61-71 Goulburn Street, Liverpool

Planning Proposal (Pre-Gateway)

13/05/2022

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Glossary

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

1 Introduction

1.1 Overview

Ason Group has been commissioned by Sacco Building Group Pty Ltd to prepare a Transport Assessment (TA) supporting a Pre-Gateway Planning Proposal of a New Health Care Development at 61-71 Goulburn Street, Liverpool (the Site).

The Site is located within the Liverpool City Council Local Government Area (LGA) and is therefore subject to that Council's controls. Under the *Liverpool Local Environmental Plan 2008* (LLEP), the current *M4 – Mixed Use* zoning allows for the construction of a Health Care Facility. This Planning Proposal seeks to amend the LEP by way of the following:

- Amend the maximum building height to establish a new height control of 79 m
- Maximising the Floor Space Ratio (FSR) from 3.5 : 1 to 6.9 : 1

To assist in realising this, the Proposal will put forward a 20-storey health facility with 4 levels of underground parking and services.

More broadly, it is envisaged that the Planning Proposal has the opportunity to become an integral co-element of the Liverpool Hospital Upgrade which is located across the road and accessed from Goulburn Street.

Figure 1 shows the Site location relative to the surrounding land development context.

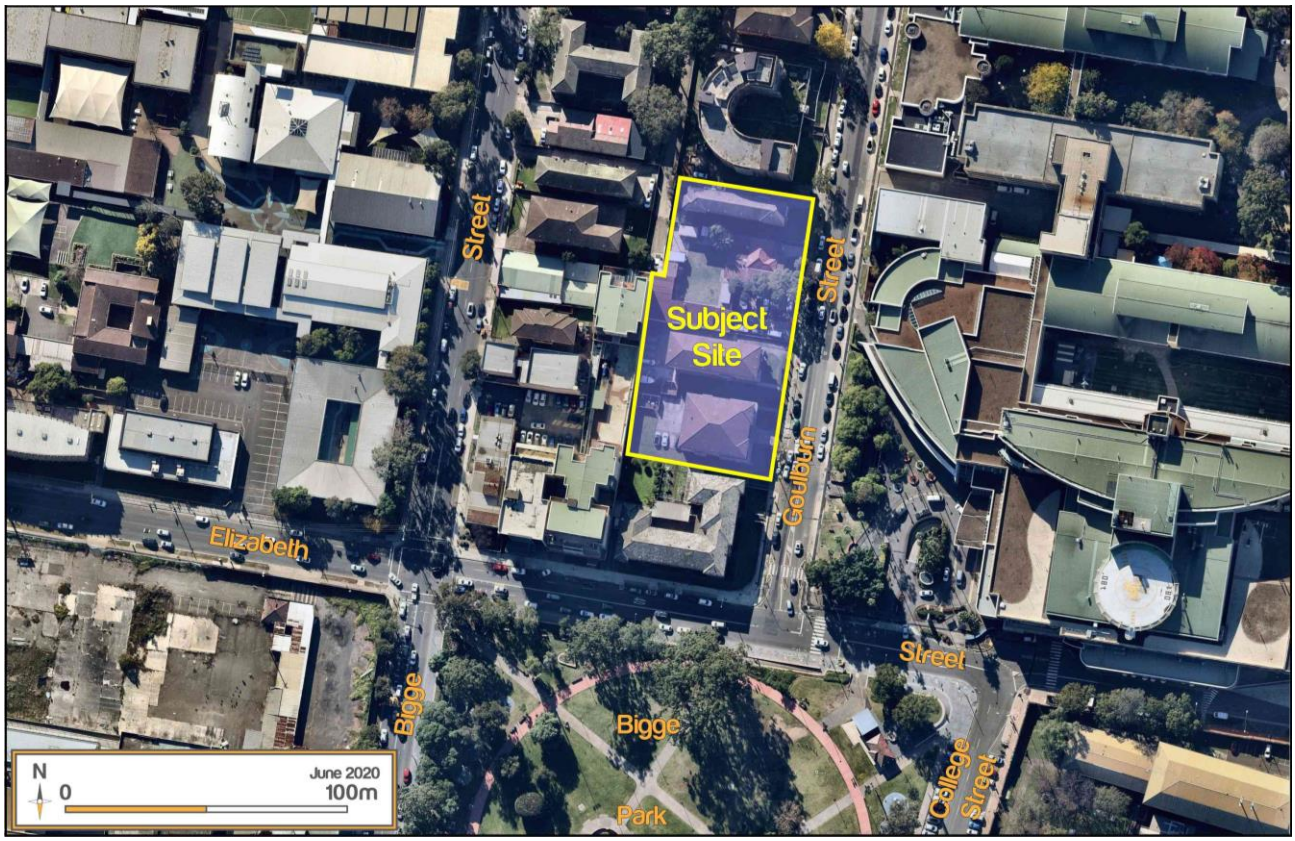


Figure 1: Site Location

1.2 The Proposal

The Planning Proposal proposes a Private Hospital Health Care Centre Development with the key aspects summarised as follows:

- Amend the maximum building height to allow building heights up to 79 metres
- Establish a maximum floor space ratio control of 6.9 : 1

To aid assessment of the above, a concept scheme has been prepared by Team2 and Urban Design Report prepared by RobertsDay which envisages a 20-floor Health Development of some

- 32,280 m^2 Gross Floor Area (GFA), including some 353m^2 of retail on the ground floor
- 4 basement floors with a total of 327 car parking spaces
- Ground level porte-cochere drop-off zone, including ambulance parking

Figure 2: Indicative Schematic Plan

The Planning Proposal also seeks to increase the pedestrian activation at the street level through the provision of a pedestrian crossing across Goulburn Street to provide a connection between the Proposal and the Liverpool Hospital.

It is envisaged that this infrastructure will facilitate the pedestrian accessibility and connectivity to the broader Liverpool Health Precinct on a street identified as a high pedestrian priority area in the *Liverpool Development Control Plan 2008* (LDCP).

Further to the above, a bridge between the proposed Private Hospital and Public Hospital is also envisaged at upper levels to connect operations between the two facilities. However, this connection is expected to be used by clinical staff only and not by the general public; which would use the at-grade pedestrian crossing referred above.

An impression of the pedestrian crossing prepared by RobertsDay is shown in **Figure 3**.

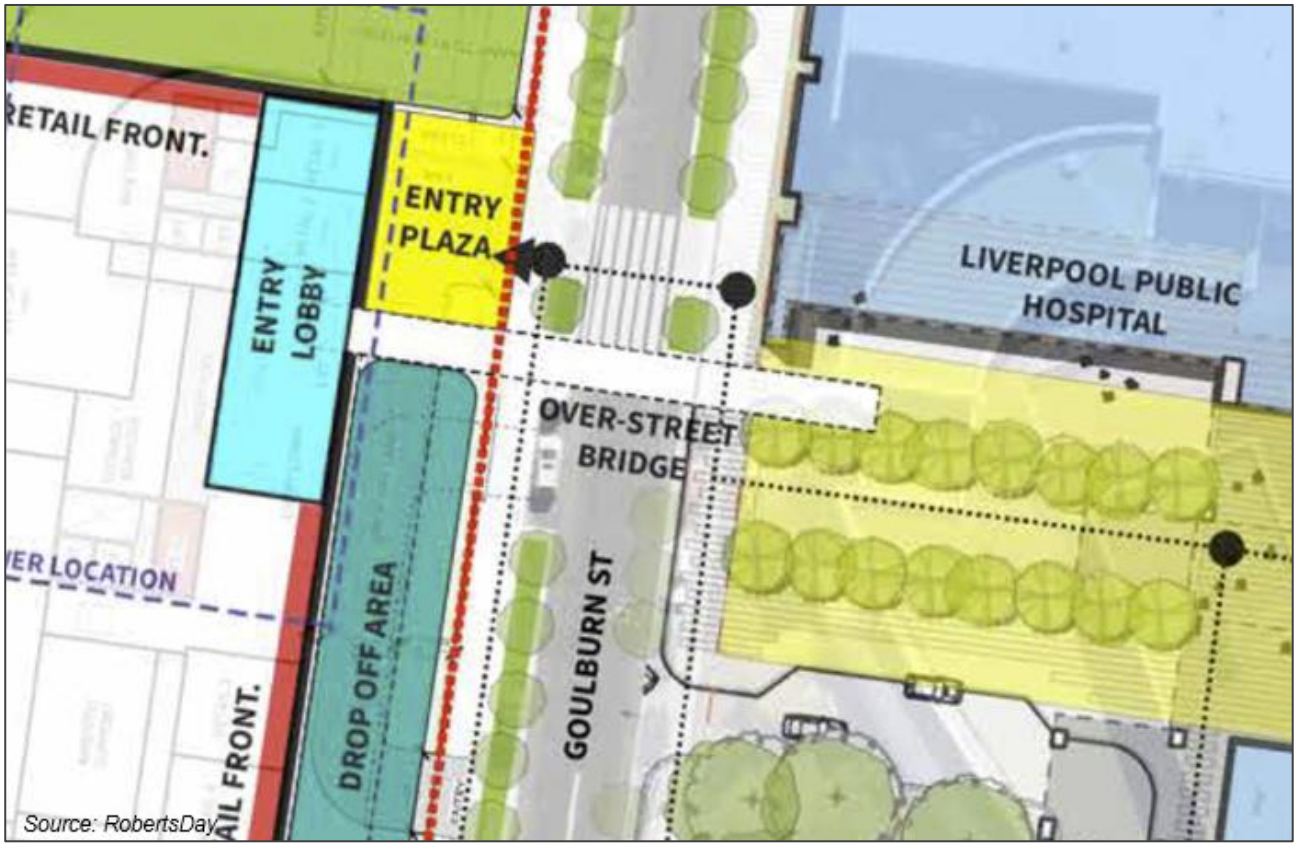


Figure 3: Pedestrian Connection across Goulburn Street

1.3 Consultation with Council

Liverpool City Council provided a Response to Submissions letter (ref: 072062.2022, dated 3 March 2022) to the project team in response to the first submission of the planning proposal. In that letter, a number of items were raised regarding the traffic assessment. These included:

- *Assessment of the additional traffic generation from the consulting suites*
- *Additional traffic modelling scenario to investigate the proposal under an assumption that Campbell Street won't be closed between Goulburn Street and Forbes Street*
- *Swept path analysis for vehicles expected on site including 12.5m trucks*

The project team met with Council traffic engineers on 02 May 2022 to discuss the aforementioned items. From the meeting, Council's traffic engineers recommended that:

- *Additional information be provided regarding the consulting suites and clarity to be provided as to the proportion of these suites which would support the primary hospital function of the development, and the proportion of these suites which would be operated separately to the primary hospital function (hereafter referred to as speculative consulting suites).*
  - To respond to this comment, updated traffic generation analysis has been undertaken to include the trips generated by the speculative consulting suites. Details are provided in **Section 5.1**.
- *Council advised the existing Liverpool Public Hospital intended to close Campbell Street between Goulburn Street and Forbes Street in the next 2 years. As the proposed Private Hospital development is tentatively expected to be operational post closure of Campbell Street, Council advised that the scenario previously modelled (i.e. assuming the Campbell Street closure) was the worst-case scenario, and additional modelling scenarios (where the Campbell Street closure does not proceed) are not required.*
  - The SIDRA analysis has continued to adopt assumptions identical to the previous TA submission as it relates to the Campbell Street closure and traffic distribution.
- *Swept path analysis for 12.5m HRVs were previously included in the submitted TA. Council reviewed these paths and advised concerns regarding the HRV movement crossing the centreline during egress. Council advised that additional measures be recommended to address potential safety concerns if 12.5m HRVs were to be used. Team2 advised that largest design vehicle intended for the site is an 8.8m MRV.*
  - The design assessment has been revised to consider swept paths for vehicles up to 8.8m MRVs, details are provided in **Appendix A**. The swept paths demonstrate that MRVs can enter and exit the site without crossing the centreline. It is however, noteworthy that any detailed design assessment queries can readily be addressed as part of the future Development Application (DA).

1.4 Key References

In preparing this TA, a series of key strategic, design and planning documents have informed the assessment of the traffic and transport related elements of the project. These documents include:

- Liverpool Local Environmental Plan 2008 (LLEP)
- Liverpool Development Control Plan 2008 (LDCP)

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

- Roads and Maritime Services, Guide to Traffic Generating Developments (RMS Guide)
- RMS Guide to Traffic Generating Developments: Updated Traffic Surveys (RMS TDT2013/04a).
- Australian Standard 2890.1:2004 Parking Facilities – Off Street Car Parking (AS 2890.1:2004)
- Australian Standard 2890.2:2018 Parking Facilities – Off Street Commercial Vehicle Facilities (AS 2890.2:2018)
- NSW Ambulance, Access Specifications for Hospitals and Other Buildings; and
- NSW Ambulance, Vehicle and Stretcher Dimensions;

Other traffic and transport studies referenced in the preparation of this TA include:

- GTA Consultants, Liverpool Health and Academic Precinct MSCP, State Significant Development Application – Transport and Accessibility Impact Assessment Issue C (LHAP Report)
- GTA Consultants, New Liverpool Public School, State Significant Development Application – Transport and Accessibility Impact Assessment Issue D (Liverpool Public School Report)

2 Existing Conditions

2.1 Existing Land Use & Access

Under the LLEP, the Site is currently zoned *B4 – Mixed Use* and legally comprises:

- SP18729
- Lot 1 DP25642
- Lot 8 Section 41 DP758620
- Lot 1 DP610334
- Lot 2 DP610334
- Lot 20 DP1113807

Existing developments on the Site consist of low to medium density residential developments ranging from 1 – 4 floors of some 4,800 m^2 GFA which is below the existing FSR of 3.5 : 1 on the subject site. Other surrounding developments include the Liverpool Hospital to the east and the Bigge Park to the south. A narrow public laneway extends partway down the western site frontage.

Access to the existing residential developments are provided via 2-way vehicular crossovers to Goulburn Street.

2.2 Road Hierarchy

Figure 4 presents the road hierarchy in the vicinity of the Site, with a description of key roads in the locality provided below.

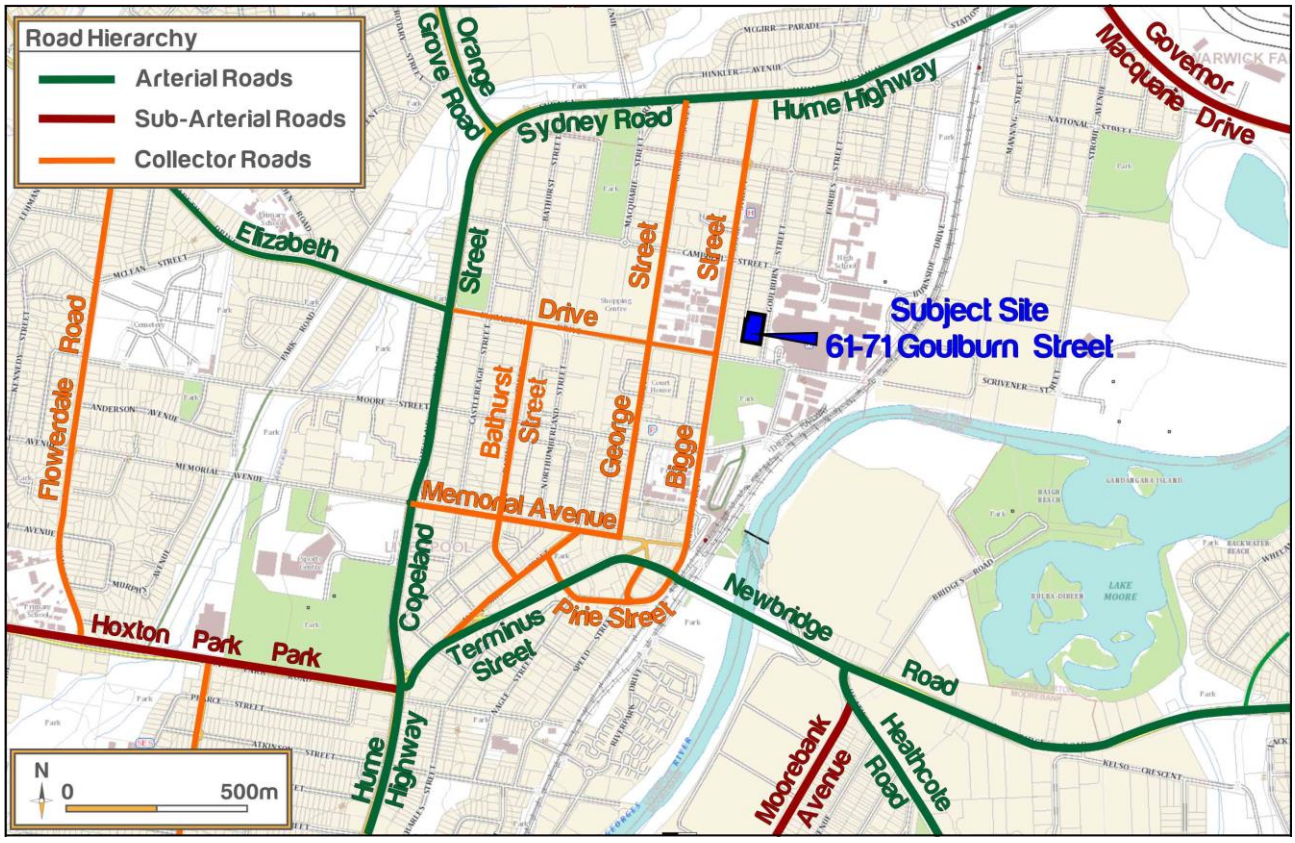


Figure 4: Road Hierarchy

2.2.1 Goulburn Street

Goulburn Street is a local road fronting the eastern side of the Site that runs generally in a north-south direction.

It is a two-way road configured with a single lane in each direction, set within an approximately 12.5 metre carriageway. Within proximity of the Site, 1P parallel parking is permitted on both sides of the road.

Goulburn Street is signposted as a 30km/h high pedestrian activity area adjacent to the hospital and is a key north-south route through Liverpool, connecting — via a left-in, left-out intersection — with the Hume Highway to the north.

2.2.2 Elizabeth Street

Elizabeth Street is a generally a collector road aligned in an east-west direction to the south of the Site, to the east of Bigge Street it transitions to a local road. It provides a single lane of traffic in each direction within an undivided carriageway of width 12.5 metres.

In terms of signage parking controls, 1P parallel parking is permitted on both sides of the road. Within vicinity of the Site, Elizabeth Street is signposted as a 30 km/h high pedestrian area.

An at grade pedestrian (zebra) crossing is provided at the eastern leg of the Goulburn Street / Elizabeth Street intersection linking Liverpool Hospital to Bigge Park. A further pedestrian (zebra) crossing is provided on the Goulburn Street leg of this intersection.

2.2.3 Campbell Street

Campbell Street is a local road generally aligned in an east-west direction close to the northern boundary of the Site. It provides 1 lane of traffic in each direction within an undivided carriageway of width 13.0 m.

In terms of signage parking controls, 2P parallel parking and accessible parking is permitted on both sides of the road.

Within vicinity of the Site, Campbell Street is signposted as a 30 km/h High Pedestrian Activity Area at the eastern end with the provision of a School Zone in effect near Liverpool Girls High School.

A number of changes are planned within Campbell Street which are discussed further in Section 3.

2.3 Traffic Volumes

At the time of preparing this report, the NSW Government had imposed a state-wide lockdown order. As such, conducting traffic surveys would not be representative of typical traffic conditions.

For this reason, traffic turning volumes and the heavy vehicle (HV) percentages have been sourced from the *Liverpool Health and Academic Precinct MSCP, State Significant Development Application – Transport and Accessibility Impact Assessment Issue C* prepared by GTA Consultants in May 2020. The surveys were undertaken on 9 April 2019 and completed over the following peak hour periods:

- 7:00 – 10:00AM
- 4:00 – 7:00PM

During those peak time periods, the survey data revealed that the morning (AM) and evening (PM) peak hours on the road network occurred at the following times:

- 7:45 am to 8:45 am
- 4:00 pm to 5:00 pm

Figure 5 shows the turning movements at the key intersections during the observed peak hours.

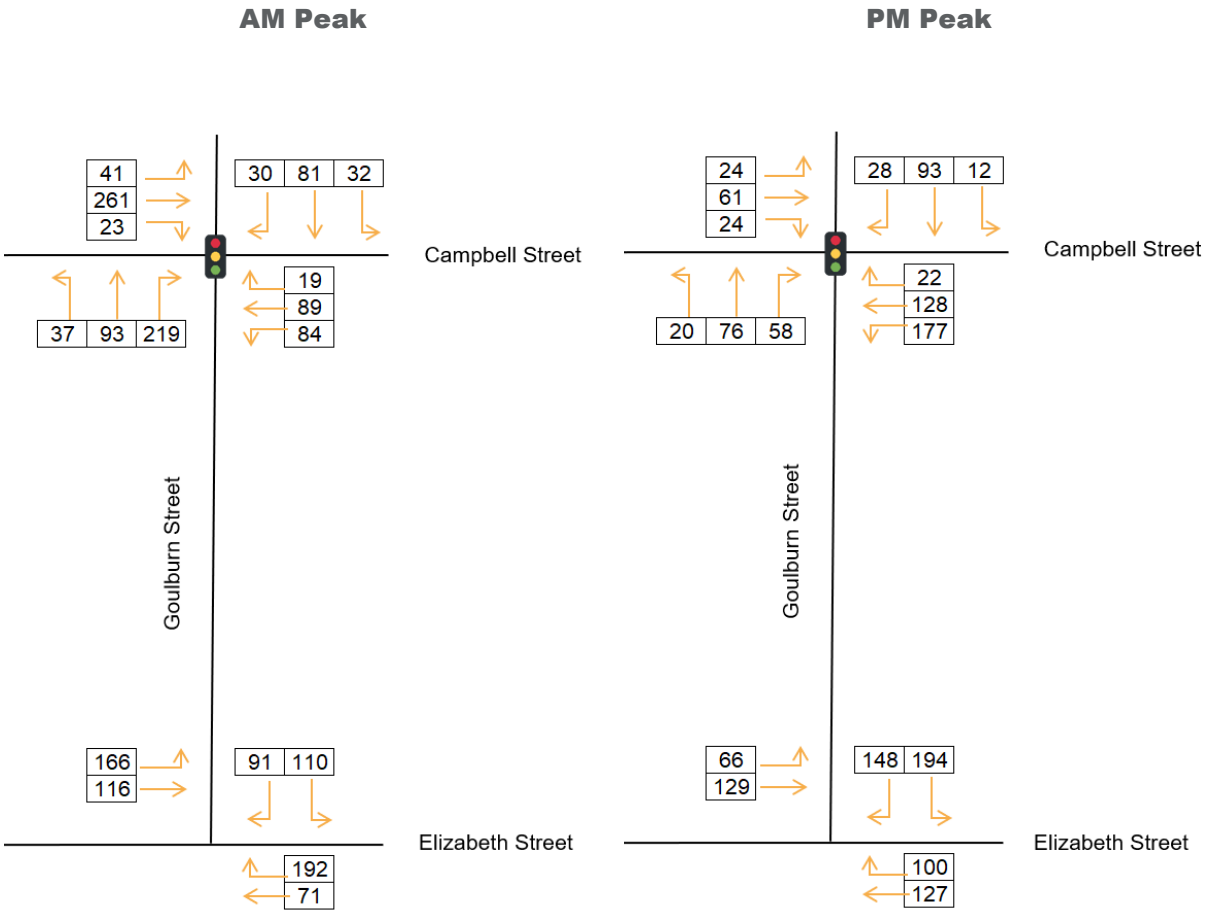


Figure 5: Vehicle Turning Movement Volumes

2.4 Intersection Performance

Performance of the existing road network is largely dependent on the operating performance of key intersections, which are critical capacity control points on the road network. In this regard, the key criteria evaluating the performance is outlined as follows:

- ***Degree of Saturation (DOS)*** – The DOS is defined as the ratio of demand (arrival) flow to capacity. The DOS is used to measure the performance of intersections where a value of 1.0 represents an intersection at theoretical capacity, above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity).

  As the performance of an intersection approaches DOS of 1.0, queue lengths and delays increase rapidly. It is usual to attempt to keep DOS to less than 0.9, with satisfactory intersection operation generally achieved with a DOS below 0.8.

- ***Average Vehicle Delay (AVD)*** – Delay represents the difference between interrupted and uninterrupted travel times through an intersection and is measured in seconds per vehicle. Delays include queued vehicles accelerating and decelerating from/to the intersection stop lines, as well as general delays to all vehicles travelling through the intersection.

  The AVD (or average delay per vehicle in seconds) for intersections also provides a measure of the operational performance of an intersection and is used to determine an intersection's Level of Service (see below). For signalised intersections, the AVD reported relates to the average of all vehicle movements through the intersection. For priority (Give Way, Stop & Roundabout controlled) intersections, the AVD reported is that for the movement with the highest AVD.

- ***Level of Service (LOS)*** – This is a comparative measure that provides an indication of the operating performance, based on AVD. For signalised and roundabout intersections, LOS is based on the average delay to all vehicles, while at priority-controlled intersections LOS is based on the worst approach delay.

Having regard for the above, TfNSW provides the following criteria for the assessment of intersection performance as outlined in **Table 1.**

TABLE 1 – INTERSECTION ASSESSMENT CRITERIA

Level of Service	Average Delay (sec)	Traffic Signals	Give way and stop sign
A	less than 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity.	Unsatisfactory and requires other control mode or major treatment

Ason Group have analysed the performance of the existing surrounding road network using SIDRA Intersection, with the results presented in **Table 2**.

TABLE 2 – EXISTING INTERSECTION PERFORMANCE

Intersection	Peak Hour	Delay (Sec)	Degree of Saturation (DOS)	Queue (m)	Level of Service (LOS)
Goulburn St / Campbell St	AM Peak	16	0.63	56	B
	PM Peak	15	0.33	24	A
Goulburn St / Elizabeth St	AM Peak	5	0.21	7	A
	PM Peak	5	0.32	10	A

With regard for the above, the critical intersections in the surrounding road network of relevance to this proposal are performing well with relatively minor average delays in the morning and evening peak hours.

2.5 Public Transport Network

The Site is well serviced by public transport infrastructure with the existing key rail and bus services within accessibility of the Site is detailed below and shown in **Figure 6**.

2.5.1 Railway Services

According to the *Integrated Public Transport Service Planning Guidelines, Sydney Metropolitan Area* December 2013 (IPT Guidelines), rail services influence the travel mode choices of areas within 800 metres (approximately 10 minutes walk) of a railway station.

Having regard for this, it is notable that Liverpool Railway Station is located at approximately 450 metres walking distance to the south of the Site via Elizabeth Street, Bigge Street, College Street, Moore Street.

Liverpool Railway Station is serviced by a plethora of train services including services to Sydney CBD, Parramatta, Bankstown, and other regional centres. Peak hour train services and frequencies are summarised in **Table 3**.

TABLE 3 – TRAIN FREQUENCIES AT LIVERPOOL RAILWAY STATION

T2 Leppington Inner West Line			
Station - Line	**To City**	**From City**	**Total**
Morning Peak Hour (8:00 am – 9:00 am)	8	9	17
Off Peak Hour	8	8	16
Afternoon Peak Hour (5:00 pm – 6:00 pm)	8	8	16
T3 Bankstown Line to City			
Station - Line	**To City**	**From City**	**Total**
Morning Peak Hour (8:00 am – 9:00 am)	3	3	6
Off Peak Hour	2	2	4
Afternoon Peak Hour (5:00 pm – 6:00 pm)	2	2	4
T5 Leppington Richmond Line			
Station - Line	**To Richmond**	**From Richmond**	**Total**
Morning Peak Hour (8:00 am – 9:00 am)	2	2	4
Off Peak Hour	2	2	4
Afternoon Peak Hour (5:00 pm – 6:00 pm)	2	2	4

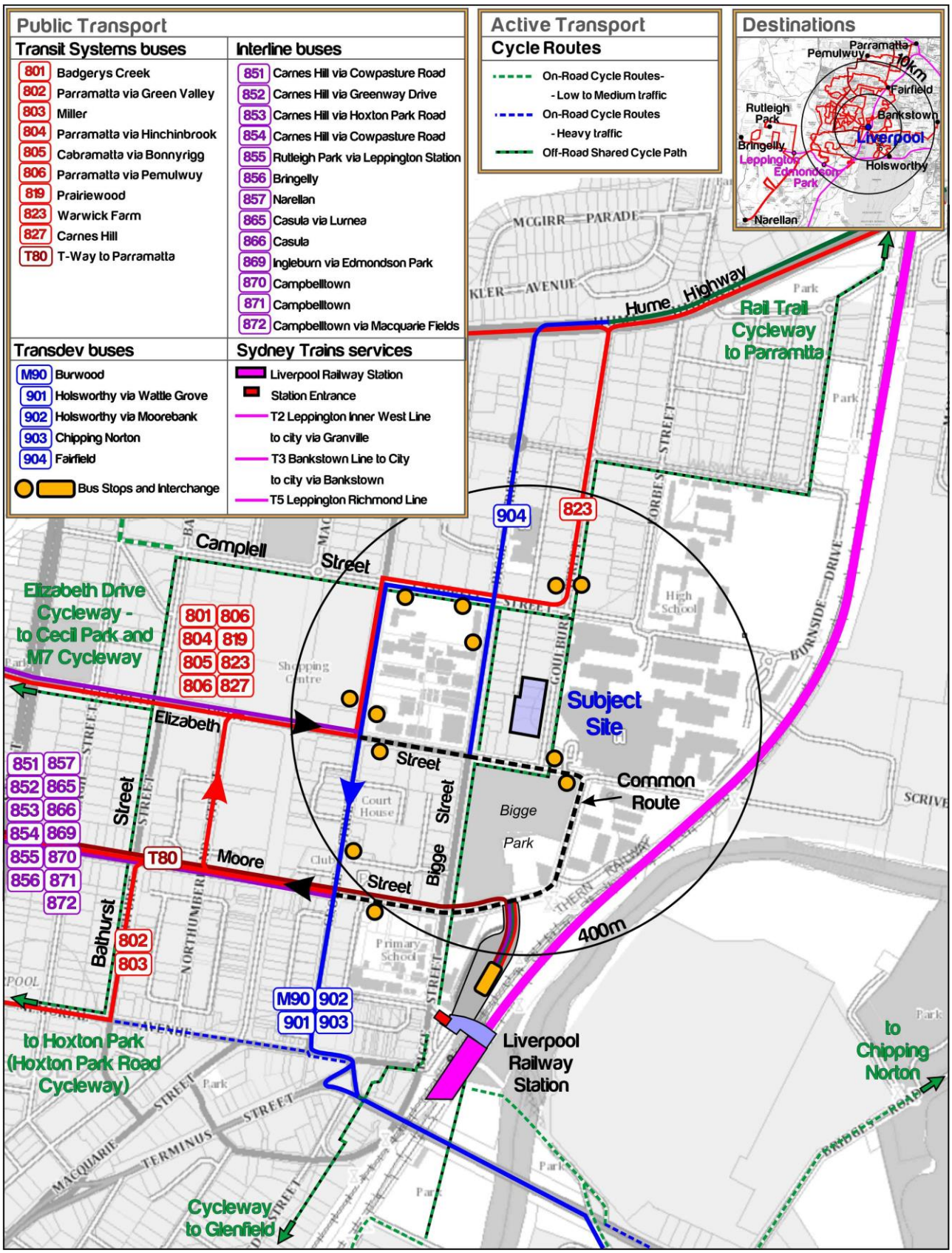


Figure 6: Existing Public and Active Transport Network

2.5.2 Bus Services

Having regard to the standard bus travel, the IPT Guidelines state that bus services influence the travel mode choices of sites within 400 metres (approximately 5 minutes' walk) of a bus stop.

The Site is well serviced by a wide selection of bus stops within 400 metres of the Site with the Liverpool Bus Interchange also located just outside the 400 metres to the south of the Site as shown in Figure 6. Bus services are operated by Transdev, Transit System and Interline Bus Services with the bus services and frequencies are summarised in **Table 4.**

TABLE 4 – BUS SERVICES

Route	Description	Peak Hour Frequency
Transit System Buses		
801	Badgerys Creek	2
802	Parramatta via Green Valley	2
804	Parramatta via Hitchenbrook	3
805	Cabramatta via Bonnyrigg	3
806	Parramatta via Pemulwuy	2
819	Prairewood	2
823	Warwick Farm	2
827	Carnes Hill	1
T80	T-way to Parramatta (Weekend Service)	2
Interline Buses		
851	Carnes Hill via Cowpasture Road	1
852	Carnes Hill via Greenway Drive	1
853	Carnes Hill via Hoxton Park Road	1
854	Carnes Hill via Cowpasture Road	1
855	Rutleigh Park via Leppington Station	1
856	Bringelly	1
857	Narellan	1
865	Casula via Lurnea	2
866	Casula	3
869	Ingleburn via Edmundson Park	2
870	Campbelltown	1
871	Campbelltown	1
872	Campbelltown via Macquarie Fields	2
Transdev Buses		
M90	Burwood	6
901	Holsworthy via Wattle Grove	1
902	Holsworthy via Moorebank	2
903	Chipping Norton	2
904	Fairfield	2

2.6 Surrounding Active Transport

2.6.1 Pedestrian Network

The Site is well serviced by a well-connected pedestrian network, with the key features outlined as follows:

- Covered footpaths averaging 3.4 metres wide along either side of the Goulburn Street and Elizabeth Street.
- Signalised pedestrian crossings at the Goulburn Street / Campbell Street intersection.
- Painted zebra crossing across Goulburn Street / Elizabeth Street intersection (East and North Legs).
- Refuge island provided at the southern end of Goulburn Street (at the painted zebra crossing referred above).

2.6.2 Cycle Network

There is a mixture of recreational routes, regional routes, sub-regional routes and local routes within the Liverpool LGA. As identified in the *Liverpool City Council Bike Plan* (Bike Plan), there are cycle routes which pass through the Liverpool Centre as shown in **Figure 6.** With regard for the Bike Plan, the key initiatives are as follows:

- Connecting the Liverpool city centre with surrounding suburban areas and suburban shopping centres.
- Future provision of an off-road bike path along Terminus Street.
- Linking off-road bike paths leading north towards Cabramatta or east towards Bankstown.

2.7 Travel Mode Share

2.7.1 Journey to Work

Journey-to-Work (JTW) data from the Australian Bureau of Statistics (ABS) Census data of people travelling to work in the Liverpool Destination Zone 115 980 008 of which the Site forms a part of, has been analysed to ascertain the plausible travel behaviour of future workers inbound to the Site.

The location of the destination zone relative to the surrounding context is presented in **Figure 7** and the results of the travel mode summary is presented graphically in **Figure 8**.

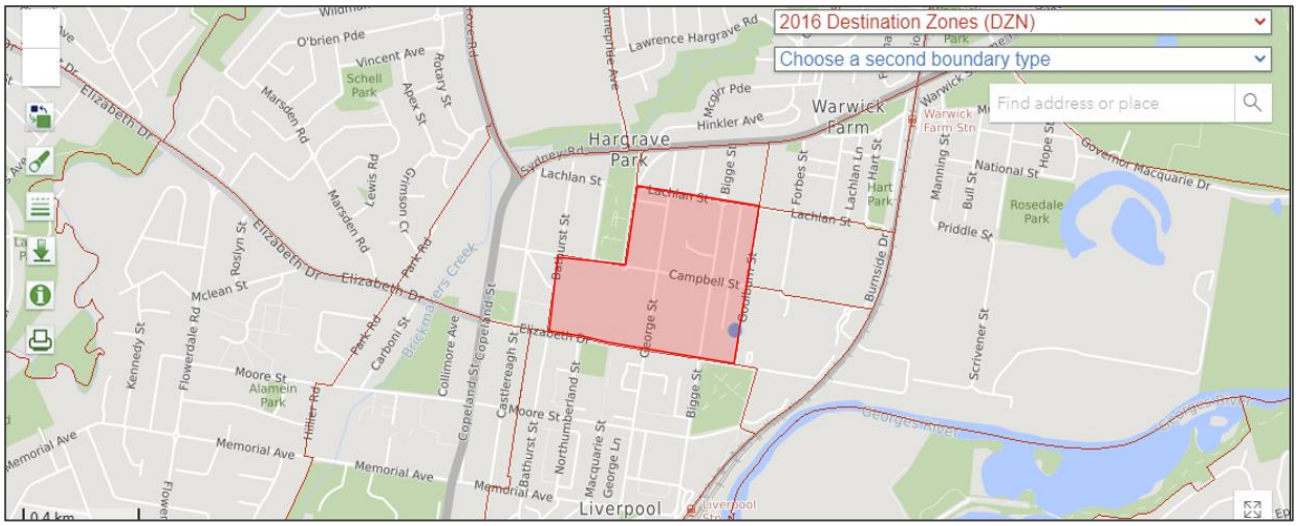


Figure 7: Destination Zone 115 980 008

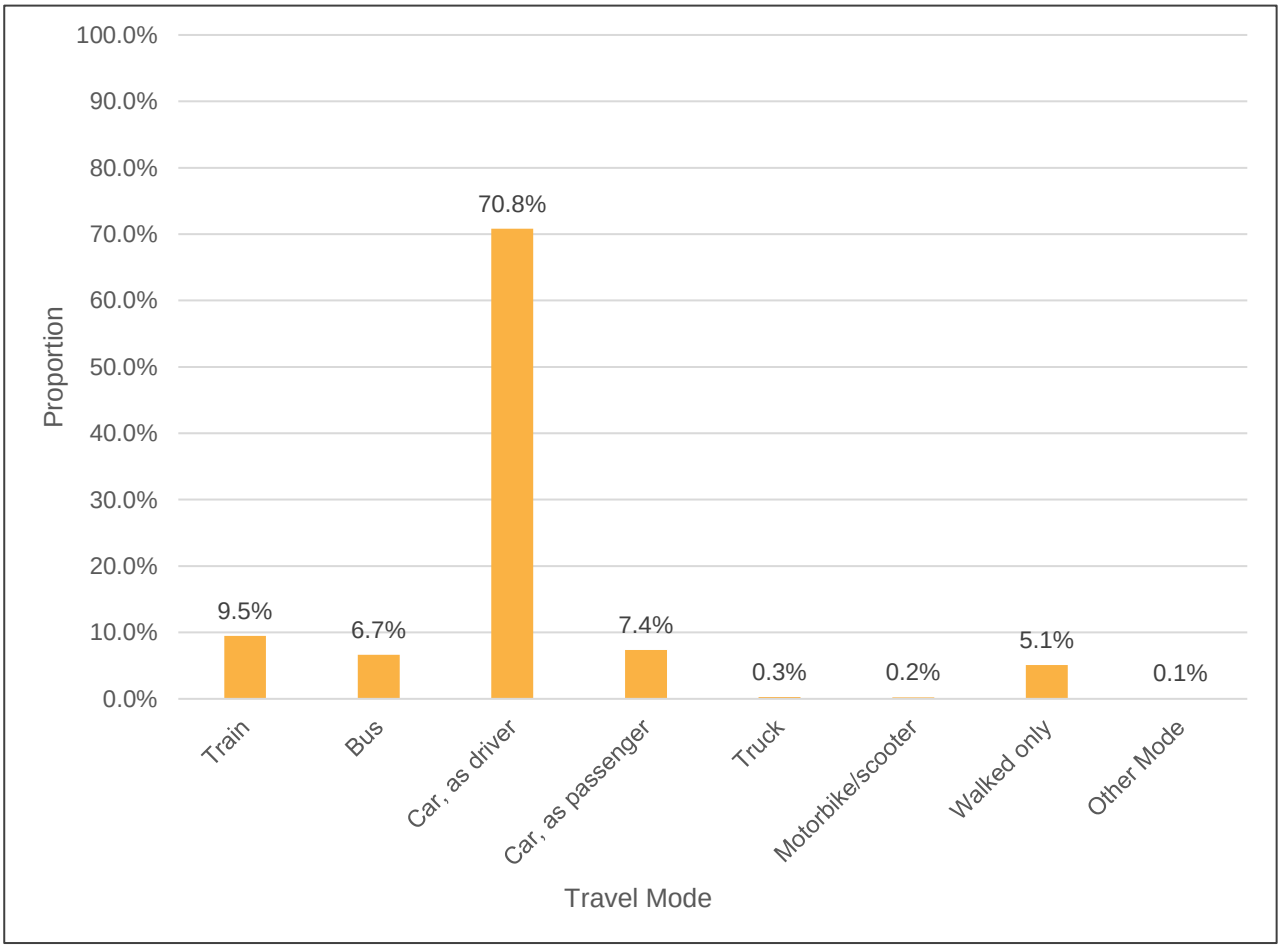


Figure 8: Modal Split – Workers to Destination Zone 115 980 008

As demonstrated in Figure 8, for workers travelling to the area, it can be seen that:

- Car or private vehicle is the most prevalent in the modal split, with 78.2% of workers (70.8% as driver and 7.4% as passenger) travelling by private vehicle.
- 16.1% of workers to the area travel by public transport.
- Train is the most popular mode of public transport, with 9.5% reporting that their main mode of travel was by train.
- Bus was reported to be used 6.7% of workers to the area.
- Walking represented 5.1%.

Based on the above data, it is evident that the private vehicle is a dominant mode of travel in Liverpool whether it is as a driver or a passenger.

However, with the available alternative travel modes including a range of bus and train services and strong active transport provision and future commitments, there is an opportunity to create a shift away from dependency on private vehicle usage which Liverpool City Council supports.

3 Strategic Context

3.1 Statutory Planning Framework

3.1.1 Liverpool LEP (Amendment No. 52)

The *Liverpool Local Environment Plan* (LLEP) 2008 (Amendment No.52) is the principal legal document for controlling development and guiding planning decisions within the Liverpool Council Local Government Area. It does this by including provisions for land use, building heights, floor space ratio (FSR) and design excellence.

This LLEP reduces the area of the Liverpool City Centre zoned as *B3 - Commercial Core* and increases the area of Liverpool City Centre zoned as *B4 - Mixed Use*, in order to attract a more diverse set of uses and support the revitalisation of the area.

The co-location of residential, commercial, retail, education, health services and amenity within the Liverpool city centre is outlined as a key opportunity to bring investment into the city.

Accordingly, the LLEP provides the following controls as outlined in **Table 5**.

TABLE 5 – LLEP 2008 CONTROLS

Description	LLEP Control
Zoning	B4 – Mixed Use
Height	35 m
FSR	3.5 : 1

3.1.2 Liverpool DCP

The *Liverpool Development Control Plan 2008* (LDCP) provides guidance which supports the implementation of the LLEP. Controls are provided to reinforce the desired outcomes for development in the City Centre.

Clause 4.1 of the LDCP identifies the Education and Medical precinct as being located on the eastern edge of the city centre.

The precinct is characterised by the South-Western Sydney Area Health Service (Liverpool Hospital) and attendant medical centres and clinics, the Sydney Southwest Private Hospital (40 Bigge Street, Liverpool), public and private schools.

Figure 9 presents an extract of the different precincts and character map to assist guidance for development in the Liverpool City Centre.

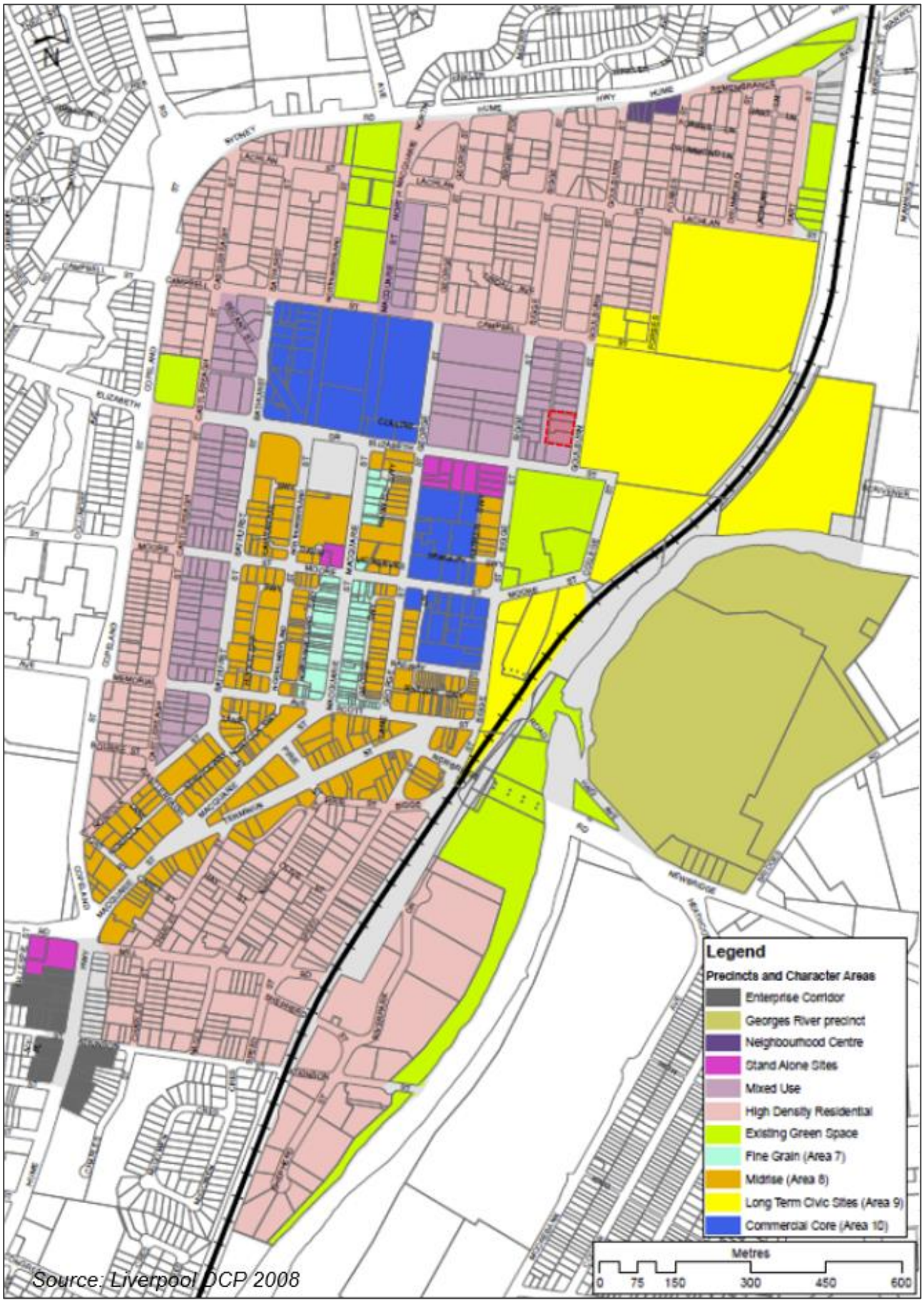


Figure 9: Liverpool City Centre Precincts

3.2 Liverpool Innovation Precinct

Liverpool Innovation Precinct (Innovation Precinct) is a report which was commissioned by The Liverpool Health, Education, Research and Innovation Precinct Committee in August 2017. Innovation Precinct sets out an aspirational vision for the future development of the Liverpool Health, Education, Research and Innovation Precinct.

This vision sees the city centre as a hub for innovation, highlighting its accessibility via transit and close proximity to the Liverpool Health Precinct. One of the key advantages when compared with other hospital locations, is the short walking travel path to the Liverpool City Centre to provide unparalleled accessibility to all the services and benefits associated within a major commercial hub.

The Innovation Precinct identifies health as a growth industry in Liverpool with opportunities to expand the hospital complex through the next stage development of the public hospital as well as the co-location of a Private Hospital. It is expected that the expansion will respond to the challenges of the increasing population growth rate that is double that of NSW.

3.3 Liverpool Local Strategic Planning Statement 2020

Liverpool Local Strategic Planning Statement 2020 otherwise known as *Connected Liverpool 2040* (Connected Liverpool) is a land use vision document prepared by Liverpool City Council in March 2020. It has been developed with the shared vision of the Council and the community to inform and guide land use planning for Liverpool.

Connected Liverpool acknowledges that the growing population is placing greater demands on the existing transport infrastructure, noting that many residents use cars as opposed to public transportation. Notwithstanding, Council are strong advocates of a modal shift to public transport and are lobbying for new and improved public transport services that match Liverpool's metropolitan cluster status.

Active transport modal options are also being improved as an alternative such as improved walkability to reduce dependency on private vehicles while encouraging greater social engagement and improving health.

One of the productivity planning priorities includes developing a world class health, education, research and innovation precinct. In this regard, the development of a Private Hospital within the Liverpool Innovation Precinct (see **Figure 10**) would reinforce Liverpool's position as a health leader and help it to develop a world-class health, education, research and innovation precinct.

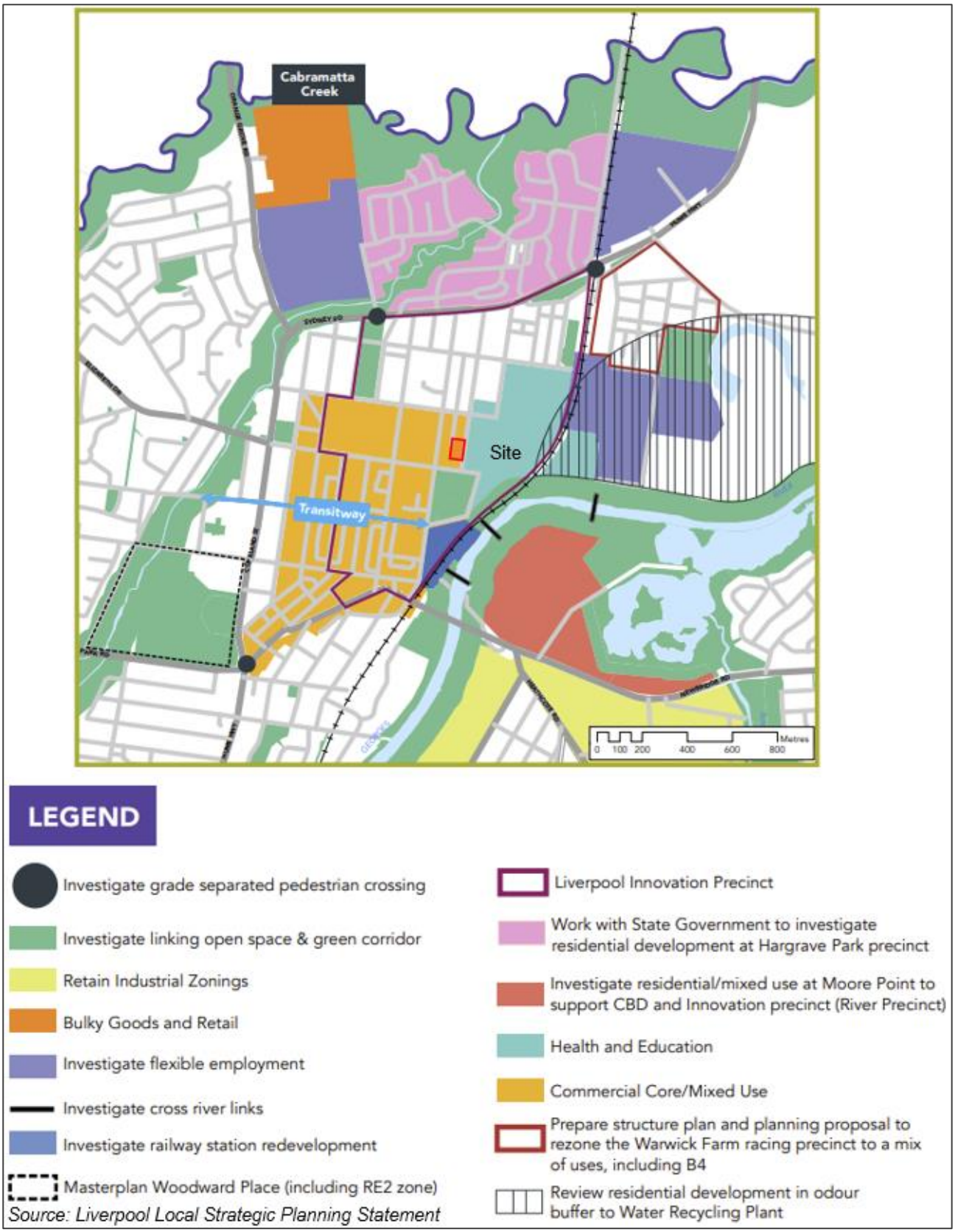


Figure 10: Liverpool City Centre

3.4 Liverpool City Public Domain Master Plan

The *Liverpool City Centre Public Domain Master Plan* (Master Plan) was adopted in June 2020 and is Council's 10-year vision to guide the development of public space and pave the way to a greener, more vibrant and active city centre while fostering an 18-hour economy.

A cohesive approach to development in the Liverpool City Centre is provided with a useful set of standards for Council, private developers and local business. Developed following extensive consultation with the community, government agencies and businesses, the Master Plan provides a list of the public infrastructure to best support the vibrant economy of Liverpool as it continues to draw more residents, workers and visitors.

Wider footpaths, dedicated cycleways, more street trees and vegetation, public art, better furniture, pedestrian lighting and new paving materials are among the catalogue of improvements suggested in the Master Plan that will improve accessibility and amenity for all users.

The Master Plan identifies Goulburn Street as a corridor for streetscape improvements as part of the Liverpool Healthcare & Innovation Precinct redesign and upgrade. This includes street trees, new paving and kerbs, intersection improvements & other pedestrian priority infrastructure, and restorative & sensory plantings within the precinct.

3.5 Liverpool Bike Plan

The *Liverpool Bike Plan* (Bike Plan) was prepared by Liverpool City Council in 2017. It identifies the requirements for bicycle-related infrastructure, with the aim to encourage and promote bicycle use in the Liverpool Local Government Area (LGA). It has been compiled to guide and inform future developments of bicycle infrastructure and developments that impact bicycle usage, networks and activities.

Spanning across the LGA, the document outlines the present and expected future use of bicycles. It identifies challenges and opportunities for bicycle networks, and the existing and newly proposed cycleways, in their existing land and transportation contextual environment.

The strategic approach outlined by the document includes an action plan for all future bicycle related works and its implementation strategies. The plan aims to improve safety, connections and access for bicycle users.

3.6 Campbell Street Closure

It is understood that Campbell Street, between Forbes Street and Goulburn Street, will be closed to vehicular traffic as part of the Liverpool Health and Academic Precinct (LHAP) redevelopment.

According to the *Liverpool Health and Academic Precinct Main Works, State Significant Development Application – Transport and Accessibility Impact Assessment | Issue C* prepared by GTA Consultants in May 2020, an active frontage will be provided along this section of Campbell Street which will promote pedestrian links between the Education Research Hub and the new integrated services building. Having regard for this, it is considered that the Proposal could achieve a similar outcome in terms of the pedestrian activation to Goulburn Street with the proposed pedestrian connection.

4 Parking Provisions

Parking provision are a detailed matter for consideration during future Development Application submissions. Notwithstanding, a preliminary assessment has been undertaken to confirm the broad suitability of the concept plan and guide further design development should the development proceed.

4.1 Car Parking

4.1.1 Car Parking Rates

Car parking rates for Hospitals (private or public) are not provided within the *Liverpool Development Control Plan 2008* (LDCP).

In this regard, for the purposes of calculating car parking requirements for the Planning Proposal, reference is made to the *RMS Guide to Traffic Generating Development 2002* (RMS Guide) to determine the benchmark.

The RMS Guide contains car parking rate for private hospital developments, which is based on traffic surveys undertaken in 1994 at 19 private hospitals in the Sydney region. Based on this, the peak parking accumulation (PPA) at private hospital can be estimated as follows:

- *PPA = -26.52 + 1.18B,* where B is the number of beds

Note: This equation is applicable when the number of staff is unknown.

It is understood that upon opening, the Private Hospital will support 90 beds and at full capacity in the future will have 155 beds.

Moreover, it is considered that the hospital generally includes ancillary facilities for people that are admitted as in-patients to the hospital, including health consulting rooms, retail outlets and cafes etcetera.

With reference to the proposed scheme, much of these ancillary facilities are provided at the ground level. Given the ancillary nature of these facilities, such they would be visited by people as a secondary exercise to the hospital and therefore, it is not anticipated that significant additional car parking spaces demands would be generated by these uses.

It is noted, however, that 6 of the 11 levels of Consulting Suites are intended as speculative development, with the other 5 being ancillary to the primary operation of the hospital. Therefore, for a conservative assessment, 6 of the 11 levels of Consulting Suites are included for the purposes of parking requirements.

Additionally, some provision should be made for retail parking which has been referenced to Clause 5.7, Table 5.2 of the RMS Guide which provides the following rate:

- 0 – 10,000 Gross Leasable Floor Area (GLFA) m^2, 6.1 car spaces per 100 m^2 GLFA

Furthermore, compliance with the *Liverpool Local Environmental Plan 2008* (LEP) is considered. Clause 7.3 indicates the following parking rates:

- 1 space/200 m^2 ground floor GFA

- 1 space/100 m^2 retail GFA in any other part of the building for retail premises; and
- 1 space/150 m^2 other GFA in any other part of the building for any other purpose

Accordingly, the number of car parking spaces required, and calculated based on the maximum number of beds at full capacity according to the RMS Guide is presented in **Table 6.** Additionally, the number of car parking spaces required based on the Liverpool LEP is presented in **Table 7**

TABLE 6 – RMS GUIDE CAR PARKING REQUIREMENTS

Land Use	Yield	Rate	Requirement
Private Hospital	155 beds	-26.52 + 1.18B, *where B is the number of beds*	156
Retail	265 m^2 GLFA[1]	6.1 car spaces per 100 m^2 GLFA	16
Consulting Suites	5,130 m^2 GLFA[1]	9 car spaces per 1,000 m^2 GLFA	46
Total			**219[2]**

Note: 1) Gross Leasable Floor Area (GLFA) = 75% of GFA as per RMS Guide
Note: 1) Rounded up to nearest whole number

TABLE 7 – LIVERPOOL LEP CAR PARKING REQUIREMENTS

Land Use	Yield	Rate	Requirement
Private Hospital	2,900 m^2 GFA	1 space/200 m^2 ground floor GFA	15
	29,380 m^2 GFA	1 space/150 m^2 non-ground floor GFA	196
Total			**211**

Therefore, 219 spaces are required based on the RMS Guide, and 211 spaces are required based on the LEP.

4.1.2 Car Parking Provisions

In response, the Proposal has an indicative provision of a total of 327 car parking across 3 basement levels, which suggests that it is more than capable of satisfying the car parking demand in accordance with both the RMS Guide and LEP.

4.1.3 Accessible Parking

Part 1, Table 12 of the LDCP provides Accessible Car Parking rates for car parking areas exceeding 20 spaces.

With relevance to the Proposal, where the land use would be classified under Health, the Accessible Car Parking rate is reproduced with the corresponding requirement based on the provision shown on the current scheme below.

TABLE 8 – ACCESSIBLE PARKING PROVISIONS

Land Use	Rate	Requirement
Health	3 per 100 spaces	8[1]

Note: 1) based on the minimum number of car spaces as per LEP. 10 spaces required if based on actual provision

With reference to the above table, the minimum number of accessible parking spaces is 8 based on the minimum car parking provision as per LEP (10 spaces if based on actual provision). The proposed scheme will provide accessible parking to meet the minimum required provisions, located adjacent to the lift cores.

4.2 Bicycle Parking

As a means to encourage alternative transport options, the LDCP provides bicycle parking rates under Table 13 of Part 1 which are outlined in **Table 9**.

TABLE 9 – BICYCLE PARKING PROVISIONS

Land Use	Resident / Staff	Visitor / Customer
Medical Centre and Health Consulting Rooms	1 per 10 staff	2 per centre, plus 1 for every 5th consulting room

The Soci-economic Impact Assessment report prepared separately by Hill PDA indicates a maximum of 400-500 workers on site at a given time. Based on the LDCP, the required number of bicycle spaces is 69-79. The Proposal will provide bicycle parking to meet this requirement.

The LDCP notes that bicycle parking facilities for residents and staff should be located on the ground floor, or first basement level close to the entry/exit points to ensure they are secure and readily accessible by staff and tenants.

Furthermore, this active travel infrastructure will be highlighted as part of any future travel demand initiatives such as a Green Travel Plan (GTP).

4.3 Motorcycle Parking

Part 4, Clause 4.4.2 of the LDCP provides the following Motorcycle Parking rates which is outlined along with the corresponding requirement in **Table 10.**

TABLE 10 – MOTORCYCLE PARKING PROVISIONS

Land Use	Rate	Requirement
All Developments	1 per 20 car spaces	13[1]

Note: 1) based on the minimum number of car spaces as per LEP. 17 spaces required if based on actual provision

4.4 Servicing

Part 1, Table 11 of the LDCP provides Service and Loading requirements for hospital developments as follows:

- Service facilities for a Heavy Rigid Vehicle (HRV);
- Facilities are designed for waste collection

Detailed design of any on-site loading areas shall be scope for future development applications. Notwithstanding, a loading area in envisaged for Basement 1.

Ason Group attended a meeting with Council on 2 May 2022 who raised concerns about the HRV swept path crossing the centreline during egress. Council recommended the Applicant consider additional management measures to address safety concerns regarding HRV movements or consider a smaller design vehicle. Team2, in the meeting, confirmed that the largest design vehicle intended for the site is an MRV. Swept path assessment has been prepared for 8.8m MRVs on the basis that this is the largest expected design vehicle.

5 Operational Traffic Analysis

5.1 Traffic Generation

Traffic generation arising from the Proposal has been estimated based on the RMS Guide. In this regard, the RMS Guide details the Peak Vehicle Trips (PVT) of private hospitals can be determined when the number of beds is known.

Vehicle trip generation for the morning commuter peak hour, evening commuter peak hour is outlined in the RMS Guide, however, for conservativeness the PVT equation has been adopted for the assessment. In this capacity, the PVT equation is outlined as follows:

- *PVT = -22.07 + 1.04B,* where B is the number of beds

As noted in Section 4.1, it is understood that there are 90 beds upon opening and 155 beds when the hospital Proposal eventually operates at full capacity.

Additionally, traffic generation for the speculative consulting suites has been determined on a first principles basis. The following assumptions have been adopted for this calculation, based on consultation with the project team, with the more conservative parameters adopted where relevant:

- Number of speculative consulting suites = 132 (22 rooms x 6 levels)
- Average consultation time = 30 min (based on average 30-45min range, provided by Team 2)
- Average room utilisation = 50% (based on average 30-50% utilisation, provided by Team 2)
- Scale operation based on number of beds on opening (i.e. assume 58% of maximum operation upon opening[1], and 100% of maximum operation when Hospital is at full capacity)

For the purposes of the assessment, and noting it is an ambitious target at the current Pre-Gateway Planning Proposal stage, it has been assumed that 2023 will be the opening year. In turn, the 10-year horizon in 2033, will be at such a time when the Proposal has 155 bed capacity.

Accordingly, the traffic generation of the Proposal at each of the two assessment years (2023 and 2033) is presented in **Table 11.**

TABLE 11 – PROPOSAL DEVELOPMENT TRAFFIC GENERATION

Year	No. of Beds	Trip Generation
2023	90	225
2033	155	403

[1] 90 beds out of 155 capacity = 58%

5.2 Development Traffic Distribution

The traffic generation of the Proposal has been distributed to the surrounding road network for assessment with consideration to the following influencing traffic influencing factors:

- Probable distribution of staff and patient/visitor residences in relation to the Site when referencing relevant JTW data.
- Existing traffic flow patterns at the key intersections.
- Closure of Campbell Street (between Forbes Street and Goulburn Street) and the likely re-routing of traffic to the broader road network. During a meeting with Council on 2 May 2022, Council Traffic Engineers advised that as the proposed development is likely to be operational post-closure of Campbell Street, a SIDRA assessment under the scenario whereby Campbell Street is closed is considered the worst-case scenario. Hence, a sensitivity test with Campbell Street open (as it currently is) is not required.

Figure 11 and **Figure 12** present the assumed traffic generation of the Proposal distributed to the road network.

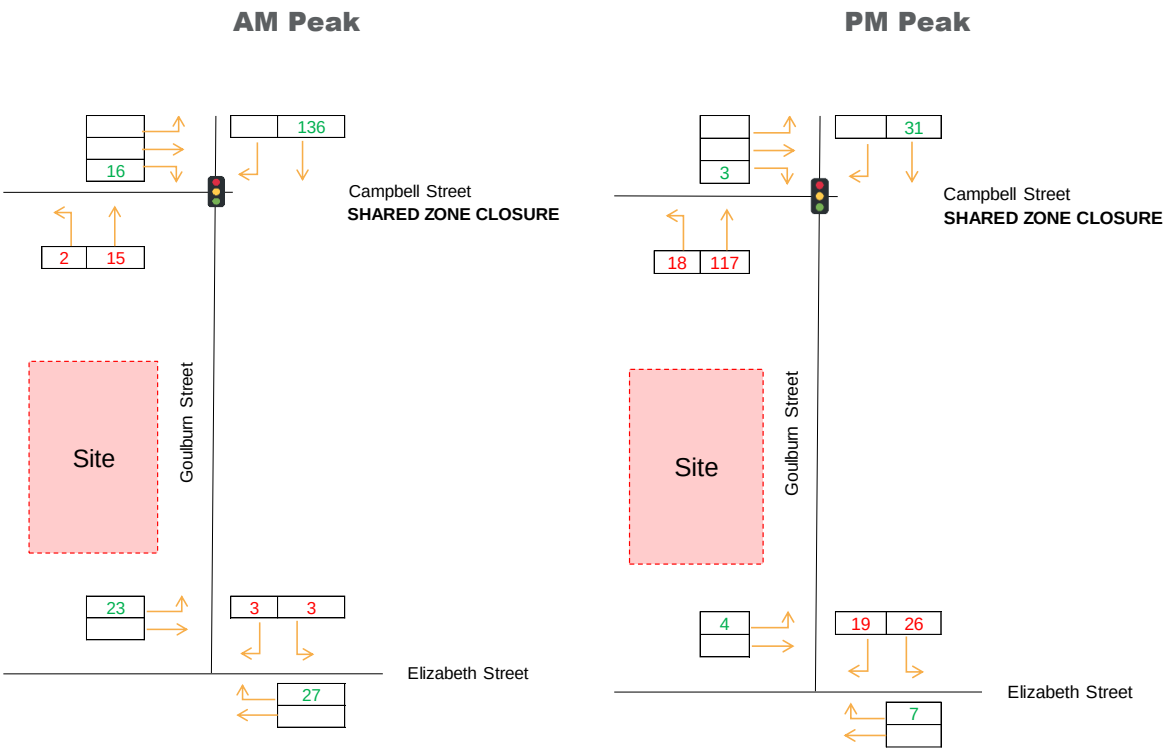


Figure 11: 2023 Opening Year Development Traffic Distribution

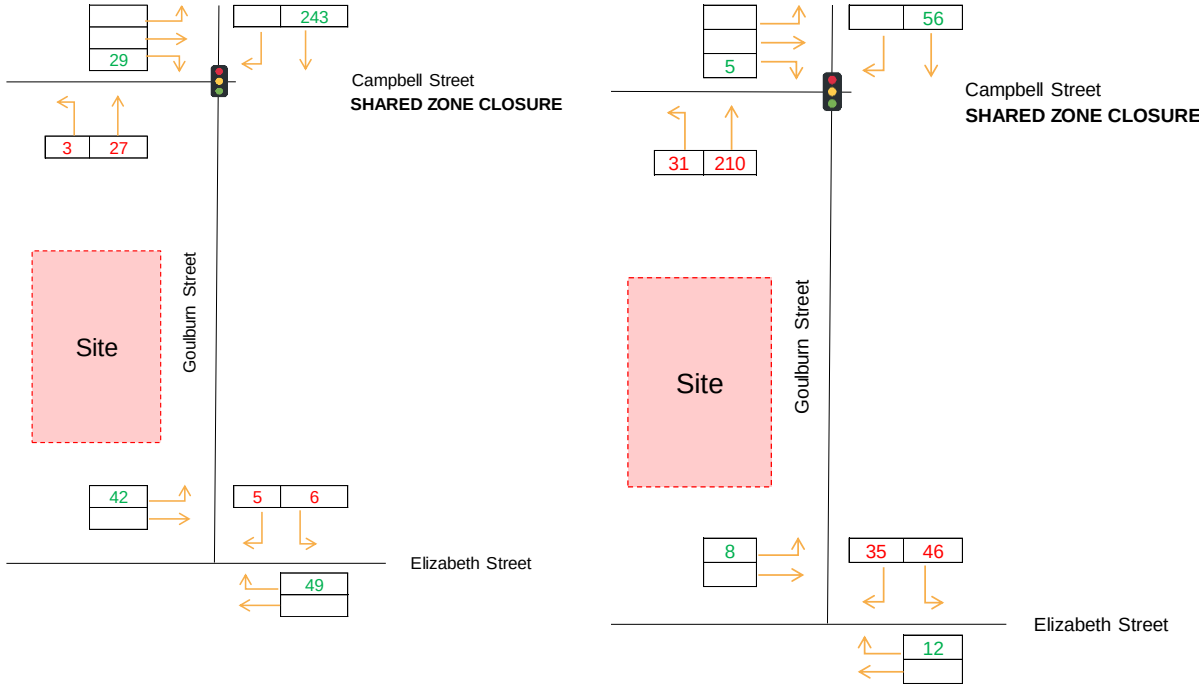


Figure 12: 2033 Horizon Year Development Traffic Distribution

5.3 Surrounding Developments

Given the Liverpool City Centre is currently undergoing significant redevelopment, with several projects in the vicinity having been approved, it is necessary to appropriately consider the traffic generated by those developments for a thorough assessment.

A review of the *New Liverpool Public School – Transport and Accessibility Assessment* and *Liverpool Health and Academic Precinct Transport and Accessibility Assessment* both prepared by GTA Consultants was undertaken to extract the additional traffic volumes redistributed to the surrounding road network, including consideration of the Campbell Street closure, as presented below.

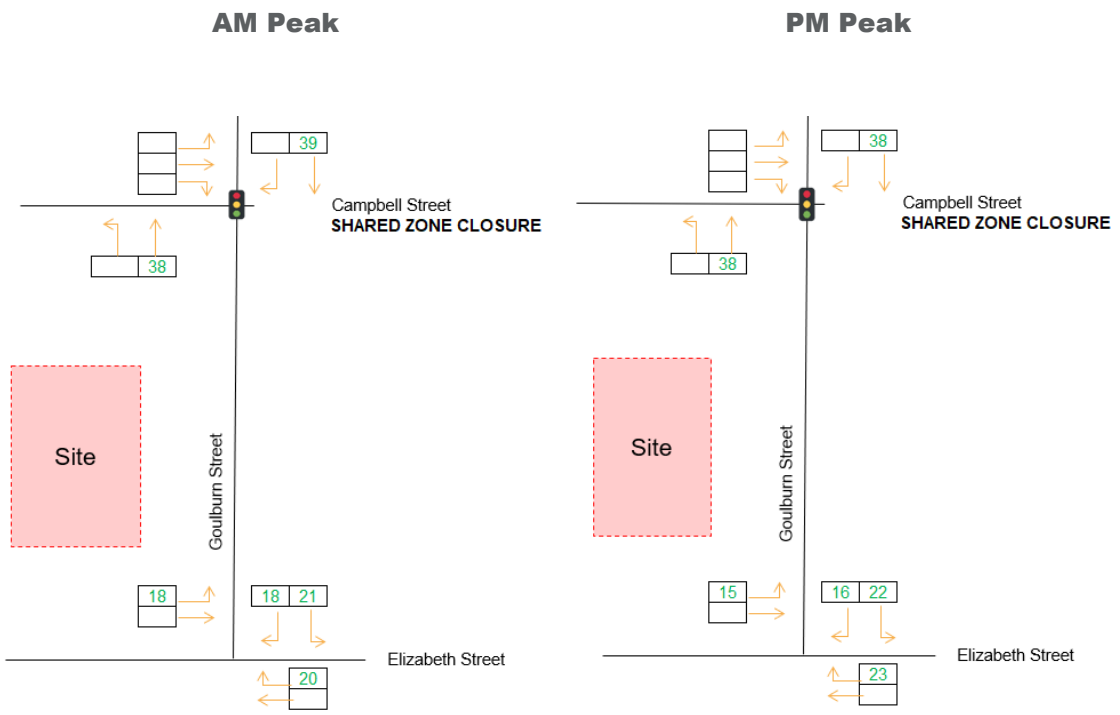


Figure 13: 2023 Surrounding Other Development Traffic Distribution

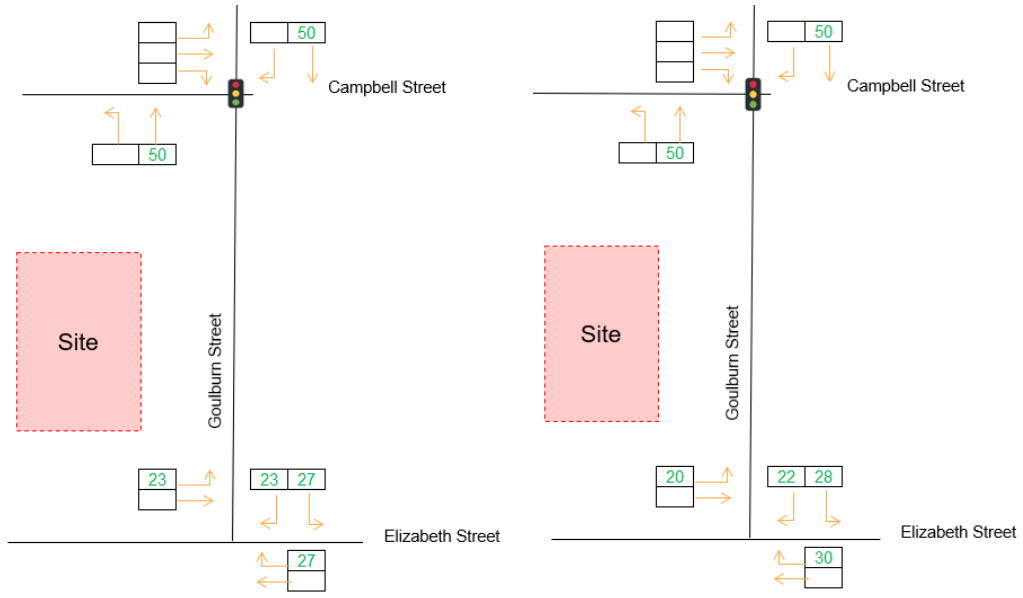


Figure 14: 2033 Surrounding Other Development Traffic Distribution

5.4 Cumulative Traffic

Based on the above, the cumulative traffic on the surrounding road network is presented below.

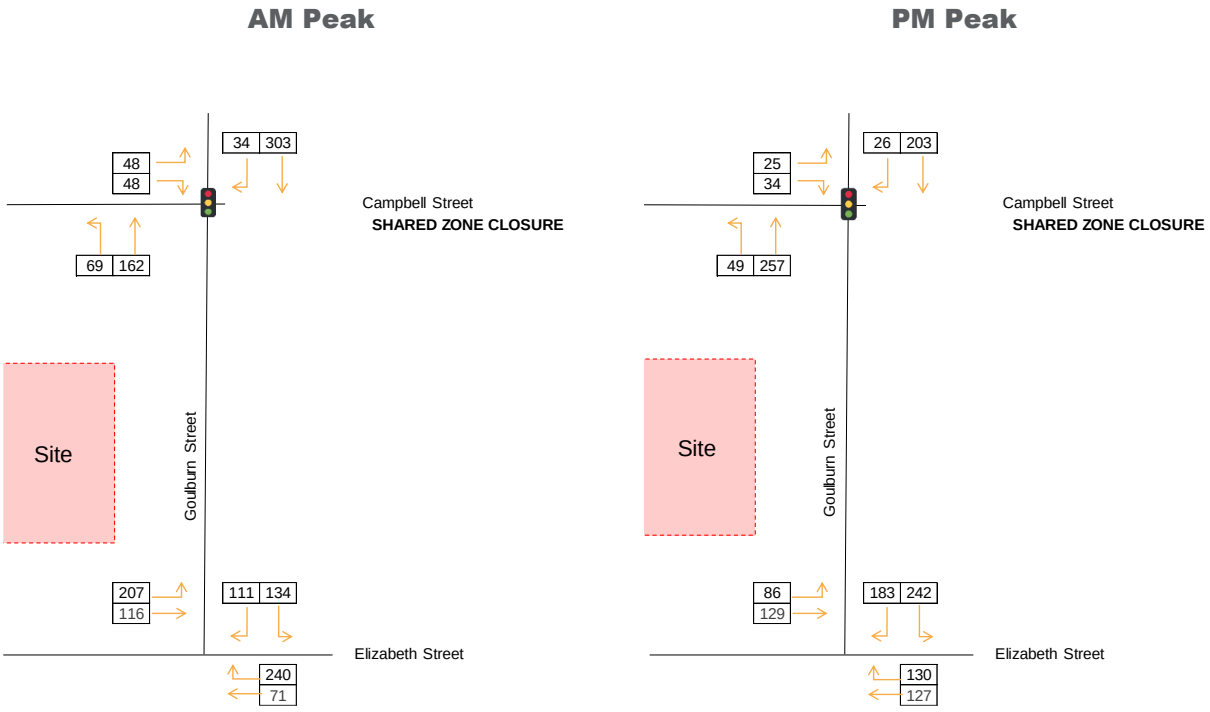


Figure 15: 2023 Cumulative Traffic

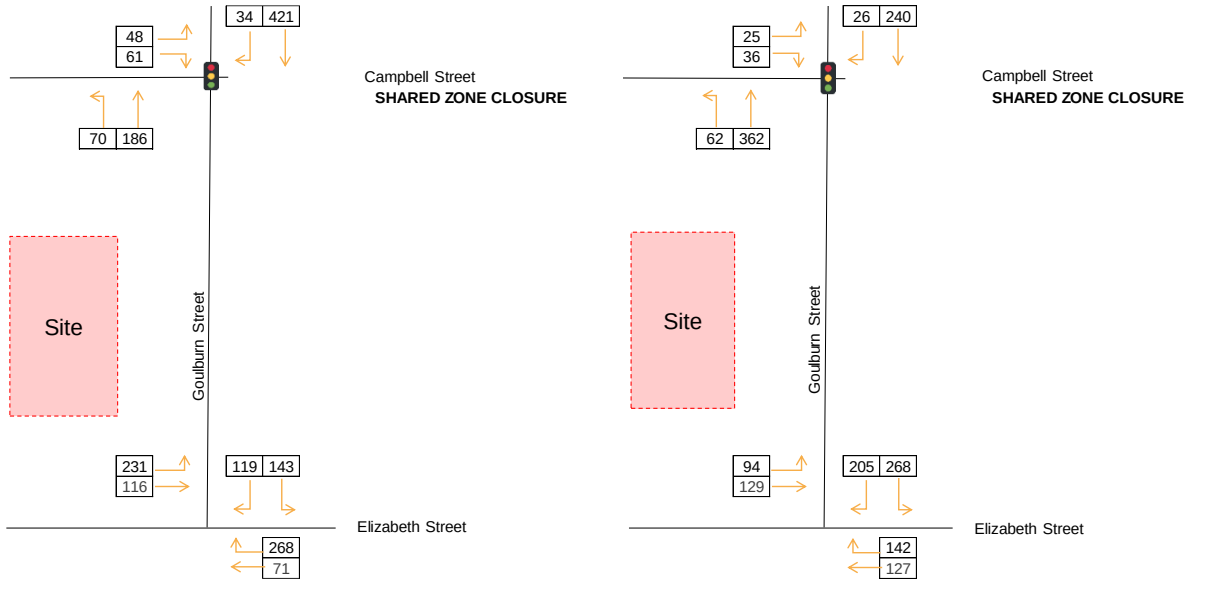


Figure 16: 2033 Cumulative Traffic

5.5 Traffic Impact

Having consideration for the above cumulative traffic increases to the road network, an assessment of the key intersections were undertaken using SIDRA Intersection to review the projected traffic impacts.

5.5.1 Base Case Performance

Table 12 presents the performance for the 2023 year – Future Base Case without the traffic generated by the Proposal, but it does consider other development traffic from the surrounding area.

TABLE 12 – 2023 INTERSECTION PERFORMANCE WITHOUT DEVELOPMENT

Intersection	Peak Hour	Delay (Sec)	Degree of Saturation (DOS)	Queue (m)	Level of Service (LOS)
Goulburn St x Campbell St	AM Peak	14	0.14	20	A
	PM Peak	12	0.12	16	A
Goulburn St x Elizabeth St	AM Peak	5	0.25	8	A
	PM Peak	5	0.37	12	A

Table 13 presents the performance for the 2033 year – Horizon Base Case without the traffic generated by the Proposal, but it does consider other development traffic from the surrounding area.

TABLE 13 – 2033 INTERSECTION PERFORMANCE WITHOUT DEVELOPMENT

Intersection	Peak Hour	Delay (Sec)	Degree of Saturation (DOS)	Queue (m)	Level of Service (LOS)
Goulburn St x Campbell St	AM Peak	12	0.17	24	A
	PM Peak	10	0.15	18	A
Goulburn St x Elizabeth St	AM Peak	8	0.27	8	A
	PM Peak	14	0.38	5	A

5.5.2 Project Case Performance

Table 14 presents the performance for the 2023 year – Future Project Case with the traffic generated by the Proposal, as well as other development traffic from the surrounding area.

TABLE 14 – 2023 INTERSECTION PERFORMANCE WITH DEVELOPMENT

Intersection	Peak Hour	Delay (Sec)	Degree of Saturation (DOS)	Queue (m)	Level of Service (LOS)
Goulburn St x Campbell St	AM Peak	14	0.14	20	A
	PM Peak	12	0.12	16	A
Goulburn St x Elizabeth St	AM Peak	5	0.25	8	A
	PM Peak	5	0.37	14	A

Table 15 presents the performance for the 2033 year – Horizon Project Case with the traffic generated by the Proposal, as well as other development traffic from the surrounding area.

TABLE 15 – 2033 INTERSECTION PERFORMANCE WITH DEVELOPMENT

Intersection	Peak Hour	Delay (Sec)	Degree of Saturation (DOS)	Queue (m)	Level of Service (LOS)
Goulburn St x Campbell St	AM Peak	11	0.31	48	A
	PM Peak	8	0.26	38	A
Goulburn St x Elizabeth St	AM Peak	6	0.29	9	A
	PM Peak	6	0.46	21	A

5.5.3 Impact Summary

Having regard for the preceding tables, the surrounding road network is anticipated to continue to perform well with a LOS A reported in all scenarios and peak hour periods, including with the development traffic at opening and following a 10-year horizon.

Notably, the changes in performance due to the increase in traffic from the development are relatively minor and is therefore not expected to result in material impacts to the adjacent road network.

5.6 Vehicle Access

Goulburn Serviceway (the narrow laneway to the north west of the Site) is narrow and therefore not ideal for access to the subject site which will require frequent access by commercial vehicles, particularly ambulances and patient transport vehicles.

As such, vehicular access is proposed to be via the eastern frontage to Goulburn Street via 3 separate access points as follows:

- **Access 1:** Main access to the basement car park and on-site service area.
- **Access 2:** Provides access to the porte-cochere along the main frontage of the Site for passenger drop-off/pick-up activities and ambulance / patient transfer movements.

- **Egress 3:** Provides egress from the porte-cochere along the main frontage of the Site.

Figure 17 shows the proposed access location from Goulburn Street.

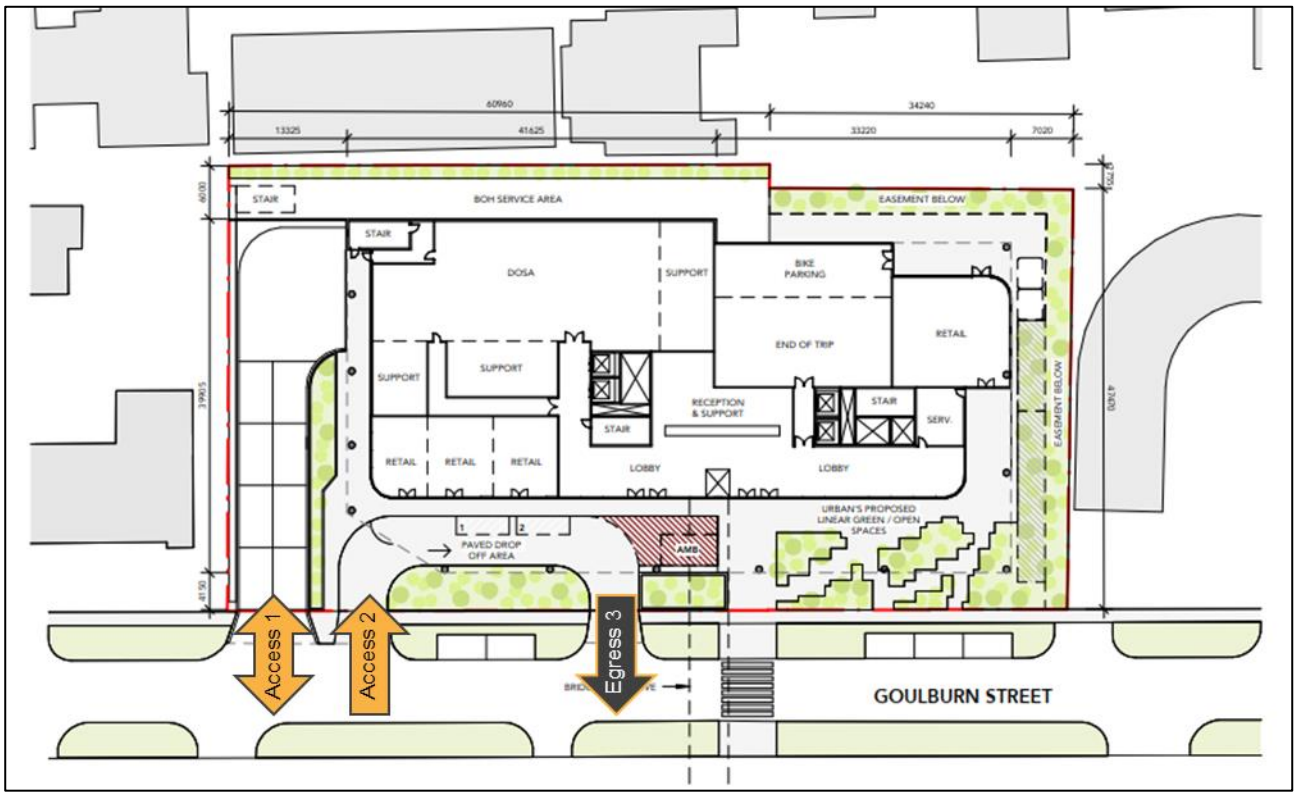


Figure 17: Proposed Vehicle Access Location

5.7 Pedestrian Access and Amenity

Clause 4.3 of the LDCP includes provisions that are intended to achieve a high standard of public domain design and pedestrian comfort in city centre public spaces. Lanes, arcades, and through site links are to form an integrated pedestrian network by providing a choice of routes at ground level for pedestrians.

In this regard, the following objectives are relevant to an enhanced pedestrian network:

- To develop future through-site links at ground level
- To ensure active street frontages
- To ensure a positive relationship between the building and the public domain
- To create clear and direct throughways for pedestrians

Similarly, Clause 4.3.3 of the LDCP details Active Street Frontages as promoting an interesting and safe pedestrian environment. The following objectives are relevant to Active Street Frontages:

- Promote pedestrian activity and safety in the public domain
- Maximise active street frontages in Liverpool City Centre.

Having regard for the above, the Proposal seeks to provide for a new at-grade pedestrian (zebra) crossing to the Liverpool Hospital, which is to be upgraded with a new entrance in proximity of the site.

Additionally, a bridge link between the existing Public Hospital and the proposed Private Hospital is proposed on Level 1. This will facilitate internal pedestrian movements between the hospitals, assisting in further minimising pedestrian/ vehicle interaction and reducing pedestrian travel distance between the two developments.

6 Design Commentary

6.1 Design Standards

Site access, car park and loading areas would be designed to comply with the following relevant Australian Standards, NSW Ambulance and Council Controls:

- Australian Standard, AS2890.1:2004 Part 1: Off-Street Car Parking;
- Australian Standard, AS2890.2:2018 Part 2: Off-Street Commercial Vehicle Facilities;
- Australian Standard, AS2890.1:2009 Part 6: Off-Street Parking for People with Disabilities;
- Liverpool City Council, Liverpool Development Control Plan 2008;
- Transport for NSW, Roads and Maritime Supplement to Austroads Guide Version 3.1 2017;
- NSW Ambulance, Access Specifications for Hospitals and Other Buildings; and
- NSW Ambulance, Vehicle and Stretcher Dimensions;

Compliance with the above Standards would be expected to form a standard condition of consent to at the Development Application approval stage.

6.2 Design Vehicles

Having regard for the operational requirements of the hospital, the following vehicles have been considered for the swept path analysis, noting that the 8.8m MRV is the largest intended design vehicle:

- 8.8m Medium Rigid Vehicle (MRV);
- B99 Vehicle;
- B85 Vehicle

Swept path analysis of the Team2 concept plans has been undertaken with the abovementioned vehicles and associated design commentary is provided in **Appendix A**.

7 Summary and Recommendations

Ason Group has been commissioned by Sacco Building Group Pty Ltd to prepare a Transport Assessment (TA) supporting a Pre-Gateway Planning Proposal of a New Private Health Care Development at 61-71 Goulburn Street, Liverpool.

This Planning Proposal seeks Pre-Gateway approval for a Private Health Care Development and increase in permitted building height from 35 metres to 79 metres and FSR from 3.5 : 1 to 6.9 : 1.

7.1 Key Findings

In summary, the key findings are as follows:

- Strategically, the Site is co-located directly adjacent to the Liverpool Health and Academic Precinct within the Innovation Precinct with strong links to existing sustainable transport infrastructure.
- Sustainable Transport Infrastructure includes the Liverpool Railway Station and Bus Interchange providing numerous services to key regional centres and throughout Liverpool. Existing Active Transport Infrastructure within accessibility of the Site consists of pedestrian footpaths, signalised, painted pedestrian crossings and cycleways.
- Council have suggested upgrades to the pedestrian infrastructure and connections to missing cycle links as part of broader strategies including the Liverpool Public Domain Master Plan.
- Of relevance, the Planning Proposal proposes an at-grade pedestrian crossing to activate the Goulburn Street frontage and provide a connection to the adjacent Liverpool Public Hospital.
- SIDRA Analysis of the key intersections indicate that the surrounding road network is currently performing with good Levels of Service and only moderate average delays.
- Application of the RMS Guide Traffic Generation rates for private hospitals and a first principles assessment of the trip generation of the speculative consulting suites suggests the Proposal will generate:
  - 225 veh/h during the peak hours upon opening, and
  - 403 veh/h at full capacity in the future.
- Distribution and analysis of the surrounding road network further to the addition of the above traffic generation has been undertaken with further SIDRA analysis confirming the key intersections will continue to perform well, with no adverse impacts on the surrounding road network.
- In terms of car parking, the Proposal provides a total of 327 car parking spaces which is in accordance with the minimum parking requirement of 219 car parking spaces with reference to the RMS Guide or 211 spaces with reference to the LEP.

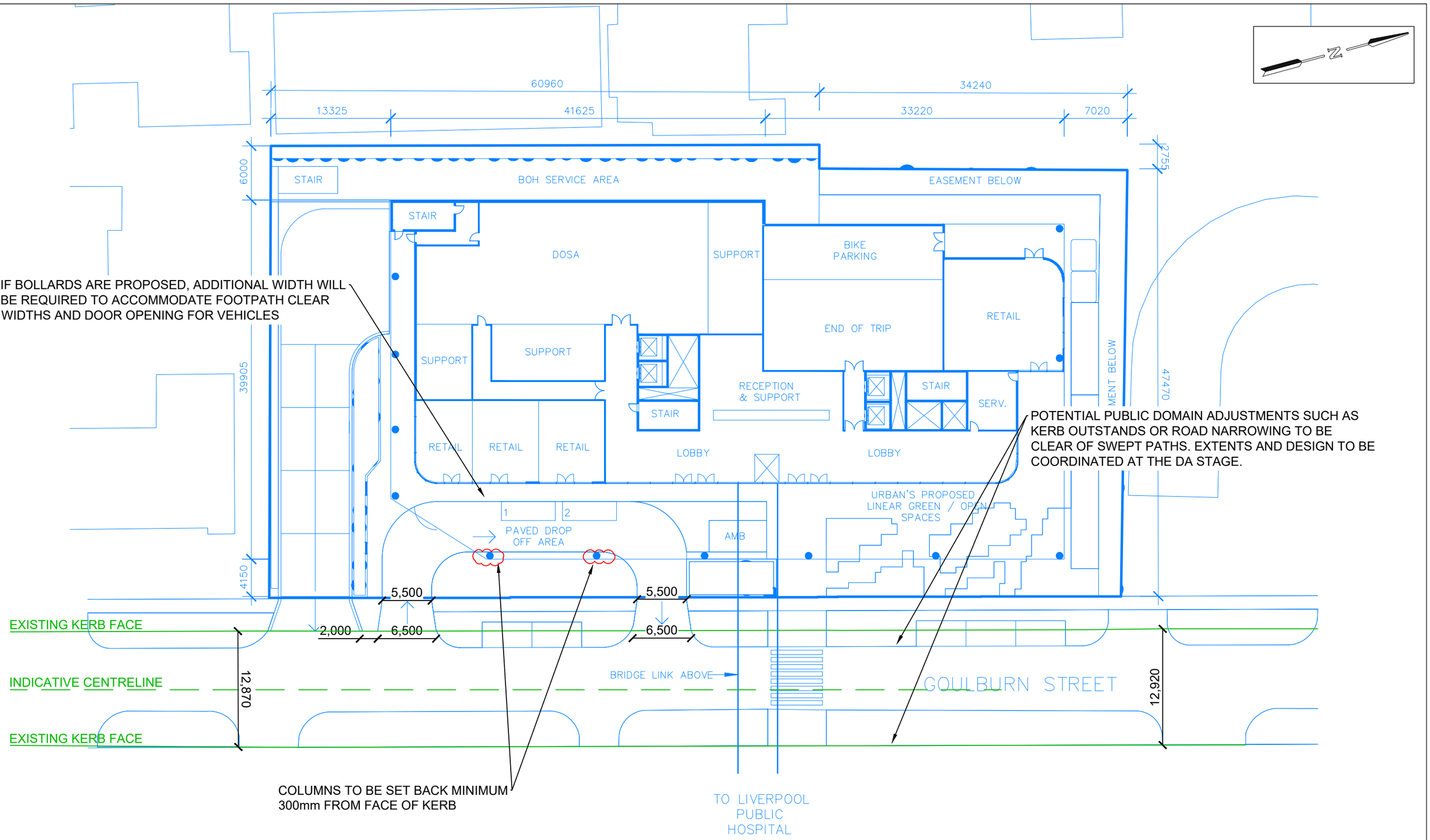
7.2 Conclusions

On the basis of the above, the Planning Proposal is considered supportable on transport planning grounds and is not expected to result in any adverse impacts on the surrounding transport network.

The increased density sought on the subject site achieves broad goals of increased density in close proximity to a range of public transport and services, thus minimising traffic impacts.

Appendix A. Swept Path Assessment

Appendix B. SIDRA Movement Summaries



GENERAL NOTES

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GF base plan: Project 885, Drawing PP110, Rev E, prepared by TEAM2, received 05.06.2022
B1 base plan: Project 885, Drawing PP109, Rev E, prepared by TEAM2, received 05.06.2022
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B3 base plan: Project 885, Drawing PP107, Rev E, prepared by TEAM2, received 05.06.2022
B4 base plan: Project 885, Drawing PP106, Rev E, prepared by TEAM2, received 05.06.2022
Goulburn Street has a posted speed limit of 30 km/h. Swept path assessments completed at 10 km/h and 300mm clearance.

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PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:400
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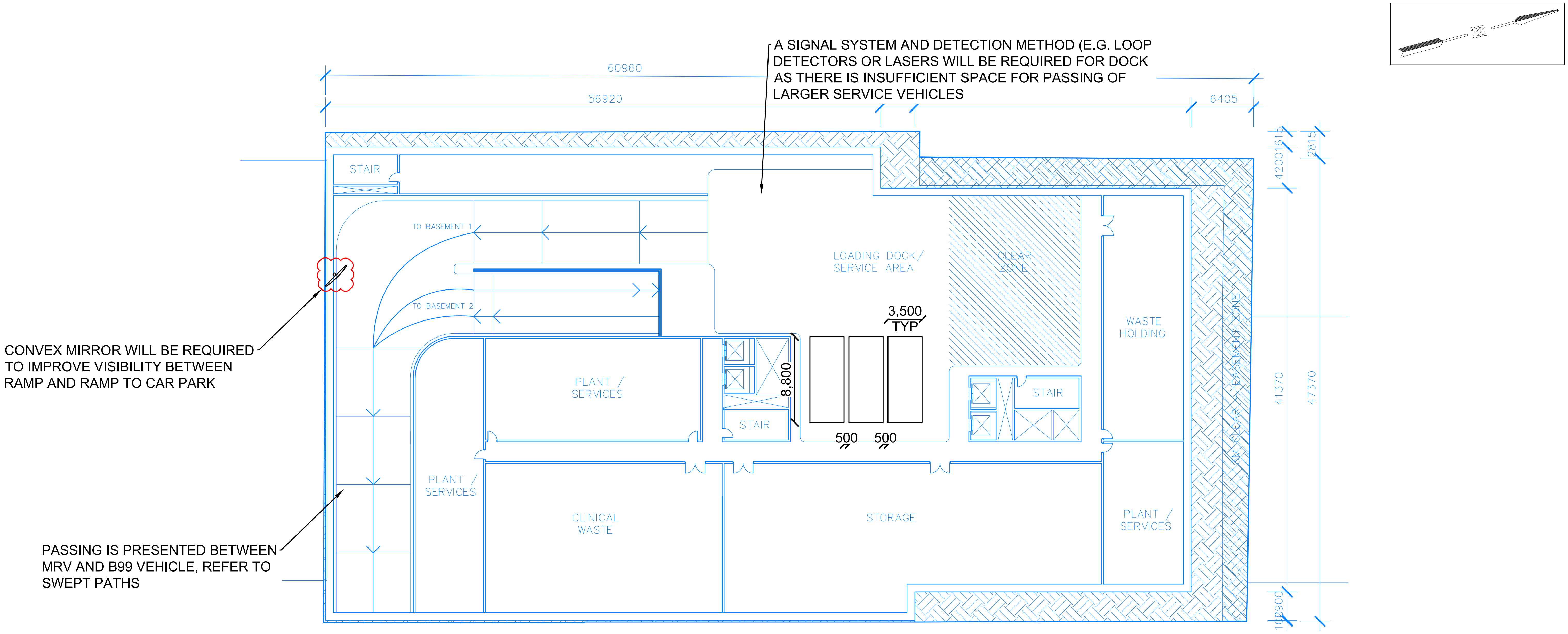
CLIENT: SACCO BUILDING GROUP PTY LTD

PROJECT: 1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
GROUND LEVEL DESIGN REVIEW

FILE NAME	SHEET
AG1362-02-v04.dwg	AG01

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au



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PROJECT	1362
	61-71 GOULBURN STREET, LIVERPOOL
DOCUMENT INFORMATION	PLANNING PROPOSAL
	BASEMENT 1 DESIGN REVIEW
FILE NAME	AG1362-02-v04.dwg
SHEET	AG02

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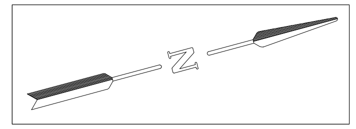

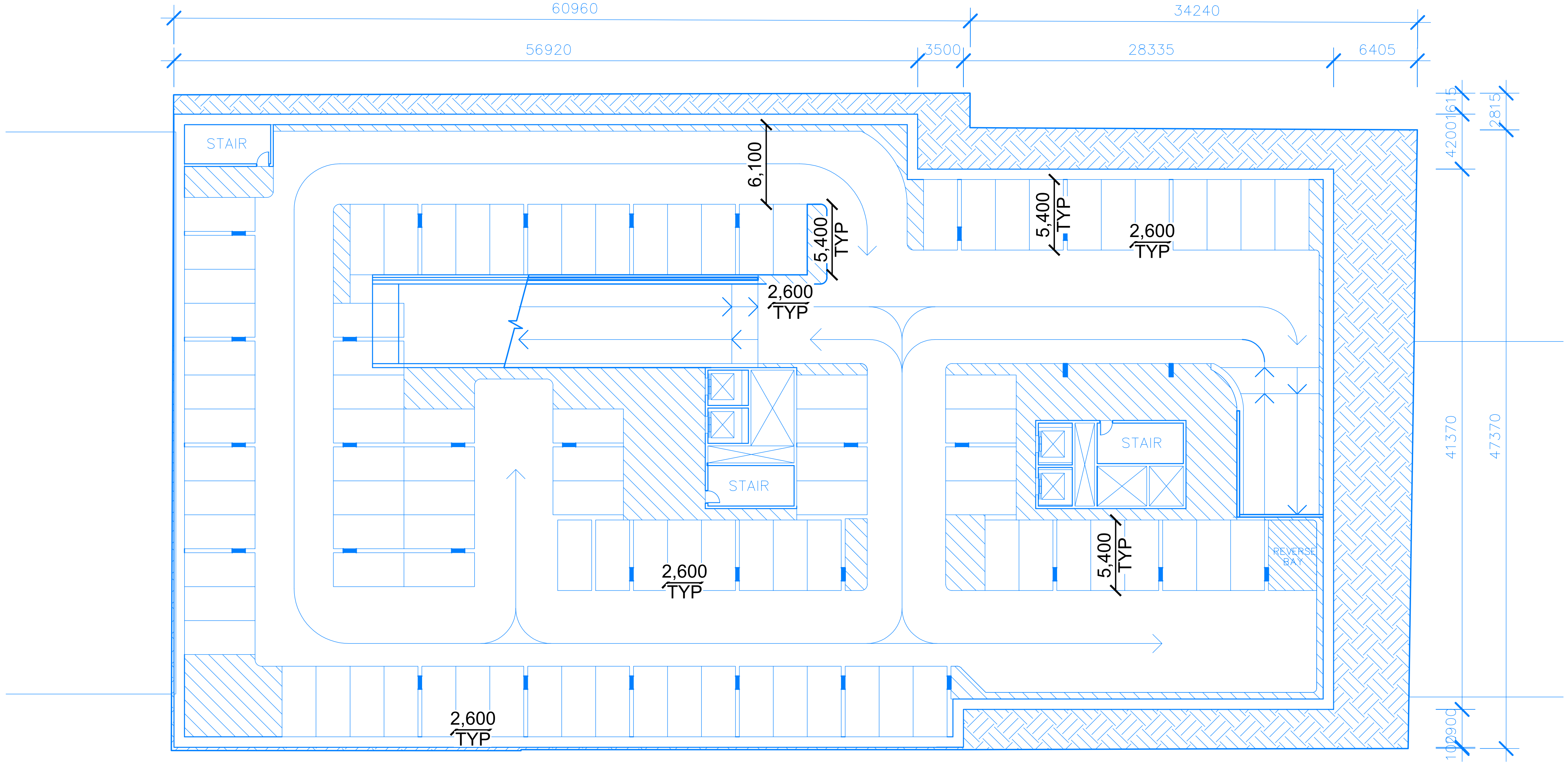

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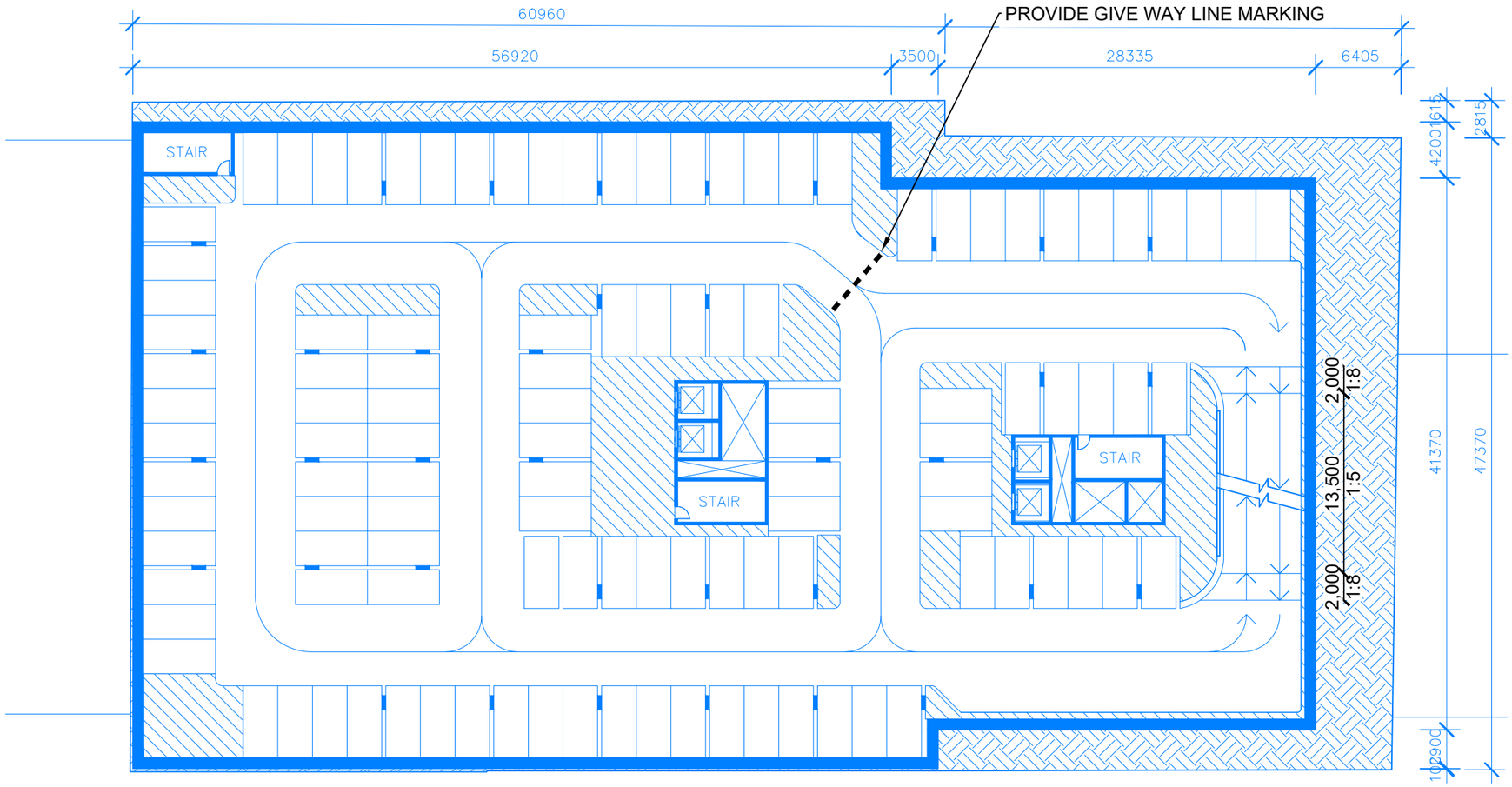
Goulburn Street has a posted speed limit of 30 km/h. Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED Jensen Wu	PAPER SIZE A3	CLIENT SACCO BUILDING GROUP PTY LTD	DOCUMENT INFORMATION PLANNING PROPOSAL BASEMENT 2 DESIGN REVIEW
APPROVED BY XXXX	DATE 11.05.2022	PROJECT 1362	
SCALE 1:400	0 4 8	61-71 GOULBURN STREET, LIVERPOOL	FILE NAME AG1362-02-v04.dwg / SHEET AG03

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 11/05/2022 5:44:50 PM | CAD REFERENCE: C:\Users\Jensen Wu\Ason Group\Ason Group Team Site - 1362\Projects\Design Advice\CAD\AG1362-02-v04.dwg | Jensen Wu |



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PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:400
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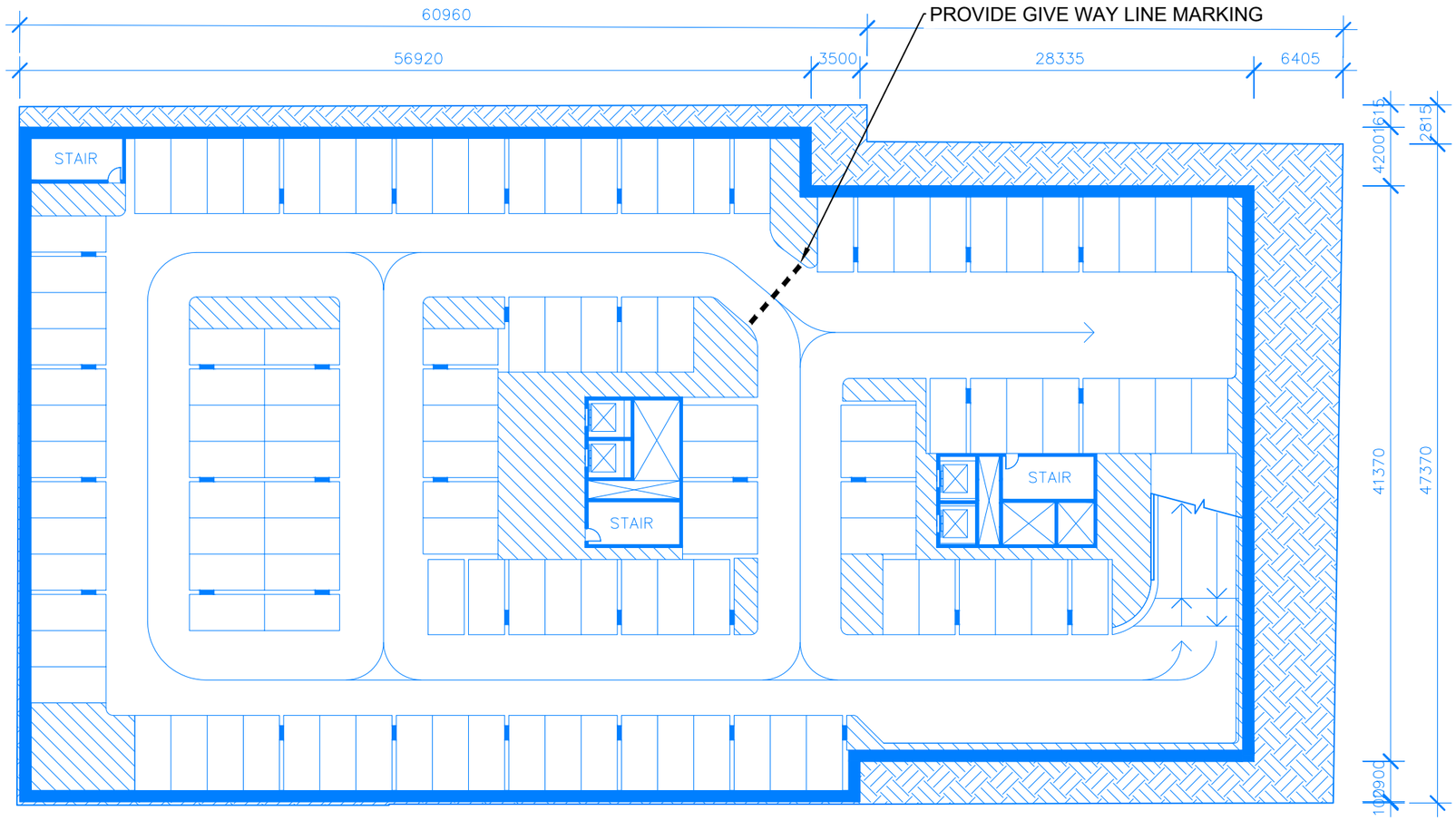
SACCO BUILDING GROUP PTY LTD

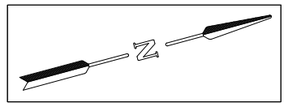
PROJECT
1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
BASEMENT 3 DESIGN REVIEW

FILE NAME	SHEET
AG1362-02-v04.dwg	AG04

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au





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PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:400
	0 4 8

CLIENT
SACCO BUILDING GROUP PTY LTD

PROJECT
1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
BASEMENT 4 DESIGN REVIEW

FILE NAME	SHEET
AG1362-02-v04.dwg	AG05

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
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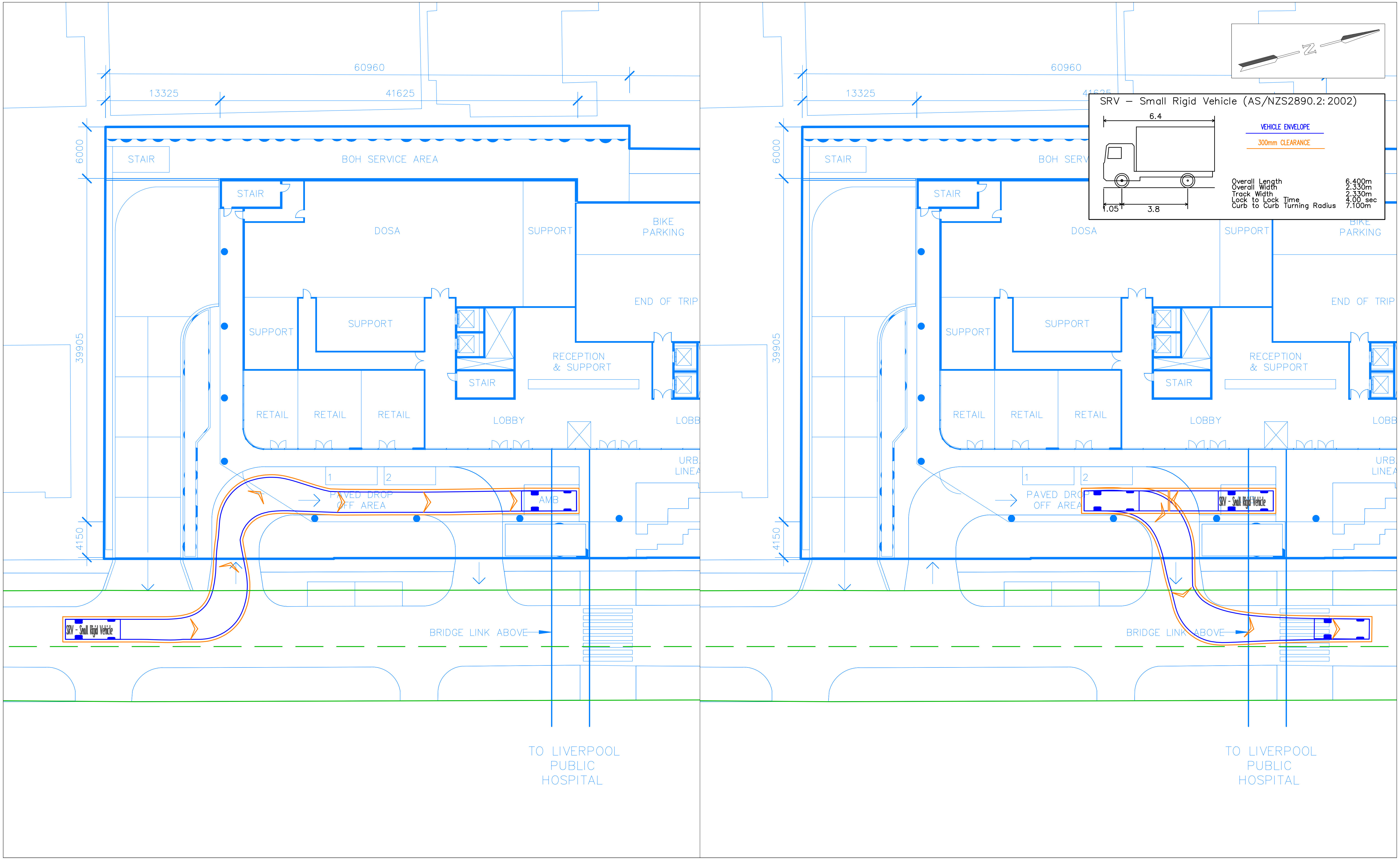

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APPROVED BY XXXX	DATE 11.05.2022	PROJECT 1362	GROUND LEVEL SWEPT PATH ASSESSMENT
SCALE 1:400	0 4 8	61-71 GOULBURN STREET, LIVERPOOL	FILE NAME AG1362-02-v04.dwg — SHEET AG06

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

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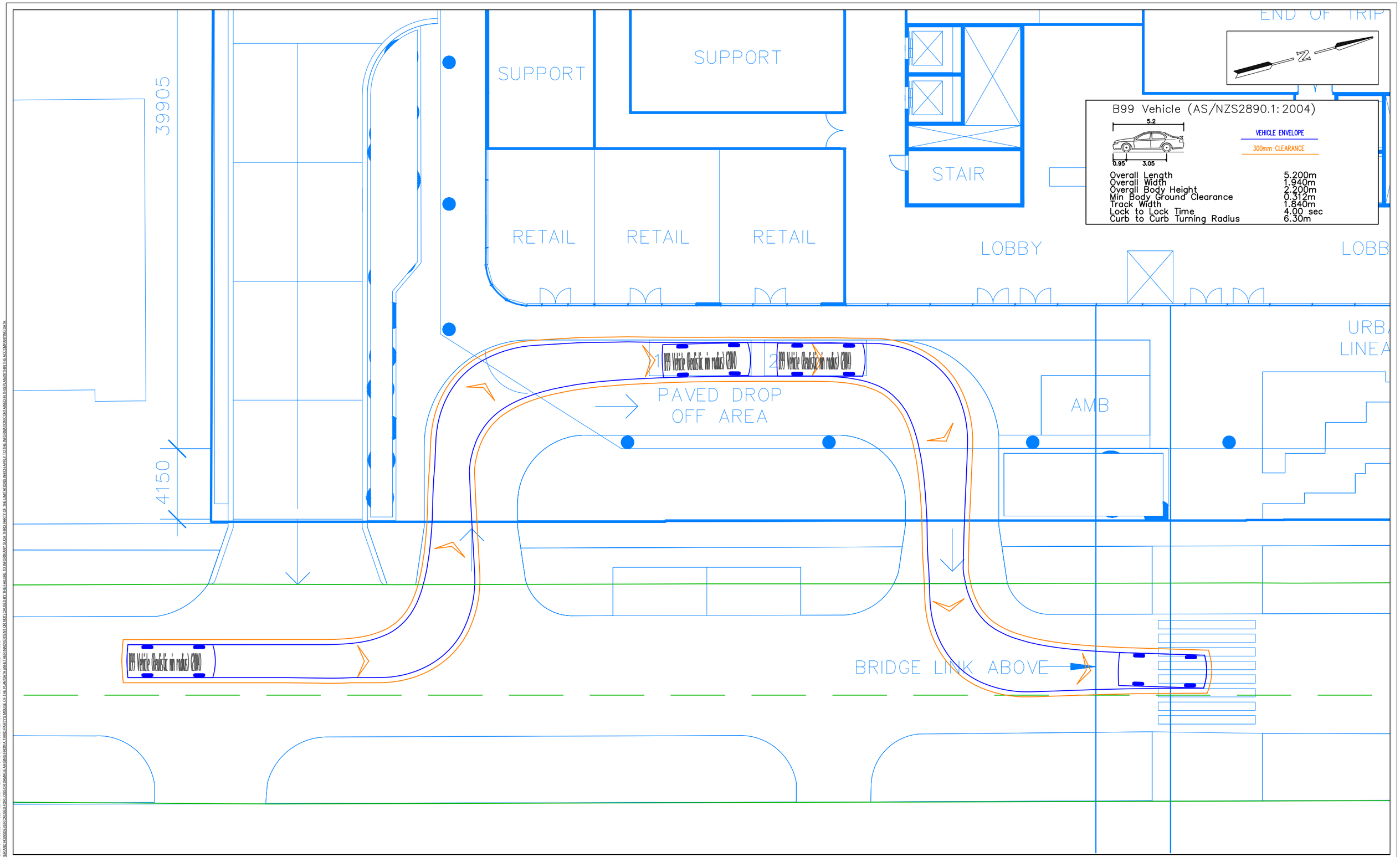

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PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:200
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PROJECT: 1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
GROUND LEVEL SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG07

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
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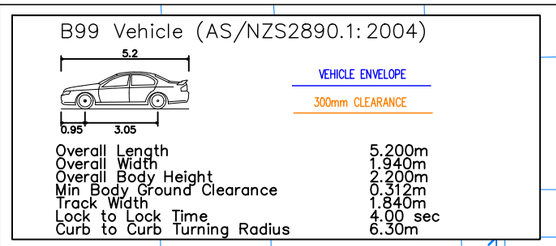

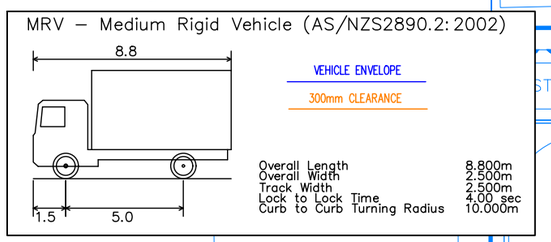

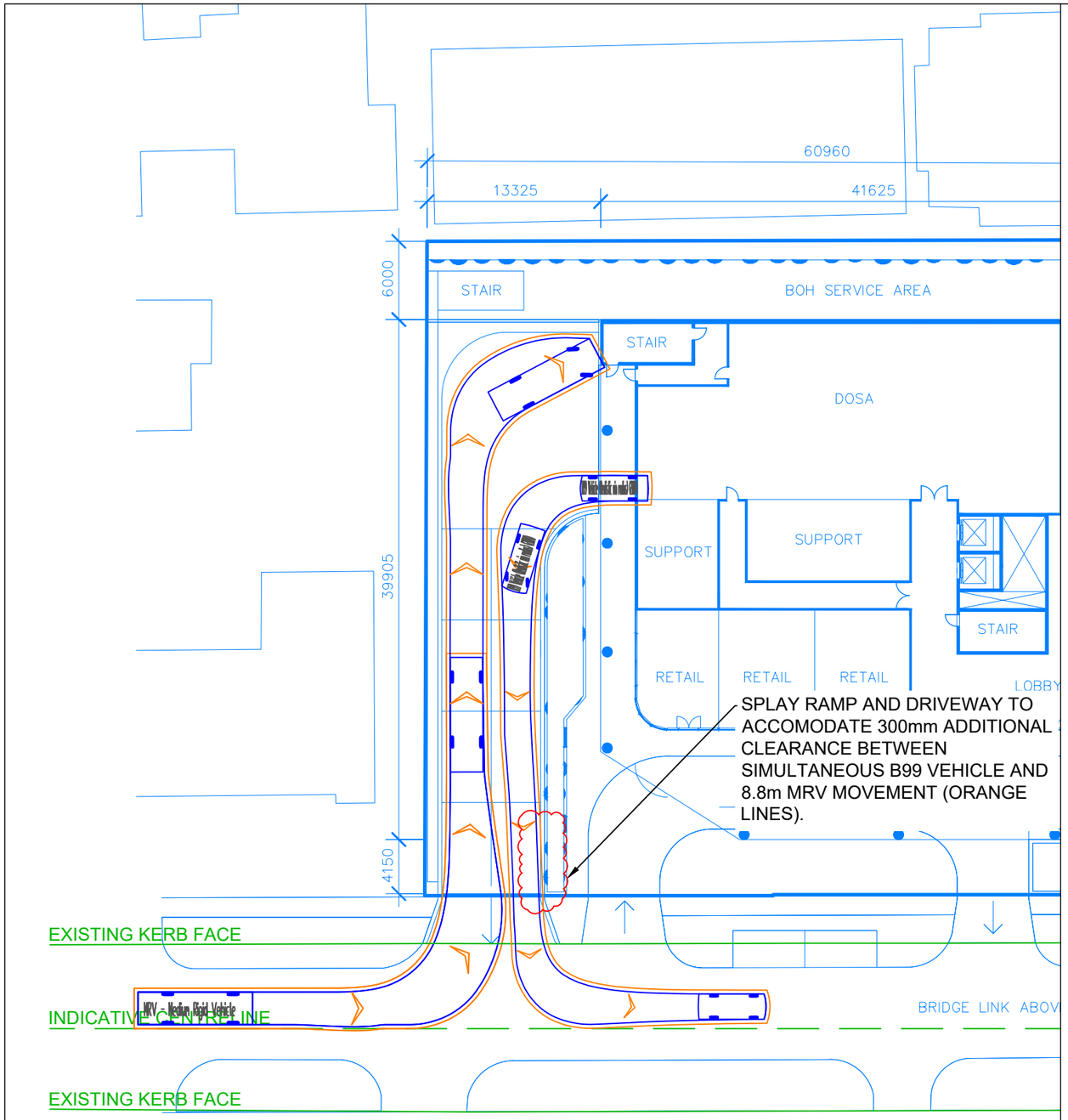

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PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:400
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CLIENT: SACCO BUILDING GROUP PTY LTD

PROJECT: 1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
GROUND LEVEL SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG08

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
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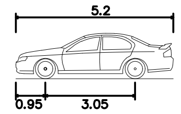
B99 Vehicle (AS/NZS2890.1: 2004)

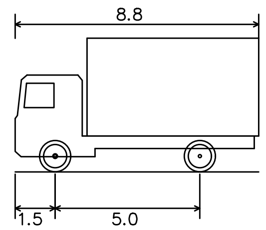


VEHICLE ENVELOPE

300mm CLEARANCE

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m

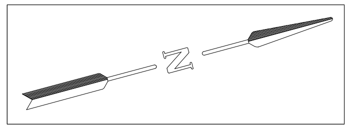
MRV – Medium Rigid Vehicle (AS/NZS2890.2: 2002)

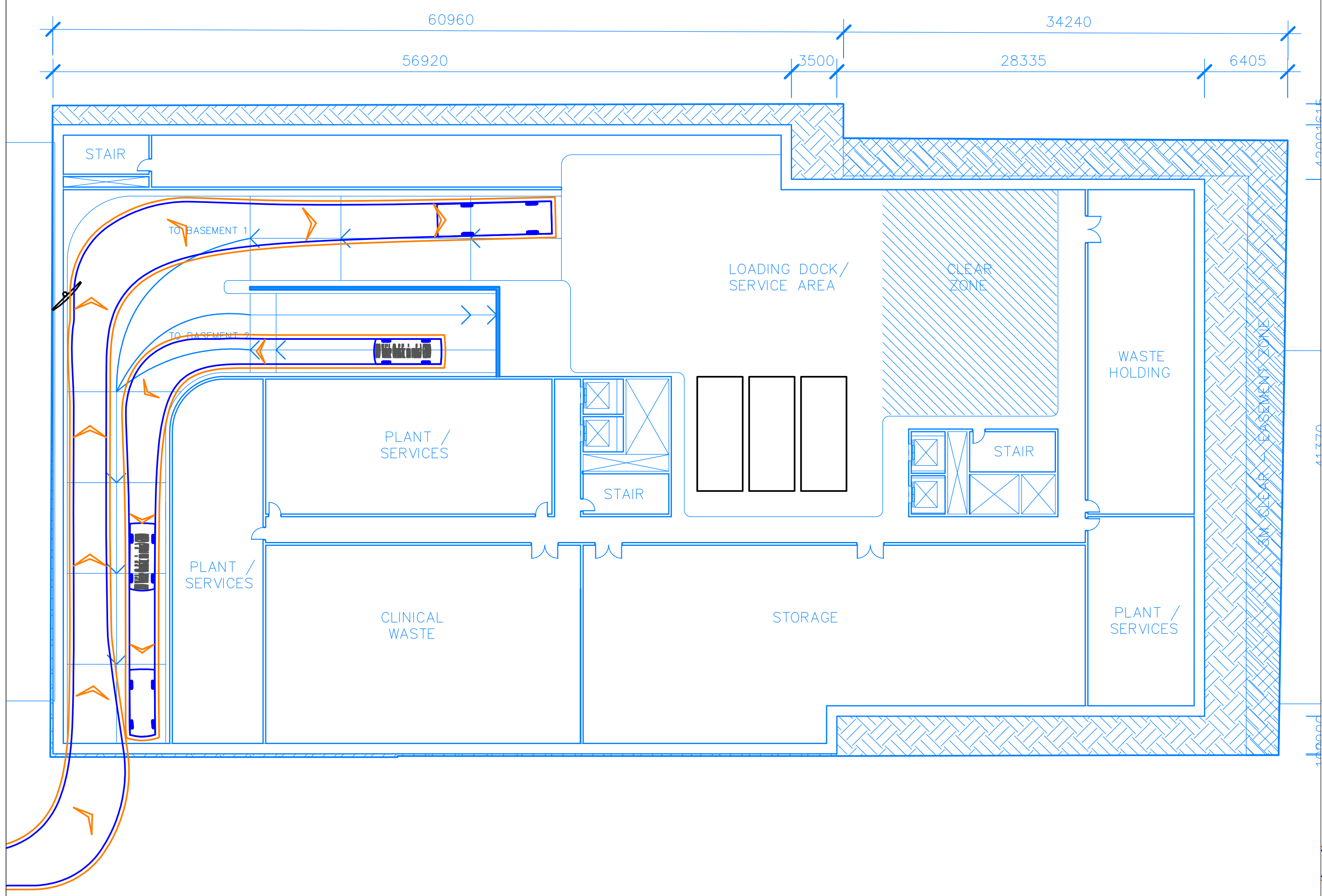


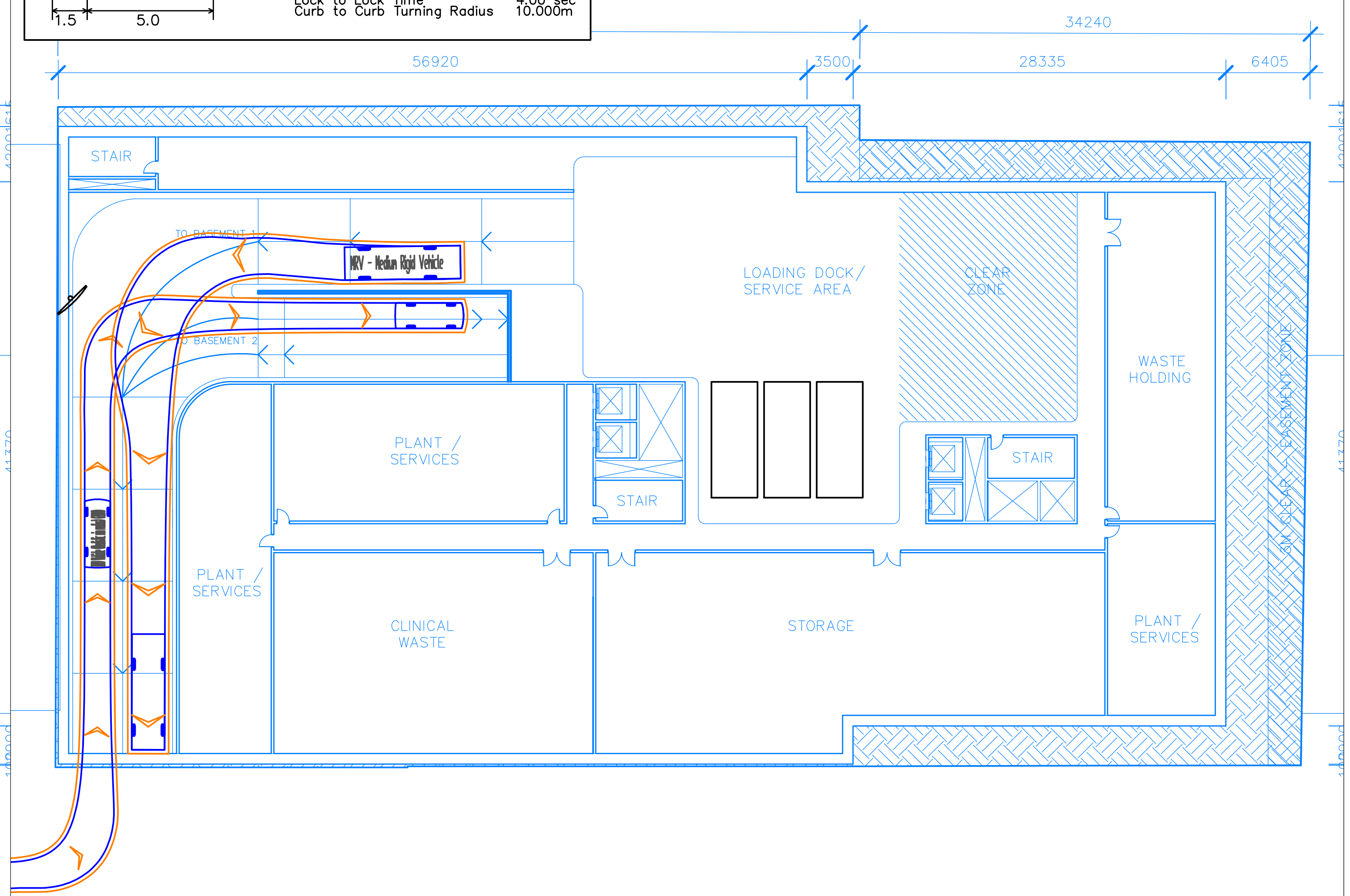
VEHICLE ENVELOPE

300mm CLEARANCE

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







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DESIGNED: Jensen Wu	PAPER SIZE: A3
APPROVED BY: XXXX	DATE: 11.05.2022
SCALE: 1:500	0 5 10

CLIENT
SACCO BUILDING GROUP PTY LTD

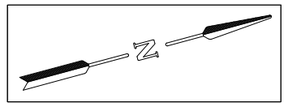
PROJECT
1362
61-71 GOULBURN STREET, LIVERPOOL

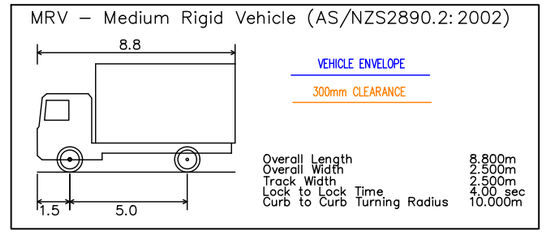
DOCUMENT INFORMATION
PLANNING PROPOSAL
BASEMENT 1 SWEPT PATH ASSESSMENT

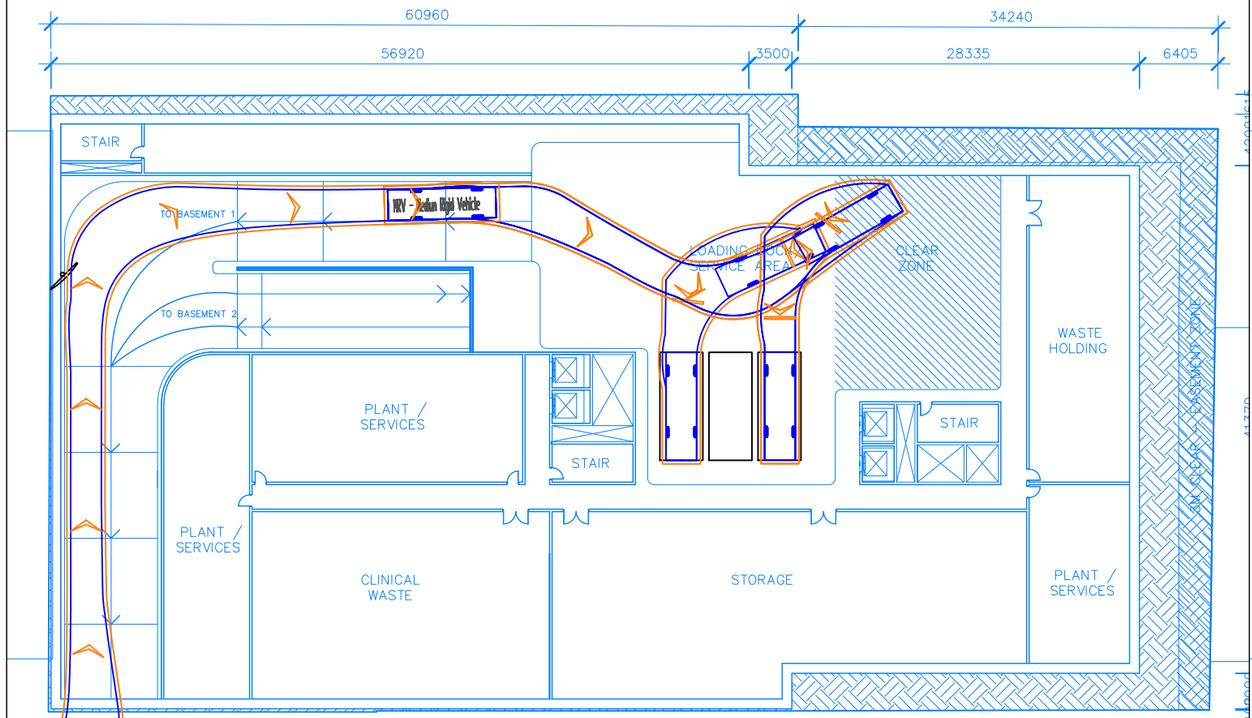
FILE NAME	SHEET
AG1362-02-v04.dwg	AG09

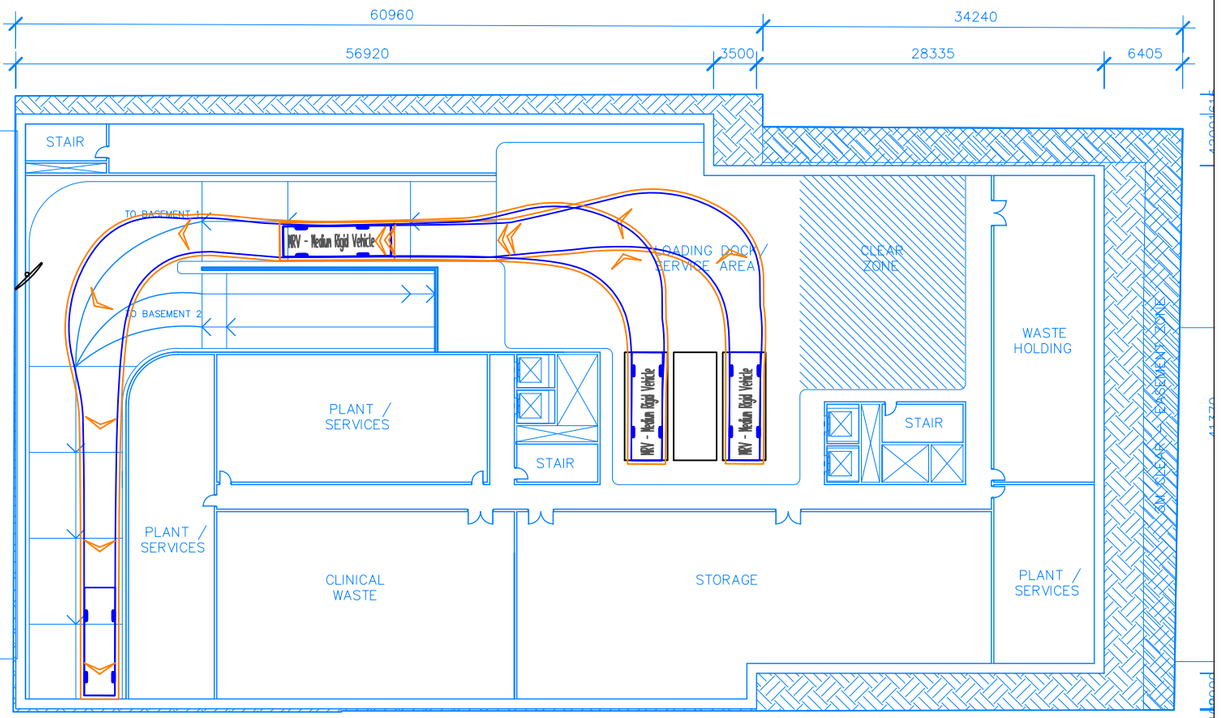
asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 11/05/2022 5:45:20 PM | CAD REFERENCE: C:\Users\Jensen Wu\Ason Group\Ason Group Team Site - 1362\Projects\Design Advice\CAD\AG1362-02-v04.dwg | Jensen Wu |









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DESIGNED	Jensen Wu
PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:500
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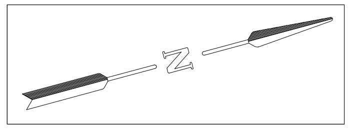
CLIENT
SACCO BUILDING GROUP PTY LTD

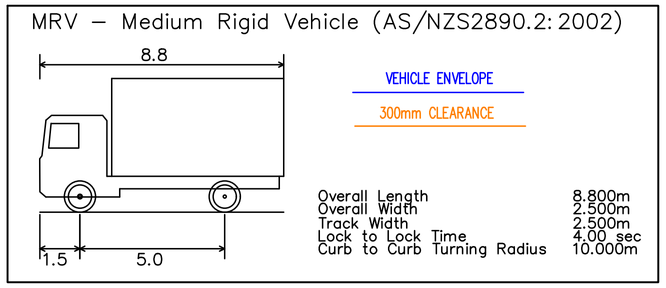
PROJECT
1362
61-71 GOULBURN STREET, LIVERPOOL

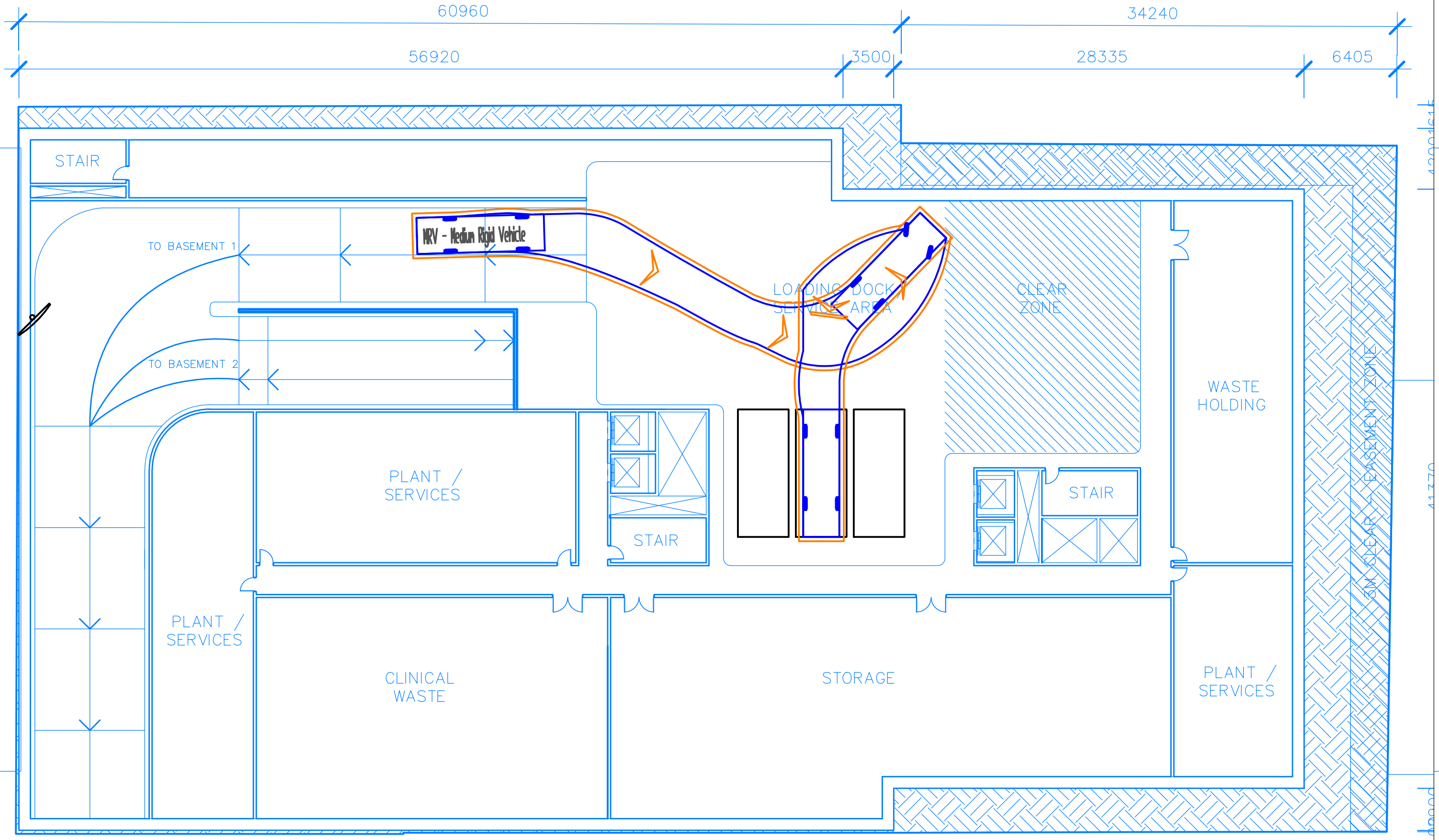
DOCUMENT INFORMATION
PLANNING PROPOSAL
BASEMENT 1 SWEPT PATH ASSESSMENT

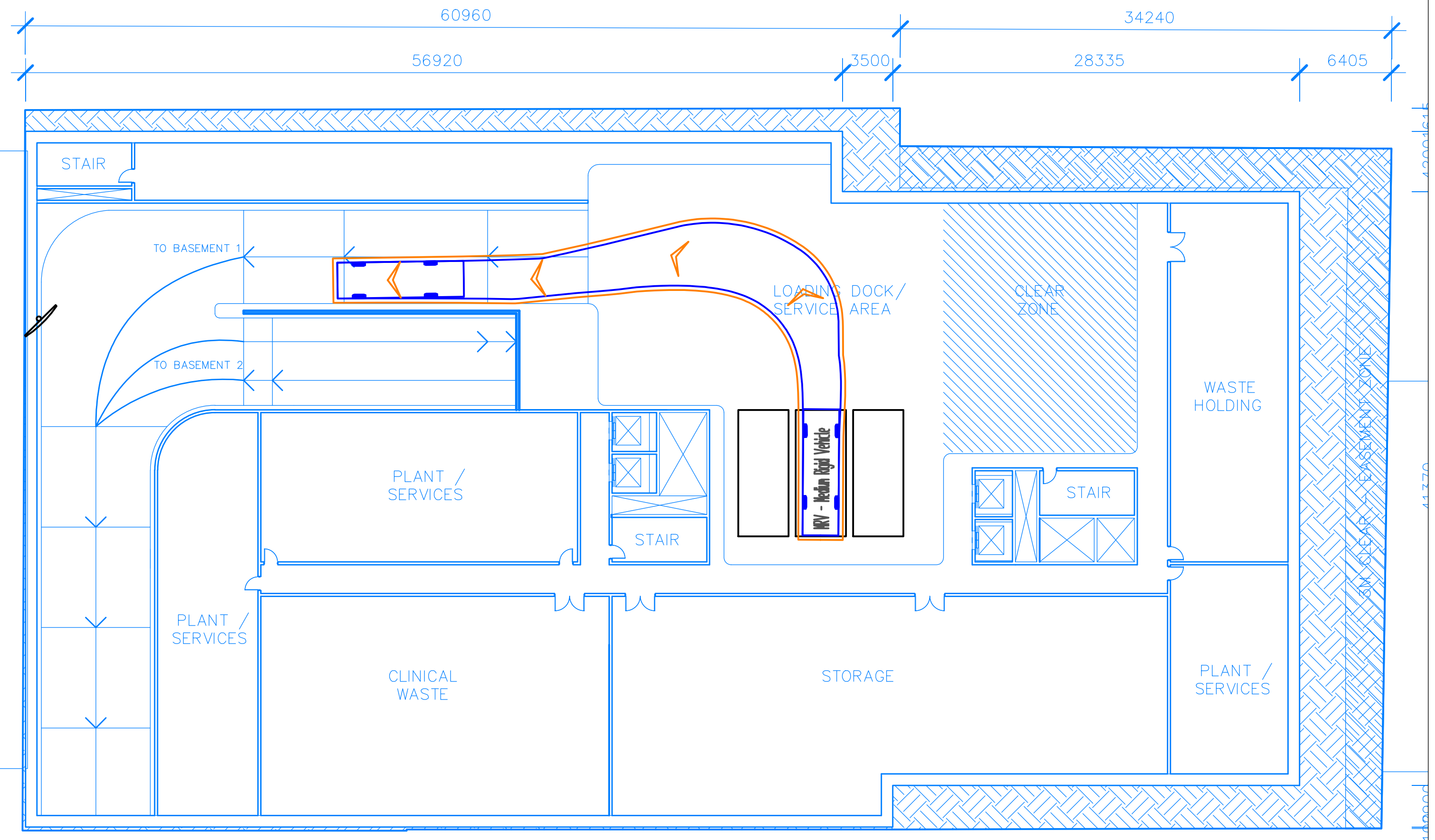
FILE NAME	SHEET
AG1362-02-v04.dwg	AG10

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au









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APPROVED BY: XXXX	DATE: 11.05.2022
SCALE: 1:500	0 5 10

CLIENT

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PROJECT

1362

61-71 GOULBURN STREET, LIVERPOOL

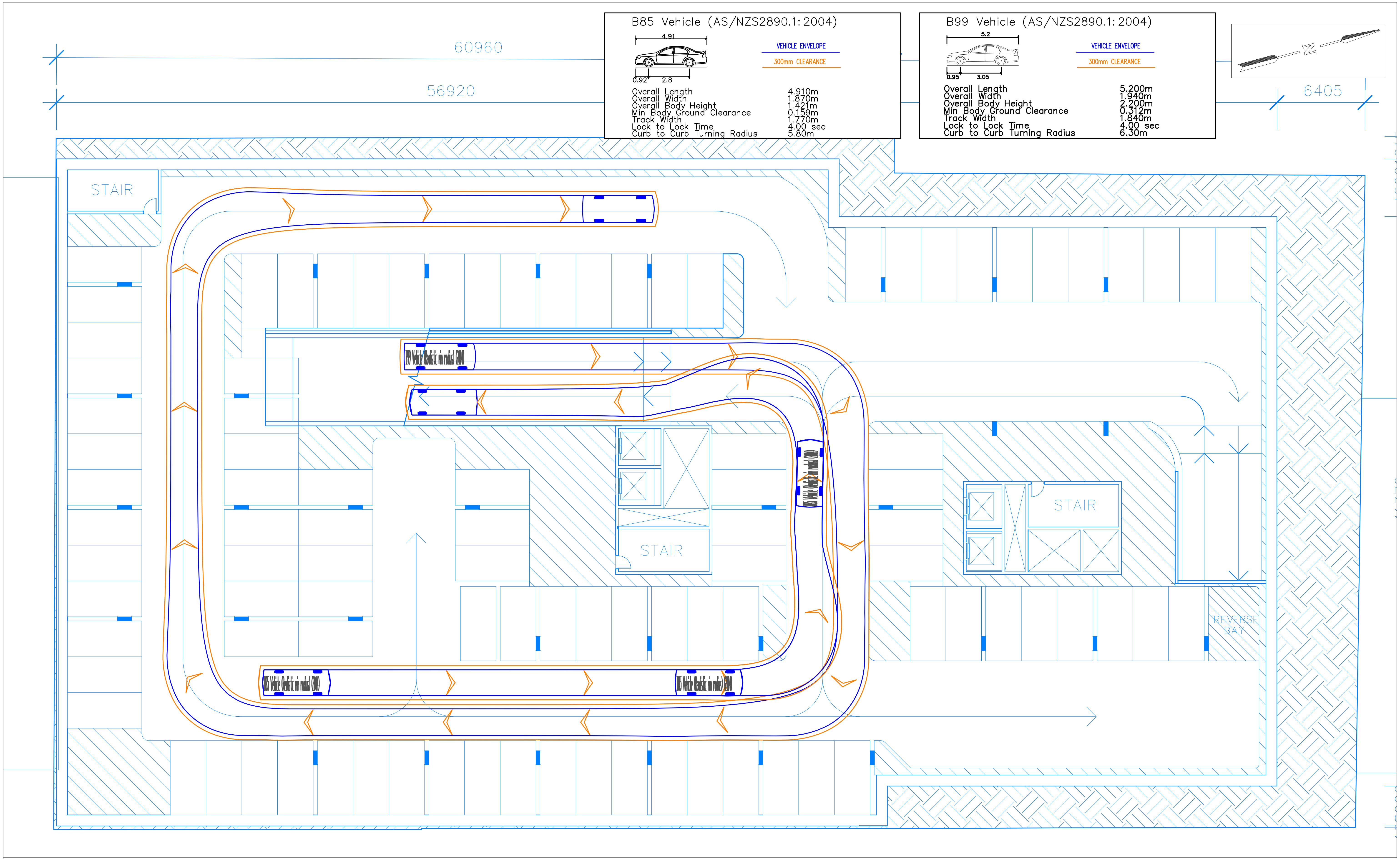
DOCUMENT INFORMATION

PLANNING PROPOSAL

BASEMENT 1 SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG11

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au



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APPROVED BY: XXXX	DATE: 11.05.2022
SCALE: 1:250	0 2.5 5

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SACCO BUILDING GROUP PTY LTD

PROJECT

1362

61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION

PLANNING PROPOSAL

BASEMENT 2 SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG12

asongroup

Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000

info@asongroup.com.au

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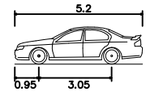
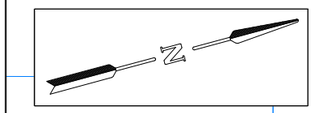
B99 Vehicle (AS/NZS2890.1: 2004)

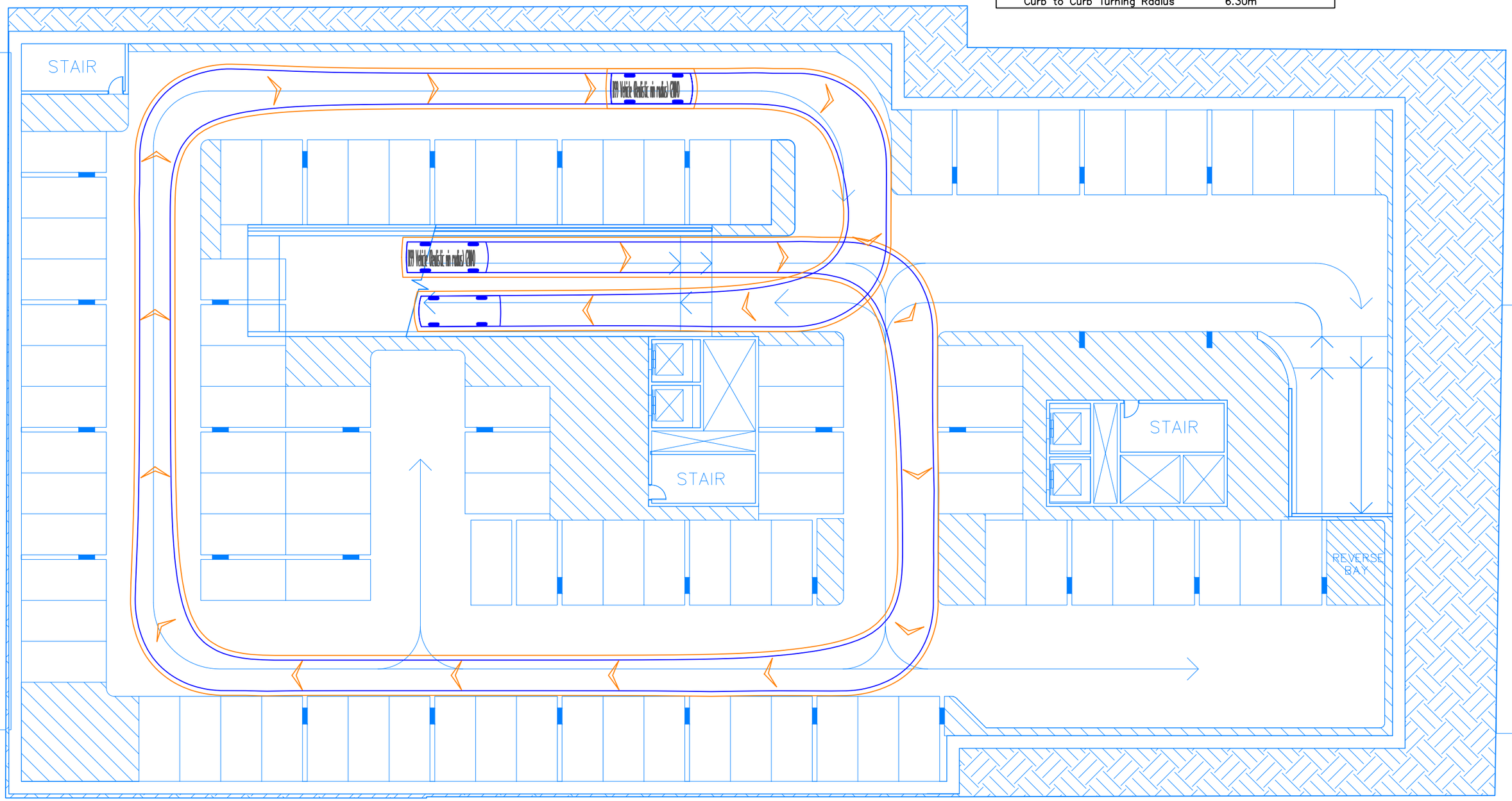


VEHICLE ENVELOPE

300mm CLEARANCE

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	2.200m
Min Body Ground Clearance	0.312m
Track Width	1.840m
Lock to Lock Time	4.00 sec
Curb to Curb Turning Radius	6.30m





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DESIGNED	Jensen Wu
PAPER SIZE	A3
APPROVED BY	XXXX
DATE	11.05.2022
SCALE	1:250
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CLIENT: SACCO BUILDING GROUP PTY LTD

PROJECT: 1362

61-71 GOULBURN STREET, LIVERPOOL

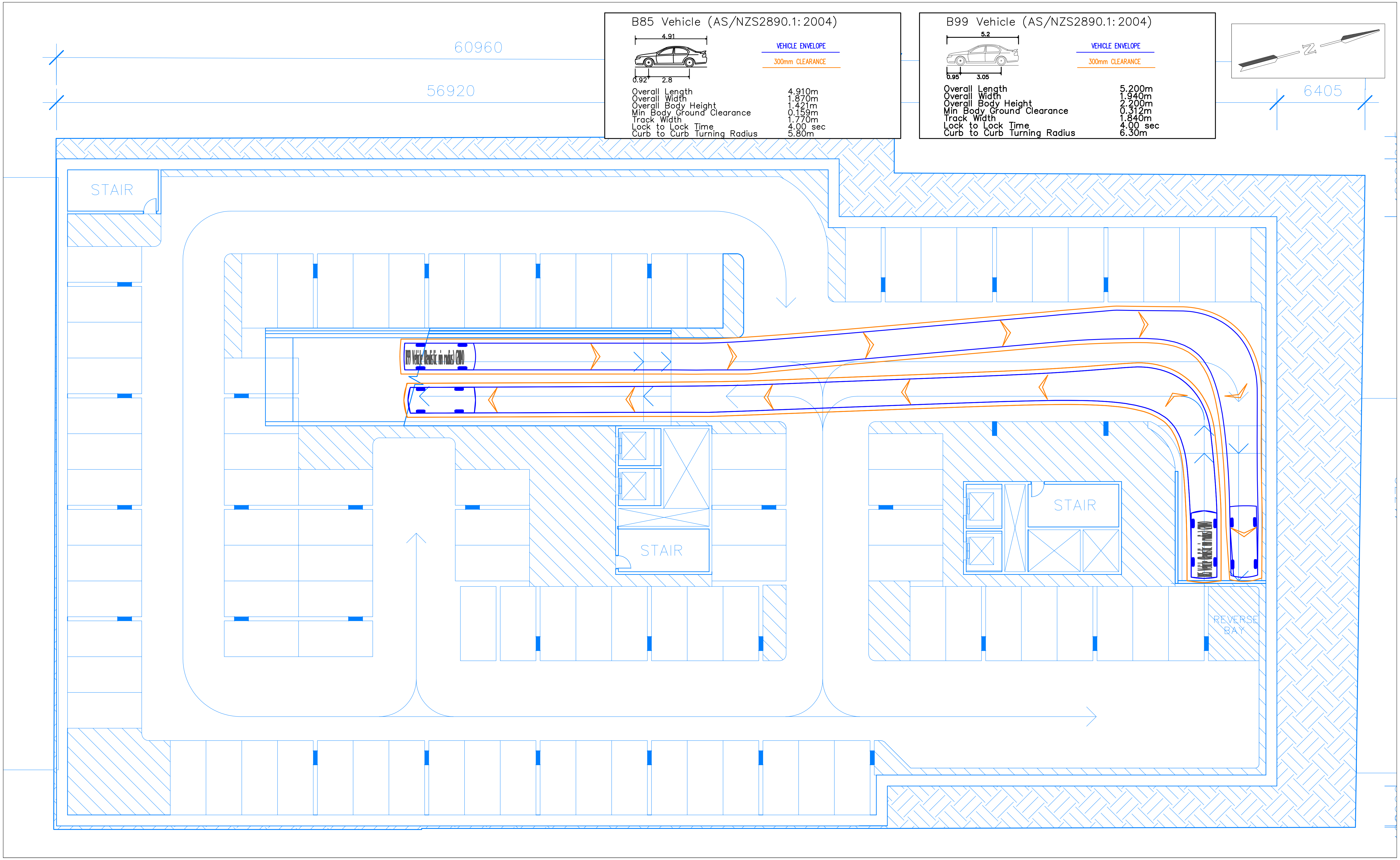
DOCUMENT INFORMATION

PLANNING PROPOSAL

BASEMENT 2 SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG13

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au



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DESIGNED	PAPER SIZE
Jensen Wu	A3
APPROVED BY	DATE
XXXX	11.05.2022
SCALE	0 2.5 5
1:250	

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SACCO BUILDING GROUP PTY LTD

PROJECT

1362

61-71 GOULBURN STREET, LIVERPOOL

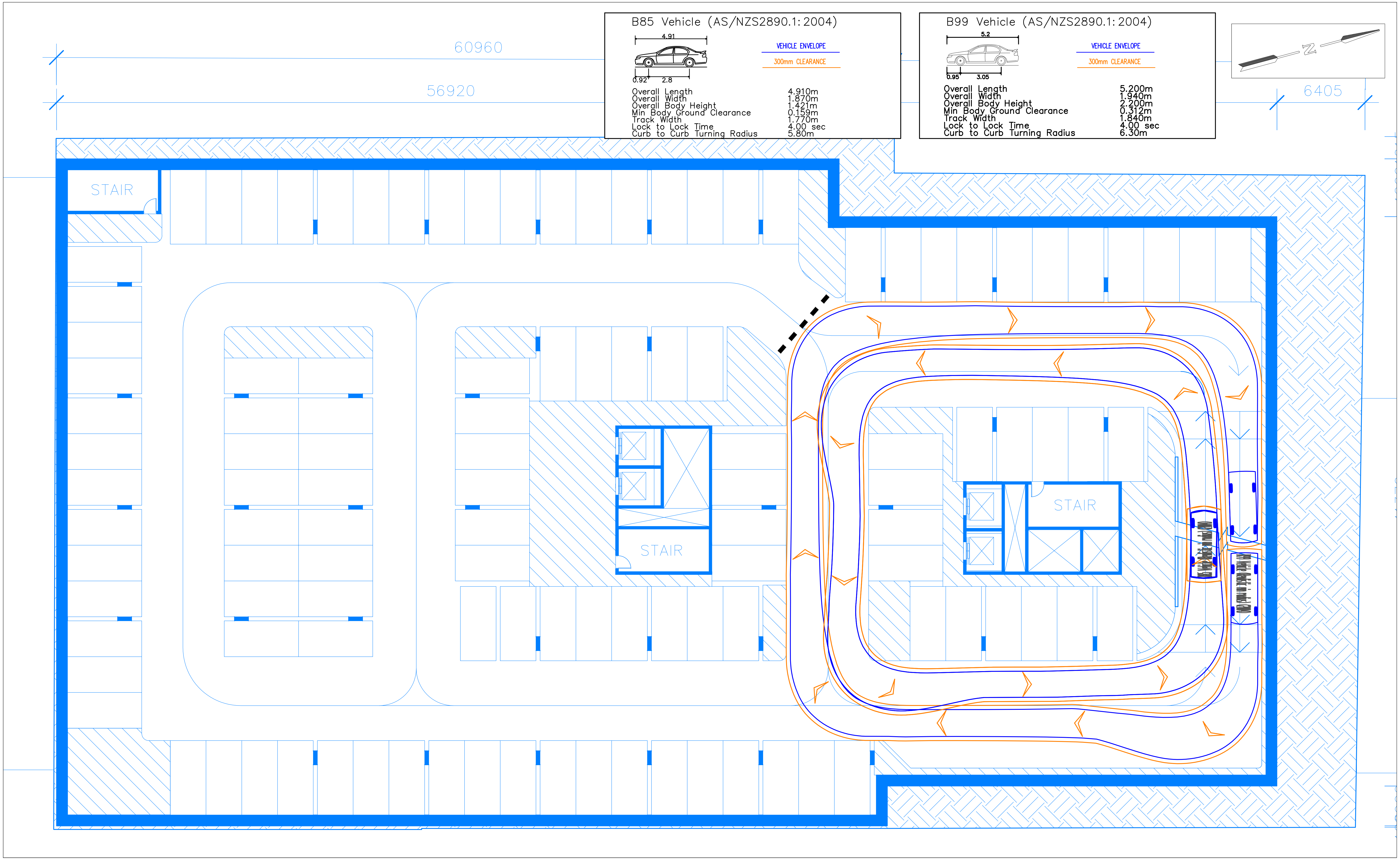
DOCUMENT INFORMATION

PLANNING PROPOSAL

BASEMENT 2 SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG14

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au



GENERAL NOTES

This drawing is provided for information purposes only and should not be used for construction.
GF base plan: Project 885, Drawing PP110, Rev E, prepared by TEAM2, received 05.06.2022
B1 base plan: Project 885, Drawing PP109, Rev E, prepared by TEAM2, received 05.06.2022
B2 base plan: Project 885, Drawing PP108, Rev E, prepared by TEAM2, received 05.06.2022
B3 base plan: Project 885, Drawing PP107, Rev E, prepared by TEAM2, received 05.06.2022
B4 base plan: Project 885, Drawing PP106, Rev E, prepared by TEAM2, received 05.06.2022
Goulburn Street has a posted speed limit of 30 km/h. Swept path assessments completed at 10 km/h and 300mm clearance.

DESIGNED: Jensen Wu	PAPER SIZE: A3
APPROVED BY: XXXX	DATE: 11.05.2022
SCALE: 1:250	0 2.5 5

CLIENT
SACCO BUILDING GROUP PTY LTD

PROJECT
1362
61-71 GOULBURN STREET, LIVERPOOL

DOCUMENT INFORMATION
PLANNING PROPOSAL
BASEMENT 3 SWEPT PATH ASSESSMENT

FILE NAME	SHEET
AG1362-02-v04.dwg	AG15

asongroup
Suite 17.02, Level 17, 1 Castlereagh St
Sydney NSW 2000
info@asongroup.com.au

PLOT DATE: 11/05/2022 5:45:50 PM | CAD REFERENCE: C:\Users\Jensen Wu\Ason Group\Ason Group Team Site - 1362\Projects\Design Advice\CAD\AG1362-02-v04.dwg | Jensen Wu |

Appendix B. SIDRA Movement Summaries

USER REPORT FOR SITE

All Movement Classes

Project: P1362 - New Health Care Development_v3 **Template: Movement Summary**

Site: 3204 [Goulburn St_Campbell St_AM (Site Folder: Existing Conditions)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	37	2.7	39	2.7	0.142	18.2	LOS B	1.9	13.6	0.73	0.61	0.73	22.0
2	T1	93	1.1	98	1.1	0.625	18.9	LOS B	7.9	55.6	0.82	0.71	0.83	22.5
3	R2	219	0.0	231	0.0	* 0.625	23.1	LOS B	7.9	55.6	0.90	0.81	0.91	20.1
Approach		349	0.6	367	0.6	0.625	21.5	LOS B	7.9	55.6	0.86	0.76	0.87	21.0
East: Campbell Street (E)														
4	L2	84	13.1	88	13.1	0.119	13.4	LOS A	1.6	12.8	0.61	0.61	0.61	23.6
5	T1	89	4.5	94	4.5	0.151	11.0	LOS A	2.1	15.3	0.61	0.52	0.61	21.0
6	R2	19	5.3	20	5.3	0.151	13.0	LOS A	2.1	15.3	0.61	0.52	0.61	24.3
Approach		192	8.3	202	8.3	0.151	12.2	LOS A	2.1	15.3	0.61	0.56	0.61	22.7
North: Goulburn Street (N)														
7	L2	32	0.0	34	0.0	0.060	19.2	LOS B	0.8	5.3	0.73	0.63	0.73	21.3
8	T1	81	4.9	85	4.9	0.215	16.8	LOS B	2.7	19.8	0.75	0.63	0.75	23.3
9	R2	30	6.7	32	6.7	0.215	18.9	LOS B	2.7	19.8	0.75	0.63	0.75	21.8
Approach		143	4.2	151	4.2	0.215	17.8	LOS B	2.7	19.8	0.75	0.63	0.75	22.6
West: Campbell Street (W)														
10	L2	41	2.4	43	2.4	0.071	12.4	LOS A	1.0	7.4	0.58	0.55	0.58	24.1
11	T1	261	0.0	275	0.0	* 0.335	11.4	LOS A	5.6	39.3	0.65	0.57	0.65	20.8
12	R2	23	4.3	24	4.3	0.335	13.5	LOS A	5.6	39.3	0.66	0.57	0.66	24.2
Approach		325	0.6	342	0.6	0.335	11.7	LOS A	5.6	39.3	0.65	0.57	0.65	21.7
All Vehicles		1009	2.6	1062	2.6	0.625	16.0	LOS B	7.9	55.6	0.73	0.64	0.73	21.7

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: 3204 [Goulburn St_Campbell St_PM (Site Folder: Existing Conditions)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site User-Given Phase Times)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	20	0.0	21	0.0	0.074	22.5	LOS B	0.8	5.8	0.80	0.63	0.80	20.4
2	T1	76	3.9	80	3.9	* 0.326	21.5	LOS B	3.4	24.4	0.84	0.70	0.84	21.8
3	R2	58	0.0	61	0.0	0.326	23.7	LOS B	3.4	24.4	0.85	0.71	0.85	20.2
Approach		154	1.9	162	1.9	0.326	22.5	LOS B	3.4	24.4	0.84	0.69	0.84	21.1
East: Campbell Street (E)														
4	L2	177	0.0	186	0.0	* 0.195	10.8	LOS A	3.1	22.0	0.56	0.61	0.56	24.7
5	T1	128	0.0	135	0.0	0.159	7.6	LOS A	2.4	17.1	0.52	0.45	0.52	23.1
6	R2	22	0.0	23	0.0	0.159	9.7	LOS A	2.4	17.1	0.52	0.45	0.52	26.0
Approach		327	0.0	344	0.0	0.195	9.5	LOS A	3.1	22.0	0.54	0.54	0.54	24.3
North: Goulburn Street (N)														
7	L2	12	0.0	13	0.0	0.054	22.4	LOS B	0.6	4.3	0.79	0.61	0.79	20.6
8	T1	93	0.0	98	0.0	0.269	21.1	LOS B	3.0	21.3	0.83	0.67	0.83	22.1
9	R2	28	7.1	29	7.1	0.269	23.2	LOS B	3.0	21.3	0.83	0.68	0.83	20.3
Approach		133	1.5	140	1.5	0.269	21.7	LOS B	3.0	21.3	0.83	0.67	0.83	21.6
West: Campbell Street (W)														
10	L2	24	8.3	25	8.3	0.028	10.0	LOS A	0.4	2.9	0.50	0.53	0.50	25.0
11	T1	61	1.6	64	1.6	0.109	8.5	LOS A	1.4	10.2	0.53	0.47	0.53	22.3
12	R2	24	0.0	25	0.0	0.109	10.5	LOS A	1.4	10.2	0.53	0.47	0.53	25.4
Approach		109	2.7	115	2.7	0.109	9.2	LOS A	1.4	10.2	0.53	0.48	0.53	23.9
All Vehicles		723	1.1	761	1.1	0.326	14.5	LOS A	3.4	24.4	0.66	0.59	0.66	22.7

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: 2 [Goulburn St_Elizabeth St_AM (Site Folder: Existing Conditions)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	71	8.5	75	8.5	0.191	1.2	LOS A	1.0	7.2	0.43	0.37	0.43	26.2
6	R2	192	2.1	202	2.1	0.191	3.4	LOS A	1.0	7.2	0.43	0.37	0.43	28.4
Approach		263	3.8	277	3.8	0.191	2.8	NA	1.0	7.2	0.43	0.37	0.43	28.0
North: Goulburn Street (N)														
7	L2	110	11.8	116	11.8	0.207	2.5	LOS A	0.8	6.1	0.29	0.45	0.29	28.5
9	R2	91	3.3	96	3.3	0.207	4.8	LOS A	0.8	6.1	0.29	0.45	0.29	28.3
Approach		201	8.0	212	8.0	0.207	3.6	LOS A	0.8	6.1	0.29	0.45	0.29	28.4
West: Elizabeth Street (W)														
10	L2	166	0.0	175	0.0	0.158	2.0	LOS A	0.0	0.0	0.00	0.19	0.00	30.2
11	T1	116	18.1	122	18.1	0.158	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	28.4
Approach		282	7.4	297	7.4	0.158	1.2	NA	0.0	0.0	0.00	0.19	0.00	29.7
All Vehicles		746	6.3	785	6.3	0.207	2.4	NA	1.0	7.2	0.23	0.33	0.23	28.7

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 2 [Goulburn St_Elizabeth St_PM (Site Folder: Existing Conditions)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	127	12.6	134	12.6	0.143	0.5	LOS A	0.6	4.8	0.28	0.19	0.28	27.4
6	R2	100	2.0	105	2.0	0.143	3.0	LOS A	0.6	4.8	0.28	0.19	0.28	29.2
Approach		227	7.9	239	7.9	0.143	1.6	NA	0.6	4.8	0.28	0.19	0.28	28.4
North: Goulburn Street (N)														
7	L2	194	1.0	204	1.0	0.323	2.6	LOS A	1.4	10.0	0.33	0.47	0.33	28.6
9	R2	148	0.0	156	0.0	0.323	4.6	LOS A	1.4	10.0	0.33	0.47	0.33	28.4
Approach		342	0.6	360	0.6	0.323	3.4	LOS A	1.4	10.0	0.33	0.47	0.33	28.5
West: Elizabeth Street (W)														
10	L2	66	1.5	69	1.5	0.112	2.0	LOS A	0.0	0.0	0.00	0.11	0.00	30.5
11	T1	129	20.2	136	20.2	0.112	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	29.0
Approach		195	13.9	205	13.9	0.112	0.7	NA	0.0	0.0	0.00	0.11	0.00	29.7
All Vehicles		764	6.2	804	6.2	0.323	2.2	NA	1.4	10.0	0.23	0.29	0.23	28.8

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 3204 [Goulburn St_Campbell St_AM (Site Folder: Future Base - 2023)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	67	2.7	71	2.7	0.064	10.3	LOS A	1.4	9.8	0.43	0.52	0.43	24.9
2	T1	109	1.1	115	1.1	0.094	7.3	LOS A	2.1	14.8	0.40	0.33	0.40	26.8
Approach		176	1.7	185	1.7	0.094	8.4	LOS A	2.1	14.8	0.41	0.40	0.41	26.2
North: Goulburn Street (N)														
8	T1	128	4.9	135	4.9	0.137	7.7	LOS A	2.7	19.6	0.42	0.38	0.42	26.4
9	R2	34	6.7	36	6.7	* 0.137	10.0	LOS A	2.7	19.6	0.43	0.41	0.43	25.7
Approach		162	5.3	171	5.3	0.137	8.2	LOS A	2.7	19.6	0.42	0.38	0.42	26.3
West: Campbell Street (W)														
10	L2	48	2.4	51	2.4	* 0.134	36.8	LOS C	2.0	14.5	0.85	0.69	0.85	16.4
12	R2	32	4.3	34	4.3	0.090	36.5	LOS C	1.3	9.7	0.84	0.68	0.84	16.5
Approach		80	3.2	84	3.2	0.134	36.7	LOS C	2.0	14.5	0.84	0.69	0.84	16.4
All Vehicles		418	3.4	440	3.4	0.137	13.8	LOS A	2.7	19.6	0.50	0.45	0.50	24.0

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: 3204 [Goulburn St_Campbell St_PM (Site Folder: Future Base - 2023)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	31	0.0	33	0.0	0.027	8.1	LOS A	0.5	3.8	0.36	0.48	0.36	26.0
2	T1	102	3.9	107	3.9	0.083	5.4	LOS A	1.7	12.2	0.35	0.28	0.35	27.5
Approach		133	3.0	140	3.0	0.083	6.0	LOS A	1.7	12.2	0.35	0.33	0.35	27.3
North: Goulburn Street (N)														
8	T1	134	0.0	141	0.0	0.118	5.5	LOS A	2.2	15.7	0.35	0.32	0.35	27.4
9	R2	26	7.1	27	7.1	* 0.118	7.6	LOS A	2.2	15.7	0.36	0.34	0.36	27.0
Approach		160	1.2	168	1.2	0.118	5.8	LOS A	2.2	15.7	0.35	0.32	0.35	27.3
West: Campbell Street (W)														
10	L2	25	8.3	26	8.3	0.095	41.2	LOS C	1.1	8.4	0.88	0.68	0.88	15.5
12	R2	31	0.0	33	0.0	* 0.112	41.3	LOS C	1.4	9.7	0.89	0.69	0.89	15.5
Approach		56	3.7	59	3.7	0.112	41.3	LOS C	1.4	9.7	0.89	0.69	0.89	15.5
All Vehicles		349	2.3	367	2.3	0.118	11.6	LOS A	2.2	15.7	0.44	0.38	0.44	24.9

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: 2 [Goulburn St_Elizabeth St_AM (Site Folder: Future Base - 2023)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	71	8.5	75	8.5	0.211	1.3	LOS A	1.1	8.0	0.45	0.40	0.45	26.1
6	R2	212	2.1	223	2.1	0.211	3.5	LOS A	1.1	8.0	0.45	0.40	0.45	28.3
Approach		283	3.7	298	3.7	0.211	3.0	NA	1.1	8.0	0.45	0.40	0.45	28.0
North: Goulburn Street (N)														
7	L2	131	11.8	138	11.8	0.252	2.5	LOS A	1.0	7.6	0.30	0.46	0.30	28.4
9	R2	109	3.3	115	3.3	0.252	5.2	LOS A	1.0	7.6	0.30	0.46	0.30	28.2
Approach		240	7.9	253	7.9	0.252	3.7	LOS A	1.0	7.6	0.30	0.46	0.30	28.3
West: Elizabeth Street (W)														
10	L2	184	0.0	194	0.0	0.168	2.0	LOS A	0.0	0.0	0.00	0.20	0.00	30.1
11	T1	116	18.1	122	18.1	0.168	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	28.4
Approach		300	7.0	316	7.0	0.168	1.2	NA	0.0	0.0	0.00	0.20	0.00	29.7
All Vehicles		823	6.1	866	6.1	0.252	2.5	NA	1.1	8.0	0.24	0.34	0.24	28.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 2 [Goulburn St_Elizabeth St_PM (Site Folder: Future Base - 2023)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	127	12.6	134	12.6	0.161	0.7	LOS A	0.8	5.8	0.32	0.22	0.32	27.2
6	R2	123	2.0	129	2.0	0.161	3.0	LOS A	0.8	5.8	0.32	0.22	0.32	29.0
Approach		250	7.4	263	7.4	0.161	1.8	NA	0.8	5.8	0.32	0.22	0.32	28.3
North: Goulburn Street (N)														
7	L2	216	1.0	227	1.0	0.365	2.7	LOS A	1.8	12.4	0.34	0.49	0.36	28.5
9	R2	164	0.0	173	0.0	0.365	5.0	LOS A	1.8	12.4	0.34	0.49	0.36	28.2
Approach		380	0.6	400	0.6	0.365	3.7	LOS A	1.8	12.4	0.34	0.49	0.36	28.4
West: Elizabeth Street (W)														
10	L2	81	1.5	85	1.5	0.121	2.0	LOS A	0.0	0.0	0.00	0.13	0.00	30.4
11	T1	129	20.2	136	20.2	0.121	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	28.9
Approach		210	13.0	221	13.0	0.121	0.8	NA	0.0	0.0	0.00	0.13	0.00	29.7
All Vehicles		840	5.7	884	5.7	0.365	2.4	NA	1.8	12.4	0.25	0.32	0.26	28.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 3204 [Goulburn St_Campbell St_AM (Site Folder: Project Case - 2023)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	69	2.7	73	2.7	0.058	6.9	LOS A	1.1	7.7	0.33	0.48	0.33	26.7
2	T1	162	1.1	171	1.1	0.123	4.2	LOS A	2.4	17.0	0.31	0.26	0.31	28.0
Approach		231	1.6	243	1.6	0.123	5.0	LOS A	2.4	17.0	0.32	0.33	0.32	27.7
North: Goulburn Street (N)														
8	T1	303	4.9	319	4.9	0.235	4.6	LOS A	4.5	33.2	0.34	0.31	0.34	27.8
9	R2	34	6.7	36	6.7	* 0.235	6.7	LOS A	4.5	33.2	0.35	0.33	0.35	27.6
Approach		337	5.1	355	5.1	0.235	4.8	LOS A	4.5	33.2	0.34	0.31	0.34	27.8
West: Campbell Street (W)														
10	L2	48	2.4	51	2.4	0.234	46.4	LOS D	2.3	16.5	0.94	0.73	0.94	14.6
12	R2	48	4.3	51	4.3	* 0.237	46.5	LOS D	2.3	16.8	0.94	0.73	0.94	14.6
Approach		96	3.4	101	3.4	0.237	46.4	LOS D	2.3	16.8	0.94	0.73	0.94	14.6
All Vehicles		664	3.6	699	3.6	0.237	10.9	LOS A	4.5	33.2	0.42	0.38	0.42	25.2

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: 3204 [Goulburn St_Campbell St_PM (Site Folder: Project Case - 2023)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	49	0.0	52	0.0	0.044	6.2	LOS A	0.8	5.5	0.30	0.44	0.30	27.2
2	T1	257	3.9	271	3.9	* 0.191	4.2	LOS A	3.8	27.7	0.32	0.28	0.32	28.0
Approach		306	3.3	322	3.3	0.191	4.5	LOS A	3.8	27.7	0.32	0.31	0.32	27.9
North: Goulburn Street (N)														
8	T1	203	0.0	214	0.0	0.158	4.0	LOS A	2.8	19.5	0.31	0.28	0.31	28.1
9	R2	26	7.1	27	7.1	0.158	6.1	LOS A	2.8	19.5	0.31	0.30	0.31	28.0
Approach		229	0.8	241	0.8	0.158	4.3	LOS A	2.8	19.5	0.31	0.28	0.31	28.0
West: Campbell Street (W)														
10	L2	25	8.3	26	8.3	0.139	46.8	LOS D	1.2	9.0	0.94	0.70	0.94	14.6
12	R2	34	0.0	36	0.0	* 0.178	47.1	LOS D	1.6	11.5	0.94	0.71	0.94	14.5
Approach		59	3.5	62	3.5	0.178	47.0	LOS D	1.6	11.5	0.94	0.71	0.94	14.5
All Vehicles		594	2.3	625	2.3	0.191	8.6	LOS A	3.8	27.7	0.38	0.34	0.38	26.2

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: 2 [Goulburn St_Elizabeth St_AM (Site Folder: Project Case - 2023)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	71	8.5	75	8.5	0.238	1.5	LOS A	1.3	9.1	0.47	0.43	0.47	26.0
6	R2	240	2.1	253	2.1	0.238	3.7	LOS A	1.3	9.1	0.47	0.43	0.47	28.2
Approach		311	3.6	327	3.6	0.238	3.2	NA	1.3	9.1	0.47	0.43	0.47	27.9
North: Goulburn Street (N)														
7	L2	132	11.8	139	11.8	0.263	2.5	LOS A	1.1	8.0	0.30	0.47	0.30	28.3
9	R2	111	3.3	117	3.3	0.263	5.5	LOS A	1.1	8.0	0.30	0.47	0.30	28.1
Approach		243	7.9	256	7.9	0.263	3.9	LOS A	1.1	8.0	0.30	0.47	0.30	28.2
West: Elizabeth Street (W)														
10	L2	207	0.0	218	0.0	0.181	2.0	LOS A	0.0	0.0	0.00	0.21	0.00	30.1
11	T1	116	18.1	122	18.1	0.181	0.0	LOS A	0.0	0.0	0.00	0.21	0.00	28.3
Approach		323	6.5	340	6.5	0.181	1.3	NA	0.0	0.0	0.00	0.21	0.00	29.7
All Vehicles		877	5.9	923	5.9	0.263	2.7	NA	1.3	9.1	0.25	0.36	0.25	28.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 2 [Goulburn St_Elizabeth St_PM (Site Folder: Project Case - 2023)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	127	12.6	134	12.6	0.167	0.7	LOS A	0.8	6.1	0.33	0.23	0.33	27.1
6	R2	130	2.0	137	2.0	0.167	3.1	LOS A	0.8	6.1	0.33	0.23	0.33	29.0
Approach		257	7.2	271	7.2	0.167	1.9	NA	0.8	6.1	0.33	0.23	0.33	28.3
North: Goulburn Street (N)														
7	L2	242	1.0	255	1.0	0.411	2.9	LOS A	2.3	16.1	0.35	0.52	0.40	28.3
9	R2	183	0.0	193	0.0	0.411	5.4	LOS A	2.3	16.1	0.35	0.52	0.40	28.1
Approach		425	0.6	447	0.6	0.411	4.0	LOS A	2.3	16.1	0.35	0.52	0.40	28.2
West: Elizabeth Street (W)														
10	L2	86	1.5	91	1.5	0.124	2.0	LOS A	0.0	0.0	0.00	0.13	0.00	30.4
11	T1	129	20.2	136	20.2	0.124	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	28.9
Approach		215	12.7	226	12.7	0.124	0.8	NA	0.0	0.0	0.00	0.13	0.00	29.7
All Vehicles		897	5.4	944	5.4	0.411	2.6	NA	2.3	16.1	0.26	0.34	0.28	28.5

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 3204 [Goulburn St_Campbell St_AM (Site Folder: Future Base - 2033)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	67	2.7	71	2.7	0.060	8.7	LOS A	1.2	8.8	0.38	0.50	0.38	25.7
2	T1	159	1.1	167	1.1	0.129	5.9	LOS A	2.8	19.8	0.37	0.31	0.37	27.3
Approach		226	1.6	238	1.6	0.129	6.7	LOS A	2.8	19.8	0.38	0.37	0.38	26.9
North: Goulburn Street (N)														
8	T1	178	4.9	187	4.9	0.166	6.3	LOS A	3.2	23.6	0.38	0.35	0.38	27.0
9	R2	34	6.7	36	6.7	* 0.166	8.6	LOS A	3.2	23.6	0.39	0.37	0.39	26.5
Approach		212	5.2	223	5.2	0.166	6.7	LOS A	3.2	23.6	0.38	0.35	0.38	27.0
West: Campbell Street (W)														
10	L2	48	2.4	51	2.4	* 0.165	40.8	LOS C	2.1	15.3	0.89	0.71	0.89	15.6
12	R2	32	4.3	34	4.3	0.112	40.4	LOS C	1.4	10.2	0.88	0.69	0.88	15.7
Approach		80	3.2	84	3.2	0.165	40.7	LOS C	2.1	15.3	0.89	0.70	0.89	15.7
All Vehicles		518	3.3	545	3.3	0.166	11.9	LOS A	3.2	23.6	0.46	0.41	0.46	24.8

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: 3204 [Goulburn St_Campbell St_PM (Site Folder: Future Base - 2033)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	31	0.0	33	0.0	0.026	6.4	LOS A	0.5	3.3	0.31	0.45	0.31	27.0
2	T1	152	3.9	160	3.9	0.116	4.2	LOS A	2.2	16.1	0.31	0.26	0.31	28.0
Approach		183	3.2	193	3.2	0.116	4.6	LOS A	2.2	16.1	0.31	0.29	0.31	27.9
North: Goulburn Street (N)														
8	T1	184	0.0	194	0.0	0.144	4.3	LOS A	2.6	18.4	0.31	0.29	0.31	27.9
9	R2	26	7.1	27	7.1	*0.144	6.4	LOS A	2.6	18.4	0.32	0.31	0.32	27.8
Approach		210	0.9	221	0.9	0.144	4.5	LOS A	2.6	18.4	0.31	0.29	0.31	27.9
West: Campbell Street (W)														
10	L2	25	8.3	26	8.3	0.127	45.6	LOS D	1.2	8.9	0.93	0.70	0.93	14.8
12	R2	31	0.0	33	0.0	*0.149	45.8	LOS D	1.5	10.3	0.93	0.71	0.93	14.8
Approach		56	3.7	59	3.7	0.149	45.7	LOS D	1.5	10.3	0.93	0.70	0.93	14.8
All Vehicles		449	2.2	473	2.2	0.149	9.7	LOS A	2.6	18.4	0.39	0.34	0.39	25.7

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: 2 [Goulburn St_Elizabeth St_AM (Site Folder: Future Base - 2033)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	71	8.5	75	8.5	0.217	1.3	LOS A	1.1	8.2	0.45	0.40	0.45	26.1
6	R2	219	2.1	231	2.1	0.217	3.5	LOS A	1.1	8.2	0.45	0.40	0.45	28.3
Approach		290	3.7	305	3.7	0.217	3.0	NA	1.1	8.2	0.45	0.40	0.45	27.9
North: Goulburn Street (N)														
7	L2	137	11.8	144	11.8	0.265	2.5	LOS A	1.1	8.1	0.30	0.47	0.30	28.4
9	R2	114	3.3	120	3.3	0.265	5.3	LOS A	1.1	8.1	0.30	0.47	0.30	28.2
Approach		251	7.9	264	7.9	0.265	3.8	LOS A	1.1	8.1	0.30	0.47	0.30	28.3
West: Elizabeth Street (W)														
10	L2	189	0.0	199	0.0	0.171	2.0	LOS A	0.0	0.0	0.00	0.20	0.00	30.1
11	T1	116	18.1	122	18.1	0.171	0.0	LOS A	0.0	0.0	0.00	0.20	0.00	28.3
Approach		305	6.9	321	6.9	0.171	1.2	NA	0.0	0.0	0.00	0.20	0.00	29.7
All Vehicles		846	6.1	891	6.1	0.265	2.6	NA	1.1	8.2	0.25	0.35	0.25	28.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 2 [Goulburn St_Elizabeth St_PM (Site Folder: Future Base - 2033)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	127	12.6	134	12.6	0.167	0.7	LOS A	0.8	6.1	0.33	0.23	0.33	27.1
6	R2	130	2.0	137	2.0	0.167	3.1	LOS A	0.8	6.1	0.33	0.23	0.33	29.0
Approach		257	7.2	271	7.2	0.167	1.9	NA	0.8	6.1	0.33	0.23	0.33	28.3
North: Goulburn Street (N)														
7	L2	222	1.0	234	1.0	0.380	2.8	LOS A	1.9	13.5	0.35	0.50	0.37	28.4
9	R2	170	0.0	179	0.0	0.380	5.2	LOS A	1.9	13.5	0.35	0.50	0.37	28.2
Approach		392	0.6	413	0.6	0.380	3.8	LOS A	1.9	13.5	0.35	0.50	0.37	28.3
West: Elizabeth Street (W)														
10	L2	86	1.5	91	1.5	0.124	2.0	LOS A	0.0	0.0	0.00	0.13	0.00	30.4
11	T1	129	20.2	136	20.2	0.124	0.0	LOS A	0.0	0.0	0.00	0.13	0.00	28.9
Approach		215	12.7	226	12.7	0.124	0.8	NA	0.0	0.0	0.00	0.13	0.00	29.7
All Vehicles		864	5.6	909	5.6	0.380	2.5	NA	1.9	13.5	0.25	0.33	0.27	28.6

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 3204 [Goulburn St_Campbell St_AM (Site Folder: Project Case - 2033)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	70	2.7	74	2.7	0.059	6.9	LOS A	1.1	7.9	0.33	0.48	0.33	26.7
2	T1	186	1.1	196	1.1	0.141	4.3	LOS A	2.8	19.8	0.32	0.27	0.32	28.0
Approach		256	1.5	269	1.5	0.141	5.0	LOS A	2.8	19.8	0.32	0.33	0.32	27.7
North: Goulburn Street (N)														
8	T1	421	4.9	443	4.9	0.313	5.0	LOS A	6.6	48.3	0.36	0.33	0.36	27.7
9	R2	34	6.7	36	6.7	* 0.313	7.1	LOS A	6.6	48.3	0.38	0.35	0.38	27.5
Approach		455	5.0	479	5.0	0.313	5.1	LOS A	6.6	48.3	0.36	0.33	0.36	27.7
West: Campbell Street (W)														
10	L2	48	2.4	51	2.4	0.234	46.4	LOS D	2.3	16.5	0.94	0.73	0.94	14.6
12	R2	61	4.3	64	4.3	* 0.302	47.0	LOS D	3.0	21.6	0.95	0.74	0.95	14.6
Approach		109	3.5	115	3.5	0.302	46.7	LOS D	3.0	21.6	0.95	0.74	0.95	14.6
All Vehicles		820	3.7	863	3.7	0.313	10.6	LOS A	6.6	48.3	0.43	0.38	0.43	25.4

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: 3204 [Goulburn St_Campbell St_PM (Site Folder: Project Case - 2033)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Cycle Time)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times determined by the program
Phase Sequence: Opposed Turns
Reference Phase: Phase A
Input Phase Sequence: A, B
Output Phase Sequence: A, B

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Goulburn Street (S)														
1	L2	62	0.0	65	0.0	0.059	5.7	LOS A	1.0	7.2	0.29	0.42	0.29	27.6
2	T1	362	3.9	381	3.9	* 0.258	3.8	LOS A	5.2	37.9	0.32	0.29	0.32	28.2
Approach		424	3.3	446	3.3	0.258	4.1	LOS A	5.2	37.9	0.31	0.31	0.31	28.1
North: Goulburn Street (N)														
8	T1	240	0.0	253	0.0	0.181	3.7	LOS A	3.1	22.2	0.30	0.27	0.30	28.2
9	R2	26	7.1	27	7.1	0.181	5.9	LOS A	3.1	22.2	0.31	0.29	0.31	28.1
Approach		266	0.7	280	0.7	0.181	4.0	LOS A	3.1	22.2	0.30	0.28	0.30	28.2
West: Campbell Street (W)														
10	L2	25	8.3	26	8.3	0.169	49.4	LOS D	1.2	9.3	0.96	0.70	0.96	14.1
12	R2	36	0.0	38	0.0	* 0.230	49.7	LOS D	1.8	12.6	0.96	0.72	0.96	14.1
Approach		61	3.4	64	3.4	0.230	49.6	LOS D	1.8	12.6	0.96	0.71	0.96	14.1
All Vehicles		751	2.4	791	2.4	0.258	7.7	LOS A	5.2	37.9	0.36	0.33	0.36	26.5

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: 2 [Goulburn St_Elizabeth St_AM (Site Folder: Project Case - 2033)]

AM Peak: 07:45-08:45
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	71	8.5	75	8.5	0.268	1.7	LOS A	1.4	10.3	0.50	0.46	0.50	25.8
6	R2	268	2.1	282	2.1	0.268	3.9	LOS A	1.4	10.3	0.50	0.46	0.50	28.1
Approach		339	3.4	357	3.4	0.268	3.4	NA	1.4	10.3	0.50	0.46	0.50	27.8
North: Goulburn Street (N)														
7	L2	143	11.8	151	11.8	0.292	2.5	LOS A	1.2	8.9	0.31	0.47	0.31	28.2
9	R2	119	3.3	125	3.3	0.292	6.0	LOS A	1.2	8.9	0.31	0.47	0.31	28.0
Approach		262	7.9	276	7.9	0.292	4.1	LOS A	1.2	8.9	0.31	0.47	0.31	28.1
West: Elizabeth Street (W)														
10	L2	231	0.0	243	0.0	0.194	2.0	LOS A	0.0	0.0	0.00	0.22	0.00	30.1
11	T1	116	18.1	122	18.1	0.194	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	28.2
Approach		347	6.1	365	6.1	0.194	1.3	NA	0.0	0.0	0.00	0.22	0.00	29.7
All Vehicles		948	5.6	998	5.6	0.292	2.8	NA	1.4	10.3	0.27	0.37	0.27	28.5

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.

Site: 2 [Goulburn St_Elizabeth St_PM (Site Folder: Project Case - 2033)]

PM Peak: 16:00-17:00
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Elizabeth Street (E)														
5	T1	127	12.6	134	12.6	0.177	0.8	LOS A	0.9	6.6	0.35	0.25	0.35	27.0
6	R2	142	2.0	149	2.0	0.177	3.1	LOS A	0.9	6.6	0.35	0.25	0.35	28.9
Approach		269	7.0	283	7.0	0.177	2.0	NA	0.9	6.6	0.35	0.25	0.35	28.2
North: Goulburn Street (N)														
7	L2	268	1.0	282	1.0	0.463	3.2	LOS A	3.0	20.9	0.37	0.55	0.46	28.0
9	R2	205	0.0	216	0.0	0.463	6.0	LOS A	3.0	20.9	0.37	0.55	0.46	27.8
Approach		473	0.6	498	0.6	0.463	4.4	LOS A	3.0	20.9	0.37	0.55	0.46	27.9
West: Elizabeth Street (W)														
10	L2	94	1.5	99	1.5	0.128	2.0	LOS A	0.0	0.0	0.00	0.14	0.00	30.4
11	T1	129	20.2	136	20.2	0.128	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	28.8
Approach		223	12.3	235	12.3	0.128	0.8	NA	0.0	0.0	0.00	0.14	0.00	29.7
All Vehicles		965	5.1	1016	5.1	0.463	2.9	NA	3.0	20.9	0.28	0.37	0.32	28.3

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.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road 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.