AIR QUALITY MANAGEMENT PLAN

CONCRETE BATCHING PLANT

NORTH MACLEAN

PLANS AND DOCUMENTS
referred to in the PDA
DEVELOPMENT APPROVAL

Approval no: DEV2024/1583

Date: 6 August 2025

Queensland Government

Prepared for:
Nucrush Group

Prepared by:
MWA Environmental

12 June 2025

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Title:	Air Quality Management Plan, Concrete Batching Plant, North Maclean
Principal Author:	Paul King
Client:	Nucrush Group
Client Contact:	Mr Paul West

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1.0 INTRODUCTION

1.1 Purpose of this Air Quality Management Plan

This Air Quality Management Plan (**AQMP**) applies to the proposed concrete batching plant to be located at 916-944 Greenbank Road, North Maclean. This Management Plan (AQMP) is to be used as a reference document by all persons concerned with the activities and operations of the site.

1.2 Objective

The objective of the AQMP is to manage all operations associated with the use to ensure proper action is taken to minimise the potential for adverse air quality impacts (dust) on surrounding sensitive land uses.

1.3 How to Use This Management Plan

To simplify implementation of this AQMP, it has been prepared in a standard format that nominates the following principles that need to be addressed:

Objective
State the objective(s) that are to be achieved;

Performance Criteria
Describe the criteria against which the level of achievement of the stated objective will be measured;

Tasks/Actions
Describe the steps to be taken to achieve the objective, including education, operational, management, and monitoring procedures.

Responsible Person
Assign responsibility for carrying out each task/action to a relevant person;

Reporting and Review
Describe the required reporting and review arrangements (including auditing) for each task; and,

Corrective Actions
Describe what will be done if the stated objectives/targets are not being met or maintained, including whom is responsible for taking the required actions.

1.4 Responsible Person

The Production Manager is responsible for the initial and ongoing implementation, conduct, reporting and documentation of all aspects of the AQMP, and is recorded below. The Production Manager may delegate the responsibility for implementing some, or all of the AQMP, to other designated staff. The responsible person and persons having delegated authority for implementation and recording shall be recorded in the AQMP Records, along with the date of appointment. The names of all such delegated responsible persons shall be kept up to date and current at all times.

Primary Responsible Person	
Position:	Production Manager
Phone Number:	**tba**
Email Address:	**tba**

1.5 Implementation

The AQMP shall be implemented and applied continuously during all operations related to the site use. The AQMP requires the responsible persons, including delegated responsible persons, to take specific actions in a timely manner to fulfil the objective of the AQMP. The actions, frequency, timing and person responsible will be identified in the relevant sections of the AQMP.

1.6 Document Review

This AQMP is to be reviewed within twelve (12) months of implementation to ensure consistency with the uses of the site. Subsequent annual reviews shall be undertaken to ensure the document remains relevant and current. Each review shall be formally documented, signed by the Responsible Person, and included in the AQMP Records.

Minutes of each review shall be recorded, noting the date, the items reviewed against the objective of the AQMP, including any reported non-compliances with the requirements of the AQMP. Reviews will also consider the results of routine site performance reviews conducted, dust complaint records and responses. The minutes will record the name of the Responsible Person conducting the review, and the review date.

A copy of the review shall be filed in the AQMP Records and shall be provided for inspection, if requested.

1.7 Document Currency

The currency of all copies of the AQMP shall be checked annually to ensure that the current version of the document is available to all staff and obsolete versions are removed to avoid errors and confusion.

1.8 Records

All records required to be kept by this AQMP shall be retained on the premises for a period of at least five years. Dust monitoring and AQMP related records will be digitised (i.e. scanned) at the end of each calendar year for the purposes of long term storage and recall.

Records are to include:

- Responsible Person name and contact details.
- Results of Document Reviews and any updated AQMP s.
- The records created during any reporting/review of Section 3.3 Tasks/Actions of the AQMP.
- Any changes to site practices that may affect air quality impacts.
- Training of staff.
- Dust Monitoring.
- Dust complaints register, and the actions taken (including if over the course of the year no actions or complaints were made).

2.0 SITE INFORMATION

2.1 Site Description

The Concrete batching plant is to be located on part of land at 916-944 Greenbank Road, North Maclean. The property had real description of Lot 2 on SP267252 and comprises of total area of 25,310m^2. Details on site location, sensitive receptors and site design are provided in the Air Quality Assessment report (Attachment 2 to this AQMP).

The Mount Lindesay Highway is located to the east of the subject land.

The subject site is included within the Priority Development Area.

2.2 Site Operations

The proposed concrete batching plant is a new use on the land with equipment and facilities associated with the proposed concrete batching plant including, but are not limited to, the following:

- Front end loader;
- Bulk aggregate storage;
- Cement and fly ash silos;
- Batching point beneath silos (partial enclosure)
- Slump stand area (2 stands);
- Water storage tanks and treatment;
- Bunded truck wash-out facilities; and
- Batch office.

The proposal is to operate the plant as required on a 24 hour/7 day basis.

The proposed concrete batching plant will incorporate various dust mitigation measures to control dust emissions, including:

- Aggregate and sand storage in above ground bins with 3-sides with walls constructed to a minimum height of 0.5 metres above the intended top of stockpile levels to minimise potential wind generated dust emissions;
- Full plant area sealed to minimise dust emissions from frequent vehicle movements in the main production area;
- Loading (batching) conducted within an enclosure with dust extraction and filtration;
- Silos with overfill protection and baghouse filters;
- Covered conveyors for raw material feed to batching plant;
- Effective sprinkler/water spray system to all above-ground storages of materials with the potential to generate dust which will be operated during high wind speed conditions to minimise dust emissions (On-site wind speed sensor to be linked to sprinkler system to activate sprinklers as necessary when wind speeds exceed 5.4m/s 1 hour average refer US EPA AP-42, Section 13.2.5); and
- The sealed area adjacent the above-ground stockpiles is to be regularly cleaned to minimise silt loading and potential dust emissions from wind erosion and vehicle manoeuvring.

2.3 Dust Sources

The operation of a Concrete Batching Plant on the site can generate dust emissions from the following primary dust sources:

- Sand and aggregate unloading from road trucks
- Sand and aggregate transfer by front end loader
- Sand and aggregate storage in above ground hoppers/ bunks
- Sand and aggregate transfer via conveyors
- Transfer of bulk cement/flyash to overhead silos
- Loading Agitator Truck at Batching Point
- Wind generated dust from paved areas

This Air Quality Management Plan provides guidance to the operators and staff to minimise and manage dust from the site operations.

Specifically this AQMP addresses:

- Ongoing site management to minimise site generate emissions (dust) to achieve compliance with regulatory air quality standards.
- Implementation and maintaining physical dust control measures
- Ongoing staff induction and training in use of the AQMP and dust reduction/minimisation practices at the plant.
- Dust monitoring at the site and community (residential areas) in response to valid complaints, as required, to identify dust sources that may require mitigation as part of the general environmental duty of the operator.
- Implementation of a formal Complaints Receipt and Handling Procedure.

3.0 DUST MANAGEMENT PLANS

3.1 Objective

To minimise dust emissions from the site using appropriate management methods to comply with regulatory air quality guidelines and minimise impacts at sensitive receptors.

3.2 Performance Criteria

3.2.1 Particulate (Dust) Emissions

Shall not cause Environmental Nuisance nor Environmental Harm as defined in the Environmental Protection Act 1994 and the Environmental Protection (Air) Policy 2019.

Shall comply with the following air quality objectives derived as part of the Air Quality Impact Assessment (MWA June 2025) (see **Attachment 2**) at all sensitive receptors (ie residences).

Table 1: Air Quality Objectives

Pollutant	Averaging Period	Health outcome protected	Air Quality Objective ($\mu g/m^3$)
PM_{10}	24-hour average	Health and wellbeing	50 $\mu g/m^3$
	Annual Average	Health and wellbeing	25 $\mu g/m^3$
$PM_{2.5}$	24-hour average	Health and wellbeing	25 $\mu g/m^3$
	Annual Average	Health and wellbeing	8 $\mu g/m^3$
TSP	Annual Average	Health and wellbeing	90 $\mu g/m^3$
Dust Deposition	Maximum Monthly Average	Common ERA limit	120 mg/m^2/day

Note: Above indicators must also take account of occasional regional influences i.e non site influences including dust storms and fires when assessing impact. Thus indicators apply except during conditions of poor air quality due to events outside the control of the concrete plant such as bushfires and dust storms. Under such conditions emissions from the site will be minimised to the greatest extent practicable to avoid increasing any adverse impact further.

3.3 Tasks/Actions

3.3.1 Sand and Aggregate Storage

ACTIVITY	Sand and Aggregate Storage Dust
Elements	
	Dust emissions from sand and aggregate storage and handling on the site resulting at sensitive receptors
Objective	
	To comply with the Performance Criteria stated in ***Section 3.2.1***
Performance Indicators	
	A visible build-up of dust on surrounding ground, roads, vegetation and building surfaces would indicate unacceptable dust emissions. Any dust complaints could indicate unacceptable disturbance.
Tasks/Actions	
	• Dampen sand and aggregate being delivered to control dust • Deliver sand and aggregate in covered trucks • Store sand and aggregates shielded from the wind in bins or 3 sided enclosures that extend at least 0.5m above the full storage level • Maintain open storage areas in a damp condition with water sprays to control dust • Regularly monitor the moisture content of stored aggregates to ensure they are maintained in a damp condition. • Above ground conveyors should be covered and transfer points enclosed. • Conveyor belts should be fitted with belt cleaners on return side • Aggregate receiving bins should be shrouded on 3 sides and roofed, where necessary/practical, to minimise wind blown dust. • Maintain regular housekeeping procedures to clean up spills that have potential to generate dust • Regular toolbox meetings will be held with personnel to identify and implement continuous improvement ideas and processes.
Frequency/Deadline	
	Tasks/Actions are to be implemented and remain ongoing.
Responsible Person	
	The Responsible Person shall be responsible for the implementation of the tasks/actions and the timely response to any dust complaints.

Reporting/Review	
	• Regular audits shall be conducted by designated staff members to ensure that suitable dust minimisation practices continue to be implemented. • Records (written/electronic) are to be kept of actions required/implemented to improve upon dust minimisation measures. • A register of complaints is kept and continually updated on an as-needed basis.
Corrective Actions	
	• If excessive dust from sand and aggregate storage and handling is identified, implement appropriate change to work practices or maintenance of dust control infrastructure to reduce dust emissions. • Modify water application sprays to increase dust minimisation to storage and handling areas.

3.3.2 Cement and Flyash Storage

ACTIVITY	Cement and Flyash Storage
Elements	
	Particulate (dust) emissions associated handling and storage of bulk powders in overhead silos
Objective	
	To comply with the Performance Criteria stated in ***Section 3.2.1***
Performance Indicators	
	A visible build-up of dust on surrounding ground, roads, vegetation and building surfaces would indicate unacceptable dust emissions. Any dust complaints could indicate unacceptable disturbance
Tasks/Actions	
	• Cement and flyash to be stored in sealed, dust tight silos fitted with dust collectors and overfill protection • Cement and flyash to be delivered in sealed vehicles equipped for pneumatic transfer to the storage silos. • Cement and flyash handling and storage to be conducted in accordance with CCAA "Guidelines for Delivery of Bulk Cementitious Products to Premixed Concrete Plants" • Maintain on-site dust collection equipment and filters in good working order to minimise dust emission and to maintain compliance with Section 3.2.1. • Conduct regular **(weekly)** inspections of major plant when operating to identify an excessive dust emissions that may be an indication of wear and tear or failure and rectify as soon as practical.
Frequency/Deadline	
	Tasks/Actions are to be implemented and remain ongoing.
Responsible Person	
	The Responsible Person shall be responsible for the implementation of the tasks/actions and the timely response to any dust complaints.
Reporting/Review	
	• Regular audits shall be conducted by designated staff members to ensure that dust containment practices continue to be implemented. • Records (written/electronic) are to be kept of actions required/implemented to improve upon dust control measures. • A register of complaints is kept and continually updated on an as-needed basis.
Corrective Actions	
	• If excessive dust from bulk powder storage is identified, implement appropriate maintenance of equipment to reduce operational dust including o Replacement of filters to dust collectors

	○ Repairs to seals in transfer pipework/ couplings

3.3.3 Agitator Truck Loading (Mixing)

ACTIVITY	Agitator Truck Loading (Mixing)
Elements	
	Particulate (dust) emissions associated with loading of agitator trucks and mixing concrete
Objective	
	To comply with the Performance Criteria stated in ***Section 3.2.1***
Performance Indicators	
	A visible build-up of dust on surrounding ground, roads, vegetation and building surfaces would indicate unacceptable dust emissions. Any dust complaints could indicate unacceptable disturbance
Tasks/Actions	
	• Truck loading bay to be enclosed and roofed with entry automatic fast acting door that closes when agitator truck is within the bay. • Filling of agitator bowls by enclosed telescopic chute or flexible sleeve linked to a mechanical dust collector. • Drivers will wash down chutes of concrete trucks in Slump Area prior to leaving site. • Maintain on-site dust collection equipment and filters in good working order to minimise dust emission and to maintain compliance with Section 3.2.1. • Conduct regular **(weekly)** inspections of major plant when operating to identify an excessive dust emissions that may be an indication of wear and tear or failure and rectify as soon as practical.
Frequency/Deadline	
	Tasks/Actions are to be implemented and remain ongoing.
Responsible Person	
	The Responsible Person shall be responsible for the implementation of the tasks/actions and the timely response to any dust complaints.
Reporting/Review	
	• Regular audits shall be conducted by designated staff members to ensure that dust containment practices continue to be implemented. • Records (written/electronic) are to be kept of actions required/implemented to improve upon dust control measures.

	• A register of complaints is kept and continually updated on an as-needed basis.
Corrective Actions	
	• If excessive dust from agitator truck loading and concrete mixing is identified, implement appropriate maintenance of equipment to reduce operational dust including o Replacement of filters to dust collectors o Repairs to enclosure/ fast acting door as required

3.3.4 Hardstand Area (Dust Emissions)

ACTIVITY	Hardstand Areas (Fugitive and Wheel Generated Dust)
Elements	
	Particulate (dust) emissions associated with paved hardstand areas of the site
Objective	
	To comply with the Performance Criteria stated in ***Section 3.2.1***
Performance Indicators	
	A visible build-up of dust on surrounding ground, roads, vegetation and building surfaces would indicate unacceptable dust emissions. Any dust complaints could indicate unacceptable disturbance
Tasks/Actions	
	• Provide appropriate sealed hardstand areas to the site • Install landscaping elements to stabilise any unsealed areas of the site • Conduct regular pavement cleaning to reduce sediment loading to minimise potential for wind generated or wheel generated dust • Promptly clean up all spills • Use wet cleaning where practical • Conduct regular **(daily)** inspections of hardstand areas to identify an excessive dust emissions and rectify as soon as practical.
Frequency/Deadline	
	Tasks/Actions are to be implemented and remain ongoing.
Responsible Person	
	The Responsible Person shall be responsible for the implementation of the tasks/actions and the timely response to any dust complaints.
Reporting/Review	
	• Regular audits shall be conducted by designated staff members to ensure that dust control practices continue to be implemented. • Records (written/electronic) are to be kept of actions required/implemented to improve upon dust control measures. • A register of complaints is kept and continually updated on an as-needed basis.
Corrective Actions	

	• If excessive dust from hardstand areas is identified appropriate actions include:
	  ○ Prompt cleanup of dust generating surface areas
	  ○ Increase cleaning schedule
	  ○ Install additional water sprays to critical areas to minimise pavement particulate dust generation.

4.0 DUST MONITORING

The operation of the site from commencement of operations shall be assessed by an appropriately qualified air quality consultant within 12 months of commencement of operation of the plant after commissioning or earlier should any validated complaints relating to air quality impacts be received . Thereafter air quality consultant attendance will only be if requested by the operator.

The air quality assessment shall include:

- Inspection of the operation of site to identify visual dust emission sources and controls and to compare to appropriate best practice standards.

- An audit of records of the AQMP to verify dust management measures are ongoing and effective, including review of any complaints and actions in response to complaints.

- Preparation of an Inspection Report to summarise the findings and to identify any changes/upgrades to dust management and mitigation as part of the Air Quality Management Plan. The air quality consultant's inspection report is to provide advice and recommendations on the need for future dust audits/ assessments.

The ongoing operation of the facility will include weekly inspection of the site and surrounding area by appropriately trained Nucrush Staff for the purpose of observing dust generation from site operations and to assist in identifying the necessity for modified dust control actions.

The results of the weekly inspections shall be kept on file.

5.0 TRAINING

Training of site staff will require a multi-faceted approach to training so that the objective of the AQMP may be achieved by the collaboration and co-operation of all personnel involved in the site operations and management of the operations.

5.1 Site Personnel

Training must be conducted for staff who have responsibility for maintaining and operating fixed plant and equipment and mobile plant on the site in respect to the objectives and meaning of the AQMP.

Toolbox discussions will be held with the responsible staff at regular intervals to review the dust management and minimisation practices and to identify possible improvements to internal policies and procedures.

6.0 COMPLAINT MANAGEMENT

6.1 Complaint Management Procedure

1. A complaint phone number and email address shall be available via Website and/or site signage. If the phone is not attended an automatic answering service shall be provided for daytime and out-of-hours messages. The Complaint Phone number is: **tba**

2. The phone number, phone and email messages will be directed to the Responsible Person and will be checked for messages each day.

3. All details regarding a complaint shall be recorded on a standard complaint form **(example provided in Attachment 1)** and be filed in the Complaints Section of the AQMP Records.

4. The Responsible Person will investigate the subject matter of the complaint by:
    a) identifying the date, time and location(s) where the alleged matter occurred.
    b) interviewing the complainant (if required) to gain further particulars about the matter.
    c) interviewing the relevant staff members working at the time to determine site activities, as appropriate.
    d) reviewing available and relevant evidence including site logs and any site CCTV footage.
    e) determining an appropriate response and timing. Responses could include mitigation of dust emissions (as necessary), modification of site operations (as applicable), initiation of routine reviews to further verify improvements or modifications to site operations, or no action at all.
    f) communication of the response to the complainant.
    g) communication with all relevant staff that a complaint has been received, the nature and subject matter of the complaint, the response decided by the Responsible Person and any advice regarding implications for implementation or modification of the AQMP for future site operations.

5. The Responsible Person may seek professional independent advice to assist with item 5(e) above and to determine appropriate mitigation approaches, as required.

6. The Responsible Person shall implement any actions in the response related to operations of the site, or any actions related to amendment of the AQMP, as required.

7. The Responsible Person shall document the complaint investigation, relevant evidence and then recommended responses as a report in the Complaints Section of the AQMP Records.

8. The timing of the complaint investigation and implementing response actions is very important in minimising any potential adverse amenity impacts from the complaint management process. The timing schedule for the complaint recording,

investigation and implementation of the response process is outlined in the table below:

Procedure to be undertaken by Responsible Person/s	By When
Complaint received by Responsible Person or delegated Responsible Person	Available contact point 24 hours per day – telephone/email
Person receiving the complaint raises complaint/inquiry form noting details of the complaint and the complainant as requested on the form.	Within 24 hours of receipt of complaint
Responsible person or delegated person investigates the complaint in accordance with Item 4 (a to c) above, determine cause, and assess the event as being: - one off; - potential continuing event; or - requiring a high-level response i.e. immediate action.	As soon as possible but within 5 days of receipt of complaint
If applicable, available evidence will be reviewed by the Responsible Person, and an independent consultant, if required. Responsible Person will assess the severity of the complaint matter and will determine an appropriate response.	As soon as possible but within 5 days of receipt of complaint
Responsible person contacts complainant and advises outcome of investigation.	Within 10 days of receipt of complaint.
Responsible Person implements response actions, and prepares a Complaint Investigation Report which shall be filed in Complaint Management Section of the AQMP Records	Within 14 days of receipt of complaint
Responsible Person initiates routine reviews of site dust emissions and other relevant operational matters to confirm the response action to the complaint was effective in obviating the subject of the complaint, as appropriate to the nature of the complaint.	Within 3 months of receipt of the complaint

ATTACHMENT 1

Complaint and Incident Record

Hazard and Public Complaint Report Form

NUCRUSHGROUP

To be completed by person identifying the hazard/problem/issue or the person receiving the public complaint

Use the electronic Incident Reporting Module as first option. If the form is used it must be logged into the Incident Reporting Module by the direct Supervisor or Manager

Who is completing this form?							
Submitted by:					Date Submitted		
Site:							
Report Type:		Breakdowns		Damage to Property & Goods		Legal & Regulatory	
	Observation		Corrective Action		Customer Complaint		Hazard
	Site Visit		Environmental Issue		Improvement		Public Complaint
	Stock Unavailable		Non-conformance		Preventative Action		Other

Describe what is the hazard or other issue?	
Additional information required for Public Complaints	
Person reporting the complaint	
Address and phone number	

Immediate actions - describe

Further actions required - describe
Root cause analysis - cause of problem/issue

Actions required			
	What	**Who is responsible**	**By When**
1			
2			
3			
4			

Please attach any supporting documents or photographs.

Person submitting Form	**Name**	**Signature**
Manager/Supervisor receiving Form	**Name**	**Signature**

ATTACHMENT 2

MWA Environmental Air Quality Assessment Report
12 June 2025

AIR QUALITY ASSESSMENT

PROPOSED CONCRETE BATCHING PLANT

916-944 GREENBANK ROAD

NORTH MACLEAN

Prepared for:

Nucrush Group
c/- Pentralfultum

Prepared by:

MWA Environmental

12 June 2025

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Principal Author: Mr Alex Schloss

Client: Nucrush Group c/- Pentralfultum

Client Contact: Mr Adrian Rex

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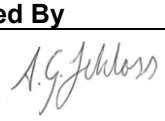
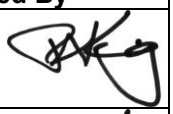
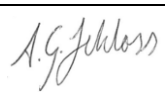
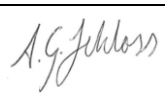
1 Report	6/12/2024	AS		PAK	
2 Report	16/12/2024	AS		PAK	
3 Updated Report Responding to EDQ Further Issues Letter	12/06/2025	AS		PAK	
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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

This report has been prepared by MWA Environmental for *Nucrush Pty Ltd* ('the Applicant') in support of a Priority Development Area (PDA) Development Application for a Material Change of Use to establish a concrete batching plant and other industrial uses on the subject site at 916-944 Greenbank Road, North Maclean.

The application is submitted to Economic Development Queensland (EDQ) as the delegate for the Minister for Economic Development Queensland (MEDQ) for PDA Development Applications in the Greater Flagstone Priority Development Area (GFPDA).

The Development Application is comprised of the following components:

- **PDA Development Permit** for **Material Change of Use** for Medium impact industry (Concrete batching plant); and
- **PDA Development Permit** for **Material Change of Use** for a Plan of Development for Low impact industry, Service industry and Warehouse land uses.

This updated Air Quality Assessment addresses the potential impact of dust emissions from the proposed concrete batching plant on surrounding sensitive uses, and has been prepared to address comments raised within a Further Issues Letter issued by EDQ on 25 February 2025. The responses to the EDQ issues are summarised in **Section 1.5**. The assessment has been based upon detailed dust emission estimations and dust dispersion modelling and provides recommendations for measures to mitigate potential dust impacts at surrounding sensitive uses as required. The matter of odour has not been assessed as a concrete batching plant does not generate nuisance odours.

The assessment of dust concentrations and deposition rates at surrounding sensitive uses has been made against the air quality objectives in the *Environmental Protection (Air) Policy 2019*.

1.2 SITE DESCRIPTION

The concrete batching plant is proposed to be constructed at 916-944 Greenbank Road, North Maclean. The property had real description of Lot 2 on SP267252 and comprises of total area of 25,310m^2.

Greenbank Road is located to the southwest of the subject land which backs on to the Mount Lindesay Highway to the east.

The site is located within a PDA and is subject to assessment under Economic Development Queensland - Greater Flagstone Development Scheme.

The location of the subject site and surrounding land uses is shown on **Figure 1**.

1.3 SURROUNDING LAND USES

The current land use zoning of the subject site and surrounding land uses is included as **Figure 2**.

Surrounding land uses comprise:

To the North:	Scott Lane, an unformed road reserve with undeveloped lots greater than 4 hectares on land located beyond within the PDA zone.
To the East:	Mount Lindesay Highway with sensitives residential uses located on land zoned *Rural Residential.*
To the South:	A service station with approval for further food and drink outlets located to the south in land in the PDA zone.
To the West:	*Rural* and *Rural Residential* zoned land located beyond Greenbank Road.

Nine surrounding sensitive receptors (residential dwellings) have been nominated for the purposes of this assessment and are shown on **Figure 3**

1.4 DESCRIPTION OF PROPOSAL

The concrete batching plant is proposed to be developed on the eastern portion of the subject site, with the balance of the subject site proposed for future industry use. Equipment and facilities associated with the proposed concrete batching plant include, but are not limited to, the following:

- Front end loader;
- Bulk aggregate storage;
- Cement and fly ash silos;
- Slump stand area;
- Water storage tanks;
- Bunded truck wash-out facilities; and
- Amenities (control room, offices, lunch room and ablutions).

The proposed concrete batching plant will incorporate various dust mitigation measures to control dust emissions, including;

- Aggregate and sand storage in above ground bins with 3-sides with walls constructed to a minimum height of 0.5 metres above the intended top of stockpile levels to minimise potential wind generated dust emissions;
- Full plant area sealed to minimise dust emissions from frequent vehicle movements in the main production area;
- Loading (batching) conducted within an enclosure with dust extraction and filtration;
- Silos with overfill protection and baghouse filters;
- Covered conveyors for raw material feed to batching plant;
- Effective sprinkler system to all above-ground storages of materials with the potential to generate dust and will be operated during high wind speed conditions to minimise dust emissions; and
- The sealed area adjacent the above-ground stockpiles is to be regularly cleaned to minimise silt loading and potential dust emissions from wind erosion and vehicle manoeuvring.

The primary function of a concrete batching plant is the mixing of raw materials (sand/aggregates, cementitious materials, admixtures, additives and water) to manufacture concrete. This mixing of raw materials (termed 'batching') is the primary (noise, odour and air (dust) emitting) aspect of the use. This aspect is undertaken indoors, within a structure that is enclosed by walls and is roofed. The batching plant enclosure has solid side walls, a roof and fast acting door, which encloses an agitator truck during the batching process. The batching plant structure effectively contains noise and includes dust filters and water sprays to effectively control and contain odour and air emissions.

Plans for the proposed concrete batching plant are provided in **Attachment 1**.

Nucrush Group has provided an indicative operations profile based upon numbers of concrete loads dispatched (by agitator truck) for the various periods of the day. representative of a potential peak operations scenario

A summary of the peak 24-hour activity rates considered in this assessment is provided in **Table 1**.

Table 1: Assumed Activity Rates for Peak 24-hour Operations

Period	Activity Rates (Overall Number per Period)		
	Agitator Loads Dispatched	Aggregate and Sand Deliveries	Cement and Cement Supplement Deliveries
Peak Daily	142	33	9

The typical distribution of proposed activities across 24-hours is provided in **Table 2**.

Table 2: Volumes and Tonnes Dispatched from Plant by Period of Day

Period	Activity Rates	Mass of Concrete (tonnes)	Volume of Concrete (m^3)
5am to 4pm	97%	1,895	824
4pm to 5am	3%	60	26
Total Daily	100%	1,955	850

For the purposes of the air quality assessment, predicted dust concentrations have been based upon the peak 24-hour operations profile occurring continuously throughout the year.

1.5 RESPONSE TO EDQ FURTHER ISSUES LETTER

A Further Issues Letter was issued by EDQ on 25 February 2025. Provided below are the relevant extracts with reference to Air Quality. It is noted that some comments make reference to the Air Quality Management Plan prepared by MWA Environmental, which have responses provided within an updated report.

Land Use

1. North Maclean is intended for a limited range of commercial and trade retail activities which are supporting small scale industry and services within the local area (Section 3.3.4 Employment opportunities of the Development Scheme). *Guideline 10 – Industry and business areas* states that 'a limited range of other uses may also be acceptable in Industry and business areas where it can be demonstrated that the use:
    - supports or otherwise has a clear nexus with the primary uses within the area
    - provides a service to the workforce within the area
    - will not prejudice the establishment or operation of the primary uses within the area.

    Demonstrate how the concrete batching plant will align with the intention of the North Maclean Industry and business areas in accordance with the *Guideline 10 – Industry and business areas* and is a Medium Impact Industry rather than a High Impact Industry land use.

    Note: *Under the Logan Planning Scheme 2015 "concrete batching and producing concrete products" is classified as a High Impact Industry. If the proposed use were defined under the Logan Planning Scheme, it would be considered prohibited development within the development scheme.*

Air Quality

14. The following points relate to the report '*Air Quality Assessment, Proposed Concrete Batching Plant', 916-944 Greenbank Road, North Maclean, 16 December 2024 by MWA Environmental*

Section 2.1 Ambient air quality

- The use of measured 70th percentile 24-hour average PM10 and PM2.5 concentrations to represent background levels is a standard approach in QLD. However, the wording in Table 3, being "70th percentile over 3 years from Year 2020 to Year 2023 at North Maclean". The 70th percentile value should be calculated separately for each year and the maximum value used, not the 70th percentile over the whole 3-year dataset. This allows for a more conservative assessment accounting for interannual variations. While we don't expect it would have a material impact on the results, we recommend that a review checks the values used and ensures this is the case.

Section 2.2 Air quality criteria

- An expansion should be provided for the abbreviation 'ERA', and (presumably) a reference made to the 2024 guideline, 'Application requirements for activities with impacts to air'.

Section 2.3.2 Dust control measures

- Sprinklers to be operated "during high wind speed conditions" would benefit from specifying a dust lift-off threshold wind speed when they would be operated. This has been noted in the AQMP review also and is probably best addressed there. However it is noted that the AQMP does not include sprinklers as a mitigation measure for any of the sources listed under "Tasks/Actions".

Response to Section 1 – Land Use

Having regard to Guideline 10 – Industry and Business Areas it is relevant to air quality that the section "Environment and Safety" states:

Development must preserve environmental quality and community safety.

	Industry and business areas
Emissions	Emissions (including air, water and soil pollutants, noise, vibration, heat, light, radioactivity and electromagnetic radiation) and hazards must be managed in accordance with: » the Environmental Protection (Air) Policy 2008 » the Environmental Protection (Noise) Policy 2008 » the Dangerous Goods Safety Management Act 2001 and the Dangerous Goods Safety Management Regulation 2001.

Of relevance is that air emissions (which relate to dust from a concrete batching plant) must be managed in accordance with the Environmental Protection (Air) Policy 2008. The assessment provided in this air quality impact assessment report adopts air quality criteria from the current Environmental Protection (Air) Policy 2019 (which is consistent with the 2008 policy and by complying with these criteria, as demonstrated in this report, achieves the Guideline Emissions outcome above.

The proposed development will preserve environmental quality because air emissions from the proposed use will not result in adverse health or amenity impacts at surrounding sensitive land uses with the air quality control measures (filters, enclosures and water sprays) and operational management measures proposed.

The use, in meeting the adopted air quality (dust) criteria, suitably contains dust such that the use fits within the definition of Medium Impact Industry of the PDA Scheme because:

1. primary aspects, including the mixing of raw materials to produce concrete, are undertaken indoors within an enclosure forming part of the modern, purpose-designed concrete batching plant, thereby reducing the potential for dust emissions; and
2. while it will generate offsite dust, the resultant dust emissions will be effectively controlled or contained to achieve compliance with regulatory air quality criteria (i.e. does not exceed the criteria at sensitive uses) which protects the amenity of offsite non-industrial uses including residential uses.

Response to Section 2.1 - Ambient

In response to the comments raised in the Further Issues Letter, additional analysis on the interannual variability of measured ambient particulate concentrations at the North Maclean air monitoring station has been undertaken. The analysis of ambient monitoring has been increased from 3-years to 4-years since publication of the original Air Quality Assessment. The updated analysis of ambient is provided in **Section 2.1** of this report.

Response to Section 2.2 – Air Quality Criteria

The formal definition for the Environmentally Relevant Activity (ERA) has been provided in **Section 2.2** of this report.

Response to Section 2.3.2 – Dust Control Measures

This item has been addressed in the updated Air Quality Management Plan. The threshold velocity for wind erosion of exposed area sources as represented in the dispersion model is 5.4 m/s.

The Logan Planning Scheme 2015 includes air quality criteria in PSP 3, and the following matters should be considered:

i. Provide an assessment against the Logan Planning Scheme 2015 PSP 3 Air Emission Standards (Table 3.2.2.1 - Air emission standards).
ii. Demonstrate compliance at and beyond the boundary of the premises.
iii. Demonstrate compliance at all the surrounding premises as the Environmental Protection (Air) Policy 2019 criteria is for human 'health and wellbeing' and is not specific to sensitive uses versus commercial uses.

Response to Above Further Issues (Logan Planning Scheme)

i. Following discussions with EDQ, assessment in respect to the Logan Planning Scheme Air Emission Standards is not required as the EPP (Air) 2019 and associated criteria provided are appropriate.

ii. Assessment is conducted for sensitive receptors.

iii. The application of EPP (Air) 2019 air quality indicators for human health as considered in the reporting relate to averaging periods of at least 24 hours which are relevant to sensitive receptors occupied for such time periods including residences. The assessment provides detailed assessment for all identified sensitive receptors. In respect to commercial uses, the adjacent service station site, including the approved but not yet constructed fast food uses are not considered sensitive receptors for the purpose of this reporting. That said, compliance with both TSP and Dust Deposition Criteria is achieved at the adajcent service station site on the basis of the best practice air quality control measures proposed.

2.0 AIR QUALITY ASSESSMENT

2.1 AMBIENT AIR QUALITY

The Queensland Government operates a network of ambient air quality monitoring stations across the state.

Key air pollutant emissions associated with concrete batching plants include Particulate Matter (as PM_{10} and $PM_{2.5}$).

Reference has been made to the ambient air quality monitoring measured by Department of Environment, Tourism, Science and Innovation (DETSI) at North Maclean for the purpose of this assessment which is located nearby at 1.7km east-northeast of the subject site.

An analysis of the interannual variability of the measured ambient air quality data for the most recent four (4) years of monitoring has been undertaken and is presented in **Table 3**.

Table 3: Summary statistics for measured particulate concentrations at the North Maclean air monitoring station

Pollutant	PM_{10}		$PM_{2.5}$		TSP
Statistic	**24-hour average 70th percentile (µg/m³)**	**Annual average (µg/m³)**	**24-hour average 70th percentile (µg/m³)**	**Annual average (µg/m³)**	**Annual average (µg/m³)[1]**
Year 2021	16.5	14.7	6.6	5.9	29
Year 2022	15.1	13.3	6.2	5.4	27
Year 2023	**22.0[2]**	**19.7**	**8.3**	**7.9[3]**	39
Year 2024	17.5	16.1	7.7	7.0	32
Statistics for period 2021 to 2024	17.5	16.0	7.1	6.55	32
Air Quality Objective (µg/m³)	50 µg/m³	25 µg/m³	25 µg/m³	8 µg/m³	90 µg/m³

A summary of the relevant ambient air quality statistics for inclusion in the dispersion modelling assessment as ambient concentrations is presented in **Table 4**.

[1] Conservatively double the annual average PM_{10} statistics

[2] Highest on yearly basis, bold and underlined

[3] Adoption of the highest measured $PM_{2.5}$ annual average ambient concentrations, provides extremely limited contribution from the Project site of only 0.1 µg/m³ against the air quality objective of 8 µg/m³. Following guidance from Brisbane City Council officers in the Air Quality Planning Scheme Policy for addressing elevated particulate concentrations measured at air quality monitoring stations, adoption of the long-term average of the particulate dataset may be undertaken.

Table 4: Ambient Air Pollutant Concentrations Applied to Assessment

Air Pollutant	Averaging Time	Concentration (µg/m³)	Reference
Particulate Matter PM_{10}	24-hour average	22	Highest 24-hour average 70th percentile over 4 years from Year 2021 to Year 2024 at North Maclean
	Annual Average	16	Annual average over 4 years from Year 2021 to Year 2024 at North Maclean
Particulate Matter $PM_{2.5}$	24-hour average	8.3	Highest 24-hour average 70th percentile over 4 years from Year 2021 to Year 2024 at North Maclean
	Annual Average	6.55	Annual average over 4 years from Year 2021 to Year 2024 at North Maclean
TSP	Annual Average	32	Conservative Assumption of Double the PM_{10} Annual Average for Year 2021 to Year 2024 at North Maclean
Dust Deposition	Maximum Monthly Average	40 mg/m²/day	Typical conservative assumption

2.2 AIR QUALITY CRITERIA

This assessment has addressed the particulate air quality objectives specified in the *Queensland Environmental Protection (Air) Policy 2019*. Assessment has also been undertaken with respect to a maximum dust deposition rate of 120 mg/m²/day when measured in accordance with AS3580.10.1 for the assessment of nuisance dust.

Table 5: Air Quality Objectives

Pollutant	Averaging Period	Health outcome protected	Air Quality Objective (µg/m³)
PM_{10}	24-hour average	Health and wellbeing	50 µg/m³
	Annual Average	Health and wellbeing	25 µg/m³
$PM_{2.5}$	24-hour average	Health and wellbeing	25 µg/m³
	Annual Average	Health and wellbeing	8 µg/m³
TSP	Annual Average	Health and wellbeing	90 µg/m³
Dust Deposition	Maximum Monthly Average	Common ERA[a] limit	120 mg/m²/day

[a] *– "Environmentally Relevant Activities." Relevant environmental activities that may cause identifiable and quantifiable environmental (air) impacts such as dust deposition from operations or activities that may release fugitive emissions of contaminants on sensitive receptors. Further relevant ERAs can be understood in "Application requirements for activities with impacts to air" (EPA 1994).*

2.3 DUST MODELLING

2.3.1 DUST MODELLING METHODOLOGY

To enable assessment of dust concentrations and deposition rates from the proposed concrete batching plant operations, detailed dispersion modelling has been conducted using the CALMET / CALPUFF modelling system.

Following accepted methodology for detailed assessment, the TAPM software was utilised to develop a prognostic meteorological model which generated a year of representative hourly meteorological data for the region.

TAPM has been used to predict meteorological parameters specific to the region including temperature, wind speed, wind direction and stability classification. The model accesses databases of surface characteristics (terrain height, soil and vegetation) and synoptic weather analyses provided by CSIRO to carry out these analyses. TAPM is able to process the output data to produce input meteorological data files suitable for input to the CALMET / CALPUFF modelling system i.e. hourly predictions of meteorological parameters over a full year and generation of surface, upper air and geophysical data files.

Technical discussion of the model algorithms, inputs and model validation studies are provided in the *Part 1: Technical Paper* (Hurley, 2002) and *Part 2: Summary of Verification Studies* (Hurley *et al*, 2002)[4,5].

The centre coordinates for the model grid were Latitude -27°42'30" and Longitude 153°7'. The following nested model grids were applied to the TAPM modelling:

35 x 30 km grid (total area 1050 km x 1050 km)

35 x 10 km grid (total area 350 km x 350 km)

35 x 3 km grid (total area 105 km x 105 km)

35 x 1 km grid (total area 35 km x 35 km)

Twenty-five vertical grid levels were modelled.

The TAPM model was set up to generate a site-specific meteorological data file for the locality, based upon synoptic analysis data for the representative Year 2018, as provided by CSIRO.

[4] Hurley, P.J. (2002) The Air Pollution Model (TAPM) Version 2: User Manual. Aspendale: CSIRO Atmospheric Research Internal Paper.

[5] Hurley, P.J. (2002) The Air Pollution Model (TAPM) Version 2: Part 1: Technical Description. Aspendale: CSIRO Atmospheric Research Technical Paper.

An analysis of wind speeds and directions measured at the DETSI monitoring station at North Maclean, 1.7km east-northeast of the subject site was undertaken for the Years 2009 to 2023. The most statistically representative year was assessed to be 2018, based on the meteorological conditions for this period of available data. Included in **Attachment 2** are wind roses comparing the distribution of wind speeds and directions at the DETSI North Maclean monitoring station for the period 2009 to 2023.

Observed wind speeds and wind directions for the monitoring station at North Maclean were incorporated into the TAPM model as assimilation data with a 15-kilometre radius of influence over 2 vertical levels with a quality factor of 0.9 applied.

The TAPM output was processed using the CALTAPM software to produce a 3-dimensional data file suitable for input to the diagnostic CALMET model as an 'initial guess field'. The CALMET model further resolved the prognostic meteorology to a finer terrain, land use and soil type resolution of 100 metres over a 6 x 6 km area covering the subject site and surrounding region for the purpose of dispersion modelling.

Provided in **Attachment 3** is a comparison of the CALMET derived meteorology for the nearby DETSI North Maclean monitoring station against measured observations. Analysis includes comparison of wind roses and wind frequency graphs. The similarity between the model predicted and observations improves the confidence in the representation of the predicted meteorology for the subject site.

Analysis of the CALMET derived meteorology for the subject site including a wind rose, wind frequency graph, monthly average temperatures graph and stability class analysis can be found in **Attachment 4**.

2.3.2 DUST CONTROL MEASURES

The proposed concrete batching plant will be a modern design which incorporates various design features to control dust emissions, including:

- Aggregate and sand storage in above ground bins with 3-sides with walls constructed to a minimum height of 0.5 metres above the intended top of stockpile levels to minimise potential wind generated dust emissions.
- Full plant area sealed to minimise dust emissions from frequent vehicle movements in the main production area.
- Loading (batching) conducted within an enclosure with dust extraction and filtration.
- Indicative performance of bag filter at 2800m^3/hr @ 10mg/Nm^3 PM_{10}
- Silos with overfill protection and baghouse filters.
- Covered conveyors for raw material feed to batching plant.

- Effective sprinkler system to all above-ground storages of materials with the potential to generate dust and will be operated during high wind speed conditions to minimise dust emissions.
- The sealed area adjacent the above-ground stockpiles is to be regularly cleaned to minimise silt loading and potential dust emissions from wind erosion and vehicle manoeuvring.

2.3.3 DUST EMISSION SOURCES

Dust emissions from the plant have been represented in the CALPUFF dispersion model as numerous area sources covering the relevant footprints of each part of the site. The loadout of concrete to agitator trucks has been represented by a volume source with appropriate dispersion parameters representing the size of the emission source.

The following dust emission sources have been represented in the dispersion model:

- Wheel generated dust from heavy vehicle movements onsite (paved road)
- Dust emissions from transfer of raw materials to above-ground storage bins and weigh hoppers by front end loader
- Dust emissions from reclaim of raw materials from above-ground storage bins by front end loader
- Wind erosion of stockpiles
- Cement unloading to silos
- Unloading of supplementary cementitious materials to silos
- Loading of agitator trucks with cement, aggregate and sand

Emissions rates for each of the above sources have been calculated using published emission factors from the following references:

- NPI *Emission Estimation Technique Manual for Mining v3.1*, Environment Australia (2012);
- USEPA AP42 Chapter 13.2.1 *Paved Roads* (2011)
- USEPA AP42 Chapter 11.12 *Concrete Batching* (2006)

Emission estimations have been based upon the indicative peak 24 hour operations profile as summarised in **Table 1**.

The dust emission rates have been calculated considering the proposed dust emission control measures outlined in ***Section 2.3.2*** above.

In accordance with the method presented in the NPI *Emission Estimation Technique Manual for Mining v3.1*, significant wind erosion emissions will occur when wind speed is greater than a 5.4 m/s threshold. As such, dust emissions from wind erosion have been varied with wind speed category for hours exceeding the 5.4 m/s threshold.

A detailed summary of the emission rate calculations for representation of the proposed plant are included as **Attachment 5**.

2.3.4 PARTICLE SIZE DISTRIBUTION

In order to assess the potential dust deposition from the concrete batching plant it was necessary to model a particle size distribution. It is considered reasonable to apply a generalised particle size distribution for the purposes of this modelling. The modelled particle size distribution was derived from the USEPA AP42 *Appendix B.2 Generalized Particle Size Distributions*[6] for concrete batching.

A detailed summary of the particle size distributions input to the TSP, PM_{10} and $PM_{2.5}$ models is provided as **Attachment 6**.

2.3.5 DUST MODELLING RESULTS

Dispersion modelling has been conducted for discrete receptors representative of surrounding sensitive uses (refer **Figure 3**).

The results of the air pollutant dispersion modelling are summarised in **Table 6** for the proposed operations.

The predicted cumulative concentrations and deposition rates include the ambient levels presented in **Table 4** in addition to the modelled concentrations and deposition rates from the proposed concrete batching plant operations.

[6] USEPA (2006) Compilation of Air Pollutant Emission Factors – Volume 1: Stationary Point and Area Sources, AP-42 Chapter 13.2.4 Aggregate Handling and Storage Piles, United States Environmental Protection Agency.

Table 6: **Predicted particulate concentrations and deposition rates from Proposed Concrete Batching Plant operations at surrounding sensitive uses**

Pollutant	PM_{10}		$PM_{2.5}$		TSP	Dust Deposition
Averaging Period	Maximum 24 hour average	Annual Average	Maximum 24 hour average	Annual Average	Annual Average	Maximum Monthly Average
Units	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(µg/m³)	(mg/m²/day)
R1	27.7	16.4	9.9	6.7	32.9	40.8
R2	29.3	16.9	10.4	6.8	34.0	42.6
R3	35.0	17.1	11.9	6.8	34.2	42.0
R4	30.5	16.8	10.6	6.8	33.6	41.4
R5	27.6	16.7	9.9	6.7	33.4	41.2
R6	31.1	16.8	10.8	6.8	33.4	41.2
R7	35.8	17.6	12.2	7.0	34.8	42.4
R8	30.6	18.0	10.7	7.1	35.4	42.4
R9	29.8	17.3	10.5	6.9	34.4	41.8
Air Quality Objective	50 µg/m³	25 µg/m³	25 µg/m³	8 µg/m³	90 µg/m³	120 mg/m²/day
Compliance?	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**	**Yes**

In addition to the discrete receptor modelling, included in **Attachment 7** are contour plots for the proposed concrete batching plant operations.

The results of the dispersion modelling demonstrate that the proposed concrete batching plant can operate 24 hours / 7 days in compliance with the air quality objectives in the *Environmental Protection (Air) Policy 2019* at surrounding sensitive uses.

3.0 CONCLUSION

MWA Environmental has been engaged to prepare an Air Quality Assessment for a proposed concrete batching plant located at 916-944 Greenbank Road, North Maclean.

The report addresses the potential impact of dust emissions from the proposed concrete batching plant on surrounding sensitive uses. The assessment has been based upon detailed dust emission estimations and dust dispersion modelling and provides recommendations for measures to mitigate potential dust impacts at surrounding sensitive uses as required.

The assessment of air pollutant concentrations at surrounding sensitive uses has been made against the air quality objectives in the *Environmental Protection (Air) Policy 2019*.

The assessment has been based upon detailed dust emission estimation and dust dispersion modelling and provides recommendations for measures required to mitigate potential dust impacts at surrounding sensitive uses.

The results of the dispersion modelling demonstrate that the proposed concrete batching plant can operate 24 hours / 7 days in compliance with the air quality objectives in the *Environmental Protection (Air) Policy 2019* at surrounding sensitive uses.

MWA Environmental
12 June 2025

FIGURES

LEGEND
SITE LOCATION
PROPERTY BOUNDARY

DRAWING REFERENCE

CLIENT
NUCRUSH GROUP

PROJECT
AIR QUALITY ASSESSMENT
PROPOSED CONCRETE BATCHING PLANT
916-944 GREENBANK ROAD
NORTH MACLEAN QLD

TITLE
SITE LOCATION AND SURROUNDING LAND USES

JOB	NORTH MACLEAN	**FIGURE 1**
JOB NO.	23135	
DATE	06/12/24	DWG NUMBER
SCALE	1:5000 (A4)	**23135-1**
REV.		

mwa ENVIRONMENTAL
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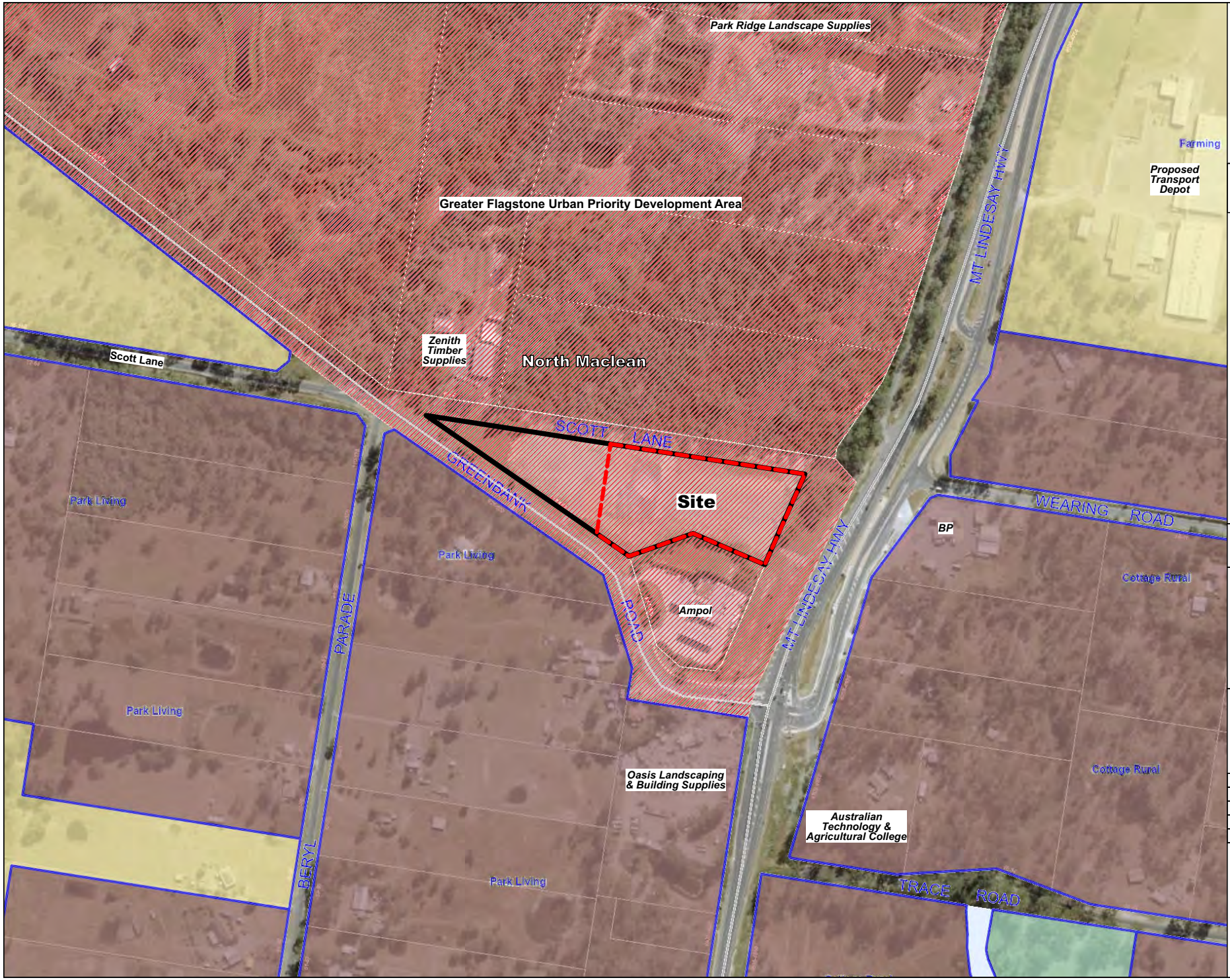
ABN 94 010 833 084



LEGEND

SITE LOCATION

PROPERTY BOUNDARY

LOGAN PLANNING SCHEME 2015 ZONES

PRIORITY DEVELOPMENT AREA

RURAL RESIDENTIAL

RURAL

RECREATION AND OPEN SPACE

DRAWING REFERENCE

LOGAN CITY COUNCIL PLANNING SCHEME 2015, INTERACTIVE MAPPING, ZONING MAP.

0 50 100 150m

CLIENT

NUCRUSH GROUP

PROJECT

AIR QUALITY ASSESSMENT

PROPOSED CONCRETE BATCHING PLANT
916-944 GREENBANK ROAD
NORTH MACLEAN QLD

TITLE

ZONING MAP

JOB	NORTH MACLEAN	**FIGURE 2**
JOB NO.	23135	
DATE	06/12/24	DWG NUMBER
SCALE	1:5000 (A4)	**23135-2**
REV.		

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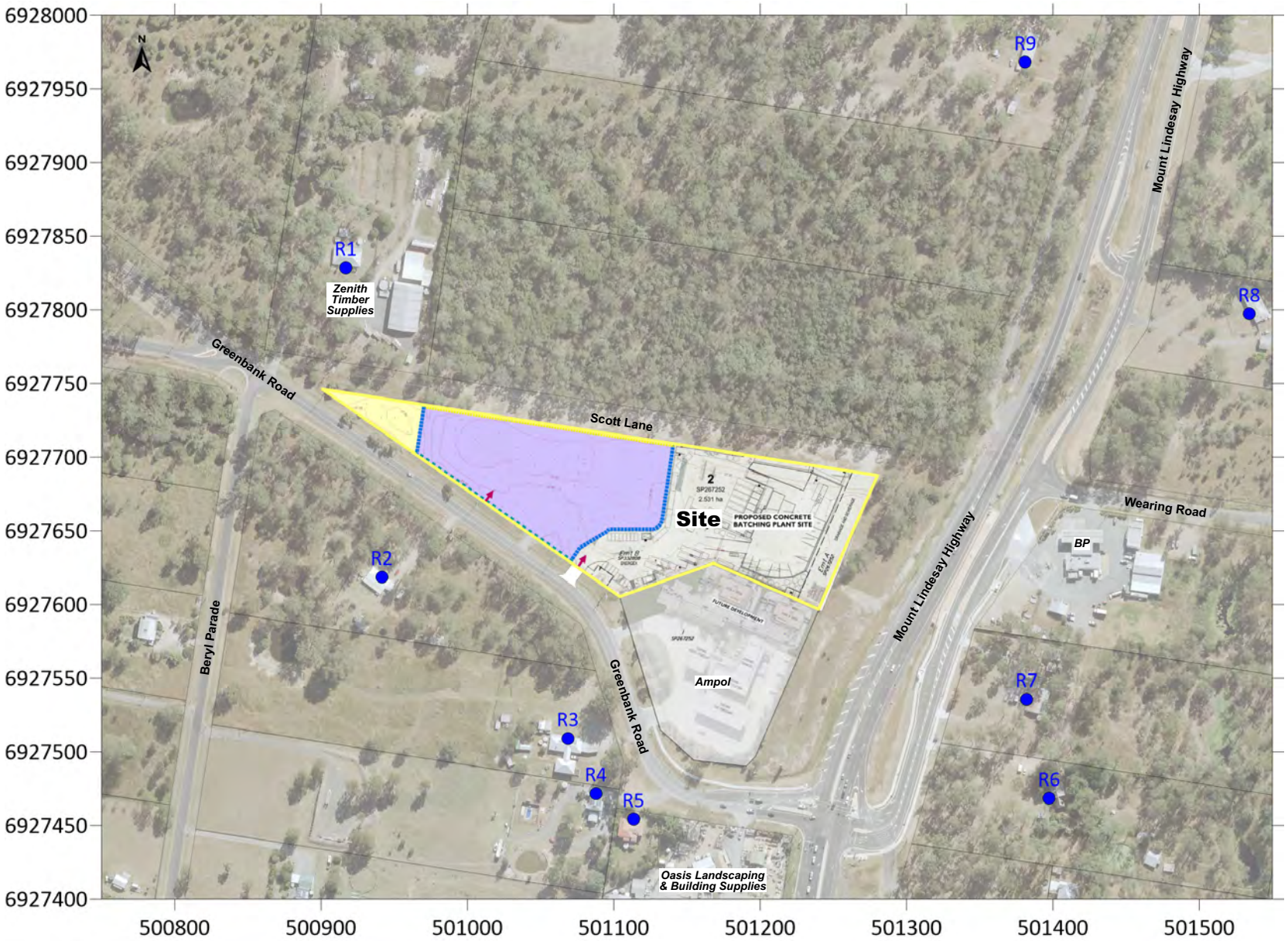

LEGEND

PROPERTY BOUNDARY

SENSITIVE RECEPTORS (R1-R9)

DRAWING REFERENCE

0 50 100m

CLIENT

NUCRUSH GROUP

PROJECT

AIR QUALITY ASSESSMENT

PROPOSED CONCRETE BATCHING PLANT
916-944 GREENBANK ROAD
NORTH MACLEAN QLD

TITLE

SENSITIVE RECEPTOR LOCATIONS

JOB	NORTH MACLEAN	**FIGURE 3**
JOB NO.	23135	
DATE	06/12/24	DWG NUMBER
SCALE	1:4000 (A4)	**23135-3**
REV.		

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ATTACHMENT 1

Plans of Proposed Development

DESIGN CRITERIA

Development is to be in accordance with the provision of the Industry and Business Area -PDA Guideline No. 10 (May 2015 version), except for the following provisions:

A. All advertising devices are to be in accordance with Logan City Council's Planning Scheme.
B. End of trip facilities can be provided by operators if deemed necessary.
C. All refuse storage areas, materials, plant areas and services will be suitably screened to all boundaries.
D. Buildings are shaped, designed and finished so that the maximum length of unvaried or unarticulated (blank) wall does not exceed 20 metres (unless facing a side or rear property boundary).
E. Roofing materials are pre coloured and non-reflective.
F. Glazing treatment must use non-reflective materials/products.
G. Where buildings face the public realm areas, including streets, parks and walkways, significant overlooking and surveillance opportunities must be incorporated with positive CPTED practice. Where public use walkways are incorporates between or within sites, the buildings must front activated zones to these walkways in accordance with positive CPTED practice.
H. All service areas, plant and air conditioning plant is to be screened, integrated into the building, or located on the roof with screening.
I. Site coverage may be up to 80% provided:
   - All other landscaping and development requirements of the Plan of Development are complied with;
   - Development is in context with, and visually compatible with the appearance of any neighbouring buildings;
   - Adequate pedestrian access and amenity is provided at ground level.
J. Greenbank Road and Scott Lane frontage:
   - Building development along the Scott Lane must be setback a minimum of 2.0 metres;
   - Any building located within 3.0m of Greenbank Road must include an articulated facade and a minimum of 2 colours (which may contain glazing).
K. Zero setbacks to side and rear boundaries will be permitted subject to sight lines and other constraints affecting adjoining development.
L. Bicycle parking will be provided at the rate of one space per five car parking spaces.
M. Landscaping:-
   - Preference is to be given to utilising plant species that are native and endemic to the area and are low maintenance species.
   - All street frontages, not developed as Built to Boundary buildings will require a 2.0m minimum width landscape strip, except at vehicular and pedestrian access points.
N. Car parking:-
   - Car parking will be provided in accordance with Table 1.
   - Service vehicles must enter and leave the Site in a forward direction.
   - Where an onsite refuse collection area is provided, access and manoeuvring areas are designed and provided to enable access by a refuse collection vehicle based on the Design Service Vehicle in Austroads/Standards Australia HB72 Design Vehicles and Turning Path Templates.
   - All premises are identified by the provision of a street number in a prominent location, preferably near the site entry, i.e. on the kerb or letterbox or by signage on the building or site.

DEVELOPMENT STANDARDS

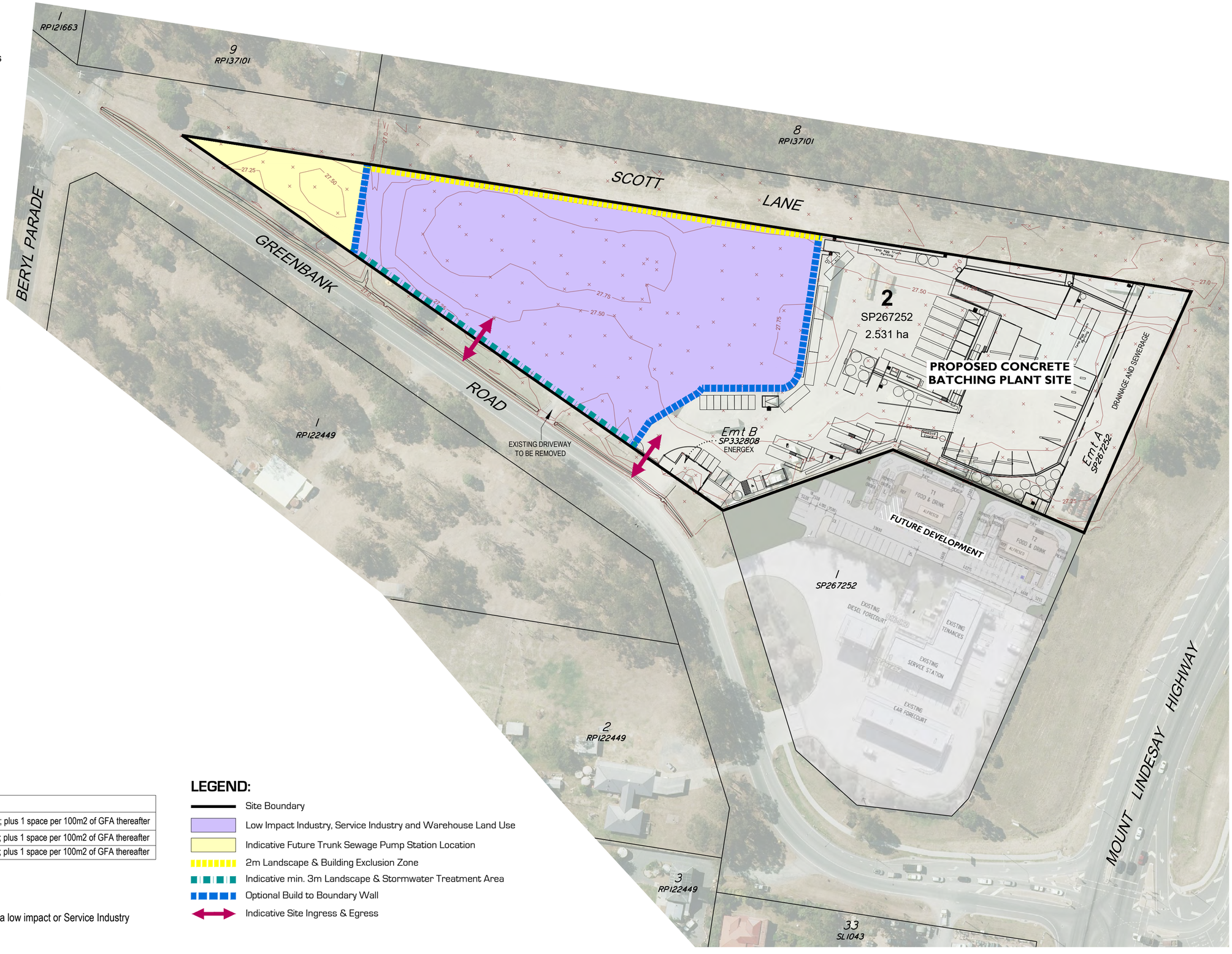
All engineering works are to comply with the PDA Guideline No. 13 Engineering Standards, dated September 2017.
Driveway construction is to be in accordance with Council standards.

TABLE 1

Approved Uses *	Car Parking Rate
Low Impact Industry #	1 space per 50m2 of GFA up to 500m2; plus 1 space per 100m2 of GFA thereafter
Service Industry	1 space per 50m2 of GFA up to 500m2; plus 1 space per 100m2 of GFA thereafter
Warehouse	1 space per 50m2 of GFA up to 500m2; plus 1 space per 100m2 of GFA thereafter

NOTE:

\# Includes ancillary shop for the sale of goods directly associated with a low impact or Service Industry



LEGEND:

- Site Boundary
- Low Impact Industry, Service Industry and Warehouse Land Use
- Indicative Future Trunk Sewage Pump Station Location
- 2m Landscape & Building Exclusion Zone
- Indicative min. 3m Landscape & Stormwater Treatment Area
- Optional Build to Boundary Wall
- Indicative Site Ingress & Egress

PLAN REF: AU015412-POD-4
DATE: 13 DECEMBER 2024
CLIENT: NERANG PASTORAL CO. PTY LTD
DRAWN: BJB
SCALE (A2): 1:1000
SHEET: 1 of 1

PLAN OF DEVELOPMENT

Lot 2 on SP267252
916 - 944 GREENBANK ROAD, NORTH MACLEAN

10 0 10 20 30 40

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ATTACHMENT 2

Representative Year Meteorological Analysis
of
DETSI North Maclean Data

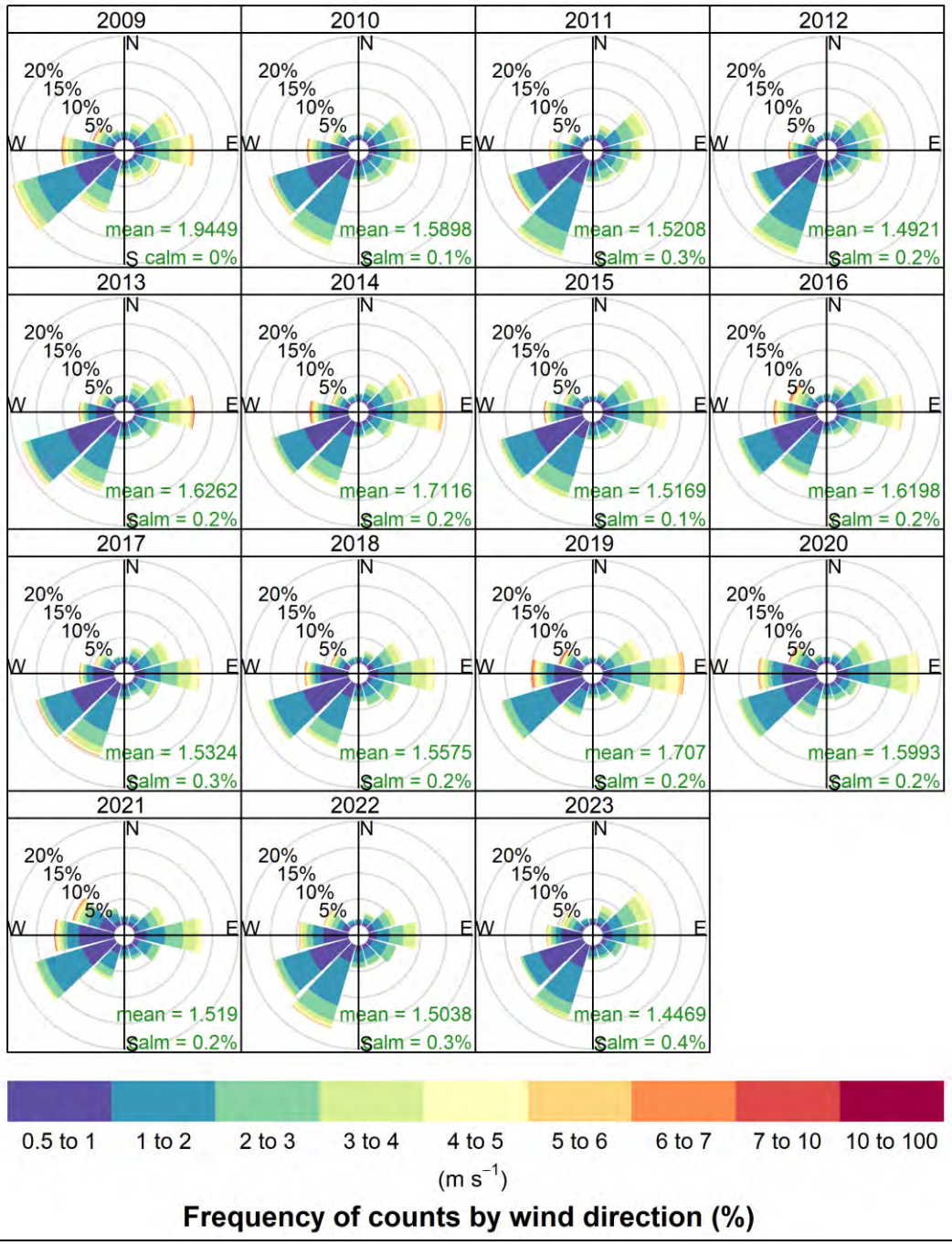


Figure A2.1 Annual wind roses for DESI North Maclean observations

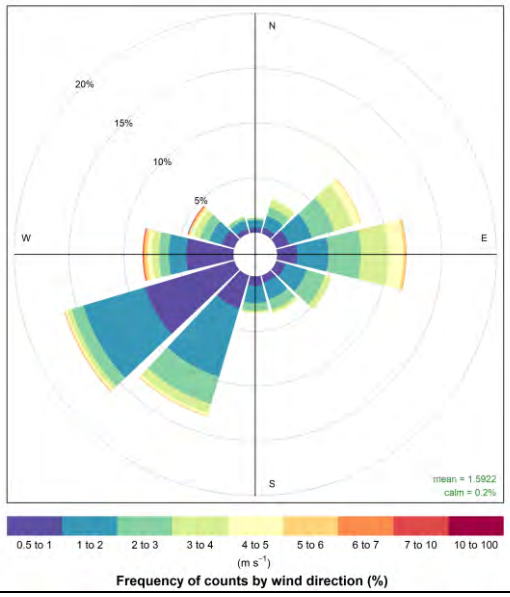
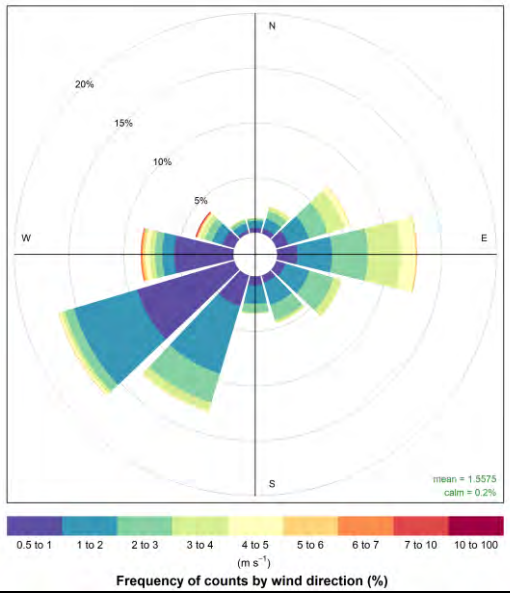
Composite of All Years	Year 2018
	

Figure A3.1 Wind Rose comparison of DESI North Maclean observations

Table A2.1 Representative Year Meteorological Analysis for DESI North Maclean observations

Year	Correlation of Yearly Wind Rose against Long-term Wind Rose	Ranking Wind Rose Correlations	Frequency of Calm Winds <0.5m/s (%)	Number of Missing Hours per annum	Missing Hours (% of year)	Mean Wind Speed (m/s)	Absolute Difference to Long term Mean Wind Speed (m/s)
2009	0.9551	8	0	104	1%	1.94	0.35
2010	0.9565	7	0.1	189	2%	1.59	0.00
2011	0.9011	11	0.3	136	2%	1.52	0.07
2012	0.8877	12	0.2	5	<1%	1.49	0.10
2013	0.9860	4	0.2	44	1%	1.63	0.03
2014	0.9822	6	0.2	169	2%	1.71	0.12
2015	0.9929	1	0.1	15	<1%	1.52	0.08
2016	0.9845	5	0.2	3	<1%	1.62	0.03
2017	0.9897	3	0.3	183	2%	1.53	0.06
2018 Representative Year selected	0.9905	2	0.2	162	2%	1.56	0.04
2019	0.8825	13	0.2	237	3%	1.71	0.11
2020	0.8753	14	0.2	66	1%	1.60	0.01
2021	0.8459	15	0.2	15	<1%	1.52	0.07
2022	0.9511	9	0.3	173	2%	1.50	0.09
2023	0.9504	10	0.4	12	<1%	1.45	0.15
Long-term						1.59	

ATTACHMENT 3

Analysis of CALMET-Generated Meteorological Data at DETSI North Maclean monitoring station against measured observations

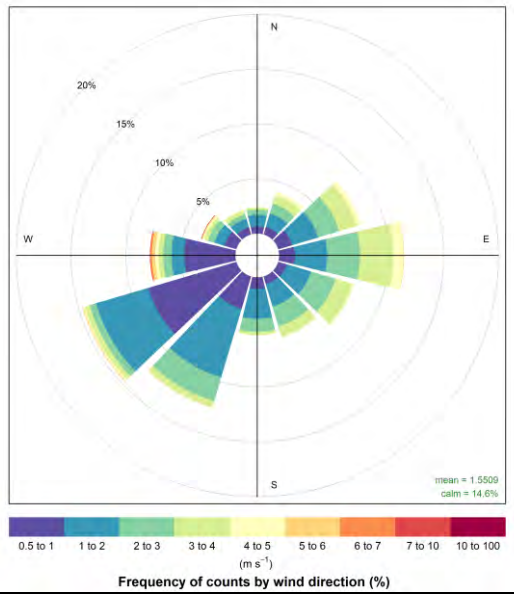
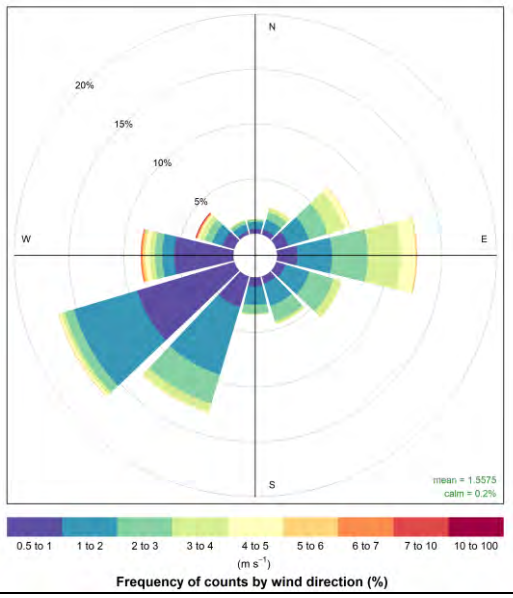
CALMET Model Predicted for North Maclean station	Observations measured at North Maclean station for Year 2018
	

Figure A3.1 Wind Rose comparison of CALMET Model Predicted and Measured Observations at the North Maclean monitoring station

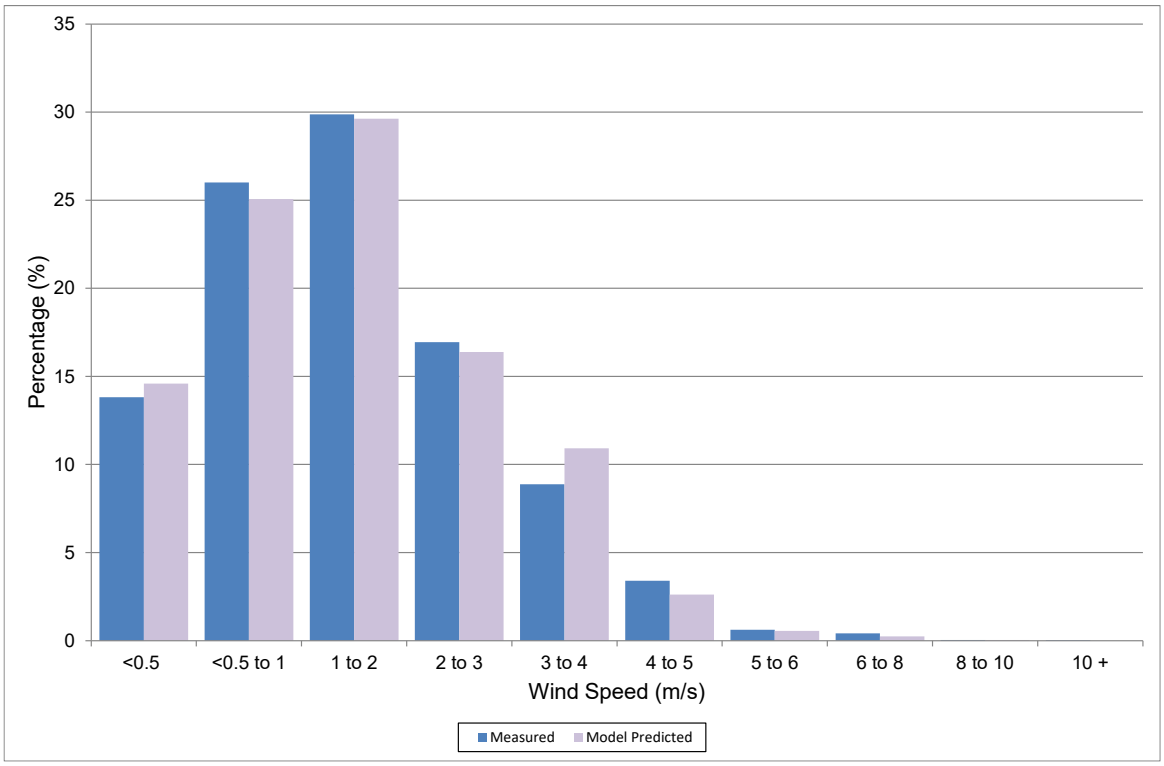


Figure A3.2 Wind Frequency comparison of CALMET Model Predicted and Measured Observations at the North Maclean monitoring station

ATTACHMENT 4

Analysis of CALMET-Generated Site Meteorological Data

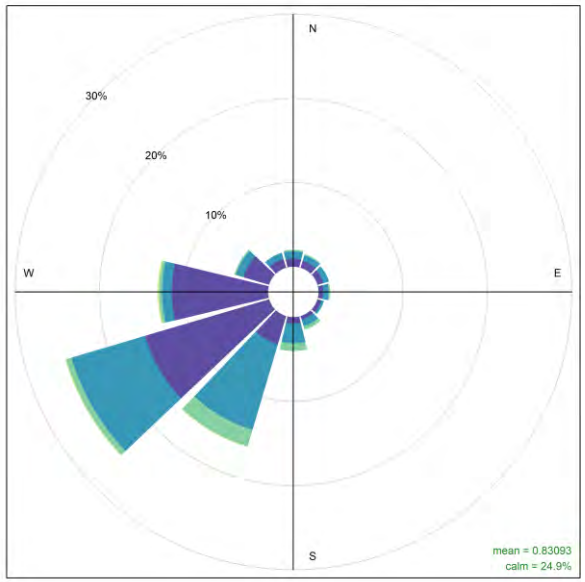
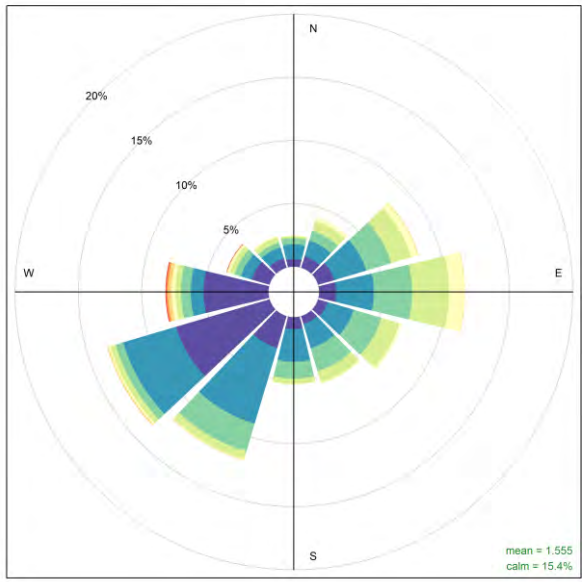
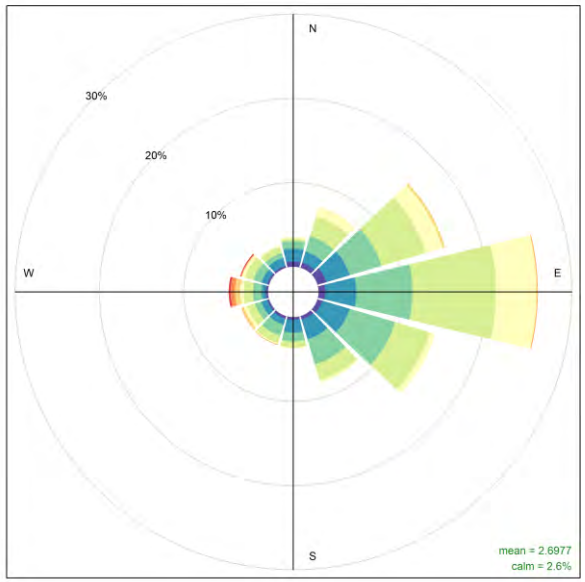
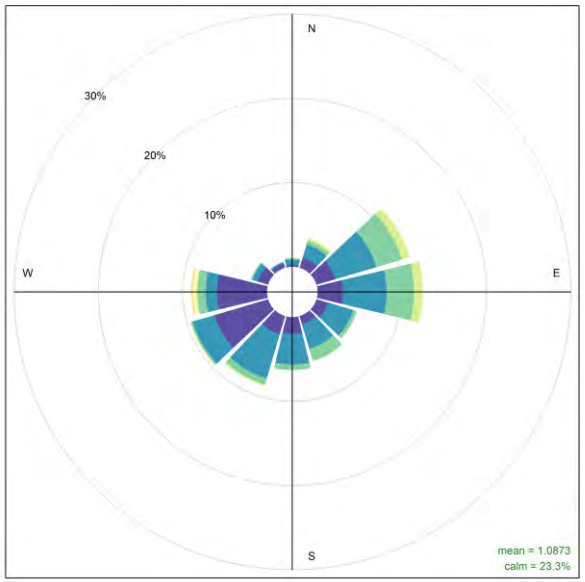
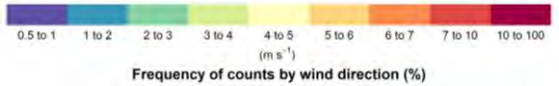
Midnight to 6am	6am to Midday	Annual
		
Midday to 6pm	**6pm to Midnight**	**Key**
		

Figure A4.1 Diurnal wind roses for Site as generated by CALMET

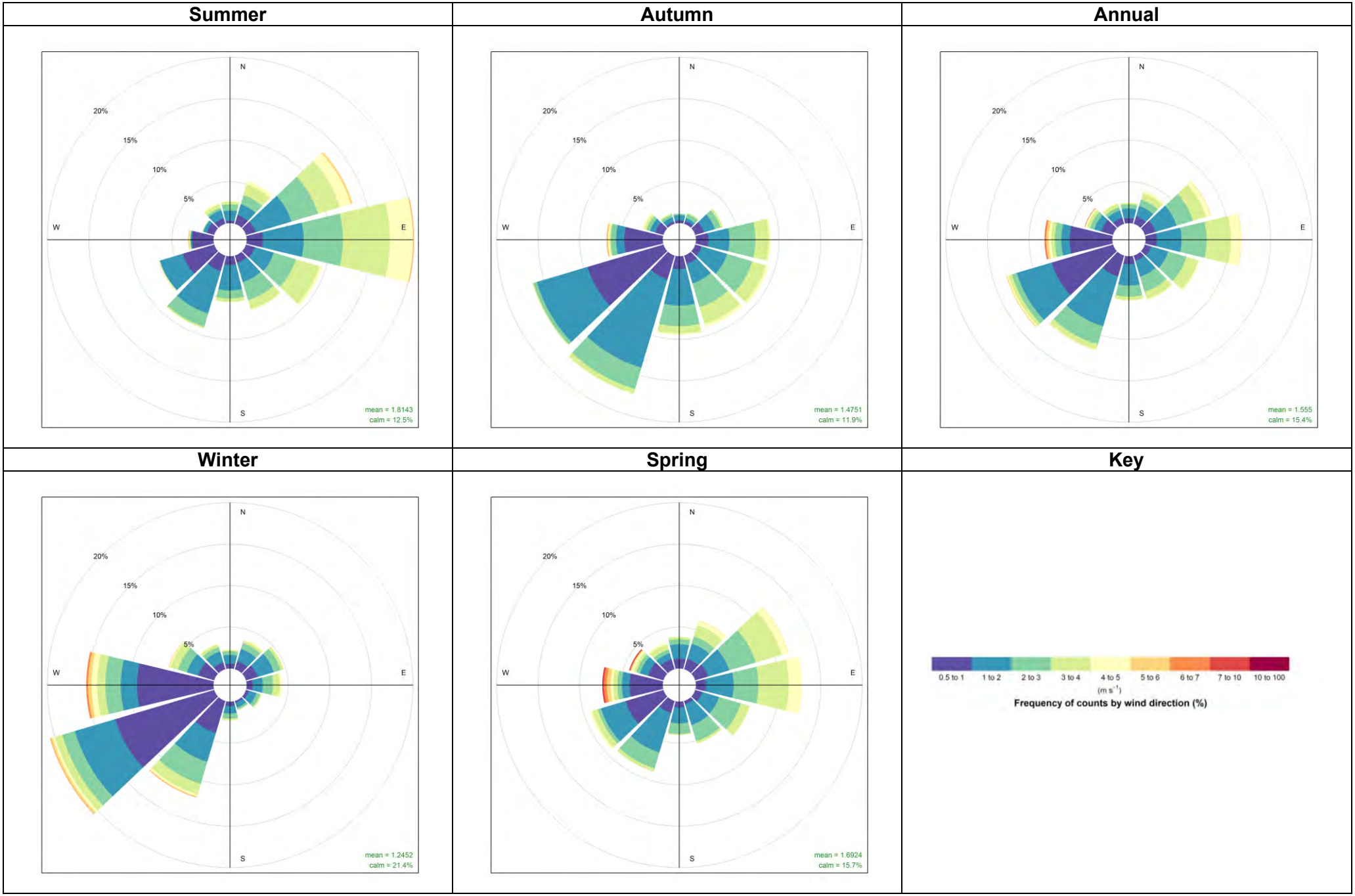


Figure A4.2 Seasonal wind roses for Site as generated by CALMET

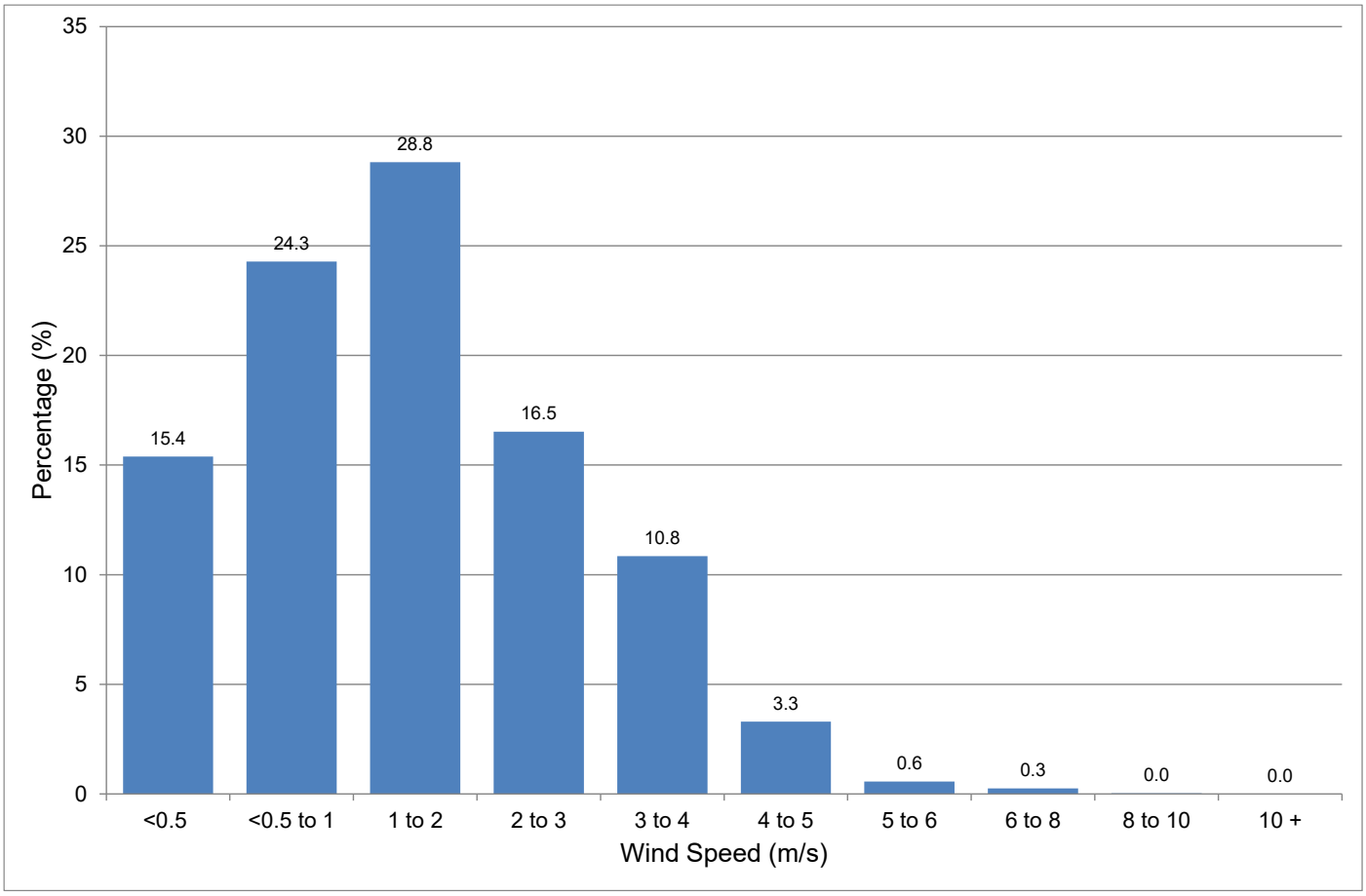


Figure A4.3 Wind frequency graph for Site as generated by CALMET

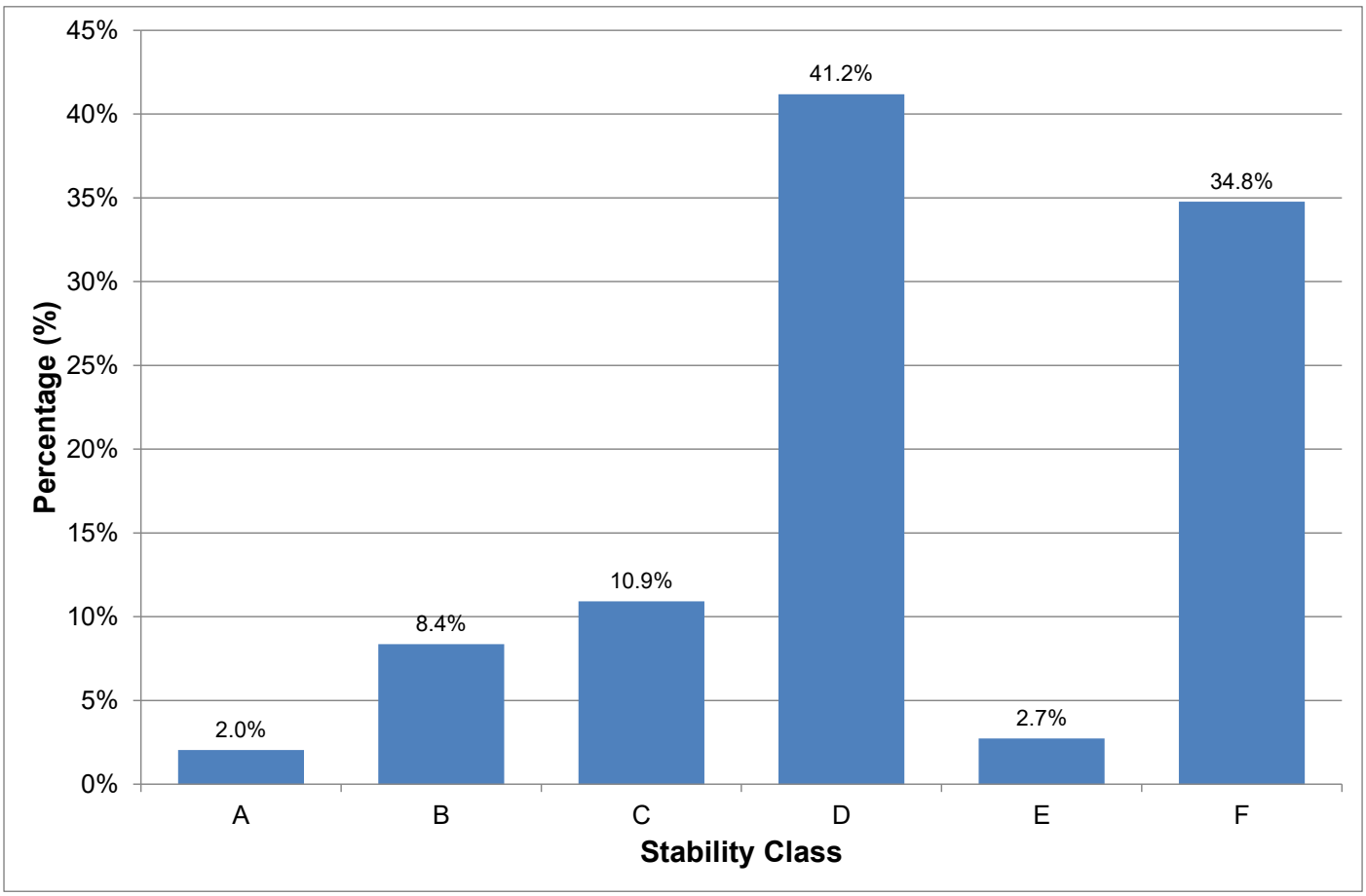


Figure A4.4 Stability Class distribution for Site as generated by CALMET

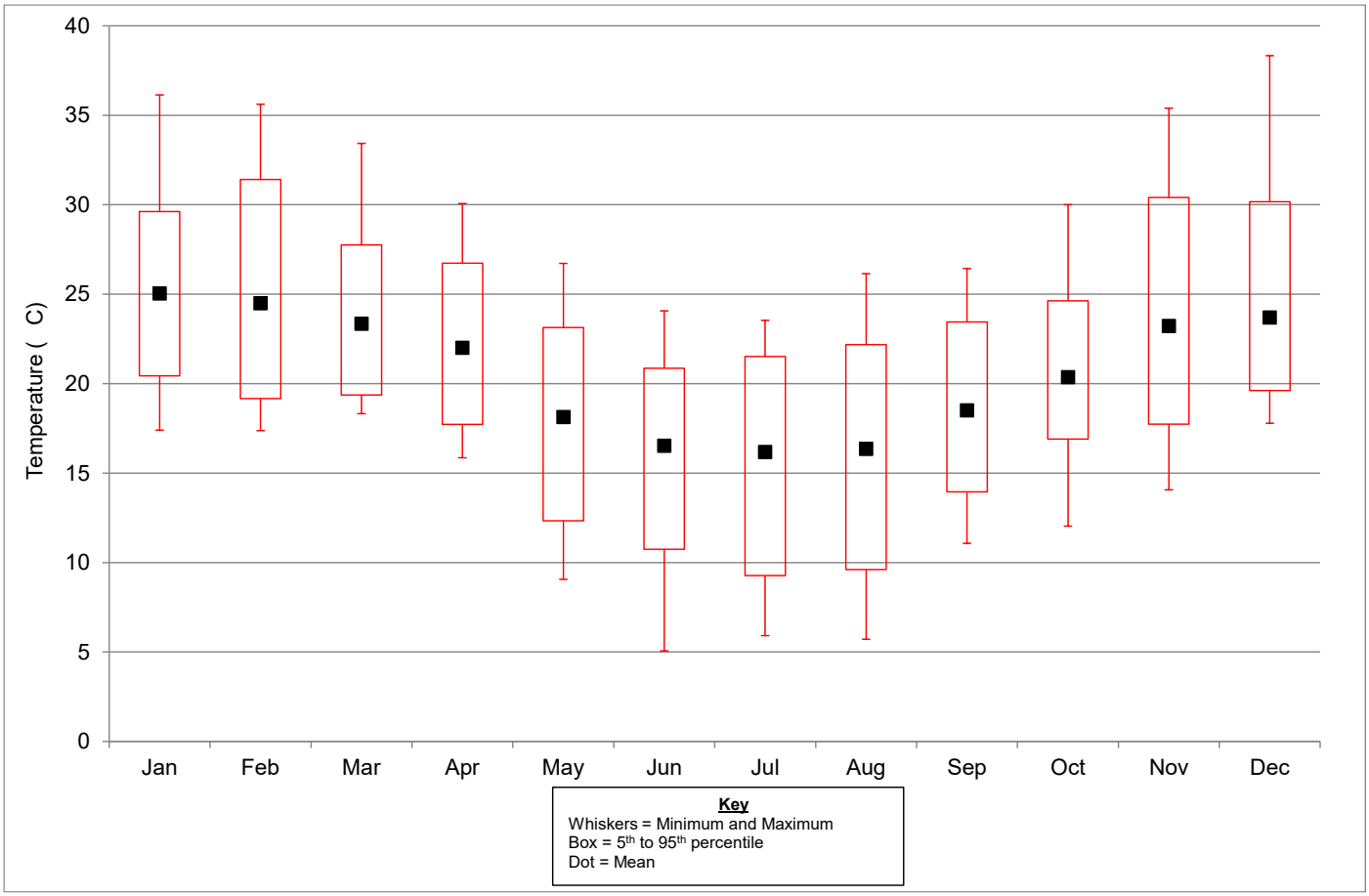


Figure A4.5 Box and Whisker plot of monthly temperature for Site as generated by CALMET

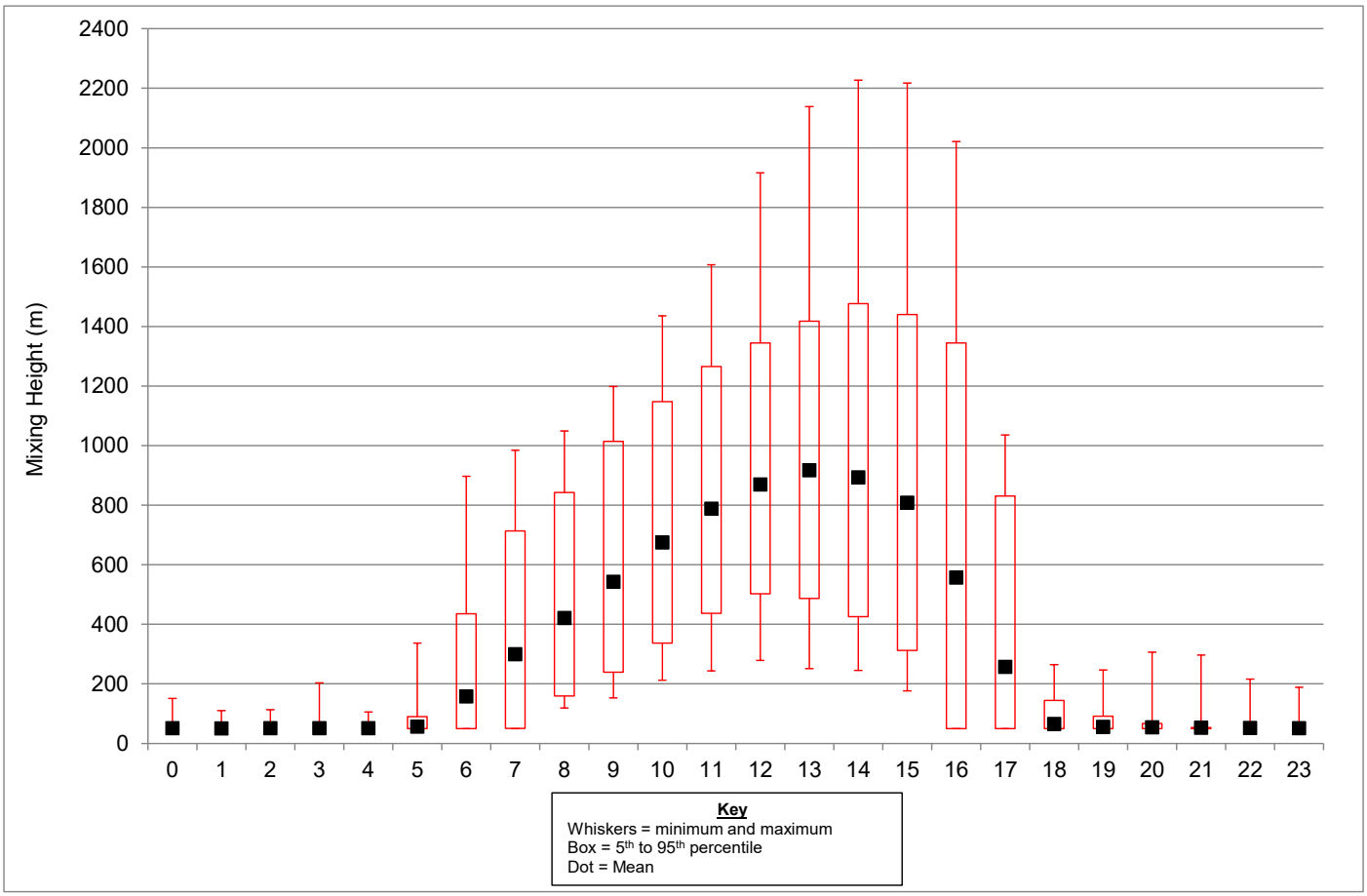


Figure A4.6 Box and Whisker plot of diurnal mixing height for Site as generated by CALMET

ATTACHMENT 5

Concrete Batching Plant Emission Rates

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

EMISSIONS ESTIMATION INPUT SUMMARY

	Value	Units	Comments
Operating Hours:	24	per day	Approval Sought
Paved Road Silt Loading (sL):	12	g/m^2	USEPA AP42 Chapter 13.2.1 mean concrete batching
Density of wet concrete	2.3	t/m^2	
Production Rate:	850	m^2/Day	Project Briefing
Production Rate:	1955	t/day	MWA Calc
Aggregate and Sand Truck Movements			
Mean Vehicle Mass (W):	39.25	tonnes	MWA Calc
Production Rate:	1955	t/day	Same as Production Rate
Raw Materials Excluding Water:	82%	%	Based on Concrete Composition Agg + Sand
Raw Materials Excluding Water:	1600	t/day	MWA Calc
Average Payload:	48.5	tonnes	Project Briefing
Trips per Day:	33	#	MWA Calc
Average Trip Length:	0.408	km	Digitised in Mapinfo
Unladen vehicle mass	15.0	tonnes	Representative from other projects
Raw Materials Excluding Water:	1600	t/day	QA CALC
Cement and Cement Supp Truck Movements			
Mean Vehicle Mass (W):	30.75	tonnes	Typical data for concrete plant
Production Rate:	1955	t/day	Same as Production Rate
Raw Materials Excluding Water:	14%	%	Based on Concrete Composition Cement + Supp
Raw Materials Excluding Water:	274	t/day	MWA Calc
Average Payload:	31.5	tonnes	Project Briefing
Trips per Day:	9	#	MWA Calc
Average Trip Length:	0.309	km	Digitised in Mapinfo
Unladen vehicle mass	15.0	tonnes	MWA Assumption from other projects
Raw Materials Excluding Water:	274	t/day	QA CALC
Agitator Truck Movements			
Mean Vehicle Mass (W):	15.2	tonnes	Representative from other projects
Production Rate:	1955	t/day	Same as Production Rate
Average Load:	6	m^3	Project Briefing
Average Payload:	13.8	tonnes	MWA Calc
Trips per Day:	142	#	MWA Calc
Average Trip Length:	0.309	km	Digitised in Mapinfo
Loader Movements			
Mean Vehicle Mass (W):	12	tonnes	Typical data for concrete plant
Average Specials Rate:	1955	t/day	Same as Production Rate
Average Payload:	5	tonnes	Typical data for concrete plant
Loader feed of raw materials:	82%	%	Loading of all Agg and Sand
Trips per Day:	320	#	MWA Calc
Average Trip Length:	0.040	km	Digitised in Mapinfo
Stockpiles			
Silt Content (s):	3.9	%	USEPA AP42 Chapter 13.2.4 Table 13.2.4-1
Days of rainfall > 0.25mm (p):	97	days	Average Greenbank (Thompson Road) - 2000 to 2021
Percentage wind speed > 5.4m/s (f):	2.2	%	CALMET meteorological data for Subject Site
	0.6	%	CALMET meteorological data for Subject Site (RUN 2)
Ground Receival Bins			
Stockpile Area:	737	m^2	Digitised in Mapinfo
Control Factor:	85%	%	Water Sprays + Wind Breaks
Sum	737	m^2	MWA Calc
Aggregate Transfer			
Production Rate:	1955	t/day	Same as Production Rate
Material Component:	46%	%	Based on Concrete Composition
Material Usage:	906	t/day	MWA Calc
Sand Transfer			
Production Rate:	1955	t/day	Same as Production Rate
Material Component:	36%	%	Based on Concrete Composition
Material Usage:	694	t/day	MWA Calc
Cement Unloading to Silo			
Production Rate:	1955	t/day	Same as Production Rate
Material Component:	12%	%	Based on Concrete Composition
Material Usage:	239	t/day	MWA Calc
Cement Supplement Unloading to Silo			
Production Rate:	1955	t/day	Same as Production Rate
Material Component:	2%	%	Based on Concrete Composition
Material Usage:	35.4	t/day	MWA Calc
Loading specials to weigh hopper			
Production Rate:	1955	t/day	Same as Production Rate
Specials Component:	5%	(assumed)	Based on Concrete Composition
Material Usage:	98	t/day	MWA Calc
Loading agitator trucks			
Production Rate:	1955	t/day	Same as Production Rate
Control Efficiency:	10mg/Nm3		Enclosure with dust collection

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

PAVED ROADS

Emission Source: **Aggregate and Sand Truck Movements**

Data Source: ***USEPA AP42 Chapter 13.2.1 Paved Roads (2011)***

Emission Factor Formula: $$E_{ext} = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$$

Silt Loading (sL):		12	g/m^2 (USEPA AP42 Chapter 13.2.1 mean concrete batching)
Mean Vehicle Mass (W):		39.25	tonnes
Days of rainfall > 0.25mm (p):		97	days
Constants (PM2.5):	k =	0.15	
Constants (PM10):	k =	0.62	
Constants (TSP):	k =	3.23	

(USEPA AP42 Chapter 13.2.2 Tables 13.2.1-1)

Emission Factor (PM2.5):	EF=	9.8	g/VKT
Emission Factor (PM10):	EF=	40.7	g/VKT
Emission Factor (TSP):	EF=	212.1	g/VKT

Operating Hours:		24	hours
Trips per Day:		33	#
Average Trip Length (two way):		0.41	km

Controlled Emission Rate:	**PM2.5:**	**1.5E-03**	**grams/second**
	PM10:	**6.3E-03**	**grams/second**
	TSP:	**3.3E-02**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

PAVED ROADS

Emission Source: **Cement and Cement Supp Truck Movements**

Data Source: ***USEPA AP42 Chapter 13.2.1 Paved Roads (2011)***

Emission Factor Formula: $$E_{ext} = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$$

Silt Loading (sL):		12	g/m^2 (USEPA AP42 Chapter 13.2.1 mean concrete batching)
Mean Vehicle Mass (W):		30.75	tonnes
Days of rainfall > 0.25mm (p):		97	days
Constants (PM2.5):	k =	0.15	
Constants (PM10):	k =	0.62	
Constants (TSP):	k =	3.23	

(USEPA AP42 Chapter 13.2.2 Tables 13.2.1-1)

Emission Factor (PM2.5):	EF=	7.7	g/VKT
Emission Factor (PM10):	EF=	31.7	g/VKT
Emission Factor (TSP):	EF=	165.3	g/VKT

Operating Hours:	24	hours
Trips per Day:	9	#
Average Trip Length (two way):	0.31	km

Controlled Emission Rate:	**PM2.5:**	**2.4E-04**	**grams/second**
	PM10:	**9.9E-04**	**grams/second**
	TSP:	**5.1E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

PAVED ROADS

Emission Source: **Agitator Truck Movements**

Data Source: ***USEPA AP42 Chapter 13.2.1 Paved Roads (2011)***

Emission Factor Formula: $$E_{ext} = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$$

Silt Loading (sL):		12	g/m^2 (USEPA AP42 Chapter 13.2.1 mean concrete batching)
Mean Vehicle Mass (W):		15.2	tonnes
Days of rainfall > 0.25mm (p):		97	days
Constants (PM2.5):	k =	0.15	
Constants (PM10):	k =	0.62	
Constants (TSP):	k =	3.23	

(USEPA AP42 Chapter 13.2.2 Tables 13.2.1-1)

Emission Factor (PM2.5):	EF=	3.7	g/VKT
Emission Factor (PM10):	EF=	15.5	g/VKT
Emission Factor (TSP):	EF=	80.6	g/VKT

Operating Hours:	24	hours
Trips per Day:	142	#
Average Trip Length (two way):	0.31	km

Controlled Emission Rate:	**PM2.5:**	**1.9E-03**	**grams/second**
	PM10:	**7.8E-03**	**grams/second**
	TSP:	**4.1E-02**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

PAVED ROADS

Emission Source: **Loader Movements**

Data Source: ***USEPA AP42 Chapter 13.2.1 Paved Roads (2011)***

Emission Factor Formula: $$E_{ext} = [k(sL)^{0.91} \times (W)^{1.02}](1 - P/4N)$$

Silt Loading (sL):		12	g/m^2 (USEPA AP42 Chapter 13.2.1 mean concrete batching)
Mean Vehicle Mass (W):		12	tonnes
Days of rainfall > 0.25mm (p):		97	days
Constants (PM2.5):	k =	0.15	
Constants (PM10):	k =	0.62	
Constants (TSP):	k =	3.23	

(USEPA AP42 Chapter 13.2.2 Tables 13.2.1-1)

Emission Factor (PM2.5):	EF=	2.9	g/VKT
Emission Factor (PM10):	EF=	12.2	g/VKT
Emission Factor (TSP):	EF=	63.3	g/VKT

Operating Hours:	24	hours
Trips per Day:	320	#
Average Trip Length (two way):	0.04	km

Controlled Emission Rate:	**PM2.5:**	**4.4E-04**	**grams/second**
	PM10:	**1.8E-03**	**grams/second**
	TSP:	**9.4E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

WIND EROSION

Emission Source: **Stockpiles**

Data Source: ***NPI Emission Estimation Technique Manual for Mining (Environment Australia, 2001)***

Emission Factor Formula:

$$EF = 1.9x\left(\frac{s}{1.5}\right)x365x\left(\frac{365-p}{235}\right)x\left(\frac{f}{15}\right)$$

kg/ha/annum

No wind erosion emissions for wind speeds below 5.4m/s

Silt Content (s):	3.9	% (USEPA AP42 Chapter 13.2.4 Table 13.2.4-1)
Days of rainfall > 0.25mm (p):	97	#
Percentage wind speed > 5.4m/s (f):	2.2	%
Stockpile Area:	737	m2
	0.07	ha
Control Factors:	Uncontrolled	

Emission Factor (PM2.5):	EF=	22.8	kg/ha/annum	Particle size factor from (USEPA AP42 Chapter 13.2.5)
Emission Factor (PM10):	EF=	152.2	kg/ha/annum	Particle size factor from (USEPA AP42 Chapter 13.2.5)
Emission Factor (TSP):	EF=	304.4	kg/ha/annum	
Emission Factor (PM2.5):	EF=	1.7	kg/annum	
Emission Factor (PM10):	EF=	11.2	kg/annum	
Emission Factor (TSP):	EF=	22.4	kg/annum	

Controlled Emission Rate:	**PM2.5:**	**0.0325 grams/second**	**When Wind Speed >5.4m/s**
	PM10:	**0.2168 grams/second**	**When Wind Speed >5.4m/s**
	TSP:	**0.4335 grams/second**	**When Wind Speed >5.4m/s**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Aggregate Transfer**

Data Source: ***USEPA AP42 Chapter 11.12 Concrete Batching (January 2012 Update)***

Uncontrolled Emission Factor (PM10):	EF=	0.0017	kg/tonne	(Table 11.12.1 USEPA AP42)
Uncontrolled Emission Factor (TSP):	EF=	0.0035	kg/tonne	(Table 11.12.1 USEPA AP42)

Average Production Rate:	1955	t/day
Material Component:	46%	
Material Handled:	906	t/day
Operating Hours:	24	#

Emission Rate (PM2.5):	EF=	0.4	kg/day	Assume 25% of PM10
Emission Rate (PM10):	EF=	1.5	kg/day	
Emission Rate (TSP):	EF=	3.2	kg/day	

Emission Rate:	**PM2.5:**	**4.5E-03**	**grams/second**
	PM10:	**1.8E-02**	**grams/second**
	TSP:	**3.7E-02**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Sand Transfer**

Data Source: ***USEPA AP42 Chapter 11.12 Concrete Batching (January 2012 Update)***

Uncontrolled Emission Factor (PM10):	EF=	0.00051	kg/tonne	(Table 11.12.1 USEPA AP42)
Uncontrolled Emission Factor (TSP):	EF=	0.0011	kg/tonne	(Table 11.12.1 USEPA AP42)

Average Production Rate:	1955	t/day
Material Component:	36%	
Material Usage:	694	t/day
Operating Hours:	24	#

Emission Rate (PM2.5):	EF=	0.1	kg/day	Assume 25% of PM10
Emission Rate (PM10):	EF=	0.4	kg/day	
Emission Rate (TSP):	EF=	0.8	kg/day	

Emission Rate:	**PM2.5:**	**1.0E-03**	**grams/second**
	PM10:	**4.1E-03**	**grams/second**
	TSP:	**8.8E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Cement Unloading to Silo**

Data Source: ***USEPA AP42 Chapter 11.12 Concrete Batching (January 2012 Update)***

Controlled Emission Factor (PM10):	EF=	0.00017	kg/tonne	(Table 11.12.1 USEPA AP42)
Controlled Emission Factor (TSP):	EF=	0.00050	kg/tonne	(Table 11.12.1 USEPA AP42)

Average Production Rate:	1955	t/day
Material Component:	12%	
Material Usage:	239	t/day
Operating Hours:	24	#

Emission Rate (PM2.5):	EF=	0.01	kg/day	Assume 25% of PM10
Emission Rate (PM10):	EF=	0.04	kg/day	
Emission Rate (TSP):	EF=	0.12	kg/day	

Emission Rate:	**PM2.5:**	**1.2E-04**	**grams/second**
	PM10:	**4.7E-04**	**grams/second**
	TSP:	**1.4E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Cement Supplement Unloading to Silo**

Data Source: ***USEPA AP42 Chapter 11.12 Concrete Batching (January 2012 Update)***

Controlled Emission Factor (PM10):	EF=	0.0024	kg/tonne	(Table 11.12.1 USEPA AP42)
Controlled Emission Factor (TSP):	EF=	0.0045	kg/tonne	(Table 11.12.1 USEPA AP42)

Average Production Rate:	1955	t/day
Material Component:	2%	
Material Usage:	35	t/day
Operating Hours:	24	#

Emission Rate (PM2.5):	EF=	0.02	kg/day	Assume 25% of PM10
Emission Rate (PM10):	EF=	0.08	kg/day	
Emission Rate (TSP):	EF=	0.16	kg/day	

Emission Rate:	**PM2.5:**	**2.5E-04**	**grams/second**
	PM10:	**9.8E-04**	**grams/second**
	TSP:	**1.8E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Loading specials to weigh hopper**

Data Source: ***USEPA AP42 Chapter 11.12 Concrete Batching (January 2012 Update)***

Uncontrolled Emission Factor	EF=	0.0013	kg/tonne	(Table 11.12.1 USEPA AP42)
Uncontrolled Emission Factor	EF=	0.0026	kg/tonne	(Table 11.12.1 USEPA AP42)

Average Production Rate:	1955	t/day	
Material Usage:	98	t/day	Specials only
Operating Hours:	24	#	

Emission Rate (PM10):	EF=	0.03	kg/day	Assume 25% of PM10
Emission Rate (PM10):	EF=	0.13	kg/day	
Emission Rate (TSP):	EF=	0.25	kg/day	

Emission Rate:	**PM2.5:**	**3.7E-04**	**grams/second**
	PM10:	**1.5E-03**	**grams/second**
	TSP:	**2.9E-03**	**grams/second**

JOB: **23135 - North Maclean**

SCENARIO: **Proposed Plant**

MATERIAL HANDLING

Emission Source: **Loading agitator trucks**

Emissions from loading of Agitator Trucks controlled by enclosure with dust extraction

Ventilation Rate:		2800	m^3/hour
		0.778	m3/s
Fabric Filter Performance (PM10)		10	mg/Nm^3
		0.0078	g/s
Bag Filter Particle Size Distribution	TSP	49	% in range
	PM10	36	% in range
	PM2.5	15	% in range

Emission Rate:	**PM2.5:**	**0.0032**	**grams/second**
	PM10:	**0.0078**	**grams/second**
	TSP:	**0.0106**	**grams/second**

ATTACHMENT 6

Modelled Dust Particle Size Distribution

AP-42 Appendix B.2 Generalized Particle Size Distributions - Category 3 for Concrete Batching

Particle Size µm	Cumulative %
1	4
2	11
2.5	15
3	18
4	25
5	30
6	34
10	51

Pollutant	% in range
TSP	49
PM_{10}	36
$PM_{2.5}$	15

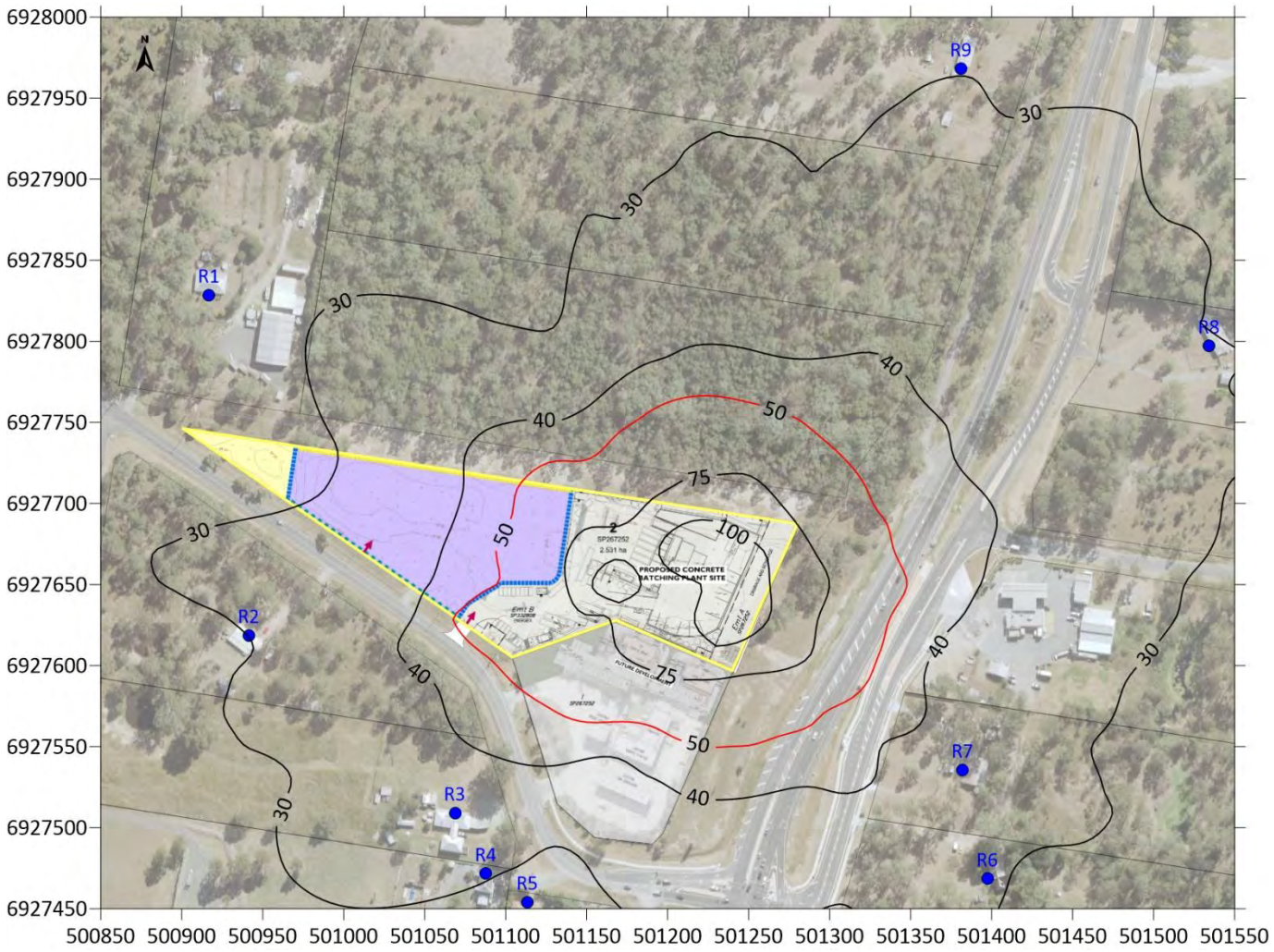
TSP	Centre Size	2.5 (anything lower than µm)	7.5 (anything between 10 and 5µm)	20 (anything over 10µm)
	% in range	30.0	21.0	49.0

PM_{10}	Centre Size	2 (anything lower than 4µm)	5 (anything between 6 and 4µm)	8 (anything between 10 and 6µm)
	% in range	49.0	17.6	33.3

$PM_{2.5}$	Centre Size	0.5 (anything lower than 1µm)	1.5 (anything between 2 and 1 µm)	2.25 (anything between 2.5 and 1 µm)
	% in range	26.7	46.7	26.7

ATTACHMENT 7

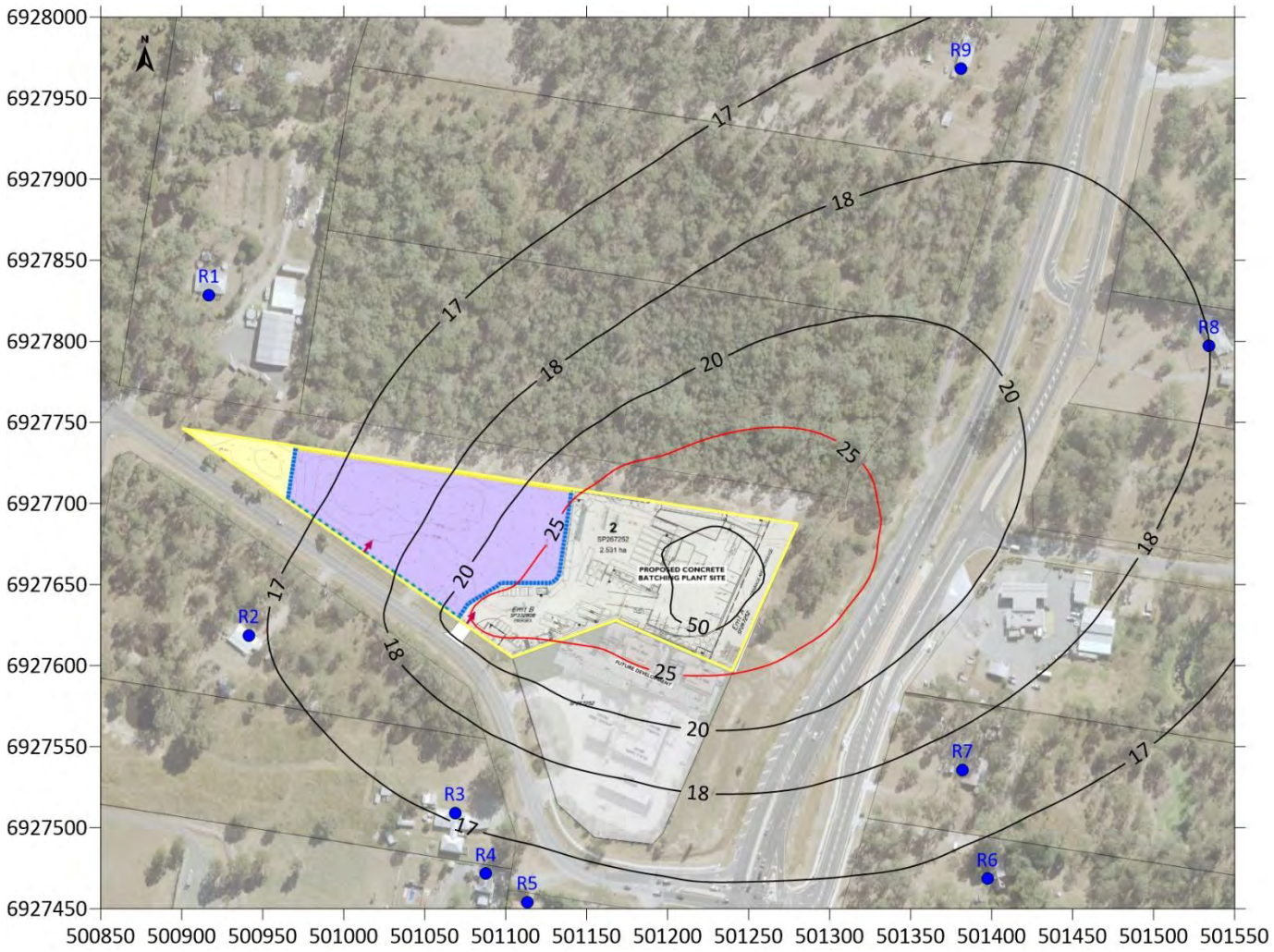
Contour Plots
Proposed Concrete Batching Plant Operations



23135 North Maclean

Maximum 24-hour average concentrations of PM_{10} from the Concrete Batching Plant including highest ambient concentration of 22.0 µg/m³

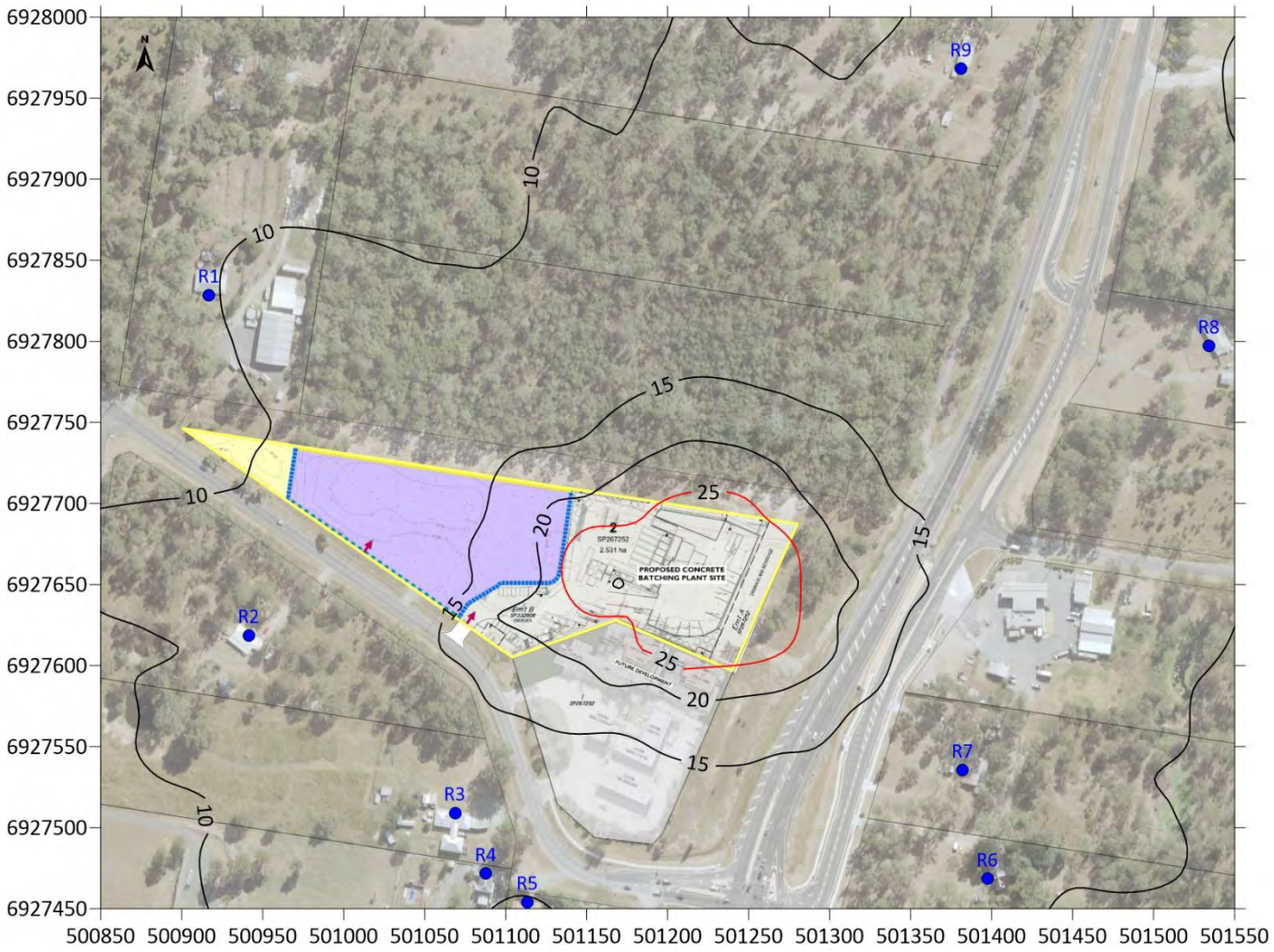
Figure A7.1	Pollutant	Averaging Period	Air Quality Objective	Units	Date
mwa ENVIRONMENTAL	PM_{10}	24-hour	50	µg/m³	29 Apr 2025



23135 North Maclean

Annual average concentrations of PM_{10} from the Concrete Batching Plant including average ambient concentration of 16.0 µg/m³

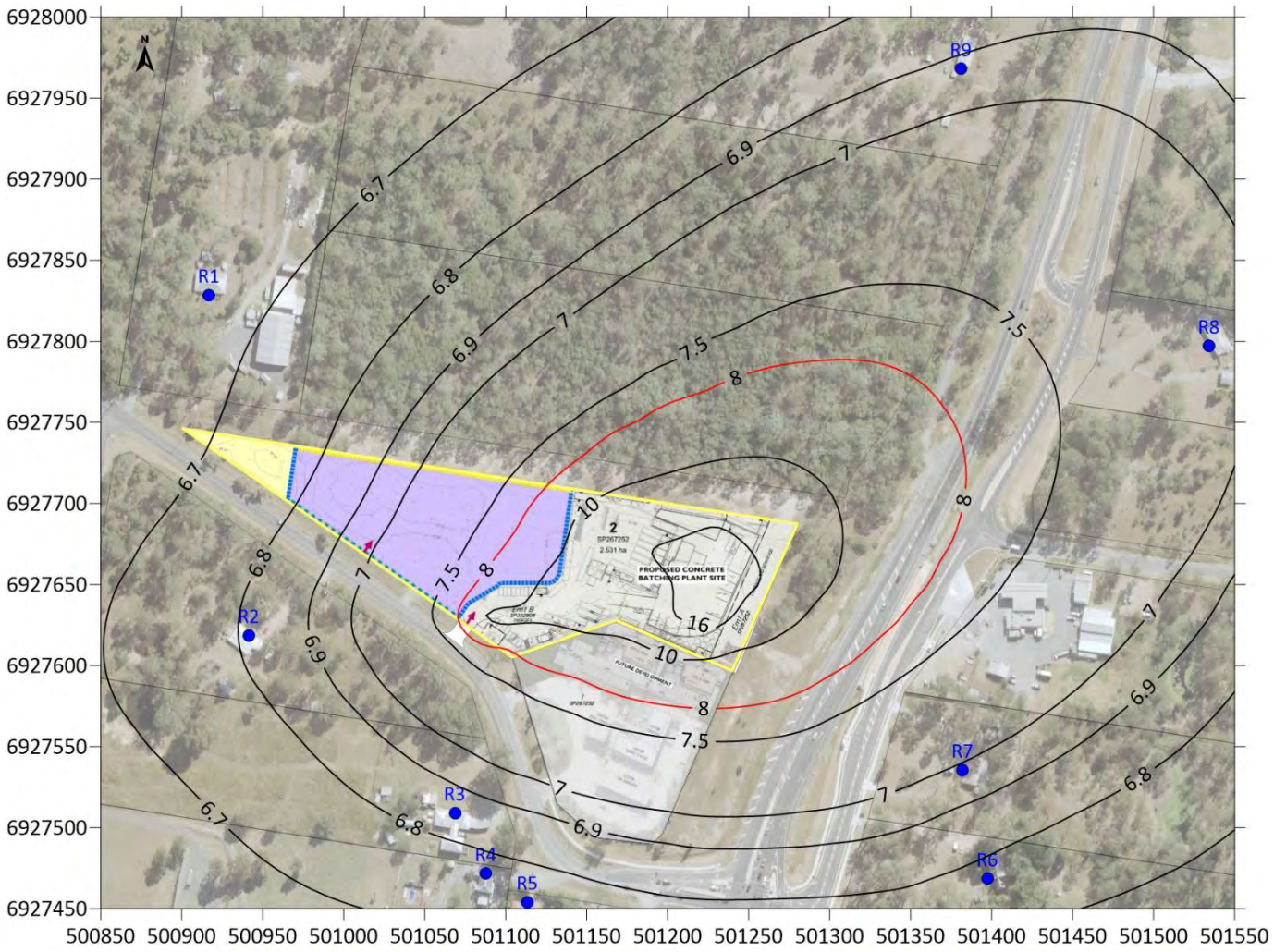
Figure A7.2	Pollutant	Averaging Period	Air Quality Objective	Units	Date
mwa ENVIRONMENTAL	PM_{10}	Annual	25	µg/m³	29 Apr 2025



23135 North Maclean

Maximum 24-hour average concentrations of $PM_{2.5}$ from the Concrete Batching Plant including highest ambient concentration of 8.3 µg/m³

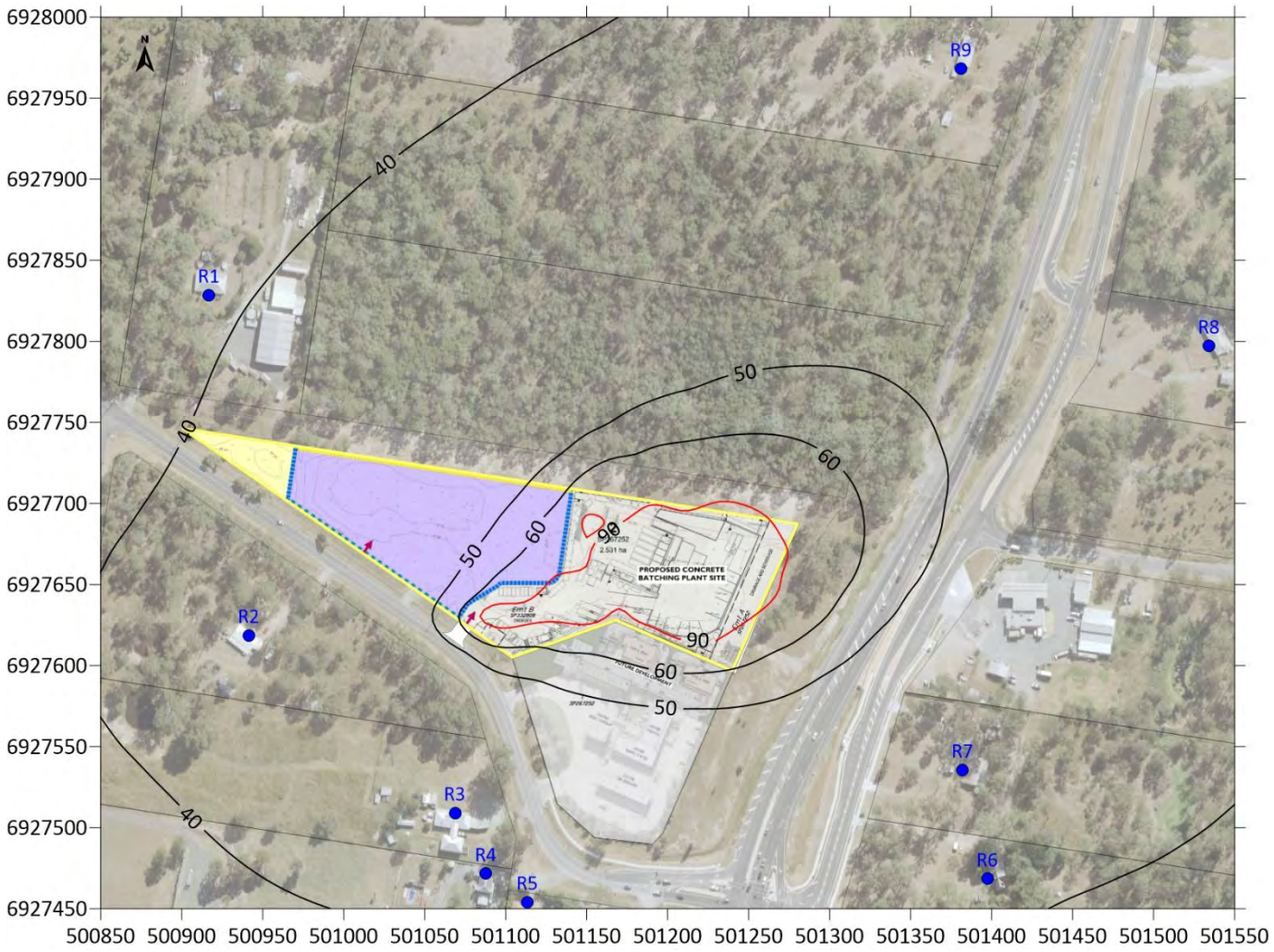
Figure A7.3	Pollutant	Averaging Period	Air Quality Objective	Units	Date
mwa ENVIRONMENTAL	$PM_{2.5}$	24-hour	25	µg/m³	29 Apr 2025



23135 North Maclean

Annual average concentrations of $PM_{2.5}$ from the Concrete Batching Plant including average ambient concentration of 6.55 µg/m³

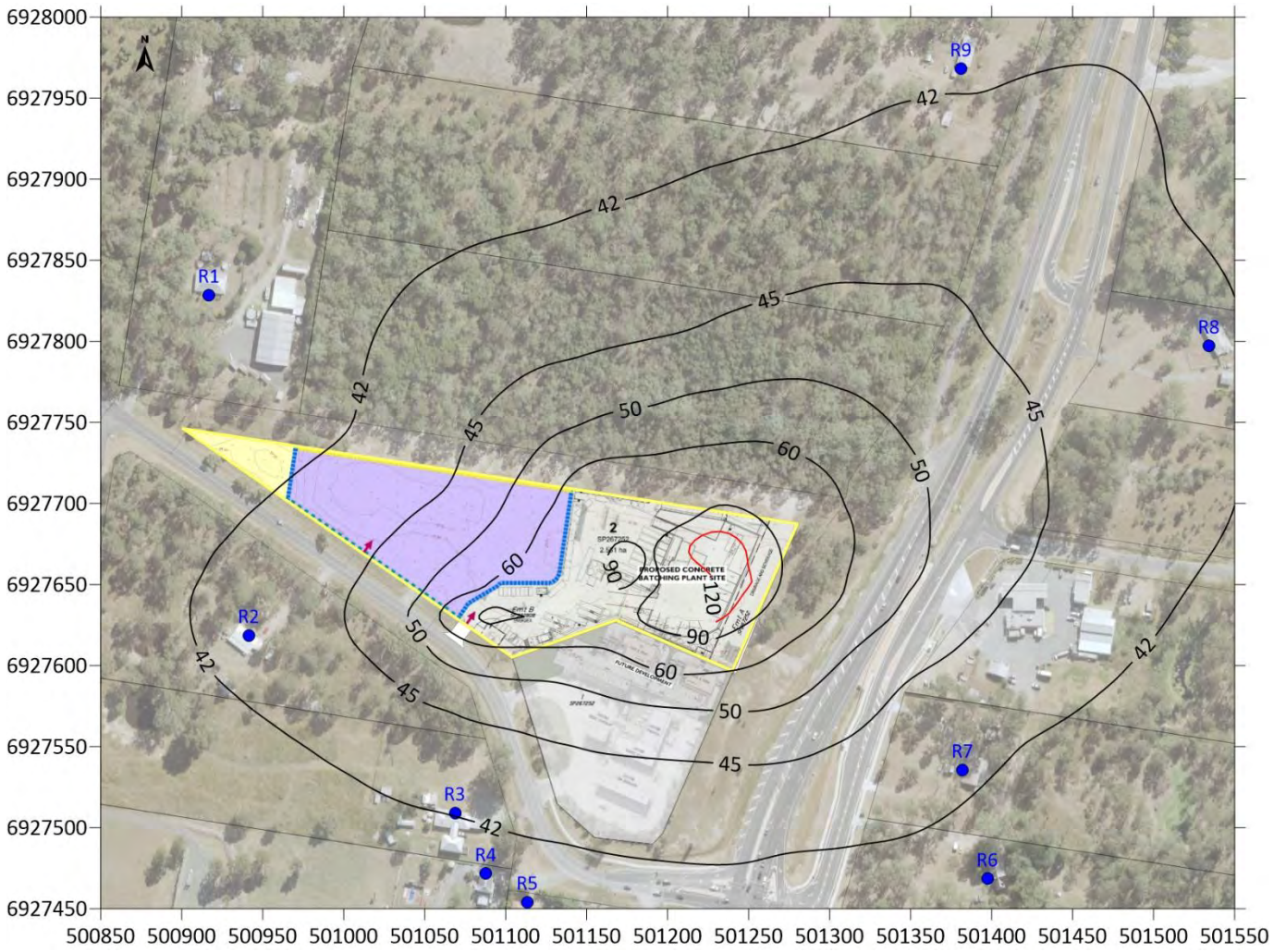
Figure A7.4	Pollutant	Averaging Period	Air Quality Objective	Units	Date
mwa ENVIRONMENTAL	$PM_{2.5}$	Annual	8	µg/m³	29 Apr 2025



23135 North Maclean

Annual average concentrations of TSP from the Concrete Batching Plant including average ambient concentration of 32.0 µg/m³

Figure A7.5	Pollutant	Averaging Period	Air Quality Objective	Units	Date
mwa ENVIRONMENTAL	TSP	Annual	90	µg/m³	29 Apr 2025



23135 North Maclean

Maximum Monthly Dust Deposition rates from the Concrete Batching Plant including background deposition rates of 40 mg/m^2/day

Figure A7.6	Pollutant	Averaging Period	Typical EA Condition	Units	Date
mwa ENVIRONMENTAL	Dust Deposition	Monthly	120	mg/m^2/day	29 Apr 2025