Transport Assessment

Development Application

14 Aquatic Drive, Frenchs Forest
2/05/2025
P2072r06

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Glossary

Acronym	Description
CC	Construction Certificate
Council	Northern Beaches Council
DA	Development Application
DCP	Development Control Plan
DPHI	Department of Planning, Housing and Infrastructure
GFA	Gross Floor Area
GTIA	TfNSW Guide to Transport Impact Assessment
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LEP	Local Environmental Plan
LGA	Local Government Area
MOD	Section 4.55 Modification (also referred as a S4.55)
RMS Guide	Transport for NSW (formerly Roads and Traffic Authority), Guide to Traffic Generating Developments, 2002
TDT 2013/04a	TfNSW Technical Direction, Guide to Traffic Generating Developments – Updated traffic surveys, August 2013
GTIA	Transport for New South Wales, Guide to Transport Impact Assessment – Technical guidance for transport practitioners – version 1.1
TfNSW	Transport for New South Wales
TA	Transport Assessment
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

1 Introduction

1.1 Overview

Ason Group has been engaged by Goodman Property Services (Aust) Pty Ltd to prepare a Transport Assessment (TA) to support a Development Application (DA) for an industrial development comprising self-storage units and warehouse units (the Proposal) at 14 Aquatic Drive Frenchs Forest (the Site). This TA also includes a Preliminary Green Travel Plan (PGTP) and Construction Traffic Management Plan (PCTMP).

1.2 TA Objectives

The purpose of this TA is as follows:

- To establish that the use of the Site is compliant and consistent with the access, traffic and parking requirements outlined in Council's Development Control Plan (DCP).
- To demonstrate that there is an appropriate and sustainable provision of car parking within the proposed Site.
- To demonstrate that the proposed access driveways, internal roads, car parks and service facilities currently provide a design compliant with the relevant Australian Standards.
- To establish that the trip generation of the Proposal can appropriately be accommodated by the existing local road network.
- To assess the need for any changes to the proposed facilities / Site layout.

1.3 Key References

In preparing this TA, a series of key strategic, design and planning documents have been referenced to inform the assessment of traffic and transport related elements of the Proposal:

- Warringah Development Control Plan 2011 (DCP 2011).
- Warringah Local Environmental Plan 2011 (LEP 2011).
- Disability (Access to Premises – Buildings) Standards 2010 (Access to Premises Standards).
- Jacobs, Frenchs Forest Planned Precinct: Transport Strategy 2020 (Precinct Transport Strategy).

This TA also references general access, traffic and parking guidelines, including:

- Transport for New South Wales, Guide to Transport Impact Assessment – Technical guidance for transport practitioners (GTIA 2024).
- Australian Standard 2890.1:2004: Parking Facilities – Off-Street Car Parking (AS 2890.1).
- Australian Standard 2890.2:2018: Parking Facilities – Off-Street Commercial Vehicle Facilities (AS 2890.2).
- Australian Standard 2890.3:2015: Parking Facilities – Bicycle Parking (AS 2890.3).
- Australian Standard 2890.6:2022: Parking Facilities – Off-Street Parking for People With Disabilities (AS 2890.6).

- Stantec, Parking and Traffic Study – Supporting the self storage industry of Australia and New Zealand.

This TA also references previous reports prepared for the Site and surrounding development proposals, including:

- SCT Consulting, *The Forest High School – Transport Access Impact Assessment*, Revision 6, 2 November 2022.
- Transport and Traffic Planning Associates, *Proposed Bunnings Development – Traffic and Parking Assessment Report*, Issue D, September 2020.

1.4 Early Engagement with Council

A Development Application Pre-Lodgement Meeting was undertaken on 6 August 2024 between Goodman and Northern Beaches Council regarding the proposal. The following are the traffic and transport related comments that were provided as part of the meeting.

TABLE 1: PRE-LODGEMENT COMMENTS FROM NORTHERN BEACHES COUNCIL

Comment	Response
The proposal is for self-storage units at basement level and warehousing/distribution on the ground and first level:	-
• **Parking appears to exceed Council's Warringah DCP requirements, given the small size of the warehouse units, the excess parking is considered necessary.**	Parking assessment has been undertaken with reference to Warringah DCP 2011 (refer to **Section 5.1**). Based on the parking rates extracted from the DCP, the proposal requires provision of 120 spaces with the proposal providing an overall 123 spaces within the development.
• **It appears all levels are to be accessible by medium rigid vehicles (MRV). This size of vehicle is considered appropriate for the size and type of development. This will however mean that overheard clearance throughout each level of 4.5m will be required to ensure units can be accessed.**	The self-storage units has been designed to accommodate for up to B99 vehicles. The warehousing component located on the ground and first levels have been designed to accommodate up to a medium rigid vehicle. Therefore, basement level has been designed to cater for up to B99 with reference to AS2890.1:2004 with the upper levels being designed for up to MRVs with reference to AS2890.2:2018.
• **The capacity for passing of two MRVs on ramps will be required. It will be unacceptable and unsafe for a MRV to have to reverse along a ramp to allow an opposing MRV to pass. The swept path plots that have been shown on the PLM plans do not include the required 300mm manoeuvring clearances on either vehicle of the vehicle as per AS2890.2:2018 clause 5.4. These will be required and must be plotted on any plans submitted with the DA. This will require widening of the ramps.**	Swept path assessment has been undertaken along the ramps to ensure that two MRVs are able to pass simultaneously as requested by Council. It is also noted that the assessment now includes the 300mm manoeuvring clearance as requested and in line with AS2890.2:2018 Clause 5.4. Refer to **Appendix A** for the swept path assessments.
• **For internal circulation of each level passing of a B99 vehicle and an MRV (with the**	Swept path assessment has been undertaken using two B99 vehicles on the basement level noting that the self storage unit has been designed to accommodate up to B99 vehicles.

required manoeuvring clearances) as a minimum will be required.	The upper levels which cater for MRVs have been designed such that B99 and MRV are able to pass with appropriate line marking and signage provided in areas where simultaneous passing cannot be achieved.
• **MRV access to and from each critically located unit must be demonstrated with the required loading bays dimensioned as per requirements in AS2890.2:2018 Table 4.1.**	Swept path assessment has been undertaken using a MRV to demonstrate that the vehicle is able to access the warehouses with the provided hardstand area. Refer to **Appendix A** for the swept path assessments.
• **Sight line triangles as per the requirements of AS2890.1 Clause 3.2.4 must be demonstrated.**	Sight line triangles have been considered and provided in accordance with AS2890.1:2004 Clause 3.2.4.
• **The vehicle crossing and driveway must be designed to allow for concurrent passing of inbound and outbound MRVs without any loss of on-street parking or encroachment into opposing traffic lanes. The above to be demonstrated in the traffic and parking impact assessment report. The DA will be referred to TfNSW.**	Swept path assessment have been undertaken to demonstrate that the proposed access driveway can accommodate simultaneous two way passing of MRVs. Refer to **Appendix A** for the swept path assessments.

2 Strategic Context

2.1 Introduction

Reference has been made to the state, regional and local planning documents as well as previous consultation with relevant planning authorities that are considered relevant to the context of the Site. These have been discussed in the following sections.

2.2 Frenchs Forest Planned Precinct Transport Strategy

The *Frenchs Forest Planned Precinct Transport Strategy,* prepared by Jacobs, established a number of transport infrastructure and services that are recommended as part of the Phase 1 implementation plan (please see **Figure 1**), including:

- An additional town centre access on Bluegum Crescent (west).
- An additional right-turn lane at the Naree Road / Forest Way intersection. It is recognised that a number of constraints exist should this be implemented. Therefore, the feasibility of this upgrade should be investigated further.
- In the short-term, new high-quality bus stop facilities on Frenchs Forest Road West to the west of the town centre access road.
- In the medium to long-term improved bus services between Northern Beaches and Chatswood. If future bus services are planned to travel via Warringah Road, bus stops on Warringah Road should be connected to direct pedestrian access via the town centre.
- Travel demand management such as aggressive parking controls, dynamic pricing, de-coupled and/or unbundled parking, car-sharing, the Travel Choices framework, and establishment of a TMA (Transport Management Association)

A summary of the upgrades required as part of Phase 1 that are near the Site is shown in **Figure 1**.

In addition to the above, forecasted traffic volumes were provided for the future 2026 and 2036 scenarios.

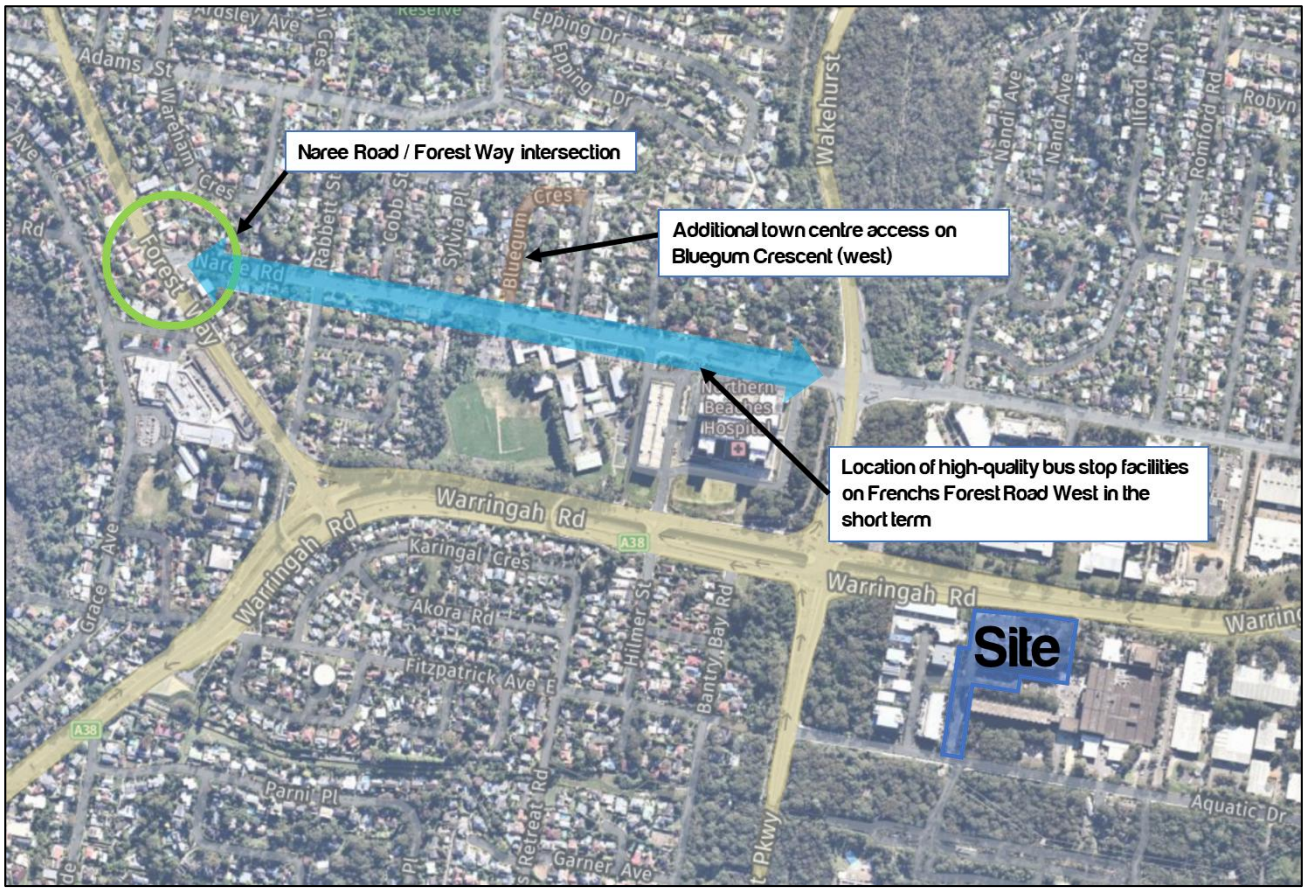


Figure 1: Forest Planned Precinct Transport Strategy Upgrades Required for Phase 1

2.3 The Forest High School – SSD-26876801[1]

An SSD application for the relocation of The Forest High School to 187 Allambie Road, Allambie Heights was granted approval on 23 November 2023 (SSD-26876801). Since then, the proposal has undergone several modifications with the latest being SSD-26876801-Mod-2 (approved 19 July 2024) at the time of writing this TA.

As part of the Transport Access Impact Assessment prepared by SCT Consulting (SCT 2022) in support of the proposal, there were investigations into several traffic infrastructure upgrades in the area to mitigate delays as a result of the school's relocation. In particular, an upgrade to the Aquatic Drive / Allambie Road intersection from a roundabout to a signalised intersection has been included as part of the conditions of consent dated 19 July 2024.

As of the writing of this TA, the school has yet to be relocated and operational.

[1] https://www.planningportal.nsw.gov.au/major-projects/projects/new-forest-high-school

2.4 Approved Bunnings Warehouse – DA2020/0717[2]

A proposed Bunnings Warehouse located at 357-373 Warringah Road was granted approval on 3 February 2021 (DA2020/0717). Since then, the proposal has undergone a number of modifications with the latest being MOD2023/0124 as of the writing of this TA which was approved on 28/03/2023. As part of the original DA2020/0717, a Traffic and Parking Assessment Report was prepared by Transport and Traffic Planning Associates (TTPA 2020) in support of the proposal.

As of the writing of this TA, the Bunnings development is currently under construction.

2 https://eservices.northernbeaches.nsw.gov.au/ePlanning/live/Public/XC.Track/SearchApplication.aspx?id=1839219

3 Existing Conditions

3.1 Site Context

The Site is legally known as Lot 102 in DP 1211755 and is currently zoned SP4 Enterprise zone under the Warringah LEP 2011 which allows for a range of uses including health services facilities, office premises, childcare centres and light industries. It is located in an existing/established business park with Wakehurst Parkway and existing developments to the west, Aquatic Drive to the south, Allambie Road to the east, and Warringah Road to the north. Developments beyond the business park includes R2 Low Density Residential, SP2 Infrastructure and RE1 Public Recreation land.

The Site was previously occupied by tenants from various industries with the majority of GLA tenanted by an IT company.

The Site is shown in its local context in **Figure 2**.

Figure 2: Site Location

3.2 Existing Land Use

Located within the Northern Beaches Council (the Council) Local Government Area (LGA), the future development is therefore subject to that Council's controls. Hence, the future development should adopt the Warringah Local Environmental Plan 2011 (Warringah LEP) which currently zones the Site as SP4 – Special Activities as shown in **Figure 3**.

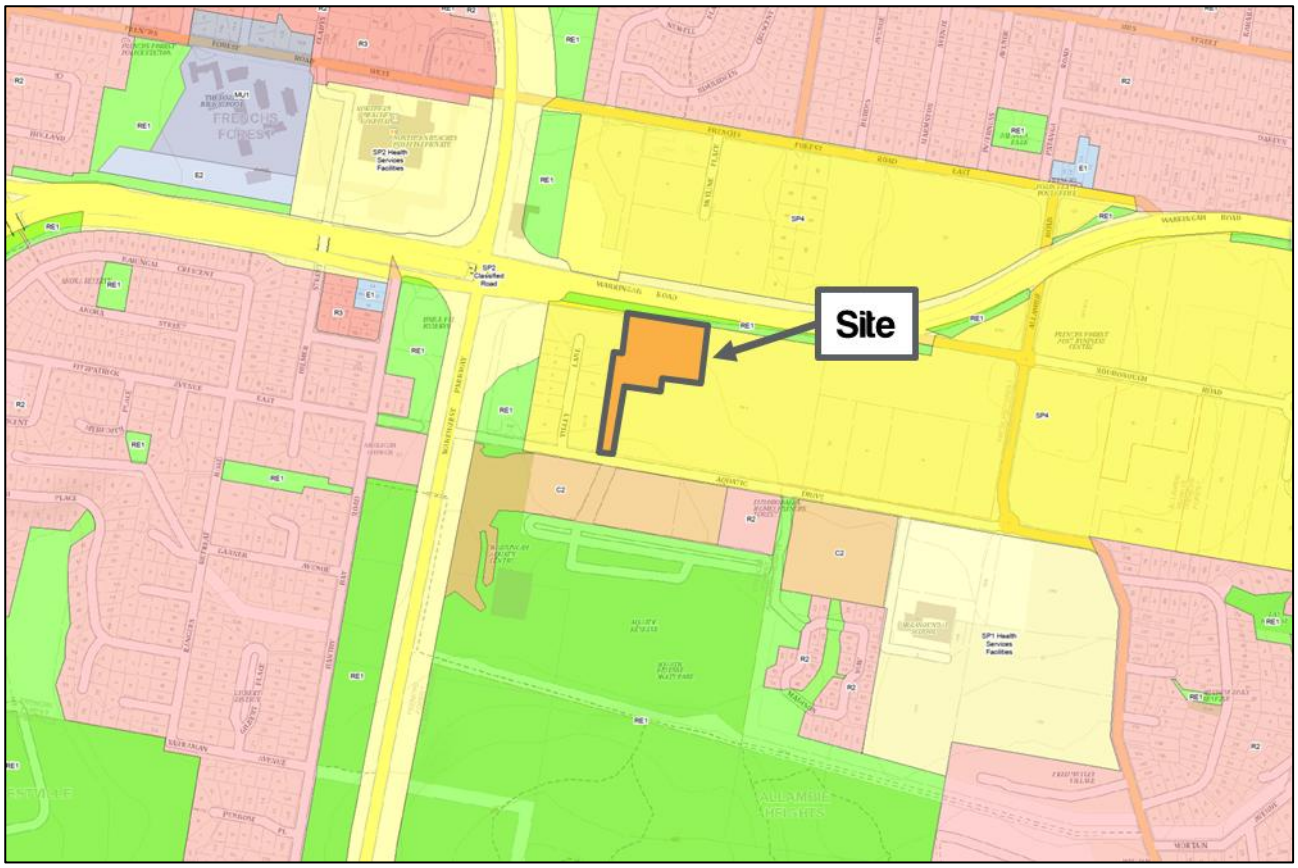


Figure 3: LEP and Zoning Map

3.3 Existing Site Yield

Based on advice provided by Goodman, the existing building currently sits on a site area of 15,460 m^2 and comprises of 4 levels. The existing development yield and site parking plan are shown in **Table 2** and **Figure 4** respectively.

Reference should be made to the following plan provided by Goodman:

- Reno Group, *Site Plan, 14 Aquatic Drive, Frenchs Forest*, Addition of Parking to Existing Business Park, Drawing No. DA-01, Revision A, dated 21 May 2012.

TABLE 2: EXISTING DEVELOPMENT YIELD

Land Use	GFA (m2)
Office	13,116
Warehouse	3,631
Retail	124
TOTAL BUILDING	**16,872**
Car parking	**523 spaces**

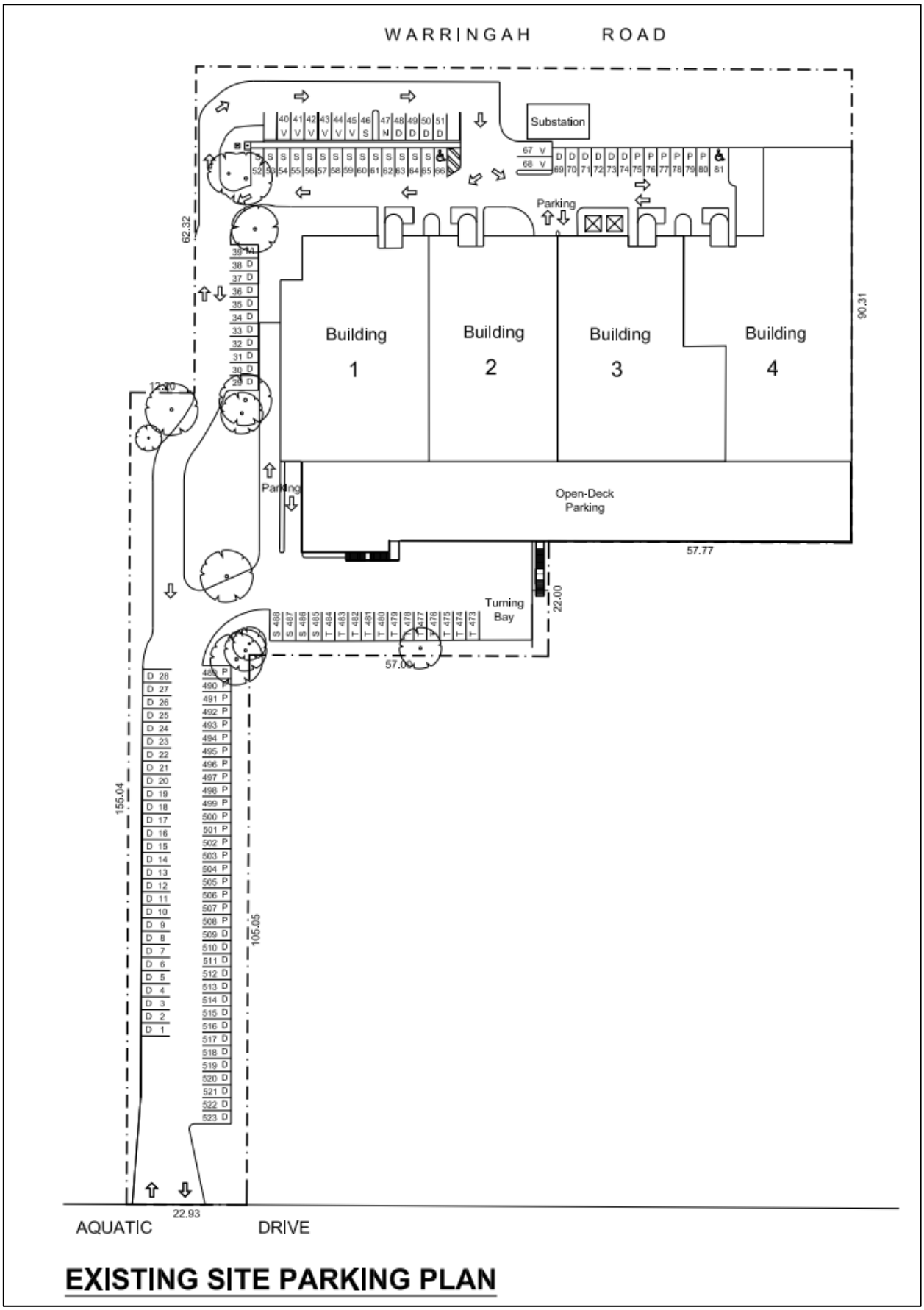


Figure 4: Existing Site Parking Plan

3.4 Existing Site Access

Currently, the Site has 1 access on Aquatic Drive as shown in **Figure 5**, which allows all turning manoeuvres.

Figure 5: Existing Site Vehicular Access

3.5 Road Network

The key roads within the vicinity of the Site are shown in **Figure 7** and summarised below:

TABLE 3: KEY ROADS

Road	Classification	Description	Speed limit
Wakehurst Parkway	State Road	Wakehurst Parkway is oriented north-south and is located to the west of the Site. It carries 1-2 lanes in each direction in the vicinity of the Site with dedicated turning lanes where necessary at signalised intersections. No on-street parking is permitted on both sides of the road.	60-80 km/h (Variable)
Warringah Road	State Road	Warringah Road is oriented east west and is located to the north of the Site. It carries 3-4 lanes in each direction in the vicinity of the Site with on/off ramps in the vicinity of the signalised intersection at Wakehurst Parkway. No on-street parking is permitted on both sides of the road.	70 km/h
Allambie Road	Regional Road	Allambie Road is oriented north south and is located to the east of the Site. It carries 2 lanes in each direction in the vicinity of the Site. No on-street parking is permitted on both sides of the road.	60 km/h
Aquatic Drive	Local Road	Aquatic Drive is oriented east west and forms the southern frontage of the Site. It carries 1 lane of traffic in each direction in the vicinity of the Site. On-street parking is permitted on both sides of the road, subject to signposted restrictions.	50 km/h

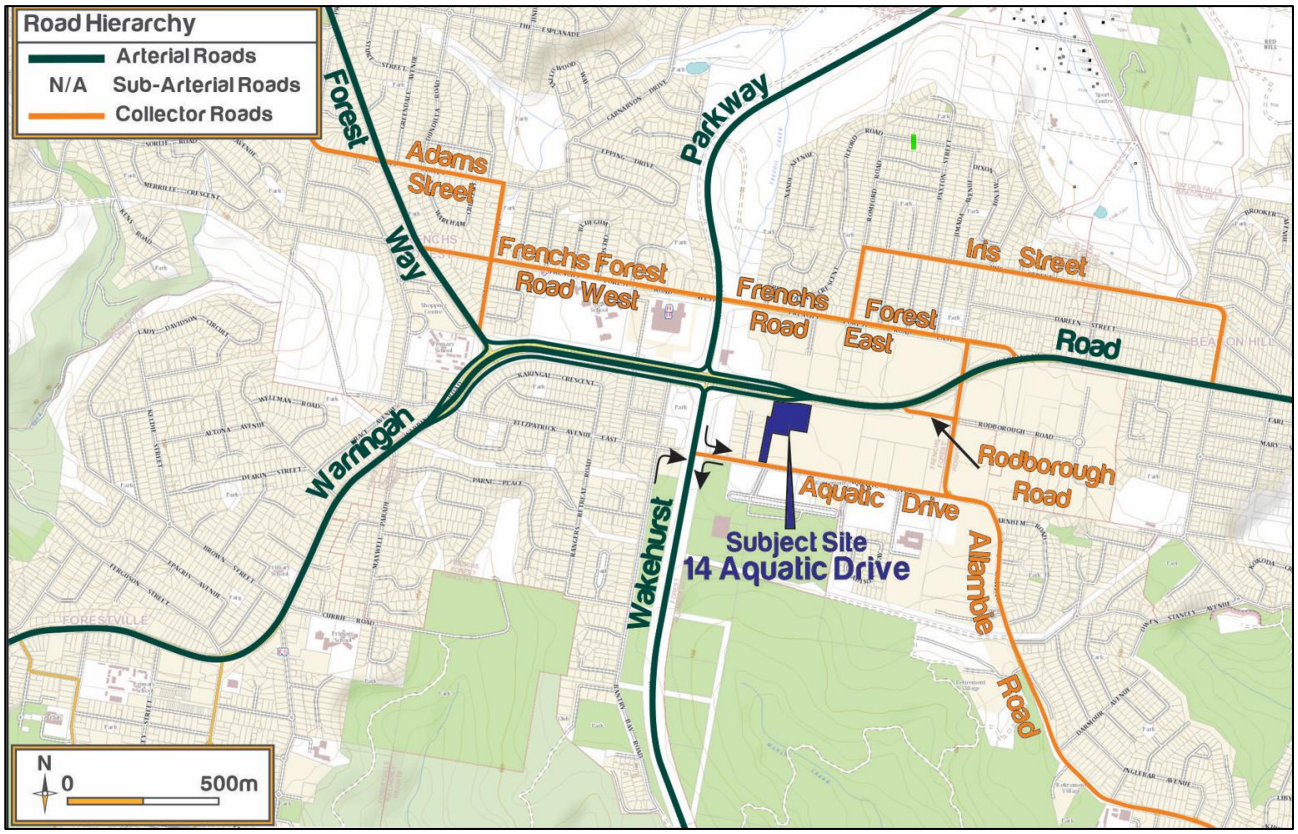


Figure 6: Road Hierarchy surrounding the Site

Figure 7: Key Intersections surrounding the Site

3.6 Crash Data Analysis

NSW Crash data is available for basic interrogation from the Transport for NSW, Centre for Road Safety website. A snapshot of the crashes near the Site is shown in **Figure 8**.

The majority of crashes occurred along Warringah Road with several crashes along Wakehurst Parkway. The crashes range from non-casualty to moderate injury crashes. With regard to the key intersections within the vicinity of the Site, the Warringah Road and Wakehurst Parkway intersection recorded the greatest number of crashes in the considered 5-year period as shown below.

Further to the above, it is noted that the proposed access driveway is in a prohibited location based on Figure 3.1 of AS2890.1:2004. However, noting that there is already an existing access driveway at the same location and recognising that there has been no crash history near the access (as far as we are aware), the proposed access driveway location can be deemed acceptable for the proposed development. Furthermore, Ason Group understand that the Site has no other means of access noting its frontage to a State Road and SEPP restrictions to obtain access along State Roads.

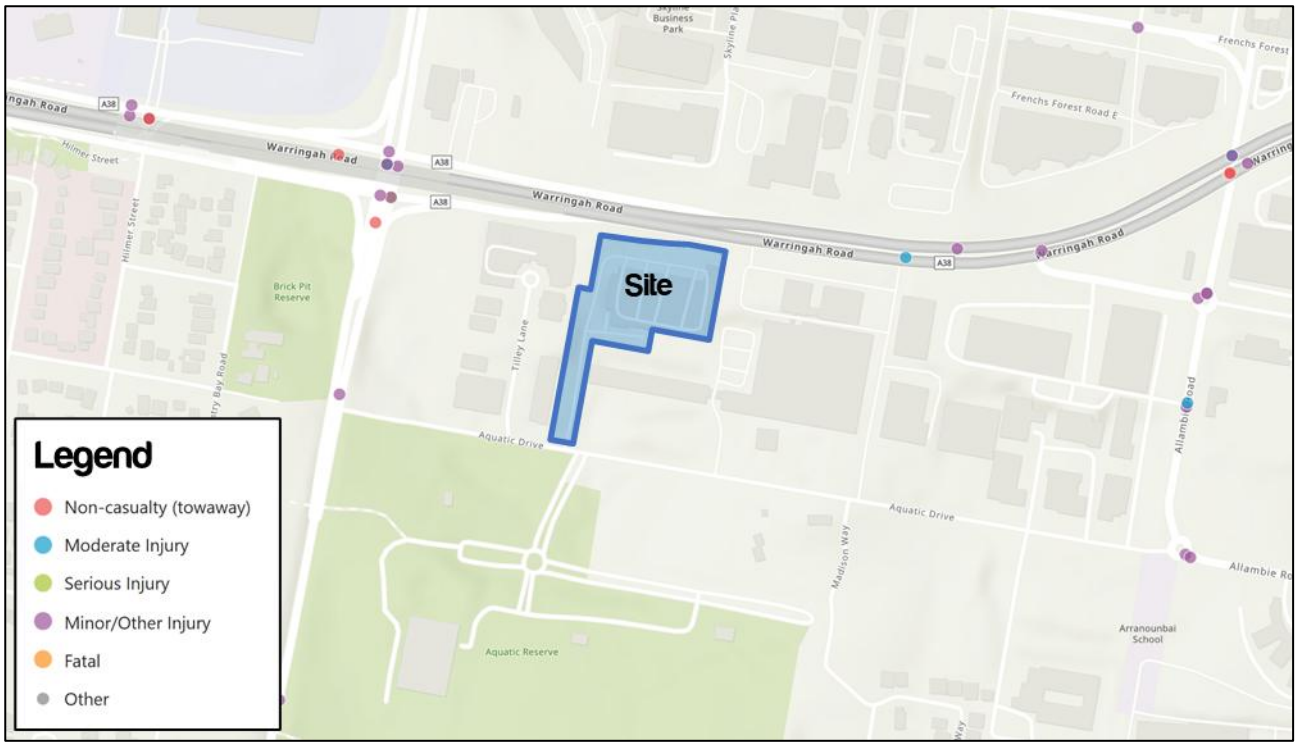


Figure 8: Crash Location and Type (2019-2023)

3.7 Approved Heavy Vehicle Routes

Approved heavy vehicle routes around the study area are illustrated in **Figure 9**.

Figure 9: Approved Heavy Vehicle Map (25/26m B-double Routes)

The National Heavy Vehicle Regulator (NHVR) currently identifies the western section of Warringah Road, the northern section of Wakehurst Parkway and Forest Way as 25/26m B-double truck routes without any travel conditions.

It can be seen however, that the southern section of Wakehurst Parkways and Aquatic Drive are not approved 25/26m B-double routes. It has been advised by the Client that the largest vehicles expected to access the Site are 8.8m Medium Rigid Vehicles (MRVs) and 12.5m Heavy Rigid Vehicles (HRV's). Notwithstanding, in the event the Site requires access by 26.0m B-Doubles, then an application to the NHVR will be required.

It is noted that there are load limits at the Aquatic Drive / Allambie Road roundabout intersection which restricts vehicles weighing 3-tonnes or over from approaching the roundabout from the northern approach of Allambie Road.

Up-to-date details regarding approved B-double routes can be obtained from the TfNSW web portal[3].

3.8 Public Transport

The Site is well serviced by local public transport infrastructure. The key train and bus services local to the Site are presented in **Figure 10** and summarised in the following sections.

3.8.1 Train Services

The *Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area* (Transport for NSW, December 2013) state that rail services influence the travel mode choices of areas within 800 metres walk (approximately 10 minutes) of a railway station. With reference to **Figure 10**, the closest station is Roseville Station on the T9 Northern line and T1 North Shore & Western line, which is approximately 6.5 km from the Site.

3.8.2 Bus Services

The *Integrated Public Transport Service Planning Guidelines* state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes) of a bus stop. Nearby bus stops that are within 400 metres from the Site include the Aquatic Drive opposite Madison Way stop which services bus route 142. This bus route provides connection between Allambie Heights and Manly and operates 7 days a week (approximately once every 30 minutes).

Other nearby bus stops that are within 400 metres from the Site includes the Wakehurst Parkway after Warringah Road stop which services bus route 141 which provides a connection between Austlink to Manly via Frenchs Forest and Seaforth.

In summary, the Site has adequate access to public transport services with focus on bus services with bus stops present within 400m walking distance to/ from the Site on the surrounding roads.

[3] https://roads-waterways.transport.nsw.gov.au/business-industry/heavy-vehicles/maps/restricted-access-vehicles-map/map/index.html

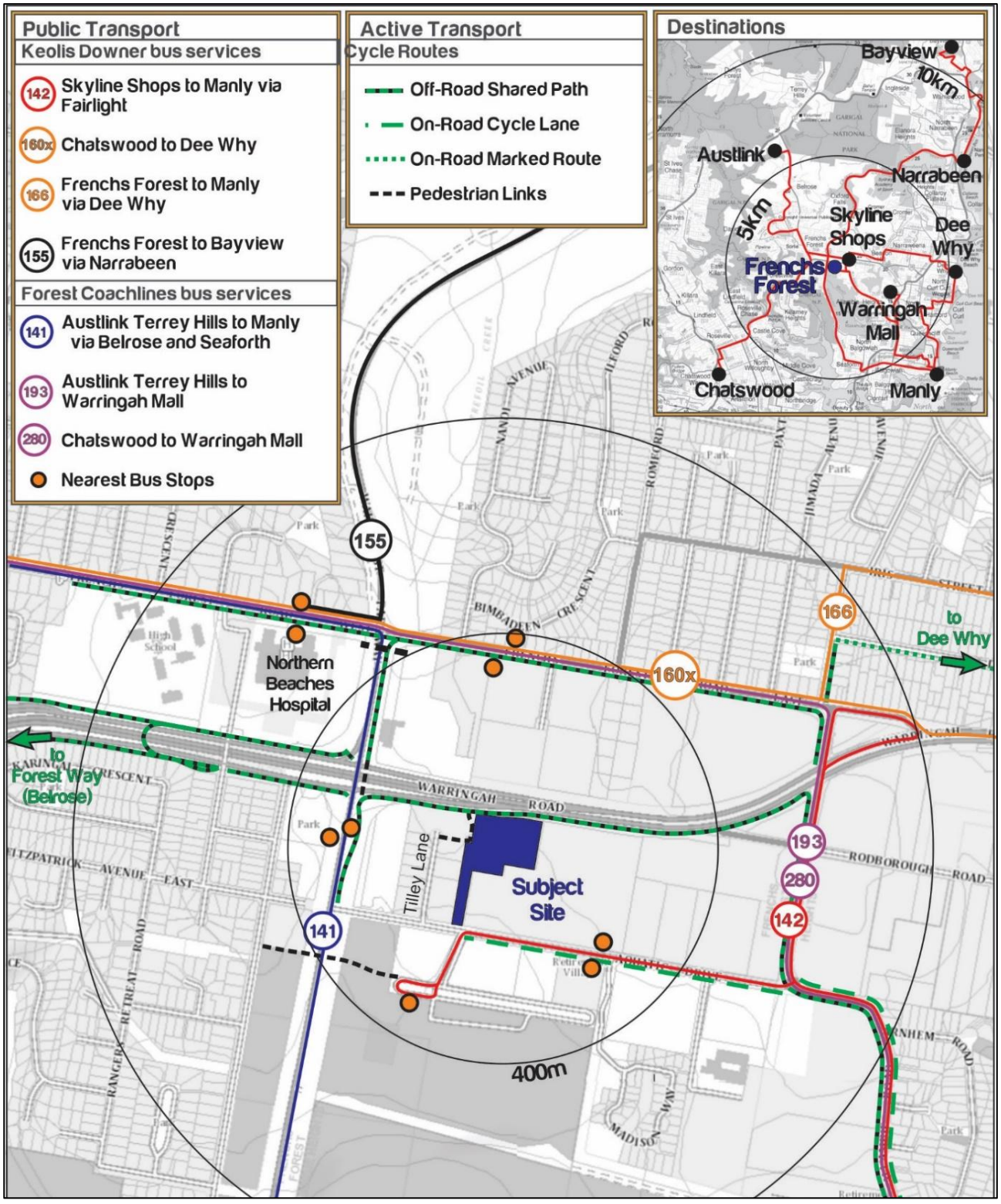


Figure 10: Public and Active Transport Network

3.9 Active Transport

3.9.1 Pedestrian Accessibility

The Site is well serviced by an extensive pedestrian network, with the key features as outlined below:

- Footpaths provided along both sides of Aquatic Drive, Allambie Road and Frenchs Forest Road, providing accessibility between several bus stops and the Site
- Signalised pedestrian crossings provided at the Wakehurst Parkway / Frenchs Forest Road and Warringah Road / Parkway intersections.

3.9.2 Cycle Routes

The Site is generally well-serviced with cycle routes within the Northern Beaches LGA. As identified in the *Northern Beaches Bike Plan Adopted July 2020* (Bike Plan), there is a well-connected mixture of sub-regional and local cycle routes. Existing and proposed bicycle routes surrounding the Site are presented in **Figure 11**.

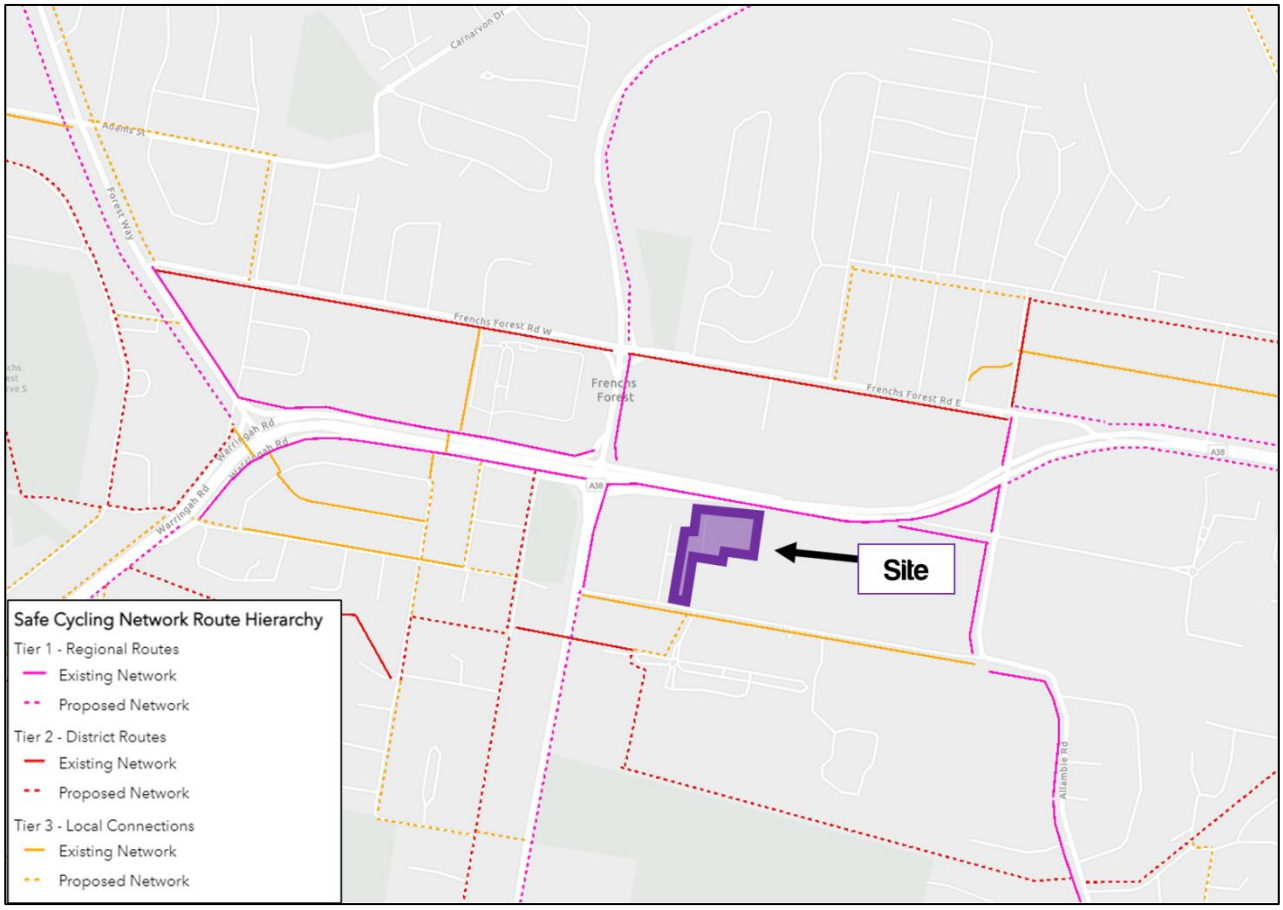


Figure 11: Cycling routes surrounding the Site

It is evident that the Site is well connected to the wider road network via active transport modes. Hence, the proposal will continue to support active transport corridors by providing a sufficient number of End of Trip facilities (EoTFs) and ensuring ease of access.

4 Description of the Proposal

4.1 Overview

The proposal is for the construction, fit out and operation of an industrial development involving:

- Demolition and removal of all existing buildings and structures;
- Construction of an industrial development providing 2 levels of light industrial tenancies with associated mezzanines and a self-storage facility on the ground floor level, with a total Gross Floor Area (GFA) of 11,798 m^2, consisting of:
  - Self-Storage: 4,501 m^2 GFA,
  - Warehouse: 4,529 m^2 GFA,
  - Mezzanine: 2,413 m^2 GFA,
  - Others: 356 m^2 GFA.
- Crossover and vehicular access from Aquatic Drive;
- 123 car parking spaces and eight (8) bicycle parking spaces;
- Associated landscaping and tree planting

Figure 12: Proposed Site Plan – Ground Floor

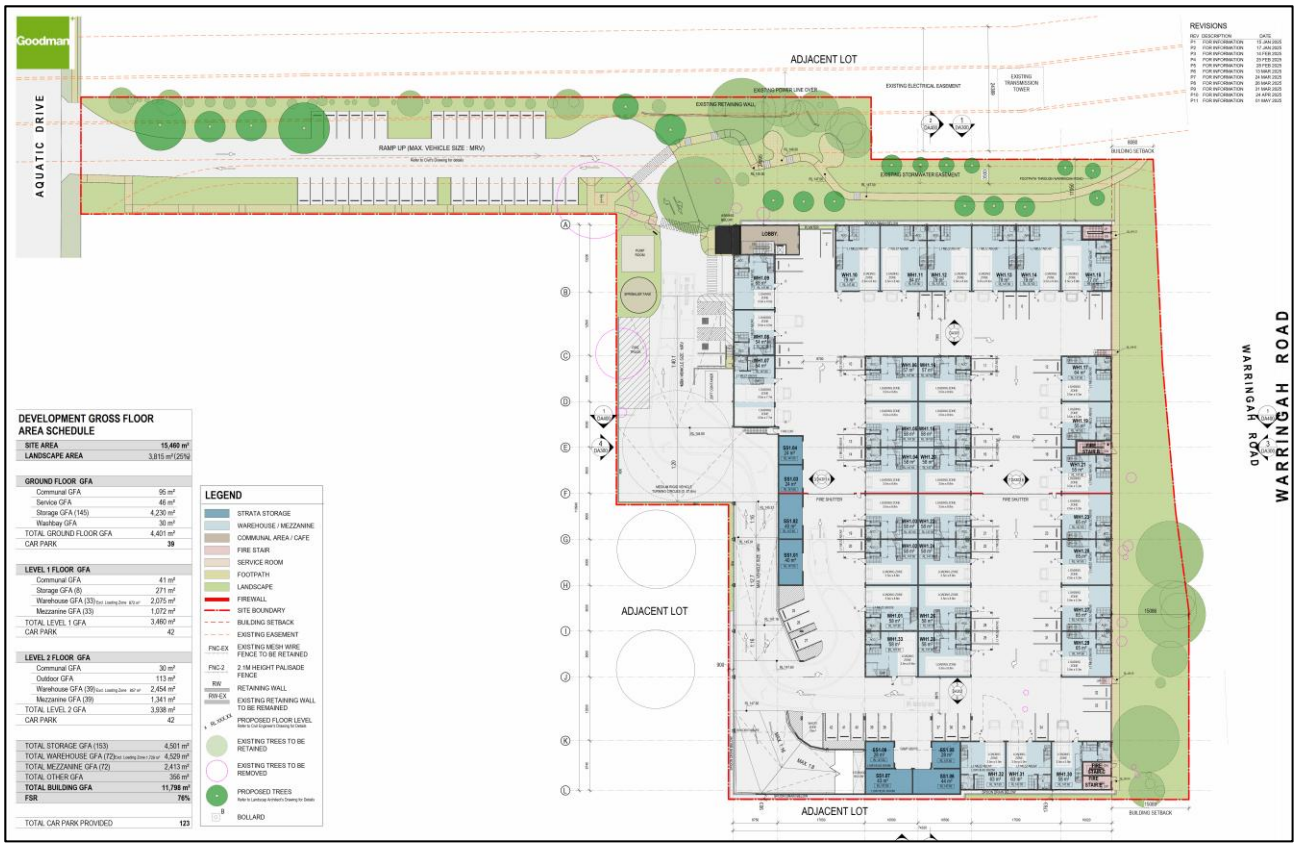


Figure 13: Proposed Site Plan – L1 Floor Plan

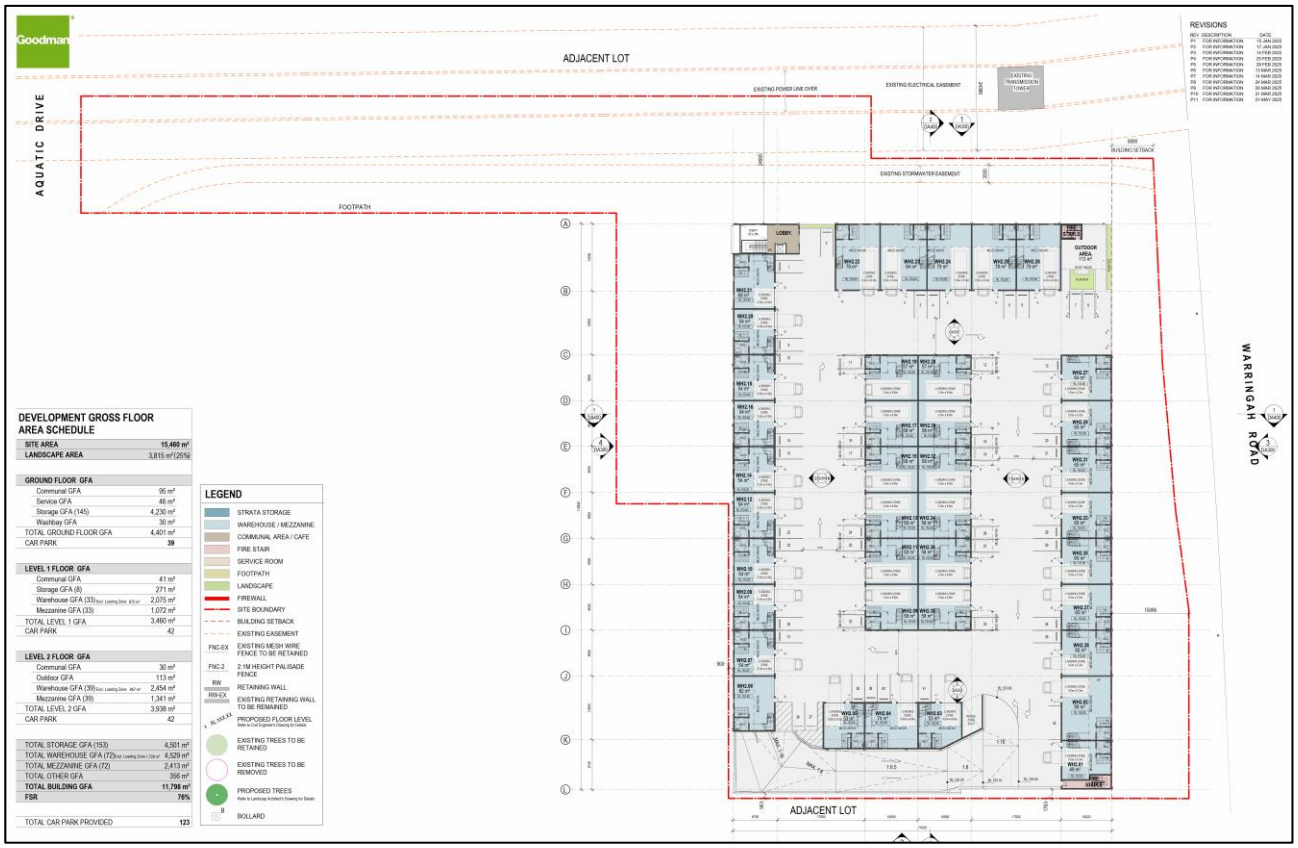


Figure 14: Proposed Site Plan – L2 Floor Plan

4.2 Proposed Vehicular Access

Access is proposed via the existing driveway on Aquatic Drive, as shown in **Figure 15**, which allows all turning manoeuvres.

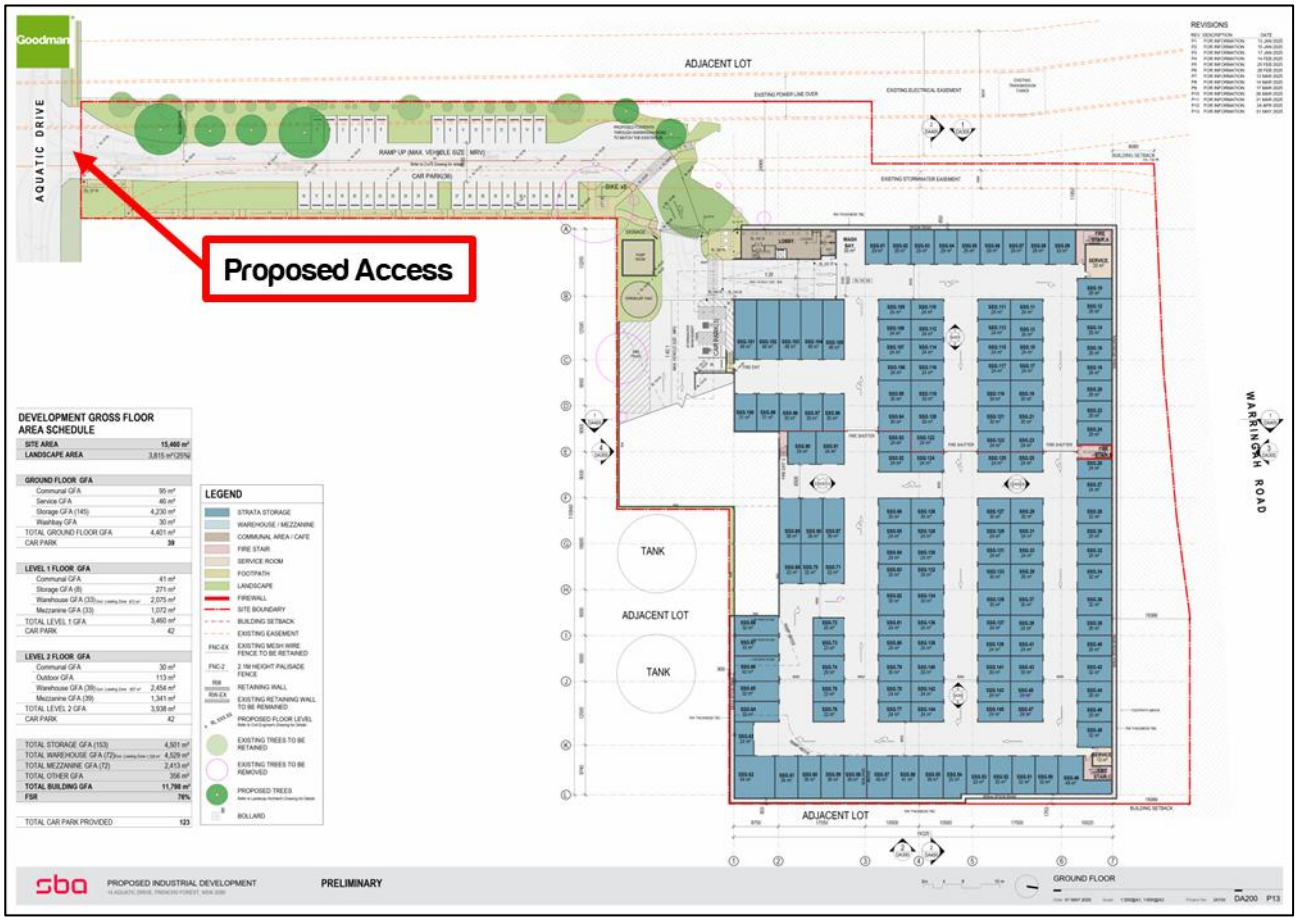


Figure 15: Proposed Site Vehicular Access

5 Parking Provisions

5.1 Car Parking

5.1.1 Car Parking Requirements – Warehouse & Office

Forming part of the Northern Beaches LGA, the Site is subject to the controls as outlined in Part H, Appendix 1 of the Warringah DCP 2011. Parking rates applicable to the development are shown below.

- **Warehouse**: 1.3 spaces per 100 m^2 GFA (including up to 20% of floor area as office space component. Office space component above 20% determined at office premises rate).
- **Office**: 1 space per 40m^2 GFA.

It is noted that the warehouse component of the development comprises 4,529m^2 GFA with 2,413m^2 GFA comprising mezzanine levels. The DCP stipulates that the warehouse parking rate can be applied for up to 20% of the office space floor area. Therefore, it is expected that the mezzanine level will be used as an office component therefore the warehouse parking rate has been applied to 20% of the office floor area.

It is noted that the warehouse component includes mezzanine levels. For the purpose of this assessment, it is assumed that the mezzanine level will be used as an ancillary office. This results in the office space component exceeding the 20% of the floor area for the warehouse component to which the office parking rate has been applied.

5.1.2 Car Parking Requirements – Self-Storage Facility

Reference is made to the Warringah DCP and neighbouring DCPs and it is noted that the DCPs do not specify a rate for self-storage facilities. As such, reference has been made to the *Parking and Traffic Study – Supporting the self-storage industry of Australia and New Zealand* document prepared by Stantec.

The study undertaken by Stantec involved 66 self storage facilities across Australia and provides weekday parking requirements for various scales of self storage facilities. The study provides a formula which calculates the probability that an arbitrary customer will have to "wait" at a carpark given the arrival rate of customers, the length of duration and the number of carparks. The estimate of the "current" arrival rate and duration of stay is used to calculate the number of car parks required. This goes through an iterative process until the percentage of time that an arrival will need to wait for a car park is acceptable. The study states that the number of car parks can be increased until the percentage of wait time becomes zero and this is represented as the 99.9 percentile demand calculation and provision of any additional car parking has no mathematical justification.

It is noted that this study is currently being used for self storage facility developments within the wider Sydney region therefore is considered appropriate to be adopted for the purpose of this application. The study recommends the following parking provisions:

TABLE 4: RECOMMENDED PARKING PROVISIONS PER GFA

	Under 3,000m^2	3,000m^2 – 6,000m^2	6,000m^2 & Over
95th Percentile	5	7	7
99.5th Percentile	8	10	11

For the purpose of a conservative assessment, the proposal has adopted the 99.5th percentile parking requirement to ensure there is sufficient parking space for the proposed self-storage facility.

5.1.3 Proposed Car Parking Provision

Based on the above, the minimum number of parking spaces required are provided in **Table 5**.

TABLE 5: CAR PARKING REQUIREMENTS (WARRINGAH DCP)

Land Use	Proposed GFA (m^2)	Requirement	Total Requirement	Provision
Self-Storage	4,501	7	120	123
Warehouse	4,529	59		
Mezzanine (Warehouse)	483	6		
Mezzanine (Office)	1,930	48		

Note: 1) By way of a more conservative assessment, it has been assumed that the Mezzanine spaces are equivalent to ancillary offices for the warehouse tenancies.

2) 20% of the mezzanine GFA has been considered under a warehouse parking rate

With reference to the table above, the total parking requirement for the proposed development is 120 spaces. As such, it is evident that the proposed provision of 123 spaces will meet the car parking requirements of the Site.

5.2 Accessible Parking

The Warringah DCP does not specify accessible parking rates. However, it states that all applicants should consider the *Disability Discrimination Act 1992* which suggests adopting the rates outlined in the *Disability (Access to Premises – Buildings) Standards 2010* (Access to Premises Standards).

As such, Table D3.5 of the Access to Premises Standards provides the following rates for a building in Class 7b:

- Class 7: 1 space for every 100 car parking spaces or part thereof.

Hence, the application of the above rates to the proposed provision of 123 car spaces result in a total of 2 accessible space required. The proposal provides 2 accessible spaces and hence complies with the Access to Premises Standards and the Warringah DCP.

5.3 Bicycle Parking

The rates for bicycle parking specifically for self-storage facility and warehouse land uses are not explicitly stated in the Warringah DCP. It is noted that the Warringah DCP also refers to the NSW Planning Guidelines for Walking and Cycling (2004) document, which recommends more suitable rates to the proposed development as follows:

- Staff Bicycle Parking Requirement: 3 to 5% of staff number
- Visitor Bicycle Parking Requirement: 5 to 10% of staff number

In lieu of site-specific staff numbers, reference is made to the Guide to Traffic Generating Developments version 2.2 (RMS Guide) section 5.11.2, which specifies that the mean floor area per employee at the warehouses surveyed by the RTA was 226m^2 per employee.

It is noted that there is no such reference in the TfNSW Guide to Transport Impact Assessment – Technical guidance for transport practitioners V1.1 2024 (GTIA 2024) and as such, this above document has been referenced. Considering the above, a summary of the bicycle parking requirement is provided in the table below.

TABLE 6: BICYCLE PARKING REQUIREMENTS

Land Use	Proposed GFA (m^2)	Estimated Staff Number	Staff Bicycle Parking	Visitor Bicycle Parking	Total Bicycle Parking
Self-Storage	4,501	20	1	1-2	2-3
Warehouse	4,529	20	1	1-2	2-3
Mezzanine	2,413	11	1	1	2
Total		**51**	**3**	**3-5**	**6-8**

Note: 1) By way of a more conservative assessment, the self-storage and mezzanine spaces are assumed to have the same mean floor area per employee as warehouses.

Considering the table above, it is recommended that a minimum of 6 bicycle parking spaces be provided. The proposed development includes a total of 8 bicycle parking spaces, which meets the required provision.

5.4 End of Trip Facilities

End of trip facilities must also be provided for new buildings and for alterations or additions to existing buildings. Section C3(A) of the Warringah DCP 2011 requires the following end of trip facilities (EoTF) to be provided for new developments:

- Shower cubicle provided at rates of 1 cubicle per 7 required bicycle parking spaces.
- Lockers to be provided at the rate of 1 clothes locker per required bicycle parking space.

As such, the following EoTF are to be provided on the basis of the provision of 10 bicycle parking spaces:

- 2 shower cubicles
- 8 lockers

It is expected that the Proposal can readily provide EoTF to meet the above requirements and would be provided prior to the CC phase of the project.

5.5 Motorcycle Parking

The Warringah DCP does not specify a requirement for motorcycle parking. As such, provisions for motorcycle parking spaces are not required, and have not been provided.

5.6 Summary

It is expected that the proposal would meet the parking requirements, hence, the proposed development provision of the Site is supportable on parking grounds.

6 Traffic Assessment

6.1 Assessment Methodology

Ason Group has been informed that the Site is now vacant; however, it was previously occupied by tenants from various industries, with the majority of the GLA leased by an IT company.

The Site currently comprises an established business park that includes office, warehouse, and retail land uses. Therefore, the traffic generation based on the existing land use and yield is compared with the proposed development to assess its potential traffic impacts.

6.2 Trip Rates

6.2.1 Trip Generation – Warehouse & Office

Reference is made to the *TfNSW Guide to Transport Impact Assessment – Technical guidance for transport practitioners (GTIA 2024)* specifically for the traffic generation rates for Large Format Warehousing and Office Blocks. The traffic generation rates are as follows:

- Large Format Warehousing (0 – 10,000m^2 GFA):
  - AM Peak: 0.5 vehicle trips/100m^2 GFA
  - Daily: 4 vehicle trips/100m^2 GFA
- Office Blocks:
  - AM Peak: 1.69 vehicle trips/100m^2 GFA
  - PM Peak: 1.20 vehicle trips/100m^2 GFA
  - Daily: 11.29 vehicle trips/100m^2 GFA

6.2.2 Trip Generation – Self-Storage Facility

It is noted that the GTIA 2024 does not specify a rate for self-storage facilities. As such, reference is again made to the *Stantec Parking and Traffic Study* which recommends trip generation rates in the following terms:

- Self-Storage Facility (3,000 to 6,000m^2 GFA):
  - Peak: 8.9 trips
  - Daily: 95.9 trips

6.3 Traffic Generation – Existing Yield

Utilising the trip rates outlined above, **Table 7** provides a summary of the traffic generation of the Site with existing yield.

TABLE 7: TRAFFIC GENERATION – EXISTING YIELD

Land Use	GFA (m^2)	AM (veh/hr)	PM (veh/hr)	Daily (veh/day)
Office	13,240[1]	224	159	1,495
Warehouse	3,631	18	18	145
Total Building	**16,871**	**242**	**177**	**1,640**

Note: 1) Includes the 124m^2 GFA of the retail land use.

6.4 Traffic Generation – Proposed Yield

Utilising the adopted trip rates, **Table 8** provides a summary of the traffic generation of the Site with proposed yield.

TABLE 8: TRAFFIC GENERATION – PROPOSED YIELD

Land Use	GFA (m^2)	AM (veh/hr)	PM (veh/hr)	Daily (veh/day)
Self-Storage	4,501	9	9	96
Warehouse	4,885[1]	24	24	195
Mezzanine (Office)	2,413	41	29	272
Total	**11,798**	**74**	**62**	**563**

Note: 1) By way of a more conservative assessment, the "Others" GFA has been assumed to be equivalent to large format warehousing and included in the warehouse GFA.

6.5 Traffic Impact

Table 9 provides a comparative assessment of traffic generation between the existing development and this Proposal.

TABLE 9: TRAFFIC GENERATION (EXISTING VS PROPOSED)

	Overall GFA (m^2)	AM (veh/hr)	PM (veh/hr)	Daily (veh/day)
Existing	16,871	242	177	1,640
Proposed	11,798	74	62	563
Net Change (Proposed – Existing)	**-5,073**	**-168**	**-115**	**-1,077**

Based on this assessment, the proposed development is expected to generate 74 trips during the AM peak and 62 trips during the PM peak, representing a net reduction of 168 trips in the AM peak and 115 trips in the PM peak compared to the traffic generation of the Site with existing yield.

It can be concluded that the trips associated with the proposed development will not have a material impact on the surrounding road network beyond that of the existing established development. Therefore, the proposed development is considered supportable from a traffic perspective.

7 Design Commentary

7.1 Relevant Design Standards

The Site's access, car park and loading areas have been generally designed with reference to the following Australian Standards:

- Australian Standard 2890.1:2004: Parking Facilities - Off Street Car Parking (AS 2890.1:2004).
- Australian Standard 2890.2:2018 Parking Facilities - Off Street Commercial Vehicle Facilities (AS 2890.2:2018).
- Australian Standard 2890.6:2022 Parking Facilities - Off Street Parking for People with Disabilities (AS 2890.6:2022).
- Fire + Rescue NSW, Fire Safety Guideline: Access for fire brigade vehicles and firefighters, Version 05, 4 October 2019 (NSW Fire Safety Guidelines).

It is expected that any detailed construction drawings in relation to any modified areas of the car park or Site access would comply with these Standards. Furthermore, compliance with the above Standards would be expected to form a standard Condition of Consent prior to any development approval. Detailed Design will be undertaken based on relevant Australian Standards (AS2890 series) as part of the Construction Certificate (CC).

7.2 Design Vehicles

The proposed access driveways on Aquatic Drive, circulation roadways, ramps, and loading bays have been designed to accommodate access and circulation requirements for vehicles up to 8.8m Medium Rigid Vehicle (MRV).

The 12.5m Heavy Rigid Vehicle (HRV) has been adopted for the design of fire access trails in accordance with the NSW Fire + Rescue Guidelines.

The proposed car parking area has been designed to accommodate B99 Vehicles as per AS2890.1:2004.

Swept path assessment has been prepared and included in **Appendix A**, demonstrating the design commentary and suitability of the proposed site arrangement to accommodate the nominated design vehicles.

7.3 Access Driveways

All access driveways shall be designed with reference to AS 2890.1:2004, AS 2890.2:2018, and any other relevant published road design / road engineering guidelines.

It is anticipated that full access driveway design compliance with AS 2890.1:2004 and AS 2890.2:2018 would form a standard Condition of Consent further to approval.

7.4 Parking Areas

All parking areas, including access aisles and parking modules shall be designed with reference to AS 2890.1:2004 and AS 2890.6:2022. It is anticipated that full parking area design compliance with the above AS2890 series would form a standard Condition of Consent further to approval.

7.5 Service Areas

All service areas shall be designed with reference to AS 2890.2:2018 and again provide for the movement of vehicles up to 8.8m MRVs. It is anticipated that service area design compliance with AS 2890.2:2018 would form a standard Condition of Consent further to approval.

8 Preliminary Construction Traffic Management Plan

8.1 Overview

This Preliminary Construction Traffic Management Plan (CTMP) has been prepared in advance of development approval and, as such, relevant conditions of consent have not yet been provided. Notwithstanding, as is standard practice, it is expected that the final CTMP shall demonstrate the proposed management of the impact in relation to construction traffic addressing the following:

- Assessment of cumulative impacts associated with other construction activities (if any).
- Assessment of road safety at key intersections and locations to be subject to heavy vehicle construction traffic movements and high pedestrian activity,
- Details of construction program detailing the anticipated construction duration and highlighting significant and milestone stages and events during the construction process,
- Anticipated peak hour and daily construction vehicle movements to and from the site,
- On-site car parking and access arrangements of construction vehicles, construction workers to and from the site, emergency vehicles and service vehicle; and
- Details of temporary cycling and pedestrian access during construction.

Having regard for the above, the purpose of this report is to establish the broad traffic principles for construction that would minimise traffic impacts on the surrounding road network, ensure safety and efficiency for workers, pedestrians, and road users, and provide information regarding construction vehicle access routes and any changed road conditions (if applicable).

The proposed works consist of the following components of works considered as part of this Preliminary CTMP.

- Bulk earthworks and site preparation
- Construction works associated with the development of the proposed warehouse facility
- Construction works associated with the access driveway to Aquatic Drive

It is expected that this plan will be updated should any necessary changes to the currently proposed arrangements arise in the future. Any special events (if required) would be subject to a separate request for a specific permit not covered by this report. Please note, Ason Group is responsible for the preparation of this CTMP only and not for its implementation, which is the responsibility of the Contractor.

8.1.1 Authority Requirements

Following approval of future applications relation to the Site, it is expected that this CTMP shall be updated to include a comprehensive list of requirements for later stages of construction.

8.2 Overview of Works

8.2.1 Staging and Duration of Work

Recognising that this CTMP has been prepared to support a DA, detailed construction staging and the duration of each stage of works will be determined post approval as part of the CC phase inputs.

8.2.2 Hours of Operation

The type of work being undertaken may vary depending on the phase of construction and associated activities and includes both construction and design personnel. However, all works will be in accordance with standard construction working hours, which are likely to be as follows:

- Monday to Friday (other than Public Holidays): 7:00AM – 6:00PM.
- Saturday: 7:00AM – 3:00PM.
- Sunday and Public Holidays: No works to be undertaken.

Any work to be undertaken outside of the standard construction hours will be required to obtain an Out of Hours (OOH) approval. Any such works would necessarily be undertaken in accordance with the appropriate OOH protocols and approval processes.

8.2.3 Proposed Construction Site Access

Access is proposed to be provided to all construction vehicles via the existing crossover on Aquatic Drive. The routes shown are to be utilised by all construction vehicles travelling to and from the site and represents the shortest route between the local and regional road network, minimising the impacts of the construction. An on-site turning area shall be provided within the future car park area so that movement to/from the site is undertaken in a forward direction, at all times.

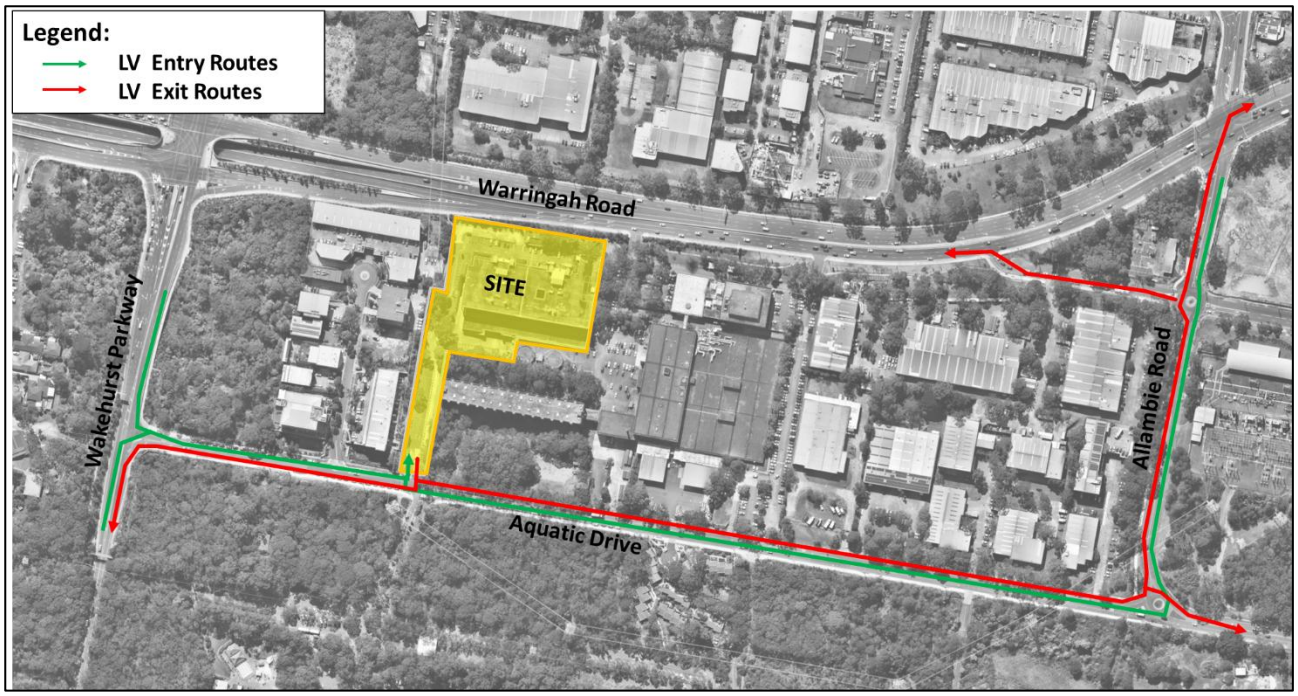


Figure 16: Construction Vehicle Routes (Light Vehicles)

Figure 17: Construction Vehicle Routes (Heavy Vehicles)

Any vehicles required to access the Site that do not comply with the mass, dimension or operating requirements as specified by the National Heavy Vehicle Regulator (NHVR) will need to apply for a class 1 Oversize Over-mass (OSOM) permit. Permits may be issued with conditional restrictions that limit the time and days that these vehicles are allowed to access the Site. Additionally, specific Traffic Guidance Schemes (TGS) may be required to facilitate safe manoeuvring of these vehicles.

8.2.4 Emergency Vehicle Access

Emergency vehicle access to and from the Site will be available at all times while the Site is occupied by construction workers. This process would be implemented through emergency protocols on the site which will be developed by the Contractor.

8.2.5 Fencing Requirements

Temporary exclusion fencing (chain mesh fencing) will be erected along the entire boundary of the Site and will be maintained for the duration of the construction program.

The fencing is to ensure unauthorised persons are kept out of the Site. Site access gates would be provided within Aquatic Drive and will be closed at all times outside of the permitted construction hours. Any control points—operational during work hours—shall be sufficiently setback so that no queuing will occur on-street.

8.2.6 Materials Handling

Handling of all materials throughout the construction shall adhere to the following.

- It is proposed that all material loading will occur within the construction site boundary.
- No loading is proposed to occur outside of the provisioned areas.
- Equipment, materials, and waste will be kept within the construction site boundary.

All materials handling shall be undertaken off public roadways, however in the event materials handling is required from a public roadway, then prior approval shall be sought and obtained from the relevant Authorities. If required Works Zones may be required.

8.3 Assessment of Construction Traffic Impacts

8.3.1 Construction Traffic

The traffic generation outlined within **Section 6.4** provides the following relevant figures regarding future operational traffic volumes associated with the Site.

- AM Peak 74 movements per hour (movements, in & out combined)
- PM Peak 62 movements per hour (movements, in & out combined)

For the purpose of this report, 1 truck is equal to 1 inbound movement plus 1 outbound movement which equals to a total of 2 movements.

Construction traffic generation is not expected to exceed the operational traffic generation of the Proposal, however further discussion is outlined below.

8.3.2 Anticipated Construction Vehicle Traffic Generation

Noting that construction staging has not been addressed within this Preliminary CTMP, construction vehicle traffic generation can also not be assessed in detail at this time.

LV traffic generation would generally be associated with staff movements to and from the Site. Staff would be comprised of project managers, various trades, and general construction employees. LV construction trips are expected to arrive in the morning and depart in the evening. Noting the typical construction work hours, the peak periods are likely to occur outside of traditional road network peak periods.

The anticipated HV movements generated by the construction of the Site has been estimated having consideration of the likely requirements for construction plant, equipment, and haulage.

It is expected that construction traffic will be substantially less than the future operational traffic and will therefore not have any unacceptable impacts on the surrounding road network more broadly. In the event that construction volumes are in excess of the volumes outlined above in **Section 8.3.1**, then a separate construction impact assessment shall be undertaken.

8.3.3 Road Safety

Heavy vehicles will be travelling along approved RAV routes which would mitigate road safety impacts along local roads and heavily pedestrianised areas. Traffic Guidance Schemes for the site access will be designed to minimise vehicle, pedestrian and cyclists impacts along Aquatic Drive, as far as practicable.

8.3.4 Vehicle Management Principles

All vehicles transporting loose materials will have the entire load covered and/or secured to prevent any large items, excess dust or dirt particles depositing onto the roadway during travel to and from the site. Drivers are to be familiar with the Driver Code of Conduct before attending the Site.

All subcontractors must be inducted by the Contractor to ensure that the procedures are met for all vehicles entering and exiting the construction site. The Head Contractor will monitor the roads leading to and from the site and take all necessary steps to rectify any road deposits caused by site vehicles.

Vehicle movements to, from and within the Site shall do so in a manner, which does not create unreasonable or unnecessary noise or vibration. No tracked vehicles will be permitted or required on any paved roads. Public roads and access points shall not be obstructed by any materials, vehicles, refuse skips or the like, under any circumstances.

8.3.5 Worker Induction

All workers and subcontractors engaged on-site would be required to complete a site induction. The induction should include permitted access routes to and from the construction site for all vehicles, as well as standard environmental, work, health, and safety (WHS), driver protocols and emergency procedures.

Any workers required to undertake works or traffic control within the public domain would be suitably trained and covered by adequate and appropriate insurances.

8.3.6 Construction Staff Parking

A small amount of on-site parking for key contractors and staff is expected to be provided throughout the construction works. The number and location of this temporary on-site car parking is expected to change throughout the various construction phases, depending on the surplus area available not required for truck loading and turning areas.

It is noted the Site is within 400m of various bus stops, therefore the use of public transport and carpooling will be actively encouraged to reduce the reliance on private vehicles and minimise parking demands.

Should parking be not available for specific stages of works, it is the incumbent contractor's responsibility to prepare relevant plan and documentation to ensure contractor parking demand and associated management measures are documented, implemented, continually monitored and managed.

8.4 Traffic Control

8.4.1 Traffic Guidance Schemes

Any Traffic Guidance Scheme (TGS's) associated risk assessment, consultation schedules, TGS verification checklist, and inspection checklists shall be prepared by an accredited person, in accordance with the TfNSW Traffic Control at Worksites Manual (Issue 6.1) and AS1742.3:2019.

All TGSs involving signage or impacts to public roads shall be approved by the Council and/or Traffic Management Centre (TMC), prior to the works for which they relate (depending on the road involved). These TGS's shall be updated to respond to any changes to prevailing traffic conditions throughout the life of the works.

With regard to the proposed temporary access road, a site-specific TGS would be implemented for the duration of the works. A copy of all approved TGSs shall be kept on-site for reference at all times.

8.4.2 Authorised Traffic Controller

An authorised Traffic Controller is to be present on-site throughout the construction stage of the project. Responsibilities include:

- Supervision of all construction vehicle movements into and out of site at all times,
- Supervision of all loading and unloading of construction materials during the deliveries in the construction phase of the project, and
- Pedestrian management, to ensure that adverse conflicts between vehicle movements and pedestrians do not occur, while maintaining radio communication with construction vehicles at all times.

8.4.3 Road Occupancy

For any works that will impact the traffic flows on the external road network, a permit will need to be obtained from the relevant road authority (Council and / or TfNSW) by the Contractor.

At all times, two-way traffic shall be maintained along Aquatic Drive. Any works within or affecting (e.g., signage within) Aquatic Drive shall only be undertaken in accordance with relevant TGS developed by an accredited person that has relevant Prepare Work Zone Traffic Management Plan accreditation.

All TGS shall be approved by TfNSW prior to commencement of any works. The Contractor shall adhere to any restrictions imposed by TfNSW (or Council) in the granting of those Road Occupancy Licenses (ROLs).

8.5 Monitoring & Communication Strategies

8.5.1 Development of a Monitoring Program

The development of a program to monitor the effectiveness of this CTMP shall be established by the lead contractor. It is not anticipated that the monitoring of the processes will have any material cost implications.

This CTMP shall be subject to ongoing review and will be updated accordingly. Regular reviews will be undertaken by the on-site coordinator. As a minimum, review of the CTMP shall occur monthly, however a weekly review would be preferred.

- All and any reviews undertaken should be documented, however key considerations regarding the review of the CTMP shall be:
  - Tracking deliveries against the estimated volumes.
  - To identify any shortfalls and develop an updated action plan to address issues that may arise during construction (Parking and access issues)
  - To ensure TGS are updated (if necessary) by “Prepare a Work Zone Traffic Management Plan” card holders to ensure they remain consistent with the set-up on-site.
  - Regular checks undertaken to ensure all loads are leaving site covered as outlined within this CTMP

8.5.2 Communications Strategies

A Communications Strategy shall be established by the Project Manager for implementation throughout the construction works; this strategy will outline the most effective communication methods to ensure adequate information within the community and assist the Project Team to ensure the construction works have minimal disruption on the road network. The Communications Strategy will include:

- The erection of appropriate signage providing advanced notice of works and any traffic control measures to be implemented.
- Written notices to surrounding landowners (and tenants) likely to be directly affected by the works, prior to commencement.

Ongoing communication is also required so that all stakeholders are kept up to date of works and potential impacts.

9 Preliminary Green Travel Plan

9.1 Introduction

9.1.1 Context

This Green Travel Plan (GTP) has been prepared by Ason Group to accompany a Development Application (DA) for a proposed light industrial (strata) & storage development located at 14 Aquatic Drive, Frenchs Forest (the Site).

Normally, this is required to support a Development Application or post-approval stage of development and therefore premature at the time of this application. Nevertheless, this plan has been prepared to reinforce Goodman's commitment towards sustainable development.

Recognising the Proposal is in its early stages, the purpose of this GTP is to outline the overarching requirements for a future GTP. Noting the proposed use of the Site, the focus of the future GTP will be to effect change in staff travel to and from the Site.

It is anticipated that a Condition of Consent would apply to any DA approval, requiring the implementation of the final GTP prior to occupation of the development.

Preparation of the GTP will assist in:

- Removing barriers to active travel for all Site employees and visitors; and
- Maximising the number of people who walk, cycle or utilise public or active transport to and from the Site.

This GTP is intended to develop a package of site-specific measures to promote and maximise the use of sustainable travel modes, including walking, cycling, public transport and car sharing. In this regard, this plan sets out objectives and strategies to assist the Council in achieving its goal to improve sustainability. These targets are to be realistic but ambitious enough to initiate substantiative behavioural change to achieve the desired outcomes.

As a 'living' document, this GTP should be updated regularly as part of an ongoing review to ensure it remains relevant and reflective of current conditions.

9.1.2 Goals

This GTP has specifically been prepared to achieve the following key goals:

- Identify objectives and modes share targets (i.e., site and land use specific, measurable, and achievable and timeframes for implementation) to define the direction and purpose of the future GTP;
- Suggest specific tools and actions to help achieve the objectives and mode share targets;
- Suggest measures to promote and support the implementation of the GTP, including financial and human resource requirements, roles and responsibilities for relevant employees involved in the implementation of the future GTP;
- Suggest a methodology and monitoring/review program to measure the effectiveness of the objectives and mode share targets of the future GTP, including the frequency of monitoring and the requirement for travel surveys to identify travel behaviours at appropriate times.

9.1.3 Objectives of GTP

Underpinning this GTP comprises a package of measures which could be adopted and designed to address the specific travel needs of the Site. In this regard, the overall intention is to encourage and facilitate the use of alternative and sustainable modes of transport and to reduce single-occupancy car travel for journeys to and from the Site.

The primary objectives of the future GTP will be to:

- Reduce the environmental footprint of the Site.
- Set future staff travel mode share targets.
- Improve access, amenity, convenience, and safety of sustainable transport modes to/from the Site.
- Promote the use of 'active transport' modes such as walking and cycling, particularly for short-medium distance journeys.
- Reduce reliance on the use of private vehicles for all journeys.
- Encourage a healthier, happier, and more active & public transport use culture.

Having regard for the above, this GTP seeks to adopt the movement hierarchy shown in **Figure 18**, with priority given to 'active transport' such as walking and cycling.

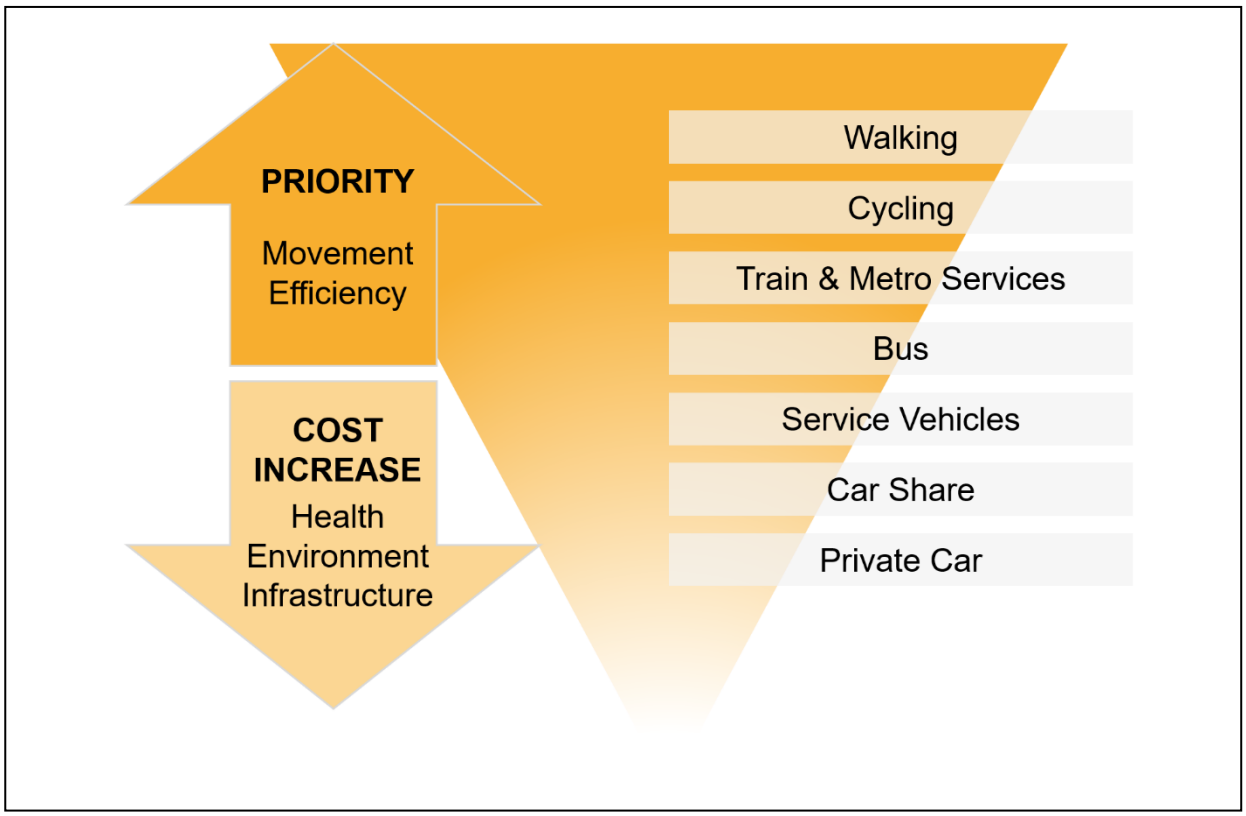


Figure 18: Movement Hierarchy

9.2 Site Audit

9.2.1 Introduction

An audit of the Site is required to determine the existing facilities in the area and review existing transport choices. This section will need to be updated prior to implementation of the future site-specific GTP, and at appropriate times, during the period of monitoring and review. The audit should consider the following:

- Site conditions, once the development is complete.
- Public transport services in the area, including proximity to the Site, frequency of services and accessibility.
- Bicycle and pedestrian facilities, including accessibility, connectivity and safety.
- Mode-split data for the Site and local area

9.2.2 Existing Travel Patterns

Journey-to-Work (JTW) data from the Australian Bureau of Statistics (ABS) 2021 Census and specifically aggregated Destination Zones (DZ) has been referenced to understand the baseline travel characteristics of the area, inclusive of the site. This data has been used to inform the initial targets in lieu of site-specific travel data, which cannot be collated until the site is occupied.

A summary of key travel modes for those travelling to the locality for work has been reviewed with regard for the surrounding Destination Zone 116960004 within the Frenchs Forest area.

The location of the Site with respect to Destination Zone 116960004 is shown in **Figure 19**.

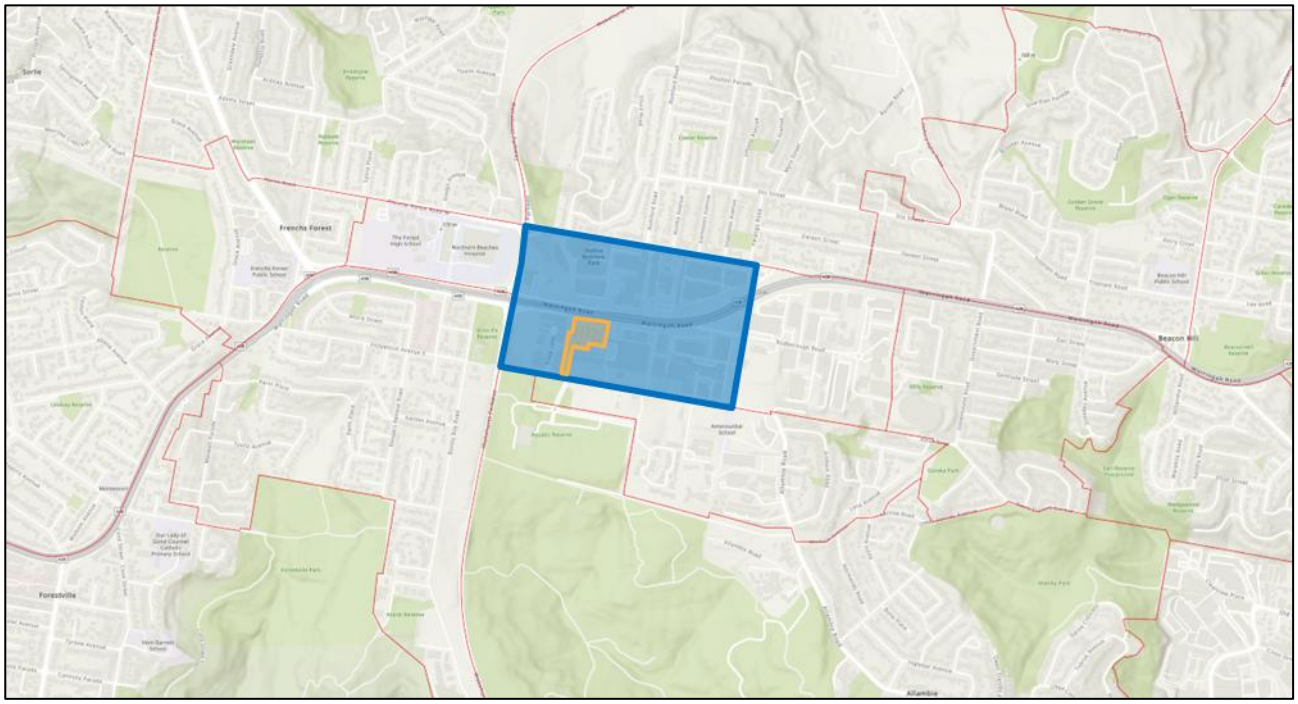


Figure 19: Site within Destination Zone 116960004

A breakdown of the existing travel mode share is presented in **Table 10**.

TABLE 10: TRAVEL MODE SUMMARY (JOURNEY TO WORK)

Travel Mode	Mode Share of Employees
Car, as driver	77%
Bus	6%
Car, as passenger	5%
Walked only	4%
Bicycle	3%
Motorbike/scooter	2%
Train	2%
Truck	1%
Other Mode	<1%
Tram/light rail	<1%

Note: Mode shares may not necessarily add up to 100% due to rounding

With reference to the above, the majority of the Frenchs Forest statistical area travels to work by car as drivers. The data indicates that approximately 82% travel by car, divided between 77% as driver and 5% as passenger i.e. carpooling.

9.3 Travel Mode Targets

9.3.1 Introduction

This section sets out the targets for the reduction in car journeys associated with the Site, with consideration to the land use in the area (being a mixture of business, residential and industrial developments in an urban environment). A focus on encouraging modal shifts away from private vehicles to utilising the existing public and active transport network aligns with the overall objective of this GTP. Targets are the means of measuring the achievement of the objectives. They need to be clear, directly linked to the objectives, monitored and reviewed.

Questionnaire surveys will be conducted in the future that will form the updated travel mode baseline to further develop site-specific targets. This will be in the form of annual travel mode questionnaire surveys to be completed by all persons attending the Site; to be undertaken online or in-person at the discretion of a Travel Plan Coordinator (TPC). The first surveys will be undertaken shortly after occupation. These surveys will be repeated at a suitable time to assess the effectiveness of the implemented Travel Plan; the targets are to be reviewed to align with the most up-to-date information.

The implemented GTP is to be in place for the lifetime of the development. The initial timeframe in which targets need to be monitored and reviewed will be reviewed every 1-2 years, for a minimum of 5 years.

9.3.2 Mode Share Targets

It is essential that Mode Share targets be achievable with consideration for the public transport, walking and cycling opportunities available within proximity to the Site. Targets should also be factoring in what future transport options could reasonably be used to access the Site, and also the nature of the development itself.

Section 4.3 of the Jacobs Report provides a mode share target for public transport of 30% (24% bus, 6% train), active transport of 4%, by car of 60% and other modes of 6% target by the completion of the Frenchs Forest Planned Precinct. The targets should be revisited and updated after the opening of the development as part of the monitoring process. The preliminary targets, developed with consideration to Council's strategies and policies are nominated in **Table 11**. These represent *preliminary* 5-year targets to coincide with the minimum 5 years of monitoring and review.

With reference to the table below, an increase in bus mode share by 3% is considered achievable when acknowledging the Site's proximity to the planned Northern Beaches Hospital Precinct within 500m radius of the Site. Part of the *Frenchs Forest Planned Precinct Strategy 2020* (Precinct Strategy 2020), new bus stops and improved bus services along the Chatswood to Dee Why via Frenchs Forest corridor are some of the current government commitments to providing necessary public transport accessibility to support the Hospital Precinct.

TABLE 11: MODE SHARE TARGETS

Travel Mode	Mode Share of Employees	Proposed Targets	Relative Change
Car, as driver	77%	71%	-6%
Bus	6%	9%	3%
Car, as passenger	5%	6%	1%
Walked only	4%	5%	1%
Bicycle	3%	4%	1%
Motorbike/scooter	2%	2%	-
Train	2%	2%	-
Truck	1%	1%	-
Other Mode	<1%	<1%	-
Tram/light rail	<1%	<1%	-

The specified modal share targets consider recent shifts in travel patterns, recognising that significant development, promotion and incentives towards public and active transport modes have been undertaken by Northern Beaches Council since the JTW data collection in 2021.

Additionally, the targets are based on reasonable inference on the basis of existing and proposed infrastructure that will work to encourage the modal shift away from private vehicles.

Measures and strategies to achieve these targets are discussed in **Section 9.4**.

9.4 Measures and Action Strategies

9.4.1 Measures

The below is a range of measures which could be implemented to achieve the objectives of this GTP.

This section needs to be reviewed and confirmed prior to implementation of any future Plan.

- Upon selling the warehouse and self-storage facilities, a welcome pack and TAG is to be distributed to all staff and tenants providing all the relevant information.
- Provide a “building manual” for new staff and tenants, highlighting on-site provisions and alternate modes of transport.
- Regular reviews of the GTP by the TPC.

9.4.2 Strategies

Seven main strategies are identified, and the actions required for each are detailed in **Table 12**. The table details specific actions that could be implemented as part of a future Plan (subject to tenant requirements) and the party responsible for implementing each action.

These actions must be reviewed at regular intervals to ensure that the mode split targets are being met. By that principle, this document is classed as a living document and subject to regular review. It is important to note, that the actions should not be taken as mandatory but rather potential options that should be investigated and implemented by future inhabitants of the development.

TABLE 12: PROPOSED ACTION STRATEGIES

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
1 Travel Planning and Demand Management				
1.1 Green / Sustainable Travel Plans	• Develop a GTP to provide information for Travel Access Guide (TAG) • Management of GTPs. • Promotion of GTPs.	The strata committee is to be responsible for overall implementation of final GTP and providing annual reporting on GTP outcomes to Council. Tenant to develop Company specific travel plan based on Final GTP prior to the commencement of a new lease/sale of property. Company/Staff/Visitors shall be responsible for ongoing implementation of Company assigned actions and participation in annual monitoring and reporting process to Council	Upon completion of the development and ongoing annual GTP events	Tenant / Business Owner
1.2 Travel Information Points	• Establish locations such as travel information points where staff and visitors and others can access travel information via interactive platforms. • Promotion of GTPs • Provision of travel and transport information options	Tenant / Business Owner	Subject to employer preference.	Tenant / Business Owner
1.3 Flexible Working hours	Allow employees the flexibility to commute outside peak periods to reduce overall congestion and travel time.	Tenant / Business Owner	Subject to employer preference. Action to be considered by employers / Visitors as part of an Employer specific GTP to be developed and forwarded to Council prior to building occupation.	Tenant / Business Owner
1.4 Teleworking	Provide the option to work remotely (where possible) to reduce the number of vehicles travelling to the development and encourage teleconferencing rather than travelling to meetings.	Tenant / Business Owner	Subject to employer preference. Action to be considered by employers / visitors	Tenant / Business Owner
2 Promoting Public Transport				
2.1 Opal Card Loan Schemes / Subsidising schemes for public transport travel through pre-paid credit cards	Company may consider subsidising staff public transport travel. Alternatively, staff can pay for their own Opal Cards / pre-paid travel card through their salary, spreading the cost over the year to make it more affordable.	Tenant / Business Owner / TPC	Subject to employer. Can be implemented at building occupation	Tenant / Business Owner

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
2.2 Public Transport for work travel	The company / TPC can promote public transport as one of the main preferences for work travel. This should be supported by all users and visitors to development having access to Opal Cards.	TPC	Subject to employer. Can be implemented at building occupation	Tenant / Business Owner
3 Promoting Carpooling				
3.1 Open Car Sharing	Where anyone in a defined geographical area can join a ride sharing scheme. This involves no input from the employer and should be on the onus of staff to schedule.	Staff	Ongoing in the workplace	Costs can be split equitably by those involved
3.2 Closed Car Sharing	The company / department sets up an in-house car-matching scheme	Company, TPC	Ongoing in the workplace. Updates can be made to organisation as appropriate	Tenant / Business Owner
3.3 Third-party Car Sharing Program	Companies such as Liftshare are an online service that facilitates journey sharing between individual users, as well as providing separate services for businesses, organisations and events.	Staff – encouraged by TPC	Ongoing in the workplace	Staff
3.4 Carpool week	Arrange for a dedicated carpool campaign week to promote the benefits of carpooling.	Tenant / Business Owner	One week per calendar year	Tenant / Business Owner
4 Promoting Cycling				
4.1 Create a Bicycle Users Group (BUG)	BUGs are local groups of like-minded bike riders who get together generally for social riding in their area. For the purposes of the workplace, this can be adapted as a way of creating as social and healthy aspect of travelling to work.	Tenant / Business Owner, TPC	Ongoing in the workplace	Tenant / Business Owner
4.2 Providing & Maintaining End of Trip Facilities	Providing facilities such as showers, change rooms, lockers. For the initial stages of the development it is recommended to provide facilities compliant with the relevant controls, and as the Site develops further, they should be reviewed as part of monitoring process to meet any increase in demand.	Developer / Estate &/or warehouse Owner / Manager	To be provided at project completion	Developer / Estate &/or warehouse Owner / Manager
4.3 Promote Bicycle Initiatives	Promotion of bicycle initiatives – NSW bicycle week, Ride to Work etc.	TPC	To be promoted annually	Developer / Estate &/or warehouse Owner / Manager

STRATEGY	HOW IT WORKS	RESOURCES / RESPONSIBILITY	TIMELINE	FUNDING
4.4 Advertise Bicycle Routes	Promotion of bike lanes through the TAG.	TPC	To be promoted and provided at communal areas such as key information kiosks within facility	Tenant / Business Owner
5 Promoting Walking				
5.1 Providing End of Journey Facilities	Provision of sufficient end of trip facilities such as showers, change rooms, lockers etc to maximise pedestrian activity throughout the site.	Developer	To be provided at completion of development	Tenant / Business Owner
5.2 Walking routes	Incentivise travelling by foot by highlighting possible routes particularly those to nearest bus stops	Tenant / Business Owner	To be promoted and provided at communal areas such as key information kiosks within facility	Tenant / Business Owner
5.3 Promote walking initiatives	Promotion of walking initiatives: walk to game / training day, pedometers / step challenge / gamification of walking / reward programs based on steps to elevate pedestrian activity throughout site and to / from public transport points.	Tenant / Business Owner, TPC	To be implemented monthly or as appropriate throughout the calendar year.	Tenant / Business Owner
6 Promoting low emissions vehicles				
6.1 Providing EV charging facilities within car parking areas	Provision of electric vehicle charge points to encourage employee and visitor uptake of electric vehicles.	Developer, Tenant / Business Owner	5% of parking spaces with EV charging provision upon project completion, with an additional ability to provide for another 20% of parking spaces with EV charging capabilities should it be required in the future.	Developer, Tenant / Business Owner
7 Influencing Travel Behaviour				
7.1 Provision of Sustainable Travel Packs to employees and visitors	Introduces employees and visitors alike to the GTP and provides information on walking and cycling routes, and travel by bus & train, timetables, and access routes. This would include a TAG.	Tenant / Business Owner, TPC	Travel Packs to be provided upon occupancy of building to employees.	Tenant / Business Owner

9.4.3 Communications Strategy

Welcome Packs

New staff shall be provided with a 'welcome pack' as part of the on-site induction process which includes a Travel Plan Pamphlet and other information in relation to sustainable transport choices. This pack shall include copy of the Travel Plan and a Travel Access guide (TAG), as well as general information regarding the health and social benefits of active transport and advice on where to seek further information. It is recommended that an electric copy of the welcome pack be created and made available to staff.

Accurate Transport Information

In addition to these 'welcome packs', a copy of the TAG shall be clearly displayed in communal areas of the site including (but not limited to):

- Ground floor cafe
- Lift lobby area and entrances to buildings

9.5 Measures and Action Strategies

9.5.1 Responsibility for Implementation

The Travel Plan Coordinator (TPC) will be responsible for the running of the future Plan, including its administration and all liaison with interested parties. The role is likely to be undertaken by a strata committee representative or appointed by the strata committee. The TPC will be appointed following occupation of the development, who will liaise with Council as part of the monitoring process.

9.5.2 Travel Plan Coordinator

A Travel Plan Coordinator (TPC) should be appointed to act as the primary point of contact for enquiries relating to the progress of the future Plans. The TPC will manage all aspects of the future Plan, including the co-ordination and joint working practices between those on-site.

The TPC will promote participation in and commitment to the future Plan from and will work in partnership with all stakeholders to deliver the strategies and actions.

The TPC should be appointed within 1 month of the site becoming occupied. Contact details for the TPC should be provided in the implemented Plan.

9.5.3 Plan Maintenance

This Plan shall be subject to ongoing reviews and will be updated accordingly. Regular reviews will be undertaken by the TPC. As a minimum, a review of the GTP should occur after the first 6 months and then every 1-2 years thereafter.

The key considerations when reviewing or monitoring the GTP are as follows:

Update baseline conditions to reflect any changes to the transport environment in the vicinity of the Site such as changes to bus services, new cycle routes etc.

- Track progress against target travel mode targets.
- Identify any shortfalls and develop an updated action plan to address issues.
- Ensure travel modes targets are updated (if necessary) to ensure they are realistic and remain ambitious.

9.5.4 Monitoring

So as to record the overall success, as well as the effectiveness of the individual measures, monitoring and review of the GTP is to be conducted at regular intervals. The TPC will act as the primary point of contact for all enquiries relating to the GTP's progress.

The GTP will be monitored around every 1-2 years, with the first survey being carried out shortly after first occupation of the Development (approximately 6 months). Travel mode surveys would determine the proportion of persons travelling to/from the Site by each transport mode. This will be in the form of annual travel mode questionnaire surveys to be completed by all persons attending the site, as far as practicable. A sample of a typical travel mode questionnaire form is included in **Appendix B**.

If targets are not met at the end of the initial period of monitoring, the GTP will be reviewed, new measures introduced and would be reassessed at the next monitoring stage.

9.5.5 Consultation

It is essential that any parties that may play a part in the future of GTP's and their actions are aware and have an opportunity to discuss. This would enable equitable input and feedback as well maximising their overall efficacy. For this reason, a coordinated approach to GTPs should be implemented (subject to individual tenant participation) to assist in the consultation with the relevant parties, which could include the following:

- Council Traffic & Transport Department
- Traffic Committee
- Local Bus Operators
- Transport for New South Wales

Other organisations may be added to this list as the Plans evolve.

10 Summary and Conclusions

Ason Group has been engaged by Goodman Property Services (Aust) Pty Ltd to prepare a TA to assess the traffic and parking implications associated with the light industrial (strata) & storage development at 14 Aquatic Drive, Frenchs Forest.

10.1 Key Findings

The key findings of this TA are:

- The Site is located at 14 Aquatic Drive, Frenchs Forest (the Site) and is currently occupied by an existing building and is zoned as SP4 Enterprise zone under the Warringah LEP.
- The following summarises key aspects of the Proposal:
  - Construction of an industrial development providing 2 levels of light industrial tenancies with associated mezzanines and a self-storage facility on the ground floor level, with a total Gross Floor Area (GFA) of 11,798 m^2, consisting of:
    - Self-Storage: 4,501 m^2 GFA,
    - Warehouse: 4,529 m^2 GFA,
    - Mezzanine: 2,413 m^2 GFA,
    - Others: 356 m^2 GFA.
  - Crossover and vehicular access from Aquatic Drive;
  - 123 car parking spaces and eight (8) bicycle parking spaces;
- An assessment of parking requirements suggests the site requires a minimum of 120 spaces. In response, the Proposal provides a total of 123 spaces and therefore readily demonstrates compliance with the Warringah DCP Rates.
- The Proposal is forecasted to generate 74 trips during the AM peak and 62 trips during the PM peak, representing a net reduction of 168 trips in the AM peak and 115 trips in the PM peak compared to the traffic generation of the Site with existing yield.

  It can be concluded that the trips associated with the proposed development will not have a material impact on the surrounding road network beyond that of the existing established development. Therefore, the proposed development is considered supportable from a traffic perspective.
- All internal circulation, service and parking areas have been designed with reference to the Australian Standards and provide for vehicles up to and including 8.8m Medium Rigid Vehicles (MRV).
- A preliminary Construction Traffic Management Plan has been provided that sets out the number of principles that should be adopted by any future detailed CTMP that is developed in coordination with the prospective building contractor.
- A Green Travel Plan has been prepared, outlining the overarching requirements for a future Sustainable / Green Travel Plan package to be delivered in future occupier-specific Plans.

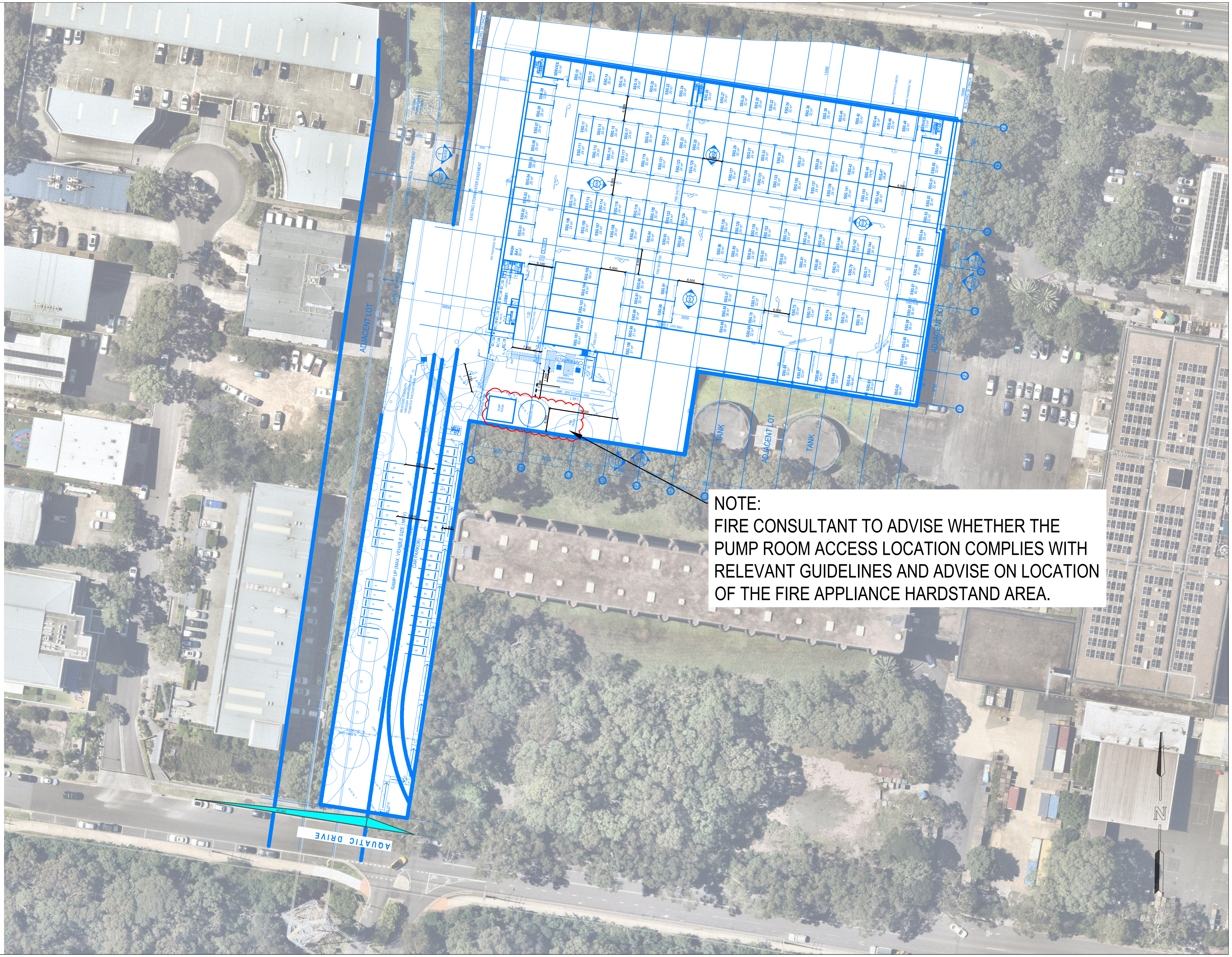
10.2 Conclusions

In summary, the proposed development at 14 Aquatic Drive, Frenchs Forest is deemed supportable on traffic and transport planning grounds and will not result in any adverse impacts on the surrounding road network.

Appendix A. Swept Path Analysis and Design Commentary

NOTES:

1. THE DESIGN REVIEW OF THE ACCESS DRIVEWAY, SERVICE AREA, AND CAR PARKING AREA HAVE BEEN UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS (AS2890.1:2004, AS2890.2:2018, AND AS2890.6:2009).
2. AG02 AND AG03 PRESENTS THE DESIGN REVIEW FOR FIRE TRUCK ACCESS AND CIRCULATION
3. AG04 TO AG06 PRESENTS THE DESIGN REVIEW FOR THE GROUND LEVEL
4. AG07 TO AG10 PRESENTS THE DESIGN REVIEW FOR LEVEL 1
5. AG11 TO AG14 PRESENTS THE DESIGN REVIEW FOR LEVEL 2
6. CAR PARKING AREAS HAVE BEEN REVIEWED AGAINST AS2890.1:2004:
   - 6.1. REQUIRED CAR PARKING SPACES ARE 2.4m X 5.4m FOR USER CLASS 1A
7. BICYCLE PARKING AND END OF TRIP FACILITY LOCATION NEEDS TO BE CONFIRMED AND DESIGNED IN ACCORDANCE TO AS2890.3:2015. ARCHITECT TO CONFIRM THE PROVIDED AMENITY AND CHANGE ROOM WITHIN THE SITE
8. IT IS NOTED THAT THE SITE ACCESS IS LOCATED WITHIN 6m OF AN INTERSECTION, HOWEVER THIS IS EXISTING AND LIKELY TO BE THE ONLY VIABLE SITE ACCESS POINT
9. THE FOLLOWING MINIMUM HEIGHT CLEARANCES SHOULD BE PROVIDED:
   - 9.1. 4.5m ABOVE LOADING BAYS AND ACCESS THE LOADING
   - 9.2. 2.5m ABOVE ACCESSIBLE PARKING AS PER AS2890.6:2022
   - 9.3. 2.2m ABOVE CAR PARKING



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Aquatic Drive has a speed limit of 50km/h.

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PAPER SIZE	A3
APPROVED BY	Jae Jeon
DATE	02.05.2025
SCALE	1:1000 (0 10 20)
CLIENT	Goodman Property Services (Aust) Pty Ltd
PROJECT	P2072 14 Aquatic Drive, Frenchs Forest
DOCUMENT INFORMATION	Design Review Site Overview
FILE NAME	AG2072-04v05.dwg
SHEET	AG01

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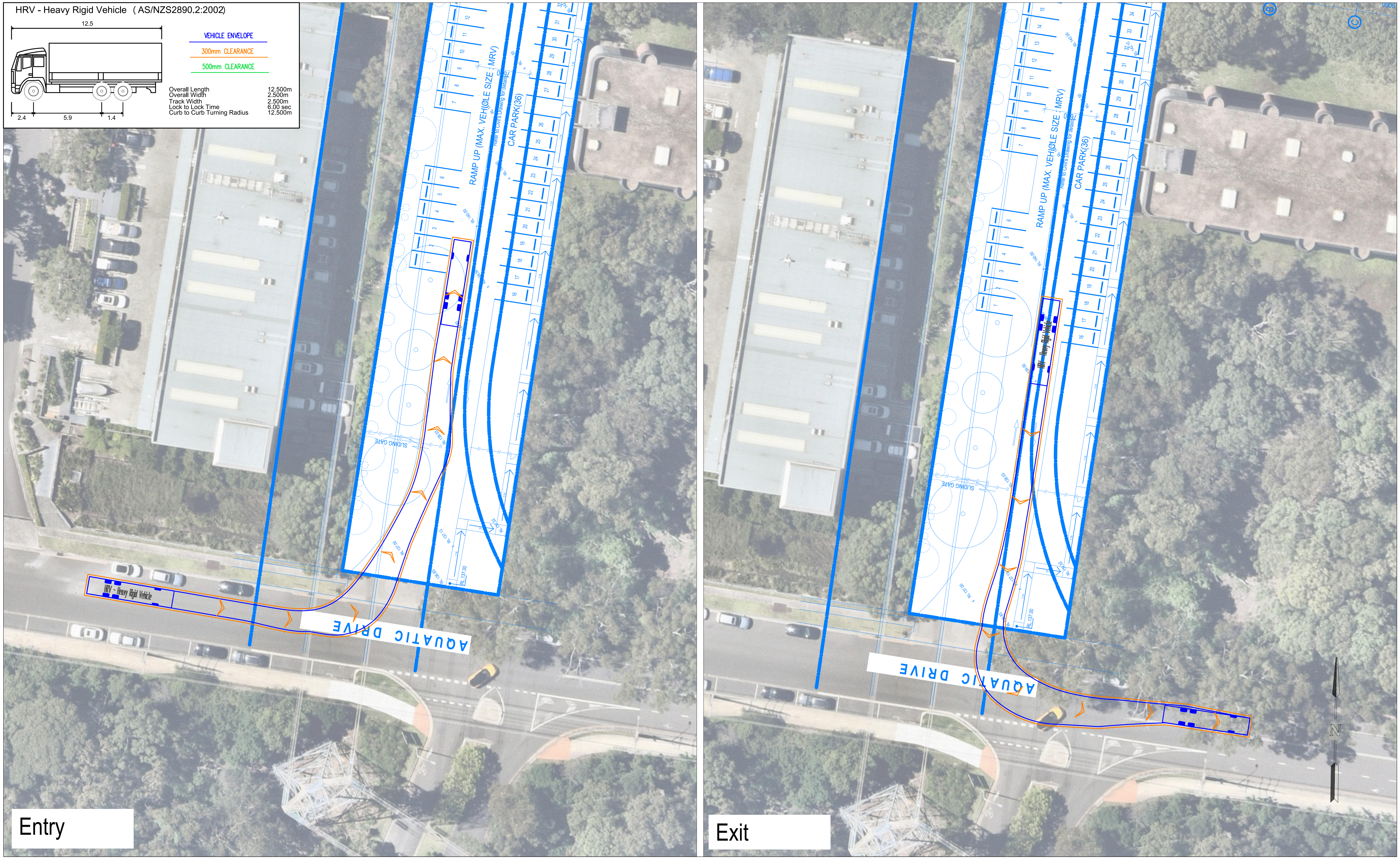

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Design vehicle: 12.5m Heavy Rigid Vehicle (HRV)

DESIGNED: William Xie	PAPER SIZE: A3	CLIENT: Goodman Property Services (Aust) Pty Ltd	DOCUMENT INFORMATION: Design Review
APPROVED BY: Jae Jeon	DATE: 02.05.2025	PROJECT: P2072	Fire Truck - Site Access
SCALE: 1:500	0 5 10	14 Aquatic Drive, Frenchs Forest	FILE NAME: AG2072-04v05.dwg; SHEET: AG02

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DATE	02.05.2025
SCALE	1:500
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PROJECT	P2072 14 Aquatic Drive, Frenchs Forest
DOCUMENT INFORMATION	Design Review Fire Truck - Circulation
FILE NAME	AG2072-04v05.dwg
SHEET	AG03

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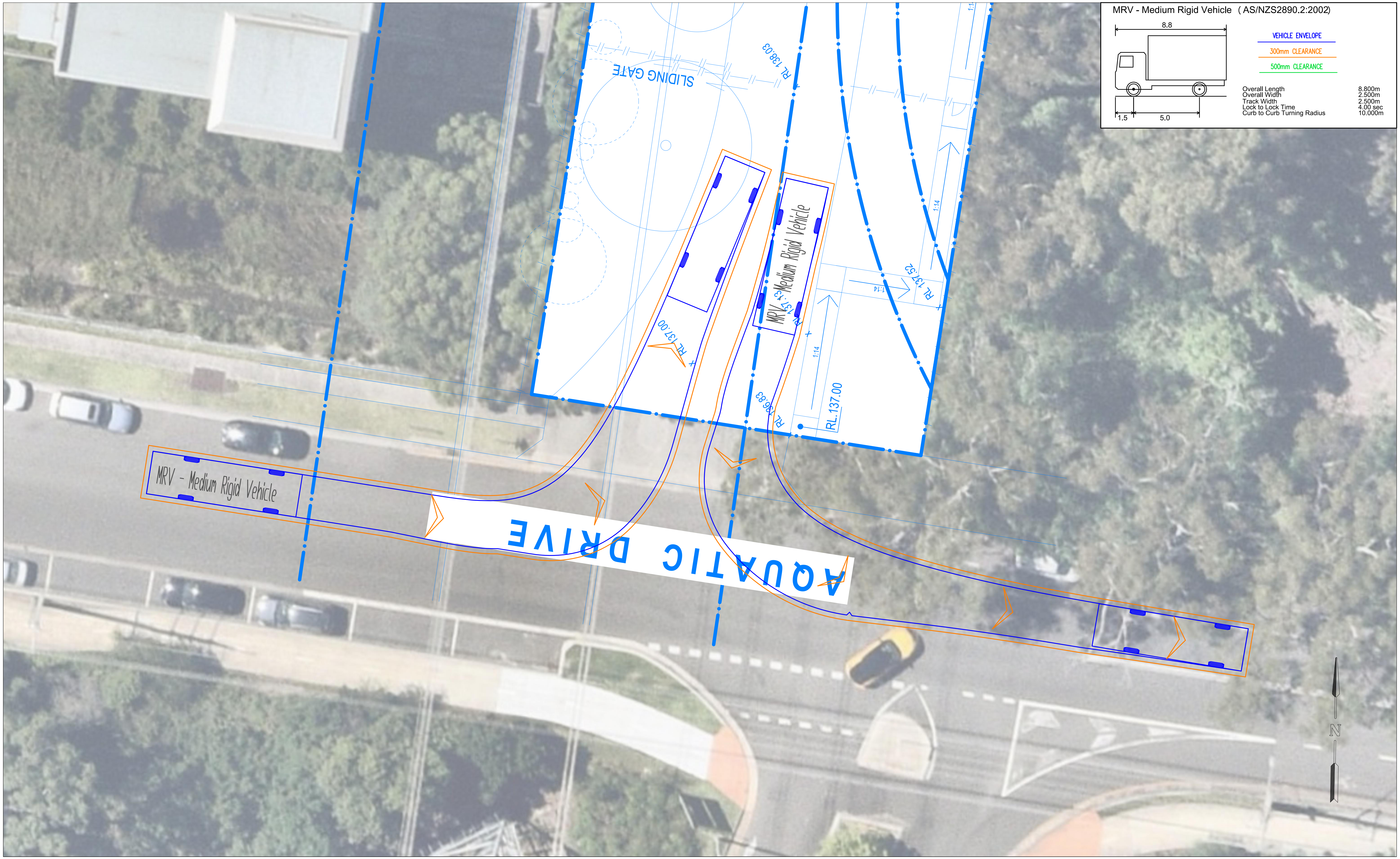

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Design vehicle: 8.8m Medium Rigid Vehicle (MRV)

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APPROVED BY Jae Jeon	DATE 02.05.2025	PROJECT P2072	8.8m MRV - Site Access
SCALE 1:200	0 2 4	14 Aquatic Drive, Frenchs Forest	FILE NAME AG2072-04v05.dwg — SHEET AG04

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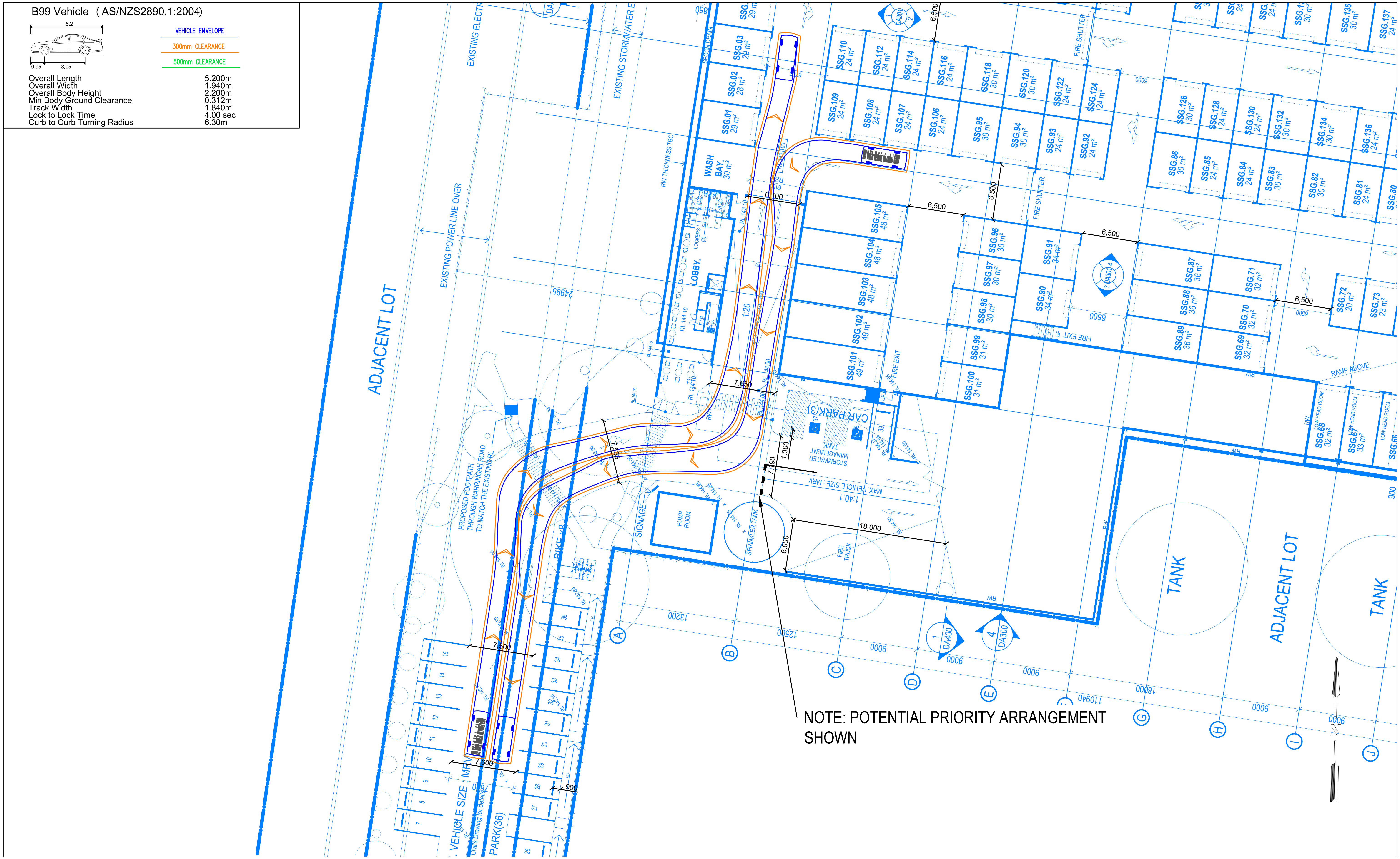

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Design vehicle: 8.8m Medium Rigid Vehicle (MRV) and B99

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Jae Jeon	02.05.2025
SCALE	0 4 8
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CLIENT
Goodman Property Services (Aust) Pty Ltd

PROJECT
P2072
14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION
Design Review - Ground Level
B99 - Access and Circulation

FILE NAME	SHEET
AG2072-04v05.dwg	AG05

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Design vehicle: 8.8m Medium Rigid Vehicle (MRV) and B99

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APPROVED BY Jae Jeon	DATE 02.05.2025
SCALE 1:400	0 4 8

CLIENT
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PROJECT
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14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION
Design Review - Ground Level
B99 - Access and Circulation

FILE NAME	SHEET
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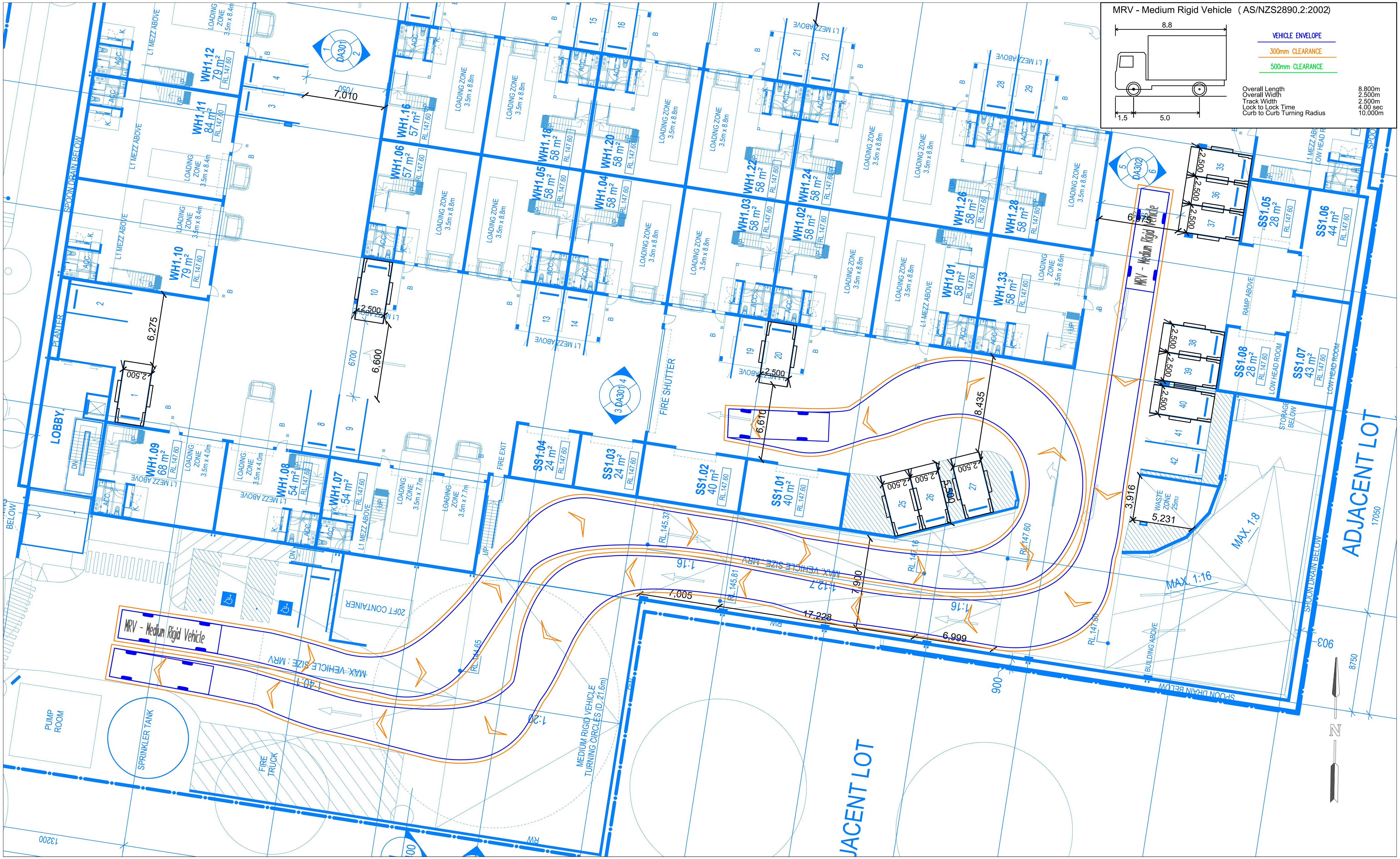

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Design vehicle: 8.8m Medium Rigid Vehicle (MRV)

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APPROVED BY: Jae Jeon	DATE: 02.05.2025
SCALE: 1:300	0 3 6

CLIENT
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PROJECT
P2072
14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION
Design Review - L1
8.8m MRV - Site Access and Circulation

FILE NAME	SHEET
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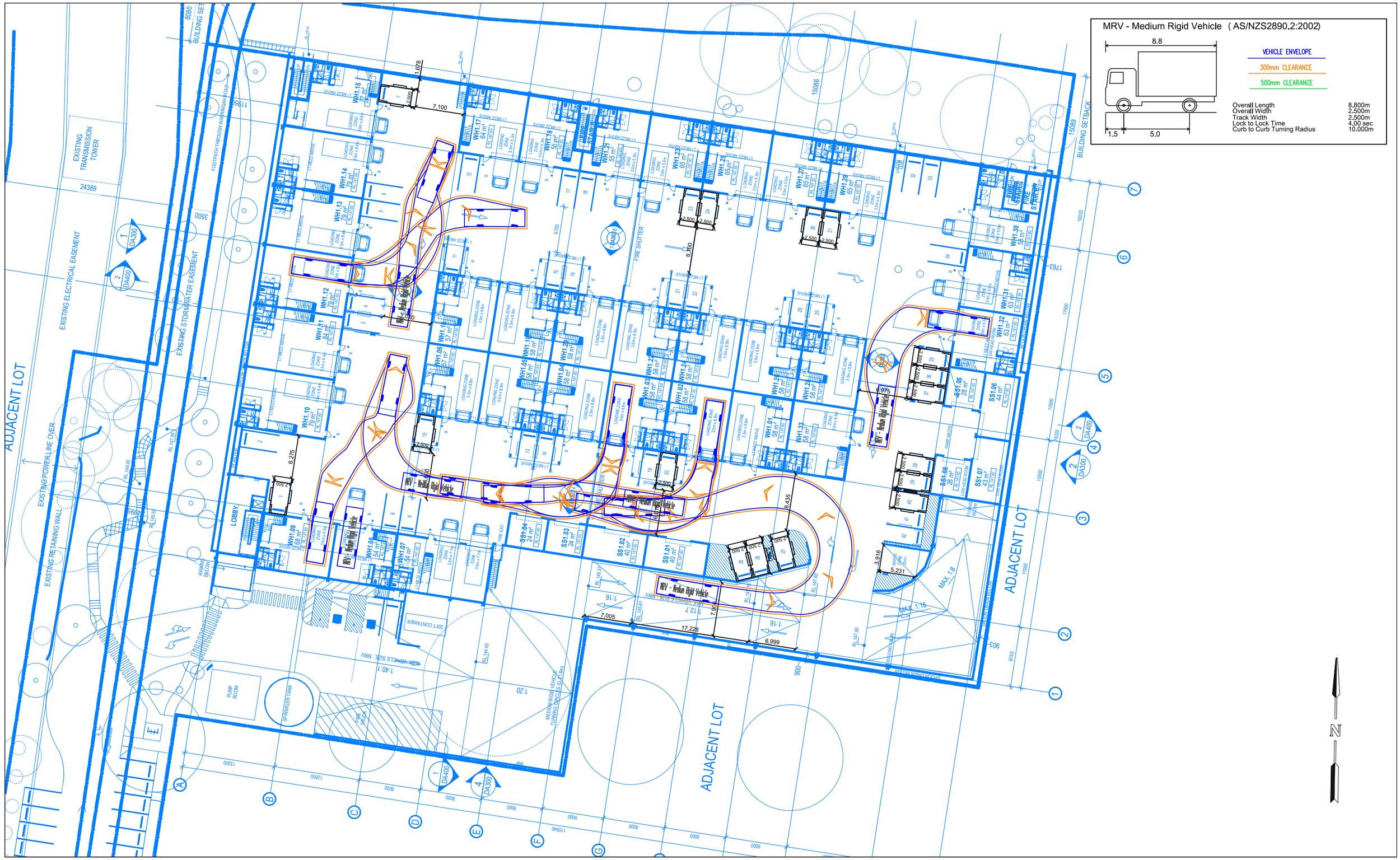

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PROJECT

P2072

14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION

Design Review - L1

8.8m MRV Loading

FILE NAME	SHEET
AG2072-04v05.dwg	AG08

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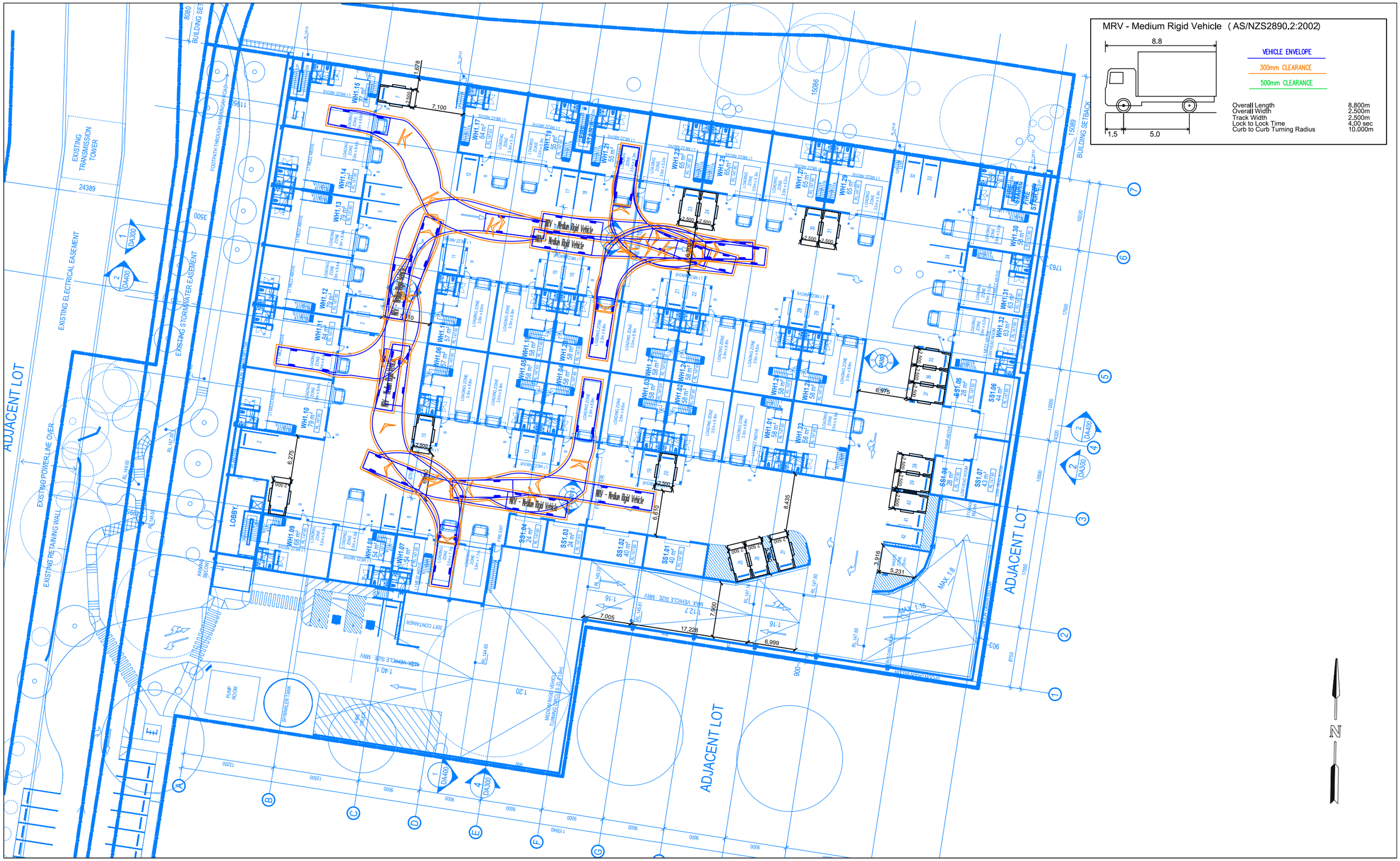

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APPROVED BY	DATE	PROJECT		
Jae Jeon	02.05.2025	P2072	8.8m MRV Loading	
SCALE	0 5 10	14 Aquatic Drive, Frenchs Forest	FILE NAME	SHEET
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APPROVED BY: Jae Jeon	DATE: 02.05.2025	PROJECT: P2072	8.8m MRV Loading
SCALE: 1:500	0 5 10	14 Aquatic Drive, Frenchs Forest	FILE NAME: AG2072-04v05.dwg / SHEET: AG10

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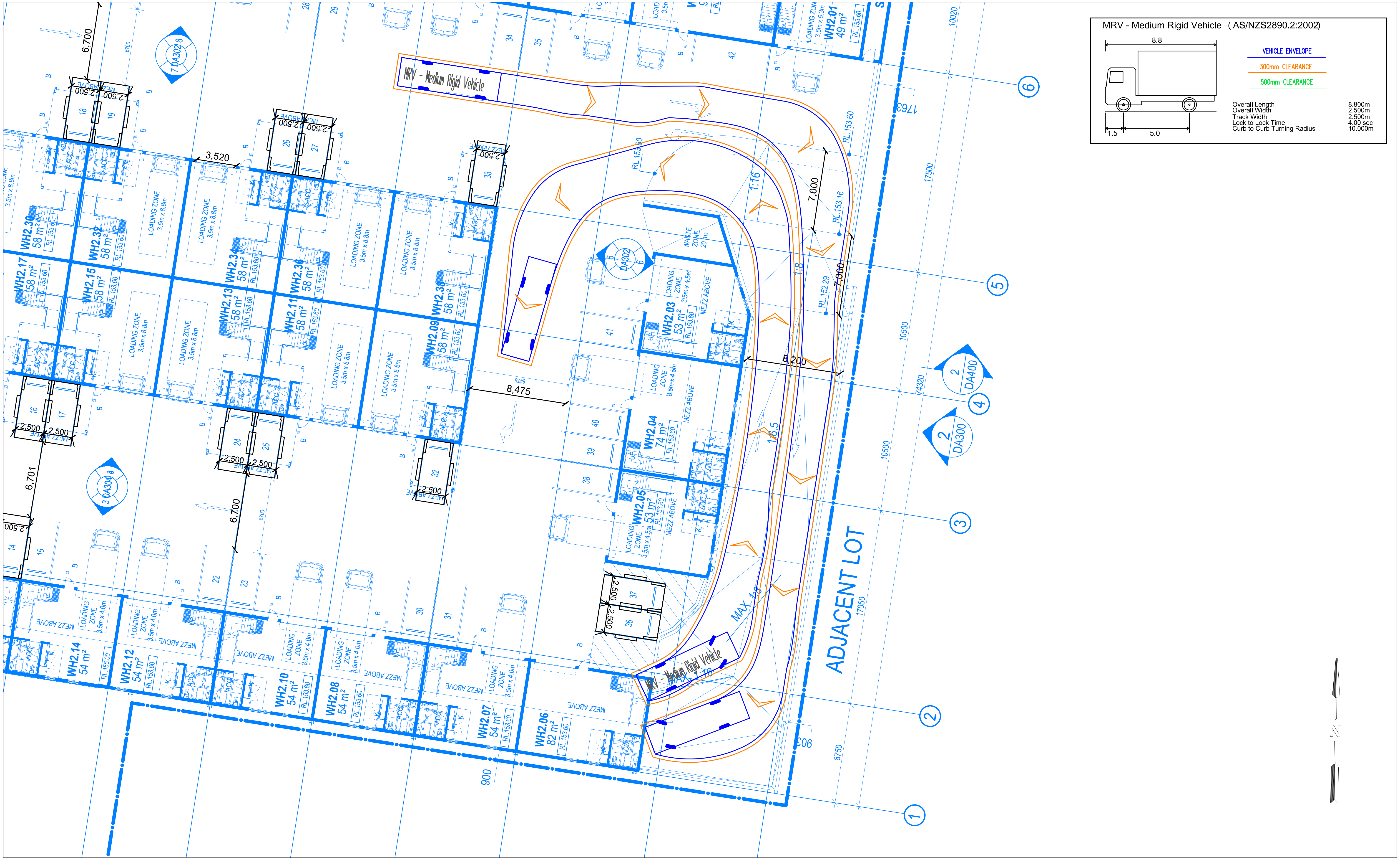

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Goodman Property Services (Aust) Pty Ltd

PROJECT

P2072

14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION

Design Review - L2

8.8m MRV - Site Access and Circulation

FILE NAME	SHEET
AG2072-04v05.dwg	AG11

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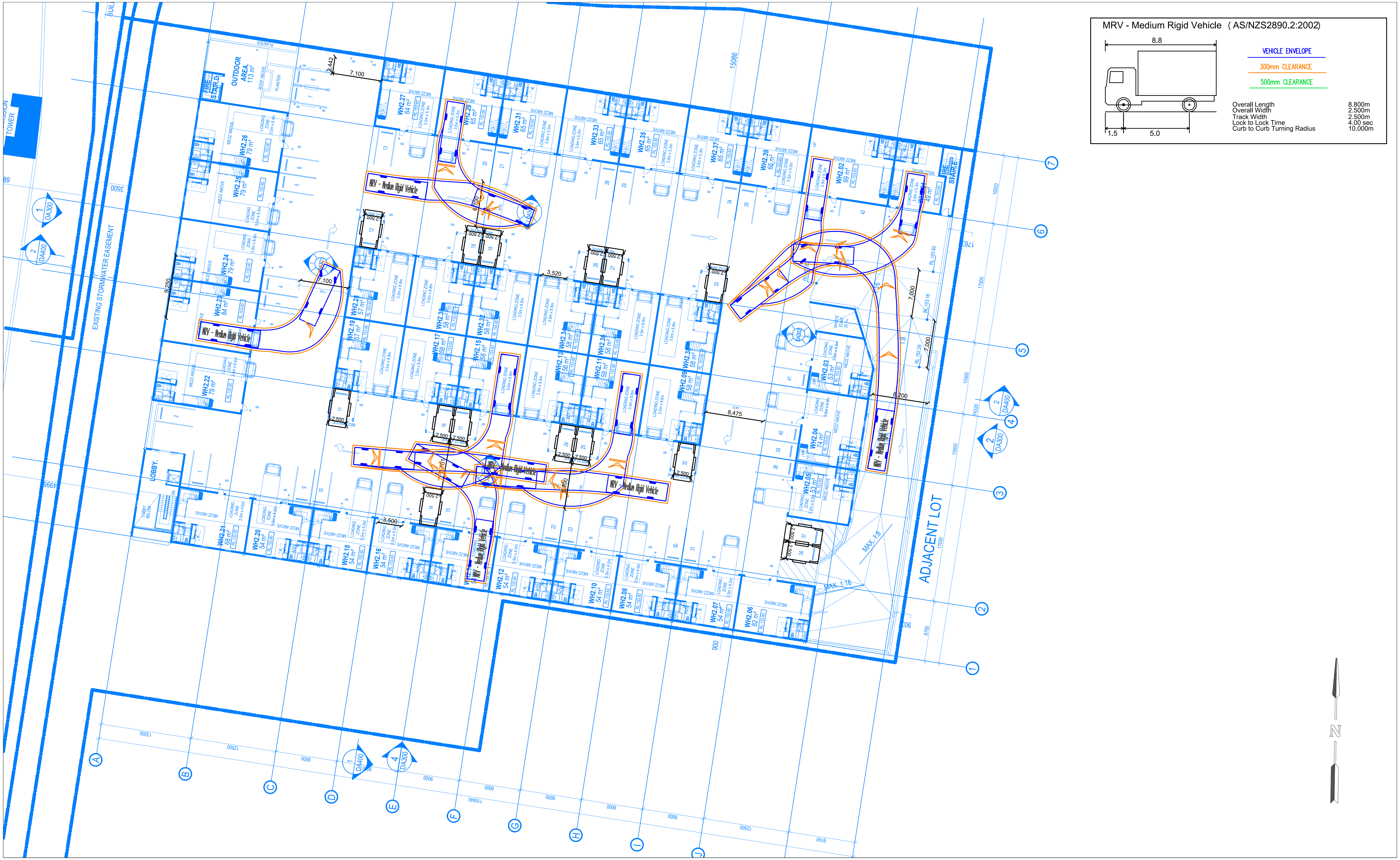

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DESIGNED	William Xie
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APPROVED BY	Jae Jeon
DATE	02.05.2025
SCALE	1:500

0 5 10

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PROJECT

P2072

14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION

Design Review - L2

8.8m MRV Loading

FILE NAME	SHEET
AG2072-04v05.dwg	AG12

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DESIGNED	PAPER SIZE
William Xie	A3
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Jae Jeon	02.05.2025
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PROJECT

P2072

14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION

Design Review - L2

8.8m MRV Loading

FILE NAME	SHEET
AG2072-04v05.dwg	AG13

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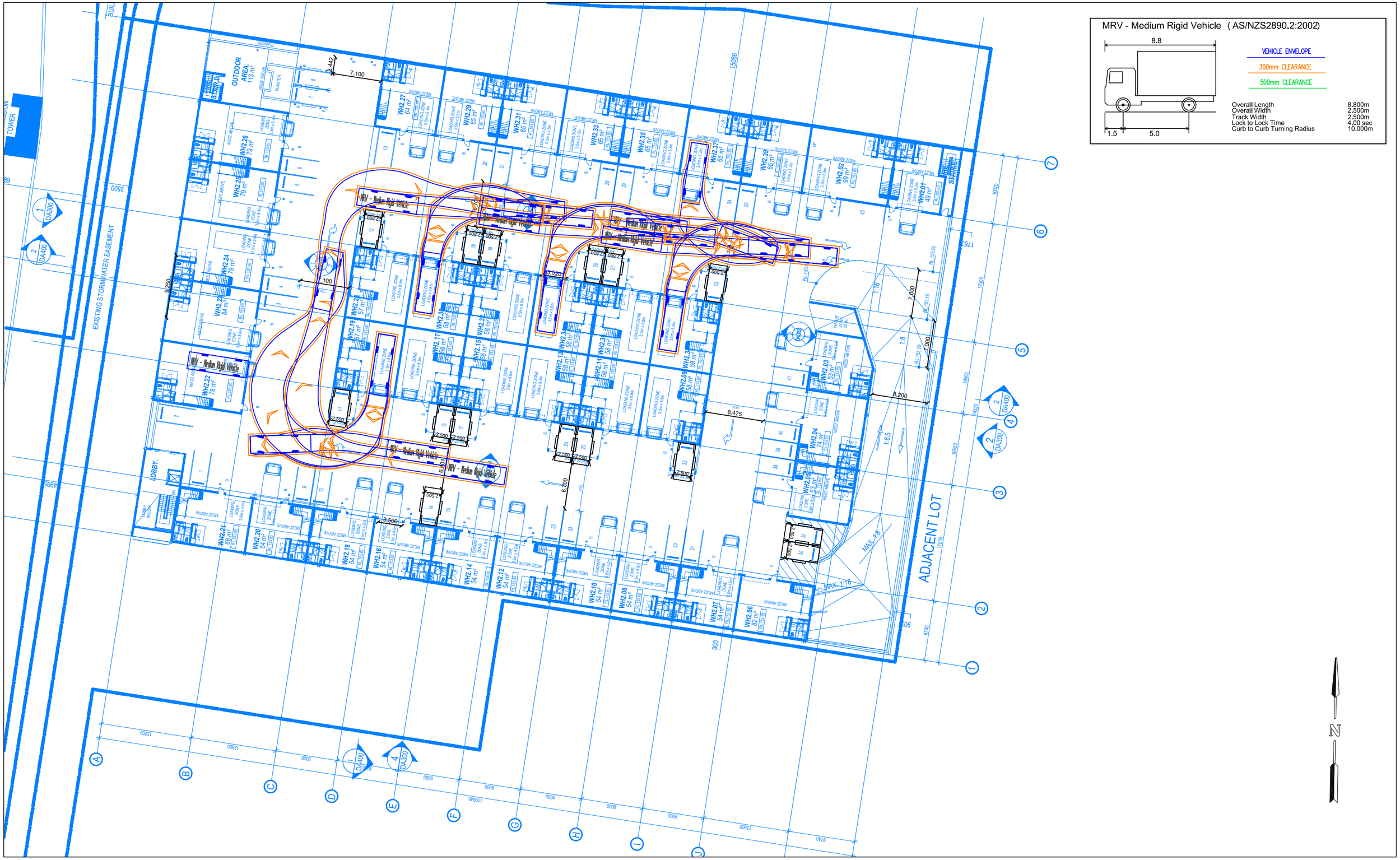
MRV - Medium Rigid Vehicle (AS/NZS2890.2:2002)

VEHICLE ENVELOPE
300mm CLEARANCE
500mm CLEARANCE

Overall Length	8.800m
Overall Width	2.500m
Track Width	2.500m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	10.000m



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PROJECT
P2072
14 Aquatic Drive, Frenchs Forest

DOCUMENT INFORMATION
Design Review - L2
8.8m MRV Loading

FILE NAME	AG2072-04v05.dwg
SHEET	AG14

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Appendix B. Sample Green Travel Plan Questionnaire

Instructions for Surveyor(s)

1. The Survey Form (over page) should be completed by EVERY PERSON attending the site on a particular day.
1. This survey should be completed SEPARATELY for EACH TRIP undertaken

Travel Mode Questionnaire Survey Form

Date: **Approximate Time:**

Q1. Are you one of the following?

☐ Warehouse staff

☐ Office staff

☐ Courier / office delivery

☐ Casual contractor

☐ Company driver / sub-contractor

☐ Other (Please specify)……

Q2. How did you travel TO the site today? Please choose the mode that you use for the greatest distance.

☐ Walked only

☐ Bicycle only

☐ Train

☐ Bus

☐ Taxi

☐ Car share vehicle

☐ Motorcycle / scooter

☐ Car (as passenger)

☐ Car (as driver)

☐ Other (Please specify)……..

Q3. What time do you typically arrive to the site?

☐ Before 6:00

☐ 06:00 – 06:29

☐ 06:30 – 06:59

☐ 07:00 – 07:29

☐ 07:30 – 07:59

☐ 08:00 – 08:29

☐ 08:30 – 08:59

☐ 09:00 – 09:29

☐ 09:30 – 09:59

☐ Other (Please specify)……..

Q4. If you drove to the site, where did you park?

☐ Not applicable – did not drive

☐ On-site car park

☐ On-site within truck hardstand

☐ Other (Please specify)……

Q5. What time do you typically leave the site?

☐ Before 15:00

☐ 15:00 – 15:29

☐ 15:30 – 15:59

☐ 16:00 – 16:29

☐ 16:30 – 16:59

☐ 17:00 – 17:29

☐ 17:30 – 17:59

☐ 18:00 – 18:29

☐ 18:30 – 18:59

☐ Other (Please specify)……..

Q6. How did you travel FROM the site today? Please choose the mode that you use for the greatest distance.

☐ Walked only

☐ Bicycle only

☐ Train

☐ Bus

☐ Taxi

☐ Car share vehicle

☐ Motorcycle / scooter

☐ Car (as passenger)

☐ Car (as driver)

☐ Other (Please specify)……..

Q7. What is the post code of your place of residence?

☐ (Please specify)……

Q8. What is the likelihood for you to choose another mode to travel to work, e.g., switching from driving to public transport or from public transport to walking or cycling?

☐ Very likely

☐ Likely

☐ Neutral

☐ Unlikely

☐ Very unlikely

☐ Not possible

Q9. What would make you want to choose another mode of transport to travel to/from work?

☐ (Please specify)……

Q10. What is the likelihood for you to change the timing of the journeys you make to avoid the busiest periods, if possible, given your work conditions?

☐ Very likely

☐ Likely

☐ Neutral

☐ Unlikely

☐ Very unlikely

☐ Not possible

Q11. Do you have any general comments on how you currently travel or how you would like to travel?

☐ (Please specify)……