	24/07/2024 11:05	16572/7	Dust	
D11 Goldstien	26/06/2024 12:23	24/07/2024 13:02	16572/8	Dust	
D12 Ram	26/06/2024 12:01	24/07/2024 11:54	16572/9	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)

Liane Peyra
Technical OfficerAnthony Crane
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 30/07/2024.

Test Report Number: 16572

Date Issued: 30/07/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	16572/1 24/07/2024 D08&9 Hitchcock Rd Olive Grove	16572/2 24/07/2024 D10 Hearses Rd	16572/3 24/07/2024 D06 School	16572/4 24/07/2024 D05 Bund	16572/5 24/07/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	25/07/2024	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	2.6	4.3	4.3	0.2
Ash	AS 3580.10.1	g/m2/mth	0.3	1.1	1.3	2.8	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	1.5	3.0	1.5	0.2
Calculated Rain	AS 3580.10.1	mm	47	45	44	39	43

Deposited Matter		Lab ID Sample Date Sample ID	16572/6 24/07/2024 D07 Mullock	16572/7 24/07/2024 D01(A) Front Gate	16572/8 24/07/2024 D11 Goldstien	16572/9 24/07/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	25/07/2024	25/07/2024	25/07/2024	25/07/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.2	2.2	1.2	1.1
Ash	AS 3580.10.1	g/m2/mth	<0.1	1.9	0.4	0.7
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.3	0.8	0.4
Calculated Rain	AS 3580.10.1	mm	41	45	44	46

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: 16572

Date Issued: 30/07/2024

Revision No: 00

Sampling Conditions: Fine, 13 °- 19 °C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16572/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	24/07/2024 11:41	AS3580.10.1	CuSO4
16572/2	D10 Hearses Rd		T & D.Walker	24/07/2024 12:07	AS3580.10.1	CuSO4
16572/3	D06 School		T & D.Walker	24/07/2024 10:37	AS3580.10.1	CuSO4
16572/4	D05 Bund		T & D.Walker	24/07/2024 10:53	AS3580.10.1	CuSO4
16572/5	D04 Rehab		T & D.Walker	24/07/2024 11:17	AS3580.10.1	CuSO4
16572/6	D07 Mullock		T & D.Walker	24/07/2024 11:29	AS3580.10.1	CuSO4
16572/7	D01(A) Front Gate		T & D.Walker	24/07/2024 11:05	AS3580.10.1	CuSO4
16572/8	D11 Goldstien		T & D.Walker	24/07/2024 13:02	AS3580.10.1	CuSO4
16572/9	D12 Ram		T & D.Walker	24/07/2024 11:54	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16572/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
16572/2	D10 Hearses Rd	312538	6294576	Minor sand, major bird droppings, algae
16572/3	D06 School	313518	6296537	Minor sand, minor insects, vegetation. - Paddock slashed
16572/4	D05 Bund	313160	6296838	Minor sand, bird droppings. - Adjacent bare earth field ploughed
16572/5	D04 Rehab	312385	6296932	
16572/6	D07 Mullock	312579	6296676	
16572/7	D01(A) Front Gate	313290	6297176	
16572/8	D11 Goldstien	312034	6294213	Minor bird droppings
16572/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 30/07/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16688

Date Issued: 27/08/2024

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 21/08/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	24/07/2024 11:41	21/08/2024 11:50	16688/1	Dust	
D10 Hearses Rd	24/07/2024 12:07	21/08/2024 12:24	16688/2	Dust	
D06 School	24/07/2024 10:37	21/08/2024 10:38	16688/3	Dust	Vegetation
D05 Bund	24/07/2024 10:53	21/08/2024 10:54	16688/4	Dust	Minor dust, bird droppings, insects, vegetation. Crop farming adjacent to dust gauge.
D04 Rehab	24/07/2024 11:17	21/08/2024 11:20	16688/5	Dust	
D07 Mullock	24/07/2024 11:29	21/08/2024 11:36	16688/6	Dust	
D01(A) Front Gate	24/07/2024 11:05	21/08/2024 11:06	16688/7	Dust	
D11 Goldstien	24/07/2024 13:02	21/08/2024 13:18	16688/8	Dust	
D12 Ram	24/07/2024 11:54	21/08/2024 12:08	16688/9	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)

Liane Peyra
Technical OfficerAnthony Crane
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 27/08/2024.

Test Report Number: 16688

Date Issued: 27/08/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	16688/1 21/08/2024 D08&9 Hitchcock Rd Olive Grove	16688/2 21/08/2024 D10 Hearses Rd	16688/3 21/08/2024 D06 School	16688/4 21/08/2024 D05 Bund	16688/5 21/08/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	22/08/2024	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.6	1.2	4.9	12.2	0.3
Ash	AS 3580.10.1	g/m2/mth	0.5	0.9	0.7	7.0	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	0.3	4.2	5.2	0.3
Calculated Rain	AS 3580.10.1	mm	34	29	34	32	34

Deposited Matter		Lab ID Sample Date Sample ID	16688/6 21/08/2024 D07 Mullock	16688/7 21/08/2024 D01(A) Front Gate	16688/8 21/08/2024 D11 Goldstien	16688/9 21/08/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	22/08/2024	22/08/2024	22/08/2024	22/08/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	3.4	0.6	0.6
Ash	AS 3580.10.1	g/m2/mth	0.1	3.1	0.3	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	0.3	0.3	0.4
Calculated Rain	AS 3580.10.1	mm	34	33	29	31



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: 16688

Date Issued: 27/08/2024

Revision No: 00

Sampling Conditions: Fine, 22 °- 26 °C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16688/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	21/08/2024 11:50	AS3580.10.1	CuSO4
16688/2	D10 Hearses Rd		T & D.Walker	21/08/2024 12:24	AS3580.10.1	CuSO4
16688/3	D06 School		T & D.Walker	21/08/2024 10:38	AS3580.10.1	CuSO4
16688/4	D05 Bund		T & D.Walker	21/08/2024 10:54	AS3580.10.1	CuSO4
16688/5	D04 Rehab		T & D.Walker	21/08/2024 11:20	AS3580.10.1	CuSO4
16688/6	D07 Mullock		T & D.Walker	21/08/2024 11:36	AS3580.10.1	CuSO4
16688/7	D01(A) Front Gate		T & D.Walker	21/08/2024 11:06	AS3580.10.1	CuSO4
16688/8	D11 Goldstien		T & D.Walker	21/08/2024 13:18	AS3580.10.1	CuSO4
16688/9	D12 Ram		T & D.Walker	21/08/2024 12:08	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16688/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
16688/2	D10 Hearses Rd	312538	6294576	Minor insects, algae. Bird droppings in funnel.
16688/3	D06 School	313518	6296537	Vegetation
16688/4	D05 Bund	313160	6296838	Minor dust, bird droppings, insects, vegetation. Crop farming adjacent to dust gauge.
16688/5	D04 Rehab	312385	6296932	
16688/6	D07 Mullock	312579	6296676	
16688/7	D01(A) Front Gate	313290	6297176	Minor sand/dust
16688/8	D11 Goldstien	312034	6294213	
16688/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 27/08/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16807

Date Issued: 25/09/2024

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 20/09/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	21/08/2024 11:50	18/09/2024 10:39	16807/1	Dust	
D10 Hearses Rd	21/08/2024 12:24	18/09/2024 11:10	16807/2	Dust	
D06 School	21/08/2024 10:38	18/09/2024 09:29	16807/3	Dust	
D05 Bund	21/08/2024 10:54	18/09/2024 09:44	16807/4	Dust	
D04 Rehab	21/08/2024 11:20	18/09/2024 10:10	16807/5	Dust	
D07 Mullock	21/08/2024 11:36	18/09/2024 10:24	16807/6	Dust	
D01(A) Front Gate	21/08/2024 11:06	18/09/2024 09:55	16807/7	Dust	
D11 Goldstien	21/08/2024 13:18	18/09/2024 12:16	16807/8	Dust	
D12 Ram	21/08/2024 12:08	18/09/2024 10:54	16807/9	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)



Liane Peyra

Authorised by: Technical Officer

Results have been approved and report finalised on 25/09/2024.

Test Report Number: 16807

Date Issued: 25/09/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	16807/1 18/09/2024 D08&9 Hitchcock Rd Olive Grove	16807/2 18/09/2024 D10 Hearses Rd	16807/3 18/09/2024 D06 School	16807/4 18/09/2024 D05 Bund	16807/5 18/09/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	23/09/2024	23/09/2024	23/09/2024	23/09/2024	23/09/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.9	0.7	0.8	3.4	0.4
Ash	AS 3580.10.1	g/m2/mth	0.5	0.4	0.6	3.1	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.4	0.3	0.2	0.3	0.2
Calculated Rain	AS 3580.10.1	mm	3	2	3	6	2

Deposited Matter		Lab ID Sample Date Sample ID	16807/6 18/09/2024 D07 Mullock	16807/7 18/09/2024 D01(A) Front Gate	16807/8 18/09/2024 D11 Goldstien	16807/9 18/09/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	23/09/2024	23/09/2024	23/09/2024	23/09/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.3	1.2	0.3	0.3
Ash	AS 3580.10.1	g/m2/mth	0.2	1.2	0.1	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	<0.1	0.2	0.1
Calculated Rain	AS 3580.10.1	mm	2	4	2	2

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: 16807

Date Issued: 25/09/2024

Revision No: 00

Sampling Conditions: Fine, 16 - 24 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16807/1	D08&9 Hitchcock Rd Olive Grove		T.Walker	18/09/2024 10:39	AS3580.10.1	CuSO4
16807/2	D10 Hearses Rd		T.Walker	18/09/2024 11:10	AS3580.10.1	CuSO4
16807/3	D06 School		T.Walker	18/09/2024 09:29	AS3580.10.1	CuSO4
16807/4	D05 Bund		T.Walker	18/09/2024 09:44	AS3580.10.1	CuSO4
16807/5	D04 Rehab		T.Walker	18/09/2024 10:10	AS3580.10.1	CuSO4
16807/6	D07 Mullock		T.Walker	18/09/2024 10:24	AS3580.10.1	CuSO4
16807/7	D01(A) Front Gate		T.Walker	18/09/2024 09:55	AS3580.10.1	CuSO4
16807/8	D11 Goldstien		T.Walker	18/09/2024 12:16	AS3580.10.1	CuSO4
16807/9	D12 Ram		T.Walker	18/09/2024 10:54	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16807/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor insects
16807/2	D10 Hearses Rd	312538	6294576	Insects, algae
16807/3	D06 School	313518	6296537	Minor vegetation
16807/4	D05 Bund	313160	6296838	Minor sand, minor insects
16807/5	D04 Rehab	312385	6296932	Minor vegetation
16807/6	D07 Mullock	312579	6296676	
16807/7	D01(A) Front Gate	313290	6297176	Minor insects
16807/8	D11 Goldstien	312034	6294213	Minor vegetation
16807/9	D12 Ram	311750	6294159	Minor insects

Sampling procedures have been approved and report finalised on 25/09/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16895

Date Issued: 24/10/2024

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 16/10/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	18/09/2024 10:39	16/10/2024 11:28	16895/1	Dust	
D10 Hearses Rd	18/09/2024 11:10	16/10/2024 11:56	16895/2	Dust	
D06 School	18/09/2024 9:29	16/10/2024 10:23	16895/3	Dust	
D05 Bund	18/09/2024 9:44	16/10/2024 10:38	16895/4	Dust	
D04 Rehab	18/09/2024 10:10	16/10/2024 11:06	16895/5	Dust	
D07 Mullock	18/09/2024 10:24	16/10/2024 11:18	16895/6	Dust	
D01(A) Front Gate	18/09/2024 9:55	16/10/2024 10:50	16895/7	Dust	
D11 Goldstien	18/09/2024 12:16	16/10/2024	16895/8	Dust	
D12 Ram	18/09/2024 10:54	16/10/2024 11:43	16895/9	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)



Liane Peyra

Authorised by: Technical Officer

Results have been approved and report finalised on 24/10/2024.

Test Report Number: 16895

Date Issued: 24/10/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	16895/1 16/10/2024 D08&9 Hitchcock Rd Olive Grove	16895/2 16/10/2024 D10 Hearses Rd	16895/3 16/10/2024 D06 School	16895/4 16/10/2024 D05 Bund	16895/5 16/10/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	22/10/2024	22/10/2024	22/10/2024	22/10/2024	22/10/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.1	2.0	1.2	6.3	0.5
Ash	AS 3580.10.1	g/m2/mth	0.7	0.8	0.6	5.7	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.4	1.2	0.6	0.6	0.3
Calculated Rain	AS 3580.10.1	mm	107	88	117	101	102

Deposited Matter		Lab ID Sample Date Sample ID	16895/6 16/10/2024 D07 Mullock	16895/7 16/10/2024 D01(A) Front Gate	16895/8 16/10/2024 D11 Goldstien	16895/9 16/10/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	22/10/2024	22/10/2024	22/10/2024	22/10/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.0	2.9	0.6	0.8
Ash	AS 3580.10.1	g/m2/mth	0.4	2.5	0.2	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.6	0.4	0.4	0.4
Calculated Rain	AS 3580.10.1	mm	107	105	85	89

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: 16895

Date Issued: 24/10/2024

Revision No: 00

Sampling Conditions: 100% Cloudcover, 17 - 19 °C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16895/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	16/10/2024 11:28	AS3580.10.1	CuSO4
16895/2	D10 Hearses Rd		T & D.Walker	16/10/2024 11:56	AS3580.10.1	CuSO4
16895/3	D06 School		T & D.Walker	16/10/2024 10:23	AS3580.10.1	CuSO4
16895/4	D05 Bund		T & D.Walker	16/10/2024 10:38	AS3580.10.1	CuSO4
16895/5	D04 Rehab		T & D.Walker	16/10/2024 11:06	AS3580.10.1	CuSO4
16895/6	D07 Mullock		T & D.Walker	16/10/2024 11:18	AS3580.10.1	CuSO4
16895/7	D01(A) Front Gate		T & D.Walker	16/10/2024 10:50	AS3580.10.1	CuSO4
16895/8	D11 Goldstien		T & D.Walker	16/10/2024	AS3580.10.1	CuSO4
16895/9	D12 Ram		T & D.Walker	16/10/2024 11:43	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16895/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Insects
16895/2	D10 Hearses Rd	312538	6294576	Minor insects, algae
16895/3	D06 School	313518	6296537	Minor insects
16895/4	D05 Bund	313160	6296838	Minor sand, minor insects
16895/5	D04 Rehab	312385	6296932	Minor insects
16895/6	D07 Mullock	312579	6296676	Spider
16895/7	D01(A) Front Gate	313290	6297176	Minor sand, insects
16895/8	D11 Goldstien	312034	6294213	
16895/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 24/10/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17075

Date Issued: 19/11/2024

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 13/11/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	16/10/2024 11:28	13/11/2024 11:35	17075/1	Dust	
D10 Hearses Rd	16/10/2024 11:56	13/11/2024 12:08	17075/2	Dust	
D06 School	16/10/2024 10:23	13/11/2024 10:29	17075/3	Dust	
D05 Bund	16/10/2024 10:38	13/11/2024 10:46	17075/4	Dust	
D04 Rehab	16/10/2024 11:06	13/11/2024 11:09	17075/5	Dust	
D07 Mullock	16/10/2024 11:18	13/11/2024 11:21	17075/6	Dust	
D01(A) Front Gate	16/10/2024 10:50	13/11/2024 10:55	17075/7	Dust	
D11 Goldstien	16/10/2024 13:02	13/11/2024 13:20	17075/8	Dust	
D12 Ram	16/10/2024 11:43	13/11/2024 11:53	17075/9	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)

Liane Peyra
Technical OfficerAnthony Crane
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 19/11/2024.

Test Report Number: 17075

Date Issued: 19/11/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17075/1 13/11/2024 D08&9 Hitchcock Rd Olive Grove	17075/2 13/11/2024 D10 Hearses Rd	17075/3 13/11/2024 D06 School	17075/4 13/11/2024 D05 Bund	17075/5 13/11/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	14/11/2024	14/11/2024	14/11/2024	14/11/2024	14/11/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.0	0.7	0.9	1.3	0.6
Ash	AS 3580.10.1	g/m2/mth	0.8	0.4	0.4	0.9	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.3	0.5	0.4	0.3
Calculated Rain	AS 3580.10.1	mm	27	23	24	23	26

Deposited Matter		Lab ID Sample Date Sample ID	17075/6 13/11/2024 D07 Mullock	17075/7 13/11/2024 D01(A) Front Gate	17075/8 13/11/2024 D11 Goldstien	17075/9 13/11/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	14/11/2024	14/11/2024	14/11/2024	14/11/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	1.6	0.7	0.6
Ash	AS 3580.10.1	g/m2/mth	0.3	1.2	0.3	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.4	0.4	0.4	0.4
Calculated Rain	AS 3580.10.1	mm	25	28	27	29

Report Comments:

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

Where applicable, 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: 17075

Date Issued: 19/11/2024

Revision No: 00

Sampling Conditions: Cloudy, 22°C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17075/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	13/11/2024 11:35	AS3580.10.1	CuSO4
17075/2	D10 Hearses Rd		T & D.Walker	13/11/2024 12:08	AS3580.10.1	CuSO4
17075/3	D06 School		T & D.Walker	13/11/2024 10:29	AS3580.10.1	CuSO4
17075/4	D05 Bund		T & D.Walker	13/11/2024 10:46	AS3580.10.1	CuSO4
17075/5	D04 Rehab		T & D.Walker	13/11/2024 11:09	AS3580.10.1	CuSO4
17075/6	D07 Mullock		T & D.Walker	13/11/2024 11:21	AS3580.10.1	CuSO4
17075/7	D01(A) Front Gate		T & D.Walker	13/11/2024 10:55	AS3580.10.1	CuSO4
17075/8	D11 Goldstien		T & D.Walker	13/11/2024 13:20	AS3580.10.1	CuSO4
17075/9	D12 Ram		T & D.Walker	13/11/2024 11:53	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17075/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
17075/2	D10 Hearses Rd	312538	6294576	Paddock slashed
17075/3	D06 School	313518	6296537	Minor insects
17075/4	D05 Bund	313160	6296838	Minor sand, minor insects
17075/5	D04 Rehab	312385	6296932	Minor insects
17075/6	D07 Mullock	312579	6296676	Minor insects
17075/7	D01(A) Front Gate	313290	6297176	Minor insects
17075/8	D11 Goldstien	312034	6294213	Minor insects
17075/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 19/11/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17198

Date Issued: 18/12/2024

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 11/12/2024

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	13/11/2024 11:35	11/12/2024 10:53	17198/1	Dust	
D10 Hearses Rd	13/11/2024 12:08	11/12/2024 11:27	17198/2	Dust	
D06 School	13/11/2024 10:29	11/12/2024 09:43	17198/3	Dust	
D05 Bund	13/11/2024 10:46	11/12/2024 09:57	17198/4	Dust	
D04 Rehab	13/11/2024 11:09	11/12/2024 10:24	17198/5	Dust	
D07 Mullock	13/11/2024 11:21	11/12/2024 10:38	17198/6	Dust	
D01(A) Front Gate	13/11/2024 10:55	11/12/2024 10:09	17198/7	Dust	
D11 Goldstien	13/11/2024 13:20	11/12/2024 11:54	17198/8	Dust	
D12 Ram	13/11/2024 11:53	11/12/2024 11:08	17198/9	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)

Liane Peyra
Technical OfficerAnthony Crane
Laboratory Manager

Authorised by:

Results have been approved and report finalised on 18/12/2024.

Test Report Number: 17198

Date Issued: 18/12/2024

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17198/1 11/12/2024 D08&9 Hitchcock Rd Olive Grove	17198/2 11/12/2024 D10 Hearses Rd	17198/3 11/12/2024 D06 School	17198/4 11/12/2024 D05 Bund	17198/5 11/12/2024 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	16/12/2024	16/12/2024	16/12/2024	16/12/2024	16/12/2024
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	3.8	2.2	3.1	2.0	0.7
Ash	AS 3580.10.1	g/m2/mth	1.9	0.9	1.4	1.2	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	1.9	1.3	1.7	0.8	0.3
Calculated Rain	AS 3580.10.1	mm	70	60	69	60	53

Deposited Matter		Lab ID Sample Date Sample ID	17198/6 11/12/2024 D07 Mullock	17198/7 11/12/2024 D01(A) Front Gate	17198/8 11/12/2024 D11 Goldstien	17198/9 11/12/2024 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	16/12/2024	16/12/2024	16/12/2024	16/12/2024
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.3	2.4	1.1	0.5
Ash	AS 3580.10.1	g/m2/mth	0.8	1.9	0.3	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.5	0.5	0.8	0.3
Calculated Rain	AS 3580.10.1	mm	57	63	61	59



Report Comments:

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

Where applicable, 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: 17198

Date Issued: 18/12/2024

Revision No: 00

Sampling Conditions: Cloudy, 22 - 26 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17198/1	D08&9 Hitchcock Rd Olive Grove		T.Walker	11/12/2024 10:53	AS3580.10.1	CuSO4
17198/2	D10 Hearses Rd		T.Walker	11/12/2024 11:27	AS3580.10.1	CuSO4
17198/3	D06 School		T.Walker	11/12/2024 09:43	AS3580.10.1	CuSO4
17198/4	D05 Bund		T.Walker	11/12/2024 09:57	AS3580.10.1	CuSO4
17198/5	D04 Rehab		T.Walker	11/12/2024 10:24	AS3580.10.1	CuSO4
17198/6	D07 Mullock		T.Walker	11/12/2024 10:38	AS3580.10.1	CuSO4
17198/7	D01(A) Front Gate		T.Walker	11/12/2024 10:09	AS3580.10.1	CuSO4
17198/8	D11 Goldstien		T.Walker	11/12/2024 11:54	AS3580.10.1	CuSO4
17198/9	D12 Ram		T.Walker	11/12/2024 11:08	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17198/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Insects
17198/2	D10 Hearses Rd	312538	6294576	Algae. Cicada & seeds in funnel
17198/3	D06 School	313518	6296537	Insects. Bird droppings in funnel
17198/4	D05 Bund	313160	6296838	Minor insects
17198/5	D04 Rehab	312385	6296932	Minor insects
17198/6	D07 Mullock	312579	6296676	Minor insects
17198/7	D01(A) Front Gate	313290	6297176	Minor insects
17198/8	D11 Goldstien	312034	6294213	Minor vegetation
17198/9	D12 Ram	311750	6294159	Minor insects

Sampling procedures have been approved and report finalised on 18/12/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17298

Date Issued: 15/01/2025

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 8/01/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	11/12/2024 10:53	8/1/2025 11:30	17298/1	Dust	
D10 Hearses Rd	11/12/2024 11:27	8/1/2025 11:58	17298/2	Dust	
D06 School	11/12/2024 9:43	8/1/2025 10:27	17298/3	Dust	
D05 Bund	11/12/2024 9:57	8/1/2025 10:39	17298/4	Dust	
D04 Rehab	11/12/2024 10:24	8/1/2025 11:04	17298/5	Dust	
D07 Mullock	11/12/2024 10:38	8/1/2025 11:18	17298/6	Dust	
D01(A) Front Gate	11/12/2024 10:09	8/1/2025 10:51	17298/7	Dust	
D11 Goldstien	11/12/2024 11:54	8/1/2025 13:10	17298/8	Dust	
D12 Ram	11/12/2024 11:08	8/1/2025 11:43	17298/9	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 15/01/2025.

Test Report Number: 17298

Date Issued: 15/01/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17298/1 8/01/2025 D08&9 Hitchcock Rd Olive Grove	17298/2 8/01/2025 D10 Hearses Rd	17298/3 8/01/2025 D06 School	17298/4 8/01/2025 D05 Bund	17298/5 8/01/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	13/01/2025	13/01/2025	13/01/2025	13/01/2025	13/01/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.0	3.7	1.8	2.6	0.6
Ash	AS 3580.10.1	g/m2/mth	0.5	1.9	0.9	1.2	0.3
Combustible Matter	AS 3580.10.1	g/m2/mth	0.5	1.8	0.9	1.4	0.3
Calculated Rain	AS 3580.10.1	mm	34	32	35	32	32

Deposited Matter		Lab ID Sample Date Sample ID	17298/6 8/01/2025 D07 Mullock	17298/7 8/01/2025 D01(A) Front Gate	17298/8 8/01/2025 D11 Goldstien	17298/9 8/01/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	13/01/2025	13/01/2025	13/01/2025	13/01/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.6	7.8	1.6	0.7
Ash	AS 3580.10.1	g/m2/mth	0.3	6.8	0.6	0.4
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	1.0	1.0	0.3
Calculated Rain	AS 3580.10.1	mm	32	31	34	38

Report Comments:

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

Where applicable, 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: 17298

Date Issued: 15/01/2025

Revision No: 00

Sampling Conditions: 100% Cloudcover, 20 - 22 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17298/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	8/1/2025 11:30	AS3580.10.1	CuSO4
17298/2	D10 Hearses Rd		T & D.Walker	8/1/2025 11:58	AS3580.10.1	CuSO4
17298/3	D06 School		T & D.Walker	8/1/2025 10:27	AS3580.10.1	CuSO4
17298/4	D05 Bund		T & D.Walker	8/1/2025 10:39	AS3580.10.1	CuSO4
17298/5	D04 Rehab		T & D.Walker	8/1/2025 11:04	AS3580.10.1	CuSO4
17298/6	D07 Mullock		T & D.Walker	8/1/2025 11:18	AS3580.10.1	CuSO4
17298/7	D01(A) Front Gate		T & D.Walker	8/1/2025 10:51	AS3580.10.1	CuSO4
17298/8	D11 Goldstien		T & D.Walker	8/1/2025 13:10	AS3580.10.1	CuSO4
17298/9	D12 Ram		T & D.Walker	8/1/2025 11:43	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17298/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
17298/2	D10 Hearses Rd	312538	6294576	Minor sand, insects, vegetation, algae
17298/3	D06 School	313518	6296537	Minor insects
17298/4	D05 Bund	313160	6296838	Minor sand, insects, minor vegetation
17298/5	D04 Rehab	312385	6296932	Minor insects
17298/6	D07 Mullock	312579	6296676	
17298/7	D01(A) Front Gate	313290	6297176	Sand. Adjacent farming crop paddocks turned over to bare earth
17298/8	D11 Goldstien	312034	6294213	Minor vegetation
17298/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 15/01/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17491

Date Issued: 12/02/2025

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 5/02/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	8/01/2025 11:30	5/02/2025 11:53	17491/1	Dust	
D10 Hearses Rd	8/01/2025 11:58	5/02/2025 12:26	17491/2	Dust	
D06 School	8/01/2025 10:27	5/02/2025 10:43	17491/3	Dust	
D05 Bund	8/01/2025 10:39	5/02/2025 10:58	17491/4	Dust	
D04 Rehab	8/01/2025 11:04	5/02/2025 11:29	17491/5	Dust	
D07 Mullock	8/01/2025 11:18	5/02/2025 11:41	17491/6	Dust	
D01(A) Front Gate	8/01/2025 10:51	5/02/2025 11:13	17491/7	Dust	
D11 Goldstien	8/01/2025 13:10	5/02/2025 13:12	17491/8	Dust	
D12 Ram	8/01/2025 11:43	5/02/2025 12:03	17491/9	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)



Liane Peyra
Technical Officer

Authorised by:



Anthony Crane
Laboratory Manager

Results have been approved and report finalised on 12/02/2025.

Test Report Number: 17491

Date Issued: 12/02/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17491/1 5/02/2025 D08&9 Hitchcock Rd Olive Grove	17491/2 5/02/2025 D10 Hearses Rd	17491/3 5/02/2025 D06 School	17491/4 5/02/2025 D05 Bund	17491/5 5/02/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	11/02/2025	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.6	6.5	2.9	1.9	1.6
Ash	AS 3580.10.1	g/m2/mth	1.0	3.0	1.4	1.4	0.9
Combustible Matter	AS 3580.10.1	g/m2/mth	0.6	3.5	1.5	0.5	0.7
Calculated Rain	AS 3580.10.1	mm	132	137	134	135	120

Deposited Matter		Lab ID Sample Date Sample ID	17491/6 5/02/2025 D07 Mullock	17491/7 5/02/2025 D01(A) Front Gate	17491/8 5/02/2025 D11 Goldstien	17491/9 5/02/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	11/02/2025	11/02/2025	11/02/2025	11/02/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	1.8	3.2	1.8	1.3
Ash	AS 3580.10.1	g/m2/mth	1.1	2.6	0.7	0.7
Combustible Matter	AS 3580.10.1	g/m2/mth	0.7	0.6	1.1	0.6
Calculated Rain	AS 3580.10.1	mm	129	115	120	127



Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 17491

Date Issued: 12/02/2025

Revision No: 00

Sampling Conditions: Fine, 31 - 35 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17491/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	5/02/2025 11:53	AS3580.10.1	CuSO4
17491/2	D10 Hearses Rd		T & D.Walker	5/02/2025 12:26	AS3580.10.1	CuSO4
17491/3	D06 School		T & D.Walker	5/02/2025 10:43	AS3580.10.1	CuSO4
17491/4	D05 Bund		T & D.Walker	5/02/2025 10:58	AS3580.10.1	CuSO4
17491/5	D04 Rehab		T & D.Walker	5/02/2025 11:29	AS3580.10.1	CuSO4
17491/6	D07 Mullock		T & D.Walker	5/02/2025 11:41	AS3580.10.1	CuSO4
17491/7	D01(A) Front Gate		T & D.Walker	5/02/2025 11:13	AS3580.10.1	CuSO4
17491/8	D11 Goldstien		T & D.Walker	5/02/2025 13:12	AS3580.10.1	CuSO4
17491/9	D12 Ram		T & D.Walker	5/02/2025 12:03	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17491/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
17491/2	D10 Hearses Rd	312538	6294576	Minor sand, insects - Paddock mowed
17491/3	D06 School	313518	6296537	Minor insects, minor vegetation
17491/4	D05 Bund	313160	6296838	Minor insects
17491/5	D04 Rehab	312385	6296932	
17491/6	D07 Mullock	312579	6296676	
17491/7	D01(A) Front Gate	313290	6297176	Full, minor sand
17491/8	D11 Goldstien	312034	6294213	Minor insects, minor vegetation
17491/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 12/02/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17589

Date Issued: 12/03/2025

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 5/03/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	5/02/2025 11:53	5/03/2025 11:57	17589/1	Dust	
D10 Hearses Rd	5/02/2025 12:26	5/03/2025 12:31	17589/2	Dust	
D06 School	5/02/2025 10:43	5/03/2025 10:49	17589/3	Dust	
D05 Bund	5/02/2025 10:58	5/03/2025 11:03	17589/4	Dust	
D04 Rehab	5/02/2025 11:29	5/03/2025 11:28	17589/5	Dust	
D07 Mullock	5/02/2025 11:41	5/03/2025 11:41	17589/6	Dust	
D01(A) Front Gate	5/02/2025 11:13	5/03/2025 11:13	17589/7	Dust	
D11 Goldstien	5/02/2025 13:12	5/03/2025 13:31	17589/8	Dust	
D12 Ram	5/02/2025 12:03	5/03/2025 12:17	17589/9	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 12/03/2025.

Test Report Number: 17589

Date Issued: 12/03/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17589/1 5/03/2025 D08&9 Hitchcock Rd Olive Grove	17589/2 5/03/2025 D10 Hearses Rd	17589/3 5/03/2025 D06 School	17589/4 5/03/2025 D05 Bund	17589/5 5/03/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	10/03/2025	10/03/2025	10/03/2025	10/03/2025	10/03/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.7	8.7	1.9	2.2	1.3
Ash	AS 3580.10.1	g/m2/mth	0.4	3.9	1.3	1.8	0.6
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	4.8	0.6	0.4	0.7
Calculated Rain	AS 3580.10.1	mm	75	68	54	43	54

Deposited Matter		Lab ID Sample Date Sample ID	17589/6 5/03/2025 D07 Mullock	17589/7 5/03/2025 D01(A) Front Gate	17589/8 5/03/2025 D11 Goldstien	17589/9 5/03/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	10/03/2025	10/03/2025	10/03/2025	10/03/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.9	5.2	0.9	2.9
Ash	AS 3580.10.1	g/m2/mth	0.6	4.5	0.4	1.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.3	0.7	0.5	1.8
Calculated Rain	AS 3580.10.1	mm	55	44	64	66

Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 17589

Date Issued: 12/03/2025

Revision No: 00

Sampling Conditions: Cloudy, 26 - 28 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17589/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	5/03/2025 11:57	AS3580.10.1	CuSO4
17589/2	D10 Hearses Rd		T & D.Walker	5/03/2025 12:31	AS3580.10.1	CuSO4
17589/3	D06 School		T & D.Walker	5/03/2025 10:49	AS3580.10.1	CuSO4
17589/4	D05 Bund		T & D.Walker	5/03/2025 11:03	AS3580.10.1	CuSO4
17589/5	D04 Rehab		T & D.Walker	5/03/2025 11:28	AS3580.10.1	CuSO4
17589/6	D07 Mullock		T & D.Walker	5/03/2025 11:41	AS3580.10.1	CuSO4
17589/7	D01(A) Front Gate		T & D.Walker	5/03/2025 11:13	AS3580.10.1	CuSO4
17589/8	D11 Goldstien		T & D.Walker	5/03/2025 13:31	AS3580.10.1	CuSO4
17589/9	D12 Ram		T & D.Walker	5/03/2025 12:17	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17589/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
17589/2	D10 Hearses Rd	312538	6294576	Minor sand, bird droppings, vegetation, algae. - Paddock slashed
17589/3	D06 School	313518	6296537	Minor sand, minor insects
17589/4	D05 Bund	313160	6296838	Minor sand, minor insects
17589/5	D04 Rehab	312385	6296932	
17589/6	D07 Mullock	312579	6296676	Very minor sand
17589/7	D01(A) Front Gate	313290	6297176	Sand
17589/8	D11 Goldstien	312034	6294213	Minor vegetation
17589/9	D12 Ram	311750	6294159	Insects

Sampling procedures have been approved and report finalised on 12/03/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17710

Date Issued: 8/04/2025

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 2/04/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	5/03/2025 11:57	2/04/2025 11:40	17710/1	Dust	
D10 Hearses Rd	5/03/2025 12:31	2/04/2025 12:20	17710/2	Dust	
D06 School	5/03/2025 10:49	2/04/2025 10:28	17710/3	Dust	
D05 Bund	5/03/2025 11:03	2/04/2025 10:44	17710/4	Dust	
D04 Rehab	5/03/2025 11:28	2/04/2025 11:08	17710/5	Dust	
D07 Mullock	5/03/2025 11:41	2/04/2025 11:21	17710/6	Dust	
D01(A) Front Gate	5/03/2025 11:13	2/04/2025 10:53	17710/7	Dust	
D11 Goldstien	5/03/2025 13:31	2/04/2025 13:14	17710/8	Dust	
D12 Ram	5/03/2025 12:17	2/04/2025 12:01	17710/9	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 8/04/2025.

Test Report Number: 17710

Date Issued: 8/04/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17710/1 2/04/2025 D08&9 Hitchcock Rd Olive Grove	17710/2 2/04/2025 D10 Hearses Rd	17710/3 2/04/2025 D06 School	17710/4 2/04/2025 D05 Bund	17710/5 2/04/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	07/04/2025	07/04/2025	07/04/2025	07/04/2025	07/04/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.5	5.3	2.6	1.2	0.3
Ash	AS 3580.10.1	g/m2/mth	0.3	2.7	1.8	0.9	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	2.6	0.8	0.3	0.2
Calculated Rain	AS 3580.10.1	mm	112	105	112	107	115

Deposited Matter		Lab ID Sample Date Sample ID	17710/6 2/04/2025 D07 Mullock	17710/7 2/04/2025 D01(A) Front Gate	17710/8 2/04/2025 D11 Goldstien	17710/9 2/04/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	07/04/2025	07/04/2025	07/04/2025	07/04/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.6	2.6	0.9	0.5
Ash	AS 3580.10.1	g/m2/mth	0.2	2.2	0.3	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.4	0.4	0.6	0.5
Calculated Rain	AS 3580.10.1	mm	114	112	105	108

Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 17710

Date Issued: 8/04/2025

Revision No: 00

Sampling Conditions: Cloudy, 17 - 23 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17710/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	2/04/2025 11:40	AS3580.10.1	CuSO4
17710/2	D10 Hearses Rd		T & D.Walker	2/04/2025 12:20	AS3580.10.1	CuSO4
17710/3	D06 School		T & D.Walker	2/04/2025 10:28	AS3580.10.1	CuSO4
17710/4	D05 Bund		T & D.Walker	2/04/2025 10:44	AS3580.10.1	CuSO4
17710/5	D04 Rehab		T & D.Walker	2/04/2025 11:08	AS3580.10.1	CuSO4
17710/6	D07 Mullock		T & D.Walker	2/04/2025 11:21	AS3580.10.1	CuSO4
17710/7	D01(A) Front Gate		T & D.Walker	2/04/2025 10:53	AS3580.10.1	CuSO4
17710/8	D11 Goldstien		T & D.Walker	2/04/2025 13:14	AS3580.10.1	CuSO4
17710/9	D12 Ram		T & D.Walker	2/04/2025 12:01	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17710/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor insects
17710/2	D10 Hearses Rd	312538	6294576	Minor sand, minor bird droppings, minor algae
17710/3	D06 School	313518	6296537	Minor sand, minor insects, minor vegetation
17710/4	D05 Bund	313160	6296838	Very minor sand, minor insects
17710/5	D04 Rehab	312385	6296932	
17710/6	D07 Mullock	312579	6296676	
17710/7	D01(A) Front Gate	313290	6297176	Minor sand
17710/8	D11 Goldstien	312034	6294213	Minor vegetation
17710/9	D12 Ram	311750	6294159	Minor insects

Sampling procedures have been approved and report finalised on 8/04/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17892

Date Issued: 8/05/2025

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 30/04/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	2/04/2025 11:40	30/04/2025 11:41	17892/1	Dust	
D10 Hearses Rd	2/04/2025 12:20	30/04/2025 12:08	17892/2	Dust	
D06 School	2/04/2025 10:28	30/04/2025 10:42	17892/3	Dust	
D05 Bund	2/04/2025 10:44	30/04/2025 10:54	17892/4	Dust	
D04 Rehab	2/04/2025 11:08	30/04/2025 11:17	17892/5	Dust	
D07 Mullock	2/04/2025 11:21	30/04/2025 11:29	17892/6	Dust	
D01(A) Front Gate	2/04/2025 10:53	30/04/2025 11:05	17892/7	Dust	
D11 Goldstien	2/04/2025 13:14	30/04/2025 13:05	17892/8	Dust	
D12 Ram	2/04/2025 12:01	30/04/2025 11:55	17892/9	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 ManagerLiane Peyra
Technical Officer

Authorised by:

Results have been approved and report finalised on 8/05/2025.

Test Report Number: 17892

Date Issued: 8/05/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	17892/1 30/04/2025 D08&9 Hitchcock Rd Olive Grove	17892/2 30/04/2025 D10 Hearses Rd	17892/3 30/04/2025 D06 School	17892/4 30/04/2025 D05 Bund	17892/5 30/04/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	7/05/2025	7/05/2025	7/05/2025	7/05/2025	7/05/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.6	5.4	0.9	1.2	0.3
Ash	AS 3580.10.1	g/m2/mth	0.4	4.8	0.5	1.0	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.6	0.4	0.2	0.2
Calculated Rain	AS 3580.10.1	mm	77	78	88	82	81

Deposited Matter		Lab ID Sample Date Sample ID	17892/6 30/04/2025 D07 Mullock	17892/7 30/04/2025 D01(A) Front Gate	17892/8 30/04/2025 D11 Goldstien	17892/9 30/04/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	7/05/2025	7/05/2025	7/05/2025	7/05/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	1.6	0.7	0.3
Ash	AS 3580.10.1	g/m2/mth	0.2	1.2	0.2	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	0.2	0.4	0.5	0.1
Calculated Rain	AS 3580.10.1	mm	86	82	86	91

Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 17892

Date Issued: 8/05/2025

Revision No: 00

Sampling Conditions: 100% Cloudcover, 17 - 19 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17892/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	30/04/2025 11:41	AS3580.10.1	CuSO4
17892/2	D10 Hearses Rd		T & D.Walker	30/04/2025 12:08	AS3580.10.1	CuSO4
17892/3	D06 School		T & D.Walker	30/04/2025 10:42	AS3580.10.1	CuSO4
17892/4	D05 Bund		T & D.Walker	30/04/2025 10:54	AS3580.10.1	CuSO4
17892/5	D04 Rehab		T & D.Walker	30/04/2025 11:17	AS3580.10.1	CuSO4
17892/6	D07 Mullock		T & D.Walker	30/04/2025 11:29	AS3580.10.1	CuSO4
17892/7	D01(A) Front Gate		T & D.Walker	30/04/2025 11:05	AS3580.10.1	CuSO4
17892/8	D11 Goldstien		T & D.Walker	30/04/2025 13:05	AS3580.10.1	CuSO4
17892/9	D12 Ram		T & D.Walker	30/04/2025 11:55	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17892/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor insects
17892/2	D10 Hearses Rd	312538	6294576	Sand, minor bird droppings, minor algae
17892/3	D06 School	313518	6296537	Minor insects
17892/4	D05 Bund	313160	6296838	Minor sand
17892/5	D04 Rehab	312385	6296932	Minor insects
17892/6	D07 Mullock	312579	6296676	
17892/7	D01(A) Front Gate	313290	6297176	Minor insects
17892/8	D11 Goldstien	312034	6294213	Vegetation
17892/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 8/05/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 18057

Date Issued: 2/06/2025

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 28/05/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	30/04/2025 11:41	28/05/2025 11:58	18057/1	Dust	
D10 Hearses Rd	30/04/2025 12:08	28/05/2025 12:27	18057/2	Dust	
D06 School	30/04/2025 10:42	28/05/2025 10:49	18057/3	Dust	
D05 Bund	30/04/2025 10:54	28/05/2025 11:04	18057/4	Dust	
D04 Rehab	30/04/2025 11:17	28/05/2025 11:32	18057/5	Dust	
D07 Mullock	30/04/2025 11:29	28/05/2025 11:46	18057/6	Dust	
D01(A) Front Gate	30/04/2025 11:05	28/05/2025 11:14	18057/7	Dust	
D11 Goldstien	30/04/2025 13:05	28/05/2025 13:31	18057/8	Dust	
D12 Ram	30/04/2025 11:55	28/05/2025 12:13	18057/9	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 2/06/2025.

Test Report Number: 18057

Date Issued: 2/06/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	18057/1 28/05/2025 D08&9 Hitchcock Rd Olive Grove	18057/2 28/05/2025 D10 Hearses Rd	18057/3 28/05/2025 D06 School	18057/4 28/05/2025 D05 Bund	18057/5 28/05/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	30/05/2025	30/05/2025	30/05/2025	30/05/2025	30/05/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	2.2	1.8	0.6	1.1	0.3
Ash	AS 3580.10.1	g/m2/mth	2.2	1.3	0.4	1.1	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	<0.1	0.5	0.2	<0.1	0.2
Calculated Rain	AS 3580.10.1	mm	239	230	242	214	220

Deposited Matter		Lab ID Sample Date Sample ID	18057/6 28/05/2025 D07 Mullock	18057/7 28/05/2025 D01(A) Front Gate	18057/8 28/05/2025 D11 Goldstien	18057/9 28/05/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	30/05/2025	30/05/2025	30/05/2025	30/05/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	2.4	19.7	2.7	0.6
Ash	AS 3580.10.1	g/m2/mth	1.9	19.1	1.4	0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.5	0.6	1.3	0.5
Calculated Rain	AS 3580.10.1	mm	230	116	149	231



Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 18057

Date Issued: 2/06/2025

Revision No: 00

Sampling Conditions: Fine, 18 - 20 °C. Recent dust storm. Recent heavy

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18057/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	28/05/2025 11:58	AS3580.10.1	CuSO4
18057/2	D10 Hearses Rd		T & D.Walker	28/05/2025 12:27	AS3580.10.1	CuSO4
18057/3	D06 School		T & D.Walker	28/05/2025 10:49	AS3580.10.1	CuSO4
18057/4	D05 Bund		T & D.Walker	28/05/2025 11:04	AS3580.10.1	CuSO4
18057/5	D04 Rehab		T & D.Walker	28/05/2025 11:32	AS3580.10.1	CuSO4
18057/6	D07 Mullock		T & D.Walker	28/05/2025 11:46	AS3580.10.1	CuSO4
18057/7	D01(A) Front Gate		T & D.Walker	28/05/2025 11:14	AS3580.10.1	CuSO4
18057/8	D11 Goldstien		T & D.Walker	28/05/2025 13:31	AS3580.10.1	CuSO4
18057/9	D12 Ram		T & D.Walker	28/05/2025 12:13	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
18057/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	Minor sand. Major dust storm 27/5/25.
18057/2	D10 Hearses Rd	312538	6294576	Minor bird droppings, minor algae
18057/3	D06 School	313518	6296537	Insects, minor vegetation
18057/4	D05 Bund	313160	6296838	
18057/5	D04 Rehab	312385	6296932	
18057/6	D07 Mullock	312579	6296676	Sand, minor insects. Major dust storm 27/5/25.
18057/7	D01(A) Front Gate	313290	6297176	Full, major sand. Major dust storm 27/5/25.
18057/8	D11 Goldstien	312034	6294213	Full, minor vegetation
18057/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 2/06/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 18291

Date Issued: 7/07/2025

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 25/06/2025

Client Sample Reference	Date On	Date Off	Lab ID	Matrix	Comments or Non-Compliances
D08&9 Hitchcock Rd Olive Grove	28/05/2025 11:58	25/06/2025 12:38	18291/1	Dust	
D10 Hearses Rd	28/05/2025 12:27	25/06/2025 13:05	18291/2	Dust	
D06 School	28/05/2025 10:49	25/06/2025 11:27	18291/3	Dust	
D05 Bund	28/05/2025 11:04	25/06/2025 11:41	18291/4	Dust	
D04 Rehab	28/05/2025 11:32	25/06/2025 12:03	18291/5	Dust	
D07 Mullock	28/05/2025 11:46	25/06/2025 12:17	18291/6	Dust	
D01(A) Front Gate	28/05/2025 11:14	25/06/2025 11:49	18291/7	Dust	
D11 Goldstien	28/05/2025 13:31	25/06/2025 13:22	18291/8	Dust	
D12 Ram	28/05/2025 12:13	25/06/2025 12:51	18291/9	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 7/07/2025.

Test Report Number: 18291

Date Issued: 7/07/2025

Revision No: 00

Results

Deposited Matter		Lab ID Sample Date Sample ID	18291/1 25/06/2025 D08&9 Hitchcock Rd Olive Grove	18291/2 25/06/2025 D10 Hearses Rd	18291/3 25/06/2025 D06 School	18291/4 25/06/2025 D05 Bund	18291/5 25/06/2025 D04 Rehab
	Method	Units					
Date Tested	AS 3580.10.1	--	3/07/2025	3/07/2025	3/07/2025	3/07/2025	3/07/2025
Number of Days	AS 3580.10.1	days	28	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.4	6.6	1.0	1.2	0.1
Ash	AS 3580.10.1	g/m2/mth	0.3	2.6	0.5	0.8	<0.1
Combustible Matter	AS 3580.10.1	g/m2/mth	0.1	4.0	0.5	0.4	0.1
Calculated Rain	AS 3580.10.1	mm	10	7	8	7	7

Deposited Matter		Lab ID Sample Date Sample ID	18291/6 25/06/2025 D07 Mullock	18291/7 25/06/2025 D01(A) Front Gate	18291/8 25/06/2025 D11 Goldstien	18291/9 25/06/2025 D12 Ram
	Method	Units				
Date Tested	AS 3580.10.1	--	3/07/2025	3/07/2025	3/07/2025	3/07/2025
Number of Days	AS 3580.10.1	days	28	28	28	28
Insoluble Solids	AS 3580.10.1	g/m2/mth	0.2	2.1	0.5	0.2
Ash	AS 3580.10.1	g/m2/mth	0.2	2.0	0.2	0.2
Combustible Matter	AS 3580.10.1	g/m2/mth	<0.1	0.1	0.3	<0.1
Calculated Rain	AS 3580.10.1	mm	7	9	6	8



Report Comments:

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

Guideline applied - EPL Dust Limits.

Results in **bold** indicate an exceedance of the applied 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: 18291

Date Issued: 7/07/2025

Revision No: 00

Sampling Conditions: Strong NW wind @ 50kph. 16 - 17 °C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18291/1	D08&9 Hitchcock Rd Olive Grove		T & D.Walker	25/06/2025 12:38	AS3580.10.1	CuSO4
18291/2	D10 Hearses Rd		T & D.Walker	25/06/2025 13:05	AS3580.10.1	CuSO4
18291/3	D06 School		T & D.Walker	25/06/2025 11:27	AS3580.10.1	CuSO4
18291/4	D05 Bund		T & D.Walker	25/06/2025 11:41	AS3580.10.1	CuSO4
18291/5	D04 Rehab		T & D.Walker	25/06/2025 12:03	AS3580.10.1	CuSO4
18291/6	D07 Mullock		T & D.Walker	25/06/2025 12:17	AS3580.10.1	CuSO4
18291/7	D01(A) Front Gate		T & D.Walker	25/06/2025 11:49	AS3580.10.1	CuSO4
18291/8	D11 Goldstien		T & D.Walker	25/06/2025 13:22	AS3580.10.1	CuSO4
18291/9	D12 Ram		T & D.Walker	25/06/2025 12:51	AS3580.10.1	CuSO4

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
18291/1	D08&9 Hitchcock Rd Olive Grove	313058	6295137	
18291/2	D10 Hearses Rd	312538	6294576	Major bird droppings, major algae, funnel blocked with bird droppings
18291/3	D06 School	313518	6296537	Minor bird droppings, minor vegetation
18291/4	D05 Bund	313160	6296838	
18291/5	D04 Rehab	312385	6296932	
18291/6	D07 Mullock	312579	6296676	
18291/7	D01(A) Front Gate	313290	6297176	Minor sand
18291/8	D11 Goldstien	312034	6294213	Minor vegetation
18291/9	D12 Ram	311750	6294159	

Sampling procedures have been approved and report finalised on 7/07/2025.

Where method is "unknown" sampling procedures are not endorsed

Appendix B – PM10, TSP and Weather Station Reports



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

JULY 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 29 August 2024

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for July 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³;
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 100% of valid meteorological data was recorded for July 2024.

Approximately 100% of valid TEOM data was available for July 2024.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³ and the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 100% of valid TEOM data was available for July 2024.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024.

The quarterly TEOM calibration was conducted in May 2024 (for June). The next calibration is due to be completed in September 2024. The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for July 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/07/2024	9.1	9.1	22.8	22.8
2/07/2024	8.9	9.0	22.3	22.5
3/07/2024	9.2	9.1	23.0	22.7
4/07/2024	11.0	9.6	27.5	23.9
5/07/2024	7.9	9.2	19.8	23.1
6/07/2024	8.2	9.1	20.5	22.6
7/07/2024	8.1	8.9	20.3	22.3
8/07/2024	9.3	9.0	23.3	22.4
9/07/2024	5.8	8.6	14.5	21.5
10/07/2024	9.2	8.7	23.0	21.7
11/07/2024	9.9	8.8	24.8	22.0
12/07/2024	12.0	9.1	30.0	22.6
13/07/2024	7.3	8.9	18.3	22.3
14/07/2024	4.3	8.6	10.8	21.5
15/07/2024	9.5	8.6	23.8	21.6
16/07/2024	12.5	8.9	31.3	22.2
17/07/2024	8.1	8.8	20.3	22.1
18/07/2024	10.5	8.9	26.3	22.3
19/07/2024	7.8	8.9	19.5	22.2
20/07/2024	18.8	9.4	47.0	23.4
21/07/2024	9.2	9.4	23.0	23.4
22/07/2024	13.4	9.5	33.5	23.9
23/07/2024	11.2	9.6	28.0	24.0
24/07/2024	9.3	9.6	23.3	24.0
25/07/2024	14.9	9.8	37.3	24.5
26/07/2024	8.5	9.8	21.3	24.4
27/07/2024	7.5	9.7	18.8	24.2
28/07/2024	4.3	9.5	10.8	23.7
29/07/2024	11.0	9.5	27.5	23.9
30/07/2024	12.4	9.6	31.0	24.1
31/07/2024	11.7	9.7	29.3	24.3

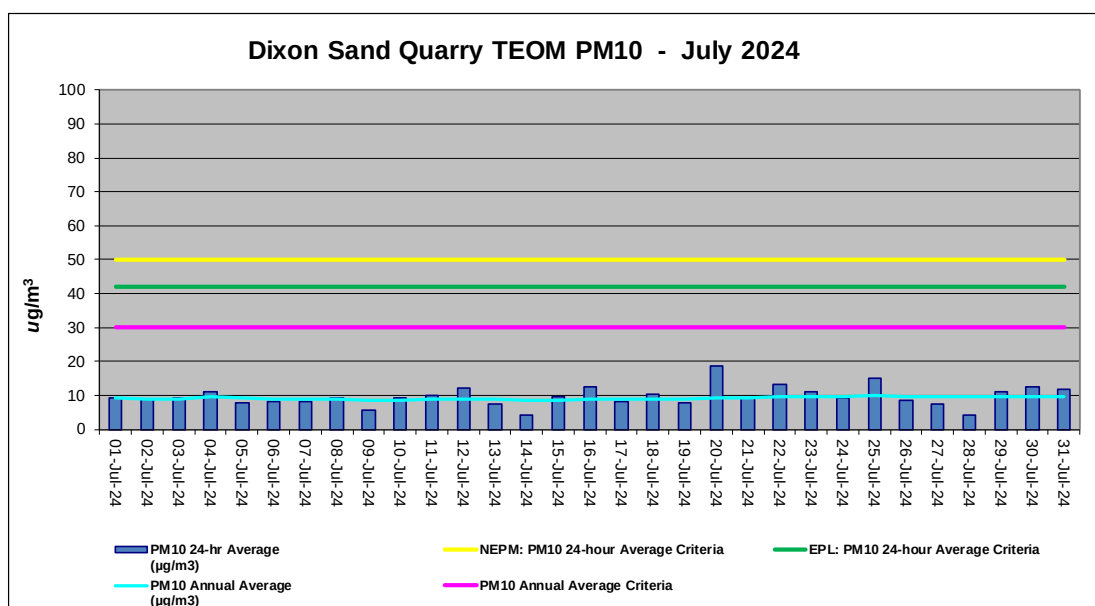


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A windrose is provided in **Figure 4**. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

A 6-monthly physical screening and system check of the meteorological station was conducted in March 2024 and is next due in September 2024. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 100% of valid meteorological data was recorded for July 2024.

Dixon Sand Quarry Environmental Monitoring Project – July 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/07/2024	5.5	9.1	13.7	0.4	0.2	4.8	13.7	65.1	84.4	100.0	1000.6	1004.3	1007.6
2/07/2024	7.5	9.1	11.6	10.8	0.5	4.3	11.9	92.6	99.8	100.0	1007.3	1009.7	1012.3
3/07/2024	7.5	10.0	15.4	3.0	1.0	5.1	11.3	60.8	93.7	100.0	1011.8	1013.0	1014.4
4/07/2024	8.4	11.2	15.7	1.8	0.3	4.0	11.1	53.2	90.0	100.0	1013.1	1014.2	1015.5
5/07/2024	9.0	11.2	14.6	5.2	0.5	3.6	10.4	81.3	98.0	100.0	1014.5	1016.7	1018.7
6/07/2024	8.4	10.9	14.9	6.0	0.2	3.2	12.0	63.1	91.7	100.0	1016.0	1017.5	1019.5
7/07/2024	8.6	11.3	15.1	0.2	0.0	2.0	9.5	81.4	97.1	100.0	1009.9	1012.9	1016.2
8/07/2024	11.1	12.4	15.4	1.2	0.1	2.3	7.8	83.0	97.4	100.0	1001.5	1005.5	1010.1
9/07/2024	10.8	13.3	17.6	1.4	0.1	4.1	15.6	65.2	87.8	100.0	998.5	1000.1	1001.4
10/07/2024	9.0	12.5	16.9	0.2	0.1	3.0	7.9	58.6	77.1	91.5	1000.1	1001.4	1003.3
11/07/2024	7.3	11.3	14.9	0.0	0.1	2.5	11.6	64.3	82.4	100.0	997.8	1000.8	1003.4
12/07/2024	7.0	10.7	16.5	0.0	0.0	2.6	8.8	46.7	82.9	100.0	991.4	993.9	997.8
13/07/2024	8.2	11.4	15.2	0.0	0.0	4.5	19.6	51.3	68.5	88.1	990.7	991.7	993.0
14/07/2024	6.2	9.7	15.3	0.0	0.0	2.8	12.4	44.9	64.1	78.6	989.5	991.3	992.7
15/07/2024	5.0	8.7	13.3	0.0	0.4	5.1	19.4	36.5	57.6	77.7	984.1	987.6	990.1
16/07/2024	7.3	9.8	12.4	0.0	1.0	6.1	20.7	53.0	61.7	69.4	981.4	983.0	985.3
17/07/2024	9.2	12.3	16.5	0.0	0.2	3.9	16.5	45.5	66.2	88.7	984.7	987.1	991.8
18/07/2024	6.1	11.1	16.2	0.0	0.1	2.7	17.6	40.3	66.6	88.8	991.5	993.2	996.3
19/07/2024	5.6	9.8	14.9	0.0	0.3	4.9	26.9	39.2	54.7	68.0	990.3	994.3	996.6
20/07/2024	10.4	12.2	14.9	0.0	0.3	8.3	32.7	35.3	52.7	69.6	985.1	987.7	991.2
21/07/2024	8.2	11.6	17.1	0.0	0.0	3.8	14.3	27.9	49.4	63.3	990.9	997.8	1003.7
22/07/2024	7.3	11.8	16.7	0.0	0.2	2.6	8.8	49.1	64.2	78.1	1003.5	1005.3	1007.1
23/07/2024	7.6	12.4	18.7	0.0	0.2	2.9	8.3	34.4	61.6	81.7	1004.7	1006.1	1008.1
24/07/2024	7.1	13.0	18.7	0.0	0.8	5.7	16.3	48.4	63.4	86.4	999.9	1002.6	1005.3
25/07/2024	11.3	15.8	20.4	0.0	0.6	7.3	17.6	48.6	56.6	63.9	995.9	998.3	1000.7
26/07/2024	9.8	14.1	19.6	5.4	0.2	4.0	13.4	43.4	73.9	100.0	996.6	999.6	1002.2
27/07/2024	8.0	11.1	15.5	6.4	0.1	2.9	13.0	80.9	95.2	100.0	995.6	998.4	1001.4
28/07/2024	5.8	9.5	13.0	0.2	0.3	5.0	23.0	33.0	57.8	88.0	995.3	998.2	1001.4
29/07/2024	3.8	8.6	13.6	0.0	0.1	5.4	23.6	38.9	55.3	80.1	1001.3	1005.1	1010.1
30/07/2024	6.0	9.3	14.5	0.0	0.6	5.7	18.1	47.9	61.9	72.2	1010.1	1011.9	1013.4
31/07/2024	6.9	9.9	13.6	0.0	0.9	5.1	21.7	56.2	65.5	73.8	1012.3	1013.2	1014.5
Monthly	3.8	11.1	20.4	42.2	0.0	4.2	32.7	27.9	73.5	100.0	981.4	1001.4	1019.5

Table 3: Meteorological Data Summary for July 2024

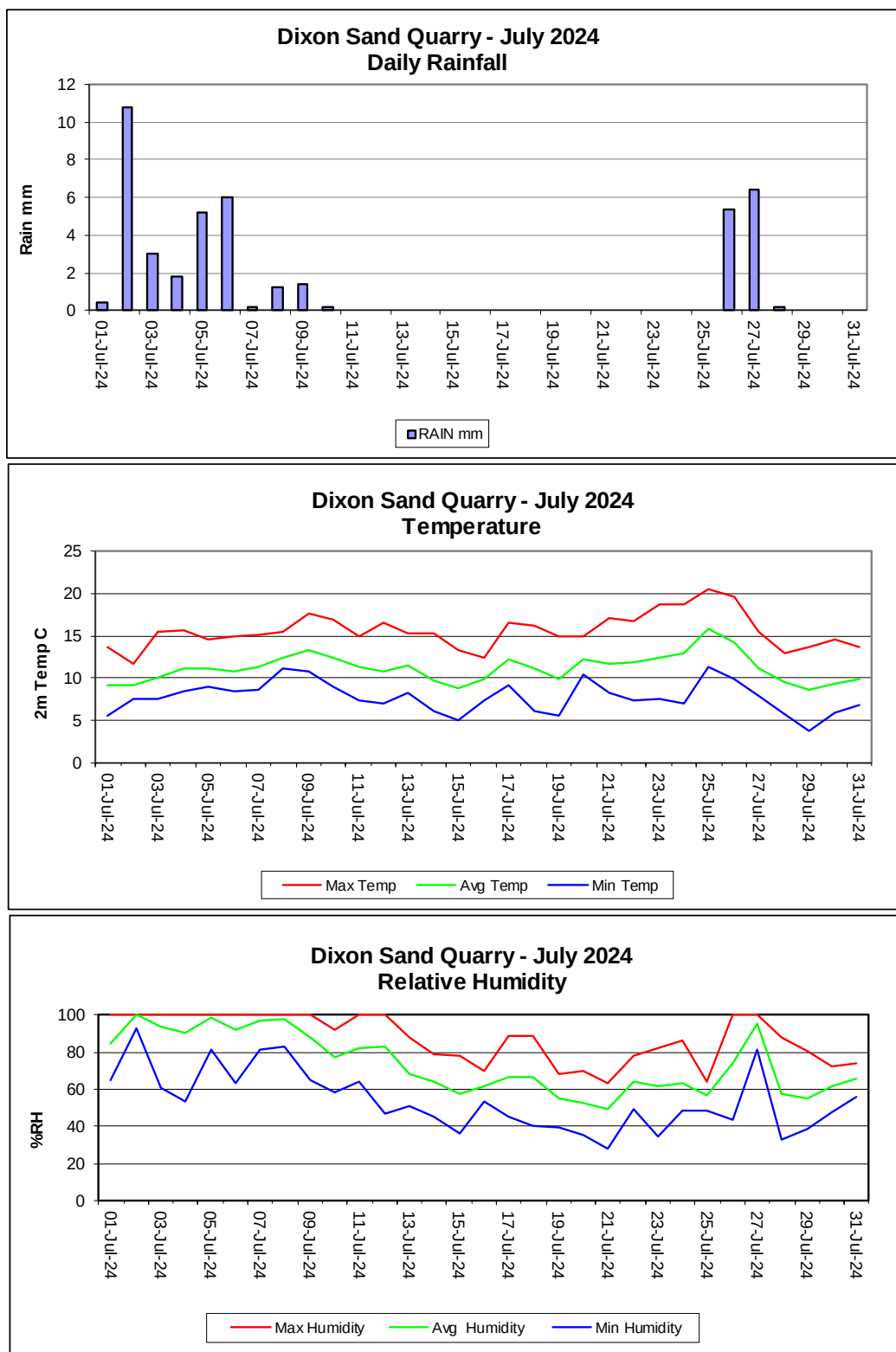


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

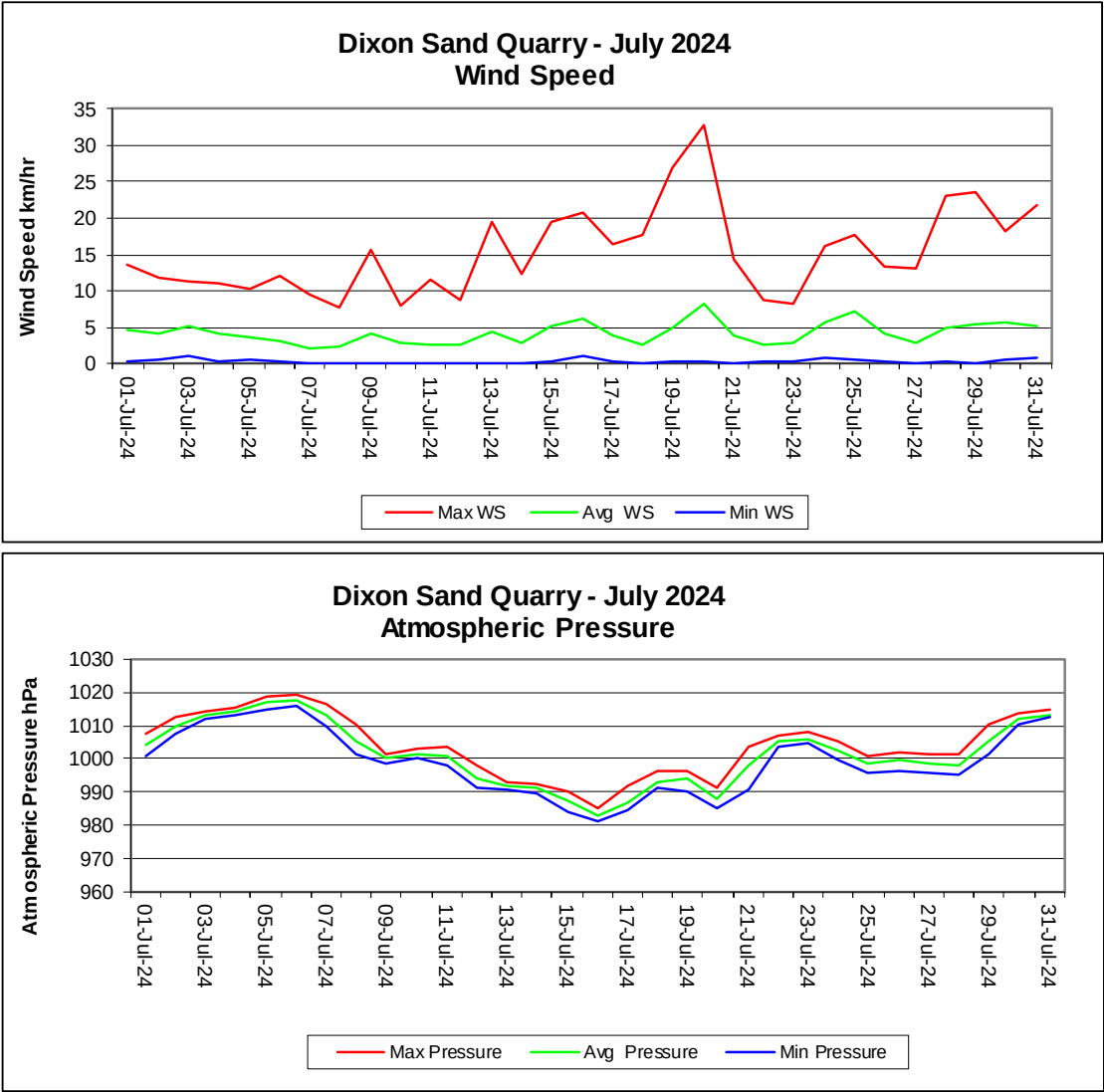


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose JULY 2024

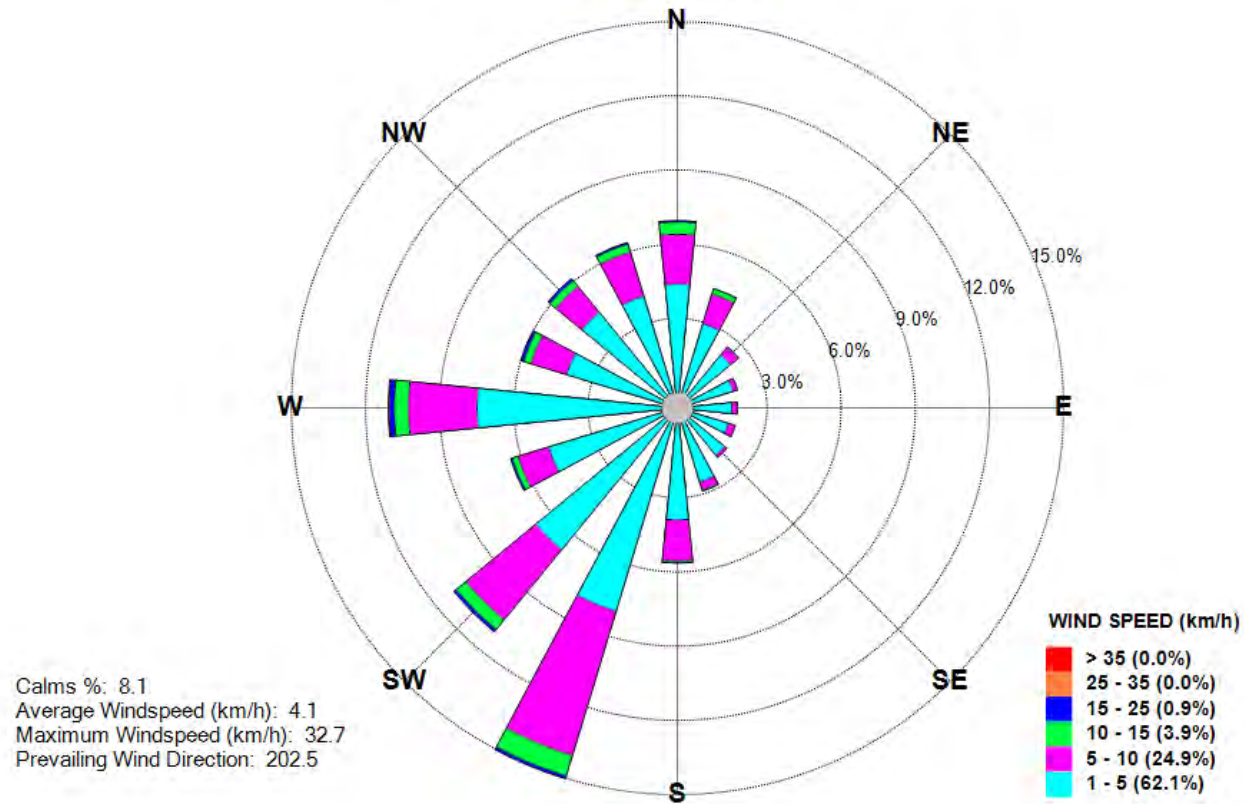


Figure 4: Monthly Windrose



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

AUGUST 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 30 September 2024

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for August 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³;
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 100% of valid meteorological data was recorded for August 2024.

Approximately 97% of valid TEOM data was available for August 2024.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³ and the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 97% of valid TEOM data was available for August 2024 due to power outages.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted in May 2024 (for June). The next calibration is due to be completed in September 2024. The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for August 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/08/2024	14.0	9.8	35.0	24.6
2/08/2024	12.7	9.9	31.8	24.8
3/08/2024	9.2	9.9	23.0	24.8
4/08/2024	11.2	9.9	28.0	24.9
5/08/2024	15.6	10.1	39.0	25.2
6/08/2024	13.4	10.2	33.5	25.5
7/08/2024	13.5	10.3	33.8	25.7
8/08/2024	17.3	10.5	43.3	26.1
9/08/2024	18.7	10.7	46.8	26.7
10/08/2024	17.7	10.8	44.3	27.1
11/08/2024	13.7	10.9	34.3	27.3
12/08/2024	21.0	11.1	52.5	27.8
13/08/2024	19.8	11.3	49.5	28.3
14/08/2024	9.6	11.3	24.0	28.2
15/08/2024	8.6	11.2	21.5	28.1
16/08/2024	10.9	11.2	27.3	28.1
17/08/2024	4.4	11.1	11.0	27.7
18/08/2024	10.4	11.1	26.0	27.7
19/08/2024	12.8	11.1	32.0	27.8
20/08/2024	13.8	11.2	34.5	27.9
21/08/2024	15.8	11.2	39.5	28.1
22/08/2024	9.2	11.2	23.0	28.0
23/08/2024	13.9	11.3	34.8	28.1
24/08/2024	10.7	11.2	26.8	28.1
25/08/2024	9.8	11.2	24.5	28.1
26/08/2024	11.7	11.2	29.3	28.1
27/08/2024	9.5	11.2	23.8	28.0
28/08/2024	20.0	11.4	50.0	28.4
29/08/2024	ND	11.4	ND	28.4
30/08/2024	ND	11.4	ND	28.4
31/08/2024	17.8	11.5	44.5	28.6

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

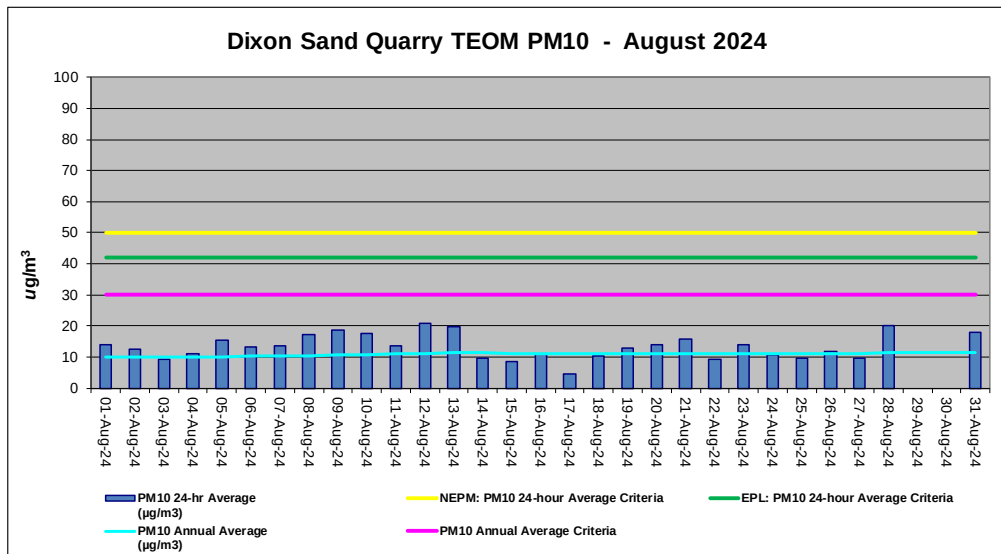


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2 and 3**. A windrose is provided in **Figure 4**. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

A 6-monthly physical screening and system check of the meteorological station was conducted in March 2024 and is next due in September 2024. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 100% of valid meteorological data was recorded for August 2024.

Dixon Sand Quarry Environmental Monitoring Project – August 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/08/2024	7.3	10.2	13.9	0.0	0.6	4.9	14.0	61.5	71.1	83.6	1010.1	1011.5	1013.1
2/08/2024	7.4	10.3	15.6	1.6	0.2	3.8	12.2	58.2	86.3	100.0	1008.5	1009.7	1011.0
3/08/2024	6.1	11.2	16.8	0.2	0.2	3.2	13.2	34.5	77.2	100.0	1007.0	1008.6	1010.6
4/08/2024	5.7	10.4	14.7	0.0	0.1	2.1	7.2	50.4	76.0	99.9	1006.4	1007.6	1009.5
5/08/2024	7.7	10.6	13.6	0.0	0.2	2.6	11.9	69.4	86.7	100.0	1001.0	1003.9	1007.2
6/08/2024	7.9	11.7	17.1	0.0	0.0	2.9	10.9	43.9	78.9	100.0	1001.1	1002.8	1004.3
7/08/2024	6.1	11.0	17.1	0.0	0.0	2.4	7.4	33.5	69.5	93.3	1003.7	1006.0	1008.3
8/08/2024	5.7	11.9	18.8	0.0	0.2	2.7	14.9	46.5	77.9	100.0	1004.9	1007.3	1009.4
9/08/2024	9.7	13.8	20.3	0.0	0.2	3.0	10.1	44.7	77.4	99.9	1004.6	1006.1	1007.6
10/08/2024	9.3	12.9	18.5	0.0	0.0	3.2	13.6	65.9	90.3	100.0	1006.6	1008.4	1010.5
11/08/2024	10.2	12.5	17.2	6.6	0.1	2.3	10.2	70.7	96.4	100.0	1010.0	1011.1	1012.4
12/08/2024	10.6	12.3	13.9	1.2	0.1	1.8	7.0	99.9	99.9	99.9	1010.3	1011.7	1013.7
13/08/2024	12.2	14.5	16.9	1.8	0.0	2.0	7.0	98.9	99.9	100.0	1004.6	1007.7	1010.4
14/08/2024	14.0	14.6	15.8	6.8	0.0	1.9	7.0	99.9	99.9	100.0	999.3	1001.6	1004.6
15/08/2024	12.8	14.1	15.8	0.0	0.1	3.1	9.4	99.9	99.9	100.0	997.3	998.6	1000.1
16/08/2024	13.0	15.4	19.8	0.2	0.1	2.8	10.3	70.4	88.9	99.9	989.8	993.4	997.8
17/08/2024	11.8	14.9	19.7	0.0	0.0	4.8	17.8	33.9	60.9	85.3	985.7	988.2	990.0
18/08/2024	10.2	12.8	16.4	0.0	0.1	3.4	17.1	58.3	71.6	83.9	989.3	995.7	1002.3
19/08/2024	9.5	12.5	17.3	0.0	0.1	2.9	14.5	54.0	80.2	100.0	1002.3	1004.6	1006.5
20/08/2024	10.0	14.9	20.8	0.0	0.0	3.4	15.6	52.8	80.8	100.0	996.8	1001.6	1005.6
21/08/2024	14.5	19.0	24.7	0.0	0.1	6.3	30.4	29.3	57.4	82.8	993.4	995.5	998.6
22/08/2024	13.0	16.3	21.3	0.0	0.0	2.9	10.7	38.2	56.2	72.9	997.3	999.3	1002.9
23/08/2024	9.9	14.9	20.5	0.0	0.1	3.6	13.4	37.1	61.1	83.0	1001.2	1003.4	1006.0
24/08/2024	12.6	18.4	25.0	0.8	0.5	7.5	21.1	39.3	61.6	88.9	993.9	997.5	1001.2
25/08/2024	16.6	18.8	20.4	0.0	0.7	6.3	26.7	54.8	68.7	85.7	990.8	994.9	996.9
26/08/2024	13.2	18.8	24.6	0.0	0.3	3.8	14.6	21.3	43.6	80.7	989.4	995.7	1000.8
27/08/2024	9.4	16.8	24.5	0.0	0.2	4.7	18.1	19.6	46.4	78.3	993.7	998.5	1002.8
28/08/2024	16.9	21.7	27.2	0.0	0.2	6.4	24.8	20.4	30.4	43.2	987.2	990.5	993.7
29/08/2024	12.4	16.4	21.4	0.0	0.0	3.6	11.8	26.1	38.1	56.4	990.6	993.2	995.7
30/08/2024	14.0	21.5	28.5	0.0	0.4	6.7	32.2	22.7	36.0	46.7	980.7	984.8	991.0
31/08/2024	15.6	19.1	22.8	0.0	0.6	6.5	25.2	23.1	35.3	48.5	982.3	987.8	991.7
Monthly	5.7	14.7	28.5	19.2	0.0	3.8	32.2	19.6	71.1	100.0	980.7	1000.9	1013.7

Table 3: Meteorological Data Summary for August 2024

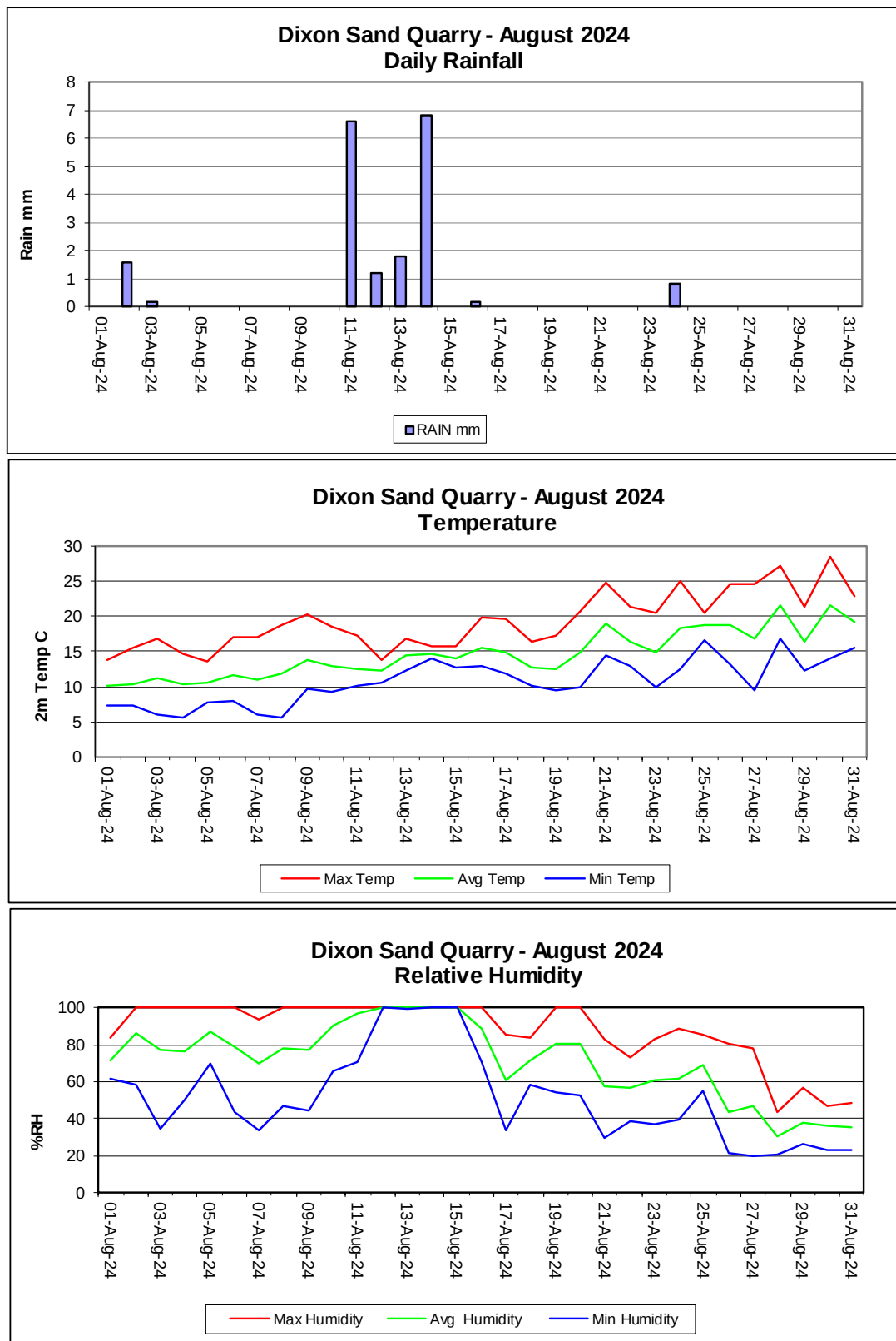


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

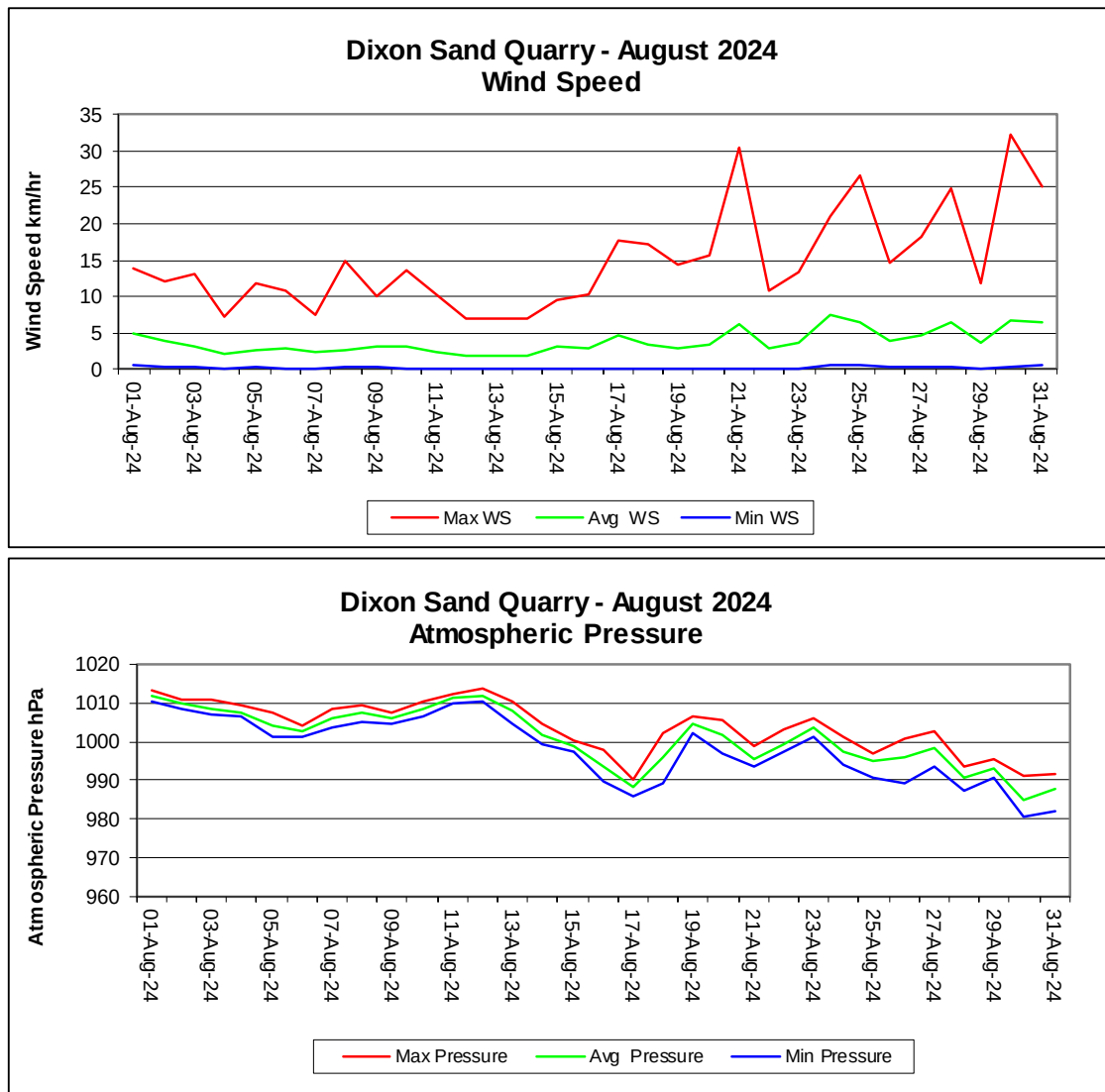


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose

AUGUST 2024

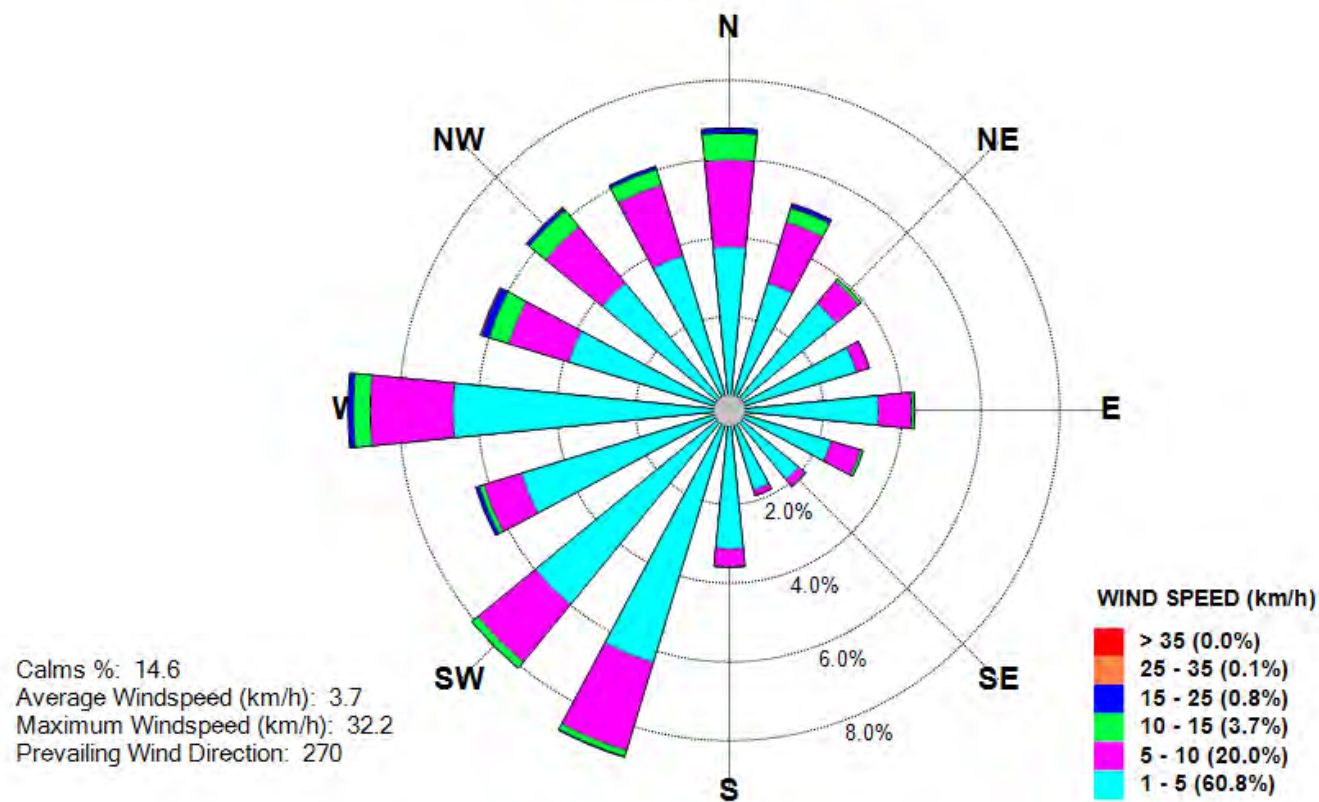


Figure 4: Monthly Windrose



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

SEPTEMBER 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 28 October 2024

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for September 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³; with the exception of 1 occurrence on the 2/09/2024 (47.1)
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 100% of valid meteorological data was recorded for September 2024.

Approximately 100% of valid TEOM data was available for September 2024.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³ with the exception of one occurrence (2/09/2024) highlighted yellow in Table 2.

Approximately 100% of valid TEOM data was available for September 2024.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The quarterly TEOM calibration was conducted on 10 September 2024. The next calibration is due to be completed in December 2024. The calibration certificate is provided in **Appendix 1** (when required).

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/09/2024	11.2	11.5	28.0	28.6
2/09/2024	47.1	12.0	117.8	30.1
3/09/2024	14.6	12.1	36.5	30.2
4/09/2024	18.5	12.2	46.3	30.4
5/09/2024	21.9	12.3	54.8	30.8
6/09/2024	21.1	12.5	52.8	31.1
7/09/2024	21.7	12.6	54.3	31.5
8/09/2024	7.7	12.5	19.3	31.3
9/09/2024	17.7	12.6	44.3	31.5
10/09/2024	16.0	12.6	40.0	31.6
11/09/2024	21.8	12.8	54.5	31.9
12/09/2024	25.5	12.9	63.8	32.4
13/09/2024	12.5	12.9	31.3	32.4
14/09/2024	9.2	12.9	23.0	32.2
15/09/2024	10.2	12.9	25.5	32.1
16/09/2024	10.4	12.8	26.0	32.1
17/09/2024	12.4	12.8	31.0	32.0
18/09/2024	13.3	12.8	33.3	32.1
19/09/2024	25.6	13.0	64.0	32.5
20/09/2024	18.8	13.1	47.0	32.6
21/09/2024	11.7	13.0	29.3	32.6
22/09/2024	9.8	13.0	24.5	32.5
23/09/2024	11.8	13.0	29.5	32.5
24/09/2024	22.6	13.1	56.5	32.8
25/09/2024	29.5	13.3	73.8	33.2
26/09/2024	9.3	13.2	23.3	33.1
27/09/2024	10.0	13.2	25.0	33.0
28/09/2024	9.0	13.2	22.5	32.9
29/09/2024	8.7	13.1	21.8	32.8
30/09/2024	13.0	13.1	32.5	32.8

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for September 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

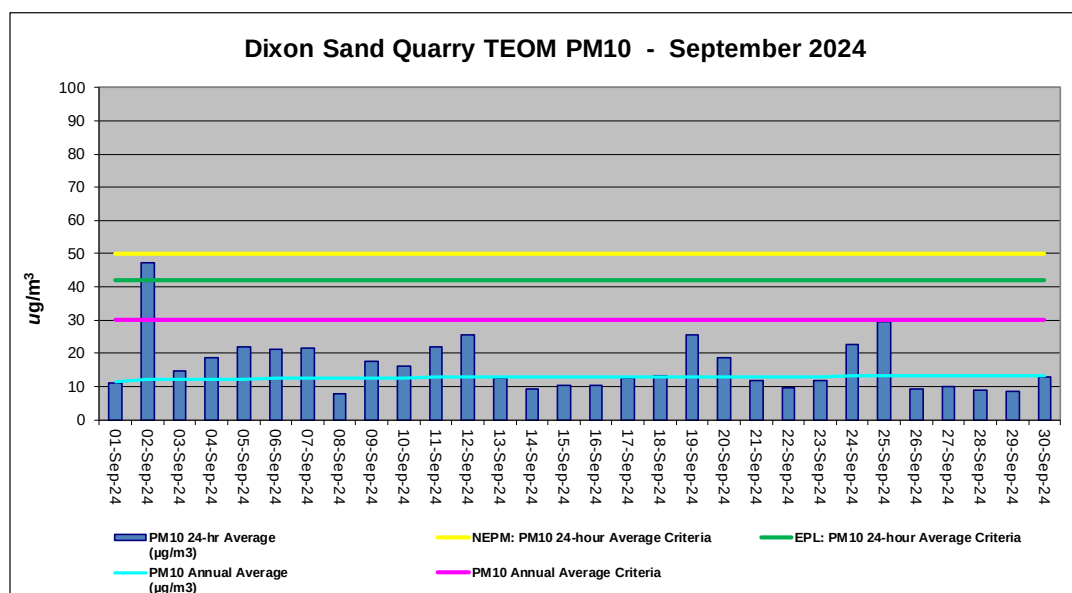


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A windrose is provided in **Figure 4**. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

A 6-monthly physical screening and system check of the meteorological station was conducted on 10 September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 100% of valid meteorological data was recorded for September 2024.

Dixon Sand Quarry Environmental Monitoring Project – September 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/09/2024	14.5	19.7	25.4	0.0	0.2	5.7	24.2	12.2	28.7	39.7	990.2	991.9	993.7
2/09/2024	11.6	17.6	23.4	0.0	1.0	7.7	34.5	18.0	28.7	35.0	989.4	994.4	1004.5
3/09/2024	7.4	11.9	17.3	0.0	0.1	3.2	11.3	24.9	42.7	64.1	1004.5	1008.6	1011.3
4/09/2024	6.7	14.2	21.5	0.0	0.4	5.3	17.7	26.7	49.3	79.4	1002.6	1006.9	1010.9
5/09/2024	14.1	19.6	25.7	0.0	0.0	6.4	29.8	27.6	39.2	55.7	1000.7	1003.0	1005.4
6/09/2024	15.5	21.2	27.3	0.0	0.5	7.1	22.8	25.2	43.7	60.8	999.0	1001.7	1004.3
7/09/2024	15.1	19.7	27.4	0.0	0.0	6.1	24.9	31.6	63.9	100.0	999.9	1001.7	1003.7
8/09/2024	13.9	15.6	19.5	0.0	0.0	2.5	12.0	36.7	76.7	99.9	996.6	999.5	1002.0
9/09/2024	12.3	16.4	23.0	0.0	0.3	3.8	14.4	31.4	45.9	58.6	995.9	998.4	1001.8
10/09/2024	10.6	15.2	21.8	0.0	0.2	3.7	17.9	47.1	67.3	92.6	1001.8	1004.7	1006.3
11/09/2024	10.7	18.2	25.6	0.0	0.3	3.4	16.3	30.5	63.2	98.6	1000.1	1002.8	1005.9
12/09/2024	11.3	15.3	19.8	1.4	0.2	5.7	16.7	51.8	75.9	100.0	999.0	1002.3	1006.6
13/09/2024	9.2	12.7	18.2	0.0	0.0	5.7	18.9	40.0	69.2	93.8	1004.9	1006.6	1008.2
14/09/2024	8.2	14.8	23.1	0.0	0.2	4.4	15.0	18.8	60.5	100.0	998.2	1002.3	1006.2
15/09/2024	6.7	10.5	15.9	0.0	0.2	6.9	22.2	30.2	52.1	76.6	1003.2	1006.2	1008.8
16/09/2024	5.2	11.5	20.4	0.0	0.1	3.8	15.9	15.0	55.3	79.2	1002.2	1005.8	1008.5
17/09/2024	7.2	13.4	20.6	0.0	0.0	3.1	11.4	33.0	57.7	84.3	1001.0	1004.0	1006.9
18/09/2024	8.8	16.9	25.2	0.0	0.2	4.7	14.6	9.2	31.1	55.2	993.2	996.9	1001.9
19/09/2024	14.6	19.3	25.7	0.0	0.2	6.4	27.2	9.6	22.6	33.5	986.3	989.8	993.7
20/09/2024	11.3	16.9	24.0	0.0	0.1	4.4	13.9	13.3	32.0	53.1	987.6	990.1	992.0
21/09/2024	11.5	16.6	22.4	0.0	0.4	5.0	22.9	22.0	36.7	51.3	989.2	991.4	994.8
22/09/2024	10.6	17.6	24.5	0.0	0.1	4.5	15.5	20.8	38.0	58.0	994.3	996.2	999.1
23/09/2024	13.0	19.7	27.9	0.0	0.1	4.0	15.2	18.8	37.9	56.7	996.1	998.9	1000.7
24/09/2024	11.7	19.1	24.5	0.0	0.1	4.4	17.2	32.2	48.1	75.4	996.2	999.3	1002.5
25/09/2024	16.4	21.5	28.0	1.6	0.4	4.7	24.4	26.5	46.4	86.3	990.4	994.0	996.8
26/09/2024	8.5	11.0	18.1	34.0	0.1	6.5	17.3	70.6	95.8	99.9	992.2	999.1	1004.4
27/09/2024	8.6	11.2	15.6	6.8	0.0	5.3	25.0	64.9	92.2	100.0	1003.9	1006.7	1009.4
28/09/2024	9.4	12.9	17.5	2.0	0.2	5.1	29.2	57.8	89.7	100.0	1005.2	1007.4	1009.6
29/09/2024	11.0	14.7	18.1	0.8	0.1	3.0	9.7	84.2	98.4	100.0	998.8	1002.0	1006.0
30/09/2024	11.3	15.4	20.3	4.6	0.1	4.3	18.5	58.7	85.4	100.0	997.0	1000.3	1003.6
Monthly	5.2	16.0	28.0	51.2	0.0	4.9	34.5	9.2	55.8	100.0	986.3	1000.4	1011.3

Table 3: Meteorological Data Summary for September 2024

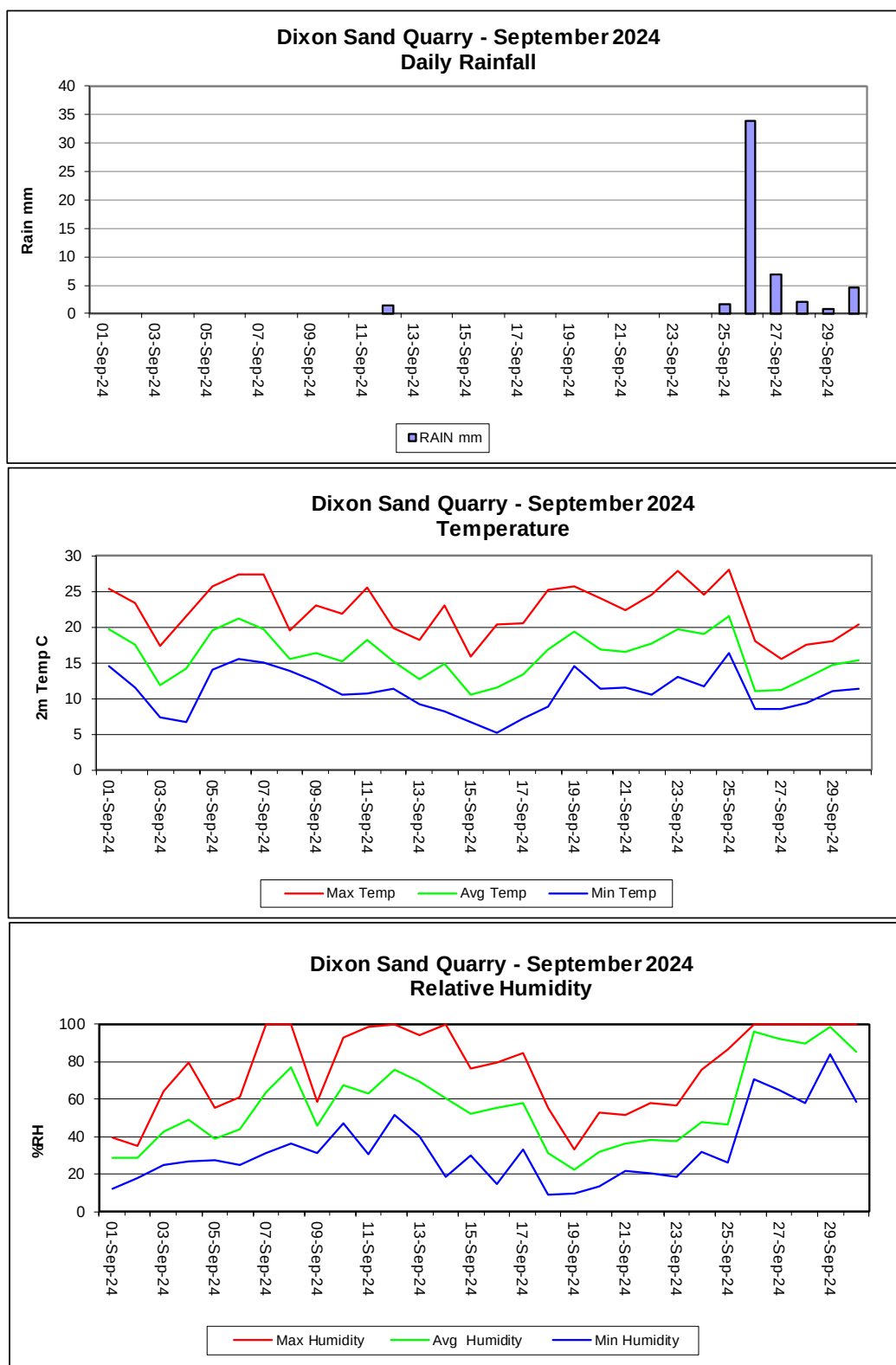


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

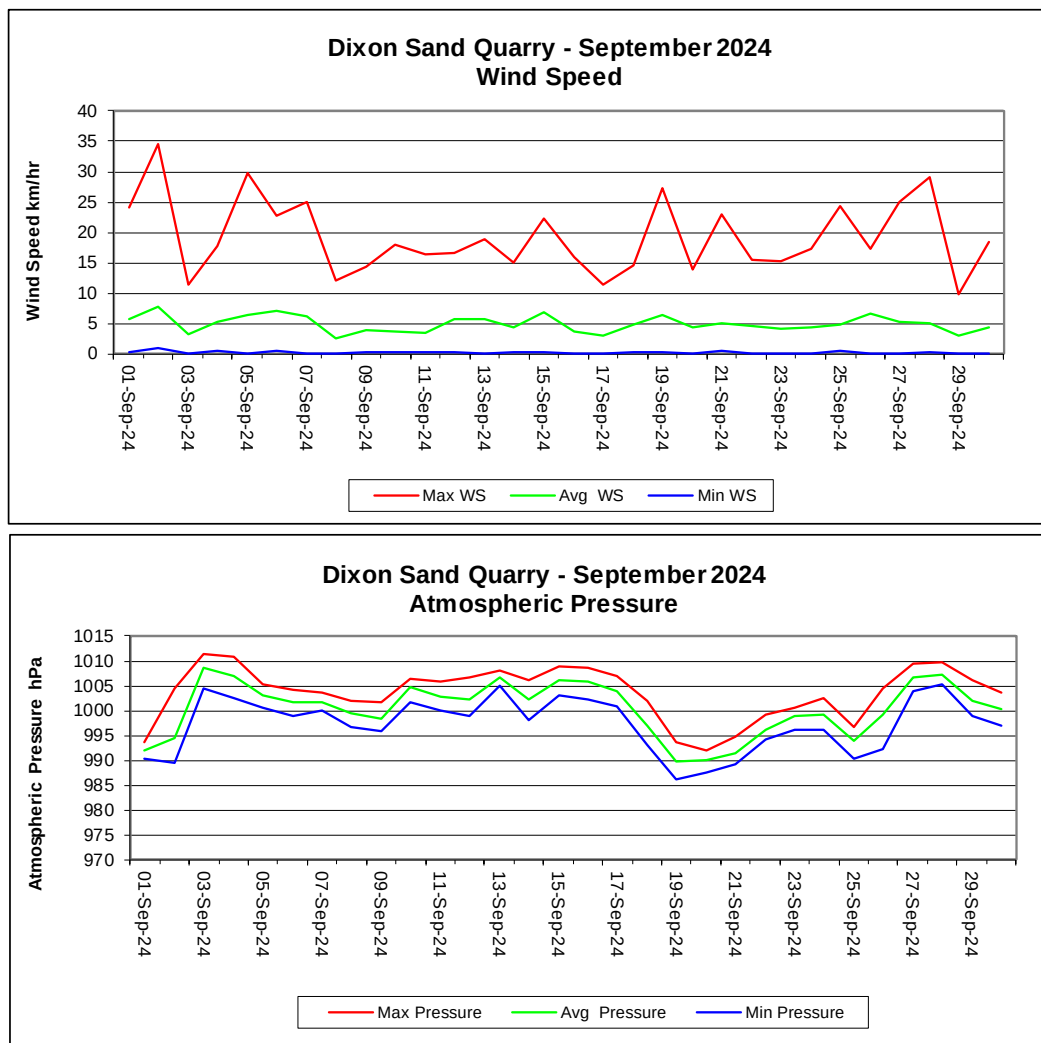


Figure 3: *Wind Speed and Atmospheric Pressure Charts*

Dixon Sand Quarry - Windrose

SEPTEMBER 2024

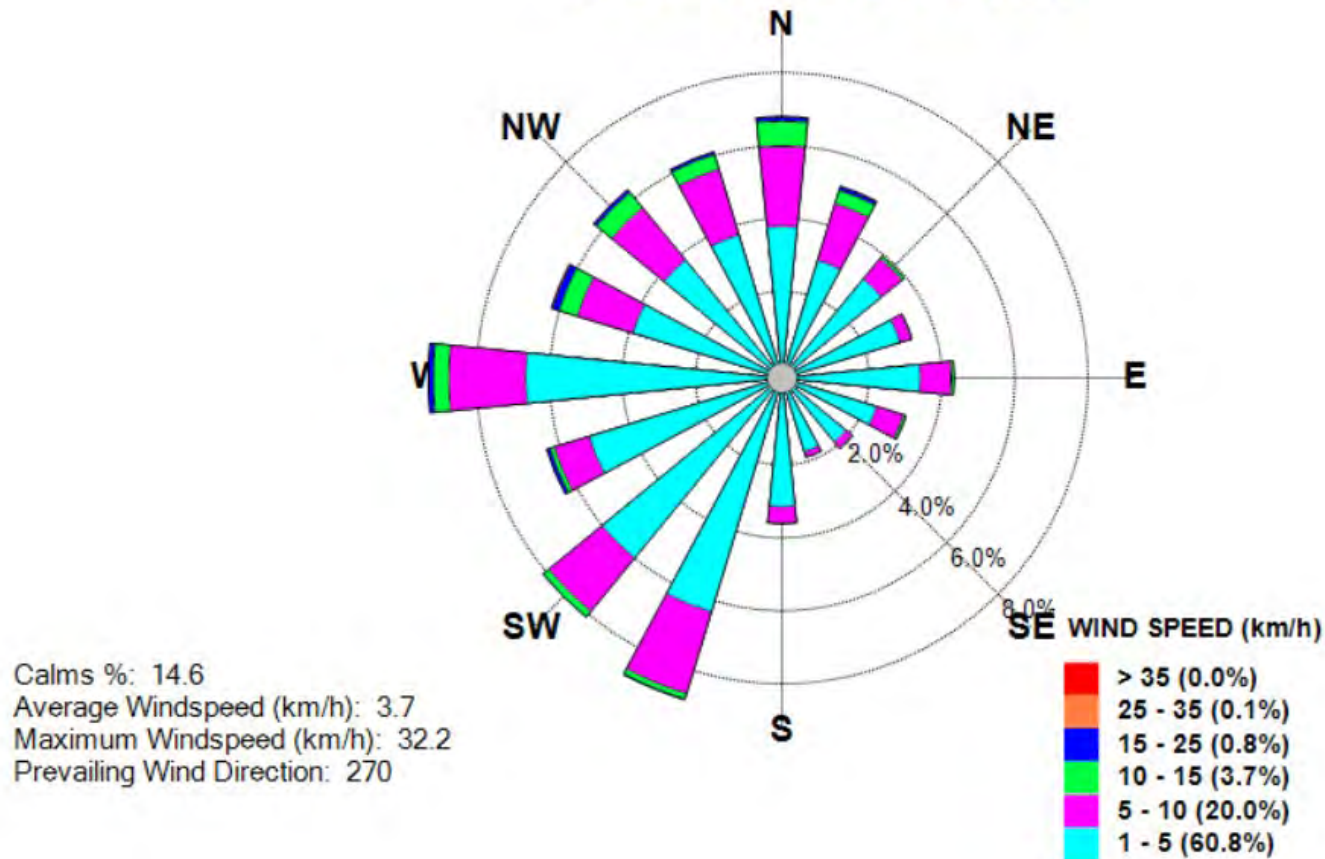


Figure 4: Monthly Windrose

Appendix 1

Calibration Documents (when required)



CBased Environmental Pty Limited
ABN 62 611 924 264

Weather Station Field Check

Site: Dixon Sands

Date/Time: 10/09/2024 12:50

Measured Against Reference Sensors

Parameter	Units	Site	Reference	Difference	Pass/Fail	Reference Description
Temperature 10m	°C	20.2	20.2	0.0	Pass	Ref Thermometer
Humidity	%RH	51.7	53.7	-2.0	Pass	Ref RH sensor
Rainfall	mm	3.0	3.2	-0.2	Pass	Glass Pipette
Wind Speed	km/hr	5.0	4.8	0.2	Pass	Ref Anemometer
Wind Direction	Degrees	115	117	-2.0	Pass	Sighting compass

Reference Instruments Specifications: *Calibration expires: 10/02/2025

Sensor	Serial Number	Specifications	Accuracy
*Temperature	230210N04	-40 to 65°C	+/- 0.3°C
*Barometer	BF230207001	20 to 30" Hg	+/- 1.1hPa
*Humidity	230210N04	10 to 90%RH	+/- 2%RH
*Anemometer	230210N06	0 to 64km/hr	+/- 3.6km/hr or 5%
**Rainfall	Standard number of tips	3.2mm	+/- 0.2mm
Compass	Sighting Compass	0 to 360 degrees	+/- 5 Deg

** 100mL used.

Reference sensors were certified by Davis Instruments USA using a reference traceable to National Institute of Standards and Technology (NIST) and were "in calibration" when used.

Comments:

The weatherstation was in conformance with the reference instruments at the monitored levels. Wind direction is referenced to true north. The calibration check of the raingauge involved adding water to the raingauge. Rain total of 3.0mm should be deleted from site records on the 10/9/2024.

NA=Not Available

The meteorological station meets the requirements of the Approved Methods for the Sampling and Analysis of Air Pollutants in NSW.

The weather station has Passed the field check. Next annual field check due:

Mar-25

Checked by: Colin Davies

7/10/2024

Colin Davies

CBased Environmental Pty Limited
Unit 3, 2 Enterprise Crescent
SINGLETON NSW 2330
P: 65 713 334

**CBased Environmental Pty Limited**

ABN 62 611 924 264

Weather Station Physical Screening Field CheckClient DIXON SANDSSite Name: Dixon Sand TEOMDate: 10/9/24Time: 12:50 - 13:50

	Yes (Pass)	No (Fail)	Comments
Grass / Vegetation Impacts			
Compound Grass height <10cm	✓		
No objects within impact area (10 x height of object)		✓	Trees/buildings nearby
Ground Anchor / Guy Wires / Mast Condition			
Bottom guy wires tight (correct tension = 35-50mm deflection, with only moderate hand force at 1.5 metres up the guy wire)	NA		Freestanding Mast
Top Guy wires tensioned (correct tension = 60-75mm deflection, with only moderate hand force at 1.5 metres up the guy wire)	NA		" "
Mast Vertical and in good condition	✓		Freestanding Mast
Ground anchors/star pickets tight in ground	NA		" "
Guy Wires insignificant corrosion	NA		" "
Ground anchors/D shackles/ winders insignificant corrosion	NA		" "
Bolts/hinge points in mast are secure	NA		" "
Cables / Connectors / Logger Cabinet / Solar Panel			
Cables attached to mast/guy wires via ties are secure	✓		
Insignificant corrosion to plugs/connectors	✓		
No water ingress in logger/battery cabinet	✓		
Wiring/plugs in cabinet OK, Logger OK	✓		
Battery terminals and condition OK	NA		Battery Volts = 240V System
Battery volts (charging >13V, not charging >12V)	NA		" "
Solar panel undamaged and clean	NA		" "
Sensor shields clean	✓		
Sensor Check			
Wind direction aligned True North/Magnetic North (strike out N/A)	✓		Compass Bearing: 350 degrees
Rain gauge cleaned, working OK (1 tip check) or 100ml Cal	✓		100ml 3.0 mm rain OK
Rain gauge level OK	✓		
Anemometer/wind vane moving freely (analogue sensors)	NA		kill ultrasonic
Other sensors visually checked and OK	✓		
Last months data checked and OK / Logging data OK	✓		

Checked By: Name COLIN DAVIESSigned [Signature]

CBased Environmental Pty Limited
Unit 3, 2 Enterprise Crescent
SINGLETON NSW 2330
P: (02) 6571 3334



Continuous Air Quality Monthly/Quarterly/Six Monthly/Annual TEOM Maintenance and Calibration – 1400AB

TEOM Client/Site: Dixon Sands/TEOMDate: 10/9/20241. TEOM Data Screen SERIAL No: 140AB255700503 Firmware: _____

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Operating Condition	OK 4	Green - Normal	✓	
Date/time	TEOM: 13:56 12th Sept Actual: 13:03	Current Date/time correct within 5 minutes	✓	
PM-10 24hr av	19.9	Positive values	✓	
Filter loading PM10	67	<80 %	✓	
Frequency PM-10	253.17016	200-300 Hz	✓	
Noise PM-10	0.052	<0.100ug	✓	

Comment: If filter load >80% but <90% and if flows Ok then data is OK

Comments:

Arrived to bad/dieing pump, changed as first task

2. System Status

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Vacuum pump pressure	-28 inch mm Hg	<0.50 atm	✓	
Warnings	Nil	No Warnings	✓	
If any warnings list:				

Comments:

Data Downloaded: YES/NO (circle)

Technician Name : Conrad Deilade Signed [Signature]

3. Instrument Conditions Ambient Conditions and Temperatures

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Ambient Temperature	24.4	-10 to 50 C	✓	
Ambient Dew Point	NA	-10 to 50 C	✓	
Ambient Pressure	0.980	0.9-1.1 atm	✓	
Ambient Relative Humidity	NA	10-100 %RH		
Cap temperature	50.00	50.00 +/- 0.10 C	✓	
Case temperature	50.00	50.00 +/- 0.10 C	✓	
Main (PM-10) Air Tube temp	50.01	50.00 +/- 0.10 C	✓	

Comments:**4. Instrument Conditions – Flows**

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Main (PM-10) Flow rate	3.00 1.06adj	2.82 – 3.18 lpm	✓	
Bypass Flow rate	13.68 1.02adj	12.95 – 14.39 lpm	✓	
Total Flow rate	16.68	15.67 – 17.67 lpm	✓	

Comments:**Results: (Tick box)**

- ☒ There were NO equipment faults found. No action required – (file report)
- ☐ There were faults found (Fails) – Were these fixed on site: YES/NO (circle)
Any Fails that cannot be repaired on site must be reported to CBased:
Office: 65713334 or email cbased@bigpond.com
Date faults notified to CBased: _____

Comments/Action Required:

Pump was replaced before calls



Calibration/Maintenance

1. 1405A: Were Filters replaced YES/NO
 2. PM10 Inlet head cleaned YES/NO
 3. If measurement filters were replaced, confirm stable results after change. Stable particulate results confirmed YES/NO

Channel	Filter Load %	Frequency Hz initial	Frequency check 1min	Frequency check 3min	Frequency check 5min
PM10	17	255.97546	.97552	.97562	.97570

Frequency should not drift by more than 0.0010 between readings (if instrument is thermodynamically stable)
 Pass/Fail – if Fail – install new filter and redo stability test.

4. Instrument clock verified (Refer Section 1) YES/NO.
 If Time changed – clock reset OK YES/NO or NA (not changed)

Comments:

clock set 2 days into future

5. Were TEOM in line and rear TEOM filters checked for cleanliness and replaced if necessary. YES/NO.

Comments if changed:

6. TEOM Cleaned and Air Conditioner checked YES/NO. Air Conditioner settings or operational status: Good

Tetral Flow/Temp/Pressure Calibrator Serial No: 172357 Refer to calibration corrections for Temperature/Pressure and Flows and apply to all readings.

Quarterly or Six Monthly Calibration**1. Flow Verification – Conducted YES/NO**

PM10 Flow verified Flow l/min 3.04 Error % 2.4 (allowed error <6%) PASS/FAIL

Bypass Flow verified Flow l/min 14.18 Error % 4.6 (allowed error <6%) PASS/FAIL

If fail then complete a full multipoint recalibration and review previous data from last good flow check. **Comments if Flows recalibrated:**

2. Leak Check – Conducted YES/NO

PM10 actual 3.00, 1.05adj < Limit 0.15

Bypass actual 13.76, 0.995adj Limit 0.60

Leak check PASS/FAIL – If fail then find leak and retest.

Comments:

*Fail, leak in mass transducer, leak in U Seal on
 Leak in flow temperature probe*





**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

OCTOBER 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 29 November 2024

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for October 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 100% of valid meteorological data was recorded for October 2024.

Approximately 100% of valid TEOM data was available for October 2024.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 100% of valid TEOM data was available for October 2024.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for October 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/10/2024	19.0	13.2	47.5	32.9
2/10/2024	19.4	13.2	48.5	33.1
3/10/2024	15.5	13.3	38.8	33.2
4/10/2024	15.1	13.3	37.8	33.2
5/10/2024	11.4	13.3	28.5	33.2
6/10/2024	11.0	13.2	27.5	33.1
7/10/2024	10.9	13.2	27.3	33.1
8/10/2024	18.5	13.3	46.3	33.2
9/10/2024	14.1	13.3	35.3	33.2
10/10/2024	11.1	13.3	27.8	33.2
11/10/2024	20.0	13.3	50.0	33.3
12/10/2024	24.1	13.4	60.3	33.6
13/10/2024	15.5	13.5	38.8	33.6
14/10/2024	14.9	13.5	37.3	33.7
15/10/2024	14.4	13.5	36.0	33.7
16/10/2024	15.7	13.5	39.3	33.7
17/10/2024	12.2	13.5	30.5	33.7
18/10/2024	10.8	13.5	27.0	33.6
19/10/2024	13.1	13.5	32.8	33.6
20/10/2024	15.7	13.5	39.3	33.7
21/10/2024	14.6	13.5	36.5	33.7
22/10/2024	16.4	13.5	41.0	33.8
23/10/2024	23.8	13.6	59.5	34.0
24/10/2024	26.8	13.7	67.0	34.3
25/10/2024	13.5	13.7	33.8	34.3
26/10/2024	15.2	13.7	38.0	34.3
27/10/2024	13.7	13.7	34.3	34.3
28/10/2024	20.7	13.8	51.8	34.5
29/10/2024	24.2	13.9	60.5	34.7
30/10/2024	24.7	14.0	61.8	34.9
31/10/2024	22.4	14.0	56.0	35.1

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

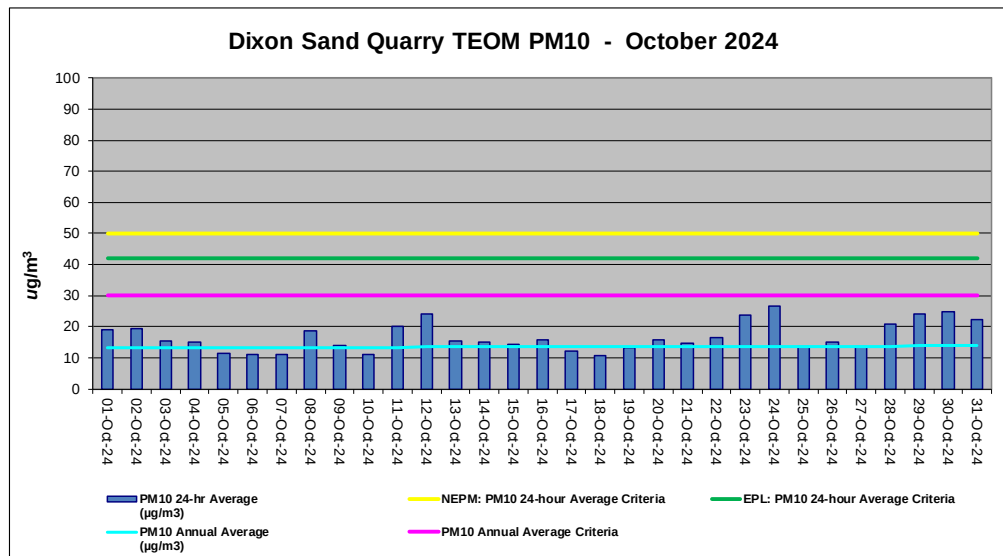


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A windrose is provided in **Figure 4**. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 100% of valid meteorological data was recorded for October 2024.

Dixon Sand Quarry Environmental Monitoring Project – October 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/10/2024	10.6	15.5	22.3	0.0	0.0	4.1	25.9	40.2	78.3	100.0	1000.6	1003.1	1006.8
2/10/2024	13.3	14.9	17.5	0.0	0.1	3.1	13.5	68.3	84.7	97.5	1006.7	1009.6	1011.4
3/10/2024	11.4	14.7	19.5	0.0	0.0	3.8	29.2	48.8	77.5	100.0	1005.6	1008.7	1011.8
4/10/2024	9.4	17.3	24.4	0.0	0.5	4.3	17.5	35.2	66.2	100.0	990.5	997.6	1005.5
5/10/2024	16.5	20.6	25.3	0.4	0.2	5.9	29.5	26.9	48.4	79.8	986.6	988.9	991.4
6/10/2024	17.0	21.1	27.7	0.0	0.2	5.4	20.7	21.6	39.4	55.5	989.8	992.8	998.5
7/10/2024	14.8	21.5	28.5	0.0	0.1	4.1	15.3	22.9	42.2	67.0	995.2	997.6	999.5
8/10/2024	11.2	13.7	21.9	2.0	0.0	4.1	15.1	35.7	86.0	100.0	998.3	1002.9	1006.7
9/10/2024	10.4	11.8	14.2	2.6	0.0	3.6	16.9	71.3	90.3	100.0	1004.6	1005.7	1007.3
10/10/2024	10.2	15.8	23.2	0.6	0.0	3.8	14.0	45.5	81.0	99.9	998.9	1002.4	1005.4
11/10/2024	13.1	17.8	24.7	0.0	0.1	4.4	20.3	48.5	83.4	100.0	999.6	1002.3	1005.2
12/10/2024	10.9	14.4	16.6	0.0	0.6	5.8	17.4	59.0	78.3	100.0	1001.4	1006.0	1008.8
13/10/2024	8.2	13.7	20.1	0.0	0.4	3.9	18.8	47.4	76.0	100.0	1002.0	1005.2	1008.4
14/10/2024	11.5	16.1	24.6	45.4	0.1	4.6	20.3	49.4	80.2	99.9	996.1	999.9	1003.1
15/10/2024	12.0	13.9	16.5	2.6	0.1	3.4	11.2	76.5	92.6	100.0	1002.1	1004.3	1005.8
16/10/2024	11.1	13.7	16.3	0.2	0.0	2.2	10.9	66.5	84.2	100.0	999.7	1001.9	1005.2
17/10/2024	10.6	16.7	24.0	0.0	0.3	4.4	15.3	41.5	81.4	100.0	995.7	998.2	1000.4
18/10/2024	15.9	19.3	24.0	0.4	0.3	5.1	18.2	62.6	87.2	100.0	984.6	989.8	996.2
19/10/2024	16.4	19.5	24.2	0.2	0.0	4.1	17.7	51.1	77.9	100.0	984.9	990.2	997.0
20/10/2024	14.8	17.7	22.6	0.0	0.1	4.1	17.9	48.4	79.1	100.0	996.5	999.2	1002.5
21/10/2024	12.1	16.0	20.9	0.0	0.2	5.8	18.7	45.9	68.7	93.7	999.3	1001.0	1003.1
22/10/2024	10.7	16.9	25.4	0.0	0.2	3.8	15.3	19.6	67.3	94.6	993.2	996.5	1000.1
23/10/2024	12.6	21.0	29.6	0.0	0.1	3.9	9.2	30.3	65.5	100.0	988.4	991.0	994.7
24/10/2024	12.6	17.9	22.4	4.0	0.2	5.8	29.9	45.8	77.0	100.0	988.6	991.4	994.8
25/10/2024	10.0	14.8	22.1	0.2	0.1	4.2	23.4	23.6	67.4	100.0	993.7	995.9	1000.5
26/10/2024	10.4	13.9	19.5	0.0	0.2	4.3	22.5	30.0	54.6	74.6	999.2	1001.1	1003.2
27/10/2024	10.7	17.5	25.6	0.0	0.1	4.0	14.1	22.4	57.2	85.8	996.5	999.2	1001.6
28/10/2024	14.7	19.6	29.1	0.0	0.2	4.8	24.4	18.2	58.8	95.6	996.0	998.6	1003.9
29/10/2024	12.7	16.9	23.8	0.0	0.2	4.0	25.4	41.1	78.3	100.0	999.6	1002.5	1004.5
30/10/2024	15.0	20.2	28.5	0.0	0.0	4.5	23.9	34.7	72.4	97.6	991.5	996.7	1002.9
31/10/2024	14.7	20.5	29.6	0.8	0.1	4.3	23.8	19.3	66.0	99.9	988.1	991.3	994.7
Monthly	8.2	16.9	29.6	59.4	0.0	4.3	29.9	18.2	72.5	100.0	984.6	999.1	1011.8

Table 3: Meteorological Data Summary for October 2024

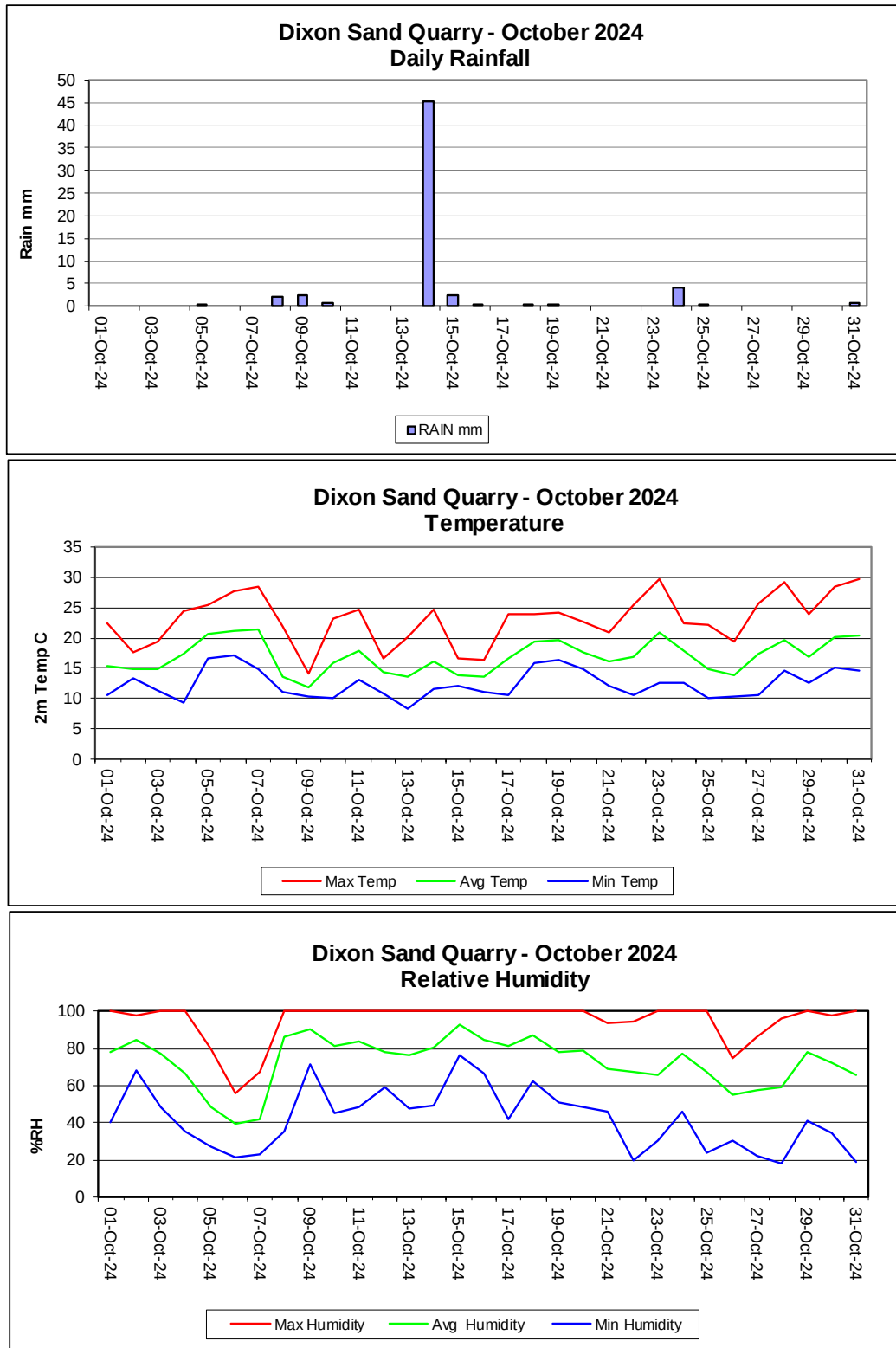


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

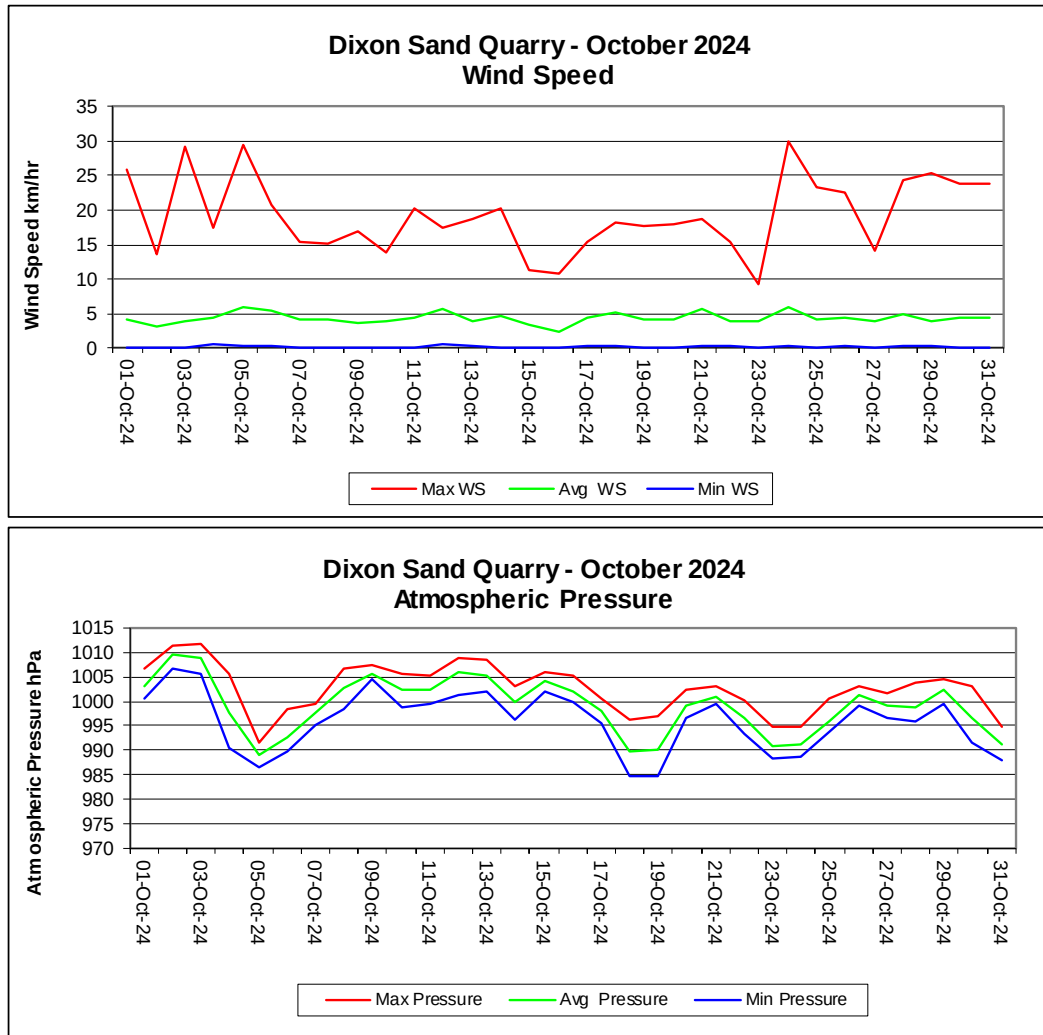


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose OCTOBER 2024

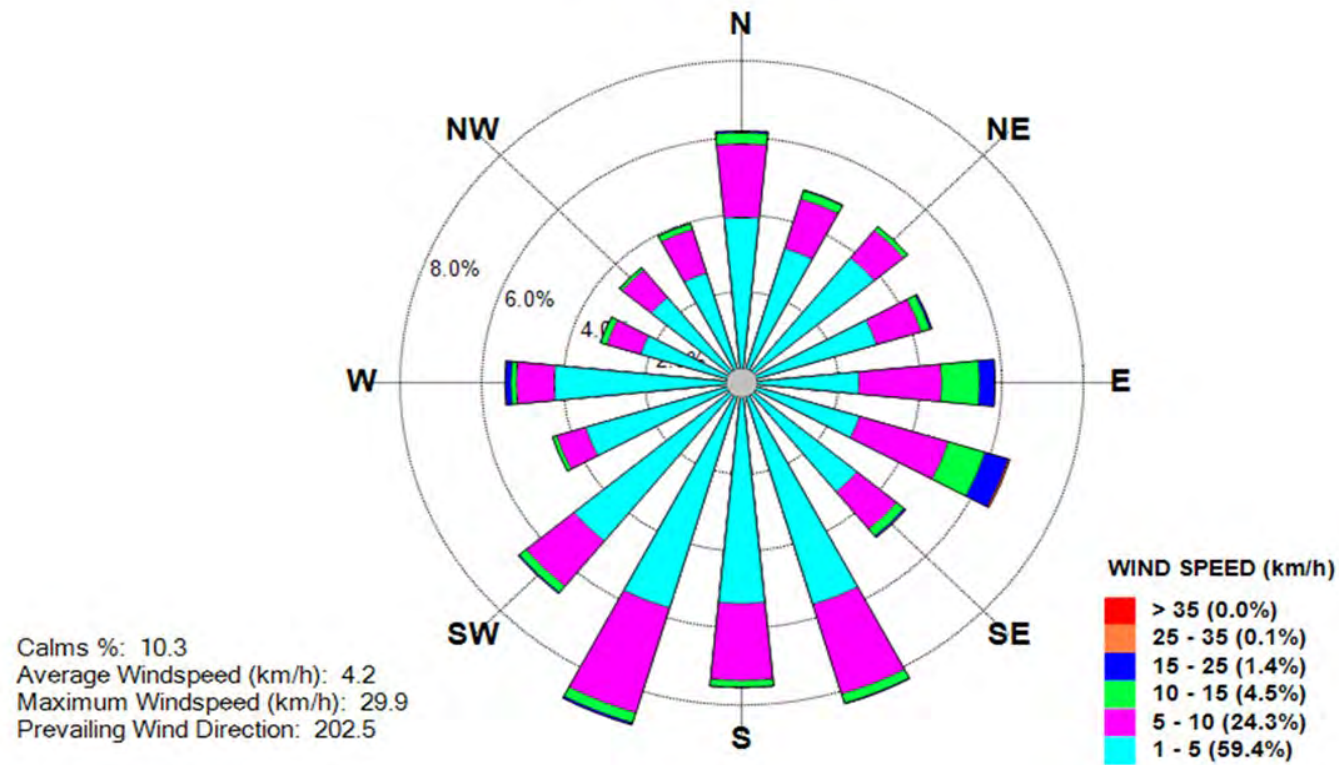


Figure 4: Monthly Windrose

Appendix 1

Calibration Documents (when required)



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

November 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 31 December 2024

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for November 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 87.7% of valid meteorological data was recorded for November 2024 due to a damaged wire connection to the wind sensor from the 27-30 November 2024. An onsite field inspection was conducted on the 30 December 2024 and repair to the damaged wire connection of the wind sensor was completed.

Approximately 60% of valid TEOM data was available for November 2024 due to a fault resulting in invalid data readings from the 1 -12 November 2024. An onsite field inspection was conducted on the 30 December 2024 however, no obvious cause could be identified.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 60% of valid TEOM data was available for November 2024 due to a fault resulting in invalid data readings from the 1 -12 November 2024. An onsite field inspection was conducted on the 30 December 2024 however, no obvious cause could be identified.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for November 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/11/2024	ND	14.0	ND	35.1
2/11/2024	ND	14.0	ND	35.1
3/11/2024	ND	14.0	ND	35.1
4/11/2024	ND	14.0	ND	35.1
5/11/2024	ND	14.0	ND	35.1
6/11/2024	ND	14.0	ND	35.1
7/11/2024	ND	14.0	ND	35.1
8/11/2024	ND	14.0	ND	35.1
9/11/2024	ND	14.0	ND	35.1
10/11/2024	ND	14.0	ND	35.1
11/11/2024	ND	14.0	ND	35.1
12/11/2024	ND	14.0	ND	35.1
13/11/2024	17.4	14.1	43.5	35.2
14/11/2024	14.2	14.1	35.5	35.2
15/11/2024	17.9	14.1	44.8	35.2
16/11/2024	17.5	14.1	43.8	35.3
17/11/2024	12.2	14.1	30.5	35.3
18/11/2024	17.1	14.1	42.8	35.3
19/11/2024	19.8	14.2	49.5	35.4
20/11/2024	16.5	14.2	41.3	35.5
21/11/2024	12.0	14.2	30.0	35.4
22/11/2024	14.1	14.2	35.3	35.4
23/11/2024	12.9	14.2	32.3	35.4
24/11/2024	16.9	14.2	42.3	35.5
25/11/2024	24.4	14.3	61.0	35.7
26/11/2024	26.0	14.4	65.0	35.9
27/11/2024	21.9	14.4	54.8	36.0
28/11/2024	14.0	14.4	35.0	36.0
29/11/2024	12.6	14.4	31.5	36.0
30/11/2024	10.4	14.4	26.0	35.9

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

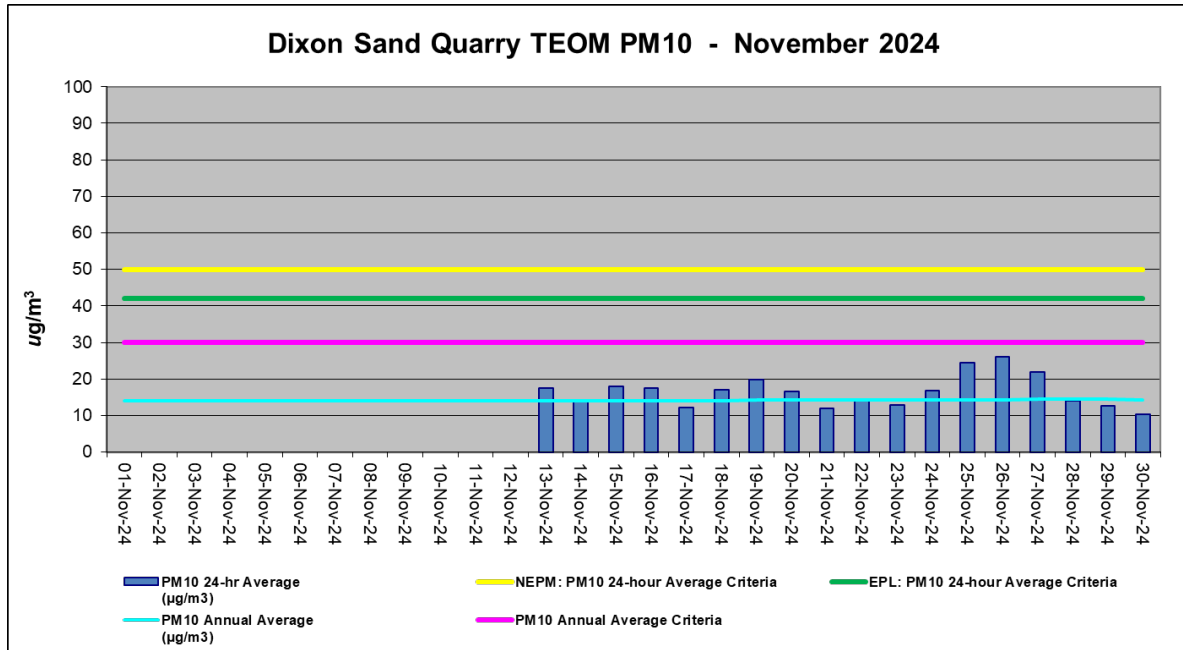


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2 and 3**. A windrose is provided in **Figure 4**. This provides the frequency distribution of wind speed and direction during the month to display dominant wind directions.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 87.7% of valid meteorological data was recorded for November 2024 due to a damaged wire connection to the wind sensor from the 27-30 November 2024. An onsite field inspection was conducted on the 30 December 2024 and repair to the damaged wire connection of the wind sensor was completed.

Dixon Sand Quarry Environmental Monitoring Project – November 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/11/2024	14.1	17.1	22.0	2.8	0.6	5.2	16.2	55.8	83.6	100.0	913.8	996.4	1002.5
2/11/2024	8.0	15.1	18.0	6.8	0.3	3.2	5.7	50.0	99.4	100.0	500.4	999.5	1005.0
3/11/2024	13.0	22.3	31.0	0.0	0.5	4.6	9.3	29.7	66.6	99.9	887.8	994.6	1000.6
4/11/2024	17.0	20.8	27.0	0.0	1.1	5.1	12.5	35.1	78.1	99.5	792.1	991.1	997.8
5/11/2024	16.0	18.3	22.0	0.2	0.2	4.2	13.2	61.5	89.7	100.0	797.8	996.5	999.5
6/11/2024	16.0	22.4	32.0	0.0	0.7	4.6	10.9	38.7	79.4	100.0	990.2	993.5	998.0
7/11/2024	18.0	25.7	34.0	1.2	0.8	4.1	10.8	31.3	59.5	100.0	987.7	989.5	994.9
8/11/2024	16.0	21.9	29.0	0.4	0.0	3.9	19.6	22.8	51.7	100.0	990.3	992.6	997.1
9/11/2024	14.0	19.3	25.0	0.0	0.2	4.6	21.4	40.5	71.6	97.9	997.0	999.3	1001.7
10/11/2024	16.0	19.8	28.0	0.0	0.2	3.7	21.4	45.0	80.4	100.0	997.6	1000.4	1004.5
11/11/2024	15.0	16.9	19.0	0.0	0.1	2.5	8.5	78.7	83.8	90.1	998.8	1001.4	1004.4
12/11/2024	16.0	17.9	22.0	2.6	0.1	3.1	11.6	73.2	94.5	100.0	995.3	997.1	999.1
13/11/2024	15.0	18.1	22.0	4.2	0.0	2.4	16.2	78.1	95.1	100.0	989.7	993.2	996.0
14/11/2024	16.0	17.7	21.0	0.0	0.2	3.8	16.3	75.1	90.8	100.0	993.3	997.0	1001.4
15/11/2024	15.0	16.5	19.0	2.0	0.0	2.5	12.7	86.7	98.7	100.0	1000.3	1001.8	1003.4
16/11/2024	17.0	19.1	22.0	1.2	0.3	5.8	25.0	80.0	94.3	99.9	1000.8	1002.5	1004.1
17/11/2024	18.0	23.3	31.0	8.8	0.2	6.0	32.8	35.2	76.3	100.0	988.0	995.1	1001.3
18/11/2024	17.0	20.5	28.0	6.0	0.2	4.1	27.9	24.7	73.9	100.0	991.1	995.4	1001.7
19/11/2024	15.0	17.7	21.0	0.0	0.0	5.8	27.7	71.7	83.5	99.0	1000.9	1002.6	1004.5
20/11/2024	14.0	18.8	25.0	0.0	0.0	4.4	24.9	45.2	74.0	98.3	1002.5	1004.0	1006.2
21/11/2024	14.0	18.6	24.0	0.0	0.0	4.4	17.4	42.8	75.3	100.0	1004.4	1006.1	1008.3
22/11/2024	14.0	20.2	28.0	0.0	0.0	3.8	18.7	42.8	77.9	100.0	1001.4	1004.1	1006.8
23/11/2024	16.0	22.7	32.0	0.0	0.4	4.8	17.7	23.3	64.0	100.0	997.5	1000.4	1002.9
24/11/2024	18.0	24.2	33.0	0.0	0.4	6.3	24.9	21.1	56.7	94.1	994.9	997.1	999.2
25/11/2024	17.0	23.2	31.0	0.0	0.2	5.9	25.7	40.8	75.4	100.0	991.1	994.3	997.0
26/11/2024	18.0	20.3	28.0	0.0	0.3	3.8	11.6	57.0	89.0	100.0	992.3	993.0	993.7
27/11/2024				0.0									
28/11/2024				5.8									
29/11/2024				3.8									
30/11/2024				2.2									
Monthly	8.0	19.9	34.0	48.0	0.0	4.3	32.8	21.1	79.4	100.0	500.4	997.6	1008.3

No data due to weather station fault possibly sensor or cable/connector issue

Table 3: Meteorological Data Summary for November 2024

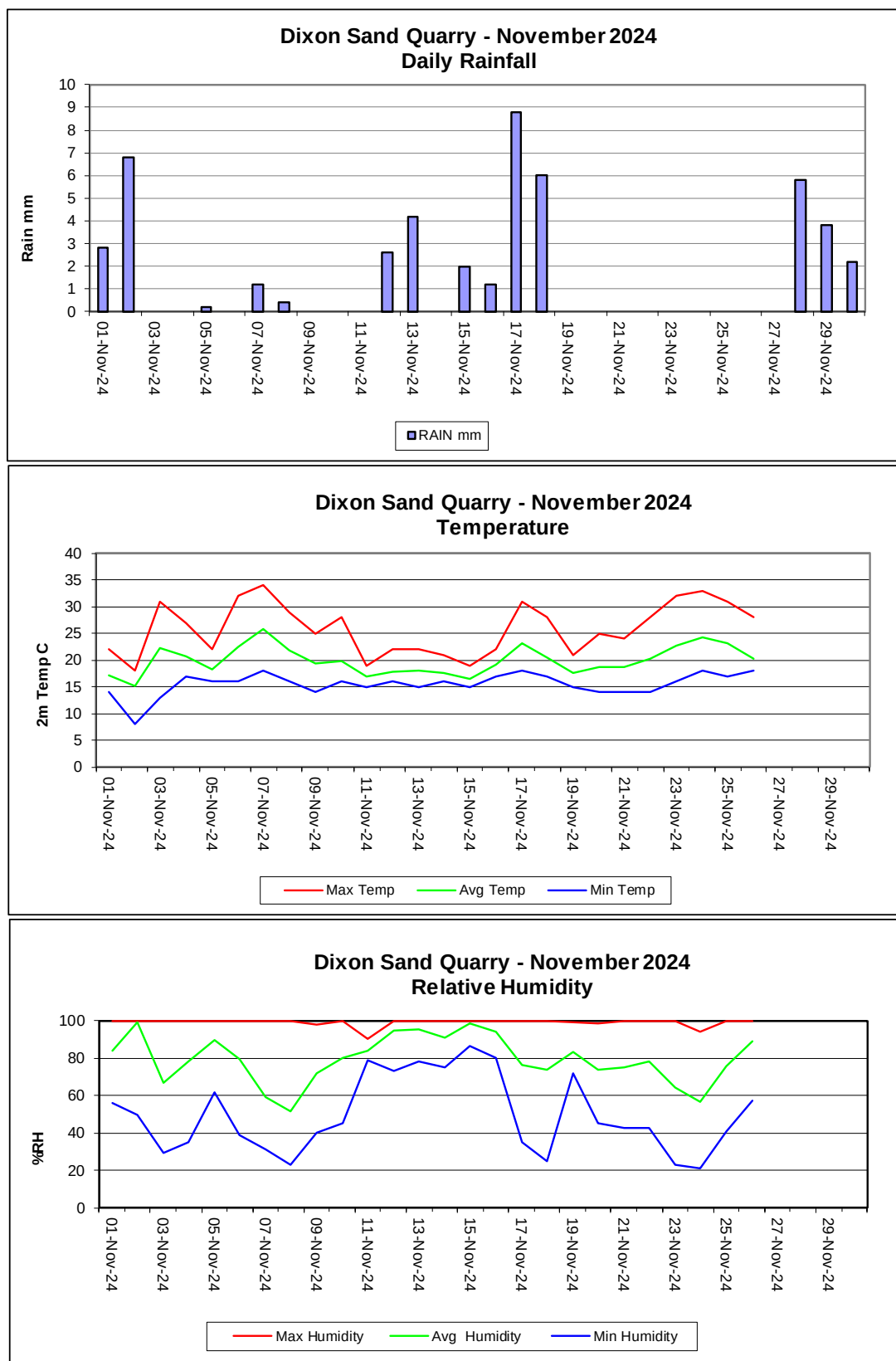


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

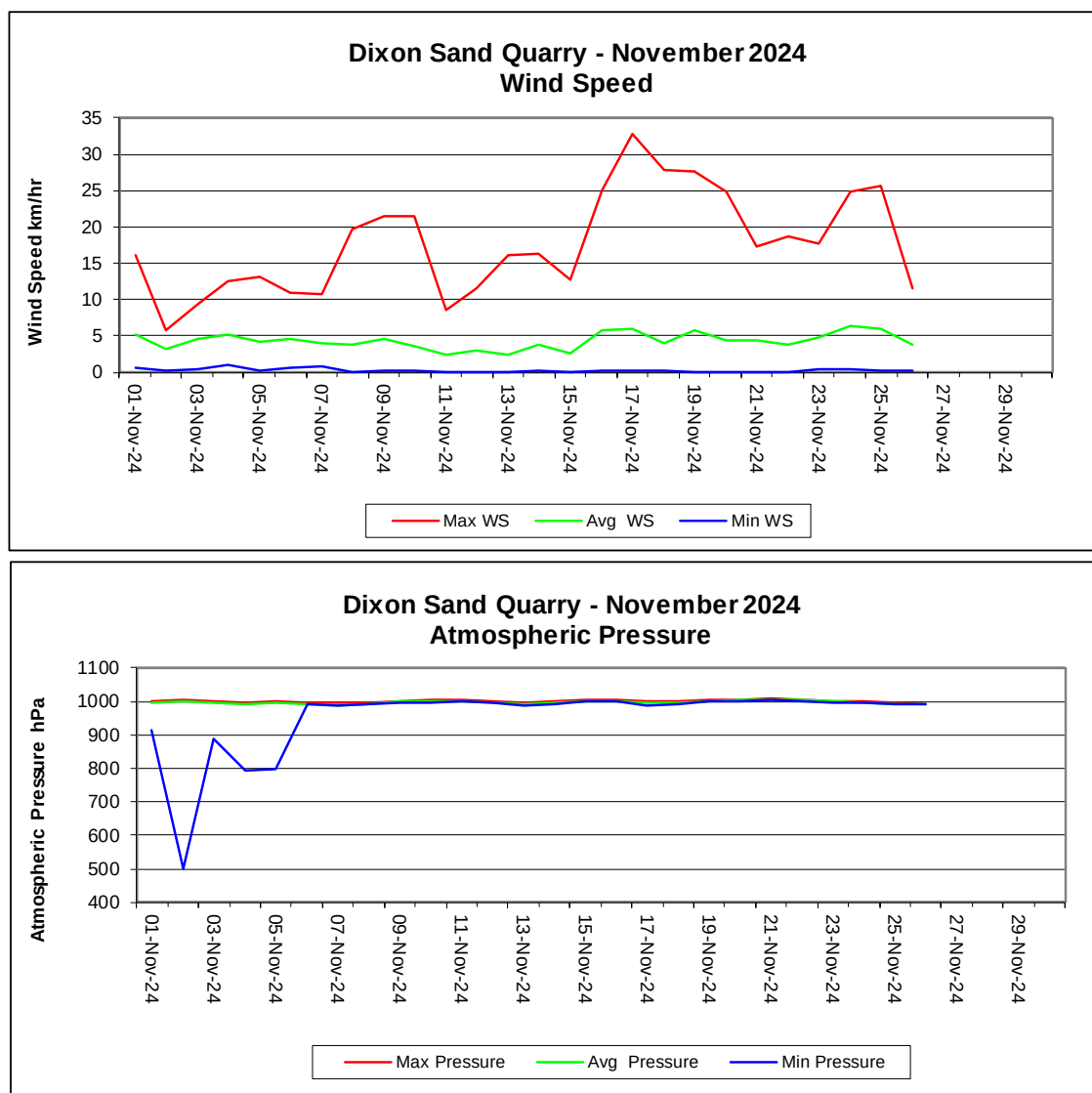


Figure 3: Wind Speed and Atmospheric Pressure Charts

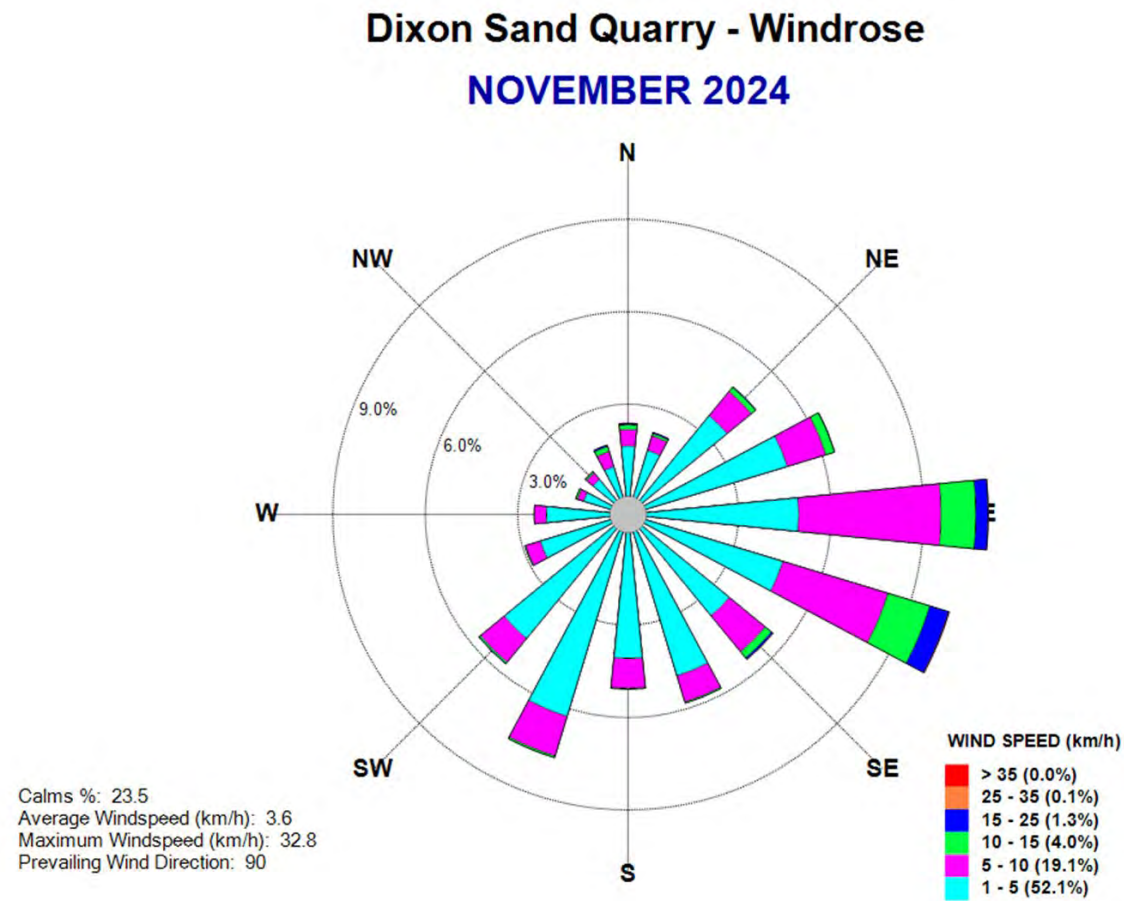


Figure 4: Monthly Windrose

Note: Chart excludes 27-30 November data due to possible sensor or cable/connector fault

Appendix 1

Calibration Documents (when required)



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

December 2024

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 28 January 2025

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for December 2024 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 10.7% of valid meteorological data was recorded for December 2024 due to a faulty connector on the cable from the main sensor, that provides all wind, temperature, humidity, and pressure data to the data logger, for the period 1-30 December 2024. Rainfall data was unaffected during this period. An onsite field inspection was conducted on the 30 December 2024 and repair to the damaged wire connection was completed on 31 December 2024.

Approximately 98.7% of valid TEOM data was available for December 2024.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 98.7% of valid TEOM data was available for December 2024.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/12/2024	9.7	14.3	24.3	35.8
2/12/2024	15.8	14.3	39.5	35.8
3/12/2024	14.3	14.3	35.8	35.8
4/12/2024	20.5	14.4	51.3	36.0
5/12/2024	15.9	14.4	39.8	36.0
6/12/2024	23.3	14.5	58.1	36.1
7/12/2024	10.6	14.4	26.5	36.1
8/12/2024	11.7	14.4	29.3	36.0
9/12/2024	18.2	14.4	45.5	36.1
10/12/2024	18.9	14.5	47.3	36.2
11/12/2024	18.7	14.5	46.8	36.2
12/12/2024	22.0	14.5	55.0	36.4
13/12/2024	28.5	14.6	71.3	36.6
14/12/2024	25.6	14.7	64.0	36.8
15/12/2024	19.2	14.7	48.0	36.8
16/12/2024	17.0	14.7	42.5	36.9
17/12/2024	17.7	14.8	44.3	36.9
18/12/2024	16.2	14.8	40.5	36.9
19/12/2024	16.5	14.8	41.3	37.0
20/12/2024	14.5	14.8	36.3	37.0
21/12/2024	16.9	14.8	42.3	37.0
22/12/2024	23.1	14.9	57.8	37.1
23/12/2024	20.8	14.9	52.1	37.2
24/12/2024	14.5	14.9	36.3	37.2
25/12/2024	14.5	14.9	36.3	37.2
26/12/2024	14.5	14.9	36.3	37.2
27/12/2024	19.3	14.9	48.3	37.3
28/12/2024	21.4	14.9	53.5	37.4
29/12/2024	17.9	15.0	44.6	37.4
30/12/2024	10.6	14.9	26.5	37.3
31/12/2024	15.0	14.9	37.5	37.3

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for December 2024 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

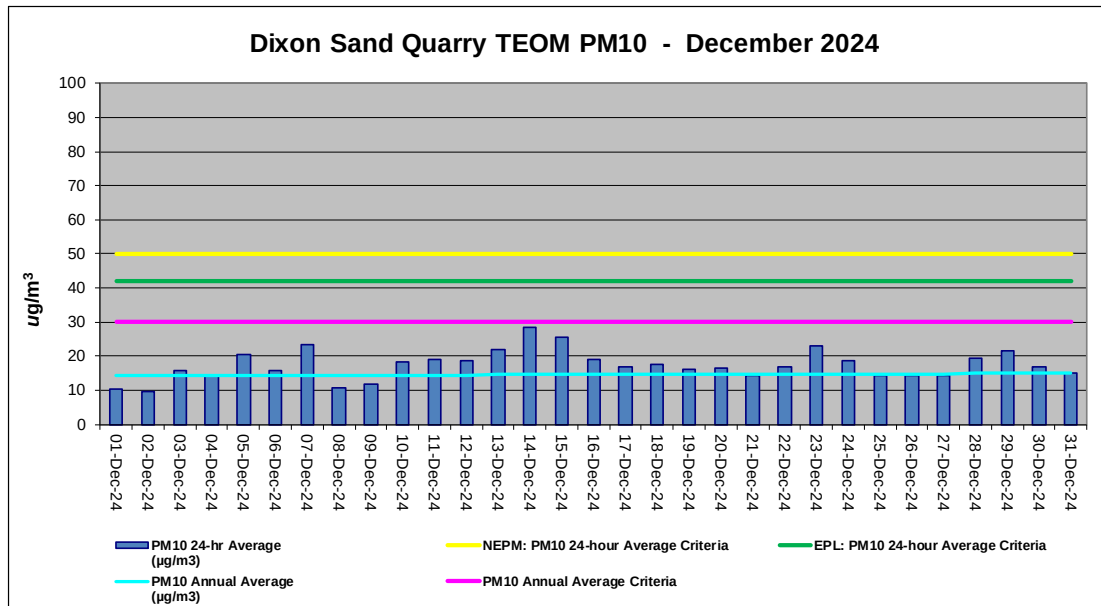


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2 and 3**. A windrose is provided in **Figure 4**. **Please Note:** These Windrose excludes data from 1-30 December due to a cable connector fault to the main sensor which resulted in data loss during this period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 10.7% of valid meteorological data was recorded for December 2024 due to a faulty connector on the cable from the main sensor, that provides all wind, temperature, humidity, and pressure data to the data logger, for the period 1-30 December 2024. Rainfall data was unaffected during this period. An onsite field inspection was conducted on the 30 December 2024 and repair to the damaged wire connection was completed on 31 December 2024.

Dixon Sand Quarry Environmental Monitoring Project – December 2024

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/12/2024				0.6									
2/12/2024				0.0									
3/12/2024				0.0									
4/12/2024				0.0									
5/12/2024				0.2									
6/12/2024				5.6									
7/12/2024				5.6									
8/12/2024				0.6									
9/12/2024				0.8									
10/12/2024				0.0									
11/12/2024				0.4									
12/12/2024				0.0									
13/12/2024				0.0									
14/12/2024				0.0									
15/12/2024				0.0									
16/12/2024				0.0									
17/12/2024				0.0									
18/12/2024				4.0									
19/12/2024				0.0									
20/12/2024				0.0									
21/12/2024				0.0									
22/12/2024				0.0									
23/12/2024				0.0									
24/12/2024				0.0									
25/12/2024				0.0									
26/12/2024				0.0									
27/12/2024				1.6									
28/12/2024				0.0									
29/12/2024				0.0									
30/12/2024				0.2									
31/12/2024	20.0	24.2	28.0	0.0	0.1	6.3	19.1	49.5	70.5	98.9	993.4	995.3	998.4
Monthly	20.0	24.2	28.0	19.6	0.1	6.3	19.1	49.5	70.5	98.9	993.4	995.3	998.4

No Data available due to faulty connector on cable from main sensor

Table 3: Meteorological Data Summary for December 2024

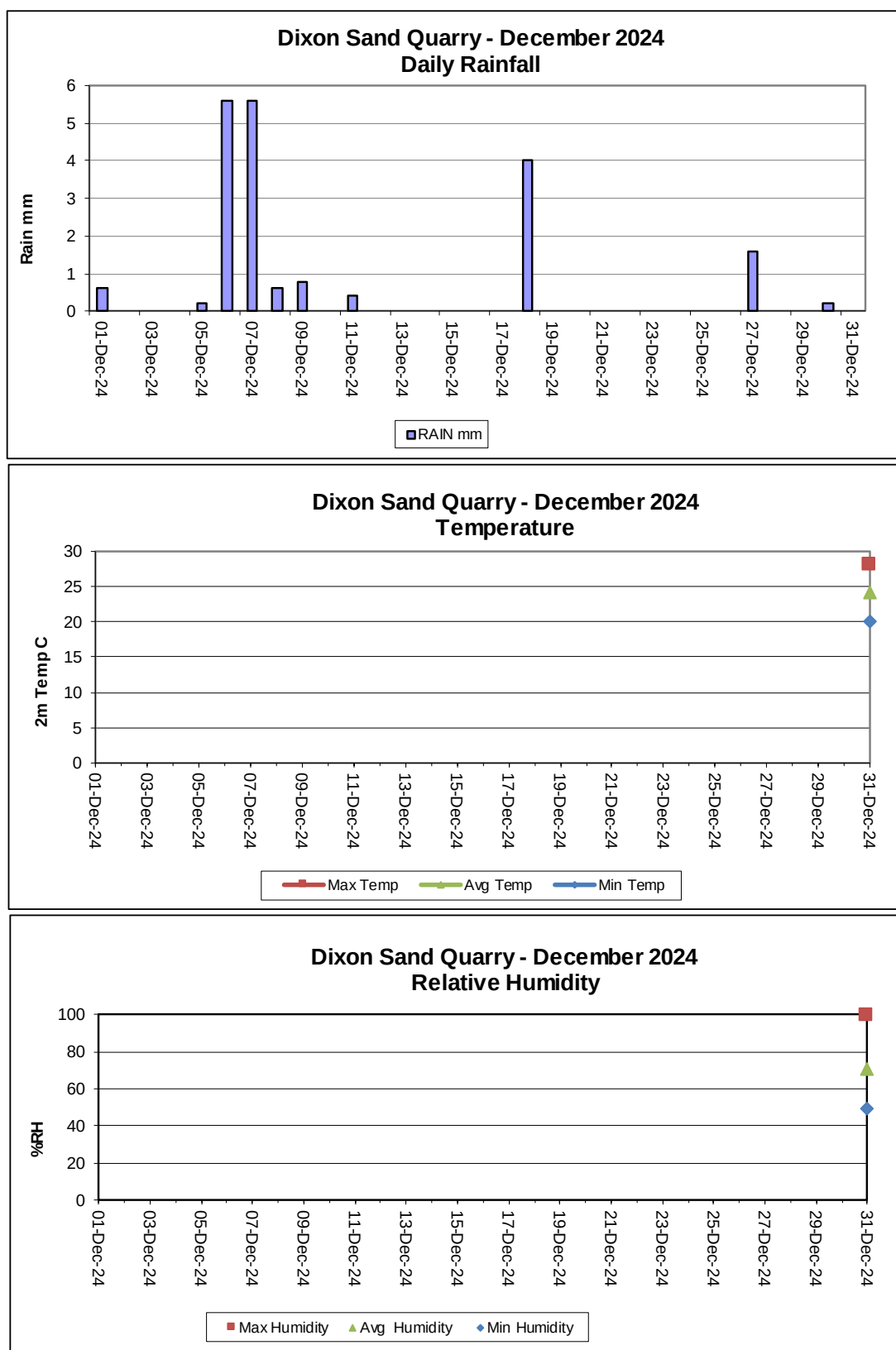


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

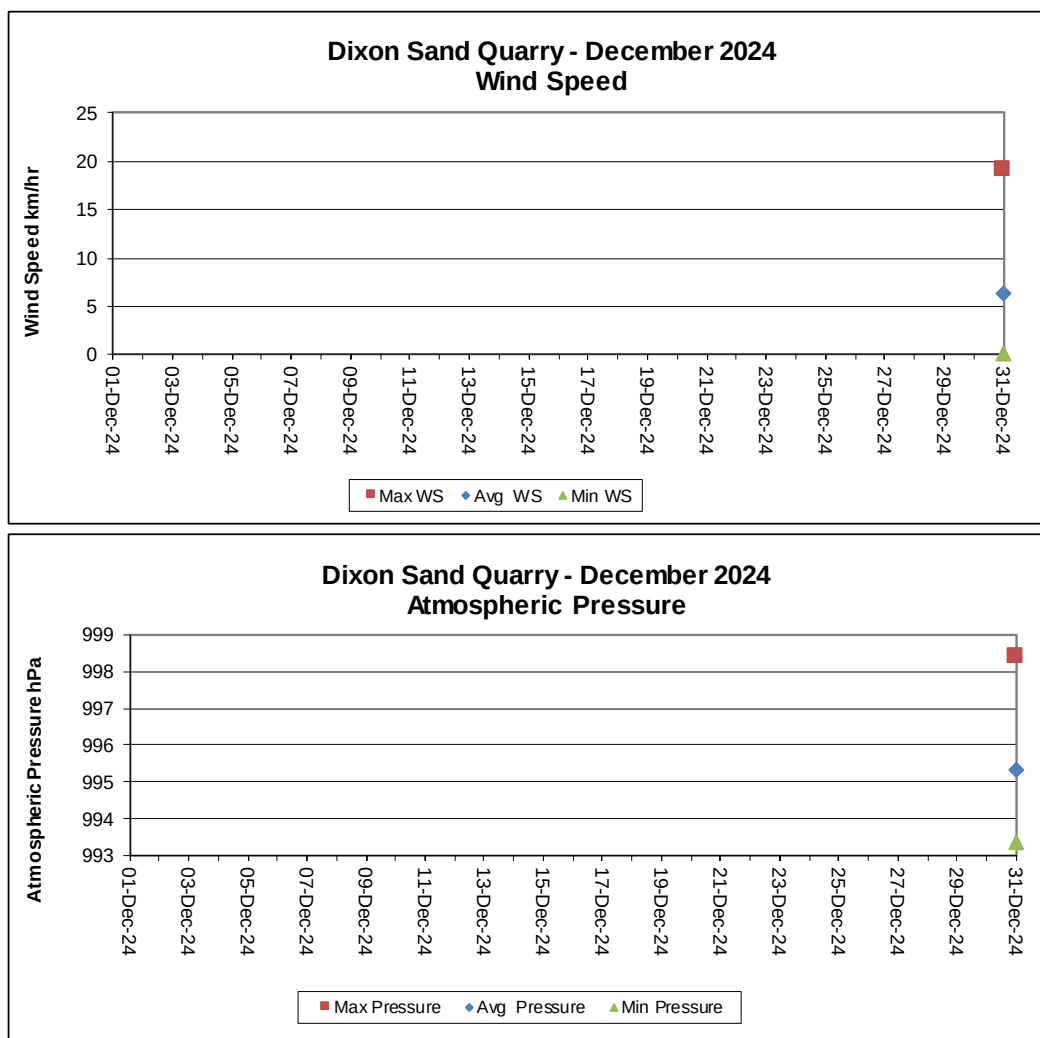


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose

31 December 2024

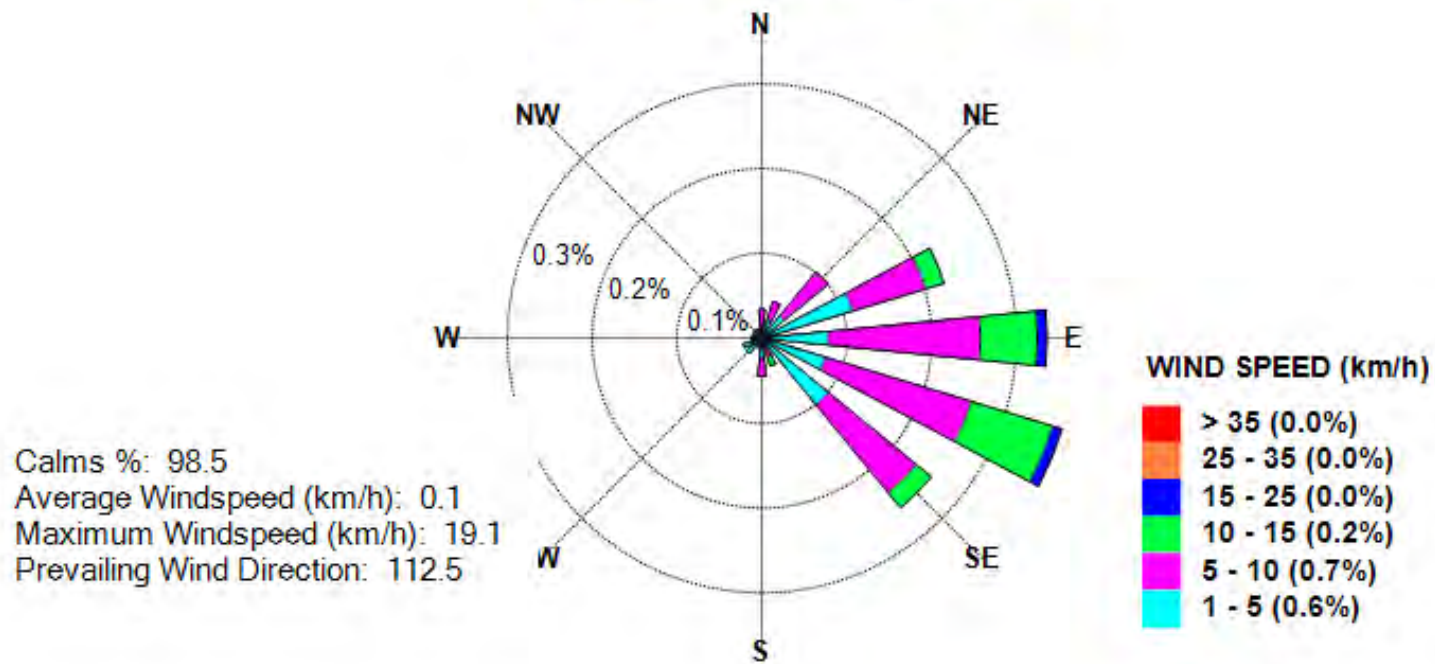


Figure 4: Windrose

Note: Chart excludes data from 1-30 December 2024 due to cable/connector fault

Appendix 1

Calibration Documents (when required)



Continuous Air Quality Monthly/Quarterly/Six Monthly/Annual TEOM Maintenance and Calibration – 1400AB

TEOM Client/Site: Dixon Sands / TEOM 1Date: 30+31/12/24**1. TEOM Data Screen**SERIAL No: 1400AB25570523 Firmware: —

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Operating Condition	<u>Fully OP (4)</u>	Green - Normal	✓	
Date/time	TEOM: <u>30/12</u> <u>10.09</u> Actual: <u>30/12</u> <u>11.10</u>	Current Date/time correct within 5 minutes	✓ <u>EST</u>	
PM-10 24hr av	<u>17.1</u>	Positive values	✓	
Filter loading PM10	<u>32</u>	<80 %	✓	
Frequency PM-10	<u>253.90734</u>	200-300 Hz	✓	
Noise PM-10	<u>0.032</u>	<0.100ug	✓	

Comment: If filter load >80% but <90% and if flows Ok then data is OK

Comments: OK**2. System Status**

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Vacuum pump pressure	<u>-28 inch Hg</u>	<0.50 atm <u><-25 inch Hg</u>	✓	
Warnings	<u>NIL</u>	No Warnings	✓	
If any warnings list:				

Comments:Data Downloaded: YES/NO(circle)Technician Name : COLIN DAVID Signed [Signature]

3. Instrument Conditions Ambient Conditions and Temperatures

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Ambient Temperature	27.7	-10 to 50 C	✓	
Ambient Dew Point	NA	-10 to 50 C		
Ambient Pressure	0.976	0.9-1.1 atm	✓	
Ambient Relative Humidity	NA	10-100 %RH		
Cap temperature	50.00	50.00 +/- 0.10 C	✓	
Case temperature	50.00	50.00 +/- 0.10 C	✓	
Main (PM-10) Air Tube temp	50.00	50.00 +/- 0.10 C	✓	

Comments:**4. Instrument Conditions – Flows**

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Main (PM-10) Flow rate	3.0	2.82 – 3.18 lpm	✓	
Bypass Flow rate	13.68	12.95 – 14.39 lpm	✓	
Total Flow rate	16.68	15.67 – 17.67 lpm	✓	

Comments:**Results: (Tick box)**

- ☒ There were NO equipment faults found. No action required – (file report)
- ☐ There were faults found (Fails) – Were these fixed on site: YES/NO (circle)
 Any **Fails** that cannot be repaired on site must be reported to CBased:
 Office: 65713334 or email cbased@bigpond.com
 Date faults notified to CBased: _____

Comments/Action Required:

Calibration/Maintenance

1. 1405A: Were Filters replaced YES/NO
 2. PM10 Inlet head cleaned YES/NO
 3. If measurement filters were replaced, confirm stable results after change. Stable particulate results confirmed YES/NO

Channel	Filter Load %	Frequency Hz initial	Frequency check 1min	Frequency check 3min	Frequency check 5min
PM10	17	255.69502	255.69505	269.69507	269.65509

Frequency should not drift by more than 0.0010 between readings (if instrument is thermodynamically stable)
 Pass/Fail – if Fail – install new filter and redo stability test.

4. Instrument clock verified (Refer Section 1) YES/NO.
 If Time changed – clock reset OK YES/NO or NA (not changed)
 Comments:

5. Were TEOM in line and rear TEOM filters checked for cleanliness and replaced if necessary. YES/NO.
 Comments if changed:

6. TEOM Cleaned and Air Conditioner checked YES/NO. Air Conditioner settings or operational status: OK ✓

Tetracal Flow/Temp/Pressure Calibrator Serial No: TET 005 Refer to calibration corrections for Temperature/Pressure and Flows and apply to all readings.

Quarterly or Six Monthly Calibration

1. Flow Verification – Conducted YES/NO

PM10 Flow verified Flow l/min 2.95 Error % 1.7 (allowed error <6%) PASS/FAIL

Bypass Flow verified Flow l/min 13.49 Error % 1.3 (allowed error <6%) PASS/FAIL

If fail then complete a full multipoint recalibration and review previous data from last good flow check. **Comments if Flows recalibrated:**

2. Leak Check – Conducted YES/NO

PM10 actual 0.14 < Limit 0.15

Bypass actual 0.58 < Limit 0.60

Leak check PASS/FAIL – If fail then find leak and retest.

Comments: slight leak near transducer as noted.

initial Final
Fadj Fadj
1.050 1.053
0.995 1000
OK ✓



Annual Calibration/Maintenance**1. Temperature and Pressure Calibration – Conducted** ☒ YES/NO

Reference Temperature: 27.8 C TEOM Temperature 27.7 C
if difference +/- 1 C recalibrate sensor. Sensor recalibrated ☒ YES/NO

Reference Pressure: 0.983 atm TEOM Pressure 0.976 atm
if difference +/- 0.010 atm recalibrate sensor. Sensor recalibrated ☒ YES/NO

Ref
T = 27.8°C
P = 746.9 mmHg
0.983 atm

Note: Tetral measures Atmospheric Pressure in mm Hg or mb or hPa
For mb or hPa divide tetral result by 1013.25 to change units to atm.
For mmHg divide tetral result by 760 to change units to atm.

2. Flow Calibration – Conducted ☒ YES/NO

Software + Hardware check

PM10

Set point 2.4 Actual: _____

Set point 3.6 Actual: _____

Set point 3.0 Actual: _____ After calibration Final: _____ l/min

Hardware Flow cal
F adj 1.000 Main
1.000 aux
Set in

BYPASS

Set point 10.9 Actual: _____

Set point 16.4 Actual: _____

Set point 13.67 Actual: _____ After calibration Final: _____ l/min

3. Mass calibration (K0) Verification – Conducted ☒ YES/NOActual measured KO = 13989 TEOM stated KO 13748 Error %: 1.75Allowed Error +/- 2.5%. ☒ PASS/FAIL

If Error +/- 2.5% repeat. If confirmed consult manufacturer.

Second Error % = _____ PASS/FAIL. Comments:

If second test fails consult manufacturer.

No filter 341.93557
Filter 253.07693
Audit 13989
Actual 13748
% 1.75%

4. Annual Noise check - Conducted ☒ YES/NO

Zero filter applied to TEOM and TEOM operated for at least 12 hours:

Start date/time: 30/12/24 14:30 Finish date/time: 31/12/24 09:55Standard deviation of all recorded data (min 30 min averages) = 1.44 ug/m³Noise was less than 5ug/m³ ☒ YES/NO**5. Maintenance**Air Inlet system cleaned ☒ YES/NOPump Reconditioned ☒ YES/NOCheck Waterproofing ☒ YES/NOComments: OK

✓ M





**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

January 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 28 February 2025

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for January 2025 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 34.5% of valid meteorological data was recorded for January 2025 due to a fault, with the station, which is currently under investigation. Rainfall data was unaffected during this period.

Approximately 98.8% of valid TEOM data was available for January 2025.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 98.8% of valid TEOM data was available for January 2025.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/01/2025	17.4	15.0	43.5	37.4
2/01/2025	23.3	15.0	58.3	37.5
3/01/2025	17.5	15.0	43.8	37.5
4/01/2025	16.1	15.0	40.3	37.6
5/01/2025	16.5	15.0	41.3	37.6
6/01/2025	19.4	15.1	48.5	37.6
7/01/2025	9.0	15.0	22.5	37.6
8/01/2025	10.2	15.0	25.5	37.5
9/01/2025	9.7	15.0	24.3	37.4
10/01/2025	8.9	14.9	22.3	37.3
11/01/2025	9.1	14.9	22.8	37.2
12/01/2025	11.4	14.9	28.5	37.2
13/01/2025	11.3	14.9	28.3	37.1
14/01/2025	19.8	14.9	49.5	37.2
15/01/2025	15.6	14.9	38.9	37.2
16/01/2025	15.6	14.9	39.0	37.2
17/01/2025	17.3	14.9	43.3	37.3
18/01/2025	13.4	14.9	33.5	37.2
19/01/2025	18.9	14.9	47.3	37.3
20/01/2025	19.8	14.9	49.5	37.4
21/01/2025	20.2	15.0	50.5	37.4
22/01/2025	24.7	15.0	61.8	37.6
23/01/2025	21.3	15.1	53.3	37.6
24/01/2025	17.0	15.1	42.5	37.7
25/01/2025	18.2	15.1	45.5	37.7
26/01/2025	16.8	15.1	42.0	37.7
27/01/2025	14.4	15.1	36.1	37.7
28/01/2025	17.9	15.1	44.8	37.8
29/01/2025	25.8	15.2	64.5	37.9
30/01/2025	18.4	15.2	46.0	37.9
31/01/2025	14.1	15.2	35.3	37.9

*Calculated from PM₁₀

**Calculated from PM₁₀ Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for January 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

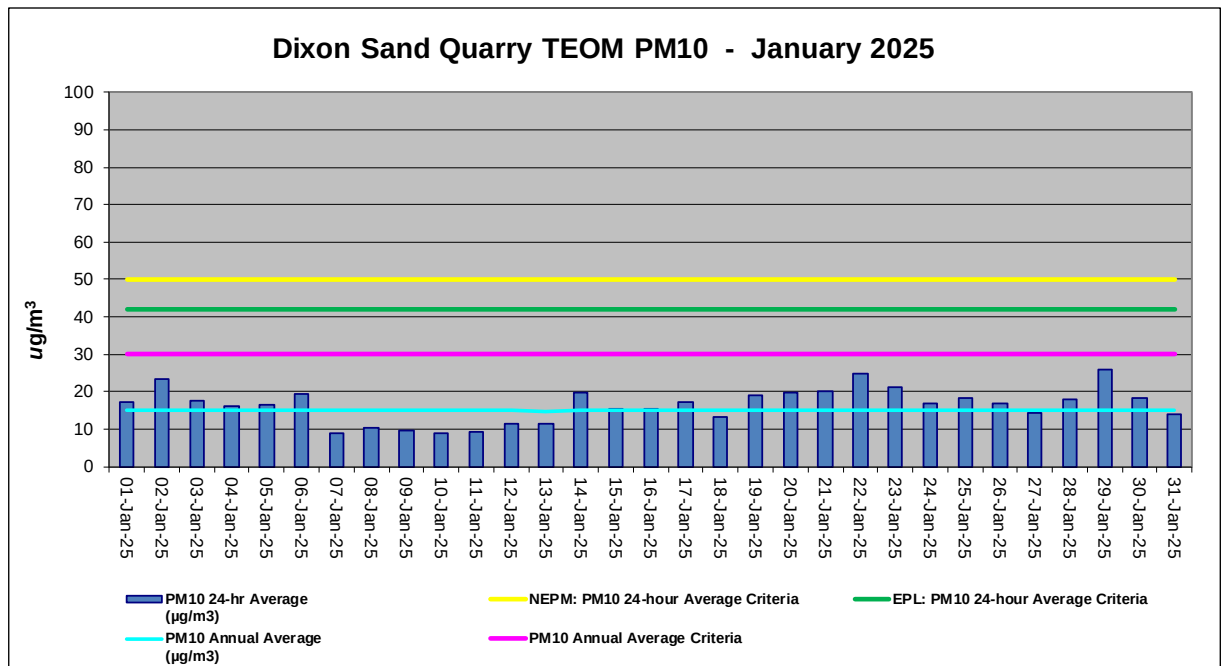


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2 and 3**. A windrose is provided in **Figure 4**. **Please Note:** The Windrose excludes data from 5-12, 17-26 and 28-31 January 2025 due to a fault, currently under investigation, which resulted in data loss during this period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 34.5% of valid meteorological data was recorded for January 2025 due to a fault with the station which is currently under investigation. Rainfall data was unaffected during this period.

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/01/2025	19.0	24.5	33.0	0.0	0.0	4.7	23.6	25.1	69.7	100.0	989.3	993.3	995.9
2/01/2025	17.0	20.3	22.0	0.0	0.4	4.2	14.2	61.9	75.8	96.8	993.5	999.4	1002.9
3/01/2025	15.0	19.8	25.0	0.6	0.1	4.4	17.4	59.6	80.4	100.0	999.1	1001.5	1003.4
4/01/2025	18.0	23.3	31.0	0.0	0.2	4.9	24.1	35.6	64.6	86.0	996.0	999.0	1001.5
5/01/2025				0.0									
6/01/2025				1.6									
7/01/2025				14.0									
8/01/2025				17.4									
9/01/2025				5.8									
10/01/2025				8.2									
11/01/2025				0.6									
12/01/2025				0.8									
13/01/2025	19.0	25.8	32.0	0.2	0.1	5.1	23.2	39.7	70.1	99.9	986.2	988.3	990.3
14/01/2025	20.0	24.9	32.0	1.0	0.1	3.5	26.4	42.4	78.6	100.0	985.6	988.0	990.7
15/01/2025	20.0	24.0	35.0	13.0	0.0	4.5	24.4	43.2	86.7	99.9	974.7	982.6	987.3
16/01/2025	19.0	19.4	20.0	8.4	0.5	3.2	9.6	99.9	99.9	99.9	979.6	980.7	982.2
17/01/2025				5.2									
18/01/2025				25.2									
19/01/2025				0.4									
20/01/2025				0.0									
21/01/2025				0.6									
22/01/2025				0.6									
23/01/2025				0.2									
24/01/2025				0.0									
25/01/2025				0.0									
26/01/2025				0.0									
27/01/2025	22.0	25.0	27.0	7.2	1.7	8.7	24.8	62.7	75.4	96.9	989.1	989.5	991.0
28/01/2025				14.8									
29/01/2025				1.0									
30/01/2025				1.4									
31/01/2025				1.6									
Monthly	15.0	23.0	35.0	129.8	0.0	4.8	26.4	25.1	77.9	100.0	974.7	991.4	1003.4

No Data available due to a fault with station - investigation underway

Table 3: Meteorological Data Summary for January 2025

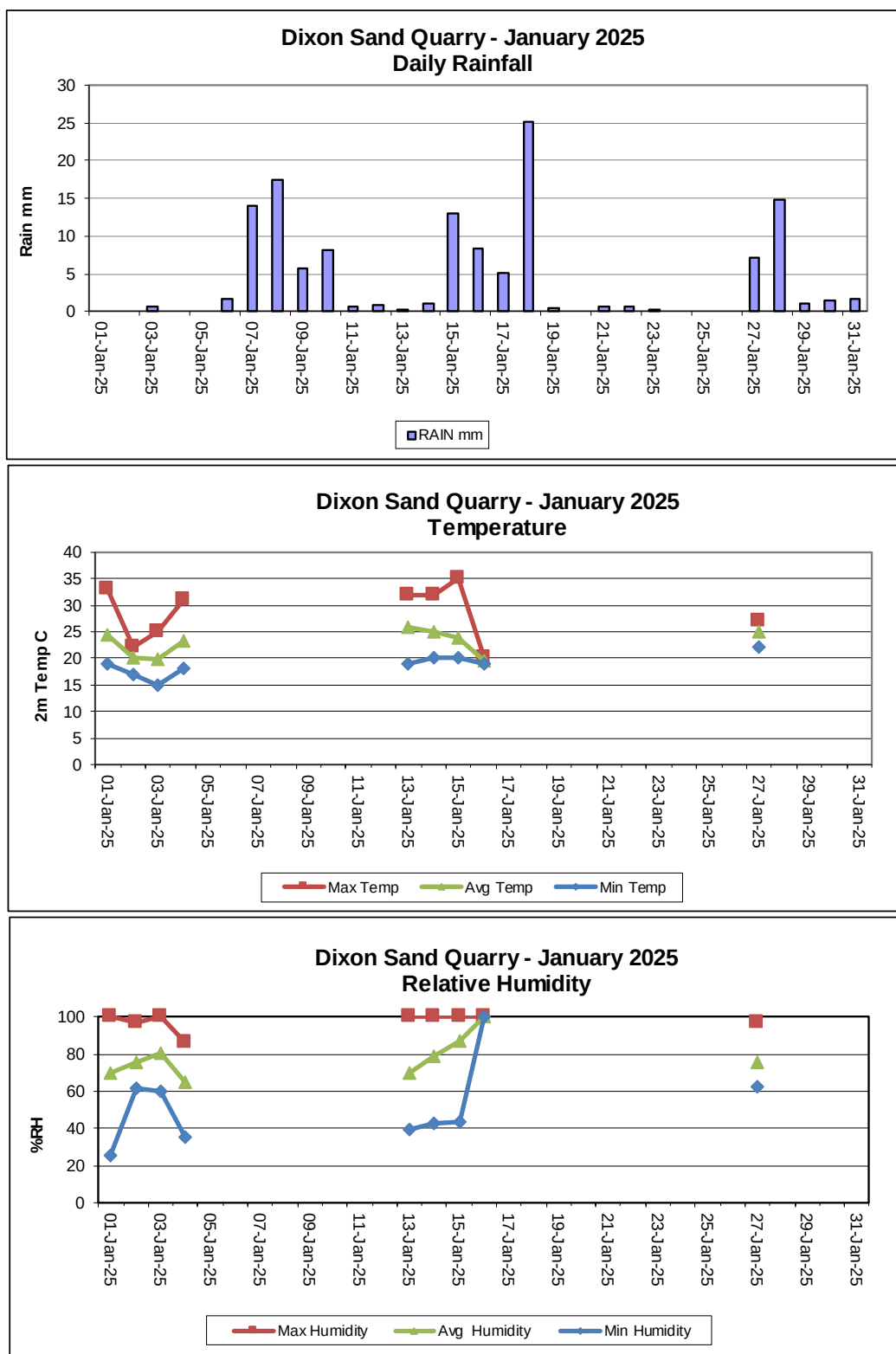


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

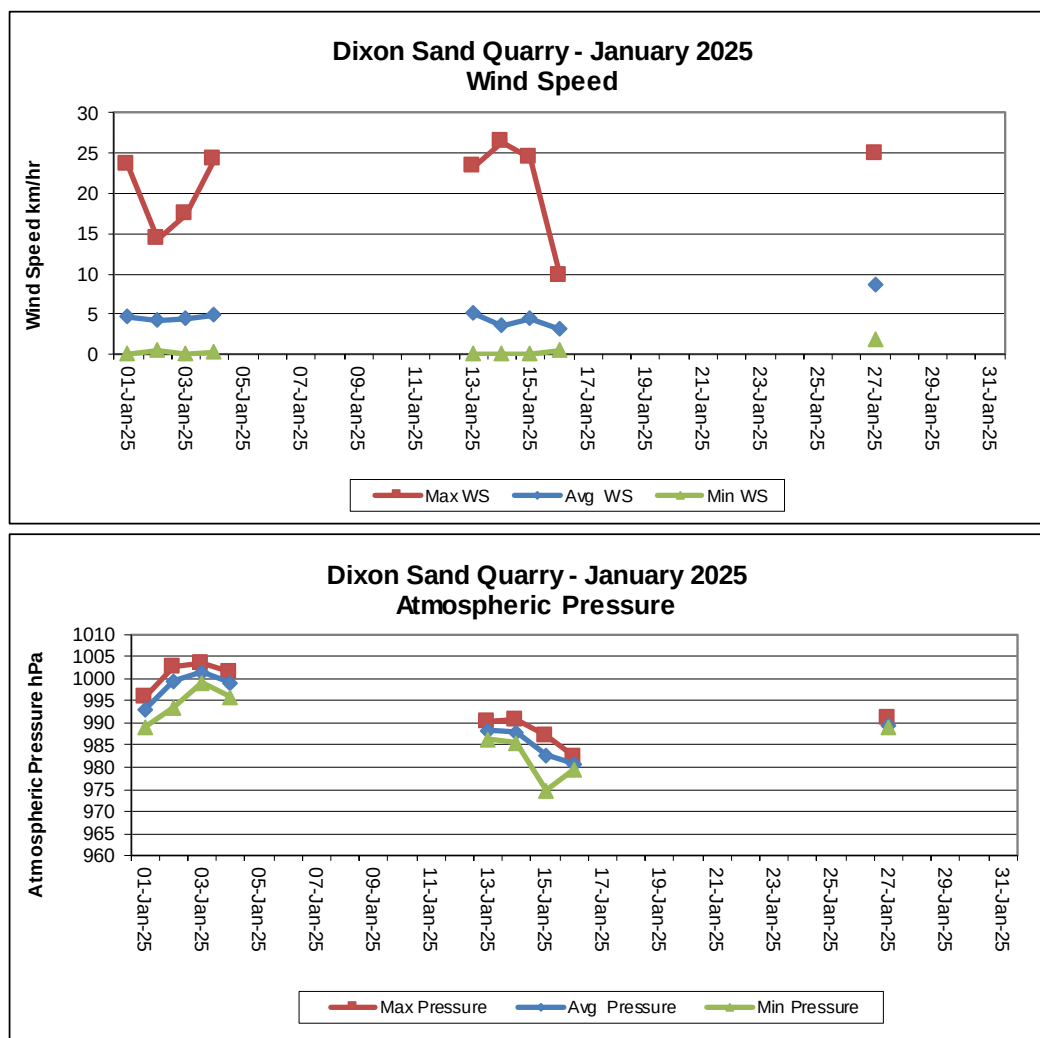


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose

JANUARY 2025

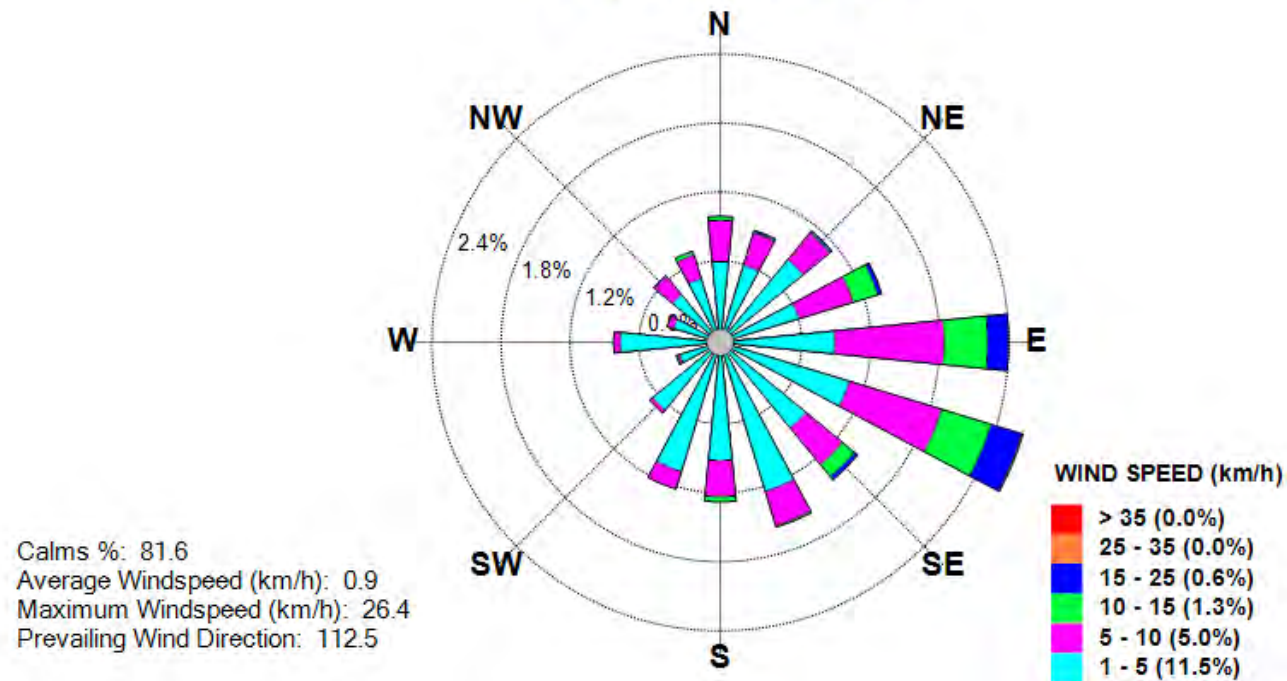


Figure 4: Windrose

Note: Chart excludes data from 5-12, 17-26 and 28-31 January 2025 due to MET station fault

Appendix 1

Calibration Documents (when required)



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

February 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 26 March 2025

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for February 2025 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 24.2% of valid meteorological data was recorded for February 2025 due to a fault, with the station, which is currently under investigation. Rainfall data was unaffected during this period.

Approximately 99.6% of valid TEOM data was available for February 2025.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ continuous direct mass method using a tapered element oscillating microbalance analyser”*; and
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TEOM PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

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The calibration certificate is provided in **Appendix 1** (when required).

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/02/2025	17.8	15.2	44.5	38.0
2/02/2025	11.3	15.2	28.3	37.9
3/02/2025	15.1	15.2	37.8	37.9
4/02/2025	18.3	15.2	45.8	37.9
5/02/2025	21.4	15.2	53.5	38.0
6/02/2025	21.2	15.2	53.0	38.1
7/02/2025	15.2	15.2	38.0	38.1
8/02/2025	18.4	15.3	46.1	38.1
9/02/2025	10.7	15.2	26.8	38.1
10/02/2025	10.9	15.2	27.3	38.0
11/02/2025	11.8	15.2	29.5	38.0
12/02/2025	13.2	15.2	33.0	38.0
13/02/2025	15.8	15.2	39.5	38.0
14/02/2025	19.4	15.2	48.5	38.0
15/02/2025	16.2	15.2	40.5	38.0
16/02/2025	12.1	15.2	30.3	38.0
17/02/2025	14.7	15.2	36.8	38.0
18/02/2025	16.7	15.2	41.8	38.0
19/02/2025	17.8	15.2	44.5	38.0
20/02/2025	16.7	15.2	41.8	38.0
21/02/2025	15.9	15.2	39.8	38.1
22/02/2025	9.9	15.2	24.8	38.0
23/02/2025	12.0	15.2	30.0	38.0
24/02/2025	31.3	15.3	78.3	38.1
25/02/2025	22.1	15.3	55.3	38.2
26/02/2025	17.4	15.3	43.5	38.2
27/02/2025	18.2	15.3	45.5	38.3
28/02/2025	20.8	15.3	52.0	38.3

*Calculated from PM₁₀

**Calculated from PM₁₀ Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for February 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

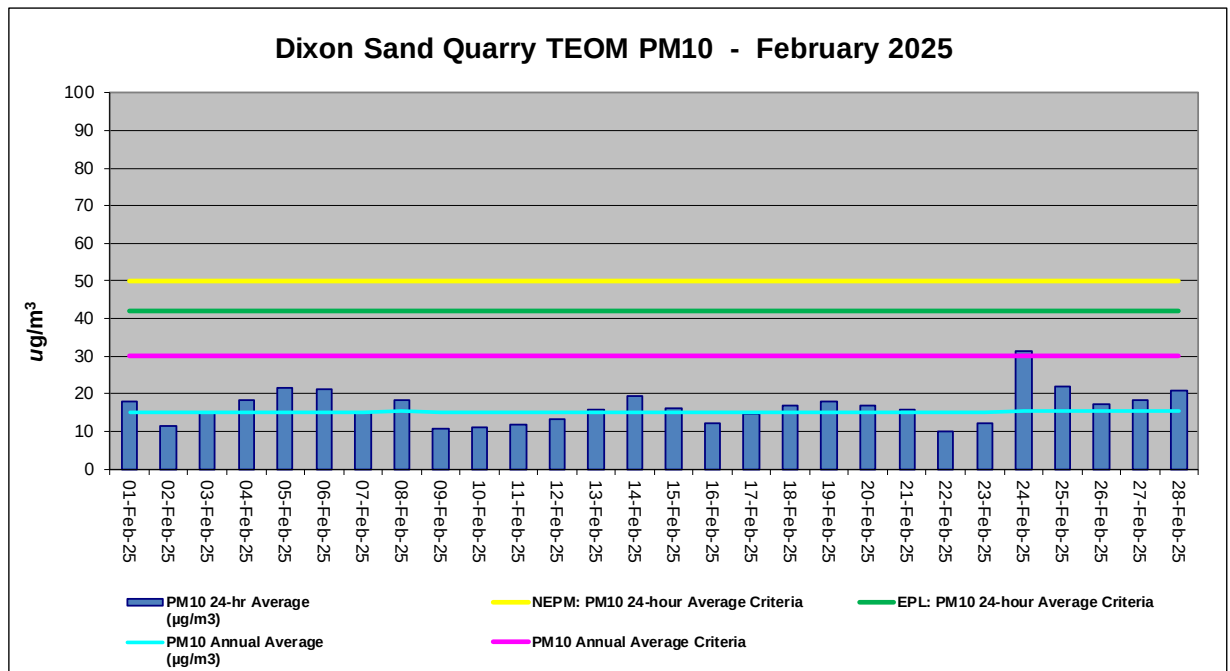


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2 and 3**. A windrose is provided in **Figure 4**. **Please Note:** The Windrose excludes data from 1-7, 10-16 and 21-28 February 2025 due to a fault, currently under investigation, which resulted in data loss during this period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and is next due in March 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

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Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/02/2025				1.2									
2/02/2025				0.0									
3/02/2025				0.0									
4/02/2025				0.0									
5/02/2025				0.0									
6/02/2025				0.0									
7/02/2025				0.0									
8/02/2025				5.2	0.3	3.4	10.5				991.2	992.4	993.3
9/02/2025				1.2	0.2	1.7	5.6				990.2	991.1	991.9
10/02/2025				22.6									
11/02/2025				0.4									
12/02/2025				0.0									
13/02/2025				0.0									
14/02/2025				0.4									
15/02/2025				0.2									
16/02/2025				0.0									
17/02/2025	14.0	18.9	24.0	0.0	0.1	4.0	18.9	27.7	56.5	78.6	997.6	998.7	999.8
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19/02/2025	15.0	20.4	26.0	0.0	0.0	3.7	24.7	52.4	75.9	100.0	993.1	995.4	997.1
20/02/2025	18.0	18.5	21.0	0.0	0.2	3.6	12.9	77.7	92.0	96.5	996.4	998.1	1000.8
21/02/2025				0.2									
22/02/2025				2.0									
23/02/2025				0.0									
24/02/2025				0.0									
25/02/2025				0.4									
26/02/2025				0.0									
27/02/2025				0.0									
28/02/2025				0.0									
Monthly	12.0	19.2	28.0	33.8	0.0	3.3	24.7	26.6	72.1	100.0	990.2	995.2	1000.8

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Table 3: Meteorological Data Summary for February 2025

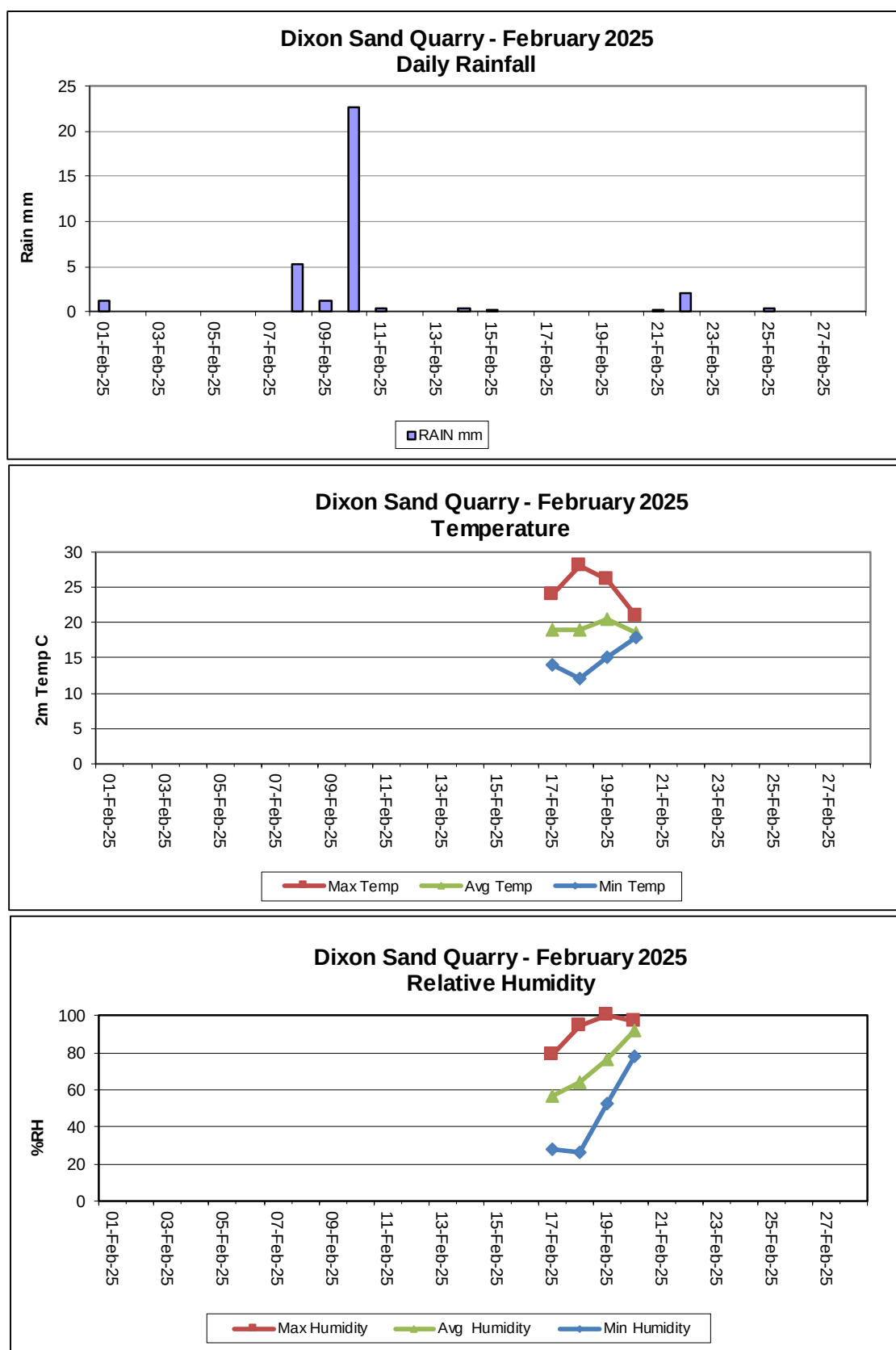


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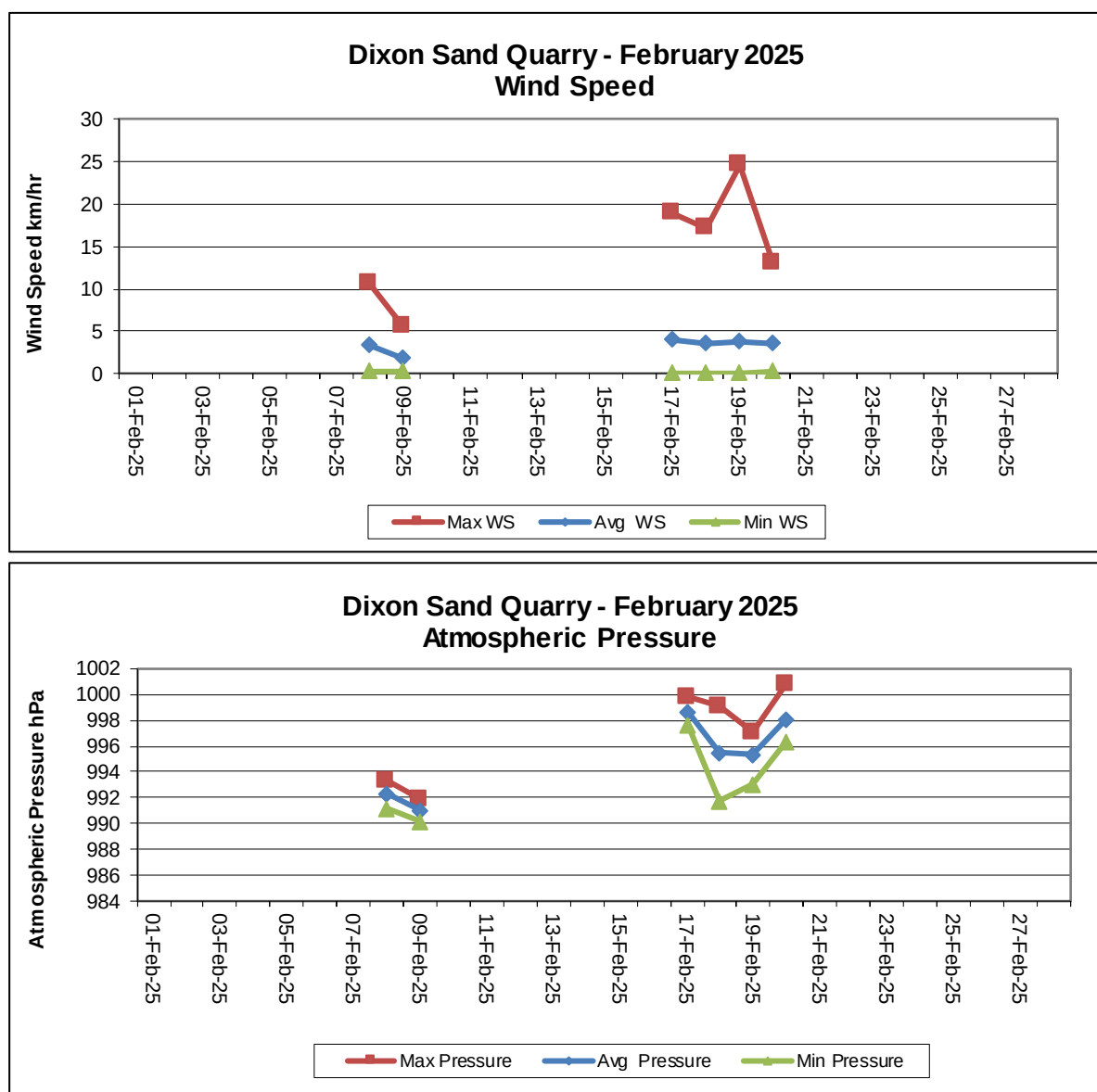


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Dixon Sand Quarry - Windrose

FEBRUARY 2025

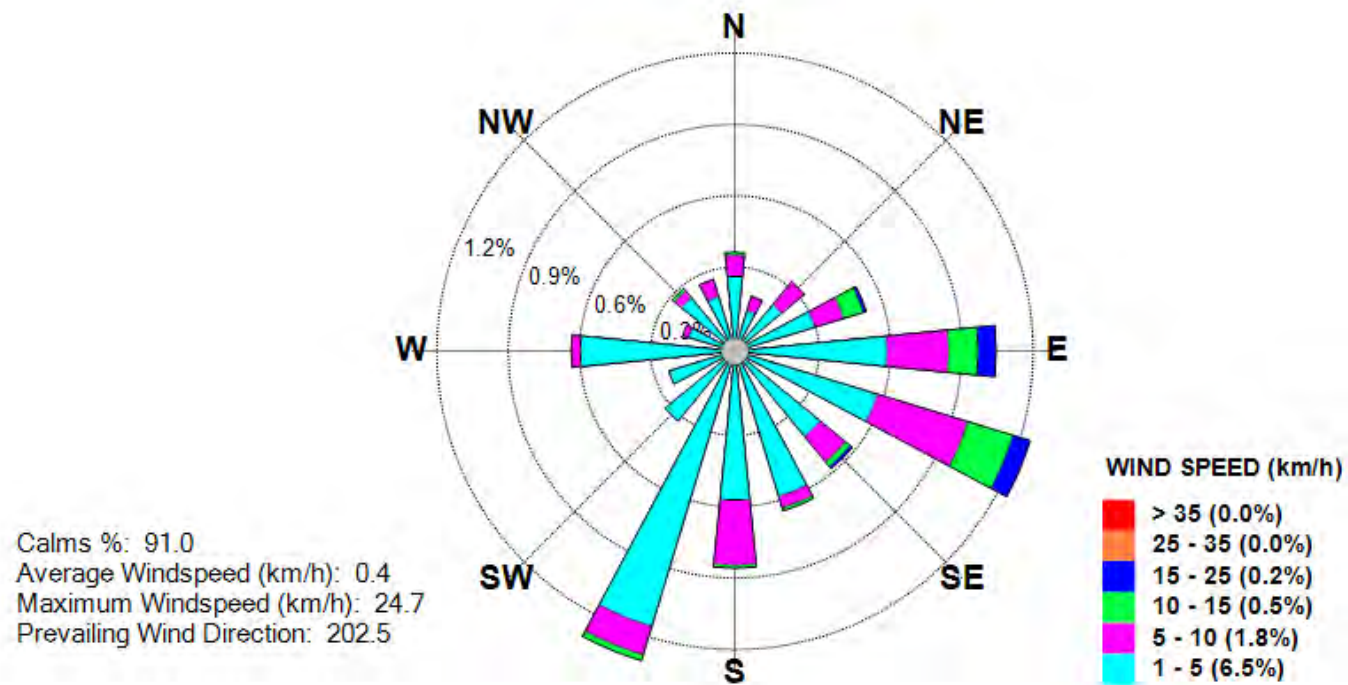


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**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

March 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 29 April 2025

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3.0 Results

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Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for March 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/03/2025	29.0	15.4	72.5	38.5
2/03/2025	22.5	15.4	56.3	38.6
3/03/2025	17.2	15.4	43.0	38.6
4/03/2025	14.9	15.4	37.3	38.6
5/03/2025	15.5	15.4	38.8	38.6
6/03/2025	15.5	15.4	38.8	38.6
7/03/2025	9.8	15.4	24.5	38.5
8/03/2025	13.2	15.4	33.0	38.5
9/03/2025	10.5	15.4	26.3	38.4
10/03/2025	10.2	15.4	25.5	38.4
11/03/2025	7.5	15.3	18.8	38.3
12/03/2025	11.5	15.3	28.8	38.3
13/03/2025	14.5	15.3	36.3	38.3
14/03/2025	14.7	15.3	36.8	38.2
15/03/2025	20.2	15.3	50.5	38.3
16/03/2025	12.6	15.3	31.5	38.3
17/03/2025	19.2	15.3	48.0	38.3
18/03/2025	17.2	15.3	43.0	38.3
19/03/2025	21.0	15.4	52.5	38.4
20/03/2025	18.5	15.4	46.3	38.4
21/03/2025	13.7	15.4	34.3	38.4
22/03/2025	13.7	15.4	34.3	38.4
23/03/2025	8.9	15.3	22.3	38.3
24/03/2025	17.2	15.3	43.0	38.3
25/03/2025	12.2	15.3	30.5	38.3
26/03/2025	13.4	15.3	33.5	38.3
27/03/2025	13.8	15.3	34.5	38.3
28/03/2025	10.4	15.3	26.0	38.2
29/03/2025	8.1	15.3	20.3	38.2
30/03/2025	10.5	15.2	26.3	38.1
31/03/2025	9.7	15.2	24.3	38.1

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

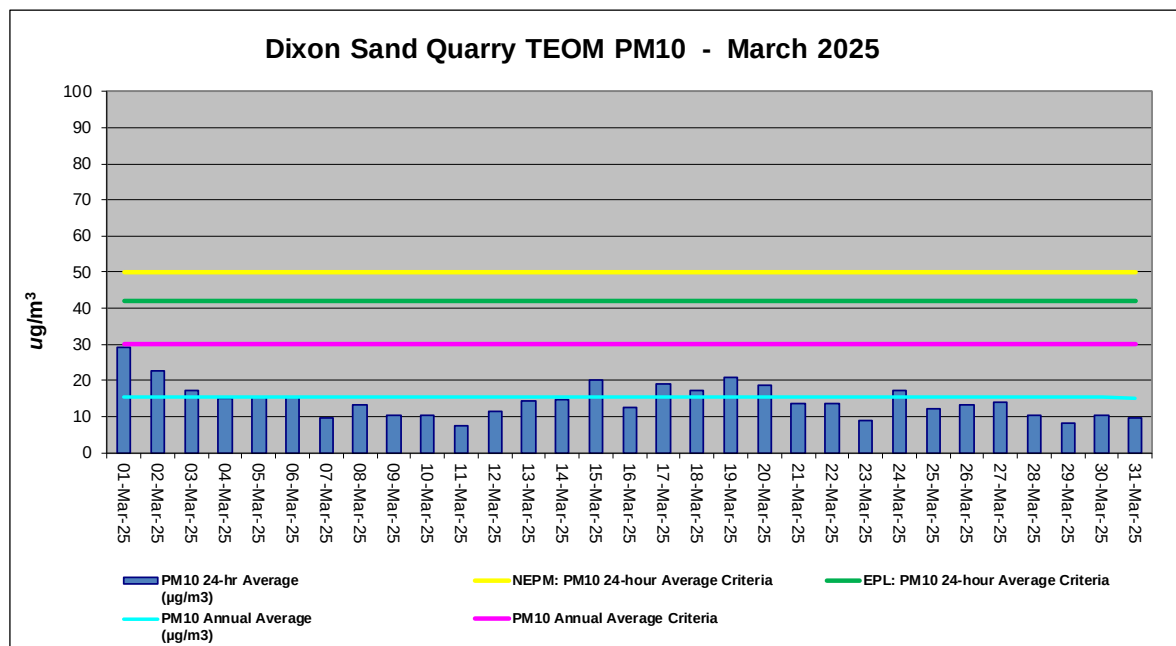


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A windrose is provided in **Figure 4**. **Please Note:** The Windrose excludes data from 1-19 and 24-31 March 2025 due to an ongoing Met station fault, which resulted in data loss during this period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024 and will be conducted upon completion of repair to the station. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 19.6% of valid meteorological data was recorded for March 2025 due to an ongoing fault with the station. A replacement sensor has been ordered by CBased and repair of the MET station will be scheduled upon receipt of the sensor. Rainfall data was unaffected during this period.

Table 3: Meteorological Data Summary for March 2025

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/03/2025				0.0									
2/03/2025				0.0									
3/03/2025				0.8									
4/03/2025				6.6									
5/03/2025				4.8									
6/03/2025				0.4									
7/03/2025				1.2									
8/03/2025				3.6									
9/03/2025				1.4									
10/03/2025				1.2									
11/03/2025				3.0									
12/03/2025				2.8									
13/03/2025				0.2									
14/03/2025				0.0									
15/03/2025				0.0									
16/03/2025				0.0									
17/03/2025				0.0									
18/03/2025				0.0									
19/03/2025				0.0									
20/03/2025	22.0	26.8	32.0	0.0	0.3	5.2	15.5	42.5	64.1	86.8	996.0	997.8	1001.3
21/03/2025	19.0	21.6	25.0	5.6	0.0	3.3	12.8	75.8	90.6	100.0	993.9	995.6	997.5
22/03/2025	19.0	21.1	25.0	1.6	0.2	3.5	18.8	71.2	93.6	100.0	996.3	998.1	1000.2
23/03/2025	19.0	19.8	20.0	9.0	0.1	2.0	6.0	99.9	99.9	99.9	999.5	1000.3	1002.2
24/03/2025				1.2									
25/03/2025				3.8									
26/03/2025				0.2									
27/03/2025				6.8									
28/03/2025				3.6									
29/03/2025				43.2									
30/03/2025				5.2									
31/03/2025				1.0									
Monthly	19.0	22.3	32.0	107.2	0.0	3.5	18.8	42.5	87.1	100.0	993.9	997.9	1002.2

No Data available due to a fault with station - investigation underway

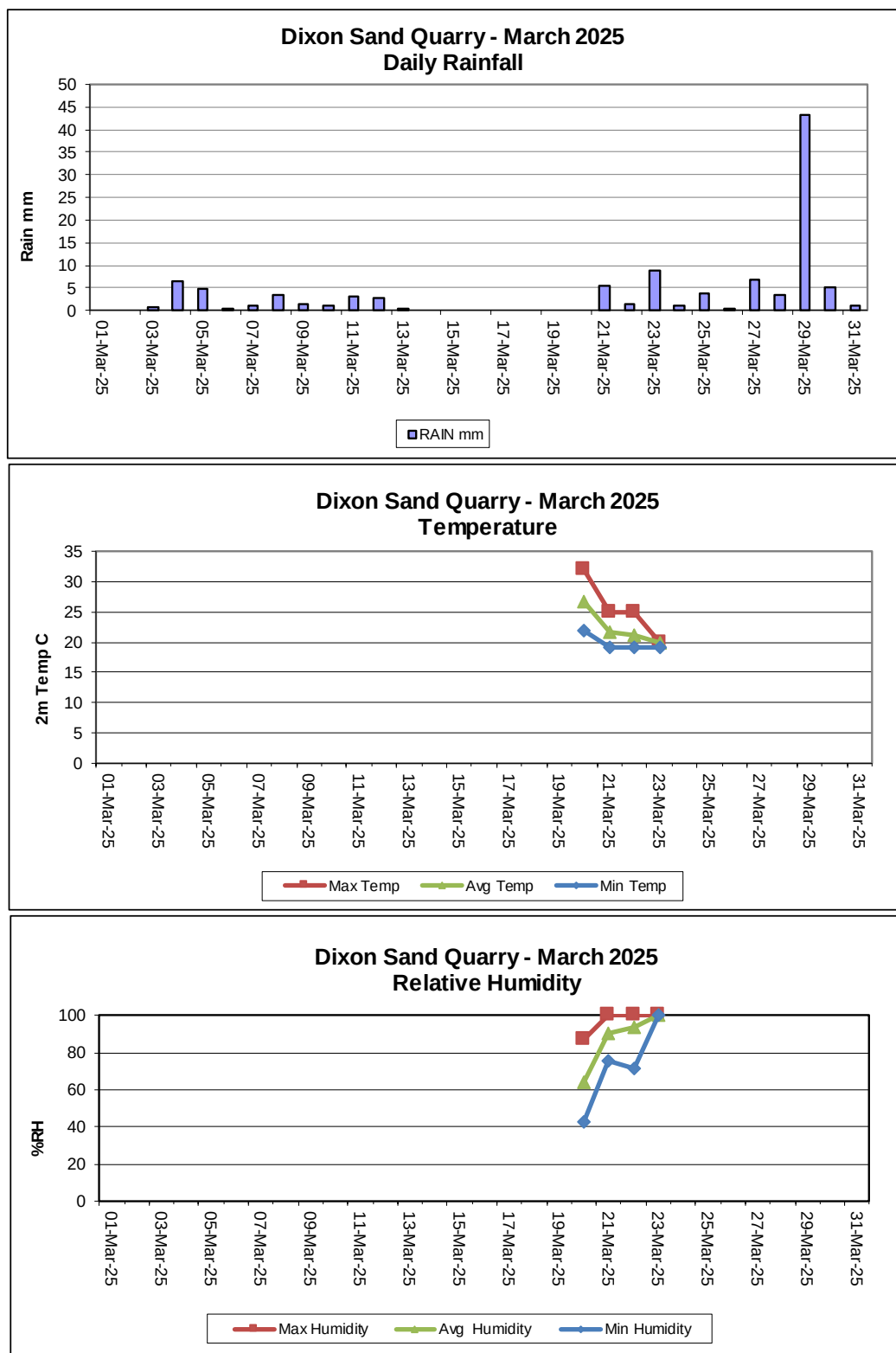


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

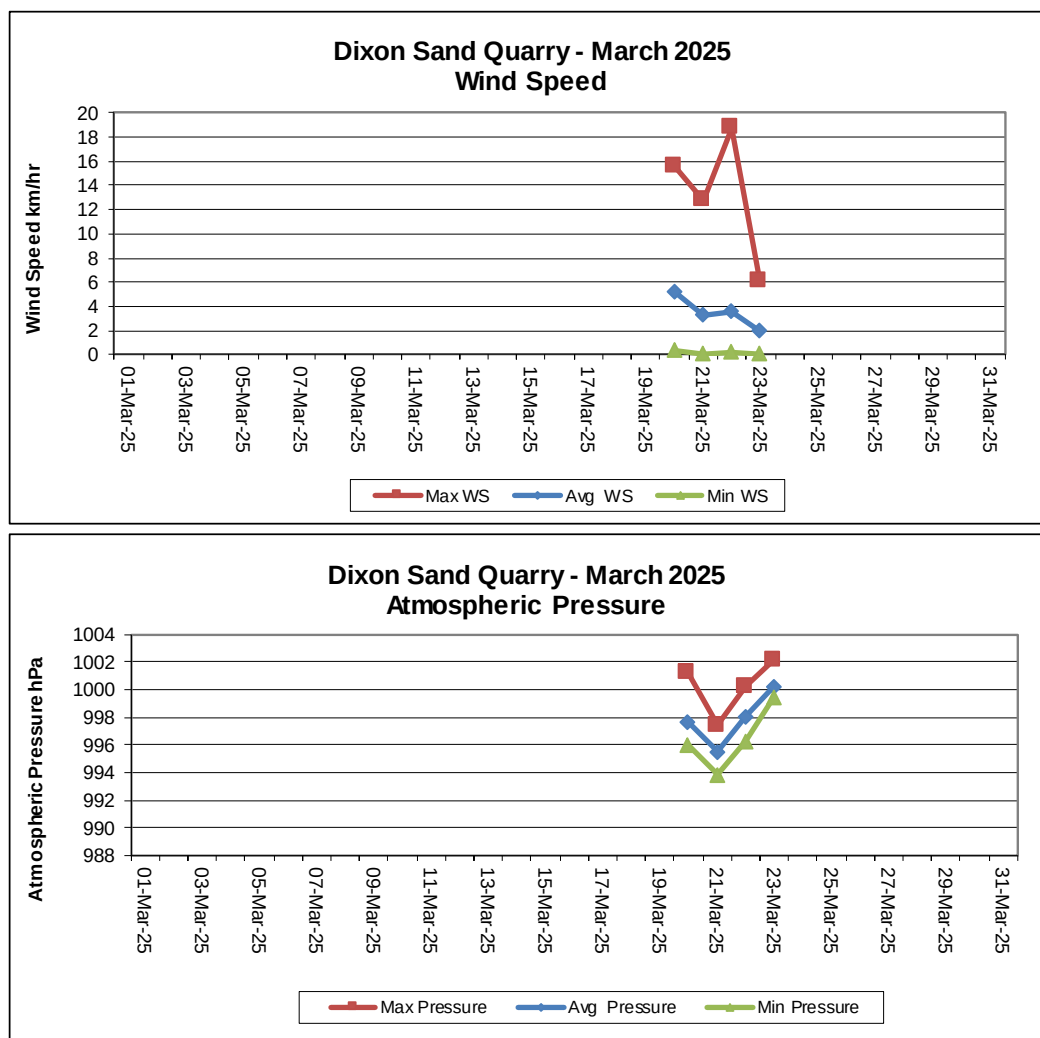


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose

MARCH 2025

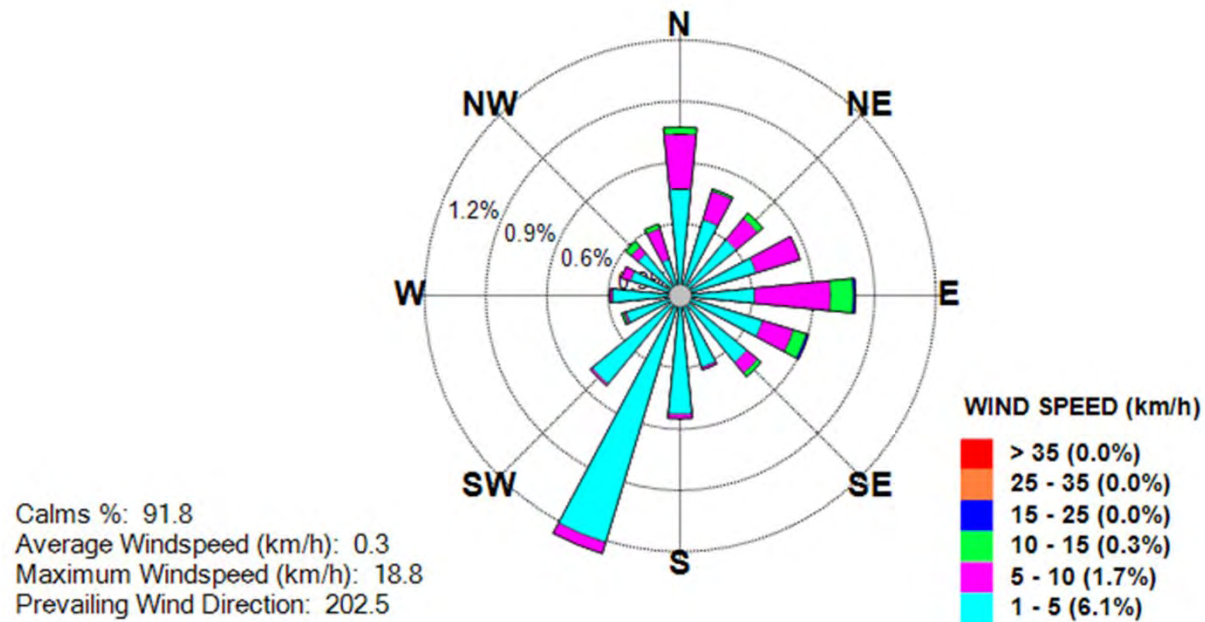


Figure 4: Windrose

Note: Chart excludes data from 1-19 and 24-31 March 2025 due to MET station fault

Appendix 1
Calibration Documents (when required)



Continuous Air Quality

Monthly/Quarterly/Six Monthly/Annual

TEOM Maintenance and Calibration – 1400AB

TEOM Client/Site: Dixon Sands / TEOM1Date: 20/3/251. TEOM Data Screen SERIAL No: 1400AB255700523 Firmware: —

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Operating Condition	<u>Filter OK (4)</u>	Green - Normal	☒	
Date/time	TEOM: <u>9.14</u> Actual: <u>10.20</u>	Current Date/time correct within 5 minutes	☒ <u>OK ET</u>	
PM-10 24hr av	<u>19.3</u>	Positive values	☒	
Filter loading PM10	<u>50</u>	<80 %	☒	
Frequency PM-10	<u>253.36972</u>	200-300 Hz	☒	
Noise PM-10	<u>0.049</u>	<0.100ug	☒	

Comment: If filter load >80% but <90% and if flows OK then data is OK

Comments:**2. System Status**

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Vacuum pump pressure	<u>-28 in Hg.</u>	<0.50 atm <u><-25 in Hg</u>	☒	
Warnings	<u>NIL</u>	No Warnings	☒	
If any warnings list:				

Comments:

Data Downloaded: YES/NO (circle)

Technician Name : COLIN DANIELSigned Colin

3. Instrument Conditions Ambient Conditions and Temperatures

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Ambient Temperature	28.2	-10 to 50 C	✓	
Ambient Dew Point	NA	-10 to 50 C	✓	
Ambient Pressure	0.976	0.9-1.1 atm	✓	
Ambient Relative Humidity	NA	10-100 %RH	✓	
Cap temperature	50.00	50.00 +/- 0.10 C	✓	
Case temperature	50.00	50.00 +/- 0.10 C	✓	
Main (PM-10) Air Tube temp	50.00	50.00 +/- 0.10 C	✓	

Comments:**4. Instrument Conditions – Flows**

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Main (PM-10) Flow rate	3.00	2.82 – 3.18 lpm	✓	
Bypass Flow rate	13.67	12.95 – 14.39 lpm	✓	
Total Flow rate	16.67	15.67 – 17.67 lpm	✓	

Comments:**Results: (Tick box)**

☒ There were NO equipment faults found. No action required – (file report)

☐ There were faults found (Fails) – Were these fixed on site: YES/NO (circle)

Any **Fails** that cannot be repaired on site must be reported to CBased:

Office: 65713334 or email cbased@bigpond.com

Date faults notified to CBased: _____

Comments/Action Required:

Calibration/Maintenance

1. 1405A: Were Filters replaced YES/NO
 2. PM10 Inlet head cleaned YES/NO
 3. If measurement filters were replaced, confirm stable results after change. Stable particulate results confirmed YES/NO

Channel	Filter Load %	Frequency Hz initial	Frequency check 1min	Frequency check 3min	Frequency check 5min
PM10	16	255.67951	255.67953	255.67954	255.67955

Frequency should not drift by more than 0.0010 between readings (if instrument is thermodynamically stable)
 Pass/Fail – if Fail – install new filter and redo stability test.

4. Instrument clock verified (Refer Section 1) YES/NO.
 If Time changed – clock reset OK YES/NO or NA (not changed)
 Comments:

5. Were TEOM in line and rear TEOM filters checked for cleanliness and replaced if necessary. YES/NO.
 Comments if changed:

6. TEOM Cleaned and Air Conditioner checked YES/NO. Air Conditioner settings or operational status: OK ✓

Tetracal Flow/Temp/Pressure Calibrator Serial No: TET005 Refer to calibration corrections for Temperature/Pressure and Flows and apply to all readings.

Quarterly or Six Monthly Calibration

1. Flow Verification – Conducted YES/NO

PM10 Flow verified Flow l/min 3.01 Error % 0.3 (allowed error <6%) PASS/FAIL

Bypass Flow verified Flow l/min 13.47 Error % 1.5 (allowed error <6%) PASS/FAIL

If fail then complete a full multipoint recalibration and review previous data from last good flow check. **Comments if Flows recalibrated:**

2. Leak Check – Conducted YES/NO

PM10 actual 0.13 < Limit 0.15

Bypass actual 0.55 < Limit 0.60

Leak check PASS/FAIL – If fail then find leak and retest.

Comments: Slight leak in mass transducer as noted previously OK for now.



Annual Calibration/Maintenance**1. Temperature and Pressure Calibration – Conducted YES/NO**

Reference Temperature: _____ C TEOM Temperature _____ C
 if difference +/- 1 C recalibrate sensor. Sensor recalibrated YES/NO

Reference Pressure: _____ atm TEOM Pressure _____ atm
 if difference +/- 0.010 atm recalibrate sensor. Sensor recalibrated YES/NO

Note: Tetral measures Atmospheric Pressure in mm Hg or mb or hPa
For mb or hPa divide tetral result by 1013.25 to change units to atm.
For mmHg divide tetral result by 760 to change units to atm.

2. Flow Calibration – Conducted YES/NO**PM10**

Set point 2.4 Actual: _____

Set point 3.6 Actual: _____

Set point 3.0 Actual: _____ After calibration Final: _____ l/min

BYPASS

Set point 10.9 Actual: _____

Set point 16.4 Actual: _____

Set point 13.67 Actual: _____ After calibration Final: _____ l/min

3. Mass calibration (K0) Verification – Conducted YES/NO

Actual measured K0 = _____ TEOM stated K0 _____ Error %: _____

Allowed Error +/- 2.5%. PASS/FAIL

If Error +/- 2.5% repeat. If confirmed consult manufacturer.

Second Error % = _____ PASS/FAIL. Comments:

If second test fails consult manufacturer.

4. Annual Noise check - Conducted YES/NO

Zero filter applied to TEOM and TEOM operated for at least 12 hours:

Start date/time: _____ Finish date/time: _____

Standard deviation of all recorded data (min 30 min averages) = _____ ug/m³

Noise was less than 5ug/m³ YES/NO

5. Maintenance

Air Inlet system cleaned YES/NO

Pump Reconditioned YES/NO

Check Waterproofing YES/NO

Comments:





**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

April 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 29 May 2025

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for April 2025 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³.
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 7.7% of valid meteorological data was recorded for April 2025 due to a fault with the station. Rainfall data was unaffected during this period.

Approximately 99.7% of valid TEOM data was available for April 2025.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environment Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³.

All TEOM PM₁₀ results were also below the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 99.7% of valid TEOM data was available for April 2025.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for April 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/04/2025	11.4	15.2	28.5	38.0
2/04/2025	21.5	15.2	53.8	38.1
3/04/2025	19.1	15.2	47.8	38.1
4/04/2025	20.9	15.3	52.3	38.2
5/04/2025	16.3	15.3	40.8	38.2
6/04/2025	14.4	15.3	36.0	38.2
7/04/2025	18.1	15.3	45.3	38.2
8/04/2025	16.9	15.3	42.3	38.2
9/04/2025	12.0	15.3	30.0	38.2
10/04/2025	13.9	15.3	34.8	38.2
11/04/2025	27.4	15.3	68.5	38.3
12/04/2025	21.3	15.3	53.3	38.3
13/04/2025	11.4	15.3	28.5	38.3
14/04/2025	20.5	15.3	51.3	38.3
15/04/2025	13.0	15.3	32.5	38.3
16/04/2025	16.1	15.3	40.3	38.3
17/04/2025	14.5	15.3	36.3	38.3
18/04/2025	13.7	15.3	34.3	38.3
19/04/2025	15.4	15.3	38.5	38.3
20/04/2025	14.4	15.3	36.0	38.3
21/04/2025	13.6	15.3	34.0	38.3
22/04/2025	18.3	15.3	45.8	38.3
23/04/2025	13.1	15.3	32.8	38.3
24/04/2025	13.9	15.3	34.8	38.3
25/04/2025	9.9	15.3	24.8	38.2
26/04/2025	10.2	15.3	25.5	38.2
27/04/2025	8.1	15.3	20.3	38.1
28/04/2025	12.1	15.2	30.3	38.1
29/04/2025	18.0	15.2	45.0	38.1
30/04/2025	11.7	15.2	29.3	38.1

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

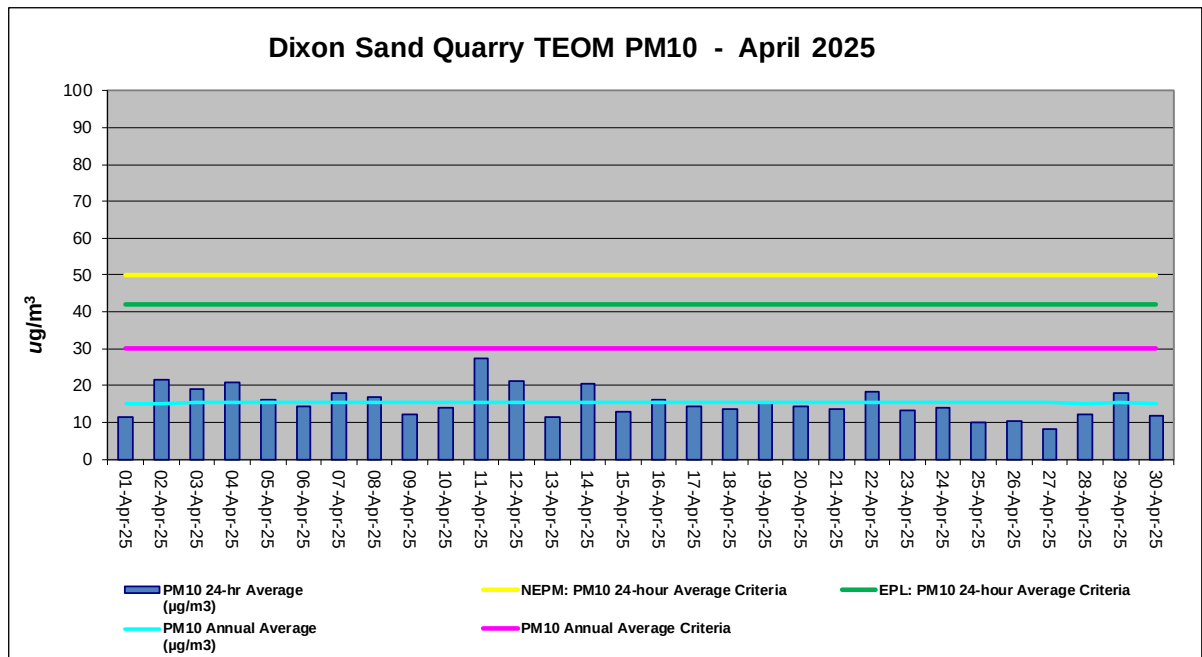


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. The chart for rainfall data is presented in **Figures 2**. No other meteorological parameters including the windrose are unavailable due to the ongoing MET station fault which resulted in data loss during the April 2025 reporting period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024. The next physical screening and system check is currently scheduled for September 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 7.7% of valid meteorological data was recorded for April 2025 due to an ongoing sensor fault with the station. A replacement sensor for the MET station has been installed by CBased on the 14 May 2025. Rainfall data was unaffected during this period.

Table 3: Meteorological Data Summary for April 2025

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/04/2025				0.0									
2/04/2025				0.0									
3/04/2025				0.0									
4/04/2025				0.0									
5/04/2025				0.0									
6/04/2025				0.0									
7/04/2025				0.0									
8/04/2025				0.0									
9/04/2025				0.0									
10/04/2025				0.0									
11/04/2025				0.0									
12/04/2025				0.0									
13/04/2025				0.2									
14/04/2025				0.2									
15/04/2025				1.4									
16/04/2025				0.0									
17/04/2025				0.4									
18/04/2025				0.0									
19/04/2025				0.0									
20/04/2025				0.0									
21/04/2025				0.0									
22/04/2025				7.4									
23/04/2025				19.8									
24/04/2025				0.2									
25/04/2025				10.0									
26/04/2025				0.8									
27/04/2025				25.4									
28/04/2025				2.6									
29/04/2025				8.2									
30/04/2025				1.0									
Monthly				77.6									

April 2025 Data unavailable due to a fault with station - Met sensor replaced 14 May 2025

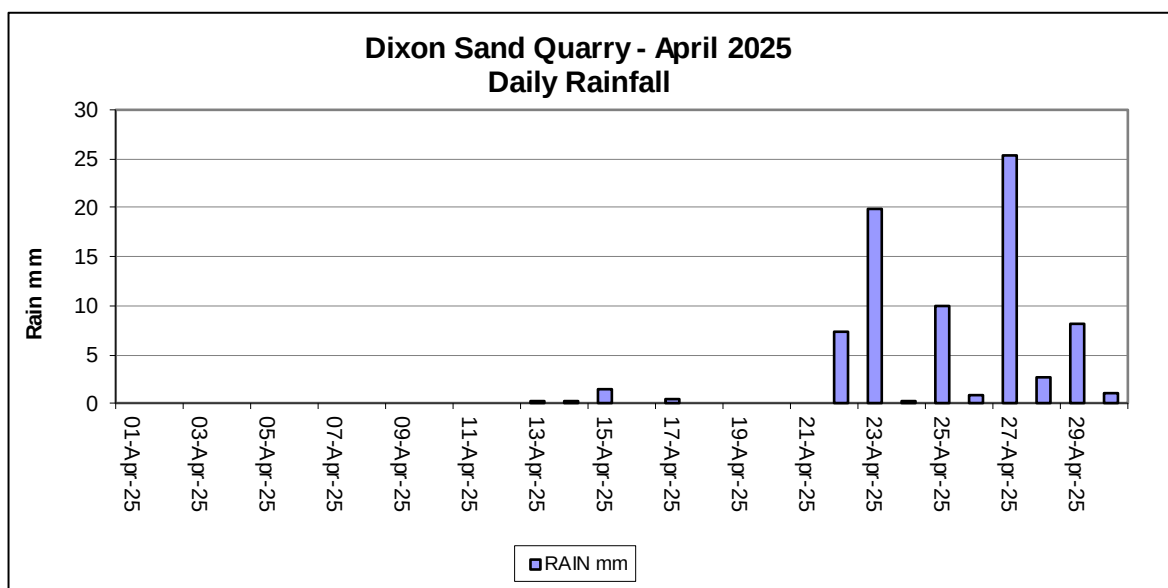


Figure 2: *Daily Rainfall*

Appendix 1

Calibration Documents (when required)



**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

May 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 30 June 2025

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for May 2025 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³; with the exception of one occurrence on the 27 May 2025 (71.7 ug/m³)
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³, with the exception of one occurrence on the 27 May 2025 (71.7 ug/m³)
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 61.3% of valid meteorological data was recorded for May 2025 due to a fault with the station. Rainfall data was unaffected during this period.

Approximately 100% of valid TEOM data was available for May 2025.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the May 2025 monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environmental Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³, with the exception of one occurrence on 27 May 2025 (71.7 ug/m³).

Additionally, TEOM PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³ with the exception of the above-mentioned occurrence on 27 May 2025 (71.7 ug/m³) highlighted in yellow in **Table 2**.

Please Note: TEOM exceedances on 27 May 2025 was due to the forecasted dust storm for this day. The Maroota Rural Fire Service (RFS) notification and Sydney Northwest region data from the NSW Government Air Quality website are provided in **Appendix 1**.

Approximately 100% of valid TEOM data was available for May 2025.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has not yet been collected.

The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for May 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/05/2025	10.6	15.2	26.5	38.1
2/05/2025	9.8	15.2	24.5	38.0
3/05/2025	10.9	15.2	27.3	38.0
4/05/2025	9.6	15.2	24.0	37.9
5/05/2025	9.6	15.2	24.0	37.9
6/05/2025	19.0	15.2	47.5	37.9
7/05/2025	10.1	15.1	25.3	37.9
8/05/2025	17.2	15.2	43.0	37.9
9/05/2025	13.8	15.1	34.5	37.9
10/05/2025	8.0	15.1	20.0	37.8
11/05/2025	7.1	15.1	17.8	37.7
12/05/2025	9.3	15.1	23.3	37.7
13/05/2025	8.9	15.1	22.3	37.6
14/05/2025	10.5	15.0	26.3	37.6
15/05/2025	14.5	15.0	36.3	37.6
16/05/2025	13.6	15.0	34.0	37.6
17/05/2025	13.1	15.0	32.8	37.6
18/05/2025	10.8	15.0	27.0	37.5
19/05/2025	11.0	15.0	27.5	37.5
20/05/2025	16.2	15.0	40.5	37.5
21/05/2025	12.0	15.0	30.0	37.5
22/05/2025	6.9	15.0	17.3	37.4
23/05/2025	5.0	14.9	12.5	37.4
24/05/2025	9.2	14.9	23.0	37.3
25/05/2025	10.1	14.9	25.3	37.3
26/05/2025	16.0	14.9	40.0	37.3
27/05/2025	71.7	15.1	179.3	37.7
28/05/2025	9.1	15.1	22.8	37.7
29/05/2025	18.3	15.1	45.8	37.7
30/05/2025	14.5	15.1	36.3	37.7
31/05/2025	13.4	15.1	33.5	37.7

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

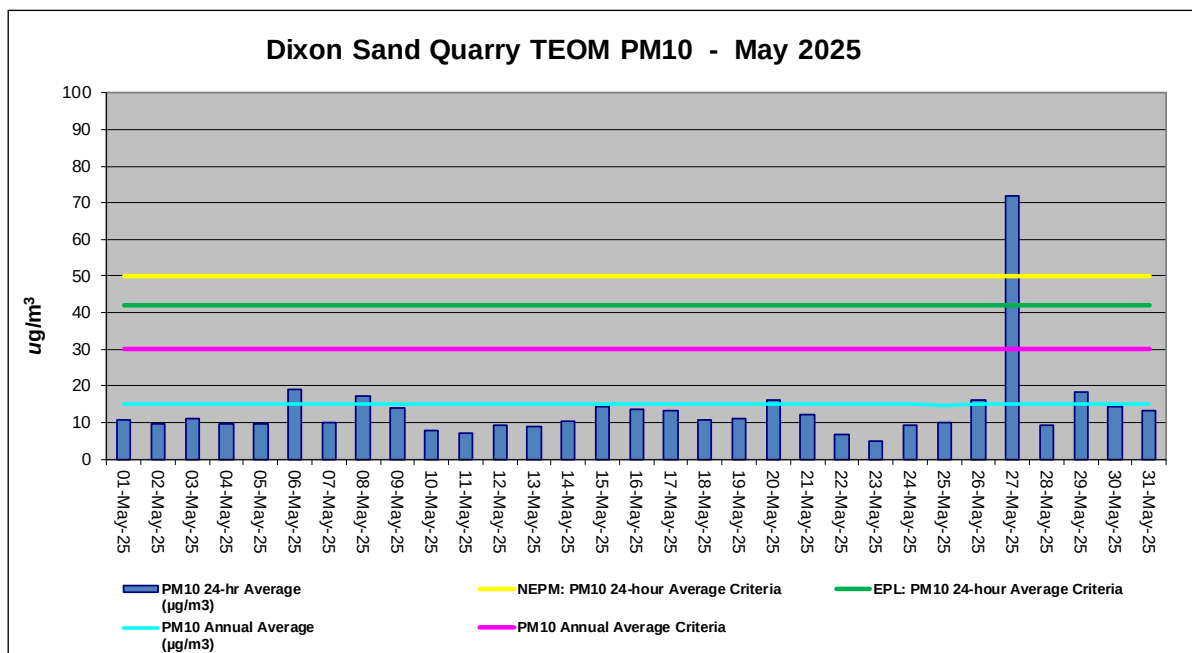


Figure 1: TEOM PM₁₀ 24 hr, Annual Average and Criteria

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A Windrose is provided in **Figure 4**.

Please Note: The Windrose excludes data from 1-13 May 2025 and are unavailable due to the ongoing MET station fault which resulted in data loss during this reporting period.

A 6-monthly physical screening and system check of the meteorological station was conducted in September 2024. The next physical screening and system check is currently scheduled for June 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 61.3% of valid meteorological data was recorded for May 2025 due to the ongoing sensor fault with the station. A replacement sensor for the MET station has been installed by CBased on the 14 May 2025. Rainfall data was unaffected during the May 2025 reporting period.

Table 3: Meteorological Data Summary for May 2025

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/05/2025				3.8									
2/05/2025				3.2									
3/05/2025				0.2									
4/05/2025				0.0									
5/05/2025				0.8									
6/05/2025				0.0									
7/05/2025				0.0									
8/05/2025				0.0									
9/05/2025				0.8									
10/05/2025				0.6									
11/05/2025				5.8									
12/05/2025				3.0									
13/05/2025				3.2									
14/05/2025	15.0	17.5	22.0	4.8	0.2	2.4	10.7	62.8	83.1	96.3	991.5	992.9	993.9
15/05/2025	13.0	15.0	17.1	0.6	0.0	2.9	10.6	85.4	92.3	97.6	992.9	993.6	994.7
16/05/2025	14.3	15.7	18.5	1.6	0.1	2.6	12.8	85.7	95.5	98.3	987.5	990.1	993.1
17/05/2025	13.3	15.9	21.3	8.8	0.2	2.5	12.2	50.5	86.3	98.9	986.8	988.3	990.7
18/05/2025	10.1	12.0	13.8	11.4	0.2	4.3	25.8	73.3	92.3	98.2	990.8	994.2	997.2
19/05/2025	9.9	11.6	15.0	21.0	0.2	6.2	18.5	68.2	91.2	98.7	997.0	999.7	1002.1
20/05/2025	10.6	13.7	18.1	0.8	0.4	4.3	11.7	65.6	85.3	94.4	999.5	1000.8	1002.4
21/05/2025	12.6	14.3	16.2	14.8	0.1	3.0	11.8	92.2	97.5	98.7	994.7	997.8	1000.1
22/05/2025	14.7	16.2	17.5	89.4	0.3	3.8	20.1	93.8	97.2	99.2	988.1	990.6	994.6
23/05/2025	13.3	17.2	20.5	31.2	0.3	4.1	12.0	64.9	86.9	98.1	983.8	986.4	988.8
24/05/2025	12.3	15.4	20.3	0.0	0.2	4.6	15.1	50.3	65.3	77.6	984.7	987.6	990.2
25/05/2025	12.7	14.2	17.2	0.0	0.0	3.6	15.4	51.2	59.9	68.0	989.4	991.3	992.9
26/05/2025	10.1	12.8	15.6	9.4	0.2	5.2	18.7	54.5	74.3	96.0	983.8	989.2	992.5
27/05/2025	9.8	13.9	17.2	0.6	0.1	5.1	27.4	38.7	68.3	96.3	979.5	982.5	986.5
28/05/2025	8.8	13.2	19.2	0.0	0.2	3.1	9.4	44.8	61.0	74.2	986.0	988.0	991.1
29/05/2025	8.3	12.5	15.0	0.0	0.1	2.8	11.6	65.2	73.6	85.8	990.9	992.7	994.9
30/05/2025	7.9	13.1	18.9	0.0	0.0	2.0	9.9	54.8	82.0	97.5	994.8	997.4	1000.6
31/05/2025	9.1	13.0	18.6	0.0	0.0	2.0	7.1	58.4	84.0	97.8	999.6	1000.4	1001.7
Monthly	7.9	14.3	22.0	215.8	0.0	3.6	27.4	38.7	82.0	99.2	979.5	992.4	1002.4

No Data available due to a fault with station - repair completed 14/05/2025

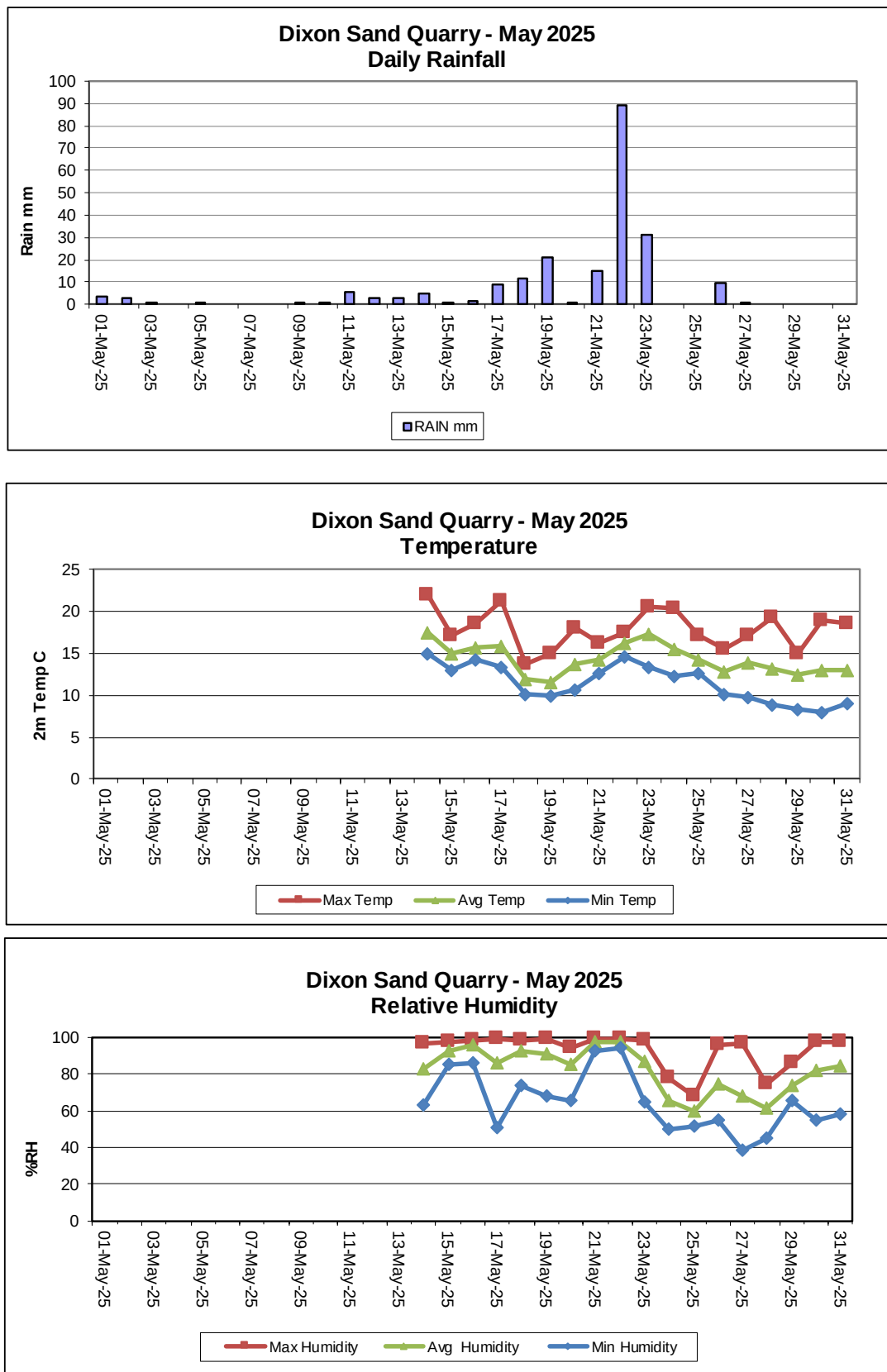


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

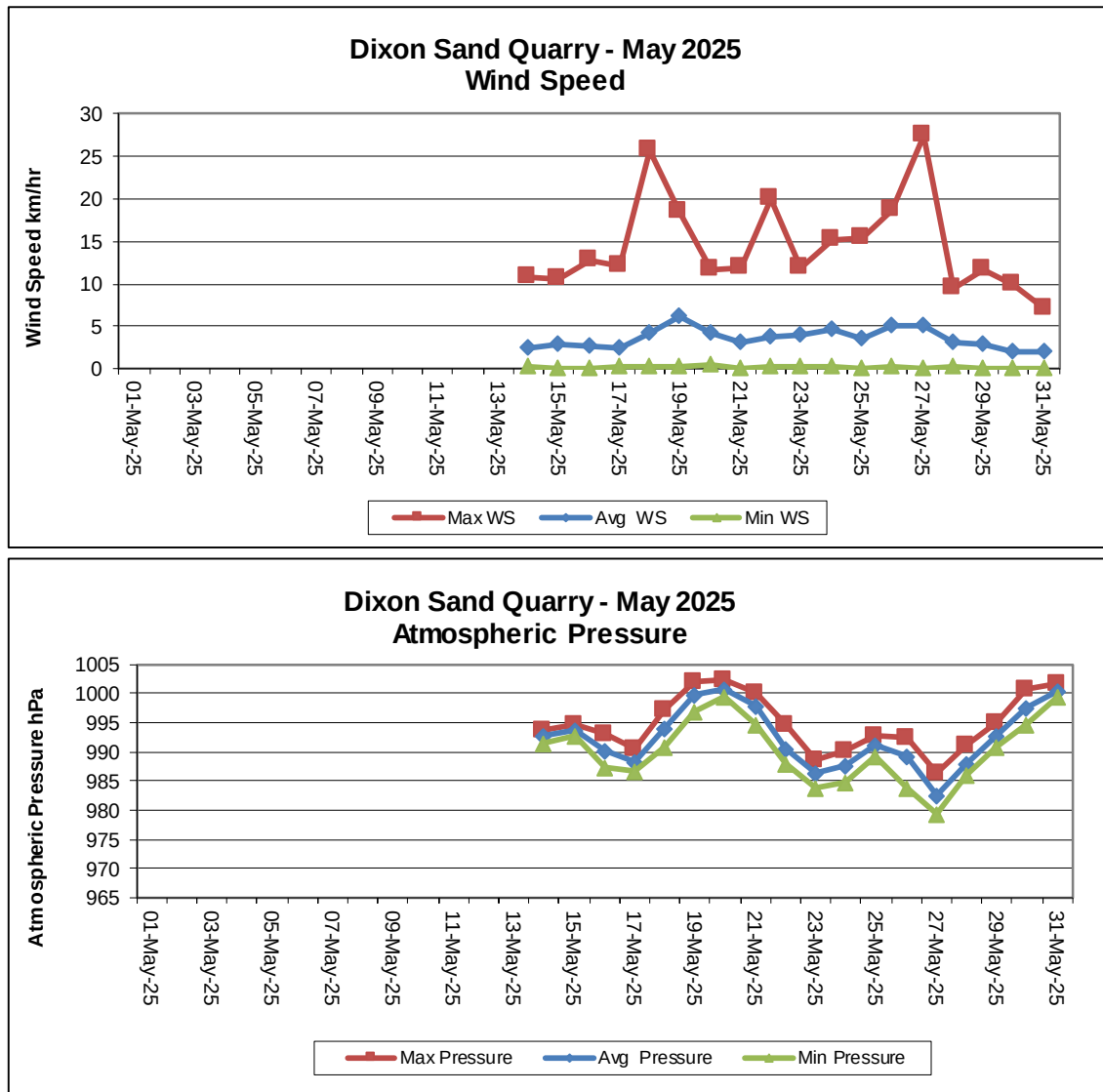


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose

MAY 2025

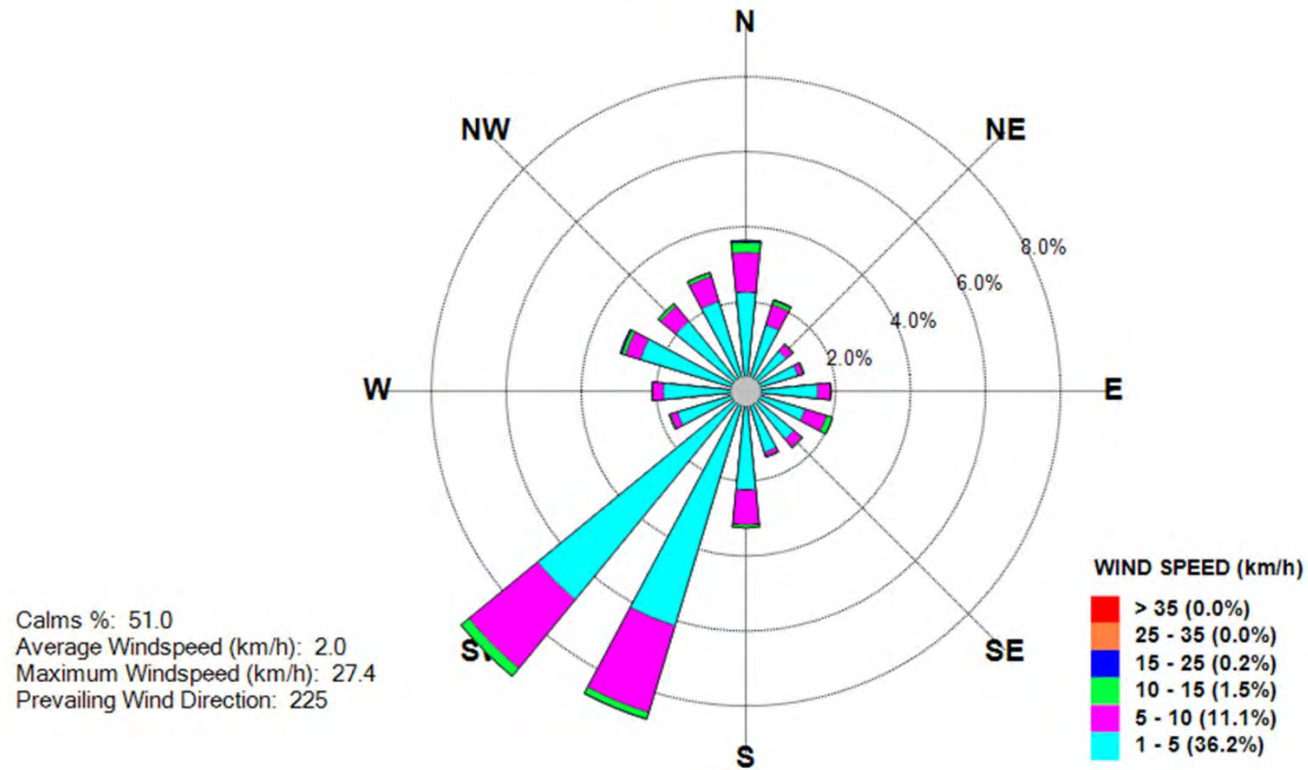


Figure 4: Windrose

Note: Chart excludes data from 1-13 May 2025 due to MET station fault

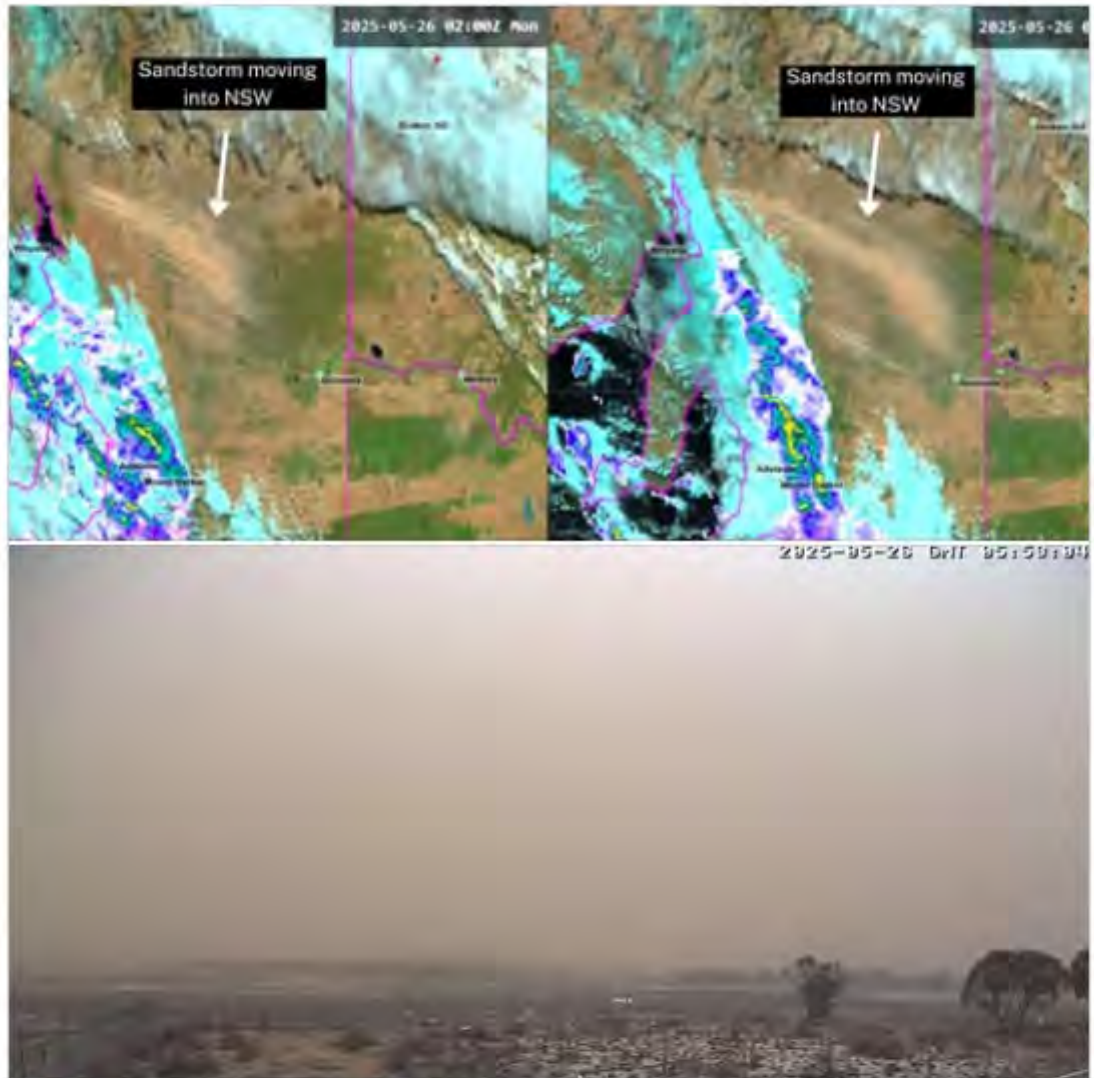
Appendix 1
Calibration Documents (when required)

Maroota Rural Fire Brigade's post



Maroota Rural Fire Brigade

27 May · 🌐



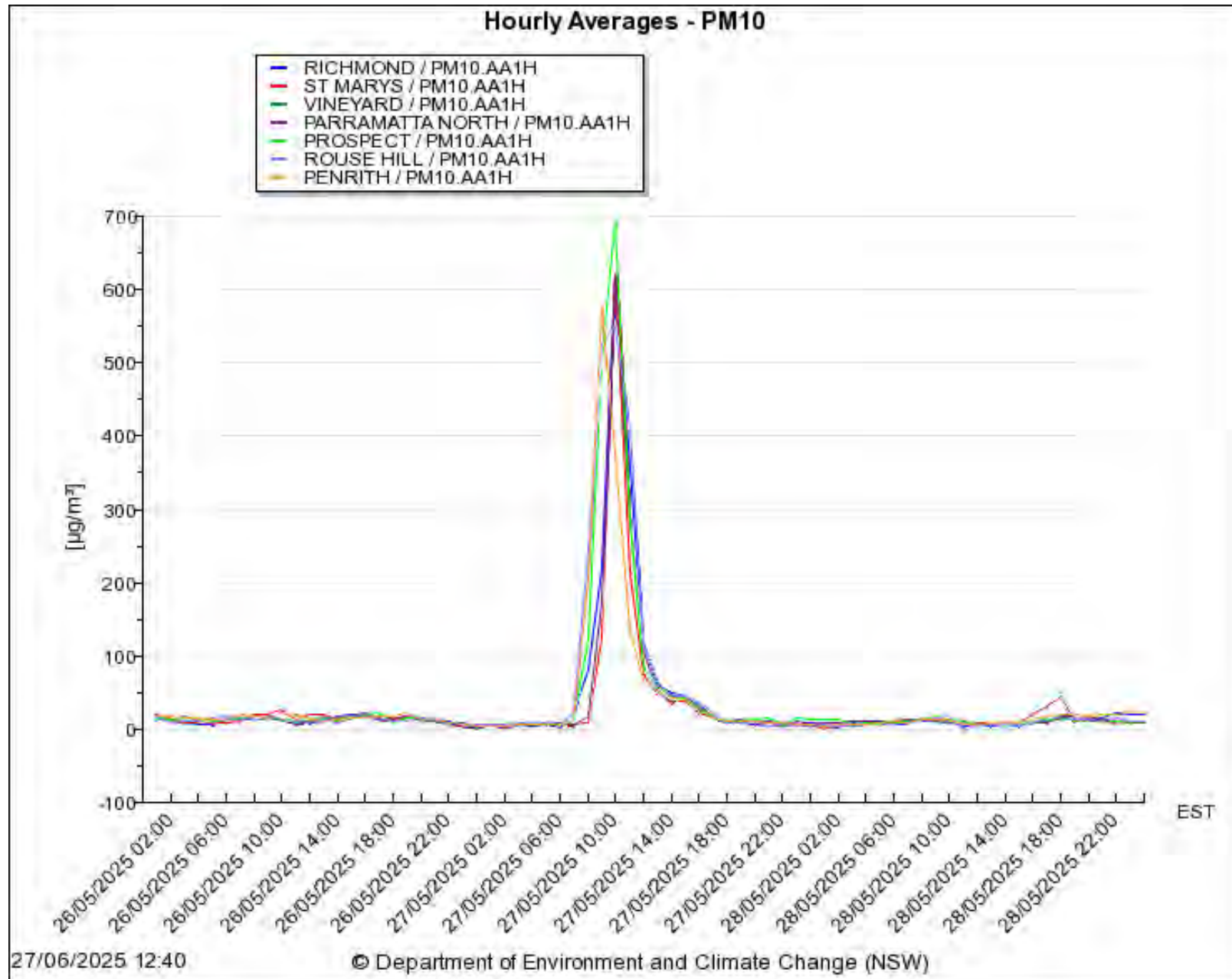
NSW Rural Fire Service

27 May · 🌐

Dust and airborne particles, caused by severe drought in other states are currently being blown across south-east Australia by intense storms. A dust storm originating in South Australia has moved into NSW overnight, significantly impacting air quality in several regions including the Greater Sydney area.

Those with asthma or other respiratory issues are advised to minimise their exposure to the dust particles by avoiding outdoor activity, stay inside with your windows closed and cover your nose and mouth with a damp cloth. For more information on the health impacts, visit [NSW Health](#).

You can check the air quality in your area by visiting the NSW Government Air Quality website: <https://www.airquality.nsw.gov.au/> ✓





**CBased Environmental
Pty Limited**
ABN 62 611 924 264

Dixon Sand Quarry

Environmental Monitoring Air Quality

Tapered Element Oscillating Microbalance (TEOM) (PM₁₀) and Meteorological Data

June 2025

Colin Davies BSc MEIA CENVP
Environmental Scientist
Date 31 July 2025

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

1.0 Summary

CBased Environmental Pty Limited is contracted by Dixon Sand to conduct continuous Tapered Element Oscillating Microbalance (TEOM) for fine particulates (PM₁₀) 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 PM₁₀ monitor; and
- One continuous meteorological station.

This monthly report for June 2025 was prepared by CBased Environmental and includes the following:

- TEOM (PM₁₀) 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 PM₁₀ results were below the NEPM 24-hour maximum criteria of 50ug/m³;
- 24-hour average PM₁₀ results were below the Dixon Sand Quarry EPL limit of 42ug/m³
- The PM₁₀ annual average is below the Dixon Sand Quarry consent annual average criteria of 30ug/m³; and
- The calculated TSP is below the Dixon Sand Quarry annual average criteria of 90ug/m³.

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 PM₁₀ is calculated from 1 July 2024 for TEOM's coinciding with the Dixon Sand project year.

Approximately 100% of valid meteorological data was recorded for June 2025.

Approximately 100% of valid TEOM data was available for June 2025.

2.0 Sampling Programme

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

- AS3580.9.8 - *“Methods for Sampling and Analysis of Ambient Air. Determination of Suspended Particulates—PM₁₀ 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 PM₁₀ results are 24-hour averages at midnight and are reported as µg/m³ 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 **Table 1**.

Table 1: Dixon Sand Air Quality Monitoring Description and Locations

Monitor	Site Code	Location Description
TEOM PM ₁₀	TEOM	Old North Road, Maroota NSW
Meteorological Station	MET	Old North Road, Maroota NSW

3.0 Results

3.1 TEOM PM₁₀

24-hour average TEOM PM₁₀ results from the AQMS data collection software are provided in **Table 2** and a chart of the data is provided in **Figure 1**.

During the June 2025 monitoring period, individual 24-hour TEOM PM₁₀ results were below the National Environmental Protection Measure (NEPM) short-term (24hr) impact criteria of 50ug/m³ and the Dixon Sand Quarry EPL limit of 42ug/m³.

Approximately 100% of valid TEOM data was available for June 2025.

At present, the current TEOM PM₁₀ annual average is below the Dixon Sand Quarry annual average PM₁₀ criteria of 30ug/m³. The current annual average for calculated Total Suspended Particulates (TSP) is below the annual average criterion of 90ug/m³. The TSP is calculated by multiplying the PM₁₀ by 2.5. Note: the annual average is calculated from 1 July 2024 and therefore an annual amount of data has now been collected.

The quarterly TEOM calibration was conducted on the 22nd July 2025 (for June). The next calibration is due to be completed in September 2025. The calibration certificate is provided in **Appendix 1** (when required).

Table 2: Average Daily 24-hr TEOM PM₁₀ and TSP Results for June 2025 from AQMS and Annual Average PM₁₀ calculated from 1 July 2024.

Date	PM ₁₀ 24-hr Average (µg/m ³)	PM ₁₀ Annual Average (µg/m ³)	24-hr Average TSP* (µg/m ³)	Annual Average TSP** (µg/m ³)
1/06/2025	8.6	15.1	21.5	37.6
2/06/2025	13.5	15.0	33.8	37.6
3/06/2025	13.5	15.0	33.8	37.6
4/06/2025	11.1	15.0	27.8	37.6
5/06/2025	18.9	15.0	47.3	37.6
6/06/2025	7.8	15.0	19.5	37.6
7/06/2025	6.9	15.0	17.3	37.5
8/06/2025	7.2	15.0	18.0	37.4
9/06/2025	5.3	14.9	13.3	37.4
10/06/2025	6.4	14.9	16.0	37.3
11/06/2025	8.4	14.9	21.0	37.2
12/06/2025	14.5	14.9	36.3	37.2
13/06/2025	10.1	14.9	25.3	37.2
14/06/2025	10.2	14.9	25.5	37.2
15/06/2025	6.4	14.8	16.0	37.1
16/06/2025	8.2	14.8	20.5	37.1
17/06/2025	11.3	14.8	28.3	37.0
18/06/2025	16.2	14.8	40.5	37.0
19/06/2025	15.2	14.8	38.0	37.0
20/06/2025	18.7	14.8	46.8	37.1
21/06/2025	12.1	14.8	30.3	37.1
22/06/2025	12.5	14.8	31.3	37.0
23/06/2025	11.4	14.8	28.5	37.0
24/06/2025	8.8	14.8	22.0	37.0
25/06/2025	26.3	14.8	65.8	37.1
26/06/2025	10.6	14.8	26.5	37.0
27/06/2025	17.4	14.8	43.5	37.0
28/06/2025	16.1	14.8	40.3	37.1
29/06/2025	8.8	14.8	22.0	37.0
30/06/2025	16.4	14.8	41.0	37.0

*Calculated from PM10

**Calculated from PM10 Annual Average

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

No Data (ND) - <18hrs hour of valid data to calculate a 24hr average

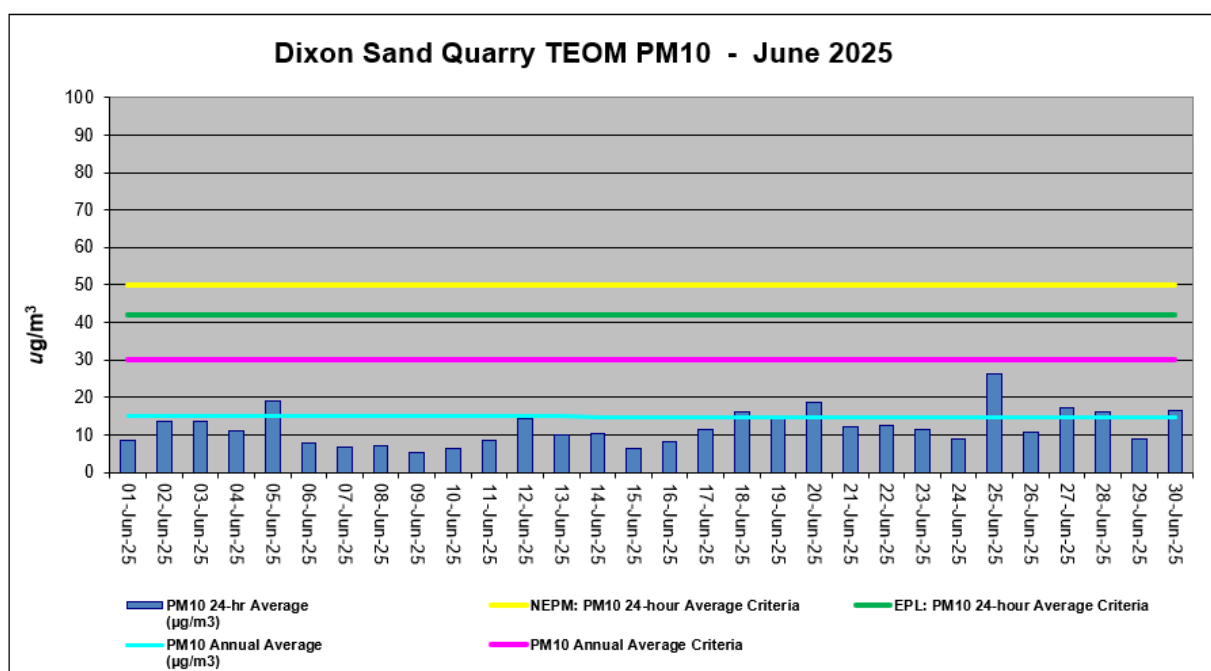


Figure 1: *TEOM PM₁₀ 24 hr, Annual Average and Criteria*

3.2 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 **Table 3**. Charts of meteorological parameters are presented in **Figures 2** and **3**. A Windrose is provided in **Figure 4**.

A 6-monthly physical screening and system check of the meteorological station was conducted on the 22nd July 2025 (for June). The next physical screening and system check is currently scheduled for December 2025. The screening and system check certificates are provided in **Appendix 1** (when required).

Approximately 100% of valid meteorological data was recorded for June 2025.

Table 3: Meteorological Data Summary for June 2025

Date	Min Temp	Avg Temp	Max Temp	RAIN mm	Min WS	Avg WS	Max WS	Min Humidity	Avg Humidity	Max Humidity	Min Pressure	Avg Pressure	Max Pressure
1/06/2025	8.7	13.2	18.4	0.0	0.1	2.3	15.5	55.7	83.0	96.5	994.7	997.7	1000.1
2/06/2025	10.7	13.4	17.7	0.0	0.1	3.3	10.9	72.4	89.8	97.7	984.8	990.2	994.7
3/06/2025	9.0	12.8	17.3	0.2	0.0	2.4	11.3	51.0	76.5	98.5	980.9	982.6	984.7
4/06/2025	8.0	10.7	12.3	1.0	0.2	6.9	23.0	52.8	67.6	91.6	983.1	988.8	994.9
5/06/2025	6.4	10.5	15.5	0.2	0.1	3.5	14.9	51.0	62.0	74.8	993.9	995.3	997.1
6/06/2025	5.7	11.3	15.7	0.0	0.3	5.0	16.8	51.6	67.8	89.8	987.1	991.3	995.2
7/06/2025	10.7	13.5	18.1	0.0	0.4	5.5	18.3	38.3	54.2	69.1	979.5	983.0	986.9
8/06/2025	6.8	10.7	14.2	0.0	0.6	5.9	24.6	42.6	56.6	68.7	976.9	978.9	980.7
9/06/2025	6.1	8.7	12.9	0.2	0.5	5.5	21.3	47.5	64.8	75.9	973.0	976.0	979.0
10/06/2025	8.0	11.6	16.6	0.2	0.2	3.1	13.2	45.7	62.5	75.2	977.0	980.6	983.9
11/06/2025	7.0	10.2	15.4	0.0	0.0	2.7	8.5	44.4	61.6	72.7	983.5	985.9	989.0
12/06/2025	5.8	9.8	14.3	0.0	0.1	2.4	15.2	55.6	67.3	78.6	988.6	991.0	993.8
13/06/2025	6.5	10.0	14.7	0.0	0.3	5.2	17.4	59.3	73.5	86.9	992.9	994.3	995.5
14/06/2025	7.0	10.8	16.3	0.0	0.2	3.7	13.2	61.6	79.2	93.9	993.7	994.8	996.0
15/06/2025	7.6	11.0	17.6	0.4	0.1	2.4	12.3	43.4	79.9	95.1	992.2	994.4	995.9
16/06/2025	5.1	10.4	16.2	0.2	0.0	2.6	9.0	43.4	69.8	93.5	993.6	995.3	997.2
17/06/2025	6.9	11.7	17.0	0.0	0.2	4.3	15.1	50.3	61.8	79.6	991.5	994.2	996.5
18/06/2025	5.8	10.3	16.2	0.0	0.1	2.3	8.1	39.6	61.0	75.7	995.5	997.5	999.3
19/06/2025	4.3	9.9	16.2	0.0	0.1	2.9	10.8	51.9	71.7	88.8	997.1	998.7	1000.5
20/06/2025	5.3	10.1	16.8	0.0	0.1	1.9	7.4	46.4	73.5	91.0	999.1	1000.9	1002.7
21/06/2025	5.5	11.5	18.3	0.0	0.4	3.0	13.5	47.1	72.4	89.7	1000.8	1002.3	1004.2
22/06/2025	6.6	12.1	19.8	0.0	0.0	4.1	15.6	46.6	71.4	87.7	996.8	999.5	1001.9
23/06/2025	10.3	15.2	20.9	0.0	0.2	5.4	17.1	55.4	68.5	84.6	989.6	993.8	996.8
24/06/2025	13.7	15.9	19.2	3.0	0.6	7.6	24.0	52.2	68.7	90.9	980.5	983.5	989.6
25/06/2025	7.7	11.8	14.9	0.0	0.3	7.0	40.7	44.6	55.1	68.5	979.2	982.6	988.3
26/06/2025	4.7	8.6	13.1	0.0	0.0	3.5	20.3	41.1	57.4	71.0	988.4	997.0	1002.4
27/06/2025	5.0	9.4	14.3	0.0	0.1	3.0	14.1	61.0	70.4	82.4	1001.2	1002.2	1003.7
28/06/2025	6.4	10.8	15.4	0.0	0.1	2.3	8.6	63.2	80.2	93.7	998.1	1000.1	1002.0
29/06/2025	6.8	11.6	18.3	0.0	0.1	3.1	9.3	51.2	78.8	95.5	995.6	997.3	998.6
30/06/2025	6.5	10.5	14.9	0.0	0.2	3.4	10.9	60.5	80.4	94.7	992.5	996.6	999.2
Monthly	4.3	11.3	20.9	5.4	0.0	3.9	40.7	38.3	69.6	98.5	973.0	992.2	1004.2

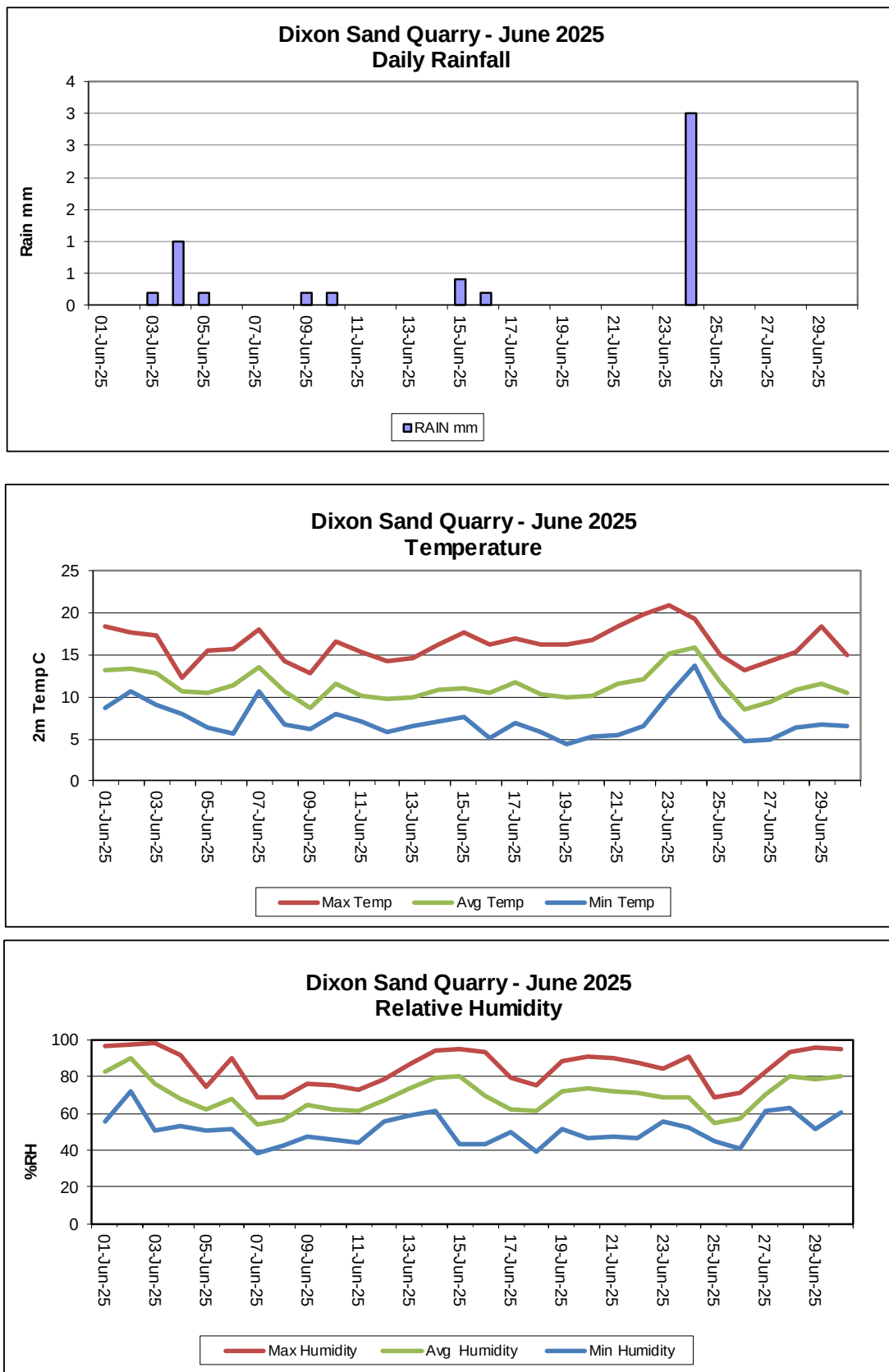


Figure 2: Daily Rainfall, Temperature and Relative Humidity Charts

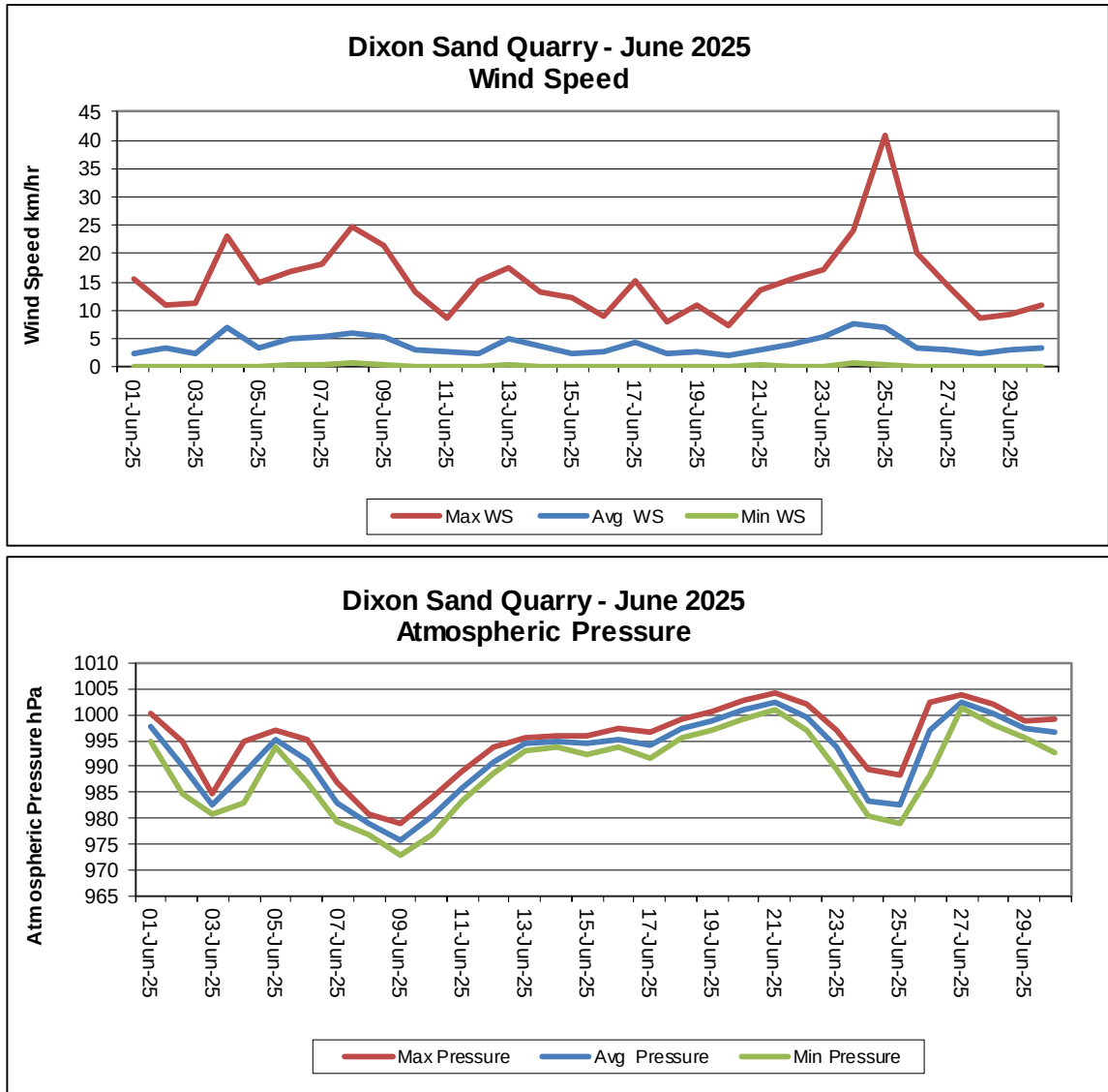


Figure 3: Wind Speed and Atmospheric Pressure Charts

Dixon Sand Quarry - Windrose JUNE 2025

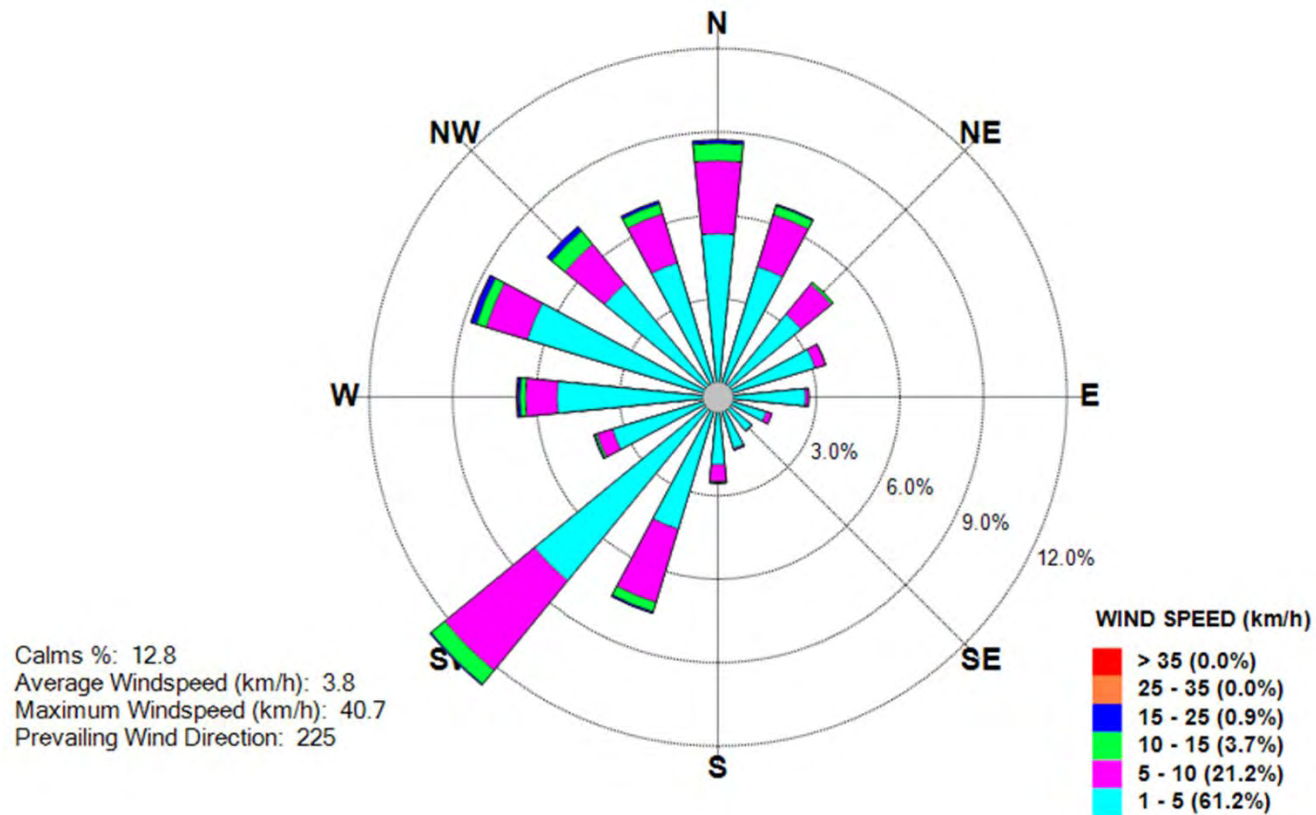


Figure 4: Windrose

Appendix 1
Calibration Documents (when required)

UNCONTROLLED DOCUMENT IF PRINTED



Continuous Air Quality Monthly/Quarterly/Six Monthly/Annual TEOM Maintenance and Calibration – 1400AB



TEOM Client/Site: Dixon Sands / TEOM

Date: 22/7/2025

1. TEOM Data Screen SERIAL No: 1405AB255700503 Firmware: NA

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Operating Condition	Full	Green - Normal	✓	
Date/time	TEOM: 1103 Actual: 1104	Current Date/time correct within 5 minutes	✓	
PM-10 24hr av	15.1	Positive values	✓	
Filter loading PM10	73.0	<80 %	✓	
Frequency PM-10	252.77368	200-300 Hz	✓	
Noise PM-10	0.046	<0.100ug	✓	

Comment: If filter load >80% but <90% and if flows Ok then data is OK

Comments:

2. System Status

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Vacuum pump pressure	0.35	<0.50 atm	✓	
Warnings	None	No Warnings	✓	
If any warnings list:				

Comments:

Data Downloaded: YES/NO (circle)

Technician Name : Conrad Melnyk Signed [Signature]



3. Instrument Conditions Ambient Conditions and Temperatures

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Ambient Temperature	15.8	-10 to 50 C	✓	
Ambient Dew Point	—	-10 to 50 C	✓	
Ambient Pressure	0.973	0.9-1.1 atm	✓	
Ambient Relative Humidity	—	10-100 %RH	✓	
Cap temperature	50.00	50.00 +/- 0.10 C	✓	
Case temperature	50.00	50.00 +/- 0.10 C	✓	
Main (PM-10) Air Tube temp	50.00	50.00 +/- 0.10 C	✓	

Comments:

4. Instrument Conditions – Flows

Condition	Current Data	Acceptable Data	Pass (Tick)	Fail (Tick)
Main (PM-10) Flow rate	3.00	2.82 – 3.18 lpm	✓	
Bypass Flow rate	13.68	12.95 – 14.39 lpm	✓	
Total Flow rate	—	15.67 – 17.67 lpm		

Comments:

Results: (Tick box)

- ☒ There were NO equipment faults found. No action required – (file report)
- ☐ There were faults found (Fails) – Were these fixed on site: YES/NO (circle)
 Any **Fails** that cannot be repaired on site must be reported to CBased:
 Office: 65713334 or email cbased@bigpond.com
 Date faults notified to CBased: _____

Comments/Action Required:



Calibration/Maintenance

1. 1405A: Were Filters replaced YES/NO
 2. PM10 Inlet head cleaned YES/NO
 3. If measurement filters were replaced, confirm stable results after change. Stable particulate results confirmed YES/NO

Channel	Filter Load %	Frequency Hz initial	Frequency check 1min	Frequency check 3min	Frequency check 5min
PM10	18.00	256.55718	256.55677	256.55657	256.55648

Frequency should not drift by more than 0.0010 between readings (if instrument is thermodynamically stable)
 Pass/Fail – if Fail – install new filter and redo stability test.

4. Instrument clock verified (Refer Section 1) YES/NO.
 If Time changed – clock reset OK YES/NO or NA (not changed)
 Comments:

5. Were TEOM in line and rear TEOM filters checked for cleanliness and replaced if necessary. YES/NO.
 Comments if changed:

6. TEOM Cleaned and Air Conditioner checked YES/NO. Air Conditioner settings or operational status: "5.5" Low Cool

Tetracal Flow/Temp/Pressure Calibrator Serial No: 172357 Refer to calibration corrections for Temperature/Pressure and Flows and apply to all readings.

Quarterly or Six Monthly Calibration**1. Flow Verification – Conducted YES/NO**

PM10 Flow verified Flow l/min 2.85 Error % 6.4 (allowed error <6%) PASS/FAIL

Bypass Flow verified Flow l/min 12.23 Error % 10.5 (allowed error <6%) PASS/FAIL
 If fail then complete a full multipoint recalibration and review previous data from last good flow check. **Comments if Flows recalibrated:**

2. Leak Check – Conducted YES/NO

PM10 actual 0.15 < Limit 0.15

Bypass actual 0.12 < Limit 0.60

Leak check PASS/FAIL – If fail then find leak and retest.

Comments:

Spent some time looking for leak in main flow
no success



UNCONTROLLED DOCUMENT IF PRINTED

Annual Calibration/Maintenance

1. Temperature and Pressure Calibration – Conducted YES/NO

Reference Temperature: _____ C TEOM Temperature _____ C
if difference +/- 1 C recalibrate sensor. Sensor recalibrated YES/NO

Reference Pressure: _____ atm TEOM Pressure _____ atm
if difference +/- 0.010 atm recalibrate sensor. Sensor recalibrated YES/NO

**Note: Tetralcal measures Atmospheric Pressure in mm Hg or mb or hPa
For mb or hPa divide tetralcal result by 1013.25 to change units to atm.
For mmHg divide tetralcal result by 760 to change units to atm.**

2. Flow Calibration – Conducted YES/NO PM10

Set point 2.4 Actual: _____
Set point 3.6 Actual: _____
Set point 3.0 Actual: _____ After calibration Final: _____ l/min

BYPASS

Set point 10.9 Actual: _____
Set point 16.4 Actual: _____
Set point 13.67 Actual: _____ After calibration Final: _____ l/min

3. Mass calibration (K0) Verification – Conducted YES/NO

Actual measured KO = _____ TEOM stated KO _____ Error %: _____
Allowed Error +/- 2.5%. PASS/FAIL
If Error +/- 2.5% repeat. If confirmed consult manufacturer.
Second Error % = _____ PASS/FAIL. Comments: _____
If second test fails consult manufacturer.

4. Annual Noise check - Conducted YES/NO

Zero filter applied to TEOM and TEOM operated for at least 12 hours:
Start date/time: _____ Finish date/time: _____
Standard deviation of all recorded data (min 30 min averages) = _____ ug/m³
Noise was less than 5ug/m³ YES/NO

5. Maintenance

Air Inlet system cleaned YES/NO
Pump Reconditioned YES/NO
Check Waterproofing YES/NO
Comments: _____





Meteorological Monitoring Maintenance and Calibration

Maintenance and Calibration as per CBased Environmental Method M202

Client: <i>Dixon Land</i>	Site Name: <i>AWS & TROM</i>
Date: <i>22.7.25</i>	Time: <i>1020</i>
General Climatic Conditions: <i>8/8 Cloud, low sun & cool light breeze</i>	
Latitude: <i>-33° 27' 16"</i>	Longitude: <i>150° 59' 36"</i>
Note: Contact office to confirm coordinates if required. Coordinates required to determine magnetic declination.	

1. Physical Maintenance

Item	Yes (Pass)	No (Fail)	Comments
<u>Grass / Vegetation Impacts</u>			
Compound Grass height <10cm	✓		
<u>Ground Anchor / Guy Wires / Mast Condition</u>			
Bottom guy wires tight (correct tension = 35-50mm deflection, with only moderate hand force at 1.5 metres up the guy wire)	NA		Fixed mast
Top Guy wires tensioned (correct tension = 60-75mm deflection, with only moderate hand force at 1.5 metres up the guy wire)	NA		Fixed mast
Mast Vertical and in good condition	✓		
Ground anchors/star pickets tight in ground	NA		
Guy Wires insignificant corrosion	NA		
Ground anchors/D shackles/ winders insignificant corrosion	NA		
Bolts/hinge points in mast are secure	NA		
<u>Cables / Connectors / Logger Cabinet / Solar Panel</u>			
Cables attached to mast/guy wires via ties are secure	NA		Cable needs to be free
Insignificant corrosion to plugs/connectors	✓		
No water ingress in logger/battery cabinet	✓		
Wiring/plugs in cabinet OK, Logger OK	✓		
Battery terminals and condition OK	NA		Battery Volts = 240 Supply
Battery volts (charging >13V, not charging >12V)	NA		
Solar panel undamaged and clean	NA		
Check for ants/insects and install new ant bait station in enclosure	✓		



Item	Yes (Pass)	No (Fail)	Comments
<u>Sensor Maintenance / Checks</u>			
Recent data checked and OK / Logging data OK, review sensor data and station battery voltage.	✓		
<u>Wind Speed/Direction</u>			
Wind direction aligned to ± 3 degrees of: True North/Magnetic North (strike out N/A) Refer: https://geomagnetism.ga.gov.au/agrf-calculations/agrf-form#magfield	✓		Magnetic Declination: <u>2.62°</u> Compass Bearing: <u>168°</u> Looking: North <u>South</u>
Anemometer/wind vane moving freely (analogue sensors)	NA.		Ultrasonic
Mechanical sensors are inaudible (audible bearing noises may indicate sensor issues)	NA.		
<u>Temperature</u>			
Temperature sensor(s), and associated radiation shield(s) inspected and cleaned	✓		Sensor only new. Inspect from ground only.
Fan(s) on aspirated radiation shields confirmed running	NA.		
Sensor shields cleaned	NA.		No 2m sensors. Did not lower mast.
<u>Humidity</u>			
Humidity sensor, and associated radiation shield inspected and cleaned	NA.		Inspect from ground.
<u>Barometric Pressure</u>			
Barometric sensor inspected, and any vents for sensor checked and cleared	NA.		Inspect from ground.
<u>Solar Radiation</u>			
Solar radiation sensor inspected	NA.		
Solar radiation sensor cleaned	NA.		
Solar radiation sensor alignment OK	NA.		
<u>Rainfall/Precipitation</u>			
Rain gauge checked for blockages and cleaned if required	✓		
Rain gauge level on arrival	✓		
Rain gauge re-levelled	NA.		Fine adjust only.



2. Calibration Equipment / Transfer Standard Details

Wind Speed, Wind Direction		Temperature, Humidity & Pressure	
Manufacturer:	Vaisala	Manufacturer:	Vaisala
Model:	WXT536	Model:	WXT536 (PTU Module)
Serial Number:	W4710639	Serial Number:	T1910754
Calibration Date:	17/12/2024	Calibration Date:	18/3/2025
Calibration Expires:	17/12/2026	Calibration Expires:	18/3/2027

Precipitation		Solar Radiation	
Manufacturer:	Hydrological Services	Manufacturer:	EKO Instruments
Model:	FCD	Model:	MS-80SH
Serial Number:	FCD001	Serial Number:	S24083856
Calibration Date:	7/3/2025	Calibration Date:	23/1/2025
Calibration Expires:	7/3/2030	Calibration Expires:	23/1/2030

1. Wind Sensor Precision Check

Sensor mounting height: 10m or Other (specify):

Wind Speed Sensor

Calibration Point	Transfer Standard, km/hr or _____	Sensor under test, km/hr or _____	Difference, km/hr or _____
1	3.50	3.31	-0.19
2	3.40	3.56	0.16
3	3.20	3.20	0.00
4	4.80	4.86	0.06
5	2.30	2.44	0.14
6	4.50	4.57	0.07
Average	3.66		0.04
Determination of Result Allowable accuracy (average of difference) $\pm (0.72\text{km/hr} + 5\% \text{ of observed})$ i.e. $\pm (0.2\text{m/s} + 5\% \text{ of observed})$ (Refer Section 5-1 of USEPA 454/R-99-005)			Calculate Allowable: <u>0.18</u> Result: <u>PASS</u> / FAIL

Wind Direction Sensor

Calibration Point	Transfer Standard, degrees	Sensor under test, degrees	Difference, degrees
1	032	031	-1
2	286	287	1
3	330	331	1
4	321	320	-1
5	030	031	1
6	034	035	1
Average			0.33
Determination of Result Allowable accuracy (average of difference) ± 5 degrees (Refer Section 5-1 of USEPA 454/R-99-005)			Result: <u>PASS</u> / FAIL



2. Temperature Sensor Precision Check

Temperature Sensor # 1

Sensor mounting height: 2m, 10m or Other (specify):

Operational Precision Check 1430

Time Interval	Calibration Point	Transfer Standard, °C	Sensor under test, °C	Difference, °C
1 min	1	16.90	17.30	0.40
2 min	2	16.90	17.30	0.40
3 min	3	17.00	17.40	0.40
4 min	4	16.80	17.20	0.40
5 min	5	16.80	17.20	0.40
Average				0.40
Determination of Result				Result: PASS/ FAIL
Acceptable tolerance is $\pm 0.5^{\circ}\text{C}$ (Refer Section 5-1 of USEPA 454/R-99-005)				

Temperature Sensor # 2 (If Present)

Sensor mounting height: 2m, 10m or Other (specify):

Operational Precision Check

Time Interval	Calibration Point	Transfer Standard, °C	Sensor under test, °C	Difference, °C
1 min	1	N	A.	
2 min	2			
3 min	3			
4 min	4			
5 min	5			
Average				
Determination of Result				Result: PASS / FAIL
Acceptable tolerance is $\pm 0.5^{\circ}\text{C}$ (Refer Section 5-1 of USEPA 454/R-99-005)				



3. Humidity Sensor Precision Check

Operational Precision Check

Precision Test Start Time: 1420				
Time Interval	Calibration Point	Transfer Standard, % RH	Sensor under test, % RH	Difference, % RH
5 min	1	67.10	67.30	0.20
10 min	2	67.50	67.90	0.40
15 min	3	67.10	67.20	0.10
Average				0.23
Determination of Result Allowable Relative Humidity (average of difference) not specified in USEPA 454/R-99-005. Using AS3580.14:2014 which specifies $\pm 5\%$ (when RH < 35%) and $\pm 7\%$ (when RH $\geq 35\%$),				Result: <u>PASS</u> / FAIL

4. Solar Radiation Sensor Precision Check

Operational Precision Check

Calibration Point	Transfer Standard, W/m ²	Sensor under test, W/m ²	Difference, W/m ²
1			
2			
3			
4			
5			
6			
Average			
Determination of Result Allowable Solar Radiation (average of difference) $\pm 5\%$ of observed (Refer Section 5-1 of USEPA 454/R-99-005) or $\pm 50 \text{ W/m}^2$ (Refer Section 5.5.2.3 of AS/NZS 3580.14)			Calculate Allowable: _____ Result: PASS / FAIL

5. Barometric Pressure Operational Precision Check

Operational Precision Check

Time Interval	Calibration Point	Transfer Standard, hPa	Sensor under test, hPa	Difference, hPa
0 min	1	987.70	987.40	0.30
15 min	2	987.70	987.40	0.30
30 min	3	987.70	987.40	0.30
45 min	4	987.60	987.30	0.30
60 min	5	987.70	987.40	0.30
Average				0.30
Determination of Result Allowable difference: $\pm 3 \text{ mb}$ ($\pm 3 \text{ hPa}$) (average difference) (Refer Section 5-1 of USEPA 454/R-99-005)				Result: <u>PASS</u> / FAIL



6. Precipitation/Rainfall Operational Precision Check – In Situ**Sensor Under Test**

Manufacturer:	Hydrological Services
Model:	7B4 S/N: 12-468
Resolution / Tipping bucket size:	(circle) 0.2mm, 0.5mm or Other (specify):
Catch diameter:	200mm or Other (specify):

Maintenance

Item	Completed
Record "As Found" details of rain gauge, are any conditions present that would affect data integrity? <i>No.</i> Comments: <i>slight debris build up in catchment bucket.</i>	✓
Disassemble the rain gauge and clean thoroughly	✓
Check rain gauge is level	✓
Re-level if needed Comments if unable to re-level:	✓
Reassemble the rain gauge and check to confirm no leaks through funnel mechanism	✓

Operational Precision Check

Precision Test Start Time: <i>1500</i>		
Expected	Recorded	Difference
<i>104</i> tips <i>20.8</i> mm	<i>99</i> tips <i>19.8</i> mm	<i>1mm / 5 tips</i>
Determination of Result Allowable difference: $\pm 10\%$ or 0.5mm		Result: <u>PASS</u> / FAIL
Comments: <i>-</i>		
Tips/mm added during cleaning/test preparation: <i>0</i>		
Total rainfall volume to be removed from daily rain records due to maintenance and precision test completed: <i>19.8</i> mm		



Maintenance Summary	Yes	No	Comments
There were NO equipment faults found. No action required – (file report)	✓		
There were faults found (Fails) – Were these fixed on site?			

Any Faults / Fails that cannot be repaired on site must be reported to CBased:
Office: (02) 65713334 or email support@cbased.com.au
Date faults notified to CBased: _____
Comments/Action Taken/Action Recommended:
(If sensors are replaced - record serial numbers and details of both the removed and installed sensors and attach calibration certificates)

Specific Comments on equipment “as found”:

Specific Comments on equipment “as left”:

NB: CBased Environmental completes maintenance, calibration and diagnostic checks on a six monthly basis as per Section 8.3.5 of USEPA 454/R-99-005, it is the Clients responsibility to complete daily remote operational checks and weekly onsite inspections/maintenance of the meteorological station.

Completed By:

Technician Name(s): <i>A Lewis</i>	Signed: <i>A</i>
------------------------------------	------------------



Appendix C – Groundwater and Surface Water Monitoring Data

Groundwater Monitoring Data

Report Number: 17148

Date Issued: 12/12/2024

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 5/12/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
BH01A	5/12/2024	17148/1	Water	
BH01B	5/12/2024	17148/2	Water	
BH01C	5/12/2024	17148/3	Water	
BH02A	5/12/2024	17148/4	Water	
BH02B	5/12/2024	17148/5	Water	
BH02C	5/12/2024	17148/6	Water	
BH05B	5/12/2024	17148/7	Water	
BH5	5/12/2024	17148/8	Water	
BH07	5/12/2024	17148/9	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 12/12/2024.

Test Report Number: 17148

Date Issued: 12/12/2024

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID Units	17148/1 5/12/2024 BH01A	17148/2 5/12/2024 BH01B	17148/3 5/12/2024 BH01C	17148/4 5/12/2024 BH02A	17148/5 5/12/2024 BH02B
	Method						
Depth to Water	AS5667.11	m(bTOLRef)	9.32	16.63	5.64	22.50	18.56
Temperature	Temp	°C	19.3	19.6	18.4	19.8	20.4
pH	APHA 4500-H B	pH Units	5.7	4.6	4.7	4.2	4.2
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	187	163	172	175	173

Field Analysis		Lab ID Sample Date Sample ID Units	17148/6 5/12/2024 BH02C	17148/7 5/12/2024 BH05B	17148/8 5/12/2024 BH5	17148/9 5/12/2024 BH07
	Method					
Depth to Water	AS5667.11	m(bTOLRef)	15.05	19.08	29.60	52.13
Temperature	Temp	°C	19.0	19.5	19.4	19.7
pH	APHA 4500-H B	pH Units	4.5	4.1	4.7	6.4
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	166	227	189	219

Solids		Lab ID Sample Date Sample ID Units	17148/1 5/12/2024 BH01A	17148/2 5/12/2024 BH01B	17148/3 5/12/2024 BH01C	17148/4 5/12/2024 BH02A	17148/5 5/12/2024 BH02B
	Method						
Total Dissolved Solids	AS3550.4	mg/L	130	100	110	96	100

Solids		Lab ID Sample Date Sample ID Units	17148/6 5/12/2024 BH02C	17148/7 5/12/2024 BH05B	17148/8 5/12/2024 BH5	17148/9 5/12/2024 BH07
	Method					
Total Dissolved Solids	AS3550.4	mg/L	100	120	130	190

Date Tested		Lab ID Sample Date Sample ID Units	17148/1 5/12/2024 BH01A	17148/2 5/12/2024 BH01B	17148/3 5/12/2024 BH01C	17148/4 5/12/2024 BH02A	17148/5 5/12/2024 BH02B
	Method						
Date Tested - Field	--	--	05/12/2024	05/12/2024	05/12/2024	05/12/2024	05/12/2024
Date Tested - TDS	AS3550.4	--	10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024

Date Tested		Lab ID Sample Date Sample ID Units	17148/6 5/12/2024 BH02C	17148/7 5/12/2024 BH05B	17148/8 5/12/2024 BH5	17148/9 5/12/2024 BH07
	Method					
Date Tested - Field	--	--	05/12/2024	05/12/2024	05/12/2024	05/12/2024
Date Tested - TDS	AS3550.4	--	10/12/2024	10/12/2024	10/12/2024	10/12/2024



Report Comments:

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

Where applicable, 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: 17148

Date Issued: 12/12/2024

Revision No: 00

Sampling Conditions: Cloudy, 23 - 29 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17148/1	BH01A		T & D.Walker	5/12/2024 1:48 PM	AS5667.11, Pump	AS5667.1
17148/2	BH01B		T & D.Walker	5/12/2024 2:17 PM	AS5667.11, Pump	AS5667.1
17148/3	BH01C		T & D.Walker	5/12/2024 2:01 PM	AS5667.11, Bail	AS5667.1
17148/4	BH02A		T & D.Walker	5/12/2024 12:19 PM	AS5667.11, Pump	AS5667.1
17148/5	BH02B		T & D.Walker	5/12/2024 12:40 PM	AS5667.11, Pump	AS5667.1
17148/6	BH02C		T & D.Walker	5/12/2024 12:27 PM	AS5667.11, Bail	AS5667.1
17148/7	BH05B		T & D.Walker	5/12/2024 11:49 AM	AS5667.11, Pump	AS5667.1
17148/8	BH5		T & D.Walker	5/12/2024 12:01 PM	AS5667.11, Pump	AS5667.1
17148/9	BH07		T & D.Walker	5/12/2024 11:22 AM	AS5667.11, Bail	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
17148/1	BH01A	
17148/2	BH01B	
17148/3	BH01C	
17148/4	BH02A	
17148/5	BH02B	
17148/6	BH02C	
17148/7	BH05B	
17148/8	BH5	
17148/9	BH07	0.31m knot in logger string

Sampling procedures have been approved and report finalised on 12/12/2024.

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			
BH05B	312160	6293752			
BH5	312159	6293753			
BH07	312139	6293374			

Well ID	Date Well Measured	Monument Height (TOM) (m)	Depth to Bottom (bTOM) (m)	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
BH05B	28/10/2019	0.97	33.87	Medium	27
BH5	28/10/2019	0.57	>60	Fast	>60
BH07					>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: 17147

Date Issued: 12/12/2024

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 5/12/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
H6	5/12/2024	17147/1	Water	
H7	5/12/2024	17147/2	Water	
H9	5/12/2024	17147/3	Water	
H12	5/12/2024	17147/4	Water	
BH4	5/12/2024	17147/5	Water	
H14	5/12/2024	17147/6	Water	
H2	5/12/2024	17147/7	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 12/12/2024.

Test Report Number: 17147

Date Issued: 12/12/2024

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID Units	17147/1 5/12/2024 H6	17147/2 5/12/2024 H7	17147/3 5/12/2024 H9	17147/4 5/12/2024 H12	17147/5 5/12/2024 BH4
	Method						
Depth to Water	AS5667.11	m(bTOfRef)	11.96	13.55	8.58	12.98	37.44
Temperature	Temp	°C	18.5	19.0	19.2	20.1	19.9
pH	APHA 4500-H B	pH Units	4.3	4.4	4.4	4.6	5.2
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	149	139	102	179	110

Field Analysis		Lab ID Sample Date Sample ID Units	17147/6 5/12/2024 H14	17147/7 5/12/2024 H2
	Method			
Depth to Water	AS5667.11	m(bTOfRef)	7.58	3.73
Temperature	Temp	°C	18.7	19.1
pH	APHA 4500-H B	pH Units	4.3	4.3
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	92.0	129

Solids		Lab ID Sample Date Sample ID Units	17147/1 5/12/2024 H6	17147/2 5/12/2024 H7	17147/3 5/12/2024 H9	17147/4 5/12/2024 H12	17147/5 5/12/2024 BH4
	Method						
Total Dissolved Solids	AS3550.4	mg/L	98	94	70	120	64

Solids		Lab ID Sample Date Sample ID Units	17147/6 5/12/2024 H14	17147/7 5/12/2024 H2
	Method			
Total Dissolved Solids	AS3550.4	mg/L	52	60

Date Tested		Lab ID Sample Date Sample ID Units	17147/1 5/12/2024 H6	17147/2 5/12/2024 H7	17147/3 5/12/2024 H9	17147/4 5/12/2024 H12	17147/5 5/12/2024 BH4
	Method						
Date Tested - Field	--	--	05/12/2024	05/12/2024	05/12/2024	05/12/2024	05/12/2024
Date Tested - TDS	AS3550.4	--	10/12/2024	10/12/2024	10/12/2024	10/12/2024	10/12/2024

Date Tested		Lab ID Sample Date Sample ID Units	17147/6 5/12/2024 H14	17147/7 5/12/2024 H2
	Method			
Date Tested - Field	--	--	05/12/2024	05/12/2024
Date Tested - TDS	AS3550.4	--	10/12/2024	10/12/2024



Report Comments:

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

Where applicable, 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: 17147

Date Issued: 12/12/2024

Revision No: 00

Sampling Conditions: Cloudy, 23 - 29 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17147/1	H6		T & D.Walker	5/12/2024 8:57 AM	AS5667.11, Bail	AS5667.1
17147/2	H7		T & D.Walker	5/12/2024 9:12 AM	AS5667.11, Bail	AS5667.1
17147/3	H9		T & D.Walker	5/12/2024 9:46 AM	AS5667.11, Pump	AS5667.1
17147/4	H12		T & D.Walker	5/12/2024 10:33 AM	AS5667.11, Pump	AS5667.1
17147/5	BH4		T & D.Walker	5/12/2024 10:06 AM	AS5667.11, Pump	AS5667.1
17147/6	H14		T & D.Walker	5/12/2024 10:49 AM	AS5667.11, Bail	AS5667.1
17147/7	H2		T & D.Walker	5/12/2024 2:40 PM	AS5667.11, Bail	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
17147/1	H6	
17147/2	H7	
17147/3	H9	
17147/4	H12	
17147/5	BH4	0.80m knot in logger string
17147/6	H14	
17147/7	H2	

Sampling procedures have been approved and report finalised on 12/12/2024.

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	Monument Height (TOM) (m)	Depth to Bottom (bTOM) (m)	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: 18236

Date Issued: 26/06/2025

Revision Number: 00

Site/Job: Haerses Rd Groundwater - 6 Monthly

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 19/06/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
BH01A	19/06/2025	18236/1	Water	
BH01B	19/06/2025	18236/2	Water	
BH01C	19/06/2025	18236/3	Water	
BH02A	19/06/2025	18236/4	Water	
BH02B	19/06/2025	18236/5	Water	
BH02C	19/06/2025	18236/6	Water	
BH05B	19/06/2025	18236/7	Water	
BH05	19/06/2025	18236/8	Water	
BH07	19/06/2025	18236/9	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 26/06/2025.

Test Report Number: 18236

Date Issued: 26/06/2025

Revision No: 00

Results

Well Parameters		Lab ID Sample Date Sample ID Units	18236/1 19/06/2025 BH01A	18236/2 19/06/2025 BH01B	18236/3 19/06/2025 BH01C	18236/4 19/06/2025 BH02A	18236/5 19/06/2025 BH02B
Depth Reference Point		--	TOM	TOM	TOM	TOM	TOM
Depth to Water	AS5667.11	m(bTORef)	9.45	16.70	5.60	23.14	18.96

Well Parameters		Lab ID Sample Date Sample ID Units	18236/6 19/06/2025 BH02C	18236/7 19/06/2025 BH05B	18236/8 19/06/2025 BH05	18236/9 19/06/2025 BH07
Depth Reference Point		--	TOM	TOM	TOM	TOM
Depth to Water	AS5667.11	m(bTORef)	15.27	19.18	30.00	52.11

Field Analysis		Lab ID Sample Date Sample ID Units	18236/1 19/06/2025 BH01A	18236/2 19/06/2025 BH01B	18236/3 19/06/2025 BH01C	18236/4 19/06/2025 BH02A	18236/5 19/06/2025 BH02B
Temperature	Temp	°C	17.0	16.6	17.3	17.4	17.2
pH	APHA 4500-H B	pH Units	5.4	4.6	4.7	4.1	4.1
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	200	183	197	197	199

Field Analysis		Lab ID Sample Date Sample ID Units	18236/6 19/06/2025 BH02C	18236/7 19/06/2025 BH05B	18236/8 19/06/2025 BH05	18236/9 19/06/2025 BH07
Temperature	Temp	°C	17.0	17.9	17.8	19.2
pH	APHA 4500-H B	pH Units	4.7	4.2	4.6	6.7
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	188	199	216	295

Solids		Lab ID Sample Date Sample ID Units	18236/1 19/06/2025 BH01A	18236/2 19/06/2025 BH01B	18236/3 19/06/2025 BH01C	18236/4 19/06/2025 BH02A	18236/5 19/06/2025 BH02B
Total Dissolved Solids	AS3550.4	mg/L	110	92	120	96	98

Solids		Lab ID Sample Date Sample ID Units	18236/6 19/06/2025 BH02C	18236/7 19/06/2025 BH05B	18236/8 19/06/2025 BH05	18236/9 19/06/2025 BH07
Total Dissolved Solids	AS3550.4	mg/L	110	98	120	210

Date Tested		Lab ID Sample Date Sample ID Units	18236/1 19/06/2025 BH01A	18236/2 19/06/2025 BH01B	18236/3 19/06/2025 BH01C	18236/4 19/06/2025 BH02A	18236/5 19/06/2025 BH02B
Date Tested - Field	--	--	19/06/2025	19/06/2025	19/06/2025	19/06/2025	19/06/2025
Date Tested - TDS	AS3550.4	--	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025



Date Tested		Lab ID Sample Date Sample ID Units	18236/6 19/06/2025 BH02C	18236/7 19/06/2025 BH05B	18236/8 19/06/2025 BH05	18236/9 19/06/2025 BH07
	Method					
Date Tested - Field	--	--	19/06/2025	19/06/2025	19/06/2025	19/06/2025
Date Tested - TDS	AS3550.4	--	24/06/2025	24/06/2025	24/06/2025	24/06/2025

Report Comments:

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

Guideline applied - No Limits.

Results in **bold** indicate an exceedance of the applied 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

Field Analysis conducted onsite at Haerses Rd Quarry

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

Sampling Report Number: 18236

Date Issued: 26/06/2025

Revision No: 00

Sampling Conditions: Fine, 7 - 18 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18236/1	BH01A		T & D.Walker	19/06/2025 3:12 PM	AS5667.11, Pump	AS5667.1
18236/2	BH01B		T & D.Walker	19/06/2025 3:37 PM	AS5667.11, Pump	AS5667.1
18236/3	BH01C		T & D.Walker	19/06/2025 3:24 PM	AS5667.11, Bail	AS5667.1
18236/4	BH02A		T & D.Walker	19/06/2025 2:03 PM	AS5667.11, Pump	AS5667.1
18236/5	BH02B		T & D.Walker	19/06/2025 2:15 PM	AS5667.11, Pump	AS5667.1
18236/6	BH02C		T & D.Walker	19/06/2025 2:28 PM	AS5667.11, Bail	AS5667.1
18236/7	BH05B		T & D.Walker	19/06/2025 1:27 PM	AS5667.11, Pump	AS5667.1
18236/8	BH05		T & D.Walker	19/06/2025 1:46 PM	AS5667.11, Pump	AS5667.1
18236/9	BH07		T & D.Walker	19/06/2025 12:28 PM	AS5667.11, Bail	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
18236/1	BH01A	
18236/2	BH01B	
18236/3	BH01C	
18236/4	BH02A	
18236/5	BH02B	Logger download failed
18236/6	BH02C	
18236/7	BH05B	
18236/8	BH05	2.29m tangle in logger string
18236/9	BH07	Unable to purge well sufficiently

Sampling procedures have been approved and report finalised on 26/06/2025.

Where method is "unknown" sampling procedures are not endorsed

Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Rd Groundwater - 6 Monthly

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			
BH05B	312160	6293752			
BH05	312159	6293753			
BH07	312139	6293374			

Well ID	Date Well Measured	Reference Point	Reference Point Height (m)	Depth to Bottom (m)	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
BH05B	28/10/2019		0.97	33.87	Medium	27
BH05	28/10/2019		0.57	>60	Fast	>60
BH07						>60

Note: NATA accreditation does not cover information provided in this section

*Where indicated AHD from ground level (m) estimated based on handheld GPS
Survey Data provided by client.

Report Number: 18235

Date Issued: 26/06/2025

Revision Number: 00

Site/Job: Haerses Rd H Groundwater- 6 Monthly

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 19/06/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
H6	19/06/2025	18235/1	Water	
H7	19/06/2025	18235/2	Water	
H9	19/06/2025	18235/3	Water	
H12	19/06/2025	18235/4	Water	
BH4	19/06/2025	18235/5	Water	
H14	19/06/2025	18235/6	Water	
H2	19/06/2025	18235/7	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 26/06/2025.

Test Report Number: 18235

Date Issued: 26/06/2025

Revision No: 00

Results

Well Parameters		Lab ID Sample Date Sample ID Units	18235/1 19/06/2025 H6	18235/2 19/06/2025 H7	18235/3 19/06/2025 H9	18235/4 19/06/2025 H12	18235/5 19/06/2025 BH4
Depth Reference Point		--	TOM	TOM	TOM	TOM	TOM
Depth to Water	AS5667.11	m(bTOMRef)	11.95	13.18	8.48	12.12	37.52

Well Parameters		Lab ID Sample Date Sample ID Units	18235/6 19/06/2025 H14	18235/7 19/06/2025 H2
Depth Reference Point		--	TOM	TOM
Depth to Water	AS5667.11	m(bTOMRef)	7.51	2.77

Field Analysis		Lab ID Sample Date Sample ID Units	18235/1 19/06/2025 H6	18235/2 19/06/2025 H7	18235/3 19/06/2025 H9	18235/4 19/06/2025 H12	18235/5 19/06/2025 BH4
Temperature	Temp	°C	17.0	17.6	17.1	18.6	17.3
pH	APHA 4500-H B	pH Units	4.3	4.4	4.5	4.7	5.2
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	158	123	109	204	122

Field Analysis		Lab ID Sample Date Sample ID Units	18235/6 19/06/2025 H14	18235/7 19/06/2025 H2
Temperature	Temp	°C	17.9	17.4
pH	APHA 4500-H B	pH Units	4.5	4.5
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	71.0	72.0

Solids		Lab ID Sample Date Sample ID Units	18235/1 19/06/2025 H6	18235/2 19/06/2025 H7	18235/3 19/06/2025 H9	18235/4 19/06/2025 H12	18235/5 19/06/2025 BH4
Total Dissolved Solids	AS3550.4	mg/L	88	68	58	120	78

Solids		Lab ID Sample Date Sample ID Units	18235/6 19/06/2025 H14	18235/7 19/06/2025 H2
Total Dissolved Solids	AS3550.4	mg/L	48	42

Date Tested		Lab ID Sample Date Sample ID Units	18235/1 19/06/2025 H6	18235/2 19/06/2025 H7	18235/3 19/06/2025 H9	18235/4 19/06/2025 H12	18235/5 19/06/2025 BH4
Date Tested - Field	--	--	19/06/2025	19/06/2025	19/06/2025	19/06/2025	19/06/2025
Date Tested - TDS	AS3550.4	--	24/06/2025	24/06/2025	24/06/2025	24/06/2025	24/06/2025



Date Tested		Lab ID Sample Date Sample ID Units	18235/6 19/06/2025 H14	18235/7 19/06/2025 H2
	Method			
Date Tested - Field	--	--	19/06/2025	19/06/2025
Date Tested - TDS	AS3550.4	--	24/06/2025	24/06/2025

Report Comments:

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

Guideline applied - No Limits.

Results in **bold** indicate an exceedance of the applied 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

Field Analysis conducted onsite at Haerses Rd Quarry

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

Sampling Report Number: 18235

Date Issued: 26/06/2025

Revision No: 00

Sampling Conditions: Fine, 7 - 18 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18235/1	H6		T & D.Walker	19/06/2025 9:47 AM	AS5667.11, Bail	AS5667.1
18235/2	H7		T & D.Walker	19/06/2025 10:09 AM	AS5667.11, Bail	AS5667.1
18235/3	H9		T & D.Walker	19/06/2025 10:39 AM	AS5667.11, Pump	AS5667.1
18235/4	H12		T & D.Walker	19/06/2025 11:36 AM	AS5667.11, Pump	AS5667.1
18235/5	BH4		T & D.Walker	19/06/2025 11:03 AM	AS5667.11, Pump	AS5667.1
18235/6	H14		T & D.Walker	19/06/2025 11:58 AM	AS5667.11, Bail	AS5667.1
18235/7	H2		T & D.Walker	19/06/2025 4:02 PM	AS5667.11, Pump	AS5667.1

Lab ID	Client Sample Reference	Sampling Observations
18235/1	H6	
18235/2	H7	
18235/3	H9	
18235/4	H12	
18235/5	BH4	2.90m tangle in logger string
18235/6	H14	
18235/7	H2	

Sampling procedures have been approved and report finalised on 26/06/2025.

Where method is "unknown" sampling procedures are not endorsed

Well Parameters:

Client: Dixon Sand (No.1) Pty Ltd

Site/Job: Haerses Rd H Groundwater- 6 Monthly

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	Reference Point	Reference Point Height (m)	Depth to Bottom (m)	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

Survey Data provided by client.

Surface water Monitoring Data

Report Number: 16573

Date Issued: 26/07/2024

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 24/07/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	24/07/2024	16573/1	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 ManagerLiane Peyra
Technical Officer

Authorised by:

Results have been approved and report finalised on 26/07/2024.

Test Report Number: 16573

Date Issued: 26/07/2024

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	16573/1 24/07/2024 Basin 1 - Mod 1
Temperature	Temp	°C	12.4
pH	APHA 4500-H B	pH Units	4.8
Turbidity	APHA 2130 B	NTU	26

Solids	Method	Lab ID Sample Date Sample ID Units	16573/1 24/07/2024 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	21

Date Tested	Method	Lab ID Sample Date Sample ID Units	16573/1 24/07/2024 Basin 1 - Mod 1
Date Tested - Field	--	--	24/07/2024
Date Tested - TSS	AS3550.4	--	25/07/2024

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: 16573

Date Issued: 26/07/2024

Revision No: 00

Sampling Conditions: Fine, 18 °C

Lab ID	Client Sample Reference	Licence/Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16573/1	Basin 1 - Mod 1		T & D.Walker	24/07/2024 12:38 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16573/1	Basin 1 - Mod 1	312148	6293404	Clear. No flow.

Sampling procedures have been approved and report finalised on 26/07/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16690

Date Issued: 22/08/2024

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 21/08/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	21/08/2024	16690/1	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 22/08/2024.

Test Report Number: 16690

Date Issued: 22/08/2024

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	16690/1 21/08/2024 Basin 1 - Mod 1
Temperature	Temp	°C	17.1
pH	APHA 4500-H B	pH Units	4.6
Turbidity	APHA 2130 B	NTU	11

Solids	Method	Lab ID Sample Date Sample ID Units	16690/1 21/08/2024 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	11

Date Tested	Method	Lab ID Sample Date Sample ID Units	16690/1 21/08/2024 Basin 1 - Mod 1
Date Tested - Field	--	--	21/08/2024
Date Tested - TSS	AS3550.4	--	22/08/2024

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: 16690

Date Issued: 22/08/2024

Revision No: 00

Sampling Conditions: Fine, 26 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16690/1	Basin 1 - Mod 1		T & D.Walker	21/08/2024 1:01 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16690/1	Basin 1 - Mod 1	312148	6293404	Clear, no flow.

Sampling procedures have been approved and report finalised on 22/08/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16808

Date Issued: 20/09/2024

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 18/09/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	18/09/2024	16808/1	Water	Dry, no sample.

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)



Liane Peyra

Authorised by: Technical Officer

Results have been approved and report finalised on 20/09/2024.

Test Report Number: 16808

Date Issued: 20/09/2024

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID Units	16808/1 18/09/2024 Basin 1 - Mod 1
Method			
Temperature	Temp	°C	[NT]
pH	APHA 4500-H B	pH Units	[NT]
Turbidity	APHA 2130 B	NTU	[NT]

Date Tested		Lab ID Sample Date Sample ID Units	16808/1 18/09/2024 Basin 1 - Mod 1
Method			
Date Tested - Field	--	--	18/09/2024

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: 16808

Date Issued: 20/09/2024

Revision No: 00

Sampling Conditions: Fine, 24 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16808/1	Basin 1 - Mod 1		T.Walker	18/09/2024 12:05 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16808/1	Basin 1 - Mod 1	312148	6293404	Dry, no sample. Earthworks have reshaped basin area.

Sampling procedures have been approved and report finalised on 20/09/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 16896

Date Issued: 18/10/2024

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 16/10/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	16/10/2024	16896/1	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)



Liane Peyra

Authorised by: Technical Officer

Results have been approved and report finalised on 18/10/2024.

Test Report Number: 16896

Date Issued: 18/10/2024

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	16896/1 16/10/2024 Basin 1 - Mod 1
Temperature	Temp	°C	18.7
pH	APHA 4500-H B	pH Units	4.7
Turbidity	APHA 2130 B	NTU	15

Solids	Method	Lab ID Sample Date Sample ID Units	16896/1 16/10/2024 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	14

Date Tested	Method	Lab ID Sample Date Sample ID Units	16896/1 16/10/2024 Basin 1 - Mod 1
Date Tested - Field	--	--	16/10/2024
Date Tested - TSS	AS3550.4	--	17/10/2024

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: 16896

Date Issued: 18/10/2024

Revision No: 00

Sampling Conditions: 100% Cloudcover, 19 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
16896/1	Basin 1 - Mod 1		T & D.Walker	16/10/2024 12:29 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
16896/1	Basin 1 - Mod 1	312148	6293404	Clear, no flow

Sampling procedures have been approved and report finalised on 18/10/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17076

Date Issued: 19/11/2024

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 13/11/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	13/11/2024	17076/1	Water	No sample taken - No safe access due to earthworks

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



Liane Peyra
Technical Officer

Authorised by:

Results have been approved and report finalised on 19/11/2024.

Test Report Number: 17076

Date Issued: 19/11/2024

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID Units	17076/1 13/11/2024 Basin 1 - Mod 1
Method			
Temperature	Temp	°C	[NT]
pH	APHA 4500-H B	pH Units	[NT]
Turbidity	APHA 2130 B	NTU	[NT]

Date Tested		Lab ID Sample Date Sample ID Units	17076/1 13/11/2024 Basin 1 - Mod 1
Method			
Date Tested - Field	--	--	13/11/2024

Report Comments:

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

Where applicable, 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: 17076

Date Issued: 19/11/2024

Revision No: 00

Sampling Conditions: 100 ° Cloudcover, 25 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17076/1	Basin 1 - Mod 1		T & D.Walker	13/11/2024 12:33 PM		

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17076/1	Basin 1 - Mod 1	312148	6293404	No sample (clear, no flow) - No safe access due to earthworks

Sampling procedures have been approved and report finalised on 19/11/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17149

Date Issued: 12/12/2024

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 5/12/2024

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Stage 1 Pit Sump	5/12/2024	17149/1	Water	
Stage 2 West Sediment	5/12/2024	17149/2	Water	
Stage 2 West Pit Sump	5/12/2024	17149/3	Water	
Stage 2 East Sediment Dam	5/12/2024	17149/4	Water	
Basin 1 - Mod 1	5/12/2024	17149/5	Water	
Basin 4	5/12/2024	17149/6	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 12/12/2024.

Test Report Number: 17149

Date Issued: 12/12/2024

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID	17149/1 5/12/2024 Stage 1 Pit Sump	17149/2 5/12/2024 Stage 2 West Sediment	17149/3 5/12/2024 Stage 2 West Pit Sump	17149/4 5/12/2024 Stage 2 East Sediment Dam	17149/5 5/12/2024 Basin 1 - Mod 1
	Method	Units					
Temperature	Temp	°C	24.9	26.4	26.9	25.6	25.8
pH	APHA 4500-H B	pH Units	4.9	5.2	4.5	4.7	4.2
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	69.0	83.0	187	168	197
Turbidity	APHA 2130 B	NTU	2.0	2.5	1.7	5.8	4.6

Field Analysis		Lab ID Sample Date Sample ID	17149/6 5/12/2024 Basin 4
	Method	Units	
Temperature	Temp	°C	25.8
pH	APHA 4500-H B	pH Units	4.5
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	164
Turbidity	APHA 2130 B	NTU	2.5

Solids		Lab ID Sample Date Sample ID	17149/1 5/12/2024 Stage 1 Pit Sump	17149/2 5/12/2024 Stage 2 West Sediment	17149/3 5/12/2024 Stage 2 West Pit Sump	17149/4 5/12/2024 Stage 2 East Sediment Dam	17149/5 5/12/2024 Basin 1 - Mod 1
	Method	Units					
Total Suspended Solids	AS3550.4	mg/L	<5	<5	<5	<5	<5

Solids		Lab ID Sample Date Sample ID	17149/6 5/12/2024 Basin 4
	Method	Units	
Total Suspended Solids	AS3550.4	mg/L	<5

Date Tested		Lab ID Sample Date Sample ID	17149/1 5/12/2024 Stage 1 Pit Sump	17149/2 5/12/2024 Stage 2 West Sediment	17149/3 5/12/2024 Stage 2 West Pit Sump	17149/4 5/12/2024 Stage 2 East Sediment Dam	17149/5 5/12/2024 Basin 1 - Mod 1
	Method	Units					
Date Tested - Field	--	--	05/12/2024	05/12/2024	05/12/2024	05/12/2024	05/12/2024
Date Tested - TSS	AS3550.4	--	6/12/2024	6/12/2024	6/12/2024	6/12/2024	6/12/2024

Date Tested		Lab ID Sample Date Sample ID	17149/6 5/12/2024 Basin 4
	Method	Units	
Date Tested - Field	--	--	05/12/2024
Date Tested - TSS	AS3550.4	--	6/12/2024



Report Comments:

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

Where applicable, 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: 17149

Date Issued: 12/12/2024

Revision No: 00

Sampling Conditions: Cloudy, 23 - 29 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17149/1	Stage 1 Pit Sump		T & D.Walker	5/12/2024 9:27 AM	AS5667.4 Lake, Grab	AS5667.1
17149/2	Stage 2 West Sediment		T & D.Walker	5/12/2024 1:09 PM	AS5667.4 Lake, Grab	AS5667.1
17149/3	Stage 2 West Pit Sump		T & D.Walker	5/12/2024 1:26 PM	AS5667.4 Lake, Grab	AS5667.1
17149/4	Stage 2 East Sediment Dam		T & D.Walker	5/12/2024 10:17 AM	AS5667.4 Lake, Grab	AS5667.1
17149/5	Basin 1 - Mod 1		T & D.Walker	5/12/2024 2:24 PM	AS5667.4 Lake, Grab	AS5667.1
17149/6	Basin 4		T & D.Walker	5/12/2024 11:01 AM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17149/1	Stage 1 Pit Sump	312739	6294472	Clear, no flow.
17149/2	Stage 2 West Sediment	312403	6293815	Clear, no flow.
17149/3	Stage 2 West Pit Sump	312612	6293745	Clear, no flow.
17149/4	Stage 2 East Sediment Dam	312770	6293687	Clear, no flow.
17149/5	Basin 1 - Mod 1	312148	6293404	Clear, no flow.
17149/6	Basin 4	312576	6293303	Clear, no flow.

Sampling procedures have been approved and report finalised on 12/12/2024.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17299

Date Issued: 9/01/2025

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 8/01/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	8/01/2025	17299/1	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 9/01/2025.

Test Report Number: 17299

Date Issued: 9/01/2025

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	17299/1 8/01/2025 Basin 1 - Mod 1
Temperature	Temp	°C	21.8
pH	APHA 4500-H B	pH Units	4.7
Turbidity	APHA 2130 B	NTU	5.1

Solids	Method	Lab ID Sample Date Sample ID Units	17299/1 8/01/2025 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	<5

Date Tested	Method	Lab ID Sample Date Sample ID Units	17299/1 8/01/2025 Basin 1 - Mod 1
Date Tested - Field	--	--	08/01/2025
Date Tested - TSS	AS3550.4	--	09/01/2025

Report Comments:

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

Where applicable, 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: 17299

Date Issued: 9/01/2025

Revision No: 00

Sampling Conditions: 100% Cloudcover, 22 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17299/1	Basin 1 - Mod 1		T & D.Walker	8/01/2025 12:31 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17299/1	Basin 1 - Mod 1	312148	6293404	Clear, no flow

Sampling procedures have been approved and report finalised on 9/01/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17492

Date Issued: 6/02/2025

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 5/02/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	5/02/2025	17492/1	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 6/02/2025.

Test Report Number: 17492

Date Issued: 6/02/2025

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	17492/1 5/02/2025 Basin 1 - Mod 1
Temperature	Temp	°C	28.6
pH	APHA 4500-H B	pH Units	4.9
Turbidity	APHA 2130 B	NTU	2.9

Solids	Method	Lab ID Sample Date Sample ID Units	17492/1 5/02/2025 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	<5

Date Tested	Method	Lab ID Sample Date Sample ID Units	17492/1 5/02/2025 Basin 1 - Mod 1
Date Tested - Field	--	--	5/02/2025
Date Tested - TSS	AS3550.4	--	06/02/2025

Report Comments:

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

Where applicable, 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: 17492

Date Issued: 6/02/2025

Revision No: 00

Sampling Conditions: Cloudy, 35 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17492/1	Basin 1 - Mod 1		T & D.Walker	5/02/2025 12:51 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17492/1	Basin 1 - Mod 1	312148	6293404	Clear, no flow

Sampling procedures have been approved and report finalised on 6/02/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 17893

Date Issued: 1/05/2025

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 30/04/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	30/04/2025	17893/1	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)



Liane Peyra

Authorised by: Technical Officer

Results have been approved and report finalised on 1/05/2025.

Test Report Number: 17893

Date Issued: 1/05/2025

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	17893/1 30/04/2025 Basin 1 - Mod 1
Temperature	Temp	°C	18.5
pH	APHA 4500-H B	pH Units	4.9
Turbidity	APHA 2130 B	NTU	50

Solids	Method	Lab ID Sample Date Sample ID Units	17893/1 30/04/2025 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	37

Date Tested	Method	Lab ID Sample Date Sample ID Units	17893/1 30/04/2025 Basin 1 - Mod 1
Date Tested - Field	--	--	30/04/2025
Date Tested - TSS	AS3550.4	--	01/05/2025

Report Comments:

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

Guideline applied - SWMP Limits.

Results in **bold** indicate an exceedance of the applied 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: 17893

Date Issued: 1/05/2025

Revision No: 00

Sampling Conditions: 100% Cloudcover, 19 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
17893/1	Basin 1 - Mod 1		T & D.Walker	30/04/2025 12:41 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
17893/1	Basin 1 - Mod 1	312148	6293404	No flow

Sampling procedures have been approved and report finalised on 1/05/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 18058

Date Issued: 29/05/2025

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 28/05/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Basin 1 - Mod 1	28/05/2025	18058/1	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 29/05/2025.

Test Report Number: 18058

Date Issued: 29/05/2025

Revision No: 00

Results

Field Analysis	Method	Lab ID Sample Date Sample ID Units	18058/1 28/05/2025 Basin 1 - Mod 1
Temperature	Temp	°C	17.3
pH	APHA 4500-H B	pH Units	4.9
Turbidity	APHA 2130 B	NTU	900

Solids	Method	Lab ID Sample Date Sample ID Units	18058/1 28/05/2025 Basin 1 - Mod 1
Total Suspended Solids	AS3550.4	mg/L	450

Date Tested	Method	Lab ID Sample Date Sample ID Units	18058/1 28/05/2025 Basin 1 - Mod 1
Date Tested - Field	--	--	28/05/2025
Date Tested - TSS	AS3550.4	--	29/05/2025

Report Comments:

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

Guideline applied - No Limits.

Results in **bold** indicate an exceedance of the applied 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

Field Analysis conducted onsite at Haerses Rd Quarry

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

Sampling Report Number: 18058

Date Issued: 29/05/2025

Revision No: 00

Sampling Conditions: Fine, 20 °C. Recent heavy rain.

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18058/1	Basin 1 - Mod 1		T & D.Walker	28/05/2025 1:02 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
18058/1	Basin 1 - Mod 1	312148	6293404	Turbid. No flow

Sampling procedures have been approved and report finalised on 29/05/2025.

Where method is "unknown" sampling procedures are not endorsed

Report Number: 18237

Date Issued: 26/06/2025

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 19/06/2025

Client Sample Reference	Date Sampled	Lab ID	Matrix	General Comments
Stage 1 Pit Sump	19/06/2025	18237/1	Water	Not Discharging
Stage 2 West Sediment	19/06/2025	18237/2	Water	Not Discharging
Stage 2 West Pit Sump	19/06/2025	18237/3	Water	Not Discharging
Stage 2 East Sediment Dam	19/06/2025	18237/4	Water	Not Discharging
Basin 1 - Mod 1	19/06/2025	18237/5	Water	Not Discharging
Basin 4	19/06/2025	18237/6	Water	Not Discharging

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 ManagerLiane Peyra
Technical Officer

Authorised by:

Results have been approved and report finalised on 26/06/2025.

Test Report Number: 18237

Date Issued: 26/06/2025

Revision No: 00

Results

Field Analysis		Lab ID Sample Date Sample ID	18237/1 19/06/2025 Stage 1 Pit Sump	18237/2 19/06/2025 Stage 2 West Sediment	18237/3 19/06/2025 Stage 2 West Pit Sump	18237/4 19/06/2025 Stage 2 East Sediment Dam	18237/5 19/06/2025 Basin 1 - Mod 1
	Method	Units					
Temperature	Temp	°C	9.3	12.9	13.1	12.4	14.6
pH	APHA 4500-H B	pH Units	5.0	4.8	4.9	5.5	5.1
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	<50.0	90.0	106	100	140
Turbidity	APHA 2130 B	NTU	18	7.1	4.0	32	14

Field Analysis		Lab ID Sample Date Sample ID	18237/6 19/06/2025 Basin 4
	Method	Units	
Temperature	Temp	°C	11.6
pH	APHA 4500-H B	pH Units	4.8
Electrical Conductivity	APHA 2510 B	µS/cm 25°C	104
Turbidity	APHA 2130 B	NTU	25

Solids		Lab ID Sample Date Sample ID	18237/1 19/06/2025 Stage 1 Pit Sump	18237/2 19/06/2025 Stage 2 West Sediment	18237/3 19/06/2025 Stage 2 West Pit Sump	18237/4 19/06/2025 Stage 2 East Sediment Dam	18237/5 19/06/2025 Basin 1 - Mod 1
	Method	Units					
Total Suspended Solids	AS3550.4	mg/L	19	12	<5	22	13

Solids		Lab ID Sample Date Sample ID	18237/6 19/06/2025 Basin 4
	Method	Units	
Total Suspended Solids	AS3550.4	mg/L	22

Date Tested		Lab ID Sample Date Sample ID	18237/1 19/06/2025 Stage 1 Pit Sump	18237/2 19/06/2025 Stage 2 West Sediment	18237/3 19/06/2025 Stage 2 West Pit Sump	18237/4 19/06/2025 Stage 2 East Sediment Dam	18237/5 19/06/2025 Basin 1 - Mod 1
	Method	Units					
Date Tested - Field	--	--	19/06/2025	19/06/2025	19/06/2025	19/06/2025	19/06/2025
Date Tested - TSS	AS3550.4	--	20/06/2025	20/06/2025	20/06/2025	20/06/2025	20/06/2025

Date Tested		Lab ID Sample Date Sample ID	18237/6 19/06/2025 Basin 4
	Method	Units	
Date Tested - Field	--	--	19/06/2025
Date Tested - TSS	AS3550.4	--	20/06/2025



Report Comments:

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

Guideline applied - No Limits.

Results in **bold** indicate an exceedance of the applied 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

Field Analysis conducted onsite at Haerses Rd Quarry

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

Sampling Report Number: 18237

Date Issued: 26/06/2025

Revision No: 00

Sampling Conditions: Fine, 7 - 18 °C

Lab ID	Client Sample Reference	Licence/ Reference	Sampler	Date Sampled	Method of Sampling	Pre-treatment / Preservation
18237/1	Stage 1 Pit Sump		T & D.Walker	19/06/2025 10:27 AM	AS5667.4 Lake, Grab	AS5667.1
18237/2	Stage 2 West Sediment		T & D.Walker	19/06/2025 2:39 PM	AS5667.4 Lake, Grab	AS5667.1
18237/3	Stage 2 West Pit Sump		T & D.Walker	19/06/2025 2:58 PM	AS5667.4 Lake, Grab	AS5667.1
18237/4	Stage 2 East Sediment Dam		T & D.Walker	19/06/2025 11:17 AM	AS5667.4 Lake, Grab	AS5667.1
18237/5	Basin 1 - Mod 1		T & D.Walker	19/06/2025 12:55 PM	AS5667.4 Lake, Grab	AS5667.1
18237/6	Basin 4		T & D.Walker	19/06/2025 12:05 PM	AS5667.4 Lake, Grab	AS5667.1

Lab ID	Client Sample Reference	GPS-Easting	GPS-Northing	Sampling Observations
18237/1	Stage 1 Pit Sump	312739	6294472	No flow
18237/2	Stage 2 West Sediment	312403	6293815	No flow
18237/3	Stage 2 West Pit Sump	312612	6293745	No flow
18237/4	Stage 2 East Sediment Dam	312770	6293687	No flow
18237/5	Basin 1 - Mod 1	312148	6293404	No flow
18237/6	Basin 4	312576	6293303	No flow

Sampling procedures have been approved and report finalised on 26/06/2025.

Where method is "unknown" sampling procedures are not endorsed

Appendix D – Noise Compliance Reports

Dixon Sand (No.1) Pty Ltd

Haerses Road Quarry, Maroota

Noise monitoring report
December 2024

Doc no. 19020-NV-RP-19-0





Dixon Sand (No.1) Pty Ltd
Haerses Road Quarry, Maroota

Title	Noise monitoring report
Document no.	19020-NV-RP-19-0
Revision	0
Date	9 December 2024
Author	John Hutchison
Reviewer	Scott Hughes

Hutchison Weller Pty Ltd
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Revision history

0	30 April 2024	Draft report to client
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Table of Contents

Definition of terms..... ii

1. Introduction..... 1

2. Noise compliance criteria 3

3. Monitoring methodology..... 4

4. Monitoring results 5

4.1 Attended measurements..... 5

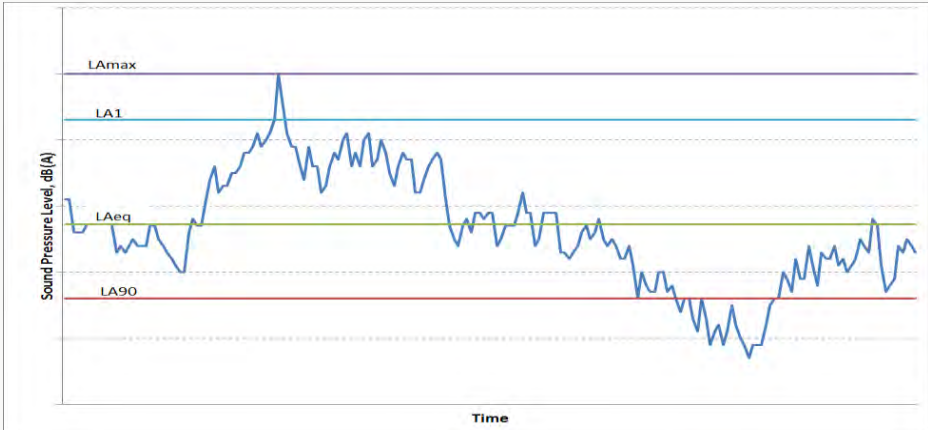
4.2 Modifying factors..... 5

4.3 Extrapolated measurements 9

4.4 Compliance summary 10



Definition of terms

Background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation.
Decibel (dB)	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.
dB(A)	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.
dB(C)	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.
EPA	Environment Protection Authority
Extraneous noise	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.
Noise level statistics	L_{A90} – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise. L_{Aeq} – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period. L_{A1} – The A-weighted sound pressure level exceeded 1% of the monitoring period. L_{Amax} – The maximum A-weighted noise level associated with the measurement period. 
RBL	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)
Receiver	The land use at which noise is heard
SLM	Sound Level Meter
Sound Power Level (SWL)	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.
Sound Pressure Level (SPL)	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. 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 $20 \mu\text{Pa}$ equivalent to 0 dB).
Tonal noise	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 9 December 2024.

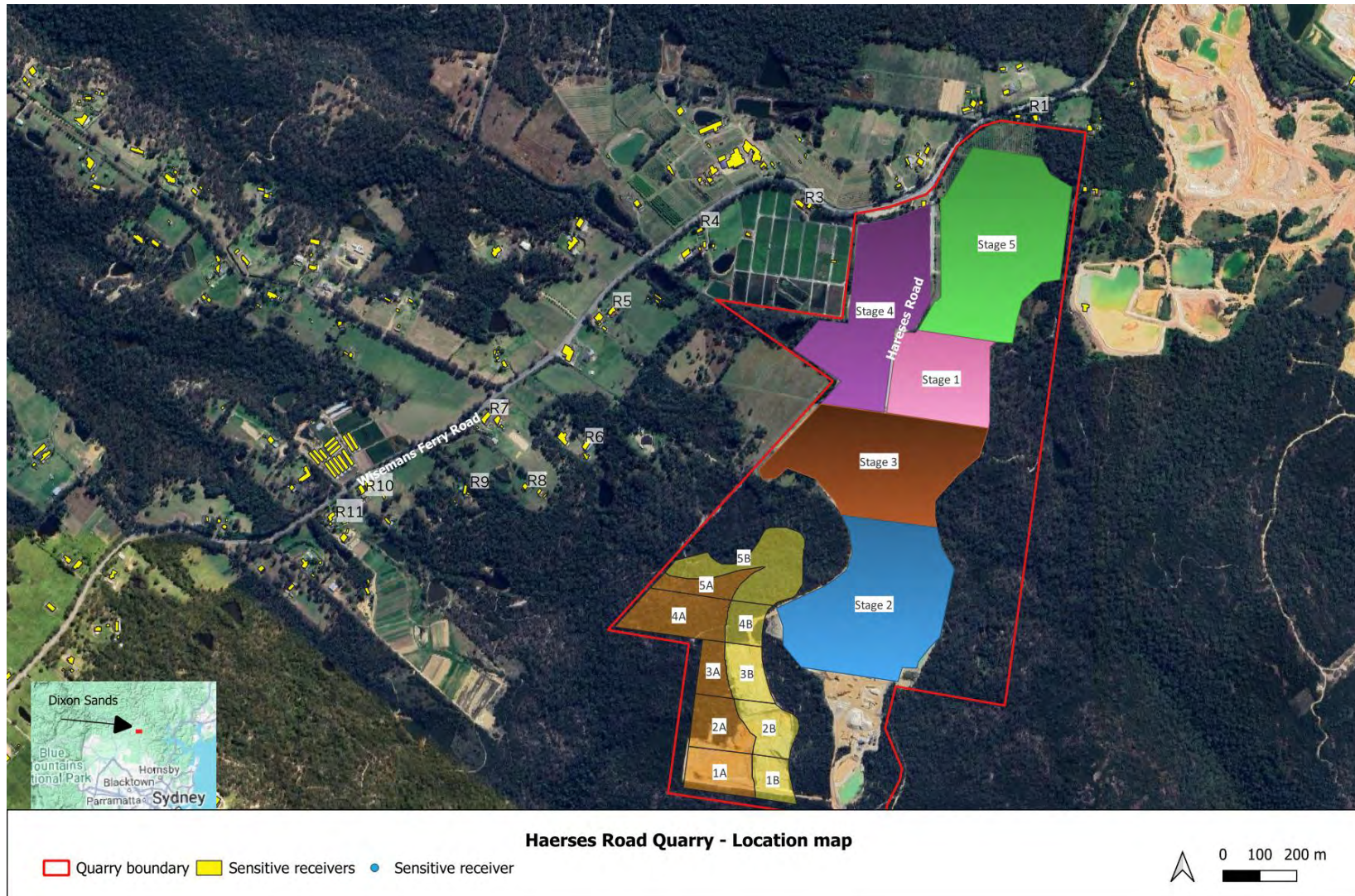


Figure 1 Location of the Quarry

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 9 December 2024 by John Hutchison of Hutchison Weller, an independent acoustic specialist. Monitoring locations were selected in line with the Haerses Road Quarry Noise Management Plan (May 2019), which addresses specific stages of quarry development, as outlined in Section 2. Monitoring locations are illustrated in Figure 1 and specific addresses are summarised in Table 4.

Table 3 Noise monitoring locations for each stage and extraction cell (from Noise and Vibration Management Plan, 2019)

Location	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Mod 1, Extraction cells 1A to 5B
R1	-	-	-	-		-
R3	✓	✓	✓	✓	✓	-
R4	✓	✓	✓	✓	✓	-
R6	-	-	-	-	-	✓
R8	-	-	-	-	-	✓

Table 4 Monitoring locations

Receiver	Address	Description
R3	1643 Wisemans Ferry Road	Private residence adjacent to plant nursery
R4	1617 Wisemans Ferry Road	No access granted – levels extrapolated from site measurements
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 was 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 2026.

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 is usually recorded during each monitoring period adjacent to the Maroota public school, to establish whether meteorological conditions were suitable for monitoring. Data includes wind speed, direction, temperature, relative humidity, and sigma-theta (to establish the Pascall-Guifford stability category). This data was not available for the monitoring period due to equipment malfunction. Therefore meteorological data was taken from the nearby BOM Automatic Weather Station at Richmond Airport (Station ID:

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 5.

Quarry operations were inaudible at all residential receivers prior to 7am, with traffic noise on Wisemans Ferry Road in all cases the dominant source of noise. No L_Amax noise levels were attributable to the quarry in the shoulder period.

During the day period, quarry noise was inaudible or just audible at monitoring locations. Again, ambient noise masked noise from the quarry. However, at receiver 8, quarry noise was more prominent than the previous measurement and care needs to be taken to ensure no upward trend.

Based on measured noise at each location, the Haerses Road quarry was compliant with the project noise objectives.

On-site measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were undertaken 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 5 Monitoring results

Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmax			
At-receiver measurements									
Shoulder (6.00am to 7.00am)	6:06 AM	R3	37	46.9	34.3	61.1	<35	Traffic on Wisemans Ferry Road is dominant source of noise with pass-bys of around 53-60 dBA for HV and 44-45 dBA for LV. During breaks in flow, dropped to 36-37 dBA. No quarry-related activity audible. No tones or Low Frequency No LAmax attributable to the quarry.	Calm breeze Temperature 18°C O/cast with some mist
	6:27 AM	R6	35	54.4	53.5	59.6	<35	Insects in the trees dominant ~ 54 dBA (LA90 & LAeq) Road traffic just audible, ~44-45 dBA Quarry operations faintly audible with machine tracking for a few seconds	
	6.50 AM	R7 (R8)	35	46.9	42.8	62.7	<35	Quarry was faintly audible at times with engine noise intermittently above the background ~ 35 dBA Traffic on Wisemans Ferry Road is dominant and constant source of noise ~ 46-48 dBA Birds/cicadas ~ 43-44 dBA When traffic dropped away for a moment – 39 dBA No LAmax values attributable to the quarry	



Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmaz			
Onsite measurements									
Onsite	8:02 AM	OAS1	N/A	72.4	69.2	85.0	-	Stage 2 – stockpile area Excavator on stockpile loading screen, with FEL servicing spoil. 74.0 dBA. Screen is dominant source and reflected by LA90. Truck bodies block noise while being loaded.	Light breeze from ENE Temperature 20°C O/cast no rain
	8:27 AM	OAS2		72.0	67.0	88.7	-	Stage 1A & 2A Rock saw ~ 72 dBA is dominant Excavator with hammer intermittently in distance FEL loading rock to truck ~ 65 dBA All equipment together ~ 72 dBA	
	9:45 AM	OAS3		71.5	70.7	77.8	-	Processing area 3 x screens with front two dominant ~ 72 dBA FEL in the area intermittently as it moves around the yard.	
At-receiver measurements									
Day (7.00am to 6.00pm)	10:26 AM	R3	40	45.1	38.4	58.6	40 (See Section 4.3)	Wisemans Ferry Road remains dominant noise source at 54-56 dBA for HVs and 42-45 dBA for LVs Traffic drops out ~ 39 dBA Distant engine noise between quarry and monitoring location ~ 39 dBA (unrelated to quarry) Hammering from east (not quarry) – 42 dBA Quarry not audible over background. Distant tractor just audible.	Light breeze from ENE Temperature 20°C O/cast no rain



Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmix			
	11:25 AM	R6	41	N/A	N/A	N/A	41 (See Section 4.3)	Not accessible	
	11:51 AM	R8	40	54.4	52.4	62.1	42 (See Section 4.3)	Crusher/screen noise is intermittently just audible over background (cicadas), at 52 dBA. Estimate 42-43 dBA Tracking excavator or dozer just audible intermittently Traffic remains an influence at 54-58 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 other ambient sounds including road traffic. Therefore, measurements captured on-site without substantial influence from traffic were used to calculate sound pressure levels at each receiver.

Based on observations close to the quarry and processing area, the following plant and equipment was in use during the monitoring period.

1. Processing plant – Washplant, 3 screens, front end loader, haulage trucks
2. Quarry -
 - Stage 2: Excavator on stockpile loading screen, with FEL servicing trucks
 - Area 1A/1B: Rock saw, excavator popping out rock, grinder and dozer ripping, hammer
 - Area 2B: rock hammer

Measurements close to these plant items established a representative noise model of the operations. A summary of noise emission data for these items is presented in Appendix A. See Figure 2 for work locations.



Figure 2 Work areas and noise sources included in the model



Predictions of noise at nearby receivers were based on measured onsite noise levels and propagation methods described in 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 the above, modelled noise levels for each monitoring location are presented in Table 6. Results are shown for equipment operating in each quarry area and processing plant. Modelled noise levels are within 2 dB of measured values indicating the model is sufficiently accurate to represent operating conditions.

Table 6 Extrapolated monitoring results to intermediate measurement locations

Location	Modelled noise level, dBA	Measured noise level, LAeq, 15 minute, dBA
OAS1	71.4	72.4
OAS2	72.4	72.0
OAS3	70.2	71.5

Based on measurements described in Table 5, extrapolated noise results for each receiver are presented in Table 7. Results are shown for all equipment operating. Extrapolated results demonstrate the Quarry is just compliant with the criteria for shoulder and daytime operations (within 2 dB) when all observed equipment is operating.

Table 7 Extrapolated monitoring results

Receiver	Noise criteria	Extrapolated noise level, LAeq, 15 minute	Comment
R3	40	40	All locations comply with noise limits.
R4	40	40	
R6	41	41	
R8	40	42	
All other receivers	40	See Figure 3	

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.

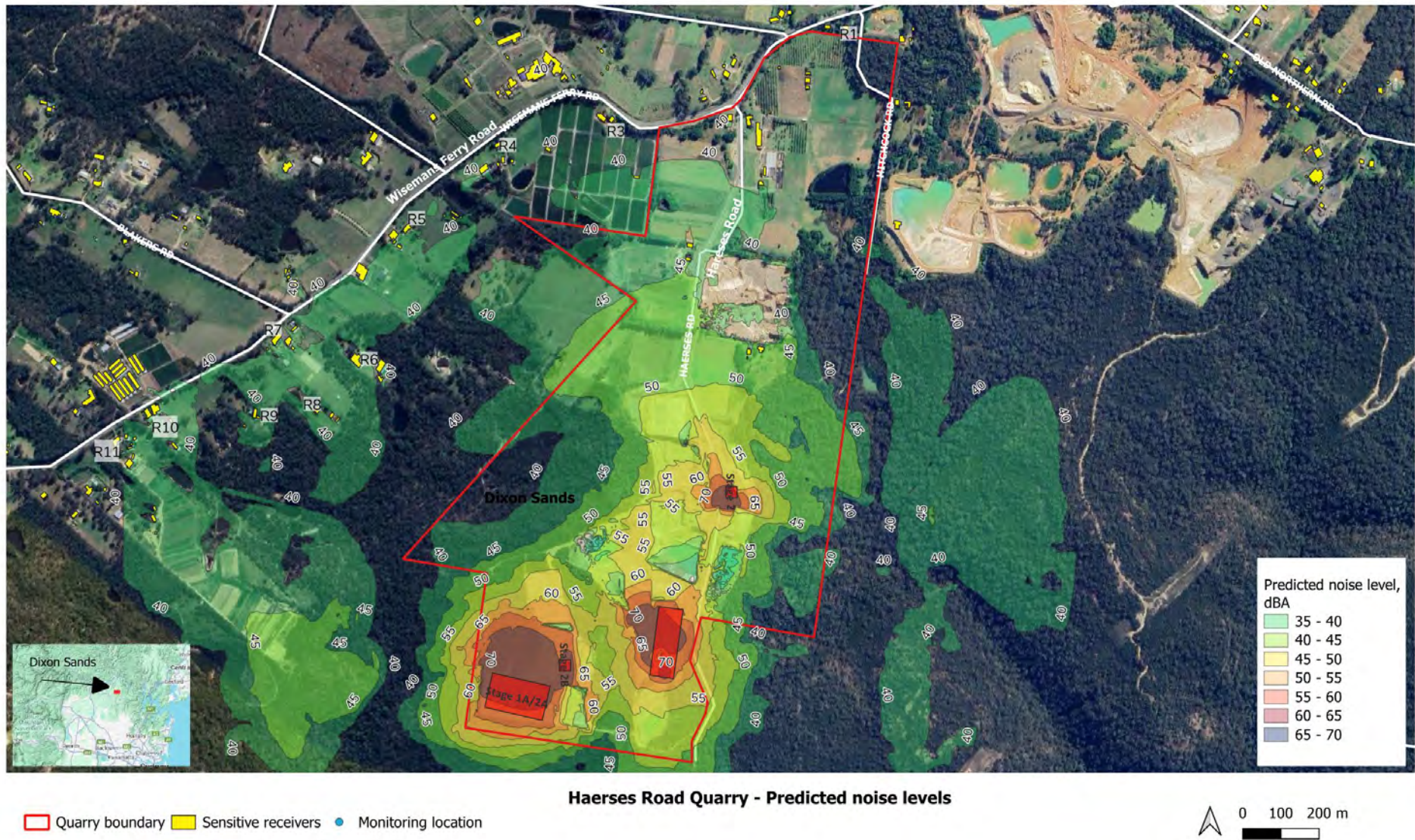


Figure 3 Extrapolated noise levels from Haerses Road quarry based on on-site measurements.



Appendix A. On-site measurements

Plant item	Height, m	Sound Power Level, (third octave, Hz), dBA																													
		Sum	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k
Exc with hammer	1.5	120	52	58	58	65	74	83	88	92	95	101	99	104	96	99	102	100	105	110	107	109	112	110	111	109	108	104	100	94	88
Excavator loading moxy	2	109	38	43	47	54	58	64	81	78	80	87	86	88	85	86	90	97	100	99	98	99	99	100	99	98	97	94	90	87	82
Excavator with grinder	1.5	109	38	43	47	54	58	64	81	78	80	87	86	88	85	86	90	97	100	99	98	99	99	100	99	98	97	94	90	87	82
Excavator ripping	1.5	115	40	47	53	59	70	80	86	91	95	99	101	103	98	97	102	102	102	105	105	105	104	104	106	104	101	99	95	92	89
Rock saw stage 1	1	118	29	38	44	50	61	74	78	84	87	92	88	91	101	103	105	109	111	111	108	104	105	105	104	101	98	95	92	87	82
Screen loaded by excavator Processing	2	118	46	63	56	59	71	82	86	90	95	97	98	100	100	105	111	108	108	106	103	105	108	109	107	103	100	97	94	90	83
Screen loaded by excavator Stage 2	2	116	43	47	51	61	76	80	87	87	92	105	96	98	101	101	107	109	104	106	104	104	104	105	101	102	102	98	93	90	86
Washplant	1.5	105	27	37	53	48	56	62	67	74	90	92	84	89	82	92	90	90	92	93	95	93	94	95	94	93	92	93	88	86	82

Dixon Sand (No.1) Pty Ltd

Haerses Road Quarry, Maroota

**Noise monitoring report
June 2025**

Doc no. 19020-NV-RP-21-0





Dixon Sand (No.1) Pty Ltd
Haerses Road Quarry, Maroota

Title	Noise monitoring report
Document no.	19020-NV-RP-21-0
Revision	0
Date	16 September 2025
Author	John Hutchison
Reviewer	Scott Hughes

Hutchison Weller Pty Ltd
ABN 37 001 024 095
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Mosman NSW 2008

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Revision history

0	16 September 2025	Draft report to client
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Table of Contents

Definition of terms ii

1. Introduction 1

2. Noise compliance criteria..... 3

3. Monitoring methodology 4

4. Monitoring results..... 5

4.1 Attended measurements 5

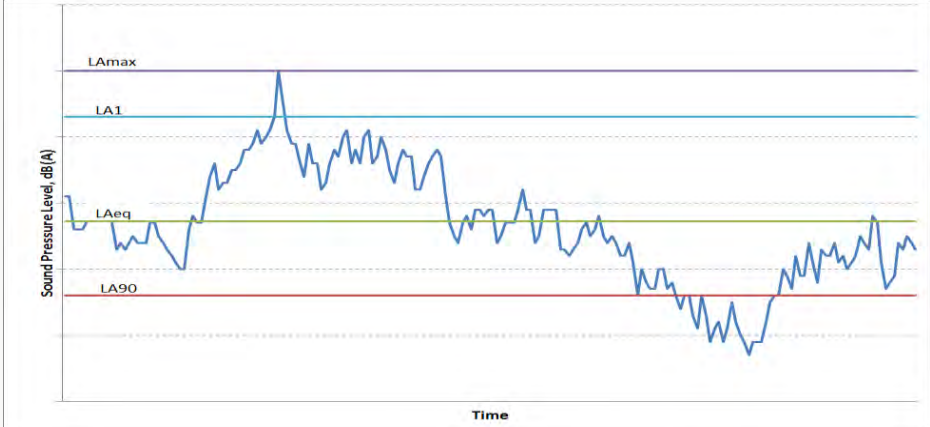
4.2 Modifying factors 5

4.3 Extrapolated measurements 9

4.4 Compliance summary 10



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Noise level statistics	L_{A90} – The A-weighted sound pressure level exceeded 90% of the monitoring period. This is considered to represent the background noise. L_{Aeq} – The equivalent continuous A-weighted noise level—the level of noise equivalent to the energy average of noise levels occurring over a measurement period. L_{A1} – The A-weighted sound pressure level exceeded 1% of the monitoring period. L_{Amax} – The maximum A-weighted noise level associated with the measurement period. 
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1. Introduction

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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.

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This document outlines the consent conditions, monitoring methodology and results of the monitoring undertaken on 3 June 2025.

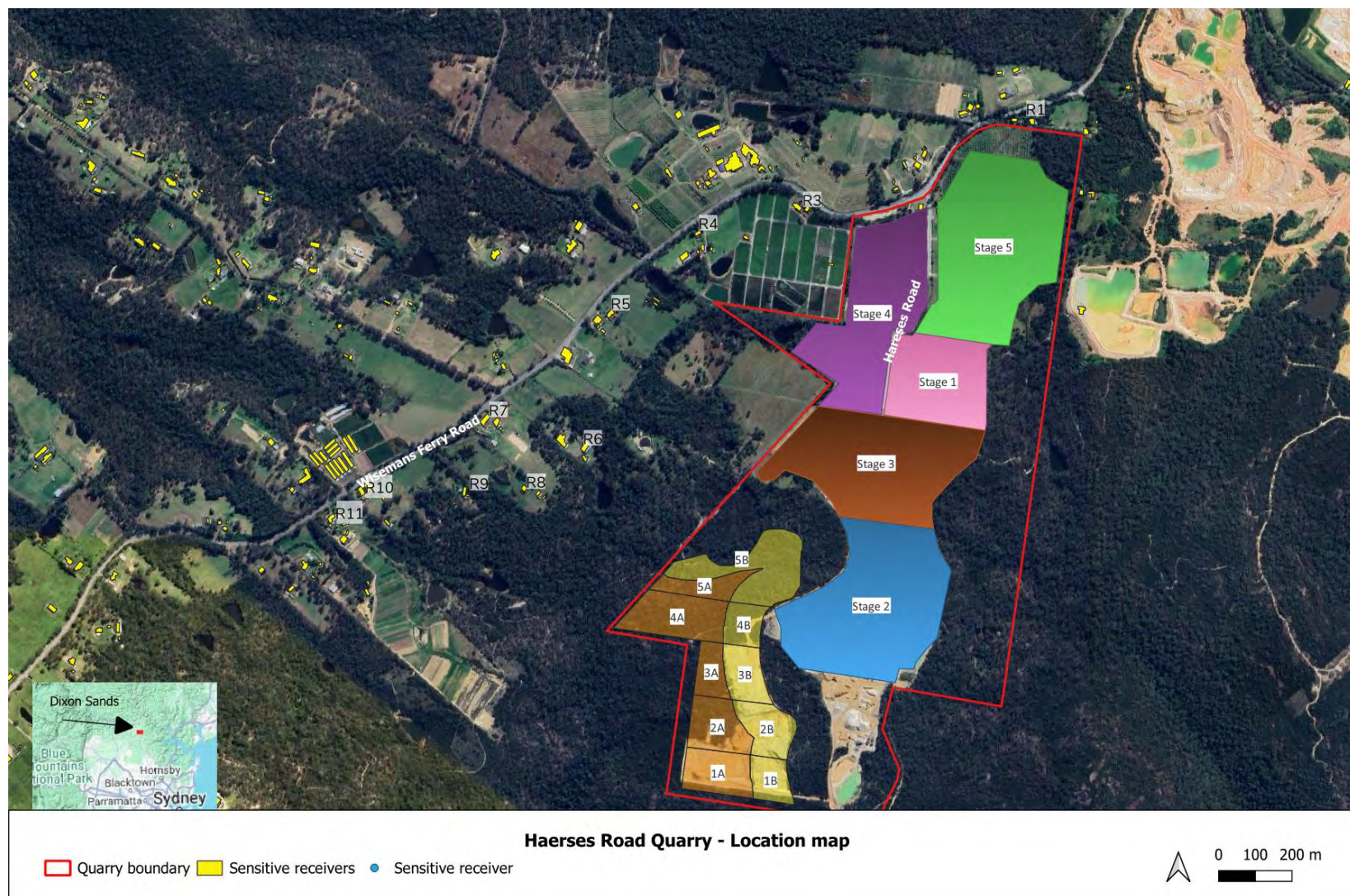


Figure 1 Location of the Quarry

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
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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.

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
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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 3 June 2025 by John Hutchison of Hutchison Weller, an independent acoustic specialist. Monitoring locations were selected in line with the Haerses Road Quarry Noise Management Plan (May 2019), which addresses specific stages of quarry development, as outlined in Section 2. Monitoring locations are illustrated in Figure 1 and specific addresses are summarised in Table 4.

Table 3 Noise monitoring locations for each stage and extraction cell (from Noise and Vibration Management Plan, 2019)

Location	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Mod 1, Extraction cells 1A to 5B
R1	-	-	-	-		-
R3	✓	✓	✓	✓	✓	-
R4	✓	✓	✓	✓	✓	-
R6	-	-	-	-	-	✓
R8	-	-	-	-	-	✓

Table 4 Monitoring locations

Receiver	Address	Description
R3	1643 Wisemans Ferry Road	Private residence adjacent to plant nursery
R4	1617 Wisemans Ferry Road	No access granted – levels extrapolated from site measurements
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 was 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 2026.

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 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 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 5.

Quarry operations were inaudible at all monitoring locations prior to 7am, with traffic noise on Wisemans Ferry Road in all cases the dominant source of noise. No L_Amax noise levels were attributable to the quarry in the shoulder period.

During the day period, quarry noise was inaudible or just audible at monitoring locations. Again, ambient noise masked noise from the quarry.

Based on measured noise at each location, the Haerses Road quarry was compliant with the project noise objectives.

On-site measurements were taken to determine the noise level of various noise sources without the influence of traffic noise. Measurements were undertaken 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 5 Monitoring results

Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmaz			
At-receiver measurements									
Shoulder (6.00am to 7.00am)	6:10 AM	R3	37	48	39	57	<35	Traffic on Wisemans Ferry Road is dominant source of noise with pass-bys of around 55-57 dBA for HV and 47-53 dBA for LV. During breaks in flow, dropped to 36-37 dBA and quarry generally not audible. Occasional tracking or rattling noise just perceptible when no traffic noise. No engine noise or processing plant audible. No tones or Low Frequency No LAmaz attributable to the quarry.	Calm breeze (0-2 km/h) from SW - NW Temperature 9°C Clear sky with low fog - A-class stability (extremely unstable)
	6:29 AM	R6	35	41	38	59	<35	Quarry not audible. Creek steady baseline 38 dBA Traffic 40 – 41 (LV) and 49-50 (HV) Birds 57-59 dBA (Lmax)	
	6.47 AM	R7 (R8)	35	50	39	66	<35	Caged birds up to 65 dBA Traffic on Wisemans Ferry Road pretty steady 51-53 (57 dBA compression bakes) Light vehicles 42 - 44 Equipment tracking intermittently 2-3 instances but largely inaudible.	



Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmaz			
Onsite measurements									
Onsite	8:04 AM	OAS1	N/A	66	60	81	-	Stage 2 – stockpile area Crusher not operating 3 x FEL and 1 excavator operating in the area – 65 dBA 4 trucks loaded in 15 minutes Excavator – 59 dBA FEL 60 Leq, 64 Lmax Empty truck loaded with rocks – 81 dBA (Lmax)	Light breeze (1 - 3 km/h) from W-NW Temperature 10-11°C O/cast with no rain - A-class stability (extremely unstable)
	8:29 AM	OAS2		72	71	80	-	Processing area 3 x screens with front one dominant ~ 72 dBA and 76 dBA when loaded with stone by FEL Rear screen not audible over closest.	
	8:50 AM	OAS3		67	64	81	-	A range of intensive activity in this pit including: Excavator popping blocks with fork. This changed to scraping with bucket part-way through measurement. Grinder on excavator Quad saw FEL Excavator with bucket scraping Hammer in the distance Saw cutting in distance	



Monitoring period	Time	Location	Noise criterion	Measured 15-minute noise level			Estimated LAeq, 15 min quarry contribution	Observations	Meteorological conditions
				LAeq	LA90	LAmaz			
At-receiver measurements									
Day (7.00am to 6.00pm)	10:26 AM	R3	40	45	38	59	40 (See Section 4.3)	Wisemans Ferry Road remains dominant noise source at 54-56 dBA for HVs and 42-45 dBA for LVs Traffic drops out ~ 39 dBA Distant engine noise between quarry and monitoring location ~ 39 dBA (unrelated to quarry) Hammering from east (not quarry) – 42 dBA Quarry not audible over background. Distant tractor just audible.	Calm breeze (1 – 7 km/h) from SSW Temperature 15°C O/cast no rain - A-class stability (extremely unstable)
	11:25 AM	R6	41	N/A	N/A	N/A	41 (See Section 4.3)	Not accessible	
	11:51 AM	R8	40	54	52	62	42 (See Section 4.3)	Crusher/screen noise is intermittently just audible over background (cicadas), at 52 dBA. Estimate 42-43 dBA Tracking excavator or dozer just audible intermittently Traffic remains an influence at 54-58 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 other ambient sounds including road traffic. Therefore, measurements captured on-site without substantial influence from traffic were used to calculate sound pressure levels at each receiver.

Based on observations close to the quarry and processing area, the following plant and equipment was in use during the monitoring period.

1. Processing plant – Wash plant, 3 screens, front end loader, haulage trucks
2. Quarry -
 - Stage 2: Excavator on stockpile, with three FELs servicing trucks
 - Area 1A/1B: 2 x Rock saw, excavator popping out rock, grinder pump, hammer
 - Area 2B: Rock saw, grinder

Measurements close to these plant items established a representative noise model of the operations. A summary of noise emission data for these items is presented in Appendix A. See Figure 2 for work locations.



Figure 2 Work areas and noise sources included in the model

Predictions of noise at nearby receivers were based on measured onsite noise levels and propagation methods described in 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 the above, modelled noise levels for each monitoring location are presented in Table 6. Results are shown for equipment operating in each quarry area and processing plant. Modelled noise levels are within 2 dB of measured values indicating the model is sufficiently accurate to represent operating conditions.

Table 6 Extrapolated monitoring results to intermediate measurement locations

Location	Modelled noise level, dBA	Measured noise level, LAeq, 15 minute, dBA
OAS1	67	66
OAS2	67	67
OAS3	70	72

Based on measurements described in Table 5, extrapolated noise results for each receiver are presented in Table 7. Results are shown for all equipment operating. Extrapolated results demonstrate the Quarry is just compliant with the criteria for shoulder and daytime operations (within 2 dB) when all observed equipment is operating. Extrapolated contours are shown in Figure 3.

Table 7 Extrapolated monitoring results

Receiver	Noise criteria	Extrapolated noise level, LAeq, 15 minute	Comment
R3	40	38	All locations comply with noise limits.
R4	40	38	
R6	41	41	
R8	40	41	
All other receivers	40	See Figure 3	

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.

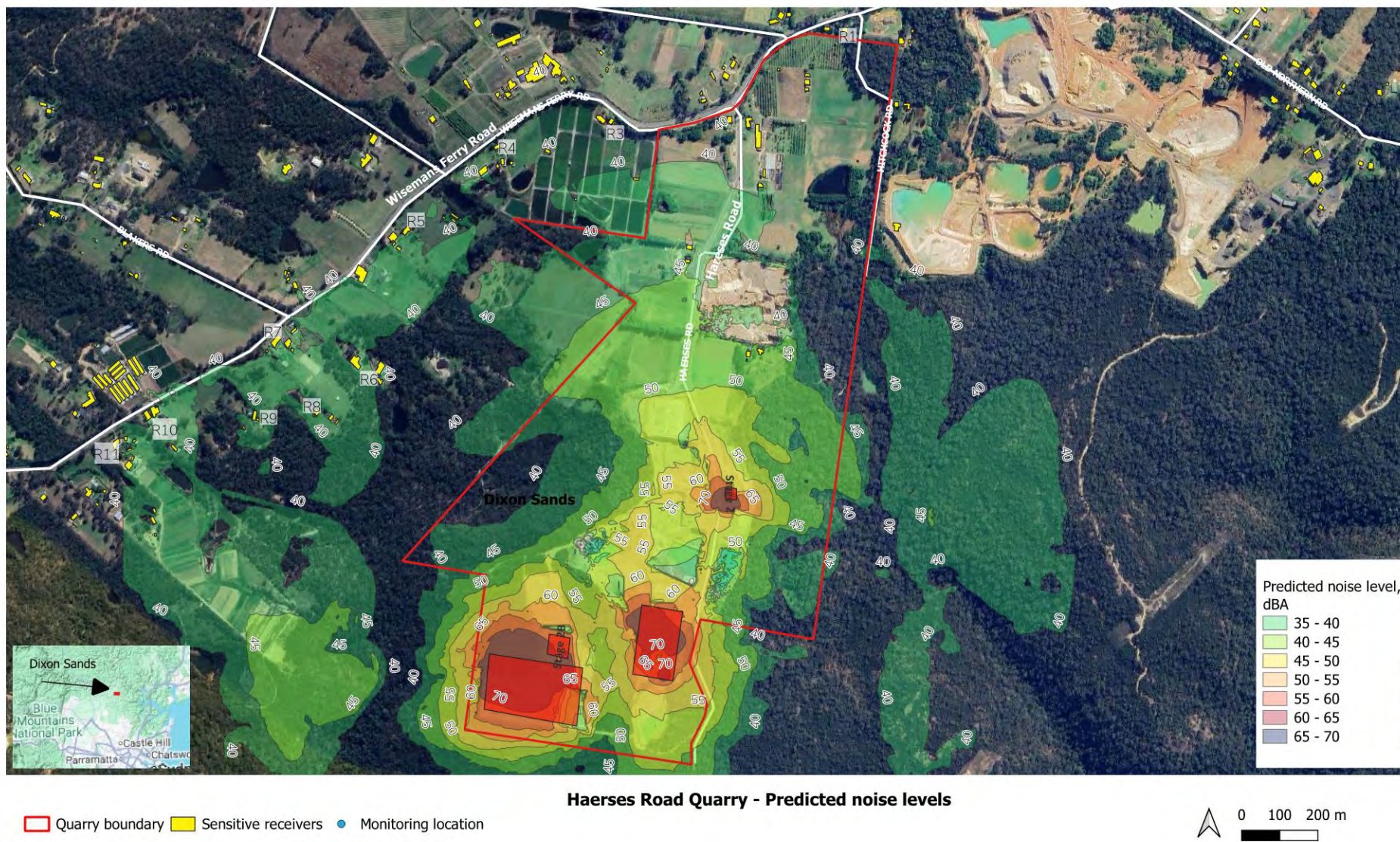


Figure 3 Extrapolated noise levels from Haerses Road quarry based on on-site measurements.



Appendix A. On-site measurements

Plant item	Height, m	Sound Power Level, (third octave, Hz), dBA																													
		Sum	12.5	16	20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1k	1.25k	1.6k	2k	2.5k	3.15k	4k	5k	6.3k	8k
Exc with hammer	1.5	120	52	58	58	65	74	83	88	92	95	101	99	104	96	99	102	100	105	110	107	109	112	110	111	109	108	104	100	94	88
Excavator loading moxy	2	109	38	43	47	54	58	64	81	78	80	87	86	88	85	86	90	97	100	99	98	99	99	100	99	98	97	94	90	87	82
Excavator with grinder	1.5	109	38	43	47	54	58	64	81	78	80	87	86	88	85	86	90	97	100	99	98	99	99	100	99	98	97	94	90	87	82
Excavator ripping	1.5	115	40	47	53	59	70	80	86	91	95	99	101	103	98	97	102	102	102	105	105	105	104	104	106	104	101	99	95	92	89
Rock saw stage 1	1	118	29	38	44	50	61	74	78	84	87	92	88	91	101	103	105	109	111	111	108	104	105	105	104	101	98	95	92	87	82
Screen loaded by excavator Processing	2	118	46	63	56	59	71	82	86	90	95	97	98	100	100	105	111	108	108	106	103	105	108	109	107	103	100	97	94	90	83
Screen loaded by excavator Stage 2	2	116	43	47	51	61	76	80	87	87	92	105	96	98	101	101	107	109	104	106	104	104	104	105	101	102	102	98	93	90	86
Washplant	1.5	105	27	37	53	48	56	62	67	74	90	92	84	89	82	92	90	90	92	93	95	93	94	95	94	93	92	93	88	86	82

Appendix E – Monthly Site Inspection



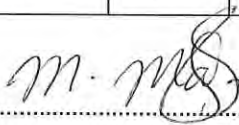
HAERSES ROAD QUARRY DIXON SAND, MAROOTA MONTHLY SITE CONDITION CHECKLIST

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:	30/9/2024			
Inspection by:	Melissa Mass			
Measured monthly rainfall (mm)	29/8/2024 - 30/9/2024 Rainfall = 51.2 mm			
	Yes (✓) No (X) NA	Comments	Actions	Actions Complete (Date/Sign)
SEDIMENT CONTROLS				
Site checked for potential erosion issues or transport of sediment from batters, vehicle access points, excavations, haul roads, vegetation clearing etc.	✓	No erosion or transport of sediment noted		
Effectiveness and capacity of Erosion and Sediment controls checked (drains, basins, filters etc.)	✓	All drains, basins etc clear		
Stockpiles located and maintained correctly	✓			
Tree clearance restricted to required area	N/A			
WATER QUALITY AND QUANTITY				
Monthly water quality samples collected from monitoring bores. Samples tested for pH and electrical conductivity	N/A			
Monthly surface water monitoring of the in-pit sump	✓			
6 monthly monitoring of groundwater quality at 13 bores	✓	undertaken by V&T		
Monthly depth measurement of all groundwater bores and comparison with rainfall	✓	undertaken by SEE on 30/9/2024		
Monthly inspection of drainage & sediment controls including water storages, pumps, pipes and dams' walls	✓	undertaken by SEE on 30/9/2024		
Any Fuel or oil spills reported and maintained	✓			
Fuels/chemicals stored in bunded areas	✓	EPA approved bunding		
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		
On site dust suppression	✓	use of water cart when required.		

Loads covered entering and leaving site	✓	In compliance with TMP		
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	✓			
NOISE				
Compliance with approved hours of operation	✓	In compliance with TMP + NMP		
No complaints received from surrounding residences	✓	No complaints this period.		
Annual attended and unattended monitoring	✓			
Either 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 compliance with NMP		
In the wet processing plant area, stockpiles are located along to western boundary of the area to shield loading and unloading activities	✓			
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 extraction area	✓	Undertaken by Hutchison and Weller		
FLORA & FAUNA/ REHABILITATION				
Sightings of threatened species reported	✓			
No disturbance of buffer/conservation areas	✓			
All buffer/conservation area fencing/markings intact	✓			
Rehabilitation undertaken to schedule	✓	monthly visit by Bush-it		
Success of rehabilitation of buffers, conservation areas & rehabilitation areas	✓			
Flora and fauna monitoring program undertaken to schedule	✓			
ARCHAEOLOGY				
Stop work if sites located – OEH notified	✓	None this period		

WASTE AND SITE CONDITION				
No rubbish visible or buried on site	✓			
Recyclables removed by licensed Contractors	✓	By council contractors		
Putrescible waste covered and regularly removed	✓			
ROADS AND TRANSPORT				
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 Hunny to check		
Truck movements have not exceeded 56 per day, or 20 between 6:00 am and 7:00 am	✓	Refer to Hunny to check		
Weighbridge/log book records retained and recorded	✓	Refer to truck records		
At the Channelised Right Hand turning lane located at the intersection of Wisemans Ferry Road and Haerses Road, for each month, undertake 1-hour duration monitoring during each of the peak periods below: 6:00 – 7:00 am, 8:00 – 9:00 am, and 3:00 – 4:00 pm Identify (when applicable) when haulage truck queuing in the right-hand turn lane into Haerses Road is exceeding the design capacity:	✓	6:00 – 7:00 am: NIL 8:00 – 9:00 am: NIL 3:00 – 4:00 pm: NIL		13/9/24  Jamie Baker
REPORTING				
Complaints register maintained	✓	updated and published monthly		
Environmental incidents reported to EPA and DPIE	✓	No incidents to report this period		
Monitoring results and statements of compliance with Development Consent and EPL conditions provided in the Annual Review and EPL Annual Return	✓			
Staff and Contractors undergo relevant environmental inductions. Sighting of training/induction records	✓			
PIRMP / SPILL KIT				
Spill kits inspected and used items replaced	✓			
A copy of PIRMP flowchart available in each Spill Kit	✓			

Signed:  (Environmental Officer or Delegate)

Appendix F – Waste and ENM/VENM Registers

Haerses Road Waste Tracking Register FY 2024-2025

Date	Waste Type	Amount	Measurement	Contractor	Disposal / Recycle	Receipt No
01/07/24 - 30/06/25	Genral Solid Waste - putrescible	12.48	cubic metre	Council Waste Contractor	Disposal	Council Rate
2/07/2024	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9819
9/08/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9834
28/08/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9842
18/09/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9849
27/09/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9852
26/09/2024	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9851
7/12/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9889
9/10/2024	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9858
3/12/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9888
3/12/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9887
16/12/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9894
19/12/2024	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9899
20/12/2024	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9900
8/01/2025	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9901
10/03/2025	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9926
6/05/2025	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9949
13/06/2025	Non-Putrescible skip	2	cubic metre	Asquith Mini Skips	Disposal	9977
6/06/2025	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9969
13/06/2025	Non-Putrescible skip	4	cubic metre	Asquith Mini Skips	Disposal	9976
01/07/24 - 30/06/25	Batteries	<0.1	cubic metre	Officeworks/Post Office	Recycle	N/A
01/07/24 - 30/06/25	General Solid Waste - recyclable	6.24	cubic metre	Council Waste Contractor	Recycle	Council Rate
01/07/24 - 30/06/25	Sewage -	As per manufacturer's specification				N/A
01/07/24 - 30/06/25	Printer Ink Catridge	0.1	cubic metre	Post Office or Officeworks	Disposal	N/A
01/07/24 - 30/06/25	Coffee Pods	<0.1	cubic metre	Return to manufacturer for recycling and composting	Recycle	N/A

Total	Non-Putrescible skip	50	m3
	Council Putrescible	12.48	m3
	Council Recycle	6.24	m3
	Printer Ink Catridge	0.1	m3
	Coffee Pods	<0.1	m3
	Sewage	As per manufacturer's specification	
	Batteries	<0.1	m3

Haerses Road Quarry - Material Transport Register

Material	VENM Owner	Transport Company	Registration No.	Transport Date	Tip Time	Batch No	Testing Certificate	Quantity (t)	Application
		No ENM / VENM imported to site during July 2024 - June 2025 period							

Total Annual Quantity (2024 Calendar year) (t)	-
Total Quantity (FY 2024 - 2025) (t)	-

Appendix G – Bush Regeneration Report



Dixon Sand (No.1) – Haerses Road
(Haerses Road DA 165-7-2005)



Annual Report

July 2024 – June 2025

Bush Regeneration Works

Author: Pat Walsh

Date amended: 22/07/2024

CONTENTS

Introduction	3
Haerses Road Biobank Site and (2009) Translocation Area	9
Scope.....	9
Resources – 104 Hours.....	9
Recommendations	10
Visual Buffer Screen – Wisemans Ferry Road	12
Scope.....	12
Resources – 75 Hours.....	12
Recomendations	12
Haerses Road Old Dam Area	14
Scope.....	14
Resources – 65 Hours.....	14
Recommendations	14
Mark’s Dam	16
Scope.....	16
Resources – 11.5 Hours.....	16
Recommendations	16
APPENDIX	17
Weed Species Controlled at Haerses Rd	17
Register of Herbicide records.....	18
Distribution of hours across management zones	19

INTRODUCTION

This report summarises the assisted bush regeneration work undertaken by Bush-it Pty Ltd for Dixon Sand (No.1) Pty Ltd between July 2024 and June 2025 in accordance with Haerses Road DA 165-7-2005. A total of 274 hours (\$18,421.76 excluding GST) were worked throughout the year with an average team size of four per visit.

Dixon Sand (No.1) 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 ha 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 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.

Additional areas under the Haerses Road are managed by Bush-it including a 30m wide vegetation buffer adjoining Wisemans Ferry Road, a parcel of degraded bushland in the north-west of the site, and a recently cleared area abutting a Marks dam in the west of the site.

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 m².
- 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.

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Overview of management zones and work areas

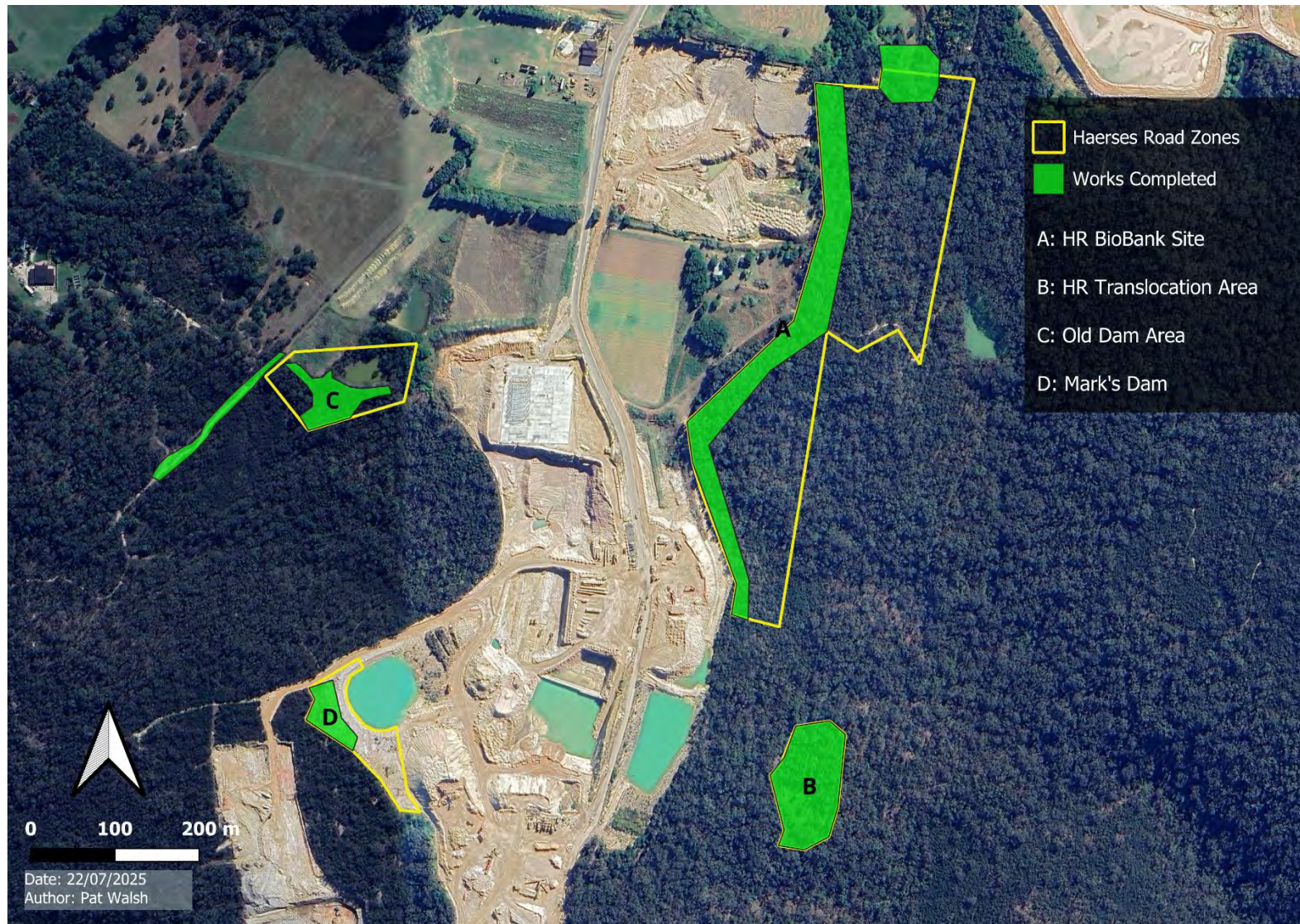


Figure 1 – Map depicting the areas worked and overall biodiversity offset boundary.

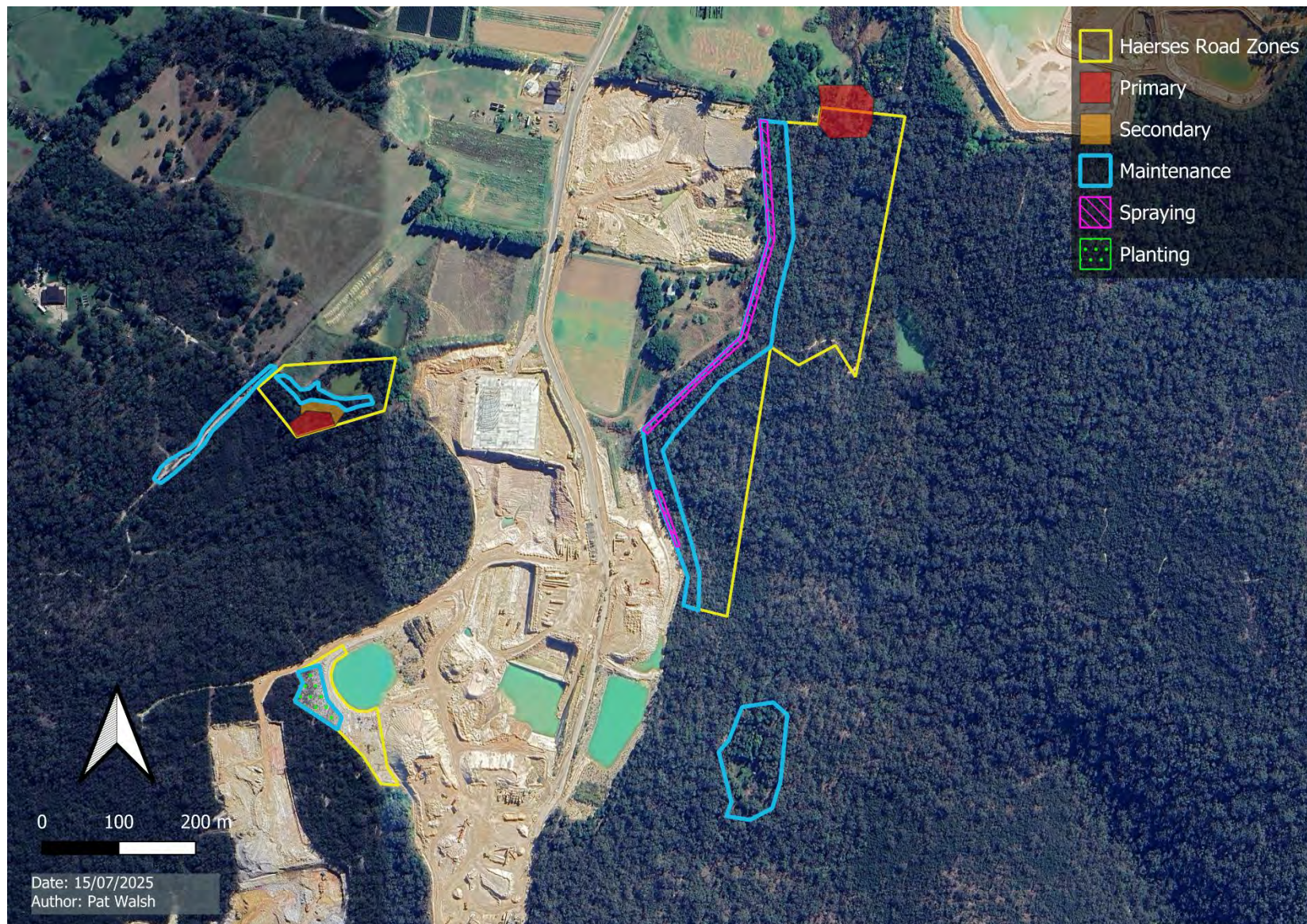


Figure 2 – Activities undertaken at Haerses Rd for 2024-2025.



Figure 3 – Map depicting the areas worked in the Wisemans Ferry Rd vegetation buffer.



Figure 4 – Activities undertaken at Wisemans Ferry Road for 2024-2025.

Haerses Road Biobank Site and (2009) Translocation Area

SCOPE

Haerses Road (HR) Biobank Site (Area A in **Figure 1**) 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 Biobank Site 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 (Area B in **Figure 1**) 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 HOURS

The majority of works for the HR Biobank Site was focused on controlling exotic grasses and annuals along the western boundary. Slashing of *Andropogon virginicus* and *Eragrostis curvula* in cleared areas abutting the offset boundary in addition to manual removal and spot spraying of specimens within the offset area. *Pallaea viridis* and *Arujia sericifera* are other exotic species that was commonly treated on the boundary of the offset area.

Lantana camara, *Ageratina adenophora* and *Solanum mauritianum* infestations were previously treated in the drainage line on the western boundary, follow-up treatment was undertaken in this area. Additionally, a scout for *A. adenophora* was undertaken further down the drainage line to ensure the species was not persisting into the core of the offset site.

As depicted in **Figure 2**, primary works on a large stand of Lantana were undertaken on and extending further from the very northern boundary.

Works in the translocation area continued to focus on the suppression of exotic grasses; *Andropogon virginicus*, *Eragrostis curvula* and *Cynodon dactylon*. Techniques included crowning/manual removal and brush cutting. Additionally, selective culling of *Kunzea ambigua* was undertaken where the specimens were growing above high-value Proteaceae species, such as *Banksia serrata*, *Lambertia formosa* or *Persoonia linearis*.

RECOMMENDATIONS

Continued maintenance of perennial grasses western boundary of HR Biobank Site and translocation areas is required owing to edge effects of neighbouring land. Additionally, close monitoring for *Pallaea viridis* within the general area and infestations of *Ageratina adenophora* within the drainage lines, specifically before it flowers in August-September.

Further works have commenced on the Lantana in the very north of the zone, secondary work is recommended to follow.

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.



Figure 5 – Before and after photos of *Andropogon virginicus* control prior to seeding bordering HR Biobank Site

SCOPE

Management and access of the buffer at the corner of Haerses Road and Wisemans Ferry Road (Area E in **Figure 3**) has improved since the roadwork undertaken by Roads and Maritime Services (RMS) in 2020. This is due to the western buffer strip being stripped back and capped with a sandstone crush in the previous financial year. The plantings conducted by Bush-it in that same year have also started to establish. The area is still prone to weed infestations due to exposure and soil compaction, however the weed density has been significantly reduced, and native competition has increased significantly since the sandstone capping conducted by Dixon Sand.

RESOURCES – 75 HOURS

In the capped area, continued monitoring of *Cynodon dactylon* was undertaken after the extensive spraying from last year. The spray application was relatively successful, with only small amounts of the species requiring manual removal. Annuals and exotic grasses were regularly slashed along the road edge and manually removed around plantings.

In uncapped areas, regular scans were conducted through the visual buffer targeting WONS, including the treatment and removal of significant infestations of *Asparagus aethiopicus*, *Asparagus asparagoides*, *Rumex sagittatus* and *Rubus fruticosus*.

50 plants were supplemented in September 2024, with the majority of specimens being planted in a cluster in the uncapped area to promote the break-down of compact soil and encourage soil enrichment. A dozen of *Angophora hispida* from the September planting were planted along the swale of the capped area. Additionally, a further 70 tube stock of *Syncarpia glomulifera* and *Banksia ericifolia* were planted in May 2025 among the plantings from last year in the uncapped area.

RECOMENDATIONS

Regular scans of buffer zones for high priority WONS species, in particular regenerating or new infestations of *Asparagus aethiopicus*, *Asparagus asparagoides*, *Rumex sagittatus* and *Rubus fruticosus*. Ongoing maintenance of annuals and perennial grasses, including biannual targeted sprays and deseeding when required.

Regular maintenance of most recent plantings; watering as required if season is particularly dry.



Figure 6 – Before and after of annual control within the capped area of the visual buffer.

Haerses Road Old Dam Area

SCOPE

An area first worked last financial year, the new addition under Haerses Rd is an area that surrounds the old dam on the western side of Haerses road (Area C in **Figure 1**), and north-west of the HR Biobank Site. An established stand of *Lantana camara* was identified in the area and set to be targeted. Beyond this weed incursion is core bushland that remains in excellent condition.

RESOURCES – 65 HOURS

Primary works continued from last financial year, consolidating a large pocket of *Lantana camara* within waterlogged areas and bordering the dam. Bush-it have significantly reduced the patch size, and the patch is now restricted to the most waterlogged area which are more difficult to access. Follow-up works have been successful in eliminating regeneration of lantana and other weed incursions. *Ageratina adenophora* is another dominant weed species in the area, efforts to reduce the cover of this species was undertaken using both manual remove and cut and paint.

Maintenance was also undertaken on the fire trail abutting the old dam area. *Andropogon virginicus* was slashed along the fire trail to prevent the species from proliferating into the pristine bushland either side of the trail.

RECOMMENDATIONS

The majority of Lantana stands have been eliminated, however secondary and maintenance works will be required to continue.

Management of *Ageratina adenophora*, especially prior to flowering in August/September is recommended, through slashing and/or spraying.



Figure 7 – Before and after of *Andropogon virginicus* along fire trail abutting old dam area.

SCOPE

Mark's Dam (Area D in **Figure 1**) is an area that is largely cleared with native regrowth emerging. The cleared area abuts a parcel a good quality Scribbly Gum – Dwarf Apple woodland to the west and a parcel of lower condition woodland to the east.

Bush-it was engaged to revegetate the cleared area bordering Mark's Dam.

RESOURCES – 11.5 HOURS

Bush-it planted 36 native shrub and canopy species into the cleared area of Mark's Dam, including; *Banksia ericifolia*, *Acacia falcata* and *Angophora hispida*. Guard installation and watering of tube stock followed the planting.

RECOMMENDATIONS

Continued maintenance and monitoring of plantings, including further watering if dry conditions persist.



Figure 8 – Planting at Mark's Dam.

APPENDIX

WEED SPECIES CONTROLLED AT HAERSES RD

Common name	Scientific name
Crofton Weed	<i>Ageratina adenophora</i>
Mistflower	<i>Ageratina riparia</i>
Whisky Grass	<i>Andropogon virginicus</i>
Moth vine	<i>Araujia sericifera</i>
Bridal Creeper	<i>Asparagus asparagoides</i>
Green Cestrum	<i>Cestrum parqui</i>
Fleabane	<i>Conyza bonariensis</i>
Pampas Grass	<i>Cortaderia selloana</i>
Common Couch	<i>Cynodon dactylon</i> var. <i>dactylon</i>
Summer Grass	<i>Digitaria ciliaris</i>
African Lovegrass	<i>Eragrostis curvula</i>
Cat's Ear	<i>Hypochaeris radicata</i>
Lantana	<i>Lantana camara</i>
Mickey Mouse Plant	<i>Ochna serrulata</i>
Paspalum	<i>Paspalum dilatatum</i>
Green Cliff Brake	<i>Pellaea viridis</i>
Blackberry	<i>Rubus fruticosus</i>
Fireweed	<i>Senecio madagascariensis</i>
Wild Tobacco	<i>Solanum mauritianum</i>
Purpletop	<i>Verbena bonariensis</i>

REGISTER OF HERBICIDE RECORDS

Date	Operator name	Herbicide name	Wind description	Direction	Notes	Application method	Qty	Volume	Start time	End time
21/02/2025	Josh	Glyphosate 360g/L	5.5	SE	Added chemwet, targetting annuals and exotic grasses	Spray	100	5	12:00:00	14:00:00

DISTRIBUTION OF HOURS ACROSS MANAGEMENT ZONES

Zone	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
Admin	12	1	2	2.75	2.75	0.5	0.5	1.5	0.5	0.5	4.5	0.5	29
HR - Offset Site (BCT site)	0	0	0	3.5	37.5	0	0	10	0	10	0	0	61
HR – Old Dam Area	30	0	7	0	0	0	15	0	0	10	0	3	65
HR - Translocation area	0	0	0	6.5	0	18	0	6	0	8	0	4.5	43
HR - Visual Screen Buffer	0	3	14	14	8	0	0	2	0	0	19	4.5	64.5
HR – Mark's Dam	0	0	0	0	0	0	0	0	0	0	8.5	3	11.5
TOTAL	42	4	23	26.75	48.25	18.5	15.5	19.5	0.5	28.5	32	15.5	274

Appendix H - Annual Biodiversity & Rehabilitation Management Report

**ANNUAL
BIODIVERSITY
&
REHABILITATION
MANAGEMENT
REPORT
HAERSES ROAD MAROOTA
2025**

Prepared for Dixon Sand Pty Ltd

September 2025



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**Annual Biodiversity
&
Rehabilitation Management
Report
Haerses Road Maroota
2025
Dixon Sand Pty Ltd**

This assessment has been prepared by

Melissa Mass

September 2025

Date

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TABLE OF CONTENTS

1	Introduction	1
1.1	Background	1
1.2	Objectives	1
2	Methodology.....	3
2.1	Site history.....	3
2.1.1	Extraction area stage 1.....	3
2.1.2	Extraction area stage 2.....	3
2.1.3	Extraction area A and B.....	3
2.1.4	Extraction area stage 3, 4 and 5.....	3
2.1.5	Wisemans Ferry Road buffer area	3
2.1.6	Maroota State Forest buffer area	3
2.2	Field survey.....	3
2.3	Criteria to monitor success of rehabilitation.....	4
3	Results.....	5
3.1	Extraction area stage 1	5
3.2	Extraction area stage 2	6
3.3	Extraction Area A and B.....	10
3.4	Wisemans Ferry Road buffer area.....	21
3.5	Maroota State Forest buffer area.....	23
4	Discussion and recommendations	24
5	Bibliography	25
6	Appendix	26

List of Tables

Table 1 Performance and criteria for Haerses Road Quarry	4
Table 2 Survey summary from Haerses Road monitoring quadrat 1	14
Table 3 Survey summary from Haerses Road monitoring quadrat 2	16
Table 4 Survey summary from Haerses Road monitoring quadrat 4	18

List of Images

Image 1 Haerses Road Quarry site	2
Image 2. Extraction area stage 1 being filled to final ground level	5
Image 3. Extraction area stage 1 active rehabilitation area	6

Image 4. Extraction area stage 2 dam construction site	7
Image 5. Extraction area stage 2 rehabilitation west of dam	7
Image 6. Emerging <i>Darwinia biflora</i> in stage 2 rehabilitation area	8
Image 7. <i>Acacia bynoeana</i> in stage 2 rehabilitation area	9
Image 8. Extraction area stage 2 active rehabilitation area aerial image	10
Image 9. Quadrat 1 start of midline point	13
Image 10. Quadrat 2 start of midline point	15
Image 11. Quadrat 4 start of midline point	17
Image 12. <i>Tetratheca glandulosa</i> flowering within quadrat 4	19
Image 13. <i>Darwinia biflora</i> flowering within quadrat 1	20
Image 14. Western side of Haerses Road within the Wisemans Ferry Road buffer area	22
Image 15. Eastern side of Haerses Road within the Wisemans Ferry Road buffer area.....	22

Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BC Act	<i>Biodiversity Conservation Act 2016</i>
BCT	Biodiversity Conservation Trust
EEC	Endangered Ecological Community
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environmental Protection and Biodiversity Conservation Act 1999</i>
HRBOA	Haerses Road Biodiversity Offset Area
HTW	High Threat Weed
KPI	Key Performance Indicators
KTP	Key Threatening Process
LEP	Local Environmental Plan
Mod 6	Modification 6
NSW OEH	New South Wales Office of Environment and Heritage
ONR	Old Northern Road
PCT	Plant Community Type
SEPP	State Environmental Planning Policy
THSC	The Hills Shire Council
VIS	Vegetation Information System
WoNS	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 site contains a Biodiversity offset area which was established via the Old Northern Road Quarry consent, modification 5, in 2017. This area is addressed in detail within the Old Northern Road Annual Biodiversity and Rehabilitation Management Report. The Haerses Road site also contains a Biodiversity Biobank area which was established in 2018 to offset the quarry operations approved within modification 1. The Biobank area is not addressed in detail within this report as a separate report is submitted to the Biodiversity Conservation Trust (BCT) which provides relevant information regarding the current status of the offset area.

1.1 BACKGROUND

Dixon Sand Pty Ltd operates a sand and sandstone 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 has been modified several times since with the most recent modification (Mod 6) being approved in September 2023.

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 are 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.

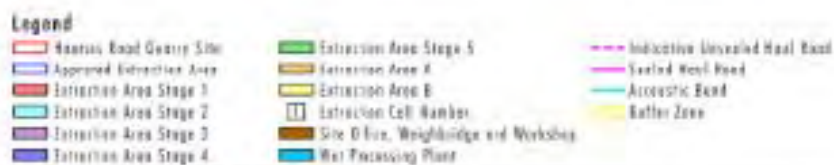


Image 1. Haerses Road Quarry site (source Umwelt Australia 2019)

2 METHODOLOGY

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, 2A, 2B, 3A and 3B. 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 Extraction area stage 3, 4 and 5

Extraction area stage 3, 4 and 5 are currently managed as agricultural land which is expected to continue for the next reporting period. A sandstone processing facility has been built and became operational within stage 3 during the reporting period.

2.1.5 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. Assisted rehabilitation was undertaken in 2023 and 2024 to aid with the restoration of the 30m buffer.

2.1.6 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. A small area within the Maroota State Forest buffer on Lot 177 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 within the Haerses Road site however some Lantana removal along the fringe of the Biobank site has

begun to prevent further spread of the weed into the native vegetation. The current condition of the Haeres Road Biodiversity Offset Area is detailed in the Old Northern Road Annual Biodiversity and Rehabilitation Management Report. The 2025 survey of this area found that the native vegetation continues to be resilient and self sustaining with threatened species remaining persistent.

Baseline monitoring locations within each vegetation community of Extraction Area A and B 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. These flora surveys are undertaken before extraction of each cell to determine a baseline condition of the native vegetation community present to assist with rehabilitation of the site post extraction operations. 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

Annual vegetation surveys were undertaken for the Haerses Road Quarry site during this reporting period. Rehabilitation work has continued in extraction area stage 2 while the rehabilitation of agricultural land in extraction area stage 1 will continue via meeting the required land form and contour during the next reporting period.

3.1 EXTRACTION AREA STAGE 1

Rehabilitation work within stage 1 has continued with clay and shale material from Extraction Areas A and B along with imported VENM and ENM being used to raise the surface level. These works are expected to continue during the 2025-2026 reporting period with an aim at rehabilitating stage 1 to agricultural usage sometime in the next two years.



Image 2. Extraction area stage 1 with rehabilitation material raising the ground level to final contour height



Image 3. Extraction area stage 1 active rehabilitation area (Image sourced from Google Earth Pro August 2024)

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 water storage 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*, *Tetratheca glandulosa* and *Acacia bynoeana* 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 which had previously sunk slightly on the western edge has undergone some remediation work to improve structural integrity. The dam had been leaking and therefore soils to the west became saturated and much of the rehabilitating vegetation was affected. Since corrective works have taken place the soil moisture has stabilised and plant recovery is evident. It is unlikely further rehabilitation assistance will be required. Regular weed sweeps are undertaken by the Bush Regeneration contractor to prevent weed species becoming established.



Image 4. Extraction area stage 2 dam



Image 5. Stage 2 rehabilitation area west of the dam



Image 6. *Darwinia biflora* flowering in Stage 2 rehabilitation area west of the dam



Image 7. *Acacia bynoeana* in Stage 2 rehabilitation area west of the dam



Image 8. Extraction area stage 2 active rehabilitation area

3.3 EXTRACTION AREA A AND B

Sand and sandstone extraction is currently in active operation within Cell 1A, 1B, 2B, 2B, 3A and 3B within Lot 216 DP 752039.

Offsetting requirements for these areas incorporate vegetation conservation areas within the Biodiversity Biobank areas at Haerses Road and Porters Road at Kenthurst. The Haerses Road Biobank area is still in passive management phase although it is likely active management will be triggered within the 2025/2026 reporting period. The Porters Road site at Kenthurst entered active management during the reporting period. Separate reports for the current condition status of the Biobank sites are provided during the year to the BCT.

Baseline vegetation data within Extraction Areas A and B were obtained prior to extraction operations as outlined within the Haerses Road Quarry Biodiversity and Rehabilitation Management Plan V5 2020. The 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. Extraction of sand and sandstone within Cell 1 (A & B) begun immediately following consent therefore establishing a monitoring site was not possible. The monitoring locations within cell 2 and 3 has now been disturbed for sand and sandstone extraction therefore monitoring of these sites are not able to continue. The remaining two monitoring locations, within Cells 4 – 5, were surveyed in August 2025 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 vegetation in the surveyed area is described in the Biodiversity Rehabilitation Management Plan V5 2020 as containing the following vegetation communities:

- PCT978/HN560 – Needlebush – Banksia Wet Heath on Sandstone Plateaux of the Sydney Basin Bioregion (consistent with Coastal Upland Swamp in the Sydney Basin Bioregion EEC (BC Act and EPBC Act)) – 0.95 ha
- PCT 1083/HN566 – Red Bloodwood – Scribbly Gum Heathy Woodland on Sandstone Plateaux of the Sydney Basin Bioregion – 10.53 ha
- PCT 1134/HN852 – Scribbly Gum – Hairpin Banksia – Dwarf Apple Heathy Woodland on Hinterland Sandstone Plateaux of the Central Coast, Sydney Basin Bioregion – 12.32 ha and
- 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 – 2.98 ha.

In 2023 the Eastern NSW PCT Classification was officially endorsed by the NSW State Government which oversaw the reclassification of all PCT's along the east coast. PCT978 was split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered PCT3924 Sydney Coastal Upland Swamp Heath. PCT1083 was also split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered as PCT3593 Sydney Coastal Sandstone Bloodwood Shrub Forest. PCT1134 was amalgamated into 3586 Northern Sydney Scribbly Gum Woodland due to the strong association with the new PCT. PCT 1181 was split into several PCT's which had association with the species present. The most relevant and best suited PCT for the vegetation within the Haerses Road site is now considered as PCT3617 Sydney Hinterland Peppermint-Apple Forest. Information collected during the survey period has been summarised in Table 3 while a full list of flora recorded within the survey flora survey quadrats can be found in Appendix A.

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.

Each of the current survey locations had some reduction noted in ground cover species, specifically forbs and grasses. This could be due to the variation in recent climatic conditions from drought over 2017-2020, extreme wet conditions over 2020-2023 with near average rainfall and temperatures over 2023-2025. Slight fluctuations are considered normal and will be monitored over time to determine if climatic conditions are the cause of species diversity increase or reduction.

Quadrat 2 was impacted upon by the leaking dam in Stage 2 which resulted in the immediate area having continuous saturated soils over an extended period of time. This resulted in the loss of many shrubs and some trees which could not withstand the wet soils. Grasses, in particular sedges and rushes, have persisted well and dominant the overall cover of the quadrat. Recovery of the shrub stratum is expected to occur with some seedlings noted as already beginning to emerge.

Threatened flora species were again identified within Quadrat 1 and 4 with *Darwinia biflora* and *Tetraloche glandulosa* abundant in both quads while *Grevillea parviflora subsp. supplicans* was located within quad 4.



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	Corymbia gummifera, Eucalyptus haemastoma, Eucalyptus punctata, Angophora hispida, Eucalyptus oblonga		
Shrubs	0.5 – 2m	Grevillea buxifolia, Banksia ericifolia, Hakea dactyloides, Lambertia Formosa, Calytrix tetragona, Leptospermum trinervium, Petrophile pulchella		
Groundcover	0.1 – 0.5m	Lomandra multiflora, Entolasia stricta, Actinotus minor, Asplenium trichomanes, Cyathochaeta diandra		
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		28		60
Grasses etc		10		30
Forbs		6		8
Ferns		2		1
Other		2		1
High Threat Weeds		0		0
Ecosystem Functions				
Length of habitat logs	25m			
Litter cover	20%			
Bare ground cover	0%			
Cryptogam cover	10%			
Rock cover	5%			
Overstorey foliage cover	40%			
Mid-storey foliage cover	60%			
Groundcover foliage cover	40%			



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>		
Shrubs	0.5 – 2m	<i>Banksia ericifolia</i> , <i>Grevillea buxifolia</i> , <i>Leptospermum trinervium</i> , <i>Calytrix tetragona</i> , <i>Dampiera stricta</i>		
Groundcover	0.1 – 0.5m	<i>Lomandra multiflora</i> , <i>Cyathochaeta diandra</i> , <i>Lepidosperma neesii</i> , <i>Cassytha glabella</i> , <i>Drosera peltata</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		2		5
Shrubs		8		30
Grasses etc		8		80
Forbs		1		2
Ferns		0		0
Other		1		2
High Threat Weeds		0		0
Ecosystem Functions				
Length of habitat logs	23m			
Litter cover	45%			
Bare ground cover	0%			
Cryptogam cover	10%			
Rock cover	0%			
Overstorey foliage cover	5%			
Mid-storey foliage cover	30%			
Groundcover foliage cover	84%			



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	Corymbia gummifera, Eucalyptus haemastoma, Angophora hispida, Eucalyptus oblonga, Eucalyptus squamosa			
Shrubs	0.5 – 2m	Grevillea speciosa, Boronia floribunda, Banksia ericifolia, Lambertia Formosa, Isopogon anemonifolius, Leptospermum trinervium			
Groundcover	0.1 – 0.5m	Entolasia stricta, Lomandra obliqua, Actinotus minor, Themeda australis, Cheilanthes sieberi			
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		60	
Grasses etc		9		40	
Forbs		7		5	
Ferns		2		1	
Other		2		1	
High Threat Weeds		0		0	
Ecosystem Functions					
Length of habitat logs					18 m
Litter cover					25%
Bare ground cover					0%
Cryptogam cover					0%
Rock cover					0%
Overstorey foliage cover					40%
Mid-storey foliage cover					60%
Groundcover foliage cover		47%			



Image 12. *Tetratheca glandulosa* flowing in Quadrat 4



Image 13. *Darwinia biflora* flowering in Quadrat 1

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 had resulted in much of the existing native vegetation buffer being removed and disturbance to some of the planted buffer area.

Assisted rehabilitation was undertaken in 2023 with soil and mulch containing native seed bank from Cells 2a and 2b spread on the western side of Haerses Road intersection with a diversity of *Eucalyptus*, *Acacia*, *Leptospermum* and native grass and forb species emerging. Further assisted planting has taken place during 2024 to complement the native species emerging from the seed bank. Ongoing weed management has been a priority in this area, particularly for exotic annual weeds which were prolific immediately following the road widening disturbance. Continued monitoring of this area will ensure the buffer meets the expectations of providing suitable vegetation screening from Wisemans Ferry Road.

The Eastern side of the Haerses Road intersection has shown limited signs of natural regeneration due to the density of exotic pasture species which dominate the immediate area. Assisted rehabilitation planting has taken place during 2024 and 2025 with deep rooting species with the hope that the compacted soils will be broken down in time so successful planting of other native species may occur.

Exotic species occur in both areas with Weeds of National Significance (WoNS) and High Threat Weeds (HTW) present. Weed density has been dramatically decreased over the reporting period from a dedicated weed management program. Weed management and control will continue during the next reporting period with the WoNS and HTW being the species of targeted priority.



Image 14. Western side of Haerses Road within the Wisemans Ferry Road buffer area



Image 15. 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. The Bush Regeneration contractor undertake maintenance work on a regular basis in this area removing weeds and thinning recovering pioneer native species which would otherwise dominate the site. An annual report from the Bush Regeneration contractor is provided to Dixon Sand outlining the rehabilitation work undertaken with achievements outlined in detail.

4 DISCUSSION AND RECOMMENDATIONS

The rehabilitation of the Haerses Road Quarry site has continued throughout the 2024-2025 reporting period within extraction areas stage 1 and 2, work continuing in the Maroota State Forest buffer area and within the Wisemans Ferry Road buffer area. Rehabilitation work is in the early stages and will increase with both intensity and measurable criteria over the next 5 year 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
- Continued import of VENM and ENM to assisting in filling the void
- Continued work towards final landform for active rehabilitation areas
- Stockpile material layered to create suitable agricultural terrain

Extraction area stage 2

- Native vegetation growth to the west of the dam
- Continued weed management in this area

Wisemans Ferry Road buffer area

- Continued weed management in this area

Maroota State Forest buffer area

- Continued bush regeneration maintenance work in disturbed area
- Continued weed management in this area

Extraction area A and B

- Continued monitoring of vegetation quadrats in areas 4 and 5

It is not expected any new areas of rehabilitation will take place within the next reporting period as extraction across the site continues.

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6 APPENDIX

APPENDIX A – FLORA IDENTIFIED ONSITE AT HAERSES ROAD

Status	Botanical Name	Common Name	Plot 1	Plot 2	Plot 4
	<i>Acacia linifolia</i>	White Wattle			
	<i>Acacia suaveolens</i>	Sweet Wattle			1
	<i>Acacia ulicifolia</i>	Prickly Moses	1		1
	<i>Actinotus minor</i>	Lesser Flannel Flower	4a		4a
	<i>Allocasuarina distyla</i>	Scrub She-oak			
	<i>Angophora hispida</i>	Dwarf Apple	2	1	1
	<i>Aristida warburgii</i>	Fine Leaf Wire Grass	3		3
	<i>Asplenium trichomanes</i>	Common Spleenwort	2		2
	<i>Austrostipa pubescens</i>	Spear Grass	3		3
	<i>Banksia ericifolia</i>	Heath Leaved Banksia	4a	4a	4a
	<i>Banksia serrata</i>	Old Man Banksia			
	<i>Banksia spinulosa</i>	Hairpin Banksia	3		2
	<i>Billardiera scandens</i>	Hairy Apple Berry			
	<i>Boronia floribunda</i>	Pale Pink Boronia	3		4a
	<i>Boronia ledifolia</i>	Sydney Boronia			2
	<i>Bossiaea obcordata</i>	Spiny Bossiaea	3		3
	<i>Bossiaea scolopendria</i>	Sword Bossiaea			
	<i>Calytrix tetragona</i>	Common Fringe Myrtle	3	4a	2
	<i>Cassytha glabella</i>	Slender Devils Twine	2	3	2
	<i>Caustis pentandra</i>	Thick Twist Rush	3		3
	<i>Cheilanthes sieberi</i>	Mulga Fern			2
	<i>Corymbia gummifera</i>	Red Bloodwood	2		1
	<i>Cyathochaeta diandra</i>	Sheath Rush	2	4a	2
	<i>Dampiera stricta</i>	Blue Dampiera	2	3	
V	<i>Darwinia biflora</i>		2		2
	<i>Dillwynia retorta</i>	Heathy Parrot Pea	2		2
	<i>Drosera peltata</i>	Sundew	3	3	3
	<i>Entolasia stricta</i>	Wiry Panic	3	3	3
	<i>Epacris pulchella</i>	Wallum Heath	2		
	<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
	<i>Gleichenia dicarpa</i>	Pouched Coral Fern	1		
	<i>Gonocarpus teucroides</i>	Raspwort	2		2
	<i>Goodenia bellidifolia</i>	Daisy-leaved Goodenia	1		1
	<i>Goodenia hederacea</i>	Forest Goodenia	1		
	<i>Grevillea buxifolia</i>	Grey Spider Flower	2	3	2
En	<i>Grevillea parviflora subsp. supplicans</i>	Small-flowered Grevillea	1		
	<i>Grevillea speciosa</i>	Red Spider Flower	3		3
	<i>Hakea dactyloides</i>	Broad Leaved Hakea	1	2	1
	<i>Hakea sericea</i>	Needlebush			1
	<i>Hibbertia aspera</i>	Rough Guinea Flower			1
	<i>Hibbertia diffusa</i>	Wedge Guinea Flower	1		
	<i>Hybanthus monopetalus</i>	Slender Violet			2
	<i>Isopogon anemonifolius</i>	Broad-leaved Drumsticks	1		2

	<i>Juncus usitatus</i>	Common Rush		3	
	<i>Lambertia formosa</i>	Mountain Devil	2	1	2
	<i>Lepidosperma laterale</i>	Variable Swordsedge	1	3	1
	<i>Lepidosperma neesii</i>	Stiff Rapier-sedge		3	
	<i>Leptospermum trinervium</i>	Flaky-barked Tea-tree	2	2	2
	<i>Leucopogon microphyllus</i>	Small Leaved White Beard	1		
	<i>Lomandra brevis</i>	Tufted Mat-rush			
	<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	2	2
	<i>Lomandra obliqua</i>	Fish Bones	2		3
	<i>Lomatia silaifolia</i>	Crinkle Bush	1		1
	<i>Micrantheum ericoides</i>	Micrantheum	1		1
	<i>Micromyrtus ciliata</i>	Fringed Heath-myrtle		1	1
	<i>Mirbelia rubiifolia</i>	Heath Mirbelia			
	<i>Patersonia sericea</i>	Silky Purple Flag			
	<i>Persoonia lanceolata</i>	Lance Leaf Geebung			1
	<i>Persoonia levis</i>	Broad Leaved Geebung	1		1
	<i>Petrophile pulchella</i>	Conesticks	2		1
	<i>Philotheca salsolifolia</i> <i>subsp. salsolifolia</i>	Philotheca	1		
	<i>Phyllanthus hirtellus</i>	Thyme Spurge	2		2
	<i>Pimelea linifolia</i>	Slender Rice Flower			
	<i>Platysace linearifolia</i>	Carrot Tops	1		
	<i>Pteridium esculentum</i>	Bracken Fern			
	<i>Rytidosperma racemosum</i>	Wallaby Grass			
	<i>Scaevola ramosissima</i>	Purple Fan-flower	1		2
	<i>Schoenus ericetorum</i>	Heath Bog Rush		2	
V	<i>Tetradlea glandulosa</i>	Glandular Pink Bells	2		3
	<i>Themeda australis</i>	Kangaroo Grass	2		3
	<i>Xanthorrhoea resinosa</i>	Grass Tree	1		1

En – Endangered species V – Vulnerable species

Key

Braun-Blanquet scale.

- 1 <5% cover & 3 or less individuals
- 2 <5% cover & more than 3 individuals sparsely scattered
- 3 <5% cover common and consistent
- 4a <5% cover & very abundant many individuals
- 4b 5 – 25% cover
- 5 25 – 50% cover
- 6 50 – 75% cover
- 7 75% - 100% cover

Appendix I – Section 94 Contribution

Haerses Road Quarry
Section 94 Contribution - Summary

Month	Tonnage	S94 Paid
Jul-24	18,878.26	\$ 20,954.87
Aug-24	19,604.41	\$ 21,956.94
Sep-24	17,200.53	\$ 19,264.59
Oct-24	18,989.23	\$ 21,267.94
Nov-24	19,450.96	\$ 21,785.08
Dec-24	13,216.19	\$ 14,802.13
Jan-25	13,494.19	\$ 15,113.49
Feb-25	18,337.22	\$ 20,537.69
Mar-25	18,378.97	\$ 20,584.45
Apr-25	15,799.05	\$ 17,694.94
May-25	17,964.92	\$ 20,120.71
Jun-25	19,590.67	\$ 21,941.55
TOTAL	210,904.60	\$ 236,024.38

Appendix J – CCC Meeting Minutes



**MINUTES OF THE BI-ANNUAL
COMMUNITY CONSULTATIVE COMMITTEE
WEDNESDAY 6 NOVEMBER 2024
HAERSES ROAD QUARRY, ADMINISTRATION BUILDING**

PRESENT	NAME	ORGANISATION
	Lisa Andrews (LA)	Independent Chairperson
	David Dixon (DD)	Dixon Sand
	Jamie Baker (JB)	Dixon Sand – Business Development Manager
	Melissa Mass (MM)	Dixon Sand - Ecologist
	Farley Roberts (FR)	Community Representative
	Lisa Aylward (LAy)	Maroota Public School Representative
	Kristine McKenzie (KM)	The Hills Shire Council Representative
	Zoe Ridgeway (ZR)	Bush-It (alternate)
	Pat Schwartz (PS)	Community Representative
	Nathan McDonough (NM)	Dixon Firestone Business Partner (<i>observer</i>)
APOLOGIES	Hunny Churcher (HC)	Environmental Officer, Dixon Sand
	Timothy Baker (TB)	Bush Regeneration Contractor (Bush-It)
	Jemma Roberts (JR)	Community Representative (alternate)

WELCOME & INTRODUCTION	LA opened the meeting at 1.02pm following a light luncheon. All members were welcomed. Nathan McDonough was introduced by DD as Dixon Firestone business partner.			All members introduced themselves to NM.
APOLOGIES	As listed above.			
DECLARATIONS OF INTEREST	LA declared that she is approved by the Department of Planning to chair the meeting and engaged by Dixon Sand.			
BUSINESS ARISING FROM PREVIOUS MEETING (28/5/24)	NO.	ITEM	RESPONSIBILITY	No other business arising.
	1	Send out finalised Terms of Reference. Complete – ratified at the previous meeting and finalised.	LA	
CORRESPONDENCE (as emailed with Meeting Notice on 4/10/24 with 1 additional item)	31/5/24 – Email from FR with his and JR's signed governance forms. Acknowledged. 5/6/24- Email to members with draft minutes for review 12/6/24 – Email to members with the finalised minutes. 3/10/24 – Email from HC advising that Old Northern Road and Haerses Road Quarries: 2023-2024 Annual Reviews have been submitted to DPHI 4/10/24 – Email to members with meeting notice & agenda for 28/5/24.			

	4/11/24 – Email to members with the reminder for this meeting.																	
OPERATIONS & PROGRESS	JB commenced the presentation, advising of the operations and progress with the Old Northern Road Quarry, followed by the Hearses Road Quarry. This included an updated aerial view of Lots 1 & 2 since May 2024. JB advised that the silt ponds have been capped. All biodiversity credits have been retired.	Questions asked and answered throughout the presentation. Slides 6 & 7																
ONR – Proposed DA Mod 6 - Extraction within existing cells to maximise resource	- Increase the depth of extraction within Lot 196 DP752025 to within 2m of the highest recorded regional wet weather groundwater level; - Import up to 250,000 tonnes per annum of virgin excavated natural material (VENM) and excavated natural material (ENM) within existing incoming trucks; and - Extend the quarry life by 11 years until 2053. Timeline <table><tr><th>Date</th><th>Milestone</th></tr><tr><td>January 2023</td><td>Scoping Letter lodged with DPHI</td></tr><tr><td>March 2023</td><td>DPHI confirmed pathway and requests additional traffic assessment and rehabilitation and final landform assessment to be updated</td></tr><tr><td>September 2023</td><td>Consultation with Agencies</td></tr><tr><td>November 2023</td><td>Modification Report submitted to DPHI</td></tr><tr><td>November 2023 – April 2024</td><td>Public Exhibition, received submissions from the community and agencies, submissions report submitted to DPHI</td></tr><tr><td>May 2024</td><td>Received further comments from DCCEEW-Water. Submission report being prepared.</td></tr><tr><td>July 2024</td><td>DPHI issued an RFI</td></tr></table>	Date	Milestone	January 2023	Scoping Letter lodged with DPHI	March 2023	DPHI confirmed pathway and requests additional traffic assessment and rehabilitation and final landform assessment to be updated	September 2023	Consultation with Agencies	November 2023	Modification Report submitted to DPHI	November 2023 – April 2024	Public Exhibition, received submissions from the community and agencies, submissions report submitted to DPHI	May 2024	Received further comments from DCCEEW-Water. Submission report being prepared.	July 2024	DPHI issued an RFI	Sides: 8 & 9
Date	Milestone																	
January 2023	Scoping Letter lodged with DPHI																	
March 2023	DPHI confirmed pathway and requests additional traffic assessment and rehabilitation and final landform assessment to be updated																	
September 2023	Consultation with Agencies																	
November 2023	Modification Report submitted to DPHI																	
November 2023 – April 2024	Public Exhibition, received submissions from the community and agencies, submissions report submitted to DPHI																	
May 2024	Received further comments from DCCEEW-Water. Submission report being prepared.																	
July 2024	DPHI issued an RFI																	
DEPARTMENT OF PLANNING, HOUSING & INFRASTRUCTURE SITE AUDIT	JB advised that following the submission of the Annual Review documents, DPHI undertook a site inspection at both quarries. There were no issues or items of concerns identified during the audit. The Department has reviewed the Annual Review and considers it to general satisfy the reporting requirements of the consent.																	

	KM asked if DPHI were going to provide Dixon Sand with an audit report. DD responded no. DPHI only notify if there is an issue. JB commented that an email had been received stating everything was okay. LA confirmed that the approved Annual Review is uploaded to the project website.														
ENVIRONMENTAL MONITORING RESULTS	JB commenced the environmental monitoring results, by showing the locations of devices.	Slides: 12 to 16													
TEOM DATA	JB explained the TEOM data and measurement criteria. - TEOM and Meteorological station records PM10 levels and weather data such as rain, temperature, wind etc. - Monitoring Criteria – - Long term: Annual PM10 average (light blue line) should not exceed the annual average criteria (pink line – 30µg/m3) – - Short term: 24hr PM10 average (blue bars) should not exceed the 24hr PM10 NEPM Criteria (yellow line – 50µg/m3) – - 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: - Notify EPA - Take immediate action to reduce PM10 levels - Stop works if levels do not fall below 42µg/m3 within 1 hour - TEOM station represent the EPL Points 1 & 3	Slide: 18													
DEPOSITIONAL DUST DATA	Dust data for this monitoring period: June 2023 –May 2024: <table><thead><tr><th>Date</th><th>Milestone</th></tr></thead><tbody><tr><td rowspan="5">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>D6 School</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> Dust exceedances reported to EPA & DPHI which was caused by nearby agricultural activities. Dixon Sand are still trying to get approval for some of the locations of	Date	Milestone	Old Northern Road	D1A Access road	D4 Rehab area	D5 Bundwall	D6 School	D7 Mullock Heap	Haerses Road	D8 Olive Grove	D10 Haerses Road (EPL Point 3)	D11 Receiver R6	D12 Receiver R8	See graphs for results. Slides: 20 - 28
Date	Milestone														
Old Northern Road	D1A Access road														
	D4 Rehab area														
	D5 Bundwall														
	D6 School														
	D7 Mullock Heap														
Haerses Road	D8 Olive Grove														
	D10 Haerses Road (EPL Point 3)														
	D11 Receiver R6														
	D12 Receiver R8														

	monitors to be relocated to avoid reoccurrences of the spikes from agricultural activities. It was noted that the results at the school were below average.	
NOISE MONITORING	ONR & Haerses Rd: Tables of noise monitoring locations indicating: Receivers, property addresses, descriptions and extrapolated monitoring results. KM enquired about the corner of Wisemans Ferry Rd & Hitchcock Road. MM advised that it was a non-sensitive receiver and the location is noisy & dusty so agreed that it will be affected.	See Slides 30-36 For location of monitoring sites and summary of data.
GROUND WATER MONITORING	GW Monitoring wells • ONR 11 x BH • HR 22 x BH GW levels: • Monthly + continuous data loggers GW quality sampling & lab analysis: • 6 monthly sampling and testing. MM advised that it hasn't rained since March and that most bores are going down slowly.	Graphs explained - See Slides 38-49 (maps)
BIODIVERSITY AND REHABILITATION (Threatened Species Update)	MM commenced the presentation by advising that the site rehabilitation is progressing well and they are getting on top of weed management. Monitoring of fauna & flora on the site continues. Biodiversity and Rehabilitation Annual Report 2024 (AR) 🌈 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. 🌈 The 2024 Biodiversity and Rehabilitation Annual Report was completed in September 2024 and submitted with the Annual Review on the 30th of September 2024. 🌈 The results found the rehabilitation areas are thriving and increasing in diversity and density. Ideal growing conditions with favourable temperatures and regular rainfall over the past 4 years has improved the overall biodiversity of all rehabilitation and monitoring sites. MM advised that the AR is now available on the website. Monitoring Fauna	See Slides 50 – 64 including photographs

	Fauna monitoring is undertaken in the summer months when activity is at the highest and more likely to be observed - o Fauna monitoring includes: Recording bat calls via an Anabat sound recorder; - o The use of unbaited infra-red motion detection cameras on animal trails; - o Looking for scats, prints and other signs such as diggings, scratches, feed scars; - o Aural survey for birds; and - o Visual observation. MM commented on the Dural Land Snail, stating that they only travel 1 metre around their home for their whole life. MM will bring a sample of the snail to the next meeting. Action. Discussions on the kunzia plant on the flat rock. KM asked if they are dug up and moved around. MM responded no, they are left where they are. DD explained that the plant thrives from the radiant heat from the rock. Monitoring flora • Flora monitoring is undertaken in the winter months as many of the threatened species are flowering or budding up preparing for early spring flowering • Vegetation quadrats are repeated annually in monitoring locations. Quadrats are 20m x 50m, 20m x 20m and 1m x 1m which record the following information: - o Species present and percentage of cover; - o Stem class including recruitments present or absent; - o Number of hollow bearing trees; - o Total length of coarse woody debris; - o Litter cover, rock surface area, bare ground	
BUSH REGENERATION WORKS	Summary of Assisted Bush Regeneration Work - May 2024 to November 2024- presented by ZR who advised that they have been able to get on top of the weeds. <u>Old Northern Rd Works Areas:</u> <u>Rehabilitation of Lot 196</u> - o Works over this period focused exclusively on revegetating the Commander area. - o In late September to early October approx. 150 viro-tube specimens were planted, watered with seasol mix and guarded into Commander, with regular watering follow-up sessions. The plantings covered the following species: Acacia falcata, Acacia longifolia, Acacia suaveolens, Angophora hispida, Banksia ericifolia, Hakea dactyloides, Hakea sericea, Ozothamnus diosmifolius.	See photographs in Slides: 65 - 79

	<u>Assisted Regeneration - Native Vegetation Corridor (NVC)</u> - o Have effectively maintained the translocation area from having additional weed incursions of exotic grasses. - o Had a new weed incursion of common couch encroaching from the bare mounds into the vegetated mounds bordering the translocation; this was treated with a selective herbicide (Fusilade forte) in October. - o Collected seed from <i>Acacia suaveolens</i> to be propagated at the nursery. <u>Rehabilitation of Lot 2</u> - o Continued large push on lantana, now reduced down to a maintenance level and secondary in small bordering areas. - o Brush-cut large Crofton patches to prevent them going to seed - o In September planted approx. 150 viro-tube specimens of the following native shrub and canopy species: <i>Acacia myrtifolia</i>, <i>Acacia ulicifolia</i>, <i>Callitris</i> sp., <i>Corymbia gummifera</i>, <i>Hakea dactyloides</i>, <i>Hakea sericea</i>, <i>Ozothamnus diosmifolius</i>, <i>Syncarpia glomulifera</i>, <i>Viminaria juncea</i>. - o Regular follow-up watering to mitigate dry conditions at the time. Applied seasol mix to one watering. - o We underestimated the rate of predation of the aforementioned plantings in Lot 2, and have responded with new strategies of larger guards and preserving annual invasive species to lower the impact of predation on current and future plantings. <u>Rehabilitation of Haerses Rd – Old Dam Area</u> <u>Challenges</u> • Lantana is now at a low maintenance level. <u>Assisted Regeneration - Haerses Road Biodiversity Offset</u> - o Is in good condition. - o Have reduced scans for crofton and wild tobacco to a low maintenance level, plans on focusing targets to lantana follow up. <u>Haerses Rd - Translocation</u> - o Minimal visits over this period - o Hand removed exotic grasses that were encroaching native ground covers - o Selectively culled <i>Kunzea ambigua</i> specimens that were growing above high-value Proteaceae	
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	species, such as <i>Banksia serrata</i>, <i>Lambertia formosa</i> or <i>Persoonia linearis</i>. - o Follow-up works required. <u>Haerses Rd – Visual buffer along Wisemans Ferry Road</u> - o In September planted 24 <i>Hakeas</i> (sp. <i>sericea</i> and <i>dactyloides</i>) and 25 <i>Acacia longifolia</i>s in the buffer to the east of Haerses road - o In the same month we filled out the established planting area right of Haerses Rd along the swale edge with a border of approx. 20 <i>Angophora hispida</i> specimens and 2 <i>Synocarpia glomulifera</i> specimens.	
PROJECT REPORT, INCLUDING PRODUCTION/ SALES	DD advised that sales are good. Extraction is continuing. Haven't been able to bake the ponds. Weather conditions should be good coming into summer for backfilling over the ponds. MOD 6 is still up in the air as Dixon Sand try to go deeper instead of outwards. The water table is deeper than expected. Still hope to mine the same amount of material, however, over 2 sites, which will be easier to manage, then being full scale just on one side. The diversity of produce has enabled Dixon Sand to be steady with sales. The new operation (Dixon Firestone) is well underway. The sheds are up and following a trip to Northern Italy & USA, equipment has been purchased, installed and commissioned. NM advised that it is cutting edge technology, which doesn't exist elsewhere in the southern hemisphere. The equipment goes a long way to reducing noise and is best practice in terms of safety, including controlled cutting, full suppression, no visual or respiratory dust, use of recycled water, reuse of fines, etc. Fines are processed at the wash plant and sold to USA as product with remanent waste going to the silt pond. KM enquired how many staff were in this area. DD advised 5-6 full time plus contractors. Two men came from the USA to install and commission the equipment, which took 25 days. PS enquired whether many fossils have been found. NM advised that they are working in the Blue Mountains/Central Coast/Pymont part of the Narrabeen pre-Jurassic permian. There is not a lot of fossils. PS advised of a <i>Labyrinthodonts</i> (amphibian) fossil gifted to the Glenorie community, which is 400M years old and located is in the Hall.	

GENERAL BUSINESS	- o LAY asked KM regarding the speed signage associated with subdivision works in the area. Reduced speed limit signs are still showing when there are no works or workmen and sometimes stay there for months, impacting on motorists having to slow down for no reason. LAY acknowledged that it isn't a Dixon Sand CCC issue, but is frustrating for the community. - o KM confirmed that the speed reductions are associated with the subdivision approval. If signs haven't been removed then contact Council to follow up. LAY will contact the Construction Engineers at Council herself. - o JB advised that Dixon Sand's Salvation Army Christmas Appeal will be held again this year, following great success in the past. Local residents are invited to drop off any Christmas presents for distribution via the Salvation Army's Christmas appeal. - o LAY thanked Dixon Sand for bringing the dozer to the school for its Maroota Muster event. - o PS advised that there is now a breeding population of koalas back in the forest after the 2002 fires. 11 have been formally reported. Whilst there may be more, there needs to be confirmed sightings. - o PS stated that the endangered Greater Glider has also been found, with the Eucalyptus deanei being their preferred habitat. - o PS mentioned that there is a controlled burn planned for the gully. Trying to find a better way to undertake burning. Further discussions on cool/cultural burning between PS & NM.	
MEETING SCHEDULE FOR 2025	LA sought consent for the meeting schedule remain as previous. Two meetings a year, one in May and one in November. Accordingly: 📅 Wednesday 7th May; and 📅 Wednesday 5th November 2025. Commencing at 12.30pm with lunch prior to the 1pm start. It was suggested that a site inspection be undertaken at the May meeting to view the new Dixon Firestone facility.	Agreed.

The meeting was closed at 2:19pm with the chair thanking all members for their attendance.

ACTION ITEM:

NO.	ITEM	RESPONSIBILITY
1	Bring Dural Land Snail sample to next CCC	MM
2	Confirm site inspection requirements	LA



**MINUTES OF THE BI-ANNUAL
COMMUNITY CONSULTATIVE COMMITTEE
WEDNESDAY 7 MAY 2025
HAERSES ROAD QUARRY, ADMINISTRATION BUILDING**

PRESENT	NAME	ORGANISATION
	Lisa Andrews (LA)	Independent Chairperson
	Hunny Churcher (HC)	Environmental Officer, Dixon Quarry Group
	Jamie Baker (JB)	Dixon Quarry Group – Business Development Manager
	Melissa Mass (MM)	Dixon Quarry Group - Ecologist
	Farley Roberts (FR)	Community Representative
	Lisa Aylward (LAy)	Maroota Public School Representative
	Kristine McKenzie (KM)	The Hills Shire Council Representative
	Mick Munnoch	Dixon Quarry Group – Quarry Manager
APOLOGIES	Pat Schwartz (PS)	Community Representative
	Timothy Baker (TB)	Bush Regeneration Contractor (Bush-It)
	Jemma Roberts (JR)	Community Representative (alternate)
	David Dixon (DD)	Dixon Quarry Group – Managing Director

WELCOME & INTRODUCTION	LA opened the meeting at 1.06pm following a light luncheon. All members were welcomed.		
APOLOGIES	As listed above.		
DECLARATIONS OF INTEREST	LA declared that she is approved by the Department of Planning to chair the meeting and engaged by Dixon Quarry Group.		
BUSINESS ARISING FROM PREVIOUS MEETING (6/11/24)	NO.	ITEM	RESPONSIBILITY
	1	Bring Dural Land Snail sample to next CCC.	MM
	2	Confirm site inspection requirements.	LA
	No other business arising.		1 – Complete 2 – Complete
CORRESPONDENCE (as emailed with Meeting Notice on 14/4/25 with 1 additional item)	19/11/24 - Email to members with draft minutes for review. 28/11/24 – Email to members with the finalised minutes. 14/4/24 – Email to members with meeting notice & agenda for 7/5/25. 5/5/25 - Email to members with the reminder for this meeting.		

OPERATIONS & PROGRESS	JB commenced the presentation, advising of the operations and progress with the firestone component of the business, including the commissioning of the machines. Firestone has been the biggest growth in the quarry, which is mainly due to residential areas (subdivisions), retaining walls, water courses as well as some commercial and industrial uses. Sand is holding strong with ONR sandstone extraction growing. Two extra people have been employed and the company is in a positive position. Included an updated aerial photos of ONR and HR quarries taken in August 2024	Questions asked and answered throughout the presentation. Slides 6 & 7																		
ONR – Proposed DA Mod 6 - Extraction within existing cells to maximise resource	• Increase the depth of extraction within Lot 196 DP752025 to within 2m of the highest recorded regional wet weather groundwater level; • Import up to 250,000 tonnes per annum of virgin excavated natural material (VENM) and excavated natural material (ENM) within existing incoming trucks; and • Extend the quarry life by 11 years until 2053. Timeline <table><tr><th>Date</th><th>Milestone</th></tr><tr><td>January 2023</td><td>Scoping Letter lodged with DPHI</td></tr><tr><td>March 2023</td><td>DPHI confirmed pathway and requests additional traffic assessment and rehabilitation and final landform assessment to be updated</td></tr><tr><td>September 2023</td><td>Consultation with Agencies</td></tr><tr><td>November 2023</td><td>Modification Report submitted to DPHI</td></tr><tr><td>November 2023 – April 2024</td><td>Public Exhibition, received submissions from the community and agencies, submissions report submitted to DPHI</td></tr><tr><td>May 2024</td><td>Received further comments from DCCEEW-Water. Submission report being prepared.</td></tr><tr><td>July 2024</td><td>DPHI issued an RFI</td></tr><tr><td>Currently</td><td>RFI being addressed</td></tr></table> Currently the quarry is preparing further information to address the Department’s Request for Information, including ground water modelling, supply of VENM & ENM and how the project will be staged.	Date	Milestone	January 2023	Scoping Letter lodged with DPHI	March 2023	DPHI confirmed pathway and requests additional traffic assessment and rehabilitation and final landform assessment to be updated	September 2023	Consultation with Agencies	November 2023	Modification Report submitted to DPHI	November 2023 – April 2024	Public Exhibition, received submissions from the community and agencies, submissions report submitted to DPHI	May 2024	Received further comments from DCCEEW-Water. Submission report being prepared.	July 2024	DPHI issued an RFI	Currently	RFI being addressed	Sides: 8 & 9
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ENVIRONMENTAL MONITORING RESULTS	HC commenced the environmental monitoring results, by showing the locations of devices and explaining/quantifying the outcomes. Data explained.	Slides: 11 to 15																		

TEOM DATA	HC explained the TEOM data and measurement criteria. - o TEOM and Meteorological station records PM10 levels and weather data such as rain, temperature, wind etc. - o Monitoring Criteria – • Long term: Annual PM10 average (light blue line) should not exceed the annual average criteria (pink line – 30µg/m3) – • Short term: 24hr PM10 average (blue bars) should not exceed the 24hr PM10 NEPM Criteria (yellow line – 50µg/m3) – • 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: • Notify EPA • Take immediate action to reduce PM10 levels • Stop works if levels do not fall below 42µg/m3 within 1 hour - o TEOM station represents the EPL Points 1 & 3	Slide: 16													
DEPOSITIONAL DUST DATA	Dust data for this monitoring period: July 2024 – April 2025: <table><tr><th>Date</th><th>Milestone</th></tr><tr><td rowspan="5">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>D6 School</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></table> Dust exceedances are reported to EPA & DPHI which are usually as a result of nearby agricultural activities. Dixon Quarry are still trying to obtain approval for some of the locations of the monitors to be relocated due to ongoing cumulative impacts from other sources. JB advised that the annual occupational dust and noise monitoring for employees was undertaken last month by the hygienist. Monitoring indicated that all dust and noise levels were acceptable. There was a slight elevation in one of the machines due to a degraded seal, which has since been replaced. All silica dust monitoring is below regulatory limits.	Date	Milestone	Old Northern Road	D1A Access road	D4 Rehab area	D5 Bundwall	D6 School	D7 Mullock Heap	Haerses Road	D8 Olive Grove	D10 Haerses Road (EPL Point 3)	D11 Receiver R6	D12 Receiver R8	See graphs for results. Slides: 17 - 22
Date	Milestone														
Old Northern Road	D1A Access road														
	D4 Rehab area														
	D5 Bundwall														
	D6 School														
	D7 Mullock Heap														
Haerses Road	D8 Olive Grove														
	D10 Haerses Road (EPL Point 3)														
	D11 Receiver R6														
	D12 Receiver R8														

NOISE MONITORING	ONR & Haerses Rd: Tables of noise monitoring locations indicating: Receivers, property addresses, descriptions and extrapolated monitoring results. No noise complaints have been received for quite some time. Predicted noise at one receiver was slightly over the noise criteria (slide 29). However, in accordance with the Noise Policy for Industry (2017), where the predicted noise level minus the project noise trigger level is $\leq 2\text{dB}$, then the significance of the residual noise level is negligible at the receiver. This is supported by observations made during monitoring which indicated Quarry only "intermittently just audible" at the affected receiver.	See Slides 23-30 For location of monitoring sites and summary of data.
GROUND WATER MONITORING	GW Monitoring wells • ONR 11 x BH • HR 16 x BH GW levels: • Monthly + continuous data loggers GW quality sampling & lab analysis: • 6 monthly sampling and testing. Results are very reflective of rain water events/weather.	Graphs explained - See Slides 31-43 (maps)
COMMUNITY CONTRIBUTIONS	HC presented on the contributions that Dixon Quarry make to the community, including, but not limited to:  Maroota Muster  Cattai Public School  Royal Flying Doctor Service  The Last Post @ Wisemans Ferry for Anzac Day  Anzac Day Tribute Sandstone Display  Castlereagh Christian Conference Centre  Sponsorship of Nepean Area Disabilities Organisation  Sponsorship of Sporting Individuals  Glenorie RSL  Glenorie Progress Association  Carols by Candlelight  Salvos Donations/Christmas Toy Appeal LAY advised that the school is seeking assistance for a sound system. JB invited LAY to provide details for consideration.	Slide 44
COMPLAINT	HC provided information on a complaint that was received by the EPA on 31/3/25, when a member of the public reported sediment on the Old Norther Road from sand trucks. Action undertaken by Dixon Quarry staff: o Road and Access Road was inspected with photographs provided to the EPA immediately showing no sand on Access road and intersection.	Slide 45

	- o Undertook a re-education campaign with the truck drivers at both quarries during April 2025 - o Complaint closed out FR commented that a lot of sediment is coming from trucks and cars picking it from the road shoulder following rain events washing it onto the roads, due to poor drainage. JB commented that the road shoulders and verges areas along Old Northern Road contain sediment, which has not been cleared from the local roads and that regular maintenance was required to ensure that the roads drained quickly. HC commented that Old Northern Road was under the control of Transport for NSW and suggested making representations to Transport for NSW to sweep the area and provided maintenance. KM agreed that Old Northern Road was a Transport for NSW road. HC to lobby.	
BIODIVERSITY AND REHABILITATION (Threatened Species Update)	MM commenced the presentation by advising that the site rehabilitation is progressing well and they are getting on top of weed management. Monitoring of fauna & flora on the site continues. Biodiversity and Rehabilitation Annual Report 2024 (AR) 🚩 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. 🚩 The 2024 Biodiversity and Rehabilitation Annual Report was completed in September 2024 and submitted with the Annual Review on the 30th of September 2024. 🚩 The results found the rehabilitation areas are thriving and increasing in diversity and density. Ideal growing conditions with favourable temperatures and regular rainfall over the past 4 years has improved the overall biodiversity of all rehabilitation and monitoring sites. Currently collecting data for the 2025 report. The flora survey will be carried out in the next few months as things start to flower. Native Vegetation Corridor – Old Northern Road explained. Biodiversity Offset Area – Haerses Road explained.	See Slides 46 – 60 including photographs

	Monitoring Fauna Fauna monitoring is undertaken in the summer months when activity is at the highest and more likely to be observed. Fauna monitoring includes: - o Recording bat calls via an Anabat sound recorder; - o The use of unbaited infra-red motion detection cameras on animal trails; - o Looking for scats, prints and other signs such as diggings, scratches, feed scars; - o Aural survey for birds; and - o Visual observation. Long-nosed Bandicoot <i>Perameles nasuta</i> tracks and digs HR observed. Deceased Brown Goshawk <i>Accipiter fasciatus</i> and Red Bellied Black Snake <i>Pseudechis porphyriacus</i> observed at ONR. MM handed around examples of the Dural Land Snail and the Cumberland Plain Land Snail, explaining the difference between the two species, which are both endangered species in state and federal legislation. Monitoring flora • Flora monitoring is undertaken in the winter months as many of the threatened species are flowering or budding up preparing for early spring flowering • Vegetation quadrats are repeated annually in monitoring locations. Quadrats are 20m x 50m, 20m x 20m and 1m x 1m which record the following information: - o Species present and percentage of cover; - o Stem class including recruitments present or absent; - o Number of hollow bearing trees; - o Total length of coarse woody debris; - o Litter cover, rock surface area, bare ground	Action Item 1 from previous CCC.
BUSH REGENERATION WORKS	Summary of Assisted Bush Regeneration Work – October 2024 to May 2025 - presented by HC. Porters Rd BCT explained. Management Plan for the control of feral animals and weeds. Need to manage protection from bush fire by undertaking ecological burns. Monitoring the 53.9 hectares for animals, fences, gates, signs. People are using area as a walking track. BCT officer is okay with recreational walking being undertaken, however, no horses or bike riding is allowed. <u>Old Northern Rd Works Areas:</u> <u>Rehabilitation of Lot 196</u>	See photographs in Slides: 61 - - 71

	- o Works over this period focused on suppressing Whisky Grass (<i>Andropogon virginicus</i>) from spreading seed. This was achieved through slashing and hand weeding around native groundcover before the species flowered. - o The planting in September 2024 was largely unsuccessful. 56 out of the 150 specimens survived (37% survival rate). Large death rates likely owing to exposure and compacted soil. <u>Assisted Regeneration - Native Vegetation Corridor (NVC)</u> - o Continued maintenance of Whisky grass in and around translocation area achieved through periodic sweeps through the area. - o Follow-up treatment of common couch encroaching the vegetated mounds next to the translocation area; this was treated through a selective herbicide (<i>Fusilade forte</i>) in January. <u>Rehabilitation of Lot 2</u> - o Continued works on lantana, largely secondary and maintenance level. - o Brush-cut large Paspalum patches to prevent them going to seed. - o New weed incursion of <i>Pellaea viridis</i>, an exotic fern known to be in other areas of works, was detected in a single area of Lot 2. The weed was treated through a Trans-mix of Broadleaf herbicides (<i>Metsulfuron-methyl</i> and <i>Glyphosate</i>) in April. - o The planting In September of approx. 150 specimens was relatively unsuccessful. The plantings consisted of a mix of native shrub and canopy species endemic to the area. Large guards were used to combat the high density of grazers in the area. However, owing to the dry winter, survival rate was low. <u>Rehabilitation of Haerses Rd – Old Dam Area</u> - o Whisky Grass (<i>Andropogon virginicus</i>) was slashed along fire trail before flowering. Suppressing the species from spreading into the resilient bush further down the fire trail. - o Follow-up works on Lantana primary works from last year was undertaken. <u>Assisted Regeneration - Haerses Road Biodiversity Offset</u> - o Is in good condition. - o Focus on monitoring edges for highly mobile weed species. Slashing of Whisky Grass in addition to occasional scans through edge was undertaken.	
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	<u>Haerses Rd - Translocation</u> - o Visits over this period were largely to manage flowering Whisky grass and African Lovegrass. The exotic perennial grasses were slashed to limit seed dispersal. Manual removal was undertaken where densities were low and amongst native ground and shrub cover. - o Continued selectively culled <i>Kunzea ambigua</i> specimens that were growing above high-value Proteaceae species, such as <i>Banksia serrata</i>, <i>Lambertia formosa</i> or <i>Persoonia linearis</i> <u>Haerses Rd – Visual buffer along Wisemans Ferry Road</u> - o Maintenance of Fleabane and perennial grasses was the focus during the summer months, undertaking slashing periodically. - o Maintenance of common couch continued, manual removal of species was undertaken periodically. - o The planting in September was reasonably successful, with few fatalities west of Haeres Rd. The planting included canopy species <i>Angophora hispida</i> and <i>Synocarpia glomulifera</i> planted along the swale. - o The planting east of Hearses Rd was less successful. The planting included shrub species including <i>Hakeas</i> (<i>sp. sericea</i> and <i>dactyloides</i>) and <i>Acacia longifolia</i>.	
GENERAL BUSINESS	o LA read PS's text message to members: <i>The Hills-Hornsby Rural Koala Project has successfully located Koalas in the Hills and Hornsby bushland. They have been found in a number of locations within the Maroota Forest which is downstream from Dixon's operations. Some of the other animals besides koalas that have been observed are very large numbers of healthy wombats, endangered Greater Glider plus many different types of glider and platypus in Little Cattai Creek. Maroota is an area of exceptional bio-diversity and it is wonderful to be able to observe all these different creatures.</i>	
NEXT MEETING	LA advised that the next meeting will be held on::  Wednesday 5th November 2025. Commencing at 12.30pm with lunch prior to the 1pm start.	Agreed.

The meeting was closed at 2:42pm with the chair thanking all members for their attendance and inviting them to stay for the 'Firestone' – HR Sandstone Cutting Shed Site Visit.

Members toured the facility in two separate vehicles with appropriate PPE.

ACTION ITEMS - NIL

Appendix K – Complaints Register

Dixon Sand (No. 1) Pty Ltd

Haerses Road Quarry

Complaints Register - Summary

Period	Number of Complaints received	Complaint Register Published on Website
Jul 2024	0	6 Aug 2024
Aug 2024	0	4 Sep 2024
Sep 2024	0	2 Oct 2024
Oct 2024	0	1 Nov 2024
Nov 2024	0	10 Dec 2024
Dec 2024	0	6 Jan 2025
Jan 2025	0	3 Feb 2025
Feb 2025	0	4 Mar 2025
Mar 2025	0	17 Apr 2025
Apr 2025	0	6 May 2025
May 2025	0	5 June 2025
June 2025	0	7 July 2025
Total No. of Complaints	0	

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