Transport Assessment

Development Application

Lot 11&12, 813 Wallgrove Road, Horsley Park
25/03/2022
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APPENDICES

Appendix A. Swept Paths

Glossary

Acronym	Description
AGRD	Austroads Guide to Road Design
AGTM	Austroads Guide to Traffic Management
CC	Construction Certificate
Council	Fairfield City Council
DA	Development Application
DCP	Development Control Plan
DoS	Degree of Saturation
DPE	Department of Planning and Environment
FSR	Floor space ratio
GFA	Gross Floor Area
HRV	Heavy Rigid Vehicle (as defined by AS2890.2:2018)
LEP	Local Environmental Plan
LGA	Local Government Area
LoS	Level of Service
MOD	Section 4.55 Modification (also referred as a S4.55)
MRV	Medium Rigid Vehicle (as defined by AS2890.2:2018)
NHVR	National Heavy Vehicle Regulator
OC	Occupation Certificate
RMS Guide	Transport for NSW (formerly Roads and Traffic Authority), Guide to Traffic Generating Developments, 2002
S4.55	Section 4.55 Modification (also referenced as MOD)
S96	Section 96 Modification (former process terminology for an S4.55)
SRV	Small Rigid Vehicle (as defined by AS2890.2:2018)
TDT 2013/04a	TfNSW Technical Direction, Guide to Traffic Generating Developments – Updated traffic surveys, August 2013
TfNSW	Transport for New South Wales
TIA	Transport Impact Assessment
TIS	Transport Impact Statement
veh/hr	Vehicle movements per hour (1 vehicle in & out = 2 movements)

1 Introduction

1.1 Overview

Ason Group has been commissioned by DHL NSW to prepare a Transport Assessment (TA) to support the proposed warehouse facility located at 813 Wallgrove Road, Horsley Park.

This Proposal will be located at Lot 11&12 situated within Gazcorp Industrial Estate (GIE) for which the Concept Proposal was approved on 11 November 2019 (SSD 5248[1]) and subsequent Modification (MOD 1) was approved on 23 December 2021[2]. Accordingly, this Transport Assessment (TA) refers to the accompanying traffic reports for the original SSD approval and MOD 1. It is our understanding that second modification (MOD 2) is currently being prepared for the GIE. This modification seeks to increase the size of Lot 11&12 and decrease the size of Lot 13, with an overall combined net decrease in GFA across Lots 11-13.

The proposed warehouse facility will comprise:

- 29,710m^2 of warehouse area
- 1,095m^2 of office area
- 320m^2 of VAS amenities area
- 575m^2 of dock office area
- 20m^2 of gate house area
- 194 car parking spaces (inclusive of 3 accessible spaces)

1.2 Site Location

With reference to **Figure 1**, the site is located at 813 Wallgrove Road, Horsley Park. It is situated within Fairfield City Council's Local Government Area (LGA) and, as such, is subject to Fairfield City Council's controls.

[1] Gazcorp Industrial Estate, NSW Planning Portal - https://www.planningportal.nsw.gov.au/major-projects/project/26011
[2] Gazcorp Industrial Estate Modification 1 Revised Layout and Earthworks, NSW Planning Portal - https://www.planningportal.nsw.gov.au/major-projects/project/41081

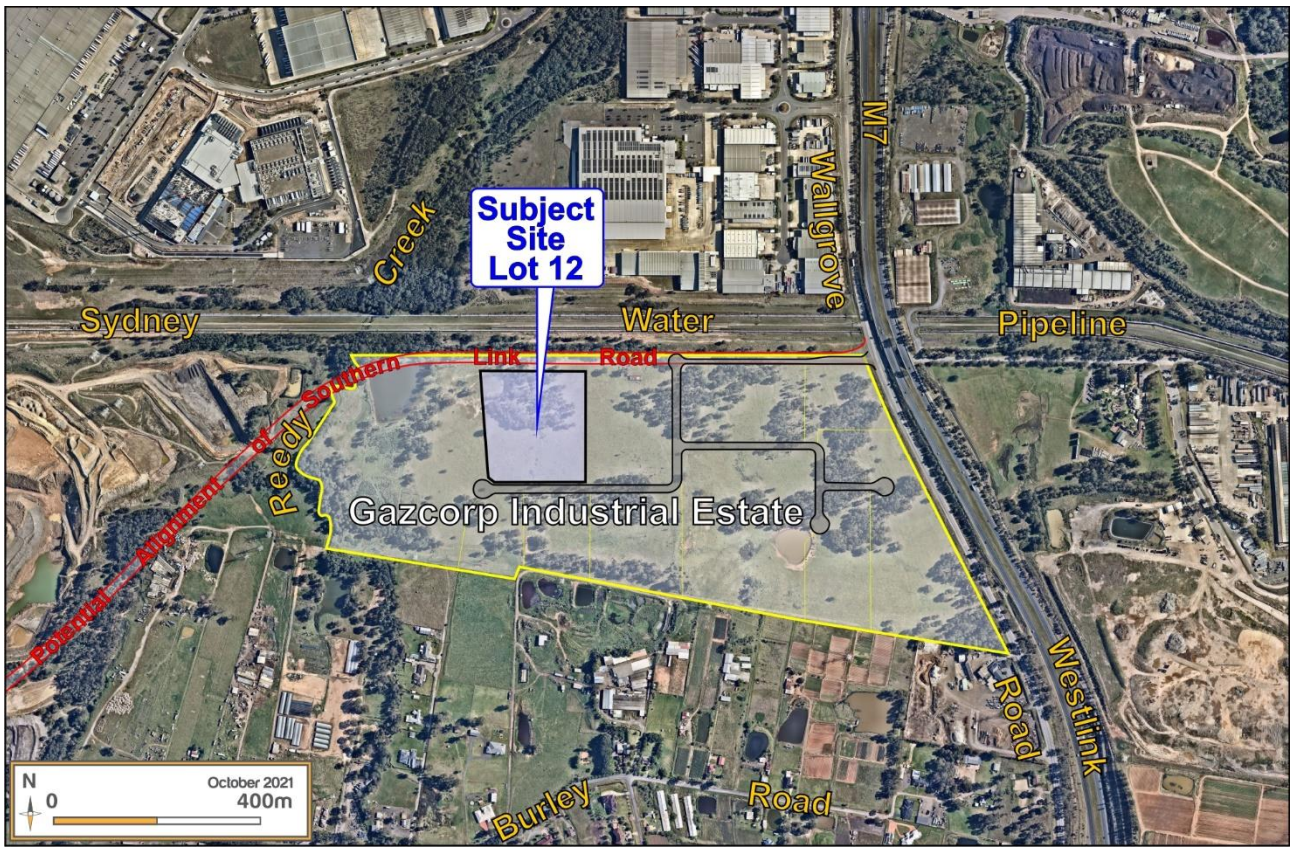


Figure 1: Site Location

1.3 Objectives

This document has been prepared to provide a detailed assessment of the traffic and transport impacts associated with the proposed DHL facility on the surrounding road network.

Given the original approval of SSD 5248 and subsequent approval of MOD 1, the assessment for this site is against the 'benchmark' conditions as detailed in the previous SSD application and modification, given that these conditions have inherently been considered and validated by the key consent authorities, including the DPE and Transport for NSW (TfNSW).

1.4 Key Reference

In preparing this TA, Ason Group has referenced key planning documents and transport standards and guidelines, including:

- Fairfield Citywide Development Control Plan (DCP) 2013
- Fairfield Local Environmental Plan (LEP) 2013
- Roads and Maritime Services, Guide to Traffic Generating Developments (RMS Guide) 2002
- Roads and Maritime Services, Guide to Traffic Generating Developments Updated Traffic Surveys (RMS Guide Update) 2013

- 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)

This TA also references the following documents:

- GHD, *Gazcorp_813-913 Wallgrove Road_Traffic Impact Assessment*, August 2013 (GHD TIA – accompanying original approval for GIE)
- Ason Group, *Transport Assessment Gazcorp Industrial Estate – SSD 5248 MOD 1*, March 2021 (Ason MOD 1 Report)

2 Planning Context

2.1 SSD 5248 Approval

The Concept Proposal for the GIE (SSD 5248) was determined on 11 November 2019 and approved with accompanying Conditions of Consent. A copy of the approved and stamped Master Plan is provided at a reduced scale in **Figure 2.**

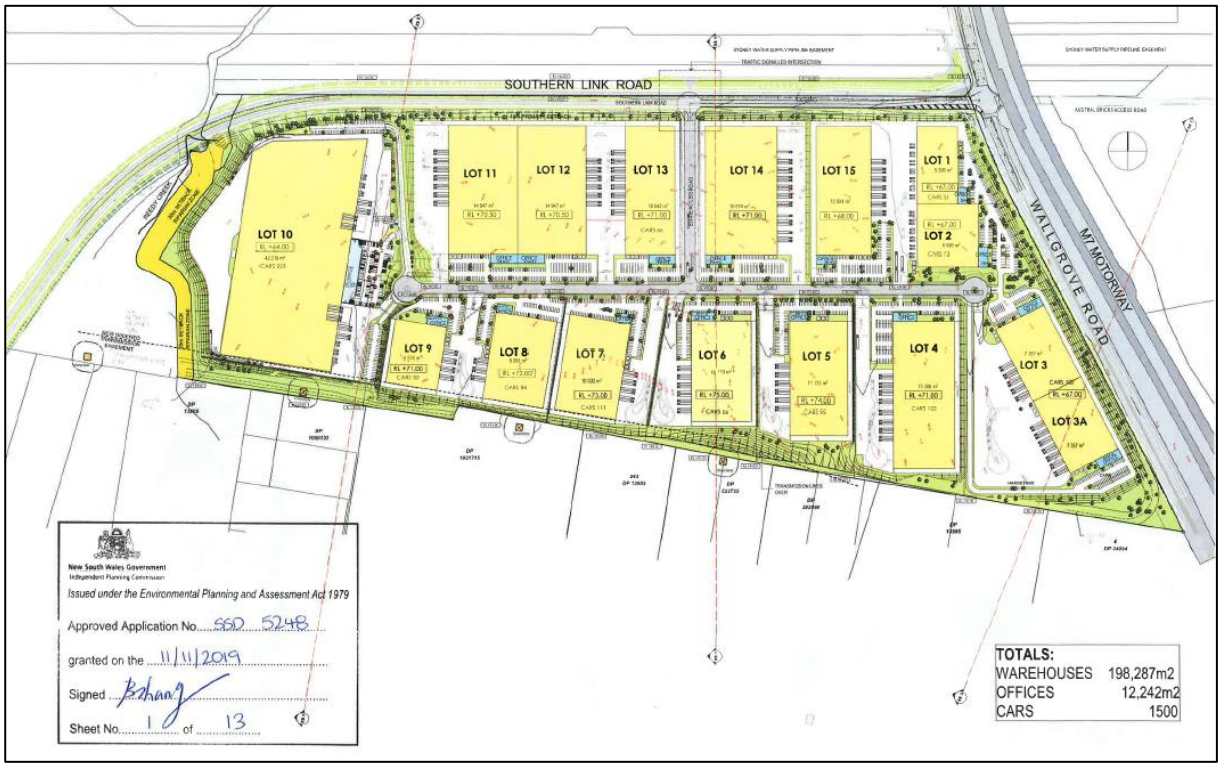


Figure 2: Approved Master Plan

2.2 Modification 1 (MOD 1)

Subsequently, a modification to the Concept Proposal was submitted which sought changes including:

- Changes to the built form / Gross Floor Area (GFA) of the approved lots, as well as a revised layout and configuration, and
- Estate road network re-configuration.

A copy of the MOD 1 Master Plan is provided at a reduced scale in **Figure 3**.

Figure 3: MOD 1 Master Plan

2.3 Modification 2 (MOD 2)

It is our understanding that a second modification to the Concept Proposal is currently being prepared[3]. This modification seeks to consolidate Lots 11 A-C and 12 A-C into a single larger warehouse, and resize Lot 13. No other lots are affected.

2.4 Approved Traffic Generation

With reference to the GHD TIA report (2013) supporting the original SSD 5248 submission, following traffic generation rate was adopted as part of the approved GIE studies:

- 15 trips per developable hectare during peak hour

Accordingly, the GHD TIA estimated the following traffic generation for the 'Ultimate' built form of GIE:

- AM and PM peak hour: 600 vehicular trips/hr

[3] https://pp.planningportal.nsw.gov.au/major-projects/projects/gazcorp-industrial-estate-mod-2

Subsequently, the Ason MOD 1 Report reviewed the revised configuration and GFA of the site under the traffic generation rates of the RMS Guide Update (superseding the previous GHD TIA traffic generation) and found an updated traffic generation of:

- AM peak hour: 541 vehicular trips/hr
- PM peak hour: 397 vehicular trips/hr

2.5 Conditions of Consent

SSD 5248 outlined Conditions of Consent to be met in future development applications (including this application) in Part B of the Conditions. The traffic and transport related Conditions are outlined in **Table 1**.

TABLE 1 RESPONSE TO CONDITIONS OF CONSENT

Condition Number	Condition	Ason Group Response
Traffic and Access		
B4	Future developments must be accompanied by a detailed assessment of the traffic and transport impacts on the surrounding road network and intersection capacity and must:	Noted. This TA has been prepared to review the traffic impact of the proposed development on the surrounding road network.
	(a) Include detailed provision of loading / unloading and access arrangement.	Refer Section **8**. External access to the proposed, GIE including Lot 11&12, will be to/from the proposed signalised access of Wallgrove Road and the internal roadways as approved under SSD 5248. Section 8 provides further commentary regarding the proposed site vehicular access points (for Lot 11&12) and loading arrangements with swept path analysis included in **Appendix A**, demonstrating traffic movements for up to 30m Super B-doubles. The largest intended design vehicle is a regular 26m B-double, however, 30m Super B-doubles have been tested to future proof the site. In summary, the proposed DHL site will be accessed via the proposed Estate Road and through separate light and heavy vehicle access crossovers. The Proposal intends to provide a one-way circulation arrangement for trucks (clockwise direction) with an entry access through a proposed cul-de-sac and an exit access along the proposed Estate Road. Two access crossovers are proposed for the car parking facility.
	(b) demonstrate that sufficient car parking has been provided in accordance with car parking rates in Condition B5, and details to promote non-car travel modes.	Refer Section **6**. The proposal will provide 194 car parking spaces, meeting the car parking requirement of 150 spaces. A Sustainable Travel Plan has been prepared separately to aid promotion of non-car travel modes.
	(c) have specific regard to the scope and timing of road infrastructure works in the surrounding road network.	It is noted that a separate Work Authorisation Deed (WAD) has been finalised which deals with the proposed works to the signalised intersection of the Estate with Wallgrove Road to facilitate

		access during both construction and operation of the warehouses. It is expected that the proposed signalised intersection and Estate Roads will be delivered prior to the operation of the proposed DHL site.
	(d) verify that the development is generally consistent with the traffic volumes for the concept proposal.	Refer Section **7**. The theoretical approved traffic generation for Lot 11&12 as established in GHD TIA and Ason MOD 1 report, pro-rated to the individual site is as follows: **GHD TIA (RMS Guide 2002 rate)** • AM peak: 110 veh/hr • PM peak: 110 veh/hr **GHD TIA (15 trips/ ha rate)** • AM peak: 85 veh/hr • PM peak: 85 veh/hr **Ason Mod 1 Report (RMS Guide Update 2013 rate)** • AM peak: 54 veh/hr • PM peak: 40 veh/hr It is therefore, a reasonable assumption that the previous approved traffic generation rates provide for an inherent vehicular generation threshold for Lot 11&12. In this regard, Ason Group has been provided with anticipated 24-hours traffic generation profile by DHL for this site. As such, the site is expected to generate the following traffic generation, which is consistent with the previous approval. • AM peak: 42 veh/hr • PM peak: 35 veh/hr As such, the proposed DHL operation will not have any additional traffic impact onto the surrounding road network from what has previously been assessed and approved. In summary, the traffic generation for this DA is deemed consistent with the previous approvals and therefore no additional modelling is deemed necessary for the purpose of this DA.
B5	Car parking must be provided in accordance with the following rates, unless evidence is provided in accordance with the car parking requirements contained in the latest version of Part 12.1 of Fairfield Citywide Development Control Plan 2013: (a) 1 space per 300 m2 of industrial/warehouse GFA; (b) 1 space per 40 m2 of office GFA; and (c) 2 disabled spaces for every 100 car parking spaces.	Refer Section **6**. Car parking has been provided in accordance with the rates noted in Condition B5.
B6	To ensure that potential conflicts between heavy vehicles and light vehicles are minimised, future development applications much include details demonstrating satisfactory arrangements have been made to separate heavy and light vehicle movements.	Refer Section **8**. Separate access points are provided for trucks and cars. A separate entry and exit access for trucks has been provided.
B7	To ensure that sustainable transport modes are supported, all future development applications proposing the construction of new industrial/warehouse buildings must include a	A separate Sustainable Travel Plan has been prepared for the site which includes detailed

	Sustainable Travel Plan (STP). All STP's must identify the pedestrian and cyclist facilities proposed to service the proposed industrial/warehouse buildings.	information regarding pedestrian and cyclist facilities and establishes mode share targets.
B8	Future development applications must provide bicycle racks, and amenity and change room facilities for cyclists in accordance with Planning Guidelines for Walking and Cycling (December 2004, NSW Department of Infrastructure, Planning and Natural Resources, Road and Traffic Authority).	Noting a maximum of 88 staff on site at any given time based on DHL's schedule, the following bicycle parking is required for the Proposal: • 8-14 bicycle spaces – 3-5 staff bicycle spaces – 5-9 visitor bicycle spaces 25 bicycle spaces are proposed, satisfying this requirement.

3 Proposed Development

3.1 Overview

Full details of the proposed warehouse facility are provided in the Environmental Impact Statement (EIS) to which this TA accompanies. A reduced scale copy of the site plan is provided in **Figure 4** below.

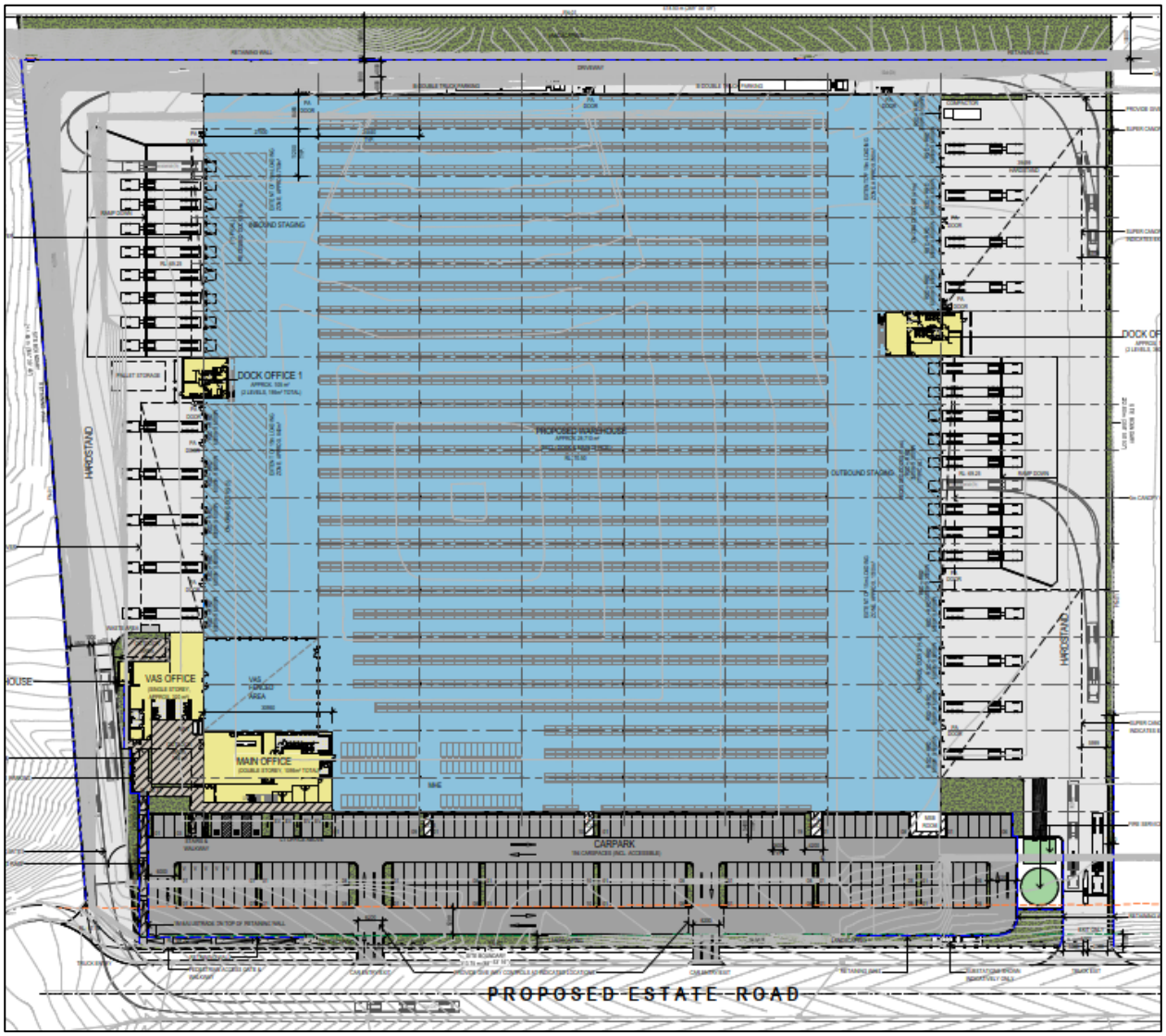


Figure 4: Site Plan

The warehouse facility will comprise:

- 29,710m^2 of warehouse area
- 1,095m^2 of office area
- 320m^2 of VAS amenities area
- 575m^2 of dock office area
- 20m^2 of gate house area
- 194 car parking spaces (inclusive of 3 accessible spaces)

3.2 MOD 1 Schedule

The proposed warehouse facility at Lot 11&12 represents an amalgamation of the previous Lot 11A, 11B, 11C, 12A, 12B, 12C. A summary of the GFA for these lots under Ason MOD 1 Report is detailed in **Table 2**. The previous MOD 1 layout is presented in **Figure 5**.

TABLE 2 MOD 1 LOTS 11-13 SCHEDULE

Lot Number	Warehouse GFA (m^2)	Office GFA (m^2)	Total GFA (m^2)
Lot 11A	3,910	200	4,110
Lot 11B	3,910	200	4,110
Lot 11C	2,930	160	3,090
Lot 12A	3,260	200	3,460
Lot 12B	3,850	200	4,050
Lot 12C	3,040	160	3,200
Lot 11&12 Subtotal	**20,900**	**1,120**	**22,020**
Lot 13	20,100	1,000	21,100
Lot 11-13 Total	**41,000**	**2,120**	**43,120**

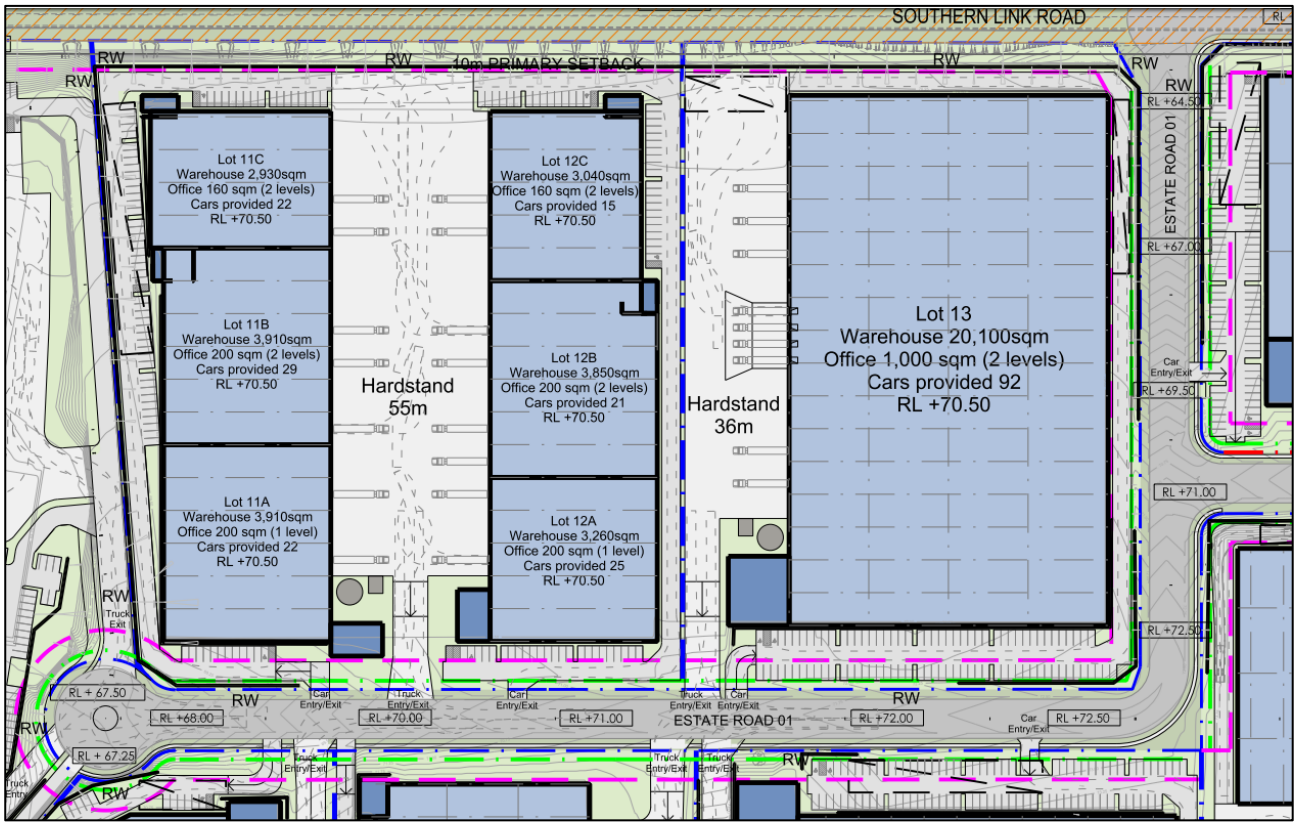


Figure 5: Previous MOD 1 Site Plan

Accordingly, the previous MOD 1 has considered a total of 22,020 m^2 GFA for Lot 11&12 (in the currently proposed configuration).

3.3 MOD 2 Schedule

Modification 2 (currently being prepared separate to this application) seeks to consolidate Lots 11 A-C and 12 A-C into a single larger warehouse and resize Lot 13. A comparison of the GFA between MOD 1 (approved) and MOD 2 is presented in **Table 3**. No other lots in the GIE are proposed to change.

TABLE 3 COMPARISON OF LOTS 11-13 SCHEDULE BETWEEN MOD 1 AND MOD 2

	Lot 11&12 GFA (m^2)	Lot 13 GFA (m^2)	Total GFA (m^2)
MOD 1	22,020	21,100	43,120
MOD 2	31,720	10,212	41,932

As seen, Lot 11&12 increases in GFA, however, the total GFA combined between Lots 11 to 13 is lower than MOD 1.

For the purposes of this traffic assessment, the most recent approval, MOD 1, is used as the benchmark for analysis.

4 Existing Conditions

4.1 Existing Site Traffic Generation

The Site is currently vacant and therefore generates minimal vehicular traffic during road network periods. Therefore, any vehicular traffic generated by the proposed operation of the industrial facility is deemed to be the net increase of the site generation.

4.2 Road Network

4.2.1 Road Hierarchy

The road hierarchy surrounding the site is presented in **Figure 6**. It should be considered that the figure also demonstrates indicative alignments for the proposed future road networks, which are currently subject to change and approval.

TABLE 4 ROAD HIERARCHY

Road Name	Road Classification	AADT (vpd)	Speed Limit
M4 Western Motorway	Motorway	~150,000 vpd	110 km/h
Westlink M7 Motorway	Motorway	~150,000 vpd	100 km/h
Wallgrove Road	Arterial	~30,000 vpd	70 km/h

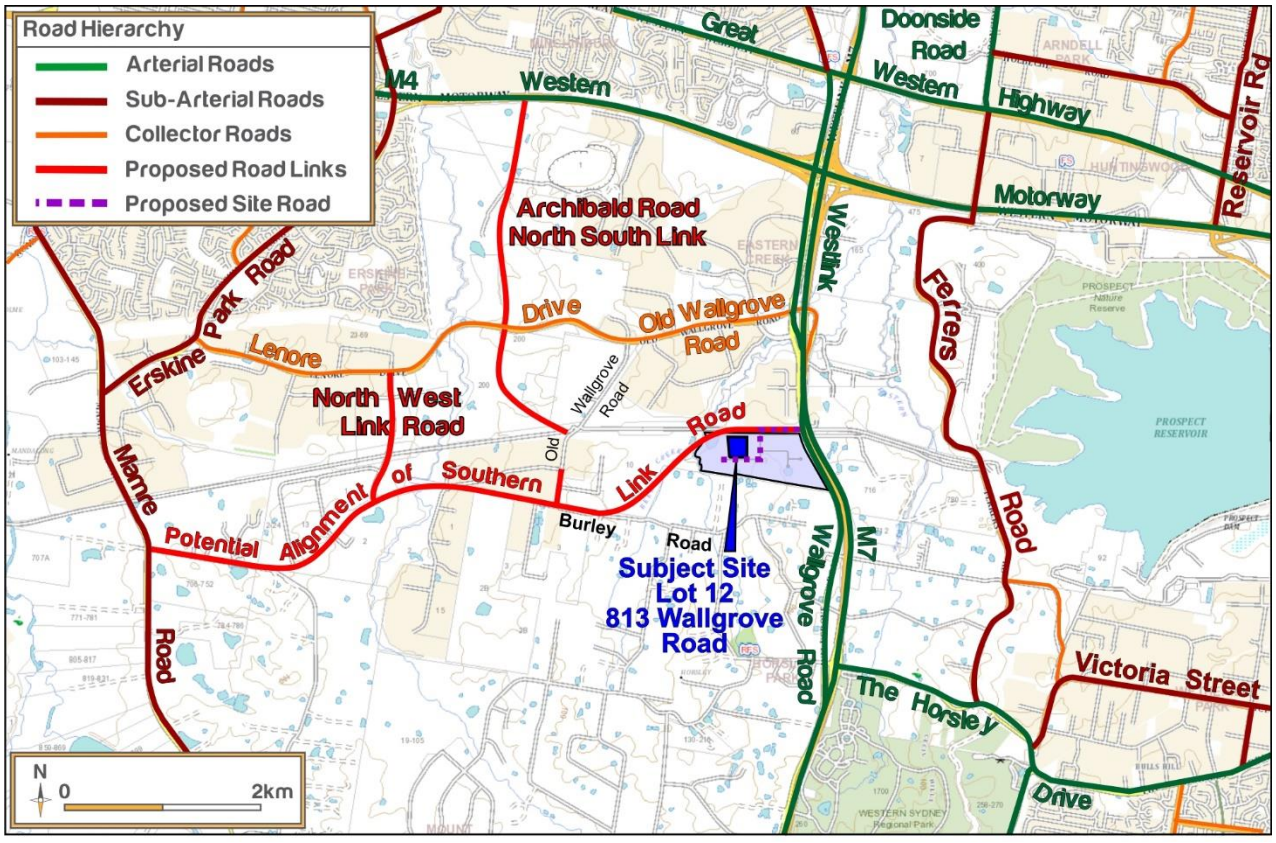


Figure 6: Road Hierarchy

4.3 Public Transport

4.3.1 Bus Services

TfNSW Guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes' walk) of a bus stop. Accordingly, the Site is serviced by 2 bus stops within 800 walking distance of the Site as shown in **Figure 7**. These stops are within walkable accessibility by bus services operating along Wallgrove Road.

Details of each service that stops within 400 metres of the Site are presented in **Table 5**. The table provides details around each route number, route description and service frequencies during the morning, evening and off-peak periods.

TABLE 5 EXISTING BUS SERVICES

Route No.	Route	Route Description	Average Service Frequency
835	University of Western Sydney, Penrith to Prairewood T-Way	Western Sydney University Penrith Campus, St Marys Interchange, St Clair, Estern Creek, Horsley Park, Bossley Park	AM Peak: 30 minutes PM Peak:30 minutes Off-Peak: 60 minutes
738	Mount Druitt to Eastern Creek via Rooty Hill (Loop Service)	Mount Druitt, Rooty Hill, Eastern Creek, Horsley Park, Eastern Creek, Rooty Hill, Mount Druitt	AM Peak: 15 minutes PM Peak: 20 minutes Off-Peak: 40-60 minutes

4.3.2 Railway Services

TfNSW Guidelines state that train services influence the travel mode choices of areas within 800 metres distance (approximately 10 minutes' walk) of a train station. In this regard, it is evident that the Site lacks walking accessibility to train services with the closest railway station being the Rooty Hill Station at approximately 5.5 km to the north.

However, bus route 738 which has stops conveniently located directly to the north of the site along Wallgrove Road providing a public transport connection to the Rooty Hill Railway Station. A bus journey to / from these stops to the station takes approximately 15 minutes.

There is one train route which services Rooty Hill Railway Station being the T1 – City to Emu Plains or Richmond line. T1 train services from the Rooty Hill Railway Station have a frequency of 10-15 minutes during the peak hours and 15-20 minutes during the off-peak hours.

4.3.3 Existing Pedestrian Accessibility

Due to the current undeveloped nature immediately surrounding the Site, pedestrian infrastructure is currently non-existent. Key pedestrian desire lines in the vicinity of the Site would be triggered by connections to existing public transport infrastructure. In this regard, it is anticipated that the WAD which has been finalised between Gazcorp and TfNSW would have pedestrian infrastructure provision such as formal footpaths and crossings to facilitate pedestrian activity and access. This would be particularly important to allow for safe and efficient movement to / from the Site to the bus stops along Wallgrove Road. However, at this point in time it is not yet committed.

Other recent improvements to Wallgrove Road and Old Wallgrove Road further north of the Site have included the provision of pedestrian infrastructure with shared paths and footpaths. Similar active transport infrastructure is expected to be included as part of localised upgrades proposed to facilitate access to the site.

Surrounding sites in the area are generally industrial in nature, and as such would not be considered key destinations and attractions for people to walk to. Finally, the proposed GIE is expected to provide pedestrian connection in the form of concrete footpath for the Estate including the site which facilitate the pedestrian walkability for the Proposal.

4.3.4 Existing Cycle Routes

The existing cycle network in the vicinity of the site is also shown in **Figure 7**. The area within the locality of the site is well serviced with cycle routes – both on-road and off-road. Notable cycle routes include the route along the M7 Westlink to the east of the Site.

Other notable off-road cycle routes are those to the north of the Site including along Lenore Drive and Old Wallgrove Road. Furthermore, recent upgrades to Old Wallgrove Road have included off-road shared cycle/pedestrian pathways and pedestrian only footpaths.

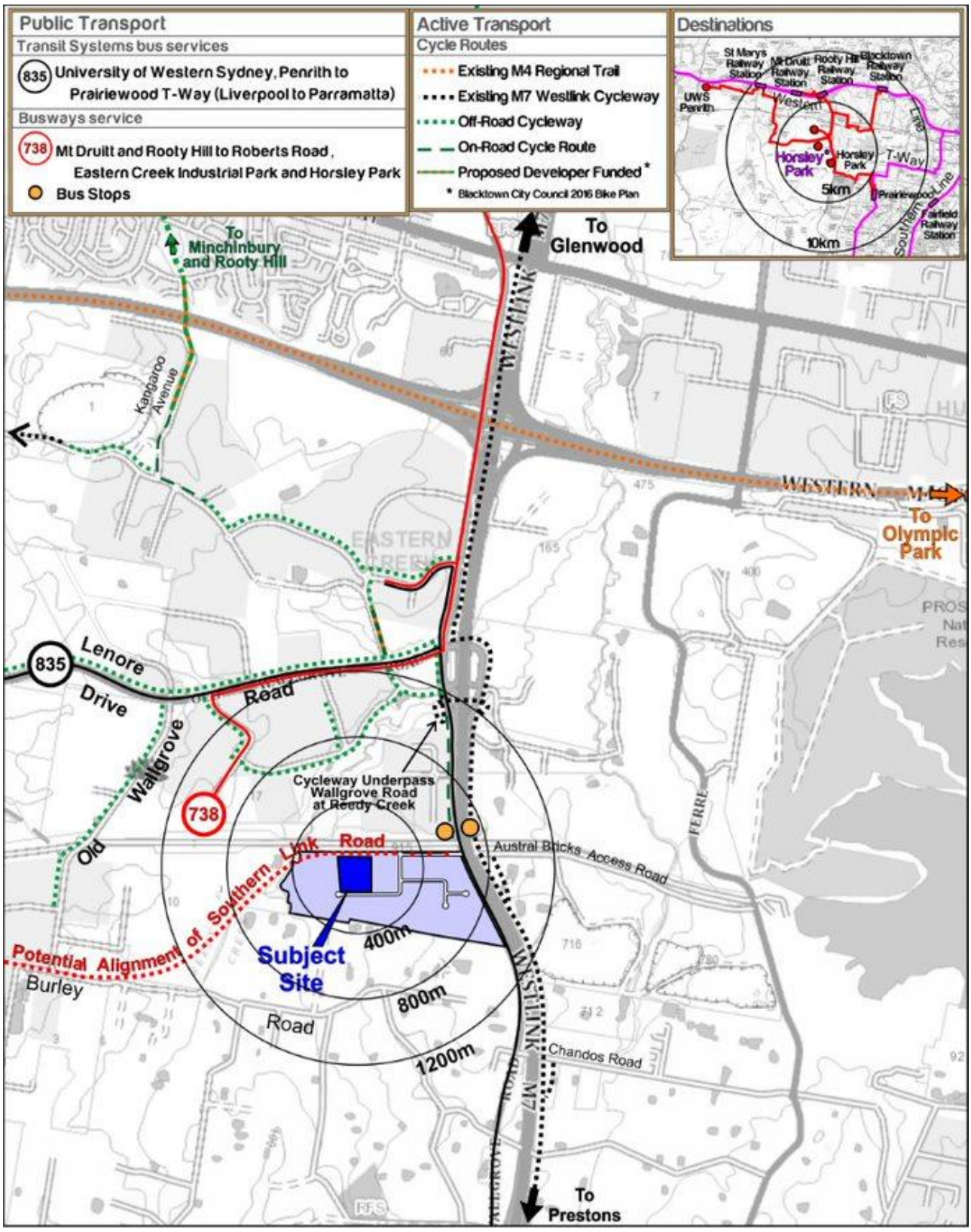


Figure 7: Public and Active Transport

5 Future Context

The Site is located within the Western Sydney Employment Area (WSEA) for which the New South Wales (NSW) Government established a vision to provide a wide range of businesses in a commercial/industrial core with the lands proposed for number of employment opportunities including transport and logistics, industrial warehousing and office spaces.

To deliver the Government vision for the WSEA, a number of regional traffic modelling and impact studies have been undertaken by different consultants on behalf of TfNSW, Council and DPE. As part of the holistic traffic studies, EMME and Paramics models had been developed by GHD to analyse the impact of traffic on a comprehensive scale. Accordingly, it is understood that the previous project approval has been granted in consideration of these traffic studies and, as such, the traffic modelling and assumptions for the area were deemed acceptable to the assessing Authorities, as detailed in the Old Wallgrove Road Upgrade Traffic and Transport Report (GHD 2012).

The latest regional road network upgrades envisaged for the general vicinity is discussed in the "Old Wallgrove Road Upgrade" documents (prepared by RMS in July 2015). These upgrade works have been largely progressed and delivered between 2017-2018. However, a number of regional works are still envisaged for the broader WSEA area.

5.1 Completed Works

As it relates to the Site the following upgrade works have been completed:

- Old Wallgrove Road has been upgraded to three-lanes in each direction between Southridge Street and the M7 Motorway, and
- Old Wallgrove Road has been upgraded to two-lanes in each direction between Southbridge Street and Robert Street with a central median to allow for potential three lanes in future.

Reduced copies of the regional road and intersection upgrades in this general proximity are presented in following **Figure 8.**

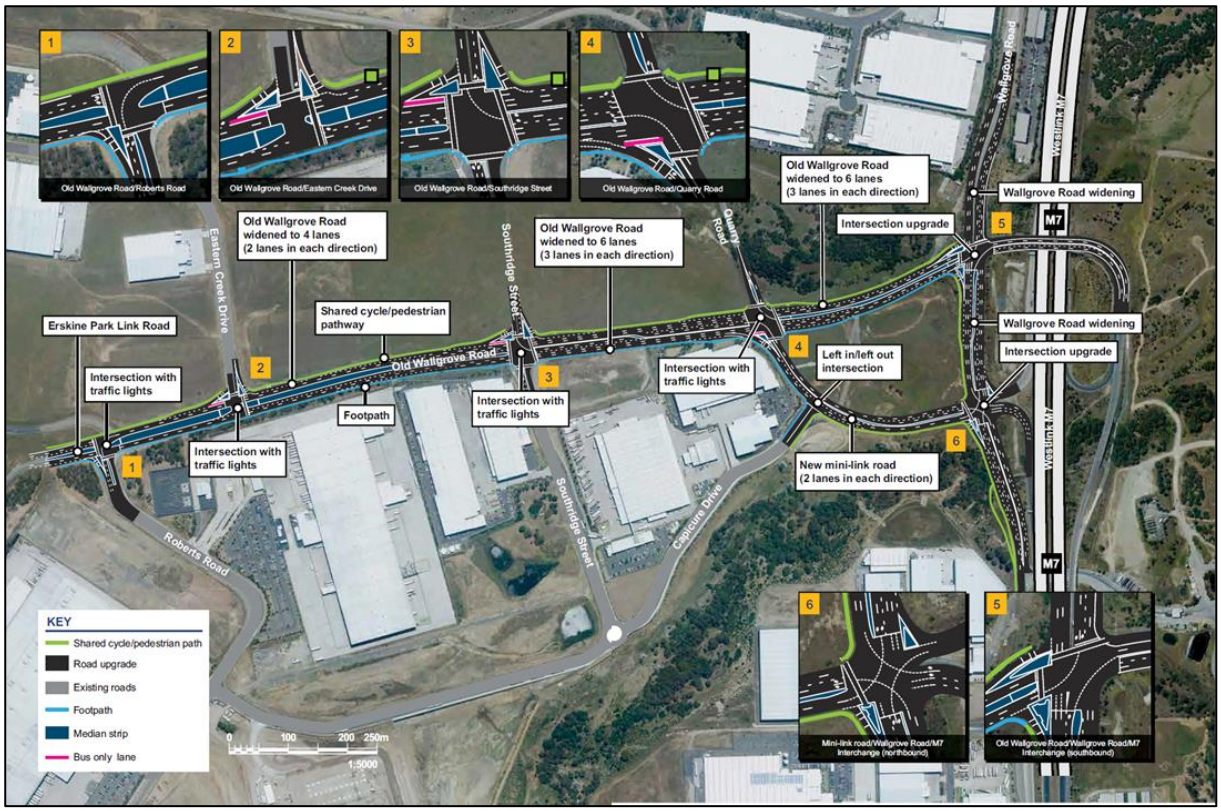


Figure 8: Regional Upgrade Plan

5.2 Proposed Works

The Southern Link Road is a significant future regional road envisaged to run along the northern boundary of the precinct and will be connected to the future Burley Road, hence providing the precinct and the Site with a greater access to the broader WSEA particularly to Mamre Road – to the west – which will also be a major north-south corridor in the future.

It is important to note that the Southern Link Road upgrade has not been funded, nor has there been any commitment to timeframes for the upgrade at the time of preparation of this TA.

6 Parking Provisions

6.1 Car Parking

The approved car parking rates — in accordance with Condition B5 of SSD 5248 — are outlined below:

- 1 space per 300 m^2 of industrial/warehouse GFA, and
- 1 space per 40 m^2 of office GFA.

Accordingly, the required parking spaces for the development is presented in the following table. This also details the number of car parking spaces proposed.

TABLE 6 CAR PARKING REQUIREMENT VS. PROVISION

	GFA (m^2)		Car Parking Requirement (spaces)	Car Parking Provision (spaces)
Warehouse	29,710	1 per 300m^2	99.0	**194**
Office	1,095	1 per 40m^2	27.4	
VAS Amenities	320	1 per 40m^2	8.0	
Dock Office	575	1 per 40m^2	14.4	
Gatehouse	20	1 per 40m^2	0.5	
Total			**150**	

The proposed development will provide 194 car parking spaces, satisfying Condition B5 of SSD 5248.

6.2 Accessible Parking

Condition B5 of SSD 5248 outlines the following rate for accessible parking:

- 2 disabled spaces for every 100 car parking spaces.

Provision of accessible parking in accordance with the above rate to the 150 spaces required under SSD 5248 results in a required provision of 3 accessible parking spaces.

The proposed development will provide 3 accessible car parking spaces, satisfying Condition B5 of SSD 5248. Accessible spaces should be located within close proximity of building entrances, where possible, and designed in accordance with AS2890.6:2009.

6.3 Bicycle Parking

Condition B8 of SSD 5248 requires that:

"Future development applications must provide bicycle racks, and amenity and change room facilities for cyclists in accordance with Planning Guidelines for Walking and Cycling (December 2004, NSW Department of Infrastructure, Planning and Natural Resources, Road and Traffic Authority)."

Accordingly, the following bicycle rates should be considered:

- Staff Bicycle Parking Requirement 3-5% of staff number (for each building)
- Visitor Bicycle Parking Requirement 5-10% of staff number (for each building)

Additionally, locker, shower and change room should be provided in accordance with the requirements summarised in the below table.

TABLE 7 MINIMUM LOCKER, SHOWER AND CHANGE ROOM PROVISION

Staff	Lockers	Showers	Change Rooms
0-12	1 per 3 racks	1	-
13-49	1 per 3 racks	2 (1 male and 1 female)	2 (1 male and 1 female)
50-149	1 per 3 racks	4 (2 male and 2 female)	2 (1 male and 1 female)
150-299	1 per 3 racks	6 (3 male and 3 female)	2 (1 male and 1 female)
300-500	1 per 3 racks	8 (4 male and 4 female)	2 (1 male and 1 female)

Note: Additional shower facilities will be required at a rate of 1 female and 1 male shower for every 250 staff.
(source: Planning Guidelines for Walking and Cycling, 2004)

Based on a projected maximum of 88 staff on site at any given time, this equates to the following requirement of:

- 8-14 bicycle spaces
  - 3-5 staff bicycle spaces
  - 5-9 visitor bicycle spaces
- 3-5 lockers
- 4 showers (2 male, 2 female)
- 2 changerooms (1 male, 1 female)

The proposed development will provide 25 bicycle spaces, 170 lockers, 4 showers, and 3 changerooms, satisfying the requirement per Condition B8 of SSD 5248.

6.4 Service Vehicle Parking

6.4.1 Service Bay Rates

Separate hardstand areas are proposed for each warehouse development which is expected to accommodate their proposed site-specific demand. However, in the absence of known operational requirements, the RMS Guide suggests the following service bay requirements for industrial land-uses:

- 1 space per 800m2 for development with a GFA <8,000m2, and
- 10 spaces + 1 space per 1,000m2 over 8,000m2.

Based on experience with similar projects, the strict application of RMS Guides service bay rates leads to significant on-site service bay requirements which in most cases is higher than the actual tenant demands for such facilities.

In this regard, a review of the similar site-specific plans for developments within the recently approved (and nearly complete) First Estate development at Distribution Drive, Orchard Hills, has been undertaken to review current practice with regard to provision of service bays for such developments.

Details of this analysis are outlined in below table.

TABLE 8 SERVICE BAY RATES – SUBDIVISION LOTS AT FIRST ESTATE

Lot	Warehouse GFA (m^2)	Number of service bays provided	Service Bay Rate
Lot 6A	5,000	6	1 space per 833m^2
Lot 6B	4,575	4	1 space per 1,144m^2
Lot 6C	13,950	6	1 space per 2,325m^2
Lot 8A	21,000	25	1 space per 840m^2
Lot 8B1	7,000	9	1 space per 778m^2
Lot 8B2	11,734	13	1 space per 903m^2

From the above, the actual service bay provision is expected to fall within the range between 1 space per 778 m^2 and 2,325 m^2 of warehouse GFA.

6.4.2 Service Bay Provision

Having regard to the above, the minimum and maximum service bay rates have been applied. The resultant service bay requirements are outlined in the following table.

TABLE 9 SERVICE BAY REQUIREMENT VS. PROVISION

Warehouse GFA (m^2)	Service Bay Requirement (Lower Rate)	Service Bay Requirement Rate (Upper Rate)	Service Bay Provision
29,710	13	38	31

The development will provide 31 service bays, comprising:

- 18 recessed docks
- 13 on-grade docks

In addition to the 31 service bays, 2 waiting areas to the north of the building for B-doubles have also been provided.

In line with **Table 9**, it is demonstrated that the indicative number of service bays provided is within the range of the requirements established. As such, this provision is deemed sufficient.

6.4.3 First Principles Assessment – Loading Dock Turnover Time

Furthermore, typical dwell times (provided by DHL, based on a comparable DHL facility) have been obtained and is summarised in **Table 10**.

TABLE 10 SERVICE BAY TYPICAL DWELL TIMES

Vehicle size and loading arrangement	Typical dwell time (gate to gate) in hours
B-double rear trailer	2.08
B-double side load	2.10
Export container	1.97
Single rear trailer	1.11
Single side load	1.27
Single unload reload sideload	1.92

B-doubles are expected to comprise 25% of heavy vehicles (refer to Section **7.4**), hence over a 2-hour window, up to 3 B-doubles can be expected on site at any given time (25% of 12 inbound vehicles during the busiest period between 6:00AM and 12:00PM). This can be readily accommodated in the 2 B-double truck spaces to the north, and 2 nominated locations for side loading (4 locations in total).

Likewise, rigid trucks and semi-trailers are expected to comprise 75% of heavy vehicles (refer to Section **7.4**). For conservativeness, a dwell time of 2 hours is also adopted. Thus, at peak, up to 9 rigid trucks and semi-trailers can be expected on site (75% of 12 inbound vehicles during the busiest period between 6:00AM and 12:00PM).

Even accounting for the worst-case scenario whereby there are 2 B-doubles side loading, and 8 of the loading docks need to be kept vacant (see design review in **Appendix A**), this leaves 23 loading docks which is more than sufficient to accommodate the forecast 9 rigid trucks / semi-trailers.

7 Traffic Assessment

7.1 SSD 5248 Traffic Generation (Estate)

The GHD TIA considered the calculation of traffic generation for industrial sites via a number of methods including based on Gross Floor Area (GFA), number of employees, and recent surveys.

The report stated that the typical RMS Guide (2002) rate of 0.5 trips per 100m^2 GFA was not reflective of the nature of the GIE and that a rate of 15 trips per developable hectare (i.e. site area) is more appropriate. This received RMS (now Transport for NSW) concurrence in 2013.

As such, application of the 15 trips per developable hectare resulted in an overall peak traffic generation of:

- AM peak: 600 vehicular trips/hr
- PM peak: 600 vehicular trips/hr

7.2 MOD 1 Traffic Generation (Estate)

The RMS Guide Update (2013) was published after the GHD TIA. This guide provided more recent guidance on traffic generation for industrial sites (amongst others). The Ason MOD 1 Report referred to this adopted an average trip generation of:

- AM Rate 0.247 trips per 100m^2 of GFA.
- PM Rate 0.182 trips per 100m^2 of GFA.

Resulting in an overall peak traffic generation for the overall GIE site (218,675m^2).:

- AM peak: 541 vehicular trips/hr
- PM peak: 397 vehicular trips/hr

7.3 Lot 11&12 Traffic Generation

As it relates specifically to Lot 11&12, the rates outlined in Section **7.1** and Section **7.2** need to be pro-rated down to an individual site level.

The proposed Lot 11&12 has a site area of 56,698m^2.

The proposed Lot 11&12 site is an amalgamation of the previous Lot 11A, 11B, 11C, 12A, 12B, 12C (refer to Section **3.2**) which totalled an overall GFA of 22,020m^2, or 10.1% of the total GIE site.

As such, it can be considered that the approved traffic generation for Lot 11&12 (previously Lot 11A, 11B, 11C, 12A, 12B, 12C) is summarised per **Table 11**.

Additionally, the traffic generation for the proposed development, calculated on the basis of the trip rates adopted in MOD 1 is also included in **Table 11**.

TABLE 11 TRAFFIC GENERATION (PRO-RATED TO SITE)

Reference	Rate	Area	Traffic Generation
RMS Guide (2002)	0.5 trips per 100m^2 GFA	22,020m^2 GFA	• AM peak: 110 veh trips/hr • PM peak: 110 veh trips/hr
SSD 5248 Approval	15 trips per 1 developable hectare	56,698m^2 site area	• AM peak: 85 veh trips/hr • PM peak: 85 veh trips/hr
MOD 1 Approval (i.e. RMS Guide Update 2013)	AM: 0.247 trips per 100m^2 of GFA PM: 0.182 trips per 100m^2 of GFA	22,020m^2 GFA	• AM peak: 54 veh trips/hr • PM peak: 40 veh trips/hr
Proposed Development (based on GFA)	AM: 0.247 trips per 100m^2 of GFA PM: 0.182 trips per 100m^2 of GFA	31,720 m^2 GFA	• AM peak: 78 veh trips/hr • PM peak: 58 veh trips/hr

As seen, on the basis of theoretical trip rates and GFA, the proposed development will generate some 24 and 18 vehicle trips per hour (in the AM and PM peaks respectively) over the previous MOD 1 approval. This is generally some 9-12 additional vehicles per hour or 1 additional vehicle every 5-7 minutes which is considered minor in the context of overall Estate volumes. Furthermore, detailed operational volumes have been provided by DHL which provides a more accurate (and lower) indication of expected traffic generation for the site.

7.4 Traffic Impacts

A detailed 24-hour schedule of expected traffic volumes has been provided by DHL. The expected traffic generation for the site is summarised in **Table 12**.

Of the heavy vehicle volumes, the expected breakdown by size is:

- 5% rigid trucks (12.5m or shorter)
- 70% articulated vehicles (12.5m to 19m)
- 25% B-doubles

TABLE 12 PROJECTED TRAFFIC GENERATION

Period	Light Vehicles			Visitors	Heavy Vehicles			All Vehicles
	Inbound	Outbound	Total	Total	Inbound	Outbound	Total	Total
12:00 AM - 1:00 AM	0	0	0	0	0	0	0	0
1:00 AM - 2:00 AM	0	0	0	0	0	0	0	0
2:00 AM - 3:00 AM	0	0	0	0	0	0	0	0
3:00 AM - 4:00 AM	0	0	0	0	0	0	0	0
4:00 AM - 5:00 AM	0	0	0	0	0	0	0	0
5:00 AM - 6:00 AM	29	0	29	3	4	1	5	37
6:00 AM - 7:00 AM	20	0	20	2	6	14	20	42
7:00 AM - 8:00 AM	5	0	5	1	6	7	13	19
8:00 AM - 9:00 AM	10	0	10	1	6	6	12	23
9:00 AM - 10:00 AM	17	0	17	2	6	5	11	30
10:00 AM - 11:00 AM	0	0	0	0	6	5	11	11
11:00 AM - 12:00 PM	0	0	0	0	6	4	10	10
12:00 PM - 1:00 PM	0	0	0	0	2	1	3	3
1:00 PM - 2:00 PM	7	0	7	1	2	4	6	14
2:00 PM - 3:00 PM	0	29	29	3	1	2	3	35
3:00 PM - 4:00 PM	0	20	20	2	1	1	2	24
4:00 PM - 5:00 PM	0	5	5	1	1	3	4	10
5:00 PM - 6:00 PM	0	10	10	1	1	2	3	14
6:00 PM - 7:00 PM	0	17	17	2	0	1	1	20
7:00 PM - 8:00 PM	0	0	0	0	0	0	0	0
8:00 PM - 9:00 PM	0	0	0	0	0	0	0	0
9:00 PM - 10:00 PM	0	7	7	1	0	0	0	8
10:00 PM - 11:00 PM	0	0	0	0	0	0	0	0
11:00 PM - 12:00 AM	0	0	0	0	0	0	0	0
TOTAL	**88**	**88**	**176**	**20**	**48**	**56**	**104**	**300**

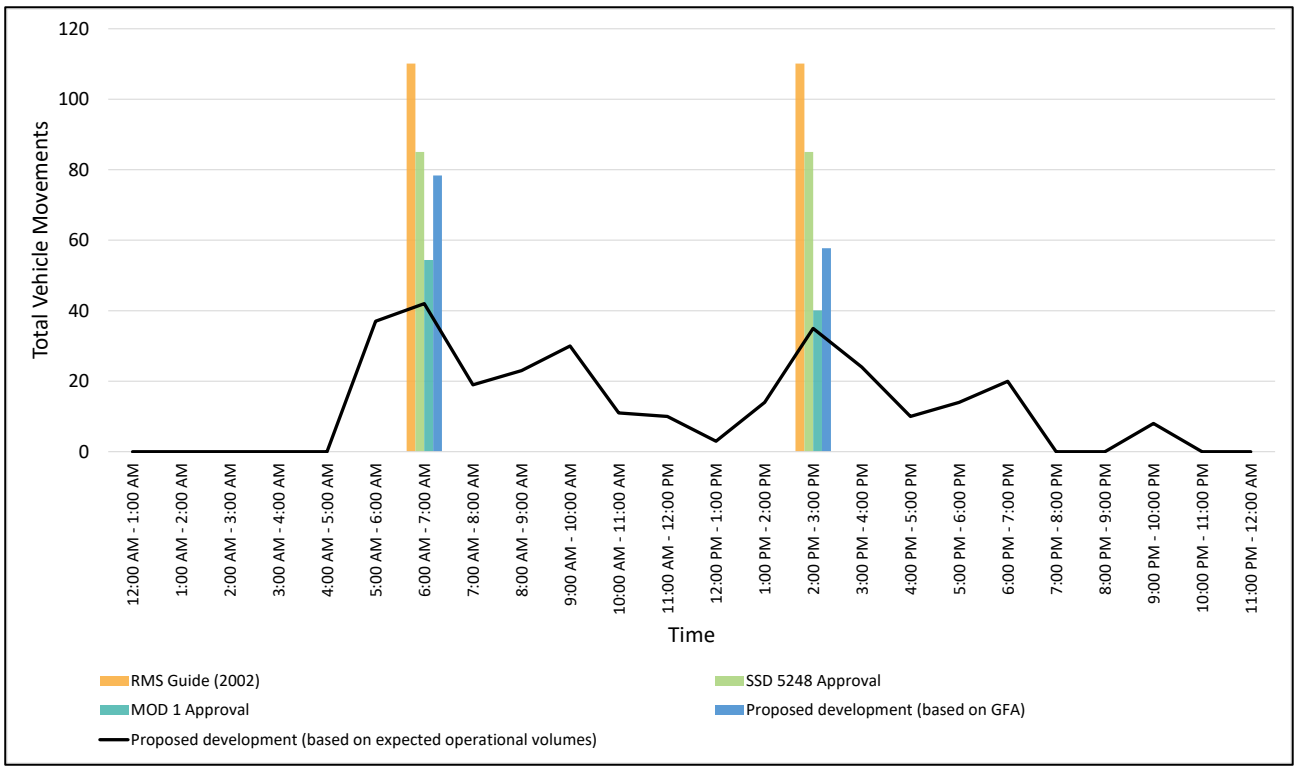


Figure 9: Traffic Generation Profile for Lot 11&12

As seen in **Table 12** and in **Figure 9**, the expected DHL traffic generation of 42 vehicular trips in the AM peak and 35 vehicular trips in the PM peak is less than that approved under the GHD assessment (both RMS Guide 2002 and 15 trips per hectare rate) and Ason Group MOD 1 traffic studies.

Furthermore, subject to its approval, MOD 2 would further raise the effective cap on the Lot 11&12 traffic generation (and consequently lowering the cap on the Lot 13 traffic generation, whilst reducing the overall GIE traffic generation due to lower total Estate GFA). In essence, subject to approval of MOD 2, the operation volumes as outlined in **Table 12** would be even lower (proportionally) compared to the theoretical generation based on trip rates and GFA.

As such, the overall traffic impact of this development is expected to be less than that previously approved and is not considered to warrant additional traffic modelling.

8 Design Commentary

8.1 Relevant Design Standards

The site access, car park and loading arrangements for the proposed development should be designed to comply with the following relevant Australian Standards:

- AS2890.1:2004 for car parking areas
- AS2890.2:2018 for commercial vehicle loading areas
- AS2890.3:2015 for bicycle parking

Ason Group will complete a detailed design review once the site plans are available. However, compliance with the above design guidelines is expected to form a normal condition of consent which can readily be provided at the Construction Certificate (CC) phase of the Proposal.

8.2 Design Vehicles

The largest vehicle expected to access the site is a 26m B-double. However, for robust assessment, we have reviewed the swept path analysis for 30m Super B-double. This is to future-proof the site in the event that 30m Super B-doubles be required in the future.

On-site facilities and accesses should be generally designed to accommodate up to B99 cars as the light 'design vehicle' as defined in AS2890.1.

8.3 Access Design

Separate accesses have been provided for cars and trucks. Swept path assessment (provided in **Appendix A**) has been prepared to demonstrate 30m Super B-doubles (for future-proofing) can enter/ exit the site in a single forwards manoeuvre at the truck accesses, and likewise for B99 vehicles for the car accesses. As the design has been tested for a larger 30m Super B-double, access and circulation is readily possible for the smaller design vehicle, being the 26m B-double.

8.4 Vehicle Queueing

Site access gates will be generally kept open during operation hours so as to minimise the potential for vehicle queueing beyond the site boundaries. The design of the warehouse also includes a long external loop around the perimeter of the site, assisting in reducing the incidence of any potential queueing.

8.5 Internal Design

Access, circulation areas, and parking is expected to be designed in accordance with AS2890.1:2004, AS2890.2:2018, and AS2890.3:2015.

Key swept paths have been undertaken to demonstrate the suitability of the design (provided in **Appendix A**).

The loading docks will be utilised by vehicles up to 20m articulated vehicles. 26m B-doubles will unload on the hardstand, in a side-loading manner. The design can also accommodate 30m Super-B-double side loading, if it were required in the future.

8.6 Loading Dock Management

It is noted that the maximum size truck reversing into the loading bays will be restricted to 20m articulated vehicles, with 26m B-doubles restricted to side loading. Additional loading dock and hardstand management practices will be required to fully co-ordinate, manage and assist when B-doubles are required on-site, as is typical of any industrial facility.

8.7 Emergency Vehicle Access

The perimeter road has been designed to provide a minimum width of 6m or more, accommodating aerial appliance (fire truck) access and circulation.

9 Summary and Conclusions

9.1 Key Findings

The key findings of this Transport Assessment are:

- The application refers to the proposed warehouse facility within Lot 11&12 of the Gazcorp Industrial Estate, located at 813–913 Wallgrove Road, Horsley Park within Fairfield City Council. The Estate has been approved for development as a State Significant Development (SSD 5248) on 11 November 2019 and subsequently modified (MOD 1) on 23 December 2021. A second modification for the Estate (MOD 2) is currently being prepared
- The facility will comprise
  - 29,710m^2 of warehouse area
  - 1,095m^2 of office area
  - 320m^2 of VAS amenities area
  - 575m^2 of dock office area
  - 194 car parking spaces (inclusive of 3 accessible spaces)
- In line with the approved SSDA conditions, minimum car parking provision rates are defined for the site, requiring a minimum provision of 150 car spaces. The proposal will provide 194 car spaces (including 3 accessible spaces), satisfying the SSDA conditions.
- In line with the approved SSDA conditions, minimum bicycle parking provision rates and amenities are defined for the site, requiring a minimum provision of 8-14 bicycle spaces. The proposal will provide 25 bicycle spaces alongside the required number of locker, shower, and change rooms to satisfy the SSDA conditions.
- 31 service bays have been provided for service vehicle parking, which falls within the range of standard provisions based on comparable warehouses and is considered suitable for the development and planned operations. Dwell time analysis also demonstrates sufficiency of the proposed service bay provision.
- The GHD TIA established an approved trip generation (pro-rated for the site Lot) of:
  - AM peak: 85 vehicular trips/hr
  - PM peak: 85 vehicular trips/hr
- The Ason MOD 1 Report established an approved trip generation (pro-rated for the site Lot) of:
  - AM peak: 54 vehicular trips/hr
  - PM peak: 40 vehicular trips/hr
- On the basis of MOD 1 trip rates and the proposed GFA, the proposed development would be expected to generate:
  - AM peak: 78 vehicular trips/hr
  - PM peak: 58 vehicular trips/hr
- However, projected operational volumes have been provided, indicating a lower forecasted generation of:
  - AM peak: 42 vehicular trips/hr
  - PM peak: 35 vehicular trips/hr

- This is less than the previously approved traffic generation for the Site, hence is expected to result in similar or less impact upon the external road network
- Warehouse, access and hardstand areas have been designed in accordance with AS2890.1:2004, AS2890.2:2018, AS280.3:2015. A standard condition of consent requiring compliance with AS2890 would be considered sufficient to ensure that any minor changes to the plans required, if any, could be undertaken as part of subsequent and future development stages and/or Construction Certificates.

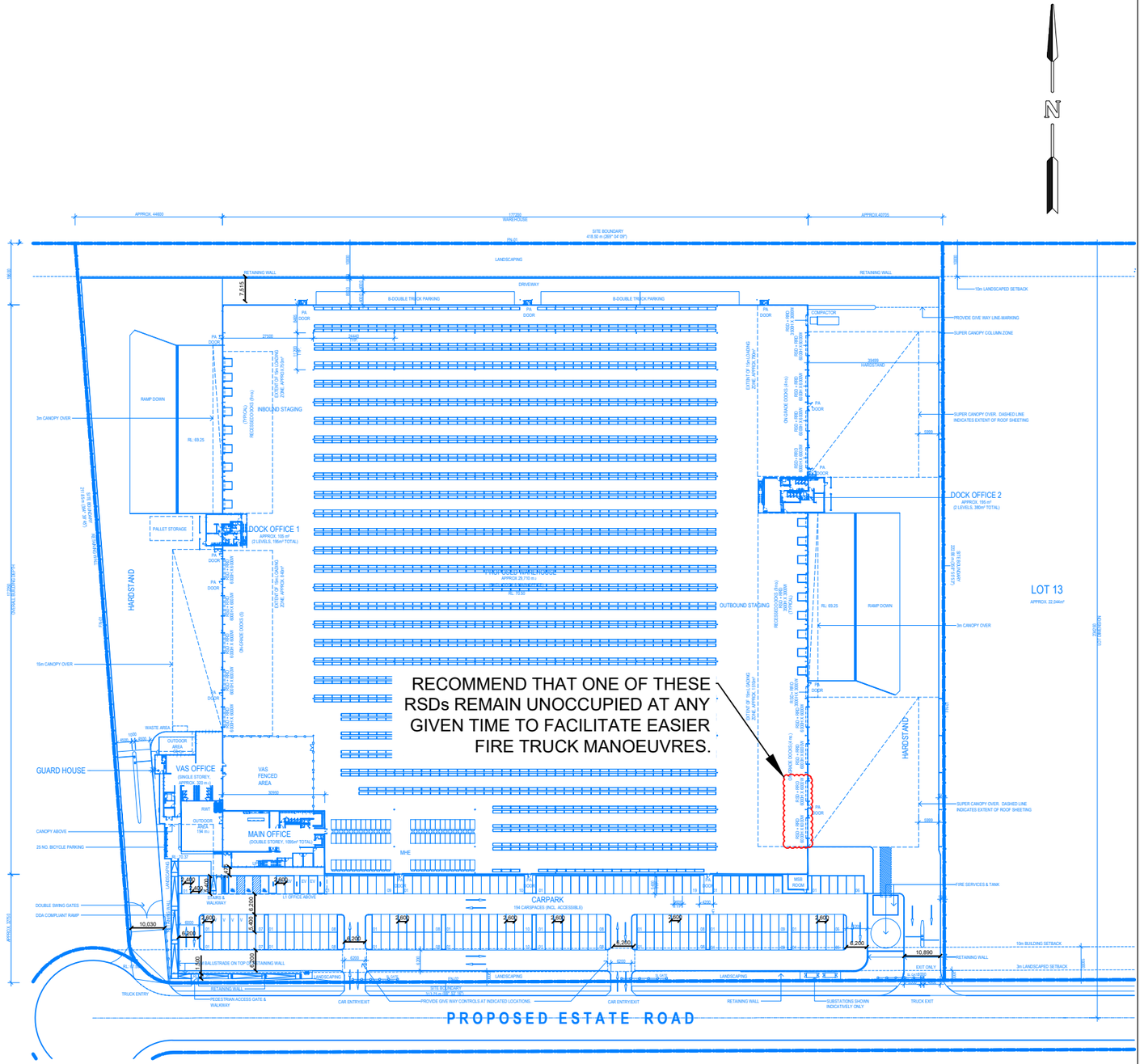
9.2 Conclusions

In summary, the proposed development is supportable from a transport planning perspective.

Appendix A. Swept Paths

NOTE:

- THE DESIGN REVIEW HAS BEEN UNDERTAKEN IN ACCORDANCE WITH THE RELEVANT AUSTRALIAN STANDARDS (AS2890.1:2004 AND AS2890.2:2018).
- 30.0m SUPER B-DOUBLES CAN SIDE LOAD FROM BOTH THE WESTERN AND EASTERN SIDES IN FRONT OF THE ON-GRADE DOCKS. REFER TO AG02 FOR FURTHER DETAILS. SOME DOCKS WILL NEED TO BE VACANT TO ACCOMMODATE 30.0m SUPER B-DOUBLES WHEN THEY ARE SIDE LOADING.
- CLARIFY IF 30.0m SUPER B-DOUBLES WILL BE UNCOUPLING WITHIN THE EASTERN AND WESTERN HARDSTAND AREAS. IF UNCOUPLING IS REQUIRED, CLARIFY UNCOUPLING LOCATIONS.
- THE WESTERN HARDSTAND AREA ASSESSMENT HAS BEEN SHOWN FROM AG04 TO AG05.
- THE EASTERN HARDSTAND AREA ASSESSMENT HAS BEEN SHOWN FROM AG06 TO AG07.
- THE PROPOSED CAR PARKING AREA HAS BEEN REVIEWED AND THE FOLLOWING IS NOTED:
  - THE CLASS OF CAR PARKING SPACES HAS BEEN ASSESSED AND IT IS USER CLASS 3 (GREATER THAN USER CLASS 1/1A AS REQUIRED BY AS2890.1:2004).
  - FIRE TRUCKS WILL BE ABLE TO TURN AROUND THE SITE IN A CLOCKWISE DIRECTION. REFER TO SWEPT PATHS ON AG07 AND AG08. IT IS RECOMMENDED THAT ONE OF THE RSDs (INDICATED ON THIS PAGE) MAINTAIN UNOCCUPIED AT ANY GIVEN TIME TO FACILITATE EASIER FIRE TRUCK MANOEUVRES.



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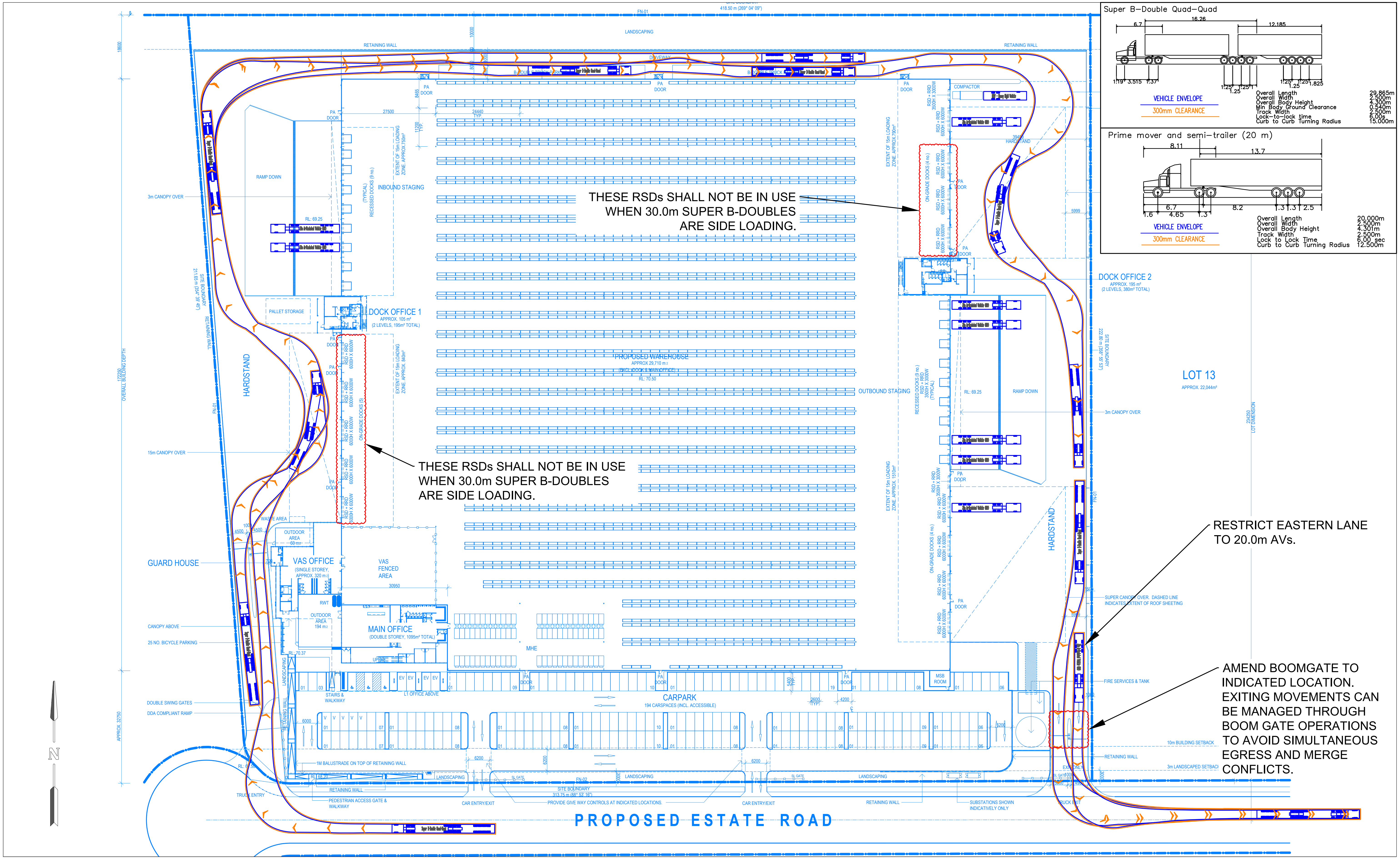

Super B-Double Quad-Quad
VEHICLE ENVELOPE
300mm CLEARANCE
Overall Length 29.865m
Overall Width 2.500m
Overall Body Height 4.300m
Min Body Ground Clearance 0.540m
Track Width 2.500m
Lock-to-lock time 6.00s
Curb to Curb Turning Radius 15.000m
Prime mover and semi-trailer (20 m)
VEHICLE ENVELOPE
300mm CLEARANCE
Overall Length 20.000m
Overall Width 2.500m
Overall Body Height 4.301m
Track Width 2.500m
Lock to Lock Time 6.00 sec
Curb to Curb Turning Radius 12.500m
THESE RSDs SHALL NOT BE IN USE
WHEN 30.0m SUPER B-DOUBLES
ARE SIDE LOADING.
THESE RSDs SHALL NOT BE IN USE
WHEN 30.0m SUPER B-DOUBLES
ARE SIDE LOADING.
RESTRICT EASTERN LANE
TO 20.0m AVs.
AMEND BOOMGATE TO
INDICATED LOCATION.
EXITING MOVEMENTS CAN
BE MANAGED THROUGH
BOOM GATE OPERATIONS
TO AVOID SIMULTANEOUS
EGRESS AND MERGE
CONFLICTS.
DOCK OFFICE 1
DOCK OFFICE 2
HARDSTAND
INBOUND STAGING
OUTBOUND STAGING
PROPOSED WAREHOUSE
LOT 13
GUARD HOUSE
VAS OFFICE
MAIN OFFICE
CARPARK
PROPOSED ESTATE ROAD
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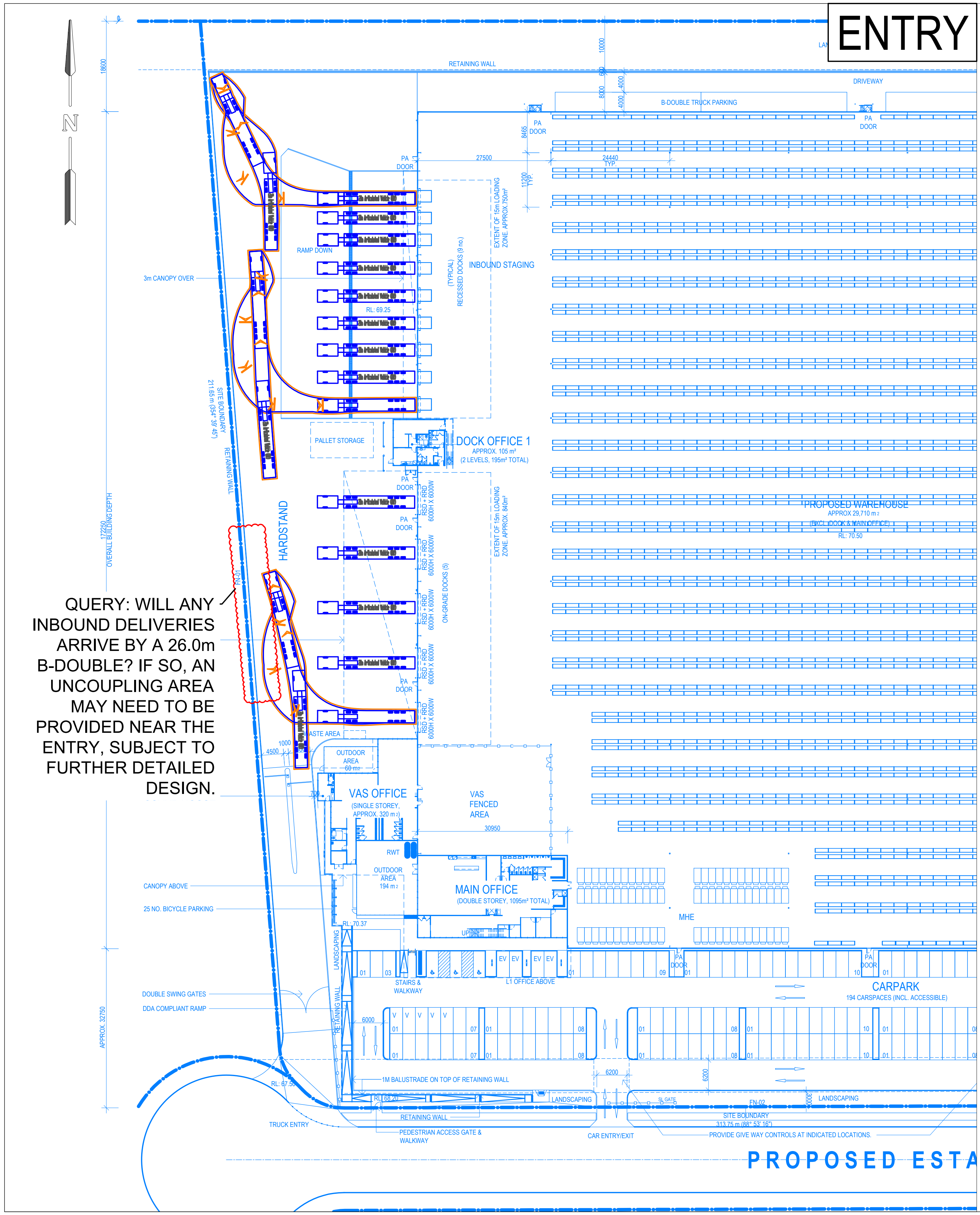

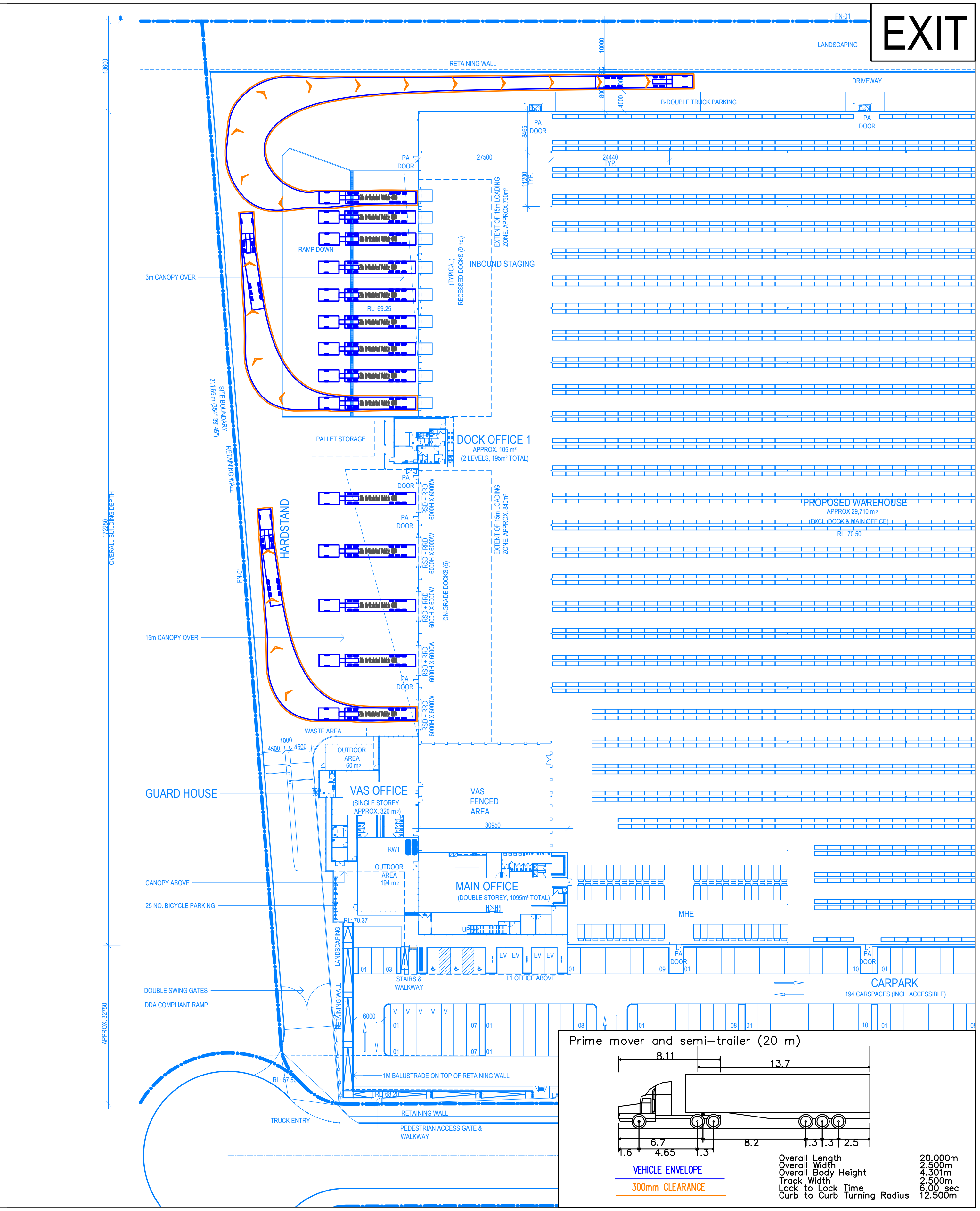

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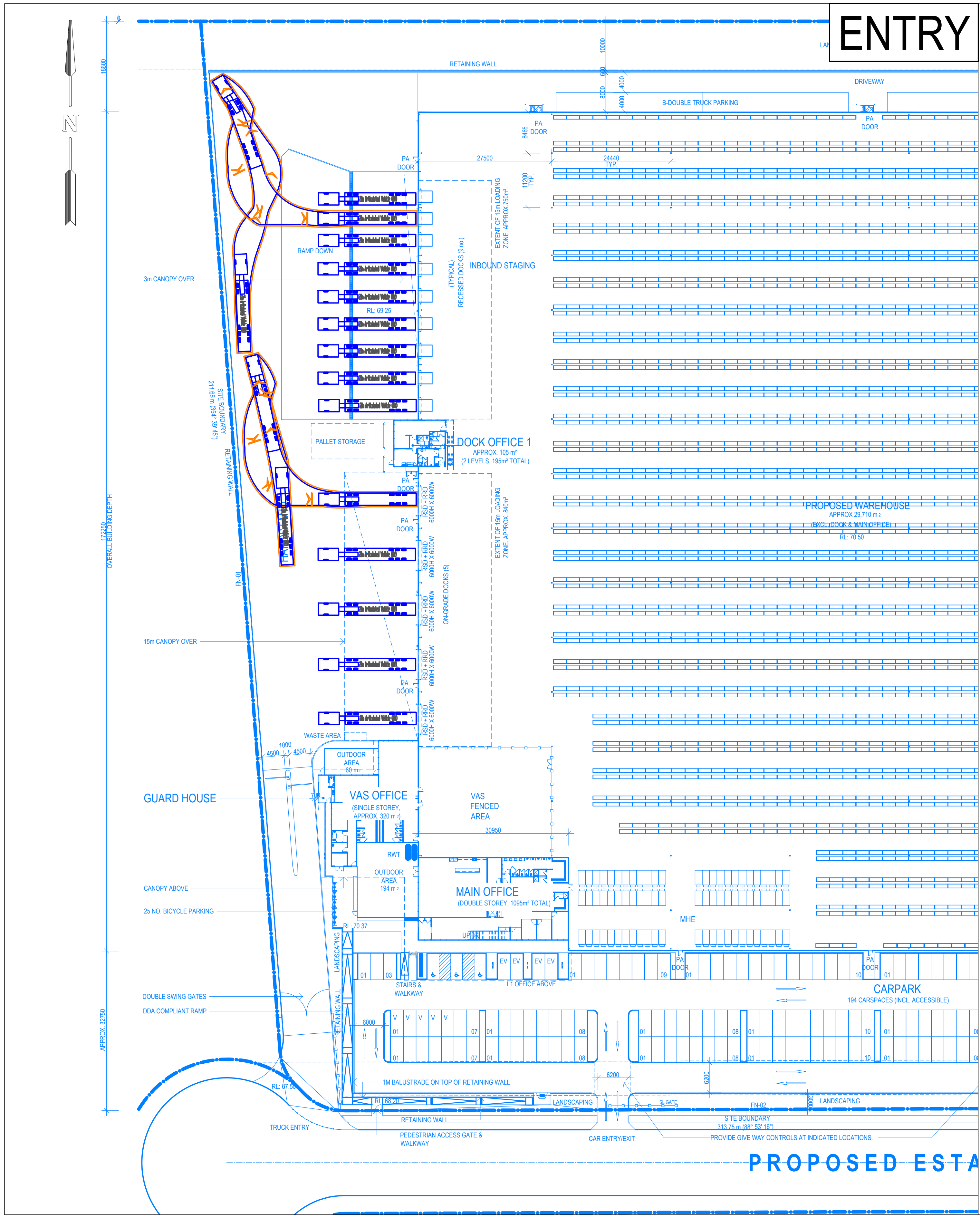

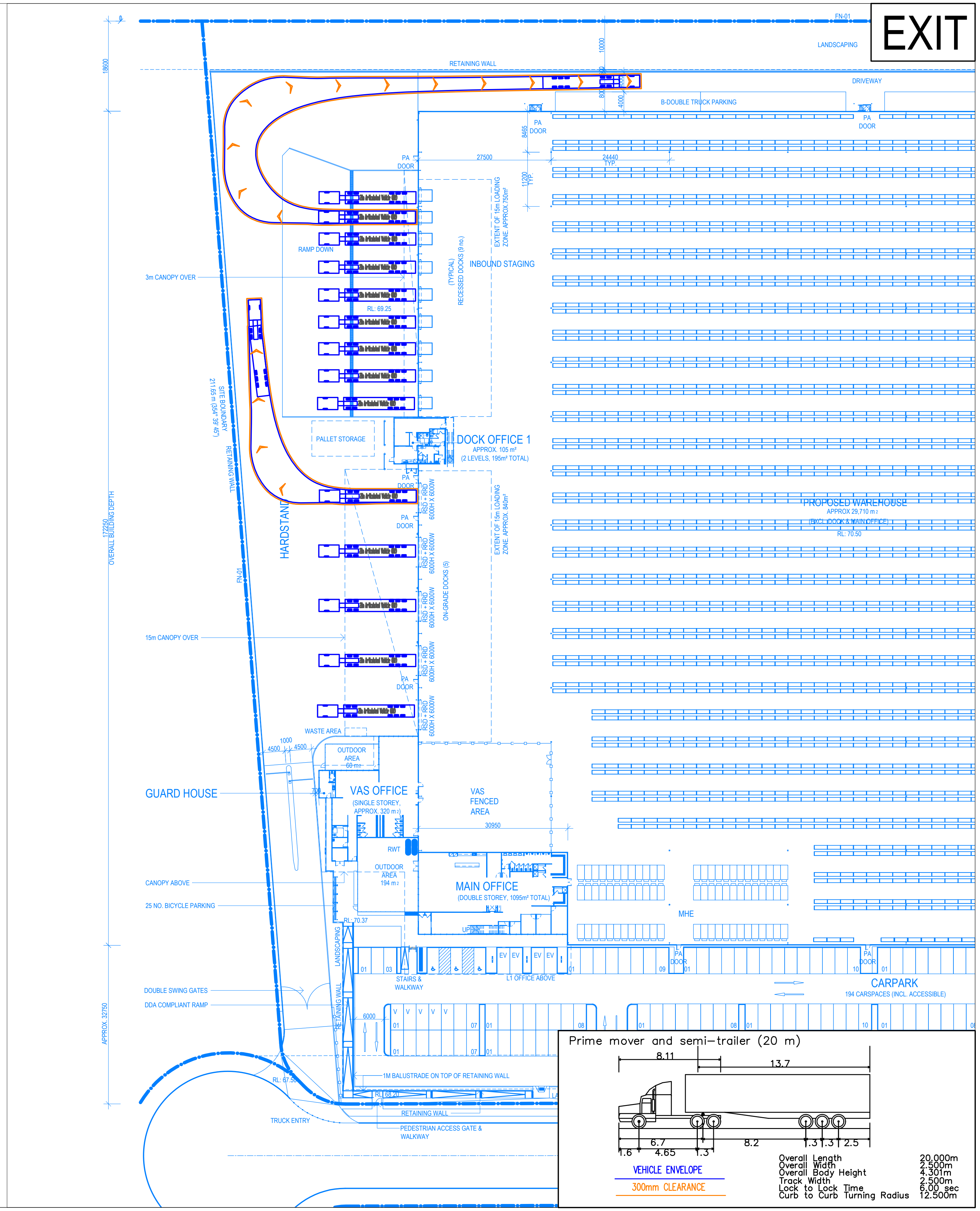

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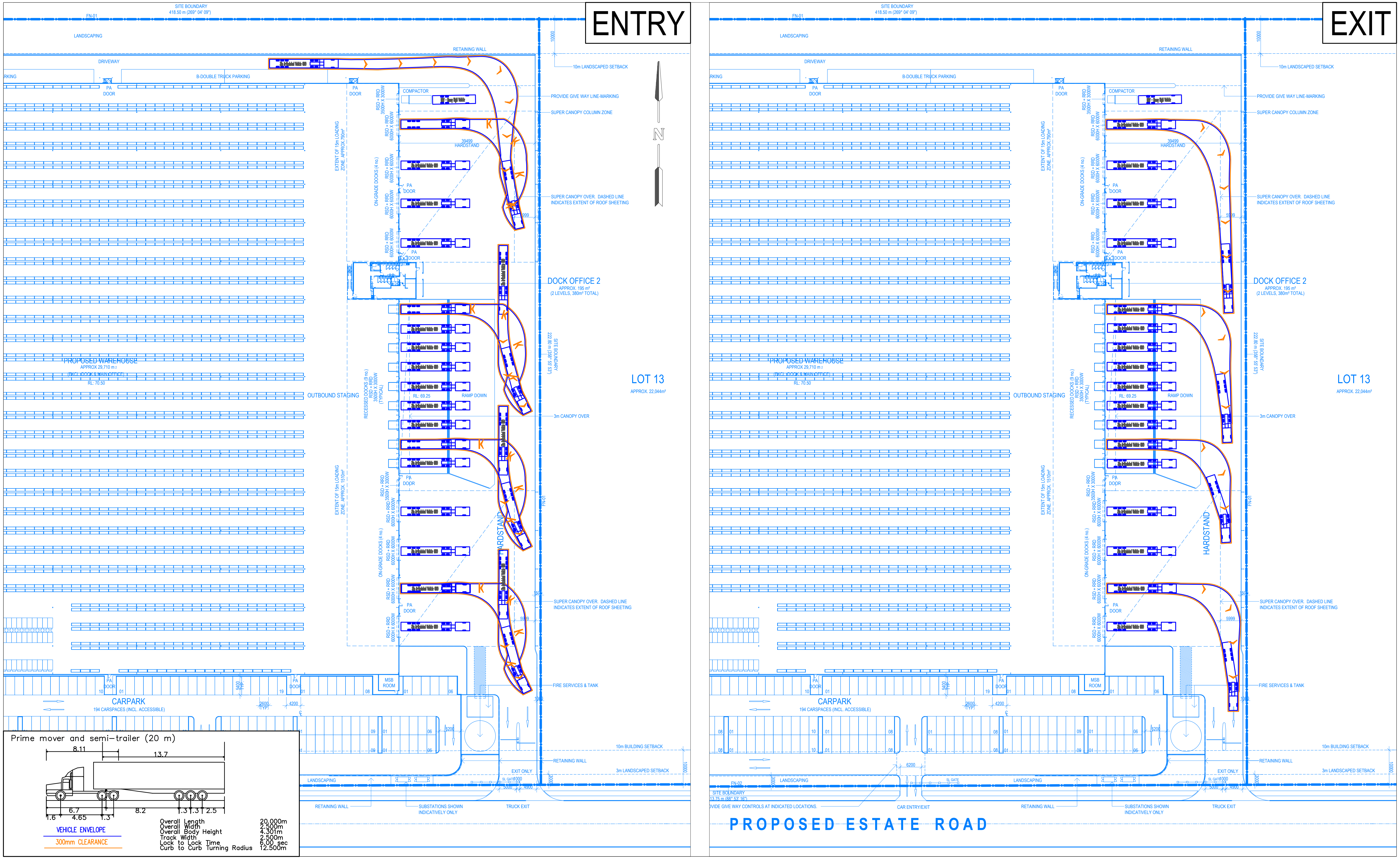

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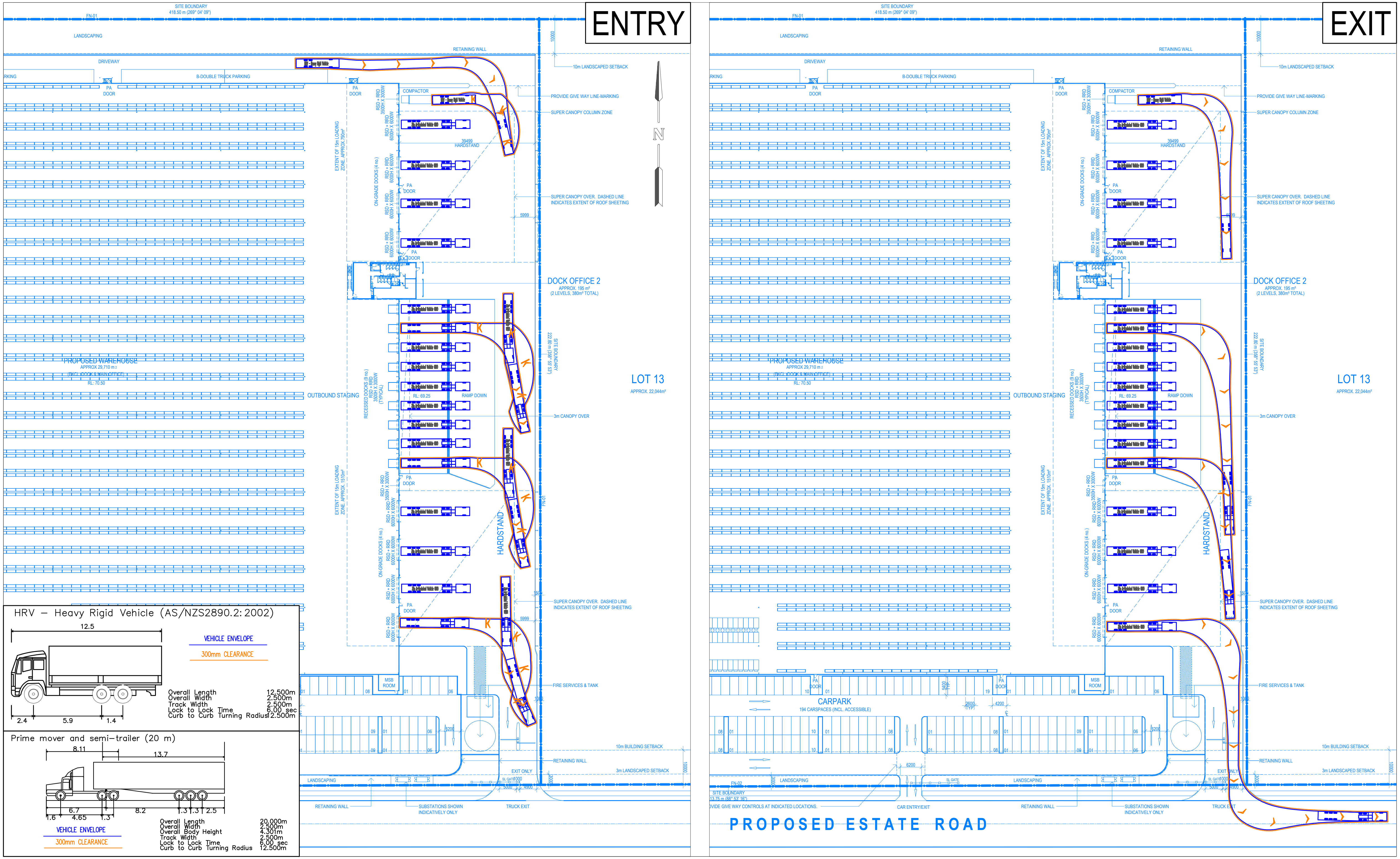

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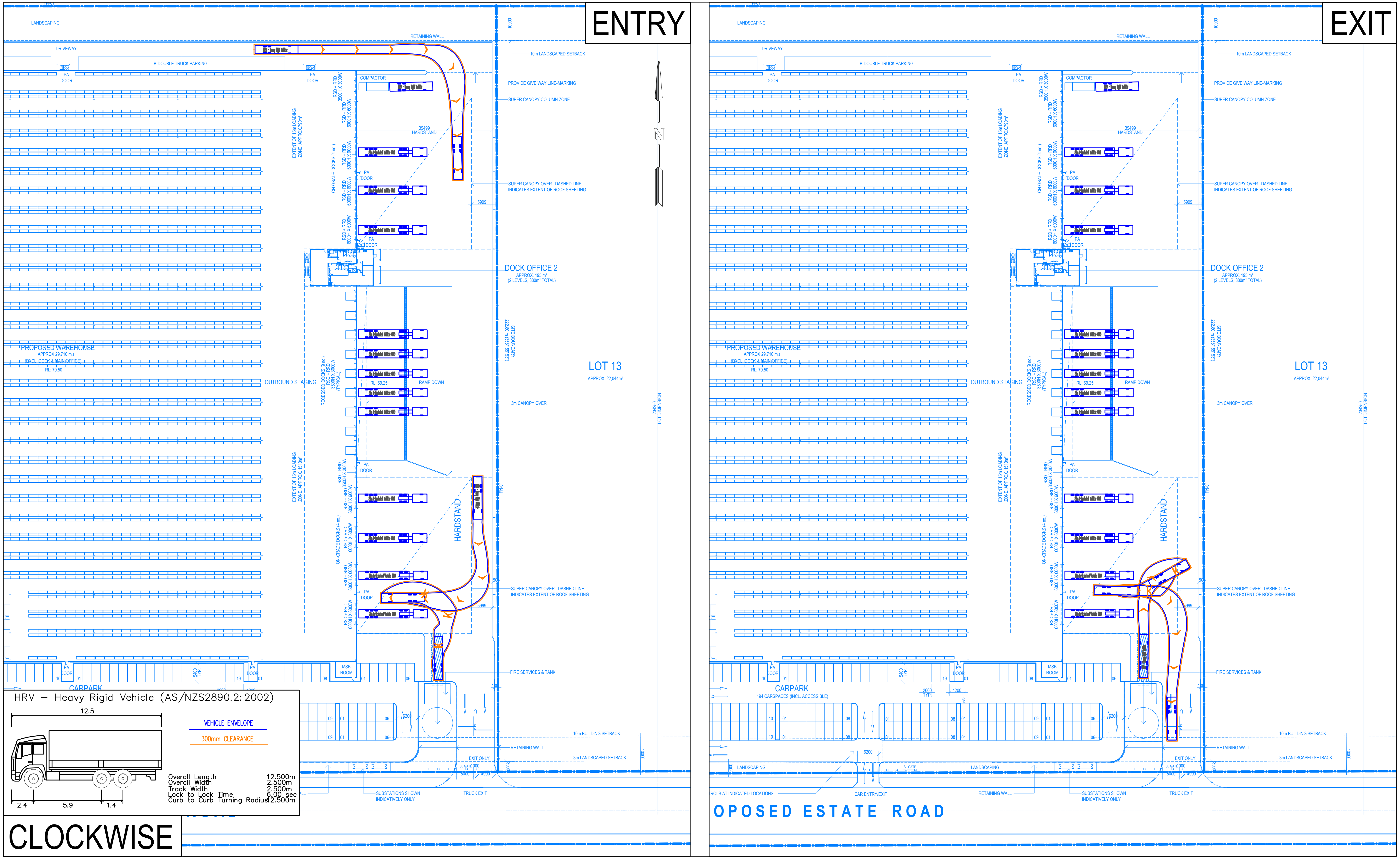

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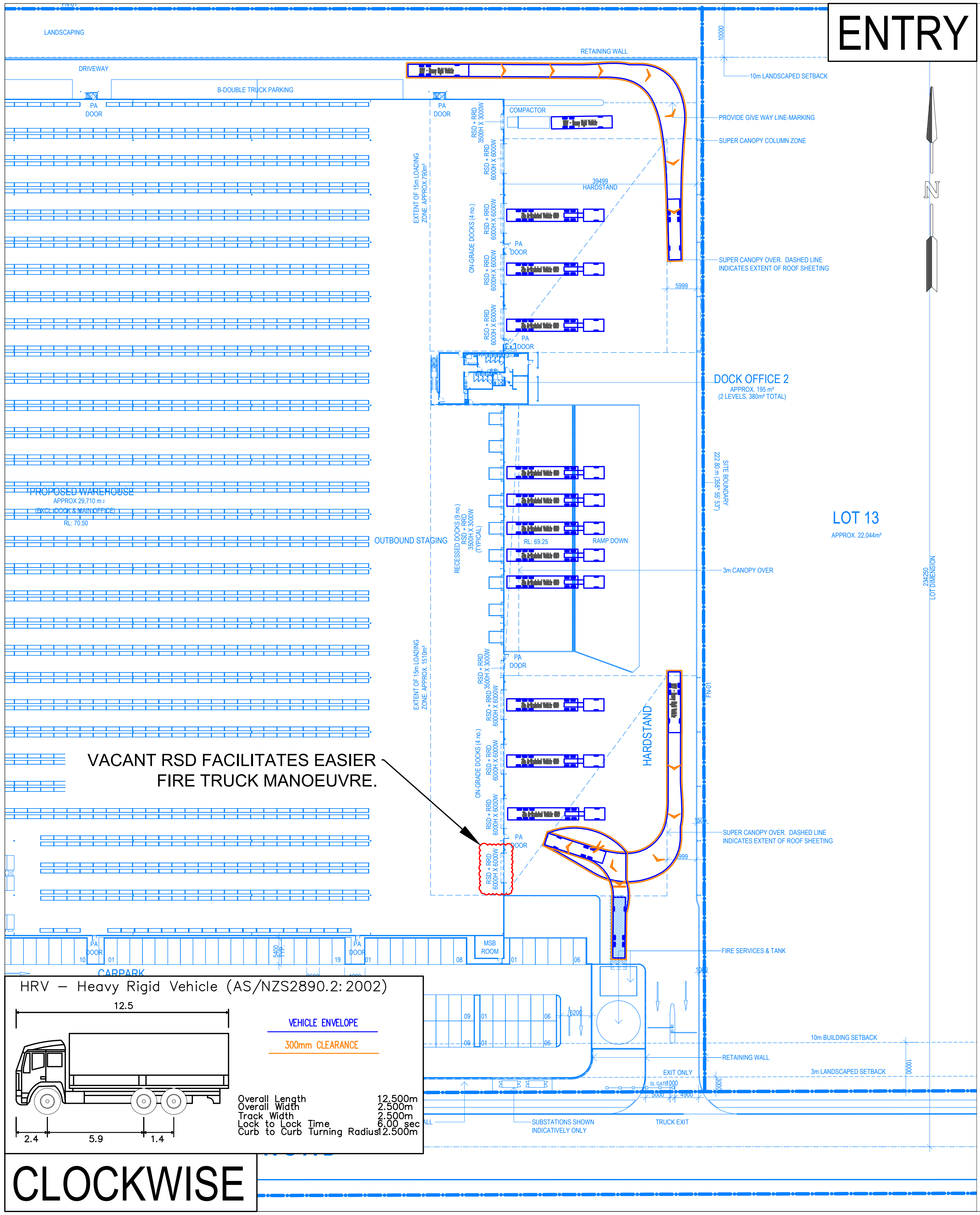

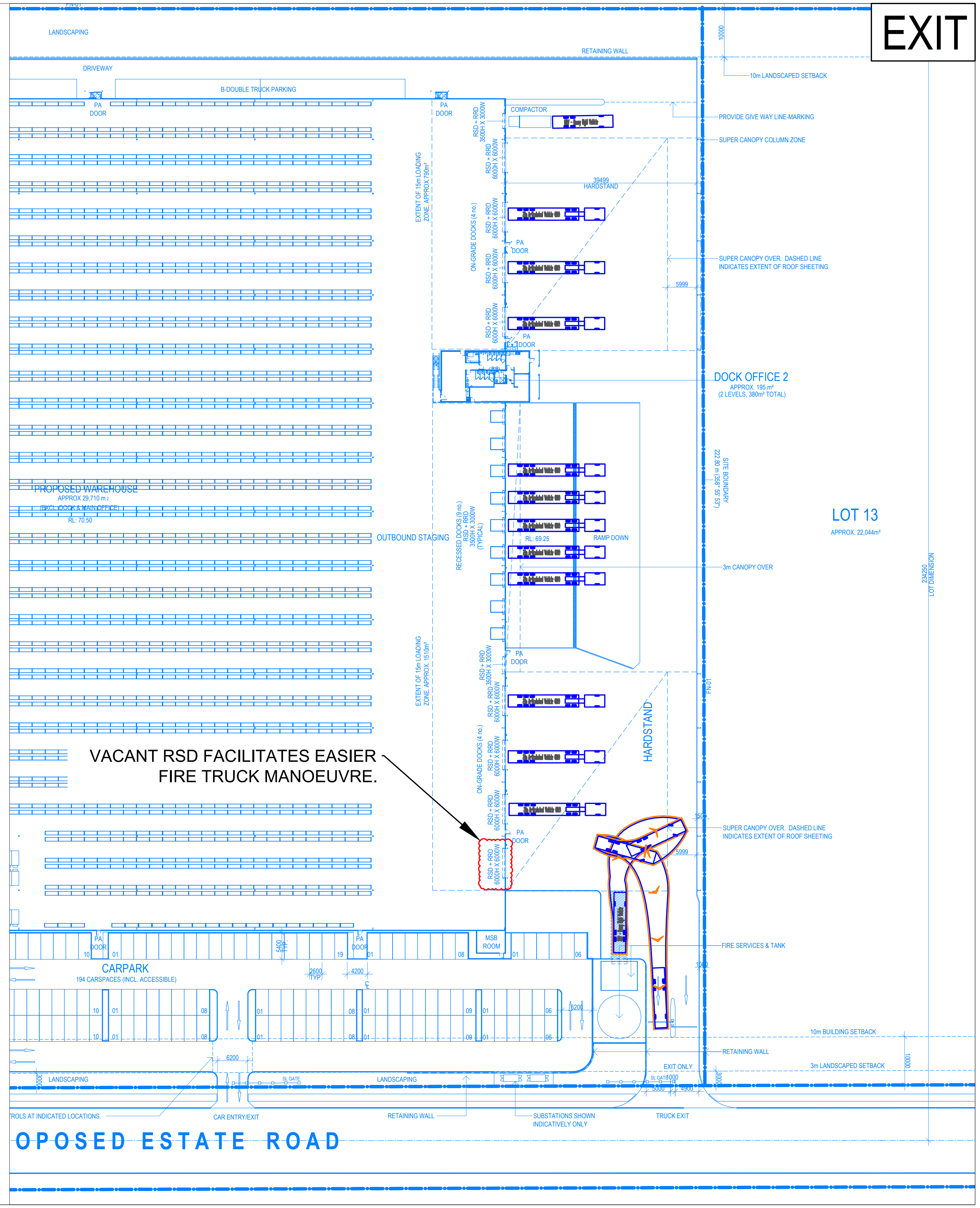

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PROJECT
1877
Lot 12, 813 Wallgrove Road, Horsley Park

DOCUMENT INFORMATION
SWEPT PATH ASSESSMENT

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