

THE TRUSTEE FOR HUNTINGWOOD
PROPERTY TRUST

TRANSPORT AND ACCESSIBILITY
IMPACT ASSESSMENT FOR
PROPOSED WAREHOUSE AND
DISTRIBUTION CENTRE AT
AUGUSTA STREET, HUNTINGWOOD

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I. INTRODUCTION

- I.1 Colston Budd Rogers and Kafes Pty Ltd has been commissioned by The Trustee for Huntingwood Property Trust to prepare the transport and accessibility impact assessment in accordance with the technical requirements of the Secretary's Environmental Assessment Requirements (SEARs), and in support of the State Significant Development Application (SSD-36138263) for the proposed Augusta Street warehouse and distribution centre at Augusta Street, Huntingwood.

Site Location

- I.2 The site is located at Augusta Street, Huntingwood, within the Blacktown Local Government Area (LGA). The site is bounded by Great Western Highway to the north, M4 Western Motorway to the south, Flushcombe Road to the west and Prospect Highway to the east. The site comprises multiple parcels of land and is legally described as:

- Lot 1 DP835264;
 - Lots 218-219 DP 457024;
 - Lot 151 DP 135859;
 - Lot 2 DP516449;
 - Lots 163-164, 168-188 and 216 DP8716;
 - Lot 1 DP119616;
 - Lots 4-6 DP 226294;
 - Lots 50-52 DP1144623;
 - Lot 7 DP803359;
 - Lots 6-10 DP801210;
 - Lot 4 DP585492;
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- Lot 4 DP5853442; and
- Lot 2 DP1263824.

I.3 The site location is shown in Figure I.



Figure I – Site Location

Source: Urbis 2022

I.4 Key features of the site are:

- the site has frontage to the Great Western Highway and the M4 Western Motorway of approximately 940 metres and frontage to Flushcombe Road of approximately 250 metres. Augusta Street dissects part of the western portion of the site and is vested to Blacktown Council;

- ❑ access to the site is currently available from Augusta Street which connects to Flushcombe Road to the west. Flushcombe Road intersects with the Great Western Highway, providing east-west access to the metropolitan road network, with right-in and right-out movements available via the existing signalised intersection;
 - ❑ the eastern part of the site slopes to the west, while the western part of the site slopes to the east, with the central low point at Blacktown Creek adjacent to the easement for water supply;
 - ❑ the site is affected by multiple easements and restrictions including:
 - multiple easements up to 30 metres wide for transmission lines along the southern part of the site. the site features high voltage power lines along the southern side;
 - easement for water supply which runs north-south within the central part of the site, with associated nine metre wide and three metre wide easements for construction purposes;
 - ❑ Lot 164 in DP8716 is identified as being owned by Amplitel as the land accommodates a Telstra mobile telecommunications facility which is proposed to be relocated;
 - ❑ the site has been cleared but is undeveloped with scattered trees across the western and southern boundaries and in the north-east corner of the site. Blacktown Creek runs north-south through the central part of the site with riparian vegetation along the corridor.
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Key features of the locality are:

- ❑ the site is approximately 34km west of the Sydney CBD and approximately 3.3km south of the Blacktown commercial centre;
- ❑ the region features a mix of land uses, including residential and employment-generating activities. The Huntingwood and Pemulwuy industrial estates are located to the west and south-east;
- ❑ the Prospect Reservoir is approximately 1km south of the site adjacent to the Western Sydney Parklands.

1.5 The surrounding locality is described as follows:

- ❑ North: The site adjoins the Great Western Highway. The land further north primarily comprises residential development including detached single and double storey dwellings. A small natural reserve known as Timbertop Reserve separates the residential development and associated landscaping;
 - ❑ East: The land immediately to the east of the site is vacant. The Prospect Highway is located further east, providing access to the M4 Motorway and the Great Western Highway. St Bartholomew's Church and Cemetery is located on the eastern side of the Prospect Highway;
 - ❑ South: The M4 Motorway runs along the southern boundary of the site, with boundary landscaping provided for visual screening of the site. The land on the opposite side of the Motorway comprises recreational and entertainment facilities in the form of a water park and drive-in movie theatre;
-

- ❑ West: The land to the west comprises an animal holding facility and industrial development, characterised by large warehouse buildings.

Project Description

- 1.6 The proposed development includes construction and operation of a warehouse and distribution centre development of approximately 134,565m² gross floor area, including four warehouse buildings, ancillary office space, office facilities, indicative warehouse fitout works inclusive of warehouse racking, on-site car parking, and associated works including excavation, landscaping, and signage.
- 1.7 The proposed development includes construction and operation of four (4) new warehouse buildings comprising a multi-level warehouse building on the eastern portion of the site and three single storey warehouse buildings on the western portion of the site.
- 1.8 The proposed SSDA seeks approval to redevelop the site to accommodate a warehouse and distribution centre use inclusive of the following:
- ❑ site establishment works, including tree removal, minor excavation/bulk earthworks;
 - ❑ construction and operation of four (4) new warehouse buildings comprising a multi-level warehouse building on the eastern portion of the site and three single storey warehouse buildings on the western portion of the site. The warehouse buildings will include ancillary office space and indicative warehouse fit out works including warehouse racking;
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- ❑ the warehouse distribution tenancies are proposed to operate 24 hours/7 days a week;
- ❑ other associated works including landscaping, at-grade parking and general site improvements;
- ❑ business identification signage and wayfinding signage;
- ❑ vehicle access provided via Augusta Street and a new proposed access from the Great Western Highway; and
- ❑ Lot consolidation of properties.

Planning Secretary's Environmental Assessment Requirements (SEARs)

- 1.9 The Planning Secretary's Environmental Assessment Requirements (SEARs) for the proposed warehouse and distribution centre development and the relevant sections of the report in which they are addressed, are set out in Table I.1.

Table I.1: SEARs	
SEARs requirement	Section of report
<i>Traffic Transport and Accessibility</i> <i>Provide a transport and accessibility impact assessment, which includes:</i>	
○ <i>details of all traffic types and volumes likely to be generated during construction and operation, including a description of key access and haul routes.</i>	Traffic generation is discussed in paragraphs 7.15 and 7.16. Construction traffic, including access and haulage routes is discussed in the draft CTMP in Chapter 8.

○ <i>an assessment of the predicted impacts of this traffic on road safety and the capacity of the road network, including consideration of cumulative traffic impacts at key intersections (using industry standard modelling).</i>	Traffic assessment is discussed in paragraphs 7.8 to 7.27. Cumulative impact is discussed in paragraphs 7.28 to 7.34.
○ <i>plans demonstrating how all vehicles likely to be generated during construction and operation and awaiting loading, unloading or servicing can be accommodated on the site to avoid queuing in the street network.</i>	These matters are discussed in Chapter 6 and construction traffic management is discussed in Chapter 8.
○ <i>details and plans of any proposed internal road network, loading dock provision and servicing, on-site parking provisions, and sufficient pedestrian and cyclist facilities, in accordance with the relevant Australian Standards.</i>	Parking provision, accessible parking, motorcycle parking and bicycle parking are discussed in Chapter 5. Internal circulation, car parking layout, loading docks and servicing are discussed in Chapter 6.
○ <i>swept path analysis for the largest vehicle requiring access to the development.</i>	Vehicle swept paths are provided in Appendix A.
○ <i>details of road upgrades, infrastructure works, or new roads or access points required for the development if necessary.</i>	Access arrangements are discussed in Chapter 6.
○ <i>Provide a Construction Traffic Management Plan detailing predicted construction vehicle movements, routes, access and parking arrangements, coordination with other construction occurring in the area, and how impacts on existing traffic, pedestrian and bicycle networks would be managed and mitigated.</i>	A draft CTMP, including, access, construction vehicle movements, haulage routes, hours of work, work zones, material handling areas, construction traffic effects and construction management measures, are provided in Chapter 8.
Consultation Your EIS must be informed by consultation with: ○ <i>Transport for NSW, regarding construction and operational traffic impacts of the development, particularly the proposed access onto the Great Western Highway.</i>	The consultation process with Blacktown Council and TfNSW is discussed in Chapter 9.

- I.10 As part of the consultation process, a number of discussions have been undertaken with TfNSW between June 2022 and May 2023. As part of those discussions, TfNSW indicated general support, subject to a number of matters being addressed post lodgment of the SSD, to access to the Great Western Highway via the new intersection that is being constructed as part of the Prospect Highway upgrade. These matters and our responses are set out in Chapters 7 and 9.

Report Structure

- I.11 This report assesses the traffic, transport and accessibility implications of the proposed development, including addressing the SEARs, through the following chapters:
- ❑ Chapter 2 - proposed development;
 - ❑ Chapter 3 - public and active transport aspects;
 - ❑ Chapter 4 - green travel plan;
 - ❑ Chapter 5 - parking provision;
 - ❑ Chapter 6 - access, car parking layout, circulation and servicing;
 - ❑ Chapter 7 - traffic effects;
 - ❑ Chapter 8 – draft construction traffic management plan; and
 - ❑ Chapter 9 – consultation with authorities.

2. PROPOSED DEVELOPMENT

- 2.1 The proposed development includes construction and operation of a warehouse and distribution centre development of approximately 134,565m² gross floor area, including four (4) warehouse buildings, ancillary office space, office facilities, indicative warehouse fitout works inclusive of warehouse racking, on-site car parking, and associated works including excavation, landscaping, and signage.
- 2.2 The proposed development includes construction and operation of four (4) new warehouse buildings comprising a multi-level warehouse building on the eastern portion of the site and three single storey warehouse buildings on the western portion of the site.
- 2.3 Vehicular access for the proposed development will be provided from Augusta Road, via Flushcombe Road (for warehouses 1 to 4), and a new proposed access from the Great Western Highway (warehouse 5). The new access onto the Great Western Highway will be controlled by traffic signals.
- 2.4 On-site parking will be provided (951 spaces) plus motorcycle and bicycle parking.
- 2.5 As part of the proposed development, the following road works are proposed:
- upgrades to the intersections of Great Western Highway with Flushcombe Road and Prospect Highway Connection; and
 - upgrades to Flushcombe Road (between Great Western Highway and Augusta Street) and Augusta Street.

3. PUBLIC AND ACTIVE TRANSPORT NETWORK

Bus Services

3.1 Local and regional bus services operate through the area along Flushcombe Road, Reservoir Road and Prospect Highway. Busways operates the following services through the area:

- Route 722 – Blacktown to Prospect via Flushcombe Road (Loop Service);
- Route 723 –Mount Druitt to Blacktown via Eastern Creek;
- Route 724 – Blacktown to Arndell Park via Huntingwood (Loop Service); and
- Route 812 – Blacktown to Fairfield via Prospect Highway.

3.2 Bus route 722 operates along Flushcombe Road, bus routes 723 and 724 operate along Reservoir Road and bus route 728 operates along the Prospect Highway.

3.3 The closest bus stop to the site is located on Flushcombe Road, north of Azalea Street, some 700 metres to the north of the site. Bus route 722 services this bus stop via a loop service between Blacktown Station and Prospect. Bus route 722 operate seven days a week at some 15 minutes frequencies during the weekday morning and afternoon peak periods and at some 30 minutes frequencies outside of peak times and on weekends.

3.4 Public transport commuters using the route 722 bus service will be able to transfer to other bus routes (including North-West T-way bus services) and to rail services at the Blacktown Station interchange.

Train Services

- 3.5 Blacktown Railway Station is located some 3.5 kilometres north of the site. It is serviced by multiple metropolitan rail lines, including the T1 North Shore, Northern and Western Line; T5 Leppington to Richmond Line; and intercity services between Bathurst and Central. Train services run frequently throughout the day, with train frequencies of some six to ten minutes in each direction through the station.
- 3.6 Given its location from the site, Blacktown Railway Station is some distance outside the area of influence to solely encourage travel by train, as a singular mode of transport to and from the site. However, linking the site to Blacktown Railway Station by regular bus services will allow access to the site by public transport (bus and train services).
- 3.7 Public transport commuters will be able to transfer to other train services at any of the major CBD railway stations to provide access to the surrounding Sydney metropolitan area.
- 3.8 The proposed development is therefore consistent with government objectives and the planning principles of:
- (a) improving accessibility to employment and services by walking, cycling, and public transport;
 - (b) improving the choice of transport and reducing dependence solely on cars for travel purposes;
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- (c) moderating growth in the demand for travel and the distances travelled, especially by car; and
- (d) supporting the efficient and viable operation of existing and future public transport services.

Active Transport

- 3.9 The site currently provides limited pedestrian connectivity and accessibility. Pedestrian footpaths are provided along the eastern side of Flushcombe Road north of the Great Western Highway. A pedestrian crossing facility is provided across the Great Western Highway, on the western leg of the signalised intersection with Flushcombe Road.
- 3.10 The bicycle network in the vicinity of the site includes an east-west cycleway along the M4 Motorway and a north-south cycle route along the Prospect Highway, as shown on Figure 2.

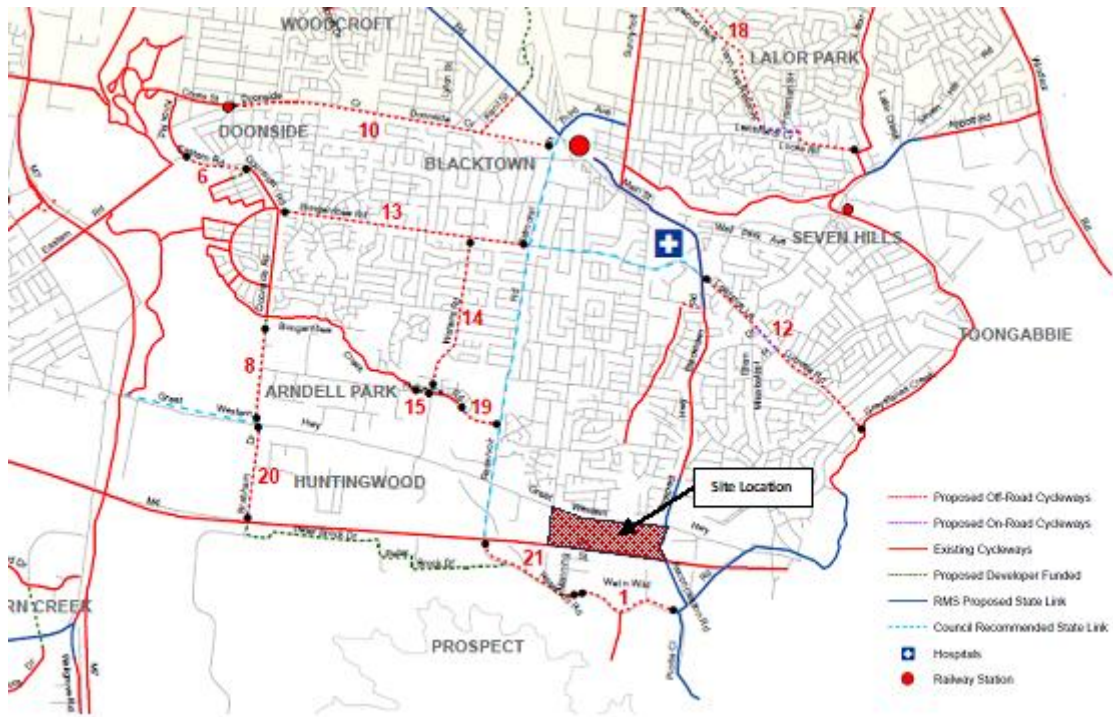


Figure 2 – Bicycle Network

Source: Blacktown City Council 2016 Bike Plan

- 3.11 As shown on Figure 2, Blacktown Council have a recommended cycle route along Reservoir Road which could potentially serve as a cycling route between Blacktown Railway Station and the site.
- 3.12 The proposed development will provide pedestrian access and bicycle facilities connecting to the surrounding available active transport network. Bicycle parking and end of trip facilities, including change rooms, lockers and showers, will be provided internal to the site.
- 3.13 In association with the proposed development a signalised access to the site will be provided on the Great Western Highway, approximately midway between Flushcombe Road and the Prospect Highway. The new traffic signals will include pedestrian crossings on each of the four legs of the intersection and a new

pedestrian footpath and cycle path will be provided on the southern side of the highway between the site access and Flushcombe Road. These pedestrian facilities will provide convenient pedestrian and bicycle access to the site, linking to the existing pedestrian and cycle network in the surrounding area.

- 3.14 In association with the proposed development, employees and visitors will be made aware of the available means of travel, including access to the site by public transport, walking and cycling. A Green Travel Plan will be prepared and made available to all employees and visitors to the site.

4. GREEN TRAVEL PLAN

Introduction

- 4.1 A Green Travel Plan (GTP) will be developed for the site to identify measures to promote sustainable transport options and to encourage travel modes away from single occupant private vehicles. It will adopt a transport management approach and provide a site-specific management strategy for delivering long term behavioural change and sustainable travel patterns. It will outline a range of actions and initiatives to increase travel modes such as walking, cycling, public transport, car sharing and carpooling, as well as influencing behaviours that lead to better organisational outcomes, improving environmental impacts, improving viability of public transport services and creating healthier lifestyles, while reducing adverse transport impacts on the surrounding road network.
- 4.2 The GTP will apply to all employers and visitors travelling to and from the site. Government authorities and planning guidelines are placing increasing emphasis on the need to reduce the number vehicle trips and travel distances by car, while encouraging greater use of alternative means of non-car-based travel, resulting in less environmental impact.

Benefits of a Green Travel Plan

- 4.3 The provision of a GTP creates a number of social, economic, environmental and health benefits for employers and visitors to the site. These include:
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- ❑ promoting the use of sustainable transport modes by increasing awareness of public transport routes and facilities;
- ❑ the provision of car parking is reflected in the sites' proximity to public transport and the ability to provide alternative travel modes for staff and visitors by encouraging non car based travel;
- ❑ reducing the growth in greenhouse gas emissions resulting in significant benefits for the environment as a result of reducing car based travel and also result in improved health benefits;
- ❑ encourage healthier travel options for staff and visitors, such as walking and cycling;
- ❑ promoting the use of sustainable transport modes can provide a more affordable means of transport and provide travel cost savings;
- ❑ reducing travel time and travel costs; and
- ❑ the GTP reduces traffic impacts and traffic congestion on the surrounding road network by reducing the number of vehicles travelling to and from the site.

Objectives of a Green Travel Plan

- 4.4 The GTP will comprise a package of measures designed to address the specific travel needs of the site. The main objectives of the GTP include:
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- ❑ reducing dependence on private vehicles and encourage the use of more sustainable travel modes;
- ❑ provide facilities for employees and visitors to commute by sustainable transport modes, including walking and cycling;
- ❑ promoting public transport and car sharing;
- ❑ advise all new employees of the available public transport options to travel to and from the site;
- ❑ reducing congestion in the local area; and
- ❑ promote the health benefits of active transport and create a more active social culture.

Green Travel Plan

- 4.5 The GTP is intended to develop a package of site-specific measures and initiatives to promote and maximise the use of sustainable travel modes, including walking, cycling and public transport. It will include a review of existing transport options available and set targets so that the effective implementation of the plan can be assessed.
- 4.6 The GTP will be refined in consultation with council, TfNSW, public transport operators and other stakeholders. It will include the following action strategies to achieve the mode split targets:
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- ❑ travel planning and demand management;
- ❑ encouraging the use of public transport;
- ❑ encouraging active transport (cycling and walking); and
- ❑ influencing travel behavior.

4.7 In developing the GTP, it should be noted that the end user/tenant of the building is not known. Therefore, all future prospective tenants should be made aware of the GTP action strategies that have been agreed for the site, to achieve the mode split targets and the process of monitoring and reviewing the GTP.

4.8 Measures and action strategies to achieve the mode split targets could include:

- ❑ Travel Planning and Demand Management
 - develop a Workplace Travel Plan. The travel plan will provide public transport information, maps and public transport timetable;
 - management and promotion of travel plan by rewarding and encouraging those who travel actively to help develop a healthy, active culture and meet travel mode targets;
 - allow employees the flexibility to commute outside of peak periods to reduce traffic impacts and travel time, by developing flexible working hours;
 - provide the option for employees to work remotely (work-from-home policies), where possible, to reduce the number of vehicles on the road

and encourage teleconferencing rather than travelling to and from meetings;

□ Encourage the Use of Public Transport

- encourage the use of public transport by providing information and resources, through the development of a Workplace Travel Plan;
- work with public transport providers to improve services;
- meet or exceed TfNSW bus planning guidelines;
- promote the provision of travel passes for employees;
- tenants to promote public transport as the first preference for business travel;

□ Encouraging Active Transport (Cycling and Walking)

- implement a range of initiatives to reward and encourage employees to walk and cycle to work and to develop a healthy, active culture and meet travel targets;
 - promote active transport by undertaking a Green Travel Plan event each year, such as group cycling events, NSW bicycle week and walking groups;
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- provide convenient bicycle parking and appropriate end of trip facilities for employees and visitors who walk or cycle to work;
- provision of sufficient end of trip facilities such as showers, change rooms, lockers etc to maximise pedestrian activity throughout the site;
- Influencing Travel Behavior
 - introduce an employee carpool register, or alternative mobile app, such as Cohop, to inform employees of the travel characteristics of other employees with similar travel destinations;
 - provide EV charging points to allow employees to use electric cars;
 - provision of sustainable travel packs to employees. This introduces employees to the GTP and provides information on walking and cycling routes, and travel by bus and train. Contacts of the travel plan coordinator for the GTP will also be provided.

Monitoring and Reviewing the Green Travel Plan

- 4.9 The GTP will be monitored to ensure that it is meeting its objectives and having the intended impact on car use and transport choices for employees and visitors. The plan will be updated to reflect changing circumstances and to identify which initiatives are having an impact or need to be modified to ensure appropriate travel behaviour.

- 4.10 A travel plan coordinator (TPC) will be appointed to oversee the measures and resultant impacts of the GTP. This person will review and assess the travel mode data against the existing available travel data for Huntingwood.

5. PARKING PROVISION

Car Parking

5.1 An assessment of parking requirements has been undertaken based on the Huntingwood Precinct DCP and TfNSW Guidelines. Huntingwood Precinct DCP sets out the following rates:

- office - one space per 40m² GFA;
- warehouse - one space per 100m² GFA for the first 7,500m²; then one space per 200m² GFA

5.2 Applying these rates, the proposed development would require 944 spaces comprising:

- warehouse 1 (474m² office and 5,461m² warehouse) – 67 spaces;
- warehouse 2 (363m² office and 11,668m² warehouse) – 106 spaces;
- warehouse 3 & 4 (2,411m² office and 49,455m² warehouse) – 345 spaces; and
- warehouse 5 (3,290m² office and 61,443m² warehouse) – 426 spaces

5.3 By way of comparison, TfNSW Guidelines suggest a provision of one space per 300m² GFA for warehouse development and one space per 40m² for office development. Applying these rates, the proposed development would require 591 spaces comprising:

- warehouse 1 (474m² office and 5,461m² warehouse) – 30 spaces;
 - warehouse 2 (363m² office and 11,668m² warehouse) – 48 spaces;
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- warehouse 3 & 4 (2,411m² office and 49,455m² warehouse) – 225 spaces; and
 - warehouse 5 (3,290m² office and 61,443m² warehouse) – 288 spaces.

5.4 The TfNSW guidelines note a wide variation parking demand for warehouse developments and if the future users are unknown, provision should be made to provide additional parking if required by setting aside (but not necessarily surfacing) space for car parking.

5.5 The overall the parking provision of 951 spaces satisfies both the DCP and TfNSW requirements. Noting the variation in parking rates between the DCP and TfNSW requirements, consideration be given to providing less than the DCP (minimum TfNSW requirements) with area set aside to provide additional parking in accordance with the DCP if required. Part of this area could initially be provided as an unformed overflow car park.

Accessible Parking and Motorcycle Parking

5.6 With regards to accessible parking, the Huntingwood Precinct DCP has a requirement that parking areas with more than 50 spaces, two per cent of the spaces be accessible spaces.

5.7 Huntingwood Precinct DCP does not set out specific rates for motorcycle parking. For the proposed development a rate of one space per 50 car spaces is suggested.

5.8 Accessible parking and motorcycle parking will be provided in accordance with the following rates:

- accessible parking - two per cent of the spaces be accessible spaces; and
- motorcycle parking – one space per 50 car spaces.

5.9 Applying these rates, 22 accessible spaces and 22 motorcycle spaces would be required. Provision of 27 accessible spaces and 23 motorcycle spaces satisfies these requirements.

Bicycle Parking

5.10 The Huntingwood Precinct DCP suggests bicycle parking in accordance with Austroads Guidelines. Austroads (Bicycle Parking Facilities – Updating the Austroads Guide to Traffic Management) suggests the following rates:

- 0.02 spaces per 100m² short stay; and
- 0.18 spaces per 100m² long stay.

5.11 These rates are based on 10% travel by bicycle and an employee density of one employee per 50m² GFA. TfNSW guidelines note employee density for warehouses is some one employee per 225m². Adjusting the above rates to account for the lower employee density of the warehouse component, the following rates would apply for the proposed development:

Warehouse

- 0.004 spaces per 100m² short stay; and
 - 0.04 spaces per 100m² long stay.
-

Office

- 0.02 spaces per 100m² short stay; and
- 0.18 spaces per 100m² long stay.

5.12 Applying these rates, the proposed development would require 69 bicycle spaces (6 short stay and 63 long stay). 85 bicycle spaces are provided which satisfies this requirement,

5.13 Bicycle parking and end of trip facilities will be provided within each warehouse development. These facilities will be available to employees and visitors to the site.

6. ACCESS, CAR PARK LAYOUT, CIRCULATION AND SERVICING

Access Arrangements

- 6.1 Vehicular access to the proposed development will be provided via Augusta Street (warehouses 1 to 4) and Great Western Highway (warehouse 5). Warehouses 1 and 2 will also have direct access from Flushcombe Road. These arrangements are consistent with those identified in the Huntingwood Precinct DCP. The DCP identifies left in/left out access to the Great Western Highway. Following discussions with TfNSW, the Great Western Highway access is proposed to form the fourth leg of the new intersection of Great Western Highway/Prospect Highway Connection, providing right in/right out and left in/left out movements for Warehouse 5. This new intersection forms part of the Prospect Highway upgrade and is currently under construction.
- 6.2 The proposed access driveways onto Augusta Street and Flushcombe Road will be provided in accordance with the Australian Standard for Parking Facilities Part 1: Off-street car parking and Part 2: Off-street commercial vehicle facilities (AS2890.1-2004 and AS2890.2-2018). They will provide appropriate sight lines for vehicles entering and exiting the site to observe pedestrians on the adjacent footpath and vehicles in Augusta Street and Flushcombe Road. The driveways will be designed to cater for the swept path of the largest service vehicle required to access the site and to allow vehicles to enter and exit the site in a forward direction. The swept path of vehicles accessing the site and circulating through the site are shown in Appendix A.
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Car Park Layout and Internal Circulation

- 6.3 Car parking dimensions and aisle widths will be provided in accordance with the Australian Standard for Parking Facilities (Part 1: Off-street car parking), AS2890.1-2004. Parking spaces will be provided with dimensions of 2.4 metres wide by 5.4 metres long and aisle widths of 6.1 metres. Spaces located adjacent to obstructions will be 300mm wider to appropriately provide for doors to open.
- 6.4 Disabled parking spaces will be provided in accordance with the Australian Standard for Parking Facilities Part 6: Off-street parking for people with disabilities (AS2890.6-2022). These spaces will be 2.4 metres wide by 5.4 metres long with an adjacent shared zone of 2.4 metres wide for wheelchair access. These dimensions are in accordance with the Australian Standards AS2890.1-2004 and AS2890.6-2022.

Servicing and Emergency Vehicles

- 6.5 The warehouse and loading docks will be accommodated within single buildings (warehouses 1 to 4) and a multi-storey building (warehouse 5). For the multi-storey building loading/unloading areas will be provided on each level.
- 6.6 Service vehicle access to warehouses 1 and 2 will be provided via two separate entry/exit driveways located on the northern and southern sides of Augusta Street respectively. Warehouses 1 and 2 will cater for service vehicles ranging from large rigid trucks to articulated vehicles (up to 20 metres in length). The access driveways will be designed to cater for the swept paths of these vehicles to enter and exit the respective sites in a forward direction.
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- 6.7 Service vehicle access to warehouses 3 and 4 will be provided via separate entry and exit driveways located at the eastern end of Augusta Street. The access driveways and the internal circulation road will be designed to cater for service vehicles ranging from large rigid trucks to articulated vehicles, including B-Doubles (up to 26 metres in length). The internal circulation road will circulate around the perimeter of the building to access loading docks located on the southern side of the building. The access driveways and the internal circulation road will be designed to cater for the swept paths of these vehicles to enter and exit the site in a forward direction.
- 6.8 As discussed in Chapter 7, service vehicle access to warehouse 5 will be provided via a fourth leg onto the proposed t-intersection traffic signals onto the Great Western Highway. The access driveways and the internal circulation road will be designed to cater for service vehicles ranging from large rigid trucks to articulated vehicles, including B-Doubles (up to 26 metres in length). The internal circulation road will circulate around the perimeter of the building to access loading docks located on the southern side of the building. The access driveways and the internal circulation road will be designed to cater for the swept paths of these vehicles to enter and exit the site in a forward direction.
- 6.9 The individual warehouse and loading docks will be designed in accordance with the Australian Standard for Parking Facilities (Part 2: Off-Street Commercial Vehicle Facilities), AS2890.2-2018, with regards to service vehicle manoeuvring areas, internal circulation, aisle widths, ramp grades and transitions. Service vehicles will range from large rigid vehicles (up to 12.5 metre) to articulated vehicles, including B-Doubles (up to 26 metres). These vehicles will be designed to enter and exit the site in a forward direction.
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- 6.10 With regards to emergency vehicle access, the site will be designed to include a perimeter to allow fire appliance vehicles up to 12.5 metres in length to circulate around the site. In addition, emergency vehicles will also be able to access the at-grade car park located on the northern part of the site.
- 6.11 Following DA approval, access arrangements, parking layouts, servicing and vehicle swept paths should be reviewed and confirmed for compliance certification.

7. TRAFFIC EFFECTS

7.1 The study area and time frame to assess the traffic effects of the proposed development was determined in consultation with TfNSW. TfNSW advised that the traffic assessment should assess the cumulative impacts of the proposed development and other future developments in the area and should model 10 years traffic growth. The assessment should use SIDRA modelling and include the two intersections of Great Western Highway with the Prospect Highway connection (currently under construction) and Flushcombe Road. TfNSW suggested using data from the traffic report undertaken as part of the Prospect Highway REF to estimate future weekday AM/PM peak hour traffic flows along Great Western Highway.

7.2 The traffic effects of the proposed development are assessed through the following sections:

- ❑ road network;
- ❑ traffic flows;
- ❑ intersection analysis;
- ❑ traffic generation;
- ❑ traffic effects; and
- ❑ future traffic conditions.

Road Network

7.3 The road network in the vicinity of the site includes Great Western Highway, Flushcombe Road and Augusta Street. In addition, the M4 Motorway (to the

south), M7 Motorway (to the west) and Prospect Highway (to the east) are major roads that provide regional access to/from the employment zone located in Western Sydney.

- 7.4 Great Western Highway runs in an east-west direction along the northern boundary of the site. It is a multi-lane arterial road that connects Penrith in the west with Parramatta and Sydney CBD in the east. Major intersections along the Great Western Highway are traffic signal controlled. The kerb side lanes on the Great Western Highway (in both directions) are T2 transit lanes during the weekday morning and afternoon peak periods.
- 7.5 Flushcombe Road is located west of the site and runs in a north-south direction connecting Blacktown town centre with the Great Western Highway. Flushcombe Road generally provides one traffic and one parking lane in each direction. South of the Great Western Highway, it is a no through road, providing access to the eastern section of the Huntingwood employment area. South of Great Western Highway, Flushcombe Road provides one traffic lane in each direction, with unformed shoulders (no kerb and gutter) and no on street parking.
- 7.6 Augusta Street is a no through road that provides access to the subject site. It provides one traffic lane in each direction with kerb and gutter on part of the northern side and an unformed shoulder on the southern side. A gate at the bridge over a creek, prevents access to the eastern section of Augusta Street. The intersection of Augusta Street/Flushcombe Road is a priority controlled t-intersection with Flushcombe Road the major road.
- 7.7 TfNSW is currently undertaking works to upgrade the Prospect Highway from two lanes to four lanes between Reservoir Road and St Martins Crescent with
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completion expected in late 2024. Part of the upgrade is the provision of a new connection between Prospect Highway and Great Western Highway on the western side of the existing overpass and construction of a new traffic signal controlled intersection on the Great Western Highway (catering for all movements). A concept plan of the proposed works (as shown in the December 2021 Prospect Highway Upgrade - Project Update) is provided in Appendix B.

Traffic Flows

7.8 Traffic generated by the proposed development will have its greatest effects during the weekday morning (7.00am to 9.00am) and afternoon peak periods (4.00pm to 6.00pm) when it combines with other traffic on the surrounding road network. In order to gauge traffic conditions, traffic counts during these times were undertaken in late October 2022 at the intersection of Great Western Highway and Flushcombe Road.

7.9 The results of the counts surveys are shown on Figures 3 and 4, and summarised in Table 7.1.

Table 7.1: Existing Peak Hour 2-Way (sum of both directions) Traffic Flows		
Road/Location	Morning	Afternoon
Great Western Highway		
– east of Flushcombe Road	2,860	3,470
– west of Flushcombe Road	3,235	3,525
Flushcombe Road		
– north of Great Western Highway	1,245	1,365
– south of Great Western Highway	80	75

7.10 Existing traffic flows are as follows:

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- ❑ Great Western Highway traffic flows are some 2,900 and 3,500 vehicles per hour two-way during the weekday morning and afternoon peak periods; and
 - ❑ Flushcombe Road traffic flows north of Great Western Highway are some 1,250 and 1,350 vehicles per hour two-way during the weekday morning and afternoon peak periods. South of Great Western Highway, traffic flows are lower at less than 100 vehicles per hour two-way during the weekday morning and afternoon peak periods.

Intersection Analysis

7.11 The capacity of the road network is largely determined by the capacity of its intersections to cater for peak period traffic flows. The intersection of Great Western Highway has been analysed using SIDRA 9 for the traffic flows shown in Figures 3 and 4.

7.12 SIDRA simulates the operations of intersections to provide a number of performance measures. The most useful measure provided is average delay per vehicle expressed in seconds per vehicle. Based on average delay per vehicle, SIDRA estimates the following levels of service (LOS):

- ❑ For traffic signals, the average delay per vehicle in seconds is calculated as delay/(all vehicles), for roundabouts the average delay per vehicle in seconds is selected for the movement with the highest average delay per vehicle, equivalent to the following LOS:

0 to 14 = “A” Good

15 to 28 = “B” Good with minimal delays and spare capacity

29 to 42	=	"C"	Satisfactory with spare capacity
43 to 56	=	"D"	Satisfactory but operating near capacity
57 to 70	=	"E"	At capacity and incidents will cause excessive delays. Roundabouts require other control mode
>70	=	"F"	Unsatisfactory and requires additional capacity

- For give way and stop signs, the average delay per vehicle in seconds is selected from the movement with the highest average delay per vehicle, equivalent to following LOS:

0 to 14	=	"A"	Good
15 to 28	=	"B"	Acceptable delays and spare capacity
29 to 42	=	"C"	Satisfactory but accident study required
43 to 56	=	"D"	Near capacity and accident study required
57 to 70	=	"E"	At capacity and requires other control mode
>70	=	"F"	Unsatisfactory and requires other control mode

7.13 It should be noted that for roundabouts, give way and stop signs, in some circumstances, simply examining the highest individual average delay can be misleading. The size of the movement with the highest average delay per vehicle should also be taken into account. Thus, for example, an intersection where all movements are operating at a level of service A, except one which is at level of service E, may not necessarily define the intersection level of service as E, if that movement is very small. That is, longer delays to a small number of vehicles may not justify upgrading an intersection unless a safety issue was also involved.

7.14 The SIDRA analysis for the existing traffic flows found that the intersection of Great Western Highway/Flushcombe Road operates with average delays of less

than 40 seconds per vehicle in the weekday morning and afternoon peak hours. This represents level of service C, a satisfactory level of intersection operation in both the weekday morning and afternoon peak hours. SIDRA movement summaries are provided in Appendix C.

Traffic Generation

7.15 TfNSW “Guide to Traffic Generating Developments” sets out the following generation rate for warehouse (where the office component is less than 20% of total GFA) during the weekday daily, morning and afternoon peak hour periods:

- ❑ four vehicles per day per 100m² GFA (two-way) on a weekday; and
- ❑ 0.5 vehicles per hour per 100m² GFA (two-way) during the weekday morning and afternoon peak hour periods, with some 10% heavy vehicles in the morning and afternoon peak hours.

7.16 For the proposed development, the office component is less than 5% of the total GFA. Application of the above rate to the proposed development results in traffic generations of:

- ❑ some 2,795 vehicles per day (two way) for Warehouses 1 to 4;
 - ❑ some 2,590 vehicles per day (two way) for Warehouse 5;
 - ❑ some 350 vehicles per hour (two way) for Warehouses 1 to 4 in the weekday morning and afternoon peak hours; and
 - ❑ some 325 vehicles per hour (two way) for Warehouse 5 in the weekday morning and afternoon peak hours.
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- 7.17 Traffic generated by the proposed development will vary over the day, with the highest traffic generation in the weekday morning and afternoon peak hours. Distribution of traffic generation over a typical weekday is set out below in Table 7.2.

Table 7.2 Distribution of Traffic Generation over a Typical Weekday			
Time Period	% of Daily Traffic (5,385 vpd, 2-way)	Average Hourly Traffic Generation (vph, 2-way)	% Heavy Vehicles
0000-0600	6%	55	30%
0600-0800	10%	270	15%
0800-0900	12.5%	670	10%
0900-1000	8%	430	15%
1000-1600	33%	222	20%
1600-1700	8%	430	15%
1700-1800	12.5%	670	10%
1800-1900	4%	215	15%
1900-2200	4%	70	25%
2200-2400	2%	55	30%

- 7.18 The distribution of development traffic to the road network has been based on access to the regional road network and is set out below:

- 20% to/from the north via Flushcombe Road;
- 40% to/from the east via Great Western Highway and Prospect Highway; and
- 40% to/from the west via Great Western Highway.

Traffic Effects

- 7.19 Traffic effects of the proposed development have been assessed for:

- ❑ existing traffic flows plus development traffic; and
- ❑ ten year future traffic flows (year 2033) with and without development traffic.

7.20 The traffic report undertaken as part of the Prospect Highway REF provided total traffic movements through intersections without providing turning movements. At the new intersection of Great Western Highway with the Prospect Highway Connection, for the existing situation, estimated total traffic movements are based on the movements through the adjacent Great Western Highway/Flushcombe Road intersection. Estimated turning movements are based on the Prospect Highway Connection having two-way traffic flows of some 700 and 850 vehicles per hour (two way) in the weekday morning and afternoon peak hours.

7.21 Existing peak hour traffic flows plus the development traffic are shown in Figures 3 and 4, and summarised in Table 7.2.

Table 7.3: Existing Peak Hour 2-Way (sum of both directions) Traffic Flows				
Road/Location	Morning		Afternoon	
	Existing	+ Dev	Existing	+ Dev
Great Western Highway				
– east of Prospect Highway	3,050	+235	3,550	+235
– east of Flushcombe Road	2,860	+305	3,470	+305
– west of Flushcombe Road	3,235	+265	3,525	+265
Flushcombe Road				
– north of Great Western Hwy	1,245	+100	1,365	+100
– south of Great Western Hwy	80	+340	75	+340
Prospect Highway Connection				
– north of Great Western Hwy	700	+60	840	+60
Site Accesses				
– Warehouse 5 (GWH)	0	+320	0	+320
– Warehouses 1-4 (Augusta Street)	0	+340	0	+340

7.22 Table 7.3 reveals that:

- ❑ traffic flows on Great Western Highway would increase by some 235 and 305 vehicles per hour (two way) in the weekday morning and afternoon peak hours;
- ❑ traffic flows on Flushcombe Road, north of Great Western Highway would increase by some 100 vehicles per hour (two way) in the weekday morning and afternoon peak hours;
- ❑ traffic flows on Augusta Street and Flushcombe Road, south of Great Western Highway, would increase by some 340 vehicles per hour (two way) in the weekday morning and afternoon peak hours; and
- ❑ traffic flows on the Prospect Highway connection would increase by some 60 vehicles per hour (two way) in the weekday morning and afternoon peak hours.

7.23 To accommodate existing plus development traffic the following works have been identified:

Great Western Highway/Flushcombe Road Traffic Signals

- ❑ extend the existing right turn bay on Great Western Highway (eastern approach) by some 50 metres;
 - ❑ provide a separate signalised left turn lane (some 120 metres) on Great Western Highway (eastern approach);
 - ❑ upgrade the Flushcombe Road (northern approach) to provide two lanes, a shared left/through lane and separate right turn lane; and
 - ❑ modify the existing pedestrian crossing of the Great Western Highway (western approach) to a staged crossing. TfNSW has indicated that any upgrade of the intersection would require provision of pedestrian crossing on approaches to the intersection. With a pedestrian crossing on the eastern approach, consideration should be given to deleting the pedestrian crossing on the western approach.
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Flushcombe Road/Augusta Street

- ❑ upgrade Flushcombe Road (between Great Western Highway and Augusta Street) and Augusta Street to the Huntingwood Precinct DCP requirements. This includes provision of a 27 metre diameter turning head at the end of Augusta Street.

Great Western Highway/Prospect Highway Connection Traffic Signals

- ❑ modify the proposed t-intersection traffic signals to provide a fourth (southern) approach for access to Warehouse 5;
- ❑ to maintain a three phase operation of the traffic signals, no through movements between Warehouse 5 and the Prospect Highway Connection would be permitted (access to Warehouse 5 would be limited to left and right turns to/from Great Western Highway);
- ❑ provide a separate right turn bay on Great Western Highway (western approach);
- ❑ provide a separate signalised left turn lane on Great Western Highway (eastern approach);
- ❑ provide a new southern approach to the intersection with two lanes (separate left and right turn lanes);
- ❑ provide a pedestrian crossing on the southern approach to the intersection; and
- ❑ provide a 4.0 metre wide shared cycle/pedestrian path along the Great Western Highway frontage of the site.

7.24 The above works are shown on concept plans prepared by MU Group.

7.25 SIDRA analysis of the intersections of the Great Western Highway with Flushcombe Road and Prospect Highway connection for existing flows plus development traffic with the above works found that:

- the signalised intersection of Great Western Highway/Flushcombe Road would operate with average delays of some 40 seconds per vehicle during the weekday morning peak hour and some 48 seconds per vehicle in the afternoon peak hour. This represents level of service C/D, a satisfactory level of intersection operation; and
- the signalised intersection of Great Western Highway/Prospect Highway Connection/Warehouse 5 access would operate with average delays of less than 30 seconds per vehicle during the weekday morning and afternoon peak periods. This represents level of service B/C, a good to satisfactory level of intersection operation.

7.26 The site access to Warehouse 5 has been designed to address matters raised by TfNSW including the following measures:

- the left and right turns into the site operating in different phases of the signals;
 - proposed left and right turn lanes on the Great Western into the site can readily accommodate the 95% back of queues;
 - within the site, heavy and light traffic split into separate lanes, with heavy traffic going up the ramp and cars accessing the car park;
 - priority given to cars entering the carpark, with pedestrian crossing at the car park entry relocated; and
 - approaches from within Warehouse to the traffic signal controlled intersection have been straightened, improving sight lines and queuing.
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- 7.27 With the identified upgrades, the surrounding road network can cater for existing plus development traffic with the two intersections on the Great Western Highway operating at satisfactory of service in the weekday morning and afternoon peak hours.

Future Traffic Conditions

- 7.28 Section 3.4.3 of the traffic report undertaken as part of the Prospect Highway REF noted that – *from 2018 to 2028, traffic will grow at about 1.2 per cent per year and beyond 2028 will grow at about one per cent per year.*
- 7.29 These growth rates have been used to estimate 2033 traffic flows.
- 7.30 The intersections of Great Western Highway with Flushcombe Road and Prospect Highway Connection were reanalysed for 2033 traffic flows without development traffic. The SIDRA analysis found that:
- the signalised intersection of Great Western Highway/Flushcombe Road would operate with average delays of less than 70 seconds per vehicle during the weekday morning and afternoon peak hours. This represents level of service E, at capacity; and
 - the signalised intersection of Great Western Highway/Prospect Highway Connection/Warehouse 5 Access would operate with average delays of less than 25 seconds per vehicle during the weekday morning and afternoon peak periods. This represents level of service B, a good level of intersection operation.
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- 7.31 To accommodate future 2033 traffic flows, without traffic generated by the proposed development, the following works would be required at the intersection of Great Western Highway/Flushcombe Road:
- provide a third lane on the Flushcombe Road northern approach, configured as a separate left turn slip lane (some 30 metres long), shared through/right turn lane and separate right turn lane (some 100 metres);
 - reconfigure the existing pedestrian crossing on the Great Western Highway western approach to staged crossing; and
 - modify the signal phasing to split phasing on the Flushcombe Road approaches.
- 7.32 With these works in place, the intersection of Great Western Highway/Flushcombe Road would operate with average delays of less than 35 seconds per vehicle during the weekday morning and afternoon peak hours. This represents a satisfactory level of service.
- 7.33 With development traffic added to the 2033 traffic flows, the following works (in addition to those set out in Section 7.30) would be required at the intersection of Great Western Highway/Flushcombe Road:
- provide a third lane on the Flushcombe Road southern approach, configured as a separate left turn lane (some 40 metres long), shared through/right turn lane and separate right turn lane.
- 7.34 With development traffic added to 2033 traffic flows and with the above works in place, the SIDRA analysis found that:
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- ❑ the signalised intersection of Great Western Highway/Flushcombe Road would operate with average delays of less than 40 seconds per vehicle during the weekday morning peak hour and less than 45 seconds per vehicles in the weekday afternoon peak hour. This represents level of service C/D, a satisfactory level of intersection operation; and
- ❑ the signalised intersection of Great Western Highway/Prospect Highway Connection/Warehouse 5 Access would operate with average delays of less than 30 seconds per vehicle in the weekday morning and afternoon peak hours. This represents level of service B/C, a good to satisfactory level of intersection operation.

7.35 Therefore, with the identified upgrades, the surrounding road network can cater for 2033 plus development traffic, with the two intersections on the Great Western Highway operating at satisfactory in the weekday morning and afternoon peak hours. It is noted that some works are required at the intersection of Great Western Highway/Flushcombe Road to accommodate 2033 future traffic flows without the traffic generated by the proposed development.

8. DRAFT CONSTRUCTION TRAFFIC MANAGEMENT PLAN

8.1 A draft construction traffic management plan (CTMP) has been prepared. The construction methodology, process and staging for the proposed warehouse development has not yet been precisely defined. The successful builder/contractor will be responsible for the preparation of a construction traffic management plan, which will be prepared prior to the commencement of work, taking into account relevant consent conditions.

8.2 The CTMP will be prepared in consultation with the Blacktown Council and TfNSW, and will include the following:

- ❑ location of all proposed work zones;
- ❑ proposed crane locations and methods of erection and dismantling;
- ❑ haulage routes;
- ❑ construction vehicle access arrangements;
- ❑ proposed construction hours;
- ❑ construction fencing and hoardings;
- ❑ estimated number and type of construction vehicle movements including morning and afternoon peak and off peak movements;
- ❑ construction program highlighting details of peak construction activities and proposed construction staging;
- ❑ identify any potential impacts to general traffic, cyclists, pedestrians and bus services within the vicinity of the site from construction vehicles, during the period of construction;
- ❑ identify measures to mitigate any associated impacts, including signage, traffic management and traffic control.

Overall Principles for Traffic Management

8.3 The overall principles for traffic management during construction are:

- ❑ minimise effects on pedestrian and cyclist movements and amenity;
- ❑ manage and control vehicular movements to and from the site;
- ❑ maintain traffic capacity at intersections and mid-block around the site;
- ❑ maintain access to other properties adjacent to the site in Flushcombe Road;
- ❑ restrict vehicle activity to designated truck routes through the area;
- ❑ maintain safety for workers;
- ❑ provide appropriate construction fencing and hoarding along the Great Western Highway, M4 Western Motorway and Flushcombe Road;
- ❑ provide appropriate access to the site for construction traffic; and
- ❑ manage and control construction vehicle activity in the vicinity of the site.

Hours of Work

8.4 Subject to conditions of consent, work associated with construction activities will be carried out between the following hours:

- ❑ Monday to Friday: - 7:00am to 7:00pm;
- ❑ Saturday: - 7:00am to 5:00pm; and
- ❑ Sunday/public holidays: - No work.

8.5 These hours will be subject to DPE approval. Work outside these hours may be undertaken, subject to prior approval from the Planning Secretary and Blacktown City Council, if works are inaudible, or if NSW Police require deliveries outside normal business hours due to safety concerns.

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- 8.6 All work including excavation and construction work during the approved hours will be carried out in accordance with the conditions of consent and the Australian Standard AS2436.10 Guide to Noise Control and Construction, Maintenance and Demolition Sites. The site contractor will be responsible to instruct and control all workers and sub-contractors regarding the hours of work.

Truck Routes

- 8.7 During excavation and construction, trucks removing spoil and transporting material to the site will be accommodated on-site. Access to and from the site will be provided from Flushcombe Road and Augusta Street, via temporary construction access driveways. Alternate temporary access arrangements will be required for the eastern part of the site, onto the Great Western Highway, given Blacktown Creek divides the site. Access arrangements and vehicle movements to and from the site will be managed by qualified traffic controllers. Construction vehicles will generally include single unit dump trucks, concrete trucks, large rigid trucks, articulated vehicles and truck and trailer combinations.
- 8.8 Traffic movements on surrounding roads and continued access to adjacent properties will be maintained during construction. Truck movements will be restricted to designated truck routes and will be confined to the main road network in the vicinity of the site.
- 8.9 The proposed truck routes for the removal of spoil from the site and for the delivery of construction materials, are shown on Figure 5, and include the Great Western Highway, M4 Western Motorway, Prospect Highway, Reservoir Road and Flushcombe Road. Truck drivers will be inducted and advised of the designated truck routes to and from the site.
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- 8.10 The designated truck routes to and from the site are proposed to restrict construction traffic to the main road network through the area.

Construction Site Entries

- 8.11 During excavation and construction, all construction vehicles and materials handling, including the removal of spoil and delivery of construction material, will be accommodated on-site. Construction hoarding and containment fencing will be erected around the perimeter of the site, with scaffolding and overhead protection provided where required.
- 8.12 Trucks will enter and exit the site in a forward direction. The temporary construction access driveways onto Flushcombe Road and Augusta Street will be managed and controlled by qualified traffic controllers. The traffic controllers will be located within the site and will manage pedestrians and truck movements across the adjacent footpaths. They will ensure that the access driveways are kept clear at all times, to allow trucks unobstructed access to the site. Trucks exiting the site will give way to traffic and pedestrians and will wait for appropriate gaps in the traffic in order to enter the surrounding road network.
- 8.13 The construction access driveways will provide appropriate sight lines for construction vehicle access, with regards to the number, type and size of construction vehicles. Pedestrian warning signs will be erected adjacent to the driveways and on pedestrian paths adjacent to the construction activity, in accordance with SafeWork NSW requirements.

- 8.14 Truck drivers will be advised of the presence of the traffic controllers. All traffic controllers will be fully qualified with the relevant TfNSW Traffic Controllers qualifications.
- 8.15 All traffic controllers and work personnel will be required to wear high visibility fluorescent safety vests and Personnel Protective Equipment (PPE). Wet weather clothing will be made of fluorescent high visibility material.

Construction Traffic Effects

- 8.16 The number of vehicles generated during the various stages of construction will be determined when the construction methodology, process and staging is finalised by the builder. The peak construction traffic activity will generally occur during bulk excavation, with the removal of excavated material from the site, and during concrete pours, with the delivery of concrete to the site.
- 8.17 Construction traffic will be managed to minimise the overall traffic effects on the surrounding road network, through the following measures:
- ❑ ensure that construction vehicles travel to and from the site along the designated truck routes;
 - ❑ traffic controllers to manage the movement of construction vehicles on and off the site;
 - ❑ control the size of construction vehicles;

- ❑ ensure that trucks do not park within surrounding streets. All construction vehicles are to be accommodated on-site;
- ❑ co-ordinate and manage the arrival of trucks and the delivery of construction material to and from the site; and
- ❑ ensure that all truck drivers are advised of the construction traffic management procedures.

Construction Workers

- 8.18 The number of construction workers will be determined when the construction methodology, process and staging is finalised by the builder. Construction worker parking will be available on-site. However, construction workers will be encouraged to use public transport services when travelling to and from the site. Public transport timetables will be made available to all construction workers.
- 8.19 Construction workers will be required to undergo site induction before access to the site is permitted. During the induction process and at more regular tool time talks, construction workers will be encouraged to use public transport. Appropriate on-site storage facilities, for the storage of tools, will be provided for construction workers.

Pedestrians and Cyclists

- 8.20 No construction vehicles will be parked nor will material/equipment be stored on the public footpaths adjacent to the site. Appropriate construction fence/hoarding will be erected around the perimeter of the site. The design, set-out and erection
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of the construction safety fence/hoarding and access to the site will be the responsibility of the site contractor/builder.

- 8.21 The openings in the construction fencing at the construction access driveways will be managed and controlled by qualified traffic controllers. Pedestrian warning signs will be erected adjacent to the driveways, in accordance with SafeWork NSW requirements.
- 8.22 The movement of trucks entering and exiting the site, and the movement of pedestrians across the construction access driveways when in use, will be managed and controlled by traffic controllers.

Community Public Consultation

- 8.23 In regard to community public consultation process relating to the site preparation, excavation and construction activity, the appointed builder/contractor will undertake meetings and discussions with Blacktown Council and other authorities. A line of communication will be established between the builder and the various stakeholders to discuss the proposed construction staging.
- 8.24 In addition, the builder/contractor will establish a 24 hour feedback telephone hotline and complaints register, and establish procedures to respond to issues raised by stakeholders, public and community groups. A dedicated website will be established containing information about the project, status of work and other relevant notices.

Draft Construction Traffic Management Plan

- 8.25 The draft construction traffic management plan for construction includes the principles of traffic management and is subject to SafeWork NSW requirements, as well as survey and final design.
- 8.26 The appointed builder/contractor will be responsible for the preparation of a detailed construction traffic management plan, to incorporate these principles and refine the construction methodology, staging and timing.
- 8.27 Site operations, signage, construction fencing/hoarding, overhead protection, safety barriers and line marking detail will be provided in accordance with Australian Standards and the TfNSW Manual for Traffic Control at Work Sites. A copy of the traffic management plan will be kept on-site at all times. Signage details, traffic management, the control of pedestrians in the vicinity of the site, and the control of trucks to and from the site will be the responsibility of the site contractor.
- 8.28 The draft construction traffic management plan includes the following:
- ❑ all construction activity to be provided for on-site;
 - ❑ the construction activity to be coordinated with the construction of other developments in the vicinity of the site;
 - ❑ construction vehicle access to be provided from Flushcombe Road and Augusta Street;

- ❑ construction fencing/hoarding and scaffolding to be erected around the construction site, with overhead protection provided where required;
 - ❑ construction work to be restricted to the approved hours of construction. Any work outside the approved hours would be subject to prior approval from Blacktown City Council and DPE;
 - ❑ the movement of trucks entering and exiting the site to be managed and controlled by traffic controllers in accordance with a safe work method statement and appropriate traffic control plans;
 - ❑ construction vehicles will include single unit dump truck, truck and trailer combinations, concrete trucks, large rigid delivery trucks and articulated vehicles;
 - ❑ truck movements to and from the site to be restricted to the designated truck route;
 - ❑ trucks to enter and exit the site in a forward direction;
 - ❑ openings to be provided in the construction fence for access to the site for construction vehicles;
 - ❑ the construction access driveways will be managed and controlled by a qualified traffic controllers;
 - ❑ traffic controllers to ensure that the construction access driveways are kept clear at all times, to allow trucks unobstructed access to the site;
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- ❑ the management of the site works will be the responsibility of the site contractor/builder;
- ❑ pedestrian and cyclist warning signs to be utilised in the vicinity of the site;
- ❑ pedestrian arrangements, construction activity and erection of safety fencing will be provided in accordance with SafeWork NSW requirements;
- ❑ the construction site manager/builder to be responsible for the management of the site, the movement of trucks on and off the site, signage detail, traffic management and the control of pedestrians/cyclists; and
- ❑ construction signage to be provided in accordance with Australian Standards and the TfNSW Manual for Traffic Control at Work Sites.

9. CONSULTATION WITH AUTHORITIES

9.1 LOGOS Development Management and Colston Budd Rogers & Kafes Pty Ltd (CBRK) have undertaken consultation with TfNSW and Blacktown Council.

9.2 A series of meetings and email exchanges were held with TfNSW between June 2022 and May 2023 to discuss the following:

- direct access to the Great Western Highway from the eastern side of the development (Building 5); and
- upgrades to the Flushcombe Road / Great Western Highway signalised intersection.

9.3 A summary of the matters raised by TfNSW and the responses are set out below in Table 9.1.

Table 9.1	Response to Traffic Matters Raised by TfNSW
<i>Matter Raised:</i>	<i>Response</i>
Item 1 (Email - 13 October 2022): It is the preference of TfNSW to have access to the eastern side of the development site from the local road network as opposed to a left in left out arrangement from Great Western Highway. TfNSW advises that the practice of reducing accesses along movement corridors and classified roads provides many safety and efficiency benefits and therefore would not consider additional accesses unless warranted	Response to Item 1: The Blacktown City Council Huntingwood Precinct DCP (amended 2020) contemplates a LI/LO access to GWH from the subject site which had been previously discussed and reviewed with the RTA. The provision of a separate access to GWH from Warehouse 5 would improve the dispersion of traffic onto the road network, compared to all traffic access via Augusta Street which would result in all development traffic passing through the GWH/Flushcombe Road intersection. Traffic Assessment assessed the nominated intersections for 2022 and 2032 traffic conditions, with and without development.

Item 2 (Email - 13 October 2022): TfNSW requests that investigations into the creek crossing occur. It is recommended that consideration be given to multiple locations along the creek line to find the site with the least amount of environmental impact as possible.	Response Item 2: The proposed direct access solution of the GWH will allow for the 1st Order Blacktown Creek and riparian corridor to undertake substantial restoration works directed to provide habitat for threatened fauna (Fishing Bat and the Green and Golden Bell Frog) recognised by Blacktown City Council as once widespread in the local area, especially Green and Golden Bell Frog. Fragmentation of this conservation area via potential alternative Blacktown Creek crossing locations will diminish the value and potential of this proposed ecologically sustainable development and are contrary to the Huntingwood DCP.
Item 3 (Email – 13 October 2022): With regards to the proposed changes at the intersection to Flushcombe Road and the Great Western Highway, TfNSW provided a number of comments that would be required to be incorporated into the design and traffic analysis of the intersection. Key focus was on pedestrian access, modelling requirements and requirement for increased slip land to right turn lane off the GWH (north bound).	Response to Item 3: Flushcombe Road / Great Western Highway signalised intersection comments were adopted into the updated design. TfNSW largely supportive of the Flushcombe Road / Great Western Highway signalised intersection upgrade with minor comments suggested to the design.
Item 4 (Email - 16 December 2022): Left in Left out access is located within the new proposed traffic signal for the Prospect Highway upgrade and TfNSW have safety and operation concerns with regards to the location of the access on Great Western Highway in relation to the new traffic signal. As an alternative option, TfNSW suggests that you consider and investigate obtaining access to the site from the intersection currently being constructed at Great Western Highway to the east of the site. Access from the intersection would allow a left-hand deceleration lane into the site to be constructed in connection with the intersection and a right-hand signalised turn	Response to Item 4: A new access point (“fourth leg”) to link to the proposed future Prospect Hwy signalised intersection was presented to TfNSW on 6 February 23. TfNSW provided feedback across a number of meetings and emails with minor modifications to the to the proposed new intersection design fourth leg (swept paths, pedestrian crossings, shared pathway). Design feedback provided by TfNSW has been incorporated into the design refinement of the intersection by LOGOS appointed traffic engineers MU Group.

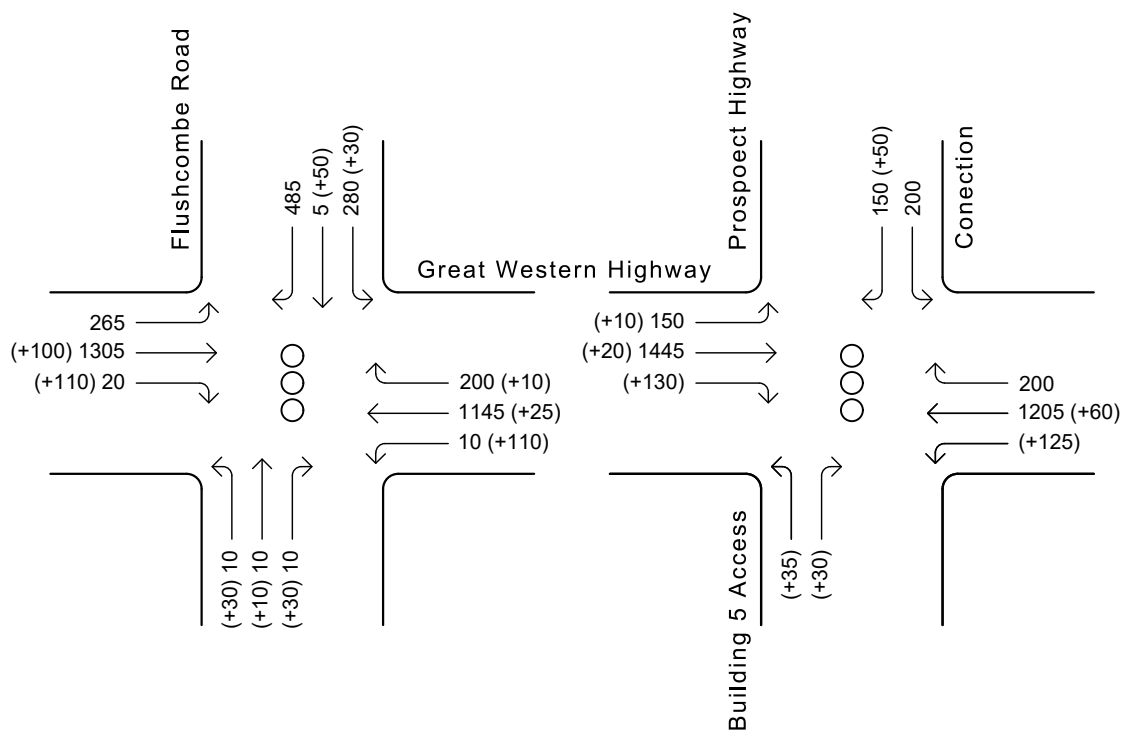
from The Great Western Highway. TfNSW considers this to be the only option where access to and from the site from The Great Western Highway to be safe while minimising impacts to the efficiency of the state road network.	
--	--

9.4 A pre-DA meeting was held with Blacktown Council (BCC) on 22 June 2022. The traffic matters raised by Council are summarised below:

- consult with TfNSW regarding access from Great Western Highway;
- parking to comply with Huntingwood Precinct DCP;
- provide details on proposed access arrangements; including swept paths; and
- design of access arrangements; car parking areas and loading docks to comply with AS2890.1-2004, AS2890.2-2018 and AS2890.6-2009.

9.5 With regards to these matters, we note that:

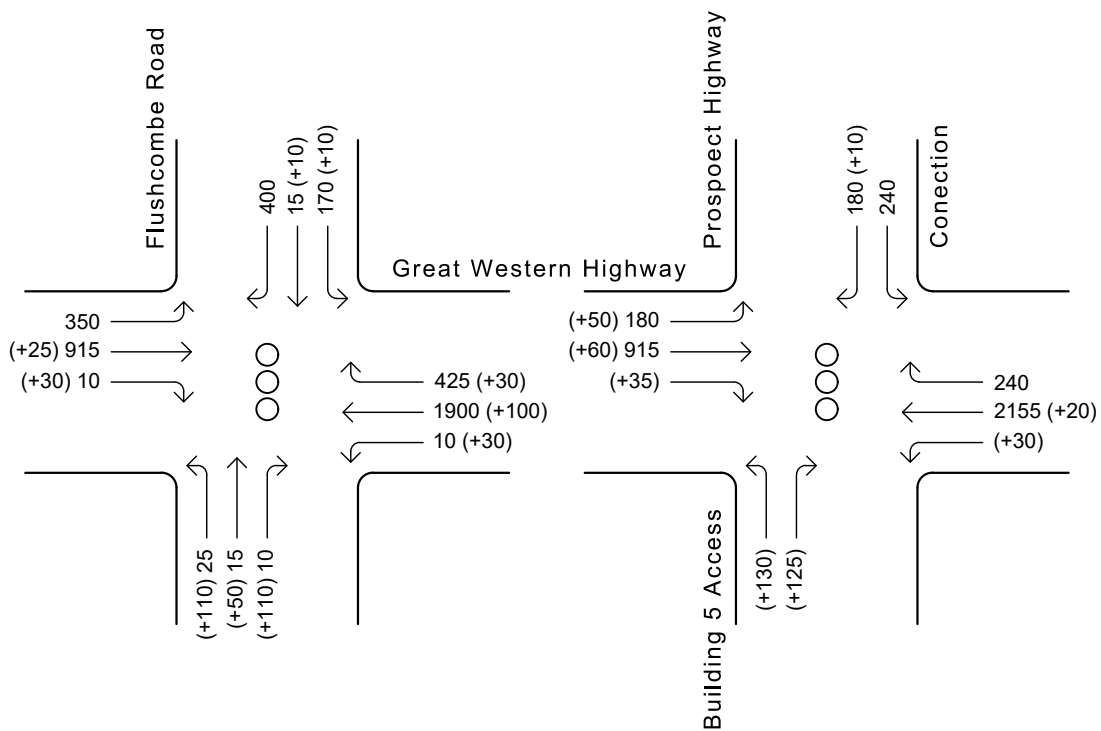
- consultation with TfNSW has been undertaken regarding access from Great Western Highway;
- parking is addressed in Chapter 5;
- access, parking layout and servicing arrangements are addressed in Chapter 6 with swept paths provided in Appendix A.



LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- ∞ - Traffic Signals
- - Roundabout

**Existing weekday morning
peak hour traffic flows plus
development traffic**
Figure 3



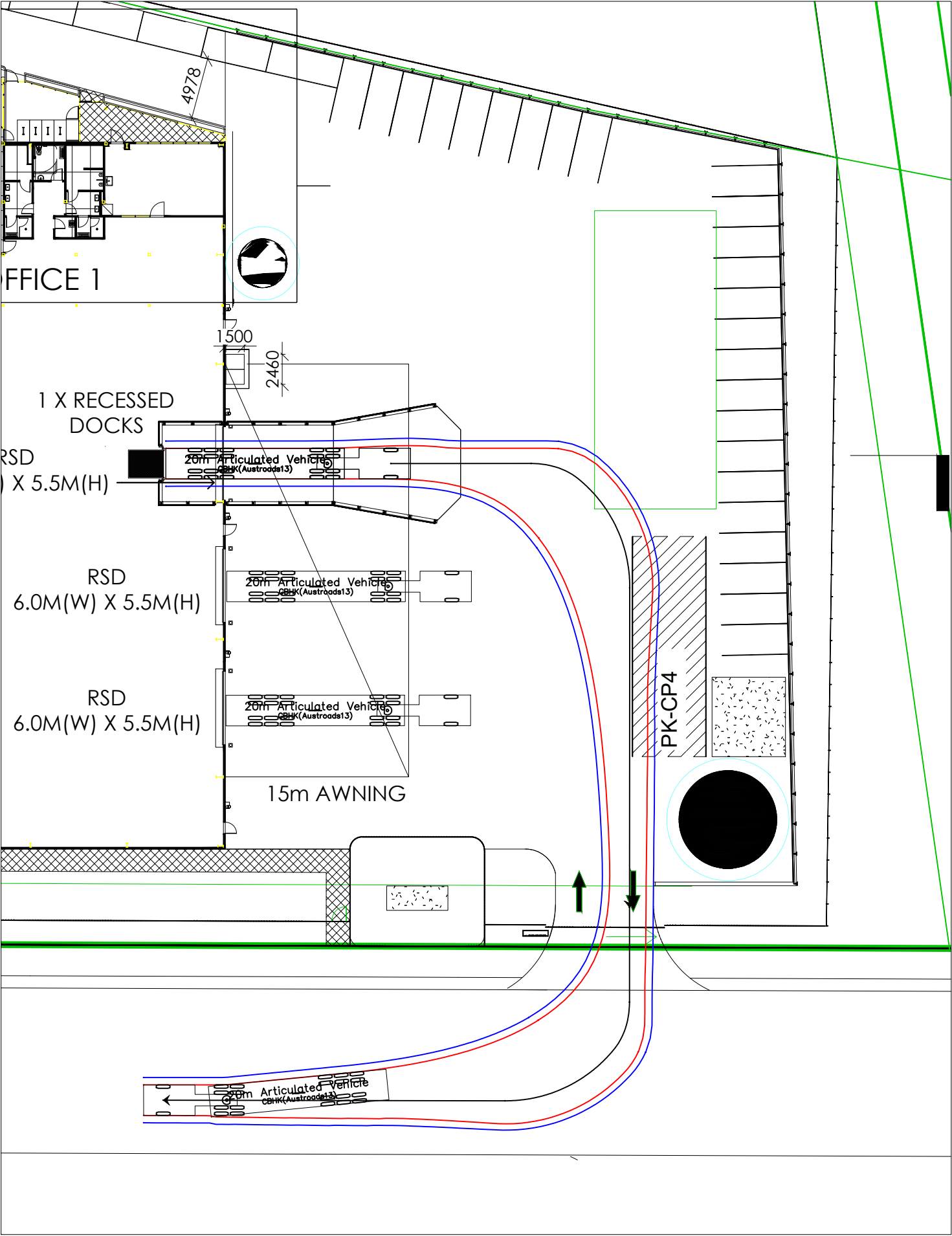
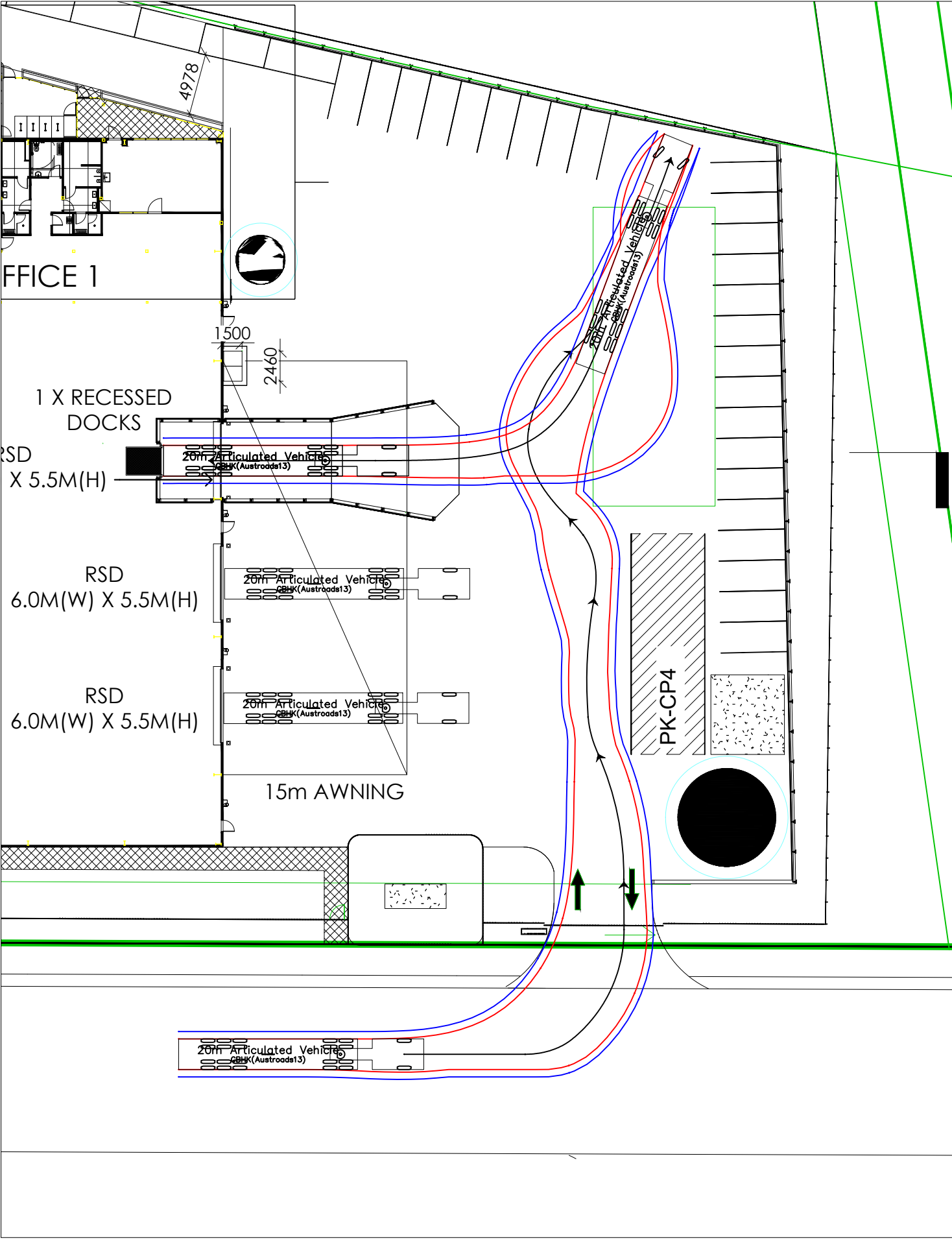
LEGEND

- 100 - Existing Peak Hour Traffic Flows
- (+10) - Additional Development Traffic
- ⊗ - Traffic Signals
- - Roundabout

**Existing weekday afternoon
peak hour traffic flows plus
development traffic**
Figure 3

APPENDIX A

VEHICLE SWEEP PATHS



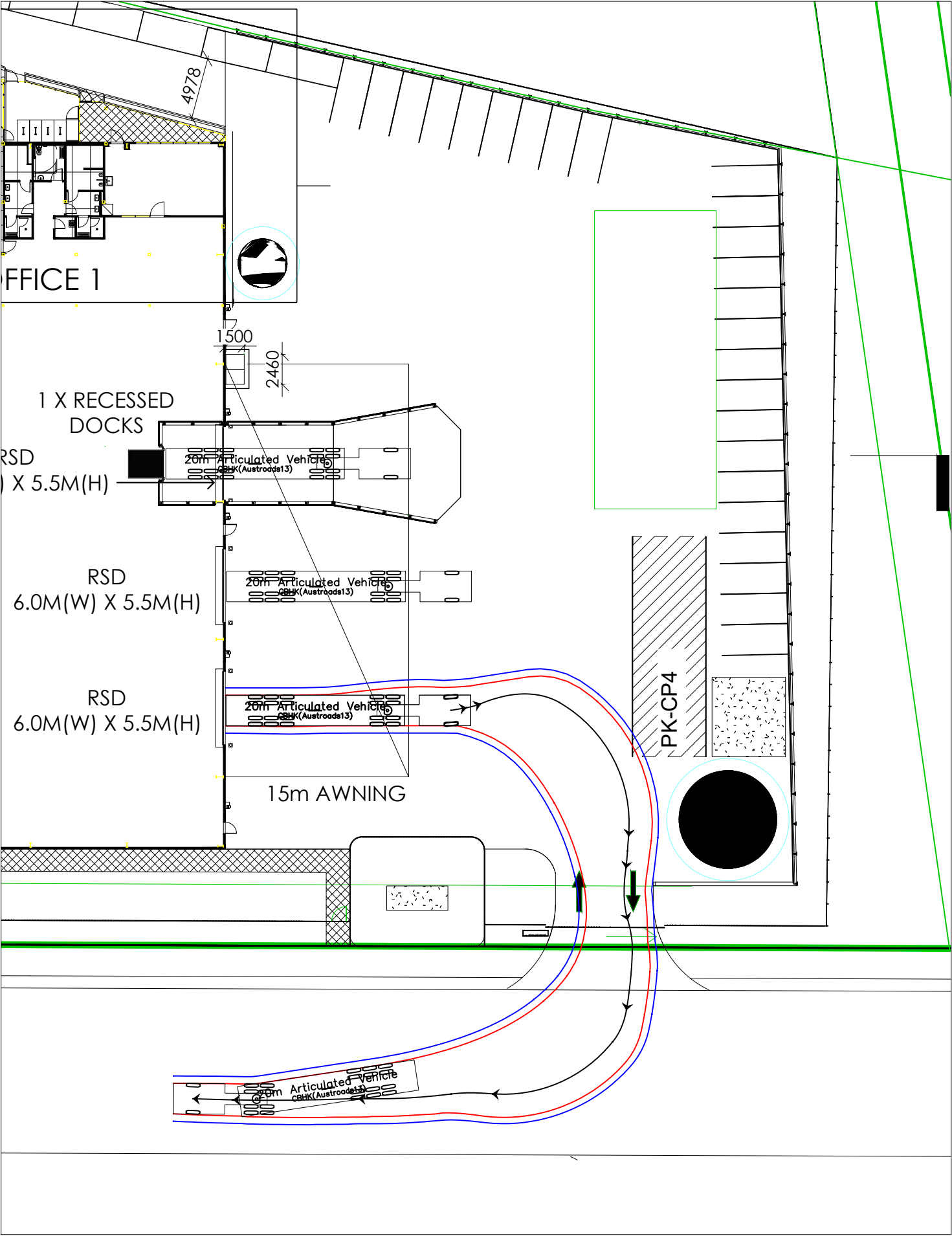
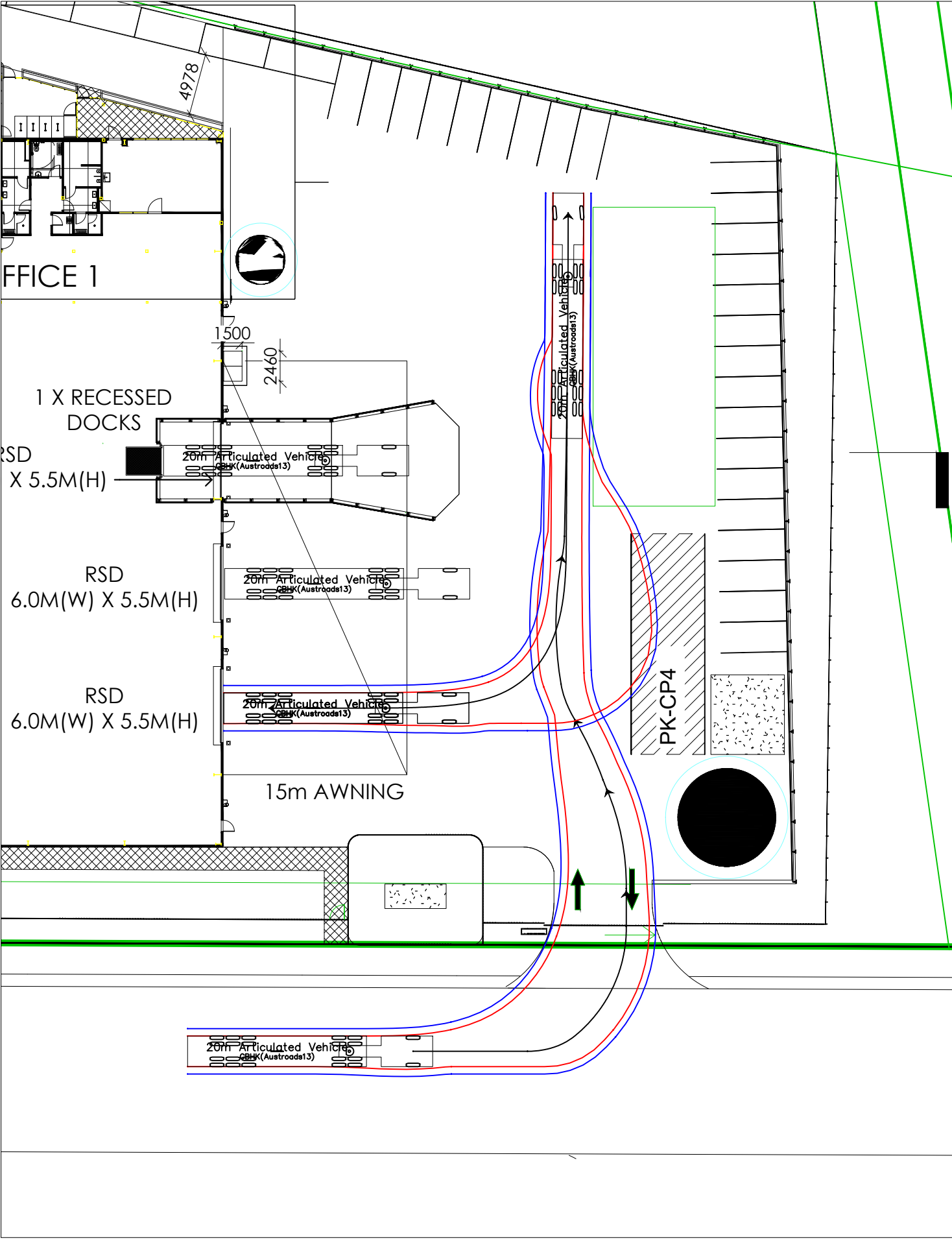
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PROPOSED IN THIS PLAN ARE CONCEPT ONLY AND
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 1

DRAWN BY CBRK Pty Ltd_mrc Ref: 11916 11.09.2023

A1

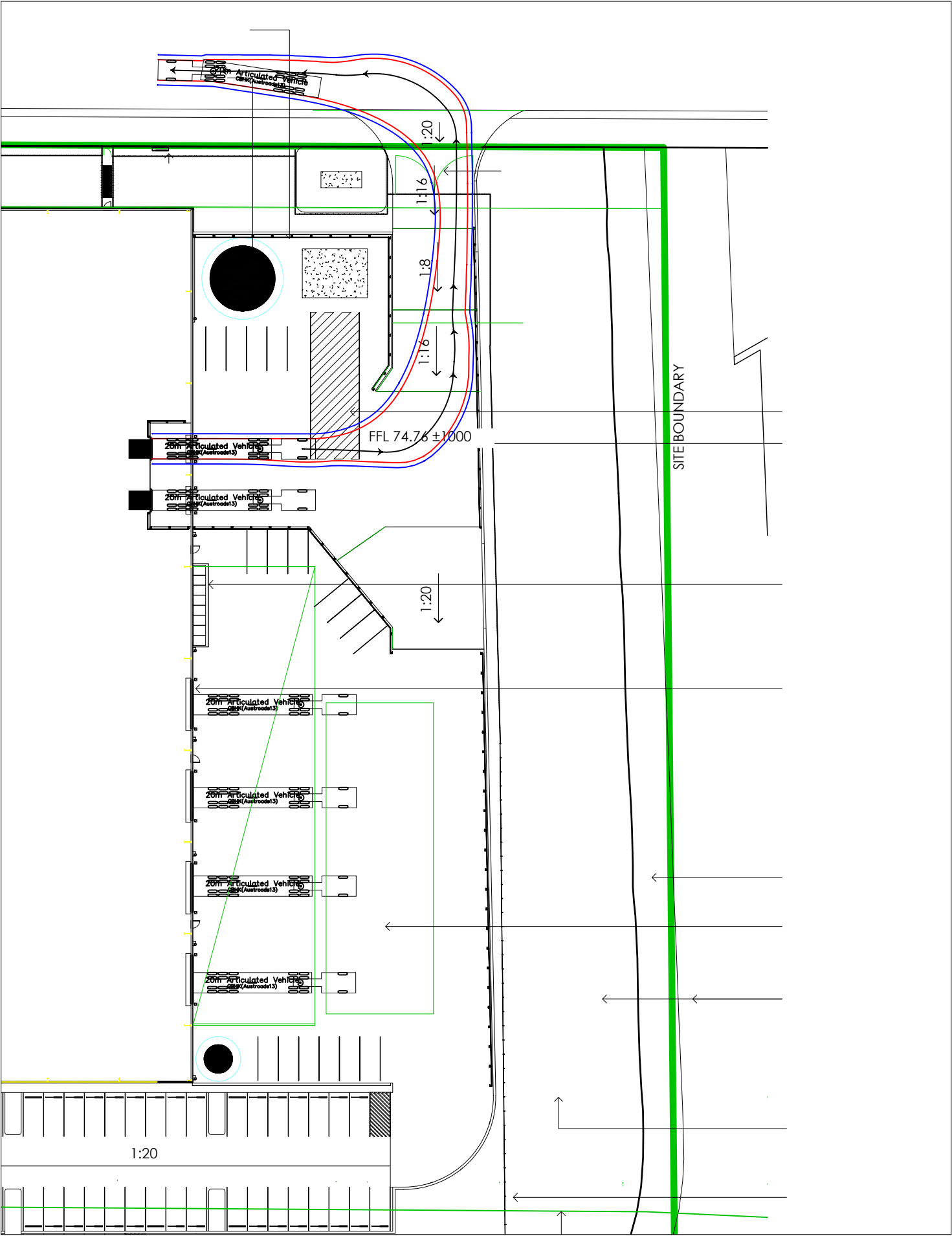
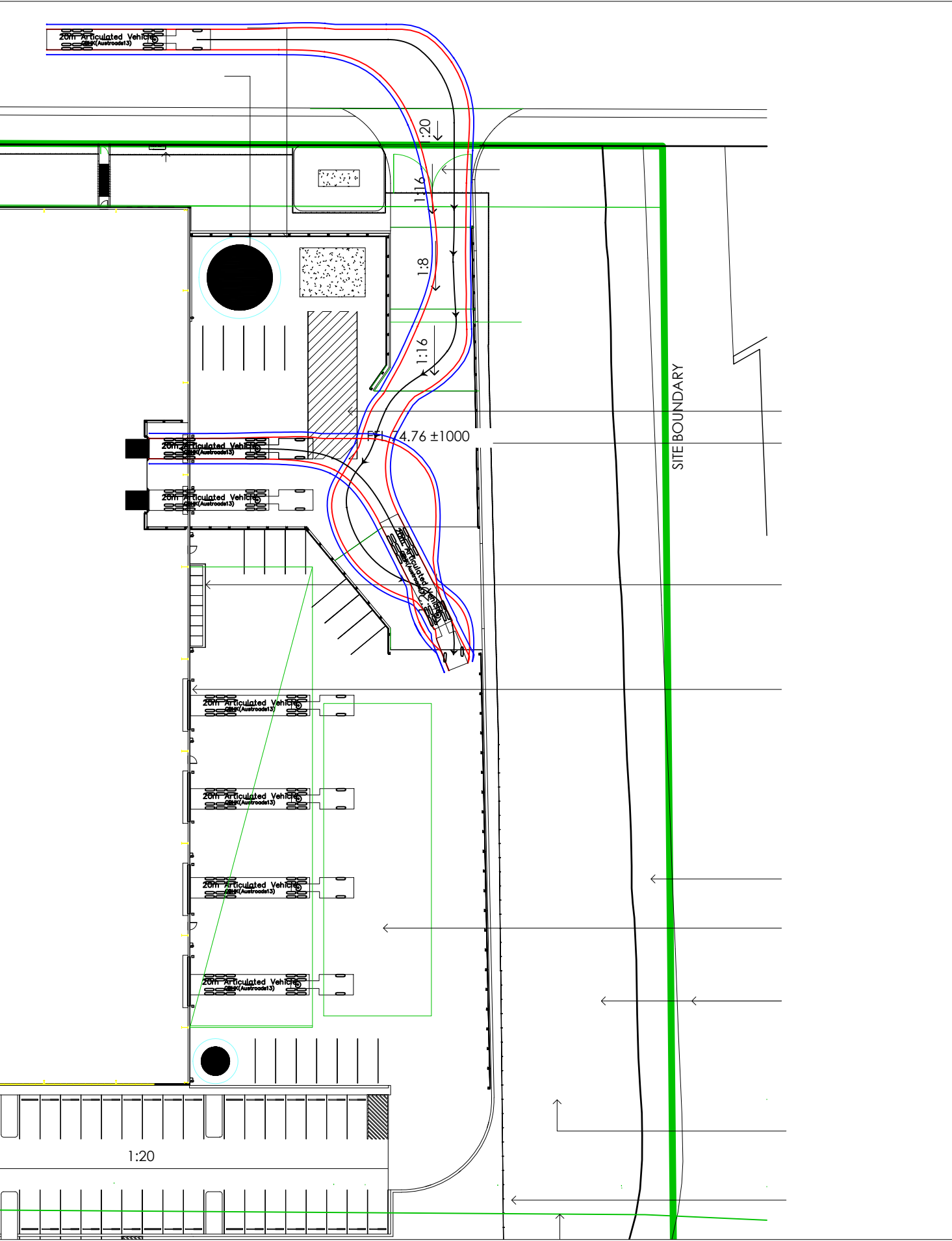


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20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 1

DRAWN BY CBRK Pty Ltd_mrc Ref: 11916 11.09.2023



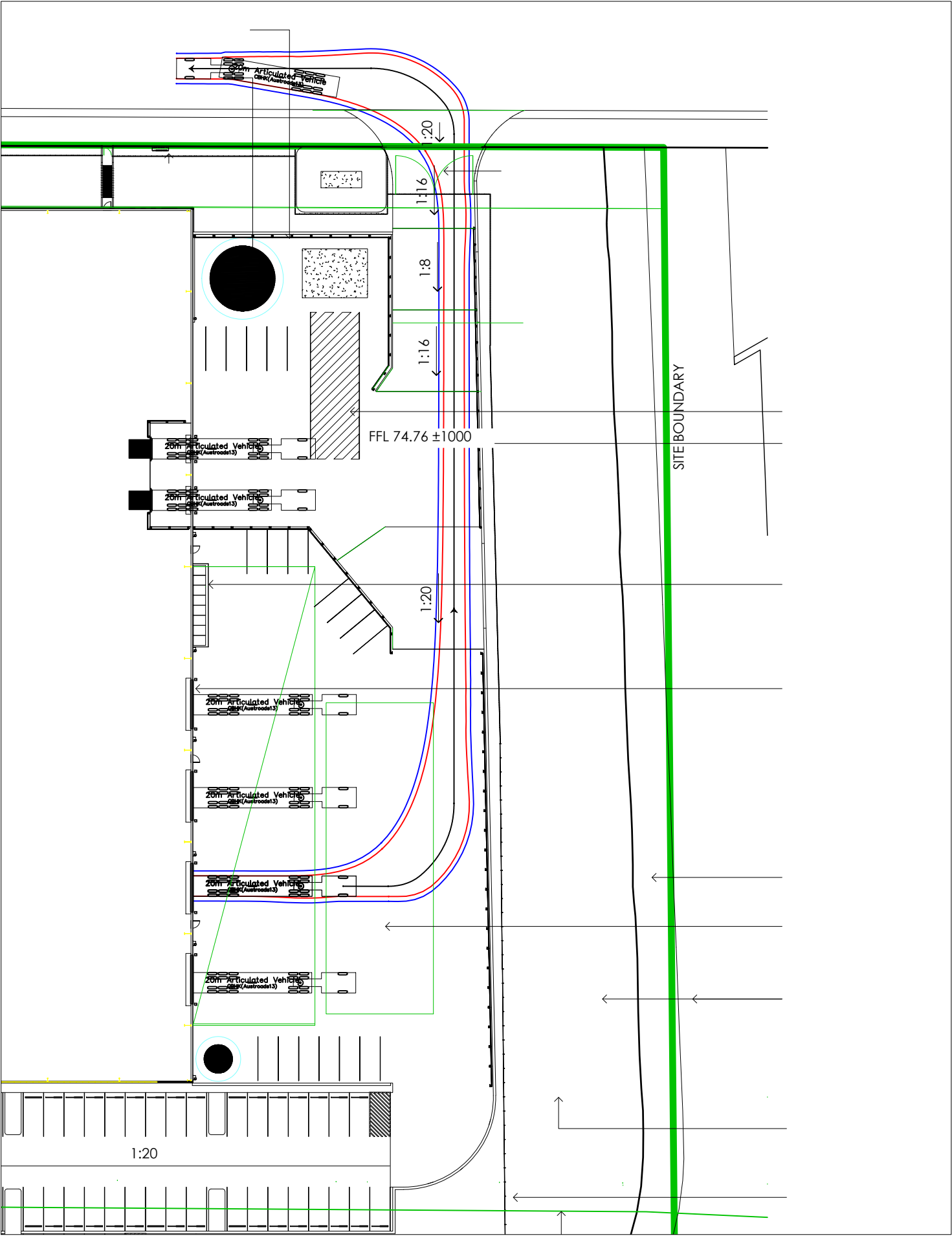
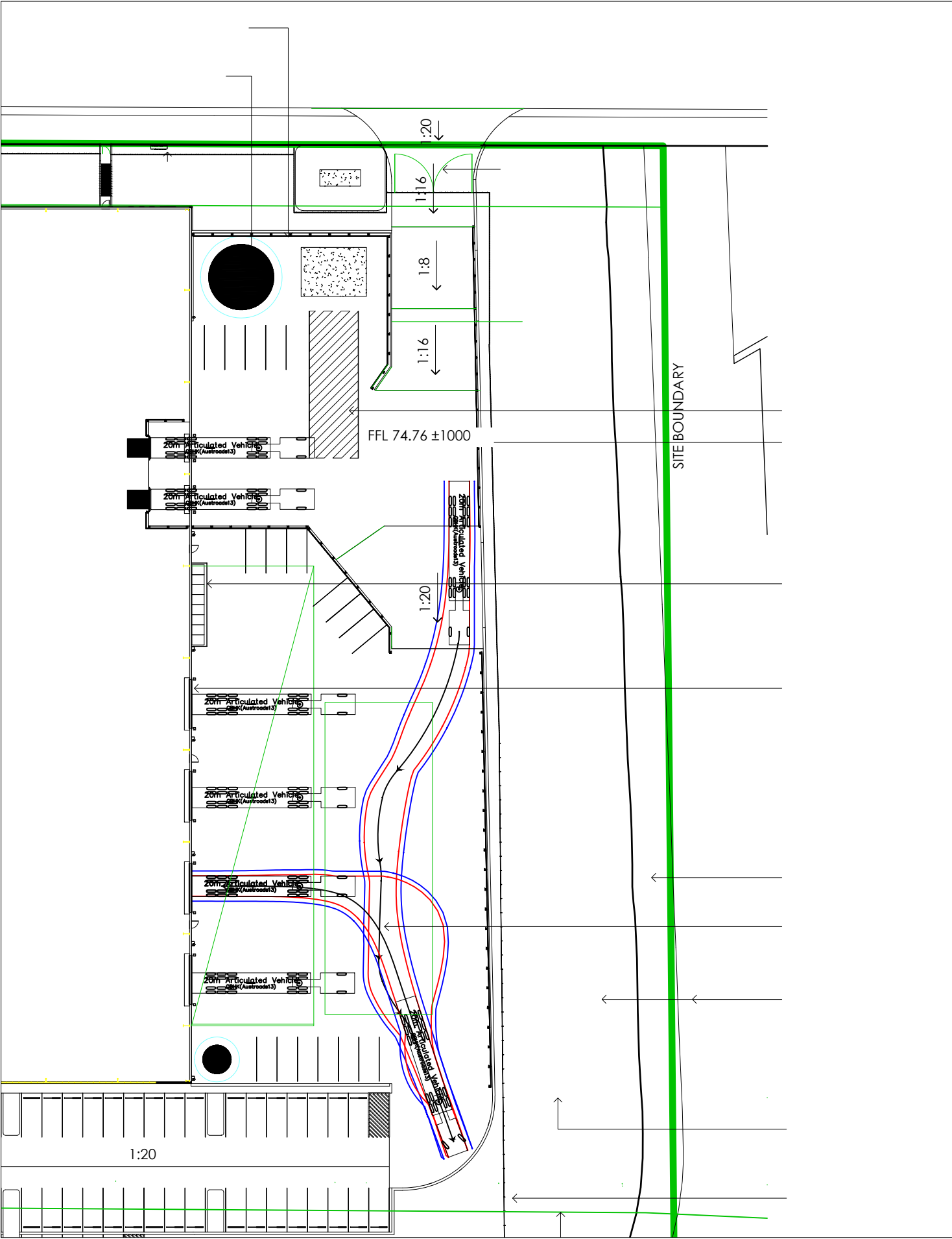
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 2

DRAWN BY CBRK Pty Ltd_mrc Ref: 11916 11.09.2023

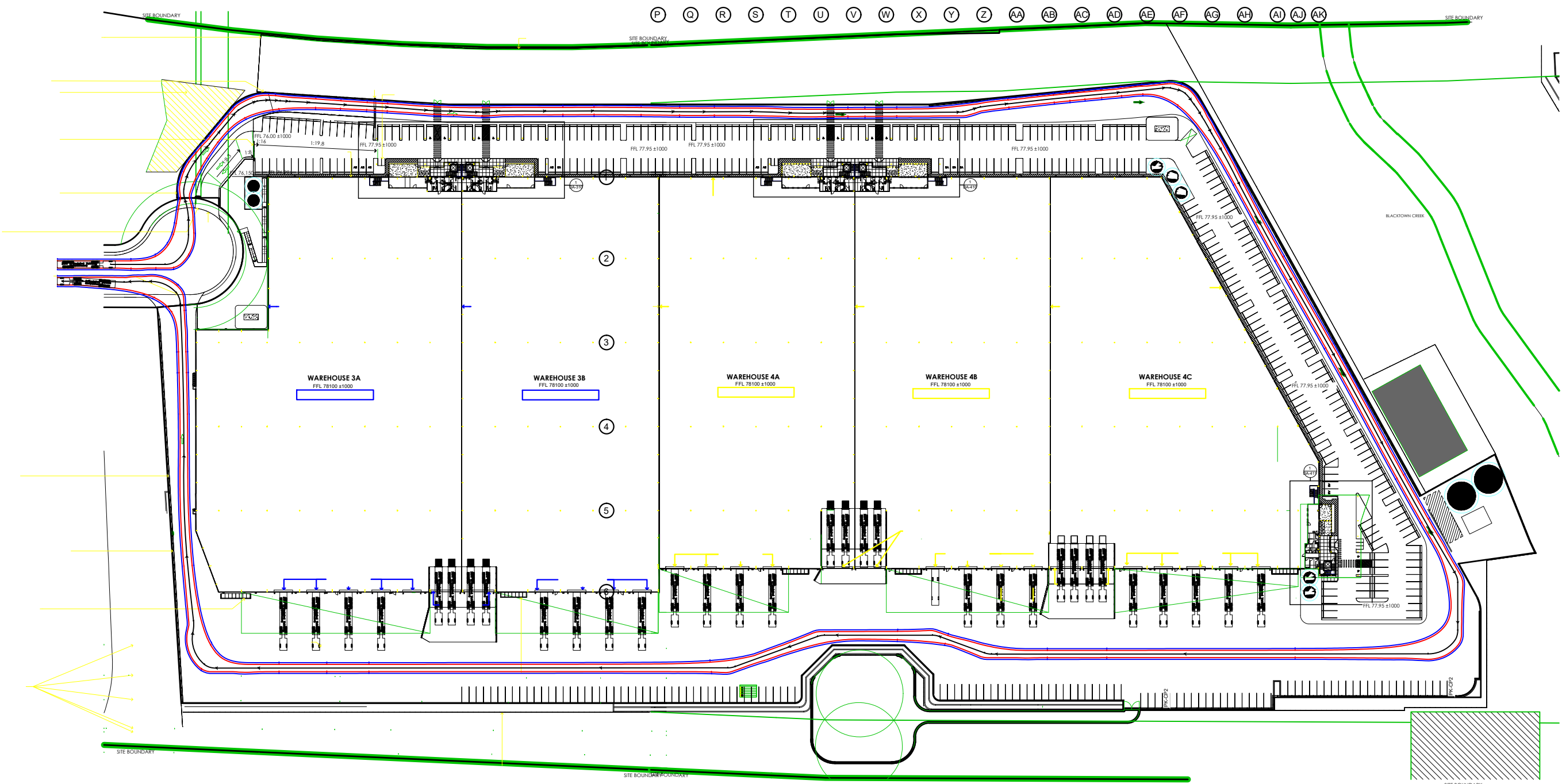
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— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 2

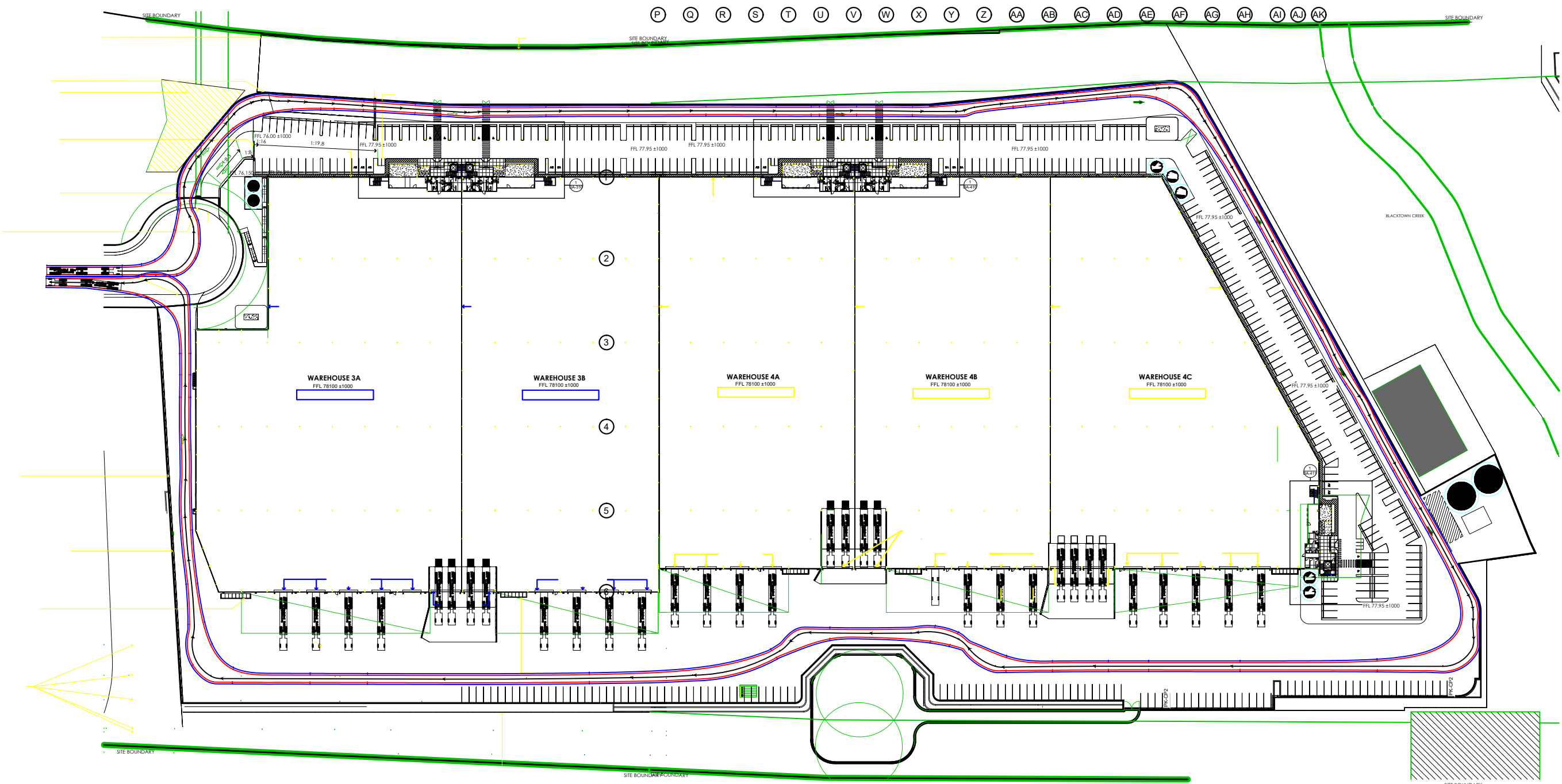


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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDINGS 3 & 4

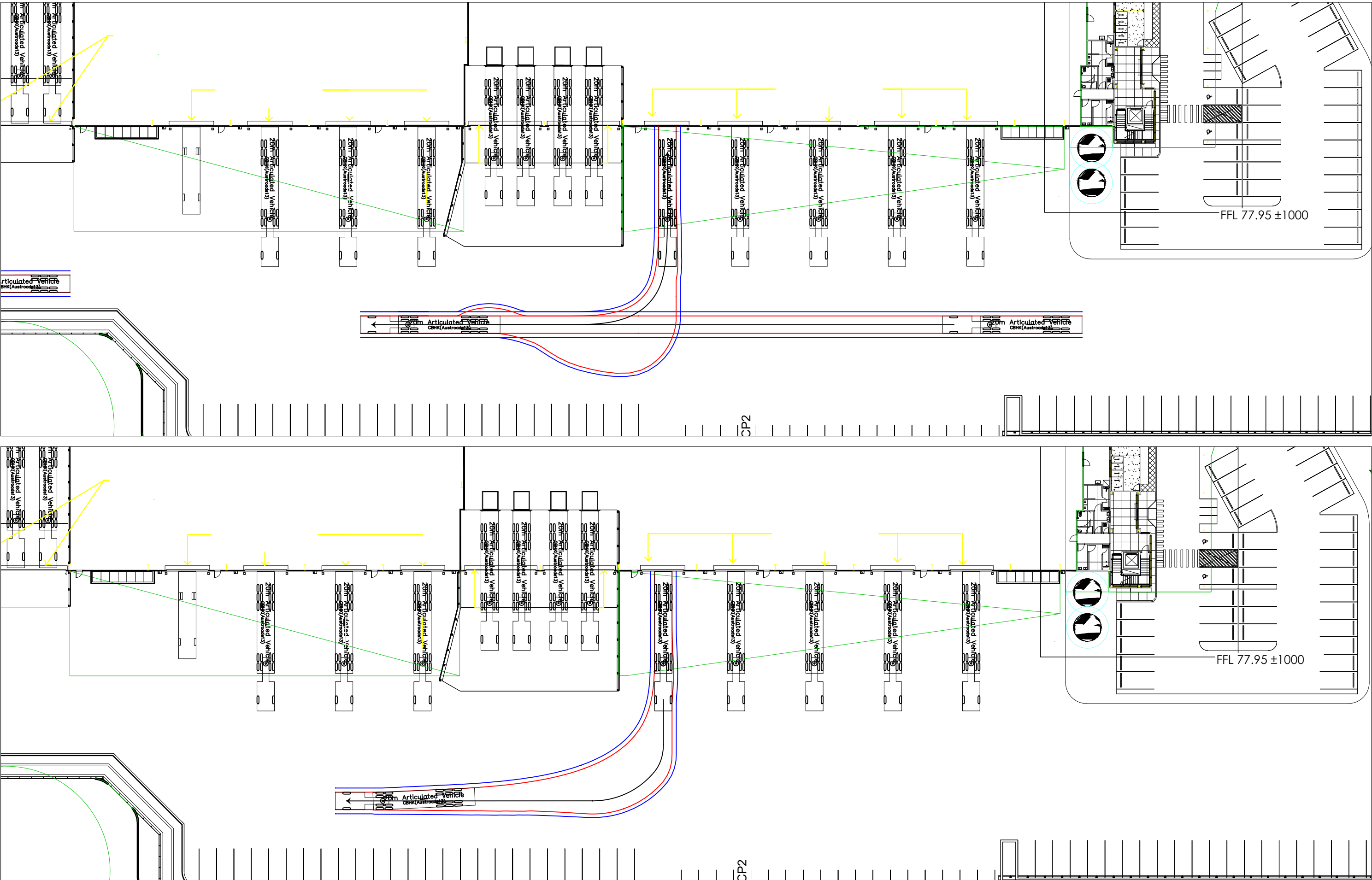
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

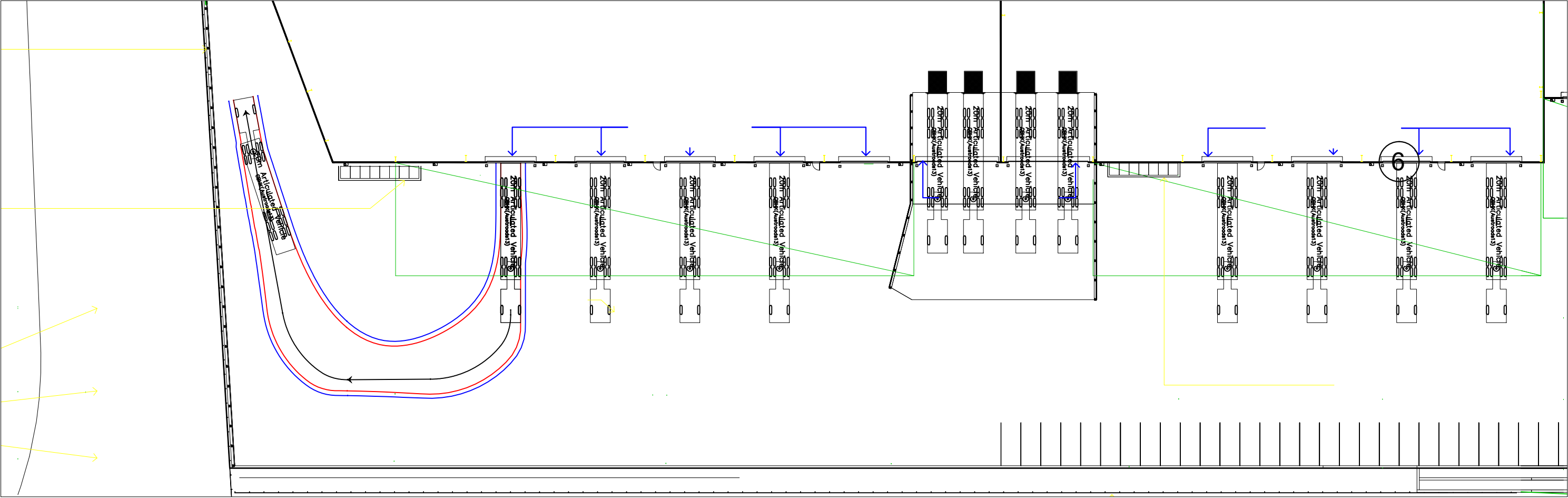
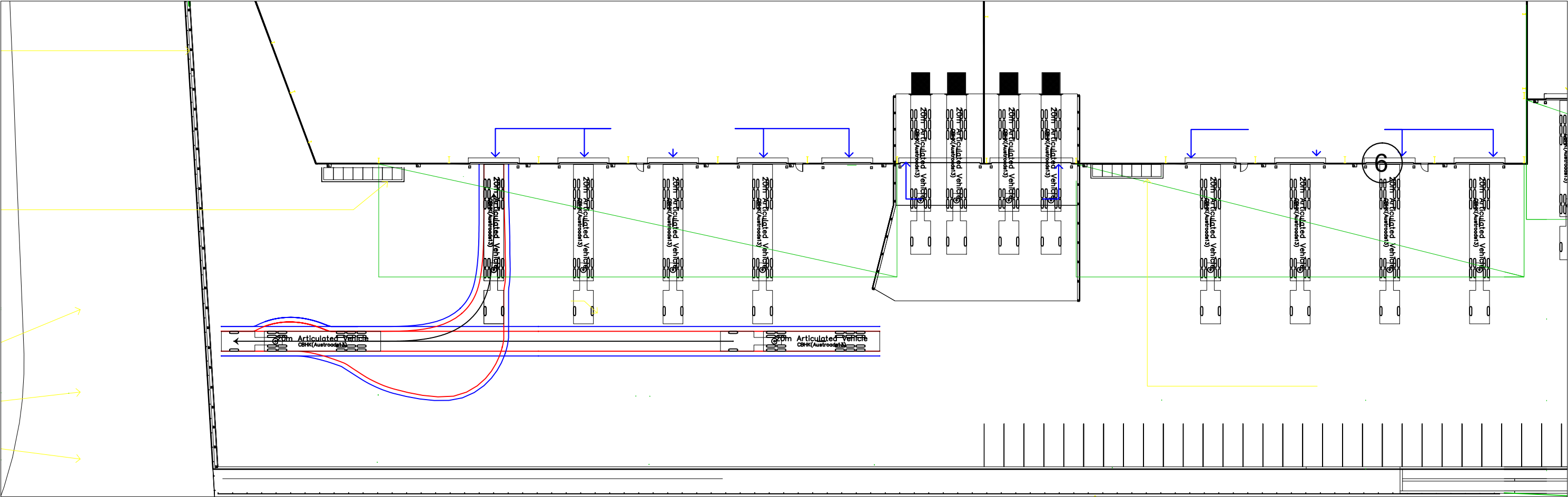
26.0m B-DOUBLE VEHICLE
SWEPT PATHS
- BUILDINGS 3 & 4



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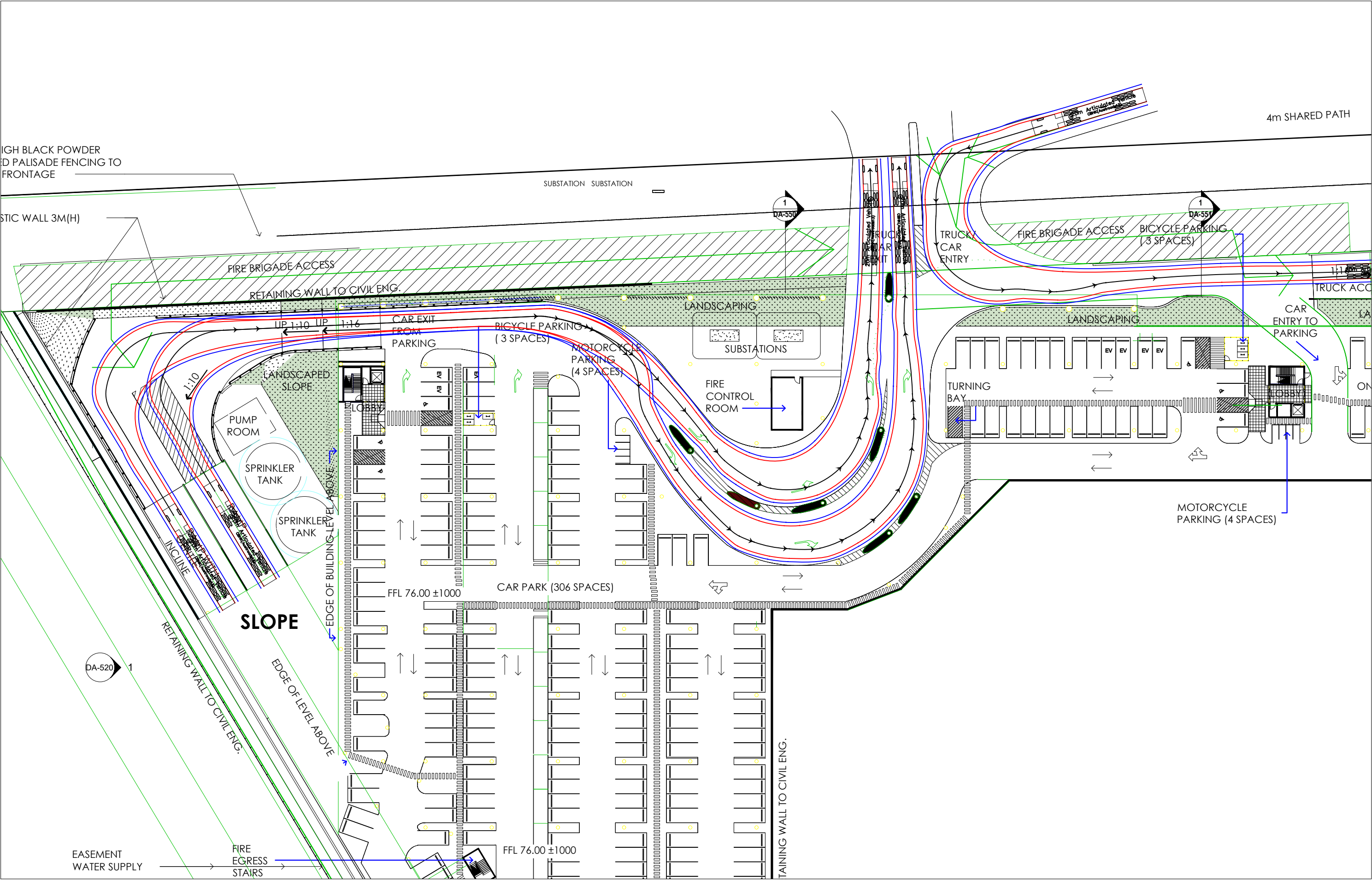
20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDINGS 3 & 4



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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDINGS 3 & 4

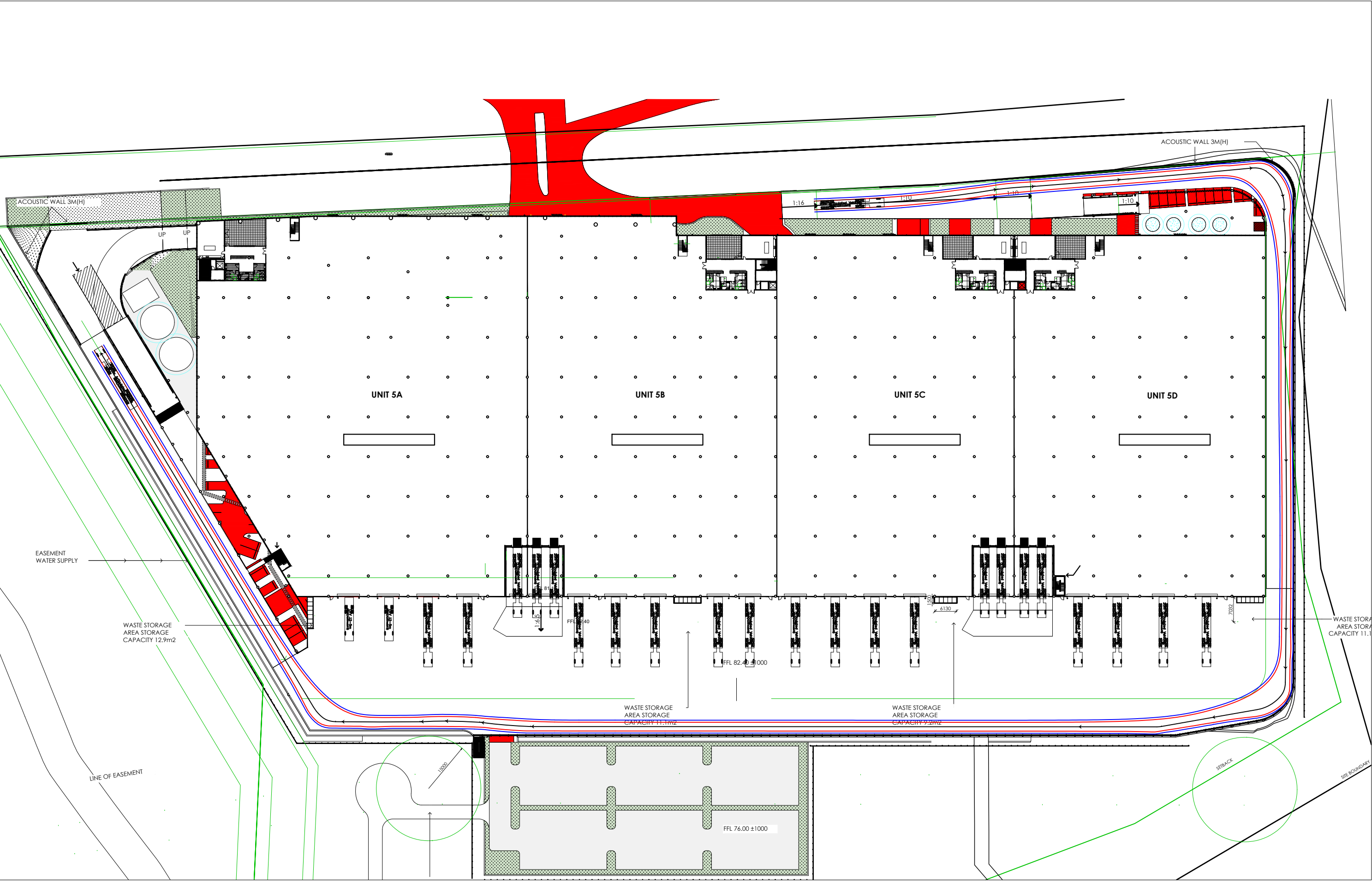


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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 5

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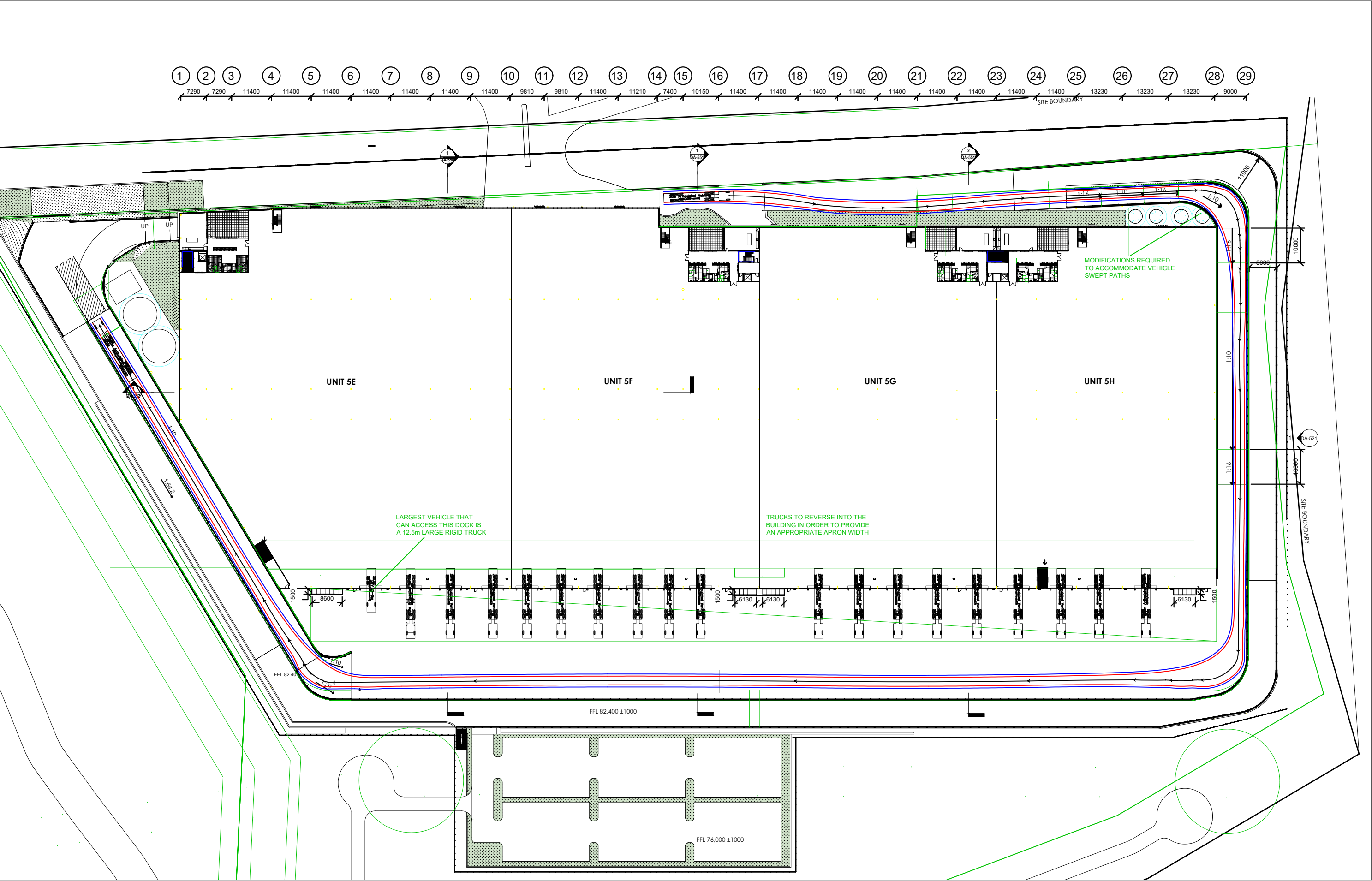
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20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 5

DRAWN BY CBRK Pty Ltd_mrc Ref: 11916 11.09.2023

A10



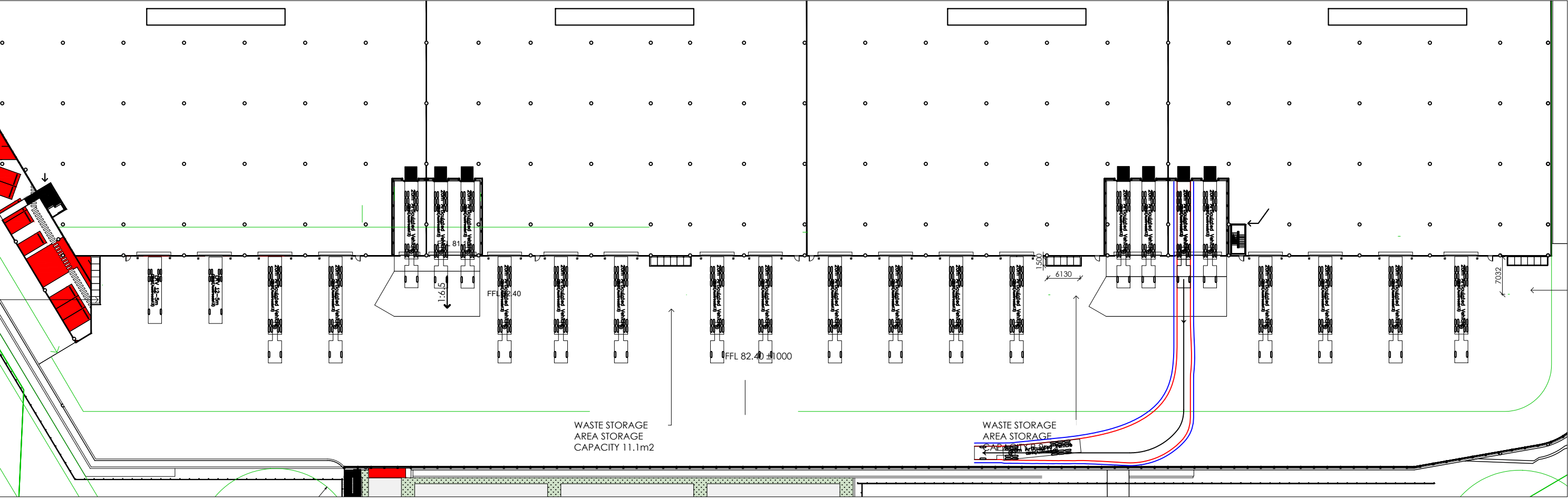
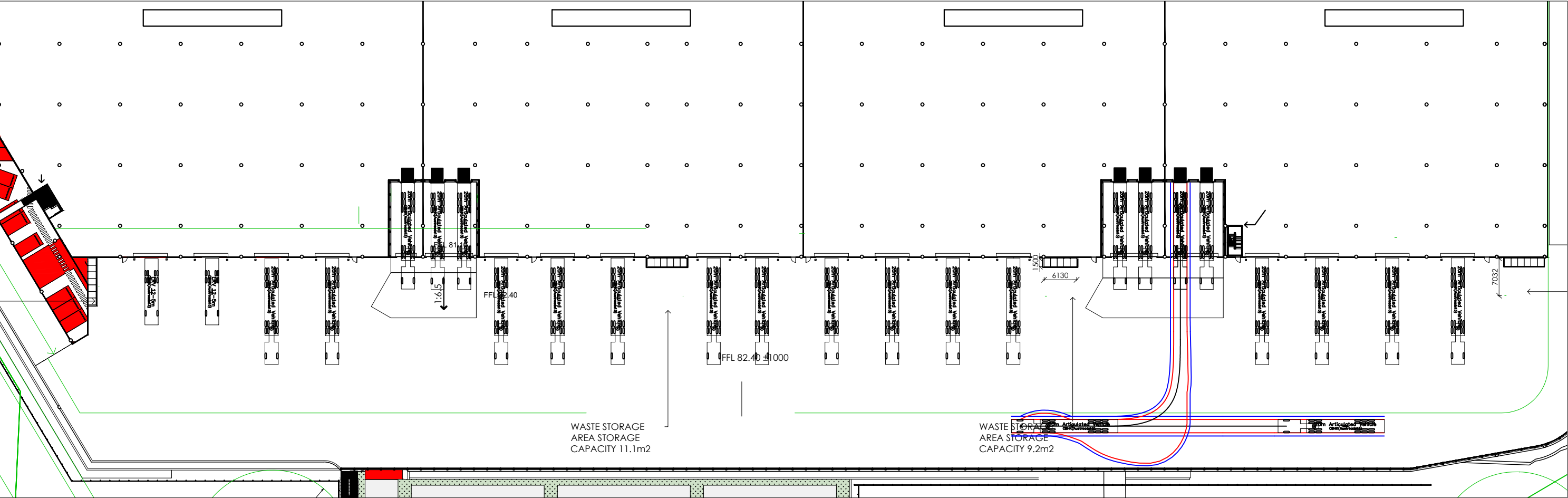
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

20.0m ARTICULATED
VEHICLE SWEEP PATHS
- BUILDING 5

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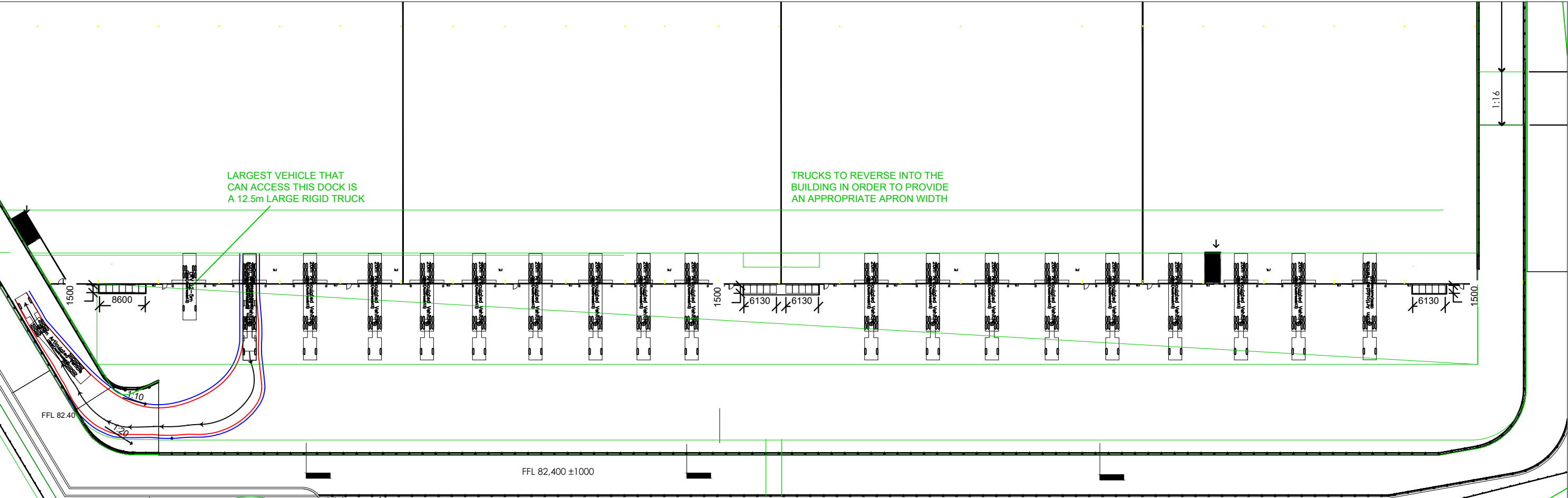
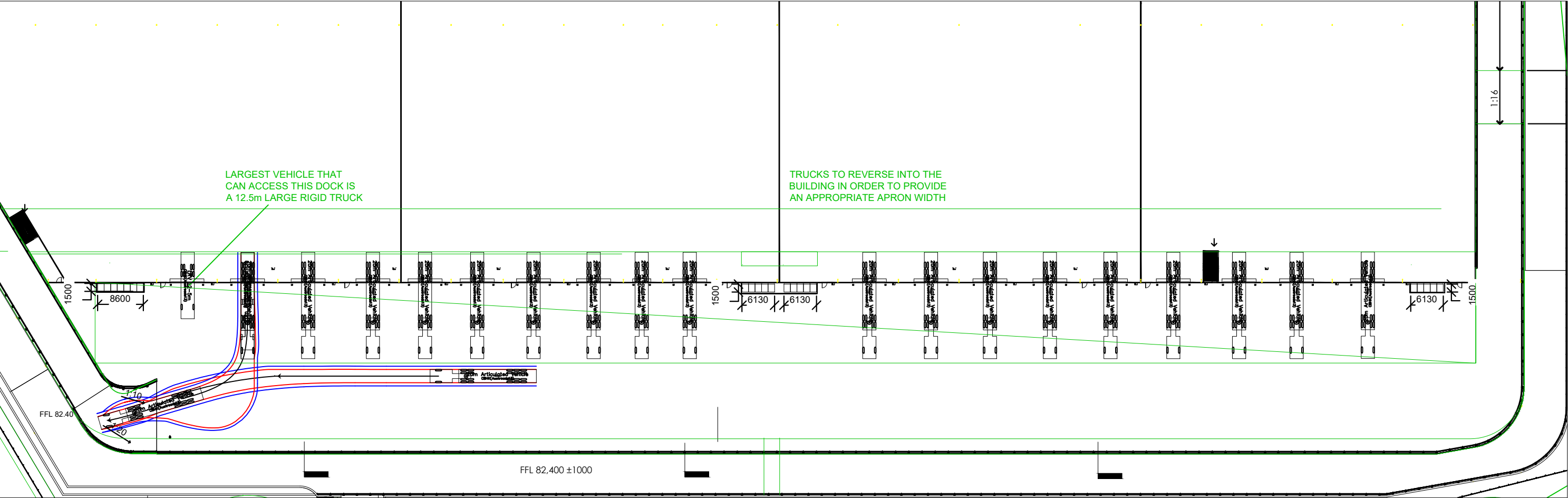
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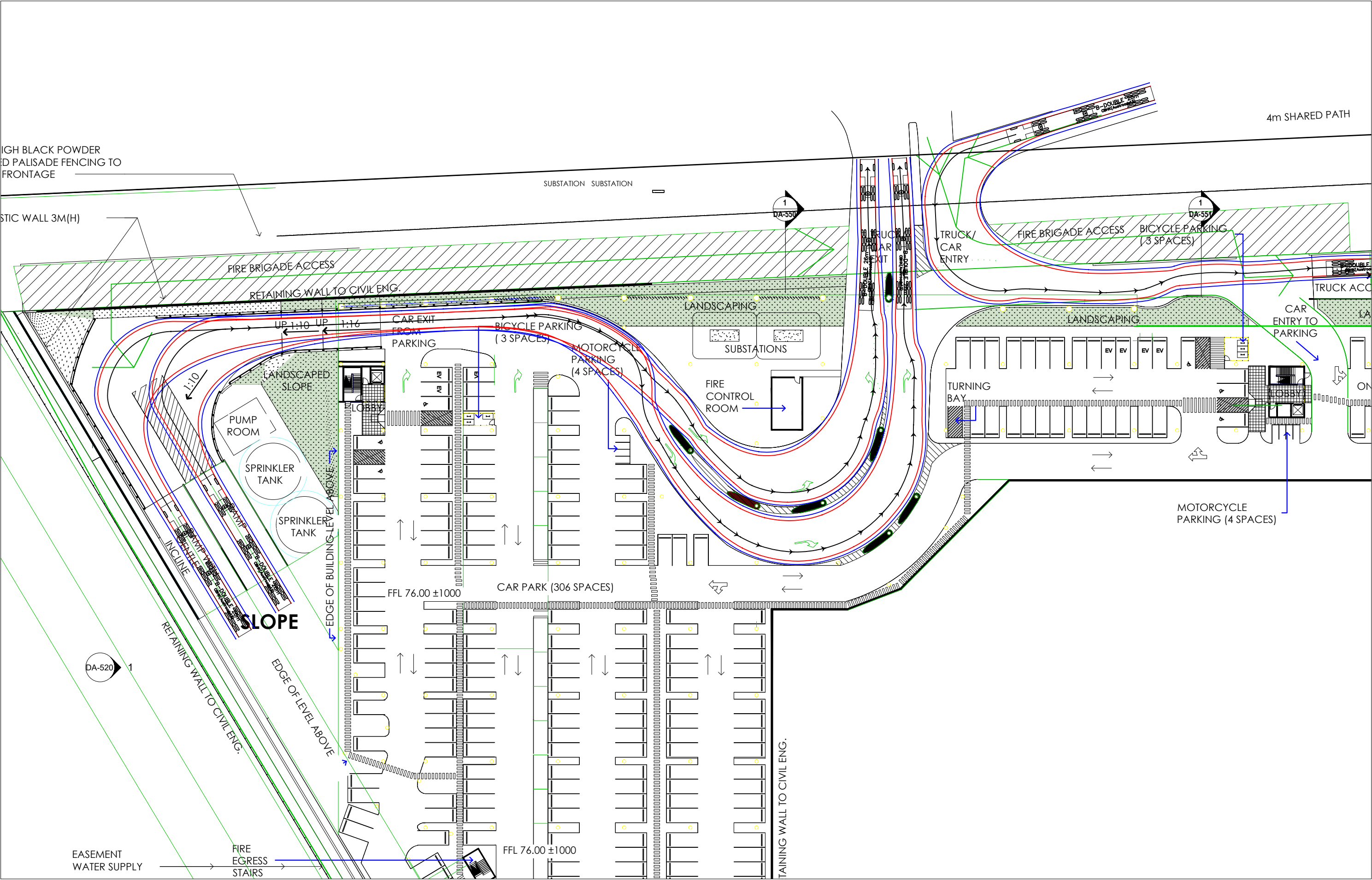
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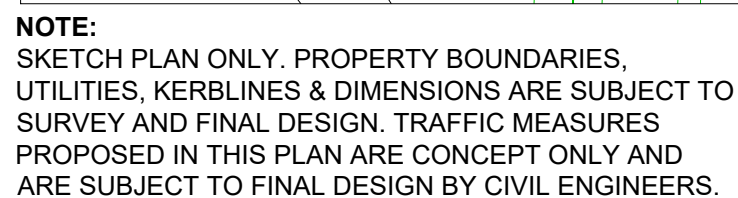
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VEHICLE SWEEP PATHS
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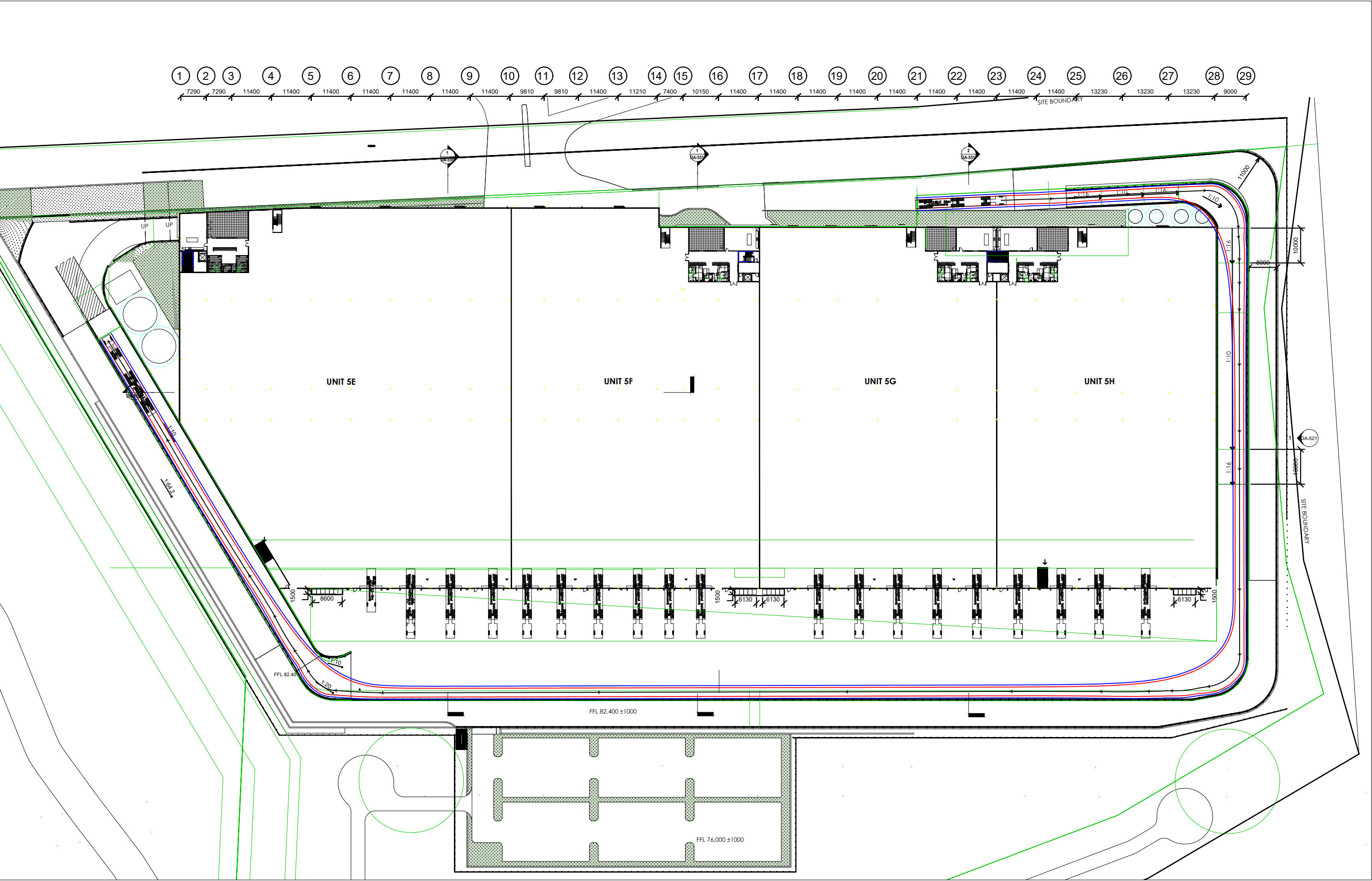
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

26.0m B-DOUBLE VEHICLE
SWEPT PATHS
- BUILDING 5



26.0m B-DOUBLE VEHICLE
SWEPT PATHS
- BUILDING 5



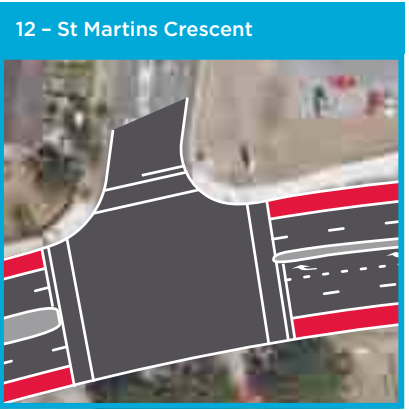
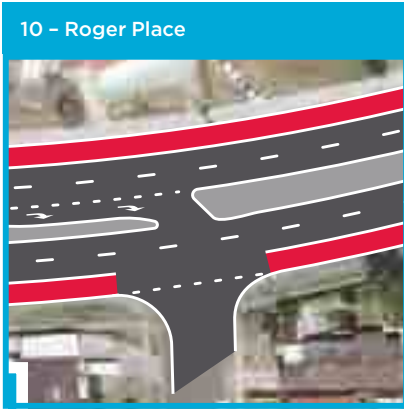
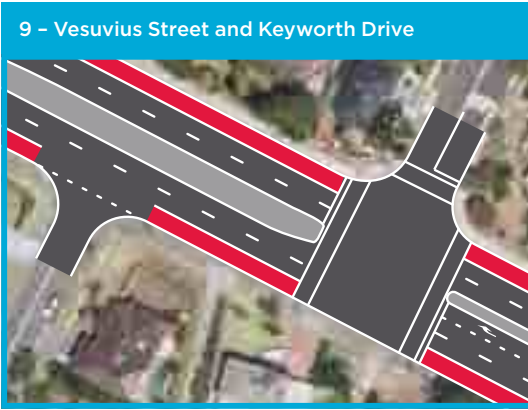
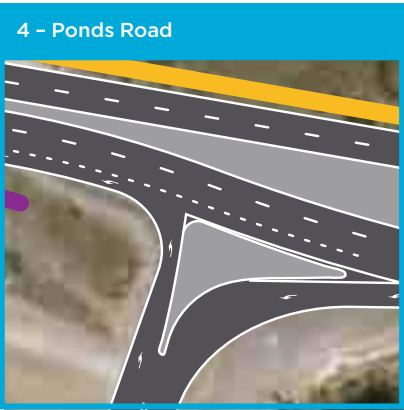
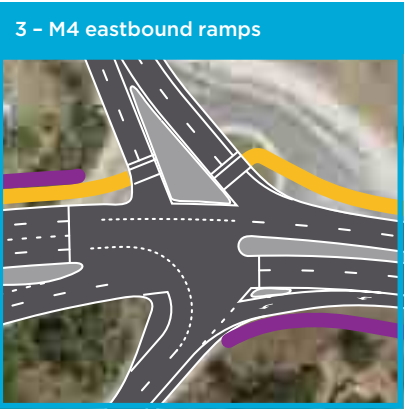
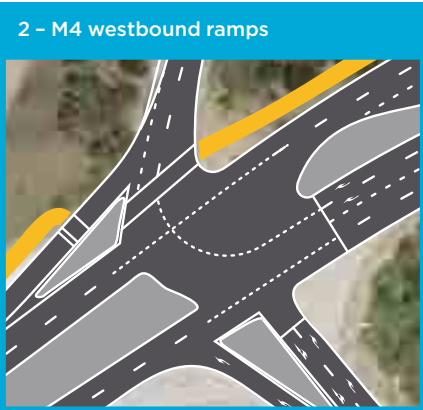
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— Swept Path of Vehicle Body
— Swept Path of Clearance to Vehicle Body

26.0m B-DOUBLE VEHICLE
SWEPT PATHS
- BUILDING 5

APPENDIX B

PROSPECT HIGHWAY UPGRADE



APPENDIX C

SIDRA MOVEMENT SUMMARIES

USER REPORT FOR SITE

All Movement Classes

 **Project: GWH - Flushcombe Road 230626sip9**

Template: Movement Summaries

Site: 101 [AM Base - Great Western Highway - Flushcombe Road (Site Folder: Base)]

October 2022 Traffic Flows

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 121 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	10	5	11	50.0	0.074	28.6	LOS C	1.1	11.1	0.62	0.62	0.62	40.0
2	T1	10	5	11	50.0	0.074	22.5	LOS B	1.1	11.1	0.62	0.62	0.62	42.1
3	R2	10	5	11	50.0	0.074	28.6	LOS C	1.1	11.1	0.62	0.62	0.62	40.3
Approach		30	15	32	50.0	0.074	26.5	LOS B	1.1	11.1	0.62	0.62	0.62	40.8
East: Great Western Highway														
4	L2	10	5	11	50.0	0.562	37.1	LOS C	18.4	137.2	0.84	0.74	0.84	37.9
5	T1	1145	75	1205	6.6	0.562	31.0	LOS C	18.7	138.4	0.84	0.73	0.84	39.8
6	R2	200	5	211	2.5	* 0.905	76.2	LOS F	14.4	103.0	1.00	0.99	1.39	26.5
Approach		1355	85	1426	6.3	0.905	37.7	LOS C	18.7	138.4	0.86	0.77	0.92	37.0
North: Flushcombe Road														
7	L2	280	5	295	1.8	0.267	17.1	LOS B	7.9	56.3	0.50	0.72	0.50	45.8
8	T1	5	1	5	20.0	0.806	39.3	LOS C	28.7	204.6	0.96	0.90	1.02	34.7
9	R2	485	10	511	2.1	* 0.806	44.9	LOS D	28.7	204.6	0.96	0.90	1.02	34.4
Approach		770	16	811	2.1	0.806	34.7	LOS C	28.7	204.6	0.79	0.84	0.83	37.8
West: Great Western Highway														
10	L2	265	5	279	1.9	0.221	8.1	LOS A	3.3	23.2	0.28	0.64	0.28	52.4
11	T1	1305	90	1374	6.9	* 0.912	41.2	LOS C	30.0	222.4	0.95	0.95	1.11	35.8
12	R2	20	5	21	25.0	0.608	79.0	LOS F	1.4	12.2	1.00	0.75	1.19	25.7
Approach		1590	100	1674	6.3	0.912	36.2	LOS C	30.0	222.4	0.84	0.90	0.97	37.6
All Vehicles		3745	216	3942	5.8	0.912	36.4	LOS C	30.0	222.4	0.84	0.84	0.92	37.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM Base - Great Western Highway - Flushcombe Road (Site Folder: Base)]

2019 pre Covid Flows

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 125 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	25	5	26	20.0	0.105	32.2	LOS C	2.0	18.0	0.67	0.66	0.67	38.9
2	T1	15	5	16	33.3	0.105	26.4	LOS B	2.0	18.0	0.67	0.66	0.67	40.1
3	R2	10	5	11	50.0	0.105	32.6	LOS C	2.0	18.0	0.67	0.66	0.67	38.5
Approach		50	15	53	30.0	0.105	30.5	LOS C	2.0	18.0	0.67	0.66	0.67	39.2
East: Great Western Highway														
4	L2	10	5	11	50.0	0.805	38.1	LOS C	37.0	269.2	0.93	0.85	0.94	37.5
5	T1	1900	75	2000	3.9	0.805	31.5	LOS C	37.3	270.3	0.90	0.83	0.92	39.5
6	R2	425	15	447	3.5	* 0.890	64.9	LOS E	30.4	218.9	1.00	0.97	1.21	28.8
Approach		2335	95	2458	4.1	0.890	37.6	LOS C	37.3	270.3	0.92	0.86	0.98	37.0
North: Flushcombe Road														
7	L2	170	5	179	2.9	0.143	12.0	LOS A	3.5	25.1	0.35	0.67	0.35	48.9
8	T1	15	0	16	0.0	0.799	44.6	LOS D	25.6	182.9	0.98	0.90	1.04	33.1
9	R2	400	10	421	2.5	* 0.799	50.2	LOS D	25.6	182.9	0.98	0.90	1.04	32.8
Approach		585	15	616	2.6	0.799	39.0	LOS C	25.6	182.9	0.79	0.84	0.84	36.3
West: Great Western Highway														
10	L2	350	10	368	2.9	0.350	12.9	LOS A	8.2	59.0	0.46	0.70	0.46	49.0
11	T1	915	50	963	5.5	* 0.887	49.9	LOS D	21.1	154.8	0.99	0.94	1.13	33.0
12	R2	10	5	11	50.0	0.606	87.5	LOS F	0.8	7.9	1.00	0.73	1.28	24.1
Approach		1275	65	1342	5.1	0.887	40.0	LOS C	21.1	154.8	0.84	0.87	0.95	36.1
All Vehicles		4245	190	4468	4.5	0.890	38.5	LOS C	37.3	270.3	0.88	0.86	0.95	36.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [AM Base + Dev - Great Western Highway - Flushcombe Road + V1 Upgrades (Site Folder: Base + Development)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	40	10	42	25.0	0.129	30.3	LOS C	2.3	21.0	0.67	0.66	0.67	39.5
2	T1	20	10	21	50.0	0.129	24.5	LOS B	2.3	21.0	0.67	0.66	0.67	40.9
3	R2	40	10	42	25.0	0.174	45.6	LOS D	2.0	17.0	0.83	0.73	0.83	34.0
Approach		100	30	105	30.0	0.174	35.2	LOS C	2.3	21.0	0.73	0.69	0.73	37.3
East: Great Western Highway														
4	L2	120	20	126	16.7	0.259	38.7	LOS C	5.5	44.1	0.79	0.76	0.79	36.3
5	T1	1170	80	1232	6.8	0.697	37.7	LOS C	19.7	146.0	0.88	0.76	0.88	37.5
6	R2	210	5	221	2.4	* 0.881	71.9	LOS F	14.6	104.1	1.00	0.97	1.33	27.3
Approach		1500	105	1579	7.0	0.881	42.6	LOS D	19.7	146.0	0.89	0.79	0.93	35.6
North: Flushcombe Road														
7	L2	310	10	326	3.2	0.358	23.8	LOS B	11.2	80.3	0.63	0.76	0.63	42.2
8	T1	55	5	58	9.1	* 0.905	53.9	LOS D	38.3	274.3	1.00	1.01	1.22	30.6
9	R2	485	10	511	2.1	0.905	59.5	LOS E	38.3	274.3	1.00	1.01	1.22	30.4
Approach		850	25	895	2.9	0.905	46.1	LOS D	38.3	274.3	0.87	0.92	1.01	33.9
West: Great Western Highway														
10	L2	265	5	279	1.9	0.225	8.3	LOS A	3.4	24.4	0.29	0.64	0.29	52.2
11	T1	1405	100	1479	7.1	* 0.921	39.4	LOS C	33.1	246.0	0.92	0.94	1.09	36.4
12	R2	130	20	137	15.4	0.655	61.7	LOS E	8.0	63.3	1.00	0.83	1.05	29.5
Approach		1800	125	1895	6.9	0.921	36.4	LOS C	33.1	246.0	0.83	0.89	0.97	37.5
All Vehicles		4250	285	4474	6.7	0.921	40.5	LOS C	38.3	274.3	0.86	0.86	0.96	36.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM Base + Dev - Great Western Highway - Flushcombe Road + V1 Upgrades (Site Folder: Base + Development)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	135	20	142	14.8	0.421	38.1	LOS C	9.8	77.5	0.78	0.75	0.78	36.8
2	T1	65	10	68	15.4	0.421	32.4	LOS C	9.8	77.5	0.78	0.75	0.78	37.7
3	R2	120	20	126	16.7	0.327	42.7	LOS D	6.2	49.3	0.81	0.77	0.81	35.0
Approach		320	50	337	15.6	0.421	38.7	LOS C	9.8	77.5	0.79	0.76	0.79	36.3
East: Great Western Highway														
4	L2	40	10	42	25.0	0.068	27.7	LOS B	1.5	12.8	0.60	0.68	0.60	40.5
5	T1	2000	85	2105	4.3	0.817	29.1	LOS C	35.4	256.7	0.85	0.78	0.86	41.1
6	R2	455	20	479	4.4	* 0.922	73.0	LOS F	35.8	260.4	1.00	1.00	1.27	27.1
Approach		2495	115	2626	4.6	0.922	37.1	LOS C	35.8	260.4	0.87	0.82	0.94	37.6
North: Flushcombe Road														
7	L2	180	5	189	2.8	0.165	15.1	LOS B	4.6	33.3	0.42	0.69	0.42	46.9
8	T1	25	5	26	20.0	* 1.045	130.8	LOS F	47.2	340.1	1.00	1.26	1.76	18.5
9	R2	400	10	421	2.5	1.045	136.4	LOS F	47.2	340.1	1.00	1.26	1.76	18.4
Approach		605	20	637	3.3	1.045	100.1	LOS F	47.2	340.1	0.83	1.09	1.36	22.4
West: Great Western Highway														
10	L2	350	10	368	2.9	0.372	16.0	LOS B	10.1	72.2	0.53	0.72	0.53	47.1
11	T1	940	55	989	5.9	* 0.928	56.8	LOS E	24.2	178.1	0.99	0.99	1.20	31.1
12	R2	40	10	42	25.0	0.784	83.1	LOS F	3.0	25.8	1.00	0.86	1.37	25.1
Approach		1330	75	1400	5.6	0.928	46.9	LOS D	24.2	178.1	0.87	0.92	1.03	33.9
All Vehicles		4750	260	5000	5.5	1.045	47.9	LOS D	47.2	340.1	0.86	0.88	1.01	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [AM 2032 - Great Western Highway - Flushcombe Road (Site Folder: 2032)]

October 2022 Traffic Flows

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	15	5	16	33.3	0.104	33.1	LOS C	1.9	17.5	0.66	0.65	0.66	38.4
2	T1	15	5	16	33.3	0.104	27.1	LOS B	1.9	17.5	0.66	0.65	0.66	39.9
3	R2	15	5	16	33.3	0.104	33.1	LOS C	1.9	17.5	0.66	0.65	0.66	38.7
Approach		45	15	47	33.3	0.104	31.1	LOS C	1.9	17.5	0.66	0.65	0.66	39.0
East: Great Western Highway														
4	L2	15	5	16	33.3	0.623	40.4	LOS C	23.9	178.0	0.86	0.76	0.86	36.9
5	T1	1305	85	1374	6.5	0.623	34.5	LOS C	24.3	179.4	0.86	0.76	0.86	38.3
6	R2	230	5	242	2.2	* 1.019	123.6	LOS F	23.1	164.5	1.00	1.14	1.72	19.6
Approach		1550	95	1632	6.1	1.019	47.8	LOS D	24.3	179.4	0.88	0.82	0.99	33.5
North: Flushcombe Road														
7	L2	320	5	337	1.6	0.306	19.0	LOS B	10.5	74.2	0.52	0.73	0.52	44.7
8	T1	10	5	11	50.0	0.926	63.6	LOS E	45.8	328.2	1.00	1.01	1.24	28.2
9	R2	550	10	579	1.8	* 0.926	69.3	LOS E	45.8	328.2	1.00	1.01	1.24	28.1
Approach		880	20	926	2.3	0.926	50.9	LOS D	45.8	328.2	0.82	0.91	0.98	32.4
West: Great Western Highway														
10	L2	300	5	316	1.7	0.251	8.5	LOS A	4.4	30.9	0.29	0.64	0.29	52.0
11	T1	1490	105	1568	7.0	* 1.026	86.9	LOS F	53.4	396.3	0.98	1.23	1.45	24.6
12	R2	25	5	26	20.0	0.600	84.4	LOS F	1.9	15.8	1.00	0.76	1.14	24.8
Approach		1815	115	1911	6.3	1.026	73.9	LOS F	53.4	396.3	0.87	1.13	1.25	26.9
All Vehicles		4290	245	4516	5.7	1.026	59.3	LOS E	53.4	396.3	0.86	0.97	1.09	30.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM 2032 - Great Western Highway - Flushcombe Road (Site Folder: 2032)]

2019 pre Covid Flows

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	30	5	32	16.7	0.142	38.5	LOS C	3.1	26.3	0.72	0.68	0.72	36.6
2	T1	20	5	21	25.0	0.142	32.8	LOS C	3.1	26.3	0.72	0.68	0.72	37.5
3	R2	15	5	16	33.3	0.142	38.7	LOS C	3.1	26.3	0.72	0.68	0.72	36.4
Approach		65	15	68	23.1	0.142	36.8	LOS C	3.1	26.3	0.72	0.68	0.72	36.8
East: Great Western Highway														
4	L2	15	5	16	33.3	0.878	44.9	LOS D	54.0	392.4	0.97	0.94	1.03	35.3
5	T1	2165	85	2279	3.9	0.878	38.8	LOS C	54.4	393.5	0.92	0.90	1.00	36.6
6	R2	485	15	511	3.1	* 1.066	152.2	LOS F	58.9	423.2	1.00	1.22	1.78	16.8
Approach		2665	105	2805	3.9	1.066	59.5	LOS E	58.9	423.2	0.94	0.96	1.14	30.2
North: Flushcombe Road														
7	L2	195	5	205	2.6	0.162	12.4	LOS A	4.4	31.5	0.35	0.67	0.35	48.7
8	T1	15	0	16	0.0	0.961	83.9	LOS F	43.4	309.4	1.00	1.07	1.37	24.5
9	R2	455	10	479	2.2	* 0.961	89.5	LOS F	43.4	309.4	1.00	1.07	1.37	24.3
Approach		665	15	700	2.3	0.961	66.8	LOS E	43.4	309.4	0.81	0.95	1.07	28.5
West: Great Western Highway														
10	L2	400	10	421	2.5	0.436	19.0	LOS B	13.8	99.0	0.59	0.74	0.59	45.3
11	T1	1045	55	1100	5.3	* 1.051	115.2	LOS F	40.4	295.6	1.00	1.28	1.60	20.5
12	R2	10	5	11	50.0	0.674	97.2	LOS F	0.9	8.8	1.00	0.75	1.37	22.6
Approach		1455	70	1532	4.8	1.051	88.7	LOS F	40.4	295.6	0.89	1.13	1.32	24.1
All Vehicles		4850	205	5105	4.2	1.066	68.9	LOS E	58.9	423.2	0.90	1.01	1.18	27.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [AM 2032 - Great Western Highway - Flushcombe Road + V2 Upgrades (Site Folder: 2032)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Split Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, D1

Output Phase Sequence: A, B, C, D, D1

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	15	5	16	33.3	0.379	39.7	LOS C	1.1	10.1	0.99	0.73	0.99	36.3
2	T1	15	5	16	33.3	* 0.379	33.8	LOS C	1.1	10.1	0.99	0.73	0.99	37.6
3	R2	15	5	16	33.3	0.260	70.8	LOS F	1.0	8.8	0.99	0.70	0.99	27.4
Approach		45	15	47	33.3	0.379	48.1	LOS D	1.1	10.1	0.99	0.72	0.99	33.1
East: Great Western Highway														
4	L2	15	5	16	33.3	0.586	29.7	LOS C	17.1	127.6	0.69	0.62	0.69	41.8
5	T1	1305	85	1374	6.5	0.586	24.2	LOS B	17.5	129.7	0.69	0.62	0.69	43.3
6	R2	230	5	242	2.2	* 0.855	67.9	LOS E	15.5	110.4	1.00	0.95	1.25	28.2
Approach		1550	95	1632	6.1	0.855	30.8	LOS C	17.5	129.7	0.74	0.67	0.78	40.2
North: Flushcombe Road														
7	L2	320	5	337	1.6	0.331	14.6	LOS B	8.9	63.1	0.52	0.72	0.52	47.9
8	T1	10	5	11	50.0	* 0.858	55.5	LOS D	12.9	93.7	0.92	0.95	1.22	30.1
9	R2	550	10	579	1.8	0.858	61.2	LOS E	23.6	167.7	0.97	0.95	1.20	29.9
Approach		880	20	926	2.3	0.858	44.2	LOS D	23.6	167.7	0.81	0.87	0.95	34.6
West: Great Western Highway														
10	L2	300	5	316	1.7	0.208	7.7	LOS A	3.3	23.5	0.26	0.63	0.26	52.7
11	T1	1490	105	1568	7.0	* 0.835	26.0	LOS B	27.2	202.2	0.82	0.77	0.87	42.1
12	R2	25	5	26	20.0	0.213	63.9	LOS E	1.5	12.4	0.97	0.72	0.97	28.9
Approach		1815	115	1911	6.3	0.835	23.5	LOS B	27.2	202.2	0.73	0.75	0.77	43.3
All Vehicles		4290	245	4516	5.7	0.858	30.6	LOS C	27.2	202.2	0.75	0.74	0.81	40.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM 2032 - Great Western Highway - Flushcombe Road + V2 Upgrades (Site Folder: 2032)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 121 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Split Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, D1

Output Phase Sequence: A, B, C, D, D1

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	30	5	32	16.7	0.543	41.7	LOS C	2.1	17.6	1.00	0.76	1.03	35.6
2	T1	20	5	21	25.0	* 0.543	36.0	LOS C	2.1	17.6	1.00	0.76	1.03	36.5
3	R2	15	5	16	33.3	0.263	71.4	LOS F	1.0	8.9	0.99	0.70	0.99	27.3
Approach		65	15	68	23.1	0.543	46.8	LOS D	2.1	17.6	1.00	0.75	1.02	33.5
East: Great Western Highway														
4	L2	15	5	16	33.3	0.810	26.0	LOS B	32.8	238.7	0.77	0.71	0.78	43.6
5	T1	2165	85	2279	3.9	0.810	20.3	LOS B	33.4	241.9	0.75	0.69	0.76	45.4
6	R2	485	15	511	3.1	* 0.772	43.9	LOS D	27.2	195.7	0.95	0.88	0.98	34.6
Approach		2665	105	2805	3.9	0.810	24.6	LOS B	33.4	241.9	0.79	0.73	0.80	43.0
North: Flushcombe Road														
7	L2	195	5	205	2.6	0.167	10.6	LOS A	3.6	25.8	0.36	0.65	0.36	50.4
8	T1	15	0	16	0.0	* 0.934	75.1	LOS F	14.4	102.7	0.99	1.08	1.50	26.0
9	R2	455	10	479	2.2	0.934	80.3	LOS F	21.1	150.2	0.99	1.06	1.46	25.9
Approach		665	15	700	2.3	0.934	59.7	LOS E	21.1	150.2	0.81	0.94	1.14	30.2
West: Great Western Highway														
10	L2	400	10	421	2.5	0.356	12.5	LOS A	9.1	65.2	0.46	0.70	0.46	49.3
11	T1	1045	55	1100	5.3	* 0.914	48.8	LOS D	24.4	178.4	0.98	0.97	1.17	33.4
12	R2	10	5	11	50.0	0.130	66.5	LOS E	0.6	6.2	0.96	0.69	0.96	28.1
Approach		1455	70	1532	4.8	0.914	39.0	LOS C	24.4	178.4	0.84	0.90	0.97	36.6
All Vehicles		4850	205	5105	4.2	0.934	34.0	LOS C	33.4	241.9	0.81	0.81	0.90	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [AM 2032 + Dev - Great Western Highway - Flushcombe Road + V1 Upgrades (Site Folder: 2032 + Development + Upgrades)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, B2*, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Flushcombe Road														
1	L2	45	10	47	22.2	0.136	32.9	LOS C	3.0	24.7	0.68	0.66	0.68	38.8
2	T1	25	5	26	20.0	0.136	27.1	LOS B	3.0	24.7	0.68	0.66	0.68	40.0
3	R2	45	10	47	22.2	0.203	49.5	LOS D	2.5	20.5	0.84	0.74	0.84	32.8
Approach		115	25	121	21.7	0.203	38.1	LOS C	3.0	24.7	0.74	0.69	0.74	36.4
East: Great Western Highway														
4	L2	125	20	132	16.0	0.250	39.1	LOS C	6.0	47.8	0.76	0.76	0.76	36.1
5	T1	1330	90	1400	6.8	0.741	38.9	LOS C	24.3	180.2	0.88	0.78	0.88	37.1
6	R2	240	5	253	2.1	* 1.022	122.9	LOS F	23.7	168.6	1.00	1.16	1.75	19.7
Approach		1695	115	1784	6.8	1.022	50.8	LOS D	24.3	180.2	0.89	0.83	1.00	33.0
North: Flushcombe Road														
7	L2	350	10	368	2.9	0.402	26.0	LOS B	14.1	100.9	0.66	0.77	0.66	41.2
8	T1	60	10	63	16.7	* 1.044	124.0	LOS F	67.8	488.0	1.00	1.25	1.69	19.2
9	R2	550	10	579	1.8	1.044	129.6	LOS F	67.8	488.0	1.00	1.25	1.69	19.1
Approach		960	30	1011	3.1	1.044	91.5	LOS F	67.8	488.0	0.87	1.08	1.31	23.7
West: Great Western Highway														
10	L2	300	5	316	1.7	0.257	8.9	LOS A	4.6	32.4	0.31	0.65	0.31	51.8
11	T1	1590	120	1674	7.5	* 1.033	88.2	LOS F	58.1	433.1	0.98	1.27	1.49	24.3
12	R2	135	20	142	14.8	0.731	69.2	LOS E	9.3	73.1	1.00	0.86	1.12	27.8
Approach		2025	145	2132	7.2	1.033	75.2	LOS F	58.1	433.1	0.88	1.15	1.29	26.7
All Vehicles		4795	315	5047	6.6	1.044	68.9	LOS E	67.8	488.0	0.88	1.01	1.18	28.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM 2032 + Dev - Great Western Highway - Flushcombe Road + V1 Upgrades (Site Folder: 2032 + Development + Upgrades)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Site Optimum Cycle Time - Minimum Delay)

Variable Sequence Analysis applied. The results are given for the selected output sequence.

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Variable Phasing

Reference Phase: Phase C

Input Phase Sequence: A, B1*, B2*, C, F

Output Phase Sequence: A, C, F

(* Variable Phase)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: Flushcombe Road														
1	L2	140	20	147	14.3	0.515	43.8	LOS D	11.6	91.2	0.82	0.77	0.82	34.8
2	T1	70	10	74	14.3	0.515	38.1	LOS C	11.6	91.2	0.82	0.77	0.82	35.7
3	R2	125	20	132	16.0	0.373	48.5	LOS D	7.2	57.3	0.84	0.78	0.84	33.2
Approach		335	50	353	14.9	0.515	44.3	LOS D	11.6	91.2	0.83	0.77	0.83	34.4
East: Great Western Highway														
4	L2	45	10	47	22.2	0.107	43.0	LOS D	2.3	19.2	0.75	0.72	0.75	34.7
5	T1	2265	95	2384	4.2	* 1.355	375.0	LOS F	147.9	1072.7	1.00	2.35	2.81	8.4
6	R2	515	20	542	3.9	* 1.376	407.3	LOS F	103.0	745.3	1.00	1.73	2.95	7.5
Approach		2825	125	2974	4.4	1.376	375.6	LOS F	147.9	1072.7	1.00	2.21	2.80	8.3
North: Flushcombe Road														
7	L2	205	5	216	2.4	0.219	22.5	LOS B	7.4	52.7	0.55	0.73	0.55	42.9
8	T1	25	5	26	20.0	* 1.349	380.4	LOS F	94.2	676.8	1.00	1.81	2.87	8.0
9	R2	455	10	479	2.2	1.349	386.1	LOS F	94.2	676.8	1.00	1.81	2.87	8.0
Approach		685	20	721	2.9	1.349	277.1	LOS F	94.2	676.8	0.86	1.48	2.18	10.5
West: Great Western Highway														
10	L2	400	10	421	2.5	0.395	14.7	LOS B	11.3	81.1	0.49	0.71	0.49	47.9
11	T1	1070	60	1126	5.6	0.682	31.7	LOS C	20.2	148.1	0.78	0.68	0.78	39.5
12	R2	40	10	42	25.0	0.141	54.1	LOS D	2.3	19.9	0.85	0.73	0.85	31.3
Approach		1510	80	1589	5.3	0.682	27.8	LOS B	20.2	148.1	0.71	0.69	0.71	41.1
All Vehicles		5355	275	5637	5.1	1.376	244.2	LOS F	147.9	1072.7	0.89	1.60	2.01	11.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [AM 2032 + Dev - Great Western Highway - Flushcombe Road + V3 Upgrades (Site Folder: 2032 + Development + Upgrades)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 121 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Split Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, D1

Output Phase Sequence: A, B, C, D, D1

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	45	10	47	22.2	0.261	33.6	LOS C	1.5	12.6	0.93	0.74	0.93	37.6
2	T1	25	5	26	20.0	* 0.525	66.2	LOS E	2.4	19.8	1.00	0.75	1.04	28.6
3	R2	45	10	47	22.2	0.525	72.3	LOS F	2.4	19.8	1.00	0.75	1.04	27.5
Approach		115	25	121	21.7	0.525	55.9	LOS D	2.4	19.8	0.97	0.75	1.00	31.0
East: Great Western Highway														
4	L2	125	20	132	16.0	0.180	25.4	LOS B	4.4	35.3	0.61	0.72	0.61	41.7
5	T1	1330	90	1400	6.8	0.674	31.5	LOS C	20.8	154.0	0.81	0.72	0.81	40.0
6	R2	240	5	253	2.1	* 0.952	85.9	LOS F	18.8	133.8	1.00	1.07	1.51	24.8
Approach		1695	115	1784	6.8	0.952	38.8	LOS C	20.8	154.0	0.82	0.77	0.90	37.0
North: Flushcombe Road														
7	L2	350	10	368	2.9	0.389	18.7	LOS B	11.8	84.7	0.61	0.74	0.61	45.4
8	T1	60	10	63	16.7	* 0.935	73.0	LOS F	15.7	115.2	0.92	1.09	1.44	26.6
9	R2	550	10	579	1.8	0.935	76.6	LOS F	30.5	216.6	0.98	1.05	1.38	26.6
Approach		960	30	1011	3.1	0.935	55.3	LOS D	30.5	216.6	0.84	0.94	1.11	31.4
West: Great Western Highway														
10	L2	300	5	316	1.7	0.215	9.0	LOS A	4.4	31.1	0.32	0.65	0.32	51.7
11	T1	1590	120	1674	7.5	* 0.914	33.2	LOS C	36.0	268.4	0.87	0.88	1.01	38.9
12	R2	135	20	142	14.8	0.681	62.8	LOS E	8.4	66.6	1.00	0.84	1.07	29.3
Approach		2025	145	2132	7.2	0.914	31.6	LOS C	36.0	268.4	0.79	0.84	0.91	39.5
All Vehicles		4795	315	5047	6.6	0.952	39.5	LOS C	36.0	268.4	0.82	0.83	0.95	36.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [PM 2032 + Dev - Great Western Highway - Flushcombe Road + V3 Upgrades (Site Folder: 2032 + Development + Upgrades)]

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 135 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Split Phasing

Reference Phase: Phase A

Input Phase Sequence: A, B, C, D, D1

Output Phase Sequence: A, B, C, D, D1

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Flushcombe Road														
1	L2	140	20	147	14.3	0.877	53.2	LOS D	7.6	59.5	1.00	0.94	1.36	31.4
2	T1	70	10	74	14.3	* 0.910	83.6	LOS F	8.1	64.3	1.00	1.02	1.50	25.2
3	R2	125	20	132	16.0	0.910	89.8	LOS F	8.1	64.3	1.00	1.02	1.51	24.4
Approach		335	50	353	14.9	0.910	73.2	LOS F	8.1	64.3	1.00	0.98	1.45	27.1
East: Great Western Highway														
4	L2	45	10	47	22.2	0.055	17.6	LOS B	1.3	10.5	0.43	0.65	0.43	45.7
5	T1	2265	95	2384	4.2	0.868	30.1	LOS C	45.1	327.1	0.86	0.82	0.91	40.6
6	R2	515	20	542	3.9	* 0.905	66.8	LOS E	39.9	288.7	1.00	0.98	1.20	28.5
Approach		2825	125	2974	4.4	0.905	36.6	LOS C	45.1	327.1	0.88	0.85	0.95	37.8
North: Flushcombe Road														
7	L2	205	5	216	2.4	0.190	14.4	LOS A	5.4	38.6	0.43	0.67	0.43	48.0
8	T1	25	5	26	20.0	* 0.926	79.2	LOS F	15.1	109.8	0.97	1.05	1.43	25.3
9	R2	455	10	479	2.2	0.926	84.1	LOS F	24.1	172.0	0.99	1.03	1.38	25.2
Approach		685	20	721	2.9	0.926	63.1	LOS E	24.1	172.0	0.82	0.92	1.10	29.4
West: Great Western Highway														
10	L2	400	10	421	2.5	0.384	18.9	LOS B	13.3	95.5	0.58	0.74	0.58	45.4
11	T1	1070	60	1126	5.6	* 0.899	49.7	LOS D	27.2	199.4	0.97	0.94	1.11	33.1
12	R2	40	10	42	25.0	0.370	72.6	LOS F	2.8	23.6	0.99	0.75	0.99	27.1
Approach		1510	80	1589	5.3	0.899	42.1	LOS C	27.2	199.4	0.87	0.88	0.97	35.4
All Vehicles		5355	275	5637	5.1	0.926	43.8	LOS D	45.1	327.1	0.88	0.88	1.01	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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Project: G:\Traffic\SIDRA 9.0\11916 Huntingwood\GWH - Flushcombe Road 230626sip9.sip9

USER REPORT FOR SITE

All Movement Classes

 **Project: GWH - Lot 5 Access 230626**

Template: Movement Summaries

Site: 101 [2022 AM - GWH - Connection to PH (Site Folder: 2022)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: GWH (east)														
5	T1	1205	5.0	1268	5.0	0.314	5.5	LOS A	8.1	59.5	0.36	0.32	0.36	55.0
6	R2	200	5.0	211	5.0	*0.588	52.5	LOS D	11.3	82.5	0.96	0.82	0.96	31.8
Approach		1405	5.0	1479	5.0	0.588	12.2	LOS A	11.3	82.5	0.45	0.39	0.45	49.9
North: Connection to PH														
7	L2	200	5.0	211	5.0	0.294	30.5	LOS C	8.1	59.3	0.71	0.76	0.71	39.7
9	R2	150	5.0	158	5.0	*0.580	57.3	LOS E	8.8	64.2	0.98	0.81	0.98	30.7
Approach		350	5.0	368	5.0	0.580	42.0	LOS C	8.8	64.2	0.82	0.78	0.82	35.2
West: GWH (west)														
10	L2	150	5.0	158	5.0	0.133	12.3	LOS A	3.1	22.4	0.36	0.64	0.36	49.9
11	T1	1445	5.0	1521	5.0	*0.586	18.8	LOS B	17.0	124.3	0.61	0.54	0.61	45.9
Approach		1595	5.0	1679	5.0	0.586	18.1	LOS B	17.0	124.3	0.59	0.55	0.59	46.2
All Vehicles		3350	5.0	3526	5.0	0.588	18.1	LOS B	17.0	124.3	0.55	0.51	0.55	46.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2022 PM - GWH - Connection to PH (Site Folder: 2022)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
East: GWH (east)														
5	T1	2155	5.0	2268	5.0	* 0.625	8.4	LOS A	23.8	173.5	0.52	0.48	0.52	52.8
6	R2	240	5.0	253	5.0	0.476	41.9	LOS C	12.0	87.7	0.86	0.81	0.86	35.0
Approach		2395	5.0	2521	5.0	0.625	11.7	LOS A	23.8	173.5	0.56	0.51	0.56	50.2
North: Connection to PH														
7	L2	240	5.0	253	5.0	0.275	21.9	LOS B	8.0	58.2	0.58	0.73	0.58	43.7
9	R2	180	5.0	189	5.0	* 0.629	56.2	LOS D	10.5	76.8	0.98	0.82	0.98	31.0
Approach		420	5.0	442	5.0	0.629	36.6	LOS C	10.5	76.8	0.75	0.77	0.75	37.2
West: GWH (west)														
10	L2	180	5.0	189	5.0	0.186	17.5	LOS B	5.0	36.4	0.49	0.68	0.49	46.6
11	T1	915	5.0	963	5.0	0.483	29.1	LOS C	12.5	91.4	0.71	0.62	0.71	40.6
Approach		1095	5.0	1153	5.0	0.483	27.2	LOS B	12.5	91.4	0.68	0.63	0.68	41.5
All Vehicles		3910	5.0	4116	5.0	0.629	18.7	LOS B	23.8	173.5	0.61	0.57	0.61	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2022 AM + Dev - GWH - Connection to PH - 4 way 1 LT lane (Site Folder: 2022)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: B, B1, A, C

Output Phase Sequence: B, B1, A, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: RoadName														
1	L2	35	10.0	37	10.0	0.125	50.2	LOS D	1.8	13.8	0.87	0.73	0.87	32.3
3	R2	30	10.0	32	10.0	0.125	53.1	LOS D	1.6	12.3	0.89	0.72	0.89	31.8
Approach		65	10.0	68	10.0	0.125	51.5	LOS D	1.8	13.8	0.88	0.72	0.88	32.1
East: GWH (east)														
4	L2	125	10.0	132	10.0	0.115	11.2	LOS A	2.3	17.6	0.33	0.64	0.33	49.9
5	T1	1205	5.0	1268	5.0	0.459	20.1	LOS B	15.7	114.4	0.69	0.61	0.69	45.1
6	R2	200	5.0	211	5.0	* 0.588	52.5	LOS D	11.3	82.5	0.96	0.82	0.96	31.8
Approach		1530	5.4	1611	5.4	0.588	23.6	LOS B	15.7	114.4	0.69	0.64	0.69	43.1
North: Connection to PH														
7	L2	200	5.0	211	5.0	0.588	52.5	LOS D	11.3	82.5	0.96	0.82	0.96	32.0
9	R2	150	5.0	158	5.0	* 0.580	57.4	LOS E	8.8	64.2	0.98	0.81	0.98	30.8
Approach		350	5.0	368	5.0	0.588	54.6	LOS D	11.3	82.5	0.96	0.82	0.96	31.5
West: GWH (west)														
10	L2	150	5.0	158	5.0	0.133	12.3	LOS A	3.1	22.4	0.36	0.64	0.36	49.9
11	T1	1445	5.0	1521	5.0	* 0.586	18.8	LOS B	17.0	124.3	0.61	0.54	0.61	45.9
12	R2	130	10.0	137	10.0	0.466	53.8	LOS D	7.3	55.6	0.94	0.80	0.94	31.4
Approach		1725	5.4	1816	5.4	0.586	20.8	LOS B	17.0	124.3	0.61	0.57	0.61	44.7
All Vehicles		3670	5.4	3863	5.4	0.588	25.8	LOS B	17.0	124.3	0.69	0.63	0.69	42.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2022 PM + Dev - GWH - Connection to PH - 4 way 1 LT lane (Site Folder: 2022)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: B, B1, A, C

Output Phase Sequence: B, B1, A, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: RoadName														
1	L2	130	10.0	137	10.0	* 0.732	65.3	LOS E	8.3	63.2	1.00	0.86	1.13	28.5
3	R2	125	10.0	132	10.0	0.519	57.0	LOS E	7.3	55.2	0.97	0.80	0.97	30.8
Approach		255	10.0	268	10.0	0.732	61.2	LOS E	8.3	63.2	0.98	0.83	1.05	29.6
East: GWH (east)														
4	L2	30	10.0	32	10.0	0.025	8.7	LOS A	0.4	3.0	0.23	0.60	0.23	51.6
5	T1	2155	5.0	2268	5.0	* 0.725	19.7	LOS B	31.8	232.4	0.79	0.72	0.79	45.3
6	R2	240	5.0	253	5.0	0.464	41.0	LOS C	11.9	86.6	0.85	0.81	0.85	35.3
Approach		2425	5.1	2553	5.1	0.725	21.7	LOS B	31.8	232.4	0.79	0.73	0.79	44.2
North: Connection to PH														
7	L2	240	5.0	253	5.0	0.464	41.0	LOS C	11.9	86.6	0.85	0.81	0.85	35.6
9	R2	180	5.0	189	5.0	* 0.696	59.5	LOS E	11.0	80.0	1.00	0.85	1.05	30.2
Approach		420	5.0	442	5.0	0.696	49.0	LOS D	11.9	86.6	0.92	0.82	0.94	33.1
West: GWH (west)														
10	L2	180	5.0	189	5.0	0.189	18.0	LOS B	5.1	37.2	0.50	0.69	0.50	46.3
11	T1	915	5.0	963	5.0	0.472	28.1	LOS B	12.2	89.3	0.70	0.60	0.70	41.1
12	R2	35	10.0	37	10.0	0.197	58.9	LOS E	2.0	15.3	0.94	0.73	0.94	30.1
Approach		1130	5.2	1189	5.2	0.472	27.4	LOS B	12.2	89.3	0.67	0.62	0.67	41.4
All Vehicles		4230	5.4	4453	5.4	0.732	28.3	LOS B	31.8	232.4	0.78	0.72	0.79	40.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2033 AM - GWH - Connection to PH (Site Folder: 2033)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist] m				
						v/c	sec							km/h
East: GWH (east)														
5	T1	1326	5.0	1396	5.0	0.346	5.7	LOS A	9.3	67.5	0.37	0.34	0.37	54.9
6	R2	226	5.0	238	5.0	* 0.664	53.5	LOS D	13.0	95.2	0.97	0.83	0.98	31.5
Approach		1552	5.0	1634	5.0	0.664	12.6	LOS A	13.0	95.2	0.46	0.41	0.46	49.5
North: Connection to PH														
7	L2	226	5.0	238	5.0	0.332	30.9	LOS C	9.3	68.2	0.72	0.77	0.72	39.5
9	R2	170	5.0	179	5.0	* 0.657	58.5	LOS E	10.2	74.3	0.99	0.83	1.02	30.4
Approach		396	5.0	417	5.0	0.657	42.8	LOS D	10.2	74.3	0.84	0.79	0.85	35.0
West: GWH (west)														
10	L2	170	5.0	179	5.0	0.150	12.4	LOS A	3.5	25.7	0.37	0.64	0.37	49.8
11	T1	1633	5.0	1719	5.0	* 0.673	19.8	LOS B	21.5	157.0	0.66	0.60	0.66	45.3
Approach		1803	5.0	1898	5.0	0.673	19.1	LOS B	21.5	157.0	0.64	0.60	0.64	45.7
All Vehicles		3751	5.0	3948	5.0	0.673	18.9	LOS B	21.5	157.0	0.59	0.54	0.59	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2033 PM - GWH - Connection to PH (Site Folder: 2033)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: A, B, C

Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV %	[Total veh/h	HV %				[Veh. veh	Dist m				
						v/c	sec							km/h
East: GWH (east)														
5	T1	2435	5.0	2563	5.0	* 0.707	9.3	LOS A	30.1	220.1	0.58	0.54	0.58	52.1
6	R2	271	5.0	285	5.0	0.538	42.8	LOS D	13.9	101.4	0.88	0.82	0.88	34.8
Approach		2706	5.0	2848	5.0	0.707	12.6	LOS A	30.1	220.1	0.61	0.57	0.61	49.6
North: Connection to PH														
7	L2	271	5.0	285	5.0	0.311	22.3	LOS B	9.2	67.2	0.60	0.74	0.60	43.5
9	R2	203	5.0	214	5.0	* 0.710	58.3	LOS E	12.3	89.8	1.00	0.86	1.05	30.4
Approach		474	5.0	499	5.0	0.710	37.7	LOS C	12.3	89.8	0.77	0.79	0.79	36.7
West: GWH (west)														
10	L2	203	5.0	214	5.0	0.210	17.7	LOS B	5.7	41.8	0.50	0.69	0.50	46.5
11	T1	1034	5.0	1088	5.0	0.546	29.9	LOS C	14.8	107.9	0.75	0.65	0.75	40.2
Approach		1237	5.0	1302	5.0	0.546	27.9	LOS B	14.8	107.9	0.70	0.65	0.70	41.2
All Vehicles		4417	5.0	4649	5.0	0.710	19.6	LOS B	30.1	220.1	0.65	0.61	0.66	45.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2033 AM + Dev - GWH - Connection to PH - 4 way 1 LT lane (Site Folder: 2033)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: B, B1, A, C

Output Phase Sequence: B, B1, A, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
						v/c	sec							km/h
South: RoadName														
1	L2	35	10.0	37	10.0	0.131	51.2	LOS D	1.8	14.0	0.88	0.73	0.88	32.0
3	R2	30	10.0	32	10.0	0.125	53.1	LOS D	1.6	12.3	0.89	0.72	0.89	31.8
Approach		65	10.0	68	10.0	0.131	52.1	LOS D	1.8	14.0	0.89	0.73	0.89	31.9
East: GWH (east)														
4	L2	125	10.0	132	10.0	0.113	10.9	LOS A	2.3	17.1	0.32	0.64	0.32	50.1
5	T1	1326	5.0	1396	5.0	0.496	20.0	LOS B	17.5	127.6	0.70	0.62	0.70	45.2
6	R2	226	5.0	238	5.0	* 0.664	53.5	LOS D	13.0	95.2	0.97	0.83	0.98	31.5
Approach		1677	5.4	1765	5.4	0.664	23.9	LOS B	17.5	127.6	0.71	0.65	0.71	43.0
North: Connection to PH														
7	L2	226	5.0	238	5.0	0.664	53.5	LOS D	13.0	95.2	0.97	0.83	0.98	31.8
9	R2	170	5.0	179	5.0	* 0.657	58.5	LOS E	10.2	74.3	0.99	0.83	1.02	30.5
Approach		396	5.0	417	5.0	0.664	55.7	LOS D	13.0	95.2	0.98	0.83	0.99	31.2
West: GWH (west)														
10	L2	170	5.0	179	5.0	0.150	12.4	LOS A	3.5	25.7	0.37	0.64	0.37	49.8
11	T1	1633	5.0	1719	5.0	* 0.673	19.8	LOS B	21.5	157.0	0.66	0.60	0.66	45.3
12	R2	130	10.0	137	10.0	0.488	54.9	LOS D	7.4	56.3	0.95	0.80	0.95	31.1
Approach		1933	5.3	2035	5.3	0.673	21.5	LOS B	21.5	157.0	0.66	0.61	0.66	44.3
All Vehicles		4071	5.4	4285	5.4	0.673	26.3	LOS B	21.5	157.0	0.71	0.65	0.71	41.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 101 [2033 PM + Dev - GWH - Connection to PH - 4 way 1 LT lane (Site Folder: 2033)]

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 124 seconds (Site Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Site Phasing & Timing dialog

Phase Times determined by the program

Phase Sequence: Leading Right Turn

Reference Phase: Phase A

Input Phase Sequence: B, B1, A, C

Output Phase Sequence: B, B1, A, C

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: RoadName														
1	L2	130	10.0	137	10.0	* 0.815	71.9	LOS F	9.0	68.3	1.00	0.91	1.26	27.1
3	R2	125	10.0	132	10.0	0.536	59.3	LOS E	7.6	57.4	0.97	0.80	0.97	30.2
Approach		255	10.0	268	10.0	0.815	65.7	LOS E	9.0	68.3	0.99	0.86	1.12	28.5
East: GWH (east)														
4	L2	30	10.0	32	10.0	0.025	8.4	LOS A	0.4	2.9	0.22	0.59	0.22	51.9
5	T1	2435	5.0	2563	5.0	* 0.818	20.5	LOS B	41.6	303.4	0.83	0.77	0.83	44.9
6	R2	271	5.0	285	5.0	0.527	43.3	LOS D	14.2	103.6	0.88	0.82	0.88	34.6
Approach		2736	5.1	2880	5.1	0.818	22.6	LOS B	41.6	303.4	0.83	0.77	0.83	43.7
North: Connection to PH														
7	L2	271	5.0	285	5.0	0.527	43.3	LOS D	14.2	103.6	0.88	0.82	0.88	34.8
9	R2	203	5.0	214	5.0	* 0.811	66.6	LOS E	13.6	99.6	1.00	0.92	1.18	28.6
Approach		474	5.0	499	5.0	0.811	53.3	LOS D	14.2	103.6	0.93	0.86	1.01	31.9
West: GWH (west)														
10	L2	203	5.0	214	5.0	0.211	18.3	LOS B	6.0	43.4	0.50	0.69	0.50	46.2
11	T1	1034	5.0	1088	5.0	0.517	28.3	LOS B	14.4	105.1	0.71	0.61	0.71	41.0
12	R2	35	10.0	37	10.0	0.219	62.3	LOS E	2.1	16.1	0.95	0.73	0.95	29.3
Approach		1272	5.1	1339	5.1	0.517	27.6	LOS B	14.4	105.1	0.68	0.63	0.68	41.3
All Vehicles		4737	5.3	4986	5.3	0.818	29.4	LOS C	41.6	303.4	0.81	0.75	0.82	40.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

Delay Model: SIDRA Standard (Geometric Delay is included).

Queue Model: SIDRA Standard.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

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