Minto Resource Recovery Facility | SSD

MODIFICATION REPORT

Prepared for CR Plus Pty Ltd | 24 February 2026

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24 February 2026

PR445

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CHAPTER 1

INTRODUCTION

1 INTRODUCTION

1.1 Overview

CR Plus Pty Ltd (CR Plus) owns and operates the Minto resource recovery facility ('the existing RRF') at 7 Montore Road, Minto, New South Wales (NSW) ('the site'). CR Plus are seeking approval under Section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to modify State significant development (SSD) consent (SSD-5339) (the modification') to allow the existing RRF to:

- increase the amount of material received and processed from 450,000 tonnes per annum (tpa) to 600,000 tpa;
- receive and process non-destructive digging (NDD) waste at night; and
- receive and process excavated soil classified as general solid waste (non-putrescible).

A scoping letter was prepared and lodged with DPHI for this modification on 16 October 2025, and a basic list of Secretary's Environmental Assessment Requirements (SEARs) was issued by DPHI on 28 November 2025. This modification report has been prepared to satisfy the SEARs and the provisions of Part 4, Section 4.55(2) of the EP&A Act.

1.2 The proponent

CR Plus is the proponent for the modification, and its company and contact details are provided in Table 1.1.

Table 1.1: Proponent details

Item	Detail
Proponent	CR Plus Pty Ltd Anthony males – General Manager (operations) 0427 308 437 anthony@cr-plus.com.au
Postal address	14 Thackery Street, Camellia NSW 2124
ABN	14 678 871 488
Site owner	Camolaw Pty Ltd as trustee for Minto Property Trust

CR Plus commenced business in 1988 and has grown to be Sydney's largest recycler of concrete and brick. CR Plus operates similar facilities in the greater Sydney region, including Camelia, and Kimbriki.

With building and demolition waste being a major contributor to landfill in Australia, resource recovery facilities are vital to divert waste from landfill.

CR Plus has undertaken work on government road and rail projects including:

- Northconnex.
- Westconnex.
- M5 and M8 Motorway.
- Smart M4 Motorway Stages 1, 2 & 3.
- Parramatta Light Rail.
- The Northern Road Upgrade (multiple stages).

1.3 The approved development

1.3.1 Summary

The site is currently approved under SSD-5339 (the existing approval), which defines the operation to include the receival, storage and processing of concrete, brick, asphalt, sandstone and sand, and specifically permits the site to:

- receive and process up to 450,000 tpa of general solid waste (non-putrescible) limited to concrete, asphalt, sandstone and sand from the building and demolition industry; and
- store up to 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time.

A separate modification (Modification 1) was lodged with the NSW Department of Planning, Housing and Infrastructure (DPHI) in December 2025 for the introduction of NDD waste as a new waste stream to be received and processed at the site within the approved 450,000 tpa processing capacity at the site. Modification 1 is currently under assessment by DPHI and the Modification 1 report is accessible via the Major Project Portal. There have been no other previous modifications to the existing approval.

The facility is licenced under environment protection licence (EPL) 21828 for the scheduled activities of resource recovery and waste storage (refer to Table 4.4). The EPL outlines limit conditions for:

- Pollution of waters,
- Waste,
- Noise,
- Hours of operation, and
- Potentially offensive odour.

The EPL also includes operating conditions including dust management, monitoring and recording conditions, reporting conditions and special conditions relating to maintaining financial assurance.

The approved facility receives material from the building and construction industry as follows:

- Concrete, bricks and asphalt sourced from the demolition industry.
- Excavated sandstone and sand sourced from earthwork projects.
- Drilling mud, hydro excavation waste, non-destructive digging (NDD) waste and muddy water from construction sites (collectively referred to in Modification 1 and this application as 'NDD waste') (subject to approval of Modification 1).

Material is processed at the site through a sand washing plant, pugmill and screening and crushing plant to produce the following products (see Section 1.3.3):

- Road base.
- 20 mm aggregate.
- 10 mm aggregate.
- Brick sand.
- Washed excavation sand.

Figure 1.1 and Figure 1.2 illustrate the regional and local context of the site, and Figure 1.3 illustrates the existing site layout.

1.3.2 Site infrastructure

The site contains the following infrastructure components (see Figure 1.3):

- Light vehicle carpark.
- Weighbridge and site office.
- Wheel wash.
- Maintenance store.
- Water storage tanks.
- Water treatment plant.
- Enclosed sand washing plant.
- Enclosed crushing and screening plant (fitted with baghouse).
- Pugmill.
- Material storage bays and internal pushwalls.
- Perimeter walls.

The following mobile plant and equipment are also used in site operations:

- 3 x 35-tonne class wheel loaders.
- 1 x 45-tonne excavator.
- 2 x 30-tonne excavators.
- 1 x water cart.
- 1 x 20,000 litre capacity self-bunded fuel tank.

All stormwater runoff is collected and treated in the site water treatment system to prevent off-site migration of sediment via stormwater. The water treatment system includes on-site water tanks to store and supply captured stormwater and recycled process water for dust suppression and sand washing demands.

1.3.3 Existing operational process

Covered trucks enter the site via the north-eastern driveway and pass over a weighbridge where the weighbridge operator records the vehicle weight and registration. Load covers are retracted and the load is visually inspected by weighbridge personnel and via overhead cameras. Loads suspected to contain unauthorised or contaminated materials are rejected and directed to circulate and exit the site without unloading. Accepted loads are directed to slowly move through the overhead load-wetting gantry to increase the materials moisture content and reduce potential dust emissions during tipping.

All vehicle movements within the site follow designated circulation routes in accordance with the existing approval.

Concrete and brick processing

Trucks delivering construction and demolition waste are directed to the receival area and the load is tipped onto the designated hardstand and spread out with a front-end loader for inspection. Any material identified as unsuitable at this stage is reloaded and transported off-site for disposal at an appropriately licenced facility. Accepted materials are processed as follows:

- An excavator fitted with a hydraulic hammer or jaw crusher breaks oversized concrete pieces into smaller fragments to facilitate safe handling and ensure the material is appropriately sized for feeding into the crusher.
- A front-end loader loads the concrete and bricks into the feed hopper. A vibrating grizzly feeder separates fine material (≤75 mm) and transfers it directly to the conveyor, bypassing the crusher and reducing energy consumption.
- The remaining material is fed into a fixed jaw crusher, which reduces oversized concrete and brick into a nominal 0–100 mm product.
- Crushed material is transferred via conveyor past an overband magnet, which removes steel from the material. Recovered steel is stockpiled and transported off-site for recycling by a licensed contractor.

- Crushed material passes a visual inspection where any remaining foreign objects are manually removed.
- Crushed material passes through a vibrating screen with multiple decks to separate it into fractions (e.g. sand, 10 mm aggregate, 20 mm aggregate).
- Oversize material is directed to a secondary cone crusher for further size reduction before being re-screened in a closed-loop process until the desired product size is achieved.
- Processed materials (e.g. road base, sand, aggregates) are discharged from conveyors into storage bays, with stockpile heights not exceeding 8 m.
- Material is transferred from the bays to loading stockpiles by front-end loader as required.

Dust is managed through the use of conveyor hoods, water sprays, high pressure water misting systems and a baghouse dust extraction system, which captures dust at transfer points and returns it to the product stream. All hardstand areas are graded to direct stormwater runoff to the site's water management system for treatment and reuse.

Trucks are loaded with processed products using a front-end loader. Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility in a forward direction.

Sand washing

Sand is tipped within the receival area before being delivered to the sand washing plant for processing. The sand washing process produces washed, free-draining sand and aggregates as follows:

- A front-end loader loads sand into the feed hopper, which discharges material via conveyor to the wet screen. As material travels across the screen media, it is sprayed with high-pressure water to clean and grade the material. The screen separates two aggregate fractions which are stockpiled adjacent to the plant for transfer to the crushing plant for further processing. The slurry and wash water passing through the screen flow into a sump, which acts as the header tank for the next stage of washing.
- Slurry from the sump is pumped under pressure into a hydrocyclone filter. Inside the cyclone, centrifugal forces separate coarse particles, which discharge via the underflow to a dewatering screen for final moisture removal. The overflow, containing fine silt, is returned to the sump for further washing and silt removal.
- Water containing suspended silt flows over the weir in the sump and is pumped to a high-rate thickener. A coagulant & flocculant is added to allow solids to rapidly settle at the bottom of the thickener, where mechanical rakes gather the silt for removal. Clarified water from the thickener is transferred to holding tanks for reuse within the washing process. Thickened silt is pumped to the concrete & brick processing plant and used on watering sprays fitted on the discharge conveyor.
- The sand washing plant operates as a closed-loop system, with all process water collected, clarified, and returned for reuse. Make-up water is only required to replace moisture lost in the final products, silt cake, and through evaporation.

Although sand washing is a predominantly wet process, dust is controlled by minimising drop heights when loading hoppers and stockpiles, and by keeping processing areas damp. The closed water recycling system ensures efficient water use and prevents sediment-laden runoff from leaving the site.

Sold washed sand is loaded into trucks using a front-end loader. Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility in a forward direction.

Pug mill mixing

The pug mill is used to mix processed sand or road base with cement binder and/or water to produce stabilised materials for construction use.

- A front-end loader or excavator feeds sand or road base into the receiving hopper. Cement is stored in a 40-tonne silo above the unit and metered into the mixing chamber via a calibrated drum conveyor. Water is added at this stage to condition the material and minimise dust generation. The cement silo is fitted with a baghouse filter system to control dust emissions during loading and mixing.
- Dual counter-rotating shafts with pitched paddles knead and fold the material, ensuring thorough mixing of all components.
- Mixed product is discharged via a conveyor onto the stockpile located adjacent to the pug mill. Material is then loaded into trucks with a front-end loader for dispatch.

Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility in a forward direction.

Stormwater and water treatment plant

All stormwater and process water at the site is collected, treated and stored in the site water treatment system to prevent off-site migration of sediments and reduce site water demand.

Water within this system is collected via three tanks:

- 1 x 50,000 L tank (workshop building);
- 1 x 50,000 L tank (crusher building); and
- 1 x 50,000 L tank (driveway and carpark).

Any stormwater that is not collected from the above tanks is captured via a series of sumps across the site. During high rainfall storm events, stormwater is designed to pond around two of these sumps, providing additional on-site detention. All water captured from the above tanks and sumps is treated by flocculating water, adjusting pH and filtering out all suspended solids, heavy metals and nutrients before being stored in a 50,000 L primary tank. A portion of water from the primary tank is fed into the sand washing plant for operational use whilst the other portion supply's the southern storage tanks comprising one 440,000 L tank and two 229,000 L tanks.

Water from the southern storage tanks is either discharged to the Campbelltown City Council stormwater system or reused for site operations including dust suppression, sand wash and fire water storage.

Conductivity, pH, turbidity and TSS meters/sensors are fitted throughout the site water treatment system to ensure treatment is effective before any water is reused on site or discharged into the council stormwater system.

NDD processing

Subject to approval of Modification 1, NDD waste received at the site will be processed as follows:

- NDD trucks will enter the site via the weighbridge as per existing arrangements.
- Drivers will perform a material declaration form and have their loads tested for pH and conductivity to check for conformance with the applicable EPL and Resource Recovery Order (RRO).
- If accepted, trucks will be directed to one of two NDD receival bays for unloading.
- NDD waste will be tipped into a slurry pit which will screen foreign objects such as metals, plastics (e.g. PVC pipe and conduit), ceramics, roots or other plant matter that cannot fit through the pump screen (80 mm).
- NDD slurry will be pumped through a dewatering screen and cyclone filter which will separate coarse soil fractions and aggregates from the NDD slurry.
- Coarse soil fractions and aggregates will be fed onto a radial conveyor and stored in bays where it is visually inspected and tested for physical and chemical properties in accordance with the applicable EPL and RRO.

- Unsuitable or contaminated material will be disposed of off-site at an appropriately licensed waste facility.
- Acceptable material will be collected by front-end loader and taken to the crushing plant for further processing with the existing concrete and brick waste stream.
- Dirty water (with entrained fines) from the dewatering process will be directed to the existing water treatment plant for treatment and reuse for dust suppression or process water.

1.3.4 Hours of operation

The site currently operates during the following approved hours:

Operation (including crushing, screening, pugmill and sand washing)

- Monday to Friday 7 am - 6 pm.
- Saturday 7 am - 4 pm.

Truck deliveries and pick-ups,

- Monday to Friday 6 am - 7 pm.
- Saturday 7 am - 4 pm.

1.3.5 Employment

Fifteen full-time staff are employed at the site across the following roles:

- One Site Foreman.
- Three Loader Drivers.
- Three Excavator Drivers.
- Two Weighbridge Attendants.
- Two Fitters.
- Four Labourers.

1.3.6 Environmental performance

Independent Environmental Audit

The first Independent Environmental Audit of the operational phase of the approved Minto Resource Recovery Facility was conducted by Artea Green Ventures in October 2025 in compliance with the conditions of consent C16-C17 under the State Significant Development SSD-5339. The audit was undertaken in accordance with the Department's *Independent Audit Post-Approval Requirements (2020)*.

The audit covered the period from the commencement of operations in September 2024 to October 2025 and assessed compliance with the SSD-5339 conditions of consent and reviewed the implementation of mitigation measures outlined in the approved Operational Environmental Management Plan, as well as all obligations under Environment Protection Licence (EPL 21828).

The audit found a high level of compliance, with 78 of 111 conditions of consent compliant, 32 not triggered and only one non-compliance identified, which was administrative in nature and related to audit timing rather than environmental performance.

48 of 69 EPL conditions were found to be compliant, 21 conditions were not triggered and no non-compliances were identified against the EPL. No environmental incidents, regulatory notices or community complaints were recorded during the audit period.

The audit report summarised that key achievements included effective dust and noise management, along with consistently high standards of housekeeping and waste management across the premises. Environmental and safety management systems were assessed as adequate and effectively implemented, in accordance with the OEMP. Overall, the project demonstrated strong environmental performance and a clear commitment to maintaining high operational standards and pursuing continuous improvement.

The auditor confirmed that actual operational impacts were consistent with, or less than, those predicted in the existing EIS, and identified effective implementation of environmental controls, including dust, noise, water and waste management measures. Overall, the audit concluded that the facility is operating to a high environmental standard, with environmental management systems assessed as adequate and effectively implemented, demonstrating strong ongoing environmental performance and a commitment to continuous improvement.

Several targeted compliance items were identified by the auditor as open observations to proactively support ongoing compliance. One of these was:

> As per condition A10, should any modifications be made to the development consent, the Applicant is recommended to prepare a comprehensive staging plan for inclusion with the modification application. This plan should clearly outline the sequencing of works, projected timeframes, and associated environmental management measures to ensure the staged implementation of the development remains transparent, orderly, and compliant with the conditions of consent. Inclusion of such a plan would also assist the Department in assessing the modification and provide greater clarity for future reporting and compliance obligations.

The outcomes of this recommendation are expected to have been achieved by the separation of Mod-1 and this modification (Mod-2), and an environmental assessment and modification report having been prepared for each.

As detailed in sections 6.1.5, 6.2.5, 6.3.5, 6.4.5 and 6.5 operational management plans will continue to be implemented at the site, having been deemed suitable for ongoing use in the management of impacts associated with the modification.

Air Quality Verification Report

A post-commissioning Air Quality Verification Report was completed by Todoroski Air Sciences (November 2025) in compliance with condition of consent B13 under the State Significant Development SSD-5339. It assessed the findings presented in the Air Quality Impact Assessment (Wilkinson Murray, 2019) and subsequent reports (Wilkinson Murry, 2021). The verification report found that:

> The air quality mitigation measures installed at the site are as per those assessed in the AQIA and identified additional dust control measures. The overall dust emissions generated at the site would likely be less than those assessed in the AQIA.
>
> The measured ambient air quality levels for the site are below the applicable 24-hour average air quality criteria for PM_{10} and $PM_{2.5}$ and further indicates that the dust control measures at the facility are effective and are compliant. In addition, the monitoring data were considered consistent with the modelling predictions presented in the air quality impact assessment and the extent of impacts from the site.
>
> Stack testing was conducted for the concrete crusher filter baghouse and the results indicate that emissions for solid particles (total) were below the POEO limit, and that the baghouse is operating efficiently to remove particulate matter before being dispersed.

Noise Verification Report

A post-commissioning Noise Verification Report was completed by Todoroski Air Sciences (November 2025) in compliance with condition of consent B30 under the State Significant Development SSD-5339. It assessed the findings presented in the Noise Impact Assessment (Wilkinson Murray, 2019). The verification report found that:

> The results of the attended noise measurements indicate that noise emissions from the facility operations were inaudible and were primarily attributed to vehicle movements along Campbelltown Road. The topographical features of the area were analysed and conclude that the residential areas to the west of the site are shielded from noise emissions generated by the site.

1.4 Modification summary

The modification seeks to allow the existing RRF to:

- increase the amount of material received and processed from 450,000 tonnes per annum (tpa) to 600,000 tpa;
- receive non-destructive digging (NDD) waste 24 hours a day 7 days a week and process NDD waste 24 hours a day 6 days a week (excluding Sunday); and
- receive and process excavated soil classified as general solid waste (non-putrescible) according to the NSW EPA's Waste Classification Guidelines (2014).

Processing NDD waste at night involves running the NDD dewatering plant and equipment, and the water treatment plant, but not the crushing plant and equipment.

While the modification aims to increase processing capacity, it won't require a change to approved waste and product storage limits, as existing plant and equipment have spare capacity to process additional material. No site upgrades or additional equipment, plant or infrastructure are required to facilitate the increased processing volumes or the processing of soil materials. All existing on-site activities will continue to operate as approved, with no changes required to existing operational procedures.

Resource recovery of the soil waste will be permitted by the *recovered fines (Batch) order 2014, recovered fines (Continuous) order 2014* or a site-specific resource recovery order (RRO) administered by NSW EPA, and an updated EPL. A site-specific RRO has been applied for, however NSW EPA have advised that approval is subject to development consent for receiving the waste type.

Soil will be processed through the sand washing plant (refer to Section 1.3.3) to derive washed sand products, and fine soil fractions (silt and clay) will be recovered via the water treatment plant. Recovered fines will be blended into existing products produced at the facility. Fine soil fractions are a highly beneficial additive blended into the road base product as it contains plastic fines not found in crushed concrete and which make a better road base product.

Construction activities to enable the modification would comprise building an additional storage bay for soils within the existing storage bay area. Construction activities are accordingly minor in scale and duration (less than 3 weeks), leading to minimal environmental impacts.

1.5 Needs, benefits and alternatives

1.5.1 Needs and benefits

Supporting urban growth and construction demand

As the Macarthur region continues to grow rapidly, demand for construction and demolition waste disposal and recycling facilities will increase. The region is expected to experience some of the highest annual population growth rates in NSW over the next 19 years (Camden +3.5% and Wollondilly +3.3%) (NSW Planning, 2024) which is expected to drive significant urban development and construction across the region.

The Minto RRF is strategically located to support this growth. The site is well connected to the arterial road network, enabling convenient access for contractors working across south-west Sydney.

NDD waste is typically generated during night works on local and major infrastructure projects to minimise impacts to road users and pedestrians. Providing a facility where this waste can be tipped at night will support construction industry demand and increased resource recovery.

Resource recovery

NSW is facing a significant waste management challenge, with waste generation projected to increase from approximately 22 million tpa to nearly 37 million tpa over the next 20 years. An estimated 17% of Australia's total annual waste was attributed to construction and demolition waste generation in 2023. To address this issue, the NSW Government has developed the NSW Waste and Sustainable Materials Strategy 2041 and the Draft NSW Waste and Circular Infrastructure Plan, which identify a critical need to plan and prepare early for waste and resource recovery infrastructure to encourage waste minimisation and recycling as NSW transitions to a circular economy.

In support of the focus areas and actions identified in the NSW Waste and Sustainable Materials Strategy 2041 and Draft NSW Waste and Circular Infrastructure Plan, CR Plus is proposing to extend and expand the waste processing capacity at the site. This will divert valuable materials from landfill, increase recycling rates and reduce the reliance of industry on emission-intensive virgin materials.

CR Plus is committed to supporting sustainable resource recovery while implementing best-practice environmental management measures to minimise impacts on the surrounding community and environment.

1.5.2 Project alternatives

Alternative facilities

CR Plus has previously assessed potential new sites across the Sydney metropolitan area. However, land availability is limited, acquisition costs are high, and new development would require significant lead time to deliver a facility with comparable environmental performance. Increasing the capacity of the existing Minto RRF is the most viable and efficient option given its established infrastructure, environmental controls and separation from sensitive land uses.

The ‘do nothing’ option

Without an increase to the approved capacity of Minto RRF and the approval to receive and process excavated soil, construction and demolition waste contractors in the south-west Sydney region may be constrained and an opportunity for increased resource recovery would be forfeited.

The ‘do nothing’ scenario would therefore not align with State policy objectives for waste diversion and efficient infrastructure delivery.

1.6 Document purpose

This modification report has been prepared by Element Environment Pty Limited (Element) on behalf of CR Plus for submission to the NSW Department of Planning, Housing and Infrastructure (DPHI) to support the application for the modification of the existing SSD consent (SSD-5339) under Section 4.55(2) of the EP&A Act. The report has been prepared with consideration to the provisions of Section 4.15 of the Act.

The objective of this modification report is to inform the public, government authorities and other stakeholders about the modification and the measures that will be implemented to avoid, mitigate and manage potential impacts, together with a description of the remaining social, economic and environmental impacts.

1.7 Assessment requirements

A scoping letter was prepared and lodged with DPHI for this modification on 16 October 2025, and Secretary’s Environmental Assessment Requirements (SEARs) were issued by DPHI on 28 November 2025. This modification report has been prepared to satisfy the SEARs and Table 1.2 details where each of the SEARs have been addressed in this report.

Table 1.2: SEARs compliance table

Requirement	Where addressed
1. Description of Modification	
Outline proposed changes, relationship to existing operations, and staging.	Section 3.1
Identify consent conditions to be modified and proposed wording.	Section 3.1
Note any variations to other licences or approvals.	Section 4.2.6
2. Existing operations	
Summarise current and approved operations, licenses, and statutory approvals.	Chapter 4
Provide relevant consent conditions and environmental management/ monitoring regime.	Section 3.1 and Chapter 6
Include site layout plans for existing and proposed structures.	Chapter 1
3. Assessment of Modification	
Assess key issues, public authority requirements, and risks.	Sections 4.2.6 and Chapter 6
Evaluate all potential and cumulative impacts.	Section 6.6
Detail measures to avoid minimise, and manage impacts, including adaptive and contingency plans.	Chapter 6
4. Strategic & statutory context	
Justify need and suitability of the modification.	Section 1.5 and Chapter 7
Address relevant legislation, planning instruments, and any inconsistencies.	Chapter 4
Demonstrate compliance with s4.55(2) of the EP&A Act (substantially the same development.	Section 3.5

Requirement	Where addressed
5. Key issues assessments	
Air Quality: Quantitative AQIA per EPA guidelines; justify any external material handling.	Section 6.1
Noise & Vibration: Quantitative assessment of operational and transport noise impacts per EPA guidelines.	Section 6.2
Waste Management: Describe waste streams, throughput limits, stockpile sizes, processing operations, storage, transport, and tracking. Include strategy for non-conforming waste and compliance with NSW Waste & Sustainable Materials Strategy 2041.	Section 6.5
Traffic & Access: Traffic impact assessment covering volumes, safety, and network capacity.	Section 6.3
Soil & Water: Detail stormwater and leachate systems and any required upgrades.	Section 6.4
6. Consultation	
Engage relevant authorities, including EPA, service providers, community groups, and affected landowners.	Sections 5.2 - 5.4
7. SEARs compliance table	
Provide a table showing where each requirement is addressed in the application.	Table 1.2

Figure 1.1
Regional context

Minto Resource Recovery Facility - Modification 2
SSD Modification

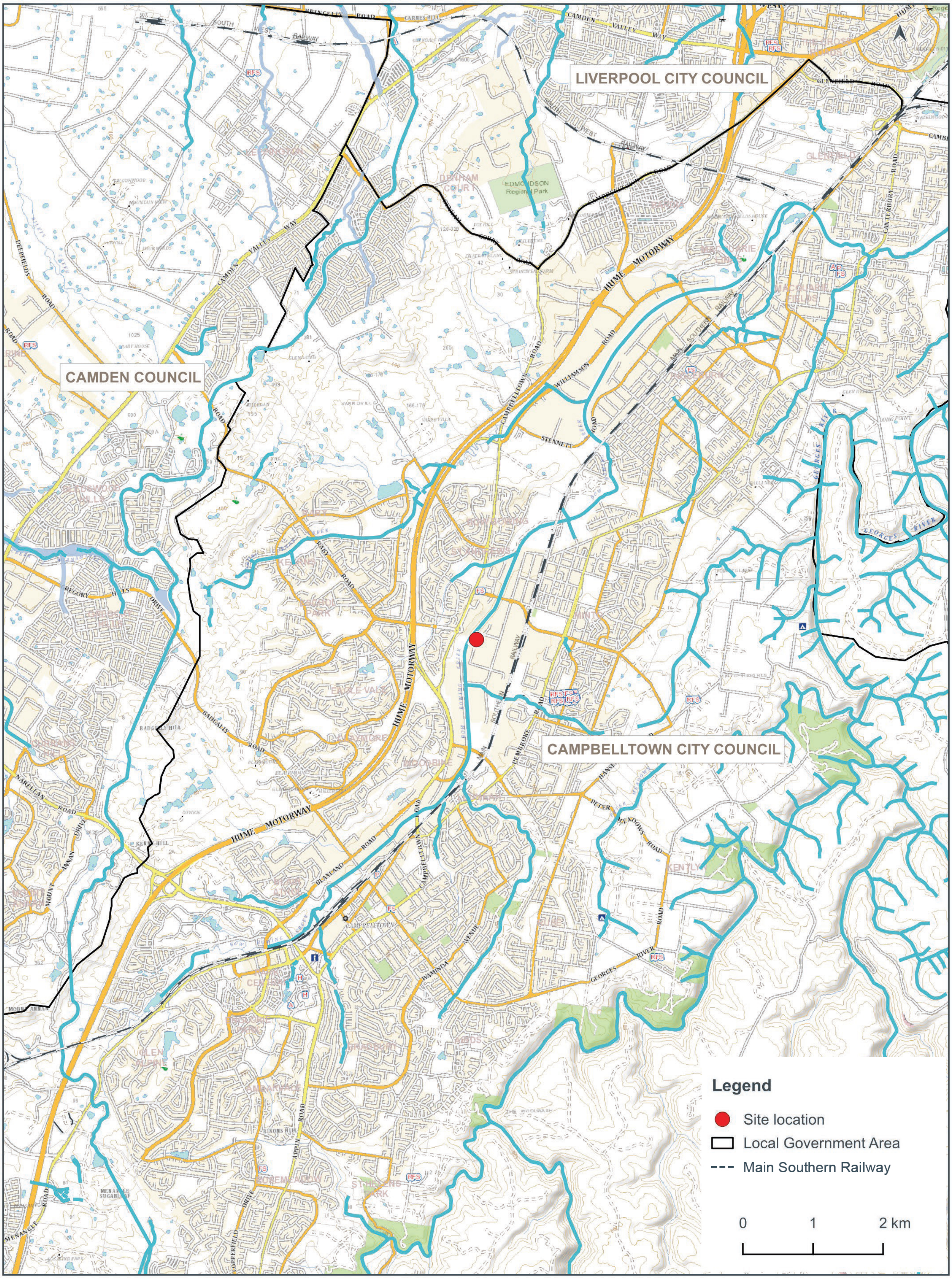


Figure 1.2
Local context

Minto Resource Recovery Facility - Modification 2
SSD Modification

Figure 1.3
Site Layout

Minto Resource Recovery Facility - Modification 1
SSD Modification

CHAPTER 2

STRATEGIC CONTEXT

2 STRATEGIC CONTEXT

2.1 Site features

2.1.1 Site location, character and surrounding land use

CR Plus owns and operates the existing RRF at 7 Montore Road, Minto NSW 2566, legally defined as Lot 52 DP 618900 (see Figure 1.1 and Figure 1.2).

The site is in Minto, a predominantly industrial suburb over 37 km south-west of Sydney's Central Business District and covers approximately 4,000 m².

The site is in the Macarthur region in Campbelltown local government area (LGA) and is zoned E4 General Industrial under the Campbelltown Local Environment Plan 2015 (CLEP).

The site is largely surrounded by industrial receivers. There is an approximately 50 m wide dedicated drainage corridor with a concrete-lined channel (Bow Bowing Creek) directly to the west of the site, TR Group to the east, and Foamco Industries and Speed E-Gas to the south. The Sydney Cook Islands Seventh Day Adventist church is located immediately to the north of the site on the opposite side of the car park.

The closest residents are approximately 265 m to the west on the site opposite Campbelltown Road. Another industrial property operated by CCA Logistic Solutions is located in between the site and the nearest residents.

Figure 2.1 illustrates the site’s land zoning according to the CLEP.

Figure 3.1
Land zoning

Minto Resource Recovery Facility - Modification 2
SSD Modification

2.1.2 Access and road network

Surrounding road network

The industrial precinct of Minto and the surrounding road network is an approved B-Double route with access from Ben Lomond Road to the north, Pembroke Road to the east or Rose Payten Drive to the south. The following traffic controls are in place surrounding the site:

- Priority controlled junction of Montore Road / Airds Road.
- Roundabout intersection of Airds Road / Ben Lomond Road.
- Roundabout intersection of Ben Lomond Road / Pembroke Road.
- Signalised intersection of Rose Payten Drive / Pembroke Road / Smith Creek Bypass.
- Signalised junction of Rose Payten Drive / Campbelltown Road.

Site access and internal circulation

Both heavy and light vehicles access the site via a single entry and exit driveway at the north-eastern site boundary off Montore Road. Light vehicles are directed to the car park reserved for staff and visitors located in the northern portion of the site. The car park design complies with the relevant Australian Standards, with the clockwise internal circulation being the most practicable and safest operation.

All heavy vehicles follow approved haulage routes under the *Operational Plan of Management* and *Driver Code of Conduct* (OPM) (McLaren, 2020) associated with the existing approval. The approved haulage routes include Ben Lomond Road to the north and Rose Payten Drive to the south, both of which are approved B-Double routes. Heavy vehicles are not permitted to travel on Raby Road between Campbelltown Road and Eagle Vale Drive due to its proximity to local residents.

All heavy vehicle drivers must be inducted upon entry at the weighbridge before passing through into the site’s operational area. Heavy vehicles circulate through the premises in a clockwise rotation on a one-way loop and unload or load adjacent to the on-site haulage route within designated areas. Heavy vehicles are then weighed prior to exiting via the same driveway.

The OPM outlines the following operating conditions for the site:

- 10 km/h speed limits for all vehicles on site.
- No blocking of the entry to the site or any other driveways.
- Drivers of light and heavy vehicles to wait with engines off.
- No laden trucks to use Raby Road between Campbelltown Road and Eagle Vale Drive.
- All trucks to be operated and maintained in a safe and roadworthy condition as outlined in the TruckSafe standards and vehicle standards regulations, and in compliance with Australian Vehicle Standards and Design Rules.

Traffic generation

The site is approved to generate 171 trucks, equating to 342 truck movements, per day. The site’s peak traffic period occurs between 8:00 am and 10:00 am. The site has 15 employees generating approximately 30 light vehicle movements per day.

Based on weighbridge data collected during 2025 (refer Section 6.3.1) and summarised in Table 6.9, existing traffic generation is as follows (during the recorded period annual production was approximately 300,000 tonnes per annum):

- Average truck volumes per day (weekday): 115 trucks (230 movements)
- Average truck volumes per day (Saturday): 35 trucks (70 movements)
- AM peak-hour period (85th percentile): 38 trips (19 in, 19 out); and

- PM peak-hour period (85th percentile): 24 trips (12 in, 12 out).

CR Plus has not received any complaints associated with traffic generation associated with the site.

Public transport

There are numerous public transport networks surrounding the industrial precinct of Minto. Minto railway station is approximately 1 km walking distance to the north, and Leumeah railway station is approximately 3 km to the south.

The Minto railway station is also accessible through the public bus network, however, bus services do not run along Airds Road within the Minto industrial precinct.

Bicycle lanes are accommodated on the southern half of Airds Road only. The Bicycle lanes do not extend to Montore Road.

Given that the site is approximately 1 km from Minto railway station, it is assumed that only a low percentage of staff would use public transport to access the site.

2.1.3 Sensitive receivers

The nearest residential receivers are approximately 265 m west of the site, on the opposite side of Campbelltown Road. There is another industrial property operated by CCA Logistic Solutions between the site and the nearest residential receiver.

Stranraer Reserve represents the closest recreational receiver and is approximately 450 m to the north-west of the site.

The Sydney Cook Islands Seventh-day Adventist Church is immediately to the north of the site and represents the closest worship receiver.

The site is otherwise surrounded by industrial receivers to the east (TR Group) and south (Foamco Industries and Speed-e-Gas), with Bow Bowing Creek immediately to the west of the site.

Figure 2.2 illustrates key sensitive receivers near the site.

2.1.4 Services and utilities

The site is connected to a potable water supply, electrical power mains, Sydney Water sewer mains and telecommunication systems. The modification will not require any upgrades to existing services and utilities.

Process water used at the RRF is sourced from stormwater runoff treated on-site and stored in water storage tanks. Where needed, water is supplemented with potable water from the Sydney Water potable network. Captured non-potable water is also used for toilet flushing, and sewage is disposed of via the Sydney Water sewer main.

The site operates a water treatment plant, and treated stormwater is discharged to the Campbelltown City Council stormwater system only when rainfall exceeds storage and on-site reuse (refer Section 1.3.3).

Figure 3.2
Summary of sensitive receivers

Minto Resource Recovery Facility - Modification 2
SSD Modification

2.2 Biophysical factors

2.2.1 Climate

Climate data in Table 2.1 is applicable to the area surrounding the site and sourced from the Camden Airport automatic weather station (AWS). The Camden Airport AWS is located approximately 13 km west of the site.

Table 2.1: Camden Airport AWS average climate data

Parameter	Period	Measurement	Month
Mean maximum temperature (˚C)	Annual	23.8	-
	Highest monthly	29.7	January
	Lowest monthly	17.4	July
Mean minimum temperature (˚C)	Annual	10.3	-
	Highest monthly	17	January
	Lowest monthly	3.1	July
Mean rainfall (mm)	Annual	789.3	-
	Highest monthly	101.8	March
	Lowest monthly	39.7	July
Mean 9 am wind speed (km/h)	Annual	7	-
	Highest monthly	9.3	October
	Lowest monthly	5.4	May

The data indicates that temperatures range throughout the year from an average maximum of 29.7°C in January to an average minimum of 3.1°C in July. The area experiences moderate rainfall, with an average annual total of approximately 789.3 mm. Rainfall is unevenly distributed throughout the year, with mean rainfalls considerably higher in January-March than those seen in July-September.

In summer, winds are most commonly from either the north-east or south-west. Whilst the autumn, winter and spring wind distributions are all predominantly from the south-west. The greatest frequency of winds are from the south-west on an annual basis.

2.2.2 Topography and waterways

The site is slightly raised compared to industrial properties. The topography of the site is not high enough for distant residential receivers to view operations; however, the industrial properties surrounding it do have several lines of sight.

The site lies within the Southern Sydney Rivers water source regulated by the Greater Metropolitan Region Unregulated River Water Sources Water Sharing Plan (WSP) and the Lower Georges River and Bunbury Curran Creek management zone. The WSP includes rules for all utilisation of surface water within the plan area.

Bow Bowing Creek is situated directly to the west of the site. The development does not include the collection or extraction of water from Bow Bowing Creek. All stormwater captured onsite is treated prior to any discharge to Bow Bowing Creek.

2.2.3 Geology, soils and salinity

Geology

According to the Wollongong – Port hacking 1:100,000 Geological Series Sheet 9029 – 9129 (NSW Department of Mineral Resources, 1985), the site is underlain by medium to fine-grained lithic sandstone.

Soils

The site has had a long history of commercial and industrial uses since 1899, as per council records. Throughout different uses, the site geology has been disturbed and compacted. The site is likely to have reflected the Cumberland Plain model prior to disturbance and is now identified as the Blacktown soil landscape.

The Blacktown soil landscape comprises of gently undulating rises on Wianamatta Group shales and Hawkesbury shale. The soils are described as shallow to moderately deep red and brown podzolic soils on crests, upper slopes and well-drained areas with Yellow Podzolic Soils and Soloths on lower slopes with poorer drainage.

Salinity

According to the Salinity Potential Western Sydney Map (SEED NSW, 2025), the site is within an area mapped as 'known salinity'.

Contamination

A Stage 1 (preliminary site investigation) and Stage 2 (detailed site investigation) contamination assessment (Environmental Investigation Services, 2018) was undertaken as part of the EIS. Contamination was identified at the site, including fragments of non-friable asbestos cement and friable matted material containing asbestos within shallow surface soils.

Furthermore, concentrations of benzo(a)pyrene were encountered in concentrations above the adopted ecological site assessment criteria.

A remediation action plan (EI Australia, 2020) was prepared to guide the remediation of the site, including:

- Excavation of friable asbestos materials at identified locations, and
- Excavation and off-site disposal of fill materials at identified locations, followed by hand picking of asbestos fragments and processing of oversize materials.

Site remediation has been completed as part of the approval of the existing facility.

2.2.4 Hydrology and flooding

The site is situated on the banks of the Bow Bowing Creek within the Bow Bowing Bunbry Creek catchment.

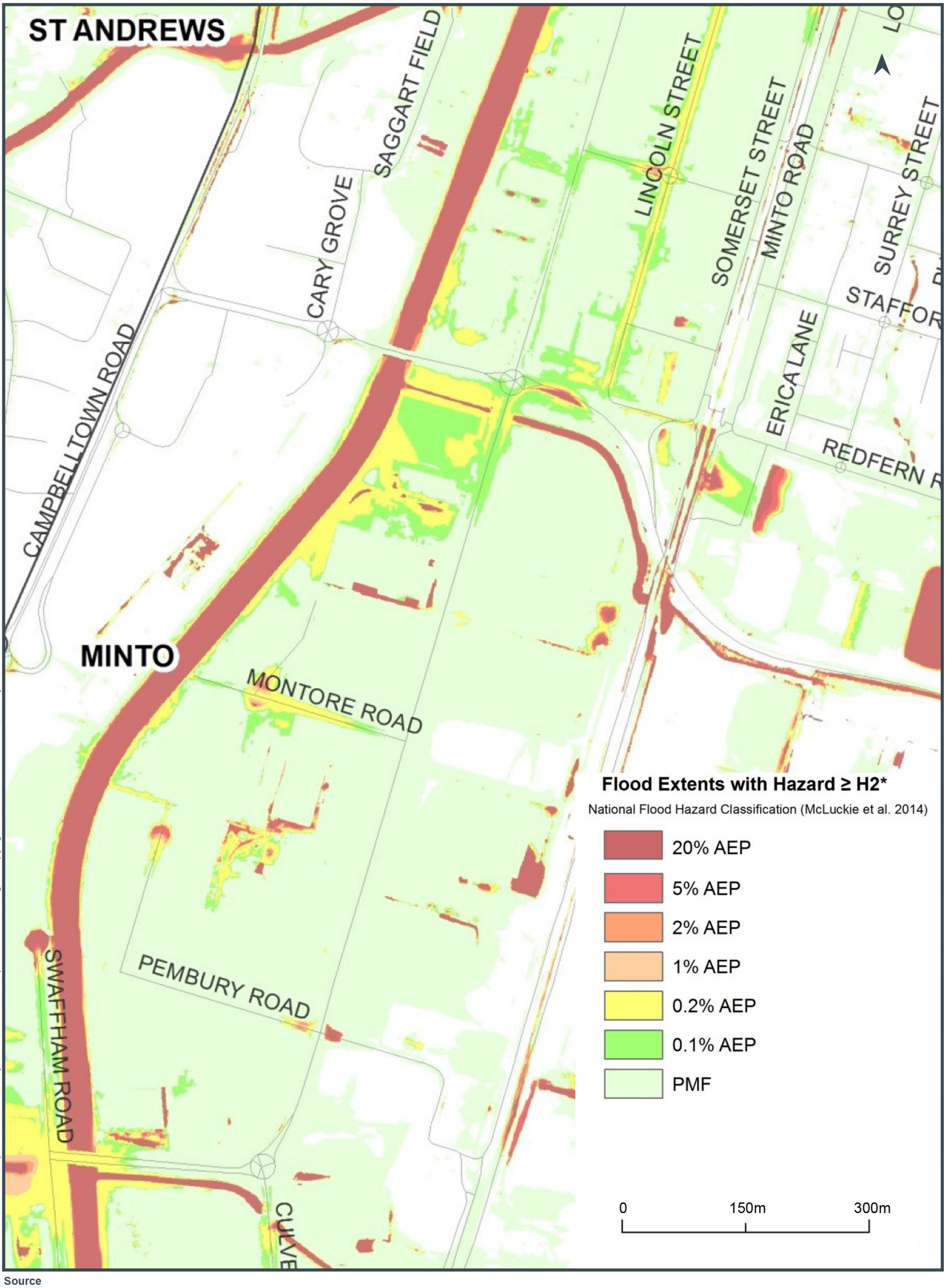
According to the *Bow Bowing Bunbry Curran Creek Strategic Floodplain Risk Management Study and Plan* (Campbelltown City Council, 2018), the Bow Bowning Creek corridor, adjacent to the site, is inundated by a 20% Annual Exceedance Probability (AEP) flooding event. The site has been raised and is flood-free up to the 1% AEP flood event.

The majority of the site is subject to the Probable Maximum Flood event, whilst the western and southern boundaries are affected by 0.1% and 0.2% AEP events. Parts of the driveway adjacent to the head of Montore Road are shown to be affected by 0.1%, 0.2%, 1%, 2% and 5% AEP events. However, as stated in the existing EIS, the topography of the site contains flood waters to Montore Road during these events.

Figure 2.3 details the distribution of floodwaters across the site relative to the flood event type.

Figure 3.3
Floodwater distribution (Campbelltown council)

Minto Resource Recovery Facility - Modification 2
SSD Modification



Source
Campbelltown Council - 'Bow Bowing Bunbury Curran Creek Strategic Flood Plan Risk Management Study and Plan Final Vol2.pdf'

2.2.5 Air quality

The main sources of air pollution in the area are anthropogenic activities such as motor vehicle exhaust, industrial and commercial activities. The National Pollutant Inventory map was searched in September 2025, which identified seven industrial contributors to the local airshed within a 2 km radius of the site. Table 2.2 details each contributor, the key emissions and their relative distance to the site.

Table 2.2: Air pollution contributors

Contributing company	Distance to site (km)	Direction from site	Key emissions
Foamco Industries Pty Ltd	0.1	SSW	▪ Dichloromethane. ▪ Toluene-2,4-diisocyanate. ▪ Total Volatile Organic Compounds.
Industrial Galvanizers Corporation Pty Ltd	0.4	ENE	▪ Hydrochloric acid. ▪ Particulate Matter 10.0 um. ▪ Zinc and compounds.
Boortmalt Asia Pacific Pty Ltd	0.7	SE	▪ Arsenic and compounds. ▪ Beryllium and compounds. ▪ Cadmium and compounds. ▪ Carbon monoxide. ▪ Chromium (III) compounds. ▪ Cobalt and compounds. ▪ Copper and compounds. ▪ Formaldehyde (methyl aldehyde). ▪ Lead and compounds. ▪ Manganese and compounds. ▪ Mercury and compounds. ▪ Nickel and compounds. ▪ Oxides of Nitrogen. ▪ Particulate Matter 10.0 µm. ▪ Particulate Matter 2.5 µm. ▪ Polychlorinated dioxins and furans (TEQ). ▪ Polycyclic aromatic hydrocarbons (B[a]Peq). ▪ Selenium and compounds. ▪ Sulfur dioxide. ▪ Total Volatile Organic Compounds. ▪ Zinc and compounds.
Fulton Hogan Industries Pty Ltd	0.6	SSE	▪ Fluoride compounds. ▪ Manganese and compounds.
Origin Energy LPG Ltd	0.1	SSW	▪ Total Volatile Organic Compounds.
Capral Aluminium Pty Ltd	0.1	E	▪ Carbon monoxide. ▪ Fluoride compounds. ▪ Hydrochloric acid. ▪ Oxides of Nitrogen. ▪ Particulate Matter 10.0 µm. ▪ Polycyclic aromatic hydrocarbons (B[a]Peq). ▪ Sulfur dioxide. ▪ Total Volatile Organic Compounds.
Unilever Australia Trading Ltd	0.7	SE	▪ Arsenic and compounds. ▪ Beryllium and compounds. ▪ Cadmium and compounds. ▪ Carbon monoxide. ▪ Chromium (III) compounds. ▪ Cobalt and compounds. ▪ Copper and compounds. ▪ Lead and compounds.

Contributing company	Distance to site (km)	Direction from site	Key emissions
			▪ Manganese and compounds. ▪ Mercury and compounds. ▪ Nickel and compounds. ▪ Oxides of Nitrogen. ▪ Particulate Matter 10.0 µm. ▪ Particulate Matter 2.5 µm. ▪ Polychlorinated dioxins and furans (TEQ). ▪ Polycyclic aromatic hydrocarbons (B[a]Peq). ▪ Selenium and compounds. ▪ Sulfur dioxide. ▪ Total Volatile Organic Compounds. ▪ Zinc and compounds.

2.2.6 Noise

The noise catchment is characterised by industrial and commercial activities and motor vehicle traffic. Noise sources include the operation of plant and equipment at industrial and commercial premises and heavy and light vehicles within and outside the site.

The RRF EIS describes noise levels at the nearest residences as being dominated by traffic noise from Campbelltown Road. Trucks from the existing RRF access the major arterial road network via Airds Road, Ben Lomond Road and Rose Payten Drive.

2.2.7 Heritage

The site has previously been subjected to extensive ground surface clearing and earthworks. The surrounding area has changed significantly with the development of industries within the area.

Searches of the Australian World Heritage Database, the Commonwealth Heritage List, National Heritage List, State Heritage Register, State Heritage Inventory, and the CLEP were conducted on 27 February 2019 for the RRF EIS. The searches concluded that there were no recorded historic or Aboriginal heritage items within the site and that the site does not fall within the visual catchment of any nearby heritage items.

A search of the Aboriginal Heritage Information Management Systems (AHIMS) was conducted in July 2025. The search did not identify any recorded Aboriginal sites within a 1 km radius of the site.

2.2.8 Biodiversity

A flora and fauna survey was prepared for the EIS to assess the biodiversity of the existing environment within and around the site. The survey did not identify any threatened flora species at the site. Of the flora species recorded, African Olive, Chilean Needle Grass, Cape Broom and Fireweed were listed as priority weeds in the Greater Sydney Area under the NSW *Biosecurity Act 2015*. Priority weeds identified during the construction of the RRF were removed during the development of the site where feasible.

No fauna species listed as threatened under the *Threatened Species Conservation Act 1995* or the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were detected during the survey.

Under Section 7.9 of the *Biodiversity Act 1999*, SSD development applications under Part 4 of the EP&A Act are to be accompanied by a Biodiversity Development Assessment Report (BDAR) to determine any potential biodiversity impacts. However, a BDAR waiver request was granted in November 2019 for the RRF development.

2.3 Socio-economic factors

2.3.1 Community profile

Population

The population of Minto was 13,940 at the time of the 2021 census of population and housing data. 49.3% of the population of Minto was male, and 50.7% was female. The locality has a median age of 35, and 3.1 people on average per household.

Indigenous Population

The Indigenous population makes up 3.1% of the Minto population. This is below the national average of 3.2%. The Indigenous population is also characterised by a lower median age (22 years) when contrasted against the median age of the wider national population (24 years), illustrating it as a relatively younger population sub-group.

Employment

The Minto population's participation in the labour force is lower than the NSW population, with 55.2% of people 15 years and older currently employed, compared to NSW at 61.1% (ABS, 2021). Regarding participants in the labour force in Minto, 50.4% were employed full-time, 29.4% were employed part-time, 13.0% were away from work, and 7.3% were unemployed and looking for work. These figures represent a 7.25% unemployment rate for the suburb, higher than the national average of 5.1% (ABS, 2021).

Income

The median weekly household income of Bayside residents is $1,646, compared to $1,829 for the rest of NSW and $1,746 for Australia.

2.4 Strategic planning and policy framework

Several regional strategies and plans have been prepared which set the sustainability and economic goals for the LGA, particularly in view of generating future employment. The strategies are discussed in further detail below.

2.4.1 National Waste Policy 2018

In 2018, the Australian Government introduced the *National Waste Policy: Less Waste, More Resources (National Waste Policy)* (Commonwealth of Australia, 2018). This policy builds on the 2009 framework, providing a strategic direction for businesses, governments, communities, and individuals in managing waste through to 2030. It focuses on reducing waste disposal and treating waste as a valuable resource, aiming to deliver economic, environmental, and social benefits while transitioning towards a circular economy.

The policy outlines a nationally coordinated approach to waste management, guided by five key principles:

- Waste avoidance – prioritising waste prevention, promoting efficient resource use, and designing products to minimise waste.

- Enhanced resource recovery – improving collection systems, recycling processes, and the quality of recovered materials.
- Increased use of recycled materials – stimulating demand and markets for recycled products.
- Better management of material flows – ensuring waste is managed to benefit human health, the environment, and the economy.
- Improved data and innovation – enhancing information systems to drive innovation, guide investment, and support informed consumer choices.

The overarching goal of the National Waste Policy is to ensure all waste, including non-putrescible waste, is managed in alignment with Australia's international commitments, safeguarding human health and the environment. The policy also aims to identify and mitigate long-term risks associated with waste to prevent intergenerational environmental impacts.

This modification supports the policy's objectives by:

- treating waste as a resource;
- expanding industry capacity;
- generating economic, environmental and social benefits by expanding existing services at an existing waste facility; and
- promoting sustainability and innovation.

The National Waste Policy contributes to Australia's broader commitment to sustainable waste management, reinforcing the principles of the circular economy and responsible resource use.

2.4.2 National Waste Policy Action Plan 2024

The *National Waste Policy Action Plan 2024* (Commonwealth of Australia, 2024), endorsed by State environment ministers in December 2024, sets out a national roadmap to transition Australia toward a circular economy by 2030. It builds on the 2018 National Waste Policy (above) and establishes national targets, including:

- achieving an 80% average resource recovery rate by 2030;
- reducing total waste generated in Australia by 10% per capita; and
- halving the amount of organic waste sent to landfill.

The Action Plan focuses on three priorities:

- strengthening policy and regulatory frameworks;
- delivering strategic infrastructure investment; and
- supporting market development and innovation.

The modification supports these national priorities by:

- Accelerating strategic infrastructure delivery (Priority 2): expanding resource recovery services at an existing resource recovery facility, enabling the rapid creation of additional resource recovery capacity in the area during a period of national infrastructure constraint.
- Optimising existing assets: maximising the efficiency of current facilities, consistent with the Action Plan's emphasis on reducing reliance on new development of waste facilities.
- Supporting the circular transition: providing reliable and centrally located resource recovery services that promote recycling and waste avoidance as we move towards national targets.

In this way, the modification is not only consistent with NSW's waste strategy but also directly contributes to achieving national objectives for waste reduction, recovery and infrastructure planning.

2.4.3 NSW Waste and Circular Infrastructure Plan, 2025

The *NSW Waste and Circular Infrastructure Plan* (NWCIP) (NSW Government, 2025) provides a whole-of-government approach to ensuring that NSW has the right infrastructure in place to manage future waste streams and transition to a circular economy. The plan highlights the importance of optimising the performance of existing resource recovery facilities and expanding capacity for new and emerging waste streams, rather than relying on new landfill development.

The modification is consistent with this policy direction. By increasing processing capacity and adding the approval to receive and process excavated soil, the modification will:

- provide additional processing capacity for a waste stream that is growing as urban development and construction accelerate in south-west Sydney;
- maximise the utilisation of existing infrastructure at an established, well-regulated resource recovery facility;
- contribute to the diversification and resilience of NSW's waste infrastructure network, ensuring the region can sustainably manage a broader range of materials.

In this way, the modification represents a practical and necessary response to the infrastructure challenges identified in the NWCIP. It expands the capacity of the Minto RRF to address a growing waste stream, supports resource recovery over disposal, and aligns with the long-term shift towards a circular economy in NSW.

2.4.4 NSW Environment Protection Authority Strategic Plan 2024 – 2029

The *Strategic Plan 2024–29* (EPA, 2024) describes how the NSW Environment Protection Authority (EPA), as NSW's primary environmental regulator, will protect, restore and enhance the NSW environment and human health over the next five years and beyond.

The plan outlines three strategic choices about the environmental and human health outcomes the EPA will deliver:

- care for Country – land, water, air and community;
- drive climate action; and
- enable a safe circular economy.

The modification supports the following outcomes of the strategic choices:

- The necessary systems, infrastructure and regulatory settings are incentivising the transition to a circular economy. The modification would provide the essential infrastructure needed to increase the recycling of construction and demolition waste and increase the supply of recovered aggregates in the region.
- Potential harm associated with managing waste and recovered materials is minimised. The modification would promote best waste management practices and minimise potential environmental impacts associated with illegal disposal of waste materials by providing a centrally located and affordable waste disposal facility for construction and demolition waste including excavated soil.
- The modification would assist communities, industry and government in recovering aggregate and sand products for reuse in the building industry.

2.4.5 A Metropolis of Three Cities – Greater Sydney Region Plan

The *Greater Sydney Region Plan: A Metropolis of Three Cities* (Greater Sydney Commission [GSC], 2018) provides the basis for strategic planning for the Greater Sydney region by setting out a 40-year vision and establishing a 20-year plan to manage growth and change.

The Greater Sydney Region Plan establishes 10 directions supported by 40 objectives that outline the framework for the city's liveability, productivity and sustainability.

Objective 3 (*Infrastructure adapts to meet future needs)* is focused on designing and adapting existing infrastructure to meet the growing needs of the area. The modification is a direct adaptation to an existing facility to accommodate the growth in the region and the rising need for construction and demolition waste resource recovery facilities.

Objective 35 ("more waste is reused and recycled to support the development of a circular economy") promotes circular economy principles and discourages landfill use. The objective acknowledges the limited landfill capacity in Greater Sydney, which increases community disposal costs outside the region. The modification addresses this by providing additional resource recovery services for wastes that otherwise may need to travel further to already stretched landfills and/or resource recovery facilities. The modification aligns with Strategy 35.1 to protect existing waste management.

Western City District Plan

The Western City District Plan ('the district plan') (GSC, 2020) provides a strategic framework for managing growth and land use in the Western Sydney region over a 20-year period. The key planning priority relevant to this modification includes Planning Priority W10: "maximising freight and logistics opportunities and planning and managing industrial and urban services land".

This priority emphasises the need to retain and enhance industrial and urban services land, manage freight and logistics efficiently, and support infrastructure and services that underpin the functioning of the greater Sydney region. The modification directly supports these priorities by enabling expanded operations of an essential, centrally located waste infrastructure asset, ensuring sufficient services are available to support the circular economy industry in the region through the provision of additional construction and demolition waste processing capacity.

- Maintaining local capacity for landfill disposal, reducing the need to transport residual waste to other regions, which in turn helps minimise freight pressure on the broader road network.
- Supporting the construction and infrastructure sectors, through the provision of additional resource recovery services that reduce transport cost and therefore disposal costs for the construction sector.

The district plan strongly supports waste reduction, recycling and transition to a circular economy. The modification will enable the site to play a critical role in the responsible management of construction and demolition waste streams. The modification aligns with the district plan's principle of retaining and managing industrial services that provide essential infrastructure to support sustainable and liveable communities.

Accordingly, the modification is well-aligned with the objectives of the Western City District Plan and does not conflict with its broader strategic intent.

2.4.6 Minto Precinct Plan 2017

The Minto Precinct Plan 2017 is a document prepared by the NSW Planning and Environment that outlines the growth and vision for the Minto area. The precinct plan provides an analysis of the Minto area and an evidence-based vision and projected growth plan.

The precinct plan states the following visions for the precinct as they relate to the modification:

- Construction and industrial-related jobs will continue to be the major land use for the precinct as the demand for new housing increases.

- Longer-term potential for the precinct's employment lands to accommodate industrial-related office uses and more consolidated employment activities.

The precinct plan also provides a future characterisation map of the precinct. The site is located within the expected growth area for industry and innovation, which are expected to accommodate for large floorplate industrial and commercial offices and workshops on sites that are carefully designed to integrate with existing uses according to the precinct plan.

The modification aligns with the vision stated in the precinct plan by integrating innovative uses with existing ones in an area identified as a growth precinct for industry and innovation.

CHAPTER 3

DESCRIPTION OF THE MODIFICATION

3 DESCRIPTION OF THE MODIFICATION

3.1 Modified development

The modification seeks to allow the existing RRF to:

- increase the amount of material received and processed from 450,000 tonnes per annum (tpa) to 600,000 tpa;
- receive non-destructive digging (NDD) waste 24 hours a day 7 days a week and process NDD waste 24 hours a day 6 days a week (excluding Sunday); and
- receive and process excavated soil classified as general solid waste (non-putrescible) according to the NSW EPA's Waste Classification Guidelines (2014).

Processing NDD waste at night involves running the NDD dewatering plant and equipment, and the water treatment plant, but not the crushing plant and equipment. Coarse soil fractions and aggregates separated from the NDD waste will be stockpiled for crushing during currently approved daytime processing hours. The processing of NDD waste at night is primarily for ensuring adequate space in the NDD waste receival bays for 24-hour deliveries.

While the modification aims to increase processing capacity, it won't require a change to approved waste and product storage limits, as existing plant and equipment have spare capacity to process additional material. No site upgrades or additional equipment, plant or infrastructure are required to facilitate the increased processing volumes or the processing of soil materials. All existing on-site activities will continue to operate as approved, with no changes required to existing operational procedures. The increased volume of material received and processed at the site will result in additional traffic movements to transport the material to and from the site, and an additional storage bay will be established for the unloading and storage of unprocessed soil material.

Resource recovery of the soil waste will be permitted by the *recovered fines (Batch) order 2014, recovered fines (Continuous) order 2014* or a site-specific resource recovery order (RRO) administered by NSW EPA, and an updated EPL. A site-specific RRO has been applied for, however NSW EPA have advised that approval is subject to development consent for receiving the waste type. Screening and refusal of non-conforming waste would continue to occur in accordance with current site procedures.

Soil will be processed through the sand washing plant (refer to Section 1.3.3) to derive washed sand products, and fine soil fractions (silt and clay) will be recovered via the water treatment plant. Recovered fines will be blended into existing products produced at the facility. Fine soil fractions are a highly beneficial additive blended into the road base product as it contains plastic fines not found in crushed concrete and which make a better road base product.

Construction activities to enable the modification would comprise building an additional storage bay for soils within the existing storage bay area. Construction activities are accordingly minor in scale and duration (less than 3 weeks), leading to minimal environmental impacts.

A summary of the modified project relative to the approved project is provided in Table 3.1. An updated project description incorporating the modification is provided in Appendix A.

Table 3.1: Modified development summary

Aspect	Approved project	Modified project
Waste receival and processing volumes	450,000 tpa	600,000 tpa

Aspect	Approved project	Modified project
Waste types	General solid waste (non-putrescible) limited to concrete, brick, asphalt, sandstone and sand from the building and demolition industry.	General solid waste (non-putrescible) limited to concrete, brick, asphalt, sandstone, sand **and soil** from the building and demolition industry.
Waste storage	50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time.	No change.
Heavy vehicle movements	171 trucks (342 movements) per day Monday - Friday. 106 trucks (212 movements) Saturday.	229 trucks (458 movements) per day Monday – Friday 70 trucks (140 movements) Saturday
Operational hours	**Operation (including crushing, screening, pugmill and sand washing):** ▪ Monday to Friday 7 am - 6 pm. ▪ Saturday 7 am - 4 pm. **Truck deliveries and pick-ups:** ▪ Monday to Friday 6 am - 7 pm. ▪ Saturday 7 am - 4 pm.	**Operation (including crushing, screening, pugmill and sand washing):** ▪ Monday to Friday 7 am - 6 pm. ▪ Saturday 7 am - 4 pm. **Truck deliveries and pick-ups:** ▪ Monday to Friday 6 am - 7 pm. ▪ Saturday 7 am - 4 pm. **NDD waste deliveries:** ▪ 24 hrs 7 days **NDD waste processing (dewatering)** ▪ 24 hrs 6 days (excluding Sunday)
Employment	Fifteen full-time staff are employed at the site across the following roles: ▪ One Site Foreman ▪ Three Loader Drivers ▪ Three Excavator Drivers ▪ Two Weighbridge Attendants ▪ Two Fitters ▪ Four Labourers	No change.
Plant and equipment	The current processing plant and equipment includes: ▪ Concrete and brick processing plant: Jaw crusher, overband magnet, screening, secondary crushing, conveyor belts. ▪ Sand washing plant: Wet screen, cyclonic separation, water reuse tank/thickener, water storage tanks. ▪ Pugmill ▪ 3 x 35 tonne class wheel loaders. ▪ 1 x 45 tonne excavator. ▪ 2 x 30 tonne excavators. ▪ Stormwater storage tanks. ▪ 1 x water cart. ▪ 1 x 20,000 litre capacity self-bunded fuel tank. ▪ 2 x Weighbridge. ▪ Wheel wash. ▪ Workshop for general repairs. ▪ Staff lunch room and associated amenities. ▪ Car park.	One additional storage bay for unprocessed soil material within the existing storage bay area.
Processing method	As per Section 1.3.3	Soil waste received under this modification will be processed by

Aspect	Approved project	Modified project
		the existing sand washing plant as described at Section 3.1.
Outputs	The concrete and brick processing plant produces: ▪ Sand. ▪ 10 mm recovered aggregates. ▪ 20 mm recovered aggregates. The sand washing plant produces: ▪ >18 mm sand. ▪ 6 mm to 18 mm sand. ▪ <6 mm washed sand. The pug mill produces: ▪ Sand-cement mixtures. ▪ Road base-cement mixtures. ▪ Road base-water mixtures .	No change to existing outputs. Recovered materials from soil waste processing will include washed sand products and fine soil fractions (silt and clay) which will be blended into existing products produced at the facility.
Access	Access into the site is via a single designated entry / exit driveway on Montore Road, before proceeding through internal access roads throughout the existing RRF.	No change.
Site boundary	Approximately 4.0 ha.	No change.
Maximum building height	12 m.	No change.
Services and utilities	The site is connected to a potable water supply, electrical power mains, Sydney Water sewer mains and telecommunication systems.	The modification will not require any upgrades to existing services and utilities.
Stormwater management	As described in Sections 1.3.3 and 6.4.3.	No change.
Parking	The existing parking area at the existing RRF provides 15 spaces.	No change.

3.2 Conditions to be modified

The modification will require an amendment to the existing conditions of consent as summarised in Table 3.2.

Table 3.2: Proposed changes to development consent conditions

Condition	Condition description	Proposed change
A6 Waste	The applicant must not: (a) receive and process more than 450,000 tonnes per annum (tpa) of general solid waste (non-putrescible) limited to concrete, asphalt, sandstone and sand from the building and demolition industry; and (b) store more than 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time	The applicant must not: (a) receive and process more than **600,000** tonnes per annum (tpa) of general solid waste (non-putrescible) limited to concrete, asphalt, sandstone, sand **and soil** from the building and demolition industry; and (b) store more than 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time.
B25 Hours of work	Truck deliveries and pick-ups: ▪ Monday – Friday: 6 am to 7 pm ▪ Saturday: 7 am to 4 pm ▪ Sunday and public holidays: No work. Operation (including crushing, screening, pugmill and sand washing):	**NDD waste** truck deliveries: ▪ 24 hrs 7 days **Other** truck deliveries and pick-ups: ▪ Monday – Friday: 6 am to 7 pm ▪ Saturday: 7 am to 4 pm ▪ Sunday and public holidays: No work.

Condition	Condition description	Proposed change
	▪ Monday – Friday: 7 am to 6 pm; ▪ Saturday: 7 am to 4 pm ▪ Sunday and public holidays: No work.	Operation (including crushing, screening, pugmill and sand washing): ▪ Monday – Friday: 7 am to 6 pm; ▪ Saturday: 7 am to 4 pm ▪ Sunday and public holidays: No work. **NDD waste processing (dewatering) and WTP operation:** ▪ 24 hrs 6 days (excluding Sunday) ▪ Sunday and public holidays: No work.

3.3 Additional soil waste stream

The modification will allow the site to receive and process excavated soil from the building and demolition industry and classified as general solid waste (non-putrescible) according to the NSW EPA's Waste Classification Guidelines (2014). This would include soil mixed with other construction and demolition waste or bulk excavated soil from earthwork projects.

Currently CR Plus have found that sand as part of mixed construction and demolition waste is being classified as 'soil' or 'general solid waste' and, based on the existing licence prescribing sand only, these loads have not been able to be accepted. The current development consent conditions are seen to be preventing a practical outcome and the modification seeks to allow resource recovery of waste streams with this classification, as described at Section 1.5 and 3.1.

3.4 Construction

The modification would require an additional storage bay for soils, within the existing storage bay area. This would comprise concrete panel walls with support posts founded on in-ground concrete footings. Construction is estimated to take less than 3 weeks and the Construction Environmental Management Plan (CEMP) previously used for the construction of Minto RRF will be adopted for managing these minor works.

3.5 Substantially the same development

Section 4.55(2)(a) of the EP&A Act allows for a modification of a development where the consent authority "is satisfied that the development to which the consent as modified relates is the same or substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all)".

The modification is substantially the same development as originally approved for the following reasons:

- There will be no significant changes to the approved site development plan, nor will the functions and operations as a waste and resource recovery management facility be changed.
- As described in Chapter 6, environmental impacts of the modified project will remain generally consistent with the originally approved and existing development.
- The modification will enable the site to continue operating as an RRF with the ability to recover materials from additional waste streams, using existing processing plant and equipment.

CHAPTER 4

STATUTORY CONTEXT

4 STATUTORY CONTEXT

4.1 Commonwealth Legislation

4.1.1 Commonwealth Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth EPBC Act requires actions that are likely to have a significant impact on matters of national environmental significance (MNES), or which have a significant impact on Commonwealth land, to be referred to the Commonwealth Minister for the Environment and Water for approval.

The nine MNES protected under the EPBC Act are:

- World heritage properties.
- National heritage places.
- Wetlands of international importance (listed under the Ramsar Convention).
- Listed threatened species and ecological communities.
- Migratory species protected under international agreements.
- Commonwealth marine areas.
- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mines).
- A water resource, in relation to coal seam gas development and large coal mining development.

The Protected Matters Search Tool was reviewed, which identified several MNES within 10 km of the site that may be relevant to the modification, including:

- Threatened ecological communities (TEC).
- Threatened species.
- Migratory species.

The modification will not significantly impact any MNES as no habitat will be impacted. Therefore, the requirements of the EPBC Act are not relevant, and a referral of the project to DCCEEW is not required.

4.1.2 Native Title Act 1993

The Commonwealth *Native Title Act 1993* recognises that Aboriginal people have rights and interests to land and waters which derive from their traditional laws and customs. Native title may be recognised in places where Indigenous people continue to follow their traditional laws and customs and have maintained a link with their traditional country. It can be negotiated through a native title claim, an indigenous land use agreement or future act agreements.

The National Native Title Register, Register of Native Title Claims, Unregistered Claimant Applications register, and Register of Indigenous Land Use Agreements were searched for reported native title claimants in the LGA. No native title claims were identified near the site.

4.2 NSW Environmental Planning and Assessment Act 1979

The EP&A Act provides the statutory framework for planning approval and environmental assessment in NSW. Implementation of the EP&A Act is the responsibility of the Minister for

Planning and Public Spaces, statutory authorities and local councils. It contains the following parts that impose requirements for planning approval:

- Part 4 provides for control of ‘development' that requires development consent from the relevant authority. A division of Part 4 (Division 4.7) provides for the assessment of State Significant Development (SSD) where the Minister for Planning and Public Spaces (or delegate) or the Independent Planning Commission (IPC) is the consent authority.
- Part 5 provides for control of 'activities’ that do not require development consent under Part 4.
- Division 5.2 provides for the control of State significant infrastructure that does not require development consent under Part 4.

The requirement for development consent is set out in environmental planning instruments (EPI), being a State environmental planning policy (SEPP) or local environmental plan (LEP).

4.2.1 State significant development

The Minister for Planning granted SSD consent for the existing approval (SSD-5339) on 17 June 2022 under Section 4.38 of the EPA Act.

Development is declared SSD under Part 4, Division 4.7 of the EP&A Act if specified in a State Environmental Planning Policy (SEPP). The State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) identifies waste and resource management facilities as SSD where they exceed the relevant thresholds in Schedule 1.

4.2.2 Permissibility

This development is proposed on land zoned as E4 General Industrial under the Campbeltown Local Environment Plan 2015 (CLEP). The facility can be defined as a ‘Waste or resource management facility’ under the definitions of the CLEP.

Under the CLEP, ‘waste or resource management facilities’ are prohibited in the E4 General industrial land zone. However, under Section 2.152 of the State Environmental Planning Policy (Transport and Infrastructure) 2021 (TISEPP), the use is permissible with consent in E4 General industrial zonings. As per Section 2.7(2) of the TISEPP, where there is an inconsistency between Chapter 2 of the TISEPP and any other environmental planning instrument (such as the CLEP), Chapter 2 of the TISEPP prevails.

4.2.3 Power to grant consent

Under Section 4.5(a) of the EP&A Act, the Minister is the consent authority for SSD applications, except in certain specified cases. For the purposes of this modification, the Minister is the relevant consent authority under Section 4.55(2).

A modification may be granted under this section if the consent authority is satisfied that "the development to which the consent as modified relates is the same or substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all)”.

The development, as modified, will be substantially the same development as the development for which consent was originally granted (see section 3.5) and suitable consultation with DPHI and other stakeholders has been completed along with preparation of a modification application and this modification report, to be submitted to DPHI.

4.2.4 Mandatory matters for consideration

Section 4.55(2) modifications involving no or minimal environmental impact

Table 4.1outlines the matters that a consent authority must consider in modifying a development consent under Section 4.55(2) of the EP&A Act.

Table 4.1: Section 4.55(2) requirements

Clause and requirements	Comments
4.55(2) Other modifications A consent authority may, on application being made by the applicant or any other person entitled to act on a consent granted by the consent authority and subject to and in accordance with the regulations, modify the consent if—	-
(a) it is satisfied that the development to which the consent as modified relates is the same or substantially the same development as the development for which consent was originally granted and before that consent as originally granted was modified (if at all), and	As outlined in section 3.5, the modification will remain substantially the same development as the development for which the consent was originally granted.
(b) it has consulted with the relevant Minister, public authority or approval body (within the meaning of Division 4.8) in respect of a condition imposed as a requirement of a concurrence to the consent or in accordance with the general terms of an approval proposed to be granted by the approval body and that Minister, authority or body has not, within 21 days after being consulted, objected to the modification of that consent, and	CR Plus and Element met with DPHI on 11 November 2025 regarding the modification. No objections were raised by DPHI within 21 days of the consultation.
(c) it has notified the application in accordance with— (i) the regulations, if the regulations so require, or (ii) a development control plan, if the consent authority is a council that has made a development control plan that requires the notification or advertising of applications for modification of a development consent, and	DPHI will notify the modification application in accordance with the regulations, if required. The modification will be for an existing state-significant development, and the council is not the consent authority.
(d) it has considered any submissions made concerning the proposed modification within any period prescribed by the regulations or provided by the development control plan, as the case may be.	If applicable, any submissions on the modification application will be considered.
Subsections (1) and (2) do not apply to such a modification.	-

Section 4.15(1) Matters for consideration – general

In determining an application for a modification of consent under Section 4.55(2), Section 4.55(3) of the EP&A Act requires the consent authority to consider the matters in Section 4.15(1) of the Act. These matters are addressed in Table 4.2.

Table 4.2: Section 4.15(1) EP&A Act matters for consideration

Section and requirement	Comment
4.15(1) Matters for consideration – general In determining a development application, a consent authority is to take into consideration such of the following matters as are of relevance to the	-

Section and requirement	Comment
development the subject of the development application: (a) the provisions of -	
(i) any environmental planning instrument, and	All environmental planning instruments relevant to the modification are considered in section 4.3.
(ii) any proposed instrument that is or has been the subject of public consultation under this Act and that has been notified to the consent authority (unless the Planning Secretary has notified the consent authority that the making of the proposed instrument has been deferred indefinitely or has not been approved), and	N/A
(iii) any development control plan, and	The alignment between the Campbelltown DCP 2014 and the modification has been discussed in Section 4.4.2.
(iii) any planning agreement that has been entered into under section 7.4, or any draft planning agreement that a developer has offered to enter into under section 7.4, and	No planning agreements are relevant to the modification.
(iv) the regulations (to the extent that they prescribe matters for the purposes of this paragraph),	Section 4.2.5.
(v) (Repealed)	-
that apply to the land to which the development application relates,	-
(b) the likely impacts of that development, including environmental impacts on both the natural and built environments, and social and economic impacts in the locality,	Environmental impacts of the modification have been detailed in Chapter 6.
(c) the suitability of the site for the development,	Suitability of the site has been discussed in Section 4.2.2.
(d) any submissions made in accordance with this Act or the regulations,	CR Plus will respond to any government agency or public submissions received that DPHI requests a response to.
(e) the public interest.	Chapter 5 summarises public consultation.

4.2.5 Environmental Planning and Assessment Regulation 2021

Part 5, clause 100 (1) of the NSW Environmental Planning and Assessment Regulation 2021 (EP&A Regulation) outlines requirements for modifications to a development consent. Table 4.3 lists the relevant clause requirements and where they have been addressed in this report.

Table 4.3: Requirements of Part 5, clause 100 (1) of the EP&A Regulation

Clause requirement	Comments
(1) An application for modification of a development consent under section 4.55(1), (1A) or (2) or 4.56(1) of the Act must contain the following information—	-
(a) the name and address of the applicant,	Section 1.2.
(b) a description of the development to be carried out under the consent (as previously modified),	Chapter 1.3.
(c) the address, and formal particulars of title, of the land on which the development is to be carried out,	Section 2.1.1.
(d) a description of the proposed modification to the development consent,	Chapter 3.

Clause requirement	Comments
(e) a statement that indicates either— (i) that the modification is merely intended to correct a minor error, misdescription or miscalculation, or (ii) that the modification is intended to have some other effect, as specified in the statement,	Section 4.2.3.
(f) a description of the expected impacts of the modification,	Chapter 6.
(g) an undertaking to the effect that the development (as to be modified) will remain substantially the same as the development that was originally approved.	Section 3.5.

Ecologically sustainable development

One of the objects in Section 1.3 of the EP&A Act is:

> *to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment".*

Clause 193 of the EP&A Regulation defines ESD.

The following sections summarise how the modification aligns with the principles of ESD and how these principles have been incorporated into the design of the modification.

Precautionary principle

Where there are threats of serious or irreversible environmental damage, a lack of full scientific certainty should not be used as a reason for postponing measures to prevent such damage.

Baseline environmental characteristics have been monitored to understand the condition of the existing environment at and around the site, and to understand the environmental impacts of previous operations. This data in combination with publicly available data for the region, has been used by the technical specialists to predict the environmental impacts of the modification.

As described in Chapter 6, environmental aspects requiring assessment were considered, and the level of assessment detail for each aspect was proportional to environmental risk.

CR Plus has numerous similar operations within the Sydney Region, and the potential environmental impacts associated with waste management are well understood and have been effectively managed, resulting in negligible environmental impact. This experience and knowledge has been used to design the modification and predict and manage potential environmental impacts.

Management measures have been proposed where serious or irreversible damage to the environment is likely to be unavoidable.

Inter-generational equity

Inter-generational equity is the concept that the present generation should ensure the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

As described in Chapter 6, the modification will not have significant noise, traffic, or air quality impacts.

Therefore, the modification will not detract from future generations' access to and equal enjoyment of water and clean air.

Conservation of biological diversity and ecological integrity

This is the concept that conservation of biological diversity and ecological integrity should be a fundamental consideration.

The operational area of the site is void of vegetation, and therefore the modification will not result in the disturbance of native flora or fauna, threatened species or ecological communities.

Improved valuation, pricing and incentive mechanisms

The principle of improved valuation, pricing and incentive mechanisms deems that environmental factors should be included in the valuation of assets and services, and that those who generate the pollution and waste should bear the cost of containment, avoidance or abatement.

CR Plus acknowledges and accepts the financial costs associated with licensing the modification and all measures required to avoid, minimise, mitigate and manage potential environmental and social impacts.

4.2.6 Other NSW legislation

Additional NSW legislation relevant to the proposed modification are summarised in Table 4.4.

Table 4.4: Other NSW legislation

Legislation	Objective	Application to the proposed modification
NSW Protection of the Environment Operations Act 1997 (POEO Act)	The POEO Act aims to protect, restore and enhance the quality of the environment in the context of ecologically sustainable development and to reduce risks to human health and prevent degradation of the environment.	Section 48 of the Act requires an EPL for premises-based activities listed in Schedule 1 of the Act. CR Plus is licensed under EPL 21828. Condition L2.1 states the facility is approved for: The receival and processing of up to 450,000 tpa of general solid waste (non-putrescible) limited to concrete, brick, asphalt, sandstone and sand from the building and demolition industry. The storage of not more than 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time. Conditions L2.1 and L2.3 of the EPL will need to be varied to align with the modification to allow for the additional waste stream (GSW soil) and increased processing capacities. Condition L4.1 will need to be varied to align with the modification to allow for increased operating hours (NDD waste receival and processing only). Resource recovery orders (RROs) issued by the EPA under clause 93 of the Protection of the Environment Operations (Waste) Regulation 2014 (Waste Regulation) and proposed to be used to support

Legislation	Objective	Application to the proposed modification
		processing of soil classified as general solid waste (non-putrescible) are discussed at Section 3.1.
NSW Contaminated Land Management Act 1997 (CLM Act)	The CLM Act establishes a process for investigating, and where required remediating contaminated lands, that pose a risk to human health and the environment. The CLM Act outlines the circumstances in which notification of the EPA is required in relation to the contamination of land.	The EPA's Contaminated Land Record and List of Contaminated Sites notified to the EPA was searched. No recorded contaminated sites requiring remediation under the CLM Act were identified in or adjacent to the site. Requirements of the CLM Act will be implemented if contaminated land is identified during the construction of the modification. However, contaminated soils are not expected as site remediation has been completed as part of approval of the existing facility.
NSW Roads Act 1993 (Roads Act)	The Roads Act provides for the classification of roads and determines which public authority is the appropriate road authority for public roads.	Under Section 138 of the Roads Act, the consent or concurrence of the appropriate roads authority is required to: Erect a structure or carry out a work in, on or over a public road. Dig up or disturb the surface of a public road. Remove or interfere with a structure, work or tree on a public road. Pump water into a public road from any land adjoining the road. Connect a road (whether public or private) to a classified road. The modification will not involve any of the above and no approvals are required under the Roads Act.
NSW Biodiversity Conservation Act 2016 (BC Act)	The BC Act provides protection for threatened plants and animals native to NSW (excluding fish and marine vegetation) and integrates the conservation of threatened species into development control processes under the EP&A Act.	The modification will be confined to previously disturbed areas of the existing RRF and associated designated accessways and will not require disturbance of vegetation. As such, the modification will not result in significant impacts upon endangered or threatened ecological communities, populations or species protected under the EPBC Act, BC Act or NSW *Fisheries Management Act 1994*, nor the potential habitat of threatened fauna. No further assessment is required under the BC Act.
NSW Water Management Act 2000 (WM Act)	The WM Act regulates the management of water by granting licences, approvals for taking and using water, and trading groundwater and surface water. The WM Act applies to those areas where a water sharing plan has commenced. Alternatively, if a water sharing plan has not yet	The site is located in the 'Southern Sydney Rivers' water source within the 'Greater Metropolitan Region Unregulated River Water Sources'. The Water Sharing Plan (WSP) for the Lower Georges River and Bunbury Curran Creek applies to the site.

Legislation	Objective	Application to the proposed modification
	commenced, the *NSW Water Act 1912* (Water Act) applies. The WM Act is progressively replacing the Water Act as relevant water sharing plans are introduced across the State. Water sharing plans (WSP) have commenced for most of NSW. Licensing of monitoring bores continues under the Water Act until a regulation for aquifer interference gives a mechanism to approve these activities. Licensing of reinjection into groundwater systems is also still currently managed under the Water Act. The NSW Aquifer Interference Policy (AIP), published by the NSW Office of Water in 2012, outlines the water licensing and assessment processes for aquifer interference activities under the WM Act and other relevant legislative frameworks.	The modification will not include either collection or extraction from Bow Bowing Creek and, therefore, no licensable surface water elements are proposed. The development is, therefore, compliant with the WSP.
NSW Heritage Act 1977 (Heritage Act)	Non-Aboriginal historical archaeological relics, buildings, structures, archaeological deposits and features are protected under the Heritage Act.	There are no listed heritage items within the site.
NSW National Parks and Wildlife Act 1974 (NPW Act)	The NPW Act contains provisions for the protection and management of national parks, historic sites, nature reserves and Aboriginal heritage. The NPW Act provides statutory protection for Aboriginal objects by making it illegal to move, damage, deface or destroy a relic without written permission from DPHI.	Under Section 86 of the NPW Act, a person must not harm or desecrate an Aboriginal object or place. In cases where harm to Aboriginal objects or places cannot be avoided, an Aboriginal heritage impact permit (AHIP) may be sought under Section 90 of the Act. The modification will not result in harm to Aboriginal objects and can proceed with no requirement for further investigation.
NSW Rural Fires Act 1997	The NSW Rural Fire Service (NSW RFS) has an obligation under the *NSW Rural Fires Act 1997* to protect life, property and the environment through fire suppression and fire prevention.	Section 4.14 of the EP&A Act requires all new development on bushfire-prone land to comply with the requirements of RFS (2019) Planning for Bushfire Protection (PBP) The site does not contain bushfire-prone land.
NSW Biosecurity Act 2015 (Biosecurity Act)	The Biosecurity Act provides a framework to manage biosecurity risks from animal and plant pests and diseases, weeds and contaminants. The Biosecurity Act requires any person who deals with any biosecurity matter or who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented,	The site has been previously disturbed, and there will be no requirement to remove priority weeds as part of the modification

Legislation	Objective	Application to the proposed modification
	eliminated or minimised, so far as is reasonably practicable. Whilst the Biosecurity Act provides for all biosecurity risks, implementation of the Act for weeds is supported by regional strategic weed management plans developed for each region in NSW.	
NSW Waste Avoidance and Resource Recovery Act 2001 (WARR Act)	The purpose of the WARR Act is to encourage the most efficient use of resources and to reduce environmental harm in accordance with the principles of ecologically sustainable development. The WARR Act provides for the making of policies and strategies to achieve this. The WARR Act promotes a hierarchy of avoidance of unnecessary resource consumption; resource recovery (including reuse, reprocessing, recycling and energy recovery), and disposal (as a last resort).	All construction and operational wastes will be classified and disposed of in accordance with NSW Waste Classification Guidelines (EPA, 2014) and the waste hierarchy of the WARR Act and NSW Protection of the Environment Operations (Waste) Regulation 2014.

4.3 Environmental planning instruments

4.3.1 State environmental planning policies

SEPPs considered in relation to the modification are summarised in Table 4.5.

Table 4.5: SEPPs relevant to the proposed modification

SEPP	Overview
State Environmental Planning Policy (Planning Systems) 2021	Section 2.6 and Schedule 1 of the SEPP declare certain development to be SSD. The existing approval subject to this modification is SSD.
State Environmental Planning Policy (Biodiversity and Conservation) 2021 (BC SEPP)	The site is in the area mapped as Georges River Catchment on Map Sheet GRC_001 of SEPP (Biodiversity and Conservation) 2021 (Biodiversity SEPP). Section 6.22(1) of the Biodiversity SEPP prohibits waste management facilities on flood liable land in the Georges River Catchment. However, clause 6.3 of the Biodiversity SEPP provides that Chapter 2 of the TISEPP prevails over Chapter 6 of the Biodiversity SEPP to the extent of any inconsistency. This means that clause 2.153 of the TISEPP prevails over clause 6.22 of the Biodiversity SEPP. Section 2.153(1) of the TISEPP makes waste management facilities permissible in the E4 land zone with consent. Clause 6.22(2) of the Biodiversity SEPP states that development consent must not be granted to development for the purposes of waste or resource management facilities on land in a regulated catchment unless the consent authority is satisfied of the following: ▪ An adequate site management plan has been prepared in relation to the development. ▪ An appropriate site management plan has been prepared for the development. ▪ The development includes adequate leachate surface controls.

SEPP	Overview
	▪ The facility will not accept putrescible waste. CR Plus are seeking approval to recover additional non-putrescible GSW soil from the building and demolition industry. ▪ The site has an existing stormwater management system designed to capture all surface runoff for treatment. ▪ The final landform of the development on the site will be stable in the long term. The modification does not propose to change the existing landform.
State Environmental Planning Policy (Transport & Infrastructure) 2021 (Infrastructure SEPP)	The aim of Chapter 2 of the Infrastructure SEPP is to facilitate the effective delivery of infrastructure across the State by clarifying types of infrastructure works that are permissible in certain land use zones. Clause 2.153(1) makes development for the purpose of a waste or resource management facility permissible with consent on land zoned IN1 – General Industry or equivalent zones. The site is located on land zoned E4 – General industrial, which falls under an equivalent zone to IN1 in the Infrastructure SEPP. As described in Section 4.2.2, the proposed development is permissible with consent on the land. Section 2.122 of the TISEPP applies to traffic-generating development which is specified in Schedule 3 and includes waste or resource management facilities of any size or capacity that has access to a road. Section 2.122(4) of the TISEPP provided that prior to determining a development application, the consent authority must: ▪ give written notice of the application to TfNSW within 7 days after the application is made, and; ▪ take into consideration – – any submission that TfNSW provides in response to that notice within 21 days after the notice was given; and; – the accessibility of the site concerned, including: i. the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips; and; ii. the potential to minimize the need for travel by car and to maximise movement of freight in containers or bulk freight by rail; and; iii. any potential traffic safety, road congestion or parking implications of the development. The proposed modification triggers traffic-generating development under Schedule 3 of the Infrastructure SEPP.
State Environmental Planning Policy (Resilience and Hazards) 2021	**Hazardous and offensive development** Chapter 3 of State Environmental Planning Policy (Hazards and Resilience) 2021 (Hazards SEPP) requires the consent authority to consider whether a project is a potentially hazardous industry or a potentially offensive industry. The modification has been assessed by applying the screening process specified in Applying SEPP 33 – Hazardous and Offensive Development Application Guidelines (NSW Department of Planning, 2011), to determine whether the development is classified as hazardous or offensive industry under the SEPP. The proposed RRF does not involve the storage of any dangerous goods above their corresponding thresholds in Appendix 4, Table 3 of the SEPP 33 guidelines. Therefore, the proposed RRF is not considered to be potentially hazardous, and a preliminary hazards assessment is not required. Similarly, the proposal is not classed as offensive industry based on adoption of a suitable EPL. Potential air and noise associated with the modification are assessed in Chapter 6 and are considered negligible. **Remediation of land** Chapter 4 of the Hazards SEPP provides that a consent authority must not consent to the carrying out of development on land unless it has considered potential contamination issues.

SEPP	Overview
	A remedial action plan was prepared to guide the remediation of contamination at the site under the existing approval (refer to Section 2.2.3) and as such remnant contamination is not anticipated to be present. If previously unidentified contaminated land is identified, the requirements of Chapter 4 of the SEPP will be complied with.

4.4 Local Environmental Planning Instruments

4.4.1 Campbelltown Local Environmental Plan 2015

The CLEP aims to make local environmental planning provisions for land in the LGA under Section 3.20 of the EP&A Act.

The modification has been considered against the objectives of the E4 General industrial zone in the CLEP in Table 4.6.

Table 4.6: Consideration of land use zone objectives

Zone objective	Consistency
To provide a range of industrial, warehouse, logistics and related land uses.	The modified development will continue to provide industry, which will cater for forecast population growth in the Sydney Metropolitan region.
To ensure the efficient and viable use of land for industrial uses.	The development as modified will continue to comprise a waste management facility and is a continued appropriate use of land in the E4 zone.
To minimise any adverse effect of industry on other land uses.	As discussed in Chapter 6, there will be a negligible impact on other land uses.
To encourage employment opportunities.	The modification seeks to improve economical performance of the site and retain employment.
To enable limited non-industrial land uses that provide facilities and services to meet the needs of businesses and workers.	N/A
To enable non-industrial land uses that are compatible with and do not detract from industrial and warehouse uses or impact on the viability of existing centres.	N/A
To ensure that any commercial, retail or other non-industrial development is not likely to adversely affect employment generating activities or opportunities.	N/A
To facilitate diverse and sustainable means of access and movement.	The modification does not alter existing access arrangements to the site.
To maximise public transport patronage and encourage walking and cycling.	The modification does not limit any public access to footpaths or potential cycling routes.

4.4.2 Campbelltown (Sustainable City) Development Control Plan 2015

The Campbelltown (Sustainable City) Development Control Plan 2015 (CDCP) supplements the provisions of CLEP by providing more detailed objectives and development standards.

Section 2.10(1) of the TISEPP provides that development control plans do not apply to SSD.

CHAPTER 5
COMMUNITY ENGAGEMENT

5 COMMUNITY ENGAGEMENT

5.1 Objectives and approach

CR Plus values active engagement with stakeholders and the community. Thorough and robust engagement is fundamental to minimising risk, optimising design, minimising social and environmental impacts, and gaining and maintaining community acceptance.

CR Plus aims to improve engagement with the community by recognising, predicting and responding positively to the community and their expectations by:

- ensuring community interactions are genuine and informative;
- proactively communicating with affected communities and relevant stakeholders, keeping them informed through the provision of timely, relevant and targeted information; and
- identifying and engaging with a wide range of stakeholders and interested parties, building positive working relationships.

5.2 Community consultation

Potentially affected community stakeholders were consulted during the environmental assessment process to identify any requirements for consideration in the modification report. CR Plus carried out a mass letter box drop to 752 businesses and residences in the area (Figure 5.1), selected due to their proximity to the site/or truck traffic routes. The community notification letters outlined details of the proposed modification, CR Plus company background, the planning approval process and invited feedback. The letters were delivered on 23 September 2025. No responses were received.

5.3 Government agency consultation

The following government agencies were consulted during the environmental assessment process to identify any requirements for consideration in the modification report:

- NSW EPA,
- TfNSW
- Campbelltown City Council, and
- Sydney Water.

Consultation letters were sent on 28 January 2026, to which CR Plus received responses from both NSW EPA and TfNSW, outlining their assessment requirements for consideration in the modification report (Appendix B). These assessment requirements have been assessed in this modification report (Chapter 6) and supporting technical studies (Appendices).

No response was received from Campbelltown City Council or Sydney Water.

5.4 Continuation of stakeholder engagement

The modification report will be placed on public exhibition to allow for government agencies, organisations, interest groups, stakeholders and community members to review the report, seek clarification with CR Plus on the content of the modification report and provide written submissions if required.

Once the modification report has been exhibited, CR Plus will prepare a response to submissions report, if required, to address any written submissions, prior to determination of the modification application.

Figure 5.1
Letter distribution area

Minto Resource Recovery Facility - Modification 1
SSD Modification

CHAPTER 6

ASSESSMENT OF IMPACTS

6 ASSESSMENT OF IMPACTS

This chapter summarises the likely impacts of the modification, including environmental impacts on both the natural and built environments, and social and economic impacts on the locality.

Key potential environmental impacts associated with the modification are addressed in Sections 6.1 - 6.4. Low-risk environmental aspects were assessed in less detail and are summarised in Section 6.5 and potential cumulative impacts are reviewed in Section 6.6.

Construction activities to enable the modification would comprise building an additional storage bay for soils within the existing storage bay area. Construction activities (see Section 3.4) are accordingly minor in scale and duration (less than 3 weeks), leading to minimal environmental impacts and have therefore not been included in the following sections. Air quality, noise, traffic, water quality and other potential environmental impacts would be negligible during construction.

6.1 Air quality

This section summarises the *Air Quality Impact and Greenhouse Gas Assessment – CR Plus Minto Modification 2* prepared by Todoroski Air Sciences Pty Ltd, which is included as Appendix C.

6.1.1 Assessment methodology

The air quality impact assessment has been prepared in general accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2022). The greenhouse gas (GHG) assessment has been prepared in general accordance with the *NSW Guide for Large Emitters* (NSW EPA, 2025).

To assess the potential air quality impacts and greenhouse gas emissions associated with the project, the report comprises:

- a background to the project and description of the site and operations;
- an outline of the applicable criteria to assess air quality impacts from the project;
- a review of the existing meteorological and air quality environment surrounding the site;
- dispersion modelling using a combination of the CALPUFF Modelling System and the Weather Research and Forecasting model (WRF);
- emissions estimation and discussion of the potential air quality impacts at sensitive receptors including dwellings, schools, hospitals, offices, and public recreational areas as defined by the NSW EPA approved methods (2022);
- discussion of associated mitigation and management measures; and,
- an assessment of the potential greenhouse gas emissions associated with the modification only.

The Project does not propose to process any putrescible waste on-site, and any non-acceptable odorous waste will not be permitted. The proposed waste streams do not have any distinct or notable odour, and therefore the project is not expected to generate any odour impacts. It is expected that the Project will comply with Section 129 of the POEO Act concerning the control of offensive odour, and odour has therefore not been assessed further.

The significant dust-generating activities associated with operation of the project include:

- loading/unloading of material;
- vehicles travelling on-site;
- windblown dust from exposed areas and stockpiles;
- crushing and screening processes; and

- diesel exhaust from plant and equipment.

Dust impacts were based on the 600,000 tpa processing capacity proposed by the modification.

An average scenario and a peak 24-hour scenario have been assessed with the average scenario used to assess annual average dust impacts, and the peak 24-hour scenario used to assess maximum 24-hour average dust impacts.

Dust emission estimates have been calculated by analysing the various types of dust generating activities taking place and utilising suitable emissions sourced from both locally developed and United States Environmental Protection Agency (US EPA) developed documentation.

6.1.2 Assessment criteria

Air impacts from the modification have been compared against the air quality goals outlined in the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW EPA, 2022) and the interim NSW impact assessment criteria for respirable crystalline silica (RCS) (Table 6.1).

Table 6.1: NSW EPA air quality impact assessment criteria

Pollutant	Averaging period	Impact	Criterion
TSP	Annual	Total	90 µg/m^3
PM_{10}	Annual	Total	25 µg/m^3
	24-hour	Total	50 µg/m^3
$PM_{2.5}$	Annual	Total	8µg/m^3
	24-hour	Total	25 µg/m^3
Deposited dust	Annual	Incremental	2 g/m^2/month
		Total	4 g/m^2/month
RCS ($PM_{2.5}$ dust fraction)	Annual	-	24 µg/m^3
	24-hour	-	3 µg/m^3

6.1.3 Existing environment

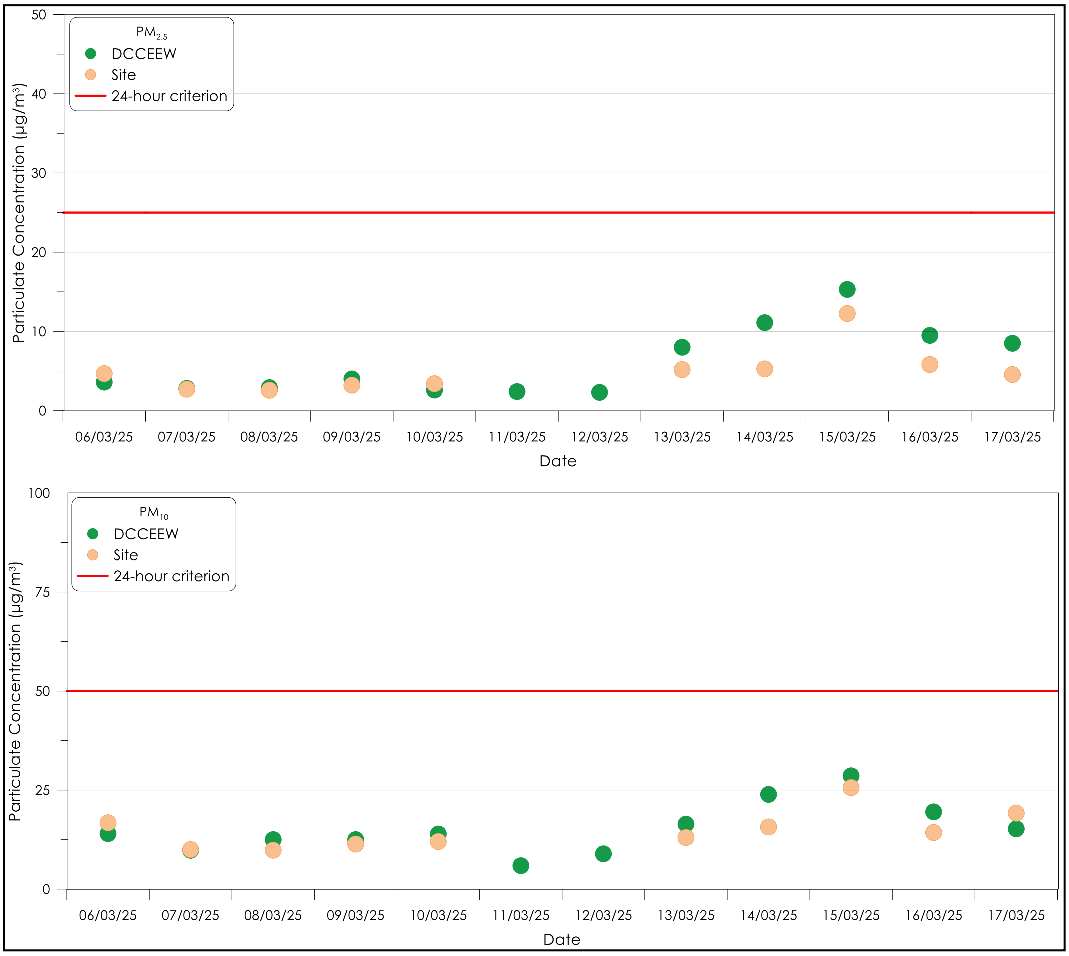
The background air quality is influenced by air pollutants from industrial and commercial sources surrounding the facility. Other anthropogenic activities, such as wood heaters and motor vehicle exhaust, are also contributing factors.

Local ambient air quality monitoring data was obtained from the closest NSW DCCEEW monitoring station at Campbelltown West (5.2 km south-west from the site) to characterise baseline background pollutant levels near the site.

The data indicated that annual PM_{10} levels were below the NSW EPA impact assessment criteria of 25 µg/m^3, whereas the 24 hour average criterion of 50 ug/m^3 was exceeded on occasion. Similarly, $PM_{2.5}$ monitoring data showed annual concentrations mostly below the EPA impact assessment criterion of 8 µg/m^3 with one exceedance. The 24-hour average criterion of 25 µg/m^3 was exceeded on multiple occasions for $PM_{2.5}$ emissions. However, NSW was experiencing drought and widespread bushfires in some years where 24-hour average criteria were exceeded for both PM_{10} and $PM_{2.5}$ concentrations.

Todoroski Air Sciences completed air quality monitoring between 6 March and 17 March 2025 to compare emissions generated by the existing RRF with background air quality benchmarks. Figure 6.1: compares ambient air quality monitoring results at both the site and the DCCEEW monitoring station with NSW EPA criteria during the campaign. The on-site monitoring station is located in the north-western corner of the facility. The monitoring showed that neither the site or DCCEEW monitoring station recorded $PM_{2.5}$ or PM_{10} emissions above the 24-hour criterion. Both $PM_{2.5}$ and PM_{10} air emissions at the site exceeded the Campbelltown monitoring station on two occasions out of the 11-day time frame.

Figure 6.1: Comparison of $PM_{2.5}$ and PM_{10} monitoring data



The background air quality levels from the DCCEEW monitor at Campbelltown West for the 2023 calendar year were used to represent the background levels for the Project (Table 6.2).

Table 6.2: Summary of background levels

Pollutant	Background level	Units
Annual average TSP	51.9	µg/m³
24-hour average PM_{10}	Daily varying	µg/m³
Annual average PM_{10}	14.4	µg/m³
24-hour average $PM_{2.5}$	Daily varying	µg/m³
Annual average $PM_{2.5}$	6.1	µg/m³
Annual average deposited dust	2.3	g/m²/month

Climate change in the Sydney region is expected to result in higher temperatures, more hot days and heatwaves, periods of reduced rainfall, and an increased risk of bushfires, leading to an increased propensity for dust generation. However, with appropriate mitigation and management measures in place, any potential impacts of climate change can be effectively managed. The management of day-to-day operations will adapt to the changing climate as necessary.

6.1.4 Potential impacts

Dispersion modelling results

The dispersion model predictions include those for the operation of the project in isolation (incremental impact) and the operation of the project with consideration of background air quality (total cumulative impact). The results show the predicted:

- maximum 24-hour average $PM_{2.5}$ and PM_{10} concentrations;
- annual average $PM_{2.5}$, PM_{10} and TSP concentrations; and
- annual average dust (insoluble solids) deposition rates.

Associated isopleth diagrams of the dispersion modelling results illustrating the predicted dust levels in the surrounding environment and the contribution from the project are presented in Appendix C of the air quality impact assessment (Appendix C of this modification report).

The predicted incremental and cumulative particulate dispersion modelling results at each of the assessed receptor locations are presented in Table 6.3.

The predicted maximum incremental concentrations at residential and childcare receptors are less than 10% of the various cumulative dust criteria. The greatest incremental effects are predicted to be experienced at receptors located close to the project's activities (i.e. Wor1), as expected. The predicted cumulative results indicate that all assessed receptors will experience levels below the relevant criteria for each of the assessed dust metrics.

The results also indicate the predicted levels would comply with the interim impact assessment criteria for RCS, even under the conservative assumption that the entire $PM_{2.5}$ fraction is composed of RCS.

Assessment of cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations indicate that the Project will not increase the number of days above the 24-hour average criterion at the most impacted receptors and thus meets the EPA cumulative impact assessment criteria at all receptors at all times.

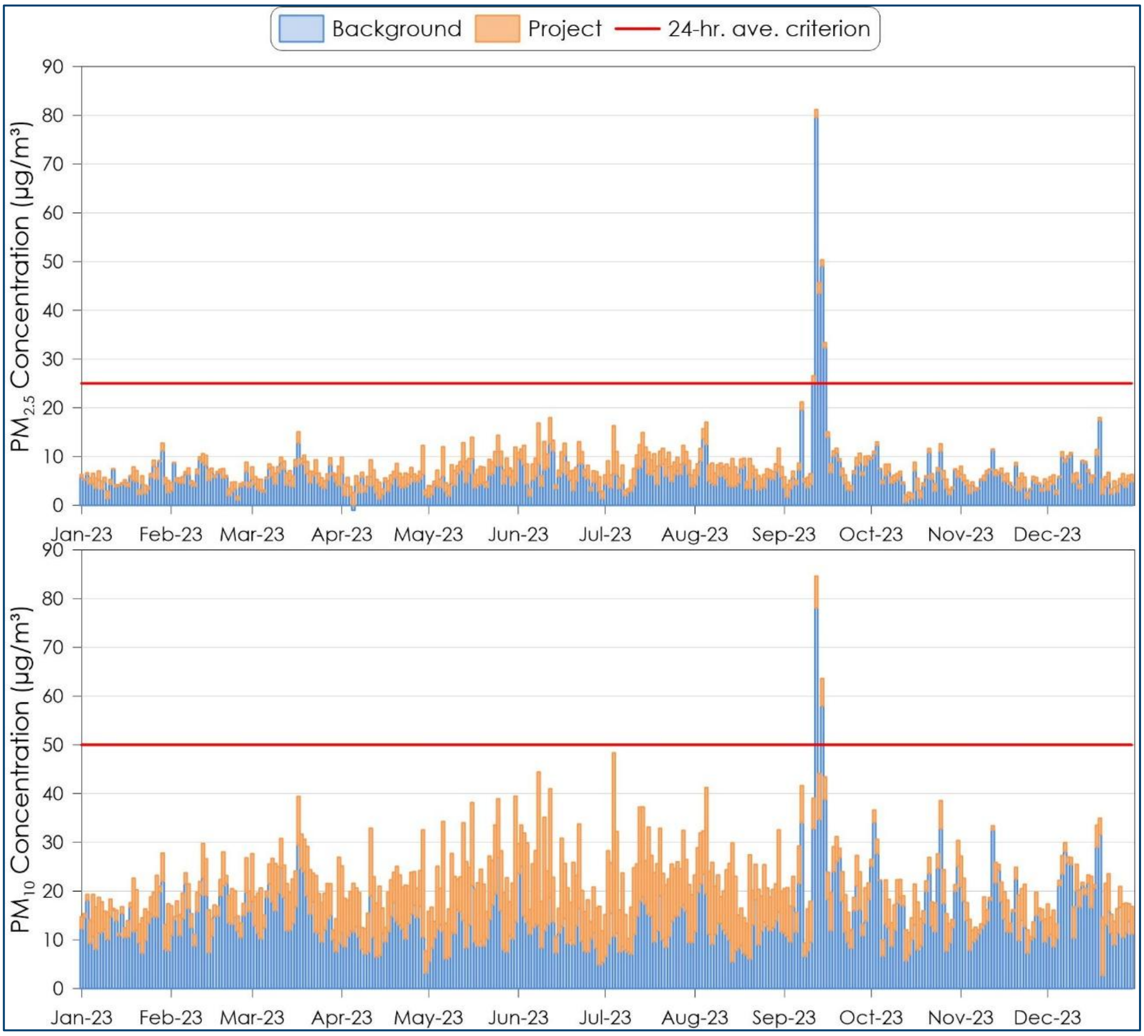
Table 6.3: Dispersion modelling results for the modification

Receptor ID	$PM_{2.5}$ ($\mu g/m^3$)		PM_{10} ($\mu g/m^3$)		TSP ($\mu g/m^3$)	DD* ($g/m^2/mth$)	$PM_{2.5}$ ($\mu g/m^3$)	PM_{10} ($\mu g/m^3$)	TSP ($\mu g/m^3$)	DD* ($g/m^2/mth$)
	Incremental						Cumulative			
	24-hr ave.	Ann. ave.	24-hr ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.
	Air quality impact criteria									
	-	-	-	-	-	2	8	25	90	4
Wor1	9.7	1.7	37.7	6.5	20.4	1.6	7.8	20.9	72.3	3.9
CC1	0.7	<0.1	2.6	0.2	0.6	<0.1	6.1	14.6	52.5	2.3
R1	1.0	<0.1	3.5	0.4	0.9	<0.1	6.2	14.8	52.8	2.4
R2	1.1	0.1	4.3	0.4	1.0	<0.1	6.2	14.8	52.9	2.4
R3	1.2	0.1	4.8	0.4	1.0	<0.1	6.2	14.8	52.9	2.4
R4	0.9	<0.1	3.5	0.3	0.7	<0.1	6.2	14.7	52.6	2.4
IND1	7.6	1.1	29.1	4.1	13.1	1.2	7.1	18.5	65.0	3.5
IND2	5.5	0.9	22.7	3.0	8.6	0.7	6.9	17.4	60.5	3.0

Time series plots of the predicted cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations for Receptor Wor1 are presented in Figure 6.2. However, the time series shows the peak 24-hour emissions scenario for the proposed modification, which models the maximum emission rate continuously throughout the year to assess compliance with 24hr criteria. This scenario is not representative of the modification's annual contribution to air quality, which was separately modelled and the results of which are presented in the annual averages in Table 6.3.

The blue bars in the figures show the existing background levels and the orange bars show the predicted additional levels due to the modification above background levels (i.e. the orange sections of the bars indicate the amount of increased dust). The top of the orange bar indicates the predicted future cumulative level associated with the project and background combined. The results indicate that the predicted $PM_{2.5}$ and PM_{10} levels would not result in any additional days of exceedance of the cumulative 24-hour average $PM_{2.5}$ and PM_{10} criteria due to the operation of the modification.

Figure 6.2: Time series plot of predicted maximum cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations for the receptor Wor1



A comparison of the predicted incremental 24-hour and annual average PM_{10} levels for the approved operations and the modification (project) is presented in Figure 6.3 and Figure 6.4, respectively. The isopleths for the two scenarios are overlaid to allow for a direct comparison and demonstrate the change in impacts associated with the increase in production.

The comparison shows that the greatest change in impacts occur close to the site and that the change in impacts at the residential locations are likely to be negligible.

Figure 6.3: Comparison of predicted incremental maximum 24-hour average PM_{10} concentrations for the approved operations and the modification (µg/m³)

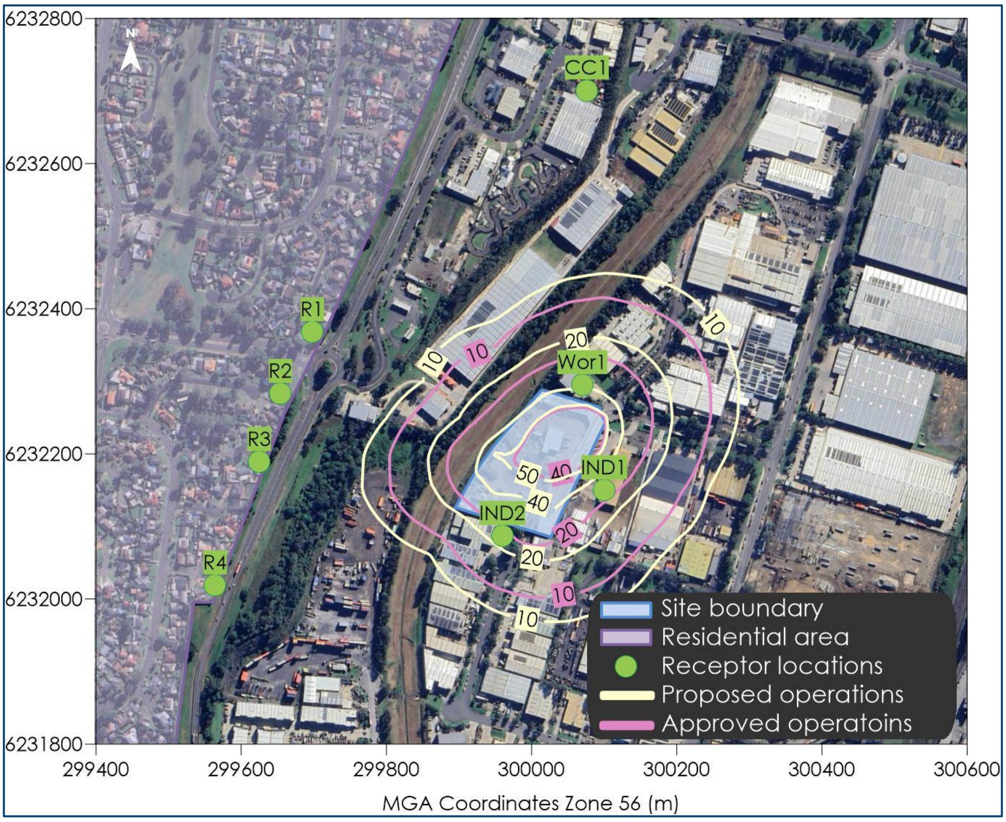
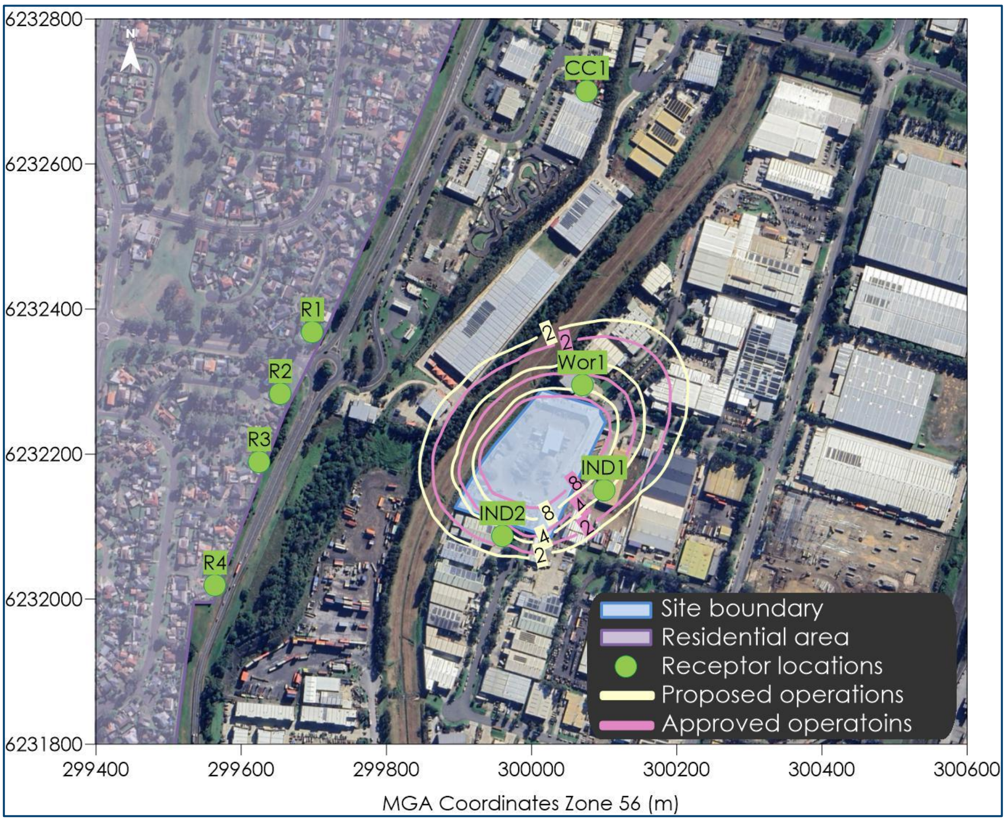


Figure 6.4: Comparison of the predicted incremental annual average PM_{10} concentrations for the approved operations and the modification (µg/m³)



Estimated greenhouse gas emissions

The 'modification only' scenario is expected to result in an additional 521 t $CO_{2\text{-}e}$ (Scope 1 + Scope 2) which is below the threshold of 25,000 t $CO_{2\text{-}e}$ in accordance with the *NSW Guide for Large Emitters* (NSW EPA, 2025).

6.1.5 Mitigation measures

The modelling predictions for the Project do not indicate any exceedance of the relevant dust impact assessment criteria at the residential receptors. Given this situation, there are no specific ambient air quality monitoring recommendations for the project at the receptors.

CR Plus currently employ a number of air quality control measures at the Minto RRF that are included within the site's Air Quality Management Plan (AQMP) (Todoroski Air Sciences, 2022). These air quality control measures will continue to be applied.

It is anticipated that the site's existing air quality monitoring network be maintained for the project. Retaining the current air quality monitoring program will allow for identification in any changes to trends in the data due to the project and adapt as necessary.

6.2 Noise

This section summarises the *Noise and Vibration Impact Assessment* (NVIA) report prepared by Muller Acoustic Consulting Pty Ltd, which is included as Appendix D.

6.2.1 Assessment methodology

The NVIA has quantified potential operational, sleep disturbance and road traffic noise emissions from the project and recommends reasonable and feasible noise controls where required.

This assessment has been undertaken in accordance with the following standards and guidelines:

- NSW (2017), *EPA Noise Policy for Industry* (NPI);
- NSW Department of Environment, Climate Change and Water (DECCW) (2011) – *NSW Road Noise Policy* (RNP);
- NSW Department of Environment and Conservation (DEC) (2006) – *NSW Environmental Noise Management – Assessing Vibration: a Technical Guideline* (the NSW vibration guideline);
- NSW EPA (2022), *Approved methods for the measurement and analysis of environmental noise in NSW*; and
- *Australian Standard AS 1055:2018 – Acoustics – Description and measurement for environmental noise – General procedures*.

The assessment quantified potential noise emissions pertaining to the operation of the site during the morning shoulder, day, evening and night periods, including fixed plant, mobile equipment and heavy vehicle movements. A computer model was developed to quantify project noise emissions to neighbouring receivers using DGMR (iNoise, Version 2024) noise modelling software. The sound power levels for each noise source modelled in the assessment were derived from real measurements of existing plant and equipment at the site. The assessment considered the worst-case scenario of all plant and equipment operating simultaneously under noise enhancing conditions.

Assessment of potentially annoying noise characteristics such as low-frequency, tonality, intermittent noise, irregular noise or noise of short duration was completed in accordance with the NPI guidelines. None were found to apply.

The project does not propose any vibration intensive activities and hence, vibration emissions from the project were not considered.

Road traffic noise assessment

Road traffic noise has been modelled using iNoise modelling software and ISO 9613-1 and ISO 9613-2 calculation methods, representing the road traffic as 'moving sources' along the transport route.

Daytime heavy vehicle traffic movements will be increased 21% during Monday to Friday (refer to Section 6.3), which equates to 0.8 dBA increase (less than 2 dBA increase as per the RNP). Saturday HV movements will remain within the existing approved heavy vehicle movements.

A 2 dBA increase is generally accepted as the threshold of perceptibility to a change in noise level. Therefore, the road traffic noise modelling assessment as part of the NVIA has been undertaken for the night period (10pm to 7am) only.

6.2.2 Assessment criteria

Operational noise from the RRF is currently regulated under EPL 21828. Noise criteria are set for nearby sensitive receivers and are based on historical noise monitoring conducted during the original development application. Table 6.4: reproduces the noise limits for the RRF as described in EPL 21828.

Table 6.4: EPL 21828 operational noise limits

Time period	Measurement parameter	Noise level dB(A)
Morning-shoulder	LAeq (15-minute)	52
	LAmax	63
Day	LAeq (15-minute)	53
Evening	LAeq (15-minute)	53

Note: Morning-shoulder means 6 am – 7 am Monday to Friday, Day means 7 am to 6 pm Monday to Saturday or 8 am to 6 pm Sundays and public holidays, and Evening means 6 pm to 7 pm Monday to Friday.

In lieu of night time criteria defined in the existing approved EPL noise limits, Project Noise Trigger Levels (PNTLs) for the night time period are determined in accordance with NPI methodology. The PNTLs are the lower of either the Project Intrusiveness Noise Levels (PINLs) or the Project Amenity Noise Levels (PANLs). Table 6.5 presents the derivation of PNTLs in accordance with the methodologies outlined in the NPI.

Table 6.5: Project noise trigger levels (PNTLs)

Receiver type	Assessment period	PINL dB LAeq (15-min)	PANL dB LAeq (15-min)	PNTL dB LAeq (15-min)
Residential (suburban)	Evening	56	43	43
	Night	49	38	38
Industrial	When in use	-	68	68

Note: Evening period means 6 pm to 10 pm Monday to Friday. Night period means 10 pm to 6 am Monday to Friday or 6 pm to 8 am Saturday or 6 pm to 7 am Sunday.

Road traffic noise

In accordance with the Road Noise Policy, the NVIA identified that there are no residential receivers located within the direct vicinity of the project site. A place of worship is directly adjacent to the north of the project on Montore Road and additional industrial receivers lie along Montore Road and Airds Road. Hence, the assessment has adopted the 'Place of Worship' existing sensitive land use. Table 6.6 reproduces the road traffic noise assessment criteria relevant to the existing land use.

Table 6.6: Road traffic noise assessment criteria

Receiver type	Assessment period	Noise level dB(A)
Place of worship	Day (7 am to 10 pm)	40 LAeq(1hr) (internal)
	Night (10 pm to 7 am)	40 LAeq(1hr) (internal)

For industrial facilities, in accordance with the RNP and AS2107-2016, an internal design sound level of 60 dBLAeq(period) is applicable for warehouses (packaging and delivery). Hence, in assuming a conservative facade attenuation of 10 dBA, the applicable external noise goal for industrial facilities of 70 dBLAeq(period).

However, the RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2dBA, which is generally accepted as the threshold of perceptibility to a change in noise level.

6.2.3 Existing environment

To quantify the existing background noise environment of the area, unattended noise monitoring was conducted from Tuesday 27 May 2025 to Thursday 5 June 2025 at one location representative of the ambient environment surrounding the project site. The selected monitoring location is shown in Figure 6.5 and is considered representative of surrounding residential receivers as per Fact Sheet B1.1 of the NPI.

The summary results of long-term unattended noise monitoring are provided in Table 6.7.

Table 6.7: Background noise monitoring summary

Time period	Measured background noise level (LA_{90}) dB ABL	Measured ambient noise level dB LA_{eq}(period)
Day	54	66
Evening	51	63
Night	44	59

FIGURE 1

LOCALITY PLAN

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

- Project Area
- E4 - General Industrial
- R2 - Low Density Residential
- Monitoring Location

0 25 50 75 100 m

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6.2.4 Potential impacts

The results of the assessment demonstrate that operational noise emissions would achieve the PNTLs and existing EPL criteria for all assessment periods, at all assessed receiver locations.

Noise predictions from the operation of the site during the day, evening and night (under noise enhancing meteorological conditions) have been quantified at surrounding receivers to the project site and are presented in Table 6.8. Noise contour plots for the morning shoulder, day, evening and night period operations are provided in Figure 6.6 and Figure 6.7.

Furthermore, sleep disturbance is not anticipated, as emissions from maximum noise events (i.e. truck airbrake events) are predicted to satisfy the NPIs maximum noise trigger levels at all assessed receivers. Predicted noise levels from LAmax events for assessed receivers are presented in Table 16 of Appendix D.

An assessment of road traffic noise during the day and night period found that road traffic noise levels are anticipated to be below the relevant RNP criteria (refer Section 6.5 and Table 17 of Appendix D).

Table 6.8: Noise predictions – all receivers

Receiver Location	Predicted Noise Level dB LAeq(15min)				Relevant Noise Limits dB LAeq(15min)				Compliant
	Morning shoulder	Day	Evening	Night	Morning shoulder	Day	Evening	Night	
Residential receivers									
R01	<30	36	<30	<30	52	53	53	38	✓
R02	<30	37	<30	<30	52	53	53	38	✓
R03	<30	37	<30	<30	52	53	53	38	✓
R04	<30	39	<30	<30	52	53	53	38	✓
R05	<30	44	<30	<30	52	53	53	38	✓
R06	<30	39	<30	<30	52	53	53	38	✓
R07	<30	40	<30	<30	52	53	53	38	✓
R08	<30	49	<30	<30	52	53	53	38	✓
R09	<30	41	<30	<30	52	53	53	38	✓
R10	<30	39	<30	<30	52	53	53	38	✓
R11	<30	37	<30	<30	52	53	53	38	✓
R12	<30	44	<30	<30	52	53	53	38	✓
R13	<30	40	<30	<30	52	53	53	38	✓
R14	<30	43	<30	<30	52	53	53	38	✓
R15	<30	46	<30	<30	52	53	53	38	✓
R16	<30	48	<30	<30	52	53	53	38	✓
R17	<30	48	<30	<30	52	53	53	38	✓
R18	<30	50	<30	<30	52	53	53	38	✓
R19	<30	49	<30	<30	52	53	53	38	✓
R20	<30	48	<30	<30	52	53	53	38	✓
R21	<30	49	<30	<30	52	53	53	38	✓

Receiver Location	Predicted Noise Level dB LAeq(15min)				Relevant Noise Limits dB LAeq(15min)				Compliant
	Morning shoulder	Day	Evening	Night	Morning shoulder	Day	Evening	Night	
R22	<30	48	<30	<30	52	53	53	38	✓
R23	<30	48	<30	<30	52	53	53	38	✓
R24	<30	48	<30	<30	52	53	53	38	✓
R25	<30	47	<30	<30	52	53	53	38	✓
R26	<30	47	<30	<30	52	53	53	38	✓
R27	<30	46	<30	<30	52	53	53	38	✓
R28	<30	46	<30	<30	52	53	53	38	✓
Non-residential receivers									
I01	<30	52	<30	<30	68	68	68	68	✓
I02	<30	52	<30	<30	68	68	68	68	✓
I03	<30	54	<30	<30	68	68	68	68	✓
I04	<30	46	<30	<30	68	68	68	68	✓
I05	<30	51	<30	<30	68	68	68	68	✓
I06	<30	57	<30	<30	68	68	68	68	✓
I07	32	56	32	32	68	68	68	68	✓
I08	32	57	32	32	68	68	68	68	✓
PoW01	<30	51	<30	<30	68	68	68	68	✓

Note: Morning-shoulder means 6 am – 7 am Monday to Friday, Day means 7 am to 6 pm Monday to Saturday or 8 am to 6 pm Sundays and public holidays, and Evening means 6 pm to 7 pm Monday to Friday. Night period means 10 pm to 6 am Monday to Friday or 6 pm to 8 am Saturday or 6 pm to 7 am Sunday.

6.2.5 Mitigation measures

Based on the compliant results summarised above and reported in detail in the Noise and Vibration Impact Assessment (Appendix D), the assessment supports the modification application for the project without specific management measures being required.

CR Plus currently employ a number of noise control measures at the Minto RRF that are included within the site's Noise Management Plan (Todoroski Air Sciences, 2022). These noise control measures will continue to be applied.

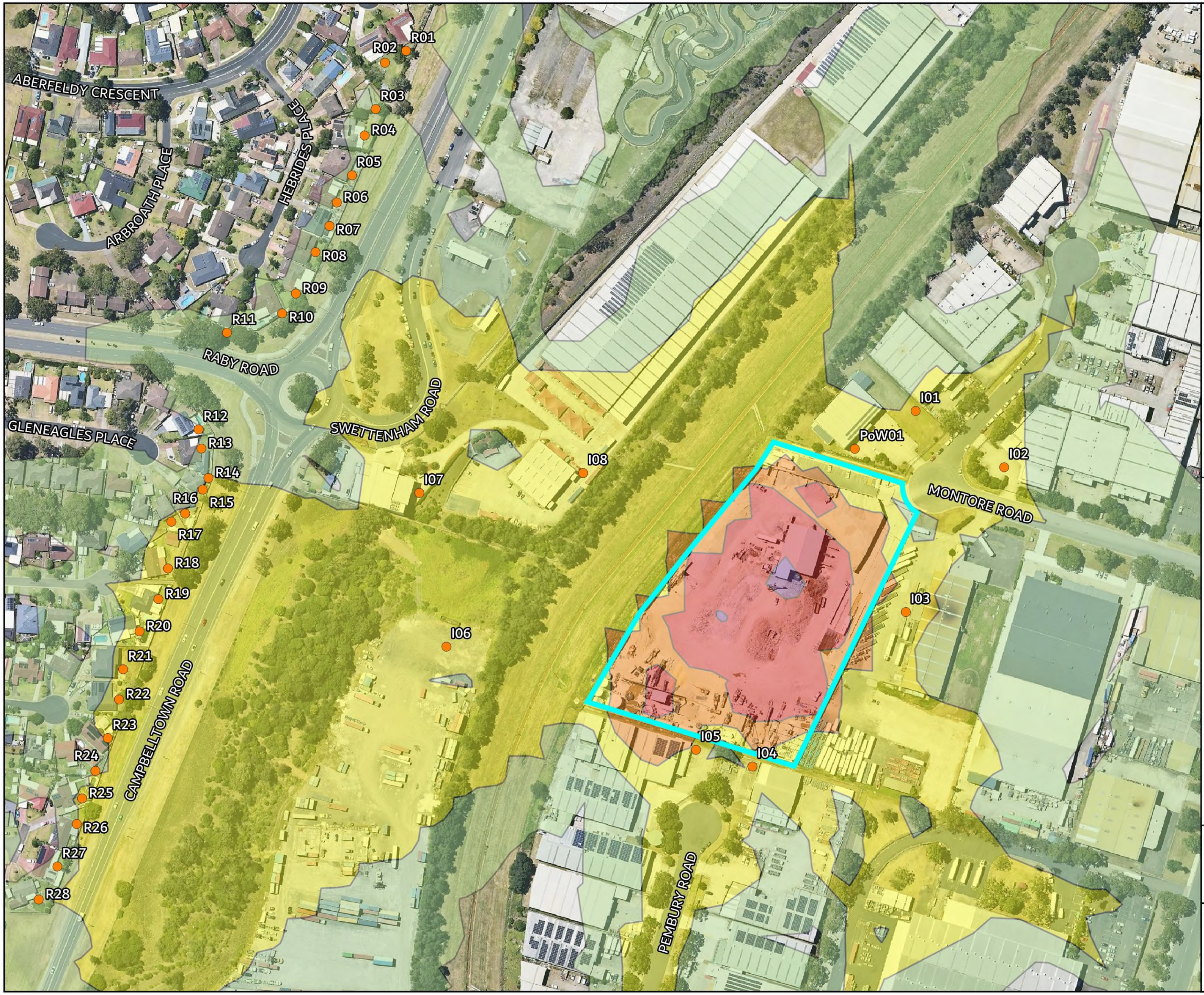

FIGURE 4

Noise Contours

Day Operations

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

Project Boundary

Assessed Receiver Location

dB LAeq(15min)

40-50

50-60

60-70

70-80

>80

0 25 50 75 100 m

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FIGURE 5
Noise Contours
Morning Shoulder, Evening and Night Operations
MAC252458-01
Minto RRF
7 Montore Road, Minto, NSW
Lot 52 DP 618900

KEY

Project Boundary

Assessed Receiver Location

dB LAeq(15min)

40-50

50-60

60-70

70-80

>80

0 25 50 75 100 m

N

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6.3 Traffic and access

This section summarises the *Traffic and Parking Impact Assessment of the Proposed Resource Recovery Facility at 7 Montore Road, Minto* ('the traffic assessment') prepared by McLaren Traffic Engineering, which is included as Appendix D.

6.3.1 Assessment methodology

The traffic assessment involved measuring the performance of the surrounding road network under the predicted traffic conditions associated with the modification. Surrounding intersections were assessed using the SIDRA Intersection 10 model to measure the baseline efficiencies. The assessment was based on turning movement count traffic surveys conducted at the intersections of Montore Road / Airds Road, Ben Lomond Road / Airds Road and Campbelltown Road / Rose Payten Drive from 7 am to 10 am and 3 pm to 6 pm on Thursday 6 March 2025, representing typical existing weekday traffic conditions.

Weighbridge data for a 6-month period between 1 February 2025 to 31 July 2025 was obtained for the entry and exit weighbridge of the approved and operating development. During the recorded 6-month period approximately 150,000 tonnes of material was processed, equating to an annual production of 300,000 tonnes. Traffic generation from the modification was calculated by extrapolating the weighbridge data for the 600,000 tpa processing capacity proposed by the modification.

A queuing analysis was completed to ensure that any traffic attending the site can be accommodated wholly within the site without affecting Montore Road. The queuing analysis considered predicted traffic generation and the internal traffic circulation and wait times associated with operation of the facility.

Provisions for parking and for servicing and loading vehicles within the site were reviewed to ensure compliance with the *Campbelltown (Sustainable City) Development Control Plan 2015*.

6.3.2 Assessment criteria

The efficiencies of existing intersections were categorised into levels of service depending on approach delays and spare capacities using the SIDRA model. Levels of service were measured during the AM and PM peak hour periods. The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The Level of Service "C" performance is characterised by satisfactory approach delays and spare capacity. Level of Service "A" conditions are categorised by low approach delays and spare capacity.

6.3.3 Existing environment

The surrounding road network is dominated by industrial land uses associated with the Minto industrial area. Both heavy and light vehicle access to the site is via a single entry and exit driveway at the north-eastern site boundary off Montore Road. The site is accessed via heavy-vehicle approved roads, including Ben Lamond Road to the north and Rose Payten Drive to the south.

All vehicles are weighed and inspected upon entry prior to unloading. Six waiting bays are available for trucks entering the site before being weighed. The waiting bays are sufficient to prevent queuing of trucks on Montore Road during maximum operating capacity. Trucks follow an approved circulation route within the site.

A car park is located in the north-eastern corner of the site and is reserved for light vehicles visiting the site. The car park accommodates the approved number of light vehicles visiting the site.

Existing traffic generation based on weighbridge data is summarised in Table 6.9.

Table 6.9: Existing traffic generation

Traffic generation	Import(1)	Export(2)	Combined(3)
Site peak hour generation (8 am to 10 am)			
Average	26.5	20.1	40.7
85th percentile	34	26	52
Network AM peak-hour generation(4)			
Average	16	12.9	24.6
85th percentile	24	20	38
Network PM peak-hour generation(5)			
Average	11.3	2.7	15.2
85th percentile	18.8	4	24
Daily trips (typical)			
Weekday	132	97	229
Saturday	47	23	70

Notes:
(1) Import relates to trucks bringing material to the site to be processed.
(2) Export relates to trucks taking processed material from the site.
(3) Combined relates to total truck generation at any given peak hour. The import and export traffic generations do not typically align at the same time during the day and hence the Combined value is not a summation of import and export.
(4) The peak hour trip generation of the site between 7am and 9am.
(5) The peak hour trip generation of the site between 4pm and 6pm.

6.3.4 Potential impacts

Table 6.10 details the predicted traffic generation of the modification. Existing traffic numbers have been extrapolated from Table 6.9 according to the modifications proposed 600,000 tpa processing capacity.

Table 6.10: Proposed traffic generation

Traffic generation	Import(1)	Export(2)	Combined(3)
Site peak hour generation (8 am to 10 am)			
Average	53	40.2	81.4
85th percentile	68	52	104
Network AM peak-hour generation(4)			
Average	32	25.8	49.2
85th percentile	48	40	**76**
Network PM peak-hour generation(5)			
Average	22.6	5.4	30.4
85th percentile	37.6	8	**48**
Daily trips (typical)			
Weekday – day	219	194	413
Weekday – night (10 pm to 7 am)[6]	45	0	45
Saturday – day	80	46	126
Saturday – night (10 pm to 7 am) [6]	14	0	14

Notes:
(1) Import relates to trucks bringing material to the site to be processed.
(2) Export relates to trucks taking processed material from the site.
(3) Combined relates to total truck generation at any given peak hour. The import and export traffic generations do not typically align at the same time during the day and hence the Combined value is not a summation of import and export.
(4) The peak hour trip generation of the site between 7am and 9am.
(5) The peak hour trip generation of the site between 4pm and 6pm.
(6) Advised by CR Plus.

As shown above, the modification is expected to generate the following traffic (85th percentile):

- AM peak-hour period: 76 trips (38 in, 38 out); and
- PM peak-hour period: 48 trips (24 in, 24 out).

This traffic generation has been added to the existing surveyed traffic volumes. The SIDRA Intersection 10 model results indicate the intersections of Airds Road / Montore Road, Ben Lomond Road / Airds Road, and Campbelltown Road / Rose Payten Drive retain the same overall level of service under predicted conditions associated with the modification. Minimal delays and additional capacity suggest that no adverse impact on the existing road network would result from the modification.

A queuing analysis confirmed that the design traffic volume can be accommodated wholly within the site without affecting Montore Road.

There are no changes relating to sight lines for traffic or pedestrians at the driveway exit as part of this modification application, hence no reassessment is warranted. The existing sight lines to traffic and pedestrians is compliant with AS2890.1:2004 and the increase in traffic associated with the proposed modification and will not result in any adverse impact to the safety of the surrounding road.

No changes to the approved number of staff members are proposed as part of the modification application, and hence, no increase to the parking demand will result. As such, there are no changes to the approved car park layout associated with the modification, indicating continued compliance with the DCP.

6.3.5 Mitigation measures

The modification would continue to operate in accordance with the approved *Operational Plan of Management and Driver Code of Conduct* prepared by McLaren (2020). These documents set out requirements for driver inductions, operational procedures, driver safety and behaviour, incident response, and restrictions on vehicle movements, and will remain in place for the modification.

6.4 Stormwater management and water use

6.4.1 Assessment methodology

Site water demand for the modified project has been estimated by extrapolation of existing site water and assuming the effects of water recovery from NDD waste processing (refer Minto RRF Modification 1). The implications for town water demand and the site water management infrastructure including storage and treatment capacities has been reviewed accordingly.

6.4.2 Assessment criteria

The compliance criteria used for the approved development remain for the modification, as per the approved *Water Management Plan* (4Pillars, 2024) and EPL conditions.

6.4.3 Existing environment

Site water usage

The RRF at Minto currently has a total annual water demand of approximately 60 megalitres, used for:

- dust suppression;
- process water (crushing plant and sand wash plant requirements);
- wheel wash water;
- truck, plant and machinery wash down; and
- staff amenities.

According to the approved water management plan (4Pillars Environmental Consulting, 2024), the total water usage for the RRF is approximately 127 kL per day in winter and 202 kL per day in summer.

Currently, approximately 20% (12 ML) of the site water demand is sourced from captured stormwater and recycled process water, while the remaining water demand (48 ML) is sourced from the town water supply, which is also used to supply the kitchen, hand basins and shower amenities.

With the benefit of accepting NDD waste (refer to Minto RRF Modification 1), approximately 65% (40 ML/year) of the site water demand would be sourced from captured stormwater, recycled process water and, most significantly, recovered NDD wastewater. The remaining water demand (20 ML) would be sourced from the town water supply.

Site water treatment system

All stormwater and process water at the site is collected, treated and stored in the site water treatment system to prevent off-site migration of sediments and reduce site water demand. Treated stormwater is discharged to the Campbelltown City Council stormwater system only when rainfall exceeds storage and on-site reuse.

Staff amenity water

Rainwater and potable water from the staff amenities building is collected from in a 2,000L tank and is either reused for potable water or discharged into the council stormwater system. This system is in a separate closed loop to the site water treatment system.

6.4.4 Potential impacts

Site water demand is expected to increase proportionally with the proposed increase in material received and processed. Due to an increase in material processing from 450,000 tpa to 600,000 tpa, site water demand is expected to increase by 33% as follows:

- from 60 ML to 80 ML per annum;
- from 127 kL to 140 kL per day in winter; and
- from 202 kL to 269 kL per day in summer.

Night-time operation (NDD waste tipping and processing) is not expected to require any additional water demand as it involves dewatering of NDD waste but not operation of the crushing plant and equipment.

Of the estimated 20 ML per annum increase in site water demand, it must be assumed that up to 100% of that is satisfied by town water supply, since captured stormwater volumes do not change with the project modification and the volume of recovered NDD wastewater is uncertain and cannot be relied upon (depending on amount of NDD waste received at the site). While this might lead to 40 ML per annum of town water demand, it is important to recognise that town water demand was approximately 48 ML per annum prior to Modifications 1 and 2.

Stormwater capture, overflow/discharge frequency and water quality performance remain governed by rainfall and unchanged catchment areas, storage volumes and treatment capacities, and are not affected by the proposal to process NDD waste at night or the proposed increase in material processing. No variations to stormwater quality targets or EPL discharge conditions are proposed to address the modification.

A minor increase in potential pollutant loads from increased truck numbers accessing the site would be readily managed by the existing water treatment system including gross pollutant trap and oil separator.

6.4.5 Mitigation measures

The current water management system has adequate capacity to accommodate the increased material processing and operating hours for NDD waste receival, without the need for any upgrades to the treatment train, controls or hydraulic infrastructure. With standard operational controls such as maintaining transfer pump setpoints, sustaining storage drawdown, and continuing routine GPT and oil separator maintenance, the site will continue to meet its approved stormwater quality objectives and operate in compliance with current approvals.

The existing mitigation measures outlined in the approved *Water Management Plan* (4Pillars, 2024), remain sufficient to adequately manage the modification.

Additionally, the assumed water usage will be confirmed during operation of the modification, and the transfer pump and water treatment plant settings will be adjusted if required.

6.5 Other environmental considerations

Environmental aspects assessed as having a low-risk rating and not requiring detailed technical investigations are discussed in Table 6.11.

Table 6.11: Low risk environmental aspects

Environmental aspect	Potential environmental impact
Heritage	Niche Environment and Heritage Pty Ltd assessed the site's Aboriginal and cultural heritage values to accompany the existing EIS in 2020. No Aboriginal objects were recorded within 200 m of the site. A recent basic AHIMS search confirmed there are no recorded Aboriginal sites within a 1 km radius of the site. A search of the NSW State Heritage Inventory was conducted in October 2025, which identified two heritage items within a 1 km radius of the site. Both items are milestones and are listed within the Campbeltown LEP. Neither of these heritage listings are potentially impacted by the modification, given their nature and distance from the site. There are no impacts to heritage associated with the modification; as such, additional mitigation measures are not required. The modification will continue to implement the mitigation measures described in the existing EIS, including: ▪ In the unlikely event that any Aboriginal objects are found, all activities must stop and an appropriately qualified archaeologist engaged to assess the findings, and notification is provided to the Office of Environment and Heritage. ▪ In the unlikely event that human remains are found, stop work, secure the site and notify the NSW Police and the NSW Office of Environment and Heritage.
Groundwater	The modification does not involve any extension of the existing development footprint. Previous investigations completed for the existing EIS identify groundwater occurring at the site at approximately 39 mAHD. As the modification does not involve any substantial excavations, there will be no impact to groundwater associated with the modification. Shallow and temporary excavation for construction of concrete panel walls (refer Section 3.4) are not expected to intercept groundwater. Measures outlined in the existing RRF's site water management plan (Martens and Associates, 2020) and water management plan (4Pillars Environmental, 2024) will be maintained to ensure surface operations do not result in contamination of the underlying groundwater at the site.
Vibration	Construction of the modification is minor and occurring over a short time period. Rock excavation is not expected, and considering surrounding industrial land use zones and distance to sensitive receivers, vibrations from construction of the modification is not expected to significantly affect existing site infrastructure or neighbouring properties. The operation of the modification does not involve any vibratory intensive plant or equipment and will have no ongoing impacts on nearby structures or sensitive receivers. Existing mitigation measures implemented by the RRF are considered sufficient in managing any vibration impacts from the modification.
Waste management	The modification is not expected to generate significant quantities of waste by-product from the resource recovery operations. Minor quantities of waste might be generated from the screening of GSW soil. Waste will continue to be managed in accordance with CR Plus's waste management systems and practices. Non-conforming GSW soil will follow the process outlined in Section 1.3.3. Wastes will be classified and disposed of in accordance with NSW Waste Classification Guidelines (EPA, 2014) and the resource management hierarchy and requirements of the WARR Act and NSW Protection of the Environment Operations (Waste) Regulation 2014.
Visual amenity	The modification will not significantly alter the form or scale of the approved development. Apart from adding an additional material storage bay, within the existing storage bay area, the modification involves no other changes to the plant and equipment beyond those already approved.

Environmental aspect	Potential environmental impact
	The site is fully enclosed by a wall along its perimeter, and no built aspect of the modification will be visible from external viewpoints. Therefore, the modification will not result in significant changes to the visual amenity of the site or location, or the views of surrounding neighbours or motorists along Montore Road.
Hazards and risk	The modification will not cause any new hazardous substances or dangerous goods to be transported to or stored on site. While there would be an increased consumption of hazardous substances and dangerous goods associated with the increased processing capacity of the modification, these materials would be delivered to the site as needed to minimise risks associated with storage. Increased processing capacity is likely to lead to more waste oils from machinery operating at higher rates. However, these increases are expected to be minimal and can be easily managed within current waste management practices at the existing RRF.
Social and economic	All potential dust, odour, noise, traffic, and water quality impacts associated with the modification have been assessed in Chapter 6. The modification does not involve a change in land use or to the nature of industrial activities at the site, and no adverse socio-economic impacts are expected. The modification will not have any negative economic impacts on the local area or the State of NSW and will support the construction and demolition sector.

6.6 Cumulative impacts

In accordance with clause 171 of the EP&A Regulation, any cumulative environmental effects associated with the proposal and other relevant existing and future activities must be considered when determining the potential impacts on the environment.

Table 6.12 details those environmental factors that are potentially susceptible to cumulative impacts from the modification and how they have been addressed in Chapter 6.

Table 6.12: Potential cumulative impacts

Aspect	Modification finding
Air quality	Section 6.1 has assessed potential cumulative air quality impacts, considering background air quality and applying regional air quality goals as the assessment criteria (refer Figure 6.2).
Noise	As described at Section 6.2, the existing RRF operation and proposed modification are subject to day-time noise limits set by EPL 21828. The day-time noise limit set by the EPL (53 dB(A)) at nearby sensitive receivers is less than the measured background noise environment of the area (54 dB LA_{90}). Potential night-time noise impacts from the modification have been assessed with reference to existing background noise levels and recommended amenity noise levels as the assessment criteria, thereby addressing cumulative impacts of existing surrounding land use. The road traffic noise assessment adopts a similar approach, comparing day-time project traffic with existing traffic volumes and applying a recommended assessment criteria for the most sensitive land use at night. No change to the EPL noise limits is proposed by this modification and completed modelling indicates that the modification would meet the adopted night-time assessment criteria.
Traffic and access	Section 6.3 assessed potential traffic, access and road safety impacts with reference to existing background traffic data obtained from traffic surveys conducted at local intersections on 6 March 2025, representing typical existing weekday traffic conditions. The existing RRF was operating during the time of the road network traffic surveys and as such the surveys would have captured some of the traffic generated by the existing site operations. Yet, the traffic impact assessment does not discount those trips and as such is conservative. Completed modelling indicates that the surrounding intersections retain their overall level of performance under traffic conditions imposed by the modification. The modelling incorporates background traffic volumes to consider cumulative impacts.
Stormwater management and water use	As described in Section 6.4, the site demand for town water supply would be reduced after the combined implementation of Modifications 1 and 2. Stormwater capture, overflow/discharge frequency and water quality would be unaffected by this modification.

CHAPTER 7

JUSTIFICATION OF THE MODIFIED PROJECT

7 JUSTIFICATION OF THE MODIFIED PROJECT

Justification

The modification will support regional growth and State policy objectives. The Macarthur region is experiencing rapid population growth and urban development, driving demand for recycled construction materials. The existing RRF is well located to service this demand, reducing transport distances to other metropolitan facilities, associated emissions, transport costs and road dilapidation.

NDD waste is often generated during night-time construction activities for public infrastructure and road projects that require unobstructed access to public areas. Accordingly, there is a demand for NDD waste transfer outside standard daytime hours. Alternatively, construction sites are forced to store the NDD waste overnight in multiple trucks or transport the waste further afield, outside of the Macarthur region. The modification would improve efficiency for construction projects, allow truck movements to occur outside of peak traffic hours and avoid long-haul transport to more distant facilities.

Resource recovery of excavated soil classified as general solid waste will divert valuable materials from landfill, increase recycling rates and reduce the reliance of industry on emission-intensive virgin materials. .

Increasing the amount of material approved to be received and processed annually would provide CR Plus with the flexibility to accommodate fluctuations in the market and meet peak demands when needed. The operational capacity of the current plant and equipment can support these proposed increases. .

Alternatives

CR Plus has previously assessed potential new sites across the Sydney metropolitan area. However, land availability is limited, acquisition costs are high, and new development would require significant lead time to deliver a facility with comparable environmental performance. Increasing the capacity of the existing Minto RRF is the most viable and efficient option given its established infrastructure, environmental controls and separation from sensitive land uses

Without an increase to the approved capacity of Minto RRF and the approval to receive and process excavated soil, construction and demolition waste contractors in the south-west Sydney region may be constrained and an opportunity for increased resource recovery would be forfeited.

The ‘do nothing’ scenario would therefore not align with State policy objectives for waste diversion and efficient infrastructure delivery.

Conclusion

The modification allows for the receival and processing of NDD waste at night (pending the approval of Modification 1), receival and processing of excavated soil classified as general solid waste, and increased processing capacity from 450,000 tpa to 600,000 tpa without an increase to storage volumes or any changes to site infrastructure, plant or equipment.

The Minister for Planning and Public Spaces is the consent authority, and the modification application must be accompanied by a modification report. The environmental assessment concluded that the modification is unlikely to have significant environmental impacts. Potential air and noise emissions associated with the modification are predicted to be below relevant criteria. The modification will increase traffic associated with the existing RRF, however there will be no inefficiencies to the existing surrounding road network or queuing impacts outside of the site boundaries. The site demand for town water supply would be reduced after the combined implementation of Modifications 1 and 2 and stormwater capture, overflow/discharge frequency and water quality would be unaffected by this modification.

Construction for the modification would comprise building an additional storage bay for soils within the existing storage bay area. Construction activities (see section 3.4) are accordingly minor in scale and duration (less than 3 weeks), leading to minimal environmental impacts. The previous Construction Environmental Management Plan (CEMP) used for the construction of Minto RRF (Version 2.0, dated 1 August 2022 and approved on 29 September 2022) would be adopted for these minor works.

The modification is consistent with the principles of ESD as follows:

- Precautionary principle – the potential environmental impacts associated with the modification are well understood and have been assessed to a level of detail proportional to each aspect's environmental risk.
- Intergenerational equity – Suitably qualified and experienced technical specialists have been selected to ensure that the environmental assessment phase of the modification is independent, thorough, technically robust and transparent. CR Plus also engaged with neighbours, the local community and State government agencies to understand any concerns they had with the modification.
- Conservation of biological diversity and ecological integrity – the modification will not adversely impact threatened species or ecological communities.
- Improved valuation, pricing and incentive mechanisms – CR Plus acknowledges and accepts the financial costs associated with licensing the modification and all measures required to avoid, minimise, mitigate and manage potential environmental and social impacts.

On balance, given the need for the modification, lack of alternatives, suitability of the site, consistency with plans and policies, low environmental impacts, manageable environmental risk and project benefits for the community, it is clear the modification is in the public interest and its approval will benefit the greater Sydney region. The modification is therefore recommended for approval.

CHAPTER 8

REFERENCES

8 REFERENCES

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APPENDIX A

UPDATED PROJECT DESCRIPTION

Updated project description

The site is approved under SSD-5339 (the existing approval) which defines the operation to include the receival, storage and processing of concrete, brick, asphalt, sandstone, sand, soil and non-destructive digging (NDD) waste, and specifically permits the site to:

- Receive and process up to 600,000 tonnes per annum of general solid waste (non-putrescible) limited to:
  - concrete, asphalt, sandstone, sand and soil from the building and demolition industry, and;
  - drilling mud, hydro excavation waste, non-destructive digging (NDD) waste and muddy water from construction sites.
- Store up to 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time.

The approved facility receives material from the building and demolition industry as follows:

- Concrete, bricks and asphalt sourced from the demolition industry.
- Excavated sandstone, sand and soil sourced from earthwork projects.
- Drilling mud, hydro excavation waste, non-destructive digging (NDD) waste and muddy water from construction sites.

Material is processed at the RRF through the on-site NDD processing plant, sand washing plant, pugmill and screening and crushing plant to produce the following products (see Section 1.3.3):

- Road base
- 20mm aggregate
- 10mm aggregate
- Brick sand
- Washed excavation sand

Outside of the standard operating hours, NDD waste is received 24 hours a day 7 days a week and processed 24 hours a day 6 days a week (excluding Sunday). Processing NDD waste at night involves running the NDD waste dewatering plant and equipment, and the water treatment plant, but not the crushing plant and equipment.

The facility is licenced under environment protection licence (EPL) 21828.

APPENDIX B

GOVERNMENT AGENCY CONSULTATION FEEDBACK

Outlook

RE: 7 Montore Road, Minto NSW - SSD consultation letter

From Luke Brash <luke.brash@epa.nsw.gov.au>
Date Mon 09-February-2026 9:27 AM
To Mark Terei <mark.terei@elementenvironment.com.au>
Cc Harri Mayjor <harri@elementenvironment.com.au>; Brent Lawson <brent@cr-plus.com.au>; carlo@cr-plus.com.au <carlo@cr-plus.com.au>; PR445 <PR445@elementenvironment.com.au>; Anthony Males <anthony@cr-plus.com.au>

Good morning Mark,

Thank you for your email dated 28 January 2026 and for providing the agency notification letter outlining the proposed Modification 2 to SSD 5339 for the CR Plus Resource Recovery Facility at 7 Montore Road, Minto.
The EPA acknowledges the request for preliminary feedback prior to lodgement of the modification with the Department of Planning, Housing and Infrastructure (**DPHI**).

As described, the modification seeks to:

- increase processing capacity from 450,000 tpa to 600,000 tpa
- allow 24/7 NDD waste receival and 24/6 NDD processing (excluding Sunday)
- introduce the receival and processing of General Solid Waste (non-putrescible) soils as an additional waste stream

The EPA has reviewed the overview and accompanying summaries of the air quality, noise, traffic and water assessments and provides the following preliminary comments for consideration when finalising the modification report.

Increased Annual Throughput
The modification report should clearly demonstrate that increasing throughput to 600,000 tpa will not result in unacceptable impacts relating to dust, noise, odour, traffic generation, or stockpile management.

Air Quality and Operational Air Impacts
The air quality assessment indicates no exceedances of relevant criteria under the proposed scenario; however, the EPA expects:

- transparent explanation of modelling assumptions
- identification of worst-case operating scenarios
- clear assessment of dust generation risks associated with increased processing rates
- assessment of odour risks (if applicable) and how they will be managed under higher throughput scenarios

Waste Handling, Stockpiling and Throughput Management
The modification report should also clearly outline how the increase in waste receival and processing will be managed on-site, including the potential impacts of increased material volumes on existing environmental controls and infrastructure. This should include:

- details on the increase in throughput and how current waste streams will be stored and handled
- stockpile management, turnover, maximum storage volumes and stockpile height limits
- operational controls to manage increased material handling (e.g. dust suppression, traffic flow, odour controls)
- confirmation that existing infrastructure (e.g. hardstand areas, stormwater controls, dirty-water systems) can accommodate increased waste volumes

Extended NDD Operating Hours
Given the proposal for 24-hour NDD receival and extended processing hours, the modification report should include:

- a detailed night-time noise impact assessment, prepared in accordance with the *Noise Policy for Industry* (EPA, 2017) and other relevant policies and guidelines, and confirmation that night-time activities will not result in sleep disturbance at residential receivers
- identification of mitigation and management measures (e.g. broadband reversing alarms, minimisation of night-time vehicle movements)

The draft Noise and Vibration Impact Assessment indicates compliance with all Project Noise Trigger Levels and predicts no sleep-disturbance impacts; however, the EPA will further consider these outcomes upon formal submission.

Management of GSW Soils
The introduction of GSW soils as a new waste stream should be supported by clear, detailed information on:

- receival, screening, handling and processing arrangements
- stockpile management, turnover and maximum storage volumes
- storage locations and infrastructure, noting the EPA's expectation that GSW soils be stored on hardstand and undercover to minimise leachate generation and dust emissions
- implications for the site's water capture and treatment systems

The modification report should demonstrate that the additional waste stream will not introduce new environmental risks.

Water Management and Site Water Balance
The EPA notes the proponent's summary that the closed-loop water system will continue to operate and that overall discharge frequency is expected to decrease, with increased daily water demand (202 kL to 269 kL in summer; 127 kL to 169 kL in winter).
The report should confirm:

- the adequacy of existing water capture, treatment and storage capacity
- whether any upgrades or contingency measures are required during high rainfall periods or peak operational activity

Further EPA Review
The EPA will provide any further comments on the proposed modification once the full application and supporting technical assessments are formally submitted to DPHI.

Once submitted, the EPA's technical departments will review the supporting reports and provide comment if required.

If you have any questions regarding the above preliminary comments, please feel free to contact me.

Kind regards,

Luke Brash
Operations Officer
Regulatory Operations
NSW Environment Protection Authority
Level 3/84 Crown St, Wollongong NSW 2500

Join us on our mission to
protect tomorrow together.

www.epa.nsw.gov.au @NSW_EPA
Report pollution and environmental incidents via 131 555 or info@epa.nsw.gov.au

The EPA acknowledges the Traditional Custodians of the land, waters and sky where we work. As part of the world's oldest surviving cultures we pay our respect to Aboriginal Elders past, present and emerging.
I work on Dharawal Country

From: Mark Terei [mark.terei@elementenvironment.com.au]
Sent: 28/01/2026 9:24 PM
To: info@environment.nsw.gov.au
Cc: harri@elementenvironment.com.au; brent@cr-plus.com.au; carlo@cr-plus.com.au; pr445@elementenvironment.com.au; anthony@cr-plus.com.au
Subject: 7 Montore Road, Minto NSW - SSD consultation letter

Attention: NSW EPA Development Team,
Element Environment Pty Ltd (Element) has been engaged by CR Plus Pty Ltd to prepare an application to modify the planning approval for state significant development (SSD 5339) at 7 Montore Road, Minto, NSW.
Modification of the planning approval is proposed to allow for the following operational changes at the currently operating construction and demolition waste resource recovery facility:

- increased processing capacity at the site from 450,000 tonnes per annum (tpa) to 600,000 tpa;
- non-destructive digging (NDD) waste receival (tipping) 24 hours a day 7 days a week and NDD waste processing 24 hours a day 6 days a week (excluding Sunday); and
- receival and processing of soil classified as General Solid Waste (GSW) as an additional waste stream.

The attached letter provides an overview of the modification and the key environmental matters (including a site water balance) and invites feedback from EPA on the modification.

? PR445_Minto_RRF_Modification_2_Agency Notification Letter_D5_EPA.pdf?
Given that the modification report is near completion, we would appreciate your feedback at the earliest opportunity so that it can be considered in the modification report prior to being lodged with DPHI. Feedback by Friday 13 February 2026 would be most appreciated.
If you have any other questions in the interim, please don't hesitate to contact me.
Kind regards,

Mark Terei
Principal Environmental Consultant - CEnvP-IA
Planning and Environment
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ref:!00D7F06iTix.!500Mn01HTlZ7:ref

Outlook

RE: 7 Montore Road, Minto NSW - SSD consultation letter

From Pahee Rathan <Pahee.RATHAN@transport.nsw.gov.au>
Date Tue 10-February-2026 10:15 AM
To Mark Terei <mark.terei@elementenvironment.com.au>
Cc PR445 <PR445@elementenvironment.com.au>; Harri Mayjor <harri@elementenvironment.com.au>; Brent Lawson <brent@cr-plus.com.au>; Anthony Males <anthony@cr-plus.com.au>; Carlo Salvia <carlo@cr-plus.com.au>

Some people who received this message don't often get email from pahee.rathan@transport.nsw.gov.au. Learn why this is important

Hi Mark,

Thank you for providing Transport for NSW (**TfNSW**) an opportunity to provide assessment requirements for a proposed modification application for State Significant Development (SSD-5339) at 7 Montore Road, Minto.

TfNSW has reviewed the Scoping Report and provides the following assessment requirements and comments your consideration:

A Transport Impact Assessment (TIA) shall be prepared in accordance with the *Guide to Transport Impact Assessment* (**GTIA**). GTIA replaces the Guide to Traffic Generating Developments and can be found at this link. The TIA will enable TfNSW to understand the impacts the development may have on the state classified road network that it manages, as well as the impacts from local road connections with the state classified road network because of increased vehicular, bus and pedestrian/active transport movements. The TIA must include, but not be limited to, the following:

- Details of all traffic types and volumes likely to be generated during construction and operation. Traffic flows are to be shown diagrammatically to a level of detail sufficient for easy interpretation.
- An assessment of the predicted impacts of development traffic on road safety and the capacity of the road network, including consideration of cumulative impacts of nearby approved developments at key intersections using SIDRA.
- Identification of the necessary road network infrastructure upgrades (e.g. signage, pedestrian facilities, intersection upgrades, etc.) that are required to mitigate the development impact on the classified road network, in terms of safety and efficiency for both vehicles and pedestrians.
- A review of the crash data along the identified transport route/s and key nearby intersections for the most recent 5-year reporting period and an assessment of the safety implications of the proposed development and required mitigation measures.
- Plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading, or servicing can be accommodated on the site to avoid queuing in the street network.
- Details of the site access and pedestrian network and parking provision associated with the proposed development, in accordance with the relevant Australian Standards, Austroads Guide and Council's Development Control Plan (**DCP**).
- Details of travel demand management measures to minimise the development impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and/or specific Workplace Travel Plan) and the provision of facilities to increase the non-car mode share for travel to and from the site.
- Details of the adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand for the proposed development; and
- Measures to integrate the development with the existing/future public transport network.

If you like to discuss this matter further, please contact me.

Regards
Pahee

Pahee Rathan
Senior Land Use Assessment Coordinator
Transport Planning
Planning, Integration and Passenger
Transport for NSW

M 0417 246 510 **E** Pahee.Rathan@transport.nsw.gov.au

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Level 4 4 Parramatta Square, 12 Darcy Street
Parramatta NSW 2150

OFFICIAL

From: Mark Terei <mark.terei@elementenvironment.com.au>
Sent: Wednesday, 28 January 2026 9:37 PM
To: Development Sydney <Development.Sydney@transport.nsw.gov.au>
Cc: PR445 <PR445@elementenvironment.com.au>; Harri Mayjor <harri@elementenvironment.com.au>; Brent Lawson <brent@cr-plus.com.au>; Anthony Males <anthony@cr-plus.com.au>; Carlo Salvia <carlo@cr-plus.com.au>
Subject: 7 Montore Road, Minto NSW - SSD consultation letter

You don't often get email from mark.terei@elementenvironment.com.au. Learn why this is important

Attention: TfNSW Development Team,

Element Environment Pty Ltd (Element) has been engaged by CR Plus Pty Ltd to prepare an application to modify the planning approval for state significant development (SSD 5339) at 7 Montore Road, Minto, NSW.

Modification of the planning approval is proposed to allow for the following operational changes at the currently operating construction and demolition waste resource recovery facility:

- increased processing capacity at the site from 450,000 tonnes per annum (tpa) to 600,000 tpa;
- non-destructive digging (NDD) waste receival (tipping) 24 hours a day 7 days a week and NDD waste processing 24 hours a day 6 days a week (excluding Sunday); and
- receival and processing of soil classified as General Solid Waste (GSW) as an additional waste stream.

The attached letter provides an overview of the modification and the key environmental matters (including traffic) and invites feedback from TfNSW on the modification.

PR445_Minto_RRF_Modification_2_Agency Notification Letter_D5_TfNSW.pdf

Given that the modification report is near completion, we would appreciate your feedback at the earliest opportunity so that it can be considered in the modification report prior to being lodged with DPHI. Feedback by Friday 13 February 2026 would be most appreciated.

If you have any other questions in the interim, please don't hesitate to contact me.

Kind regards,

Mark Terei
Principal Environmental Consultant - CEnvP-IA
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APPENDIX C

AIR QUALITY IMPACT AND GREENHOUSE GAS ASSESSMENT

AIR QUALITY IMPACT AND GREENHOUSE GAS ASSESSMENT
CR PLUS MINTO MODIFICATION 2

Element Environment

19 January 2026

Job Number 25051888

Prepared by
Todoroski Air Sciences Pty Ltd
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Air Quality Impact and Greenhouse Gas Assessment

CR Plus Minto Modification 2

DOCUMENT CONTROL

Prepared by	Reviewed by
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1 INTRODUCTION

Todoroski Air Sciences has prepared this report for Element Environment Pty Ltd on behalf of CR Plus Pty Ltd (CR Plus). The report presents an assessment of potential air quality impacts and greenhouse gas emissions associated with the proposed modifications to a CR Plus owned and operated Resource Recovery Facility (RRF) at Minto, New South Wales (NSW) (hereafter referred to as the Project).

The existing development is approved to receive and process up to 450,000 tonnes per annum (tpa) of concrete, asphalt, sandstone, and sand from the building and construction industry, and storage of up to 50,000 tonnes (t) of unprocessed waste and 22,000 t of processed waste (product) at any one time. A separate modification (Modification 1) has previously been submitted and involves the introduction of non-destructive digging (NDD) waste as a new waste stream to be received and processed at the site.

CR Plus are seeking approval under Section 4.55(1A) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to modify State Significant Development (SSD) consent (SSD-5339) to:

- Increase production from 450,000 tpa to 600,000 tpa;
- Receive and process NDD waste at night; and
- Introduce soil classified as General Solid Waste (GSW) as a new waste stream to be received and processed at the site.

This air quality impact assessment has been prepared in general accordance with the NSW Environment Protection Authority (EPA) document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2022**). The greenhouse gas (GHG) assessment has been prepared in general accordance with the *NSW Guide for Large Emitters* (**NSW EPA, 2025**).

To assess the potential air quality impacts and greenhouse gas emissions associated with the Project, this report comprises:

- A background to the Project and description of the site and operations;
- An outline of the applicable criteria to assess air quality impacts from the Project;
- A review of the existing meteorological and air quality environment surrounding the site;
- A description of the dispersion modelling approach and emission estimation used to assess potential air quality impacts;
- Presentation of the predicted results and discussion of the potential air quality impacts and associated mitigation and management measures; and,
- An assessment of the potential greenhouse gas emissions associated with the Project.

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2 PROJECT BACKGROUND

2.1 Project setting

The Project site is located at 7 Montore Road, Minto, approximately 4.5 kilometres (km) northeast of Campbelltown and approximately 14km southwest of Liverpool.

The local land use surrounding the Project site is predominately comprised of industrial lands, with residential areas located approximately 0.2km west of the Project. A church is located immediately north of the Project, and a childcare centre is located approximately 0.4km north of the Project.

Figure 2-1 presents the location of the Project with reference to the receptors considered in this assessment. **Table 2-1** identifies each of the receptor locations.

Figure 2-1: Local setting

Table 2-1: Receptor locations for the Project

Assessment ID	Easting (m)	Northing (m)	Description
Wor1	300070	6232295	Place of worship
CC1	300076	6232701	Childcare centre
R1	299698	6232368	Residential
R2	299654	6232283	Residential
R3	299625	6232189	Residential
R4	299564	6232019	Residential
IND1	300100	6232150	Industrial
IND2	299960	6232087	Industrial

Wor = place of worship, CC = childcare, R = residential, IND = industrial.

Figure 2-2 presents a pseudo three-dimensional visualisation of the topography in the general vicinity of the Project. The local topography in the vicinity of the Project site is characterised as gently undulating hills.

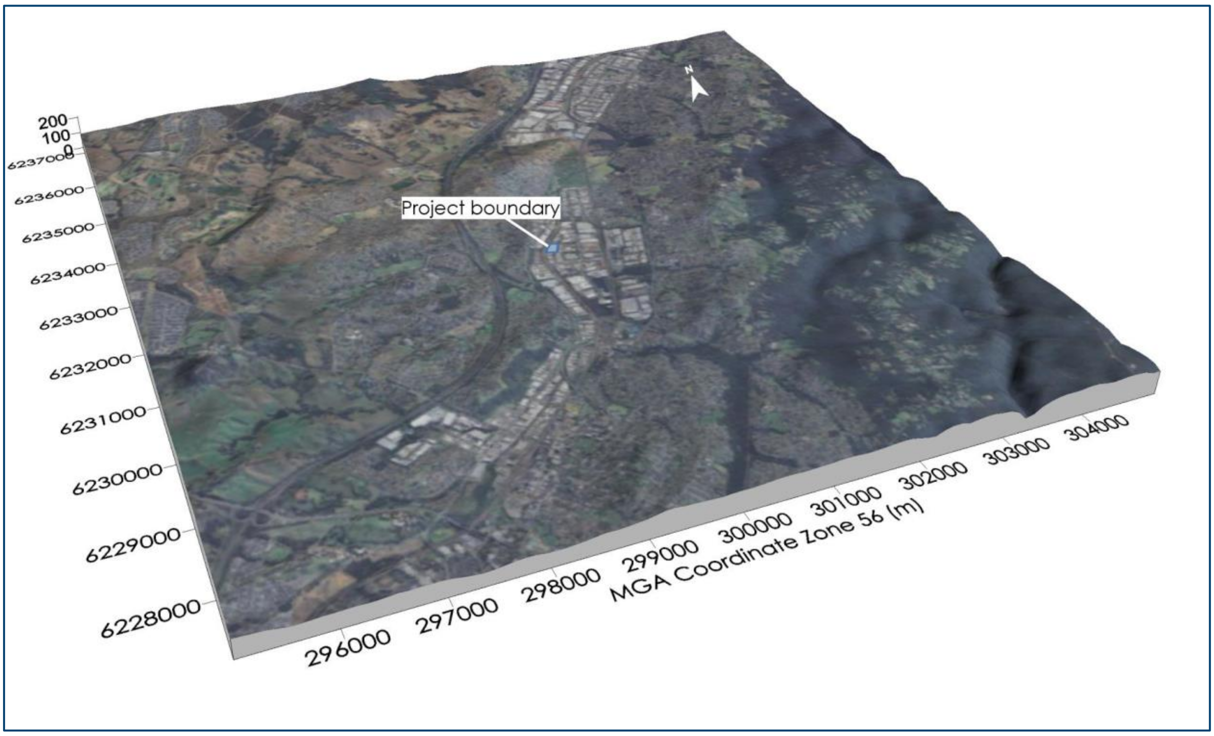

Figure 2-2: Representative visualisation of topography in the area surrounding the Project

2.2 Approved operations

The RRF is approved to receive process up to 450,000 tpa of non-putrescible general solid waste (bricks, concrete, asphalt, sandstone, and sand) from the building and demolition industry, and store up to 50,000 t of unprocessed waste and 22,000 t of processed waste (product) at any one time.

Raw material is delivered via trucks to the site, where it is unloaded and initially screened for contaminants. The material is processed by crushing, screening, washing as required and then stockpiled for the different grades of product. The finished product is then loaded on to trucks and transported off site.

The RRF utilises a sand washing plant, pugmill and concrete and brick processing plant to produce the following products:

- Road base;
- 20mm aggregate;
- 10mm aggregate;
- Brick sand; and,
- Washed excavation sand.

The RRF operates under SSD-5339 and Environment Protection Licence (EPL) 21828 which reflects the limits specified in the consent.

The approved hours of operation are outlined in **Table 2-2.**

Table 2-2: Approved hours of operations

Activity	Day	Time
Truck deliveries and pick-ups	Monday – Friday Saturday Sunday and public holidays	6am to 7pm 7am to 4pm No work
Operation (including crushing, screening, pugmill and sand washing)	Monday – Friday Saturday Sunday and public holidays	7am to 6pm 7am to 4pm No work

Modification 1 is currently in progress and involves the introduction of NDD waste as a new waste stream to be received and processed at the site. NDD waste is typically sourced from construction sites utilising vacuum trucks to excavate the ground without damaging existing underground utilities. In this case the term is also intended to include drilling mud, muddy water and stormwater collected from construction sites as part of site management.

Figure 2-3 presents an indicative site layout for the existing and proposed Modification 1 operations at the site.

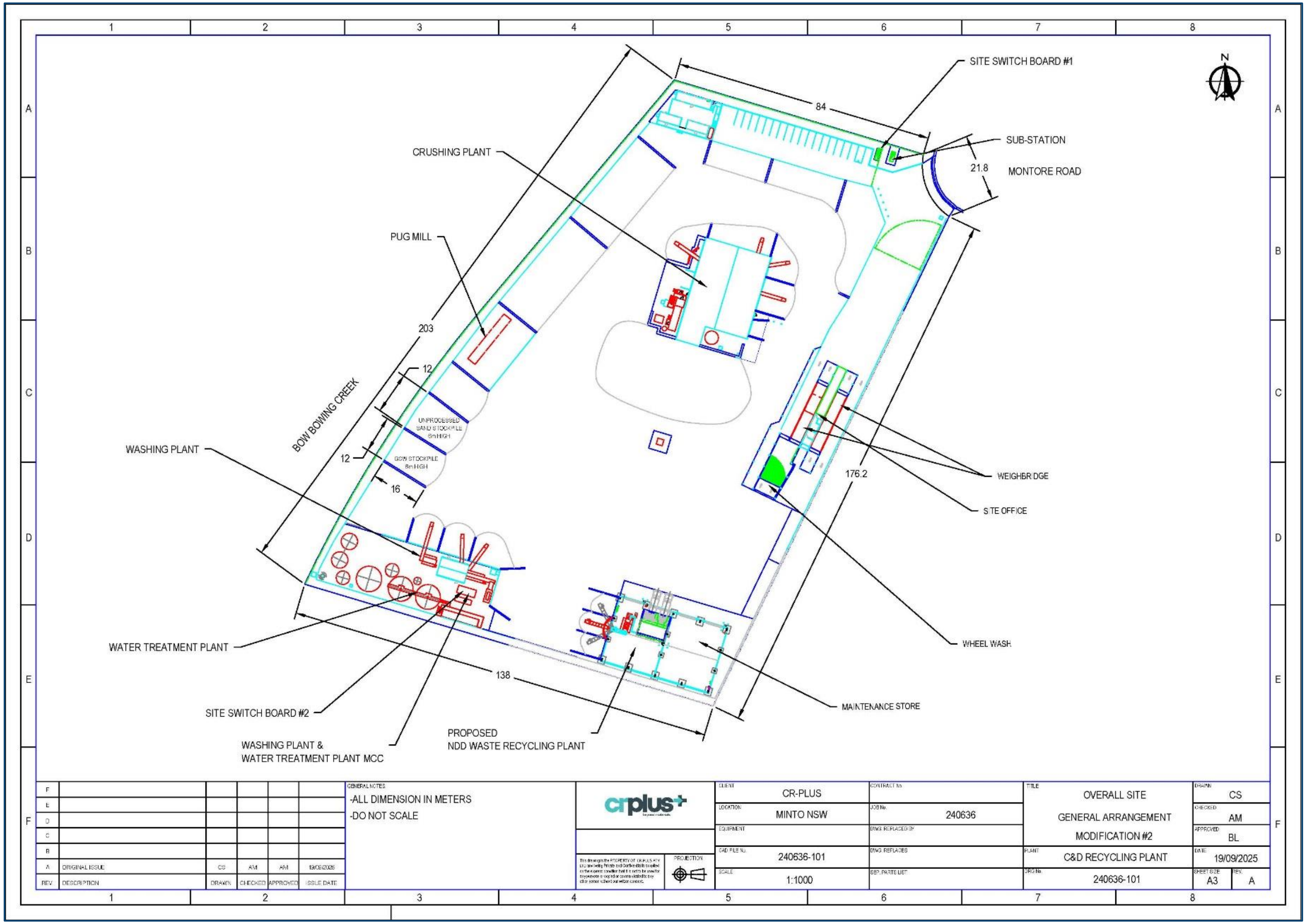

Figure 2-3: Project site layout for the existing and Modification 1 operations

2.3 Proposed operations

CR Plus are seeking approval to:

- Increase production from 450,000 tpa to 600,000 tpa;
- Receive and process NDD waste at night; and
- Introduce soil classified as General Solid Waste (GSW) as a new waste stream to be received and processed at the site.

It is noted that a separate modification (Modification 1) has previously been submitted and involves the introduction of NDD waste as a new waste stream to be received and processed at the site.

Processing NDD waste involves running the NDD dewatering plant and equipment, and the water treatment plant, but not the crushing plant and equipment.

No change is proposed to the processing activities or the limits on the storage of 50,000 t of unprocessed waste and 22,000 t of processed waste (product) at any one time.

3 AIR QUALITY CRITERIA

Air quality criteria are benchmarks set to protect the general health and amenity of the community in relation to air quality. The sections below identify the potential air emissions generated by the Project and the applicable air quality criteria.

3.1 Particulate matter

Particulate matter consists of dust particles of varying size and composition. Air quality goals refer to measures of the total mass of all particles suspended in air defined as the Total Suspended Particulate matter (TSP). The upper size range for TSP is nominally taken to be 30 micrometres (µm) as in practice particles larger than 30 to 50µm will settle out of the atmosphere too quickly to be regarded as air pollutants.

Two sub-classes of TSP are also included in the air quality goals, namely PM_{10}, particulate matter with equivalent aerodynamic diameters of 10µm or less, and $PM_{2.5}$, particulate matter with equivalent aerodynamic diameters of 2.5µm or less.

Particulate matter, typically in the upper size range, that settles from the atmosphere and deposits on surfaces is characterised as deposited dust. The deposition of dust on surfaces may be considered a nuisance and can adversely affect the amenity of an area by soiling property in the vicinity.

3.2 NSW EPA impact assessment criteria

Table 3-1 summarises the air quality goals that are relevant to this assessment as outlined in the NSW EPA document *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA, 2022**).

The air quality goals for total impact relate to the total pollutant burden in the air and not just the contribution from the Project. Consideration of background pollutant levels needs to be made when using these goals to assess potential impacts.

Table 3-1: NSW EPA air quality impact assessment criteria

Pollutant	Averaging Period	Impact	Criterion
TSP	Annual	Total	90 µg/m³
PM_{10}	Annual	Total	25 µg/m³
	24 hour	Total	50 µg/m³
$PM_{2.5}$	Annual	Total	8µg/m³
	24 hour	Total	25 µg/m³
Deposited dust	Annual	Incremental	2 g/m²/month
		Total	4 g/m²/month

Source: **NSW EPA, 2022**
µg/m³ = micrograms per cubic metre
g/m²/month = grams per square metre per month

3.3 Respirable crystalline silica

Silica occurs in nature in a crystalline or amorphous form and may be synthetically produced in amorphous forms. Silica is naturally occurring and commonly found in soil and rocks, the most common form is quartz, followed by cristobalite and tridymite. The crystalline form of silica has potential to cause adverse health effects in humans. Occupational exposure to respirable crystalline silica has potential to result in silicosis (**NIOSH, 1974**).

Various jurisdictions have developed criteria for acceptable levels of exposure to crystalline silica. The interim impact assessment criteria for respirable crystalline silica (RCS), as previously advised by the NSW EPA, are outlined in **Table 3-2** and have been applied to the Project.

Table 3-2: Interim NSW Impact assessment criterion for RCS

Pollutant	Averaging period	Criterion
RCS ($PM_{2.5}$ dust fraction)	24-hour	24 µg/m³
	Annual	3 µg/m³

3.4 Odour

NSW legislation prohibits emissions that cause odour, including offensive odour, to occur at any off-site receptor. Offensive odour is evaluated in the field by authorised officers, who are obliged to consider the odour in the context of its receiving environment, frequency, duration, character etc. and to determine whether the odour would interfere with the comfort and repose of the normal person unreasonably.

In the planning and approval stages for new developments or modifications to existing operations, actual odour emissions do not yet exist. Consequently, assessments must consider hypothetical odour conditions, with odour concentrations represented in odour units (OU). The number of odour units represents the number of times that the odour would need to be diluted to reach a level that is just detectable to the human nose. Thus, by definition, odour less than an odour unit (1 OU), would not be detectable to most people.

The range of a person's ability to detect odour varies greatly in the population, as does their sensitivity to the type of odour. The wide-ranging response in how any particular odour is perceived by any individual poses specific challenges in the assessment of odour impacts and the application of specific air quality goals related to odour. The *Technical Framework* (**NSW DEC, 2006**) sets out a framework specifically to deal with such issues.

The NSW criteria for acceptable levels of odour range from 2 to 7OU, with the more stringent 2OU criteria applicable to densely populated urban areas and the 7OU criteria applicable to sparsely populated rural areas.

The Project does not propose to process any putrescible waste on-site, and any non-acceptable odorous waste will not be permitted. The proposed waste streams do not have any distinct or notable odour, and therefore the Project is not expected to generate any odour impacts. It is expected that the Project will comply with Section 129 of the POEO Act concerning the control of offensive odour, and odour has therefore not been assessed further in this report.

4 EXISTING ENVIRONMENT

This section describes the existing environment including the climate and ambient air quality in the area surrounding the Project.

4.1 Local climatic conditions

Long term climatic data collected at the closest Bureau of Meteorology (BoM) weather station at Camden Airport Automatic Weather Station (AWS) (Station Number 068192) were analysed to characterise the local climate in the proximity of the Project. The Camden Airport AWS is located approximately 13km west of the Project.

Table 4-1 and **Figure 4-1** present a summary of the data collected from the Camden Airport AWS over an approximate 33-to-50-year period for the various meteorological parameters. These data assist in characterising the local climatic conditions based on the long-term meteorological parameters.

The data indicate that January is the hottest month with a mean maximum temperature of 29.7 degrees Celsius (°C) and July is the coldest month with a mean minimum temperature of 3.1°C.

Rainfall is highest during the summer months and declines during winter, with an annual average rainfall of 789.3 millimetres (mm) over 50.5 days. The data show March is the wettest month with an average rainfall of 101.8 millimetres (mm) over 5.2 days, and July is the driest month with an average rainfall of 39.7mm over 3.1 days.

Relative humidity levels exhibit variability over the day and seasonal fluctuations. Mean 9am relative humidity levels range from 64 percent (%) in October to 82% in June. Mean 3pm relative humidity levels vary from 43% in August to 53% in June.

Wind speeds exhibit variability over the day between the 9am and 3pm conditions. The mean 9am wind speeds range from 5.4 kilometres per hour (km/h) in May to 9.3km/h in October. The mean 3pm wind speeds vary from 12.5km/h in May to 18.5km/h in December.

Table 4-1: Monthly climate statistics summary – Camden Airport AWS

Parameter	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann.
Temperature													
Mean max. temp. (°C)	29.7	28.7	26.9	24.0	20.6	17.8	17.4	19.2	22.1	24.4	26.4	28.7	23.8
Mean min. temp. (°C)	17.0	16.9	15.0	11.1	7.0	4.6	3.1	4.0	6.8	10.1	13.0	15.3	10.3
Rainfall													
Rainfall (mm)	84.6	100.7	101.8	68.6	52.6	64.1	39.7	40.3	38.9	64.3	77.0	57.4	789.3
No. of rain days (≥1mm)	5.2	5.2	5.2	4.2	3.7	3.6	3.1	3.0	3.3	4.5	4.9	4.6	50.5
9am conditions													
Mean temp. (°C)	21.6	20.9	19.6	16.9	13.0	9.6	8.6	10.7	14.6	17.7	18.7	20.9	16.1
Mean R.H. (%)	72	78	77	77	81	82	81	73	66	64	69	68	74
Mean W.S. (km/h)	6.5	5.5	6.0	6.3	5.4	5.9	5.8	7.9	9.0	9.3	8.0	7.9	7.0
3pm conditions													
Mean temp. (°C)	27.7	26.9	25.4	22.5	19.3	16.5	16.0	17.7	20.3	22.4	24.3	26.8	22.2
Mean R.H. (%)	49	52	52	52	52	53	50	43	44	47	50	46	49
Mean W.S. (km/h)	17.2	15.5	15.0	13.8	12.5	13.9	14.6	16.8	18.1	17.7	17.7	18.5	15.9

Source: **Bureau of Meteorology, 2025**

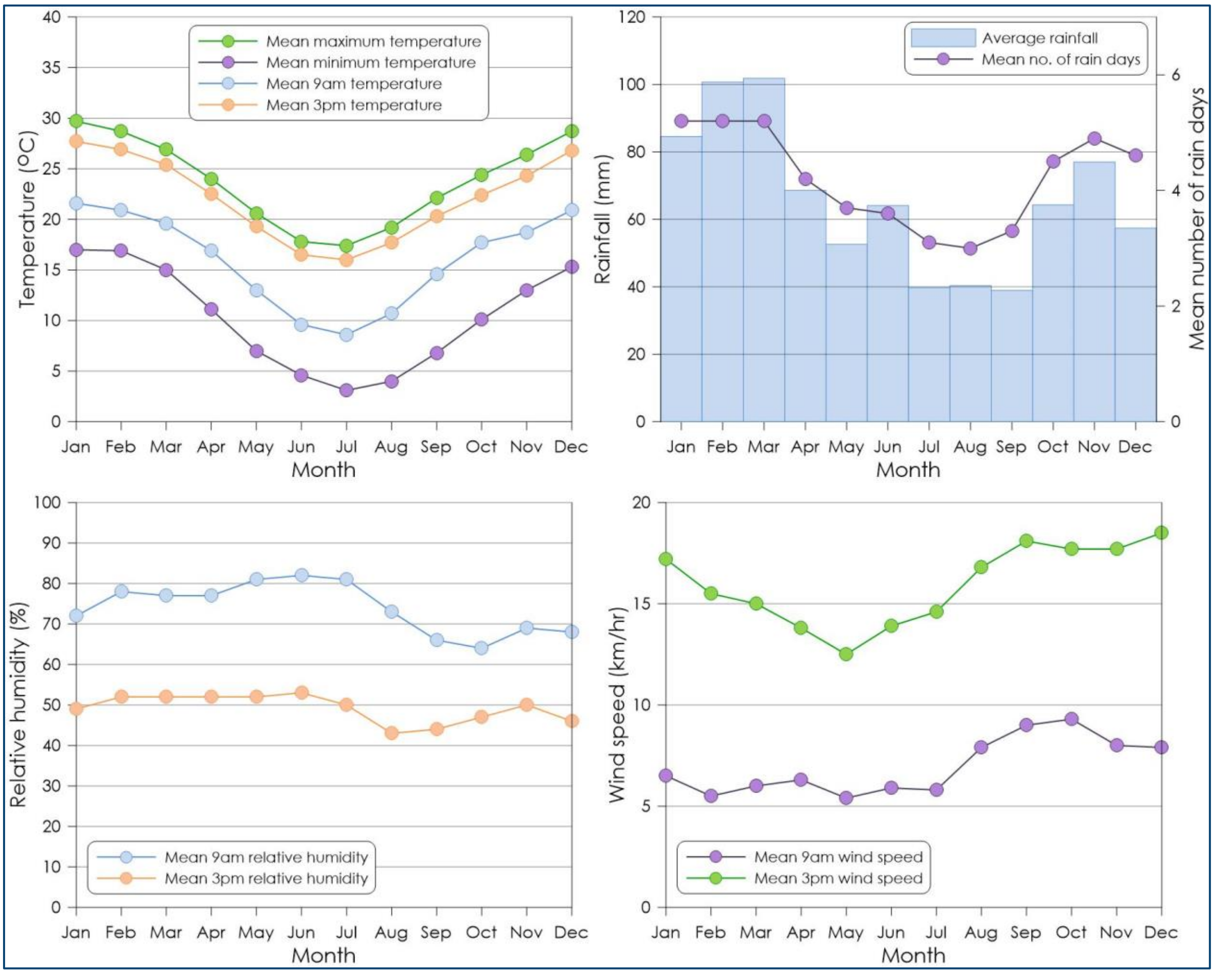

Figure 4-1: Monthly climate statistics summary – Camden Airport AWS

4.2 Local meteorological conditions

Annual and seasonal windroses generated from data recorded at the NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) Campbelltown West monitoring station during the 2023 calendar year are presented in **Figure 4-2**. The Campbelltown West monitoring station is located approximately 5km southwest of the Project.

On an annual basis, winds are predominantly from the southwest quadrant, a pattern reflected across the seasonal windroses. In summer, winds from the northeast quadrant are the second most dominant. In autumn, the west-southwest is the next strongest direction, typically associated with higher wind speeds, and winter shows a similar pattern. In spring, both the west-southwest and the northeast directions are prominent.

Figure 4-2: Annual and seasonal windroses – Campbelltown West (2023)

4.3 Local air quality monitoring

The main sources of air pollutants in the area surrounding the facility are emissions from surrounding industrial and commercial operations and from other anthropogenic activities such as wood heaters and motor vehicle exhaust. Events such as bushfires, hazard reduction burns, and dust storms are also a potential source of air pollution in the surrounding area.

Ambient air quality monitoring data collected from the nearest DCCEEW air quality monitoring station at Campbelltown West has been reviewed.

4.3.1 PM_{10} monitoring

A summary of the available PM_{10} monitoring data from 2019 to 2024 is presented in **Table 4-2**. Recorded 24-hour average PM_{10} concentrations are presented in **Figure 4-3.**

The data indicate that annual average PM_{10} levels were below the NSW EPA impact assessment criterion of 25µg/m^3, whereas the 24-hour average criterion of 50µg/m^3 was exceeded on occasion. It is noted that the elevated PM_{10} concentrations recorded in late 2019 and early 2020 are attributed to the widespread bushfires and drought affecting NSW. The elevated concentrations in 2021 and 2023 are attributed to hazard reduction burns, which caused elevated concentrations across Sydney.

Table 4-2: Summary of PM_{10} levels from Campbelltown West (µg/m³)

Year	Annual average	Criterion
2019	22.3	**25**
2020	17.0	**25**
2021	13.8	**25**
2022	11.3	**25**
2023	14.4	**25**
2024	15.1	**25**
Year	**Maximum 24-hour average**	**Criterion**
2019	**132.0**	**50**
2020	**249.7**	**50**
2021	**111.9**	**50**
2022	30.2	**50**
2023	**78.1**	**50**
2024	38.5	**50**

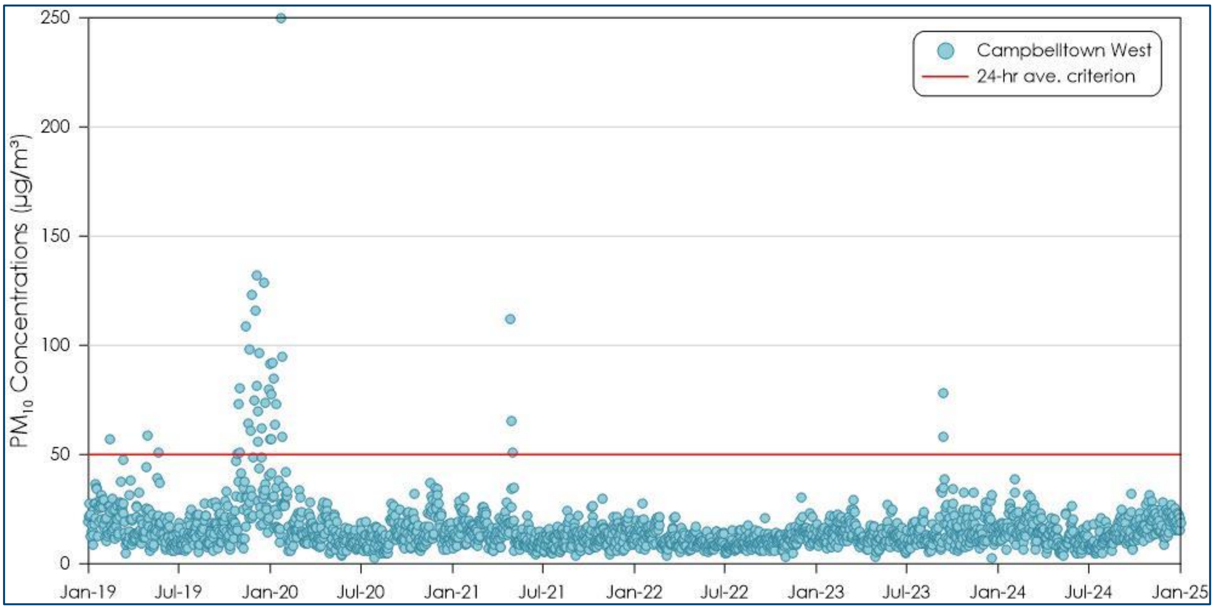

Figure 4-3: 24-hour average PM_{10} concentrations

4.3.2 $PM_{2.5}$ monitoring

A summary of the available $PM_{2.5}$ monitoring data is presented in **Table 4-3**. Recorded 24-hour average $PM_{2.5}$ concentrations are presented in **Figure 4-4**.

The data indicate that annual average $PM_{2.5}$ levels were below the NSW EPA impact assessment criterion of 8µg/m³. It should be noted that any datasets with less than 75% data availability have been excluded from calculating annual average levels.

The 24-hour average criterion of 25µg/m³ was exceeded on occasion. Similar to the PM_{10} monitoring data, the 2019/2020 bushfires and drought conditions as well as hazard reduction burns during 2021 and 2023 can be seen in the $PM_{2.5}$ monitoring data.

Table 4-3: Summary of $PM_{2.5}$ levels from Campbelltown West (µg/m³)

Year	Annual average	Criterion
2019	-	**8**
2020	7.5	**8**
2021	6.3	**8**
2022	4.6	**8**
2023	6.1	**8**
2024	5.9	**8**
Year	**Maximum 24-hour average**	**Criterion**
2019	106.0	**25**
2020	69.0	**25**
2021	99.9	**25**
2022	23.2	**25**
2023	79.6	**25**
2024	16.0	**25**

- Less than 75% available data

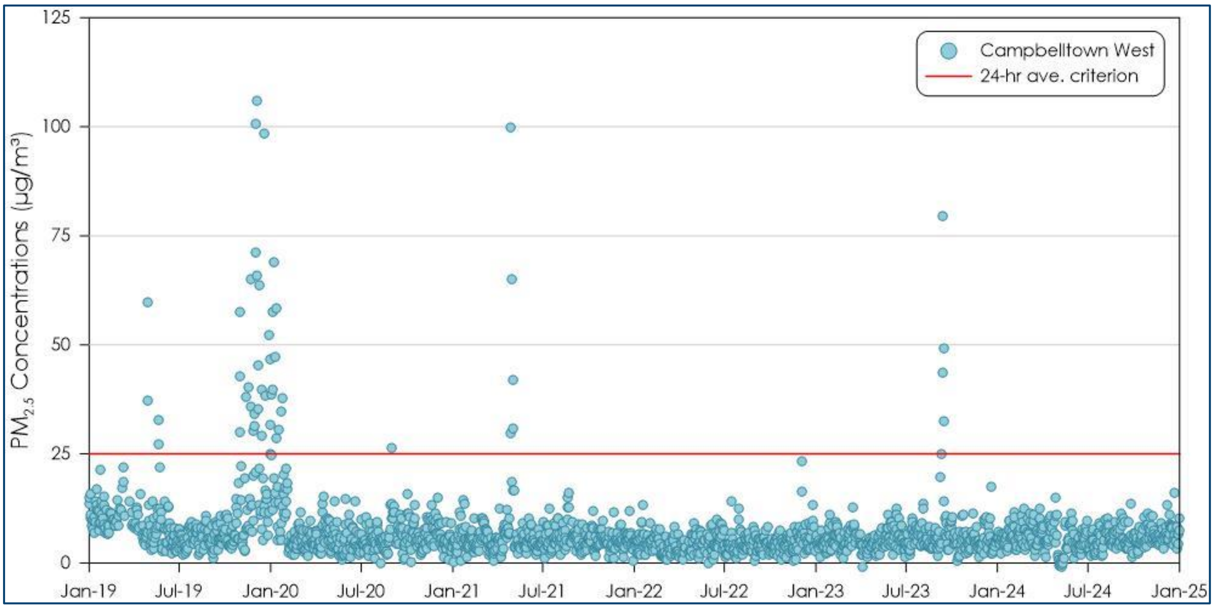

Figure 4-4: 24-hour average $PM_{2.5}$ concentrations

4.3.3 On-site air quality monitoring

A campaign of ambient air quality monitoring was conducted from 6 March 2025 to 17 March 2025 at the facility. The monitor was located along the northern boundary of the site, where it is exposed to particulates generated from operational activities occurring at the site as well as surrounding industrial operations. The location of the dust monitor is shown in **Figure 4-5**.

A comparison of the on-site and Campbelltown West monitoring data is shown in **Figure 4-6** and indicates that the particulate levels were generally similar and below the relevant criteria.

Figure 4-5: Dust monitoring Location

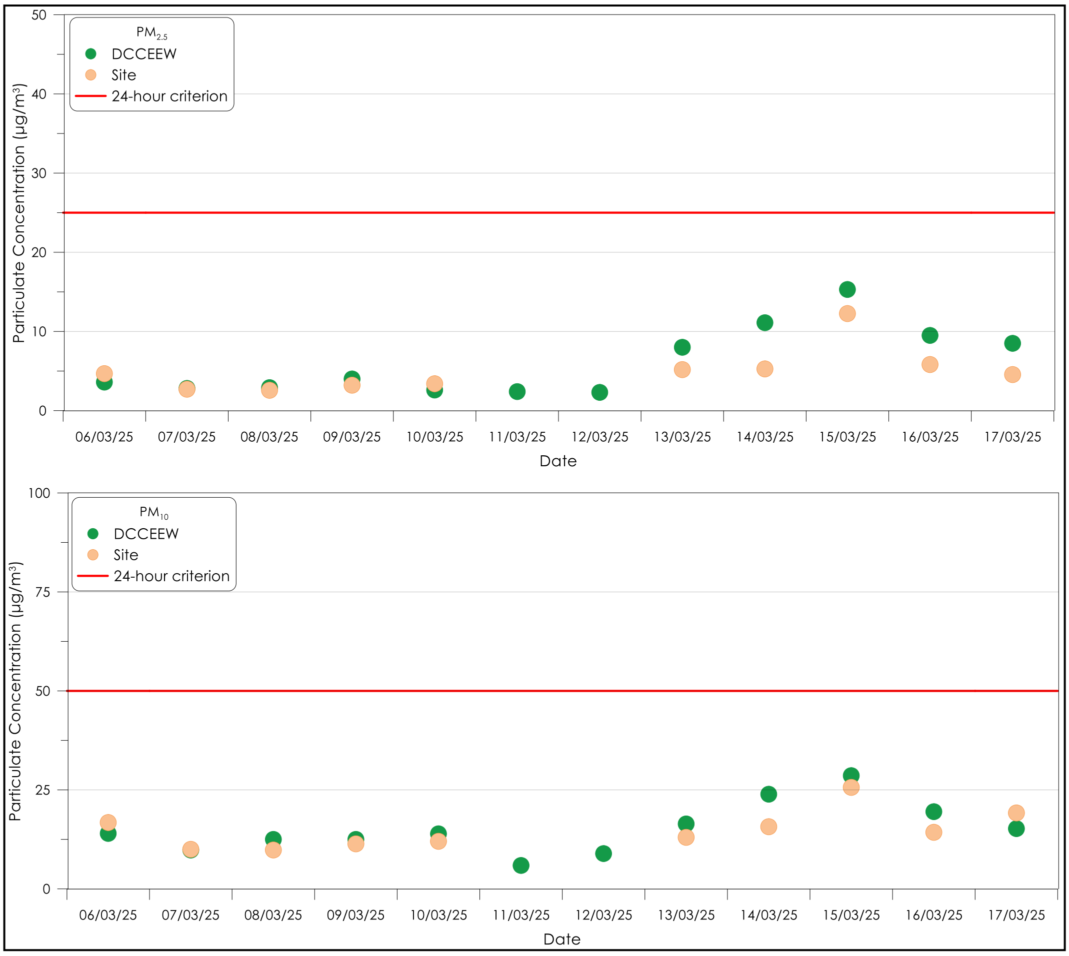

Figure 4-6: Comparison of $PM_{2.5}$ and PM_{10} monitoring data at the DCCEEW Campbelltown West monitor and on-site monitor

4.3.4 Estimated background levels

The background air quality levels from the DCCEEW monitor at Campbelltown West for the 2023 calendar year were used to represent the background levels for the Project.

In the absence of available data, estimates of the annual average background TSP and deposited dust can be determined from a relationship between TSP and deposited dust and the measured PM_{10} levels. This relationship assumes that an annual average PM_{10} concentration of 25µg/m³ corresponds to a TSP concentration of 90µg/m³ and deposited dust level of 4g/m²/month. This assumption is based on the NSW EPA air quality impact criteria. Applying this relationship with the measured annual average PM_{10} concentration of 14.4µg/m³ indicates an approximate annual average TSP concentration of 51.9µg/m³. and deposited dust level of 2.3g/m²/month.

The background air quality levels applied in this assessment are summarised in **Table 4-4**.

Table 4-4: Summary of background levels

Pollutant	Background level	Units
Annual average TSP	51.9	µg/m³
24-hour average PM_{10}	Daily varying	µg/m³
Annual average PM_{10}	14.4	µg/m³
24-hour average $PM_{2.5}$	Daily varying	µg/m³
Annual average $PM_{2.5}$	6.1	µg/m³
Annual average deposited dust	2.3	g/m²/month

4.4 Climate change

The main climate change trends expected to occur in the Sydney Region (**Adapt NSW, 2025**) include;

- An increase in average, minimum and maximum temperatures – average temperatures have been steadily rising.
- More hot days and heatwaves – the number of hot days will increase, and the number of cold nights will decrease.
- Changes in rainfall patterns – annual average rainfall is projected to remain variable, on average winter rainfall is projected to decrease.
- Increased bushfire risk – fire weather is projected to increase in spring and summer.

These climate change projections have potential to influence the dust generation at the Project. During hot days, heatwaves, and periods of reduced rainfall, the propensity of dust generation is likely to increase. However, with appropriate mitigation and management measures in place, any potential impacts of climate change can be effectively managed. The management of day-to-day operations will adapt to the changing climate as necessary. Further details regarding the potential mitigation and management measures for the Project are presented in **Section 7**.

Additionally, measures to reduce the amount of greenhouse gas emissions generated by the Project have also been considered and discussed in further detail in the **Section 8**.

5 DISPERSION MODELLING APPROACH

The following sections are included to provide the reader with an understanding of the model and modelling approach applied for the assessment. The CALPUFF is an advanced air dispersion model which can deal with the effects of complex local terrain on the dispersion meteorology over the modelling domain in a three-dimensional, hourly varying time step.

Modelling was undertaken using a combination of the CALPUFF Modelling System and the Weather Research and Forecasting model (WRF). The CALPUFF Modelling System includes three main components: CALMET, CALPUFF and CALPOST and a large set of pre-processing programs designed to interface the model to standard, routinely available meteorological and geophysical datasets.

The model was setup in general accord with the methods provided in the NSW EPA document *Generic Guidance and Optimum Model Setting for the CALPUFF Modeling System for Inclusion into the 'Approved Methods for the Modeling and Assessments of Air Pollutants in NSW, Australia'* (**TRC**, **2011**).

5.1 Meteorological modelling

The WRF model was applied to the available data to generate a three-dimensional upper air data file for use in CALMET. The centre of analysis for the WRF modelling used is 300030mE and 6232180mS. The simulation involved an outer grid of 306 km with 9 km grid spacing, with two nested grids with 3 km and 1 km grid spacing.

The CALMET domain was run on a domain of 10 x 10km with a 0.1km grid resolution. The available meteorological data for the 2023 calendar year from the Camden Airport AWS BoM and the DCCEEW Campbelltown West monitoring site were included in the simulation. The 2023 calendar year was selected as the representative period for modelling the Project based on a statistical analysis of meteorological conditions from six consecutive years, as outlined in **Appendix A**.

5.2 Meteorological modelling evaluation

The outputs of the CALMET modelling are evaluated using visual analysis of the wind fields and extract data. **Figure 5-1** presents a visualisation of the wind field generated by CALMET for a single hour of the modelling period (i.e. example only). The wind fields follow the terrain well and indicate the simulation produces realistic fine scale flow fields (such as terrain forced flows) in surrounding areas.

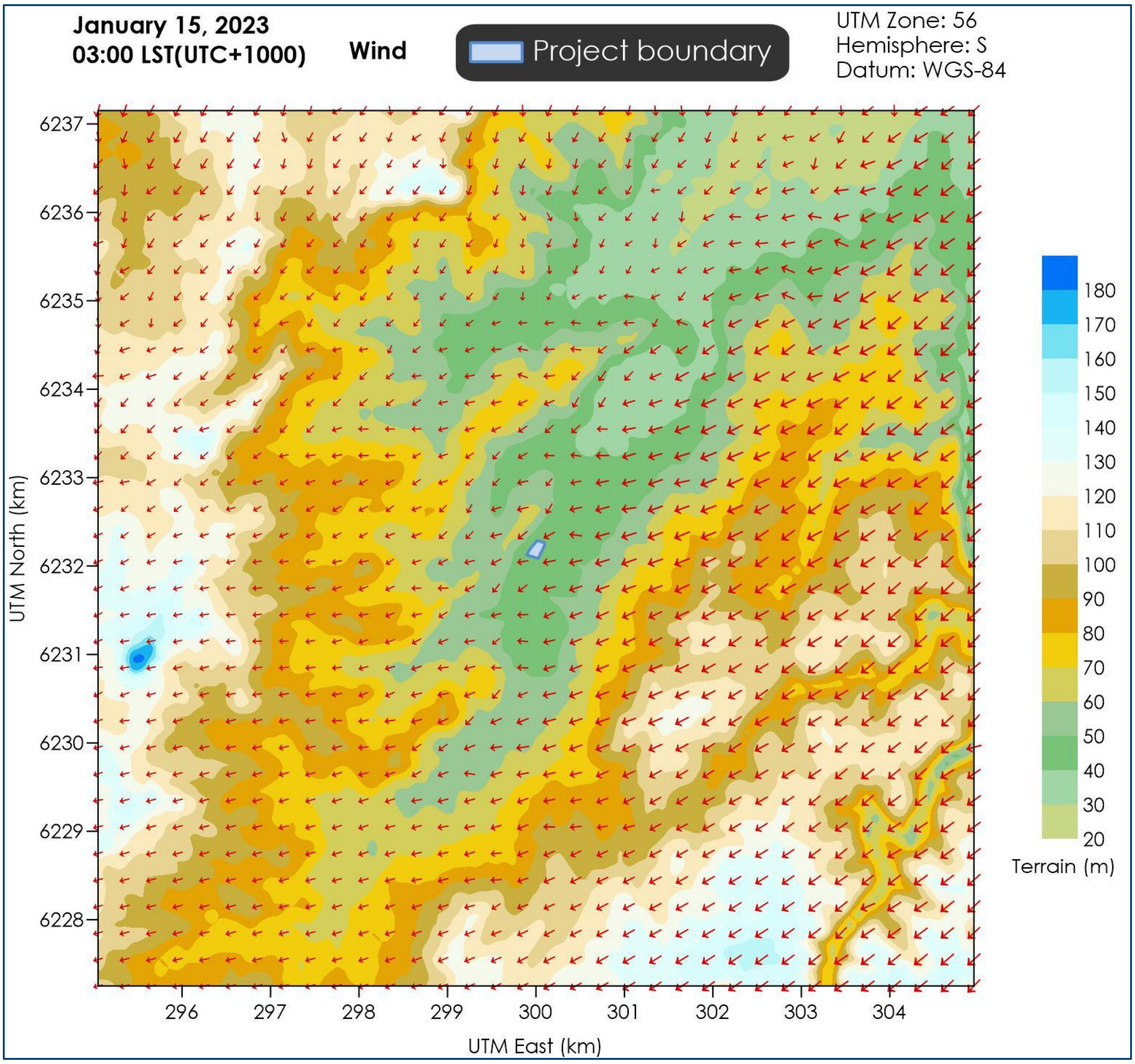

Figure 5-1: Representative 1-hour average snapshot of wind field for the Project

CALMET generated meteorological data were extracted from a point within the CALMET domain and are graphically represented in **Figure 5-2** and **Figure 5-3**.

Figure 5-2 presents the annual and seasonal windroses from the CALMET data. Overall, the windroses generated in the CALMET modelling reflect the expected wind distribution patterns of the area as determined based on the available measured data and the expected terrain effects on the prevailing winds.

Figure 5-3 includes graphs of the temperature, wind speed, mixing height and stability classification over the modelling period and shows sensible trends considered to be representative of the area.

In conclusion, the CALMET generated meteorological data for the year 2023 are considered suitable for use in the air dispersion modelling for the Project.

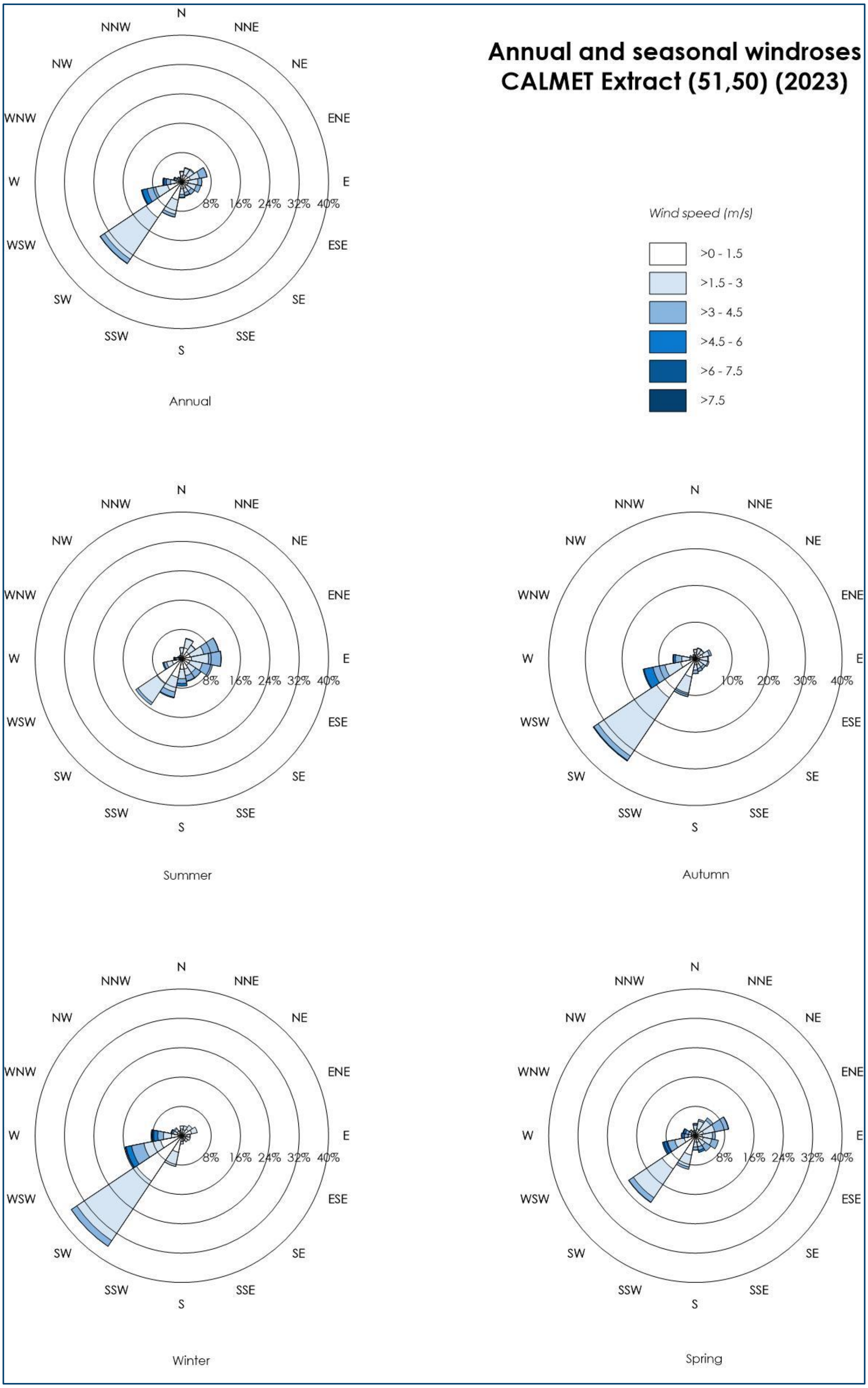

Figure 5-2: Annual and seasonal windroses from CALMET (Cell ref 5150)

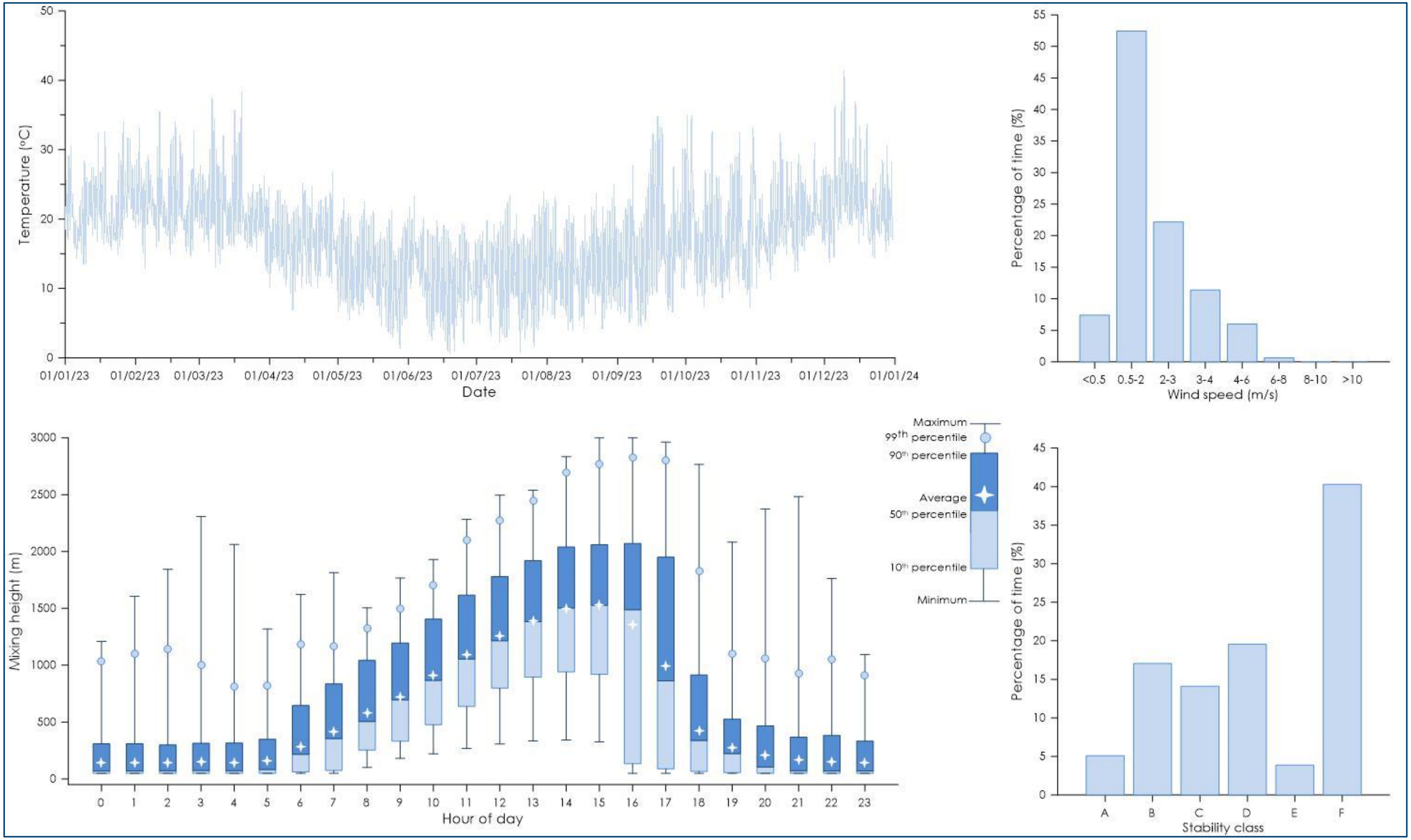

Figure 5-3: Meteorological analysis of CALMET (Cell Ref 5150)

5.3 Dispersion modelling

Dust emissions from each operational activity of the Project were represented by a series of volume sources and were included in the CALPUFF model via an hourly varying emission file. Meteorological conditions associated with dust generation (such as wind speed) and levels of dust generating activity were considered in calculating the hourly varying emission rate for each source.

As a conservative measure, the effect of the precipitation rate (rainfall) in reducing dust emissions has not been considered in this assessment.

5.4 Modelling scenario

The significant dust generating activities associated with the operation of the Project are identified as the loading/unloading of material, vehicles travelling on-site, windblown dust from exposed areas and stockpiles, and crushing and screening processes. The vehicle and plant equipment also have the potential to generate particulate emissions from the diesel exhaust.

An average scenario and a peak 24-hour scenario have been assessed with the average scenario used to assess annual average dust impacts, and the peak 24-hour scenario used to assess maximum 24-hour average dust impacts.

The annual scenario is based on the proposed annual tonnage of 600,000 tpa of material processed at the site. Based on the previous dust emissions inventory in *Concrete Recyclers Air Quality Impact Assessment* (**Wilkinson Murray, 2021**), two thirds of the received material is assumed to be concrete, which passes through the crusher, with the remaining material not passing through the crusher (e.g. sand or NDD).

To assess the peak 24-hour scenario for the Project, the estimated maximum weekday processing capacity of approximately 2,050 tonnes per day has been assumed to occur every day of the modelling period (i.e. 365 days).

Dust emission estimates have been calculated by analysing the various types of dust generating activities taking place and utilising suitable emissions sourced from both locally developed and United States Environmental Protection Agency (US EPA) developed documentation.

A summary of the estimated TSP emissions is presented in **Table 5-1**. Detailed calculations of the dust emission estimates with dust control factors considered in the model are provided in **Appendix B**. Modelled source locations are presented in **Figure 5-4**.

Table 5-1: Summary of estimated TSP dust emissions for the Project (kg/year)

Activity	Annual scenario	Peak 24-hour scenario
Main process		
Hauling imports driveway (paved)	937	1,155
Hauling imports (roundtrip) (unpaved)	3,640	4,488
Unloading material to stockpile (concrete)	62	77
Rehandle material within stockpile area (concrete)	12	15
Load to primary crusher (concrete)	62	77
Crushing (jaw crusher) (concrete)	72	89
Screening (concrete)	132	163
Screening (concrete)	132	163

Activity	Annual scenario	Peak 24-hour scenario
Crushing (cone crusher) (concrete)	72	89
Transfers between crusher and screen (2x)	37	46
Unloading material to stockpile (concrete)	62	77
Rehandle material to stockpile (concrete)	20	25
Load to pugmill (concrete)	62	77
Unloading sand and NDD to stockpile	9	11
Screening sand and NDD	66	81
Unloading sand and NDD to stockpile	23	28
Loading sand, NDD to trucks	23	28
Loading to trucks for export (concrete)	432	533
Hauling export (unpaved) (stockpile area)	3,220	3,970
Hauling exports driveway (paved)	941	1,160
Other		
Baghouse	126	126
WE - infrastructure + stockpiles	298	298
Diesel exhaust emission	643	643
Total TSP emissions	**11,083**	**13,416**

Figure 5-4: Modelled source locations

5.5 Comparison with approved operations

Dust emission estimates for the approved operations have been prepared, and both the approved operations and the proposed operations for the Project have been modelled to enable a comparative assessment of potential impacts. As the modification does not alter the processing activities, the emission estimates for the approved operations, provided in detail in **Appendix B**, are based on the same processes as the proposed operations, presented in **Table 5-1**, but with a lower throughput.

For the approved operations, the average scenario is based on an annual tonnage of 450,000tpa and maximum weekday processing of approximately 1,500 tonnes per day. **Table 5-2** presents a comparison of the estimated annual TSP emissions for both the approved operations and the Project.

This comparison shows the Project is estimated to result in an approximate 30% increase in TSP emissions, which is comparable to the increase in proposed production of 33%, (i.e. 600,000 tpa compared to 450,000 tpa).

Table 5-2: Comparison of estimated TSP emissions (kg/year)

Scenario	Annual scenario	24-hour peak scenario
Approved operation	8,530	10,280
Proposed operations	11,083	13,416
Change relative to approved operations	**30%**	**31%**

6 DISPERSION MODELLING RESULTS

This section presents the predicted air quality levels which may arise from air emissions generated by the Project.

The dispersion model predictions presented in this section include those for the operation of the Project in isolation (incremental impact) and the operation of the Project with consideration of background air quality described in **Section 4.3.4** (total cumulative impact). The results show the predicted:

- Maximum 24-hour average $PM_{2.5}$ and PM_{10} concentrations;
- Annual average $PM_{2.5}$, PM_{10} and TSP concentrations; and,
- Annual average dust (insoluble solids) deposition rates.

Associated isopleth diagrams of the dispersion modelling results illustrating the predicted dust levels in the surrounding environment and the contribution from the Project are presented in **Appendix C**.

The predicted incremental and cumulative particulate dispersion modelling results at each of the assessed receptor locations are presented in **Table 6-1**.

The predicted maximum incremental concentrations at residential and childcare receptors are less than 10% of the various cumulative dust criteria. The greatest incremental effects are predicted to be experienced at receptors located close to the Project's activities (i.e. Wor1), as expected. The predicted cumulative results indicate that all assessed receptors will experience levels below the relevant criteria for each of the assessed dust metrics.

The results also indicate the predicted levels would comply with the interim impact assessment criteria for RCS, even under the conservative assumption that the entire $PM_{2.5}$ fraction is composed of RCS, which is not expected to be the case in reality.

Overall, the predicted dust levels associated with the Project would be below the relevant criteria for the various dust metrics.

Table 6-1: Dispersion modelling results for the Project

Receptor ID	$PM_{2.5}$ (µg/m³)		PM_{10} (µg/m³)		TSP (µg/m³)	DD* (g/m²/mth)	$PM_{2.5}$ (µg/m³)	PM_{10} (µg/m³)	TSP (µg/m³)	DD* (g/m²/mth)
	Incremental						Cumulative			
	24-hr ave.	Ann. ave.	24-hr ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.	Ann. ave.
	Air quality impact criteria									
	-	-	-	-	-	2	8	25	90	4
Wor1	9.7	1.7	37.7	6.5	20.4	1.6	7.8	20.9	72.3	3.9
CC1	0.7	<0.1	2.6	0.2	0.6	<0.1	6.1	14.6	52.5	2.3
R1	1.0	<0.1	3.5	0.4	0.9	<0.1	6.2	14.8	52.8	2.4
R2	1.1	0.1	4.3	0.4	1.0	<0.1	6.2	14.8	52.9	2.4
R3	1.2	0.1	4.8	0.4	1.0	<0.1	6.2	14.8	52.9	2.4
R4	0.9	<0.1	3.5	0.3	0.7	<0.1	6.2	14.7	52.6	2.4
IND1	7.6	1.1	29.1	4.1	13.1	1.2	7.1	18.5	65.0	3.5
IND2	5.5	0.9	22.7	3.0	8.6	0.7	6.9	17.4	60.5	3.0

*Deposited dust

6.1 Assessment of cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations

When assessing the cumulative 24-hour average impacts based on model predictions, challenges arise with identification and quantification of emissions from non-modelled sources over the 365 separate 24-hour periods modelled in the year.

Due to these factors, an assessment of cumulative 24-hour average $PM_{2.5}$ and PM_{10} impacts was undertaken in accordance with Section 11.2 of the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (**NSW EPA**, **2022**). The "Level 2 assessment - Contemporaneous impact and background approach" was applied to assess potential impacts. In simple terms, the Level 2 assessment involves matching one year of ambient air quality monitoring data with meteorological data representing the same period.

Table 6-2 provides a summary of the findings from the Level 2 assessment at the most impacted receptor location (Wor1), and most impacted residential receptor location (R3) due to the Project. Detailed tables of the assessment results are provided in **Appendix D**.

The results in **Table 6-2** indicate that the Project will not increase the number of days above the 24-hour average criterion at the most impacted privately owned receptors, and thus meets the EPA cumulative impact assessment criteria at all receptors at all times.

Table 6-2: NSW EPA contemporaneous assessment - maximum number of additional days above 24-hour average criterion

Receptor ID	$PM_{2.5}$	PM_{10}
Wor1	0	0
R3	0	0

Time series plots of the predicted cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations for Receptor Wor1 are presented in **Figure 6-1**. It should be noted this timeseries shows the peak 24-hour emissions scenario for the proposed modification, which models the maximum emission rate continuously throughout the year to assess compliance with 24hr criteria. This scenario is not representative of the Projects annual contribution to air quality, which was separately modelled and the results of which are presented in the annual averages in **Table 6-1.**

The blue bars show the existing background levels and the orange bars in the figures show the predicted additional levels due to the Project above background levels (i.e. the orange sections of the bars indicate the amount of increased dust). The top of the orange bar indicates the predicted future cumulative level associated with the Project and background combined. The results indicate that the predicted $PM_{2.5}$ and PM_{10} levels would not result in any additional days of exceedance of the cumulative 24-hour average $PM_{2.5}$ and PM_{10} criteria due to the operation of the Project.

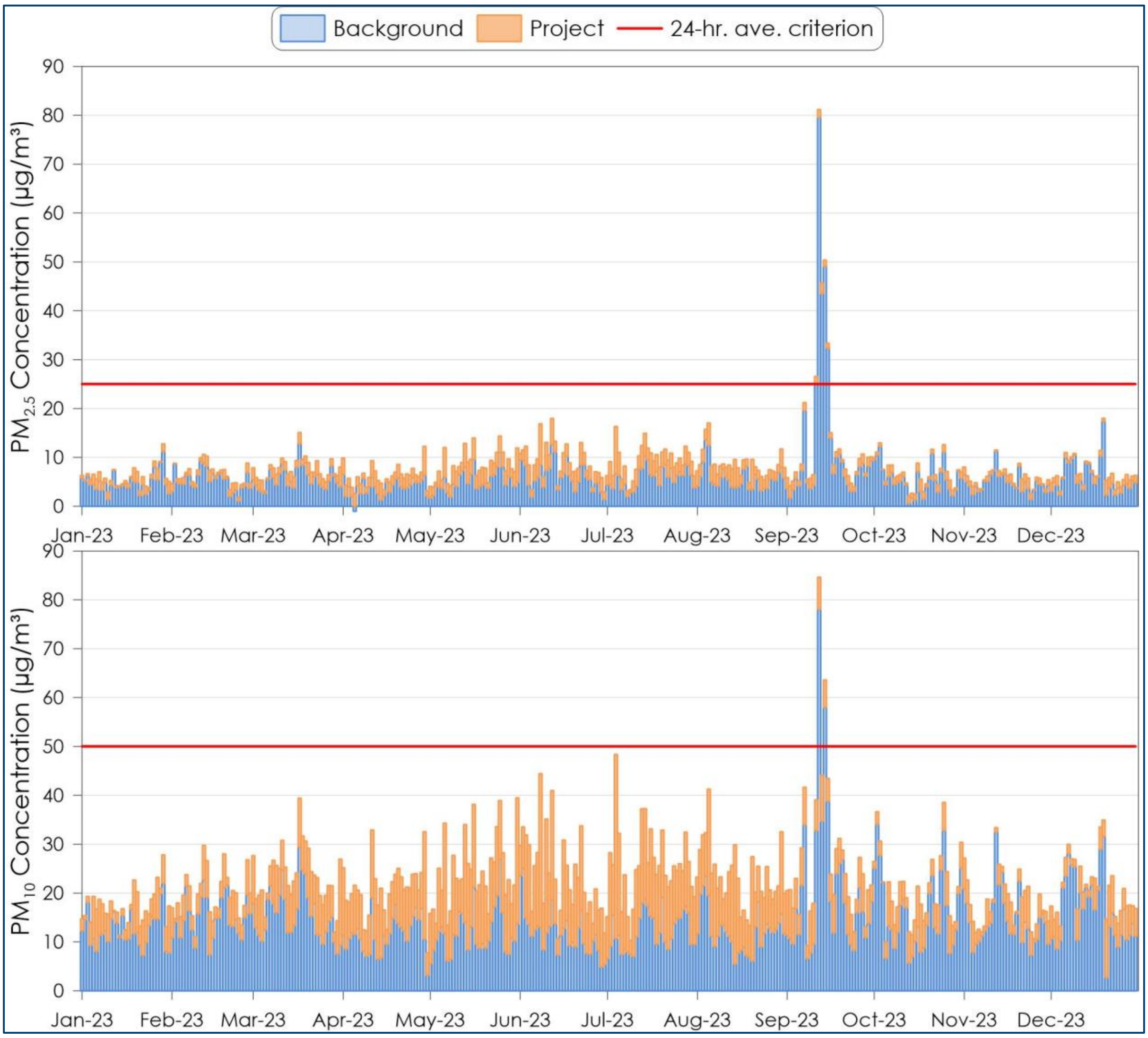

Figure 6-1: Time series plots of predicted maximum cumulative 24-hour average $PM_{2.5}$ and PM_{10} concentrations for Receptor Wor1

6.2 Comparison of modelling predictions with Approved operations

A comparison of the predicted incremental 24-hour and annual average PM_{10} levels for the approved operations and Project is presented in **Figure 6-2** and **Figure 6-3**, respectively. The isopleths for the two scenarios are overlaid to allow for a direct comparison and demonstrate the change in impacts associated with the increase in production.

The comparison highlights that the greatest change in impacts occur close to the site and that the change in impacts at the residential locations are likely to be negligible.

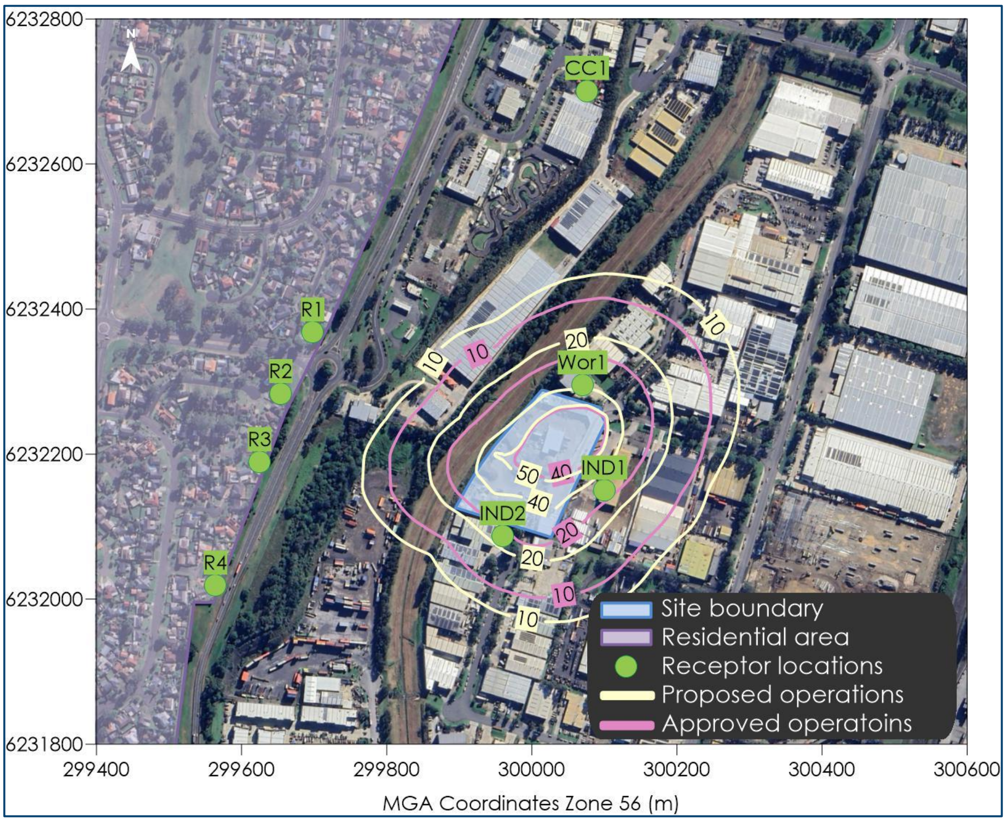

Figure 6-2: Comparison of predicted incremental maximum 24-hour average PM_{10} concentrations for the approved operations and the Project (µg/m³)

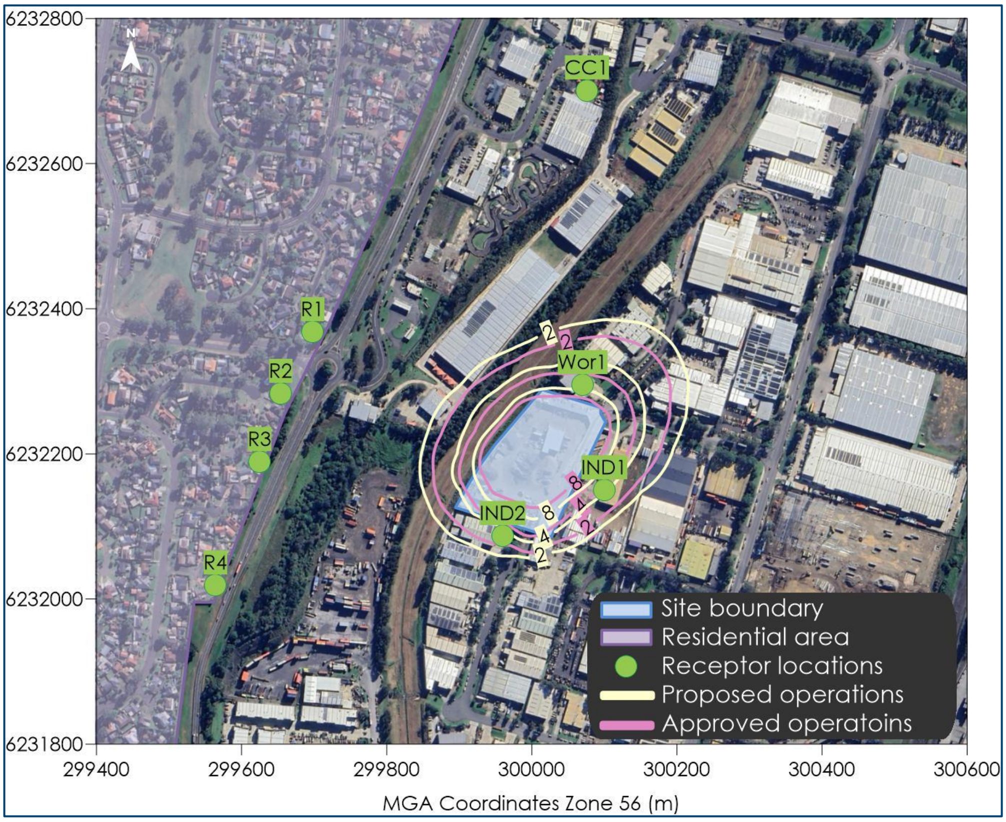

Figure 6-3: Comparison of the predicted incremental annual average PM_{10} concentrations for the approved operations and the Project (µg/m³)

7 DUST MITIGATION AND MANAGEMENT

The operations of the Project have the potential to generate dust emissions. To ensure that activities associated with the site have a minimal effect on the surrounding environment, a range of best practice dust control and mitigation measures would continue to be utilised.

CR Plus currently employ a number of air quality control measures at the Minto RRF that are included within the site's Air Quality Management Plan (AQMP) (**Todoroski Air Sciences, 2022**). It is recommended that existing air quality control measures continue to be applied.

The modelling predictions for the Project do not indicate any exceedance of the relevant dust impact assessment criteria at the assessed receptors. Given this situation, there are no specific ambient air quality monitoring recommendations for the Project at the receptors. It is anticipated that the site's existing air quality monitoring network be maintained for the Project. Retaining the current air quality monitoring program will allow for identification in any changes to trends in the data due to the Project and adapt as necessary.

8 GREENHOUSE GAS ASSESSMENT

The activities associated with the Project will result in GHG emissions due to diesel and electricity consumption required to operate the plant and equipment for processing material and the transport of product material off-site. This assessment focuses on the 'Project Only' emissions, as defined in the *NSW Guide for Large Emitters* (**NSW EPA, 2025**), estimated based on the proposed change in annual production.

8.1 GHG emission scenario

The Project seeks to increase production at the facility from the approved production of 450,000 tpa to 600,000 tpa, an increase of 150,000 tpa. The 'Project Only' GHG emissions are estimated based on the incremental change in production relative to the approved rate.

The diesel and electricity requirements are calculated based on the historical usage at the existing CR Plus facility at Minto between October 2024 to September 2025.

Table 8-1 presents the historical production, diesel and electricity usage for CR Plus Minto RRF along with the scaled values assuming an annual production rate of 150,000tpa of the Project.

Table 8-1: Diesel and electricity usage

Facility	CR Plus Minto	'Project Only'
Tonnage (tpa)	273,448	150,000
Diesel (litres)	176,507	96,823
Electricity (kWh)	737,835	404,740

In terms of delivery of product material to customers, the Project would dispatch an additional 150,000 tpa using 20 t road trucks, resulting in 7,500 trips. Assuming an average transport distance of 120 km per return trip, this results in approximately 900,000 km per year. Using an average truck fuel consumption rate of 53.1L/100km (**ABS, 2025**), this equates to 478 kL/year of diesel required due to the vehicle movements from the Project.

8.2 GHG emission factor

To quantify the amount of carbon dioxide equivalent (CO_2-e) material generated, emission factors for diesel use from the Australian *National Greenhouse Accounts Factors* (NGA Factors) document (**Cth DCCEEW, 2025b**) were applied.

Table 8-2 summarises the emission factors applied.

Table 8-2: Summary of emission factors

Type	Energy content factor (GJ/kL)	Emission factor			Units
		Scope 1	Scope 2	Scope 3	
Diesel - Stationary	38.6	69.9	-	17.3	kg CO_2-e/GJ
Electricity – NSW and ACT	N/A	-	0.64	0.03	kg CO_2-e/kWh

Note: GJ/kL = gigajoule per kilolitre, kg CO_2-e = kilograms of carbon dioxide equivalent & kg CO_2-e/KWh = kilograms of carbon dioxide equivalent per kilowatt hour

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8.3 Estimated GHG emissions

The estimated GHG emissions for the 'Project Only' scenario have been estimated based on quantity of diesel and electricity in combination with emission factors described in the previous sections. Results are presented in **Table 8-3**.

Table 8-3: Summary of estimated GHG emissions (t CO_2-e)

Activity	Scope 1	Scope 2	Scope 3
Site operation	262	259	77
Delivery of product material to customers	-	-	1,614

The 'Project Only' scenario is expected to result in an additional 521 t CO_2-e (Scope 1 + Scope 2) which is below the threshold of 25,000 t CO_2-e in accordance with the *NSW Guide for Large Emitters* (**NSW EPA, 2025**).

The estimated annual GHG emissions for Australia up to June 2024 was 440.6 Mt CO_2-e (**Cth DCCEEW, 2024**). In comparison, the estimated annual average GHG emission for the 'Project Only' scenario is 0.0005 Mt CO_2-e (Scope 1+2). Therefore, the annual contribution of GHG emissions from the 'Project Only' scenario in comparison to the Australian GHG emissions for the 2024 period is estimated to be approximately 0.0001%.

At a state level, the estimated GHG emissions for NSW in the 2022 period were 111.0 Mt CO_2-e (**Cth DCCEEW, 2025a**). The annual contribution of GHG emissions from the 'Project Only' scenario in comparison to the NSW GHG emissions for the 2022 period is estimated to be approximately 0.0005%.

8.4 Mitigation measures

Recommended GHG mitigation measures for the Project include:

- monitoring the fuel efficiency and regularly maintaining the diesel equipment;
- optimising conditions for fleet operations;
- conducting energy awareness programs for staff;
- minimising the production of waste generated on-site; and,
- a review of alternative renewable energy sources.

9 SUMMARY AND CONCLUSIONS

This report has assessed the potential air quality impacts associated with the modification to the CR-Plus RRF at Minto.

Air dispersion modelling using the CALPUFF model was applied to predict the potential for air quality impacts.

The air dispersion modelling methodology incorporated local weather data, conservative emission estimation, and existing background air quality levels. The results indicate that the Project, would not result in any exceedances of the criteria for $PM_{2.5}$, PM_{10}, TSP or dust deposition at any of the assessed receptors. Predicted levels of RCS associated with the Project are below the applicable interim impact assessment criteria.

Nevertheless, the Project will continue to operate according to a comprehensive air quality management plan to minimise emissions as far as reasonably and feasibly practicable.

The estimated annual average GHG emission for the 'Project Only' scenario is 0.0005 Mt CO_2-e (Scope 1+2), which is calculated to be approximately 0.0001% of the Australian GHG emissions for the period to June 2024 and approximately 0.0005% of the NSW GHG emissions for the 2022 period.

Overall, the assessment demonstrates that the Project would not cause any unacceptable air quality impact to the surrounding environment.

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Appendix A

Selection of Meteorological Year

Selection of meteorological year

A statistical analysis of the latest six contiguous years of meteorological data from the nearest BoM weather station with suitable available data, Camden Airport AWS, is presented in **Table A-1**.

The standard deviation of the latest six years of meteorological data spanning 2019 to 2024 was analysed against the available measured wind speed, wind direction, temperature and relative humidity. The analysis indicates that 2021, 2022 and 2023 are closest to the mean for wind speed, 2020, 2021, and 2023 are closest to the mean for wind direction, 2020 is closest to the mean for temperature and 2021, 2023, and 2024 are closest to the mean average for relative humidity. On the basis of a score weighting analysis, 2023 was found to be most representative as it was calculated to have the lowest score.

Table A-1: Statistical analysis results for Camden Airport AWS

Year	Wind speed	Wind direction	Temperature	Relative humidity	Score
2019	0.8	0.2	0.3	0.6	1.9
2020	0.8	0.1	0.1	0.3	1.2
2021	0.3	0.1	0.3	0.2	0.9
2022	0.3	0.2	0.3	0.4	1.3
2023	0.3	0.1	0.2	0.2	0.8
2024	1.1	0.2	0.2	0.2	1.8

Figure A-1 shows the frequency distributions for wind speed, temperature and relative humidity for the 2023 year compared with the mean of the 2019 to 2024 data set. The 2023 year data appear to be well aligned with the mean data.

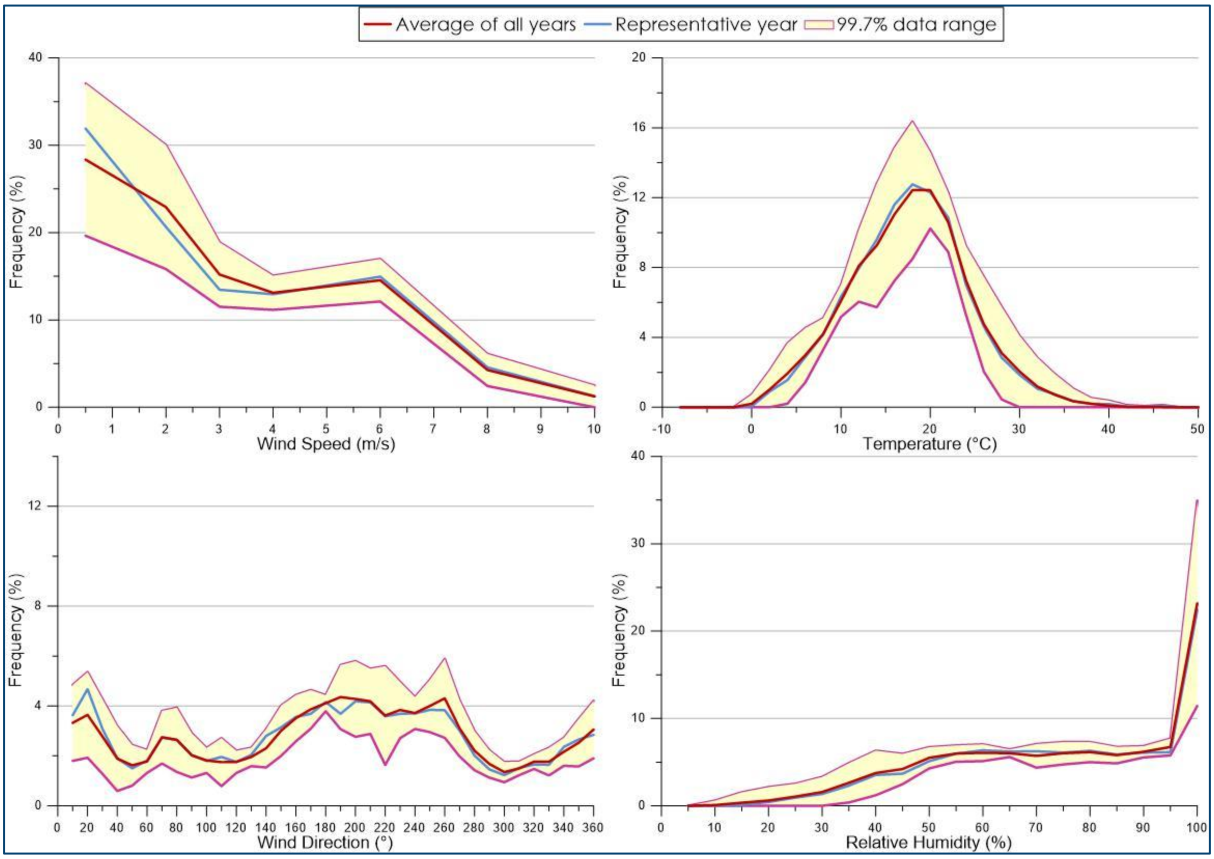

Figure A-1: Frequency distributions for wind speed, wind direction, temperature and relative humidity

Appendix B

Emission Calculations

Emission Calculation

The dust emissions from the Project have been estimated from the operational description of the proposed activities provided by the Proponent and have been combined with emissions factor equations and utilising suitable emission and load factors that relate to the quantity of dust emitted from particular activities based on intensity, the prevailing meteorological conditions and composition of the material being handled.

Emission factors and associated controls have been sourced from:

- United States (US) EPA AP42 Emission Factors (**US EPA, 1985 and Updates**);
- Office of Environment and Heritage document, "NSW Coal Mining Benchmarking Study: Best Practise Measures for Reducing Non-Road Diesel Exhaust Emissions, Final Report" (**NSW EPA, 2015**).

The emission factor equations used for each dust generating activity are outlined in **Table B-1** below. A detailed dust emission inventory for the different scenarios is presented in **Table B-2** to **Table B-4.**

Control factors include the following:

- Hauling on unpaved surfaces – 84% control for watering of trafficked areas;
- Crushing and screening – 70% control for enclosure; and,
- Wind erosion from exposed areas – 50% control for watering of exposed areas.

Table B-1: Emission factor equations

Activity	Emission factor equation		
	TSP	PM_{10}	$PM_{2.5}$
Loading / emplacing material	$EF = 0.74 \times 0.0016 \times \left(\frac{U}{2.2}^{1.3} / \frac{M}{2}^{1.4}\right) kg/tonne$	$EF = 0.35 \times 0.0016 \times \left(\frac{U}{2.2}^{1.3} / \frac{M}{2}^{1.4}\right) kg/tonne$	$EF = 0.053 \times 0.0016 \times \left(\frac{U}{2.2}^{1.3} / \frac{M}{2}^{1.4}\right) kg/tonne$
Hauling on unsealed surfaces	$EF = \left(\frac{0.4536}{1.6093}\right) \times 4.9 \times (s/12)^{0.7} \times (1.1023 \times M/3)^{0.45} kg/VKT$	$EF = \left(\frac{0.4536}{1.6093}\right) \times 1.5 \times (s/12)^{0.9} \times (1.1023 \times M/3)^{0.45} kg/VKT$	$EF = \left(\frac{0.4536}{1.6093}\right) \times 0.15 \times (s/12)^{0.9} \times (1.1023 \times M/3)^{0.45} kg/VKT$
Hauling on sealed surfaces	$EF = 3.23 \times s.L.^{0.91} \times (1.1023 \times W)^{1.02} kg/VKT$	$EF = 0.62 \times s.L.^{0.91} \times (1.1023 \times W)^{1.02} kg/VKT$	$EF = 0.15 \times s.L.^{0.91} \times (1.1023 \times W)^{1.02} kg/VKT$
Tertiary crushing (controlled)	0.0006	0.00027	0.00005
Screening (controlled)	$EF = 0.0011\ kg/tonne$	$EF = 0.00037\ kg/tonne$	$EF = 0.000025\ kg/tonne$
Wind erosion on exposed areas, stockpiles	$EF = 850\ kg/ha/year$	$0.5 \times TSP$	$0.075 \times TSP$

EF = emission factor, U = wind speed (m/s), M = moisture content (%), s = silt content (%), s.L. = silt loading (g/m^2), W = average weight of vehicle (tonne), VKT = vehicle kilometres travelled (km).

Table B-2: Dust Emissions Inventory – Approved Operations (average)

Activity	TSP emission (kg/y)	PM10 emission (kg/y)	PM25 emission (kg/y)	Intensity	Units	EF - TSP	EF - PM10	EF - PM25	Units	Var 1	Units	Var 2	Units	Var 3 - TSP	Var 3 - PM10	Var 3 - PM25	Units	Var 4	Units	Var 5	Units	Var 6	Units
Main process																							
Hauling imports driveway (paved)	703	135	33	450,000	t/yr	0.0016	0.0003	0.0001	kg/t	16.0	t/load	0.2	km/return	0.125	0.024	0.006	kg/VKT	2.0	sL (g/m^2)	17.6	ave weight (t)		
Hauling imports (roundtrip) (unpaved)	2,730	702	70	450,000	t/yr	0.038	0.010	0.001	kg/t	16	t/load	0.4	km/return	1.7	0.4	0.04	kg/VKT	5.0	S.C %	17.6	weight (t)	84	C %
Unloading material to stockpile (concrete)	47	22	3	300,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material within stockpile area (concrete)	9	4	1	60,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to primary crusher (concrete)	47	22	3	300,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Crushing (jaw crusher) (concrete)	54	24	5	300,000	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Screening (concrete)	99	33	2	300,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Screening (concrete)	99	33	2	300,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Crushing (cone crusher) (concrete)	54	24	5	300,000	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Transfers between crusher and screen (2x)	28	13	2	600,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %									70	C %
Unloading material to stockpile (concrete)	47	22	3	300,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material to stockpile (concrete)	15	7	1	99,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to pugmill (concrete)	47	22	3	300,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Unloading sand and NDD to stockpile	6	3	0	150,000	t/yr	0.00004	0.00002	0.00000	kg/t	0.91	(ws/2.2)^1.3 (m/s)	20	M.C %										
Screening sand and NDD	50	17	1	150,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Unloading sand and NDD to stockpile	17	8	1	150,000	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading sand, NDD to trucks	17	8	1	150,000	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading to trucks for export (concrete)	324	153	23	300,000	t/yr	0.00108	0.00051	0.00008	kg/t	0.91	(ws/2.2)^1.3 (m/s)	2	M.C %										
Hauling export (unpaved) (stockpile area)	2,415	620	62	450,000	t/yr	0.034	0.009	0.001	kg/t	20.0	t/load	0.4	km/return	1.9	0.5	0.05	kg/VKT	5.0	S.C %	22	weight (t)	84	C %
Hauling exports driveway (paved)	706	136	33	450,000	t/yr	0.0016	0.0003	0.0001	kg/t	20.0	t/load	0.2	km/return	0.157	0.030	0.007	kg/VKT	2.0	sL (g/m^2)	22.0	ave weight (t)		
Other																							
Baghouse	126	60	9																				
WE - infrastructure + stockpiles	298	149	22	0.7	ha	850	425	64	kg/ha/year													50	C %
Diesel exhaust emission	594	594	576																				
Total TSP emissions (kg/yr.)	8,530	2,812	863																				

Table B-3: Dust Emissions Inventory – Proposed Operations (average)

Activity	TSP emission (kg/y)	PM10 emission (kg/y)	PM25 emission (kg/y)	Intensity	Units	EF - TSP	EF - PM10	EF - PM25	Units	Var 1	Units	Var 2	Units	Var 3 - TSP	Var 3 - PM10	Var 3 - PM25	Units	Var 4	Units	Var 5	Units	Var 6	Units
Main process																							
Hauling imports driveway (paved)	937	180	44	600,000	t/yr	0.0016	0.0003	0.0001	kg/t	16.0	t/load	0.2	km/return	0.125	0.024	0.006	kg/VKT	2.0	sL (g/m^2)	17.6	ave weight (t)		
Hauling imports (roundtrip) (unpaved)	3,640	935	94	600,000	t/yr	0.038	0.010	0.001	kg/t	16	t/load	0.4	km/return	1.7	0.4	0.04	kg/VKT	5.0	S.C %	17.6	weight (t)	84	C %
Unloading material to stockpile (concrete)	62	29	4	400,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material within stockpile area (concrete)	12	6	1	80,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to primary crusher (concrete)	62	29	4	400,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Crushing (jaw crusher) (concrete)	72	32	6	400,000	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Screening (concrete)	132	44	3	400,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Screening (concrete)	132	44	3	400,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Crushing (cone crusher) (concrete)	72	32	6	400,000	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Transfers between crusher and screen (2x)	37	18	3	800,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %									70	C %
Unloading material to stockpile (concrete)	62	29	4	400,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material to stockpile (concrete)	20	10	1	132,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to pugmill (concrete)	62	29	4	400,000	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Unloading sand and NDD to stockpile	9	4	1	200,000	t/yr	0.00004	0.00002	0.00000	kg/t	0.91	(ws/2.2)^1.3 (m/s)	20	M.C %										
Screening sand and NDD	66	22	2	200,000	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Unloading sand and NDD to stockpile	23	11	2	200,000	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading sand, NDD to trucks	23	11	2	200,000	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading to trucks for export (concrete)	432	204	31	400,000	t/yr	0.00108	0.00051	0.00008	kg/t	0.91	(ws/2.2)^1.3 (m/s)	2	M.C %										
Hauling export (unpaved) (stockpile area)	3,220	827	83	600,000	t/yr	0.034	0.009	0.001	kg/t	20.0	t/load	0.4	km/return	1.9	0.5	0.05	kg/VKT	5.0	S.C %	22	weight (t)	84	C %
Hauling exports driveway (paved)	941	181	44	600,000	t/yr	0.0016	0.0003	0.0001	kg/t	20.0	t/load	0.2	km/return	0.157	0.030	0.007	kg/VKT	2.0	sL (g/m^2)	22.0	ave weight (t)		
Other																							
Baghouse	126	60	9																				
WE - infrastructure + stockpiles	298	149	22	0.7	ha	850	425	64	kg/ha/year													50	C %
Diesel exhaust emission	643	643	624																				
Total TSP emissions (kg/yr.)	11,083	3,531	996																				

Table B-4: Dust Emissions Inventory – Approved Operations (peak)

Activity	TSP emission (kg/y)	PM10 emission (kg/y)	PM25 emission (kg/y)	Intensity	Units	EF - TSP	EF - PM10	EF - PM25	Units	Var 1	Units	Var 2	Units	Var 3 - TSP	Var 3 - PM10	Var 3 - PM25	Units	Var 4	Units	Var 5	Units	Var 6	Units
Main process																							
Hauling imports driveway (paved)	866	166	40	554,800	t/yr	0.0016	0.0003	0.0001	kg/t	16.0	t/load	0.2	km/return	0.125	0.024	0.006	kg/VKT	2.0	sL (g/m^2)	17.6	ave weight (t)		
Hauling imports (roundtrip) (unpaved)	3,366	865	86	554,800	t/yr	0.038	0.010	0.001	kg/t	16	t/load	0.4	km/return	1.7	0.4	0.04	kg/VKT	5.0	S.C %	17.6	weight (t)	84	C %
Unloading material to stockpile (concrete)	57	27	4	369,867	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material within stockpile area (concrete)	11	5	1	73,973	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to primary crusher (concrete)	57	27	4	369,867	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Crushing (jaw crusher) (concrete)	67	30	6	369,867	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Screening (concrete)	122	41	3	369,867	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Screening (concrete)	122	41	3	369,867	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Crushing (cone crusher) (concrete)	67	30	6	369,867	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Transfers between crusher and screen (2x)	34	16	2	739,733	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %									70	C %
Unloading material to stockpile (concrete)	57	27	4	369,867	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material to stockpile (concrete)	19	9	1	122,056	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to pugmill (concrete)	57	27	4	369,867	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Unloading sand and NDD to stockpile	8	4	1	184,933	t/yr	0.00004	0.00002	0.00000	kg/t	0.91	(ws/2.2)^1.3 (m/s)	20	M.C %										
Screening sand and NDD	61	21	1	184,933	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Unloading sand and NDD to stockpile	21	10	2	184,933	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading sand, NDD to trucks	21	10	2	184,933	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading to trucks for export (concrete)	400	189	29	369,867	t/yr	0.00108	0.00051	0.00008	kg/t	0.91	(ws/2.2)^1.3 (m/s)	2	M.C %										
Hauling export (unpaved) (stockpile area)	2,977	765	76	554,800	t/yr	0.034	0.009	0.001	kg/t	20.0	t/load	0.4	km/return	1.9	0.5	0.05	kg/VKT	5.0	S.C %	22	weight (t)	84	C %
Hauling exports driveway (paved)	870	167	40	554,800	t/yr	0.0016	0.0003	0.0001	kg/t	20.0	t/load	0.2	km/return	0.157	0.030	0.007	kg/VKT	2.0	sL (g/m^2)	22.0	ave weight (t)		
Other																							
Baghouse	126	60	9																				
WE - infrastructure + stockpiles	298	149	22	0.7	ha	850	425	64	kg/ha/year													50	C %
Diesel exhaust emission	594	594	576																				
Total TSP emissions (kg/yr.)	10,280	3,280	923																				

Table B-5: Dust Emissions Inventory – Proposed Operations (peak)

Activity	TSP emission (kg/y)	PM10 emission (kg/y)	PM25 emission (kg/y)	Intensity	Units	EF - TSP	EF - PM10	EF - PM25	Units	Var 1	Units	Var 2	Units	Var 3 - TSP	Var 3 - PM10	Var 3 - PM25	Units	Var 4	Units	Var 5	Units	Var 6	Units
Main process																							
Hauling imports driveway (paved)	1,155	222	54	739,733	t/yr	0.0016	0.0003	0.0001	kg/t	16.0	t/load	0.2	km/return	0.125	0.024	0.006	kg/VKT	2.0	sL (g/m^2)	17.6	ave weight (t)		
Hauling imports (roundtrip) (unpaved)	4,488	1,153	115	739,733	t/yr	0.038	0.010	0.001	kg/t	16	t/load	0.4	km/return	1.7	0.4	0.04	kg/VKT	5.0	S.C %	17.6	weight (t)	84	C %
Unloading material to stockpile (concrete)	77	36	5	493,156	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material within stockpile area (concrete)	15	7	1	98,631	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to primary crusher (concrete)	77	36	5	493,156	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Crushing (jaw crusher) (concrete)	89	40	7	493,156	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Screening (concrete)	163	55	4	493,156	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Screening (concrete)	163	55	4	493,156	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Crushing (cone crusher) (concrete)	89	40	7	493,156	t/yr	0.0006	0.0003	0.0001	kg/t													70	C %
Transfers between crusher and screen (2x)	46	22	3	986,311	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %									70	C %
Unloading material to stockpile (concrete)	77	36	5	493,156	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Rehandle material to stockpile (concrete)	25	12	2	162,741	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Load to pugmill (concrete)	77	36	5	493,156	t/yr	0.00016	0.00007	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	8	M.C %										
Unloading sand and NDD to stockpile	11	5	1	246,578	t/yr	0.00004	0.00002	0.00000	kg/t	0.91	(ws/2.2)^1.3 (m/s)	20	M.C %										
Screening sand and NDD	81	27	2	246,578	t/yr	0.00110	0.00037	0.00003	kg/t													70	C %
Unloading sand and NDD to stockpile	28	13	2	246,578	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading sand, NDD to trucks	28	13	2	246,578	t/yr	0.00011	0.00005	0.00001	kg/t	0.91	(ws/2.2)^1.3 (m/s)	10	M.C %										
Loading to trucks for export (concrete)	533	252	38	493,156	t/yr	0.00108	0.00051	0.00008	kg/t	0.91	(ws/2.2)^1.3 (m/s)	2	M.C %										
Hauling export (unpaved) (stockpile area)	3,970	1,020	102	739,733	t/yr	0.034	0.009	0.001	kg/t	20.0	t/load	0.4	km/return	1.9	0.5	0.05	kg/VKT	5.0	S.C %	22	weight (t)	84	C %
Hauling exports driveway (paved)	1,160	223	54	739,733	t/yr	0.0016	0.0003	0.0001	kg/t	20.0	t/load	0.2	km/return	0.157	0.030	0.007	kg/VKT	2.0	sL (g/m^2)	22.0	ave weight (t)		
Other																							
Baghouse	126	60	9																				
WE - infrastructure + stockpiles	298	149	22	0.7	ha	850	425	64	kg/ha/year													50	C %
Diesel exhaust emission	643	643	624																				
Total TSP emissions (kg/yr.)	13,416	4,155	1,075																				

Appendix C

Isopleth Diagrams

Figure C-1: Predicted incremental maximum 24-hour average $PM_{2.5}$ concentrations (µg/m³)

Figure C-2: Predicted incremental annual average $PM_{2.5}$ concentrations (µg/m³)

Figure C-3: Predicted incremental maximum 24-hour average PM_{10} concentrations (µg/m³)

Figure C-4: Predicted incremental annual average PM_{10} concentrations (µg/m³)

Figure C-5: Predicted incremental annual average TSP concentrations (µg/m³)

Figure C-6: Predicted incremental annual average dust deposition levels (g/m²/month)

Appendix D

Further Detail Regarding 24-hour $PM_{2.5}$ and PM_{10} Analysis

Further detail regarding 24-hour average $PM_{2.5}$ and PM_{10} analysis

The analysis below provides a cumulative 24-hour $PM_{2.5}$ and a 24-hour PM_{10} impact assessment in accordance with the NSW EPA Approved Methods; refer to the worked example on Page 50 to 51 of the Approved Methods.

The background level is the ambient level at the Campbelltown West monitoring station.

The increment is the predicted level to occur at the receptor due to the Project.

The total is the sum of the background level and the predicted level. The totals may have minor discrepancies due to rounding.

Tables E-1 to **E-4** assesses the most impacted receptor (Wor1) and most impacted residential receptor (R3) and shows the predicted maximum cumulative levels at these receptors. The left half of the table examines the cumulative impact during the periods of highest background levels and the right half of the table examines the cumulative impact during the periods of highest contribution from the Project.

The green shading represents days ranked per the highest background level but below the criteria.

The blue shading represents days ranked per the highest predicted increment level but below the criteria.

The orange shading represents days where the measured background level is already over the criteria.

Any value above the $PM_{2.5}$ criterion of 25µg/m^3 or above the PM_{10} criterion of 50µg/m^3 is in **bold red.**

Table E-1: 24-hour average $PM_{2.5}$ concentration (µg/m³) – Receptor Wor1

Ranked by Highest to Lowest Predicted Background Concentration				Ranked by Highest to Lowest Predicted Incremental Concentration			
Date	Measured background level	Increment	Total cumulative 24-hr average level	Date	Measured background level	Increment	Total cumulative 24-hr average level
12/09/2023	79.6	1.6	81.2				
14/09/2023	49.1	1.3	50.4				
13/09/2023	43.5	2.2	45.7				
15/09/2023	32.4	1.0	33.4				
11/09/2023	25.0	1.6	26.6				
7/09/2023	19.6	1.6	21.2	4/07/2023	6.6	9.7	16.3
19/12/2023	17.4	0.6	18.0	8/06/2023	8.5	8.4	16.9
16/09/2023	14.0	1.0	15.0	31/05/2023	4.9	7.0	11.9
4/08/2023	13.6	2.2	15.8	20/08/2023	3.5	6.1	9.6
17/03/2023	12.8	2.3	15.1	6/05/2023	6.0	6.0	12.0
12/06/2023	12.6	5.4	18.0	29/04/2023	6.4	5.8	12.2
5/08/2023	12.5	4.5	17.0	10/06/2023	7.3	5.8	13.1
3/10/2023	12.3	0.7	13.0	14/08/2023	3.8	5.8	9.6
12/11/2023	11.3	0.2	11.5	12/06/2023	12.6	5.4	18.0
29/01/2023	11.2	1.6	12.8	13/05/2023	8.0	4.8	12.8

Table E-2: 24-hour average $PM_{2.5}$ concentration (µg/m³) – Receptor R3

Ranked by Highest to Lowest Predicted Background Concentration				Ranked by Highest to Lowest Predicted Incremental Concentration			
Date	Measured background level	Increment	Total cumulative 24-hr average level	Date	Measured background level	Increment	Total cumulative 24-hr average level
12/09/2023	79.6	0.3	79.9				
14/09/2023	49.1	0.2	49.3				
13/09/2023	43.5	0.3	43.8				
15/09/2023	32.4	0.0	32.4				
11/09/2023	25.0	0.2	25.2				
7/09/2023	19.6	0.1	19.7	5/06/2023	1.9	1.2	3.1
19/12/2023	17.4	0.0	17.4	24/07/2023	4.9	0.8	5.7
16/09/2023	14.0	0.0	14.0	15/05/2023	6.6	0.7	7.3
4/08/2023	13.6	0.0	13.6	22/05/2023	6.2	0.7	6.9
17/03/2023	12.8	0.1	12.9	21/06/2023	5.0	0.7	5.7
12/06/2023	12.6	0.1	12.7	12/05/2023	7.3	0.6	7.9
5/08/2023	12.5	0.1	12.6	22/07/2023	6	0.6	6.6
3/10/2023	12.3	0.0	12.3	16/07/2023	6.5	0.6	7.1
12/11/2023	11.3	0.2	11.5	19/07/2023	4.3	0.6	4.9
29/01/2023	11.2	0.1	11.3	11/06/2023	7.8	0.6	8.4

Table E-3: 24-hour average PM_{10} concentration ($\mu g/m^3$) – Receptor Wor1

Ranked by Highest to Lowest Predicted Background Concentration				Ranked by Highest to Lowest Predicted Incremental Concentration			
Date	Measured background level	Increment	Total cumulative 24-hr average level	Date	Measured background level	Increment	Total cumulative 24-hr average level
12/09/2023	**78.1**	6.5	**84.6**				
14/09/2023	**58.0**	5.6	**63.6**				
15/09/2023	38.8	4.6	43.4	4/07/2023	10.7	37.7	48.4
13/09/2023	34.7	9.4	44.1	8/06/2023	13.0	31.4	44.4
2/10/2023	34.1	2.5	36.6	31/05/2023	13.7	25.8	39.5
7/09/2023	34.0	7.7	41.7	14/08/2023	5.5	24.4	29.9
11/09/2023	32.8	6.3	39.1	10/06/2023	11.9	23.3	35.2
25/10/2023	32.8	5.7	38.5	6/05/2023	11.7	22.6	34.3
12/11/2023	32.5	0.9	33.4	12/06/2023	18.7	22.3	41.0
19/12/2023	31.6	3.3	34.9	29/04/2023	10.6	22.0	32.6
17/03/2023	29.4	10.0	39.4	5/08/2023	19.5	21.7	41.2
18/12/2023	29.0	4.5	33.5	20/08/2023	6.1	21.3	27.4

Table E-4: 24-hour average PM_{10} concentration ($\mu g/m^3$) – Receptor R3

Ranked by Highest to Lowest Predicted Background Concentration				Ranked by Highest to Lowest Predicted Incremental Concentration			
Date	Measured background level	Increment	Total cumulative 24-hr average level	Date	Measured background level	Increment	Total cumulative 24-hr average level
12/09/2023	**78.1**	1.3	**79.4**				
14/09/2023	**58.0**	0.6	**58.6**				
15/09/2023	38.8	0.1	38.9	5/06/2023	11.2	4.8	16.0
13/09/2023	34.7	1.6	36.3	24/07/2023	13.8	3.6	17.4
2/10/2023	34.1	0.6	34.7	15/05/2023	13.1	3.2	16.3
7/09/2023	34.0	0.2	34.2	22/07/2023	8.5	2.7	11.2
11/09/2023	32.8	0.8	33.6	12/05/2023	15.8	2.6	18.4
25/10/2023	32.8	0.3	33.1	21/06/2023	12.9	2.6	15.5
12/11/2023	32.5	0.6	33.1	19/07/2023	11.9	2.6	14.5
19/12/2023	31.6	0.1	31.7	11/06/2023	13.2	2.4	15.6
17/03/2023	29.4	0.6	30.0	22/05/2023	14.2	2.4	16.6
18/12/2023	29.0	0.4	29.4	25/07/2023	14.8	2.3	17.1

APPENDIX D

NOISE IMPACT ASSESSMENT

mac

Muller Acoustic Consulting

Document Information

Noise and Vibration Impact Assessment

Minto Resource Recovery Facility Modification 2

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Minto, NSW

Prepared for: CR Plus Pty Ltd

C/- Element Environment Pty Ltd

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PROJECT MANAGER	PREPARED BY	REVIEWED BY	DATE	REPORT NO
Dale Redwood	Nicholas Shipman	Oliver Muller	24 February 2026	MAC252458-01RP2V2

CONTENTS

1 Introduction

Muller Acoustic Consulting Pty Ltd (MAC) has been commissioned by Element Environment Pty Ltd (Element) on behalf of CR Plus Pty Ltd (CR Plus) to prepare a Noise and Vibration Impact Assessment (NVIA) for the proposed modification (MOD 2) to the Minto Resource Recovery Facility (RRF) (SSD-5339) located at 7 Montore Road, Minto, NSW (the 'site').

The NVIA has quantified potential operational, sleep disturbance and road traffic noise emissions from the project and recommends reasonable and feasible noise controls where required.

This assessment has been undertaken in accordance with the following documents:

- NSW Environment Protection Authority (EPA), Noise Policy for Industry (NPI) 2017;
- NSW Department of Environment and Climate Change (DECC), NSW Interim Construction Noise Guideline (ICNG), 2009;
- NSW Department of Environment, Climate Change and Water (DECCW) – NSW Road Noise Policy (RNP), March 2011;
- NSW Department of Environment and Conservation (DEC) – NSW Environmental Noise Management – Assessing Vibration: a Technical Guideline (the NSW vibration guideline), February 2006;
- NSW Environment Protection Authority (EPA), Approved Methods for the measurement and analysis of environmental noise in NSW, 2022;
- Australian Standard AS 1055:2018 - Acoustics - Description and measurement of environmental noise - General Procedures;
- International Organisation for Standardisation (ISO) 9613-1:1993 (ISO9613:1) - Acoustics - Attenuation of Sound During Propagation Outdoors - Part 1: Calculation of the Absorption of Sound by the Atmosphere;
- International Organisation for Standardisation (ISO) 9613-2:1996 (ISO9613:2) - Acoustics - Attenuation of Sound during Propagation Outdoors - Part 2: General Method of Calculation; and
- ISO/TR 17534-3 - Acoustics — Software for the calculation of sound outdoors — Part 3: Recommendations for quality assured implementation of ISO 9613-2 in software according to ISO 17534-1.

A glossary of terms, definitions and abbreviations used in this report is provided in Appendix A.

1.1 Assessment Requirements

The NVIA has been prepared in accordance with the NSW Department of Planning, Housing and Infrastructure (DPHI) Secretary's Environmental Assessment Requirements (SEARs) for the Project, issued on 28 November 2025. The SEARs identify matters which must be addressed in the assessment and essentially form the Project's terms of reference. **Table 1** lists requirements relevant to this NVIA and is the basis of this assessment report.

Table 1 Noise Related SEARs and Agency Requirements

SEAR
Noise & Vibration: Quantitative assessment of operational and transport noise impacts per EPA guidelines.

The project would not include any vibration intensive activities during MOD 2. Hence, vibration emissions from the project are not considered further within this assessment.

2 Project Description

2.1 Project Site

CR Plus owns and operates the existing RRF at 7 Montore Road, Minto, NSW, legally defined as Lot 52 DP 618900 (refer to **Figure 1**).

The site is in Minto, a predominantly industrial suburb over 37 kilometres (km) southwest of the Sydney Central Business District (CBD). The site is located within the Macarthur region of the Campbelltown local government area (LGA) and is zoned E4 – General Industrial under the Campbelltown Local Environment Plan 2015 (CLEP).

Access to the site is via a single entry and exit driveway at the northeastern site boundary off Montore Road.

The site is predominantly sealed with 5% cement stabilised road base, concrete or compact asphalt and contains the following build components (refer to **Figure 2**):

- light vehicle carpark;
- sealed and compacted access roads;
- weighbridge and site office;
- wheel wash;
- maintenance store;
- water storage tanks;
- water treatment plant;
- enclosed sand washing plant;
- enclosed crushing and screening plant;
- pugmill;
- material storage bays and internal push walls; and
- enclosed Non-Destructive Digging (NDD) waste recycling plant, as per Modification 1 (lodged with DPHI December 2025 and is currently under assessment at the time of writing the NVIA).

The site is largely surrounding by industrial facilities with an approximately 50m wide artificial drainage corridor (Bow Bowing Creek) directly to the west, Sydney Cook Islands Seventh-day Adventist Church to the north, and industrial facilities directly to the east and south.

The closest residences are located approximately 265m to the west of the site, opposite Campbelltown Road, and separated from the site by other industrial premises.

An Acoustic Review (AR) was recently lodged (MOD-1) for the existing RRF in relation to the construction, receival and processing of a new waste stream for unprocessed (NDD) material, within the approved 450,000tpa capacity for the RRF. NDD plant and equipment is proposed to be installed within an approved shed. The receival and processing of waste for MOD-1 is not anticipated to generate any additional truck movements on site, nor does it involve an increase of approved processing capacity for the project.

2.2 Approved Operations

The RRF is currently approved to receive and process up to 450,000tpa of non-putrescible general solid waste (bricks, concrete, asphalt, sandstone and sand) from the building and demolition industry, and store up to 50,000 tonnes (t) of unprocessed waste and 22,000t of processed waste (product) at any one time.

The RRF utilises a sand washing plant, pugmill, concrete and brick processing plant to produce the following products:

- road base;
- 20mm aggregate;
- 10mm aggregate;
- brick sand; and
- wasted excavation sand.

Waste is typically delivered to the site via trucks with an average capacity of 16t, whilst product is transported from the site in vehicles with an average capacity of 20t.

The RRF currently operates under environment protection licence (EPL) 21828.

2.2.1 Existing Hours of Operation

The RRF is approved to operate during the following hours:

Truck deliveries and pick-ups:

- Monday to Friday 6am to 7pm;
- Saturday 7am to 4pm; and
- No work is to be undertaken on Sunday and public holidays.

Operation (including crushing, screening, pugmill and sand washing):

- Monday to Friday 7am to 6pm;
- Saturday 7am to 4pm; and
- No work is to be undertaken on Sunday and public holidays.

2.2.2 Existing Operational Process

Covered trucks enter the site via the northeastern driveway and travel around the site via the approved designated circulation routes.

Concrete and Brick Processing

Trucks delivering concrete and bricks are directed to the receival area and tipped onto the hardstand. A front-end loader spreads the material out for inspection prior to acceptance. Any material identified as unsuitable is reloaded and transported offsite. Accepted materials are processed as follows:

- An excavator fitted with a hydraulic hammer or jaw crusher breaks oversized concrete pieces into smaller fragments to facilitate safe handling and ensure the material is appropriately sized for feeding into the crusher.
- A front-end loader then loads the size-reduced concrete and bricks into the feed hopper. A vibrating grizzly feeder separates fine material (≤75 mm) and transfers it directly to the conveyor, bypassing the crusher and reducing energy consumption.
- The remaining material is fed into a fixed jaw crusher, which reduces oversized concrete and brick into a nominal 0–100 mm product.
- Crushed material is then transferred via conveyor past an overband magnet, which removes steel from the material. Recovered steel is then stockpiled and transported off-site for recycling by a licensed contractor.
- Crushed material passes through a vibrating screen with multiple decks to separate it into fractions (e.g. sand, 10 mm aggregate, 20 mm aggregate). Oversize material is directed to a secondary cone crusher for further size reduction before being re-screened in a closed-loop process until the desired product size is achieved.
- Trucks are loaded with processed products using a front-end loader and exit the facility in a forward direction. Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility.

Sand Washing

Excavated sand is delivered to the sand washing plant and tipped within the receival area before processing, as follows:

- A front-end loader loads sand into the feed hopper, which discharges material via conveyor to the wet screen. As material travels across the screen media, it is sprayed with high-pressure water to clean and grade the material. The screen separates two aggregate fractions which are stockpiled adjacent to the plant for transfer to the crushing plant for further processing. The slurry and wash water pass through the screen flow into a sump, which acts as the header tank for the next stage of washing.
- Slurry from the sump is pumped under pressure into a hydrocyclone to separate coarse particles, which discharge via the underflow to a dewatering screen for final moisture removal. The overflow, containing fine silt, is returned to the sump for further washing and silt removal.
- Water containing suspended silt (approximately 5% solids) flows over the weir in the sump and is pumped to a high-rate thickener. A Coagulant & flocculant is added to allow solids to rapidly settle at the bottom of the thickener, where mechanical rakes gather the silt for removal. Clarified water from the thickener is transferred to holding tanks for reuse within the washing process. Thickened silt is pumped to the concrete & brick processing plant and used on watering sprays fitted on the discharge conveyor.
- The sand washing plant operates as a closed-loop system, with all process water collected, clarified, and returned for reuse. Make-up water is only required to replace moisture lost in the final products, silt cake, and through evaporation. Site water storage tanks with a total capacity of 500 kL are maintained and topped up with mains water as required.
- Washed sand and aggregates are loaded into trucks using a wheeled loader. Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility.

Pug Mill Mixing

The pug mill is used to mix processed sand or road base with cement binder and/or water to produce stabilised materials for construction use.

- A wheel loader or excavator feeds sand or road base into the receiving hopper. Cement is stored in a 40-tonne silo above the unit and metered into the mixing chamber via a calibrated drum conveyor. Water is added at this stage to condition the material and minimise dust generation.
- Dual counter-rotating shafts with pitched paddles knead and fold the material, ensuring thorough mixing of all components.
- Mixed product is discharged via a conveyor onto the stockpile located adjacent to the pug mill. Material is then loaded into trucks with a wheel loader for dispatch. Trucks pass through a wheel wash and are weighed on the site weighbridge before departing the facility.

NDD Processing

NDD waste received at the site (as proposed in Modification 1) will be processed as follows:

- NDD trucks will enter the site via the weighbridge as per existing arrangements.
- Drivers will perform a material declaration form and have their loads tested for pH and conductivity to check for conformance with the applicable EPL and Resource Recovery Order (RRO).
- If accepted, trucks will be directed to one of two NDD receival bays for unloading.
- NDD waste will be tipped into a slurry pit which will screen foreign objects such as metals, plastics (e.g. PVC pipe and conduit), ceramics, roots or other plant matter that cannot fit through the pump screen (80 mm).
- NDD slurry will be pumped through a dewatering screen and cyclone filter which will separate coarse soil fractions and aggregates from the NDD slurry.
- Coarse soil fractions and aggregates will be fed onto a radial conveyor and stored in bays where it is visually inspected and tested for physical and chemical properties in accordance with the applicable EPL and RRO.
- Unsuitable or contaminated material will be disposed of off-site at an appropriately licensed waste facility.
- Acceptable material will be collected by front-end loader and taken to the crushing plant for further processing with the existing concrete and brick waste stream.
- Dirty water (with entrained fines) from the dewatering process will be directed to the existing water treatment plant for treatment and reuse for dust suppression or process water.

2.3 Proposed Operations

CR Plus is seeking to modify the consent (Modification 2, herein referred to as the modification or MOD 2) under Section 4.55(2) of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act) to:

- increase the amount of material received and processed at the site from 450,000 tonnes per annum (tpa) to 600,000tpa;
- NDD waste receival (tipping) 24 hours a day, seven (7) days a week and NDD waste processing 24 hours a day, six (6) days a week (excluding Sunday); and
- receive and process soil classified as General Solid Waste (GSW).

Processing NDD waste involves the simultaneous operation of the Water Treatment Plant. It is noted that concrete and brick processing (ie. crushing activities) are not included in the NDD waste processing stream during the night period. Soils proposed under this modification will be processed as per the existing operational process for sand. Therefore, the increase in processing capacity does not require a change in approved waste and product storage limits, as existing plant and equipment have spare capacity to process additional materials.

No site upgrades or additional equipment, plant or infrastructure are required to facilitate the increased processing volumes or the processing of new materials. Construction for the modification would comprise building an additional storage bay for soils within the existing storage bay area. Construction activities are accordingly minor in scale and duration (less than 3 weeks), leading to minimal environmental impacts.

The increased volume of material received and processed at the site will result in additional traffic movements to transport the material to and from the site.

No change is proposed to Condition A6(b) of the consent, which limits storage to 50,000 tonnes of unprocessed waste and 22,000 tonnes of processed waste (product) at any one time.

2.3.1 Proposed Hours of Operations

The proposed hours of operation are:

NDD waste truck deliveries:

- 24 hours a day, seven (7) days a week.

Other truck deliveries and pick-ups:

- Monday to Friday, 6am to 7pm;
- Saturday, 7am to 4pm;
- Sundays and public holidays, No work.

Operation (including crushing, screening, pug mill and sand washing):

- Monday to Friday, 7am to 6pm;
- Saturday, 7am to 4pm;
- Sundays and public holidays, No work.

NDD waste processing (dewatering) and WTP operation:

- 24 hours a day, six (6) days a week;
- Sundays and public holidays, No work.

FIGURE 1

LOCALITY PLAN

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

- Project Area
- E4 - General Industrial
- R2 - Low Density Residential
- Monitoring Location

0 25 50 75 100 m

N

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FIGURE 2
PROJECT LAYOUT
MAC252458-01
Minto RRF
7 Montore Road, Minto, NSW
Lot 52 DP 618900

KEY

- Water Storage Tanks
- Pugmill
- Water Treatment Plant
- Wheel Wash
- Weighbridge/Office
- Perimeter Walls (6 metres)
- Enclosed Crusher and Screen
- Enclosed Sand Washing Plant
- NDD Separation Plant
- Maintenance Workshop
- Access Road
- Light Vehicle Carpark

0 10 20 30 40 m

N

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2.4 Receiver Review

A summary of the nearest potentially affected receivers in each Noise Catchment Area (NCA) is provided in **Table 2**. **Figure 3** provides a locality plan showing the position of these receivers in relation to the project.

Table 2 NCA and Receiver Type

NCA	Suburb/Area	Receiver Type	Land Zoning	Street Location	Distance from Site
NCA 01	St Andrews	Suburban Residential (R01-R28)	R2	Campbelltown Road	290 ~ West
NCA 02	Minto	Industrial Premises (I01-I08)	E4	Montore Road Airds Road Pembury Road Swettenham Road Swaffham Road	Adjacent ~ All Directions
		Place of Worship (PoW01)		Montore Road	Adjacent ~North

NCA02 generally contains industrial receivers within the land use zoning E4 – General Industrial. As per the NPI, 2017, PoW01 is assessed as an isolated residence.

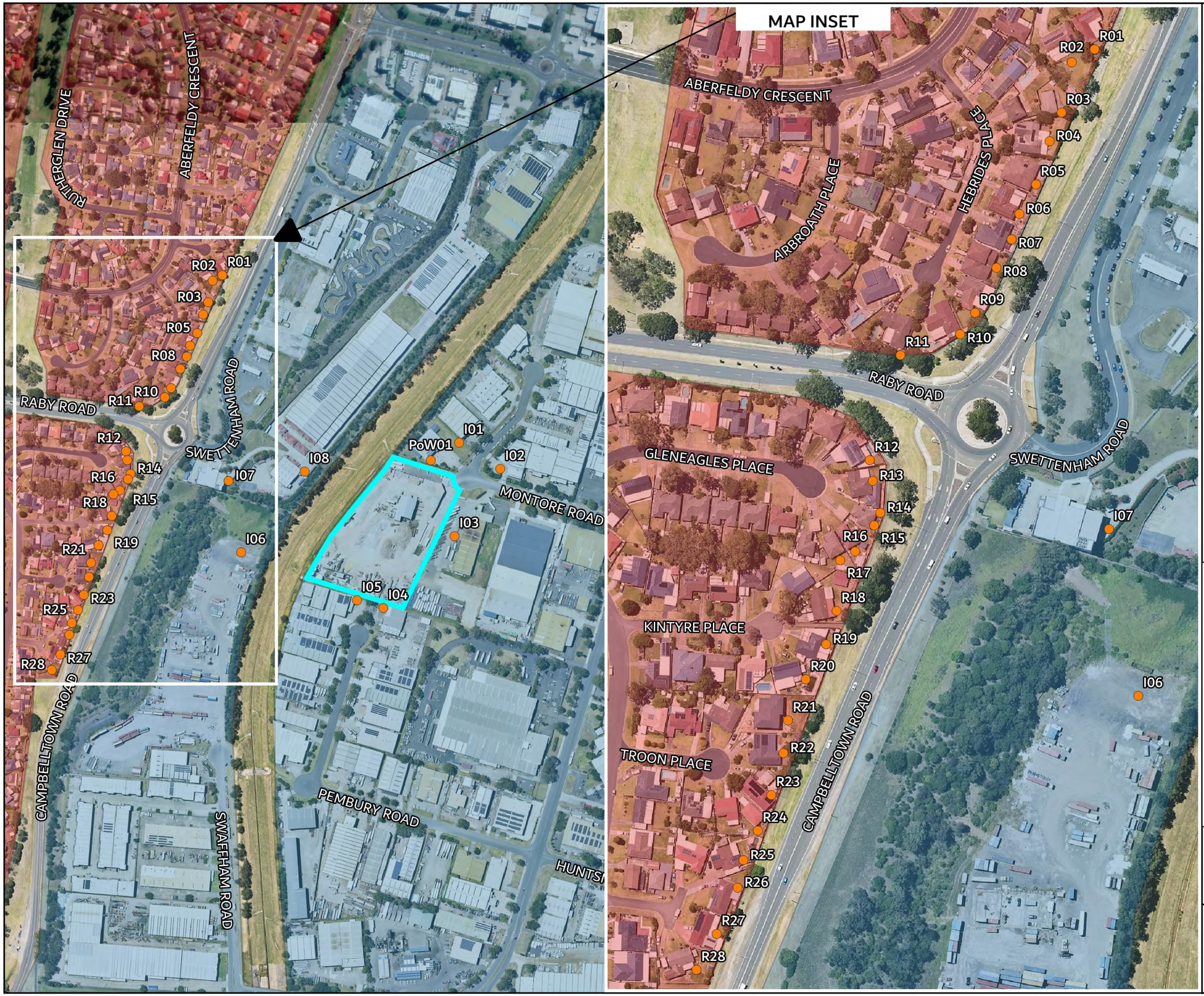

FIGURE 3

Receiver Locations

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

Project Boundary

Assessed Receiver Location

Noise Catchment Areas

NCA 01

(R2 - Low Density Residential)

NCA 02

(E4 - General Industrial)

0 50 100 150 200 250 m

N

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3 Noise Policy and Guidelines

3.1 Noise Policy for Industry

The EPA released the Noise Policy for Industry (NPI) in October 2017 which provides a process for establishing noise criteria for consents and licenses enabling the EPA to regulate noise emissions from scheduled premises under the Protection of the Environment Operations Act 1997.

The objectives of the NPI are to:

- provide noise criteria that is used to assess the change in both short term and long-term noise levels;
- provide a clear and consistent framework for assessing environmental noise impacts from industrial premises and industrial development proposals;
- promote the use of best-practice noise mitigation measures that are feasible and reasonable where potential impacts have been identified; and
- support a process to guide the determination of achievable noise limits for planning approvals and/or licences, considering the matters that must be considered under the relevant legislation (such as the economic and social benefits and impacts of industrial development).

The policy sets out a process for industrial noise management involving the following key steps:

1. Determine the Project Noise Trigger Levels (PNTLs) (ie criteria) for a development. These are the levels (criteria), above which noise management measures are required to be considered. They are derived by considering two factors: shorter-term intrusiveness due to changes in the noise environment; and maintaining the noise amenity of an area.

2. Predict or measure the noise levels produced by the development with regard to the presence of annoying noise characteristics and meteorological effects such as temperature inversions and wind.

3. Compare the predicted or measured noise level with the PNTL, assessing impacts and the need for noise mitigation and management measures.

4. Consider residual noise impacts - that is, where noise levels exceed the PNTLs after the application of feasible and reasonable noise mitigation measures. This may involve balancing economic, social and environmental costs and benefits from the proposed development against the noise impacts, including consultation with the affected community where impacts are expected to be significant.

5. Set statutory compliance levels that reflect the best achievable and agreed noise limits for the development.

6. Monitor and report environmental noise levels from the development.

3.1.1 Project Noise Trigger Levels (PNTL)

The policy sets out the procedure to determine the PNTLs relevant to an industrial development. The PNTL is the lower (ie, the more stringent) of the **Project Intrusiveness Noise Level** (PINL) and **Project Amenity Noise Level** (PANL) determined in accordance with Section 2.3 and Section 2.4 of the NPI.

3.1.2 Project Amenity Noise Level (PANL)

The PANL is relevant to a specific land use or locality. To limit continuing increases in intrusiveness levels, the ambient noise level within an area from all combined industrial sources should remain below the recommended amenity noise levels specified in Table 2.2 (of the NPI). The NPI defines two categories of amenity noise levels:

- **Amenity Noise Levels (ANL)** – are determined considering all current and future industrial noise within a receiver area; and
- **Project Amenity Noise Level (PANL)** – is the recommended level for a receiver area, specifically focusing the project being assessed.

Additionally, Section 2.4 of the NPI states: "to ensure that industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows":

PANL for new industrial developments = recommended **ANL** minus 5dBA.

The following exceptions apply when deriving the PANL:

- areas with high traffic noise levels;
- proposed developments in major industrial clusters;
- existing industrial noise and cumulative industrial noise effects; and
- greenfield sites.

Furthermore, Section 2.4 of the NPI states "*where the project amenity noise level applies and it can be met, no additional consideration of cumulative industrial noise is required.* "

The recommended amenity noise levels as per Table 2.2 of the NPI are reproduced in Table 3.

Table 3 Amenity Noise Levels

Receiver Type	Noise Amenity Area	Time of day	Recommended amenity noise level dB LAeq(period)
Residential	Rural	Day	50
		Evening	45
		Night	40
	Suburban	Day	55
		Evening	45
		Night	40
	Urban	Day	60
		Evening	50
		Night	45
Hotels, motels, caretakers' quarters, holiday accommodation, permanent resident caravan parks.	See column 4	See column 4	5dB above the recommended amenity noise level for a residence for the relevant noise amenity area and time of day
School Classroom	All	Noisiest 1-hour period when in use	35 (internal) 45 (external)
Hospital ward - internal - external	 All All	 Noisiest 1-hour Noisiest 1-hour	 35 50
Place of worship - internal	All	When in use	40
Passive Recreation	All	When in use	50
Active Recreation	All	When in use	55
Commercial premises	All	When in use	65
Industrial	All	When in use	70

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note: The recommended amenity noise levels refer only to noise from industrial noise sources. However, they refer to noise from all such sources at the receiver location, and not only noise due to a specific project under consideration. The levels represent outdoor levels except where otherwise stated.

Types of receivers are defined as rural residential; suburban residential; urban residential; industrial interface; commercial; industrial – see Table 2.3 and Section 2.7 of the NPI.

3.1.3 Maximum Noise Assessment Trigger Levels

The potential for sleep disturbance from maximum noise level events from a project during the night-time period needs to be considered. The NPI considers sleep disturbance to be both awakenings and disturbance to sleep stages.

Where night-time noise levels from a development/premises at a residential location exceed the following criteria, a detailed maximum noise level event assessment should be undertaken:

- $L_{Aeq(15min)}$ 40dB or the prevailing RBL plus 5dBA, whichever is the greater, and/or
- L_{Amax} 52dB or the prevailing RBL plus 15dBA, whichever is the greater.

A detailed assessment should cover the maximum noise level, the extent to which the maximum noise level exceeds the rating background noise level, and the number of times this happens during the night-time period.

Other factors that may be important in assessing the impacts on sleep disturbance include:

- how often the events would occur;
- the distribution of likely events across the night-time period and the existing ambient maximum events in the absence of the development;
- whether there are times of day when there is a clear change in the noise environment (such as during early morning shoulder periods); and
- current understanding of effects of maximum noise level events at night.

3.2 Road Noise Policy

The road traffic noise criteria are provided in the Road Noise Policy (RNP), 2011. The policy sets out noise criteria applicable (see **Section 5.3**) to different road classifications for the purpose of quantifying traffic noise impacts.

Additionally, the RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2dBA, which is generally accepted as the threshold of perceptibility to a change in noise level.

4 Existing Environment

4.1 Unattended Noise Monitoring

To quantify the existing background noise environment of the area, unattended noise monitoring was conducted at one location representative of the ambient environment surrounding the project site. The selected monitoring location is shown in **Figure 1** and is considered representative of surrounding residential receivers as per Fact Sheet B1.1 of the NPI.

The unattended noise survey was conducted in general accordance with the procedures described in Australian Standard AS 1055:2018, "Acoustics – Description and Measurement of Environmental Noise".

The measurements were carried out using one Svantek 977 noise analyser from Tuesday 27 May 2025 to Thursday 5 June 2025. The acoustic instrumentation used carries current NATA calibration and complies with AS/NZS IEC 61672.1-2019-Electroacoustics - Sound level meters - Specifications. Calibration of all instrumentation was checked prior to and following measurements. Drift in calibration did not exceed ±0.5dBA. All equipment carries appropriate and current NATA (or manufacturer) calibration certificates with records of all calibrations maintained by MAC as per the EPA's Approved methods for the measurement and analysis of environmental noise in NSW (EPA, 2022).

The summary results of long-term unattended noise monitoring are provided in **Table 4**. The noise monitoring charts for the background monitoring assessment are provided **Appendix B.** Data affected by adverse meteorological conditions have been excluded from the results in accordance with methodologies provided in Fact Sheet A4 of the NPI.

Table 4 Background Noise Monitoring Summary – L01

Date	Measured Background Noise Level (LA90) dB ABL			Measured Ambient Noise Level dB LAeq(period)		
	Day	Evening	Night	Day	Evening	Night
L01 – RBL / Leq Overall	54	51	44	66	63	59

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5 Assessment Criteria

5.1 Existing Operational Noise Criteria (EPL Noise Criteria)

The RRF currently operates under development consent SSD-5339, granted by the Minister for Planning on 17 June 2022, and in accordance with Environment Protection Licence (EPL) 21828. EPL noise limits for the project are reproduced in **Table 5**. Licence Condition L3.1 Noise Limits of the EPL provides the operational noise limits for sensitive residential receivers to the RRF, and states:

Noise generated at the premises that is measured at each noise monitoring point established under this licence must not exceed the noise levels specified in Column 4 of the table below for that point during the corresponding time periods specified in Column 1 when measured using the corresponding measurement parameters listed in Column 2.

Table 5 EPL Noise Limits

Time Period	Measurement Parameter	Measurement Frequency	Noise Level dB(A)
Point 1 – 18 Hebrides Place, St Andrews			
Morning Shoulder	LAeq(15min)	--	52
Morning Shoulder	LAmax	--	63
Day	LAeq(15min)	--	53
Evening	LAeq(15min)	--	53
Point 2 – 14A Gleneagles Place, St Andrews			
Morning Shoulder	LAeq(15min)	--	52
Morning Shoulder	LAmax	--	63
Day	LAeq(15min)	--	53
Evening	LAeq(15min)	--	53
Point 3 – 9 Troon Place, St Andrews			
Morning Shoulder	LAeq(15min)	--	52
Morning Shoulder	LAmax	--	63
Day	LAeq(15min)	--	53
Evening	LAeq(15min)	--	53

Subsequent noise conditions outlined in the EPL are provided below:

L3.2 For the purpose of condition L3.1

- a) *Morning shoulder means the period from 6 am to 7 am Monday to Friday;*
- b) *Day means the period from 7 am to 6 pm on Monday to Saturday; and*
- c) *Evening means the period from 6 pm to 7 pm Monday to Friday.*

L3.3 All noise monitoring for the purposes of determining compliance with the conditions of this licence must consider and be generally undertaken in accordance with:

- a) *Australian Standard AS 1055: 2018 Acoustics - Description and measurement of environmental noise;*
- b) *the compliance monitoring guidance provided in the chapter 7 'Monitoring Performance' of the Noise Policy for Industry (EPA, 2017) and*

Noise monitoring undertaken for the purposes of determining compliance with noise limits in conditions L3.1 and L3.2 must be undertaken at the boundary of noise sensitive receivers during noise generating activities that are representative of full operations or activities, including during period/s predicted to have the highest noise level impacts.

5.2 Operational Project Noise Trigger Levels

5.2.1 Project Noise Trigger Levels (Residential)

In lieu of nighttime criteria defined in the existing approved EPL noise limits, this section outlines the determination of PNTLs for the nighttime period in accordance with NPI methodology.

Evening criteria in the existing approved EPL noise limits is defined as *the period from 6 pm to 7 pm Monday to Friday.* Therefore, this section also derives evening PNTLs in accordance with the NPI methodology.

5.2.2 Project Intrusiveness Noise Levels

The PINL for the project are presented in **Table 6** and have been determined based on the RBL +5dBA and only apply to residential receivers.

Table 6 Project Intrusiveness Noise Levels

Location	Receiver Type	Period[1]	Measured RBL dB LA90	Adopted RBL dB LA90	PINL dB LAeq(15min)
L01	Suburban Residential	Evening	51	51	56
		Night	44	44	49

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

5.2.3 Project Amenity Noise Levels

The relevant PANL for residential receivers and other receiver types (ie non-residential) potentially affected by the project are presented in **Table 7.**

Table 7 Amenity Noise Levels and Project Amenity Noise Levels

Receiver Type	Noise Amenity Area	Assessment Period[1]	Recommended ANL dB LAeq(period)	ANL dB LAeq(period)[2]	PANL dB LAeq(15min)[3]
Residential	Suburban	Evening	45	40	43
		Night	40	35	38
Industrial		When in use	70	65	68

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 2: Project Amenity Noise Level equals the Amenity Noise Level -5dBA as there is other industry in the area.

Note 3: Includes a +3dB adjustment to the amenity period level to convert to a 15-minute assessment period as per Section 2.2 of the NPI.

5.2.4 Project Noise Trigger Levels

The PNTLs are the lower of either the PINLs or the PANLs. Table 8 presents the derivation of the PNTLs in accordance with the methodologies outlined in the NPI.

Classification for assessed residences within land use zone E4 – General Industrial have been adopted the industrial amenity level as per table note (Table 2.2) of the NPI, 2017. The table note is reproduced below:

- industrial – an area defined as an industrial zone on a local environment plan; for isolated residences within an industrial zone the industrial amenity level would usually apply.

Table 8 Project Noise Trigger Levels

Receiver Type	Assessment Period[1]	PINL dB LAeq(15min)	PANL dB LAeq(15min)	PNTL dB LAeq(15min)
Residential (Suburban)	Evening	56	43	43
	Night	49	38	38
Industrial	When in use	--	68	68

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

5.3 Road Traffic Noise Criteria

In accordance with the Road Noise Policy (RNP) (EPA, 2011), this assessment has identified that there are no residential receivers located within the direct vicinity of the project site. The principal haulage route has been identified to be Montore Road which is the sole access to and from the Project, with site traffic splitting onto Airds Road.

The assessment has identified a 'Place of Worship' directly adjacent to the north of the project on Montore Road, and additional industrial receivers lie along Montore Road and Airds Road. Hence, the assessment has adopted the 'Place of Worship' existing sensitive land use. Table 9 reproduces the road traffic noise assessment criteria relevant to the existing land use.

Table 9 Road Traffic Noise Assessment Criteria for Non-Residential Land Uses

Existing sensitive land use	Assessment Criteria - dB(A)		Additional considerations
	Day (7am to 10pm)	Night (10pm to 7am)	
Place of Worship	$L_{Aeq(1hr)}$ 40 (internal)	$L_{Aeq(1hr)}$ 40 (internal)	The criteria are internal, i.e. the inside of a church. Areas outside the place of worship, such as a churchyard or cemetery, may also be a place of worship. Therefore, in determining appropriate criteria for such external areas, it should be established what in these areas may be affected by road traffic noise.

Note: For road noise assessments, the day period is from 7am to 10pm (ie there is no evening assessment period as there is with operational noise). Night is from 10pm to 7am.

For industrial facilities, the RNP indicates that desirable internal noise guideline values are specified in Standards Australia 2107-2016: Acoustics – Recommended design sound levels and reverberation times for building interiors. In accordance with AS2107-2016, and internal design sound level of 60dB $L_{Aeq(period)}$ is applicable for warehouses (packaging and delivery). Hence, in assuming a conservative facade attenuation of 10dBA, the applicable external noise goal for industrial facilities of 70dB $L_{Aeq(period)}$.

It is reiterated that the RNP states where existing road traffic noise criteria are already exceeded, any additional increase in total traffic noise level should be limited to 2dBA, which is generally accepted as the threshold of perceptibility to a change in noise level.

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6 Modelling Methodology

A computer model was developed to quantify project noise emissions to neighbouring receivers using DGMR (iNoise, Version 2026) noise modelling software. iNoise is an intuitive and quality assured software for industrial noise calculations in the environment. 3D noise modelling is considered industry best practice for assessing noise emissions from projects.

The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers. Where relevant, modifying factors in accordance with Fact Sheet C of the NPI have been applied to calculations.

The model calculation method used to predict noise levels was in accordance with ISO 9613:1 and ISO 9613:2 including corrections for meteorological conditions using CONCAWE[1]. The ISO 9613 standards are the most used noise prediction method worldwide. Many countries refer to ISO 9613 in their noise legislation. However, the ISO 9613 standard does not contain guidelines for quality assured software implementation, which leads to differences between applications in calculated results. In 2015 this changed with the release of ISO/TR 17534-3. This quality standard gives clear recommendations for interpreting the ISO 9613 method. iNoise fully supports these recommendations. The models and results for the 19 test cases are included in the software.

[1] Report no. 4/18, "the propagation of noise from petroleum and petrochemical complexes to neighbouring communities", Prepared by C.J. Manning, M.Sc., M.I.O.A. Acoustic Technology Limited (Ref.AT 931), CONCAWE, Den Haag May 1981

6.1 Assessment Scenarios

The project would comprise the following processes, which would generally be housed in purpose-built sheds:

- Unprocessed brick and concrete material stockpile;
- Crusher, comprising primary feed to jaw crusher, magnets, secondary cone crusher, primary and secondary screens;
- Sand washing plant;
- Water treatment plant;
- NDD waste tipping and processing plant (includes dewatering);
- Processed material stockpiles; and
- Pugmill.

Operations including, deliveries and tipping of brick and concrete material, maintenance of unprocessed material stockpiles, crushing and screening, operation of the pugmill and despatch would be undertaken during the day period only during existing approved hours.

The assessment considered the worst-case scenario of all plant and equipment operating simultaneously during the day period at a processing capacity representative of 600,000tpa. under noise enhancing conditions.

Receival and processing of NDD waste material will occur during night time hours and is inclusive of the Water Treatment Plant under noise enhancing conditions.

NDD waste tipping is not considered for the Maximum Noise Level Assessment as it is a liquid slurry. Hence, a more conservative transient event of a 'Truck Airbrake Release' has been adopted for the purpose of the Maximum Noise Level Assessment.

The assessment parameters, including source sound power levels, analysis of annoying characteristics and meteorological analysis is provided in the following sections.

6.2 Sound Power Levels

Table 10 presents the sound power level (SWL) for each noise source modelled in this assessment. The SWLs were derived from measurements taken of existing plant and equipment at the Minto RRF.

Table 10 Single Octave Equipment Sound Power Levels, dB LAeq(15min) (re10^{-12}W)

Source/Item	Location/Detail	Octave Band Centre Frequency, Hz								Total,
		63	125	250	500	1000	2000	4000	8000	dBA
Crushing Shed	Façade / Roof	76	81	86	88	86	88	88	86	95
	Opening	83	91	97	103	101	102	100	86	108
Screen Shed	Opening	76	85	88	94	92	94	94	85	100
	Façade/Roof	76	81	86	88	86	88	88	86	95
Pugmill	Open	71	84	88	93	94	91	85	80	98
Sand Washing Plant	Façade/Roof	73	82	83	87	89	89	90	79	96
Water Treatment Plant	Open	67	69	74	78	80	80	84	69	87
NDD Plant	Façade/Roof	58	67	68	72	74	74	75	64	81
Loader DL580 (x4)	Yard	75	80	94	93	93	95	90	82	101
Skid Steer	Yard	76	78	83	89	91	89	88	77	96
Forklift	Yard	75	88	91	92	92	91	85	74	98
Excavator (6t)	Yard	67	75	84	88	85	83	77	67	92
Excavator (30t)	Yard	79	93	94	99	98	93	81	70	103
Excavator (40t)	Yard	78	87	95	99	97	98	91	82	104
Pulveriser	Unprocessed Stockpile	82	91	97	102	102	100	94	82	107
Road Truck Tipping	Yard	83	87	93	95	98	102	103	93	107
Road Trucks (8/hr)	Yard	62	70	73	78	81	79	75	68	85
Maximum Noise Level Assessment (LAmax), Night time periods (10pm to 7am)										
Truck Airbrake Release		76	80	84	96	101	106	111	111	115

6.3 Annoying Characteristics

Fact Sheet C of the NPI provides guidelines for applying 'modifying factors' adjustments to account for annoying noise characteristics such as low-frequency, tonality, intermittent noise, irregular or noise of short duration. A detailed assessment of annoying characteristics has been undertaken for the most affected day, evening and night periods and is provided in **Appendix C** and summarised below. It is noted that due to the nature of the plant operations and distance from residential receivers, intermittent noise is unlikely to be a feature of the site and has not been considered further.

The analysis of low-frequency noise found that modelled noise levels from all sources remained below the screening test of C-A weighted noise levels greater or equal to 15dB (14dB). Therefore, further analysis was not undertaken and no correction for low-frequency noise is applied.

An assessment of tonality was undertaken to identify dominant tones associated with the site. The tonal noise correction applies when the level of an octave band exceeds the level of the adjacent band on either side by at least 5dB. The results of the tonality assessment demonstrates that the site operations do not result in dominant tones. Hence, no correction for tonality is applied.

6.4 Meteorological Analysis

Noise emissions can be influenced by prevailing weather conditions. Light stable winds (<3m/s) and temperature inversions have the potential to increase noise at a receiver.

Fact Sheet D of the NPI provides two options when considering meteorological effects:

- adopt the noise enhancing conditions for all assessment periods without an assessment of how often the conditions occur – a conservative approach that considers a source to receiver winds for all receivers and F class temperature inversions with wind speeds up to 2m/s at night; or
- determine the significance of noise enhancing conditions. This requires assessing the significance of temperature inversions (F and G Class stability categories) for the night time period and the significance of light winds up to 3m/s for all assessment periods during stability categories other than E, F or G.

Standard meteorological conditions and noise-enhancing meteorological conditions as defined in Table D1of the NPI are reproduced in **Table 11**.

Table 11 Standard and Noise-Enhancing Meteorological Conditions

Meteorological Conditions	Meteorological Parameters
Standard Meteorological Conditions	Day/evening/night: stability categories A–D with wind speed up to 0.5m/s at 10m AGL.
Noise Enhancing Meteorological Conditions	Daytime/evening: stability categories A–D with light winds (up to 3 m/s at 10m AGL). Night-time: stability categories A–D with light winds (up to 3m/s at 10m AGL) and/or stability category F with winds up to 2m/s at 10 m AGL.

6.4.1 Assessment of Prevailing Winds

Prevailing conditions were determined for the project through review of weather data for the period September 2019 to October 2024, obtained from the Bureau of Meteorology's (BOM) Campbelltown (Mount Annan), NSW (Site no. 68257) located approximately 7km southwest of the project site. The data was analysed using the EPA's Noise Enhancement Wind Analysis (NEWA) program to determine the frequency of occurrence of winds of speeds up to 3m/s in each season.

Table 12 summarises the results of the wind analysis and includes the dominant wind direction and percentage occurrence during each season for each assessment period. The results of the detailed analysis of meteorological data are presented in **Appendix D**.

Table 12 Seasonal Frequency of Occurrence Wind Speed Intervals

Season	Period	Dominant Wind Directions $\pm(45^{\circ})$	% Wind Speeds (m/s) 0.5 to 3 m/s
Summer	Day	NNE	27
	Evening	E	34
	Night	S	36
Autumn	Day	SSW	26
	Evening	S	35
	Night	S / SSW	42
Winter	Day	SW	27
	Evening	SSW / SW	35
	Night	SSW	39
Spring	Day	NNE	26
	Evening	S	24
	Night	SSW	24

6.4.2 Modelled Meteorological Parameters

Based on the results of this analysis, prevailing winds are applicable for the assessment and the relevant meteorological conditions adopted in this assessment are summarised in **Table 13**.

Table 13 Modelled Meteorological Parameters

Assessment Condition[1]	Temperature	Wind Speed[2]/ Direction	Relative Humidity	Stability Class[2]
Day	20°C	3m/s all directions	50%	D
Evening	10°C	3m/s all directions	50%	D
Night	10°C	2m/s all directions	50%	F

Note 1: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

Note 2: Implemented using CONCAWE meteorological corrections.

6.5 Road Traffic Noise Assessment Methodology

Due to the low traffic volume generated by the project over a typical day, road traffic noise calculation methods such as Calculation of Road Traffic Noise (CRTN - ISBN 0 11 550847 3) by Department of Transport (UK) 1988 or Traffic Noise Model (TNM) by the United States Department of Transport, Federal Highway Administration are not considered appropriate as they are primarily intended to calculate noise emissions from motorways and highways. Whilst each method has a low volume correction, the project traffic volume is out of the scope of these methods. Therefore, road traffic noise has been modelled using iNoise modelling software using ISO 9613-1 and ISO 9613-2 calculation methods, representing the road traffic as "moving sources" along the transport route.

The proposed heavy vehicle movements during the day (15-hour) and night (9-hour) period were provided by Element. Heavy vehicle (HV) movements are based on the approved 450,000tpa of waste receival and processing and then extrapolated to the proposed 600,000tpa. Daytime HV traffic movements will be increased from 342 to 413 between Monday to Friday resulting in a 21% increase in HV movements, which equates to 0.8dBA increase (less than 2dBA increase as per the RNP). It is proposed that Saturday HV movements will remain within the existing approved HV movements.

Additionally, a 2dBA increase is generally accepted as the threshold of perceptibility to a change in noise level. Therefore, the road traffic noise modelling assessment as part of this study has been undertaken for the night period (10pm to 7am) only.

HV night time NDD waste collection is proposed to be 45 movements for between Monday to Friday and 14 on Saturday as advised by Element, between the hours of 10pm and 7am.

The modelled road traffic parameters are summarised in **Table 14** for the night period.

Table 14 Road Traffic Noise Modelling Parameters

Noise Source/Item	Lw dBA re 10-12 W	Movements[1]	Speed, km/h	Source Height, m[2]
Heavy vehicle (rigid, semi trailer or b-double)	104	45 (Monday to Friday) 14 (Saturday)	60	1.5

Note 1: Number of vehicle movements during the night period (10pm to 7am).

Note 2: Height above ground level.

7 Assessment Results

7.1 Operational Noise Assessment

Noise predictions from the operation of the site during the day, evening and night (noise enhancing meteorological conditions) have been quantified at surrounding receivers to the project site and are presented in **Table 15**. Noise contour plots for the morning shoulder, day, evening and night period operations are provided in **Figure 4** and **Figure 5**.

The results of the assessment demonstrate that operational noise emissions would achieve the NPI derived PNTLs and existing approved EPL criteria for all assessment periods, at all assessed receiver locations.

Table 15 Noise Predictions – All Receivers

Receiver Location	Predicted Noise Level dB LAeq(15min)				Relevant Noise Limits dB LAeq(15min)				Compliant
	Morning Shoulder	Day	Evening	Night	Morning Shoulder	Day	Evening	Night	
Residential Receivers									
R01	<30	36	<30	<30	52	53	43	38	✓
R02	<30	37	<30	<30	52	53	43	38	✓
R03	<30	37	<30	<30	52	53	43	38	✓
R04	<30	39	<30	<30	52	53	43	38	✓
R05	<30	44	<30	<30	52	53	43	38	✓
R06	<30	39	<30	<30	52	53	43	38	✓
R07	<30	40	<30	<30	52	53	43	38	✓
R08	<30	49	<30	<30	52	53	43	38	✓
R09	<30	41	<30	<30	52	53	43	38	✓
R10	<30	39	<30	<30	52	53	43	38	✓
R11	<30	37	<30	<30	52	53	43	38	✓
R12	<30	44	<30	<30	52	53	43	38	✓
R13	<30	40	<30	<30	52	53	43	38	✓
R14	<30	43	<30	<30	52	53	43	38	✓
R15	<30	46	<30	<30	52	53	43	38	✓
R16	<30	48	<30	<30	52	53	43	38	✓
R17	<30	48	<30	<30	52	53	43	38	✓
R18	<30	50	<30	<30	52	53	43	38	✓
R19	<30	49	<30	<30	52	53	43	38	✓
R20	<30	48	<30	<30	52	53	43	38	✓
R21	<30	49	<30	<30	52	53	43	38	✓

Table 15 Noise Predictions – All Receivers									
Receiver Location	Predicted Noise Level dB LAeq(15min)				Relevant Noise Limits dB LAeq(15min)				Compliant
	Morning Shoulder	Day	Evening	Night	Morning Shoulder	Day	Evening	Night	
R22	<30	48	<30	<30	52	53	43	38	✓
R23	<30	48	<30	<30	52	53	43	38	✓
R24	<30	48	<30	<30	52	53	43	38	✓
R25	<30	47	<30	<30	52	53	43	38	✓
R26	<30	47	<30	<30	52	53	43	38	✓
R27	<30	46	<30	<30	52	53	43	38	✓
R28	<30	46	<30	<30	52	53	43	38	✓
Non-Residential Receivers									
I01	<30	52	<30	<30	68	68	68	68	✓
I02	<30	52	<30	<30	68	68	68	68	✓
I03	<30	54	<30	<30	68	68	68	68	✓
I04	<30	46	<30	<30	68	68	68	68	✓
I05	<30	51	<30	<30	68	68	68	68	✓
I06	<30	57	<30	<30	68	68	68	68	✓
I07	32	56	32	32	68	68	68	68	✓
I08	32	57	32	32	68	68	68	68	✓
PoW01	<30	51	<30	<30	68	68	68	68	✓

Note: Day - the period from 7am to 6pm Monday to Saturday or 8am to 6pm on Sundays and public holidays; Evening - the period from 6pm to 10pm; Night - the remaining periods.

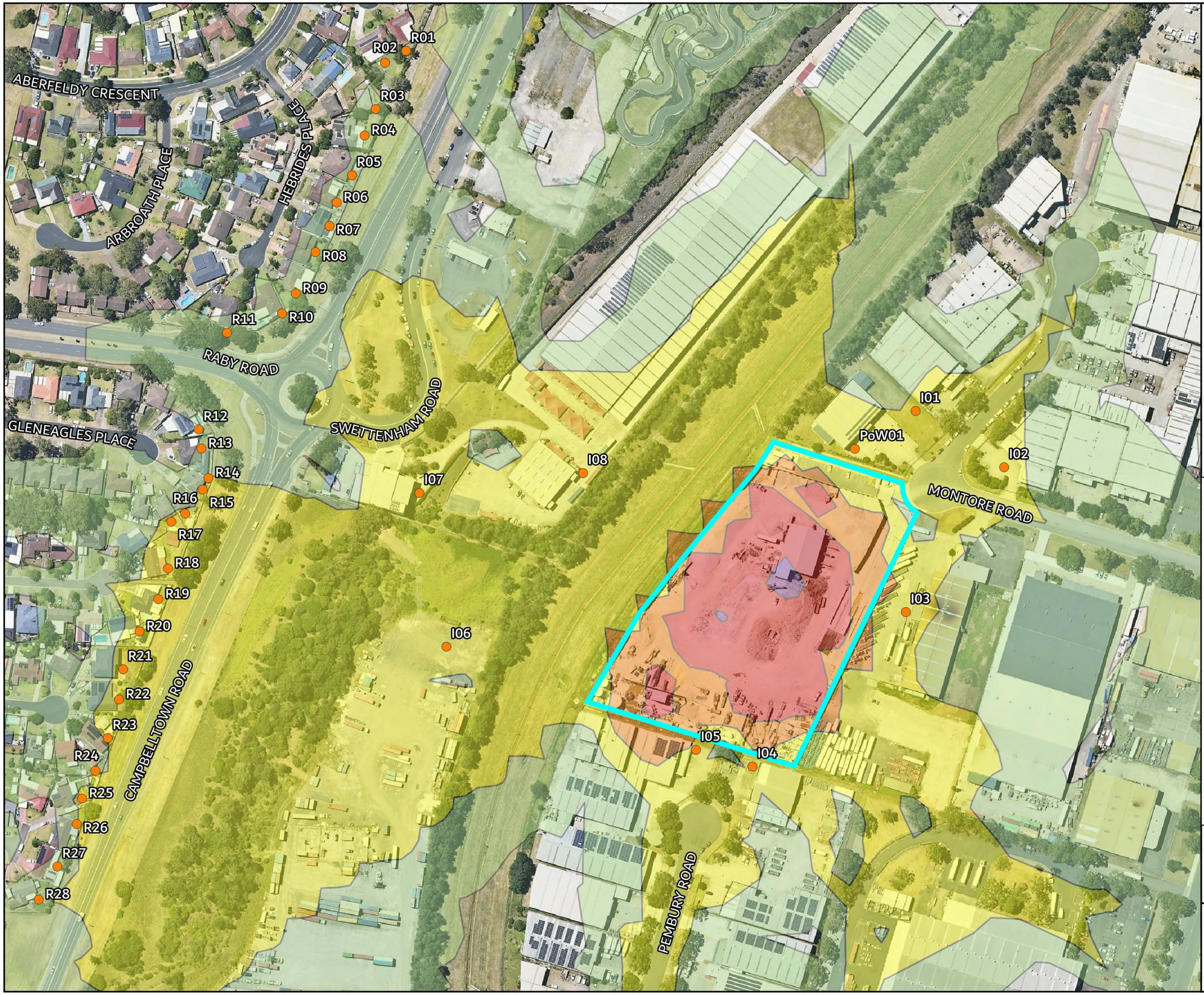

FIGURE 4

Noise Contours

Day Operations

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

Project Boundary

Assessed Receiver Location

dB LAeq(15min)

- 40-50
- 50-60
- 60-70
- 70-80
- >80

0 25 50 75 100 m

N

mac Muller Acoustic Consulting

FIGURE 5

Noise Contours

Morning Shoulder, Evening and Night Operations

MAC252458-01

Minto RRF

7 Montore Road, Minto, NSW

Lot 52 DP 618900

KEY

Project Boundary

Assessed Receiver Location

dB LAeq(15min)

40-50

50-60

60-70

70-80

>80

0 25 50 75 100 m

N

mac Muller Acoustic Consulting

7.1.1 Maximum Noise Level Assessment

In assessing maximum noise events, typical L_{Amax} noise levels from transient events were assessed at the nearest residential receivers. For the maximum noise level assessment, a sound power level of 114dBA for a truck airbrake event from HV braking at the weighbridge and at the NDD waste receival location were adopted for maximum noise level (L_{Amax}) events during the night period.

Predicted noise levels from and L_{Amax} events for assessed receivers are presented in **Table 16.** Results identify that the maximum noise trigger levels will be satisfied for all assessed receivers.

Table 16 Maximum Noise Level Assessment (Night)[1]

Receiver	Predicted Noise Level dB LAmax		Maximum Trigger Levels dB LAmax	Compliant
	Weighbridge Airbrake	NDD Receival Airbrake		
R01	<30	<30	63	✓
R02	<30	30	63	✓
R03	<30	31	63	✓
R04	<30	32	63	✓
R05	31	46	63	✓
R06	<30	34	63	✓
R07	<30	34	63	✓
R08	<30	44	63	✓
R09	<30	36	63	✓
R10	<30	34	63	✓
R11	<30	31	63	✓
R12	33	44	63	✓
R13	<30	34	63	✓
R14	<30	36	63	✓
R15	37	35	63	✓
R16	39	37	63	✓
R17	40	38	63	✓
R18	44	40	63	✓
R19	41	38	63	✓
R20	38	37	63	✓
R21	42	40	63	✓
R22	40	38	63	✓
R23	40	41	63	✓
R24	39	33	63	✓
R25	39	32	63	✓
R26	40	33	63	✓
R27	31	33	63	✓
R28	32	33	63	✓

Note 1: Monday to Saturday; Night 10pm to 7am. On Sundays and Public Holidays Night 10pm to 8am. Morning Shoulder 5am to 7am; Evening Shoulder 10pm to 12am.

7.2 Road Traffic Noise Assessment

Predicted road traffic noise levels from the project are presented in **Table 17**. The results of the assessment demonstrate that road traffic noise levels are anticipated to be below the relevant RNP criteria for the night period at the nearest receiver locations. Hence, it is expected that there would be no road traffic noise impacts associated with the proposed extension of hours.

Table 17 Operational Road Traffic Noise Levels

Receiver Locations	Offset from Road (m)	Period	Assessment Criteria dB LAeq(period)	Calculated Project Traffic Noise dB LAeq(period)	Compliant
Place of Worship	43	Night	$L_{Aeq(1hr)}$ 50 (external)[1]	40	Yes
Industrial	12		$L_{Aeq(9hr)}$ 70	45	Yes

Note 1: External level based on 10dB attenuation correction, representative of an open window as per Environmental Noise Management Manual (ENMM), 2001.

It is reiterated that a semi-qualitative assessment of daytime road traffic noise levels increase is outline in **Section 6.5**.

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8 Discussion and Conclusion

Muller Acoustic Consulting Pty Ltd (MAC) has completed a Noise and Vibration Impact Assessment (NVIA) to quantify emissions associated with the proposed modification (MOD 2) to the Minto Resource Recovery Facility (RRF) (SSD-5339) located at 7 Montore Road, Minto, NSW.

The assessment has quantified potential noise emissions pertaining to the operation of the site during the morning shoulder, day, evening and night periods, including fixed plant at a processing capacity representative of 600,000tpa, mobile equipment and heavy vehicle movements. The assessment considered the worst-case scenario of all plant and equipment operating simultaneously under noise enhancing conditions.

The results of the NVIA demonstrate that noise emissions from the operation would satisfy the relevant PNTLs and existing EPL criteria at all assessed receivers for all assessment periods.

Furthermore, sleep disturbance is not anticipated, as emissions from maximum noise events (ie truck airbrake events) are predicted to satisfy the NPIs maximum noise trigger levels.

An assessment of road traffic noise during the day and night period found that road traffic noise levels are anticipated to be significantly below the relevant RNP criteria.

Accordingly, the Noise and Vibration Impact Assessment supports the Modification Application for the project without specific management measures being required.

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Appendix A – Glossary of Terms

A number of technical terms have been used in this report and are explained in **Table A1**.

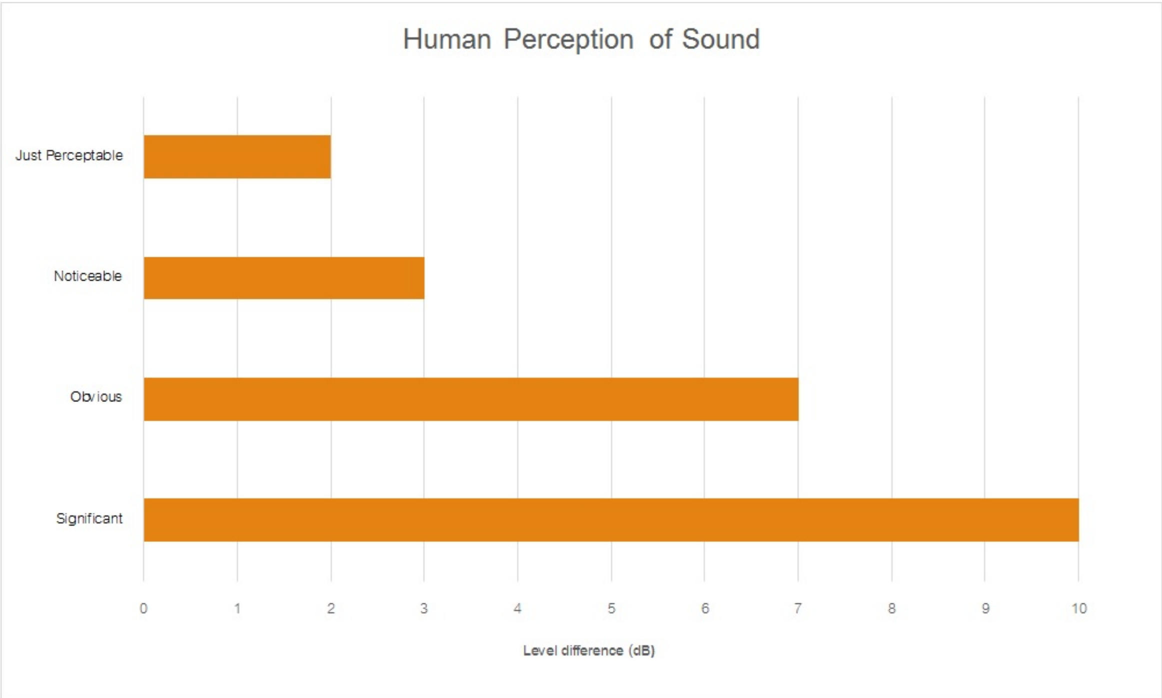
Table A1 Glossary of Acoustical Terms	
Term	Description
1/3 Octave	Single octave bands divided into three parts
Octave	A division of the frequency range into bands, the upper frequency limit of each band being twice the lower frequency limit.
ABL	Assessment Background Level (ABL) is defined in the NPI as a single figure background level for each assessment period (day, evening and night). It is the tenth percentile of the measured L90 statistical noise levels.
Ambient Noise	The total noise associated with a given environment. Typically, a composite of sounds from all sources located both near and far where no particular sound is dominant.
A Weighting	A standard weighting of the audible frequencies designed to reflect the response of the human ear to sound.
Background Noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is usually represented by the LA90 descriptor
dBA	Noise is measured in units called decibels (dB). There are several scales for describing noise, the most common being the 'A-weighted' scale. This attempts to closely approximate the frequency response of the human ear.
dB(Z), dB(L)	Decibels Z-weighted or decibels Linear (unweighted).
Extraneous Noise	Sound resulting from activities that are not typical of the area.
Hertz (Hz)	The measure of frequency of sound wave oscillations per second - 1 oscillation per second equals 1 hertz.
LA10	A sound level which is exceeded 10% of the time.
LA90	Commonly referred to as the background noise, this is the level exceeded 90% of the time.
LAeq	Represents the average noise energy or equivalent sound pressure level over a given period.
LAmax	The maximum sound pressure level received at the microphone during a measuring interval.
Masking	The phenomenon of one sound interfering with the perception of another sound. For example, the interference of traffic noise with use of a public telephone on a busy street.
RBL	The Rating Background Level (RBL) as defined in the NPI, is an overall single figure representing the background level for each assessment period over the whole monitoring period. The RBL, as defined is the median of ABL values over the whole monitoring period.
Sound power level (Lw or SWL)	This is a measure of the total power radiated by a source in the form of sound and is given by 10.log10 (W/Wo). Where W is the sound power in watts to the reference level of 10^{-12} watts.
Sound pressure level (Lp or SPL)	the level of sound pressure; as measured at a distance by a standard sound level meter. This differs from Lw in that it is the sound level at a receiver position as opposed to the sound 'intensity' of the source.

Table A2 provides a list of common noise sources and their typical sound level.

Table A2 Common Noise Sources and Their Typical Sound Pressure Levels (SPL), dBA

Source	Typical Sound Pressure Level
Threshold of pain	140
Jet engine	130
Hydraulic hammer	120
Chainsaw	110
Industrial workshop	100
Lawn-mower (operator position)	90
Heavy traffic (footpath)	80
Elevated speech	70
Typical conversation	60
Ambient suburban environment	40
Ambient rural environment	30
Bedroom (night with windows closed)	20
Threshold of hearing	0

Figure A1 – Human Perception of Sound



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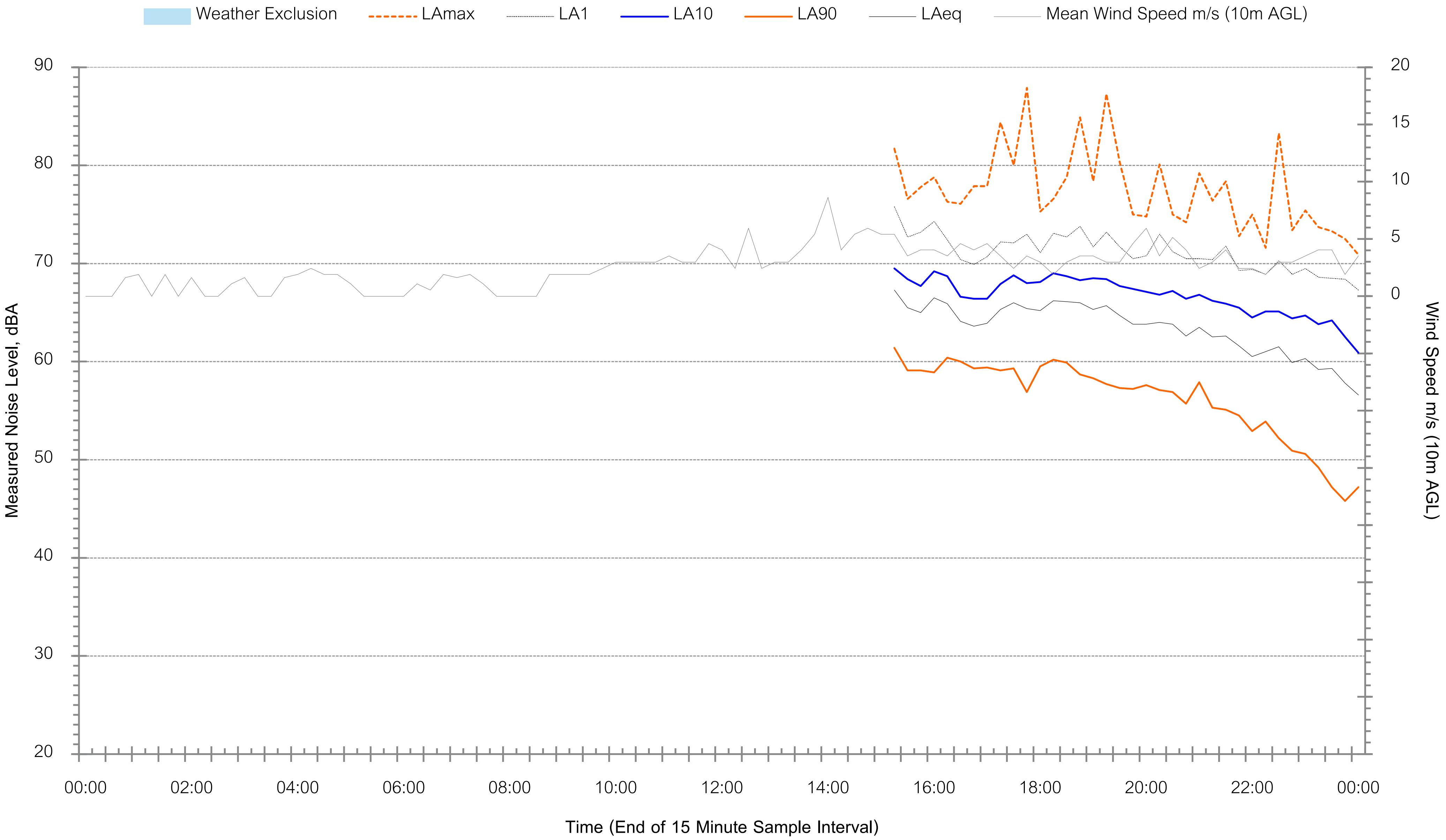
Appendix B – Noise Monitoring Charts

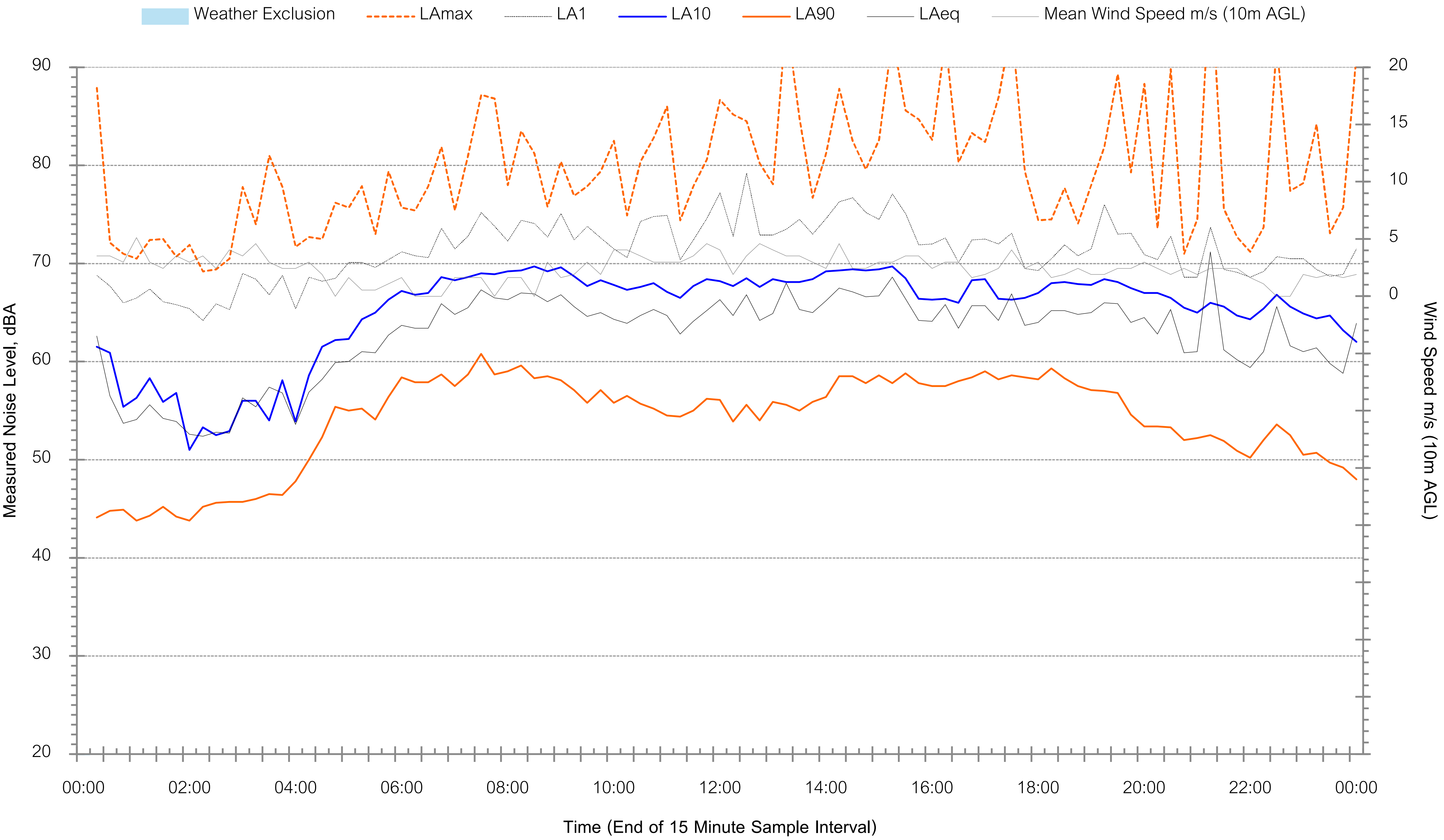
Background Noise Levels

Campbelltown Road, Minto, New South Wales - Tuesday 27 May 2025



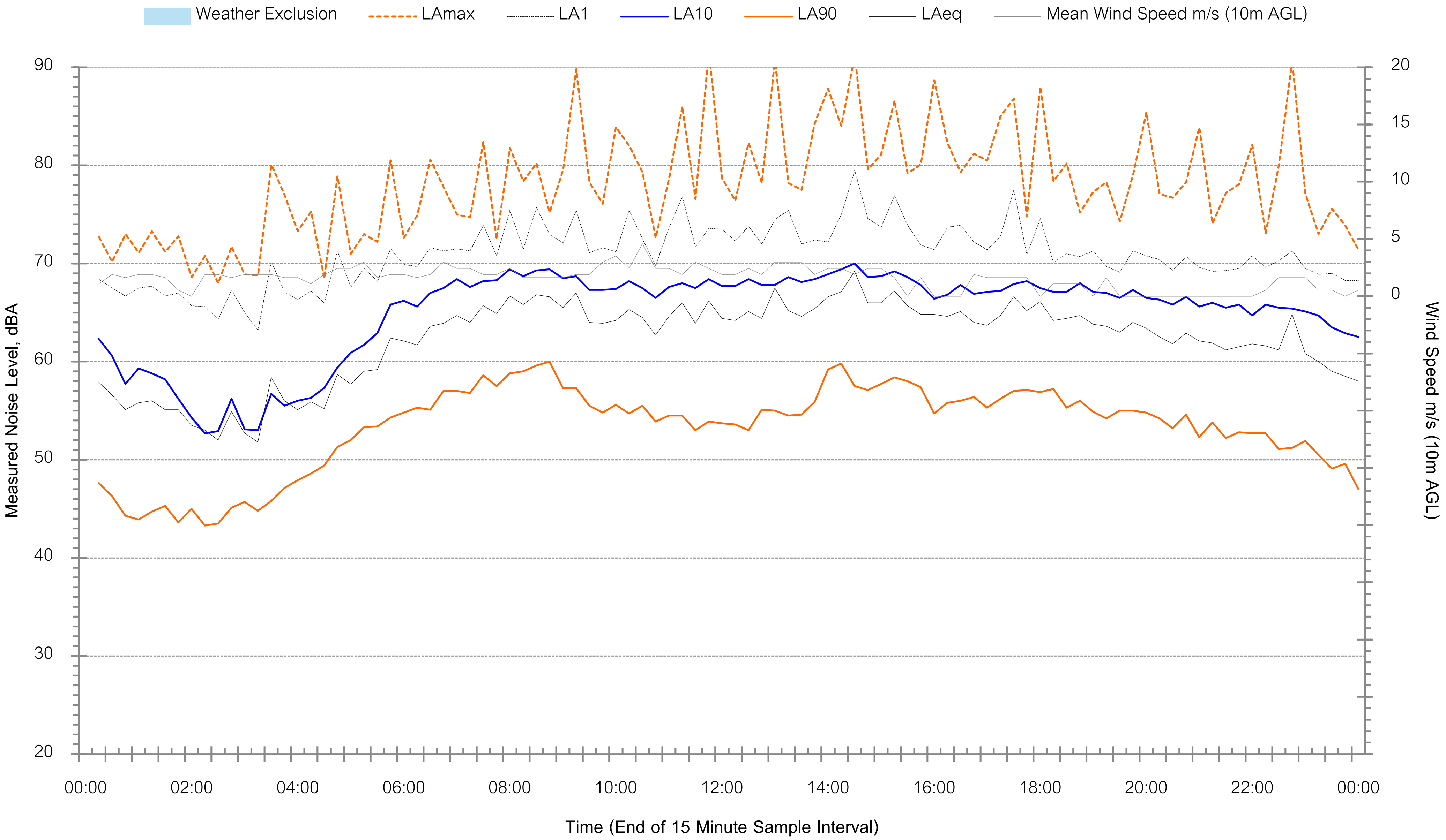
Background Noise Levels

Campbelltown Road, Minto, New South Wales - Wednesday 28 May 2025



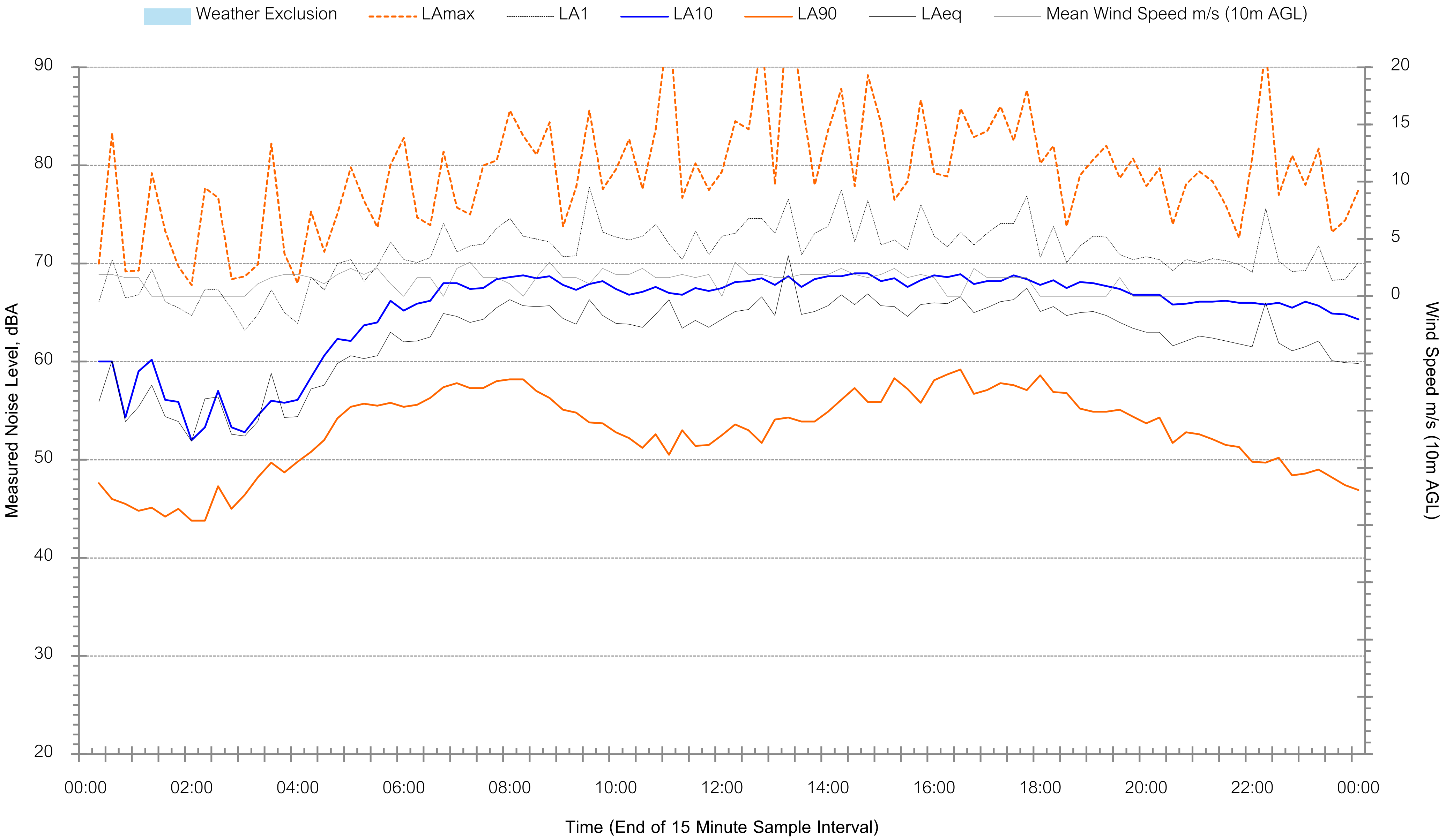
Background Noise Levels

Campbelltown Road, Minto, New South Wales - Thursday 29 May 2025



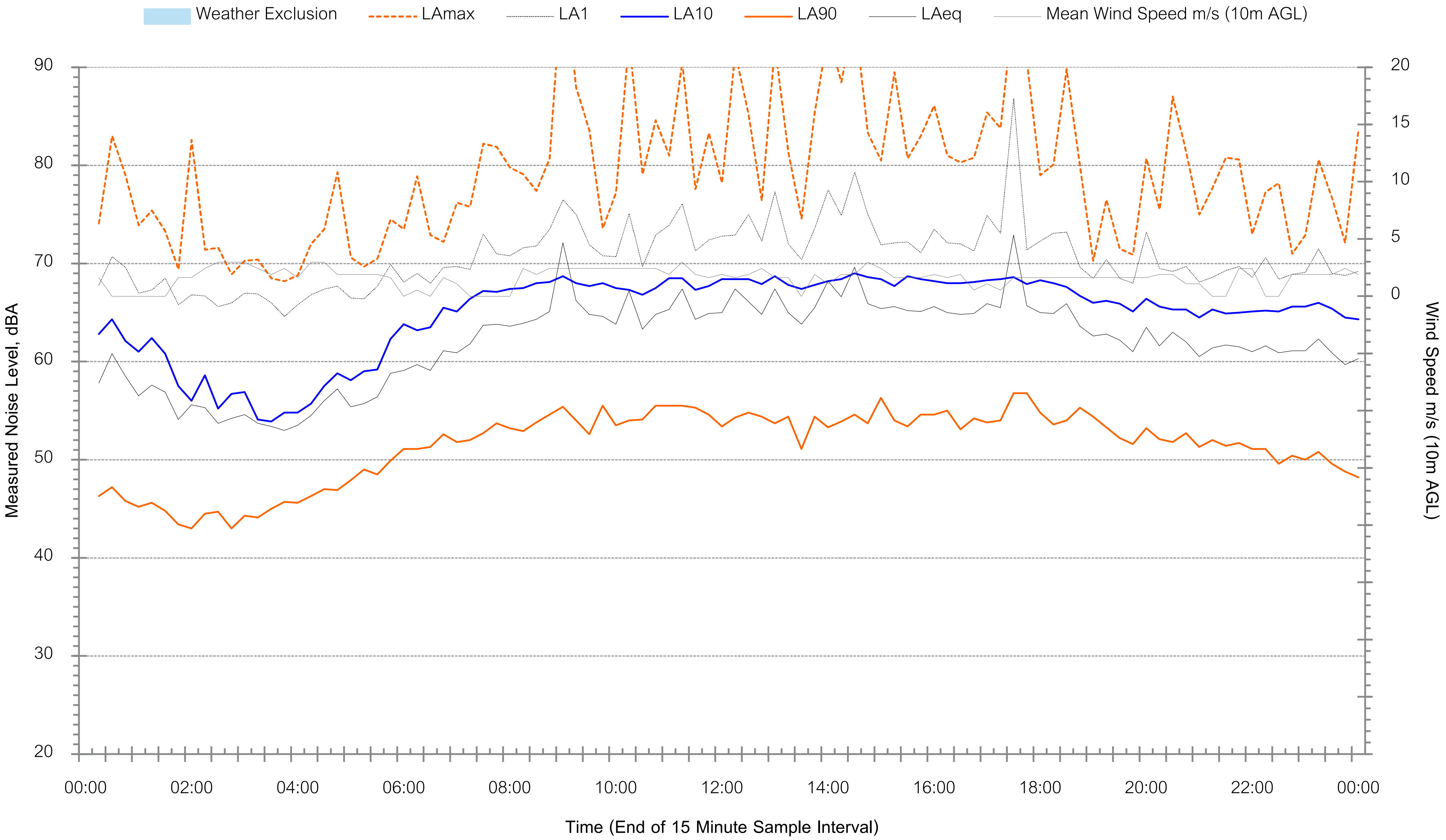
Background Noise Levels

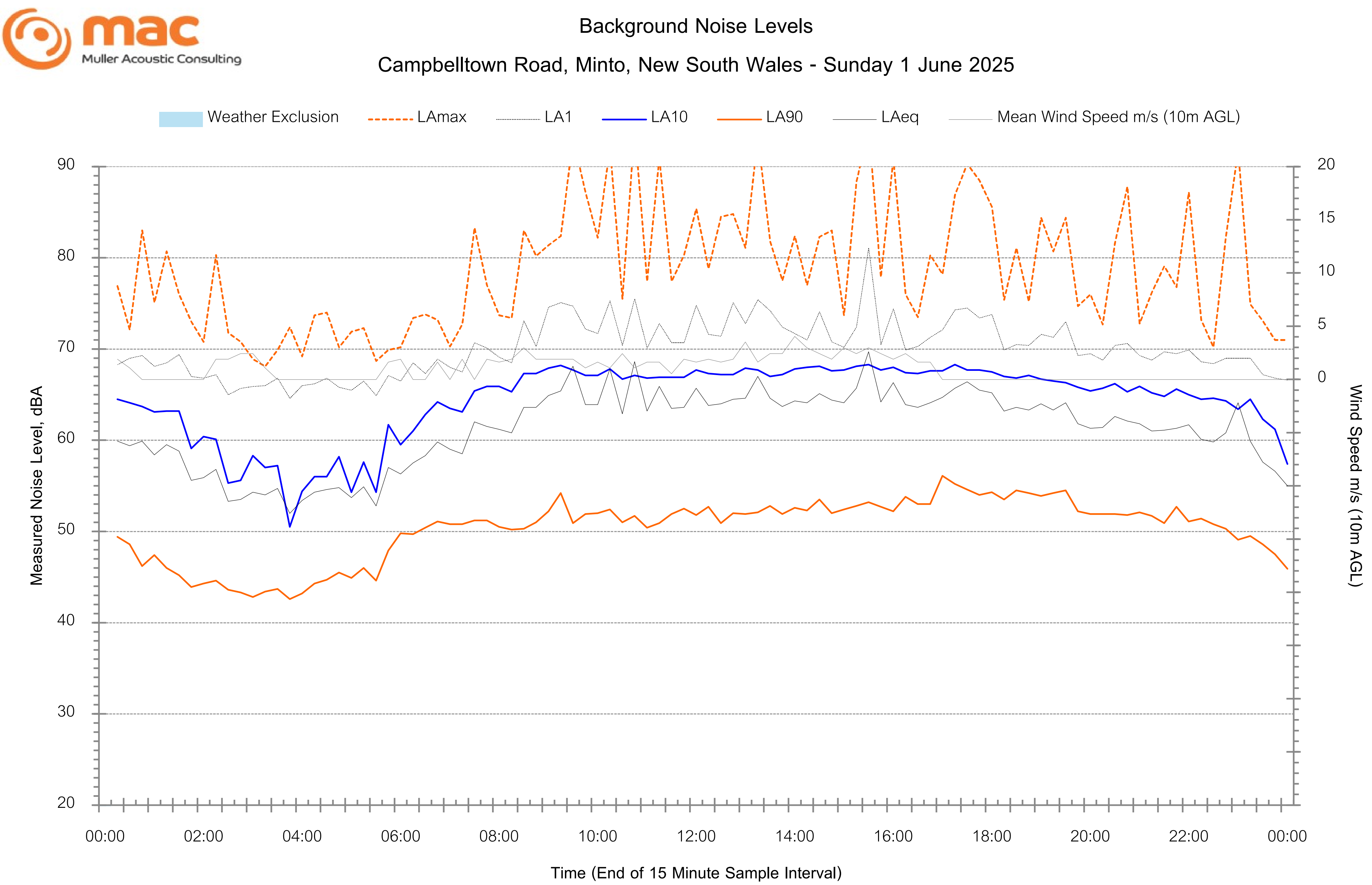
Campbelltown Road, Minto, New South Wales - Friday 30 May 2025



Background Noise Levels

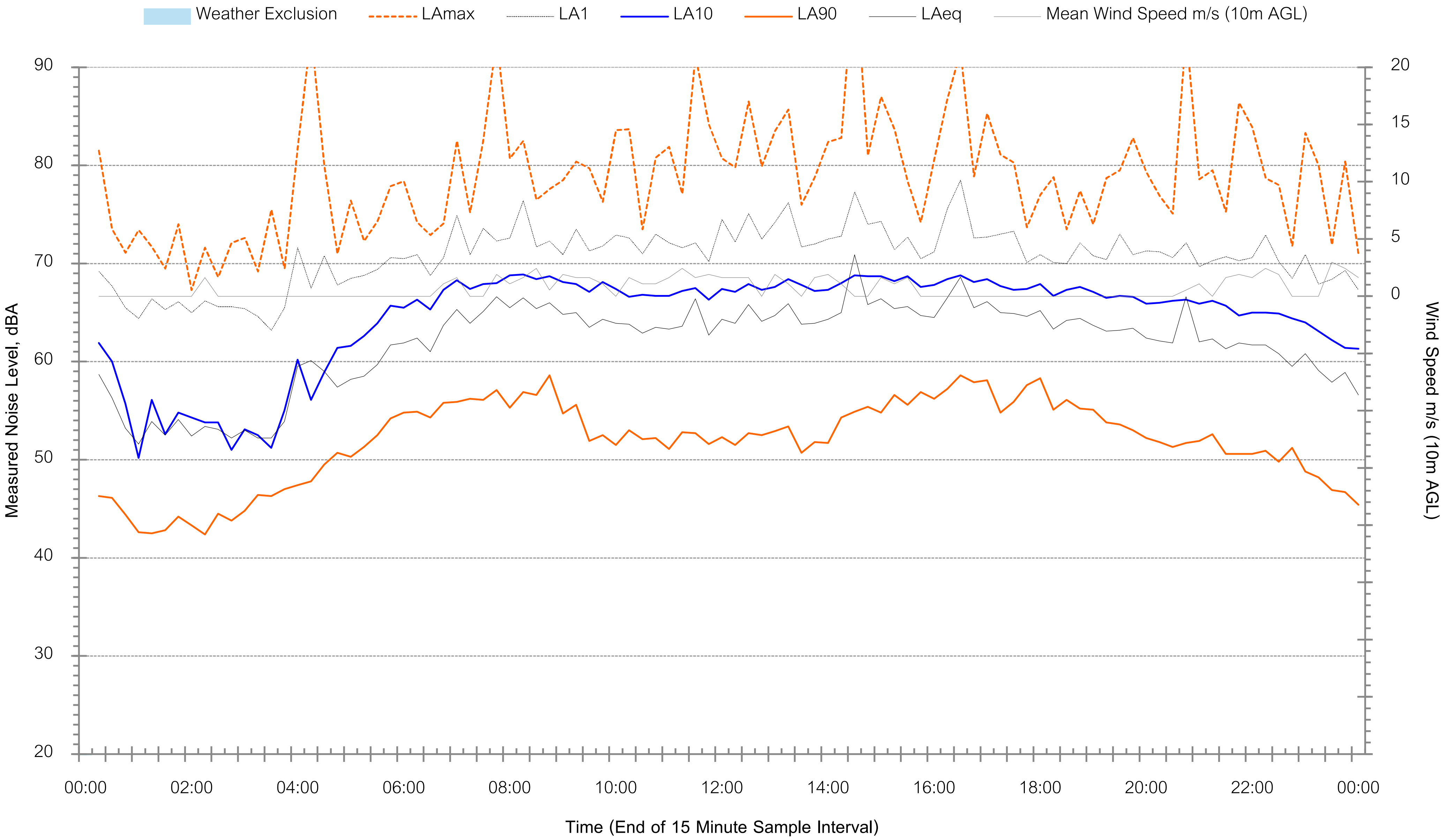
Campbelltown Road, Minto, New South Wales - Saturday 31 May 2025




Muller Acoustic Consulting
Background Noise Levels
Campbelltown Road, Minto, New South Wales - Sunday 1 June 2025
Weather Exclusion
LAmax
LA1
LA10
LA90
LAeq
Mean Wind Speed m/s (10m AGL)
Measured Noise Level, dBA
90
80
70
60
50
40
30
20
Wind Speed m/s (10m AGL)
20
15
10
5
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
00:00
Time (End of 15 Minute Sample Interval)

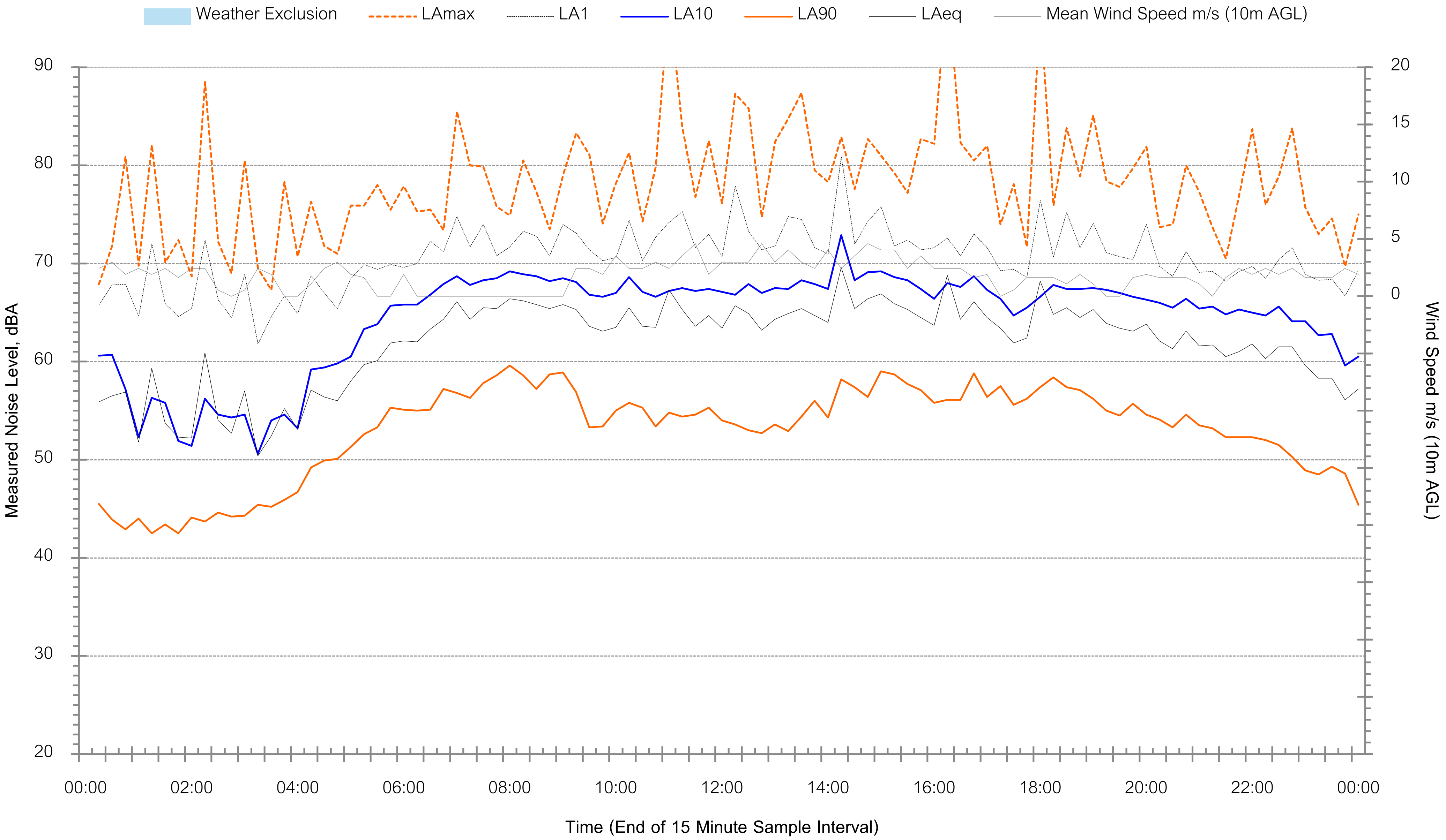
Background Noise Levels

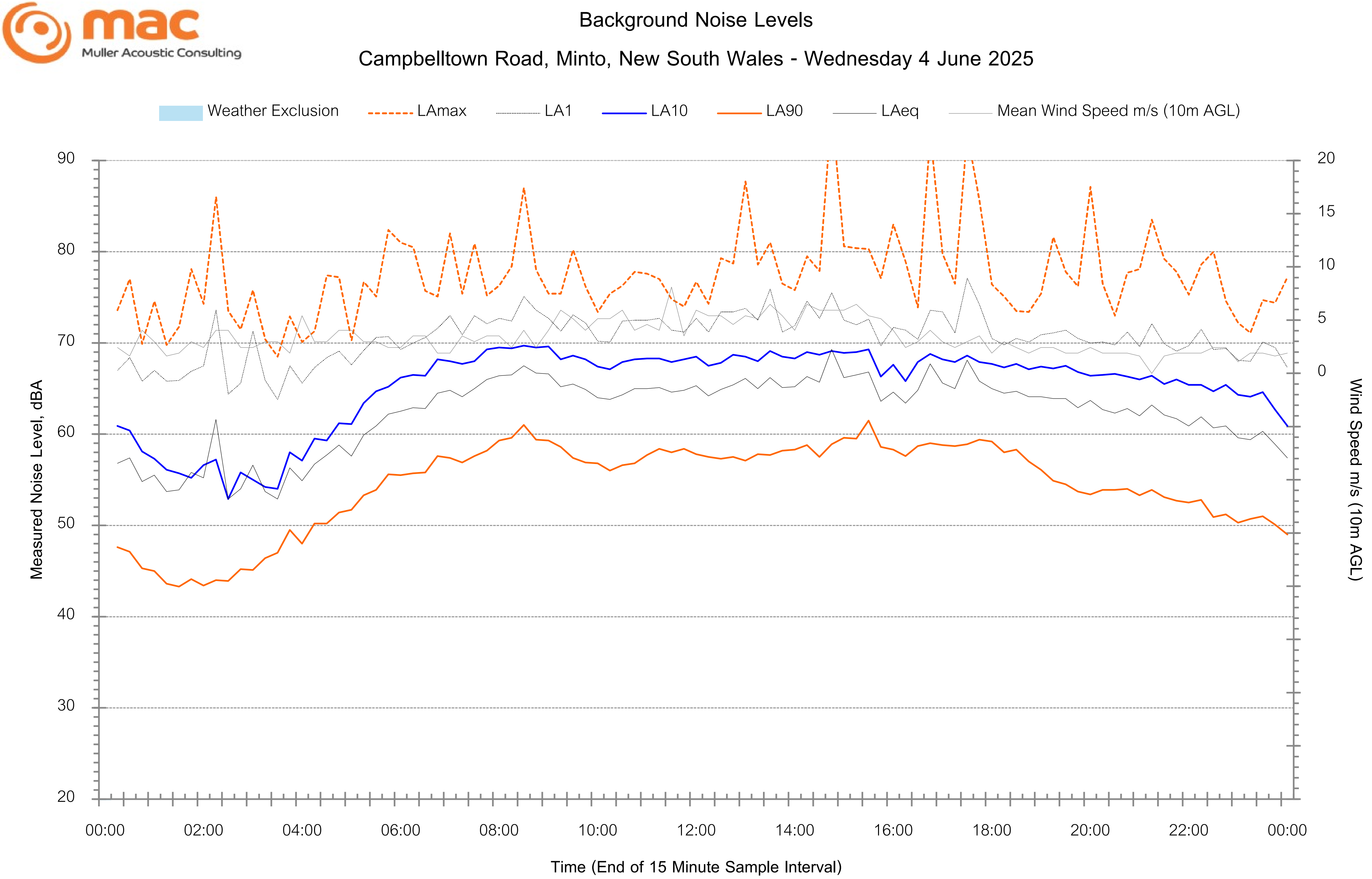
Campbelltown Road, Minto, New South Wales - Monday 2 June 2025



Background Noise Levels

Campbelltown Road, Minto, New South Wales - Tuesday 3 June 2025

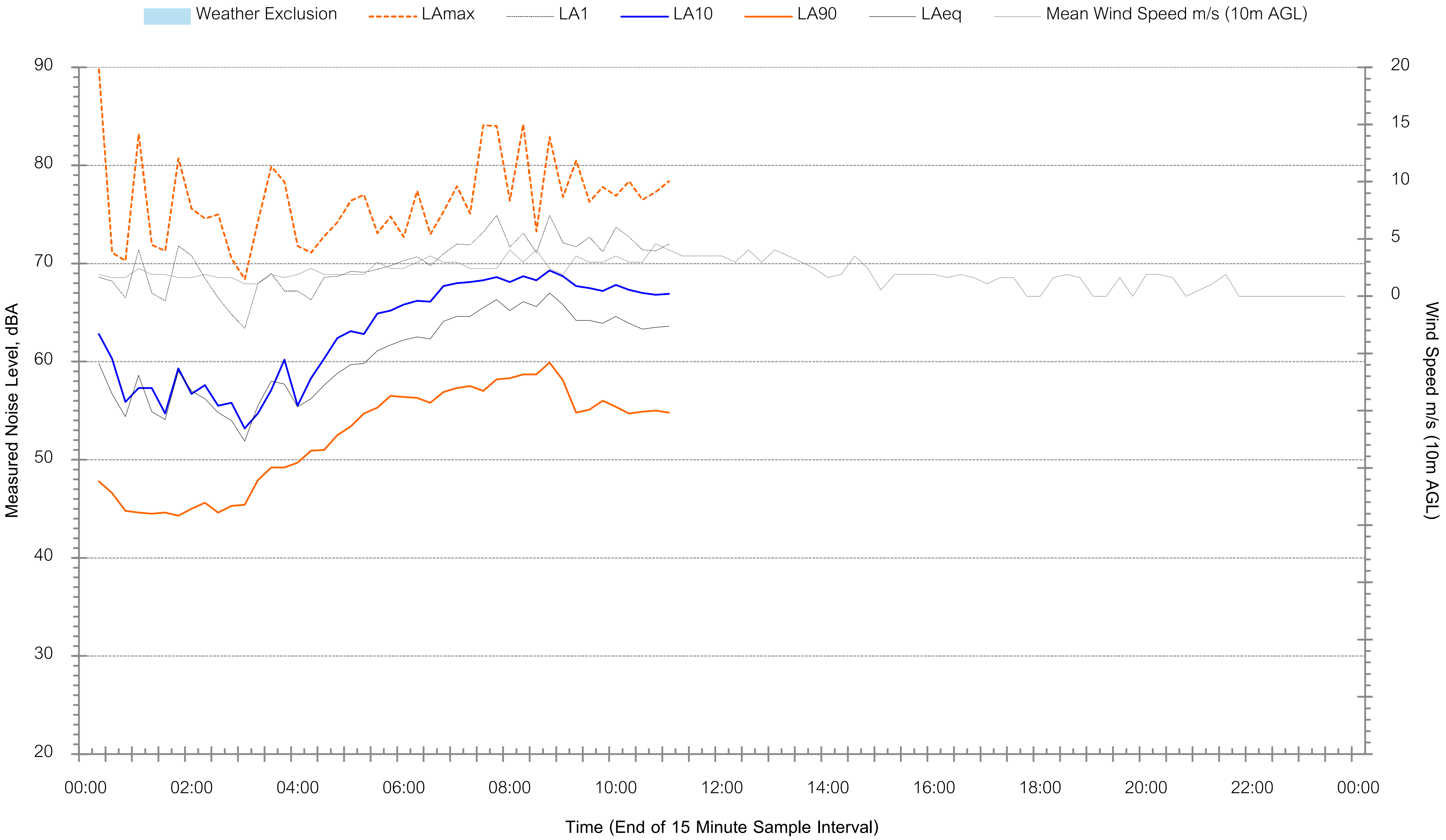




Background Noise Levels
Campbelltown Road, Minto, New South Wales - Wednesday 4 June 2025
Weather Exclusion
LAmax
LA1
LA10
LA90
LAeq
Mean Wind Speed m/s (10m AGL)
Measured Noise Level, dBA
Wind Speed m/s (10m AGL)
90
80
70
60
50
40
30
20
20
15
10
5
0
00:00
02:00
04:00
06:00
08:00
10:00
12:00
14:00
16:00
18:00
20:00
22:00
00:00
Time (End of 15 Minute Sample Interval)

Background Noise Levels

Campbelltown Road, Minto, New South Wales - Thursday 5 June 2025



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Appendix C – Annoying Characteristic Assessment

Table APPC-1 Day Tonality & Low Frequency Noise Assessment

	Frequency (Hz)	Values (dBZ)	A-wt Spectrum	C-wt Spectrum	1/3 Octave Tonality Test	1/1 Octave Tonality Test	LFN Present (Table C1 -NPI 2017)	NPI LFN Criteria (dBZ)
Inaudible Range	**10**		0	0			No	92
	12.5		0	0			No	89
	16		0	0			No	86
	20		0	0			No	77
LFN Range	**25**	54	9	49			No	69
	31.5	54	14	51	FALSE	FALSE	No	61
	40	54	19	52	FALSE		No	54
	50	53	23	52	FALSE		+2dB Eve/Night	50
	63	53	27	53	FALSE	FALSE	+2dB Eve/Night	50
	80	53	31	53	FALSE		+2dB Day;+5dB Eve/Night	48
	100	46	27	46	FALSE		No	48
	125	46	30	46	FALSE	FALSE	+2dB Eve/Night	46
	160	46	33	46	FALSE		+2dB Eve/Night	44
	200	46	35	46	FALSE			
	250	40	31	40	FALSE	FALSE		
	315	40	33	40	FALSE			
	400	42	38	42	FALSE			
	500	42	39	42	FALSE	FALSE		
	630	42	41	42	FALSE			
	800	39	38	39	FALSE			
	1000	39	39	39	FALSE	FALSE		
	1250	39	40	39	FALSE			
	1600	38	39	38	FALSE			
	2000	38	39	38	FALSE	FALSE		
	2500	38	39	38	FALSE			
	3150	28	29	28	FALSE			
	4000	28	29	27	FALSE	FALSE		
	5000	28	29	27	FALSE			
	6300	-6	0	0	FALSE			
	8000	-6	0	0	FALSE	FALSE		
	10000	-6	0	0				
	12500		0	0				
	16000		0	0				
	20000		0	0				

Fact Sheet C - Table C1

Measure/ assess source contribution C- and A-weighted Leq,T levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and:

- where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period
- where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2 dB(A) positive adjustment applies for the daytime period.

Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.

	Total dBA	Total dBC	C-A
Total SPL	**50**	**61**	**14**

Assessment	
Low Frequency Noise Present	**No C-A <15**
Tonal Noise Present	**No**

Frequency (Hz)	Values (dBZ)	A-wt Spectrum	C-wt Spectrum	1/3 Octave Tonality Test	1/1 Octave Tonality Test	LFN Present (Table C1 -NPI 2017)	NPI LFN Criteria (dBZ)
Table APPC-2 Evening Tonality & Low Frequency Noise Assessment							
Inaudible Range							
10		0	0			No	92
12.5		0	0			No	89
16		0	0			No	86
20		0	0			No	77
LFN Range							
25	36	0	31			No	69
31.5	36	0	33	FALSE	FALSE	No	61
40	36	1	34	FALSE		No	54
50	32	2	31	FALSE		No	50
63	32	6	32	FALSE	FALSE	No	50
80	32	10	32	FALSE		No	48
100	21	2	21	FALSE		No	48
125	21	5	21	FALSE	FALSE	No	46
160	21	8	21	FALSE		No	44
200	21	10	21	FALSE			
250	17	8	17	FALSE	FALSE		
315	17	10	17	FALSE			
400	17	13	17	FALSE			
500	17	14	17	FALSE	FALSE		
630	17	16	17	FALSE			
800	16	15	16	FALSE			
1000	16	16	16	FALSE	FALSE		
1250	16	17	16	FALSE			
1600	12	13	12	FALSE			
2000	12	13	12	FALSE	FALSE		
2500	12	13	12	FALSE			
3150	5	6	5	FALSE			
4000	5	6	4	FALSE	FALSE		
5000	5	6	4	FALSE			
6300	-31	0	0	FALSE			
8000	-31	0	0	FALSE	FALSE		
10000	-31	0	0				
12500		0	0				
16000		0	0				
20000		0	0				

Fact Sheet C - Table C1
Measure/ assess source contribution C- and A-weighted Leq,T levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and:

- where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period
- where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2 dB(A) positive adjustment applies for the daytime period.

Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.

	Total dBA	Total dBC	C-A
Total SPL	**25**	**40**	**14**

Assessment	
Low Frequency Noise Present	**No C-A <15**
Tonal Noise Present	**No**

Table APPC-3 Night Tonality & Low Frequency Noise Assessment

Range	Frequency (Hz)	Values (dBZ)	A-wt Spectrum	C-wt Spectrum	1/3 Octave Tonality Test	1/1 Octave Tonality Test	LFN Present (Table C1 -NPI 2017)	NPI LFN Criteria (dBZ)
Inaudible Range	**10**		0	0			No	92
	12.5		0	0			No	89
	16		0	0			No	86
	20		0	0			No	77
LFN Range	**25**	36	0	31			No	69
	31.5	36	0	33	FALSE	FALSE	No	61
	40	36	1	34	FALSE		No	54
	50	32	2	31	FALSE		No	50
	63	32	6	32	FALSE	FALSE	No	50
	80	32	10	32	FALSE		No	48
	100	21	2	21	FALSE		No	48
	125	21	5	21	FALSE	FALSE	No	46
	160	21	8	21	FALSE		No	44
	200	21	10	21	FALSE			
	250	17	8	17	FALSE	FALSE		
	315	17	10	17	FALSE			
	400	17	13	17	FALSE			
	500	17	14	17	FALSE	FALSE		
	630	17	16	17	FALSE			
	800	16	15	16	FALSE			
	1000	16	16	16	FALSE	FALSE		
	1250	16	17	16	FALSE			
	1600	12	13	12	FALSE			
	2000	12	13	12	FALSE	FALSE		
	2500	12	13	12	FALSE			
	3150	5	6	5	FALSE			
	4000	5	6	4	FALSE	FALSE		
	5000	5	6	4	FALSE			
	6300	-31	0	0	FALSE			
	8000	-31	0	0	FALSE	FALSE		
	10000	-31	0	0				
	12500		0	0				
	16000		0	0				
	20000		0	0				

Fact Sheet C - Table C1

Measure/ assess source contribution C- and A-weighted Leq,T levels over same time period. Correction to be applied where the C minus A level is 15 dB or more and:

- where any of the one-third octave noise levels in Table C2 are exceeded by up to and including 5 dB and cannot be mitigated, a 2dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period
- where any of the one-third octave noise levels in Table C2 are exceeded by more than 5 dB and cannot be mitigated, a 5dB(A) positive adjustment to measured/predicted A-weighted levels applies for the evening/night period and a 2 dB(A) positive adjustment applies for the daytime period.

Where a source emits tonal and low-frequency noise, only one 5-dB correction should be applied if the tone is in the low-frequency range, that is, at or below 160 Hz.

	Total dBA	Total dBC	C-A
Total SPL	**25**	**40**	**14**

Assessment	
Low Frequency Noise Present	**No C-A <15**
Tonal Noise Present	**No**

Appendix D – NEWA Meteorological Data

Table D1 NEWA Analysed Meteorological Conditions, Campbelltown (Mount Annan), NSW (Site no. 68257)									
Direction ± 45°	Season	Day	Evening	Night	Direction	Season	Day	Evening	Night
		Percentage Occurrence %					Percentage Occurrence %		
0	Summer	22	9	5	180	Summer	17	27	36
0	Autumn	19	5	2	180	Autumn	25	35	42
0	Winter	18	5	3	180	Winter	22	30	35
0	Spring	22	9	5	180	Spring	14	24	33
22.5	Summer	27	20	7	202.5	Summer	16	24	35
22.5	Autumn	20	8	2	202.5	Autumn	26	35	42
22.5	Winter	17	5	2	202.5	Winter	26	35	39
22.5	Spring	26	15	5	202.5	Spring	14	23	34
45	Summer	24	28	7	225	Summer	11	11	27
45	Autumn	17	10	2	225	Autumn	23	29	38
45	Winter	9	4	1	225	Winter	27	35	38
45	Spring	20	19	5	225	Spring	12	18	30
67.5	Summer	21	33	7	247.5	Summer	6	4	7
67.5	Autumn	15	12	2	247.5	Autumn	15	12	11
67.5	Winter	6	4	1	247.5	Winter	21	21	19
67.5	Spring	17	22	5	247.5	Spring	9	10	12
90	Summer	18	34	7	270	Summer	4	2	2
90	Autumn	14	13	2	270	Autumn	10	6	5
90	Winter	6	4	1	270	Winter	15	13	10
90	Spring	14	21	4	270	Spring	7	7	6
112.5	Summer	17	28	7	292.5	Summer	5	2	2
112.5	Autumn	13	11	2	292.5	Autumn	9	4	3
112.5	Winter	6	4	1	292.5	Winter	14	9	6
112.5	Spring	12	18	4	292.5	Spring	8	6	4
135	Summer	17	29	10	315	Summer	8	2	2
135	Autumn	15	13	4	315	Autumn	12	3	2
135	Winter	7	5	2	315	Winter	15	7	5
135	Spring	12	19	6	315	Spring	12	6	4
157.5	Summer	13	23	13	337.5	Summer	19	4	3
157.5	Autumn	13	14	8	337.5	Autumn	18	3	2
157.5	Winter	8	5	4	337.5	Winter	18	6	3
157.5	Spring	9	14	8	337.5	Spring	20	6	4

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APPENDIX E

TRAFFIC IMPACT ASSESSMENT

TRANSPORT IMPACT ASSESSMENT OF THE PROPOSED RESOURCE RECOVERY FACILITY AT 7 MONTORE ROAD, MINTO

McLaren
Traffic Engineering & Road Safety Consultants

Address: Shop 7, 720 Old Princes Highway Sutherland NSW 2232
Postal: P.O Box 66 Sutherland NSW 1499

Telephone: +61 2 9521 7199
Web: www.mclarentraffic.com.au
Email: admin@mclarentraffic.com.au

Division of RAMTRANS Australia ABN: 45067491678 RPEQ: 19457

Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

250042.01FB - 19 February 2026

Development Type:	**Resource Recovery Facility**
Site Address:	**7 Montore Road, Minto**
Prepared for:	**Element Environment Pty Ltd**
Document reference:	**250042.01FB**

Status	Issue	Prepared By	Checked By	Approved By	Date
Draft	A	JC	DW	DW	10 October 2025
Draft	B	JC	DW	DW	14 January 2026
Draft	C	JC	DW	DW	16 January 2026
Final	A	JC	DW	DW	21 January 2026
Final	B	JC	DW	DW	19 February 2026

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1 INTRODUCTION

M^{C}Laren Traffic Engineering was commissioned by *Element Environment Pty Ltd* to provide a transport impact assessment of the proposed modification to the approved Resource Recovery Facility at 7 Montore Road, Minto as depicted in **Annexure A**.

A transport impact assessment is an objective appraisal of the implications of a particular development on the surrounding transport networks. This includes impact to pedestrians, cyclists, motorists, passengers, public transport users, and freight and servicing vehicles.

The guideline for preparing a transport impact assessment is detailed in the *TfNSW's Guide to Transport Impact Assessment Version 1.1* (GTIA) which outlines the steps to developing a transport impact assessment. This transport impact assessment report has been prepared with due consideration to the GTIA requirements.

The scope of this study includes:

- Outline of the proposed development;
- Review of the existing site context and conditions, including the existing transport network;
- Estimation of the trip generation of the proposal;
- Determination of appropriate parking provision;
- Assessment of parking layout and design;
- Review of development impacts in relation to the transport network.

1.1 Description and Scale of Development

The proposed development involves the expansion of a resource recovery facility with an existing capacity of 450,000 tonnes per annum and an intended capacity of 600,000 tonnes per annum.

The proposed facility would receive concrete, brick, asphalt, sandstone and sand from the building and construction industry. The facility's proposed components / operations relevant to traffic and parking are outlined in the list below:

- Truck queueing area upon entry to the site;
- Two (2) weighbridges:
    - One (1) entry and one (1) exit weighbridge.
- One (1) wheel wash upon exit from the site;
- Workshop for general repairs;
- Ancillary office areas;
- 25 employees including 10 contract truck drivers who will arrive at the site in their trucks;

- Various stockpile areas for loading, unloading and processing of material:
  - Largest vehicle to access the site to be a 20m Articulated Vehicle (AV).
- At grade parking areas accommodating a total of 18 car parking spaces including one (1) accessible car parking space.
- The proposed hours of operation will be Monday to Friday, 6:00am to 8:00pm and Saturday 7:00am to 4:00pm plus NDD waste receival (tipping) 24 hours a day 7 days a week and NDD waste processing 24 hours a day 6 days a week (excluding Sunday).

1.1.1 Site Access

The site provides vehicular access via a separate entry and exit driveway from Montore Road. The existing driveways are required to accommodate vehicles up to 20m Articulated Vehicle (AV) and no changes to the driveways are proposed.

1.1.2 Truck Routes

Trucks will utilise both Ben Lomond Road to the north and Rose Payten Drive to the south via Montore Road, Airds Road and Pembroke Road for site access and egress depending on the vehicle mass, as per the current arrangement. All haulage route roads are existing approved B-Double routes. The facility is proposed to operate during the hours noted above, with the peak truck traffic estimated to occur between 8:00am to 10:00am.

1.2 State Environmental Planning Policy (Transport and Infrastructure) 2021

The proposed development qualifies as a traffic generating development with relevant size and/or capacity under *Clause 2.122* of the *SEPP (Transport and Infrastructure) 2021,* as the proposal exceeds 20,000m^2 site area for industry use. Accordingly, formal referral to Transport for NSW (TfNSW) is necessary.

1.3 Site Description

The subject site includes one (1) lot which is currently zoned *E4 – General Industrial* under the *Campbelltown Local Environmental Plan 2015*. The site has one vehicular access point from Montore Road at the site's north-eastern corner.

The site is located within the Minto Industrial Precinct, with a flood canal running along the western boundary.

1.4 State Environmental Planning Policy (Planning Systems) 2021

Development is declared State Significant Development (SSD) under Part 4, Division 4.7 of the NSW Environmental Planning and Assessment Act 1979 if specified in a State Environmental Planning Policy (SEPP). The State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP) identifies waste and resource management facilities as SSD where they exceed the relevant thresholds in Schedule 1.

On this basis, the Minister for Planning granted SSD consent for the existing approval (SSD-5339) on 17 June 2022 under Section 4.38 of the EPA Act.

1.5 Site Context

The location of the site is shown on an aerial photo and a street map in **Figure 1** and **Figure 2** respectively.

FIGURE 1: SITE CONTEXT – AERIAL PHOTO

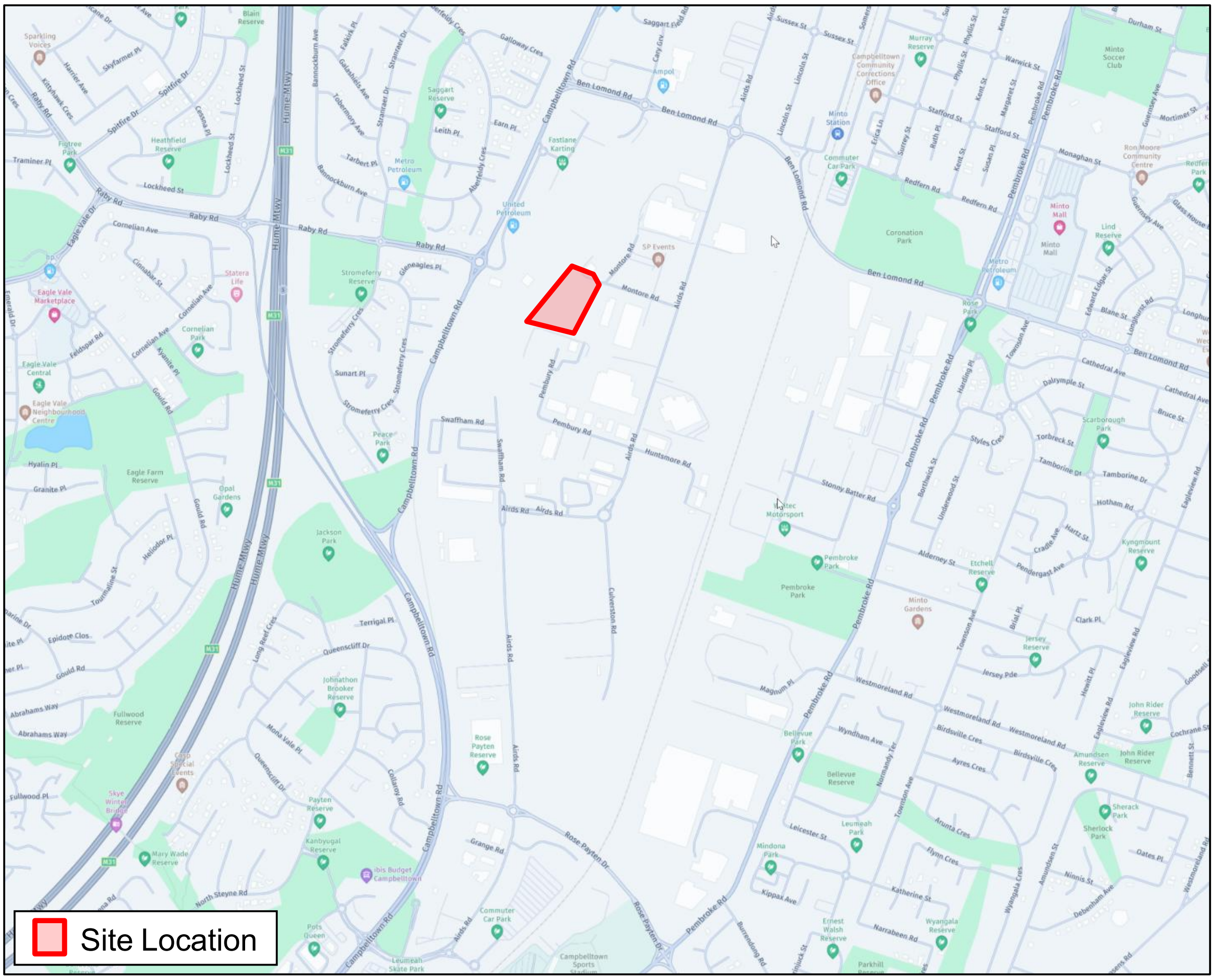


FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 Road Hierarchy

The road network servicing the site has characteristics as described in the following sub-sections.

2.1.1 Montore Road

- Unclassified LOCAL Road;
- Approximately 13m wide carriageway facilitating two-way traffic flow and kerbside parking on both sides of the road;
- Default 50km/h speed limit applies;
- Unrestricted kerbside parking permitted along both sides of the road.

2.1.2 Airds Road

- Unclassified LOCAL Road;
- Approximately 16m wide carriageway facilitating one (1) traffic flow lane in each direction and kerbside parking;
- Signposted 60km/h speed limit;
- Unrestricted kerbside parking permitted along both sides of the road.

2.1.3 Ben Lomond Road

- Unclassified REGIONAL Road (No. 7196);
- Approximately 16m wide carriageway facilitating two (2) traffic flow lanes in each direction;
- Signposted 60km/h speed limit;
- No kerbside parking permitted along both sides of the road.

2.1.4 Rose Payten Drive

- Unclassified REGIONAL Road (No. 7190);
- Approximately 16m wide carriageway facilitating two (2) traffic flow lanes in each direction;
- Signposted 60km/h speed limit;
- No kerbside parking permitted along both sides of the road.

2.1.5 Pembroke Road

- Classified STATE Road (No. 680);
- Approximately 12m wide carriageway facilitating one (1) traffic flow lane in each direction;
- Signposted 60km/h speed limit;

- Parking within the sealed road should may occur along both sides of the road.

2.1.6 Campbelltown Road

- Classified STATE Road (No. 177);
- Approximately 14m wide carriageway facilitating one (1) traffic flow lane in each direction;
- Signposted 70km/h speed limit;
- No parking permitted along both sides of the road.

2.2 Existing Traffic Management

- Priority controlled intersection of Airds Road / Montore Road.
- Roundabout controlled intersection of Airds Road / Ben Lomond Road.
- Roundabout controlled intersection of Ben Lomond Road / Pembroke Road.
- Signalised intersection of Rose Payten Drive / Pembroke Road / Smith Creek Bypass.
- Signalised junction of Rose Payten Drive / Campbelltown Road.

2.3 Existing Traffic Environment

Turning movement count traffic surveys were conducted at the intersections of Montore Road / Airds Road, Ben Lomond Road / Airds Road and Campbelltown Road / Rose Payten Drive from 7:00AM to 10:00AM and 3:00PM to 6:00PM on Thursday 6 March 2025 representing a typical weekday. The full survey results are shown in **Annexure B** for reference.

2.3.1 Existing Road Performance

The performance of the surrounding intersections under the existing traffic conditions has been assessed using SIDRA INTERSECTION 10. **Table 1** summarises the resultant intersection performance data, with full SIDRA results reproduced in **Annexure C**.

The following considerations have been undertaken to ensure a realistic calibrated model:

- Consideration to the TCS Plan for the signalised intersection Campbelltown Road / Rose Payten Drive (**Annexure D**);
- A review of the phase length and cycle times based upon video footage which is reproduced in **Annexure E** for reference:
    - Output cycle and phase lengths fall within observed cycle and phase lengths.

TABLE 1: EXISTING INTERSECTION PERFORMANCES (SIDRA INTERSECTION 10)

Intersection	Peak Hour	Degree of Saturation(1)	Average Delay(2) (sec/veh)	Level of Service(3)(4)	Control Type	Worst Movement
EXISTING PERFORMANCE						
Airds Rd / Montore Rd	AM	0.18	1.4 (Worst: 9.7)	**NA** (Worst: A)	Give Way	RT from Montore Rd (W)
	PM	0.19	1.3 (Worst: 9.2)	**NA** (Worst: A)		RT from Montore Rd (W)
Ben Lomond Rd / Airds Rd	AM	0.75	7.8 (Worst: 22.9)	**LOS A** (Worst: B)	Roundabout	UT from Airds Rd (S)
	PM	0.70	10.8 (Worst: 31.2)	**LOS A** (Worst: C)		UT from Airds Rd (S)
Campbelltown Rd / Rose Payton Dr	AM	0.82	23.3	**LOS B**	Signals	RT from Rose Payton Dr (E)
	PM	0.76	21.5	**LOS B**		RT from Rose Payton Dr (E)

Notes:

(1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.

(2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.

(3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.

(4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown, the relevant intersections are currently performing at a high level of efficiency, with an overall or worst movement Level of Service “C” conditions in both the AM & PM peak hour periods. The Level of Service “C” performance is characterised by satisfactory approach delays and spare capacity. Level of Service “A” conditions are categorised by low approach delays and spare capacity which is generally the performance of the surrounding intersections.

2.4 Public Transport

The site on Montore Road has numerous public transport networks surrounding the industrial precinct of Minto. Minto Train Station is approximately 1km walking distance to the north, and Leumeah Train Station is 3km to the south. Both stations are on the T2 – Leppington & Inner West Line, T3 – Liverpool & Inner West Line and T8 – Airport & South Line.

The location of the site subject to the surrounding public transport network is shown in **Figure 3**.

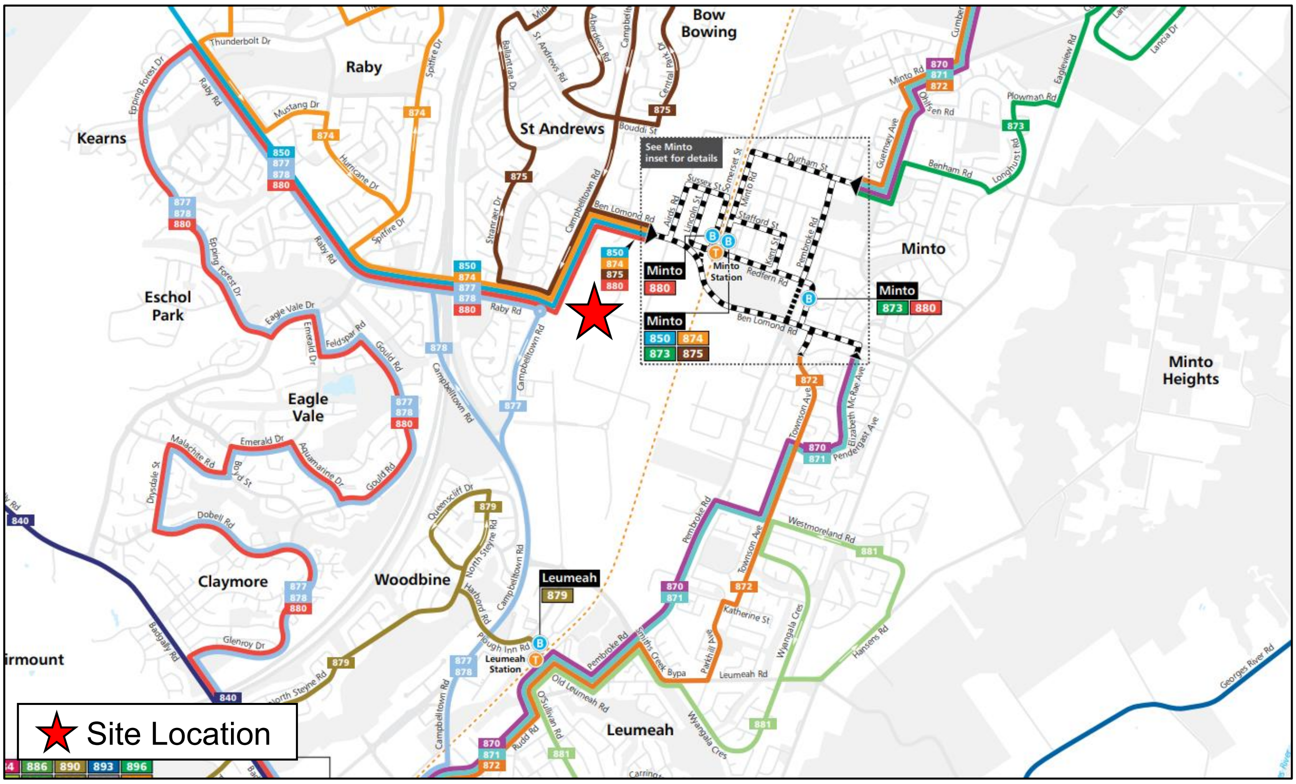


FIGURE 3: PUBLIC TRANSPORT NETWORK MAP

2.5 Future Road and Infrastructure Upgrades

From Campbelltown Council Development Application tracker and TfNSW Projects website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 PARKING ASSESSMENT

3.1 Council Parking Requirement

Whilst the *Campbelltown (Sustainable City) Development Control Plan 2015* (CSCDCP 2015) provides car parking rates based on industrial and office units on-site, it is considered that the parking requirements of the resource recovery facility, which has small office space and large storage facilities for bulk materials, should be based on a merit assessment.

The subject proposal is expected to have a total of 25 employees, a maximum of 15 whom will require the provision of car parking (as the remaining 10 contract drivers will arrive in trucks). It is thus more feasible to provide a parking rate of 1 space per employee onsite at any one time. This equates to 15 staff car parking spaces.

Similar developments see approximately 10 visitor trips per day. Parking provision for visitors to the site would be a supply of 1 to 2 car spaces as visitors tend to stay for less than 1-2 hours. This gives a suitable on-site provision of **16** to **17** car parking spaces.

The proposed layout shows a total of **18** car parking spaces (including one accessible space) complying with the above recommendations.

It should be noted that no changes to the approved number of staff members are proposed as part of the modification application and hence no increase to the parking demand will result.

3.2 Parking for People with Disabilities

The site provides one (1) accessible car parking space with no changes proposed to the number of car parking spaces as a result of the modification. The existing one (1) accessible space satisfies the requirement for accessible parking.

3.3 Bicycle & Motorcycle Parking Requirements

The CSCDCP 2015 does not require the provision of bicycle / motorcycle parking. Accordingly, no bicycle / motorcycle parking facilities have been provided, thus satisfying Council requirements.

3.4 Servicing & Loading Provision

The site will have access for vehicles up to and including 20m AVs, and servicing provisions will be adequately catered for on site. All servicing vehicles should follow the following requirements as per the DCP:

> *Provision shall be made for all loading and unloading to take place wholly within the designated loading area.*
>
> *No loading or unloading shall be carried out across parking spaces, landscaped areas, pedestrian aisles or on roadways.*

Each industrial building/ unit having a gross floor area more than 1500 square metres shall provide a loading area to allow for a heavy rigid vehicle to manoeuvre on site.

The proposed development sufficiently meets these requirements.

3.5 Car Park Design & Compliance

There are no proposed changes to the approved car parking layout as a result of this modification and hence no reassessment is warranted.

3.6 Service Vehicle Design and Compliance

There are no changes relating to servicing and loading as part of this modification application, hence no reassessment against *AS2890.2:2018* or rechecking of swept path tests is warranted.

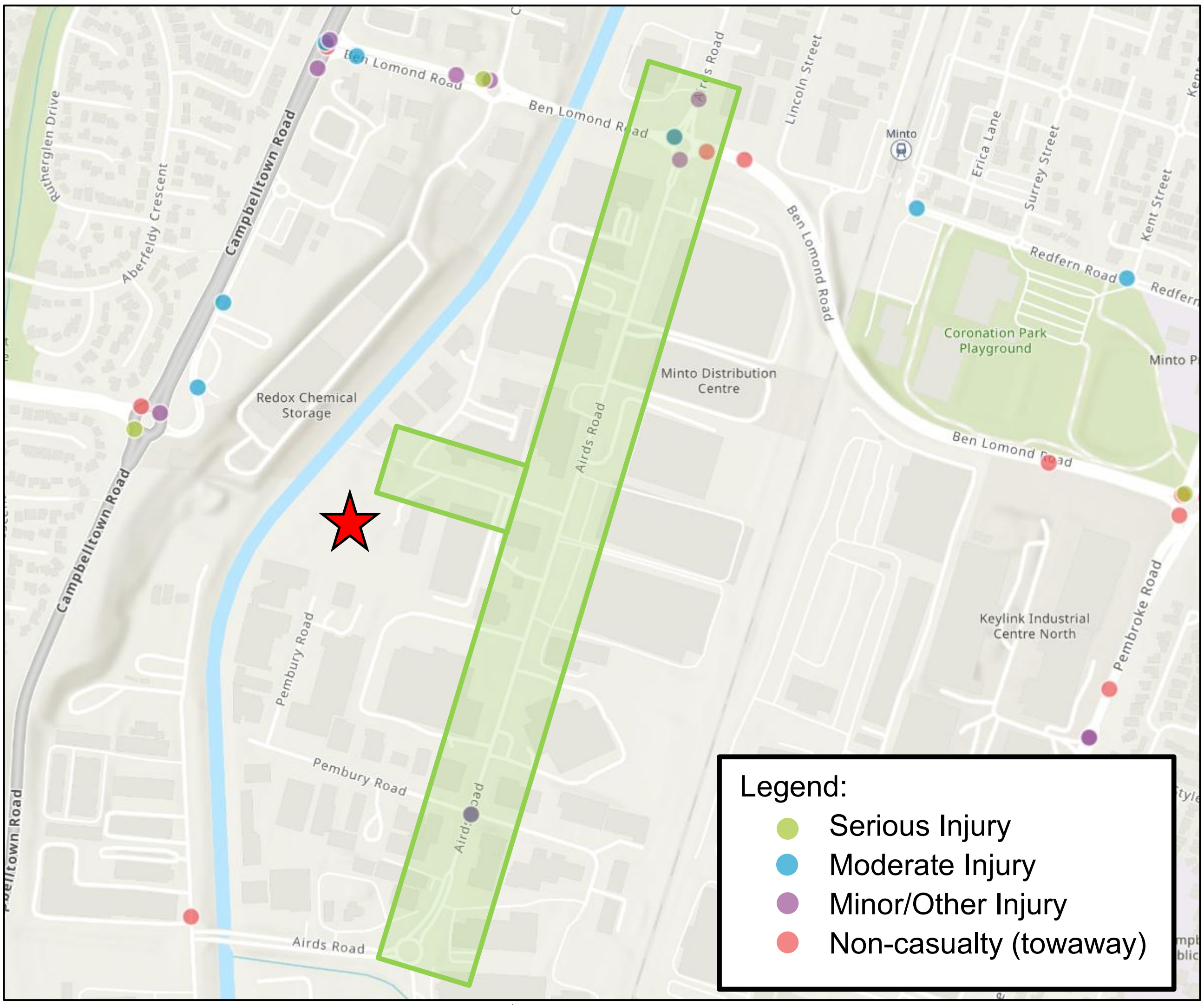
4 Road Safety

4.1 Sightline Assessment

There are no changes relating to sight lines for traffic or pedestrians at the driveway exit as part of this modification application, hence no reassessment is warranted. The existing sight lines to traffic and pedestrians is compliant with AS2890.1:2004 and the increase in traffic associated with the proposed modification and will not result in any adverse impact to the safety of the surrounding road.

4.2 Crash History

The TfNSW website provides crash data statistics for a five (5) year period between 2020 and 2024. The crashes recorded within the relevant investigation area of the sign have been summarised in **Table 2** with a diagram of the locations shown in **Figure 4**.



Relevant Investigation Area ★ **Site Location**

FIGURE 4: TFNSW CRASH STATISTICS

A summary of the crashes which involve a vehicle travelling within the investigation is shown in **Table 2.**

TABLE 2: CRASH DATA 2020 – 2024

Reporting year	Crash ID	Degree of crash	RUM - description	Type of location	Natural lighting	Street of Crash	Number killed	Number injured	Direction of Travel(1)
2021	1275556	Minor/Other Injury	Cross traffic	Roundabout	Daylight	Ben Lomond Rd	0	1	North
2024	1358591	Moderate Injury	Cross traffic	Roundabout	Darkness	Ben Lomond Rd	0	1	East
2024	1375476	Minor/Other Injury	Right through	2-way undivided	Darkness	Airds Rd	0	1	South
2022	1292668	Non-casualty (towaway)	Other same direction	Roundabout	Daylight	Ben Lomond Rd	0	0	East
2024	1369329	Non-casualty (towaway)	Off lft/lft bnd=>obj	Divided road	Darkness	Ben Lomond Rd	0	0	East

Notes:

(1) In this case, the direction of travel of the 'key traffic unit' has been reported.

As shown, during the five (5) year period between 2020 and 2024, a total of five (**5**) crashes occurred within the vicinity of the site. Of these crashes, two (2) were classified as non-casualty (towaway), with the remaining three (3) experiencing minor to moderate injury.

There are no repeated or consistent crash types within the vicinity such that there is no existing cluster of crashes. Therefore, given the lack of historical crashes within close proximity to the proposed driveway and the ample sight lines provided to both vehicles and pedestrians, the proposed increase in traffic associated with the modifications will not negatively impact the safety of the road network within the immediate vicinity of the site.

Furthermore, all of the surrounding roads on the haulage routes are B-Double approved routes. The modification does not propose any vehicles larger than 20m long Articulated Vehicles (AV).

5 TRANSPORT ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

5.1 Trip Generation

5.1.1 Vehicle Trip Generation

The GTIA does not provide traffic generation rates for Resource Recovery Facilities and as such the traffic generation associated with the proposed Resource Recovery Facility is based on the existing sites annual production (50-week year). Weighbridge data for a 6-month period between 1 February 2025 to 31 July 2025 has been obtained for the entry and exit weighbridge of the approved and operating development. A summary of the weighbridge data is provided within **Annexure F**.

The traffic generation has been calculated for the weekday peak hour periods and daily of the existing site and is summarised as follows in **Table 3** below:

TABLE 3: TRAFFIC GENERATION – TAKEN FROM WEIGHBRIDGE DATA

Traffic Generation	Import (1)	Export (2)	Combined (3)
Site Peak hour Generation			
Peak Hour Average	26.5	20.1	40.7
Peak Hour 85th Percentile	34.0	26.0	52.0
Network AM Peak hour Generation(4)			
Peak Hour Average	16.0	12.9	24.6
Peak Hour 85th Percentile	24.0	20.0	38.0
Network PM Peak hour Generation(5)			
Peak Hour Average	11.3	2.7	15.2
Peak Hour 85th Percentile	18.8	4.0	24.0
Daily Trips			
Average Weekday	132	97	229
Average Saturday	47	23	70

Notes:
(1) Import relates to trucks bringing material to the site to be processed.
(2) Export relates to trucks taking processed material from the site.
(3) Combined relates to total truck generation at any given peak hour.
(4) The peak hour trip generation of the site between 7am and 9am.
(5) The peak hour trip generation of the site between 4pm and 6pm.

During the recorded 6-month period approximately 150,000 tonnes of material was processed. This extrapolates to the assessed traffic analysis being for an annual production of 300,000 tonnes.

To determine the traffic generation for an intended capacity of 600,000 tonnes per annum, it is considered reasonable to multiply the traffic generation taken from the weighbridge data by a factor of 2 (600,000 tonnes / 300,000 tonnes), resulting in the traffic generation for the proposed site detailed in **Table 4** below:

TABLE 4: 600,000 TONNE YEARLY PROCESSED MATERIAL TRAFFIC GENERATION

Traffic Generation	Import (1)	Export (2)	Combined (3)
Site Peak hour Generation			
Peak Hour Average	53.0	40.2	81.4
Peak Hour 85^{th} Percentile	68.0	52.0	104.0
Network AM Peak hour Generation(4)			
Peak Hour Average	32.0	25.8	49.2
Peak Hour 85^{th} Percentile	48.0	40.0	**76.0**
Network PM Peak hour Generation(5)			
Peak Hour Average	22.6	5.4	30.4
Peak Hour 85^{th} Percentile	37.6	8.0	**48.0**
Daily Trips			
Weekday	264	194	458
Saturday	94	46	140

Refer to notes under **Table 3**.

The import and export traffic generations do not typically align at the same time during the day and hence the combined column in the above table is not a summation of import and export.

As shown above, the proposed site is expected to generate an average of 49 trips (25 in, 24 out) and an 85^{th} percentile of **76** trips (38 in, 38 out) in the AM peak hour period. During the PM peak hour, the site is expected to generate 30 trips (15 in, 15 out) and an 85^{th} percentile of **48** trips (24 in, 24 out). The daily weekday traffic generation is expected to be 458 trips (229 in, 229 out) and the Saturday traffic is expected to be 140 trips (70 in, 70 out).

Typical practice is to adopt the 85^{th} percentile traffic generation as the design traffic volume to assess the impact of the proposed development which has been undertaken in the following assessment.

The approved site was operating during the date of the road network traffic surveys and as such the surveys would have captured some of the traffic generated by the existing site operations. The below traffic impact assessment does not discount those trips and as such is conservative.

5.1.2 Alternative Travel Mode Trip Generation

The proposed modification is for an increase in production with no increase in the number of staff or visitors arriving to the site. Therefore, there will be no additional pedestrian, cyclist or public transport trips associated with the proposed modification.

5.1.3 Construction Traffic Generation

No construction is required for the proposed modification and therefore no construction vehicles will be generated by the modification.

5.2 Traffic Assignment

The road network and traffic surveys surrounding the site have been assessed along with input from the operator and the following traffic assignment has been assumed however, will be dependent on the source and destination for material for day to day variations:

- Inbound
  - 90% from the north feeding from the M5 and M7; and
  - 10% will travel from the local streets in the precinct.
- Outbound
  - 30% of outbound trips will travel to the north;
  - 30% will travel to the south;
  - 30% will travel to the west; and
  - 10% will travel throughout the local streets.

The masses of the trucks have been advised by the operator to be:

- All empty vehicles will be less than 32-tonnes;
- 45% of full trucks will be greater than 40-tonnes;
- 55% of full trucks will be less than 40-tonnes.

The volumes associated with relevant turning movements are summarised in **Annexure G** along with alternate routes for different sized trucks affected by tonnage limits over Bow Bowing Creek.

5.3 Traffic Impact

The traffic generation outlined in **Section 5.1** & **5.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 10 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 5**.

TABLE 5: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 10)

Intersection	Peak Hour	Degree of Saturation(1)	Average Delay(2) (sec/veh)	Level of Service(3)(4)	Control Type	Worst Movement
EXISTING PERFORMANCE						
Airds Rd / Montore Rd	AM	0.18	1.4 (Worst: 9.7)	**NA** (Worst: A)	Give Way	RT from Montore Rd (W)
	PM	0.19	1.3 (Worst: 9.2)	**NA** (Worst: A)		RT from Montore Rd (W)
Ben Lomond Rd / Airds Rd	AM	0.75	7.8 (Worst: 22.9)	**LOS A** (Worst: B)	Roundabout	UT from Airds Rd (S)
	PM	0.70	10.8 (Worst: 31.2)	**LOS A** (Worst: C)		UT from Airds Rd (S)
Campbelltown Rd / Rose Payton Dr	AM	0.82	23.3	**LOS B**	Signals	RT from Rose Payton Dr (E)
	PM	0.76	21.5	**LOS B**		RT from Rose Payton Dr (E)
FUTURE (POST DEVELOPMENT) PERFORMANCE						
Airds Rd / Montore Rd	AM	0.22	2.7 (Worst: 13.6)	**NA** (Worst: A)	Give Way	RT from Montore Rd (W)
	PM	0.20	2.2 (Worst: 11.6)	**NA** (Worst: A)		RT from Montore Rd (W)
Ben Lomond Rd / Airds Rd	AM	0.78	8.4 (Worst: 23.1)	**LOS A** (Worst: B)	Roundabout	UT from Airds Rd (S)
	PM	0.71	11.6 (Worst: 34)	**LOS A** (Worst: C)		UT from Airds Rd (S)
Campbelltown Rd / Rose Payton Dr	AM	0.86	24.4	**LOS B**	Signals	RT from Rose Payton Dr (E)
	PM	0.75	23.3	**LOS B**		RT from Rose Payton Dr (E)

NOTES: Refer to **Table 1**.

As shown, the intersections of Airds Road / Montore Road, Ben Lomond Road / Airds Road and Campbelltown Road / Rose Payten Drive all retain the same overall level of service under future conditions with minimal delays and additional capacity, indicating that there will be no adverse impact on the existing road network as a result of the proposed development.

5.4 Queuing Analysis

The following timing/operational information has been advised by the operator for the purposes of queuing assessment:

- Average time to weigh a vehicle on the weighbridge = 1-minute;
- Average time of a vehicle to unload = 1-minute;
- Average time for a vehicle to be loaded = 3-minutes;
- Average wait time to spread material after being unloaded for inspection purposes = 4-minutes;
- Number of vehicles that can be unloading at one time = 6 vehicles;
- Number of vehicles that can be loaded at one time = 2 vehicles.

Unloaded material can be inspected while the vehicle circulates towards and stops within the waiting area located on the western side of the site before being given permission to leave the material and exiting the site. Therefore, multiple operations are occurring at the same time, reducing the potential for queuing.

Considering the above information, the operation that is most likely to cause queuing is loading of vehicles with this operation taking the longest with the fewest number of vehicles that can be loaded at the same time. A queuing assessment has been undertaken with the detailed results presented in **Annexure H**. The results show that the 98th percentile queue is five (5) vehicles for the entry weighbridge and seven (7) vehicles for the loading operations which can be accommodated wholly on-site.

6 OPERATIONAL PLAN OF MANAGEMENT & DRIVER CODE OF CONDUCT

The traffic management component of the Operational Plan of Management (OPM) and Driver Code of Conduct (DCC) has been attached in **Annexure I** for reference. This OPM and DCC is approved and shall continue to be used for the proposed modification.

The traffic management component of the OPM and DCC outlines the following:

- Site inductions for drivers;
- Operational and management procedures;
- Driver safety and behaviour;
- Incident responses;
- Vehicular movement restrictions.

7 CONCLUSIONS

In view of the completed assessment, the proposed planning approval modification to the Resource Recovery Facility proposal at 7 Montore Road, Minto (as depicted in **Annexure A**) is fully supportable in terms of its traffic and parking impacts. The following outcomes of this traffic and parking impact assessment are relevant:

a) The onsite parking supply, calculated on a merits-based approach, results in a requirement of 16-17 car parking spaces. The proposed layout shows a total of 18 existing car parking spaces complying with the above recommendations.

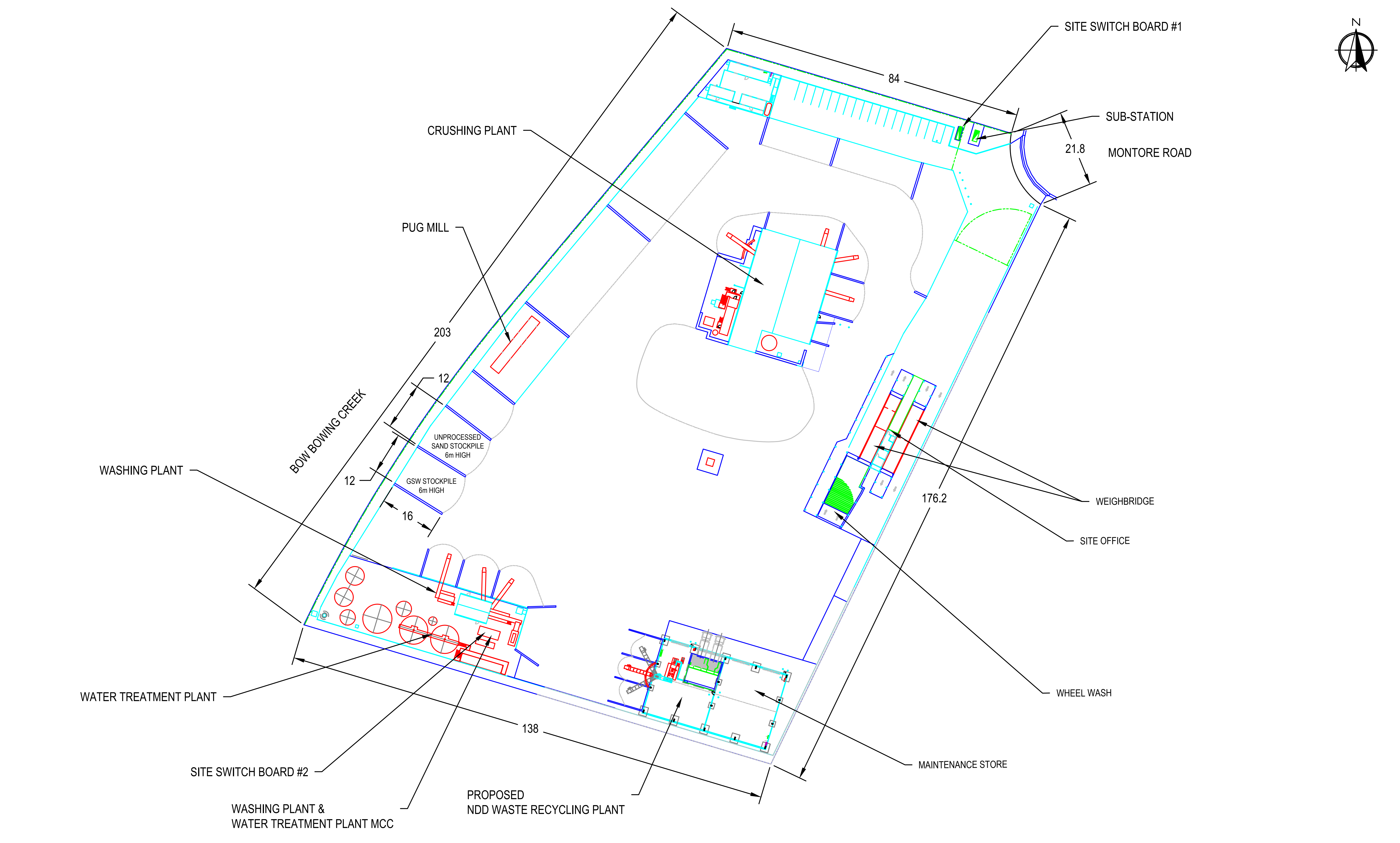
b) All traffic will ingress and egress via one existing entry/exit driveway from Montore Road.

c) The parking and loading areas of the site are approved with no changes proposed as part of the subject modification. Therefore, no reassessment against the relevant standards is warranted.

d) The traffic generation of the proposed development has been estimated to be some **76** trips in the AM peak period (38 in, 38 out) and **48** trips in the PM peak period (24 in, 24 out) based upon extrapolation of existing weighbridge data. The impacts of the traffic generation have been modelled using SIDRA INTERSECTION 10, indicating that there will be no adverse impact to the performance of the intersections as a result of the generated traffic.

McLaren
Traffic Engineering & Road Safety Consultants

ANNEXURE A: PROPOSED PLANS
(1 SHEET)



REV.	DESCRIPTION	DRAWN	CHECKED	APPROVED	ISSUE DATE
F					
E					
D					
C					
B					
A	ORIGINAL ISSUE	CS	AM	AM	19/09/2025

GENERAL NOTES:
-ALL DIMENSION IN METERS
-DO NOT SCALE

crplus+ beyond materials

PROJECTION

CLIENT	CR-PLUS	CONTRACT No.	
LOCATION	MINTO NSW	JOB No.	240636
EQUIPMENT		DWG. REPLACED BY	
CAD FILE No.	240636-101	DWG. REPLACES	
SCALE	1:1000	SEP. PARTS LIST	

TITLE	OVERALL SITE GENERAL ARRANGEMENT MODIFICATION #2	DRAWN	CS
		CHECKED	AM
		APPROVED	BL
PLANT	C&D RECYCLING PLANT	DATE	19/09/2025
DRG No.	240636-101	SHEET SIZE	A3
		REV.	A

ANNEXURE B: TRAFFIC SURVEY DATA
(3 SHEETS)

TRANS TRAFFIC SURVEY

TURNING MOVEMENT SURVEY

trafficsurvey.com.au

Intersection of Montore Rd and Airds Rd, Minto

GPS -34.031936, 150.837298

Date:	Thu 06/03/25
Weather:	Fine
Suburban:	Minto
Customer:	McLaren

North:	Airds Rd
East:	N/A
South:	Airds Rd
West:	Montore Rd

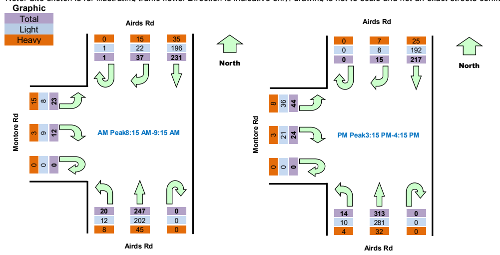
Survey Period	AM:	7:00 AM-10:00 AM
	PM:	3:00 PM-6:00 PM
Traffic Peak	AM:	8:15 AM-9:15 AM
	PM:	3:15 PM-4:15 PM

All Vehicles

Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Hourly Total	
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	Hour	Peak
7:00	7:15	1	9	38	1	61	3	0	1	2	473	
7:15	7:30	0	7	46	0	45	2	0	1	2	494	
7:30	7:45	0	4	38	0	57	8	0	1	4	523	
7:45	8:00	0	8	59	0	68	4	0	0	3	555	
8:00	8:15	1	7	43	1	72	9	0	0	4	570	
8:15	8:30	0	11	50	0	60	5	0	0	6	571	Peak
8:30	8:45	0	10	66	0	59	2	0	0	7	569	
8:45	9:00	0	8	63	0	69	5	0	6	6	538	
9:00	9:15	1	8	52	0	59	8	0	6	4	499	
9:15	9:30	0	7	52	0	51	6	0	1	13		
9:30	9:45	1	7	50	0	44	3	0	3	5		
9:45	10:00	0	13	40	0	52	3	0	2	8		
15:00	15:15	0	9	64	0	92	1	0	6	12	626	
15:15	15:30	0	7	50	0	67	5	0	6	6	627	Peak
15:30	15:45	0	2	53	0	79	6	0	6	20	626	
15:45	16:00	0	4	50	0	66	0	0	6	9	601	
16:00	16:15	0	2	64	0	101	3	0	6	9	568	
16:15	16:30	0	2	50	0	71	3	0	6	8	514	
16:30	16:45	0	3	51	0	70	2	0	3	12	499	
16:45	17:00	0	2	43	0	46	1	0	1	9	452	
17:00	17:15	0	5	47	0	66	0	0	5	8	424	
17:15	17:30	0	0	53	0	59	2	0	4	7		
17:30	17:45	1	5	28	0	51	2	0	2	5		
17:45	18:00	0	1	30	0	38	2	0	0	3		

Peak Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:15	9:15	1	37	231	0	247	20	0	12	23	571
15:15	16:15	0	15	217	0	313	14	0	24	44	627

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.



Light Vehicles

Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	1	7	28	1	56	3	0	0	1
7:15	7:30	0	7	40	0	37	2	0	1	1
7:30	7:45	0	4	34	0	46	3	0	0	1
7:45	8:00	0	4	53	0	56	4	0	0	1
8:00	8:15	1	5	36	1	53	6	0	0	1
8:15	8:30	0	5	42	0	51	2	0	0	1
8:30	8:45	0	9	56	0	44	2	0	0	2
8:45	9:00	0	6	52	0	61	3	0	6	3
9:00	9:15	1	2	46	0	46	5	0	3	2
9:15	9:30	0	2	38	0	44	4	0	1	7
9:30	9:45	0	4	37	0	31	1	0	3	1
9:45	10:00	0	9	25	0	42	2	0	2	5
15:00	15:15	0	7	58	0	84	1	0	5	11
15:15	15:30	0	3	45	0	57	4	0	6	3
15:30	15:45	0	1	47	0	69	3	0	4	19
15:45	16:00	0	2	41	0	58	0	0	5	6
16:00	16:15	0	2	59	0	97	3	0	6	8
16:15	16:30	0	1	43	0	63	2	0	6	7
16:30	16:45	0	3	41	0	70	1	0	3	12
16:45	17:00	0	2	41	0	43	1	0	0	8
17:00	17:15	0	1	46	0	62	0	0	4	8
17:15	17:30	0	0	49	0	57	2	0	4	7
17:30	17:45	1	3	26	0	50	2	0	2	4
17:45	18:00	0	1	25	0	36	1	0	0	3

Peak Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:15	9:15	1	22	196	0	202	12	0	9	8	450
15:15	16:15	0	8	192	0	281	10	0	21	36	548

Heavy Vehicles

Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd		
Period Start	Period End	U	R	SB	U	NB	L	U	R	L
7:00	7:15	0	2	10	0	5	0	0	1	1
7:15	7:30	0	0	6	0	8	0	0	0	1
7:30	7:45	0	0	4	0	11	5	0	1	3
7:45	8:00	0	4	6	0	12	0	0	0	2
8:00	8:15	0	2	7	0	19	3	0	0	3
8:15	8:30	0	6	8	0	9	3	0	0	5
8:30	8:45	0	1	10	0	15	0	0	0	5
8:45	9:00	0	2	11	0	8	2	0	0	3
9:00	9:15	0	6	6	0	13	3	0	3	2
9:15	9:30	0	5	14	0	7	2	0	0	6
9:30	9:45	1	3	13	0	13	2	0	0	4
9:45	10:00	0	4	15	0	10	1	0	0	3
15:00	15:15	0	2	6	0	8	0	0	1	1
15:15	15:30	0	4	5	0	10	1	0	0	3
15:30	15:45	0	1	6	0	10	3	0	2	1
15:45	16:00	0	2	9	0	8	0	0	1	3
16:00	16:15	0	0	5	0	4	0	0	0	1
16:15	16:30	0	1	7	0	8	1	0	0	1
16:30	16:45	0	0	10	0	0	1	0	0	0
16:45	17:00	0	0	2	0	3	0	0	1	1
17:00	17:15	0	4	1	0	4	0	0	1	0
17:15	17:30	0	0	4	0	2	0	0	0	0
17:30	17:45	0	2	2	0	1	0	0	0	1
17:45	18:00	0	0	5	0	2	1	0	0	0

Peak Time		North Approach Airds Rd			South Approach Airds Rd			West Approach Montore Rd			Peak total
Period Start	Period End	U	R	SB	U	NB	L	U	R	L	
8:15	9:15	0	15	35	0	45	8	0	3	15	121
15:15	16:15	0	7	25	0	32	4	0	3	8	79

TRANS TRAFFIC SURVEY trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Ben Lomond Rd and Airds Rd, Minto

GPS -34.027071, 150.839175

Date:	Thu 06/03/25	*North:*	Airds Rd	*Survey Period*	AM:	7:00 AM-10:00 AM
Weather:	Fine	*East:*	Ben Lomond Rd		PM:	3:00 PM-6:00 PM
Suburban:	Minto	*South:*	Airds Rd	*Traffic Peak*	AM:	8:00 AM-9:00 AM
Customer:	McLaren	*West:*	Ben Lomond Rd		PM:	3:15 PM-4:15 PM

All Vehicles

Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Hourly Total	
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	Hour	Peak
7:00	7:15	0	26	3	1	0	10	100	13	0	17	9	36	1	33	102	85	2006	
7:15	7:30	0	33	3	0	0	5	115	26	0	8	17	27	1	23	123	95	2184	
7:30	7:45	1	39	4	4	0	7	148	15	0	23	10	32	1	26	136	73	2305	
7:45	8:00	0	30	5	2	0	10	138	32	0	17	11	34	0	33	171	92	2414	
8:00	8:15	0	32	2	1	0	7	170	16	1	18	8	41	0	43	214	61	2442	Peak
8:15	8:30	0	24	6	0	1	12	177	20	1	21	9	40	0	40	206	40	2320	
8:30	8:45	0	19	7	2	0	7	176	37	3	25	9	29	0	43	224	47	2245	
8:45	9:00	0	24	5	3	0	9	183	35	0	20	12	44	0	42	185	41	2037	
9:00	9:15	0	24	10	3	1	13	137	19	2	16	13	36	0	35	152	31	1887	
9:15	9:30	0	27	9	7	0	8	160	20	1	17	8	40	0	33	144	48		
9:30	9:45	0	20	10	3	0	10	123	20	3	15	7	29	0	33	119	28		
9:45	10:00	0	19	9	5	0	9	124	20	0	23	7	32	0	26	152	27		
15:00	15:15	0	48	20	3	1	5	217	24	0	44	11	78	1	21	173	23	2673	
15:15	15:30	0	42	10	7	1	6	248	16	0	19	9	44	0	31	215	25	2703	Peak
15:30	15:45	0	54	10	8	1	16	231	18	1	37	10	80	0	24	226	30	2669	
15:45	16:00	1	53	5	6	1	11	179	21	0	20	8	44	0	22	180	34	2472	
16:00	16:15	1	69	12	11	0	12	212	23	0	46	13	74	0	24	169	33	2439	
16:15	16:30	0	58	14	11	0	9	186	8	0	30	8	56	0	18	212	29	2366	
16:30	16:45	0	53	10	4	1	9	163	9	0	35	5	58	0	32	150	20	2346	
16:45	17:00	0	41	13	3	0	14	171	14	0	18	5	44	0	18	185	26	2296	
17:00	17:15	0	67	10	2	0	6	205	17	0	28	2	58	1	21	183	26	2290	
17:15	17:30	0	51	10	6	0	2	201	22	0	33	3	36	0	24	204	27		
17:30	17:45	0	35	1	2	0	8	172	14	0	26	2	30	0	18	167	24		
17:45	18:00	0	48	3	5	0	6	208	18	0	24	4	26	0	10	168	26		

Peak Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	99	20	6	1	35	706	108	5	84	38	154	0	168	829	189	2442
15:15	16:15	2	218	37	32	3	45	870	78	1	122	40	242	0	101	790	122	2703

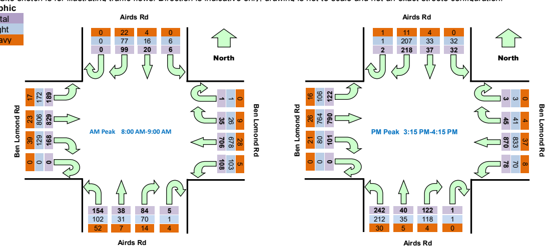
Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic

Total

Light

Heavy



Light Vehicles

Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	0	21	3	1	0	10	95	12	0	14	9	30	0	20	91	78
7:15	7:30	0	28	3	0	0	3	110	24	0	7	16	20	0	20	115	90
7:30	7:45	1	31	2	3	0	6	140	15	0	19	9	20	1	23	134	66
7:45	8:00	0	25	3	1	0	9	130	29	0	16	10	25	0	29	165	83
8:00	8:15	0	25	1	1	0	3	165	16	0	14	5	26	0	33	209	57
8:15	8:30	0	21	6	0	1	10	168	18	1	17	8	29	0	30	201	39
8:30	8:45	0	16	6	2	0	6	170	36	0	20	8	15	0	35	215	42
8:45	9:00	0	15	3	3	0	7	175	33	0	19	10	32	0	31	181	34
9:00	9:15	0	17	7	2	1	11	132	18	1	16	11	23	0	26	140	27
9:15	9:30	0	25	7	7	0	6	153	18	0	13	8	26	0	20	137	41
9:30	9:45	0	16	5	3	0	9	116	17	2	12	6	14	0	23	109	23
9:45	10:00	0	15	7	4	0	8	115	16	0	20	5	22	0	13	141	23
15:00	15:15	0	46	18	2	1	5	207	23	0	42	10	71	1	15	163	16
15:15	15:30	0	38	9	7	1	5	235	14	0	18	7	38	0	24	208	22
15:30	15:45	0	50	8	8	1	16	220	17	1	34	8	72	0	20	217	26
15:45	16:00	0	51	4	6	1	10	173	18	0	20	7	34	0	15	178	32
16:00	16:15	1	68	12	11	0	10	205	21	0	46	13	68	0	21	161	26
16:15	16:30	0	54	14	10	0	8	180	8	0	30	8	47	0	11	205	26
16:30	16:45	0	50	10	3	1	8	155	9	0	35	5	56	0	21	143	15
16:45	17:00	0	38	13	3	0	13	162	14	0	18	5	39	0	15	180	20
17:00	17:15	0	64	10	2	0	6	203	17	0	28	2	52	1	15	180	24
17:15	17:30	0	48	10	6	0	2	195	21	0	33	3	35	0	19	201	26
17:30	17:45	0	35	1	2	0	8	166	14	0	25	2	28	0	15	165	21
17:45	18:00	0	45	3	5	0	6	205	18	0	24	4	24	0	6	165	24

Peak Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	77	16	6	1	26	678	103	1	70	31	102	0	129	806	172	2218
15:15	16:15	1	207	33	32	3	41	833	70	1	118	35	212	0	80	764	106	2536

Heavy Vehicles

Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd			
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L
7:00	7:15	0	5	0	0	0	0	5	1	0	3	0	6	1	13	11	7
7:15	7:30	0	5	0	0	0	2	5	2	0	1	1	7	1	3	8	5
7:30	7:45	0	8	2	1	0	1	8	0	0	4	1	12	0	3	2	7
7:45	8:00	0	5	2	1	0	1	8	3	0	1	1	9	0	4	6	9
8:00	8:15	0	7	1	0	0	4	5	0	1	4	3	15	0	10	5	4
8:15	8:30	0	3	0	0	0	2	9	2	0	4	1	11	0	10	5	1
8:30	8:45	0	3	1	0	0	1	6	1	3	5	1	14	0	8	9	5
8:45	9:00	0	9	2	0	0	2	8	2	0	1	2	12	0	11	4	7
9:00	9:15	0	7	3	1	0	2	5	1	1	0	2	13	0	9	12	4
9:15	9:30	0	2	2	0	0	2	7	2	1	4	0	14	0	13	7	7
9:30	9:45	0	4	5	0	0	1	7	3	1	3	1	15	0	10	10	5
9:45	10:00	0	4	2	1	0	1	9	4	0	3	2	10	0	13	11	4
15:00	15:15	0	2	2	1	0	0	10	1	0	2	1	7	0	6	10	7
15:15	15:30	0	4	1	0	0	1	13	2	0	1	2	6	0	7	7	3
15:30	15:45	0	4	2	0	0	0	11	1	0	3	2	8	0	4	9	4
15:45	16:00	1	2	1	0	0	1	6	3	0	0	1	10	0	7	2	2
16:00	16:15	0	1	0	0	0	2	7	2	0	0	0	6	0	3	8	7
16:15	16:30	0	4	0	1	0	1	6	0	0	0	0	9	0	7	7	3
16:30	16:45	0	3	0	1	0	1	8	0	0	0	0	2	0	11	7	5
16:45	17:00	0	3	0	0	0	1	9	0	0	0	0	5	0	3	5	6
17:00	17:15	0	3	0	0	0	0	2	0	0	0	0	6	0	6	3	2
17:15	17:30	0	3	0	0	0	0	6	1	0	0	0	1	0	5	3	1
17:30	17:45	0	0	0	0	0	0	6	0	0	1	0	2	0	3	2	3
17:45	18:00	0	3	0	0	0	0	3	0	0	0	0	2	0	4	3	2

Peak Time		North Approach Airds Rd				East Approach Ben Lomond Rd				South Approach Airds Rd				West Approach Ben Lomond Rd				Peak total
Period Start	Period End	U	R	SB	L	U	R	WB	L	U	R	NB	L	U	R	EB	L	
8:00	9:00	0	22	4	0	0	9	28	5	4	14	7	52	0	39	23	17	224
15:15	16:15	1	11	4	0	0	4	37	8	0	4	5	30	0	21	26	16	167

TRANS TRAFFIC SURVEY
trafficsurvey.com.au

TURNING MOVEMENT SURVEY

Intersection of Campbelltown Rd and Rose Payten Dr, M

GPS -34.045452, 150.829424

Date:	Thu 06/03/25		***North:***	Campbelltown Rd		***Survey Period***	AM:	7:00 AM-10:00 AM
Weather:	Fine		***East:***	Rose Payten Dr			PM:	3:00 PM-6:00 PM
Suburban:	Minto		***South:***	Campbelltown Rd		***Traffic Peak***	AM:	8:00 AM-9:00 AM
Customer:	McLaren		***West:***	N/A			PM:	4:30 PM-5:30 PM

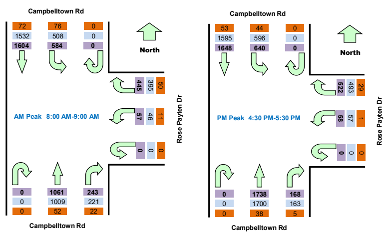
All Vehicles

Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow			Hourly Total	
Period Start	**Period End**	**U**	**SB**	**L**	**U**	**R**	**L**	**U**	**R**	**NB**	**Hour**	**Peak**
7:00	7:15	0	209	107	0	108	9	0	44	321	3441	
7:15	7:30	0	225	114	0	121	10	0	45	294	3569	
7:30	7:45	0	284	102	0	97	14	0	60	312	3771	
7:45	8:00	0	342	135	0	116	7	0	79	286	3961	
8:00	8:15	0	357	142	0	98	13	0	62	254	3994	Peak
8:15	8:30	0	387	156	0	117	9	0	73	269	3935	
8:30	8:45	0	441	145	0	131	15	0	49	278	3683	
8:45	9:00	0	419	141	0	99	20	0	59	260	3389	
9:00	9:15	0	308	107	0	110	24	0	71	247	3209	
9:15	9:30	0	281	87	0	73	24	0	30	264		
9:30	9:45	0	274	87	0	108	18	0	44	234		
9:45	10:00	0	299	104	0	78	17	0	47	273		
15:00	15:15	0	413	151	0	121	19	0	34	331	4419	
15:15	15:30	0	391	148	0	139	20	0	55	331	4499	
15:30	15:45	0	428	164	0	153	16	0	45	337	4589	
15:45	16:00	0	445	141	0	92	19	0	72	354	4594	
16:00	16:15	0	417	150	0	149	25	0	41	367	4651	
16:15	16:30	0	499	160	0	105	16	0	27	367	4712	
16:30	16:45	0	387	170	0	127	14	0	48	402	4774	Peak
16:45	17:00	0	434	163	0	105	12	0	38	428	4719	
17:00	17:15	0	398	146	0	163	15	0	50	438	4585	
17:15	17:30	0	429	161	0	127	17	0	32	470		
17:30	17:45	0	314	159	0	118	18	0	69	415		
17:45	18:00	0	387	154	0	105	15	0	53	332		

Peak Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow			Peak total
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	1604	584	0	445	57	0	243	1061	3994
16:30	17:30	0	1648	640	0	522	58	0	168	1738	4774

Note: Site sketch is for illustrating traffic flows. Direction is indicative only, drawing is not to scale and not an exact streets configuration.

Graphic
Total
Light
Heavy



Light Vehicles

Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow		
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	193	90	0	102	4	0	39	307
7:15	7:30	0	212	100	0	104	9	0	40	280
7:30	7:45	0	267	81	0	85	10	0	51	301
7:45	8:00	0	325	116	0	102	3	0	71	275
8:00	8:15	0	336	115	0	89	9	0	55	241
8:15	8:30	0	372	136	0	102	6	0	67	257
8:30	8:45	0	426	132	0	121	13	0	46	270
8:45	9:00	0	398	125	0	83	18	0	53	241
9:00	9:15	0	287	88	0	88	19	0	56	229
9:15	9:30	0	267	71	0	60	20	0	22	247
9:30	9:45	0	253	74	0	98	15	0	41	217
9:45	10:00	0	275	88	0	66	16	0	43	257
15:00	15:15	0	393	135	0	107	19	0	30	317
15:15	15:30	0	371	134	0	127	20	0	45	315
15:30	15:45	0	415	155	0	142	16	0	36	325
15:45	16:00	0	426	129	0	82	16	0	67	338
16:00	16:15	0	404	137	0	144	25	0	37	354
16:15	16:30	0	485	147	0	101	14	0	26	356
16:30	16:45	0	377	159	0	119	14	0	46	395
16:45	17:00	0	413	148	0	101	11	0	36	419
17:00	17:15	0	385	140	0	150	15	0	49	427
17:15	17:30	0	420	149	0	123	17	0	32	459
17:30	17:45	0	307	153	0	112	18	0	65	407
17:45	18:00	0	377	143	0	99	15	0	51	323

Peak Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow			Peak total
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	1532	508	0	395	46	0	221	1009	3711
16:30	17:30	0	1595	596	0	493	57	0	163	1700	4604

Heavy Vehicles

Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow		
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB
7:00	7:15	0	16	17	0	6	5	0	5	14
7:15	7:30	0	13	14	0	17	1	0	5	14
7:30	7:45	0	17	21	0	12	4	0	9	11
7:45	8:00	0	17	19	0	14	4	0	8	11
8:00	8:15	0	21	27	0	9	4	0	7	13
8:15	8:30	0	15	20	0	15	3	0	6	12
8:30	8:45	0	15	13	0	10	2	0	3	8
8:45	9:00	0	21	16	0	16	2	0	6	19
9:00	9:15	0	21	19	0	22	5	0	15	18
9:15	9:30	0	14	16	0	13	4	0	8	17
9:30	9:45	0	21	13	0	10	3	0	3	17
9:45	10:00	0	24	16	0	12	1	0	4	16
15:00	15:15	0	20	16	0	14	0	0	4	14
15:15	15:30	0	20	14	0	12	0	0	10	16
15:30	15:45	0	13	9	0	11	0	0	9	12
15:45	16:00	0	19	12	0	10	3	0	5	16
16:00	16:15	0	13	13	0	5	0	0	4	13
16:15	16:30	0	14	13	0	4	2	0	1	11
16:30	16:45	0	10	11	0	8	0	0	2	7
16:45	17:00	0	21	15	0	4	1	0	2	9
17:00	17:15	0	13	6	0	13	0	0	1	11
17:15	17:30	0	9	12	0	4	0	0	0	11
17:30	17:45	0	7	6	0	6	0	0	4	8
17:45	18:00	0	10	11	0	6	0	0	2	9

Peak Time		th Approach Campbelltow			ast Approach Rose Payten		th Approach Campbelltow			Peak total
Period Start	**Period End**	U	SB	L	U	R	L	U	R	NB	
8:00	9:00	0	72	76	0	50	11	0	22	52	283
16:30	17:30	0	53	44	0	29	1	0	5	38	170

Traffic Engineering & Road Safety Consultants

ANNEXURE C: SIDRA RESULTS
(16 SHEETS)

MOVEMENT SUMMARY

Site: [1] Airds Rd / Montore Rd EX AM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Airds Road / Montore Road
Existing conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	21	40.0	21	40.0	0.164	6.0	LOS A	0.0	0.0	0.00	0.04	0.00	55.2
2	T1	All MCs	260	18.2	260	18.2	0.164	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	59.6
Approach			281	19.9	281	19.9	0.164	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
North: Airds Rd (N)															
8	T1	All MCs	243	15.2	243	15.2	0.179	0.4	LOS A	0.4	3.5	0.17	0.19	0.17	58.8
9	R2	All MCs	39	40.5	39	40.5	0.179	7.8	LOS A	0.4	3.5	0.17	0.19	0.17	54.0
Approach			282	18.7	282	18.7	0.179	1.5	NA	0.4	3.5	0.17	0.19	0.17	58.1
West: Montore Rd (W)															
10	L2	All MCs	24	65.2	24	65.2	0.050	8.1	LOS A	0.2	1.8	0.44	0.65	0.44	48.6
12	R2	All MCs	13	25.0	13	25.0	0.050	9.7	LOS A	0.2	1.8	0.44	0.65	0.44	49.8
Approach			37	51.4	37	51.4	0.050	8.6	LOS A	0.2	1.8	0.44	0.65	0.44	49.0
All Vehicles			600	21.2	600	21.2	0.179	1.4	NA	0.4	3.5	0.10	0.15	0.10	57.9

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [2] Airds Rd / Montore Rd EX PM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Airds Road / Montore Road
Existing Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	15	28.6	15	28.6	0.190	5.9	LOS A	0.0	0.0	0.00	0.03	0.00	55.9
2	T1	All MCs	329	10.2	329	10.2	0.190	0.1	LOS A	0.0	0.0	0.00	0.03	0.00	59.7
Approach			344	11.0	344	11.0	0.190	0.3	NA	0.0	0.0	0.00	0.03	0.00	59.5
North: Airds Rd (N)															
8	T1	All MCs	228	11.5	228	11.5	0.145	0.3	LOS A	0.2	1.6	0.09	0.10	0.09	59.4
9	R2	All MCs	16	46.7	16	46.7	0.145	8.4	LOS A	0.2	1.6	0.09	0.10	0.09	54.3
Approach			244	13.8	244	13.8	0.145	0.8	NA	0.2	1.6	0.09	0.10	0.09	59.0
West: Montore Rd (W)															
10	L2	All MCs	46	18.2	46	18.2	0.085	7.3	LOS A	0.3	2.4	0.45	0.68	0.45	50.5
12	R2	All MCs	25	12.5	25	12.5	0.085	9.2	LOS A	0.3	2.4	0.45	0.68	0.45	50.4
Approach			72	16.2	72	16.2	0.085	8.0	LOS A	0.3	2.4	0.45	0.68	0.45	50.5
All Vehicles			660	12.6	660	12.6	0.190	1.3	NA	0.3	2.4	0.08	0.12	0.08	58.2

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [3] Ben Lomond Rd / Airds Rd EX AM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Ben Lomond Road / Airds Road
Existing Conditions
AM Peak Period
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	162	33.8	162	33.8	0.260	11.3	LOS A	1.7	15.8	0.86	0.76	0.86	48.6
2	T1	All MCs	40	18.4	40	18.4	0.258	12.2	LOS A	1.6	13.2	0.85	0.80	0.85	47.2
3	R2	All MCs	88	16.7	88	16.7	0.258	16.7	LOS B	1.6	13.2	0.85	0.80	0.85	46.3
3u	U	All MCs	5	80.0	5	80.0	0.258	22.9	LOS B	1.6	13.2	0.85	0.80	0.85	44.5
Approach			296	27.4	296	27.4	0.260	13.3	LOS A	1.7	15.8	0.85	0.77	0.85	47.6
East: Ben Lomond Rd (E)															
4	L2	All MCs	114	4.6	114	4.6	0.393	6.4	LOS A	2.8	20.2	0.59	0.55	0.59	52.0
5	T1	All MCs	743	4.0	743	4.0	0.393	6.1	LOS A	2.8	20.2	0.60	0.57	0.60	52.3
6	R2	All MCs	37	25.7	37	25.7	0.393	11.7	LOS A	2.7	19.5	0.61	0.58	0.61	50.5
6u	U	All MCs	1	0.0	1	0.0	0.393	12.9	LOS A	2.7	19.5	0.61	0.58	0.61	51.4
Approach			895	4.9	895	4.9	0.393	6.4	LOS A	2.8	20.2	0.60	0.57	0.60	52.2
North: Airds Road (N)															
7	L2	All MCs	6	0.0	6	0.0	0.083	16.2	LOS B	0.5	4.3	0.95	0.84	0.95	45.7
8	T1	All MCs	21	20.0	21	20.0	0.264	18.0	LOS B	2.1	17.4	0.96	0.83	0.96	45.5
9	R2	All MCs	104	22.2	104	22.2	0.264	20.4	LOS B	2.1	17.4	1.00	0.83	1.00	43.7
Approach			132	20.8	132	20.8	0.264	19.8	LOS B	2.1	17.4	0.99	0.83	0.99	44.1
West: Ben Lomond Rd (W)															
10	L2	All MCs	199	9.0	199	9.0	0.110	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	55.2
11	T1	All MCs	873	2.8	873	2.8	0.747	5.8	LOS A	9.2	67.6	0.74	0.57	0.75	51.5
12	R2	All MCs	177	23.2	177	23.2	0.747	11.0	LOS A	9.2	67.6	0.74	0.57	0.75	50.0
Approach			1248	6.7	1248	6.7	0.747	6.2	LOS A	9.2	67.6	0.63	0.55	0.63	51.8
All Vehicles			2571	9.2	2571	9.2	0.747	7.8	LOS A	9.2	67.6	0.66	0.60	0.66	51.0

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [4] Ben Lomond Rd / Airds Rd EX PM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Ben Lomond Road / Airds Road
Existing Conditions
AM Peak Period
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	255	12.4	255	12.4	0.538	24.4	LOS B	5.6	43.5	1.00	1.02	1.38	41.7
2	T1	All MCs	42	12.5	42	12.5	0.478	25.8	LOS B	4.0	29.6	1.00	0.97	1.28	40.5
3	R2	All MCs	128	3.3	128	3.3	0.478	29.5	LOS C	4.0	29.6	1.00	0.97	1.28	40.1
3u	U	All MCs	1	0.0	1	0.0	0.478	31.2	LOS C	4.0	29.6	1.00	0.97	1.28	40.2
Approach			426	9.6	426	9.6	0.538	26.1	LOS B	5.6	43.5	1.00	1.00	1.34	41.1
East: Ben Lomond Rd (E)															
4	L2	All MCs	82	10.3	82	10.3	0.491	6.9	LOS A	4.0	28.9	0.71	0.60	0.71	51.3
5	T1	All MCs	916	4.3	916	4.3	0.491	6.7	LOS A	4.0	28.9	0.72	0.62	0.72	51.8
6	R2	All MCs	47	8.9	47	8.9	0.491	11.8	LOS A	3.7	27.3	0.73	0.63	0.73	50.5
6u	U	All MCs	1	0.0	1	0.0	0.491	13.5	LOS A	3.7	27.3	0.73	0.63	0.73	50.9
Approach			1046	4.9	1046	4.9	0.491	6.9	LOS A	4.0	28.9	0.72	0.62	0.72	51.7
North: Airds Road (N)															
7	L2	All MCs	34	0.0	34	0.0	0.146	14.4	LOS A	1.0	7.1	0.93	0.82	0.93	47.2
8	T1	All MCs	39	10.8	39	10.8	0.464	15.7	LOS B	4.4	32.3	0.96	0.85	1.03	46.1
9	R2	All MCs	229	5.0	229	5.0	0.464	20.1	LOS B	4.4	32.3	1.00	0.89	1.14	44.3
9u	U	All MCs	1	0.0	1	0.0	0.464	21.9	LOS B	4.4	32.3	1.00	0.89	1.14	44.4
Approach			303	5.2	303	5.2	0.464	18.9	LOS B	4.4	32.3	0.99	0.88	1.10	44.8
West: Ben Lomond Rd (W)															
10	L2	All MCs	128	13.1	128	13.1	0.073	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	55.0
11	T1	All MCs	832	3.3	832	3.3	0.695	6.0	LOS A	7.9	57.6	0.74	0.58	0.75	51.5
12	R2	All MCs	106	20.8	106	20.8	0.695	11.1	LOS A	7.9	57.6	0.74	0.58	0.75	50.1
Approach			1066	6.2	1066	6.2	0.695	6.2	LOS A	7.9	57.6	0.65	0.57	0.66	51.8
All Vehicles			2842	6.1	2842	6.1	0.695	10.8	LOS A	7.9	57.6	0.77	0.68	0.83	49.0

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [5] Campbelltown Rd/ Rose Payten Dr EX AM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Campbelltown Road / Rose Payten Drive
Existing Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 139.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Campbelltown Rd (S)															
2	T1	All MCs	1117	4.9	1117	4.9	0.395	6.6	LOS A	13.2	96.1	0.39	0.35	0.39	54.2
3	R2	All MCs	256	9.1	256	9.1	* 0.517	52.6	LOS D	7.7	57.7	0.98	1.11	0.98	27.1
Approach			1373	5.7	1373	5.7	0.517	15.1	LOS B	13.2	96.1	0.50	0.49	0.50	45.7
East: Rose Payton Dr (E)															
4	L2	All MCs	60	19.3	60	19.3	0.098	20.5	LOS B	2.3	19.0	0.61	1.02	0.61	37.9
6	R2	All MCs	468	11.2	468	11.2	* 0.823	72.7	LOS F	16.6	127.6	1.00	0.93	1.15	26.9
Approach			528	12.2	528	12.2	0.823	66.7	LOS E	16.6	127.6	0.96	0.94	1.09	27.8
North: Campbelltown Rd (N)															
7	L2	All MCs	615	13.0	615	13.0	0.575	8.6	LOS A	10.2	79.6	0.27	0.71	0.27	49.1
8	T1	All MCs	1688	4.5	1688	4.5	* 0.772	21.8	LOS B	43.6	317.0	0.81	0.74	0.81	44.3
Approach			2303	6.8	2303	6.8	0.772	18.3	LOS B	43.6	317.0	0.67	0.74	0.67	45.4
All Vehicles			4204	7.1	4204	7.1	0.823	23.3	LOS B	43.6	317.0	0.65	0.68	0.66	42.1

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Campbelltown Rd (S)												
P1	Full	1	1	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25
East: Rose Payton Dr (E)												
P2	Full	1	1	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25
All Pedestrians		2	2	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: [6] Campbelltown Rd/ Rose Payten Dr EX PM (EXISTING)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Campbelltown Road / Rose Payten Drive
Existing Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 140.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	Aver. Back Of Queue [Veh.	Dist]	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Campbelltown Rd (S)															
2	T1	All MCs	1829	2.2	1829	2.2	0.672	12.0	LOS A	20.8	148.5	0.61	0.56	0.61	50.2
3	R2	All MCs	177	3.0	177	3.0	* 0.575	52.0	LOS D	3.6	25.7	1.00	1.00	1.00	26.5
Approach			2006	2.3	2006	2.3	0.672	15.5	LOS B	20.8	148.5	0.64	0.60	0.64	46.5
East: Rose Payton Dr (E)															
4	L2	All MCs	61	1.7	61	1.7	0.092	18.9	LOS B	1.3	9.5	0.56	0.96	0.56	39.6
6	R2	All MCs	549	5.6	549	5.6	* 0.746	63.8	LOS E	11.1	81.6	1.00	0.87	1.04	28.8
Approach			611	5.2	611	5.2	0.746	59.3	LOS E	11.1	81.6	0.95	0.88	0.99	29.6
North: Campbelltown Rd (N)															
7	L2	All MCs	674	6.9	674	6.9	0.594	8.9	LOS A	7.6	56.6	0.30	0.75	0.30	48.3
8	T1	All MCs	1735	3.2	1735	3.2	* 0.758	20.0	LOS B	26.4	189.9	0.78	0.71	0.78	45.3
Approach			2408	4.2	2408	4.2	0.758	16.9	LOS B	26.4	189.9	0.64	0.72	0.64	46.0
All Vehicles			5025	3.6	5025	3.6	0.758	21.5	LOS B	26.4	189.9	0.68	0.69	0.69	43.3

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Campbelltown Rd (S)												
P1	Full	3	3	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25
East: Rose Payton Dr (E)												
P2	Full	1	1	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25
All Pedestrians		4	4	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: [1 (2)] Airds Rd / Montore Rd FU AM (FUTURE)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Airds Road / Montore Road
Future Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	39	67.6	39	67.6	0.180	6.4	LOS A	0.0	0.0	0.00	0.07	0.00	54.0
2	T1	All MCs	260	18.2	260	18.2	0.180	0.1	LOS A	0.0	0.0	0.00	0.07	0.00	59.6
Approach			299	24.6	299	24.6	0.180	0.9	NA	0.0	0.0	0.00	0.07	0.00	58.8
North: Airds Rd (N)															
8	T1	All MCs	243	15.2	243	15.2	0.216	1.0	LOS A	0.8	6.8	0.27	0.29	0.27	58.2
9	R2	All MCs	61	62.1	61	62.1	0.216	8.8	LOS A	0.8	6.8	0.27	0.29	0.27	52.6
Approach			304	24.6	304	24.6	0.216	2.5	NA	0.8	6.8	0.27	0.29	0.27	57.0
West: Montore Rd (W)															
10	L2	All MCs	46	81.8	46	81.8	0.137	8.6	LOS A	0.5	5.6	0.51	0.72	0.51	47.0
12	R2	All MCs	31	69.0	31	69.0	0.137	13.6	LOS A	0.5	5.6	0.51	0.72	0.51	47.0
Approach			77	76.7	77	76.7	0.137	10.6	LOS A	0.5	5.6	0.51	0.72	0.51	47.0
All Vehicles			680	30.5	680	30.5	0.216	2.7	NA	0.8	6.8	0.18	0.24	0.18	56.4

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [2 (2)] Airds Rd / Montore Rd FU PM (FUTURE)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Airds Road / Montore Road
Future Conditions
AM Peak Period
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	26	60.0	26	60.0	0.200	6.3	LOS A	0.0	0.0	0.00	0.04	0.00	54.4
2	T1	All MCs	329	10.2	329	10.2	0.200	0.1	LOS A	0.0	0.0	0.00	0.04	0.00	59.7
Approach			356	13.9	356	13.9	0.200	0.5	NA	0.0	0.0	0.00	0.04	0.00	59.3
North: Airds Rd (N)															
8	T1	All MCs	228	11.5	228	11.5	0.170	0.7	LOS A	0.5	3.8	0.19	0.20	0.19	58.8
9	R2	All MCs	29	71.4	29	71.4	0.170	9.4	LOS A	0.5	3.8	0.19	0.20	0.19	52.7
Approach			258	18.4	258	18.4	0.170	1.7	NA	0.5	3.8	0.19	0.20	0.19	58.0
West: Montore Rd (W)															
10	L2	All MCs	60	36.8	60	36.8	0.143	7.9	LOS A	0.5	4.7	0.50	0.72	0.50	49.1
12	R2	All MCs	37	40.0	37	40.0	0.143	11.6	LOS A	0.5	4.7	0.50	0.72	0.50	48.6
Approach			97	38.0	97	38.0	0.143	9.3	LOS A	0.5	4.7	0.50	0.72	0.50	48.9
All Vehicles			711	18.8	711	18.8	0.200	2.2	NA	0.5	4.7	0.14	0.19	0.14	57.2

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [3 (2)] Ben Lomond Rd / Airds Rd FU AM (FUTURE)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Ben Lomond Road / Airds Road
Future Conditions
AM Peak Period
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	168	36.2	168	36.2	0.276	11.5	LOS A	1.9	17.1	0.86	0.76	0.86	48.4
2	T1	All MCs	40	18.4	40	18.4	0.308	12.3	LOS A	1.9	16.6	0.86	0.81	0.86	46.8
3	R2	All MCs	104	29.3	104	29.3	0.308	17.7	LOS B	1.9	16.6	0.86	0.81	0.86	45.6
3u	U	All MCs	5	80.0	5	80.0	0.308	23.1	LOS B	1.9	16.6	0.86	0.81	0.86	44.2
Approach			318	32.5	318	32.5	0.308	13.8	LOS A	1.9	17.1	0.86	0.78	0.86	47.2
East: Ben Lomond Rd (E)															
4	L2	All MCs	126	14.2	126	14.2	0.409	6.8	LOS A	3.0	21.9	0.62	0.57	0.62	51.6
5	T1	All MCs	743	4.0	743	4.0	0.409	6.2	LOS A	3.0	21.9	0.63	0.58	0.63	52.2
6	R2	All MCs	37	25.7	37	25.7	0.409	11.9	LOS A	2.8	20.7	0.64	0.59	0.64	50.4
6u	U	All MCs	1	0.0	1	0.0	0.409	13.0	LOS A	2.8	20.7	0.64	0.59	0.64	51.3
Approach			907	6.3	907	6.3	0.409	6.5	LOS A	3.0	21.9	0.63	0.58	0.63	52.1
North: Airds Road (N)															
7	L2	All MCs	6	0.0	6	0.0	0.092	17.4	LOS B	0.6	4.8	0.97	0.85	0.97	45.0
8	T1	All MCs	21	20.0	21	20.0	0.291	19.3	LOS B	2.4	19.6	0.97	0.85	0.97	44.9
9	R2	All MCs	104	22.2	104	22.2	0.291	21.5	LOS B	2.4	19.6	1.00	0.85	1.00	43.1
Approach			132	20.8	132	20.8	0.291	21.0	LOS B	2.4	19.6	0.99	0.85	0.99	43.5
West: Ben Lomond Rd (W)															
10	L2	All MCs	199	9.0	199	9.0	0.110	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	55.2
11	T1	All MCs	873	2.8	873	2.8	0.776	6.8	LOS A	10.9	81.1	0.81	0.63	0.86	50.8
12	R2	All MCs	186	27.1	186	27.1	0.776	12.2	LOS A	10.9	81.1	0.81	0.63	0.86	49.1
Approach			1258	7.4	1258	7.4	0.776	7.1	LOS A	10.9	81.1	0.68	0.60	0.72	51.1
All Vehicles			2615	10.7	2615	10.7	0.776	8.4	LOS A	10.9	81.1	0.70	0.63	0.72	50.5

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [4 (2)] Ben Lomond Rd / Airds Rd FU PM (FUTURE)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Ben Lomond Road / Airds Road
Future Conditions
AM Peak Period
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Airds Rd (S)															
1	L2	All MCs	259	13.8	259	13.8	0.555	25.5	LOS B	5.9	46.2	1.00	1.04	1.41	41.2
2	T1	All MCs	42	12.5	42	12.5	0.528	28.6	LOS C	4.6	35.3	1.00	1.02	1.39	39.1
3	R2	All MCs	138	9.9	138	9.9	0.528	33.0	LOS C	4.6	35.3	1.00	1.02	1.39	38.6
3u	U	All MCs	1	0.0	1	0.0	0.528	34.0	LOS C	4.6	35.3	1.00	1.02	1.39	38.8
Approach			440	12.4	440	12.4	0.555	28.2	LOS B	5.9	46.2	1.00	1.03	1.40	40.1
East: Ben Lomond Rd (E)															
4	L2	All MCs	89	17.6	89	17.6	0.500	7.2	LOS A	4.0	29.7	0.72	0.61	0.72	51.0
5	T1	All MCs	916	4.3	916	4.3	0.500	6.8	LOS A	4.0	29.7	0.73	0.63	0.74	51.7
6	R2	All MCs	47	8.9	47	8.9	0.500	12.0	LOS A	3.9	28.4	0.74	0.64	0.75	50.4
6u	U	All MCs	1	0.0	1	0.0	0.500	13.7	LOS A	3.9	28.4	0.74	0.64	0.75	50.7
Approach			1054	5.6	1054	5.6	0.500	7.1	LOS A	4.0	29.7	0.73	0.63	0.73	51.6
North: Airds Road (N)															
7	L2	All MCs	34	0.0	34	0.0	0.153	14.9	LOS B	1.0	7.6	0.94	0.82	0.94	46.9
8	T1	All MCs	39	10.8	39	10.8	0.486	16.7	LOS B	4.8	35.0	0.97	0.87	1.06	45.6
9	R2	All MCs	229	5.0	229	5.0	0.486	21.6	LOS B	4.8	35.0	1.00	0.92	1.18	43.5
9u	U	All MCs	1	0.0	1	0.0	0.486	23.4	LOS B	4.8	35.0	1.00	0.92	1.18	43.6
Approach			303	5.2	303	5.2	0.486	20.2	LOS B	4.8	35.0	0.99	0.90	1.14	44.1
West: Ben Lomond Rd (W)															
10	L2	All MCs	128	13.1	128	13.1	0.073	3.8	LOS A	0.0	0.0	0.00	0.46	0.00	55.0
11	T1	All MCs	832	3.3	832	3.3	0.713	6.5	LOS A	8.6	63.5	0.78	0.61	0.81	51.2
12	R2	All MCs	113	25.2	113	25.2	0.713	11.8	LOS A	8.6	63.5	0.78	0.61	0.81	49.6
Approach			1073	6.8	1073	6.8	0.713	6.7	LOS A	8.6	63.5	0.68	0.59	0.71	51.4
All Vehicles			2869	7.0	2869	7.0	0.713	11.6	LOS A	8.6	63.5	0.78	0.71	0.87	48.5

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [5 (2)] Campbelltown Rd/ Rose Payten Dr FU AM

(FUTURE)

Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Campbelltown Road / Rose Payten Drive
Future Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 139.0 seconds (Site User-Given Phase Times)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total	HV]	Arrival Flows [Total	HV]	Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue [Veh.	Dist]	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Campbelltown Rd (S)															
2	T1	All MCs	1117	4.9	1117	4.9	0.395	6.6	LOS A	13.2	96.1	0.39	0.35	0.39	54.2
3	R2	All MCs	256	9.1	256	9.1	* 0.519	53.0	LOS D	7.7	57.7	0.98	1.11	0.98	27.0
Approach			1373	5.7	1373	5.7	0.519	15.2	LOS B	13.2	96.1	0.50	0.49	0.50	45.6
East: Rose Payton Dr (E)															
4	L2	All MCs	77	37.0	77	37.0	0.140	26.3	LOS B	3.3	30.9	0.69	1.16	0.69	35.5
6	R2	All MCs	482	13.8	482	13.8	* 0.861	76.3	LOS F	17.7	138.8	1.00	0.96	1.21	26.2
Approach			559	16.9	559	16.9	0.861	69.4	LOS E	17.7	138.8	0.96	0.99	1.14	27.2
North: Campbelltown Rd (N)															
7	L2	All MCs	633	15.5	633	15.5	0.590	8.6	LOS A	9.9	78.3	0.25	0.70	0.25	49.3
8	T1	All MCs	1695	4.8	1695	4.8	* 0.794	23.0	LOS B	45.9	334.5	0.85	0.78	0.85	43.8
Approach			2327	7.7	2327	7.7	0.794	19.1	LOS B	45.9	334.5	0.69	0.76	0.69	45.0
All Vehicles			4259	8.3	4259	8.3	0.861	24.4	LOS B	45.9	334.5	0.66	0.70	0.68	41.6

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		ped	m			sec	m	m/sec
South: Campbelltown Rd (S)												
P1	Full	1	1	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25
East: Rose Payton Dr (E)												
P2	Full	1	1	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25
All Pedestrians		2	2	63.6	LOS F	0.0	0.0	0.96	0.96	79.0	20.0	0.25

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: [6 (2)] Campbelltown Rd/ Rose Payten Dr FU PM
(FUTURE)
Output produced by SIDRA INTERSECTION Version: 10.0.6.236

Campbelltown Road / Rose Payten Drive
Future Conditions
AM Peak Period
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated   Cycle Time = 140.0 seconds (Site User-Given Cycle Time)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
South: Campbelltown Rd (S)															
2	T1	All MCs	1829	2.2	1829	2.2	0.679	12.6	LOS A	21.4	152.3	0.62	0.57	0.62	49.8
3	R2	All MCs	177	3.0	177	3.0	* 0.574	52.5	LOS D	3.6	25.7	1.00	1.01	1.00	26.4
Approach			2006	2.3	2006	2.3	0.679	16.1	LOS B	21.4	152.3	0.66	0.61	0.66	46.2
East: Rose Payton Dr (E)															
4	L2	All MCs	72	16.2	72	16.2	0.117	22.1	LOS B	1.9	15.3	0.69	1.08	0.69	37.6
6	R2	All MCs	558	7.0	558	7.0	* 0.740	62.9	LOS E	11.2	83.4	0.99	0.87	1.03	29.0
Approach			629	8.0	629	8.0	0.740	58.3	LOS E	11.2	83.4	0.96	0.89	0.99	29.8
North: Campbelltown Rd (N)															
7	L2	All MCs	685	8.4	685	8.4	0.626	20.4	LOS B	20.7	155.5	0.80	1.10	0.80	40.1
8	T1	All MCs	1739	3.5	1739	3.5	* 0.749	20.1	LOS B	25.7	185.5	0.77	0.71	0.77	45.2
Approach			2424	4.9	2424	4.9	0.749	20.2	LOS B	25.7	185.5	0.78	0.82	0.78	43.6
All Vehicles			5060	4.2	5060	4.2	0.749	23.3	LOS B	25.7	185.5	0.75	0.74	0.76	42.1

Site Level of Service (LOS) Method: Delay (NSW). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Green.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Crossing	Input Vol. ped/h	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Qued	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Campbelltown Rd (S)												
P1	Full	3	3	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25
East: Rose Payton Dr (E)												
P2	Full	1	1	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25
All Pedestrians		4	4	64.1	LOS F	0.0	0.0	0.96	0.96	79.5	20.0	0.25

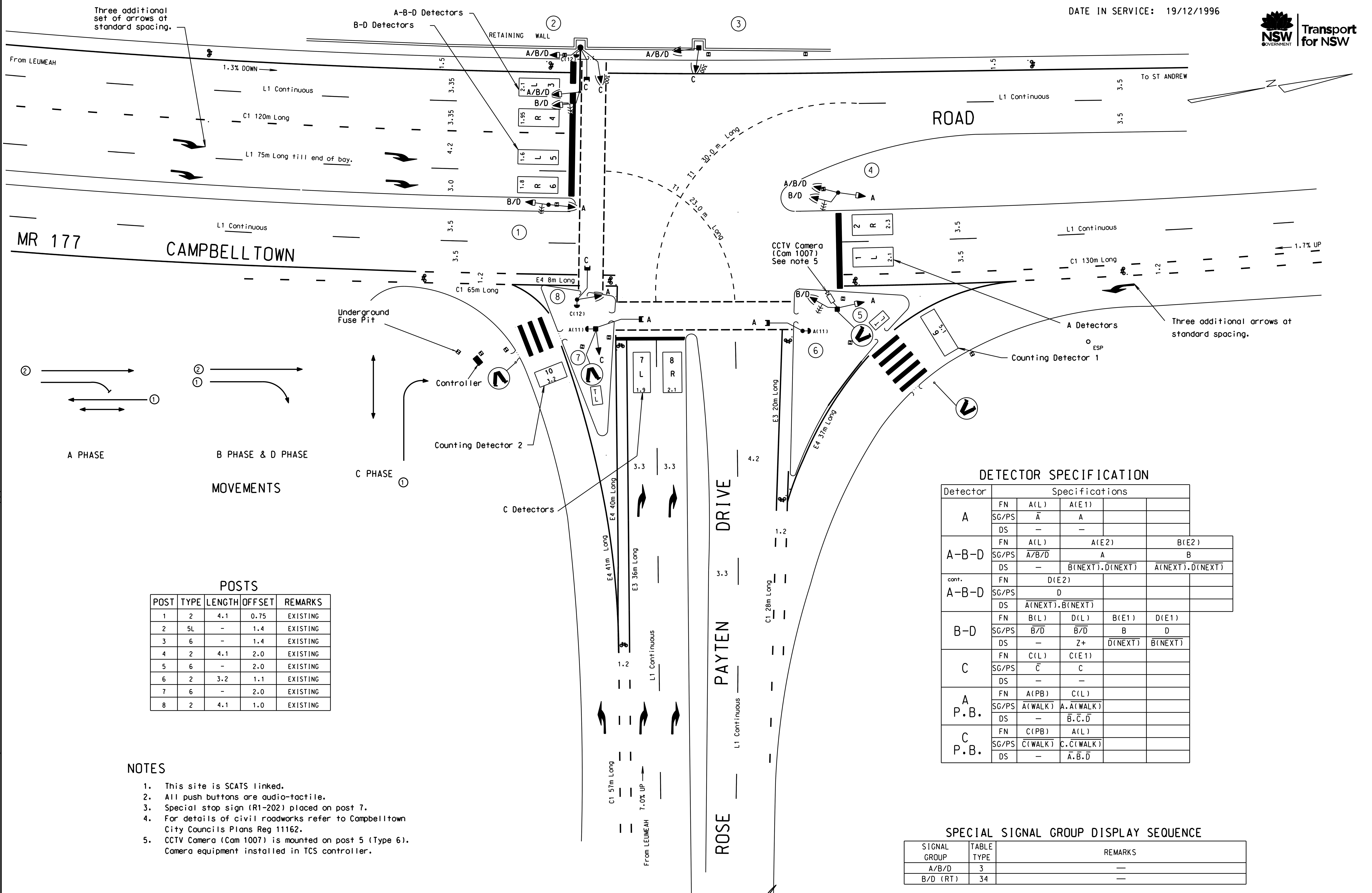
Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

ANNEXURE D: TCS PLAN
(1 SHEET)

TCS 3275

DATE IN SERVICE: 19/12/1996



POSTS

POST	TYPE	LENGTH	OFFSET	REMARKS
1	2	4.1	0.75	EXISTING
2	5L	-	1.4	EXISTING
3	6	-	1.4	EXISTING
4	2	4.1	2.0	EXISTING
5	6	-	2.0	EXISTING
6	2	3.2	1.1	EXISTING
7	6	-	2.0	EXISTING
8	2	4.1	1.0	EXISTING

NOTES

1. This site is SCATS linked.
2. All push buttons are audio-tactile.
3. Special stop sign (R1-202) placed on post 7.
4. For details of civil roadworks refer to Campbelltown City Councils Plans Reg 11162.
5. CCTV Camera (Cam 1007) is mounted on post 5 (Type 6). Camera equipment installed in TCS controller.

DETECTOR SPECIFICATION

Detector	Specifications				
A	FN	A(L)	A(E1)		
	SG/PS	$\overline{A}$	A		
	DS	—	—		
A-B-D	FN	A(L)	A(E2)		B(E2)
	SG/PS	$\overline{A/B/D}$	A		B
	DS	—	$\overline{B(NEXT)}.\overline{D(NEXT)}$		$\overline{A(NEXT)}.\overline{D(NEXT)}$
cont. A-B-D	FN	D(E2)			
	SG/PS	D			
	DS	$\overline{A(NEXT)}.\overline{B(NEXT)}$			
B-D	FN	B(L)	D(L)	B(E1)	D(E1)
	SG/PS	$\overline{B/D}$	$\overline{B/D}$	B	D
	DS	—	Z+	$\overline{D(NEXT)}$	$\overline{B(NEXT)}$
C	FN	C(L)	C(E1)		
	SG/PS	$\overline{C}$	C		
	DS	—	—		
A P.B.	FN	A(PB)	C(L)		
	SG/PS	$\overline{A(WALK)}$	A.$\overline{A(WALK)}$		
	DS	—	$\overline{B}.\overline{C}.\overline{D}$		
C P.B.	FN	C(PB)	A(L)		
	SG/PS	$\overline{C(WALK)}$	C.$\overline{C(WALK)}$		
	DS	—	$\overline{A}.\overline{B}.\overline{D}$		

SPECIAL SIGNAL GROUP DISPLAY SEQUENCE

SIGNAL GROUP	TABLE TYPE	REMARKS
A/B/D	3	—
B/D (RT)	34	—

A ORIGINAL ISSUE

ISSUE B OFFICE INST 11/9/1996
ALTERED: LEUMEAH RAILWAY OVERPASS RENAMED TO ROSE PAYTEN DRIVE.
K.I. 11/9/1996

C ISSUE:- WAE
POST POSITIONS ALTERED.
B.K 11-12-97 L.C

D ISSUE:- WAE
CCTV Camera added. Updated line styles. Added TCS pits.
TW JR 04/03/2024

PUBLIC UTILITY LEGEND	
HYDRANT	□
STOP VALVE	▲
GAS VALVE	#
SEWER MANHOLE	⊛
TELECOM PIT	◪
ELECT LIGHT POLE	○
POWER POLE	○
STAY POLE	⊘
TELEPHONE BOX	T
TELECOM PILLAR	◕

REFERENCE PLANS	
SYMBOLS/ABBS.	VD003-6
STD POSIT	VD001-5
DET SCHED EXP	VD018-10
PRES. DETECT	VC005-17
SSG DIS. SEQ.	VD018-8
CABLE INSTALLATION	SHEET 2
CABLE CHART	SHEET 3
DUCT PLAN	SHEET 4
SURVEYOR : CAMPBELLTOWN COUNCIL	
DATE : JULY 1995	

U.B.D. Ref. MAP 327 A11
I.S.G. CO-ORDS E: 299500 N: 1231280
DESIGNED KATHY KOUVAS
CHECKED KEVIN IRONSIDE
KEVIN IRONSIDE SITE CHECKED
J. ZOUTENDYK RECOMMENDED

APPROVED
B DALEY
DESIGN ENGINEER
16/8/1996 DATE

ACCEPTED
21/8/1996 DATE

TRANSPORT FOR NEW SOUTH WALES

CAMPBELLTOWN COUNCIL
(MR 177) CAMPBELLTOWN ROAD AND ROSE PAYTEN DRIVE, LEUMEAH

DESIGN LAYOUT

EXISTING ☒ PROPOSED ☐

CADD FILE: VV3275_1D_DES.dgn

SCALE 5 0 (1:200) 5 10

ISSUE D

FILE SF2014/012762

SUPERSEDES SHEET/ISSUE 1/C

REG No. DS2014/003662

TCS No. 3275

SHEET 1

ANNEXURE E: VIDEO REVIEW SUMMARY
(2 SHEETS)

Intersection	Rose Payten Drive / Campbelltown Road
Period Start	**Period Finish**
8:00:00 AM	9:00:00 AM

No. of Cycle Recorded	Mod
25	

Phase	Min	Max	Average	Occurences
A	80	105	91	100%
B	14	27	20	100%
C	13	36	29	100%
Cycle Time	115	152	139	

Cycle 1	TIME START			TIME END			Phase Duration (s)	Cycle Time (s)			
Phase	HR	MIN	SEC	HR	MIN	SEC					
A	8	0	40	8	2	12	92	144		8:00:40 AM	8:02:12 AM
B	8	2	12	8	2	39	27			8:02:12 AM	8:02:39 AM
C	8	2	39	8	3	4	25			8:02:39 AM	8:03:04 AM
A	8	3	4	8	4	34	90	135		8:03:04 AM	8:04:34 AM
B	8	4	34	8	4	56	22			8:04:34 AM	8:04:56 AM
C	8	4	56	8	5	19	23			8:04:56 AM	8:05:19 AM
A	8	5	19	8	6	59	100	152		8:05:19 AM	8:06:59 AM
B	8	6	59	8	7	21	22			8:06:59 AM	8:07:21 AM
C	8	7	21	8	7	51	30			8:07:21 AM	8:07:51 AM
A	8	7	51	8	9	21	90	142		8:07:51 AM	8:09:21 AM
B	8	9	21	8	9	40	19			8:09:21 AM	8:09:40 AM
C	8	9	40	8	10	13	33			8:09:40 AM	8:10:13 AM
A	8	10	13	8	11	36	83	115		8:10:13 AM	8:11:36 AM
B	8	11	36	8	11	55	19			8:11:36 AM	8:11:55 AM
C	8	11	55	8	12	8	13			8:11:55 AM	8:12:08 AM
A	8	12	8	8	13	28	80	130		8:12:08 AM	8:13:28 AM
B	8	13	28	8	13	48	20			8:13:28 AM	8:13:48 AM
C	8	13	48	8	14	18	30			8:13:48 AM	8:14:18 AM
A	8	14	18	8	15	46	88	135		8:14:18 AM	8:15:46 AM
B	8	15	46	8	16	6	20			8:15:46 AM	8:16:06 AM
C	8	16	6	8	16	33	27			8:16:06 AM	8:16:33 AM
A	8	16	33	8	17	58	85	140		8:16:33 AM	8:17:58 AM
B	8	17	58	8	18	21	23			8:17:58 AM	8:18:21 AM
C	8	18	21	8	18	53	32			8:18:21 AM	8:18:53 AM
A	8	18	53	8	20	15	82	136		8:18:53 AM	8:20:15 AM
B	8	20	15	8	20	33	18			8:20:15 AM	8:20:33 AM
C	8	20	33	8	21	9	36			8:20:33 AM	8:21:09 AM
A	8	21	9	8	22	39	90	143		8:21:09 AM	8:22:39 AM
B	8	22	39	8	22	59	20			8:22:39 AM	8:22:59 AM
C	8	22	59	8	23	32	33			8:22:59 AM	8:23:32 AM
A	8	23	32	8	25	2	90	140		8:23:32 AM	8:25:02 AM
B	8	25	2	8	25	17	15			8:25:02 AM	8:25:17 AM
C	8	25	17	8	25	52	35			8:25:17 AM	8:25:52 AM
A	8	25	52	8	27	18	86	131		8:25:52 AM	8:27:18 AM
B	8	27	18	8	27	38	20			8:27:18 AM	8:27:38 AM
C	8	27	38	8	28	3	25			8:27:38 AM	8:28:03 AM
A	8	28	3	8	29	35	92	144		8:28:03 AM	8:29:35 AM
B	8	29	35	8	30	0	25			8:29:35 AM	8:30:00 AM
C	8	30	0	8	30	27	27			8:30:00 AM	8:30:27 AM
A	8	30	27	8	31	59	92	140		8:30:27 AM	8:31:59 AM
B	8	31	59	8	32	20	21			8:31:59 AM	8:32:20 AM
C	8	32	20	8	32	47	27			8:32:20 AM	8:32:47 AM
A	8	32	47	8	34	22	95	146		8:32:47 AM	8:34:22 AM
B	8	34	22	8	34	46	24			8:34:22 AM	8:34:46 AM
C	8	34	46	8	35	13	27			8:34:46 AM	8:35:13 AM
A	8	35	13	8	36	46	93	144		8:35:13 AM	8:36:46 AM
B	8	36	46	8	37	4	18			8:36:46 AM	8:37:04 AM
C	8	37	4	8	37	37	33			8:37:04 AM	8:37:37 AM
A	8	37	37	8	39	5	88	134		8:37:37 AM	8:39:05 AM
B	8	39	5	8	39	20	15			8:39:05 AM	8:39:20 AM
C	8	39	20	8	39	51	31			8:39:20 AM	8:39:51 AM
A	8	39	51	8	41	22	91	135		8:39:51 AM	8:41:22 AM
B	8	41	22	8	41	38	16			8:41:22 AM	8:41:38 AM
C	8	41	38	8	42	6	28			8:41:38 AM	8:42:06 AM
A	8	42	6	8	43	42	96	144		8:42:06 AM	8:43:42 AM
B	8	43	42	8	44	1	19			8:43:42 AM	8:44:01 AM
C	8	44	1	8	44	30	29			8:44:01 AM	8:44:30 AM
A	8	44	30	8	46	7	97	144		8:44:30 AM	8:46:07 AM
B	8	46	7	8	46	24	17			8:46:07 AM	8:46:24 AM
C	8	46	24	8	46	54	30			8:46:24 AM	8:46:54 AM
A	8	46	54	8	48	25	91	129		8:46:54 AM	8:48:25 AM
B	8	48	25	8	48	39	14			8:48:25 AM	8:48:39 AM
C	8	48	39	8	49	3	24			8:48:39 AM	8:49:03 AM
A	8	49	3	8	50	48	105	147		8:49:03 AM	8:50:48 AM
B	8	50	48	8	51	5	17			8:50:48 AM	8:51:05 AM
C	8	51	5	8	51	30	25			8:51:05 AM	8:51:30 AM
A	8	51	30	8	53	9	99	146		8:51:30 AM	8:53:09 AM
B	8	53	9	8	53	30	21			8:53:09 AM	8:53:30 AM
C	8	53	30	8	53	56	26			8:53:30 AM	8:53:56 AM
A	8	53	56	8	55	28	92	144		8:53:56 AM	8:55:28 AM
B	8	55	28	8	55	47	19			8:55:28 AM	8:55:47 AM
C	8	55	47	8	56	20	33			8:55:47 AM	8:56:20 AM
A	8	56	20	8	57	42	82	133		8:56:20 AM	8:57:42 AM
B	8	57	42	8	58	2	20			8:57:42 AM	8:58:02 AM
C	8	58	2	8	58	33	31			8:58:02 AM	8:58:33 AM
										12:00:00 AM	12:00:00 AM
										12:00:00 AM	12:00:00 AM
										12:00:00 AM	12:00:00 AM

Intersection	Rose Payten Drive / Campbelltown Road
Period Start	**Period Finish**
4:30:00 PM	5:30:00 PM

No. of Cycle Recorded	Mod
25	

Phase	Min	Max	Average	Occurences
A	82	104	93	100%
B	11	21	16	100%
C	23	36	31	100%

Cycle Time	133	145	140

Cycle 1	TIME START			TIME END			Phase Duration (s)	Cycle Time (s)			
Phase	HR	MIN	SEC	HR	MIN	SEC					
A	16	30	56	16	32	33	97	142		4:30:56 PM	4:32:33 PM
B	16	32	33	16	32	47	14			4:32:33 PM	4:32:47 PM
C	16	32	47	16	33	18	31			4:32:47 PM	4:33:18 PM
A	16	33	18	16	34	53	95	139		4:33:18 PM	4:34:53 PM
B	16	34	53	16	35	10	17			4:34:53 PM	4:35:10 PM
C	16	35	10	16	35	37	27			4:35:10 PM	4:35:37 PM
A	16	35	37	16	37	10	93	143		4:35:37 PM	4:37:10 PM
B	16	37	10	16	37	29	19			4:37:10 PM	4:37:29 PM
C	16	37	29	16	38	0	31			4:37:29 PM	4:38:00 PM
A	16	38	0	16	39	29	89	138		4:38:00 PM	4:39:29 PM
B	16	39	29	16	39	50	21			4:39:29 PM	4:39:50 PM
C	16	39	50	16	40	18	28			4:39:50 PM	4:40:18 PM
A	16	40	18	16	41	44	86	137		4:40:18 PM	4:41:44 PM
B	16	41	44	16	42	4	20			4:41:44 PM	4:42:04 PM
C	16	42	4	16	42	35	31			4:42:04 PM	4:42:35 PM
A	16	42	35	16	44	0	85	135		4:42:35 PM	4:44:00 PM
B	16	44	0	16	44	20	20			4:44:00 PM	4:44:20 PM
C	16	44	20	16	44	50	30			4:44:20 PM	4:44:50 PM
A	16	44	50	16	46	23	93	145		4:44:50 PM	4:46:23 PM
B	16	46	23	16	46	42	19			4:46:23 PM	4:46:42 PM
C	16	46	42	16	47	15	33			4:46:42 PM	4:47:15 PM
A	16	47	15	16	48	48	93	133		4:47:15 PM	4:48:48 PM
B	16	48	48	16	49	0	12			4:48:48 PM	4:49:00 PM
C	16	49	0	16	49	28	28			4:49:00 PM	4:49:28 PM
A	16	49	28	16	51	12	104	144		4:49:28 PM	4:51:12 PM
B	16	51	12	16	51	25	13			4:51:12 PM	4:51:25 PM
C	16	51	25	16	51	52	27			4:51:25 PM	4:51:52 PM
A	16	51	52	16	53	35	103	139		4:51:52 PM	4:53:35 PM
B	16	53	35	16	53	47	12			4:53:35 PM	4:53:47 PM
C	16	53	47	16	54	11	24			4:53:47 PM	4:54:11 PM
A	16	54	11	16	55	54	103	145		4:54:11 PM	4:55:54 PM
B	16	55	54	16	56	13	19			4:55:54 PM	4:56:13 PM
C	16	56	13	16	56	36	23			4:56:13 PM	4:56:36 PM
A	16	56	36	16	58	8	92	136		4:56:36 PM	4:58:08 PM
B	16	58	8	16	58	25	17			4:58:08 PM	4:58:25 PM
C	16	58	25	16	58	52	27			4:58:25 PM	4:58:52 PM
A	16	58	52	17	0	30	98	143		4:58:52 PM	5:00:30 PM
B	17	0	30	17	0	47	17			5:00:30 PM	5:00:47 PM
C	17	0	47	17	1	15	28			5:00:47 PM	5:01:15 PM
A	17	1	15	17	2	45	90	144		5:01:15 PM	5:02:45 PM
B	17	2	45	17	3	4	19			5:02:45 PM	5:03:04 PM
C	17	3	4	17	3	39	35			5:03:04 PM	5:03:39 PM
A	17	3	39	17	5	1	82	134		5:03:39 PM	5:05:01 PM
B	17	5	1	17	5	18	17			5:05:01 PM	5:05:18 PM
C	17	5	18	17	5	53	35			5:05:18 PM	5:05:53 PM
A	17	5	53	17	7	19	86	136		5:05:53 PM	5:07:19 PM
B	17	7	19	17	7	33	14			5:07:19 PM	5:07:33 PM
C	17	7	33	17	8	9	36			5:07:33 PM	5:08:09 PM
A	17	8	9	17	9	44	95	140		5:08:09 PM	5:09:44 PM
B	17	9	44	17	9	55	11			5:09:44 PM	5:09:55 PM
C	17	9	55	17	10	29	34			5:09:55 PM	5:10:29 PM
A	17	10	29	17	12	6	97	145		5:10:29 PM	5:12:06 PM
B	17	12	6	17	12	20	14			5:12:06 PM	5:12:20 PM
C	17	12	20	17	12	54	34			5:12:20 PM	5:12:54 PM
A	17	12	54	17	14	22	88	140		5:12:54 PM	5:14:22 PM
B	17	14	22	17	14	40	18			5:14:22 PM	5:14:40 PM
C	17	14	40	17	15	14	34			5:14:40 PM	5:15:14 PM
A	17	15	14	17	16	37	83	136		5:15:14 PM	5:16:37 PM
B	17	16	37	17	16	54	17			5:16:37 PM	5:16:54 PM
C	17	16	54	17	17	30	36			5:16:54 PM	5:17:30 PM
A	17	17	30	17	18	59	89	137		5:17:30 PM	5:18:59 PM
B	17	18	59	17	19	14	15			5:18:59 PM	5:19:14 PM
C	17	19	14	17	19	47	33			5:19:14 PM	5:19:47 PM
A	17	19	47	17	21	22	95	141		5:19:47 PM	5:21:22 PM
B	17	21	22	17	21	35	13			5:21:22 PM	5:21:35 PM
C	17	21	35	17	22	8	33			5:21:35 PM	5:22:08 PM
A	17	22	8	17	23	48	100	142		5:22:08 PM	5:23:48 PM
B	17	23	48	17	24	0	12			5:23:48 PM	5:24:00 PM
C	17	24	0	17	24	30	30			5:24:00 PM	5:24:30 PM
A	17	24	30	17	26	10	100	141		5:24:30 PM	5:26:10 PM
B	17	26	10	17	26	22	12			5:26:10 PM	5:26:22 PM
C	17	26	22	17	26	51	29			5:26:22 PM	5:26:51 PM
A	17	26	51	17	28	25	94	138		5:26:51 PM	5:28:25 PM
B	17	28	25	17	28	41	16			5:28:25 PM	5:28:41 PM
C	17	28	41	17	29	9	28			5:28:41 PM	5:29:09 PM
A	17	29	9							5:29:09 PM	12:00:00 AM
										12:00:00 AM	12:00:00 AM
										12:00:00 AM	12:00:00 AM

ANNEXURE F: WEIGHBRIDGE DATA
(3 SHEETS)

Inbound Vehicles

Day of Week	Average	Maximum	85th percentile
Trucks within the network AM Peak Hour	8.0	19.0	12.0
Trips within the network AM Peak Hour	16.0	38.0	24.0

Day of Week	Average	Maximum	85th percentile
Trucks within the network PM Peak Hour	5.6	17.0	9.4
Trips within the network PM Peak Hour	11.3	34.0	18.8

	Generation		
Day of Week	Average	Maximum	85th percentile
Weekday Peak hour trucks	13.3	24.0	17.0
Saturday Peak hour Trucks	6.5	13.0	11.0
Monday Peak hour trucks	13.0	19.0	17.0
Tuesday Peak hour trucks	13.6	22.0	17.5
Wednesday Peak hour trucks	13.2	24.0	17.3
Thursday Peak hour trucks	13.9	21.0	17.0
Friday Peak hour trucks	12.4	20.0	14.7
Weekday Peak hour trips	**26.5**	**48.0**	**34.0**
Saturday Peak hour Trips	**13.1**	**26.0**	**22.0**
Monday Peak hour trips	26.1	38.0	34.0
Tuesday Peak hour trips	27.2	44.0	35.0
Wednesday Peak hour trips	26.4	48.0	34.5
Thursday Peak hour trips	27.8	42.0	34.0
Friday Peak hour trips	24.9	40.0	29.4

Outbound Vehicles

Day of Week	Average	Maximum	85th percentile
Trucks within the network AM Peak Hour	6.4	22.0	10.0
Trips within the network AM Peak Hour	12.9	44.0	20.0

Day of Week	Average	Maximum	85th percentile
Trucks within the network PM Peak Hour	1.3	4.0	2.0
Trips within the network PM Peak Hour	2.7	8.0	4.0

	Generation		
Day of Week	**Average**	**Maximum**	**85th percentile**
Weekday Peak hour trucks	10.0	22.0	13.0
Saturday Peak hour Trucks	4.3	9.0	6.9
Monday Peak hour trucks	9.3	14.0	12.6
Tuesday Peak hour trucks	10.1	17.0	13.5
Wednesday Peak hour trucks	9.3	16.0	12.3
Thursday Peak hour trucks	11.1	22.0	14.3
Friday Peak hour trucks	10.4	17.0	13.0
Weekday Peak hour trips	**20.1**	**44.0**	**26.0**
Saturday Peak hour Trips	**8.6**	**18.0**	**13.7**
Monday Peak hour trips	18.6	28.0	25.1
Tuesday Peak hour trips	20.2	34.0	27.0
Wednesday Peak hour trips	18.6	32.0	24.5
Thursday Peak hour trips	22.2	44.0	28.5
Friday Peak hour trips	20.8	34.0	26.0

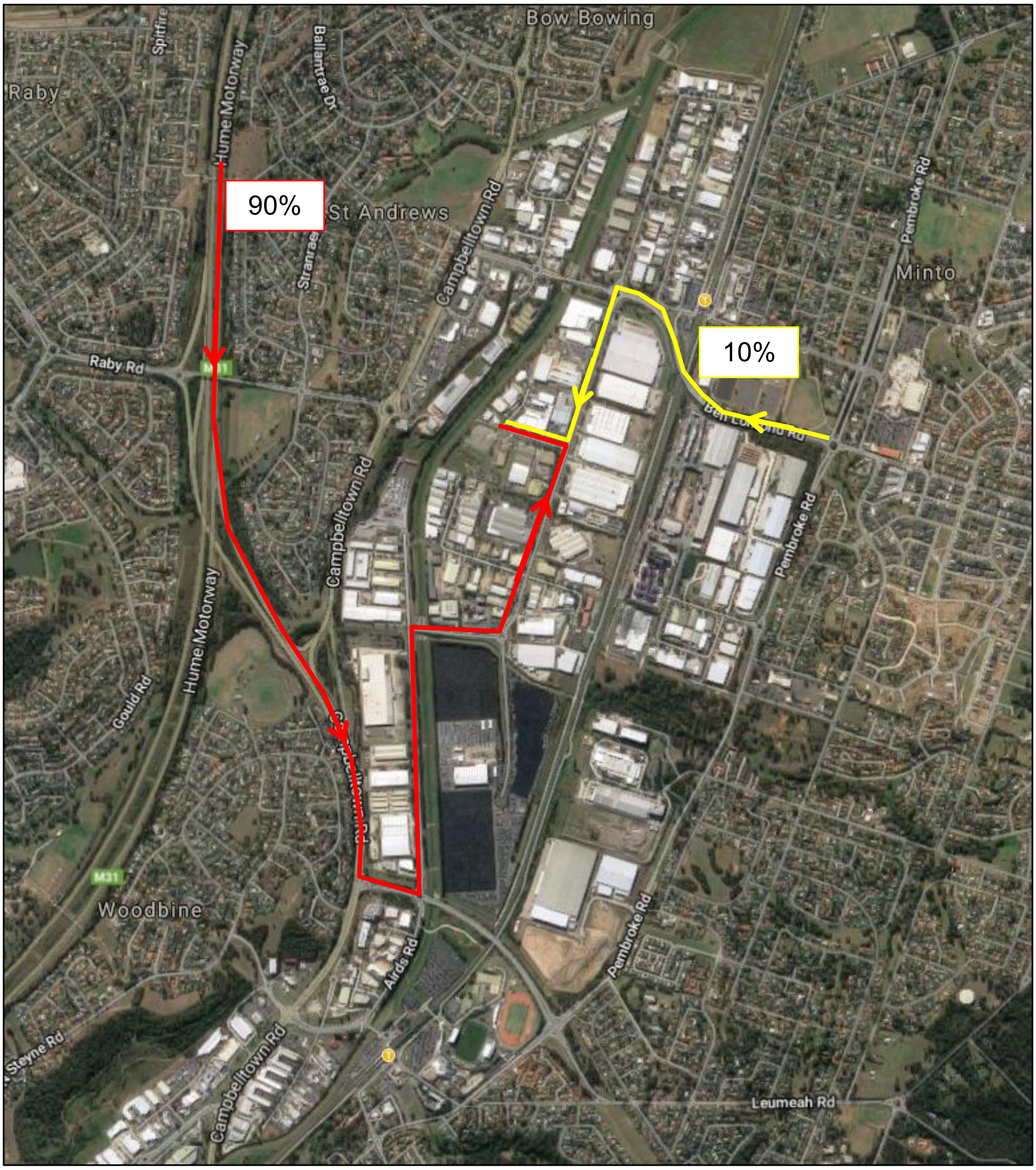
Combined Vehicle Data

Day of Week	Average	Maximum	85th percentile
Trucks within the network AM Peak Hour	12.3	31.0	19.0
Trips within the network AM Peak Hour	24.6	62.0	38.0

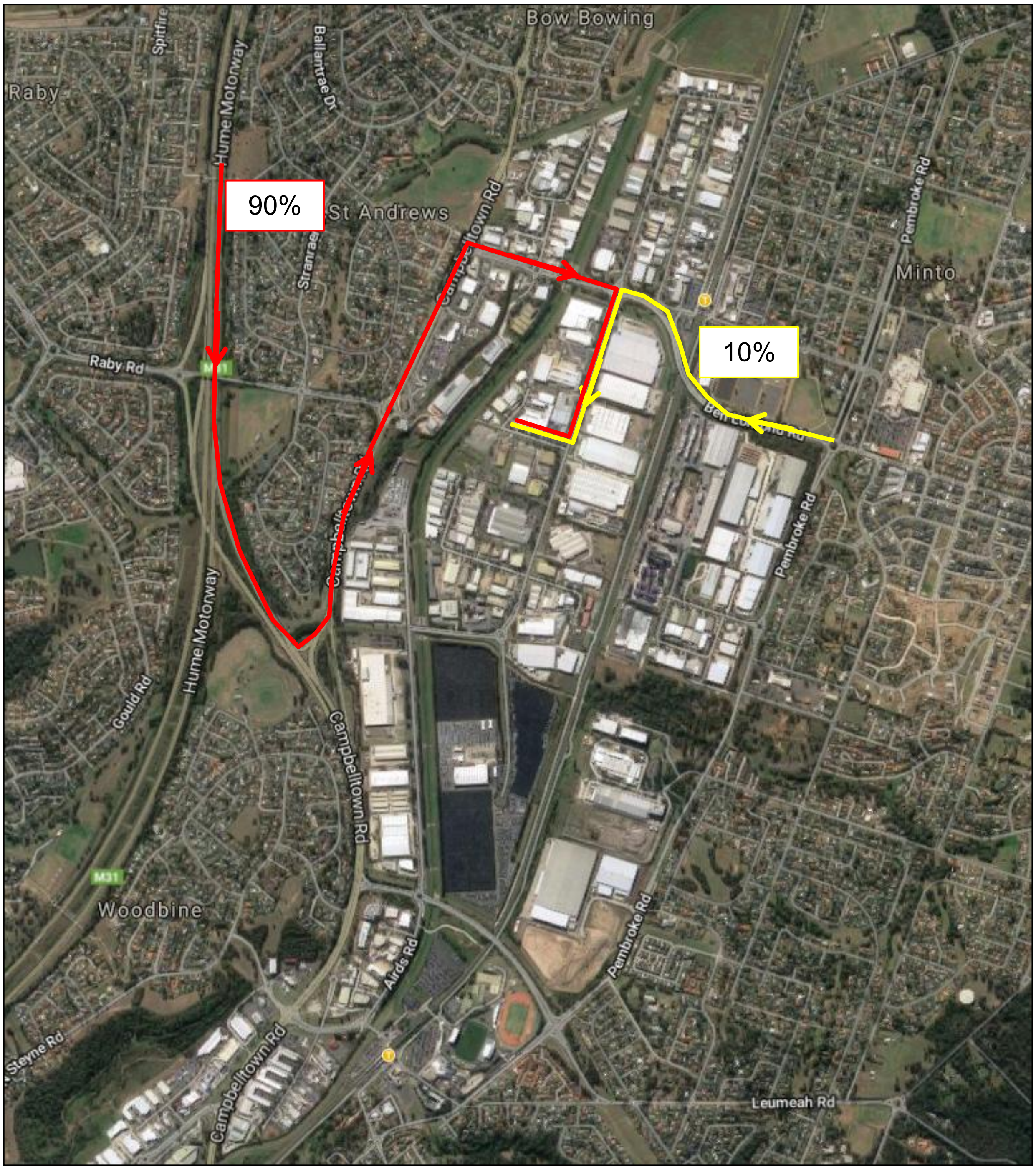
Day of Week	Average	Maximum	85th percentile
Trucks within the network PM Peak Hour	7.6	20.0	12.0
Trips within the network PM Peak Hour	15.2	40.0	24.0

	Generation		
Day of Week	**Average**	**Maximum**	**85th percentile**
Weekday Peak hour trucks	20.4	35.0	26.0
Saturday Peak hour Trucks	8.8	20.0	13.1
Monday Peak hour trucks	19.5	31.0	24.6
Tuesday Peak hour trucks	19.9	30.0	26.0
Wednesday Peak hour trucks	19.7	35.0	24.5
Thursday Peak hour trucks	22.3	31.0	27.8
Friday Peak hour trucks	20.3	29.0	25.4
Weekday Peak hour trips	**40.7**	**70.0**	**52.0**
Saturday Peak hour Trips	**17.7**	**40.0**	**26.2**
Monday Peak hour trips	38.9	62.0	49.1
Tuesday Peak hour trips	39.8	60.0	52.0
Wednesday Peak hour trips	39.5	70.0	49.0
Thursday Peak hour trips	44.6	62.0	55.5
Friday Peak hour trips	40.6	58.0	50.8

ANNEXURE G: TRAFFIC ASSIGNMENT
(6 SHEETS)

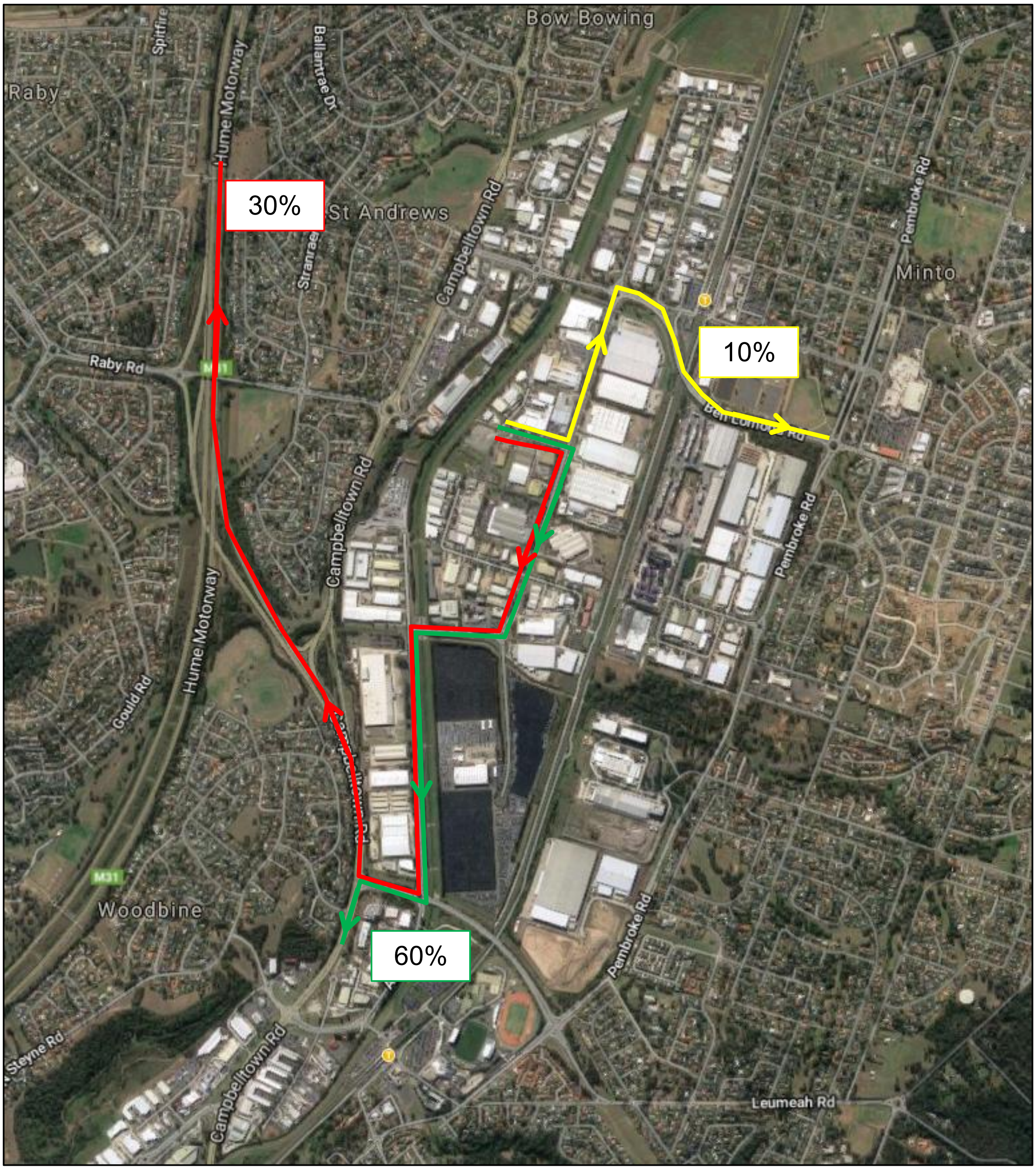


INBOUND trucks less than 32t



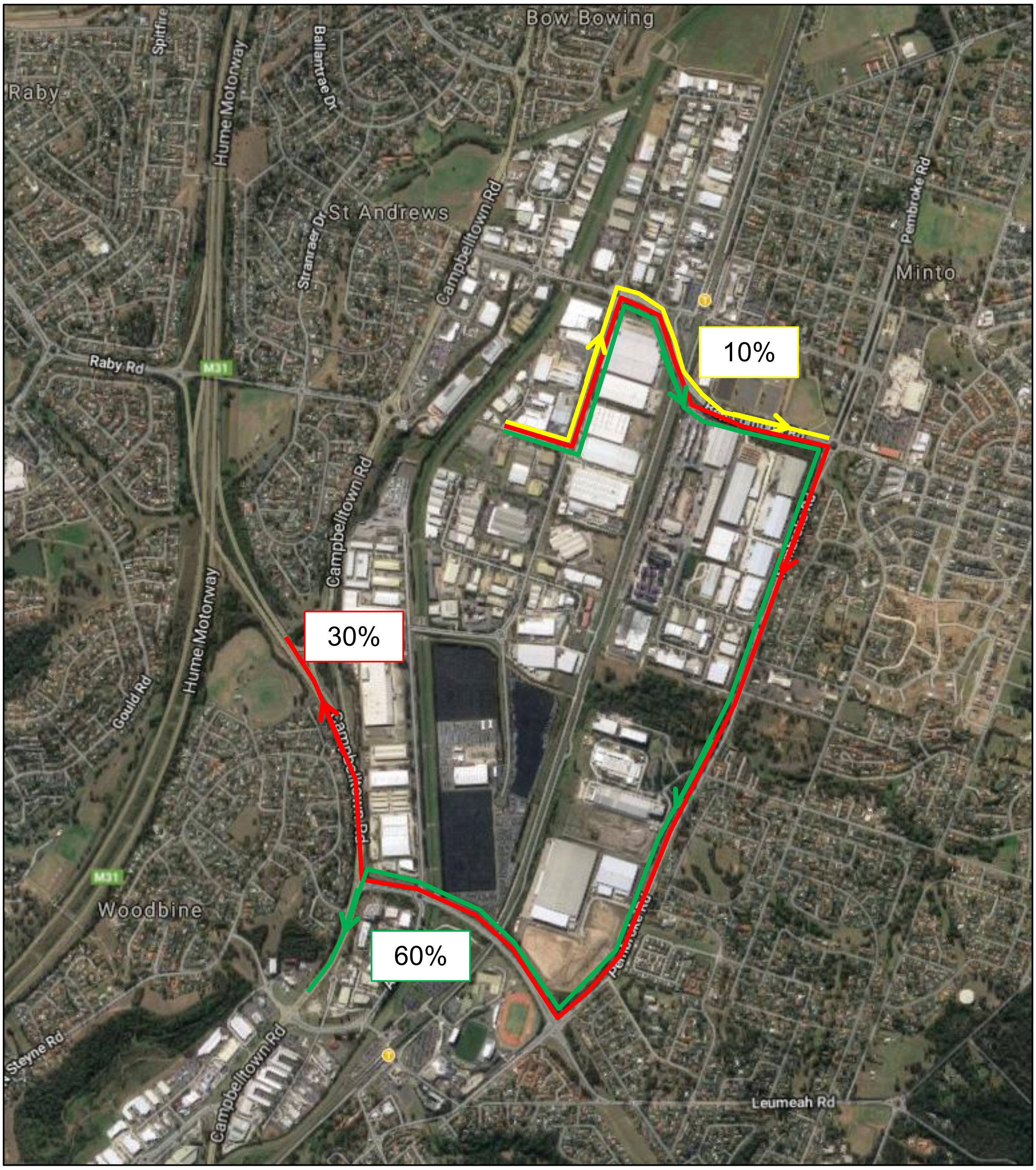
INBOUND trucks between 32t and 40t

INBOUND trucks over 40t



OUTBOUND trucks less than 32t

OUTBOUND trucks between 32t and 40t



OUTBOUND trucks over 40t

ANNEXURE H: QUEUING ASSESSMENT

(4 SHEETS)

In the single-line, multiserver, single-phase model, customers form a single line and are served by the first server available. The model assumes that there are s identical servers, the service time distribution for *each server* is exponential, and the mean service time is $1/\mu$. Using these assumptions, we can describe the operating characteristics with the following formulas:

s = the number of servers in the system

$$p = \frac{\lambda}{s\mu} = \text{the average utilization of the system}$$

$$P_0 = \left[\sum_{n=0}^{s-1} \frac{(\lambda/\mu)^n}{n!} + \frac{(\lambda/\mu)^s}{s!}\left(\frac{1}{1-p}\right)\right]^{-1} = \text{the probability that no customers are in the system}$$

$$L_Q = \frac{P_o(\lambda/\mu)^s p}{s!(1-p)^2} = \text{the average number of customers waiting in line}$$

$$W_Q = \frac{L_Q}{\lambda} = \text{the average time spent waiting in line}$$

$$W = W_Q + \frac{1}{\mu} = \text{the average time spent in the system, including service}$$

$$L = \lambda W = \text{the average number of customers in the service system}$$

$$P_n = \begin{cases} \dfrac{(\lambda/\mu)^n}{n!} P_0 & \text{for } n \le s \\ \dfrac{(\lambda/\mu)^n}{s!s^{n-s}} P_0 & \text{for } n > s \end{cases} = \text{the probability that } n \text{ customers are in the system at a given time}$$

Single Line Multi-server Queueing Equations

Entering the Weighbridge at the site entry

- Average time for a vehicle to get weighed on the weighbridge = 60s
- Number of vehicles that can be weighed at once = 1
- Inbound traffic flow is worst case 34 inbound trips in an hour that require to be weighed on entry.

Based on multi-channel queuing theory, the resulting queueing results are shown below.

Multi-Server Queue Worksheet

Service Bays	1	Arrival Rate (vehicles/hour)	34	Wait Time in Each Bay (seconds)	60
Vehicles/Second IN	0.0094	Vehicles/Second OUT (per bay)	0.0167		
P0	0.4333	rho (M/M/c and M/M/1) Non-Random Service Bays Minimum	0.567	rho (M/M/1 only)	0.5667

n	1st Term	Pn	P(>n)	Alternate (P>n)
0	1.00E+00	0.433	56.7%	43.26%
1	5.67E-01	0.246	32.1%	11.11%
2	1.61E-01	0.139	18.2%	2.00%
3	3.03E-02	0.079	10.3%	0.27%
4	4.30E-03	0.045	5.8%	0.03%
5	4.87E-04	0.025	3.3%	0.00%
6	4.60E-05	0.014	1.9%	0.00%

Percentile	Number of Vehicles in System	Number of Vehicles Queued
0%	0	0
50%	1	0
60%	1	0
70%	2	1
80%	2	1
90%	4	3
98%	6	5

The 98th percentile queue results in 5 vehicles queued which can be accommodated wholly on-site

Vehicles being loaded

- Average time for a vehicle to get get loaded with material = 180s
- Number of vehicles that can be loaded at once = 2

Inbound traffic flow is worst case 26 inbound trips in an hour.

Based on multi-channel queuing theory, the resulting queueing results are shown below.

Multi-Server Queue Worksheet

Service Bays	2	Arrival Rate (vehicles/hour)	26	Wait Time in Each Bay (seconds)	180
Vehicles/Second IN	0.0072	Vehicles/Second OUT (per bay)	0.0056		
P0	0.2121	rho (M/M/c and M/M/1) Non-Random Service Bays Minimum	1.300	rho (M/M/1 only)	0.6500

n	1st Term	Pn	P(>n)	Alternate (P>n)
0	1.00E+00	0.212	78.8%	72.75%
1	1.30E+00	0.276	51.2%	37.32%
2	8.45E-01	0.179	33.3%	14.29%
3	3.66E-01	0.117	21.6%	4.31%
4	1.19E-01	0.076	14.1%	1.07%
5	3.09E-02	0.049	9.1%	0.22%
6	6.70E-03	0.032	5.9%	0.04%

Percentile	Number of Vehicles in System	Number of Vehicles Queued
0%	0	0
50%	2	0
60%	2	0
70%	3	1
80%	4	2
90%	5	3
98%	9	7

The 98th percentile queue results in 7 vehicles queued which can be accommodated wholly on-site from the point of where loading occurs.

Vehicles being unloaded

- Average time for a vehicle to get get unloaded with material = 60s
- Number of vehicles that can be loaded at once = 6

Inbound traffic flow is worst case 34 inbound trips in an hour.

Based on multi-channel queuing theory, the resulting queueing results are shown below.

Multi-Server Queue Worksheet

Service Bays	6	Arrival Rate (vehicles/hour)	34	Wait Time in Each Bay (seconds)	60
Vehicles/Second IN	0.0094	Vehicles/Second OUT (per bay)	0.0167		
P0	0.5674	rho (M/M/c and M/M/1) Non-Random Service Bays Minimum	0.567	rho (M/M/1 only)	0.0944

n	1st Term	Pn	P(>n)	Alternate (P>n)
0	1.00E+00	0.567	43.3%	43.26%
1	5.67E-01	0.322	11.1%	11.11%
2	1.61E-01	0.091	2.0%	2.00%
3	3.03E-02	0.017	0.3%	0.27%
4	4.30E-03	0.002	0.0%	0.03%
5	4.87E-04	0.000	0.0%	0.00%
6	4.60E-05	0.000	0.0%	0.00%
7	3.72E-06	0.000	0.0%	0.00%

Percentile	Number of Vehicles in System	Number of Vehicles Queued
0%	0	0
50%	0	0
60%	1	0
70%	1	0
80%	1	0
90%	2	0
98%	2	0

The 98th percentile queue results in 0 vehicles queued.

ANNEXURE I: OPERATIONAL PLAN OF MANAGEMENT
(15 SHEETS)

McLAREN TRAFFIC ENGINEERING

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Transport Planning, Traffic Impact Assessments, Road Safety Audits, Expert Witness

5th February 2019 Reference: 18259.02FB

Concrete Recyclers
c/o Nexus Environmental Planning Pty Ltd
PO Box 212
Concord NSW 2137
Attention: Neil Kennan

OPERATIONAL PLAN OF MANAGEMENT (SPECIFIC TO TRAFFIC MANAGEMENT) AND DRIVER'S CODE OF CONDUCT FOR PROPOSED CONCRETE RECYCLING FACILITY AT 7 MONTORE ROAD, MINTO

Dear Neil,

Reference is made to your request to provide an Operational Plan of Management (OPM), specific to external traffic management and Driver's Code of Conduct (DCC) in regards to the proposed concrete recycling facility at 7 Montore Road, Minto.

A OPM, including driver's code of conduct, has been prepared and is attached in **Appendix A**. It is recommended that the attached OPM and Code of Conduct be implemented on site and be submitted as part of any future development applications for the site.

Please contact the undersigned should you require further information or assistance.

Yours faithfully
McLaren Traffic Engineering

Craig McLaren
Director
BE Civil. Graduate Diploma (Transport Eng) MAITPM MITE [1985]
RMS Accredited Level 3 Road Safety Auditor
RMS Accredited Traffic Control Planner, Auditor & Certifier (Orange Card)

APPENDIX A: OPERATIONAL PLAN OF MANAGEMENT (SPECIFIC TO TRAFFIC MANAGEMENT) AND DRIVER CODE OF CONDUCT FOR CONCRETE RECYCLING PLANT AT MONTORE ROAD, MINTO

Issue	Approved by Traffic Engineer (DATE)	Approved by Proprietor (DATE)	Adopted Date
A	Craig McLaren (5/02/2019)		

1 INTRODUCTION

1.1 Background

M^C^Laren Traffic Engineering was commissioned in November 2018 by *Nexus Environmental Planning Pty Ltd* to prepare an Operational Plan of Management (OPM), specific to traffic management and Driver Code of Conduct (DCC) for the proposed concrete recycling facility at 7 Montore Road, Minto.

1.2 Site Description

This OPM and DCC applies to the subject site, being 7 Montore Road, Minto, which is also known as Lot 52 DP628900. The site map is presented in **Appendix I**.

1.3 Objective

This OPM & DCC, reproduced below in part, for the proposed concrete recycling facility at Montore Road, Minto applies to all vehicular traffic entering, exiting and moving within the site and within the public road network to maximise safety for staff and contractors of the recycling facility and other road users.

1.4 Definitions

The following terms are defined for use specific to this OPM and DCC:

- Staff – refers to Concrete Recycling employees.
- Parties – refers to all contractors, truck drivers, heavy vehicle drivers, light vehicle drivers, employees, sub-contractor employees and visitors to the site.
- Laden Truck - refers to any truck of over 6m in length that is carrying a load, is articulated or is towing a trailer, such as a truck and dog.

2 Modifications To This Operational Plan of Management (Specific To Traffic Management) And Driver Code Of Conduct

2.1 This document is able to be reasonably modified following the consultation with and approval by:

a) The owner and proprietor of Lot 52 DP618900; and

b) A suitably qualified traffic engineer with RMS accredited Level 3 road safety auditing qualifications or similar qualifications.

The traffic management component of the OPM and Driver Code of Conduct should be reviewed every 6 months for the first year of operation and then every 36 months thereafter or sooner if site operation, external road conditions or work practices significantly alter.

2.2 Significant modifications to this document, including but not limited to those that involve changes to external road network that results in changes to vehicle departure routes or changes to the land use on the site, require consultation with and approval by:

a) The owner and proprietor of Lot 52 DP618900; and

b) A suitably qualified traffic engineer with RMS accredited Level 3 road safety auditing qualifications or similar qualifications; and

c) The consent authority of the modifications proposed.

3 Management Procedures

3.1 General Requirements

Heavy vehicle drivers delivering to and from Concrete Recyclers must:

a) Have undertaken a Site Induction carried out by an approved member of the Concrete Recyclers staff or suitably qualified person under the direction of the Concrete Recyclers management.

b) Hold a valid driver's license and carry while on duty for the class of vehicle operated.

c) Operate a vehicle in a safe manner within and external to the Concrete Recyclers site. This includes abiding with Roads and Maritime Services road rules and driving without being under the influence of drugs or alcohol.

d) Comply with the direction of authorised personnel when within the site.

e) Participate in the health screen program as detailed in the TruckSafe standards prior to commencing work for Concrete Recyclers.

3.2 Induction

a) All staff of the concrete recycling facility will be provided and notified of the Traffic Management component of this OPM and Driver's Code of Conduct, prior to or on the first day of attendance.

b) All parties completing deliveries to and from the site by truck shall be provided and notified of the traffic management component of this OPM and Driver's Code of Conduct prior to the arrival of that party to the site.

c) All parties will be required to attend an initial induction meeting with relevant Concrete Recyclers staff on the first day of attendance at the site at which time both documents will be fully explained by Concrete Recyclers staff identifying clearly their obligations when conducting work on the site and when travelling to and from the site.

d) All parties upon completion of the initial induction meeting will be required to sign an induction attendance sheet at the conclusion of the meeting confirming that they will fully comply with their obligations, requirements and directions in regard to the Traffic Management component of this OPM and Driver's Code of Conduct.

e) The induction attendance records / register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.

3.3 Management

a) Maintain a commitment to ongoing training for heavy vehicle drivers as outlined in the standards.

b) Ensure vehicles are loaded appropriately including abiding to manufacturer and regulatory requirements of maximum load limits.

c) Address their duty of care requirements in accordance with NSW Work Health and Safety legislation.

d) Allow vehicle drivers sufficient time to conduct trips in a legal, compliant and safe manner.

3.4 Driver Specific

To maintain courtesy to individuals and promote positive driver behaviour, drivers must:

a) Notify Concrete Recyclers management if they are not fit for duty prior to commencing work.

b) Notify management immediately should their status or conditions of their driver's license change in the anyway.

c) Not engage with individuals through providing information regarding the Concrete Recyclers operation beyond providing them with the suitable contact details at the site.

d) Minimise idling of engines.

e) Ensure that they do not dump litter on haulage routes or on site.

f) Maintain trucks in a good working order and in a clean and tidy condition.

g) Not block residential driveways or any other access points.

3.5 Heavy Vehicle Driver Fatigue

Fatigue is one of the biggest causes of crashes for heavy vehicle drivers. The Heavy Vehicle Driver Fatigue Reform was therefore developed by the National Transport Commission (NTC) and approved by Ministers from all States and Territories in February 2007.

The heavy vehicle driver fatigue law commenced in NSW on 28 September 2008 and applies to trucks and truck combinations over 12 tonne GVM (however there are Ministerial Exemption Notices that can apply).

Under the law, industry has the choice of operating under three fatigue management schemes:

a) Standard Hours of Operation;

b) Basic Fatigue Management (BFM);

c) Advanced Fatigue Management (AFM).

All heavy vehicle drivers operating out of the Concrete Recyclers are to be aware of their adopted fatigue management scheme and operate within its requirements.

3.6 Operating Conditions

The following best practices shall be adopted by all truck drivers hauling from Concrete Recyclers:

a) Implement best management practice, to minimise the construction, operational and traffic noise of the truck;

b) Apply and enforce a speed limit of 10km/h for all vehicles on site;

c) Ensure that waiting trucks do not block the entry to the concrete recyclers site or other driveways;

d) At commencement of the working day it may be that drivers arrive early. If this occurs drivers are to wait with engines off;

e) To reduce the impact of vehicle noise at commencement of the working day heavy vehicles waiting for the site to open are to wait with engines off.

f) Ensure that laden trucks do not use Raby Road between Campbelltown Road and Eagle Vale Drive;

g) All truck vehicles must be operated and maintained in a safe and roadworthy condition as outlined in the TruckSafe standards and vehicle standards regulations. This includes compliance to the appropriate Australian Vehicle Standards and Design Rules.

These conditions do not apply in the event of a direction from police or other relevant authority for safety or emergency reasons regarding works which may need to be undertaken to avoid loss of life, property loss and/or to prevent environmental harm.

3.7 Vehicular Movement Restrictions

h) Drivers shall comply with load limits of any given roads on the haulage routes. Load limits of 40 tonnes and 32 tonnes are applied to the bridges over Bow Bowing Creek on Ben Lomond Road and Airds Road respectively. Vehicles entering and exiting the site must abide by the restrictions applied to the bridges. Alternate routes are presented in **Appendix II** along with other routes to / from likely destinations.

i) All vehicular traffic on site shall not exceed a speed limit of 10km/h.

j) All vehicles entering and exiting the site are to do so in a forward direction.

k) All drivers of laden trucks greater than 32-tonnes are to avoid using Raby Road between Campbelltown Road and Eagle Vale Drive at all times, unless in cases of emergency. Refer to **Appendix III**.

3.8 Breakdowns and Incidents

In the case of a breakdown the vehicle must be towed to nearest breakdown point as soon as possible. All breakdowns must be reported to the Concrete Recyclers management and the vehicle protected to minimise the effect as a hazard to traffic. Rapid response from the company is required and drivers must contact the Concrete Recyclers Manager as soon as the stranded vehicle and load are safely secured.

If there is a product spill while loading/unloading or en-route the driver must:

a) Immediately warn persons in the area who may be at risk;

b) The Concrete Recyclers manager must immediately be informed so that emergency services can be contacted, and a clean-up initiated;

c) All spills must be adequately cleaned up and waste disposed of in an appropriate and environmental manner;

d) Put out warning triangles where it is safe to do so.

Drivers are to ensure that when passing pedestrians/cyclists a safe separation distance exists between trucks and pedestrians as well as a reduction in speed if appropriate.

TABLE 1: OPERATIONAL AND EMERGENCY CONTACT NUMBERS

Organisation	Contact Details
RMS Transport Management Centre	131 700
Campbelltown City Council	02 4645 4000
Concrete Recyclers Head Office	02 8832 7400

3.9 Truck Size Limits

No trucks greater than 19m long articulated vehicles will be permitted for the concrete recycling operation at the site.

4 DRIVER'S Code of Conduct

All staff of the concrete recycling facility and any employees contracted to it, whether directly or indirectly, who engage in the movement of delivery trucks or motor vehicles on the site shall abide by the following code of conduct. All drivers of vehicles including employee and contractor truck drivers will be required to sign a register of inducted drivers confirming that they agree to the obligations, requirements and directions in regard to the Traffic Management component of the OPM and Driver's Code of Conduct. The signed drivers code of conduct register shall be kept on the premises at all times and be readily available upon request by authorised Council or RMS officers.

In the event that a statutory requirement overlaps the scope of this plan then the statutory requirements will take precedence. If there is a real or perceived difference between the statutory regulations and this document then the contractor or staff member must first seek clarification from the proponent on the implementation of that action for which the difference is identified.

a) Drivers to be appropriately licenced by RMS or another Australian state for the vehicle size and combination.

b) Drivers will abide by the (NSW) Road Rules 2014 as amended at all times when travelling on public roads and within the site.

c) It is prohibited to be under the influence of alcohol while operating a motor vehicle in accordance with the NSW Road Rules or as specified in contractual agreements for all employees. This specifically includes consumption by any worker who will operate machinery or a vehicle during their work period.

d) It is prohibited to be under the influence of drugs, other than alcohol, while operating a motor vehicle in accordance with NSW Road Rules or as specified in contractual agreements for all employees. This includes illicit drugs and those which may directly or indirectly have an effect such as those accompanied by the warning of *"This medicine may cause drowsiness and may increase the effect of alcohol. If affected do not drive a motor vehicle or operate machinery"*.

e) Contractors will specifically be required to abide by this code of conduct and management plan at all times while engaged in performing their duties during their work period. Failure of a contractor to comply with this code of conduct (without due cause) may result in reprimand or severance of employment by the land owner/proprietor in accordance with relevant government policies and contractual agreements for all employees. Failure of compliance will be recorded by Concrete Recyclers staff.

f) Drivers should adjust their driving speeds and turning movements during times of poor weather including rain, fog and wind. Drivers should also turn on headlights / fog lights during fog weather conditions.

g) Drivers will comply with the direction of authorised staff when within the site.

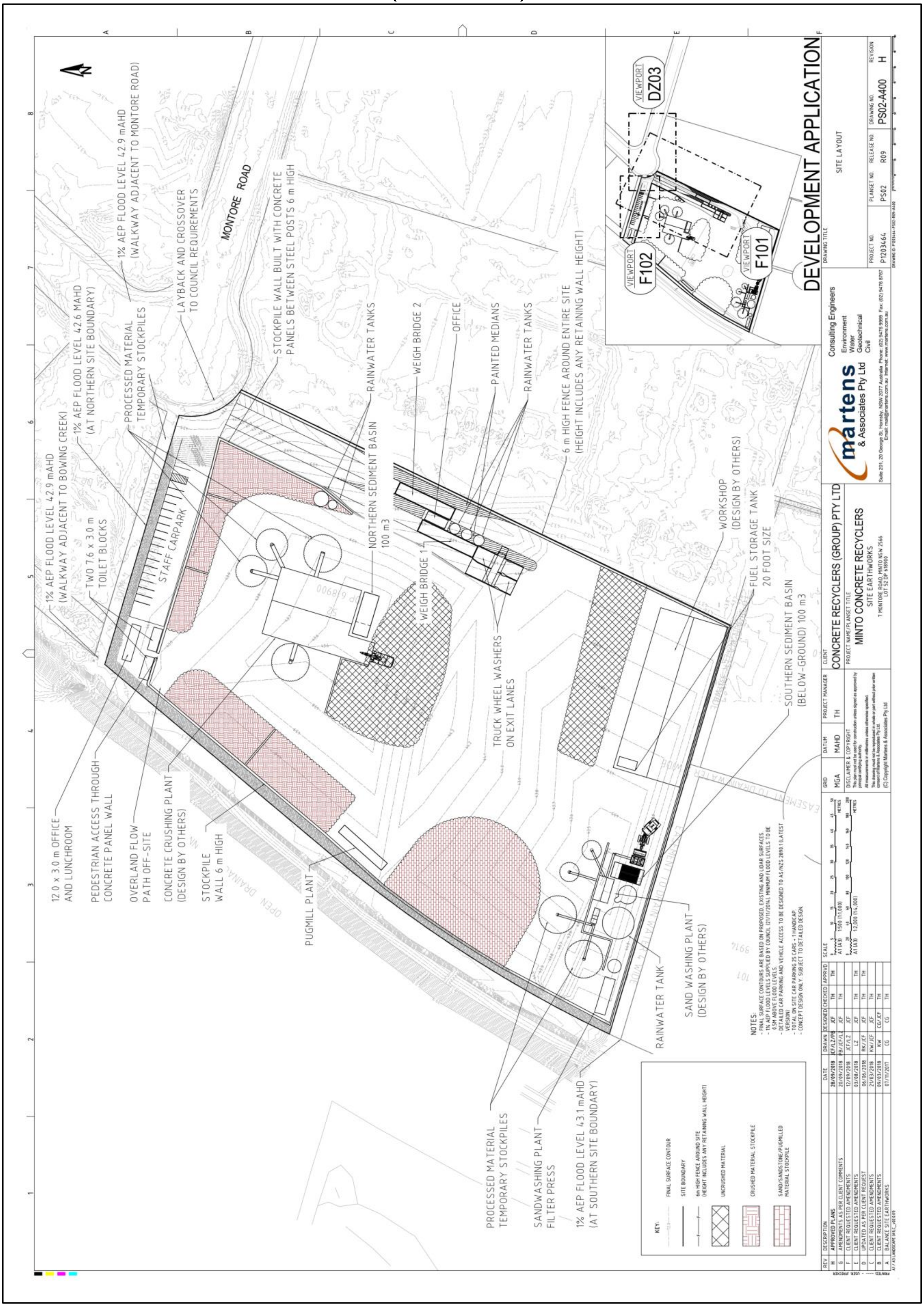
h) Drivers queued in the truck queueing area will travel into the site as far as possible to form the queue. When space becomes available ahead of their vehicle the driver will progress forward into the available space to allow for additional queueing behind the vehicle.

i) Drivers will follow the nominated vehicle movement routes referred to in the Traffic Management component of the OPM and **Appendix II**, including movements limited by, prevailing traffic conditions, vehicle size and vehicle mass. Drivers are to obey temporary changes in travel routes as directed by regulatory signage or under the direction of Police or traffic controller at work sites and drive their vehicles in a compliant manner appropriate to the size of the vehicle and road conditions.

McLaren Traffic Engineering & Road Safety Consultants

APPENDIX I – SITE MAP

(Sheet 1 of 1)



APPENDIX II – ROUTE MAPS
(Sheet 1 of 3)

Site Location

ROUTES FOR VEHICLES LESS THAN 32t

APPENDIX II – ROUTE MAPS
(Sheet 2 of 3)

★ Site Location

ROUTES FOR VEHICLES BETWEEN 32t AND 40t

APPENDIX II – ROUTE MAPS
(Sheet 3 of 3)

★ **Site Location**

ROUTES VEHICLES OVER 40t

APPENDIX III – PROHIBITED ROAD SEGMENT BY LADEN TRUCKS
(Sheet 1 of 1)

Prohibited Road Segment by Trucks Greater than 32t

Site Location

SYDNEY NEWCASTLE CENTRAL COAST TOWNSVILLE

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