QuantumTraffic

Quantum Traffic Pty Ltd

ACN 617474370

ABN 54617474370

T (02) 6243 3672

E admin@quantumtraffic.com.au

A Level 9, 2 Phillip Law Street
CANBERRA ACT 2601

W www.quantumtraffic.com.au

# Traffic Impact Assessment Report

## 8 Noonan Road, Ingleburn

### Proposed Scrap Metal Yard

13/12/2023

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## Proposed Scrap Metal Yard

Document Control

| Revision | Date | Reference | Prepared By | Approved By |
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| | | | | |

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T
**(02) 6243 3672**

E
**admin@quantumtraffic.com.au**

A
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**CANBERRA ACT 2601**

W
**www.quantumtraffic.com.au**

# Executive Summary

Quantum Traffic have been engaged by Shine Motor Corporation to provide traffic engineering advice in relation to the proposed scrap metal yard at 8 Noonan Road in Ingleburn. This Traffic Impact Assessment (TIA) report summarises the traffic and parking analyses undertaken in relation to the proposed development.

The subject site is located on the southwest side of Noonan Road, approximately 1.0km north of Ingleburn Station and 34.5km southwest of Sydney GPO. The site is zoned as IN1 – General Industrial and is surrounded by similar land uses to the northeast, northwest and southwest. Bunbury Curran Creek adjoins the site to the southeast. The site currently operates as a scrap metal yard and has limited active travel and public transport infrastructure within close proximity of the site.

Quantitative analysis of the MacDonald Road / Williamson Road and Henderson Road / Williamson Road intersection indicates that both intersections operate with acceptable average delays and 95$^{th}$ percentile queue lengths during both commuter peak hours. It is noted that the existing traffic volumes on the northwest approach (MacDonald Road) of the MacDonald Road / Williamson Road intersection marginally exceed the practical capacity of this approach. The existing traffic volumes on all other approaches were found to be within the practical capacity of these intersections.

A review of the crash history in the vicinity of the subject site identified a number of property damage and minor injury crashes but no immediate road safety issues.

A series of car parking surveys identified demands for on-street car parking exceeded the supply of on-street car parking, during business hours, within approximately 200m walking distance of the subject site.

The proposal is for a nominal change in use, in order for the site to accommodate a scrap metal yard, with capacity for up to 4,800 tonnes per annum. Given the existing use of the subject site as a scrap metal yard, the nominal change in use is not expected to significantly impact the level of activity on the subject site. As such, the proposed development is expected to continue to generate approximately 50 vehicle movements per day.

Swept path analysis has been undertaken to demonstrate that vehicle up to and including the standard semi-trailer (articulated vehicle, AV) are able to ~~entre~~enter the site in a forwards direction, undertake a three-point-turn entirely within the subject site, before departing in a forwards direction.

A review of the parking and vehicle access arrangements found that the proposed development accords with the requirements of Council's DCP and the relevant Australian Standards.

The proposal for 13 car parking spaces on the subject site (in addition to the loading / unloading area) is expected to reduce demands for on-street car parking by approximately eight (8) vehicles, during business hours. As such, the demand for on-street car parking is expected to drop below the supply of on-street car parking within 200m walking distance of the subject site.

As the nominal change in use is not expected to significantly alter the number of vehicle trips to and from the subject site, the proposed development is not expected to significantly impact the safety or performance of the road network.

On this basis, there are no traffic engineering reasons why the proposed development should not be approved, subject site appropriate conditions.

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# Tables

# 1 Introduction

Quantum Traffic have been engaged by Shine Motor Corporation to provide traffic engineering advice in relation to the proposed scrap metal yard at 8 Noonan Road in Ingleburn (the subject site).

This Traffic Impact Assessment (TIA) report summarises the traffic and parking analyses undertaken in relation to the proposed development.

## 1.1 Requested Analyses

Table 1 below presents the list of traffic engineering analyses requested in the SEARs for the proposed development. Also included are references to the relevant sections of this document which address each request.

*Table 1: Requested Traffic Engineering Analyses*

| Source | Request | Reference |
|---|---|---|
| **Planning, Industry & Environment** | *Details of road transport routes and access to the site* | Section 3.2 (page 16) |
| | *Road traffic predictions for the development during operation* | Section 3.1 (page 15) |
| | *Swept Path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site* | Appendix E |
| | *An assessment of impacts to the safety and function of the road network* | Section 5 (page 23) |
| | *Details of the parking provisions associated with the proposed development including compliance with the requirements of the relevant Australian car parking standards* | Sections 3.3.2 and 4 (pages 20 and 21) |
| **Transport for NSW** | *Details of all traffic types and volumes likely to be generated by the proposed development during construction and operation, including predicted haulage routes, including over size over mass vehicles, and consider any impacts to the state road network (i.e. where the haulage route meets the state road)* | Section 3 (page 13) |
| | *Daily inbound and outbound traffic profile by time of day and day of week broken down per vehicle types* | Section 3.1 (page 15) |
| | *Details of the origin/destination of dangerous goods movements to/from the site (if any)* | Section 3.2.1 (page 16) |
| | *Detailed plan site layout to demonstrate that the site will be able to accommodate the most productive vehicle types as well as the worst performing vehicles (sufficient loading/ unloading) and parking on site in accordance with the relevant Australian Standard and Council's Development Control Plan* | Section 3.2 (page 16) |
| | *Details of the driver facilities provided on site* | Section 3 (page 15) |
| | *Swept path diagrams to demonstrate the largest vehicles as well as the worst performing vehicles entering, exiting and manoeuvring throughout the site* | Appendix E |

| Source | Request | Reference |
|---|---|---|
| | *An assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections using SIDRA or similar traffic model. This is to include the identification and consideration of approved and proposed developments/planning proposals/road upgrades in the vicinity. The assessment needs to include the following intersections:*<br>• *Williamson Road / MacDonald Road*<br>• *Williamson Road / Henderson Road* | Section 5 (page 23) |
| | *Detailing how the proposed development connects to adjoining sites to facilitate their future development for their intended purposes* | Section 3 (page 15) |
| | *Traffic management plan on how to manage number of vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing that can be accommodated on the site to avoid queuing in the surrounding road network. This to demonstrate how internal and external traffic can be managed in conjunction with existing traffic on site* | Section 3.2 (page 16) |
| | *Detailed plans of the site access and proposed layout of the internal road and pedestrian network and parking on site in accordance with the relevant Australian Standards and Council's DCP* | Section 3.2.2 (page 17) |
| | *Swept path diagrams depicting vehicles entering, exiting and manoeuvring throughout the site* | Appendix E |
| | *Details of road upgrades, infrastructure works, or new roads or access points required for the development* | Section 5 (page 23) |
| | *Details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace Travel Plan) and the provision of facilities to increase the non-car mode share for travel to and from the site* | Section 3.1 (page 15) |
| | *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* | Section 2.2 (page 4) |
| | *Measures to integrate the development with the existing/future public transport network* | Section 2.2.2 (page 5) |

# 2 Existing Conditions

## 2.1 Subject Site

The subject site is located on the southwest side of Noonan Road, approximately 1.0km north of Ingleburn Station and 34.5km southwest of Sydney GPO. As shown at Figure 1 below, the site is zoned as IN1 – General Industrial and is surrounded by similar land uses to the northeast, northwest and southwest. Bunbury Curran Creek adjoins the site to the southeast.

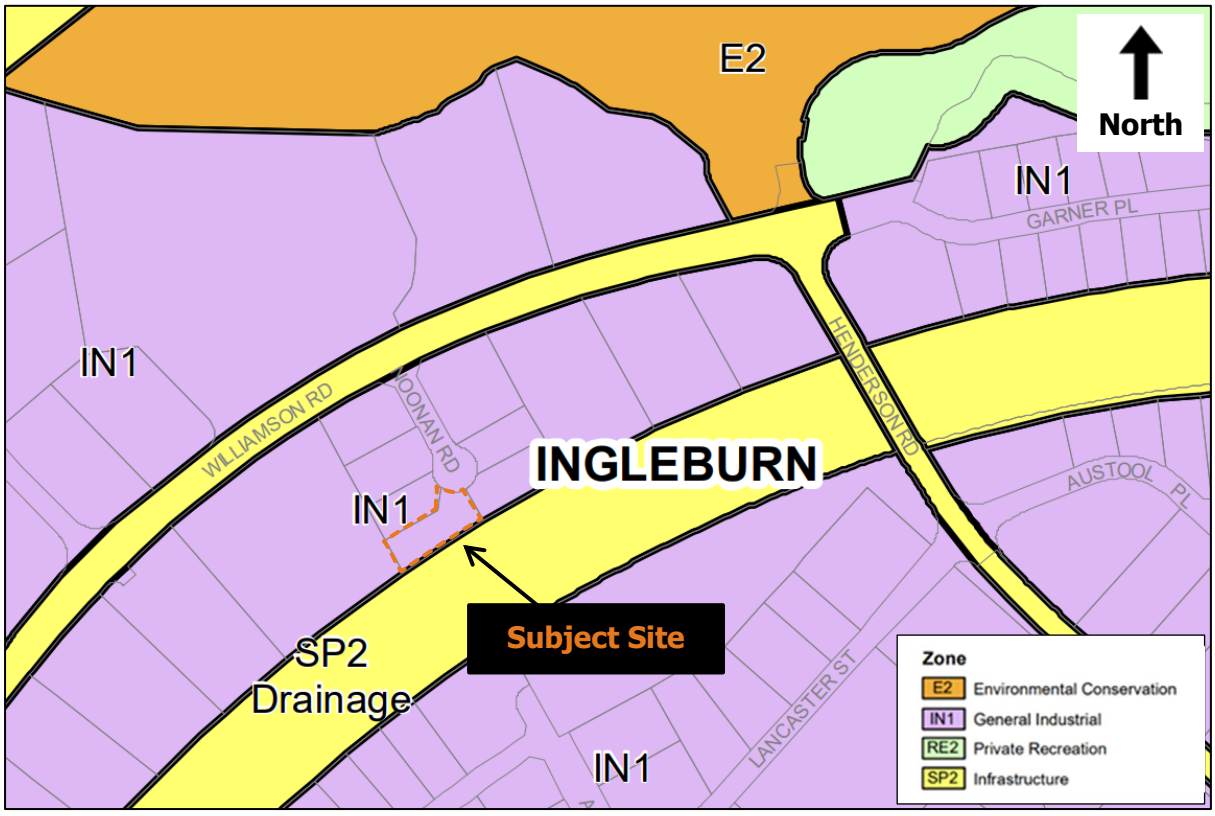



*Figure 1: Locality Plan (source: NSW Planning Portal)*

Figure 2 below shows that the subject site currently operates as a scrap metal yard, with office and industrial buildings located along the northwest boundary of the site and all vehicle access via an existing concrete driveway (of approximately 8.0m width) to the cul-de-sac of Noonan Road.


*Figure 2: Aerial Photograph (source: SIX Maps)*

## 2.2 Active Travel & Public Transport Networks

### 2.2.1 Active Travel Network

Despite the *Campbelltown LGA Cycleway Plan* (Figure 3 below) identifying Williamson Road as an existing off-road cycleway and Brooks Road as an existing on-road cycleway, there is no existing active travel infrastructure located within close proximity of the subject site.

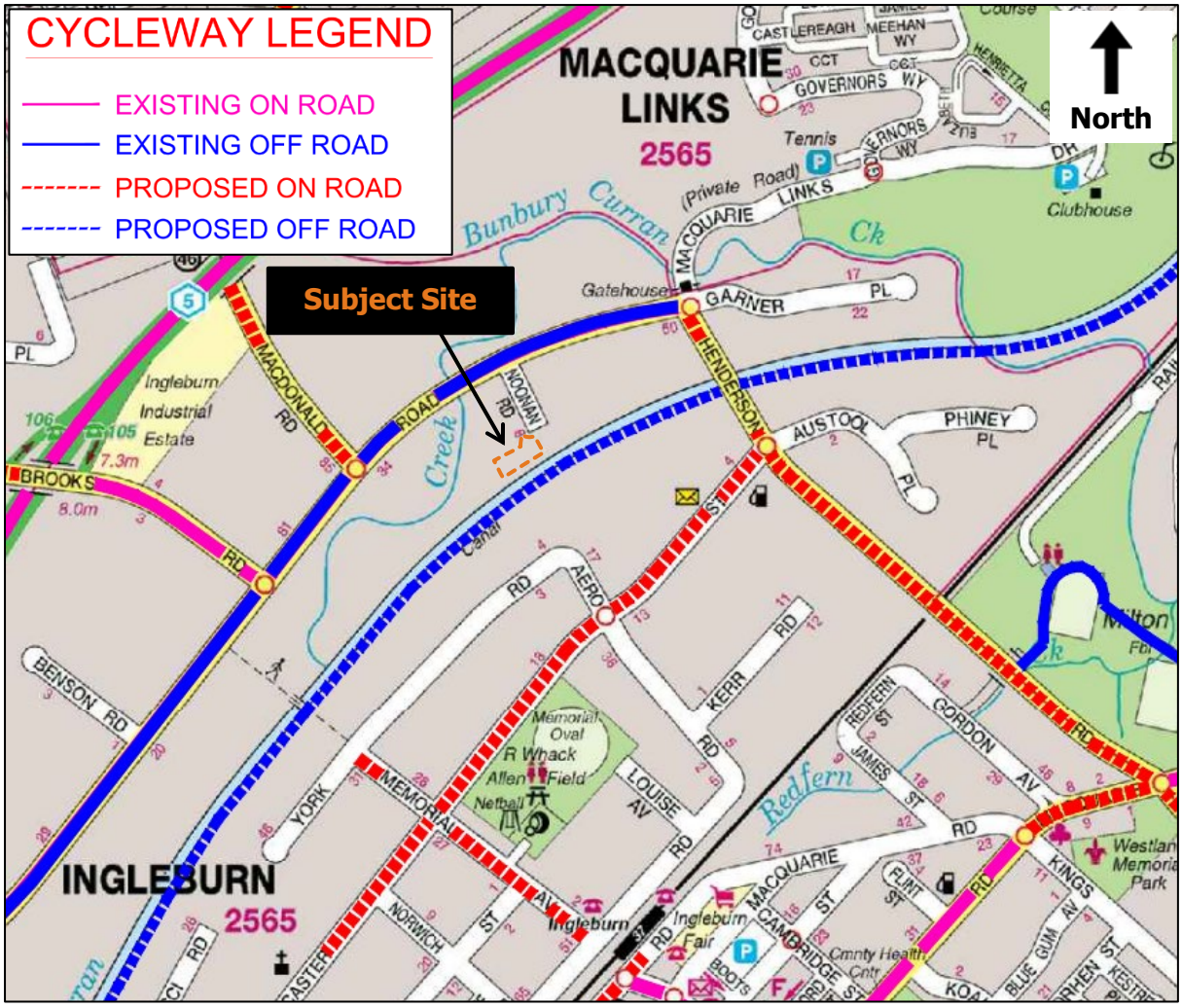



*Figure 3: Strategic Active Travel Network (source: Campbelltown City Council)*

### 2.2.2 Public Transport Network

The subject site is similarly isolated from the public transport network with only one (1) bus stop located within 400m walking distance. This stop (Williamson Rd after Henderson Rd [2565119]), and its opposite direction pair (Williamson Rd before Macquarie Links Dr [256555], are route 869 buses between Ingleburn and Liverpool via Edmondson Park and Prestons. These services operate at approximately 30-minute headways between 6am and 10pm. Figure 4, below, presents the existing public transport routes in the vicinity of the subject site.

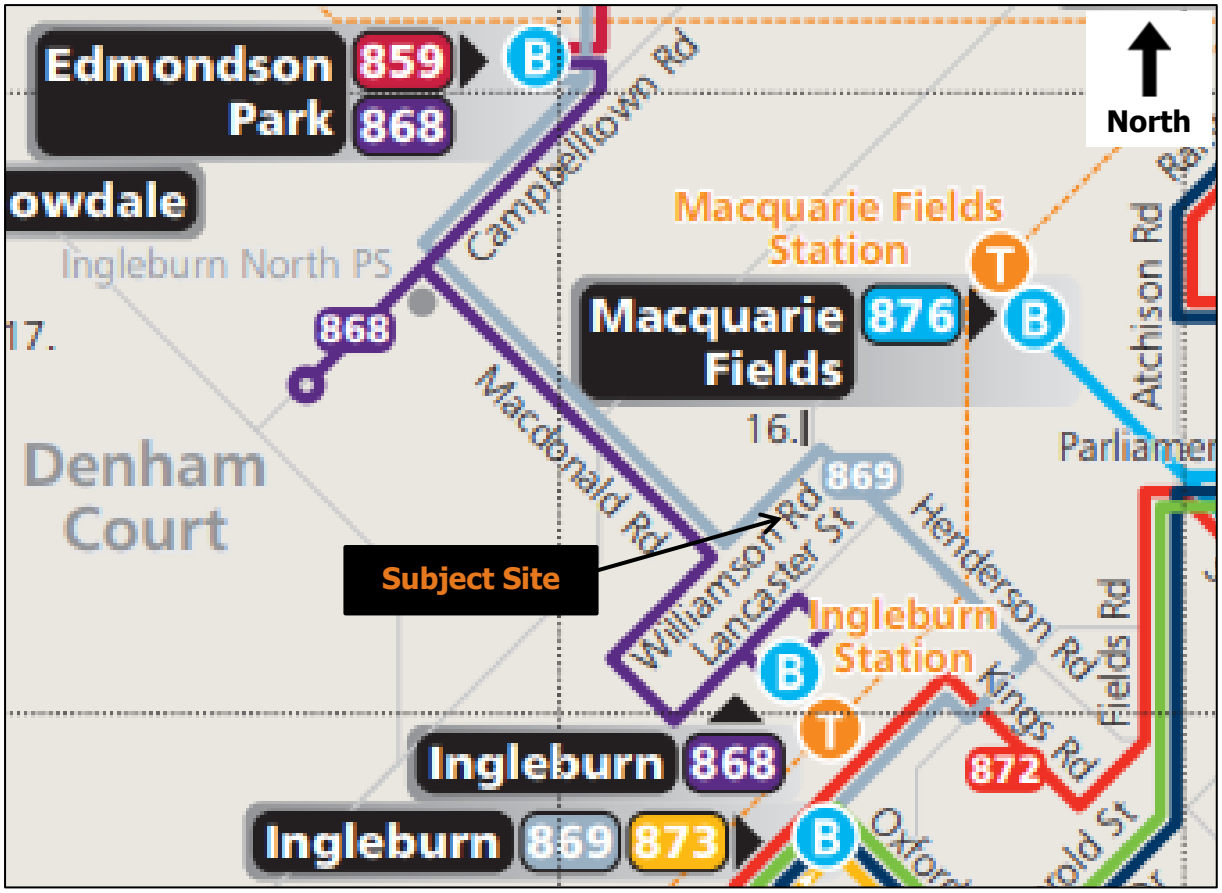



*Figure 4: Public Transport Network (source: Interline Bus)*

## 2.3 Road Network

### 2.3.1 Road Network Description

**Noonan Road** is a local road that extends approximately 120m from Williamson Road in the northwest to a cul-de-sac in the southeast.

Along its length, Noonan Road comprises a single carriageway of approximately 12m width, which supports a single lane of traffic in each direction. On-street parking is unrestricted on both sides of the carriageway, with the carriageway width sufficient to accommodate simultaneous two-way traffic flow whilst vehicles are parked on both sides.

No active travel infrastructure is provided along the length of Noonan Road.

Noonan Road is subject to the urban default speed limit of 50km/h.

**Williamson Road** is a state road that extends approximately 3.5km from Henderson Road in the northeast to Campbelltown Road in the southwest.

In the vicinity of Noonan Road, Williamson Road comprises dual carriageways of approximately 7m width, which each support two (2) traffic lanes in a single direction. The dual carriageways are separated by a planted median of approximately 11m width. On-street parking is generally not-prohibited, however the traffic conditions and lack of pedestrian access to adjacent properties acts as a significant deterrent.

A 1.2m wide footpath is located within the verge on the northwest side of Williamson Road.

Williamson Road is subject to a posted speed limit of 60km/h.

### 2.3.2 Traffic Volumes

Turning movement count data was collected at the Henderson Road / Williamson Road and MacDonald Road / Williamson Road intersections during the commuter peak periods on Thursday, 10 March 2022. Figure 5 below presents the traffic volume profile for this region of the road network throughout the duration of the turning movement counts.

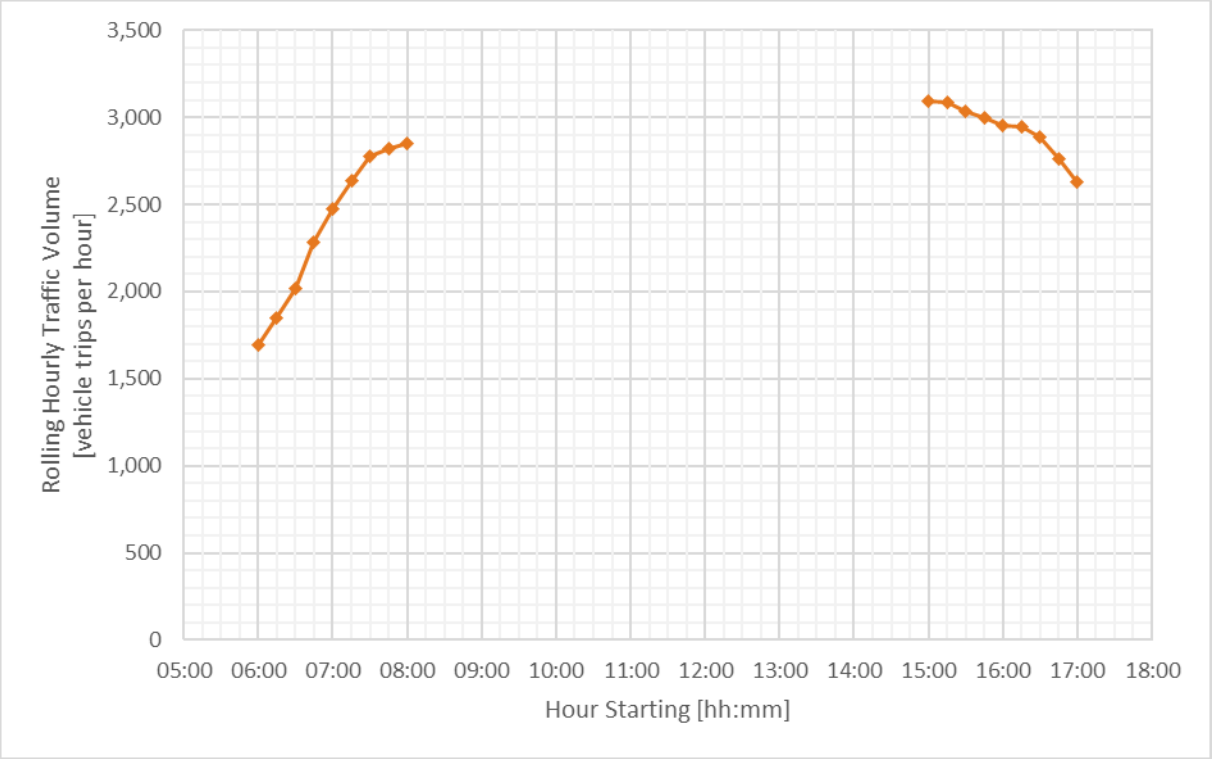
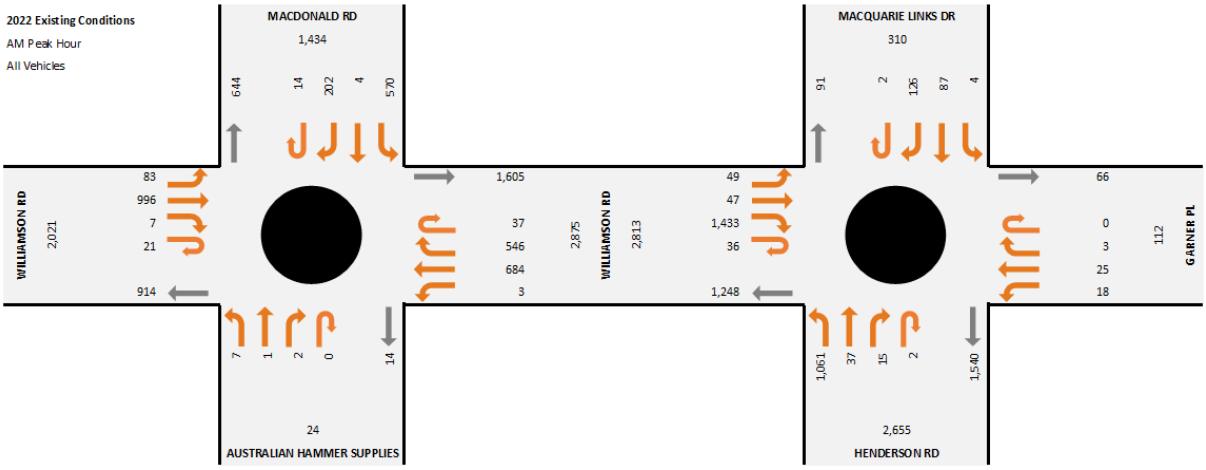
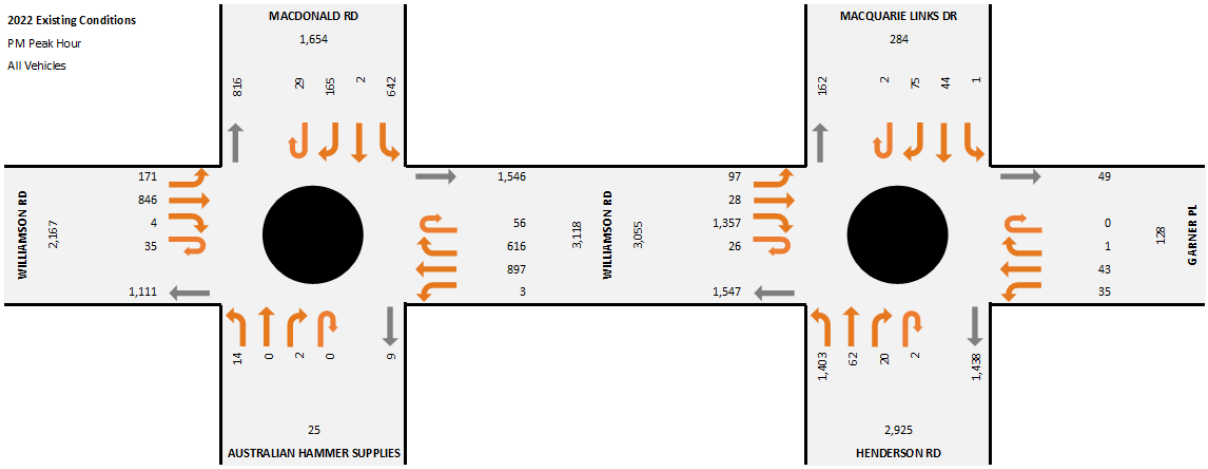



*Figure 5: Observed Traffic Volume Profile – Existing Conditions*

This data indicates that the weekday peak hours occur between 8am-9am and between 3pm-4pm. Traffic demands are not expected to significantly exceed these observed peaks between 9am and 3pm. Figure 6 below presents the peak hour turning movement counts on the road network, while full details of the observed traffic volumes are provided at Appendix A.




*(a) AM Peak Hour (8am-9am)*




*(a) PM Peak Hour (3pm-4pm)*

*Figure 6: Traffic Demands – 2022 Existing Conditions*

### 2.3.3 Intersection Performance

The performance of the Henderson Road / Williamson Road and MacDonald Road / Williamson Road roundabouts has been assessed using the SIDRA Intersection 8 software package ('SIDRA'). SIDRA quantifies intersection performance using the following four (4) measures:

- Degree of Saturation (DOS), which represents the ratio of traffic demands to theoretical intersection capacity,
- Average delay, in seconds, experienced by vehicles at the intersection,
- Level of Service (LOS), which converts average delay to a letter grade, and
- 95$^{th}$ percentile queue length, in metres, which reflects the length of queueing that has a 1-in-20 chance of being exceeded.

The *RMS Traffic Modelling Guidelines* specify that 0.85 and 0.98 are the maximum practical DOS for roundabouts and continuous lanes, respectively. Beyond this value, traffic flows can become unstable, with minor flow disruptions likely to cause long delays and queue lengths.

The *RMS Guide to Traffic Generating Developments (2002)* defines the LOS criteria as presented at Table 2 below.

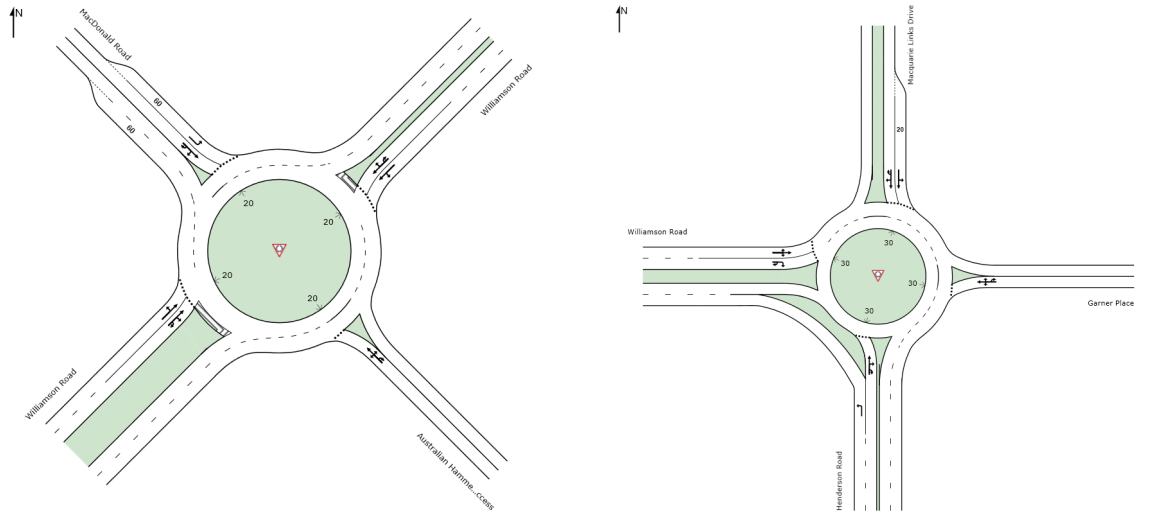
*Table 2: LOS Criteria for Intersections*

| Level of Service | Average Delay |
|---|---|
| **A** | ≤ 14s |
| **B** | 15s – 28s |
| **C** | 29s – 42s |
| **D** | 43s – 56s |
| **E** | 57s – 70s |
| **F** | > 70s |

The 95$^{th}$ percentile queue lengths have been assessed against the available storage length within each respective lane.

**Model Development**

Figure 7 below presents the modelled intersection geometry.




*(a) MacDonald Road / Williamson Road* *(b) Henderson Road / Williamson Road*

*Figure 7: Modelled Intersection Geometry – Existing Conditions*

## Intersection Performance

Table 3 below summarises the performance of the MacDonald Road / Williamson Road and Henderson Road / Williamson Road intersections under 2022 existing conditions. Full details are provided at Appendix B.

*Table 3: Intersection Performance Summary – 2022 Existing Conditions*

| Approach | AM Peak Hour | | | | PM Peak Hour | | | |
|---|---|---|---|---|---|---|---|---|
| | DOS | Delay | LOS | Queue | DOS | Delay | LOS | Queue |
| **MacDonald Road / Williamson Road** | | | | | | | | |
| SE: Aus Hammer Supplies | 0.05 | 12s | LOS A | 2m | 0.06 | 9s | LOS A | 2m |
| NE: Williamson Road | 0.56 | 14s | LOS A | 39m | 0.67 | 14s | LOS A | 55m |
| NW: MacDonald Road | 0.91 | 21s | LOS B | 84m | 0.94 | 24s | LOS B | 108m |
| SW: Williamson Road | 0.69 | 23s | LOS B | 69m | 0.75 | 28s | LOS B | 83m |
| **Total** | **0.91** | **23s** | **LOS B** | **-** | **0.94** | **28s** | **LOS B** | **-** |
| **Henderson Road / Williamson Road** | | | | | | | | |
| S: Henderson Road | 0.62 | 12s | LOS A | 2m | 0.80 | 12s | LOS A | 2m |
| E: Garner Place | 0.10 | 17s | LOS B | 4m | 0.15 | 16s | LOS B | 5m |
| N: Macquarie Links Drive | 0.18 | 11s | LOS A | 6m | 0.11 | 10s | LOS A | 4m |
| W: Williamson Road | 0.53 | 12s | LOS A | 35m | 0.52 | 13s | LOS A | 33m |
| **Total** | **0.62** | **17s** | **LOS B** | **-** | **0.80** | **16s** | **LOS B** | **-** |

The intersection performance analysis indicates that, in both peak hours, the MacDonald Road Williamson Road intersection operates with acceptable average delay and 95$^{th}$ percentile queue lengths. In both commuter peak hours, the left-turn from the northwest approach (MacDonald Road) is the critical movement, which operates marginally in excess of its practical capacity.

The analysis indicates that the Henderson Road / Williamson Road intersection operates with minimal average delays and acceptable 95$^{th}$ percentile queue lengths during both commuter peak hours. At the Henderson Road / Williamson Road intersection, the left-turn from the south approach (Henderson Road) is the critical movement in both commuter peak hours. As this movement is accommodated within a continuous lane which bypasses the roundabout,

the existing traffic volumes, during both commuter peak hours, are considered to be well within the practical capacity of this movement.

### 2.3.4 Crash History

Historical crash data has been analysed to identify any road safety issues in the vicinity of the subject site. This analysis is based on the publicly available crash data published by Transport for NSW ('TfNSW') and considers all reported crashes between 1 January 2016 and 31 December 2020.

In this period, there were a total of 17 crashes reported in the vicinity of the subject site. All of these crashes occurred on Williamson Road, between Henderson Road and MacDonald Road, inclusive of the approaches to those intersections. No crashes reported on Noonan Road or at the Noonan Road / Williamson Road intersection. One (1) of these crashes resulted in serious injuries (5.9%), five (5) crashes resulted in moderate injuries (29.4%), six (6) crashes resulted in minor/other injuries (35.3%) and the remaining five (5) crashes resulted only in property damage (29.4%). Figure 8 below presents the locations and severity of each of these crashes.

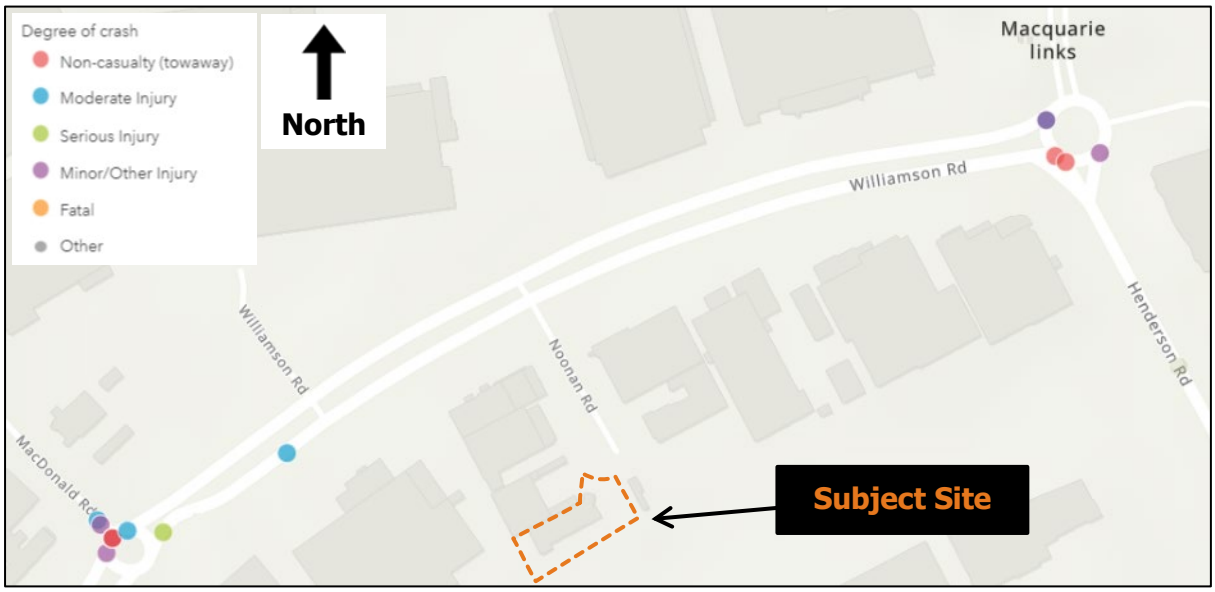



*Figure 8: Historical Crash Severity (source: TfNSW)*

Analysis of the historical crash data identified that four (4) of the crashes at the MacDonald Road / Williamson Road roundabout involved vehicles travelling towards the northeast (along Williamson Road) in parallel lanes. Three (3) of these crashes (75%) occurred during daylight hours in 2018 or 2019 and resulted in property damage only, with the remaining crash occurring in dark conditions in 2020 and resulting in moderate injuries to one (1) person.

A further four (4) crashes at the MacDonald Road / Williamson Road involved vehicles entering the roundabout colliding with vehicles already within the roundabout. These crashes were equally distributed between vehicles entering the roundabout from the northwest and southwest approaches (MacDonald Road and Williamson Road, respectively). Three (3) of these crashes (75%) occurred during daylight hours, with the remining crash occurring after dark. A different three (3) of these crashes (75%) resulted in minor injuries, with the remaining crash resulting in moderate injuries.

At the Henderson Road / Williamson Road roundabout, two (2) of the crashes involved vehicles in the same lane on the west approach (Williamson Road). Both of these crashes occurred in 2017, but in different lighting conditions (daylight and dusk). These crashes resulted in one (1) moderate injury and one (1) minor injury, respectively.

A further two (2) crashes at the Henderson Road / Williamson Road roundabout were single vehicle, run-off-road type crashes. Both of these crashes occurred in 2018. One (1) of these crashes occurred in daylight conditions, between the east and south legs (Garner Place and Henderson Road, respectively, and resulting in minor/other injuries. The other crash occurred in dark conditions, between the south and west legs (Henderson Road and Williamson Road, respectively) and resulted in property damage only.

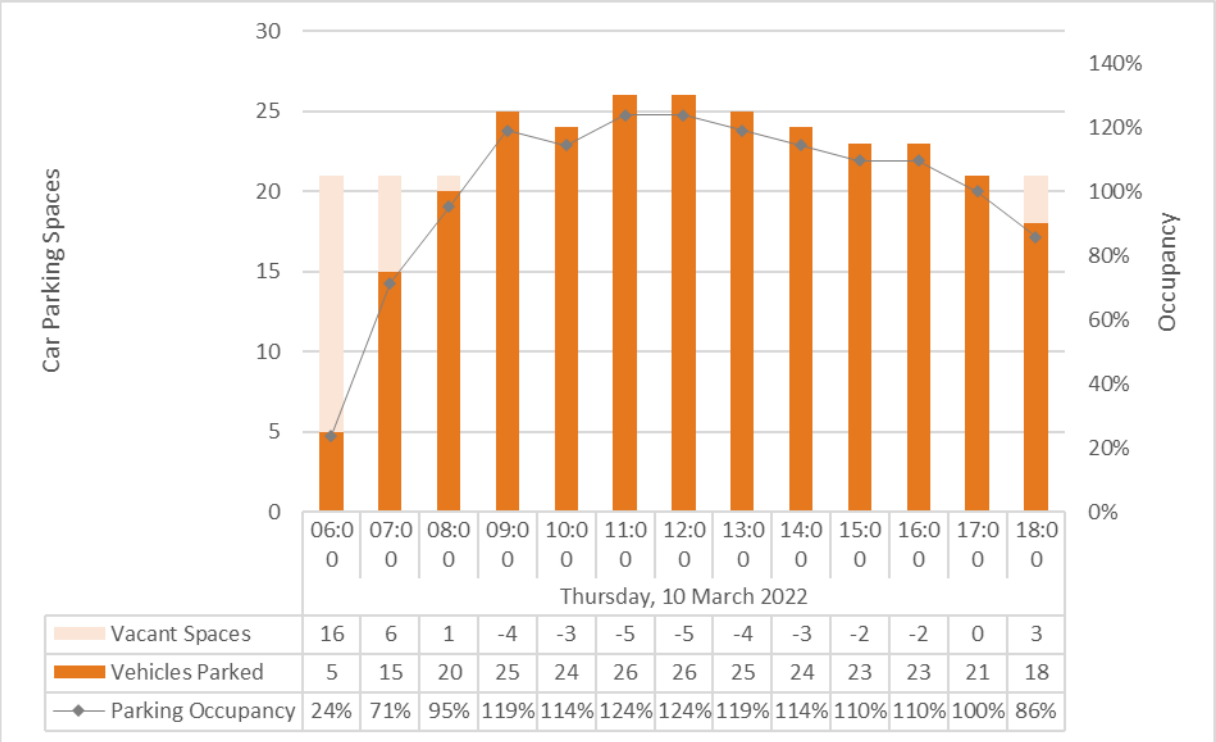
Given the lack of serious and fatal crashes, there are no immediate road safety concerns in the vicinity of the subject site.

## 2.4 Car Parking

A series of car parking surveys have been undertaken throughout the day on Thursday, 10 March 2022 to quantify the existing car parking demands within approximately 200m walking distance of the subject site, as shown in red at Figure 9 below.


*Figure 9: Car Parking Survey Area (source: ACTmapi)*

The results of the car parking surveys are summarised Figure 10 below. Full details are provided at Appendix C.




| | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vacant Spaces | 16 | 6 | 1 | -4 | -3 | -5 | -5 | -4 | -3 | -2 | -2 | 0 | 3 |
| Vehicles Parked | 5 | 15 | 20 | 25 | 24 | 26 | 26 | 25 | 24 | 23 | 23 | 21 | 18 |
| Parking Occupancy | 24% | 71% | 95% | 119% | 114% | 124% | 124% | 119% | 114% | 110% | 110% | 100% | 86% |

*Figure 10: Existing Car Parking Conditions*

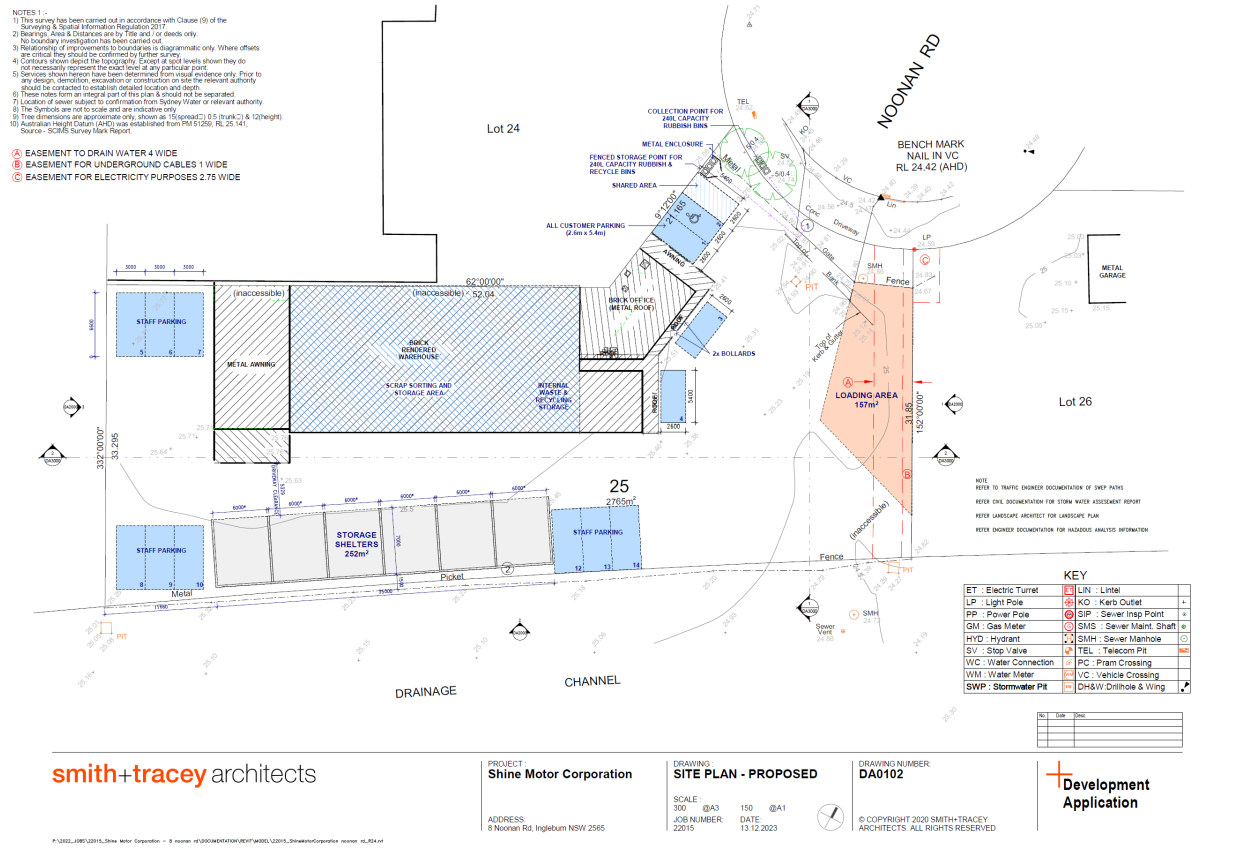
The car parking surveys identified a peak in the demand for car parking at 11am-12noon when 26 vehicles were observed to be parked on-street within 200m walking distance of the subject site. It is noted that all of these vehicles were observed to be parked on-street and on the verges along Noonan Road, with no vehicles observed to be parked along Williamson Road. This represents an existing peak car parking occupancy of 124% on Noonan Road, with vehicles observed to be illegally parking on the verge along the length of Noonan Road.

# 3 Proposed Development

The proposal is for a nominal change in use, in order for the site to accommodate a scrap metal yard, with capacity for up to 4,800 tonnes per annum. The development proposes to retain the approximately 154m$^2$ of office and 540m$^2$ industrial building on the subject site. The proposal also includes 'storage shelters' in place of the existing 'uncovered' storage area along the south-east boundary of the site.

This includes no proposed changes to the existing driver amenities (water closet accessible via the reception area). Minor changes to the arrangement of the outdoor spaces are proposed to provide on-site parking and to better accommodate vehicle loading and unloading on the site.

These changes are proposed to result in a reduction in the outdoor storage space to approximately 461m$^2$ and are not expected to adversely impact the future development of adjoining blocks, as shown at Figure 11 below. A larger copy of these plans is provided at Appendix D.



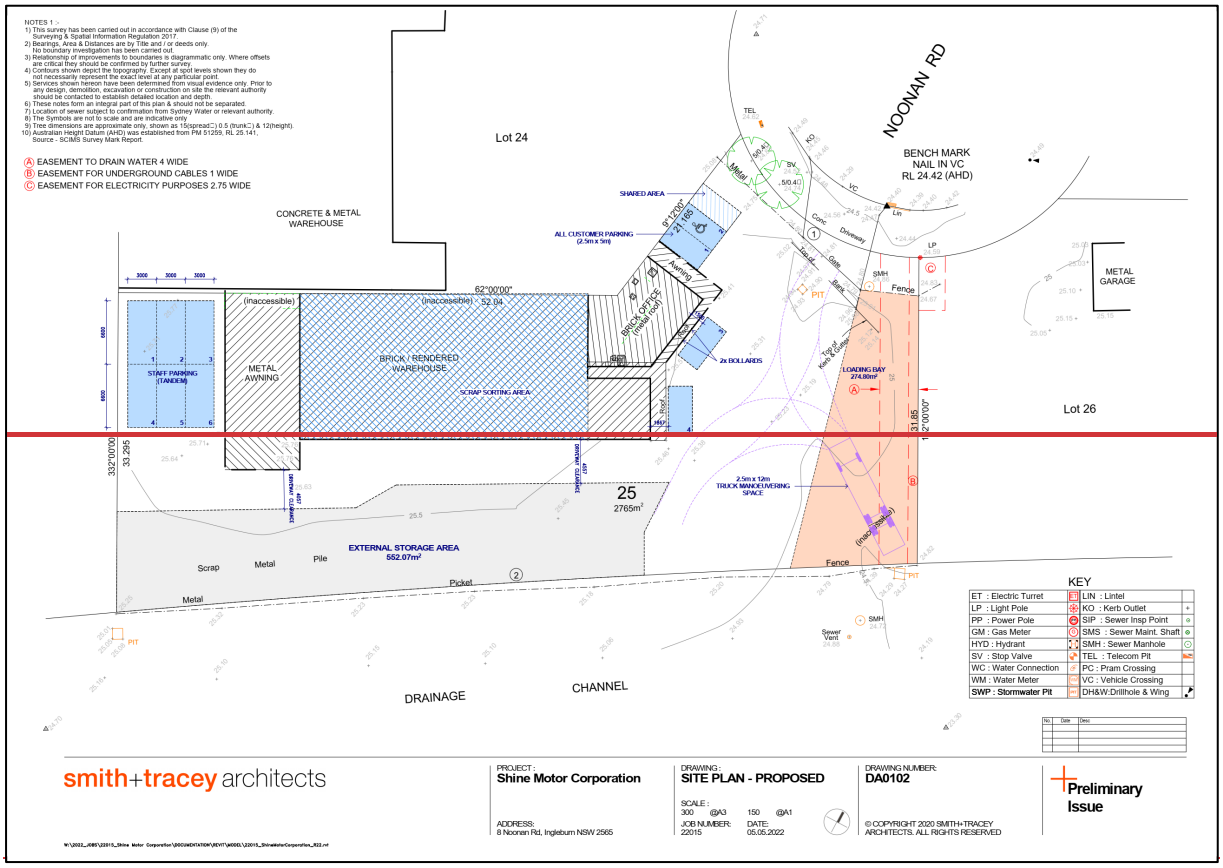




*Figure 11: Proposed Development*

## 3.1 Traffic and Parking Demands

The following sections set out the anticipated traffic and car parking demands associated with the proposed development. It is noted that the level of activity on the subject site is not proposed to significantly change compared to the existing conditions. Similarly, there is limited scope for travel demand management measures to reduce the reliance on vehicle trips (i.e. deliveries and collection of scrap metal is reliant on motor vehicles). Furthermore, the existing active travel and public transport networks are not considered to be sufficiently useful to staff to encourage a change to more sustainable travel modes.

### 3.1.1 Staff

The proposed development is expected to be operated by a total of eight (8) staff. Given the isolated nature of the subject site, these staff are conservatively assumed to all travel, individually, by car, to the subject site. On this basis, staff of the proposed development would be expected to generate:

- Eight (8) vehicle trips towards the site in the hour prior to the development opening in the morning,
- Demand for eight (8) car parking spaces throughout the course of the day, and
- Eight (8) vehicle trips away from the site in the hour after the development closes in the evening.

### 3.1.2 Scrap Deliveries

The proposed development is expected to receive up to approximately 15 deliveries of scrap metal per day. Of these, approximately 90% are expected to involve light vehicles (with or without a trailer), while the remaining 10% are expected to involve heavy vehicles (up to 8.8m rigid truck (MRV)). On this basis, the proposed development would be expected to generate:

- 13 light vehicle movements and two (2) heavy vehicle movements towards the site throughout the course of the day,
- Demand for up to two (2) vehicles to be unloaded at any one time,
- 13 light vehicle movements and two (2) heavy vehicle movements away from the site throughout the course of the day.

### 3.1.3 Scrap Collections

After sorting and some minor processing on the subject site, the scrap metal will be packaged into 40ft shipping containers or steel bins for collection and on-sale. We understand that the shipping containers are collected approximately twice-weekly (by 19m semi-trailer (AV)), with steel bins collected approximately monthly (by a 12.5m rigid truck (HRV)). On this basis, the proposed development would be expected to generate:

- One (1) heavy vehicle movement towards the site over the course of a day,
- Demand for one (1) vehicle to be loaded at any one time, and
- One (1) heavy vehicle movement away from the site over the course of a day.

### 3.1.4 Waste Collections

The office component and minor processing of the scrap metal produce some waste, which is stored on-site for commercial collection (up to 12.5m rigid truck (HRV)) approximately three (3) times per week. On this basis, the proposed development would be expected to generate:

- One (1) heavy vehicle movement towards the site over the course of a day,
- Demand for one (1) vehicle to be loaded at any one time, and
- One (1) heavy vehicle movement away from the site over the course of a day.

### 3.1.5 Summary

As set out above, the proposed development would be expected to generate a total of 50 vehicle trips per day. These development traffic and parking demands are not expected to differ significantly from those generated under existing conditions:

- Eight (8) vehicle trips towards the site in the hour prior to the development opening in the morning,
- Demand for eight (8) car parking spaces throughout the course of the day,
- 13 light vehicle movements and four (4) heavy vehicle movements towards the site throughout the course of the day,
- Demand for two (2) vehicles to be unloaded at any one time,
- Allowance for the collection of scrap metal or waste,
- 13 light vehicle movements and four (4) heavy vehicle movements away from the site throughout the course of the day, and
- Eight (8) vehicle trips away from the site in the hour after the development closes in the evening.

## 3.2 Vehicle Access Arrangements

### 3.2.1 Heavy Vehicle Routes

It is noted that all heavy vehicles accessing the proposed development are expected to comply with the National Heavy Vehicle Regulator's mass and dimension limits for 'General Access Vehicles'. Furthermore, it is note that heavy vehicles accessing the subject site are not proposed to carry dangerous goods. Figure 12 below presents the indicative haulage between the state road network (dark blue) and the subject site, in key directions.

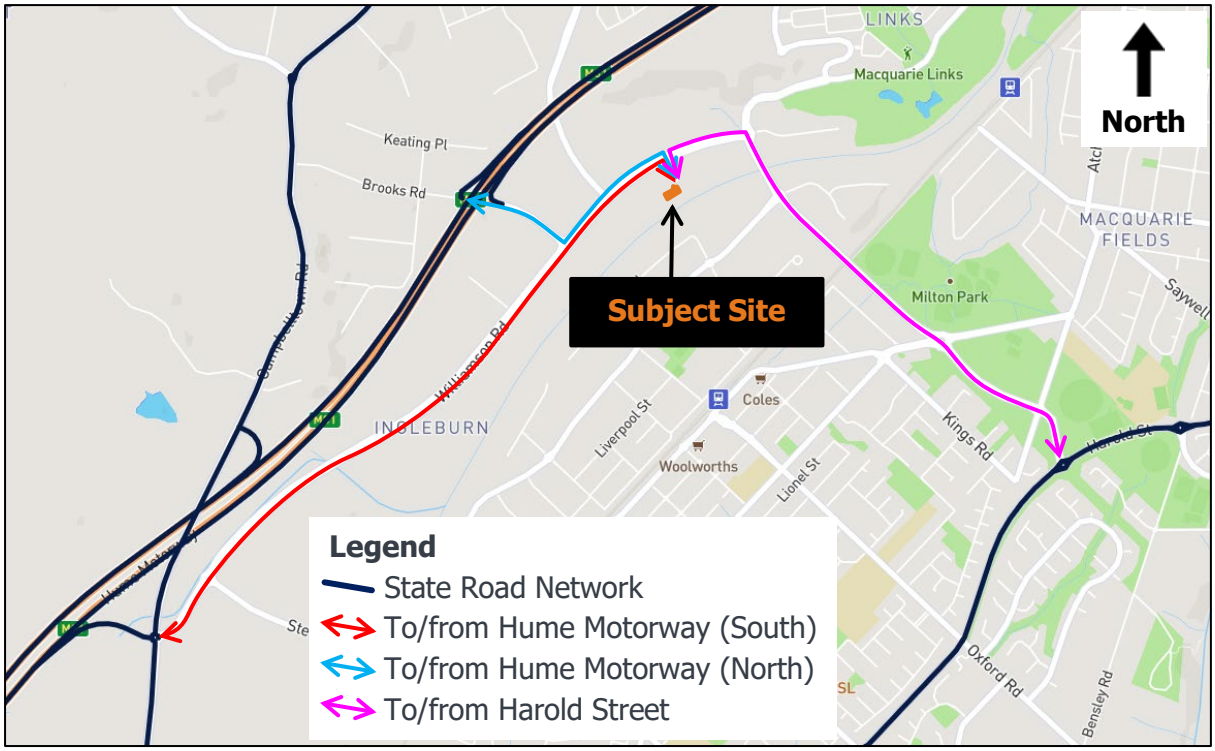
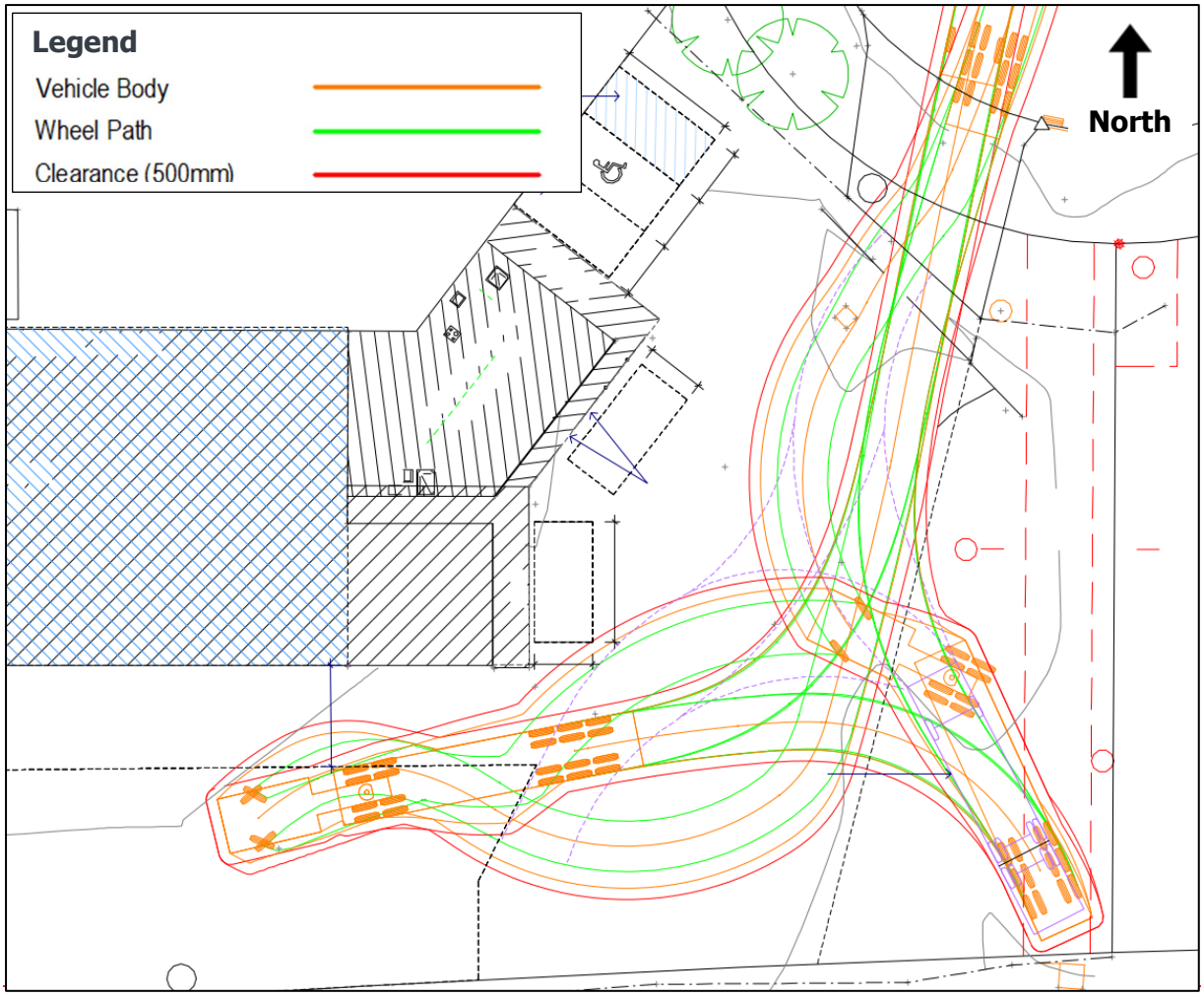



*Figure 12: Indicative Haulage Routes*

### 3.2.2 Site Access

As aforementioned, vehicle access to the subject site is proposed to remain via the existing (approximately 8.0m wide) driveway to the cul-de-sac of Noonan Road.




Within the subject site, the removal of existing stockpiles in the southeast corner are proposed in order to allow vehicles, up to a 19m semi-trailer, to enter the site in a forwards direction, turn-around, before exiting the site in a forwards direction. Figure 13 below demonstrates a 19m semi-trailer undertaking a three-point-turn within the subject site ~~(subject to minor design changes, identified below)~~. A full set of swept path diagrams are provided at Appendix E, with separated entry and exit movements to clearly show manoeuvring.

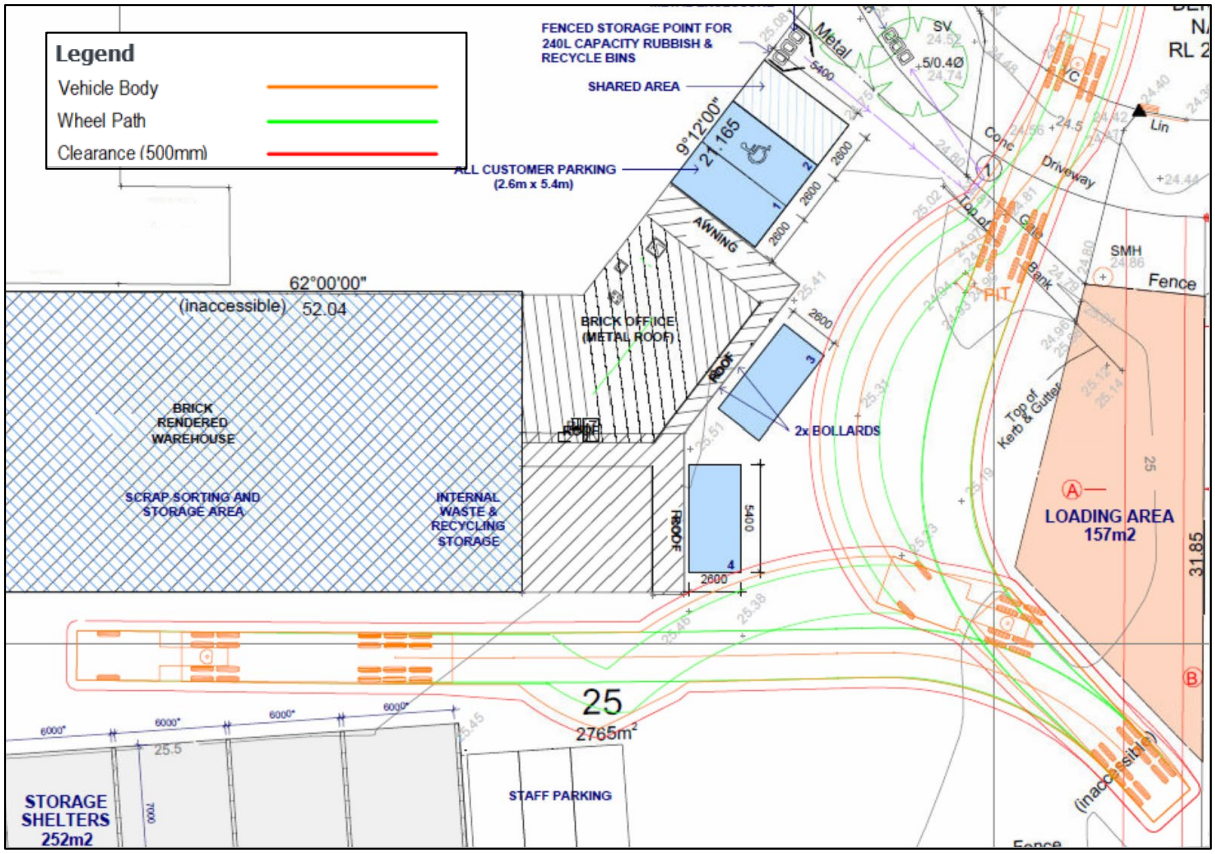



*Figure 13: Proposed Vehicle Manoeuvring Area*

## 3.3 Design Review

The design of the proposed development has been reviewed against the requirements of Council's Development Control Plan and the relevant Australian Standards.

### 3.3.1 Council's Development Control Plan

Section 7.3 of the *Campbelltown (Sustainable City) Development Control Plan 2015* (Council's DCP) sets out Council's requirements for car parking and vehicle access at industrial developments.

Council's DCP defers the dimensional requirements for parking spaces to the relevant Australian Standards (*AS2890.1* for light vehicles and *AS2890.2* for heavy vehicles).

The swept path analysis (Appendix E) demonstrates that the proposed development meets Council's requirements for all vehicles to be able to enter and exit the site in a forwards direction, while undertaking at most, a three-point-turn on the subject site.

All of the on-site car parking spaces are proposed to be provided at-grade (i.e. no car stackers are proposed), more than 10% of spaces (including the sole accessible car parking space) proposed to be located in close proximity to the entrance to the office.

It is proposed for all loading/unloading to occur in the designated area at the eastern end of the site, away from car parking spaces, landscaped areas, pedestrian paths and internal roadways.

### 3.3.2 Australian Standards

The *Australian Standard 2890.1 – Off-street car parking* (*AS2890.1*) sets out the standard requirements for car parking and vehicle access within the proposed development. Similarly, the *Australian Standard 2890.2 – Off-street commercial vehicle facilities* (*AS2890.2*) sets out the standard requirements for heavy vehicle parking and access. Finally, the *Australian Standard 2890.6 – Off-street parking for people with disabilities* (*AS2890.6*) sets out the standard requirements for accessible car parking and vehicle access.

Under *AS2890.1*, the bulk of the on-site car parking (8 spaces) is considered to be user class 1 or 1A (suitable for employees). These spaces have minimum dimensional requirements of 2.4m width and 5.4m length, located perpendicular to a 5.8m wide aisle. The remainder of the on-site car parking is considered to be user class 3 (suitable for short-term visitors), which has minimum dimensional requirements of 2.6m width and 5.4m length, located perpendicular to a 5.8m wide aisle. There is considered to be sufficient space within the subject site for the provision of car parking spaces of these dimensions.

*AS2890.2* requires that accessways and service bays be suitably dimensioned to accommodate the largest design vehicle expected to visit the site. For the proposed development, the largest design vehicle (a semi-trailer) is represented by the standard articulated vehicle (AV). On this basis, the swept path analysis (provided at Appendix E) demonstrates that the standard AV is able to both enter and exit the site in a forwards direction, as well as manoeuvre into position within the loading area in order to load/unload a shipping container.

Under *AS2890.6*, accessible car parking spaces are required to have minimum dimensions of 2.4m width by 5.4m length and be located adjacent to an equally dimensioned shared area. The proposed accessible car parking space (and associated shared area) ~~meets~~ exceeds these minimum dimensional requirements.

# 4 Parking Assessments

## 4.1 Overall Car Parking Assessment

### 4.1.1 Statutory Requirement

Section 7.3.1 of the *Campbelltown (Sustainable City) Development Control Plan 2015* (*DCP*) prescribes the number of car parking spaces to be provided for the proposed development, as follows:

- 1 car parking space per 35m$^2$ of office space, plus
- 2 car parking spaces per industrial unit, plus
- 1 car parking space per 100m$^2$ for parts of industrial buildings up to 2,000m$^2$, plus
- 1 car parking space per 250m$^2$ for parts of industrial buildings which exceed 2,000m$^2$, plus
- 1 car parking space per 300m$^2$ of outdoor storage space.

On this basis, the proposed development has a statutory requirement for 13 car parking spaces.

### 4.1.2 Anticipated Demands

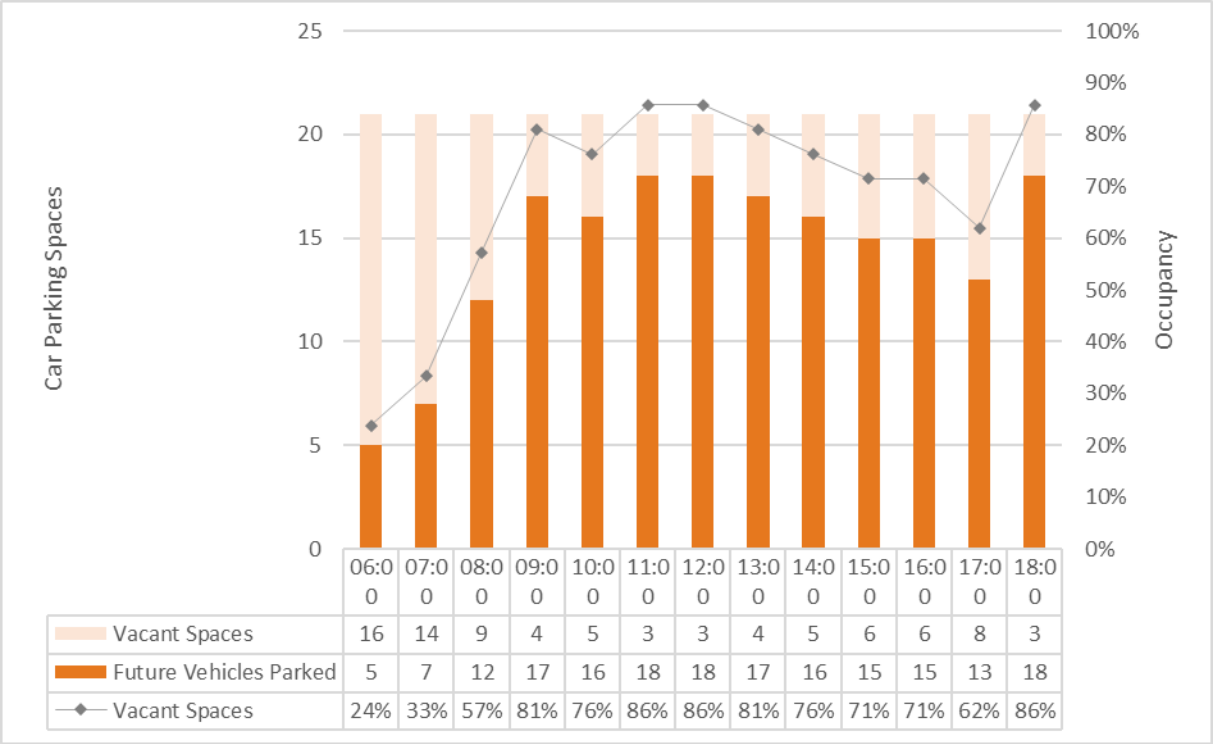
As aforementioned, the proposed development is expected to generate a peak demand for eight (8) long-term car parking spaces, plus two (2) spaces for vehicles to be loaded/unloaded at any one time.

### 4.1.3 Proposed Provision

The proposed development includes a total of 13 on-site car parking spaces, all independently accessed. Six (6) spaces are located to the rear of the site, three (3) spaces near the new sheds and four (4) located adjacent to the office building. This meets Council's requirements with no shortfall compared to the statutory requirements and a surplus of five (5) car parking spaces compared to the anticipated car parking demands.

### 4.1.4 Overall Car Parking Summary

This arrangement is expected to result in the relocation of eight (8) vehicles, which currently park on-street in Noonan Road, onto the subjects site. This would reduce the peak demand for on-street car parking to 18 vehicles (at 11am-12noon and 6pm), representing a peak car parking occupancy of 86%, as shown at Figure 14 below. This would represent a significant improvement over the existing conditions.




| | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Vacant Spaces | 16 | 14 | 9 | 4 | 5 | 3 | 3 | 4 | 5 | 6 | 6 | 8 | 3 |
| Future Vehicles Parked | 5 | 7 | 12 | 17 | 16 | 18 | 18 | 17 | 16 | 15 | 15 | 13 | 18 |
| Vacant Spaces | 24% | 33% | 57% | 81% | 76% | 86% | 86% | 81% | 76% | 71% | 71% | 62% | 86% |

*Figure 14: Anticipated Post-Development On-Street Car Parking Conditions*

## 4.2 Accessible Car Parking Assessment

### 4.2.1 Statutory Requirement

Section 7.3.3 of the *DCP* specifies that the proposed development must accord with the requirements of the *Building Code of Australia* (*BCA*) as it relates to access for people with disabilities. Table D3.5 of the *BCA* specifies that office and process buildings (classes 5 and 8, respectively) require a minimum of one (1) accessible car parking space for every 100 total car parking spaces, or part thereof. On this basis, the proposed development has a statutory requirement for one (1) accessible car parking space.

### 4.2.2 Proposed Provision

The proposed development includes one (1) accessible car parking space (and associated shared area) located adjacent to the office building. This provision meets the statutory requirement for accessible car parking.

# 5 Development Conditions

As aforementioned, the operation of the proposed development is not expected to differ significantly from that observed during the traffic and parking data collection. On this basis, the safety and performance of the Henderson Road / Williamson Road and MacDonald Road / Williamson Road roundabouts are expected remain unchanged from the existing conditions and quantified in section 2.3.3 (page 8) of this report.

Within Noonan Road, the anticipated reduction in demand for on-street car parking and the provision for heavy vehicles to both enter and exit the site in a forwards direction are expected to improve safety for road users.

# 6 Conclusions

Quantum Traffic have been engaged by Shine Motor Corporation to provide traffic engineering advice in relation to the proposed scrap metal yard at 8 Noonan Road in Ingleburn. The traffic and parking analyses undertaken in relation to the proposed development have concluded that:

a) The site is located on the southwest side of Noonan Road, approximately 1.0km north of Ingleburn Station and 34.5km southwest of Sydney GPO. The site currently operates as a scrap metal yard,
b) There is limited active travel and public transport infrastructure in close proximity to the site,
c) Intersection performance analysis indicated that both the MacDonald Road / Williamson Road and Henderson Road / Williamson Road intersections currently operate with acceptable average delays and 95$^{th}$ percentile queue lengths. These conditions are despite the northwest approach (MacDonald Road) of the MacDonald Road / Williamson Road intersection operating marginally in excess of its practical capacity in both commuter peak hours,
d) A review of the publicly-available crash data indicated no immediate road safety concerns in the vicinity of the subject site,
e) A series of car parking surveys identified that, under existing conditions, car parking demands exceed the supply of on-street car parking, within approximately 200m walking distance of the subject site,
f) The proposal is for a nominal change in use, in order for the site to accommodate a scrap metal yard, with capacity for up to 4,800 tonnes per annum,
g) Given the existing use of the site, this is expected to have minimal impact on the level of activity on the subject site, with the site expected to continue generating approximately 50 vehicle movements per day,
h) Swept path analysis has been undertaken to demonstrate that vehicles up to and including the standard AV can enter and exit the site in a forwards direction,
i) The design of parking and vehicle access arrangements at the proposed development have been reviewed against and found to accord with the requirements of Council's DCP and the relevant Australian Standards,
j) The provision of 13 on-site car parking spaces (in addition to the loading/unloading area) is expected to attract long-term car parking demands for approximately eight (8) vehicles from the road reserve, onto the subject site. This would result in the supply of on-street car parking exceeding the on-street car parking demands within 200m walking distance of the subject site,
k) Given that the level of activity on the subject site is not expected to differ significantly as the result of the proposed nominal change in use, the proposed development is not expected to significantly impact the safety or performance of the road network.

On the basis of the above, there are no traffic engineering reasons why the proposed development should not be approved, subject to appropriate conditions.

# Appendix A:

## Turning Movement Count Data

# TRANS TRAFFIC SURVEY

trafficsurvey.com.au

## TURNING MOVEMENT SURVEY

## Intersection of Garner Pl and Macquarie Links Dr, Ingleburn

***GPS*** *-33.986639, 150.866306*

| | |
|---|---|
| ***Date:*** | Thu 10/03/22 |
| ***Weather:*** | Fine |
| ***Suburban:*** | Ingleburn |
| ***Customer:*** | N/A |

| | |
|---|---|
| ***North:*** | Macquarie Links Dr |
| ***East:*** | Garner Pl |
| ***South:*** | Henderson Rd |
| ***West:*** | Williamson Rd |

| | | |
|---|---|---|
| ***Survey Period*** | AM: | 6:00 AM-9:00 AM |
| | PM: | 3:00 PM-6:00 PM |
| ***Traffic Peak*** | AM: | 8:00 AM-9:00 AM |
| | PM: | 3:00 PM-4:00 PM |

***All Vehicles***

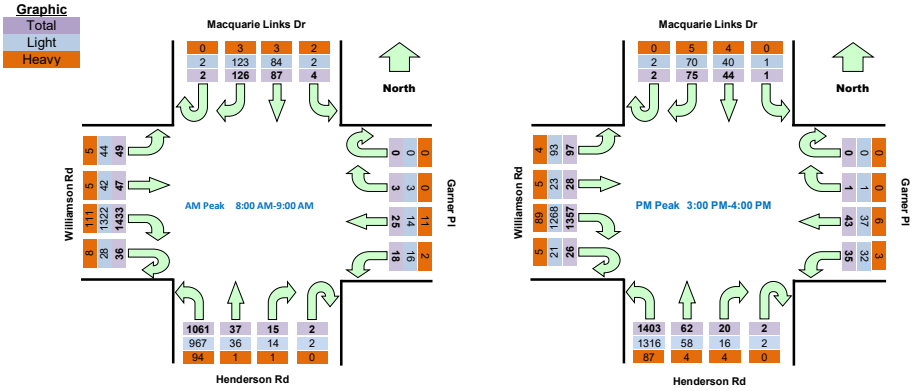
| Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | | Hourly Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 10 | 4 | 0 | 0 | 1 | 5 | 1 | 0 | 3 | 2 | 235 | 4 | 131 | 13 | 1 | 1708 | |
| 6:15 | 6:30 | 0 | 8 | 4 | 1 | 0 | 0 | 3 | 1 | 0 | 8 | 2 | 179 | 2 | 159 | 13 | 1 | 1850 | |
| 6:30 | 6:45 | 0 | 6 | 8 | 0 | 0 | 0 | 4 | 1 | 0 | 2 | 2 | 172 | 5 | 170 | 12 | 2 | 2030 | |
| 6:45 | 7:00 | 0 | 12 | 6 | 0 | 0 | 1 | 4 | 9 | 0 | 5 | 4 | 207 | 7 | 257 | 15 | 6 | 2311 | |
| 7:00 | 7:15 | 0 | 17 | 10 | 0 | 0 | 0 | 3 | 3 | 0 | 6 | 1 | 208 | 11 | 270 | 17 | 6 | 2517 | |
| 7:15 | 7:30 | 0 | 23 | 14 | 1 | 0 | 0 | 4 | 2 | 2 | 7 | 5 | 203 | 7 | 258 | 25 | 10 | 2713 | |
| 7:30 | 7:45 | 0 | 25 | 17 | 0 | 0 | 0 | 5 | 2 | 0 | 5 | 8 | 277 | 4 | 300 | 15 | 7 | 2862 | |
| 7:45 | 8:00 | 0 | 33 | 25 | 1 | 1 | 0 | 2 | 3 | 1 | 5 | 10 | 250 | 12 | 376 | 12 | 8 | 2915 | |
| 8:00 | 8:15 | 0 | 44 | 30 | 1 | 0 | 1 | 6 | 2 | 2 | 2 | 9 | 274 | 11 | 346 | 9 | 11 | 2945 | Peak |
| 8:15 | 8:30 | 1 | 34 | 26 | 1 | 0 | 2 | 9 | 1 | 0 | 5 | 8 | 256 | 6 | 335 | 14 | 12 | | |
| 8:30 | 8:45 | 0 | 23 | 19 | 1 | 0 | 0 | 5 | 8 | 0 | 3 | 10 | 247 | 8 | 370 | 16 | 8 | | |
| 8:45 | 9:00 | 1 | 25 | 12 | 1 | 0 | 0 | 5 | 7 | 0 | 5 | 10 | 284 | 11 | 382 | 8 | 18 | | |
| 15:00 | 15:15 | 1 | 15 | 7 | 0 | 0 | 0 | 21 | 12 | 0 | 3 | 15 | 331 | 5 | 341 | 8 | 25 | 3196 | Peak |
| 15:15 | 15:30 | 0 | 16 | 13 | 0 | 0 | 0 | 3 | 6 | 1 | 7 | 9 | 362 | 3 | 358 | 6 | 26 | 3190 | |
| 15:30 | 15:45 | 1 | 18 | 10 | 1 | 0 | 0 | 6 | 8 | 1 | 5 | 18 | 386 | 4 | 331 | 7 | 23 | 3138 | |
| 15:45 | 16:00 | 0 | 26 | 14 | 0 | 0 | 1 | 13 | 9 | 0 | 5 | 20 | 324 | 14 | 327 | 7 | 23 | 3088 | |
| 16:00 | 16:15 | 0 | 14 | 11 | 0 | 0 | 1 | 29 | 9 | 2 | 7 | 17 | 370 | 13 | 286 | 5 | 14 | 3038 | |
| 16:15 | 16:30 | 0 | 19 | 10 | 0 | 0 | 1 | 13 | 8 | 1 | 4 | 15 | 320 | 14 | 322 | 4 | 27 | 3012 | |
| 16:30 | 16:45 | 0 | 12 | 14 | 0 | 0 | 0 | 16 | 6 | 0 | 2 | 12 | 358 | 14 | 303 | 4 | 28 | 2955 | |
| 16:45 | 17:00 | 0 | 21 | 14 | 1 | 0 | 0 | 6 | 10 | 0 | 5 | 14 | 318 | 12 | 310 | 5 | 17 | 2837 | |
| 17:00 | 17:15 | 0 | 22 | 6 | 0 | 0 | 0 | 9 | 3 | 1 | 2 | 17 | 338 | 13 | 308 | 3 | 30 | 2698 | |
| 17:15 | 17:30 | 0 | 18 | 12 | 0 | 0 | 0 | 3 | 3 | 2 | 2 | 19 | 316 | 10 | 297 | 4 | 15 | | |
| 17:30 | 17:45 | 0 | 17 | 14 | 0 | 0 | 0 | 3 | 2 | 1 | 8 | 10 | 292 | 7 | 268 | 3 | 26 | | |
| 17:45 | 18:00 | 0 | 15 | 11 | 1 | 0 | 1 | 4 | 3 | 0 | 6 | 9 | 248 | 1 | 265 | 2 | 28 | | |

| Peak Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 2 | 126 | 87 | 4 | 0 | 3 | 25 | 18 | 2 | 15 | 37 | 1061 | 36 | 1433 | 47 | 49 | 2945 |
| 15:00 | 16:00 | 2 | 75 | 44 | 1 | 0 | 1 | 43 | 35 | 2 | 20 | 62 | 1403 | 26 | 1357 | 28 | 97 | 3196 |

*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



# TRANS TRAFFIC SURVEY

trafficsurvey.com.au

## TURNING MOVEMENT SURVEY

## Intersection of Garner Pl and Macquarie Links Dr, Ingleburn

***GPS*** *-33.986639, 150.866306*

| | |
|---|---|
| ***Date:*** | Thu 10/03/22 |
| ***Weather:*** | Fine |
| ***Suburban:*** | Ingleburn |
| ***Customer:*** | N/A |

| | |
|---|---|
| ***North:*** | Macquarie Links Dr |
| ***East:*** | Garner Pl |
| ***South:*** | Henderson Rd |
| ***West:*** | Williamson Rd |

| | | |
|---|---|---|
| ***Survey Period*** | AM: | 6:00 AM-9:00 AM |
| | PM: | 3:00 PM-6:00 PM |
| ***Traffic Peak*** | AM: | 8:00 AM-9:00 AM |
| | PM: | 3:00 PM-4:00 PM |

***Light Vehicles***

| Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L |
| 6:00 | 6:15 | 0 | 9 | 4 | 0 | 0 | 1 | 3 | 1 | 0 | 3 | 2 | 211 | 3 | 118 | 10 | 1 |
| 6:15 | 6:30 | 0 | 8 | 4 | 1 | 0 | 0 | 1 | 1 | 0 | 7 | 2 | 149 | 2 | 145 | 13 | 1 |
| 6:30 | 6:45 | 0 | 6 | 8 | 0 | 0 | 0 | 4 | 1 | 0 | 2 | 1 | 143 | 5 | 151 | 12 | 2 |
| 6:45 | 7:00 | 0 | 12 | 6 | 0 | 0 | 1 | 4 | 7 | 0 | 5 | 4 | 189 | 6 | 239 | 14 | 6 |
| 7:00 | 7:15 | 0 | 17 | 10 | 0 | 0 | 0 | 3 | 3 | 0 | 5 | 1 | 189 | 10 | 248 | 16 | 5 |
| 7:15 | 7:30 | 0 | 22 | 14 | 1 | 0 | 0 | 4 | 1 | 2 | 7 | 5 | 181 | 6 | 237 | 23 | 9 |
| 7:30 | 7:45 | 0 | 25 | 16 | 0 | 0 | 0 | 2 | 2 | 0 | 5 | 7 | 251 | 4 | 279 | 13 | 6 |
| 7:45 | 8:00 | 0 | 32 | 25 | 1 | 0 | 0 | 2 | 3 | 1 | 5 | 9 | 225 | 9 | 349 | 11 | 8 |
| 8:00 | 8:15 | 0 | 43 | 29 | 0 | 0 | 1 | 4 | 2 | 2 | 2 | 9 | 248 | 9 | 316 | 8 | 9 |
| 8:15 | 8:30 | 1 | 34 | 26 | 0 | 0 | 2 | 5 | 1 | 0 | 4 | 8 | 237 | 4 | 314 | 12 | 9 |
| 8:30 | 8:45 | 0 | 22 | 18 | 1 | 0 | 0 | 3 | 6 | 0 | 3 | 9 | 226 | 6 | 341 | 14 | 8 |
| 8:45 | 9:00 | 1 | 24 | 11 | 1 | 0 | 0 | 2 | 7 | 0 | 5 | 10 | 256 | 9 | 351 | 8 | 18 |
| 15:00 | 15:15 | 1 | 15 | 7 | 0 | 0 | 0 | 18 | 10 | 0 | 2 | 15 | 297 | 5 | 314 | 6 | 25 |
| 15:15 | 15:30 | 0 | 14 | 12 | 0 | 0 | 0 | 2 | 6 | 1 | 5 | 8 | 338 | 2 | 338 | 5 | 24 |
| 15:30 | 15:45 | 1 | 17 | 10 | 1 | 0 | 0 | 6 | 7 | 1 | 4 | 16 | 363 | 4 | 307 | 6 | 23 |
| 15:45 | 16:00 | 0 | 24 | 11 | 0 | 0 | 1 | 11 | 9 | 0 | 5 | 19 | 318 | 10 | 309 | 6 | 21 |
| 16:00 | 16:15 | 0 | 14 | 11 | 0 | 0 | 1 | 28 | 9 | 2 | 6 | 17 | 359 | 12 | 263 | 5 | 14 |
| 16:15 | 16:30 | 0 | 18 | 10 | 0 | 0 | 1 | 13 | 8 | 1 | 4 | 13 | 304 | 10 | 295 | 3 | 27 |
| 16:30 | 16:45 | 0 | 12 | 14 | 0 | 0 | 0 | 16 | 6 | 0 | 2 | 11 | 341 | 13 | 272 | 4 | 28 |
| 16:45 | 17:00 | 0 | 21 | 14 | 1 | 0 | 0 | 4 | 10 | 0 | 5 | 14 | 303 | 9 | 288 | 5 | 17 |
| 17:00 | 17:15 | 0 | 22 | 6 | 0 | 0 | 0 | 9 | 3 | 1 | 2 | 16 | 320 | 12 | 289 | 3 | 29 |
| 17:15 | 17:30 | 0 | 18 | 12 | 0 | 0 | 0 | 3 | 3 | 2 | 2 | 18 | 304 | 8 | 279 | 4 | 15 |
| 17:30 | 17:45 | 0 | 16 | 14 | 0 | 0 | 0 | 3 | 2 | 1 | 8 | 9 | 283 | 7 | 248 | 3 | 26 |
| 17:45 | 18:00 | 0 | 15 | 10 | 1 | 0 | 1 | 4 | 3 | 0 | 6 | 9 | 241 | 1 | 249 | 2 | 28 |

| Peak Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 2 | 123 | 84 | 2 | 0 | 3 | 14 | 16 | 2 | 14 | 36 | 967 | 28 | 1322 | 42 | 44 | 2699 |
| 15:00 | 16:00 | 2 | 70 | 40 | 1 | 0 | 1 | 37 | 32 | 2 | 16 | 58 | 1316 | 21 | 1268 | 23 | 93 | 2980 |

***Heavy Vehicles***

| Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L |
| 6:00 | 6:15 | 0 | 1 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 24 | 1 | 13 | 3 | 0 |
| 6:15 | 6:30 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 1 | 0 | 30 | 0 | 14 | 0 | 0 |
| 6:30 | 6:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 29 | 0 | 19 | 0 | 0 |
| 6:45 | 7:00 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 18 | 1 | 18 | 1 | 0 |
| 7:00 | 7:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 19 | 1 | 22 | 1 | 1 |
| 7:15 | 7:30 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 22 | 1 | 21 | 2 | 1 |
| 7:30 | 7:45 | 0 | 0 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 1 | 26 | 0 | 21 | 2 | 1 |
| 7:45 | 8:00 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 25 | 3 | 27 | 1 | 0 |
| 8:00 | 8:15 | 0 | 1 | 1 | 1 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 26 | 2 | 30 | 1 | 2 |
| 8:15 | 8:30 | 0 | 0 | 0 | 1 | 0 | 0 | 4 | 0 | 0 | 1 | 0 | 19 | 2 | 21 | 2 | 3 |
| 8:30 | 8:45 | 0 | 1 | 1 | 0 | 0 | 0 | 2 | 2 | 0 | 0 | 1 | 21 | 2 | 29 | 2 | 0 |
| 8:45 | 9:00 | 0 | 1 | 1 | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 28 | 2 | 31 | 0 | 0 |
| 15:00 | 15:15 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 2 | 0 | 1 | 0 | 34 | 0 | 27 | 2 | 0 |
| 15:15 | 15:30 | 0 | 2 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 2 | 1 | 24 | 1 | 20 | 1 | 2 |
| 15:30 | 15:45 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 2 | 23 | 0 | 24 | 1 | 0 |
| 15:45 | 16:00 | 0 | 2 | 3 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 1 | 6 | 4 | 18 | 1 | 2 |
| 16:00 | 16:15 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 11 | 1 | 23 | 0 | 0 |
| 16:15 | 16:30 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 16 | 4 | 27 | 1 | 0 |
| 16:30 | 16:45 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 17 | 1 | 31 | 0 | 0 |
| 16:45 | 17:00 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 15 | 3 | 22 | 0 | 0 |
| 17:00 | 17:15 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 18 | 1 | 19 | 0 | 1 |
| 17:15 | 17:30 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 12 | 2 | 18 | 0 | 0 |
| 17:30 | 17:45 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 9 | 0 | 20 | 0 | 0 |
| 17:45 | 18:00 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 7 | 0 | 16 | 0 | 0 |

| Peak Time | | North Approach Macquarie Links Dr | | | | East Approach Garner Pl | | | | South Approach Henderson Rd | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 0 | 3 | 3 | 2 | 0 | 0 | 11 | 2 | 0 | 1 | 1 | 94 | 8 | 111 | 5 | 5 | 246 |
| 15:00 | 16:00 | 0 | 5 | 4 | 0 | 0 | 0 | 6 | 3 | 0 | 4 | 4 | 87 | 5 | 89 | 5 | 4 | 216 |

# TRANS TRAFFIC SURVEY

trafficsurvey.com.au

## TURNING MOVEMENT SURVEY

## Intersection of Williamson Rd and MacDonald Rd, Ingleburn

| | |
|---|---|
| ***GPS*** | *-33.989139, 150.859528* |
| ***Date:*** | Thu 10/03/22 |
| ***Weather:*** | Fine |
| ***Suburban:*** | Ingleburn |
| ***Customer:*** | N/A |

| | |
|---|---|
| ***North:*** | MacDonald Rd |
| ***East:*** | Williamson Rd |
| ***South:*** | Hammer Supplies Entry Rd |
| ***West:*** | Williamson Rd |

| | | |
|---|---|---|
| ***Survey Period*** | AM: | 6:00 AM-9:00 AM |
| | PM: | 3:00 PM-6:00 PM |
| ***Traffic Peak*** | AM: | 8:00 AM-9:00 AM |
| | PM: | 3:00 PM-4:00 PM |

***All Vehicles***

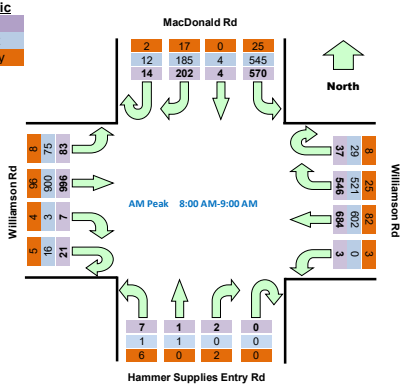
| Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | | Hourly Total | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | Hour | Peak |
| 6:00 | 6:15 | 0 | 20 | 1 | 54 | 3 | 101 | 156 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 100 | 45 | 2000 | |
| 6:15 | 6:30 | 0 | 36 | 1 | 50 | 6 | 77 | 108 | 0 | 0 | 0 | 0 | 1 | 3 | 2 | 125 | 27 | 2160 | |
| 6:30 | 6:45 | 3 | 37 | 0 | 58 | 9 | 77 | 106 | 0 | 0 | 0 | 0 | 0 | 7 | 5 | 132 | 29 | 2350 | |
| 6:45 | 7:00 | 1 | 44 | 2 | 77 | 3 | 98 | 124 | 1 | 0 | 0 | 0 | 1 | 9 | 0 | 215 | 42 | 2614 | |
| 7:00 | 7:15 | 2 | 33 | 0 | 93 | 8 | 94 | 137 | 0 | 0 | 0 | 0 | 0 | 15 | 7 | 221 | 34 | 2816 | |
| 7:15 | 7:30 | 1 | 31 | 2 | 92 | 6 | 112 | 118 | 2 | 0 | 0 | 0 | 2 | 7 | 1 | 210 | 42 | 2967 | |
| 7:30 | 7:45 | 2 | 38 | 2 | 89 | 11 | 129 | 169 | 1 | 0 | 1 | 0 | 3 | 7 | 4 | 241 | 30 | 3127 | |
| 7:45 | 8:00 | 2 | 59 | 0 | 139 | 9 | 130 | 162 | 0 | 0 | 0 | 0 | 0 | 13 | 2 | 274 | 29 | 3170 | |
| 8:00 | 8:15 | 1 | 46 | 1 | 121 | 4 | 145 | 189 | 1 | 0 | 0 | 0 | 1 | 5 | 3 | 257 | 21 | 3177 | Peak |
| 8:15 | 8:30 | 6 | 59 | 0 | 135 | 10 | 137 | 164 | 2 | 0 | 1 | 0 | 6 | 6 | 2 | 233 | 25 | | |
| 8:30 | 8:45 | 2 | 57 | 2 | 156 | 14 | 120 | 150 | 0 | 0 | 0 | 1 | 0 | 4 | 0 | 247 | 17 | | |
| 8:45 | 9:00 | 5 | 40 | 1 | 158 | 9 | 144 | 181 | 0 | 0 | 1 | 0 | 0 | 6 | 2 | 259 | 20 | | |
| 15:00 | 15:15 | 6 | 39 | 0 | 154 | 13 | 141 | 222 | 2 | 0 | 1 | 0 | 7 | 19 | 1 | 219 | 62 | 3482 | Peak |
| 15:15 | 15:30 | 4 | 40 | 1 | 177 | 16 | 154 | 222 | 0 | 0 | 0 | 0 | 3 | 4 | 2 | 211 | 33 | 3427 | |
| 15:30 | 15:45 | 7 | 43 | 0 | 150 | 10 | 173 | 235 | 1 | 0 | 0 | 0 | 3 | 6 | 0 | 214 | 39 | 3376 | |
| 15:45 | 16:00 | 12 | 43 | 1 | 161 | 17 | 148 | 218 | 0 | 0 | 1 | 0 | 1 | 6 | 1 | 202 | 37 | 3334 | |
| 16:00 | 16:15 | 1 | 30 | 0 | 125 | 13 | 154 | 272 | 0 | 0 | 0 | 1 | 6 | 5 | 0 | 186 | 38 | 3272 | |
| 16:15 | 16:30 | 4 | 39 | 0 | 133 | 15 | 145 | 216 | 0 | 0 | 2 | 0 | 2 | 5 | 2 | 221 | 32 | 3312 | |
| 16:30 | 16:45 | 3 | 39 | 2 | 121 | 9 | 150 | 246 | 0 | 0 | 1 | 2 | 2 | 3 | 2 | 221 | 38 | 3259 | |
| 16:45 | 17:00 | 2 | 33 | 0 | 140 | 20 | 157 | 188 | 0 | 0 | 1 | 1 | 5 | 0 | 1 | 195 | 43 | 3112 | |
| 17:00 | 17:15 | 3 | 32 | 2 | 141 | 8 | 129 | 256 | 0 | 0 | 0 | 2 | 15 | 5 | 1 | 216 | 61 | 2973 | |
| 17:15 | 17:30 | 2 | 31 | 0 | 132 | 13 | 128 | 217 | 0 | 0 | 0 | 0 | 3 | 7 | 0 | 184 | 46 | | |
| 17:30 | 17:45 | 1 | 30 | 0 | 105 | 11 | 143 | 167 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 194 | 38 | | |
| 17:45 | 18:00 | 4 | 28 | 0 | 116 | 9 | 117 | 147 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 186 | 37 | | |

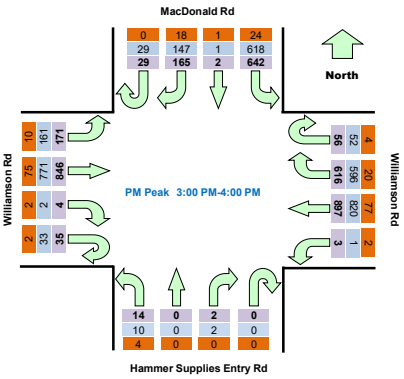
| Peak Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 14 | 202 | 4 | 570 | 37 | 546 | 684 | 3 | 0 | 2 | 1 | 7 | 21 | 7 | 996 | 83 | 3177 |
| 15:00 | 16:00 | 29 | 165 | 2 | 642 | 56 | 616 | 897 | 3 | 0 | 2 | 0 | 14 | 35 | 4 | 846 | 171 | 3482 |

*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



# TRANS TRAFFIC SURVEY

trafficsurvey.com.au

## TURNING MOVEMENT SURVEY

## Intersection of Williamson Rd and MacDonald Rd, Ingleburn

| | |
|---|---|
| ***GPS*** | *-33.989139, 150.859528* |
| ***Date:*** | Thu 10/03/22 |
| ***Weather:*** | Fine |
| ***Suburban:*** | Ingleburn |
| ***Customer:*** | N/A |

| | |
|---|---|
| ***North:*** | MacDonald Rd |
| ***East:*** | Williamson Rd |
| ***South:*** | Hammer Supplies Entry Rd |
| ***West:*** | Williamson Rd |

| | | |
|---|---|---|
| ***Survey Period*** | AM: | 6:00 AM-9:00 AM |
| | PM: | 3:00 PM-6:00 PM |
| ***Traffic Peak*** | AM: | 8:00 AM-9:00 AM |
| | PM: | 3:00 PM-4:00 PM |

***Light Vehicles***

| Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L |
| 6:00 | 6:15 | 0 | 13 | 1 | 51 | 0 | 95 | 136 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 89 | 44 |
| 6:15 | 6:30 | 0 | 30 | 1 | 49 | 4 | 68 | 88 | 0 | 0 | 0 | 0 | 0 | 2 | 2 | 113 | 22 |
| 6:30 | 6:45 | 2 | 22 | 0 | 53 | 2 | 71 | 89 | 0 | 0 | 0 | 0 | 0 | 6 | 5 | 125 | 27 |
| 6:45 | 7:00 | 1 | 38 | 2 | 75 | 3 | 92 | 111 | 1 | 0 | 0 | 0 | 1 | 8 | 0 | 196 | 36 |
| 7:00 | 7:15 | 1 | 27 | 0 | 86 | 7 | 85 | 127 | 0 | 0 | 0 | 0 | 0 | 14 | 4 | 202 | 29 |
| 7:15 | 7:30 | 1 | 30 | 2 | 91 | 5 | 102 | 105 | 2 | 0 | 0 | 0 | 0 | 6 | 0 | 187 | 37 |
| 7:30 | 7:45 | 0 | 33 | 2 | 78 | 10 | 123 | 147 | 1 | 0 | 1 | 0 | 2 | 3 | 4 | 229 | 26 |
| 7:45 | 8:00 | 2 | 53 | 0 | 135 | 9 | 121 | 142 | 0 | 0 | 0 | 0 | 0 | 10 | 2 | 247 | 25 |
| 8:00 | 8:15 | 1 | 43 | 1 | 115 | 1 | 139 | 167 | 0 | 0 | 0 | 0 | 0 | 4 | 2 | 231 | 20 |
| 8:15 | 8:30 | 5 | 52 | 0 | 127 | 9 | 134 | 145 | 0 | 0 | 0 | 0 | 1 | 5 | 1 | 215 | 24 |
| 8:30 | 8:45 | 2 | 54 | 2 | 151 | 12 | 115 | 131 | 0 | 0 | 0 | 1 | 0 | 3 | 0 | 221 | 13 |
| 8:45 | 9:00 | 4 | 36 | 1 | 152 | 7 | 133 | 159 | 0 | 0 | 0 | 0 | 0 | 4 | 0 | 233 | 18 |
| 15:00 | 15:15 | 6 | 33 | 0 | 149 | 12 | 131 | 198 | 0 | 0 | 1 | 0 | 5 | 18 | 1 | 196 | 60 |
| 15:15 | 15:30 | 4 | 36 | 1 | 175 | 13 | 150 | 201 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 192 | 31 |
| 15:30 | 15:45 | 7 | 39 | 0 | 143 | 10 | 168 | 218 | 1 | 0 | 0 | 0 | 2 | 6 | 0 | 196 | 36 |
| 15:45 | 16:00 | 12 | 39 | 0 | 151 | 17 | 147 | 203 | 0 | 0 | 1 | 0 | 1 | 5 | 1 | 187 | 34 |
| 16:00 | 16:15 | 1 | 26 | 0 | 119 | 13 | 151 | 261 | 0 | 0 | 0 | 1 | 4 | 4 | 0 | 168 | 36 |
| 16:15 | 16:30 | 4 | 37 | 0 | 128 | 13 | 137 | 206 | 0 | 0 | 1 | 0 | 2 | 5 | 2 | 197 | 32 |
| 16:30 | 16:45 | 3 | 33 | 0 | 114 | 9 | 145 | 233 | 0 | 0 | 1 | 2 | 2 | 3 | 0 | 196 | 36 |
| 16:45 | 17:00 | 2 | 30 | 0 | 137 | 19 | 151 | 174 | 0 | 0 | 0 | 1 | 4 | 0 | 0 | 175 | 43 |
| 17:00 | 17:15 | 3 | 27 | 1 | 136 | 7 | 126 | 239 | 0 | 0 | 0 | 2 | 15 | 5 | 1 | 201 | 56 |
| 17:15 | 17:30 | 2 | 29 | 0 | 128 | 12 | 123 | 209 | 0 | 0 | 0 | 0 | 3 | 5 | 0 | 169 | 44 |
| 17:30 | 17:45 | 1 | 23 | 0 | 101 | 11 | 138 | 162 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 178 | 38 |
| 17:45 | 18:00 | 4 | 22 | 0 | 111 | 9 | 115 | 142 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 175 | 37 |

| Peak Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 12 | 185 | 4 | 545 | 29 | 521 | 602 | 0 | 0 | 0 | 1 | 1 | 16 | 3 | 900 | 75 | 2894 |
| 15:00 | 16:00 | 29 | 147 | 1 | 618 | 52 | 596 | 820 | 1 | 0 | 2 | 0 | 10 | 33 | 2 | 771 | 161 | 3243 |

***Heavy Vehicles***

| Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L |
| 6:00 | 6:15 | 0 | 7 | 0 | 3 | 3 | 6 | 20 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 11 | 1 |
| 6:15 | 6:30 | 0 | 6 | 0 | 1 | 2 | 9 | 20 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 12 | 5 |
| 6:30 | 6:45 | 1 | 15 | 0 | 5 | 7 | 6 | 17 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 | 2 |
| 6:45 | 7:00 | 0 | 6 | 0 | 2 | 0 | 6 | 13 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 19 | 6 |
| 7:00 | 7:15 | 1 | 6 | 0 | 7 | 1 | 9 | 10 | 0 | 0 | 0 | 0 | 0 | 1 | 3 | 19 | 5 |
| 7:15 | 7:30 | 0 | 1 | 0 | 1 | 1 | 10 | 13 | 0 | 0 | 0 | 0 | 2 | 1 | 1 | 23 | 5 |
| 7:30 | 7:45 | 2 | 5 | 0 | 11 | 1 | 6 | 22 | 0 | 0 | 0 | 0 | 1 | 4 | 0 | 12 | 4 |
| 7:45 | 8:00 | 0 | 6 | 0 | 4 | 0 | 9 | 20 | 0 | 0 | 0 | 0 | 0 | 3 | 0 | 27 | 4 |
| 8:00 | 8:15 | 0 | 3 | 0 | 6 | 3 | 6 | 22 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 26 | 1 |
| 8:15 | 8:30 | 1 | 7 | 0 | 8 | 1 | 3 | 19 | 2 | 0 | 1 | 0 | 5 | 1 | 1 | 18 | 1 |
| 8:30 | 8:45 | 0 | 3 | 0 | 5 | 2 | 5 | 19 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 26 | 4 |
| 8:45 | 9:00 | 1 | 4 | 0 | 6 | 2 | 11 | 22 | 0 | 0 | 1 | 0 | 0 | 2 | 2 | 26 | 2 |
| 15:00 | 15:15 | 0 | 6 | 0 | 5 | 1 | 10 | 24 | 2 | 0 | 0 | 0 | 2 | 1 | 0 | 23 | 2 |
| 15:15 | 15:30 | 0 | 4 | 0 | 2 | 3 | 4 | 21 | 0 | 0 | 0 | 0 | 1 | 0 | 2 | 19 | 2 |
| 15:30 | 15:45 | 0 | 4 | 0 | 7 | 0 | 5 | 17 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 18 | 3 |
| 15:45 | 16:00 | 0 | 4 | 1 | 10 | 0 | 1 | 15 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 15 | 3 |
| 16:00 | 16:15 | 0 | 4 | 0 | 6 | 0 | 3 | 11 | 0 | 0 | 0 | 0 | 2 | 1 | 0 | 18 | 2 |
| 16:15 | 16:30 | 0 | 2 | 0 | 5 | 2 | 8 | 10 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 24 | 0 |
| 16:30 | 16:45 | 0 | 6 | 2 | 7 | 0 | 5 | 13 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 25 | 2 |
| 16:45 | 17:00 | 0 | 3 | 0 | 3 | 1 | 6 | 14 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 20 | 0 |
| 17:00 | 17:15 | 0 | 5 | 1 | 5 | 1 | 3 | 17 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 15 | 5 |
| 17:15 | 17:30 | 0 | 2 | 0 | 4 | 1 | 5 | 8 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 15 | 2 |
| 17:30 | 17:45 | 0 | 7 | 0 | 4 | 0 | 5 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 16 | 0 |
| 17:45 | 18:00 | 0 | 6 | 0 | 5 | 0 | 2 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 11 | 0 |

| Peak Time | | North Approach MacDonald Rd | | | | East Approach Williamson Rd | | | | uth Approach Hammer Supplies Entry | | | | West Approach Williamson Rd | | | | Peak |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Period Start | Period End | U | R | SB | L | U | R | WB | L | U | R | NB | L | U | R | EB | L | total |
| 8:00 | 9:00 | 2 | 17 | 0 | 25 | 8 | 25 | 82 | 3 | 0 | 2 | 0 | 6 | 5 | 4 | 96 | 8 | 283 |
| 15:00 | 16:00 | 0 | 18 | 1 | 24 | 4 | 20 | 77 | 2 | 0 | 0 | 0 | 4 | 2 | 2 | 75 | 10 | 239 |

# Appendix B:

## SIDRA Results – 2022 Existing Conditions

# USER REPORT FOR SITE

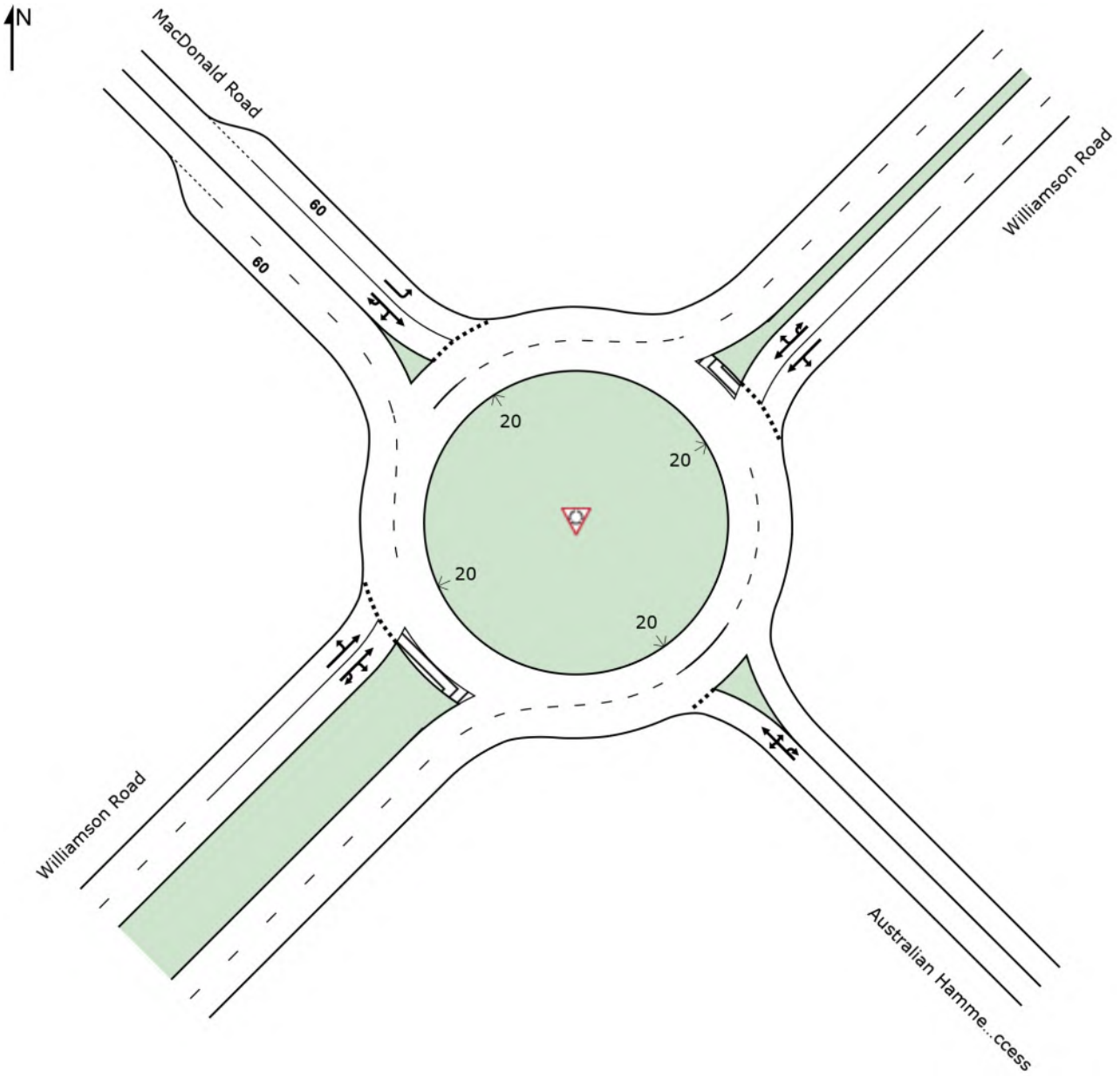
**Project: 22-0033_rev0**

**Template: Default Site User Report**

## Site: [MacDonald - ExCond - AM]

Australian Hammer Supplies Access / MacDonald Road / Williamson Road
Existing Multi-Lane Roundabout
Site Category: 2022 Existing Conditions
Roundabout

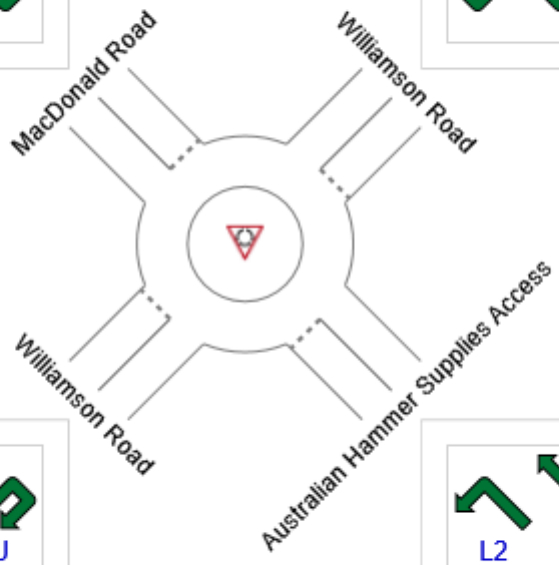
### Site Layout

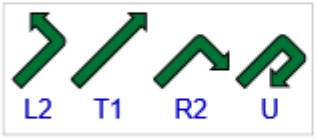


## OD Demand Flows

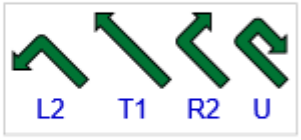
| | U | R2 | T1 | L2 |
|---|---|---|---|---|
| Tot | 15 | 213 | 4 | 600 |
| LV | 13 | 195 | 4 | 574 |
| HV | 2 | 18 | 0 | 26 |


| | U | R2 | T1 | L2 |
|---|---|---|---|---|
| Tot | 39 | 575 | 720 | 3 |
| LV | 31 | 548 | 634 | 0 |
| HV | 8 | 26 | 86 | 3 |


| | L2 | T1 | R2 | U |
|---|---|---|---|---|
| Tot | 87 | 1048 | 7 | 22 |
| LV | 79 | 947 | 3 | 17 |
| HV | 8 | 101 | 4 | 5 |




| | L2 | T1 | R2 | U |
|---|---|---|---|---|
| Tot | 7 | 1 | 2 | 0 |
| LV | 1 | 1 | 0 | 0 |
| HV | 6 | 0 | 2 | 0 |

| | All MCs | Light Vehicles (LV) | Heavy Vehicles (HV) |
|---|---|---|---|
| SE: Australian Hammer Supplies Access | 11 | 2 | 8 |
| NE: Williamson Road | 1337 | 1213 | 124 |
| NW: MacDonald Road | 832 | 785 | 46 |
| SW: Williamson Road | 1165 | 1046 | 119 |
| Total | 3344 | 3046 | 298 |

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| SouthEast: Australian Hammer Supplies Access | | | | | | | | | | | | |
| 1 | L2 | 7 | 85.7 | 0.046 | 10.4 | LOS A | 0.2 | 2.0 | 0.80 | 0.79 | 0.80 | 21.3 |
| 2 | T1 | 1 | 0.0 | 0.046 | 5.4 | LOS A | 0.2 | 2.0 | 0.80 | 0.79 | 0.80 | 45.8 |
| 3 | R2 | 2 | 100.0 | 0.046 | 11.5 | LOS A | 0.2 | 2.0 | 0.80 | 0.79 | 0.80 | 37.7 |
| 3u | U | 0 | 0.0 | 0.046 | 5.4 | LOS A | 0.2 | 2.0 | 0.80 | 0.79 | 0.80 | 16.0 |
| Approach | | 11 | 79.2 | 0.046 | 10.1 | LOS A | 0.2 | 2.0 | 0.80 | 0.79 | 0.80 | 28.7 |
| NorthEast: Williamson Road | | | | | | | | | | | | |
| 4 | L2 | 3 | 100.0 | 0.563 | 9.4 | LOS A | 5.1 | 39.2 | 0.68 | 0.58 | 0.68 | 42.7 |
| 5 | T1 | 720 | 12.0 | 0.563 | 6.0 | LOS A | 5.1 | 39.2 | 0.68 | 0.58 | 0.68 | 51.8 |
| 6 | R2 | 575 | 4.6 | 0.563 | 10.9 | LOS A | 4.9 | 35.8 | 0.70 | 0.72 | 0.70 | 54.8 |
| 6u | U | 39 | 21.6 | 0.563 | 13.6 | LOS A | 4.9 | 35.8 | 0.70 | 0.72 | 0.70 | 53.0 |
| Approach | | 1337 | 9.3 | 0.563 | 8.3 | LOS A | 5.1 | 39.2 | 0.69 | 0.65 | 0.69 | 53.7 |
| NorthWest: MacDonald Road | | | | | | | | | | | | |
| 7 | L2 | 600 | 4.4 | 0.914 | 20.6 | LOS B | 11.5 | 83.6 | 1.00 | 1.37 | 2.05 | 50.6 |
| 8 | T1 | 4 | 0.0 | 0.529 | 14.7 | LOS B | 3.0 | 22.2 | 0.83 | 1.00 | 1.01 | 45.8 |
| 9 | R2 | 213 | 8.4 | 0.529 | 15.8 | LOS B | 3.0 | 22.2 | 0.83 | 1.00 | 1.01 | 51.3 |
| 9u | U | 15 | 14.3 | 0.529 | 18.3 | LOS B | 3.0 | 22.2 | 0.83 | 1.00 | 1.01 | 55.0 |
| Approach | | 832 | 5.6 | 0.914 | 19.3 | LOS B | 11.5 | 83.6 | 0.95 | 1.26 | 1.76 | 50.9 |
| SouthWest: Williamson Road | | | | | | | | | | | | |
| 10 | L2 | 87 | 9.6 | 0.694 | 12.3 | LOS A | 9.0 | 68.5 | 0.98 | 1.04 | 1.30 | 52.4 |
| 11 | T1 | 1048 | 9.6 | 0.694 | 13.3 | LOS A | 9.0 | 68.5 | 0.98 | 1.07 | 1.32 | 48.8 |
| 12 | R2 | 7 | 57.1 | 0.694 | 23.3 | LOS B | 8.1 | 62.3 | 0.97 | 1.12 | 1.35 | 27.6 |
| 12u | U | 22 | 23.8 | 0.694 | 22.1 | LOS B | 8.1 | 62.3 | 0.97 | 1.12 | 1.35 | 39.5 |
| Approach | | 1165 | 10.2 | 0.694 | 13.5 | LOS A | 9.0 | 68.5 | 0.98 | 1.07 | 1.32 | 49.0 |
| All Vehicles | | 3344 | 8.9 | 0.914 | 12.9 | LOS A | 11.5 | 83.6 | 0.85 | 0.95 | 1.18 | 51.4 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## Lane Use and Performance

| | Demand Flows Total veh/h | Demand Flows HV % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Queue Veh | 95% Back of Queue Dist m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Australian Hammer Supplies Access | | | | | | | | | | | | | |
| Lane 1[d] | 11 | 79.2 | 233 | 0.046 | 100 | 10.1 | LOS A | 0.2 | 2.0 | Full | 90 | 0.0 | 0.0 |
| Approach | 11 | 79.2 | | 0.046 | | 10.1 | LOS A | 0.2 | 2.0 | | | | |
| NorthEast: Williamson Road | | | | | | | | | | | | | |
| Lane 1[d] | 715 | 12.4 | 1269 | 0.563 | 100 | 6.0 | LOS A | 5.1 | 39.2 | Full | 655 | 0.0 | 0.0 |
| Lane 2 | 622 | 5.7 | 1105 | 0.563 | 100 | 11.0 | LOS A | 4.9 | 35.8 | Full | 655 | 0.0 | 0.0 |
| Approach | 1337 | 9.3 | | 0.563 | | 8.3 | LOS A | 5.1 | 39.2 | | | | |
| NorthWest: MacDonald Road | | | | | | | | | | | | | |
| Lane 1[d] | 600 | 4.4 | 657 | 0.914 | 100 | 20.6 | LOS B | 11.5 | 83.6 | Short | 60 | 0.0 | NA |
| Lane 2 | 232 | 8.6 | 438 | 0.529 | 100 | 15.9 | LOS B | 3.0 | 22.2 | Full | 1280 | 0.0 | 0.0 |
| Approach | 832 | 5.6 | | 0.914 | | 19.3 | LOS B | 11.5 | 83.6 | | | | |
| SouthWest: Williamson Road | | | | | | | | | | | | | |
| Lane 1[d] | 660 | 9.6 | 950 | 0.694 | 100 | 12.3 | LOS A | 9.0 | 68.5 | Full | 235 | 0.0 | 0.0 |
| Lane 2 | 505 | 11.0 | 728 | 0.694 | 100 | 15.0 | LOS B | 8.1 | 62.3 | Full | 235 | 0.0 | 0.0 |
| Approach | 1165 | 10.2 | | 0.694 | | 13.5 | LOS A | 9.0 | 68.5 | | | | |
| Intersection | 3344 | 8.9 | | 0.914 | | 12.9 | LOS A | 11.5 | 83.6 | | | | |

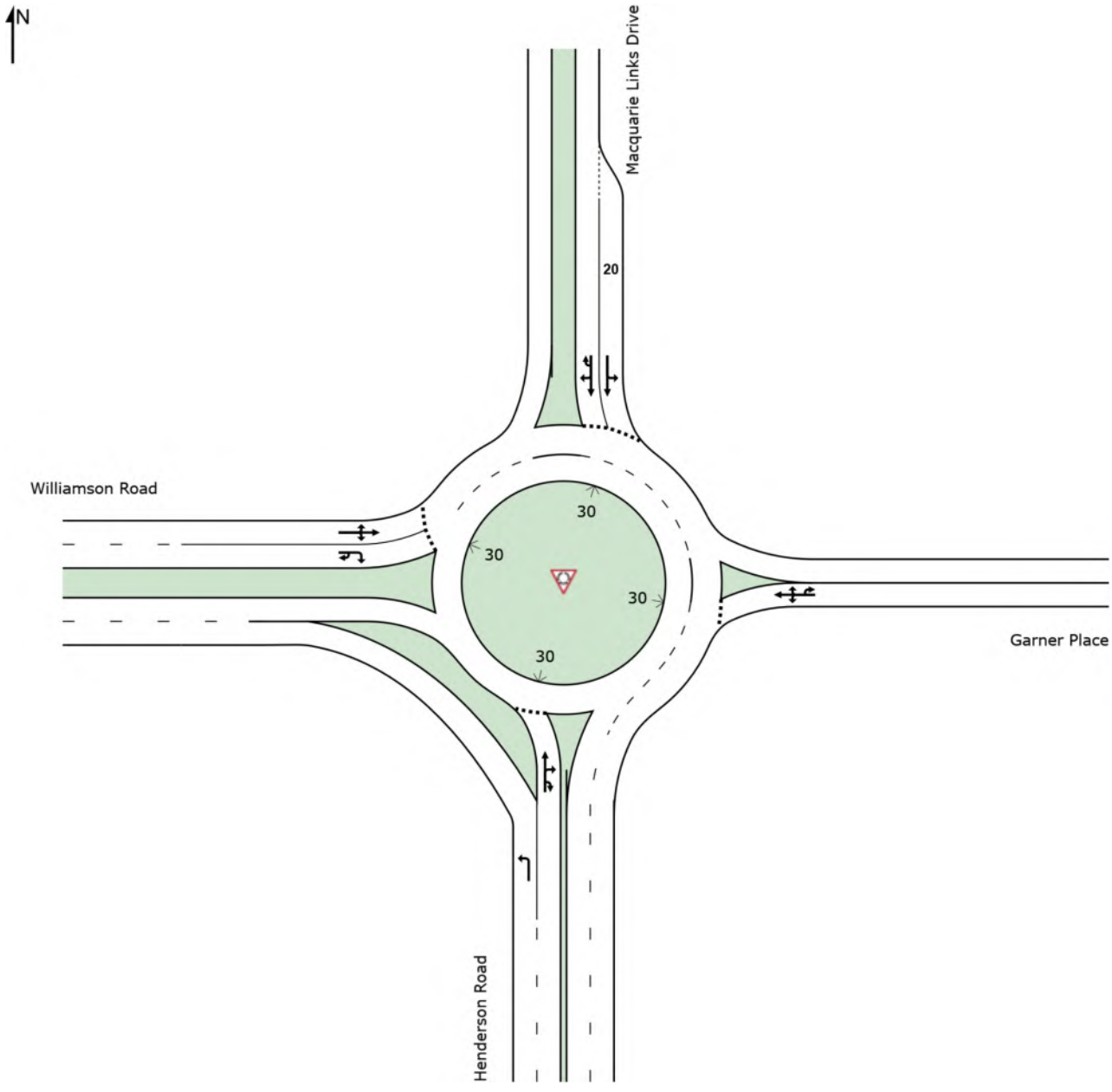
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

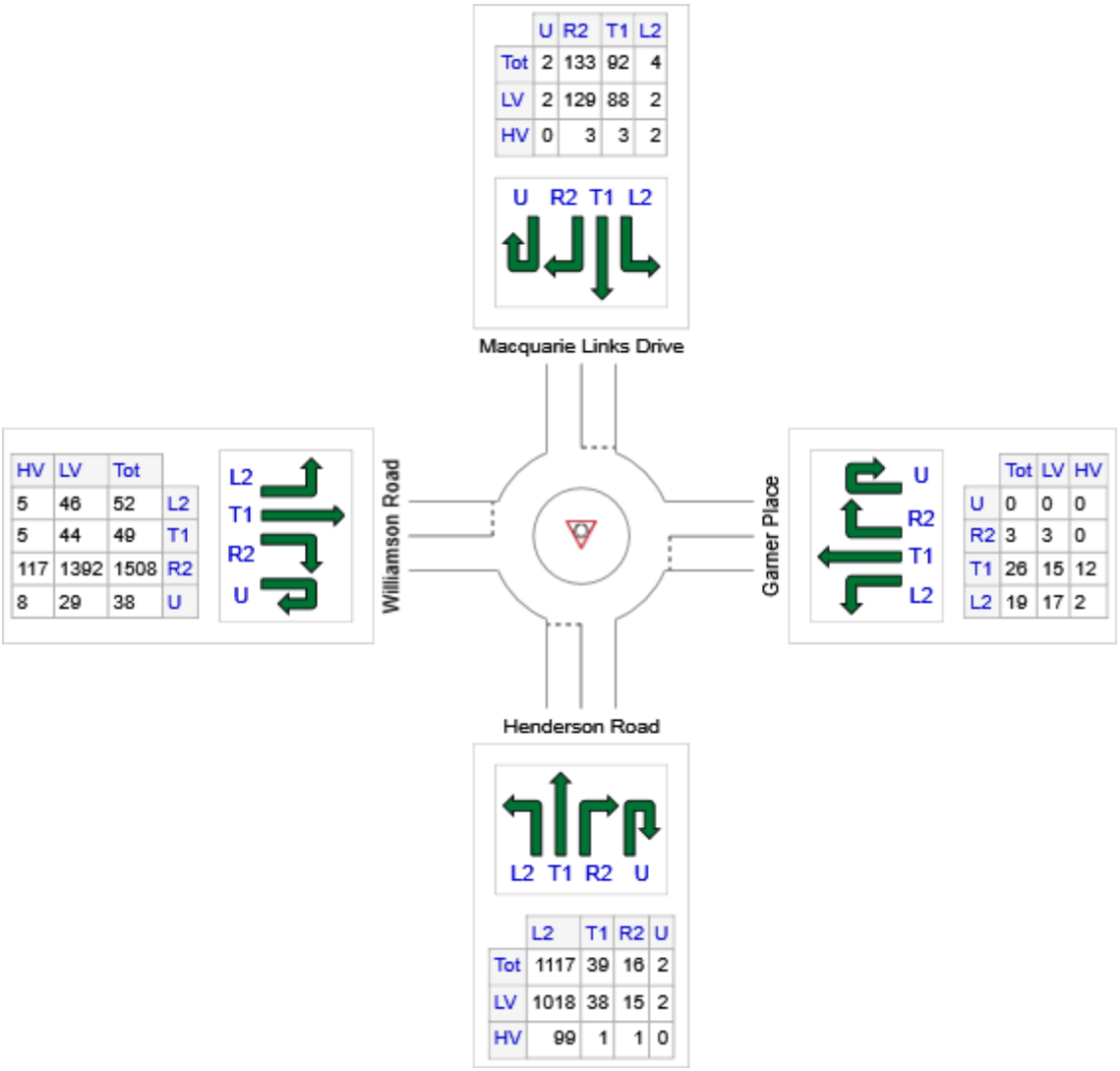
## Site: [Henderson - ExCond - AM]

Garner Place / Henderson Road / Macquarie Links Drive / Williamson Road
Existing Multi-Lane Roundabout
Site Category: 2022 Existing Conditions
Roundabout

### Site Layout



## OD Demand Flows




| | All MCs | Light Vehicles (LV) | Heavy Vehicles (HV) |
|---|---|---|---|
| S: Henderson Road | 1174 | 1073 | 101 |
| E: Garner Place | 49 | 35 | 14 |
| N: Macquarie Links Drive | 231 | 222 | 8 |
| W: Williamson Road | 1647 | 1512 | 136 |
| Total | 3100 | 2841 | 259 |

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Henderson Road | | | | | | | | | | | | |
| 1 | L2 | 1117 | 8.9 | 0.617 | 3.2 | LOS A | 0.0 | 0.0 | 0.00 | 0.40 | 0.00 | 56.5 |
| 2 | T1 | 39 | 2.7 | 0.037 | 4.1 | LOS A | 0.2 | 1.5 | 0.35 | 0.48 | 0.35 | 44.1 |
| 3 | R2 | 16 | 6.7 | 0.037 | 9.9 | LOS A | 0.2 | 1.5 | 0.35 | 0.48 | 0.35 | 53.6 |
| 3u | U | 2 | 0.0 | 0.037 | 12.2 | LOS A | 0.2 | 1.5 | 0.35 | 0.48 | 0.35 | 55.2 |
| Approach | | 1174 | 8.6 | 0.617 | 3.4 | LOS A | 0.2 | 1.5 | 0.02 | 0.40 | 0.02 | 56.0 |
| East: Garner Place | | | | | | | | | | | | |
| 4 | L2 | 19 | 11.1 | 0.103 | 9.0 | LOS A | 0.4 | 3.6 | 0.72 | 0.83 | 0.72 | 46.6 |
| 5 | T1 | 26 | 44.0 | 0.103 | 10.8 | LOS A | 0.4 | 3.6 | 0.72 | 0.83 | 0.72 | 52.6 |
| 6 | R2 | 3 | 0.0 | 0.103 | 14.3 | LOS A | 0.4 | 3.6 | 0.72 | 0.83 | 0.72 | 44.9 |
| 6u | U | 0 | 0.0 | 0.103 | 16.7 | LOS B | 0.4 | 3.6 | 0.72 | 0.83 | 0.72 | 53.4 |
| Approach | | 49 | 28.2 | 0.103 | 10.4 | LOS A | 0.4 | 3.6 | 0.72 | 0.83 | 0.72 | 50.1 |
| North: Macquarie Links Drive | | | | | | | | | | | | |
| 7 | L2 | 4 | 50.0 | 0.181 | 9.3 | LOS A | 0.8 | 5.6 | 0.73 | 0.74 | 0.73 | 42.1 |
| 8 | T1 | 92 | 3.4 | 0.181 | 5.8 | LOS A | 0.9 | 6.2 | 0.73 | 0.74 | 0.73 | 42.1 |
| 9 | R2 | 133 | 2.4 | 0.181 | 9.3 | LOS A | 0.9 | 6.2 | 0.73 | 0.87 | 0.73 | 45.4 |
| 9u | U | 2 | 0.0 | 0.181 | 10.7 | LOS A | 0.9 | 6.2 | 0.73 | 0.87 | 0.73 | 39.8 |
| Approach | | 231 | 3.7 | 0.181 | 7.9 | LOS A | 0.9 | 6.2 | 0.73 | 0.81 | 0.73 | 44.2 |
| West: Williamson Road | | | | | | | | | | | | |
| 10 | L2 | 52 | 10.2 | 0.528 | 4.1 | LOS A | 4.7 | 34.9 | 0.29 | 0.57 | 0.29 | 45.7 |
| 11 | T1 | 49 | 10.6 | 0.528 | 4.0 | LOS A | 4.7 | 34.9 | 0.29 | 0.57 | 0.29 | 53.5 |
| 12 | R2 | 1508 | 7.7 | 0.528 | 9.7 | LOS A | 4.7 | 34.9 | 0.31 | 0.57 | 0.31 | 52.0 |
| 12u | U | 38 | 22.2 | 0.528 | 12.4 | LOS A | 4.7 | 35.0 | 0.32 | 0.58 | 0.32 | 55.0 |
| Approach | | 1647 | 8.2 | 0.528 | 9.4 | LOS A | 4.7 | 35.0 | 0.31 | 0.57 | 0.31 | 51.9 |
| All Vehicles | | 3100 | 8.4 | 0.617 | 7.0 | LOS A | 4.7 | 35.0 | 0.23 | 0.53 | 0.23 | 52.6 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## Lane Use and Performance

| | Demand Flows Total veh/h | Demand Flows HV % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Queue Veh | 95% Back of Queue Dist m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Henderson Road | | | | | | | | | | | | | |
| Lane 1 | 1117 | 8.9 | 1810 | 0.617 | 100 | 3.2 | LOS A | 0.0 | 0.0 | Full | 265 | 0.0 | 0.0 |
| Lane 2[d] | 57 | 3.7 | 1517 | 0.037 | 100 | 6.0 | LOS A | 0.2 | 1.5 | Full | 265 | 0.0 | 0.0 |
| Approach | 1174 | 8.6 | | 0.617 | | 3.4 | LOS A | 0.2 | 1.5 | | | | |
| East: Garner Place | | | | | | | | | | | | | |
| Lane 1[d] | 49 | 28.2 | 472 | 0.103 | 100 | 10.4 | LOS A | 0.4 | 3.6 | Full | 395 | 0.0 | 0.0 |
| Approach | 49 | 28.2 | | 0.103 | | 10.4 | LOS A | 0.4 | 3.6 | | | | |
| North: Macquarie Links Drive | | | | | | | | | | | | | |
| Lane 1 | 95 | 5.5 | 524 | 0.181 | 100 | 6.0 | LOS A | 0.8 | 5.6 | Short | 20 | 0.0 | NA |
| Lane 2[d] | 136 | 2.4 | 751 | 0.181 | 100 | 9.3 | LOS A | 0.9 | 6.2 | Full | 460 | 0.0 | 0.0 |
| Approach | 231 | 3.7 | | 0.181 | | 7.9 | LOS A | 0.9 | 6.2 | | | | |
| West: Williamson Road | | | | | | | | | | | | | |
| Lane 1[d] | 901 | 8.0 | 1707 | 0.528 | 100 | 9.0 | LOS A | 4.7 | 34.9 | Full | 655 | 0.0 | 0.0 |
| Lane 2 | 747 | 8.5 | 1415 | 0.528 | 100 | 9.9 | LOS A | 4.7 | 35.0 | Full | 655 | 0.0 | 0.0 |
| Approach | 1647 | 8.2 | | 0.528 | | 9.4 | LOS A | 4.7 | 35.0 | | | | |
| Intersection | 3100 | 8.4 | | 0.617 | | 7.0 | LOS A | 4.7 | 35.0 | | | | |

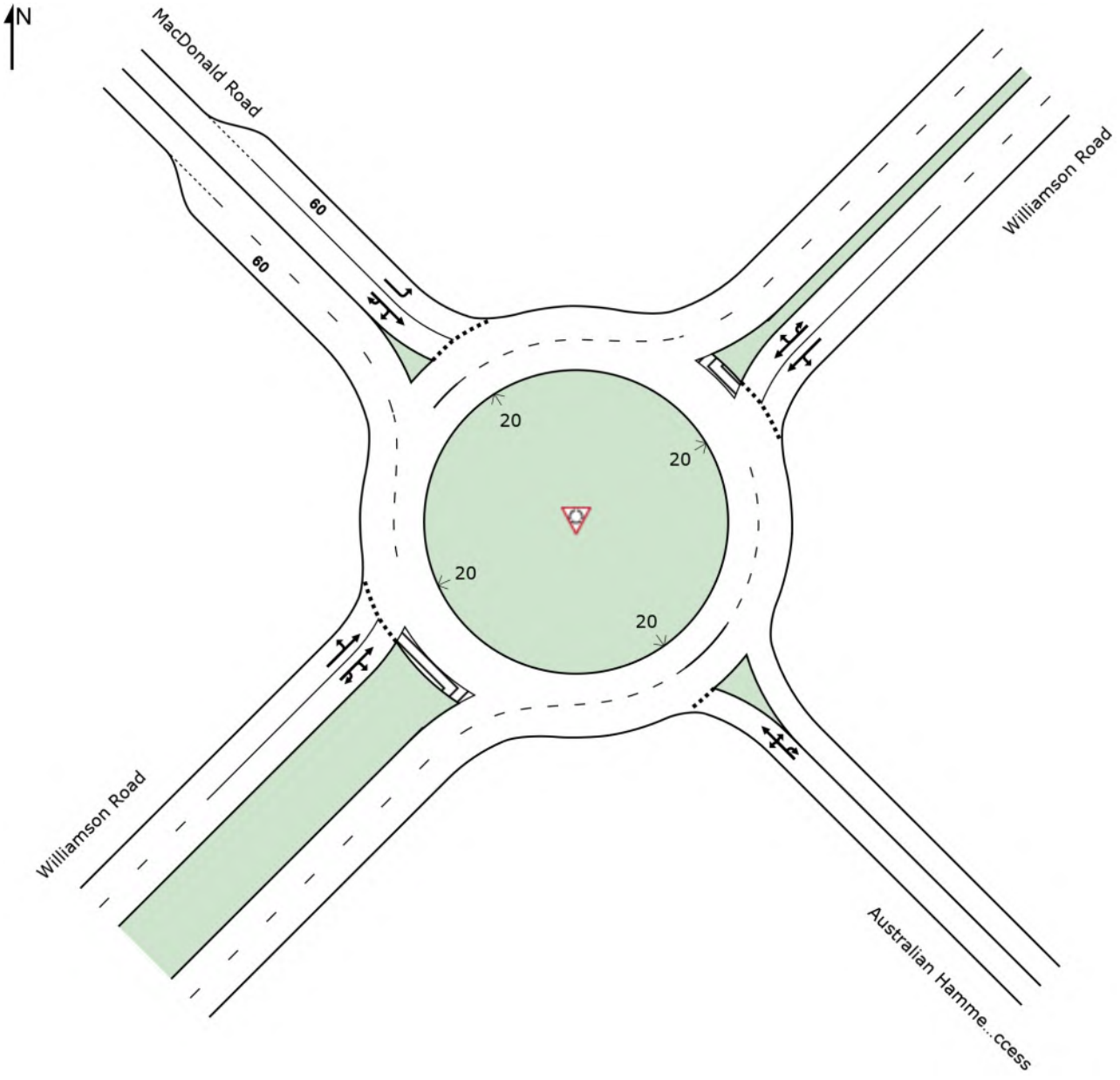
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

## Site: [MacDonald - ExCond - PM]

Australian Hammer Supplies Access / MacDonald Road / Williamson Road
Existing Multi-Lane Roundabout
Site Category: 2022 Existing Conditions
Roundabout

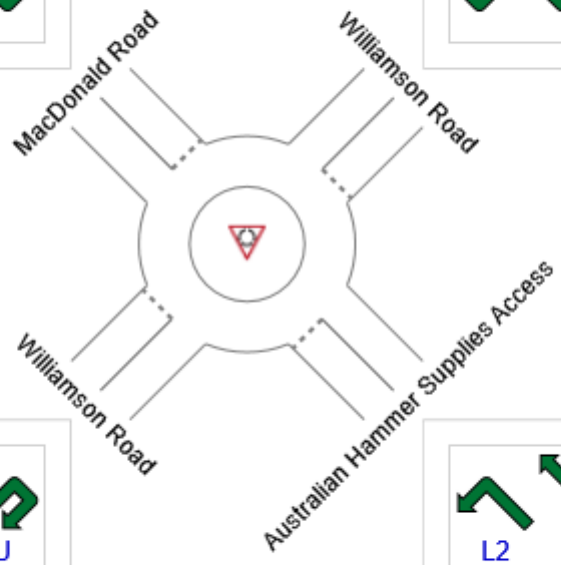
### Site Layout

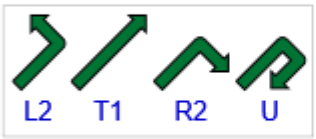


## OD Demand Flows

| | U | R2 | T1 | L2 |
|---|---|---|---|---|
| Tot | 31 | 174 | 2 | 676 |
| LV | 31 | 155 | 1 | 651 |
| HV | 0 | 19 | 1 | 25 |


| | U | R2 | T1 | L2 |
|---|---|---|---|---|
| Tot | 59 | 648 | 944 | 3 |
| LV | 55 | 627 | 863 | 1 |
| HV | 4 | 21 | 81 | 2 |


| | L2 | T1 | R2 | U |
|---|---|---|---|---|
| Tot | 180 | 891 | 4 | 37 |
| LV | 169 | 812 | 2 | 35 |
| HV | 11 | 79 | 2 | 2 |


| | L2 | T1 | R2 | U |
|---|---|---|---|---|
| Tot | 15 | 0 | 2 | 0 |
| LV | 11 | 0 | 2 | 0 |
| HV | 4 | 0 | 0 | 0 |

| | All MCs | Light Vehicles (LV) | Heavy Vehicles (HV) |
|---|---|---|---|
| SE: Australian Hammer Supplies Access | 17 | 13 | 4 |
| NE: Williamson Road | 1655 | 1546 | 108 |
| NW: MacDonald Road | 882 | 837 | 45 |
| SW: Williamson Road | 1112 | 1018 | 94 |
| Total | 3665 | 3414 | 252 |

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| SouthEast: Australian Hammer Supplies Access | | | | | | | | | | | | |
| 1 | L2 | 15 | 28.6 | 0.060 | 8.7 | LOS A | 0.3 | 2.2 | 0.81 | 0.81 | 0.81 | 25.7 |
| 2 | T1 | 0 | 0.0 | 0.060 | 7.0 | LOS A | 0.3 | 2.2 | 0.81 | 0.81 | 0.81 | 47.3 |
| 3 | R2 | 2 | 0.0 | 0.060 | 7.0 | LOS A | 0.3 | 2.2 | 0.81 | 0.81 | 0.81 | 41.0 |
| 3u | U | 0 | 0.0 | 0.060 | 7.0 | LOS A | 0.3 | 2.2 | 0.81 | 0.81 | 0.81 | 16.2 |
| Approach | | 17 | 24.7 | 0.060 | 8.5 | LOS A | 0.3 | 2.2 | 0.81 | 0.81 | 0.81 | 28.4 |
| NorthEast: Williamson Road | | | | | | | | | | | | |
| 4 | L2 | 3 | 66.7 | 0.671 | 9.5 | LOS A | 7.2 | 54.5 | 0.74 | 0.63 | 0.75 | 42.4 |
| 5 | T1 | 944 | 8.6 | 0.671 | 6.4 | LOS A | 7.4 | 53.3 | 0.74 | 0.64 | 0.76 | 51.7 |
| 6 | R2 | 648 | 3.2 | 0.671 | 11.8 | LOS A | 7.4 | 53.3 | 0.76 | 0.75 | 0.81 | 54.9 |
| 6u | U | 59 | 7.1 | 0.671 | 14.0 | LOS A | 7.4 | 53.3 | 0.76 | 0.75 | 0.81 | 53.4 |
| Approach | | 1655 | 6.6 | 0.671 | 8.8 | LOS A | 7.4 | 54.5 | 0.75 | 0.68 | 0.78 | 53.5 |
| NorthWest: MacDonald Road | | | | | | | | | | | | |
| 7 | L2 | 676 | 3.7 | 0.943 | 23.8 | LOS B | 15.0 | 108.1 | 1.00 | 1.49 | 2.37 | 49.5 |
| 8 | T1 | 2 | 50.0 | 0.470 | 17.4 | LOS B | 2.5 | 18.9 | 0.80 | 0.98 | 0.94 | 45.9 |
| 9 | R2 | 174 | 10.9 | 0.470 | 15.4 | LOS B | 2.5 | 18.9 | 0.80 | 0.98 | 0.94 | 51.2 |
| 9u | U | 31 | 0.0 | 0.470 | 16.9 | LOS B | 2.5 | 18.9 | 0.80 | 0.98 | 0.94 | 55.3 |
| Approach | | 882 | 5.1 | 0.943 | 21.9 | LOS B | 15.0 | 108.1 | 0.95 | 1.37 | 2.03 | 50.0 |
| SouthWest: Williamson Road | | | | | | | | | | | | |
| 10 | L2 | 180 | 5.8 | 0.746 | 16.1 | LOS B | 11.1 | 83.0 | 1.00 | 1.15 | 1.50 | 50.6 |
| 11 | T1 | 891 | 8.9 | 0.746 | 17.6 | LOS B | 11.1 | 83.0 | 1.00 | 1.19 | 1.53 | 45.9 |
| 12 | R2 | 4 | 50.0 | 0.746 | 27.8 | LOS B | 9.7 | 72.9 | 1.00 | 1.23 | 1.56 | 25.1 |
| 12u | U | 37 | 5.7 | 0.746 | 25.7 | LOS B | 9.7 | 72.9 | 1.00 | 1.23 | 1.56 | 37.7 |
| Approach | | 1112 | 8.4 | 0.746 | 17.7 | LOS B | 11.1 | 83.0 | 1.00 | 1.19 | 1.53 | 46.7 |
| All Vehicles | | 3665 | 6.9 | 0.943 | 14.6 | LOS B | 15.0 | 108.1 | 0.87 | 1.00 | 1.31 | 50.7 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## Lane Use and Performance

| | Demand Flows Total veh/h | Demand Flows HV % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Queue Veh | 95% Back of Queue Dist m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SouthEast: Australian Hammer Supplies Access | | | | | | | | | | | | | |
| Lane 1[d] | 17 | 24.7 | 284 | 0.060 | 100 | 8.5 | LOS A | 0.3 | 2.2 | Full | 90 | 0.0 | 0.0 |
| Approach | 17 | 24.7 | | 0.060 | | 8.5 | LOS A | 0.3 | 2.2 | | | | |
| NorthEast: Williamson Road | | | | | | | | | | | | | |
| Lane 1[d] | 889 | 8.8 | 1325 | 0.671 | 100 | 6.4 | LOS A | 7.2 | 54.5 | Full | 655 | 0.0 | 0.0 |
| Lane 2 | 766 | 4.0 | 1141 | 0.671 | 100 | 11.6 | LOS A | 7.4 | 53.3 | Full | 655 | 0.0 | 0.0 |
| Approach | 1655 | 6.6 | | 0.671 | | 8.8 | LOS A | 7.4 | 54.5 | | | | |
| NorthWest: MacDonald Road | | | | | | | | | | | | | |
| Lane 1[d] | 676 | 3.7 | 717 | 0.943 | 100 | 23.8 | LOS B | 15.0 | 108.1 | Short | 60 | 0.0 | NA |
| Lane 2 | 206 | 9.7 | 439 | 0.470 | 100 | 15.7 | LOS B | 2.5 | 18.9 | Full | 1280 | 0.0 | 0.0 |
| Approach | 882 | 5.1 | | 0.943 | | 21.9 | LOS B | 15.0 | 108.1 | | | | |
| SouthWest: Williamson Road | | | | | | | | | | | | | |
| Lane 1[d] | 634 | 8.0 | 849 | 0.746 | 100 | 16.2 | LOS B | 11.1 | 83.0 | Full | 235 | 0.0 | 0.0 |
| Lane 2 | 478 | 9.0 | 640 | 0.746 | 100 | 19.7 | LOS B | 9.7 | 72.9 | Full | 235 | 0.0 | 0.0 |
| Approach | 1112 | 8.4 | | 0.746 | | 17.7 | LOS B | 11.1 | 83.0 | | | | |
| Intersection | 3665 | 6.9 | | 0.943 | | 14.6 | LOS B | 15.0 | 108.1 | | | | |

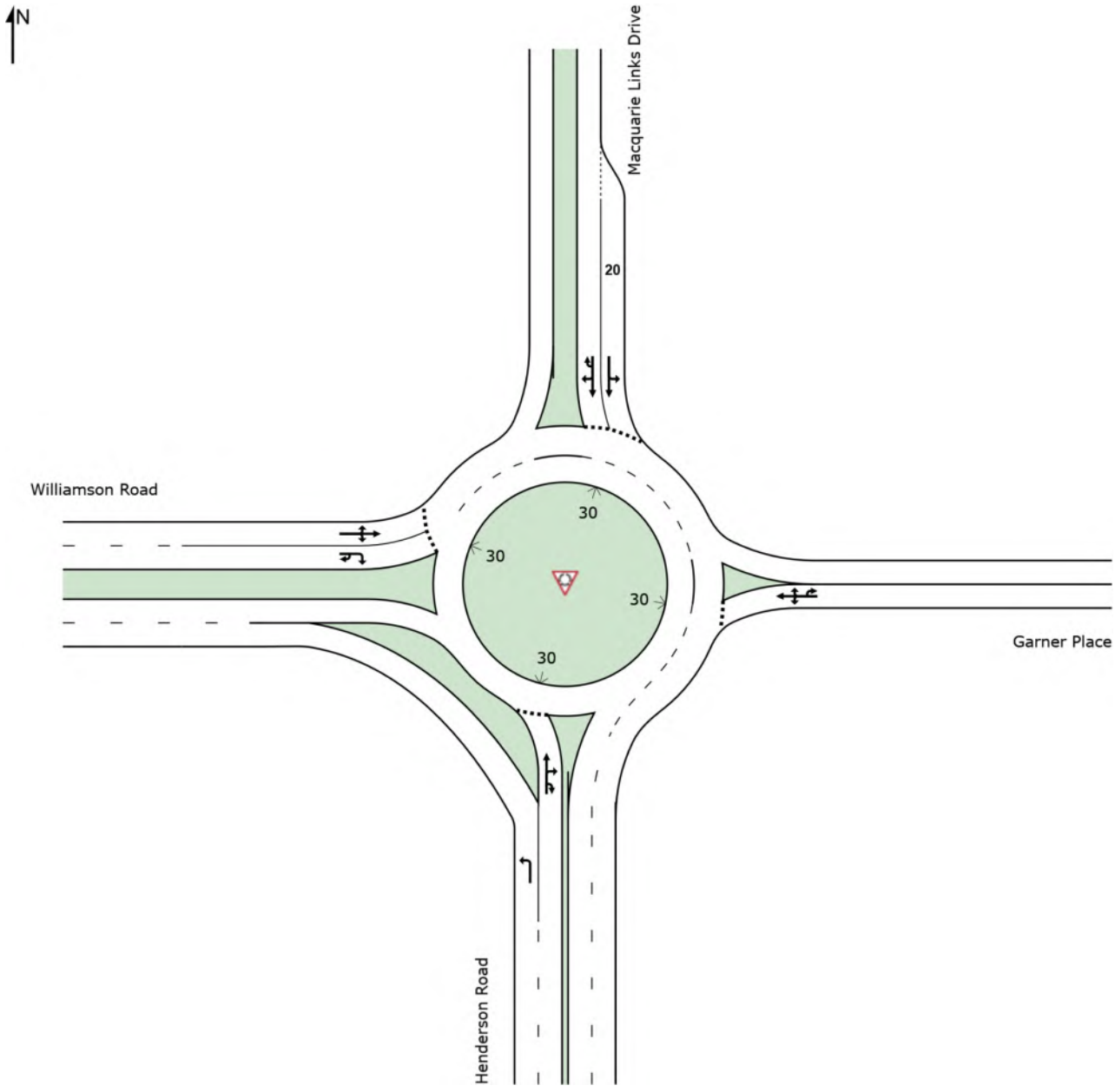
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

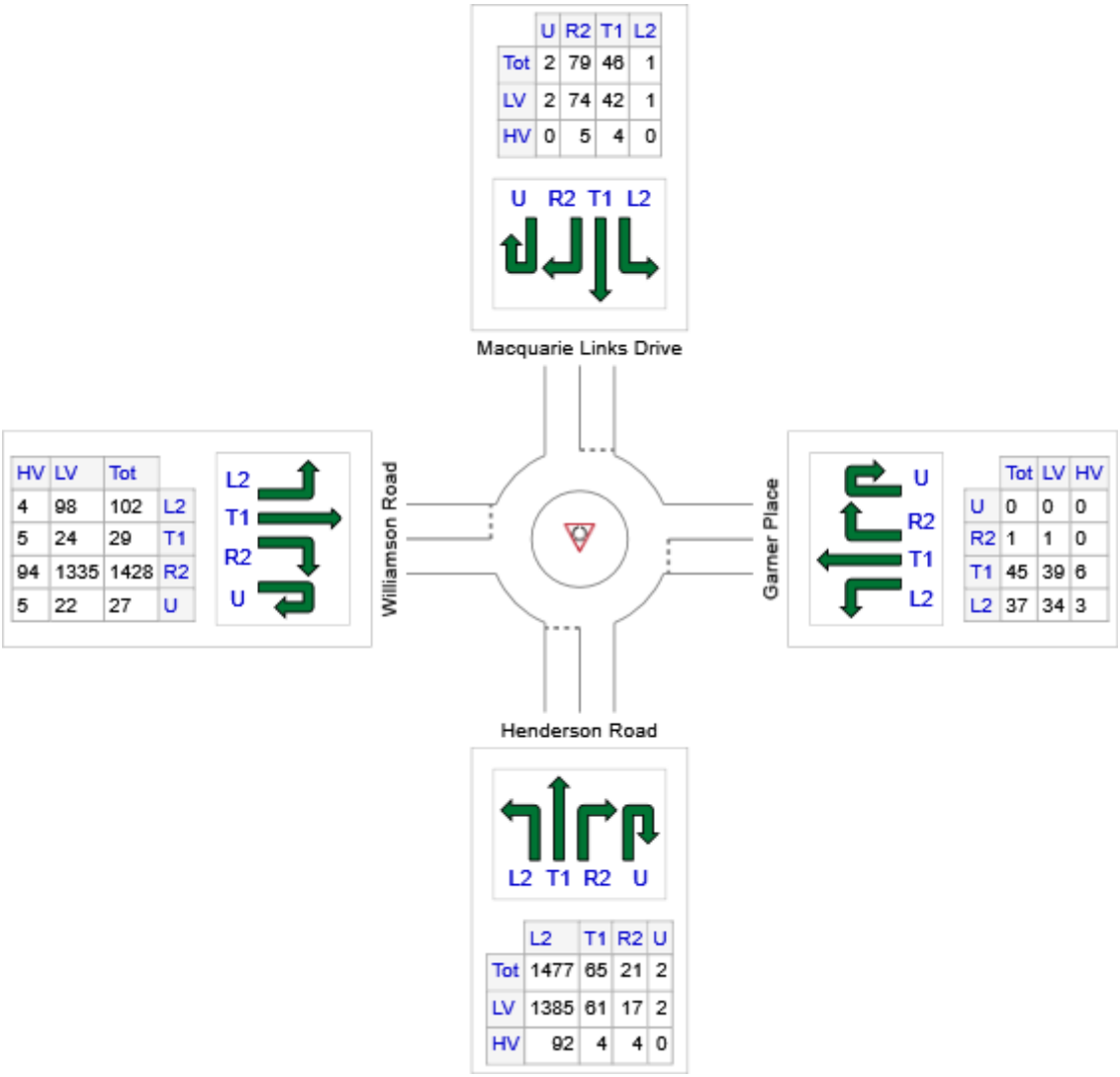
## Site: [Henderson - ExCond - PM]

Garner Place / Henderson Road / Macquarie Links Drive / Williamson Road
Existing Multi-Lane Roundabout
Site Category: 2022 Existing Conditions
Roundabout

### Site Layout



## OD Demand Flows




| | All MCs | Light Vehicles (LV) | Heavy Vehicles (HV) |
|---|---|---|---|
| S: Henderson Road | 1565 | 1465 | 100 |
| E: Garner Place | 83 | 74 | 9 |
| N: Macquarie Links Drive | 128 | 119 | 9 |
| W: Williamson Road | 1587 | 1479 | 108 |
| Total | 3364 | 3137 | 227 |

| Movement Performance - Vehicles | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Mov ID | Turn | Demand Flows Total veh/h | HV % | Deg. Satn v/c | Average Delay sec | Level of Service | 95% Back of Queue Vehicles veh | Distance m | Prop. Queued | Effective Stop Rate | Aver. No. Cycles | Average Speed km/h |
| South: Henderson Road | | | | | | | | | | | | |
| 1 | L2 | 1477 | 6.2 | 0.801 | 3.3 | LOS A | 0.0 | 0.0 | 0.00 | 0.40 | 0.00 | 56.3 |
| 2 | T1 | 65 | 6.5 | 0.058 | 4.0 | LOS A | 0.3 | 2.3 | 0.31 | 0.46 | 0.31 | 44.5 |
| 3 | R2 | 21 | 20.0 | 0.058 | 9.9 | LOS A | 0.3 | 2.3 | 0.31 | 0.46 | 0.31 | 53.6 |
| 3u | U | 2 | 0.0 | 0.058 | 12.0 | LOS A | 0.3 | 2.3 | 0.31 | 0.46 | 0.31 | 56.1 |
| Approach | | 1565 | 6.4 | 0.801 | 3.4 | LOS A | 0.3 | 2.3 | 0.02 | 0.40 | 0.02 | 55.7 |
| East: Garner Place | | | | | | | | | | | | |
| 4 | L2 | 37 | 8.6 | 0.148 | 8.3 | LOS A | 0.6 | 4.8 | 0.71 | 0.82 | 0.71 | 48.6 |
| 5 | T1 | 45 | 14.0 | 0.148 | 8.6 | LOS A | 0.6 | 4.8 | 0.71 | 0.82 | 0.71 | 54.4 |
| 6 | R2 | 1 | 0.0 | 0.148 | 13.7 | LOS A | 0.6 | 4.8 | 0.71 | 0.82 | 0.71 | 46.1 |
| 6u | U | 0 | 0.0 | 0.148 | 16.0 | LOS B | 0.6 | 4.8 | 0.71 | 0.82 | 0.71 | 55.3 |
| Approach | | 83 | 11.4 | 0.148 | 8.5 | LOS A | 0.6 | 4.8 | 0.71 | 0.82 | 0.71 | 52.2 |
| North: Macquarie Links Drive | | | | | | | | | | | | |
| 7 | L2 | 1 | 0.0 | 0.090 | 5.8 | LOS A | 0.4 | 2.8 | 0.70 | 0.71 | 0.70 | 43.5 |
| 8 | T1 | 46 | 9.1 | 0.090 | 5.2 | LOS A | 0.4 | 2.8 | 0.70 | 0.71 | 0.70 | 42.1 |
| 9 | R2 | 79 | 6.7 | 0.109 | 8.7 | LOS A | 0.5 | 3.7 | 0.70 | 0.83 | 0.70 | 45.6 |
| 9u | U | 2 | 0.0 | 0.109 | 10.0 | LOS A | 0.5 | 3.7 | 0.70 | 0.83 | 0.70 | 40.0 |
| Approach | | 128 | 7.4 | 0.109 | 7.5 | LOS A | 0.5 | 3.7 | 0.70 | 0.79 | 0.70 | 44.5 |
| West: Williamson Road | | | | | | | | | | | | |
| 10 | L2 | 102 | 4.1 | 0.521 | 4.2 | LOS A | 4.4 | 32.9 | 0.35 | 0.57 | 0.35 | 45.7 |
| 11 | T1 | 29 | 17.9 | 0.521 | 4.2 | LOS A | 4.4 | 32.9 | 0.35 | 0.57 | 0.35 | 53.4 |
| 12 | R2 | 1428 | 6.6 | 0.521 | 9.9 | LOS A | 4.4 | 32.9 | 0.37 | 0.58 | 0.37 | 52.0 |
| 12u | U | 27 | 19.2 | 0.521 | 12.6 | LOS A | 4.4 | 32.7 | 0.39 | 0.60 | 0.39 | 54.9 |
| Approach | | 1587 | 6.8 | 0.521 | 9.4 | LOS A | 4.4 | 32.9 | 0.37 | 0.58 | 0.37 | 51.6 |
| All Vehicles | | 3364 | 6.8 | 0.801 | 6.5 | LOS A | 4.4 | 32.9 | 0.23 | 0.51 | 0.23 | 53.0 |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site 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.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

## Lane Use and Performance

| | Demand Flows Total veh/h | Demand Flows HV % | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Queue Veh | 95% Back of Queue Dist m | Lane Config | Lane Length m | Cap. Adj. % | Prob. Block. % |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| South: Henderson Road | | | | | | | | | | | | | |
| Lane 1 | 1477 | 6.2 | 1843 | 0.801 | 100 | 3.3 | LOS A | 0.0 | 0.0 | Full | 265 | 0.0 | 0.0 |
| Lane 2 d | 88 | 9.5 | 1526 | 0.058 | 100 | 5.6 | LOS A | 0.3 | 2.3 | Full | 265 | 0.0 | 0.0 |
| Approach | 1565 | 6.4 | | 0.801 | | 3.4 | LOS A | 0.3 | 2.3 | | | | |
| East: Garner Place | | | | | | | | | | | | | |
| Lane 1 d | 83 | 11.4 | 561 | 0.148 | 100 | 8.5 | LOS A | 0.6 | 4.8 | Full | 395 | 0.0 | 0.0 |
| Approach | 83 | 11.4 | | 0.148 | | 8.5 | LOS A | 0.6 | 4.8 | | | | |
| North: Macquarie Links Drive | | | | | | | | | | | | | |
| Lane 1 | 47 | 8.9 | 524 | 0.090 | 83 5 | 5.2 | LOS A | 0.4 | 2.8 | Short | 20 | 0.0 | NA |
| Lane 2 d | 81 | 6.5 | 744 | 0.109 | 100 | 8.8 | LOS A | 0.5 | 3.7 | Full | 460 | 0.0 | 0.0 |
| Approach | 128 | 7.4 | | 0.109 | | 7.5 | LOS A | 0.5 | 3.7 | | | | |
| West: Williamson Road | | | | | | | | | | | | | |
| Lane 1 d | 869 | 6.7 | 1666 | 0.521 | 100 | 8.9 | LOS A | 4.4 | 32.9 | Full | 655 | 0.0 | 0.0 |
| Lane 2 | 719 | 7.0 | 1378 | 0.521 | 100 | 10.1 | LOS A | 4.4 | 32.7 | Full | 655 | 0.0 | 0.0 |
| Approach | 1587 | 6.8 | | 0.521 | | 9.4 | LOS A | 4.4 | 32.9 | | | | |
| Intersection | 3364 | 6.8 | | 0.801 | | 6.5 | LOS A | 4.4 | 32.9 | | | | |

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Lane under-utilisation found by the program
d Dominant lane on roundabout approach

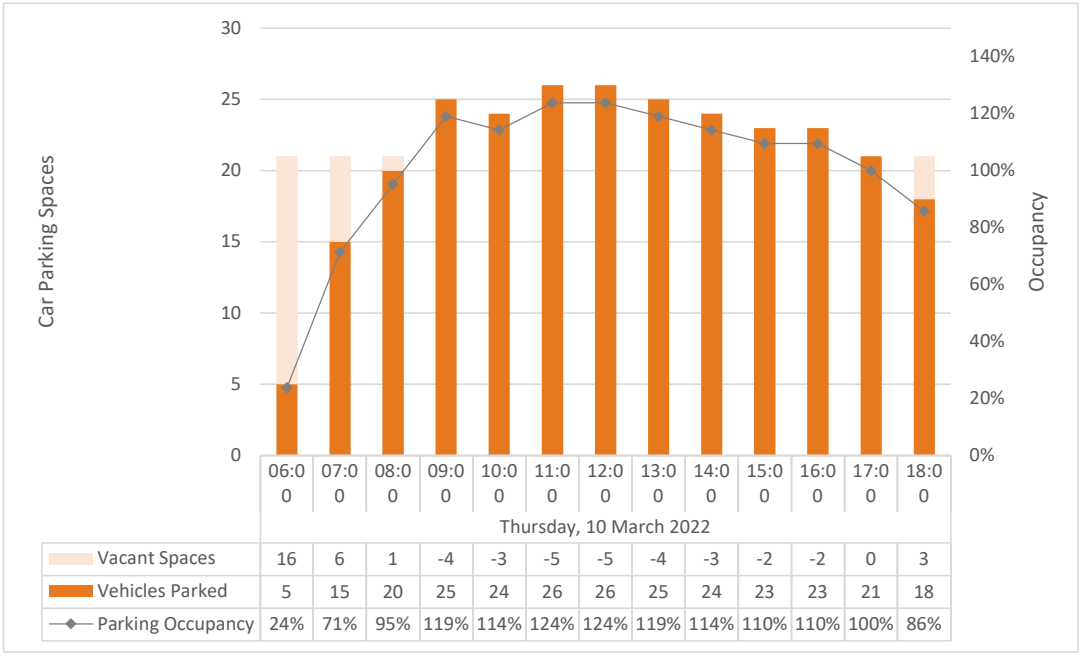
# Appendix C:

## On-Street Car Parking Observations

**22-0033: 8 Noonan Road, Ingleburn**

Existing Car Parking Observations

| Section | Restriction | Capacity | Thursday, 10 March 2022 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | 06:00 | 07:00 | 08:00 | 09:00 | 10:00 | 11:00 | 12:00 | 13:00 | 14:00 | 15:00 | 16:00 | 17:00 | 18:00 |
| **Noonan Road, Williamson Road to End - East Side of Road** | | | | | | | | | | | | | | | |
| | Unrestricted | **10** | 2 | 7 | 10 | 11 | 10 | 12 | 12 | 12 | 11 | 10 | 11 | 11 | 10 |
| **Noonan Road, End to Williamson Road - West Side of Road** | | | | | | | | | | | | | | | |
| | Unrestricted | **11** | 3 | 8 | 10 | 14 | 14 | 14 | 14 | 13 | 13 | 13 | 12 | 10 | 8 |
| **Williamson Road - Noonan Road to 75m west of Noonan Road - South Side of Road** | | | | | | | | | | | | | | | |
| | No Stopping | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Williamson Road - 75m west of Noonan Road to 75m east of Noonan Road - North Side of Road** | | | | | | | | | | | | | | | |
| | No Stopping | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Williamson Road - 75m east of Noonan Road to Noonan Road - South Side of Road** | | | | | | | | | | | | | | | |
| | No Stopping | - | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| **Parking Capacity** | | | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** | **21** |
| **Vehicles Parked** | | | **5** | **15** | **20** | **25** | **24** | **26** | **26** | **25** | **24** | **23** | **23** | **21** | **18** |
| **Vacant Spaces** | | | **16** | **6** | **1** | **-4** | **-3** | **-5** | **-5** | **-4** | **-3** | **-2** | **-2** | **0** | **3** |
| **Parking Occupancy** | | | **24%** | **71%** | **95%** | **119%** | **114%** | **124%** | **124%** | **119%** | **114%** | **110%** | **110%** | **100%** | **86%** |



# Appendix D:

## Proposed Development Plans

# Shine Motor Corporation

smith+tracey architects

CLIENT :
**SHINE MOTOR CORPORATION**

ADDRESS :
**8 Noonan Rd, Ingleburn NSW 2565**

JOB NUMBER: 22015 DATE: 13.12.2023



**Development Application**

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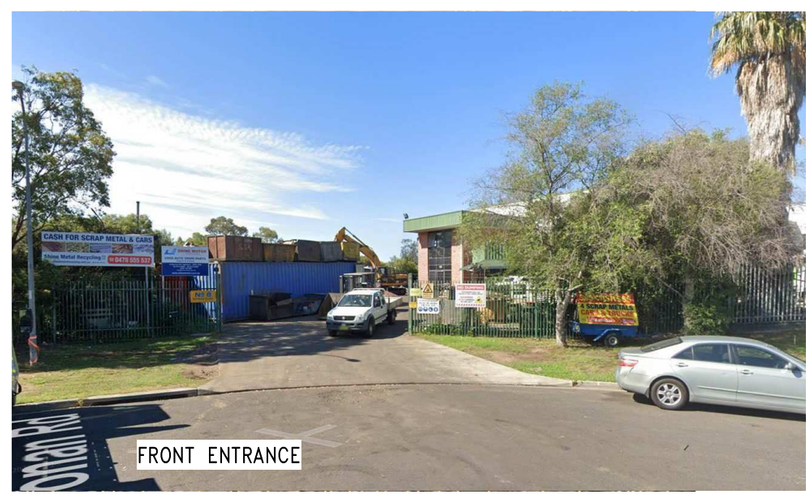


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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**LOCATION PLAN + SITE ANALYSIS**

SCALE :
NTS @A3 NTS @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0100**

**Development Application**



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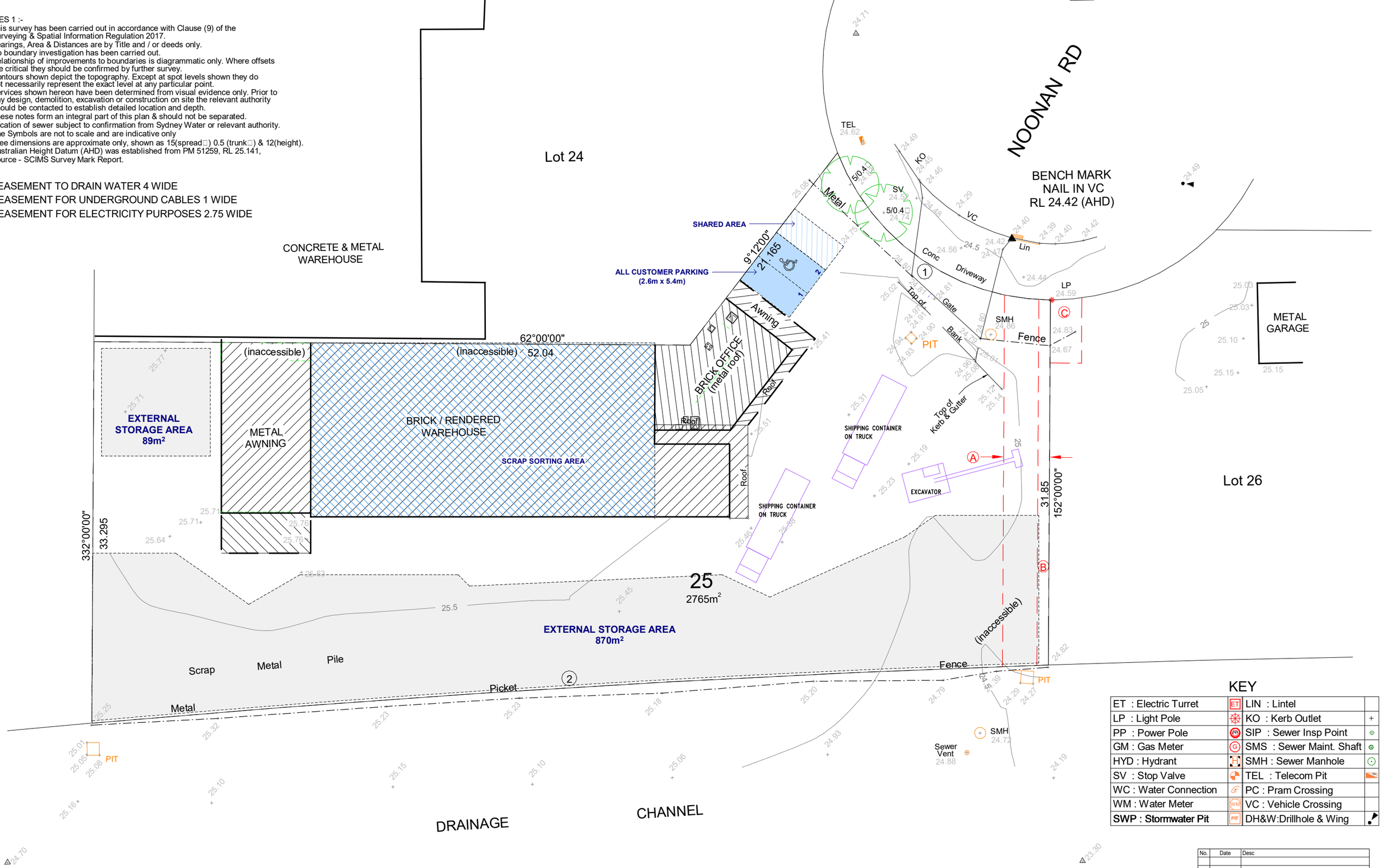
NOTES 1 :-
1) This survey has been carried out in accordance with Clause (9) of the Surveying & Spatial Information Regulation 2017.
2) Bearings, Area & Distances are by Title and / or deeds only. No boundary investigation has been carried out.
3) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
4) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.
5) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
6) These notes form an integral part of this plan & should not be separated.
7) Location of sewer subject to confirmation from Sydney Water or relevant authority.
8) The Symbols are not to scale and are indicative only
9) Tree dimensions are approximate only, shown as 15(spread□) 0.5 (trunk□) & 12(height).
10) Australian Height Datum (AHD) was established from PM 51259, RL 25.141, Source - SCIMS Survey Mark Report.

Ⓐ EASEMENT TO DRAIN WATER 4 WIDE
Ⓑ EASEMENT FOR UNDERGROUND CABLES 1 WIDE
Ⓒ EASEMENT FOR ELECTRICITY PURPOSES 2.75 WIDE




KEY

| | | | | | |
|---|---|---|---|---|---|
| ET : Electric Turret | ET | LIN : Lintel | | | |
| LP : Light Pole | LP | KO : Kerb Outlet | + | | |
| PP : Power Pole | PP | SIP : Sewer Insp Point | ⊙ | | |
| GM : Gas Meter | G | SMS : Sewer Maint. Shaft | ⊙ | | |
| HYD : Hydrant | H | SMH : Sewer Manhole | ⊙ | | |
| SV : Stop Valve | SV | TEL : Telecom Pit | TEL | | |
| WC : Water Connection | WC | PC : Pram Crossing | | | |
| WM : Water Meter | WM | VC : Vehicle Crossing | | | |
| **SWP : Stormwater Pit** | PIT | DH&W:Drillhole & Wing | | | |

| No. | Date | Desc |
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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**SITE PLAN - EXISTING**

SCALE :
300 @A3 150 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0101**

**Development Application**



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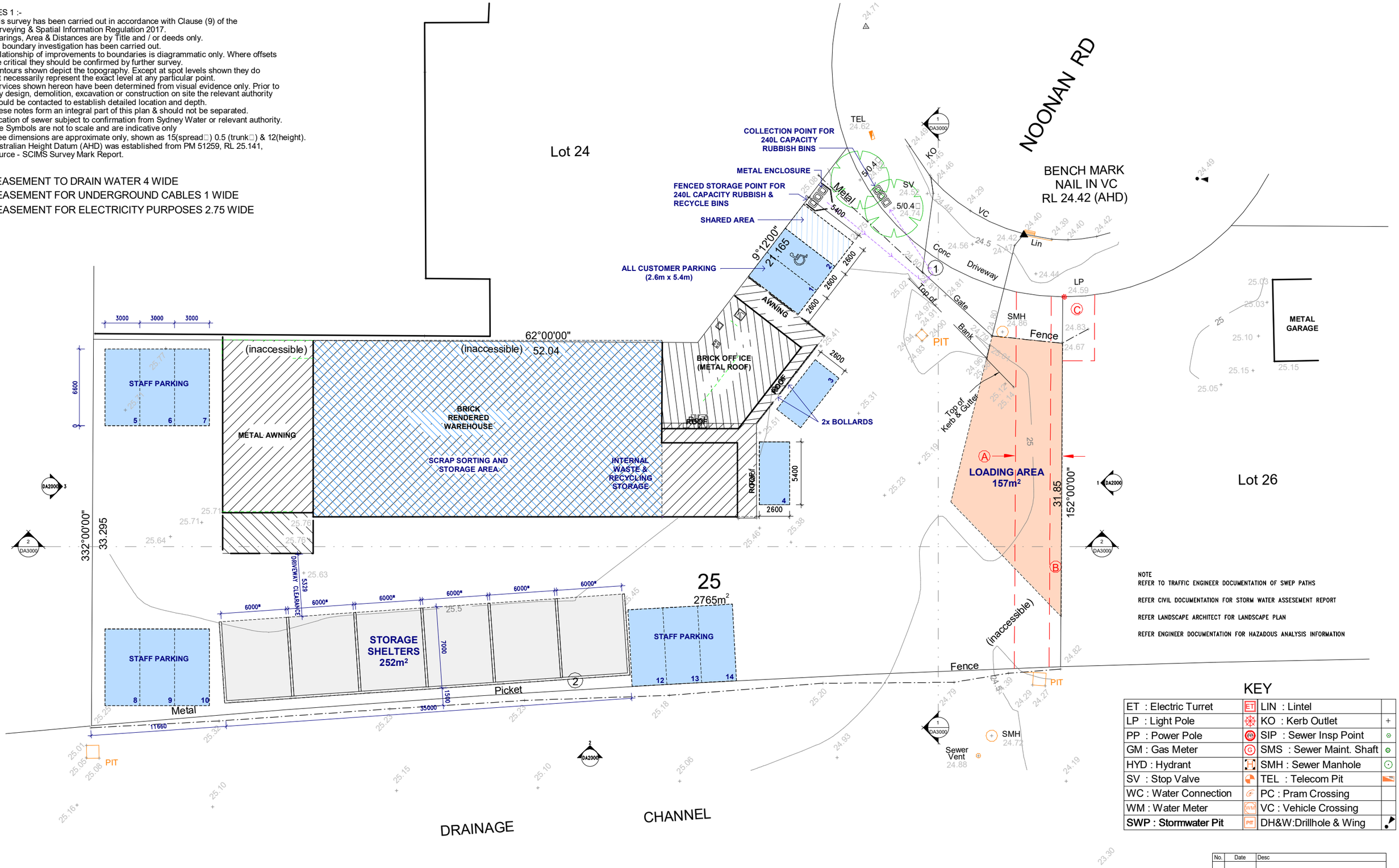
NOTES 1 :-
1) This survey has been carried out in accordance with Clause (9) of the Surveying & Spatial Information Regulation 2017.
2) Bearings, Area & Distances are by Title and / or deeds only. No boundary investigation has been carried out.
3) Relationship of improvements to boundaries is diagrammatic only. Where offsets are critical they should be confirmed by further survey.
4) Contours shown depict the topography. Except at spot levels shown they do not necessarily represent the exact level at any particular point.
5) Services shown hereon have been determined from visual evidence only. Prior to any design, demolition, excavation or construction on site the relevant authority should be contacted to establish detailed location and depth.
6) These notes form an integral part of this plan & should not be separated.
7) Location of sewer subject to confirmation from Sydney Water or relevant authority.
8) The Symbols are not to scale and are indicative only
9) Tree dimensions are approximate only, shown as 15(spread□) 0.5 (trunk□) & 12(height).
10) Australian Height Datum (AHD) was established from PM 51259, RL 25.141, Source - SCIMS Survey Mark Report.

Ⓐ EASEMENT TO DRAIN WATER 4 WIDE
Ⓑ EASEMENT FOR UNDERGROUND CABLES 1 WIDE
Ⓒ EASEMENT FOR ELECTRICITY PURPOSES 2.75 WIDE




NOTE
REFER TO TRAFFIC ENGINEER DOCUMENTATION OF SWEP PATHS
REFER CIVIL DOCUMENTATION FOR STORM WATER ASSESEMENT REPORT
REFER LANDSCAPE ARCHITECT FOR LANDSCAPE PLAN
REFER ENGINEER DOCUMENTATION FOR HAZADOUS ANALYSIS INFORMATION

KEY

| | | | |
|---|---|---|---|
| ET : Electric Turret | ET | LIN : Lintel | |
| LP : Light Pole | | KO : Kerb Outlet | + |
| PP : Power Pole | PP | SIP : Sewer Insp Point | |
| GM : Gas Meter | G | SMS : Sewer Maint. Shaft | |
| HYD : Hydrant | | SMH : Sewer Manhole | |
| SV : Stop Valve | | TEL : Telecom Pit | TEL |
| WC : Water Connection | | PC : Pram Crossing | |
| WM : Water Meter | WM | VC : Vehicle Crossing | |
| **SWP : Stormwater Pit** | PIT | DH&W:Drillhole & Wing | |

| No. | Date | Desc |
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**smith+tracey** architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**SITE PLAN - PROPOSED**

SCALE :
300 @A3 150 @A1

JOB NUMBER:
22015

DATE:
13.12.2023

DRAWING NUMBER:
**DA0102**

**Development Application**



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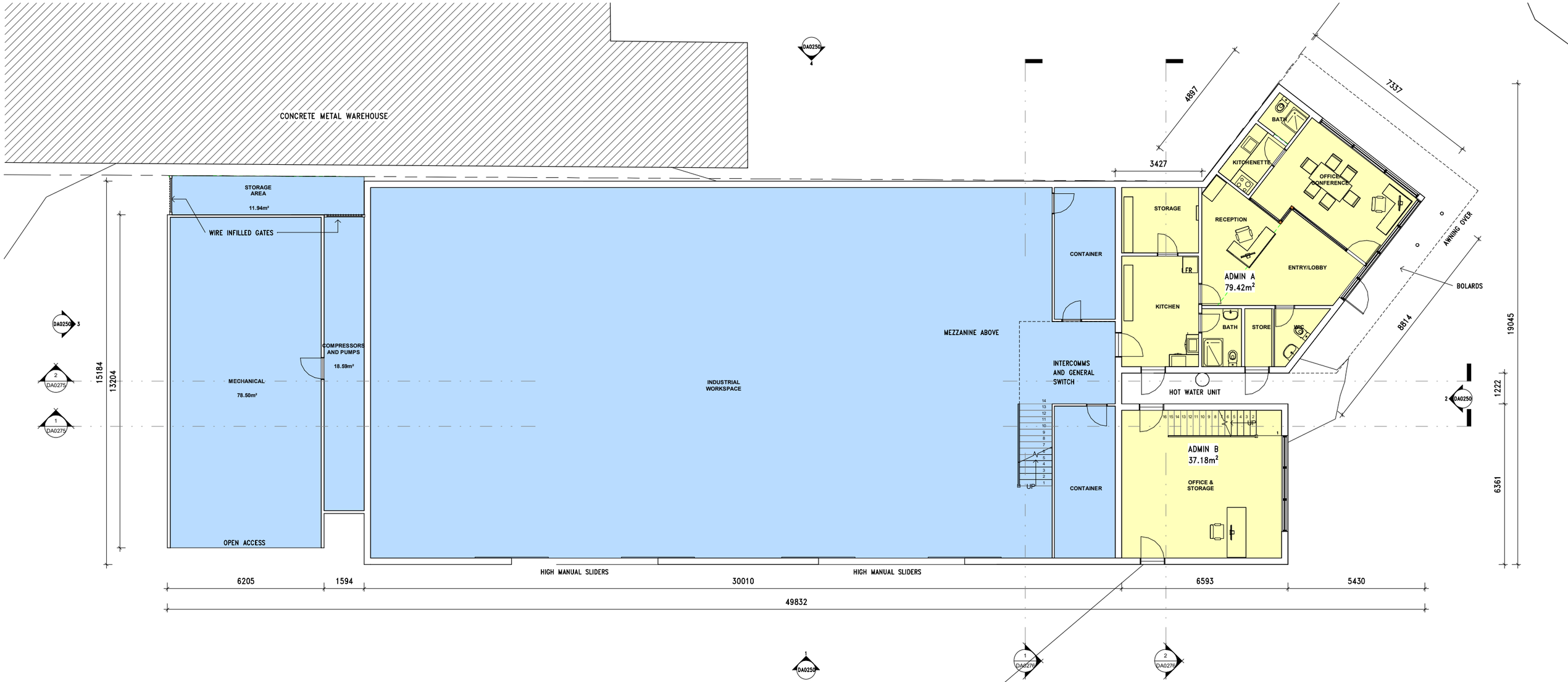


## GROUND FLOOR AREAS

### INDUSTRIAL

| | |
|---|---|
| WORKSPACE | 430.87m² |
| MECHANICAL | 78.50m² |
| COMPRESSORS AREA | 18.59m² |
| REAR STORAGE AREA | 11.84m² |
| TOTAL | 539.80m² |

### ADMINISTRATION

| | |
|---|---|
| ADMIN A | 79.42m² |
| ADMIN B | 37.18m² |
| TOTAL | 116.60m² |

| No. | Date | Desc |
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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING GROUND FLOOR**
SCALE :
150 @A3 75 @A1
JOB NUMBER: 22015
DATE: 13.12.2023

DRAWING NUMBER:
**DA0200**

**Development Application**



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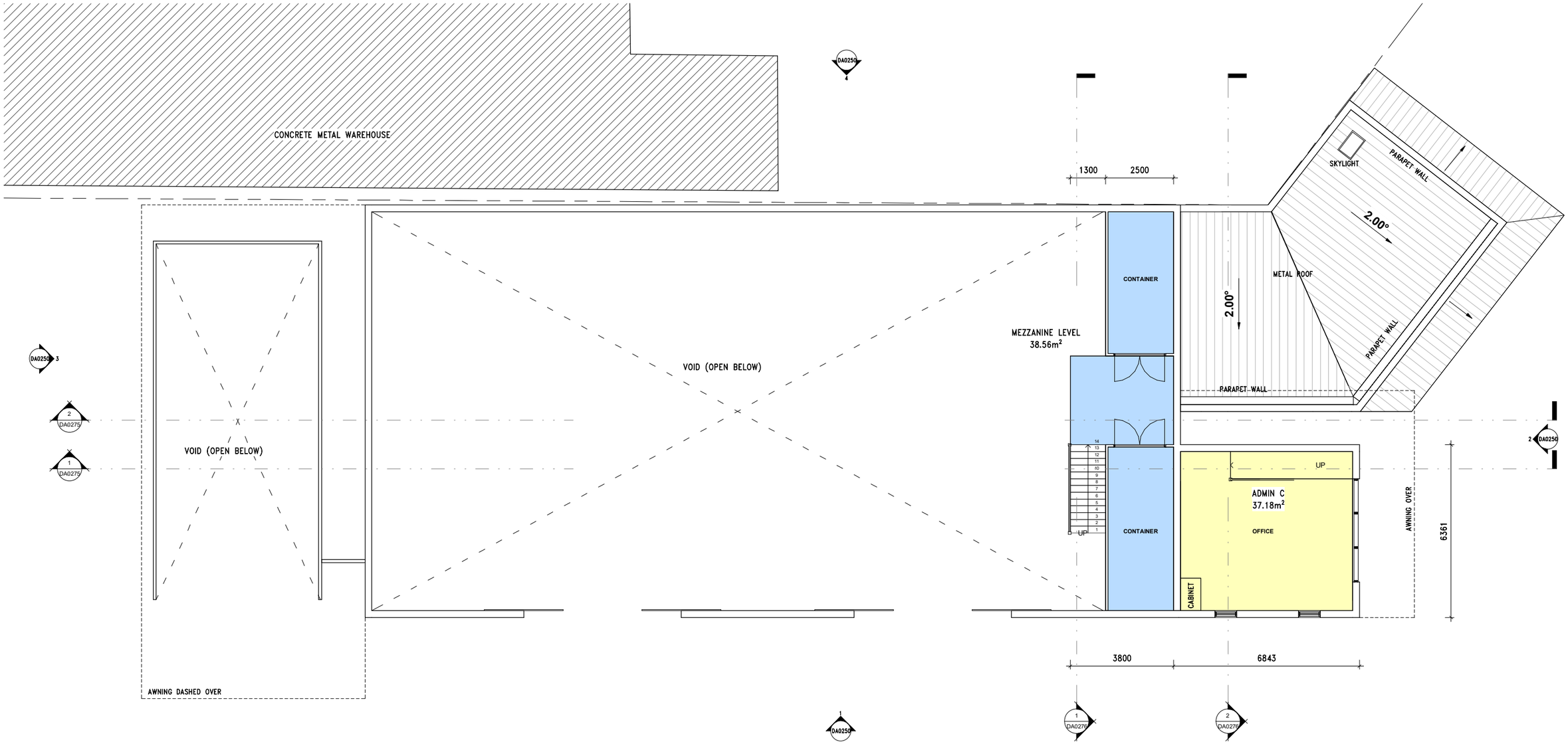


## UPPER FLOOR AREAS

### INDUSTRIAL

| | |
|---|---|
| MEZZANINE | 38.56m² |
| TOTAL | 38.56m² |

### ADMINISTRATION

| | |
|---|---|
| ADMIN C | 37.18m² |
| TOTAL | 37.18m² |

| No. | Date | Desc |
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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING L1 / MEZZANINE**

SCALE :
150 @A3 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0201**

**Development Application**



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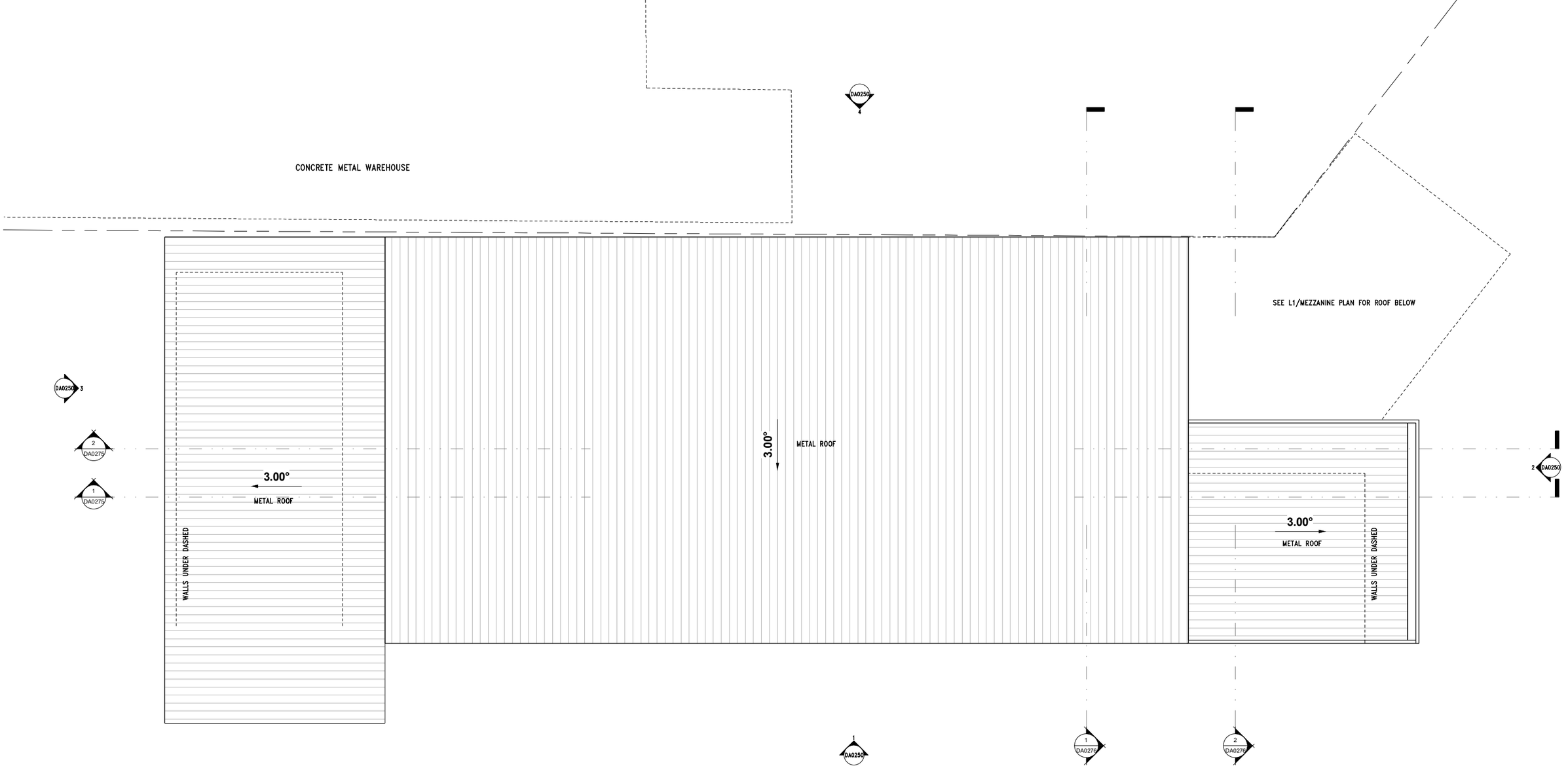


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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING ROOF PLAN**

SCALE :
150 @A3 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0202**

**Development Application**



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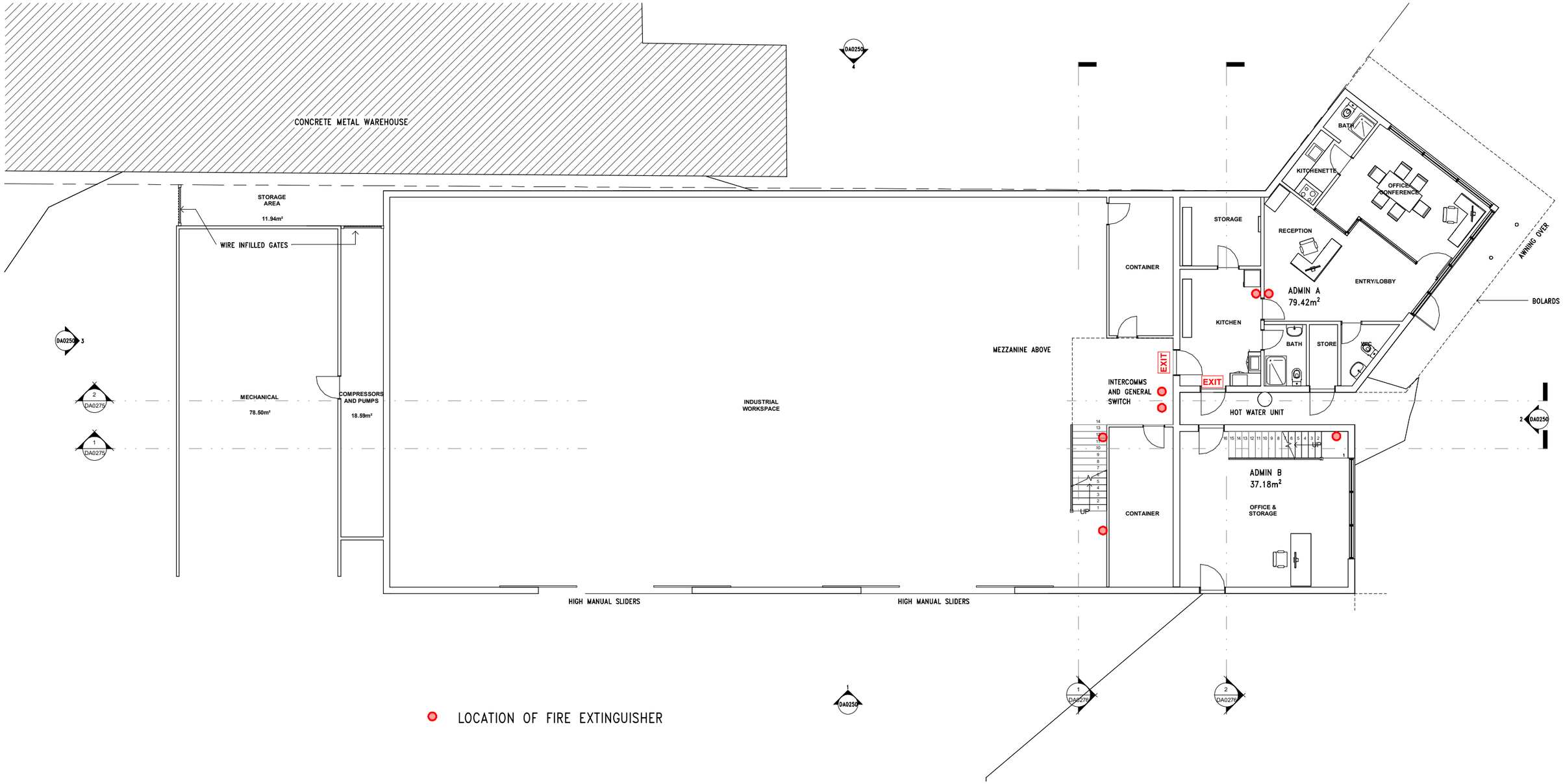


LOCATION OF FIRE EXTINGUISHER

| No. | Date | Desc |
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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING GROUND FLOOR FIRE SCHEDULE**

SCALE :
150 @A3 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0225**

**Development Application**



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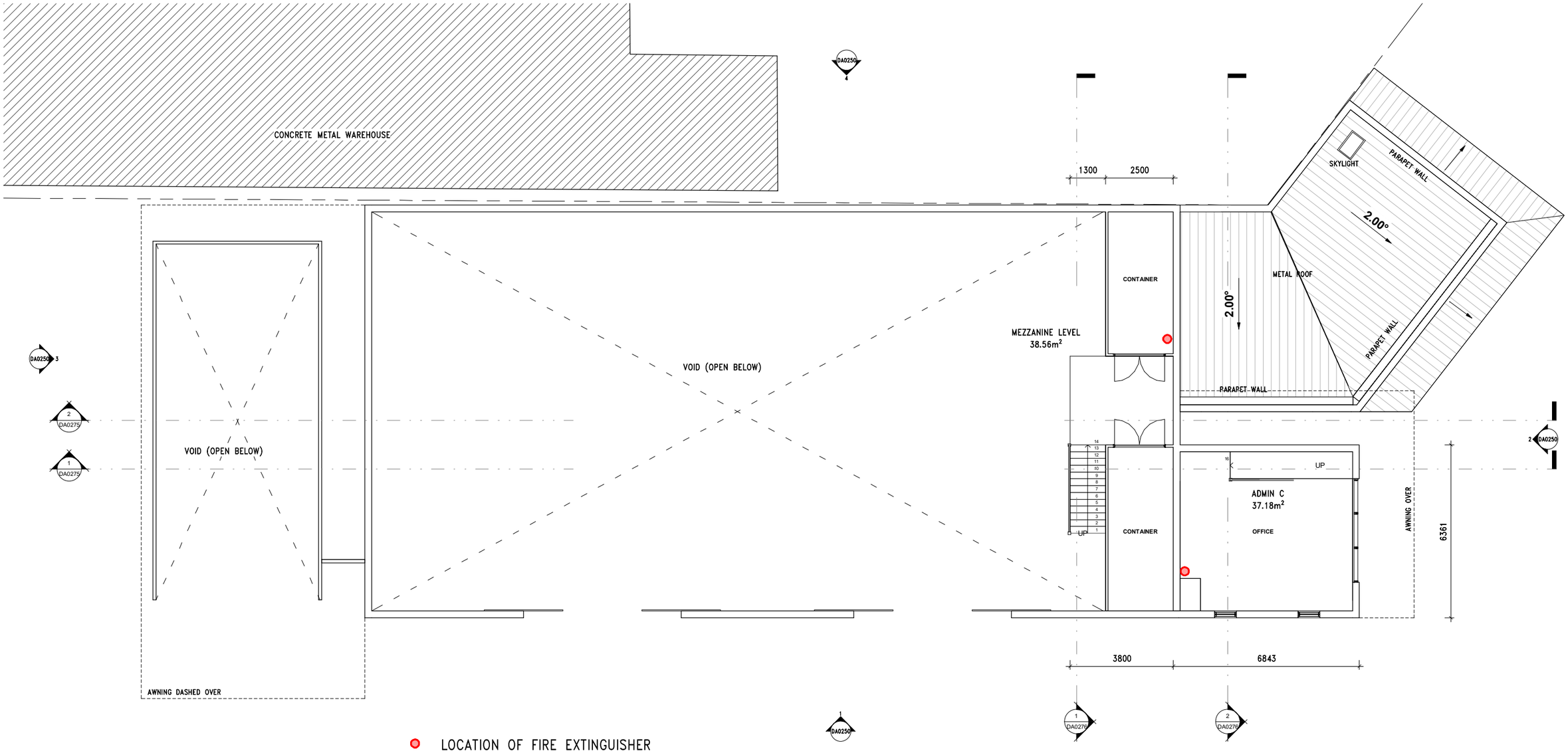


LOCATION OF FIRE EXTINGUISHER

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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING L1 / MEZZANINE FIRE SCHEDULE**

SCALE :
@A3 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0226**

**Development Application**



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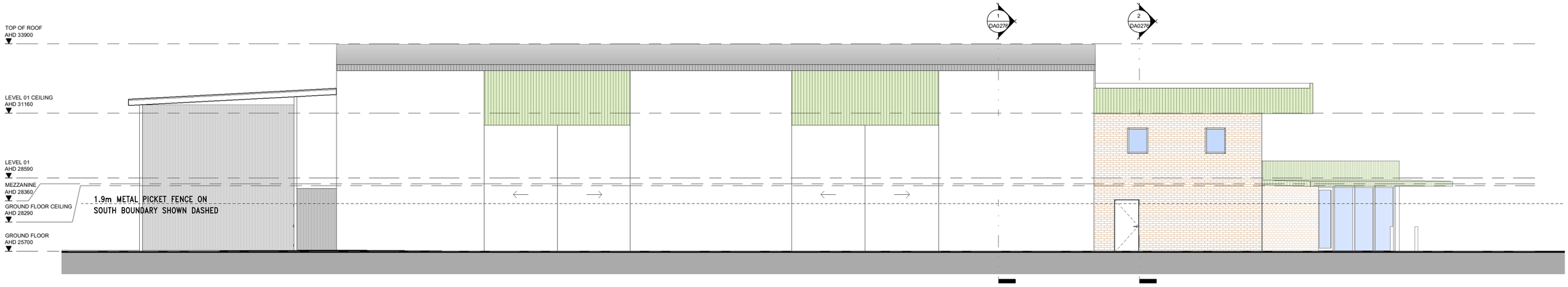
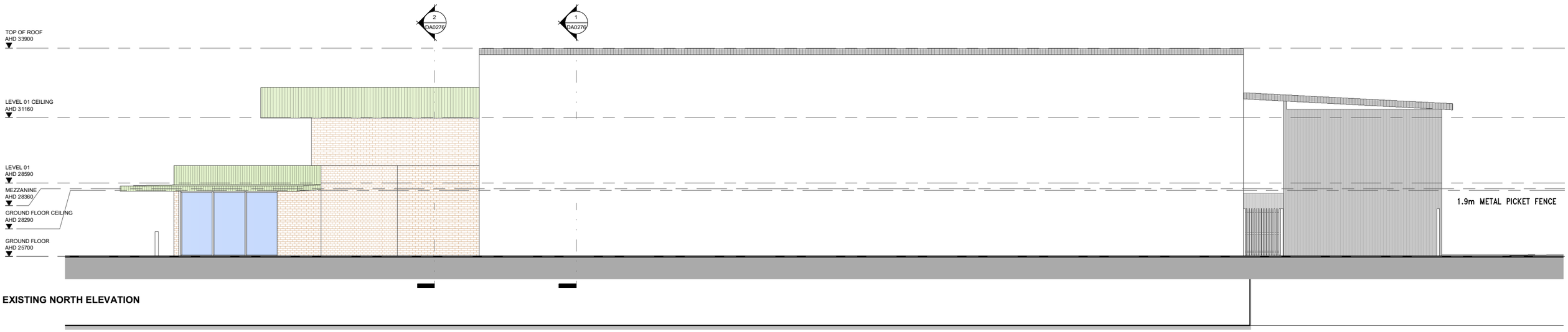
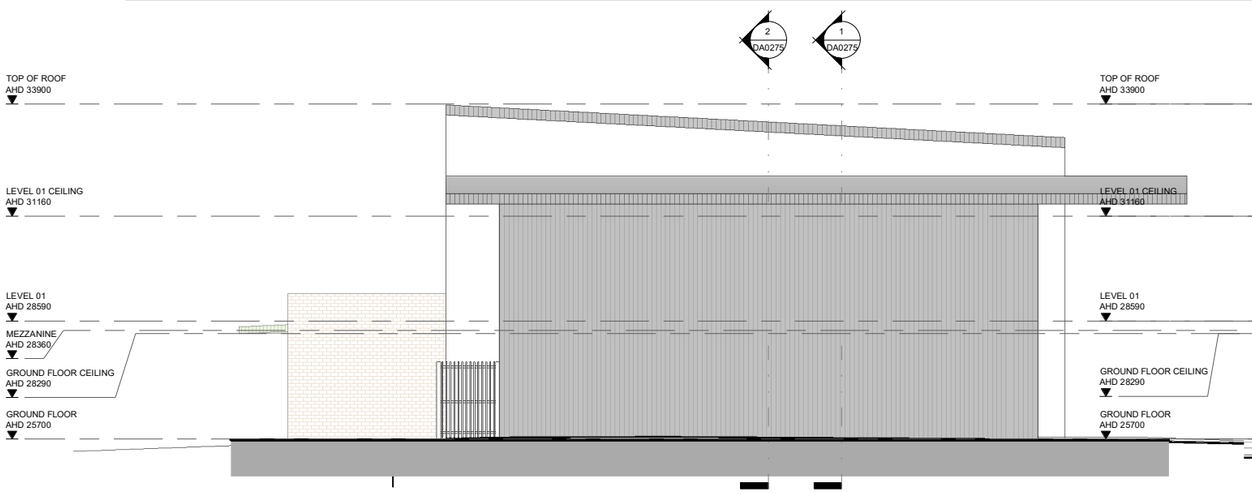



**EXISTING SOUTH ELEVATION**




**EXISTING NORTH ELEVATION**




**EXISTING WEST ELEVATION**


**EXISTING EAST ELEVATION**

| No. | Date | Desc |
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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING ELEVATIONS**

SCALE :
@A3 1 : 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0250**

**Development Application**



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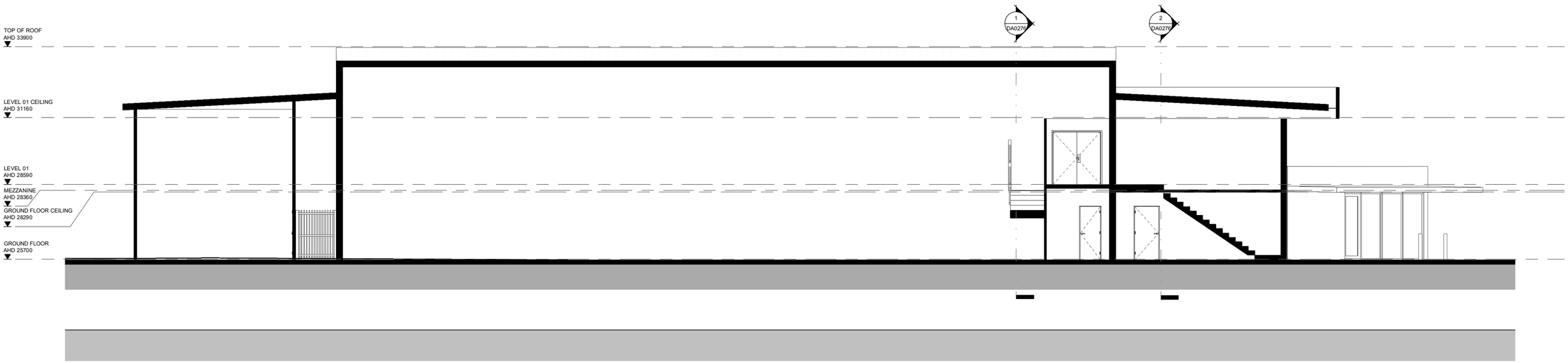


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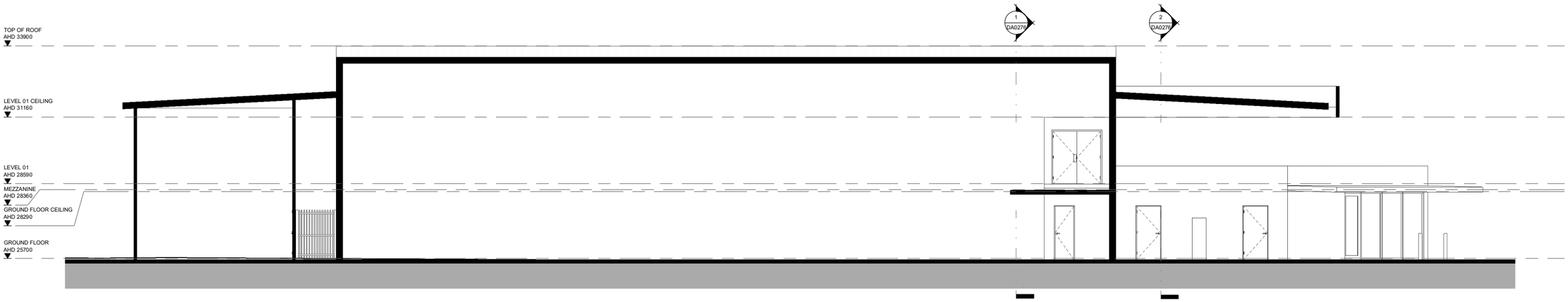


**SECTION B**

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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING SECTIONS**

SCALE :
150 @A3 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0275**



**Development Application**

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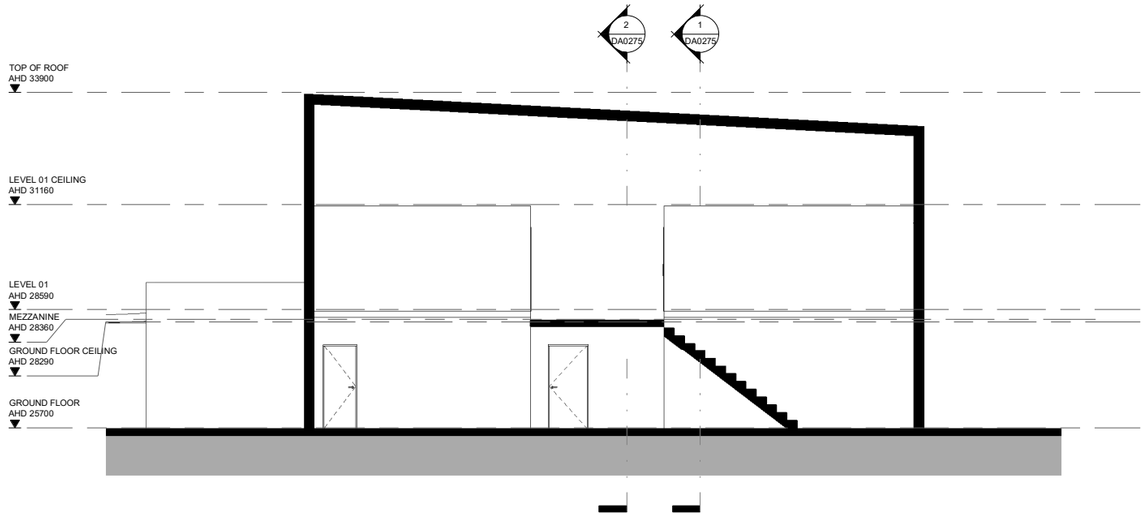
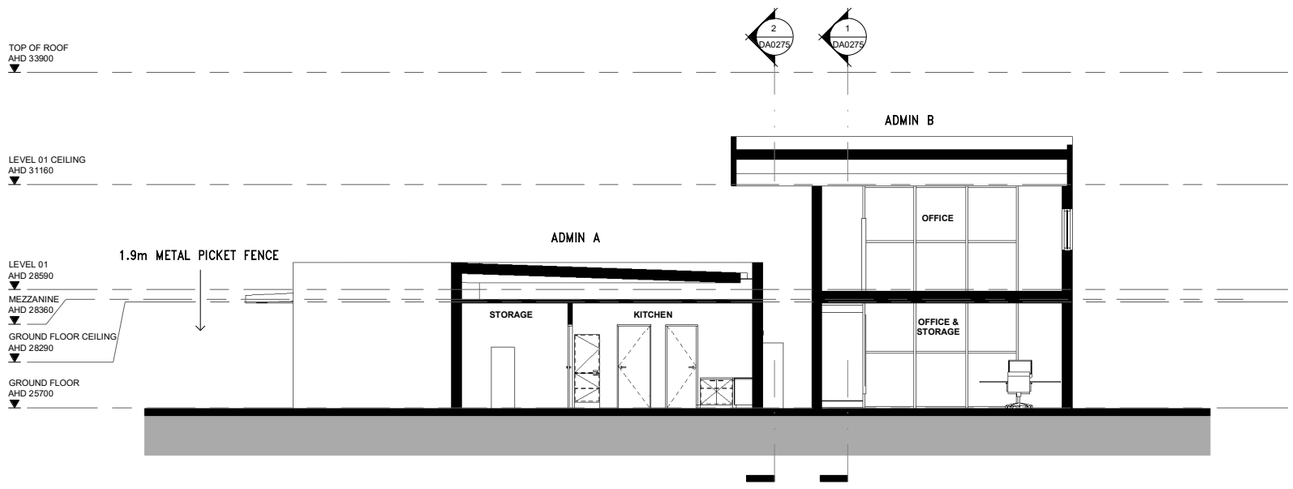



**SECTION C**




**SECTION D**

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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**EXISTING SECTIONS**

SCALE :
150 @A3 75 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0276**



**Development Application**

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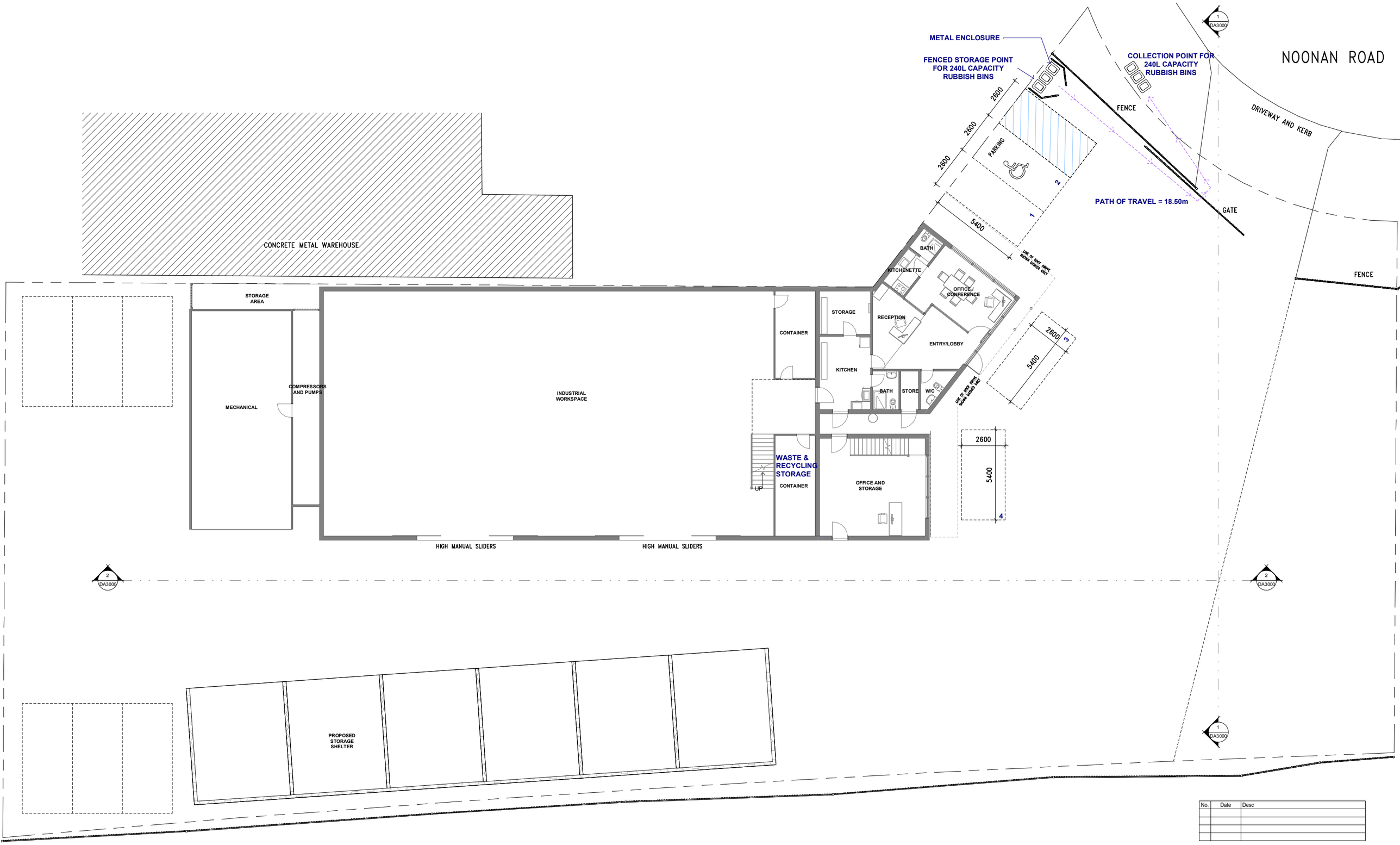


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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**WASTE MANAGEMENT PLAN**

SCALE :
200 @A3 100 @A1

JOB NUMBER: 22015

DATE: 13.12.2023

DRAWING NUMBER:
**DA0500**

**Development Application**



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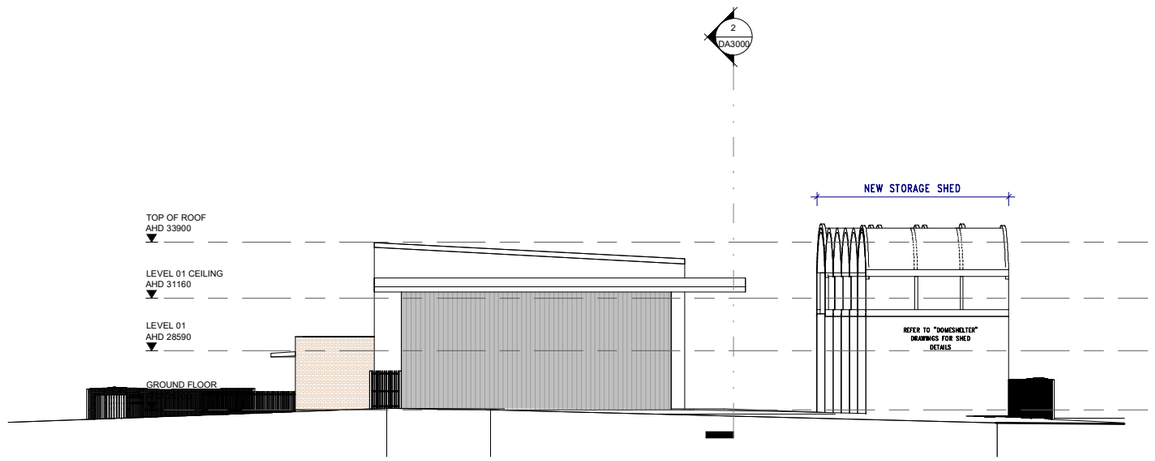
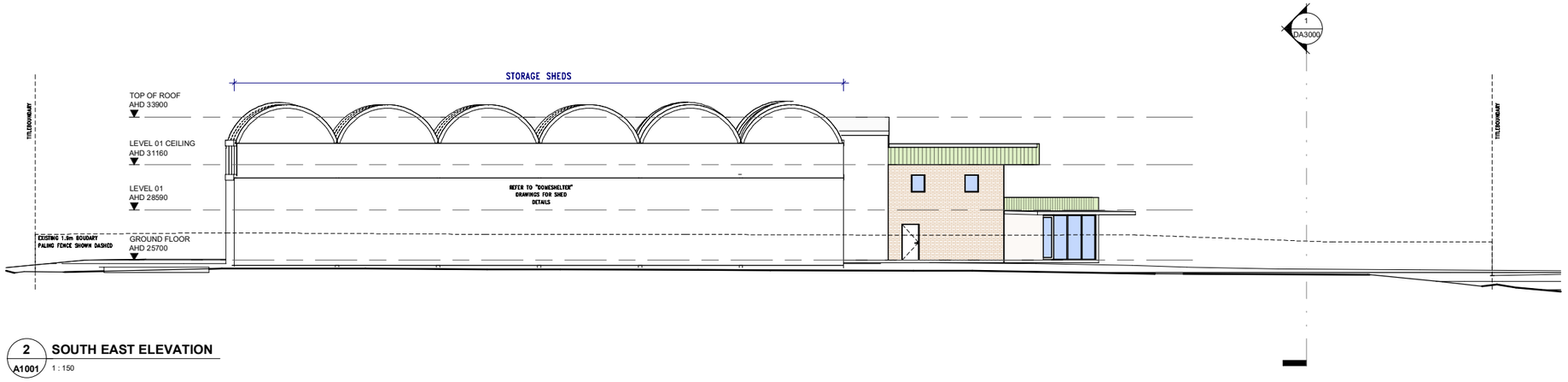
1 **NORTH ELEVATION**
DA0102 1 : 150




3 **SOUTH ELEVATION**
A1001 1 : 150




2 **SOUTH EAST ELEVATION**
A1001 1 : 150

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PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**ELEVATIONS**

SCALE :
@A3 1 : 150 @A1

JOB NUMBER: 22015
DATE: 13.12.2023

DRAWING NUMBER:
**DA2000**



**Development Application**

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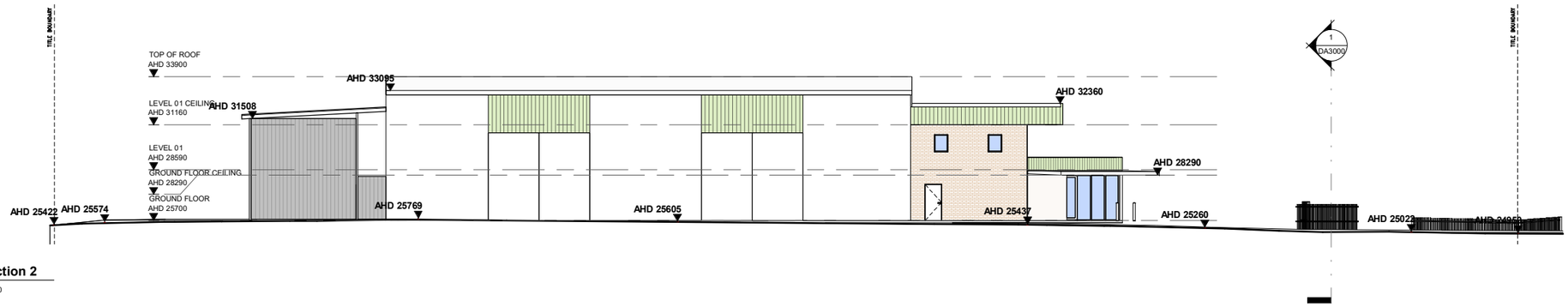
1 **Section 1**
DA0102 1 : 150




2 **Section 2**
A1001 1 : 150

| No. | Date | Desc |
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smith+tracey architects

PROJECT :
**Shine Motor Corporation**

ADDRESS:
8 Noonan Rd, Ingleburn NSW 2565

DRAWING :
**SECTIONS**

SCALE :
@A3 1 : 150 @A1

JOB NUMBER: 22015
DATE: 13.12.2023

DRAWING NUMBER:
**DA3000**



**Development Application**

P:\2022_JOBS\22015_Shine Motor Corporation – 8 noonan rd\DOCUMENTATION\REVIT\MODEL\22015_ShineMotorCorporation noonan rd_R24.rvt

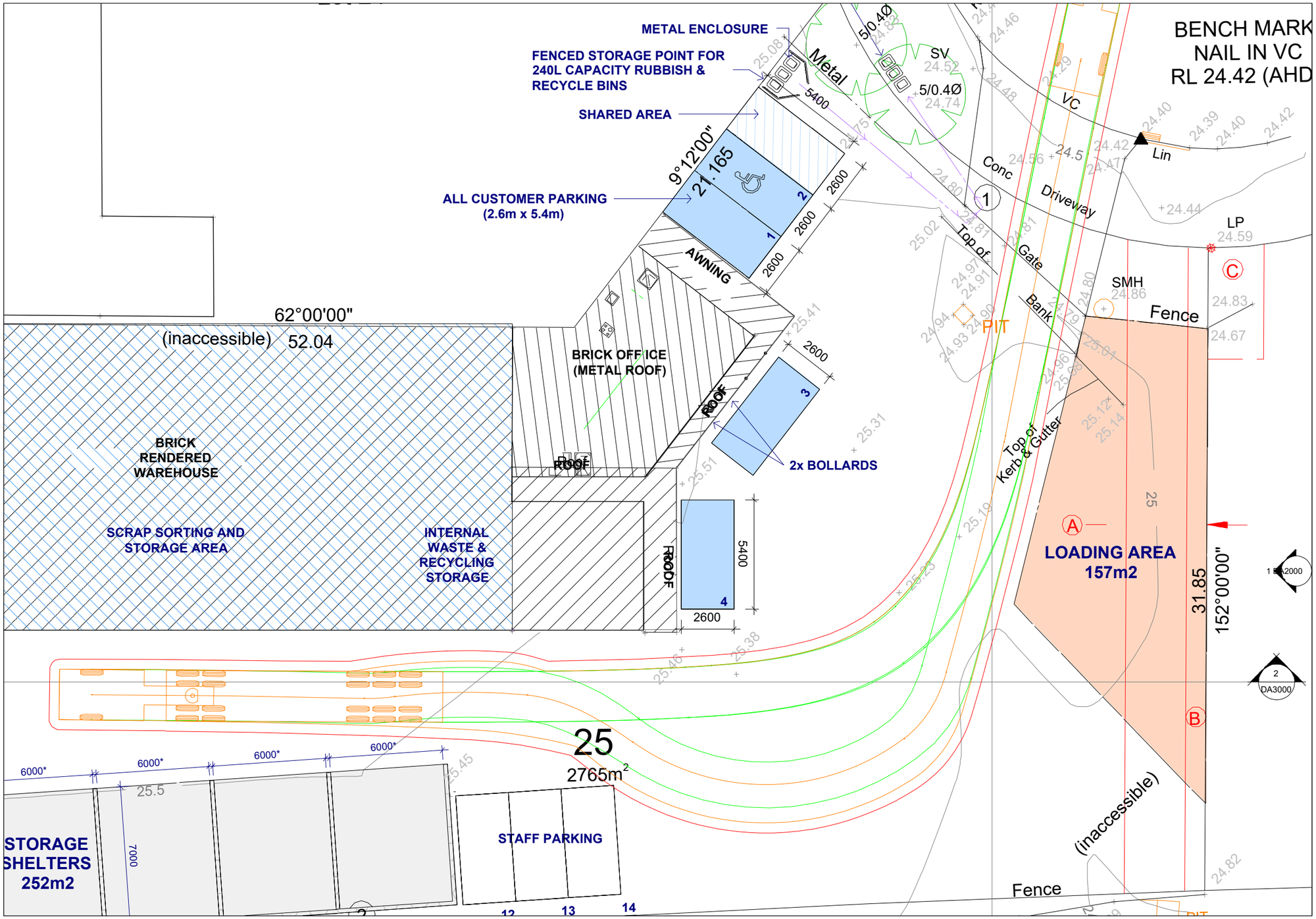
# Appendix E:

## Swept Path Diagrams

# Forwards Entry - 19m Semi-Trailer

Address: 8 Noonan Road, Ingleburn  Development: Scrap Metal Yard

LGA: Campbelltown  Ref: 22-0033  Assessment: Swept Path




Simulation Software: AutoTURN 11 Pro


Quantum Traffic

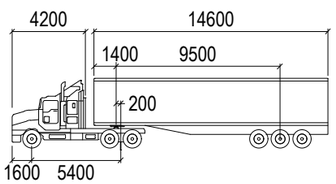
e: admin@quantumtraffic.com.au

p: (02) 6243 3672

w: www.quantumtraffic.com.au

a: Level 9, 2 Phillip Law Street
Canberra ACT 2601


## Vehicle Used In Simulation




AV

| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 28.3 |
| Articulating Angle | : 72.0 |

## Legend

- Vehicle Body
- Wheel Path
- Clearance (500mm)

## Notes

Scale: 1: 500 @ A3

Base: Provided

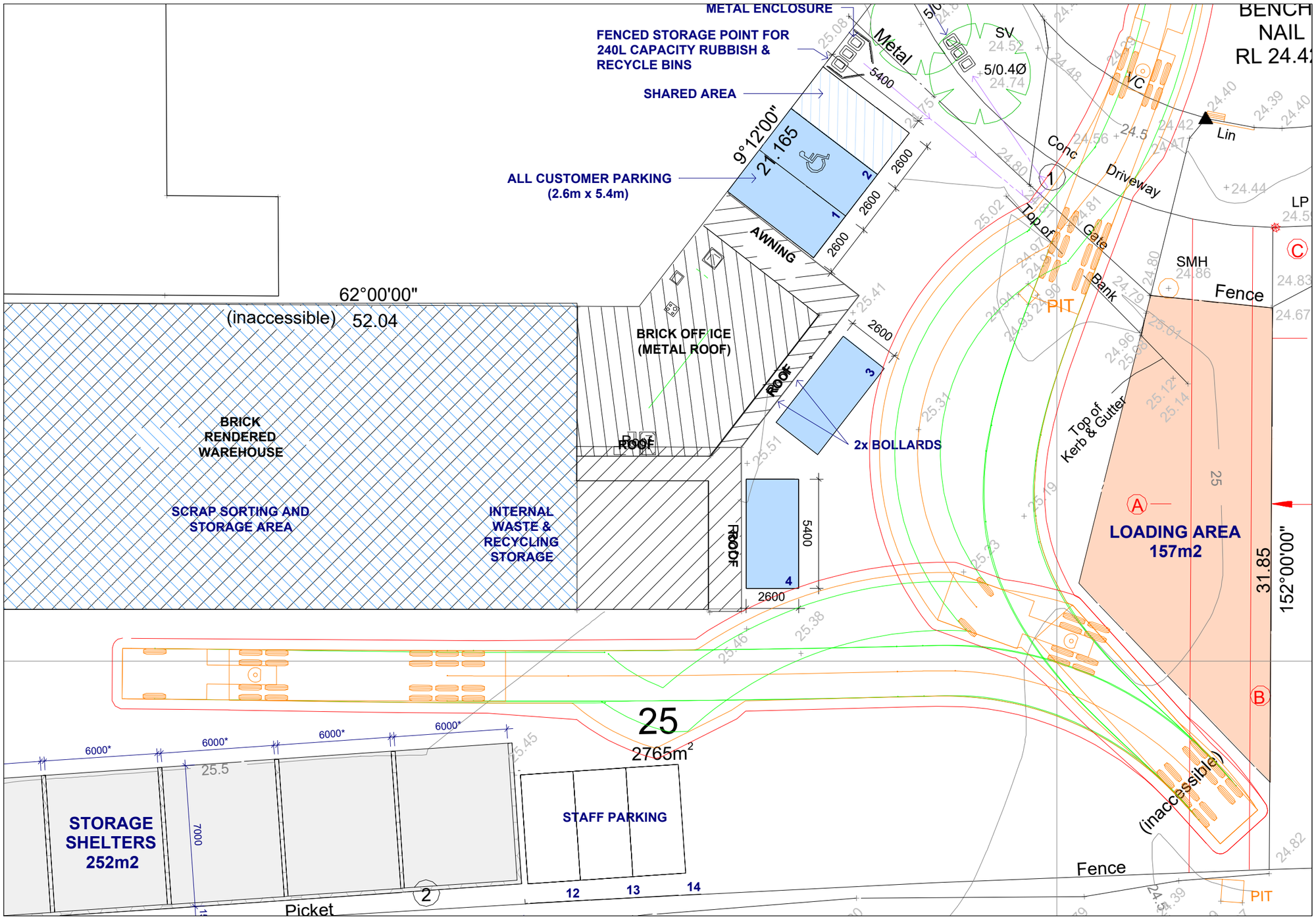
## Revision & Date

Rev: 2  Date: 14/12/2023

# Forwards Exit - 19m Semi-Trailer

Address: 8 Noonan Road, Ingleburn  Development: Scrap Metal Yard

LGA: Campbelltown  Ref: 22-0033  Assessment: Swept Path

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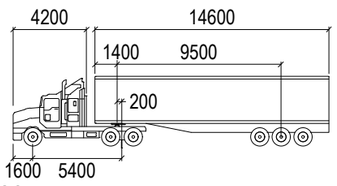
## Vehicle Used In Simulation




AV

| | mm |
|---|---|
| Tractor Width | : 2500 |
| Trailer Width | : 2500 |
| Tractor Track | : 2500 |
| Trailer Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 28.3 |
| Articulating Angle | : 72.0 |

## Legend

- Vehicle Body
- Wheel Path
- Clearance (500mm)

## Notes

Scale: 1: 500 @ A3

Base: Provided

## Revision & Date

Rev: 2  Date: 14/12/2023

# Forwards Entry - 12.5m Rigid Truck

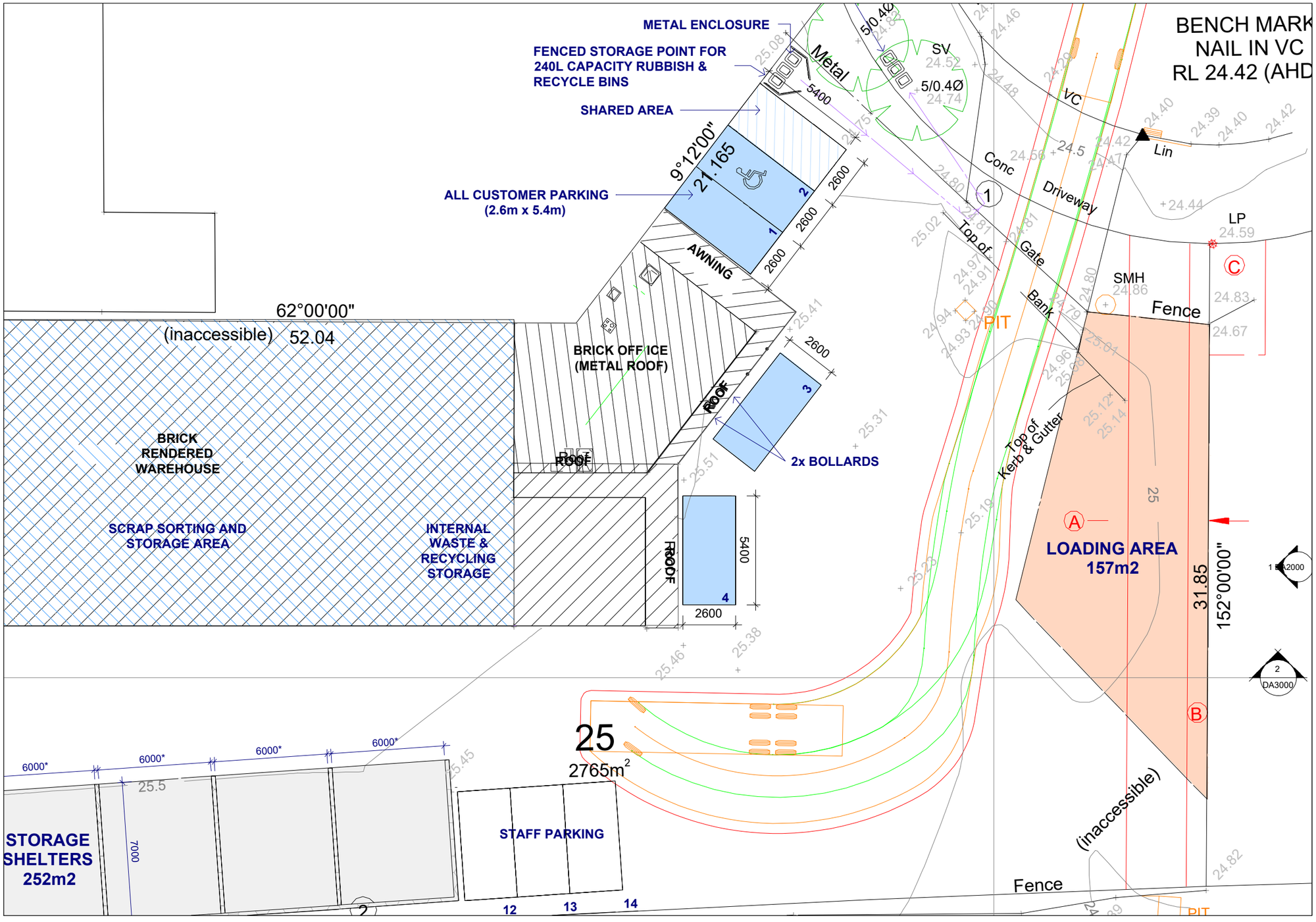
Address: 8 Noonan Road, Ingleburn

Development: Scrap Metal Yard

LGA: Campbelltown

Ref: 22-0033

Assessment: Swept Path




Simulation Software: AutoTURN 11 Pro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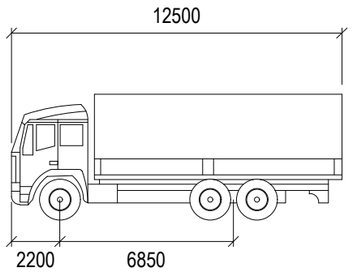
## Vehicle Used In Simulation




HRV

| | mm |
|---|---|
| Width | : 2500 |
| Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

## Legend

- Vehicle Body
- Wheel Path
- Clearance (500mm)

## Notes

Scale: 1: 500 @ A3

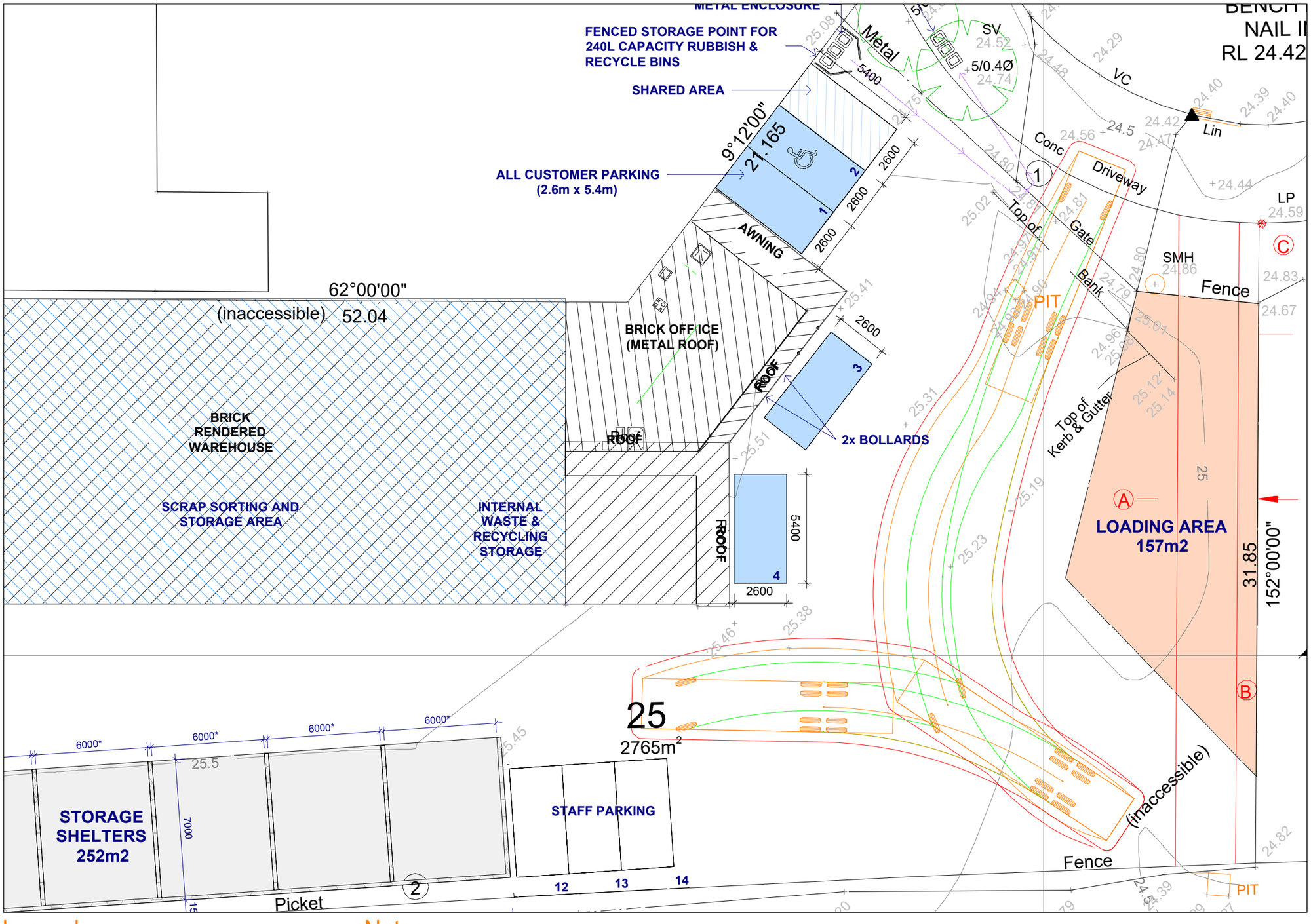
Base: Provided

## Revision & Date

Rev: 2 Date: 14/12/2023

# Forwards Exit - 12.5m Rigid Truck

Address: 8 Noonan Road, Ingleburn
Development: Scrap Metal Yard
LGA: Campbelltown
Ref: 22-0033
Assessment: Swept Path




Simulation Software: AutoTURN 11 Pro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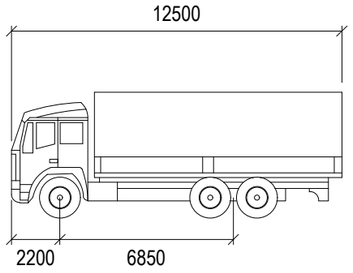
## Vehicle Used In Simulation




HRV

| | mm |
|---|---|
| Width | : 2500 |
| Track | : 2500 |
| Lock to Lock Time | : 6.0 |
| Steering Angle | : 36.7 |

## Legend

- Vehicle Body
- Wheel Path
- Clearance (500mm)

## Notes

Scale: 1: 500 @ A3
Base: Provided

## Revision & Date

Rev: 2 Date: 14/12/2023