

Traffic and Transport Assessment

Proposed Mixed-Use Development

16 Nexus Way (Lot 3A-2 Corner of Knowledge Street and Bonner Street)
Southport



12 August 2022

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GELEON

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1.0 Introduction

1.1 Project Background

Geleon has been engaged by Gold Coast 888 Pty Ltd (the **Applicant**) to prepare a Traffic and Transport Assessment to accompany a Development Application (**DA**) for the purpose of establishing a mixed-use development known as 'North Star' at 16 Nexus Way, Southport (Lot 3A-2 on Lot 9 on SP275512) (**Figure 1.1**). The existing 2,414m² site is currently vacant and forms part of the Gold Coast Health and Knowledge Precinct (**GCHKP**).

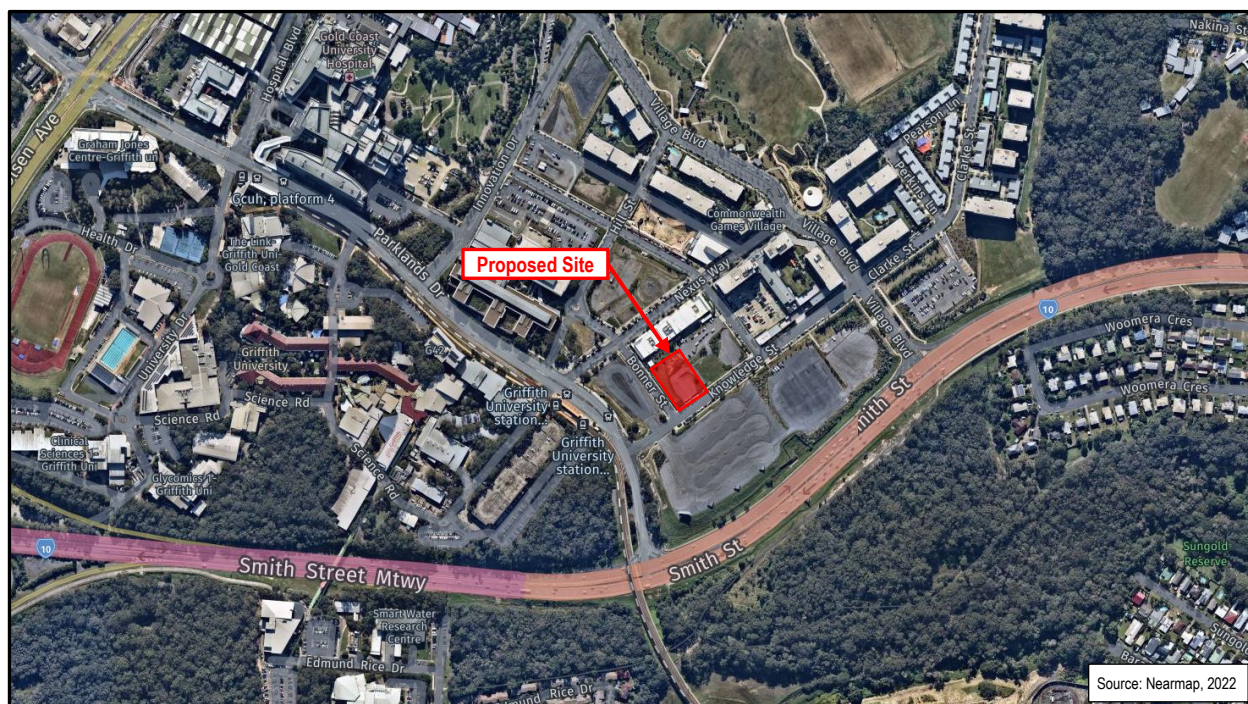


Figure 1.1 Locality Plan

1.2 Context

The subject site is situated within the Parklands Priority Development Area (**PDA**) that covers 29 hectares and is located approximately three kilometres from the Southport CBD and 3.6km east of the Pacific Motorway. The development site is subject to the Parklands Priority Development Area Development Scheme (December 2013) and the Queensland Development Code MP 4.1 – Sustainable Buildings (September 2020).

1.3 Development Details

The development proposes a mixed-use medical precinct establishment on the subject site comprising multiple land uses including Health Care Service, Research Technology, Food and Drink Outlet, Indoor Sport and Recreation, Office, Hotel and Function Facility. Access to and from the development is proposed via a two-lane, two-way vehicle crossing on the Bonner Street frontage which will provide access to three podium level carparks via a service lane easement.

Details of the proposed development are provided in **Table 1.3** with the site plan shown in **Figure 1.3**

Relevant plans of development have been provided in **Appendix A**.

Table 1.3 Proposed Development Details

Level	Land Use	GFA (m²)	TUA (m²)
Ground Floor	Health Care Services / Research and Technology / Office / Food and Drink Outlet	1,954	1,589
Podium (Level 1 – Level 3)	Health Care Services / Research and Technology / Indoor Sport and Recreation / Office	1,142	968
Tower (Level 4)	Health Care Services / Function Facility / Food and Drink Outlet (Café) / Hotel (Bar)	1,139	931
Tower (Level 5 – Level 10)	Health Care Services / Research Technology / Office	5,324	4,774
Grand-Total		9,559	8,262

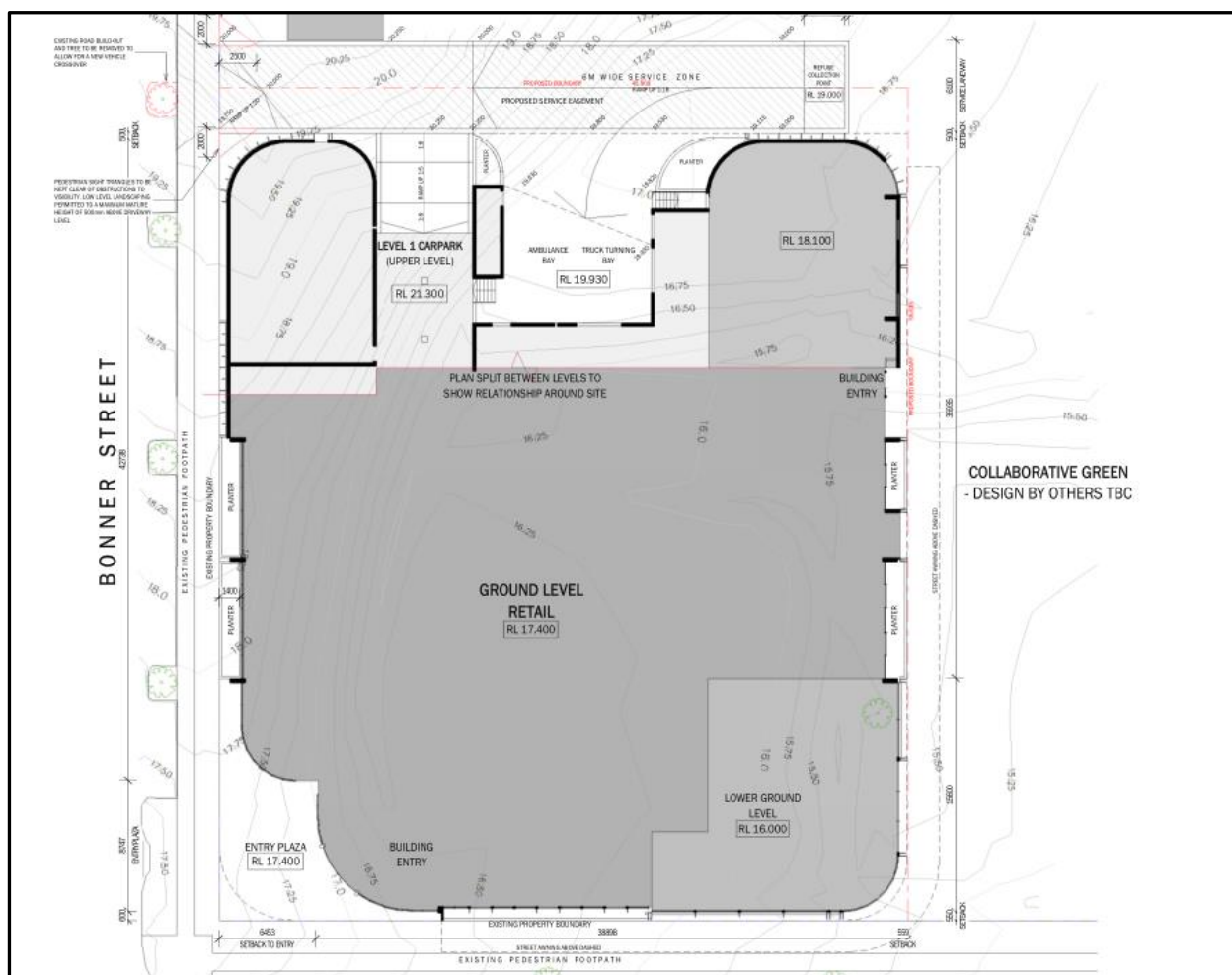


Figure 1.3 Development Plan – Site Plan

1.4 Scope

The scope of the assessment presented in this report is as follows:

- assess public transport, pedestrian and cycling accessibility to/from site and on-site
- calculate the anticipated development traffic generation and its impact to the external road network
- assess proposed car parking supply against relevant PDA requirements
- assess proposed bicycle parking supply against relevant Queensland Development Code (QDC) requirements
- review design of on-site transport and traffic operations against the Australian Standards and Council's requirements
- assess site access and access configuration against Council requirements, and
- assess servicing arrangements.

2.0 Existing Conditions

2.1 Road Network

The hierarchy of the road network surrounding the development is shown in **Table 2.1**.

Table 2.1 Surrounding Road Network

Road Name	Jurisdiction	No. of lanes (two-way)	Posted Speed Limit	Median Divided	Road Hierarchy
Parklands Drive	City of Gold Coast	4	50km/h	Partially	Local Collector
Knowledge Street	City of Gold Coast	2	50km/h	No	Local Road
Nexus Way	City of Gold Coast	2	40km/h	No	Local Access
Bonner Street	City of Gold Coast	2	50km/h	No	Local Access

2.1.1 Parklands Drive

Parklands Drive is a Council controlled four-lane median divided road comprising two lanes in each direction, providing a north-west to south-east connection between Olsen Avenue (State-controlled) to Smith Street (State-controlled) respectively. The Gold Coast Light Rail (GCLR) runs along the northbound carriage and terminates shortly after the Griffith University Station which is situated in proximity to the intersection of Parklands Drive and Knowledge Street. A concrete footpath is provided along the eastern side of the road for the entirety of Parklands Drive, offering pedestrian connectivity to the GCLR station between both Knowledge Street and Nexus Way. On-street parking is not permitted along Parklands Drive. Designated on-road cycle lanes are provided on both sides of the road.

2.1.2 Knowledge Street

Knowledge Street is a two-lane, two-way Council controlled road that runs between Parklands Drive to Village Boulevard. Both the intersection of Parklands Drive / Knowledge Street and Village Boulevard / Knowledge Street are signalised all-movements intersections. Formal on-street parking, pedestrian footpaths and on-street cycleways are provided on both sides of the road. Knowledge Street offers connectivity to multiple commercial and medical facilities throughout, with parking being restricted to short term 2-hour periods.

2.1.3 Nexus Way

Nexus Way is a two-lane, two-way Council controlled local road that runs north of Knowledge Street between Parklands Drive to Village Boulevard. Each end of Nexus Way is provided with signalised all-movements intersections, similar to Knowledge Street. Footpath and parallel on-street parking bays are provided along both sides of the road however no active provision for cyclists are provided.

2.1.4 Bonner Street

Bonner Street is a two-lane Council controlled local access road which connects Knowledge Street to Nexus Way via two separate priority-controlled intersections. Formalised on-street parking exists on both sides of the road, as well as concrete footpaths, however no active provision for cyclists are provided.

2.2 Public Transport

The development is located 220m from one Translink bus stop / Gold Coast Light Rail stop, known as 'Griffith University station (Southport)' (Stop ID 600829) (Figure 2.2.1). The stop is serviced by six public routes with a frequency ranging from 15 minutes to 60 minutes throughout the day. Weekday services for the identified bus stop operate 24-hours a day. The GCLR (G:link) service runs daily with a frequency ranging from 15 to 30 minutes (Figure 2.2.2).

Details of all stops and services within proximity to the development are shown in Figure 2.2.2. Services 700, 719 and the light rail are considered 'high-frequency services' (Figure 2.2.3).



Figure 2.2.1 Public Transport Network in Proximity to Site

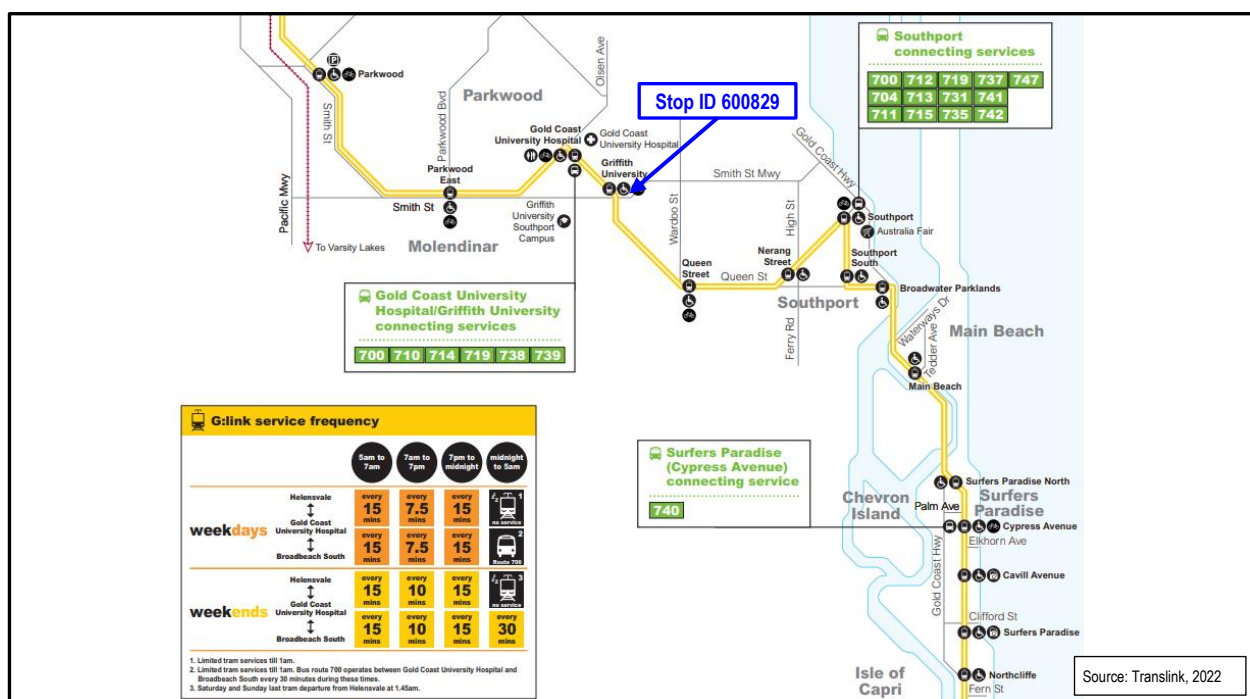


Figure 2.2.2 GCLR and Public Transport Connectivity in Proximity to Site

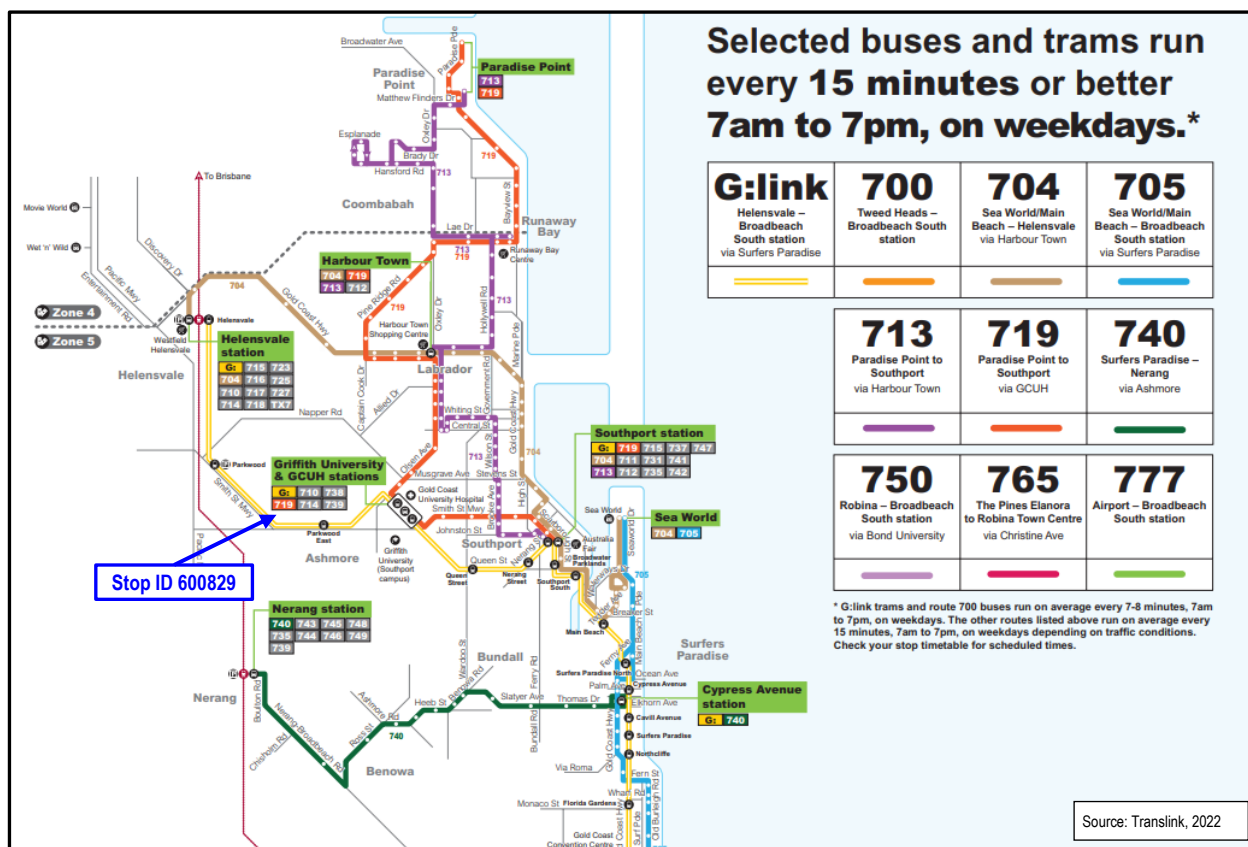


Figure 2.2.3 High Frequency Services in Proximity to Site

2.3 Active Transport

The subject site is serviced by a comprehensive network of pedestrian footpaths as shown in Figure 2.3.1 which illustrates the active transport network surrounding the proposed development.

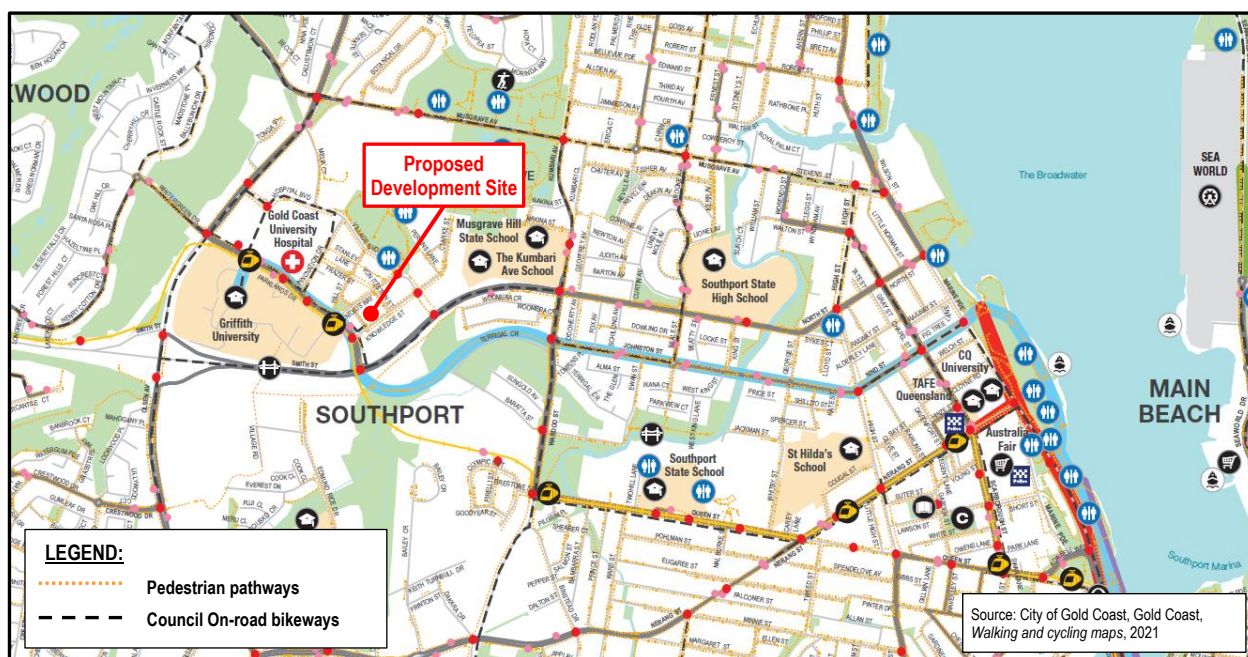


Figure 2.3.1 Active Transport Network

The subject site is located within proximity to Smith Street and Parklands Drive which are classified as a priority A and priority B routes respectively on DTMR's *South East Queensland Principal Cycle Network*. The principal cycle network surrounding the proposed development and route priorities are illustrated in **Figure 2.3.2** and **Figure 2.3.3**.

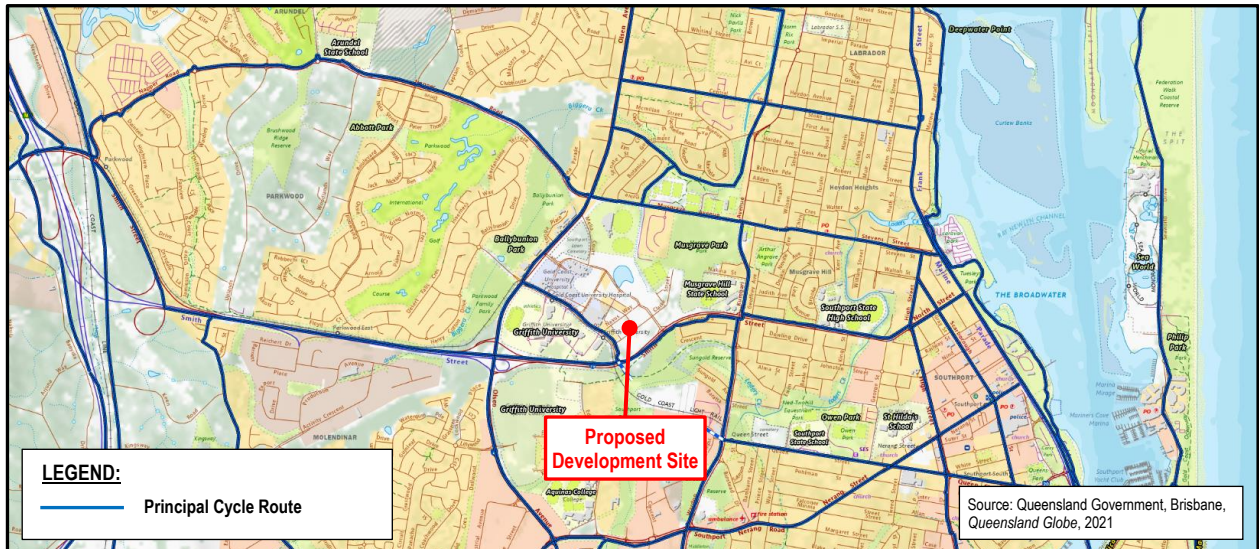


Figure 2.3.2 Principal Cycle Network

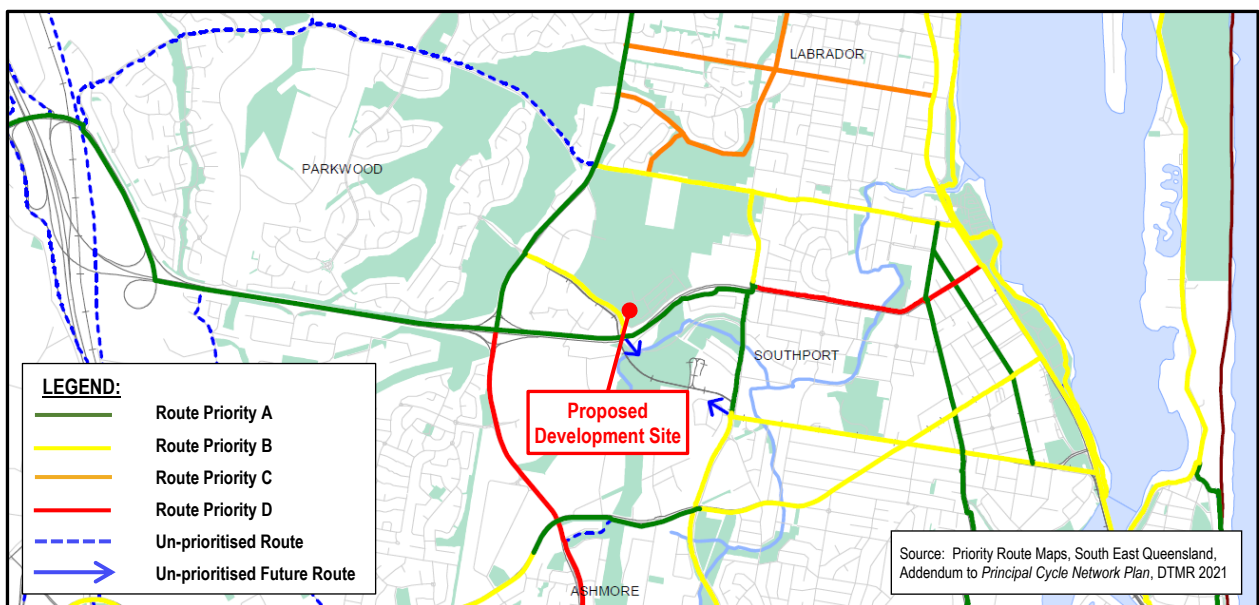


Figure 2.3.3 Priority Route Map

3.0 Traffic Impact Assessment

3.1 Traffic Generation

A review of the *Parklands Priority Development Area Development Scheme (December 2013)* has not identified traffic generation rates for the proposed land uses. In lieu of PDA specific traffic generation rates, rates for the proposed development have been based on those provided in the RTA's *Guide to Traffic Generating Developments (GTGD)*, the updated RMS *Guide to Traffic Generating Developments – Technical Direction (TDT 2013/04)*, and TMR's *Traffic Generation Data from 2006 to 2018*. For the function facility land use, traffic generation rates were not available from the above sources and were obtained from TMR's *Road Planning and Design Manual (RPDM)* for an 'Amusement Centre' land use. Adopting a conservative approach, for all tenancies from the ground floor to level nine, the highest traffic generation rate was for a 'Medical Centre' (TMR's *RPDM*) (Health Care Services) and therefore this rate was adopted for all tenancies. For the top floor level, the aforementioned 'Amusement Centre' trip generation rates were adopted for each tenancy as a conservative approach.

Appropriate trip generation 'discounts' (internalised trip reductions) have been applied at 20% given that the development concept is a mixed-use facility where uses will be primarily used by on-site staff / visitors or comprise multi-purpose / walk-in trips from within the PDA.

A summary of the expected development traffic generation is shown in **Table 3.1.1**.

Table 3.1.1 Development Traffic Generation

Land Use	GFA (m²)	Peak Period	Traffic Generation Rate		Traffic Generation Volume
Ground Floor, Podium and Tower Tenancies (Ground Floor Level to Level 9, excluding Level 4)					
Health Care Services / Research and Technology / Food and Drink Outlet / Office / Indoor Sport and Recreation	8,420	AM	6.39	trips per 100m² GFA	539
		PM	4.95	trips per 100m² GFA	417
Level 4 Tenancies					
Health Care Services / Function Facility / Food and Drink Outlet / Hotel (Bar / Restaurant)	1,139	AM	10	trips per 100m² GFA	114
		PM	10	trips per 100m² GFA	114
Internalised Trip Reduction					20%
Total AM Peak Hour Trips					523
Total PM Peak Hour Trips					426

TMR's Guide to Traffic Impact Assessment (GTIA) stipulates¹:

"Peak hour development-generated traffic volumes need to be split into entry (IN) and exit (OUT) volumes for assignment of this traffic to the access intersection and to the surrounding road network."

Typical In / Out traffic splits accounting for staff and visitors were utilised for the development (i.e. 60% In / 40% Out in the AM peak hour, and 40% In / 60% Out during the PM peak hour). The AM and PM In / Out traffic splits of the total peak hour vehicle trips are provided in **Table 3.1.2**.

Table 3.1.2 Development Traffic Generation Splits

Traffic Generation (trips)	Peak Period	IN%	IN Trips	OUT %	OUT TRIPS
523	AM Peak	60%	314	40%	210
426	PM Peak	40%	171	60%	256

¹ Department of Transport and Main Roads (December 2018), *Guide to Traffic Impact Assessment (Version no. 1.2)* s.8.2.2, p.31.

3.2 Traffic Impacts

Considering the geographical location of the development, all inbound and outbound development generated traffic will utilise Bonner Street via Knowledge Street and / or Nexus Way. It is understood that the road network within the Parklands Priority Development Area was designed and constructed to accommodate ultimate development traffic conditions for the PDA and therefore on this basis, Bonner Street, Knowledge Street and Nexus Way are expected to suitably cater for the expected traffic demand associated with the proposed development. Therefore, no further intersection analysis or investigation into mitigation measures has been considered for the external road network.

4.0 Parking Assessment

4.1 Car Parking Requirements

The parking requirements for the development have been calculated in accordance with the *Parklands Priority Development Area Development Scheme (December 2013)* as shown in **Table 4.1**.

Table 4.1 Car Parking Requirements

Description	Component	Car Parking Rate	GFA (m ²)	Parking Requirement
Non-residential (Minimum provision)	GFA	1 space per 100m ²	9,559	96
Non-residential (Maximum provision)	GFA	1 space per 50m ²	9,559	192

The total car parking requirement for the development is 96 (minimum) to 192 (maximum) car parking spaces. In accordance with the *National Construction Code (NCC) – Volume 1*, for a Class 5, 6 and 9a buildings, a minimum of one parking space for People with Disability (PWD) for every 50 carparking spaces is to be provided.

4.2 Car Parking Provision

A summary of the development's car parking provision is provided in **Table 4.2**.

Table 4.2 Development Car Parking Provision

Level	Non-PWD Spaces	Staff Tandem Spaces	PWD Spaces	Staff Small Spaces	Total
Level 1	4	24	4	-	32
Level 2	11	46	-	13	70
Level 3	25	28	-	10	63
Sub-totals	40	98	4	23	165 spaces

The development provides a total of 165 car parking spaces including 40 non-PWD spaces, 98 staff tandem spaces, four PWD spaces and 23 staff small spaces and therefore complies with the PDA and NCC requirements. The four PWD spaces are provided within the level one carpark and are positioned close to the southern lifts offering ease of access from each space into the proposed development (**Appendix A**).

4.3 Bicycle Parking

The *Parklands Priority Development Area Development Scheme (December 2013)* stipulates that a development:

"Provides end of trip facilities for pedestrian and cyclists, including secure undercover bicycle storage facilities, showers and lockers are to be provided as part of development"

The proposed development provides a total of 40 secure (Class 2) bicycle parking spaces located in a secure designated bicycle parking room on the ground floor level. The bicycle parking and storage facilities are provided in accordance with *MP 4.1 – Sustainable Buildings* of the *Queensland Development Code (QDC)*. The bicycle parking facilities are accompanied by end of trip facilities, comprising changing rooms that will include adequate showers, sanitary compartments, wash basins and mirrors. Adjacent to the bicycle storage room there is adequate provision for securing belongings in the form of personal lockers. The location of the facilities is easily accessible and within 100m of the entrance on the western side of the development site. The QDC stipulates that bicycle parking is provided to accommodate five percent (5%) of the number of employees, based on the work force numbers. The provision of 40 bicycle parking spaces equates to a work force of up to 800 people, which is considered not to exceed the number of employees of a development of this scale, and therefore the bicycle parking provision is expected to meet the needs of the development.

4.4 Parking and Internal Road Layout

4.4.1 Parking Layout

Car parking design for the proposed development has been undertaken generally in accordance with Australian Standard AS2890.1 – *Parking Facilities*. **Table 4.4.1** shows design parameters for each user class in accordance with AS2890.1.

Table 4.4.1 Car Parking Design Requirement

User Class	Minimum Parking Bay Width (m)	Minimum Parking Bay Length (m)	Minimum Aisle Width (m)	Use
1A	2.4	5.4	5.8	Staff
3	2.6	5.4	5.8	Visitor - high turn over
4	2.4*	5.4 ¹	5.8	People with Disabilities
Small Car	2.3	5.0	5.8	Small Car
Tandem	2.4	10.4	5.8	Staff

Notes:

1. In addition to these parameters, a shared area is also provided adjacent to the parking space

Other specific design parameters relating to the parking and internal road layout design have been developed generally in accordance Australian Standard AS2890.1 – *Parking Facilities* as follows:

- the development proposes an automatic ticketing and boom gate system, provided 14.0m inside the entry of the car park facility from the proposed easement on the ground floor level. In accordance with AS2890.1 – *Appendix D*, an automatic ticketing and boom gate system is only required to provide one queueing lane where the peak inflow of traffic does not exceed 300 vehicles per hour. The queueing lane provides adequate room for three passenger vehicles to queue within the development site and the proposed services easement and therefore complies with AS2890.1 (refer **Section 4.4.4** for queueing assessment)
- a 1.0m extension is provided beyond the last parking spaces in accordance with AS2890.1 – *Clause 2.4.2 (c)*
- where the parking aisle is bounded by a vertical obstruction, the aisle width has been increased by 300mm in accordance with (AS2890.1 – *Clause 2.4.2 (d)*)
- where the parking aisle is bounded by a vertical obstruction and a 6.1m parking aisle cannot be achieved, the car parking spaces in question have been appropriately labelled as 'reverse parking only' in accordance with AS2890.1 – *Clause B4.3 (Appendix B)*. A total of 25 reverse-in car parking spaces is provided, comprising four tandem carparking spaces (eight car parking spaces) on level two, one tandem space (two car parking spaces) on level three, nine small car parking bays (SCB) on level two and six small car parking bays (SCB) on level three
- no building columns are positioned within exclusion areas and therefore complies with AS2890.1 – *Figure 5.2*
- where vertical obstructions are positioned adjacent the side boundary of a parking space, a 300mm clearance has been provided between the edge of the parking space and the vertical obstruction in accordance with AS2890.1 – *Clause 2.4.2 (c)*
- all tandem car parking spaces are provided with a minimum length of 10.4m and width of 2.6m. Tandem spaces will be allocated to the same tenancy to ensure no inconvenience arises from their use
- to maximise the car parking supply, the proposed development comprises 23 small car parking spaces. The small car parking bays represent 14% of all spaces. This ratio of small to standard car parking spaces is considered acceptable on the basis that small car parking spaces are designed to cater for a B85 design vehicle in accordance with AS2890.1 which represents 85% of all vehicles, and
- no turnaround bay is provided on level three as there is sufficient space available for a vehicle to perform a turnaround manoeuvre within the parking aisle at the end of the blind aisle (**Appendix B**)

Although the carparking levels have been designed in accordance AS2890.1, for the purposes of demonstrating that the proposed reverse-in and small car parking spaces can function, swept path sketches have been provided in **Appendix B**.

4.4.2 Internal Road Layout

The internal road layout design has been undertaken generally in accordance with the requirements specified in the Australian Standards with specific design parameters as follows:

- all ramp grades, transitions and changes in grade are designed generally in accordance with AS2890.1
- roadways have been designed generally in accordance with the requirements of AS2890.1
- a 2.0m wide x 2.5m long pedestrian sight triangle is provided on both sides of the driveway in accordance with AS2890.1 – Figure 3.3 to ensure that sight lines to pedestrians on the site frontage are maintained, and
- footpath connectivity is provided from the Bonner Street and Knowledge Street frontages into the development site.

4.4.3 Bicycle Parking Design

Bicycle parking design for the proposed development has generally been designed to comply with Australian Standard AS2890 – *Parking Facilities*. Table 4.4.3 shows design parameters adopted in accordance with AS2890.3.

Table 4.4.3 Bicycle Parking Design Requirements

User	Security Level	Min. Parking Envelope Width (m)	Min. Parking Envelope Length (m)	Min. Aisle Width (m)
Staff	B ¹	0.5	1.8	1.5

Notes:

1. Parking requirements are based on a horizontal parking layout with floor mounted rails.

4.4.4 Queueing Assessment

To ensure vehicle queueing associated with the operation of the boom gate system does not adversely affect traffic or pedestrian flows on the Bonner Street frontage, AS2890.1 requires sufficient on-site queueing area to be provided between the vehicle control point, which in this case comprises the boom gate on car park level one, and the property boundary along Bonner Street (including the Services Easement). For this analysis, Austroads *Guide to Traffic Management: Part 2 – Traffic Theory* (2015) was used to undertake analysis of the queueing provision for the proposed development.

For the analysis, the mean arrival rate was 294 vehicles per hour 'IN' to the site in the PM peak hour based on a 60%:40% IN:OUT split. The service rate for egressing vehicles was based on a transfer period of 10 seconds per vehicle through the boom gate.

A summary of the variables adopted for the queueing assessment of the boom gate operation is detailed in Table 4.4.4.1.

Table 4.4.4.1 Adopted Queueing Assessment Parameters

Variable	Adopted Value	Comment
r	314 veh/h	average arrival rate
t	10 sec	Maximum waiting time for an ingress vehicle ¹
s	720 veh/h	average service rate
p	0.44	utilisation factor ¹

Notes:

1. The utilisation factor is the ratio of the average arrival rate, r, to the average service rate, s, that is $p=r/s$.

Using Equation 4.3² in Austroads, the 98th percentile queue is three vehicles or 18m (assuming a 6.0m queue length per vehicle). The plans of development (**Appendix A**) demonstrate that there is approximately 30m of available queueing area between the front end of the boom gate on level one and the Bonner Street vehicle crossing, which is adequate to queue up to five vehicles (6.0m per vehicle) if required. Therefore, no queueing issues that could impact the local road network are expected to arise due to the proposed boom gate system. The results of the queueing assessment are summarised in Table 4.4.4.2.

² Austroads (October 2015), *Guide to Traffic Management Part 2: Traffic Theory*, p.28.

Swept path sketches have been provided in **Appendix B** that utilise AutoTURN software to demonstrate that a B99 design vehicle exiting the development site can successfully pass three B85 passenger vehicles queueing at 6m intervals within the queueing area prior to the proposed boom gate whilst maintaining sufficient clearances to surrounding objects.

Table 4.4.4.2 Vehicle Queueing Assessment Summary

Queue Length		Probability	
Vehicles	Metres	Exactly x Vehicles	Less or Equal to x Vehicles
0	0.0	56.39%	56.39%
1	6.0	24.59%	80.98%
2	12.0	10.72%	91.71%
3	18.0	4.68%	96.38%
4	24.0	2.04%	98.42%

5.0 Access and Servicing Assessment

5.1 Access Arrangement

The development proposes access from Bonner Street via a single, two-way 5.5m wide ‘General Wide’ vehicle crossing in accordance with IPWEA *Standard Drawing RS-051 – Heavy Duty Vehicle Crossing*. The access will cater for all movements and provides direct access to the proposed Service Easement on the northern side of the development.

5.2 Sight Distance Assessment

A sight distance assessment has been undertaken in accordance with AS2890.1 and AS2890.2 to ensure that the location of the vehicle crossing provides sufficient sight distance for road users to find a safe gap in oncoming traffic when leaving the site. The minimum gap sight distance requirements (MGSD) for a vehicle departing the site are provided in **Table 5.2**. It is anticipated that vehicles travelling towards the development site along Bonner Street would likely have an operating speed of 30km/h having traversed the 90-degree turn from either Knowledge Street or Nexus Way, and therefore this speed has been adopted for this assessment.

Table 5.2 Sight Distance Requirements

Frontage Road	Vehicle Speed Assessed (km/h)	Sight Distance Requirement (5s Gap)
Bonner Street	30km/h	42 metres

Figure 5.2 shows the required sight distance and associated sight lines for vehicles travelling along Bonner Street to vehicles departing the development site, demonstrating compliance with specified requirements. It is recommended that parking is restricted on both sides of the vehicle crossing (approximately 15m north-west and 5m south-east) and that yellow pavement marking is installed to prevent sight lines to approaching vehicles from being obstructed.

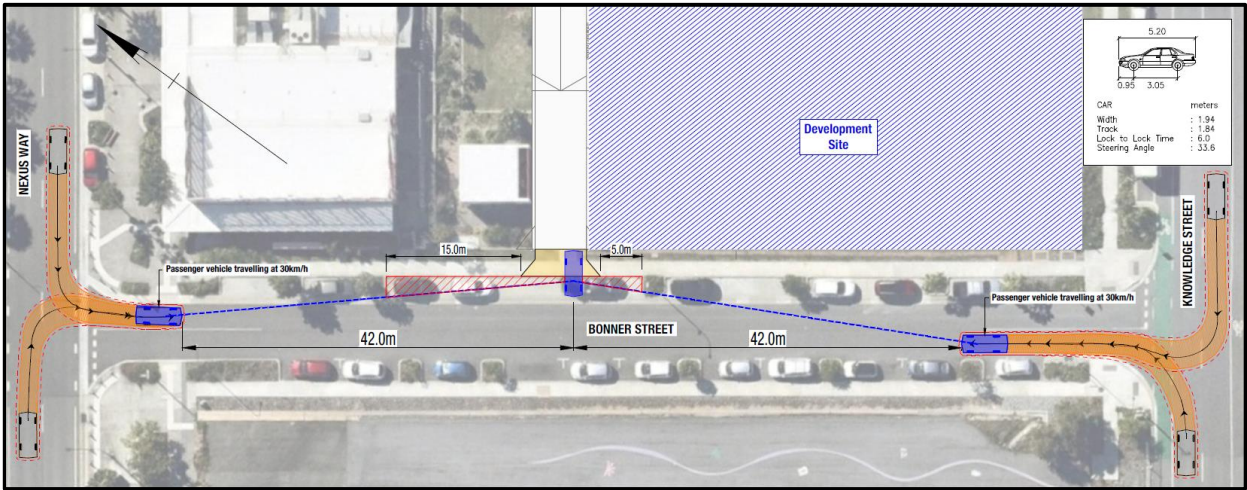


Figure 5.2 Minimum Sight Distance Requirement

5.3 Servicing

A review of the *Parklands Priority Development Area Development Scheme (December 2013)* has not identified service vehicle requirements for the proposed land uses. In lieu of PDA specific service vehicle requirements, service vehicle requirements for the proposed development have been based on the functionality and operations of the proposed commercial tenancies. As such, provision for vehicle sizes up to an 8.8m Medium Rigid Vehicle (MRV) have been provided.

The proposed development provides a dedicated servicing area to service the proposed commercial tenancies (**Figure 5.3**). The service area is located on the northern side of the development and is accessible via a 6m wide services easement provided along the northern boundary that provides direct connectivity to the Bonner Street frontage. The service area also provides parking for a 6.4m Small Rigid Vehicle (SRV) / ambulance.

A swept path assessment has been undertaken using AutoTURN Software to demonstrate that a MRV can satisfactorily enter the site in a forward gear, reverse into the service area, stand, and then exit the development in a forward gear (**Appendix B**).

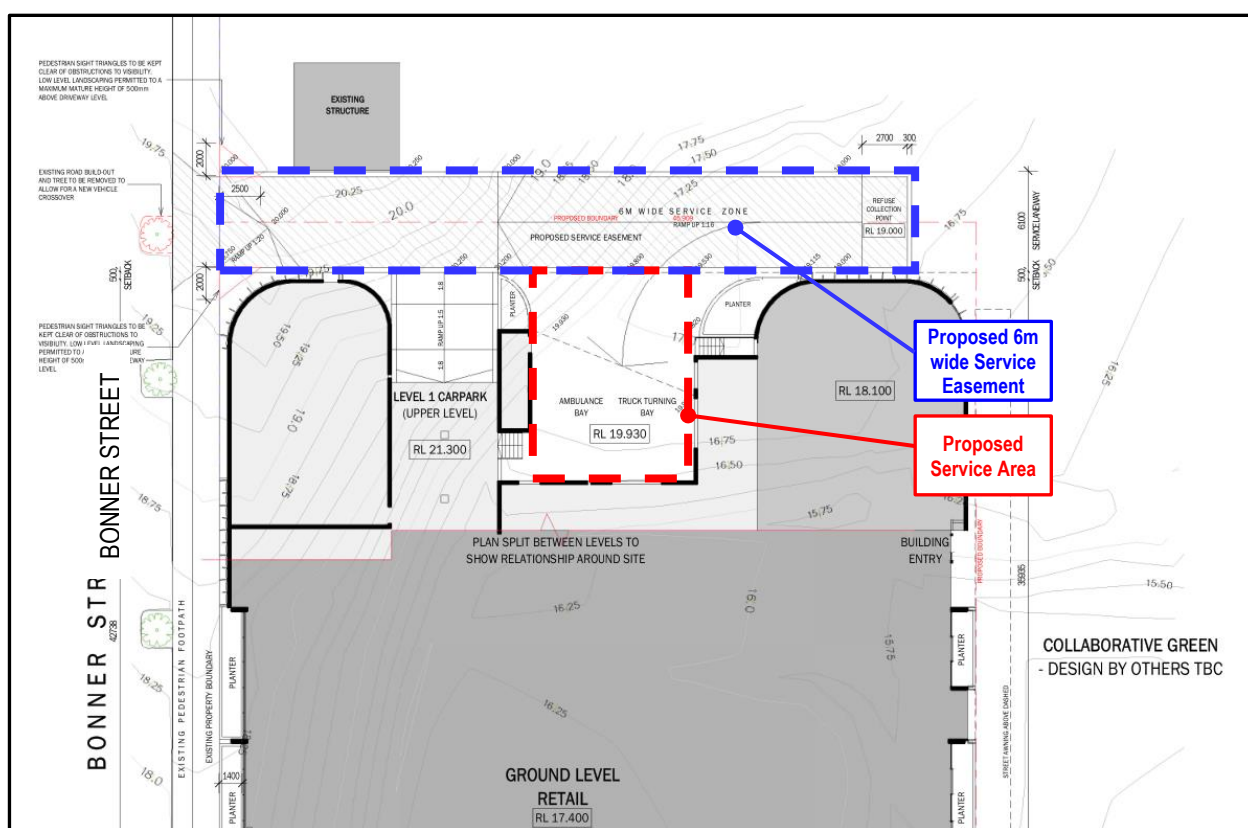


Figure 5.3 Proposed Servicing Arrangement (Site Plan)

6.0 Conclusions

6.1 Summary

This report presents the findings related to assessment of traffic and transport related matters for a proposed development located at 16 Nexus Way, Southport (Lot 3A-2 on Lot 9 on SP275512).

6.2 Findings

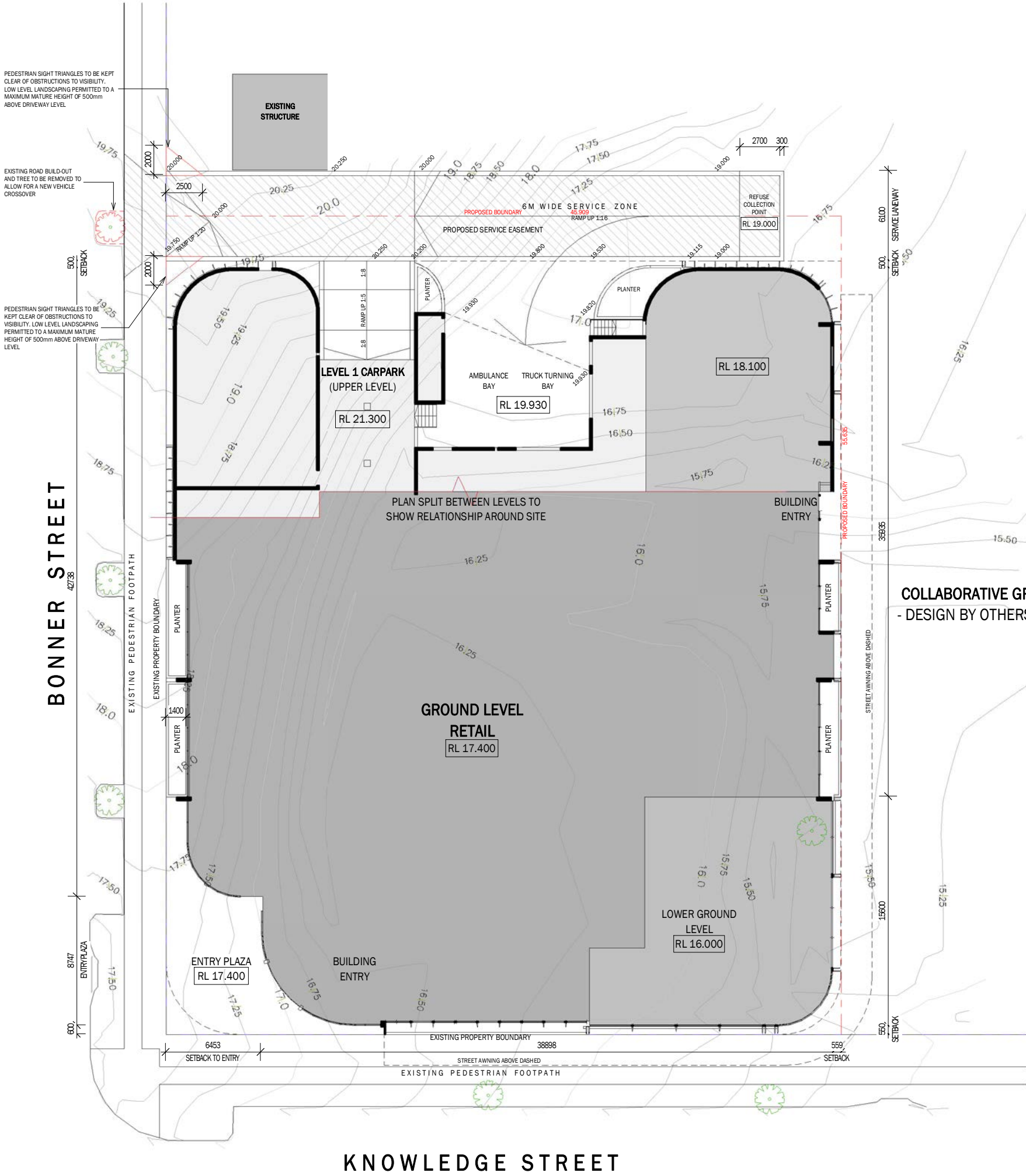
- the development is located within proximity to high frequency and quality public transport services
- the anticipated peak hour traffic generated by the development is 523 trips in the AM peak hour and 426 trips in the PM peak hour. It is understood that the road network within the Parklands Priority Development Area was designed and constructed to accommodate ultimate development traffic conditions for the PDA and therefore on this basis, Bonner Street, Knowledge Street and Nexus Way are expected to suitably cater for the expected traffic demand associated with the proposed development and therefore no further intersection analysis or investigation into mitigation measures has been considered for the external road network
- based on the *Parklands Priority Development Area Development Scheme (December 2013)*, the total car parking requirement for the development is 96 (minimum) to 192 (maximum) spaces. In accordance with the *National Construction Code (NCC) – Volume 1*, the development is required to provide a minimum of one parking space for People with Disability (PWD) for every 50 carparking spaces is to be provided. The development proposes 165 car parking spaces inclusive of four PWD spaces and therefore complies with the PDA and NCC requirements
- based on the *Parklands Priority Development Area Development Scheme (December 2013)*, a development must provide end of trip facilities for pedestrians and cyclists, including secure bicycle storage facilities. The proposed development provides a total of 40 secure (Class 2) bicycle parking spaces located in a secure designated bicycle parking room on the ground floor level and are accompanied by end of trip facilities, comprising changing rooms that will include adequate showers, sanitary compartments, wash basins and mirrors
- the layout, geometry and dimensions for car and bicycle spaces have been designed generally in accordance with relevant Council and AS2890:2004 design requirements
- the development proposes access from the Bonner Street frontage via a 5.5m wide 'General Wide' vehicle crossing in accordance with IPWEA *Standard Drawing RS-051 – Vehicle Crossings, Heavy Duty*. The access will cater for all movements, and
- a sufficient service area is provided to cater for vehicle sizes up to an 8.8m MRV adjacent to the proposed service easement and has been designed to ensure all vehicles can enter and exit the development site in a forward gear.

Based on the presented findings, it can be concluded that the proposed development will not introduce any adverse traffic or transport impacts which would prevent its approval with appropriate conditions.

7.0 References

1. State of Queensland, *Parklands Priority Development Area Development Scheme (December 2013)*, Brisbane
2. State of Queensland, *Queensland Development Code (QDC) – MP4.1 Sustainable buildings - Version 1.13*, September 2020, Brisbane.
3. City of Gold Coast, *City Plan – Version 8 (December 2020)*, Gold Coast.
4. New South Wales Government (Roads and Traffic Authority), *Guide to Traffic Generating Developments – Issue 2.2*, 2002, Sydney.
5. New South Wales Government (Roads and Maritime Services), *Guide to Traffic Generating Developments - Technical Direction (TDT2013/04) 2014*, Sydney,
6. Queensland Government (Department of Transport and Main Roads), *Guide to Traffic Impact Assessment*, December 2018, Brisbane.
7. Queensland Government (Department of Main Roads), *Road Planning and Design Manual: Chapter 3 Road Planning and Design Fundamentals*, December 2005, Brisbane.
8. Austroads (October 2015), *Guide to Traffic Management Part 2: Traffic Theory*, 2015, Sydney
9. Australian Building Codes Board, *National Construction Code (NCC) Volume 1*, May 2019.
10. Standards Australia/Standards New Zealand 2004, *AS2890.1: Off-street Car Parking Facilities*.
11. Standards Australia/Standards New Zealand 2016, *AS2890.3: Bicycle Parking*.
12. Standards Australia/Standards New Zealand 2002, *AS2890.2: Off-street Commercial Vehicle Facilities*.

Appendix A Plans of Development



KNOWLEDGE STREET

SITE PLAN

Scale @ A1 1:150

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LEGEND

L	Development Application	03-08-22	CZ
K	Prelodgement Updates	15-07-22	CZ
J	Amended Site Boundaries	28-03-22	CZ
I	General Amendments	14-12-21	CZ
H	Preliminary DA Set	30-11-21	CZ
G	Preliminary DA Set	28-10-21	CZ
F	Concept Design	11-10-21	CZ
E	Concept Design	06-10-21	CZ
D	Concept Design	30-09-21	CZ
C	Concept Design	23-09-21	CZ
B	General Amendments	02-08-21	CZ
A	Prelodgement Issue	29-06-21	CZ

Revision	Description	Date	Initials
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0315

0315

Scale (m) 1: 150 @A1
Scale (m) 1: 300 @A3

PROJECT
NORTH STAR
LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GCHKP

CLIENT
GOLD COAST 888 TRUST

DRAWING TITLE
SITE PLAN

Project Architect/Designer	Drawn By	Date Drawn
MK	CZ	
Checked	Date Checked	Scale @ A1
-		1: 150
Drawing No.	Revision	
6140.1S.01.001	L	



APPROXIMATE AREAS	
TENANCIES:	1,590m ²
COMMON (Excl Entry Foyer):	364m ²
TOTAL CALCULATED GFA:	1,954m ²

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LEGEND

M	Development Application	03-08-22	CZ
L	Prelodgement Updates	19-07-22	CZ
K	Amended Site Boundaries	28-03-22	CZ
J	General Amendments	14-12-21	CZ
I	Preliminary DM Set	30-11-21	CZ
H	Preliminary DM Set	28-10-21	CZ
G	Concept Design	11-10-21	CZ
F	Concept Design	06-10-21	CZ
E	Concept Design	10-09-21	CZ
D	Concept Design	23-09-21	CZ
C	General Amendments	02-08-21	CZ
B	Prelodgement Issue	25-06-21	CZ
A	Preliminary Issue	18-06-21	CZ

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Scale (m) 1: 100 @A1

Scale (m) 1: 200 @A3

N

PROJECT
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LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GCHKP

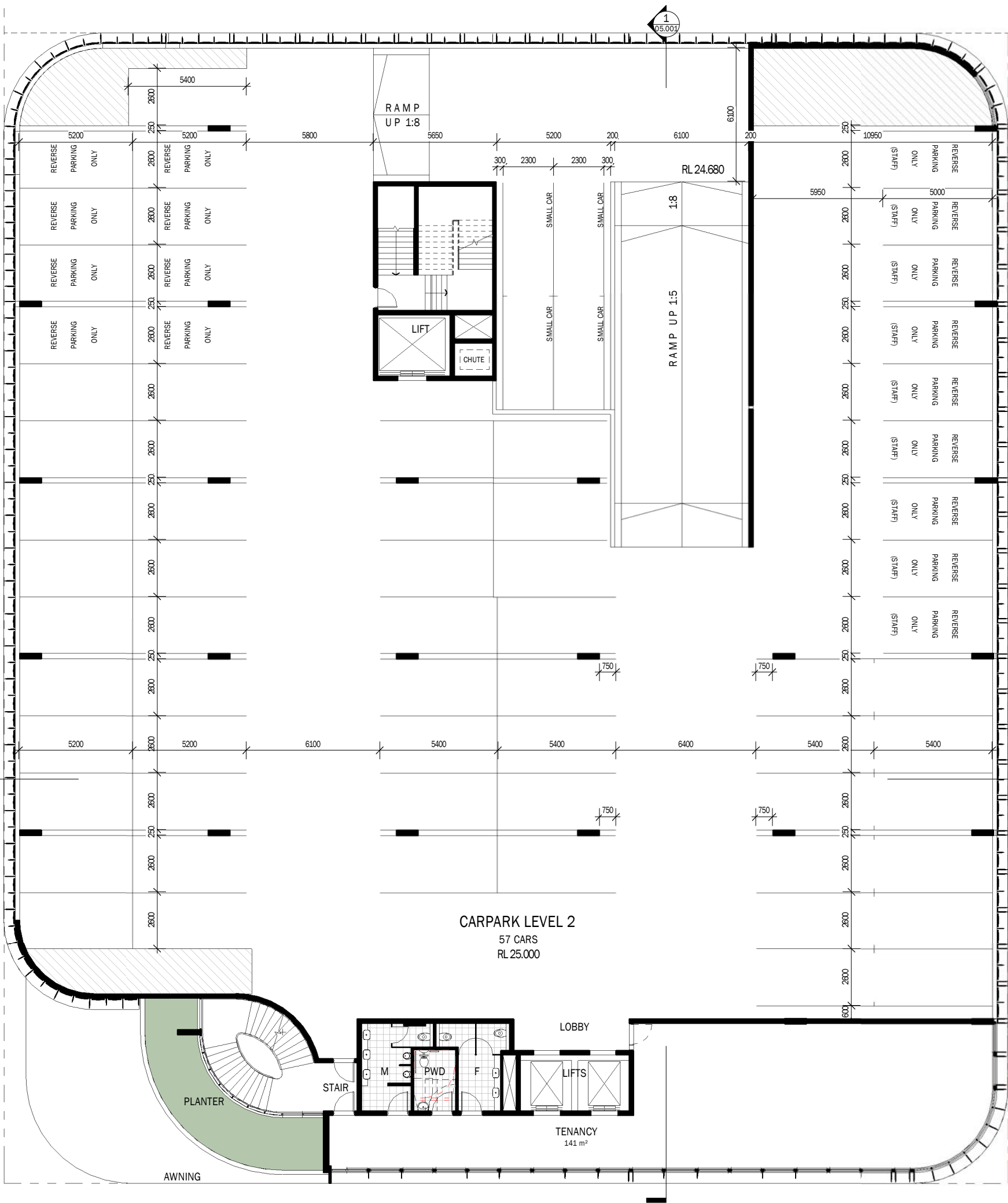
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DRAWING TITLE
GROUND FLOOR PLAN

Project Architect/Designer	Drawn By	Date Drawn
MK	CZ	
Checked	Date Checked	Scale @ A1
-		1: 100
Drawing No.	Revision	
6140.1S.02.001	M	



Project	Architect/Designer	Drawn By	Date Drawn
MK		CZ	
Checked		Date Checked	Scale @ A1
-			1:100
Drawing No.	Revision		
6140.1S.02.002			M



LEVEL 2 - FLOOR PLAN
Scale @ A1 1:100

APPROXIMATE AREAS	
TENANCY:	142m ²
TOTAL CALCULATED GFA:	142m ²
CARPARK:	1,915m ²

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LEGEND

K	Development Application	03-08-22	CZ
J	Prelodgement Updates	26-07-22	CZ
I	Prelodgement Updates	19-07-22	CZ
H	Amended Site Boundaries	28-03-22	CZ
G	General Amendments	14-12-21	CZ
F	Preliminary DA Set	30-11-21	CZ
E	Preliminary DA Set	28-10-21	CZ
D	Concept Design	30-09-21	CZ
C	Concept Design	23-09-21	CZ
B	Prelodgement Issue	29-08-21	CZ
A	Preliminary Issue	18-06-21	CZ

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0 2 4 10

Scale (m) 1: 100 @A1 Scale (m) 1: 200 @A3

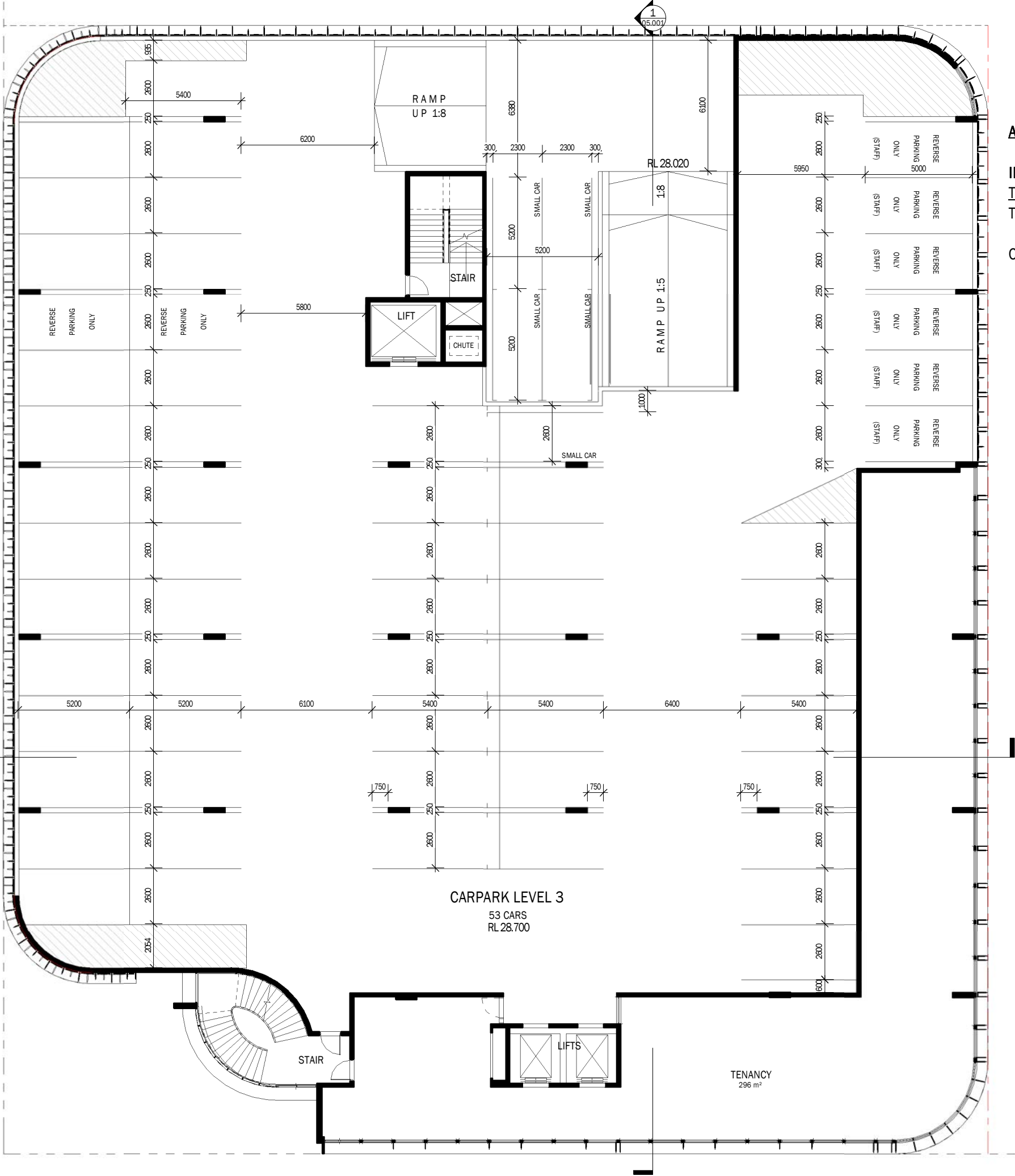
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PROJECT
NORTH STAR
LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GCHKP

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DRAWING TITLE
LEVEL 2 FLOOR PLAN

Project Architect/Designer	Drawn By	Date Drawn
MK	CZ	
Checked	Date Checked	Scale @ A1
-		1: 100
Drawing No.	Revision	
6140.1S.02.003	K	



LEVEL 3 - FLOOR PLAN
Scale @ A1 1:100

APPROXIMATE AREAS

INTERNAL TENANCY:	296m ²
TOTAL CALCULATED GFA:	296m ²
CARPARK:	1,926m ²

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LEGEND

L	Development Application	03-08-22	CZ
K	Prelodgement Updates	25-07-22	CZ
J	Prelodgement Updates	19-07-22	CZ
I	Amended Site Boundaries	28-03-22	CZ
H	General Amendments	14-12-21	CZ
G	Preliminary DA Set	30-11-21	CZ
F	Preliminary DA Set	28-10-21	CZ
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D	Concept Design	23-09-21	CZ
C	General Amendments	02-08-21	CZ
B	Prelodgement Issue	25-06-21	CZ
A	Preliminary Issue	18-06-21	CZ

RevisionDescriptionDateInitials

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Scale (m) 1: 100 @A1Scale (m) 1: 200 @A3

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PROJECT
NORTH STAR
LOT 3A-2 CORNER OF KNOWLEDGE AND
BONNER STREET, GCHKP

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GOLD COAST 888 TRUST

DRAWING TITLE
LEVEL 3 FLOOR PLAN

Project Architect/Designer	Drawn By	Date Drawn
MK	CZ	
Checked	Date Checked	Scale @ A1
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Drawing No.	Revision	
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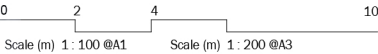
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Revision	Description	Date	Initials
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E	Amended Site Boundaries	28-03-22	CZ
D	Preliminary DA Set	30-11-21	CZ
C	Preliminary DA Set	28-10-21	CZ
B	Concept Design	23-09-21	CZ
A	General Amendments	02-08-21	CZ



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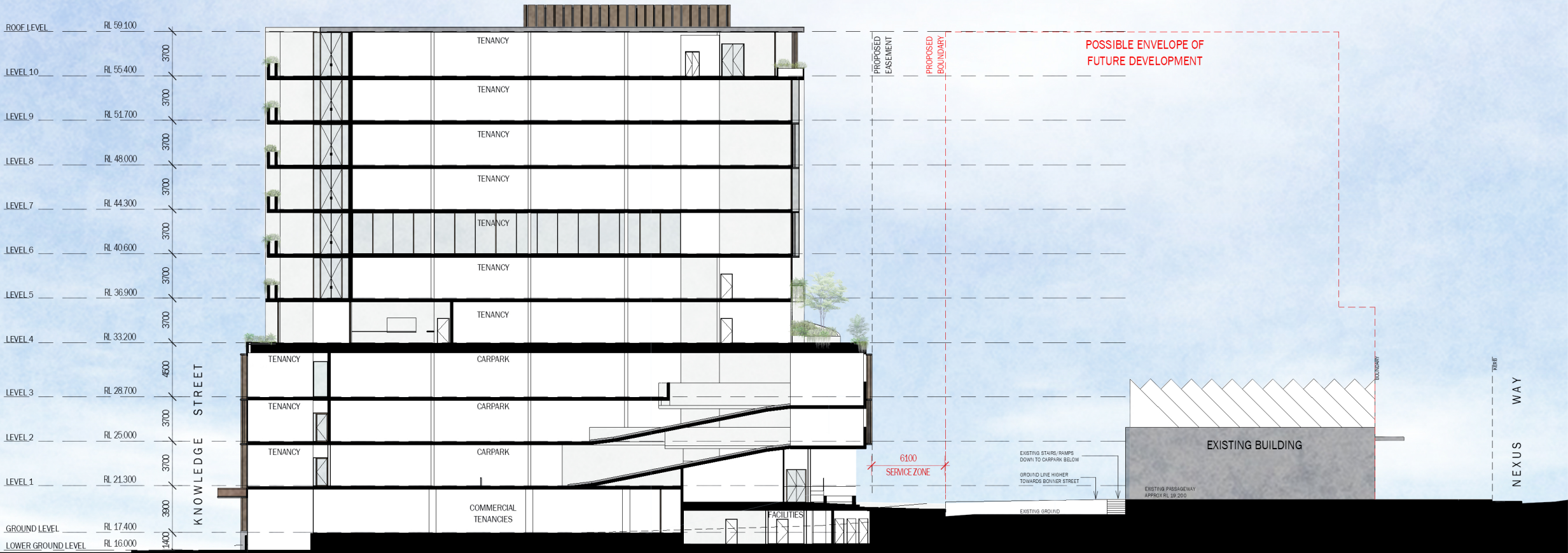


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BONNER STREET, GCHKP

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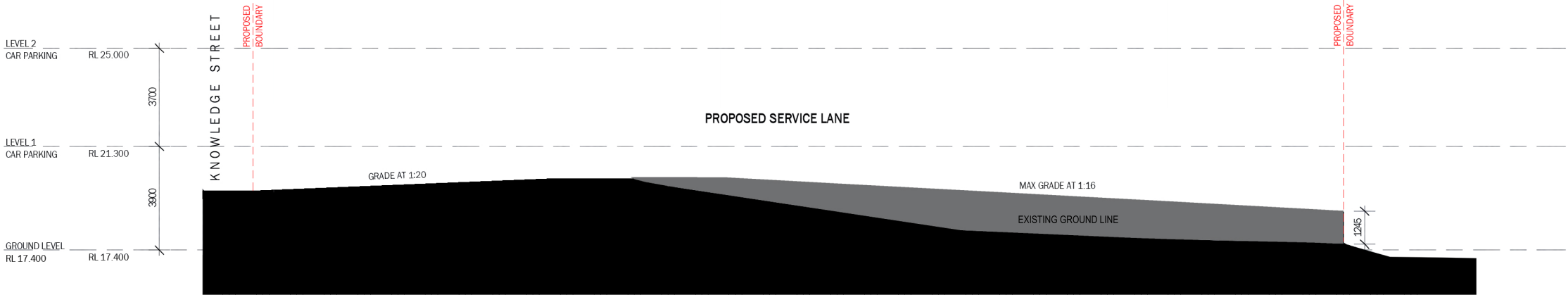
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BUILDING SECTIONS

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Drawing No.	Revision	
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SECTION A

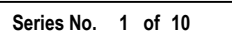
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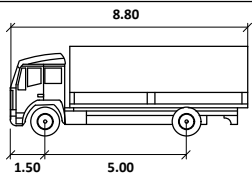
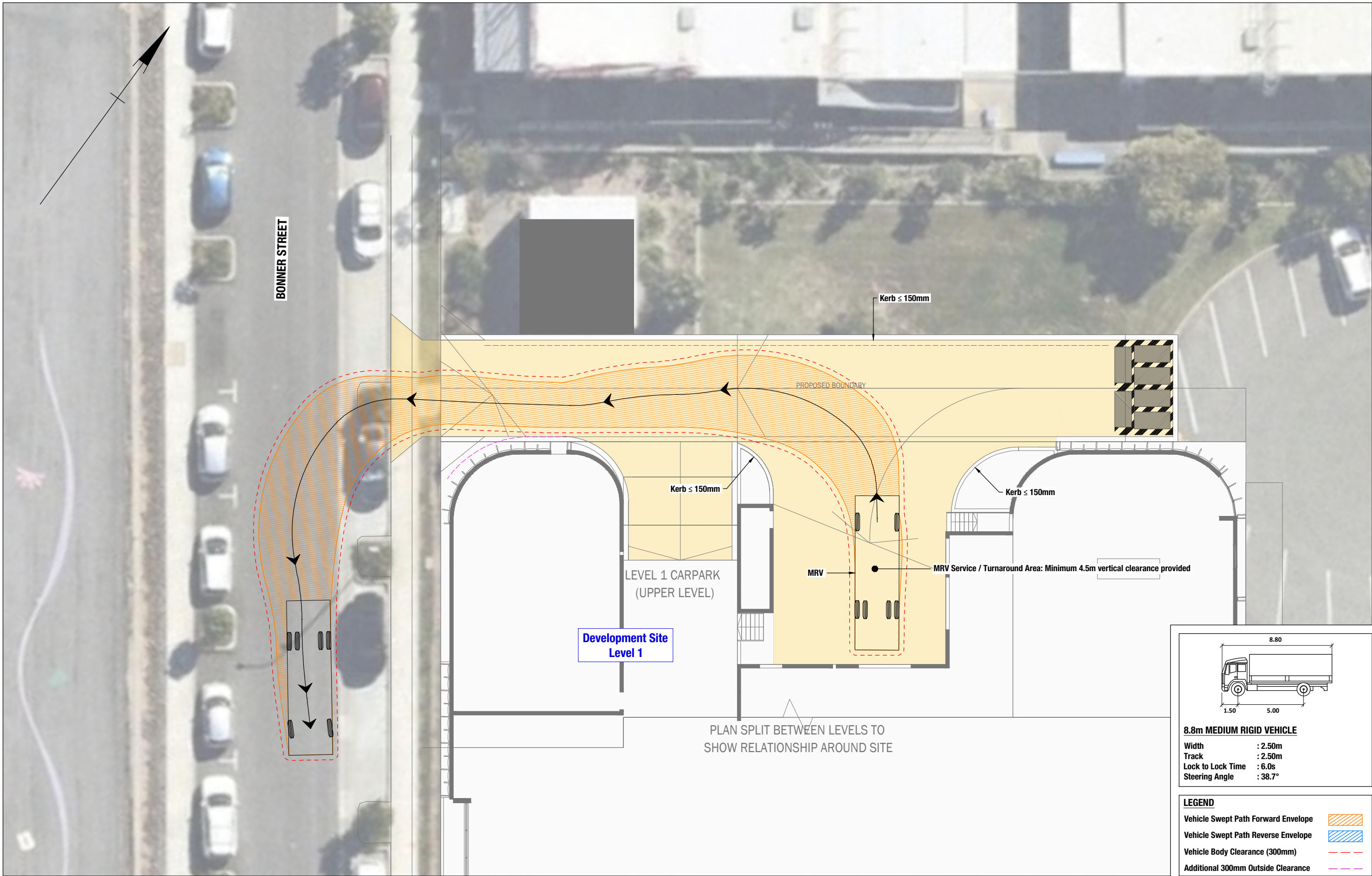


SERVICE LANE LONG SECTION

Scale @ A1 1:100

Appendix B Swept Path Assessment





8.8m MEDIUM RIGID VEHICLE

Width	: 2.50m
Track	: 2.50m
Lock to Lock Time	: 6.0s
Steering Angle	: 38.7°

LEGEND

Vehicle Swept Path Forward Envelope	
Vehicle Swept Path Reverse Envelope	
Vehicle Body Clearance (300mm)	
Additional 300mm Outside Clearance	

GELEON

ABN 53 143 670 071
Suite 12, Level 1, 3029 The Boulevard
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tel +61 7 5594 4473

0 1 2 3 4m

Engineering Certification

RPEQ Name Greg Lerch
RPEQ No. 07382
Date 10/08/22

16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
MEDIUM RIGID VEHICLE (MRV)
EXIT MANOEUVRE FROM SERVICE AREA**

Project No. 50589 Issue Date 10/08/22

Drawing No. **50589-SP004-A**

Series No. 2 of 10



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RPEQ No. 07382
Date 10/08/22

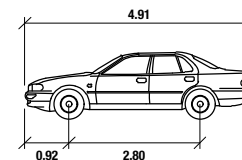
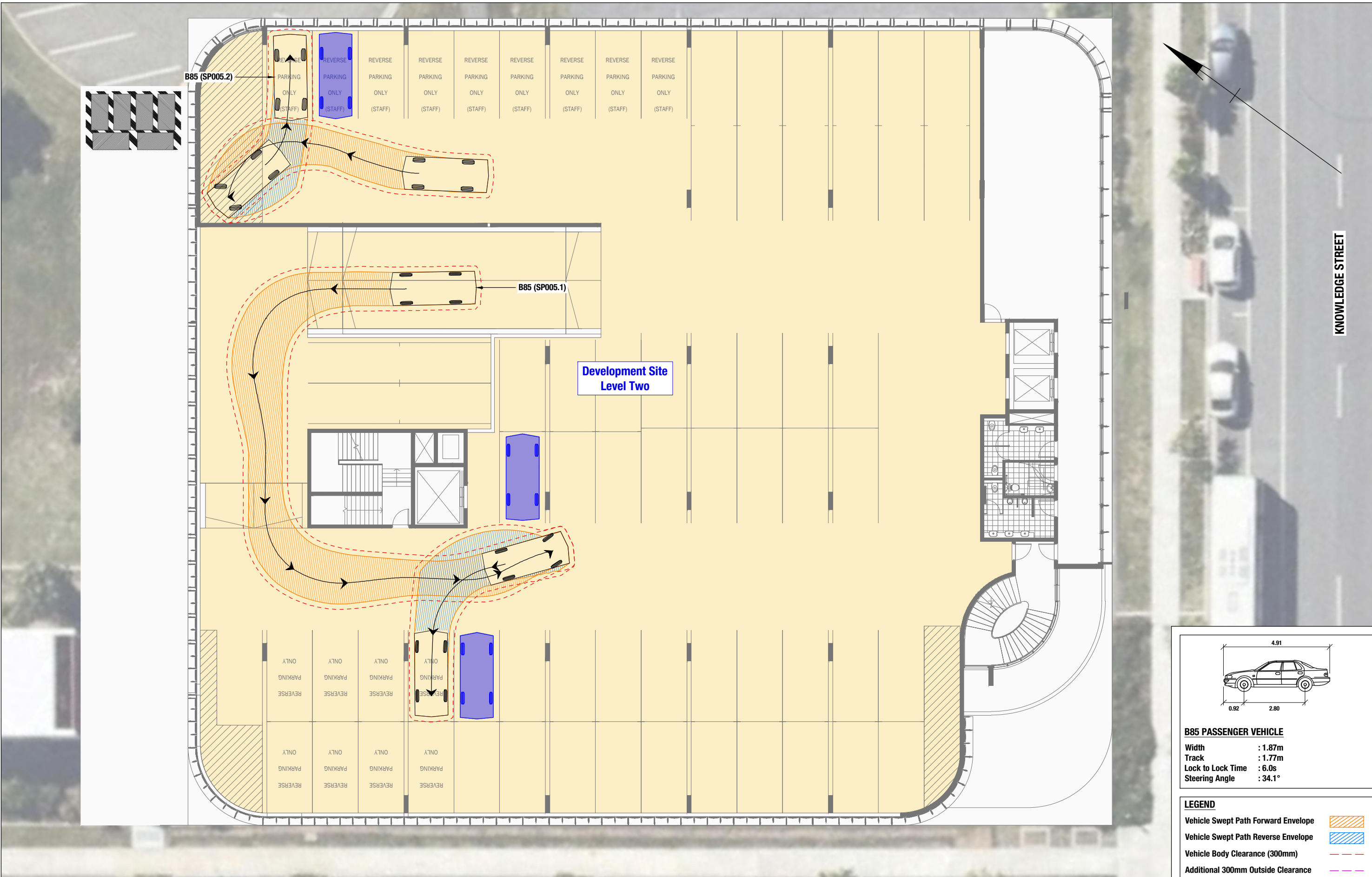
16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE(S)
PARKING MANOEUVRES (INGRESS) - LEVEL 2

Project No. 50589
Issue Date 10/08/22

Drawing No. 50589-SP005-A

Series No. 3 of 10



B85 PASSENGER VEHICLE

Width : 1.87m
Track : 1.77m
Lock to Lock Time : 6.0s
Steering Angle : 34.1°

LEGEND

- Vehicle Swept Path Forward Envelope
- Vehicle Swept Path Reverse Envelope
- Vehicle Body Clearance (300mm)
- Additional 300mm Outside Clearance



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0 1 2 3 4m

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RPEQ No. 07382
Date 10/08/22

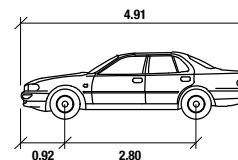
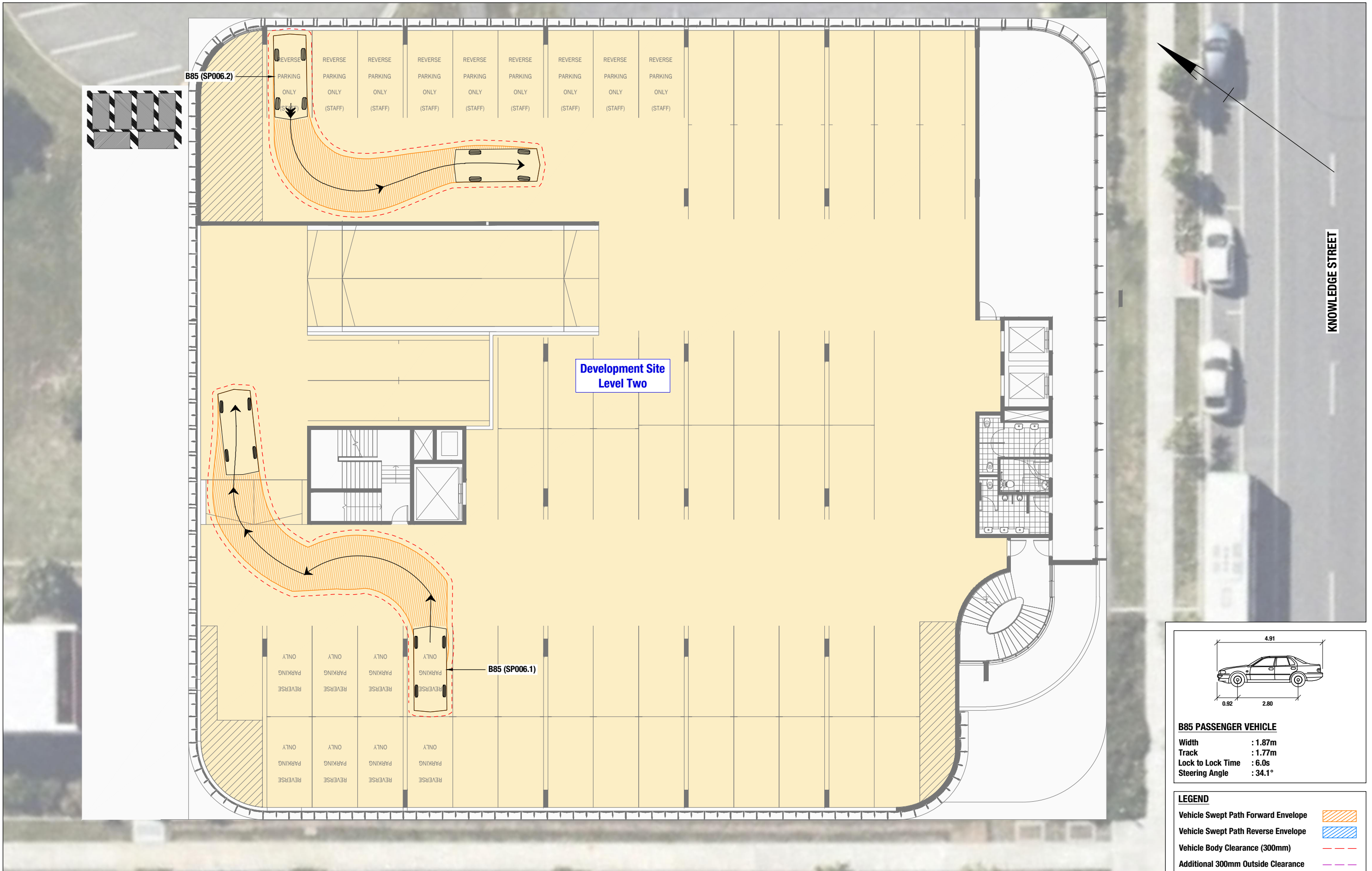
16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE(S)
PARKING MANOEUVRES (EGRESS) - LEVEL 2

Project No. 50589
Issue Date 10/08/22

Drawing No. 50589-SP006-A

Series No. 4 of 10

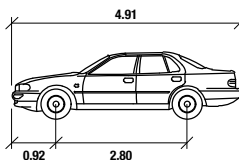
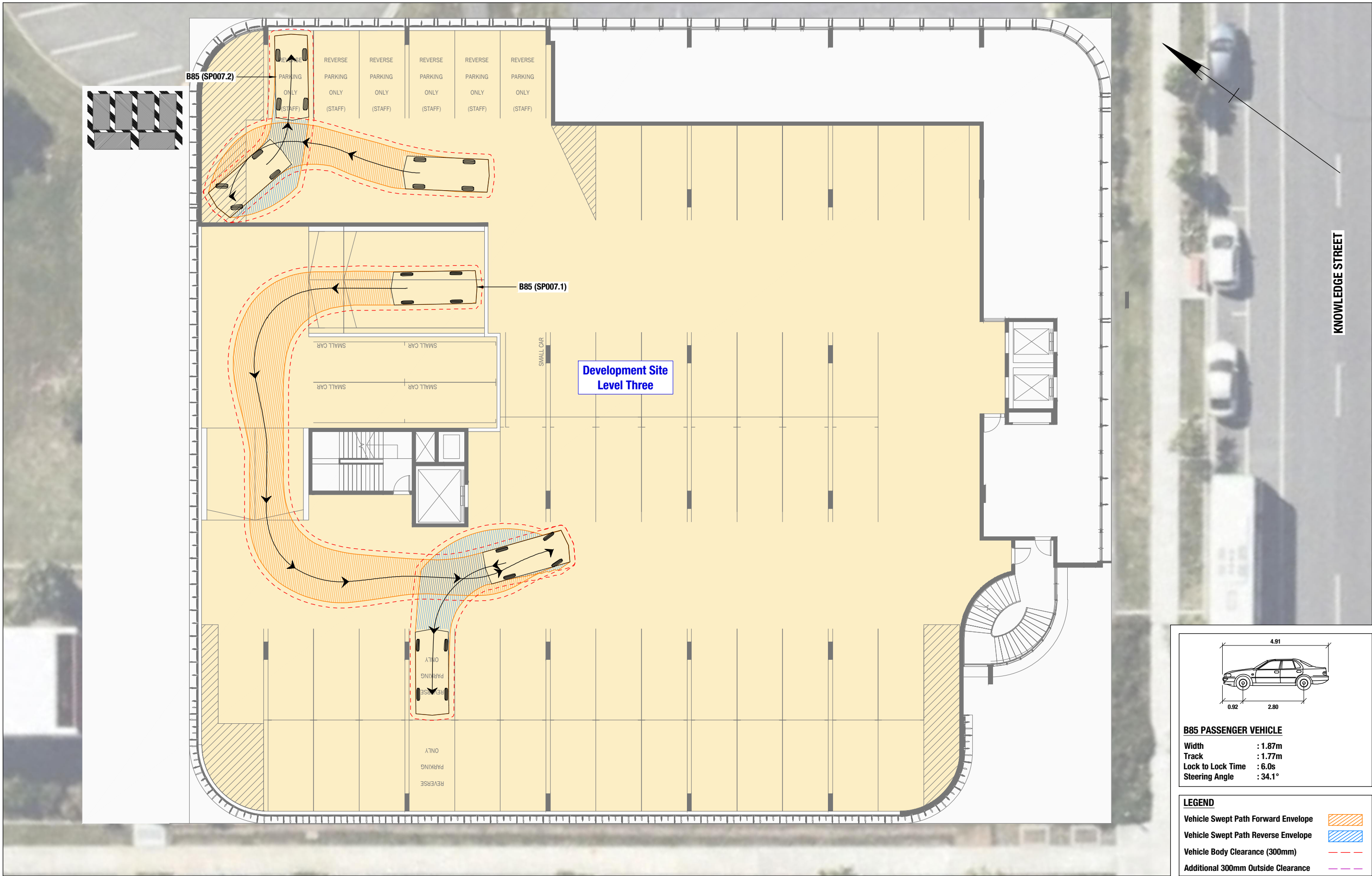


B85 PASSENGER VEHICLE

Width : 1.87m
Track : 1.77m
Lock to Lock Time : 6.0s
Steering Angle : 34.1°

LEGEND

- Vehicle Swept Path Forward Envelope (Orange hatched box)
- Vehicle Swept Path Reverse Envelope (Blue hatched box)
- Vehicle Body Clearance (300mm) (Red dashed line)
- Additional 300mm Outside Clearance (Purple dashed line)



B85 PASSENGER VEHICLE

Width	: 1.87m
Track	: 1.77m
Lock to Lock Time	: 6.0s
Steering Angle	: 34.1°

LEGEND

Vehicle Swept Path Forward Envelope	
Vehicle Swept Path Reverse Envelope	
Vehicle Body Clearance (300mm)	
Additional 300mm Outside Clearance	

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Date 10/08/22

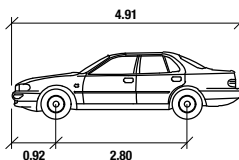
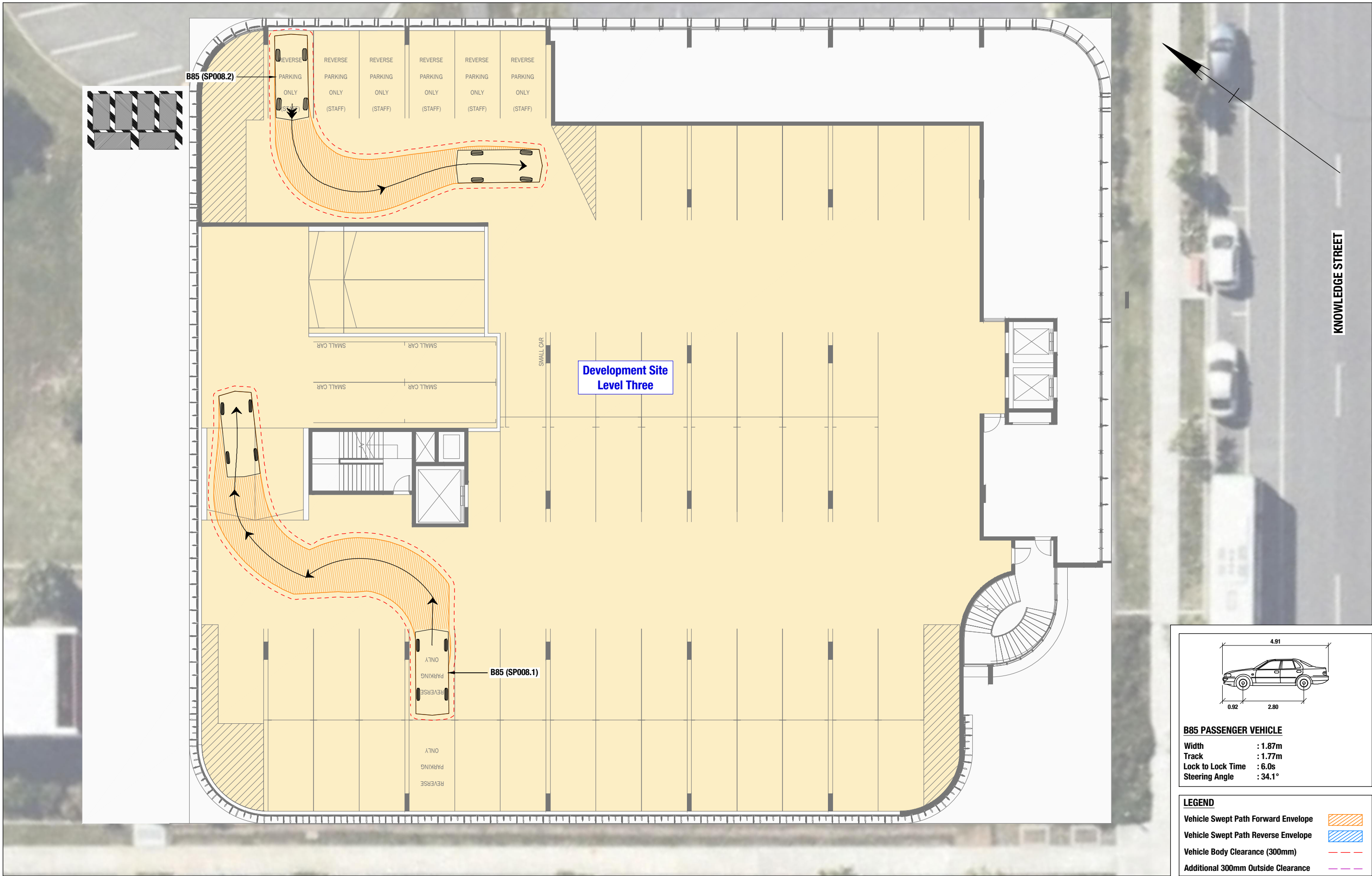
16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
PARKING MANOEUVRES (INGRESS) - LEVEL 3**

Project No. 50589 Issue Date 10/08/22

Drawing No. **50589-SP007-A**

Series No. 5 of 10



B85 PASSENGER VEHICLE

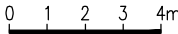
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Track	: 1.77m
Lock to Lock Time	: 6.0s
Steering Angle	: 34.1°

LEGEND

Vehicle Swept Path Forward Envelope	
Vehicle Swept Path Reverse Envelope	
Vehicle Body Clearance (300mm)	
Additional 300mm Outside Clearance	



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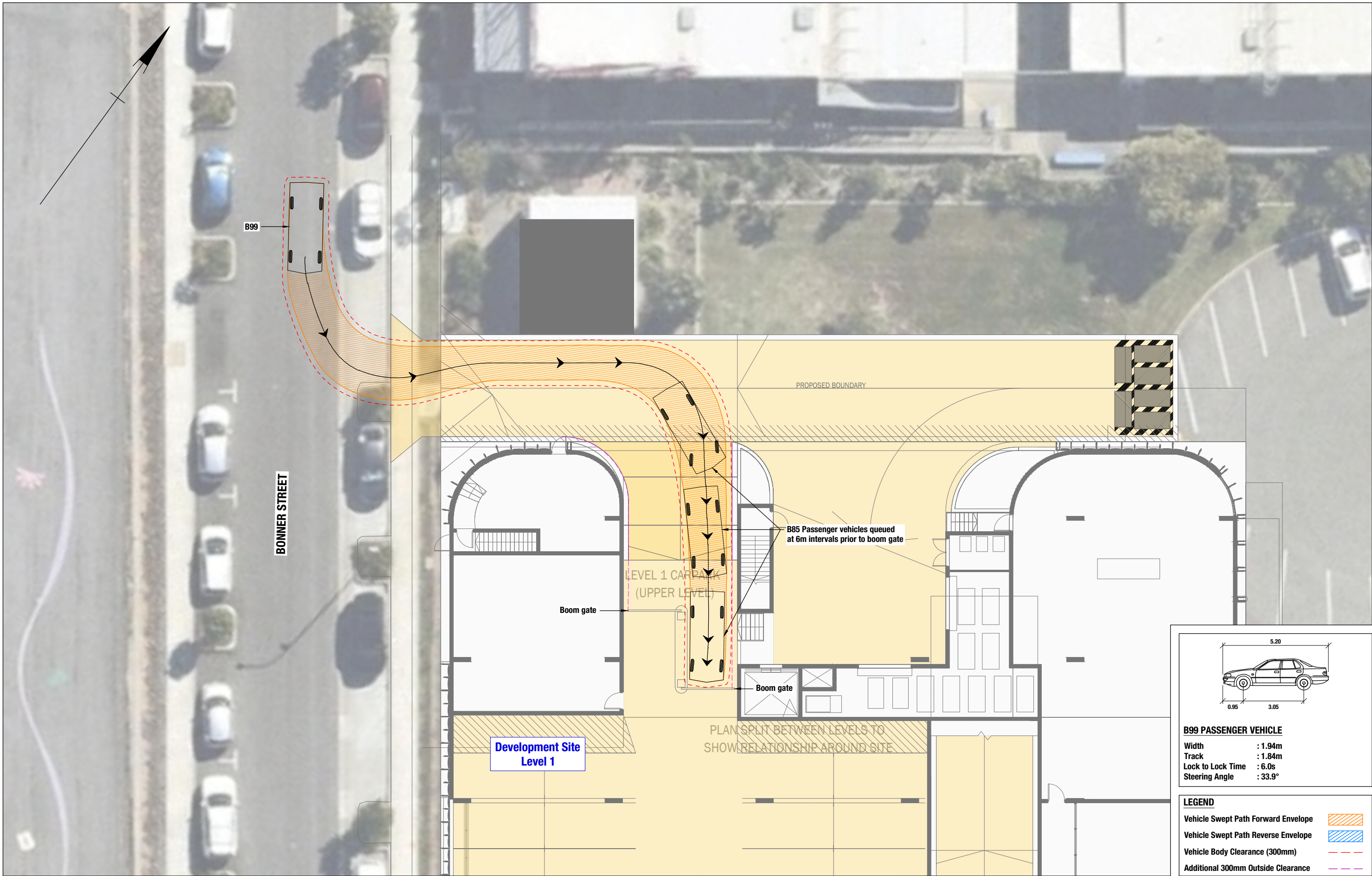
Engineering Certification

RPEQ Name Greg Lerch
RPEQ No. 07382
Date 10/08/22

16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

SWEEP PATH ASSESSMENT
B85 PASSENGER VEHICLE
PARKING MANOEUVRES (EGRESS) - LEVEL 3

Project No. 50589	Issue Date 10/08/22
Drawing No. 50589-SP008-A	
Series No. 6	of 10



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RPEQ Name Greg Lerch
RPEQ No. 07382
Date 10/08/22

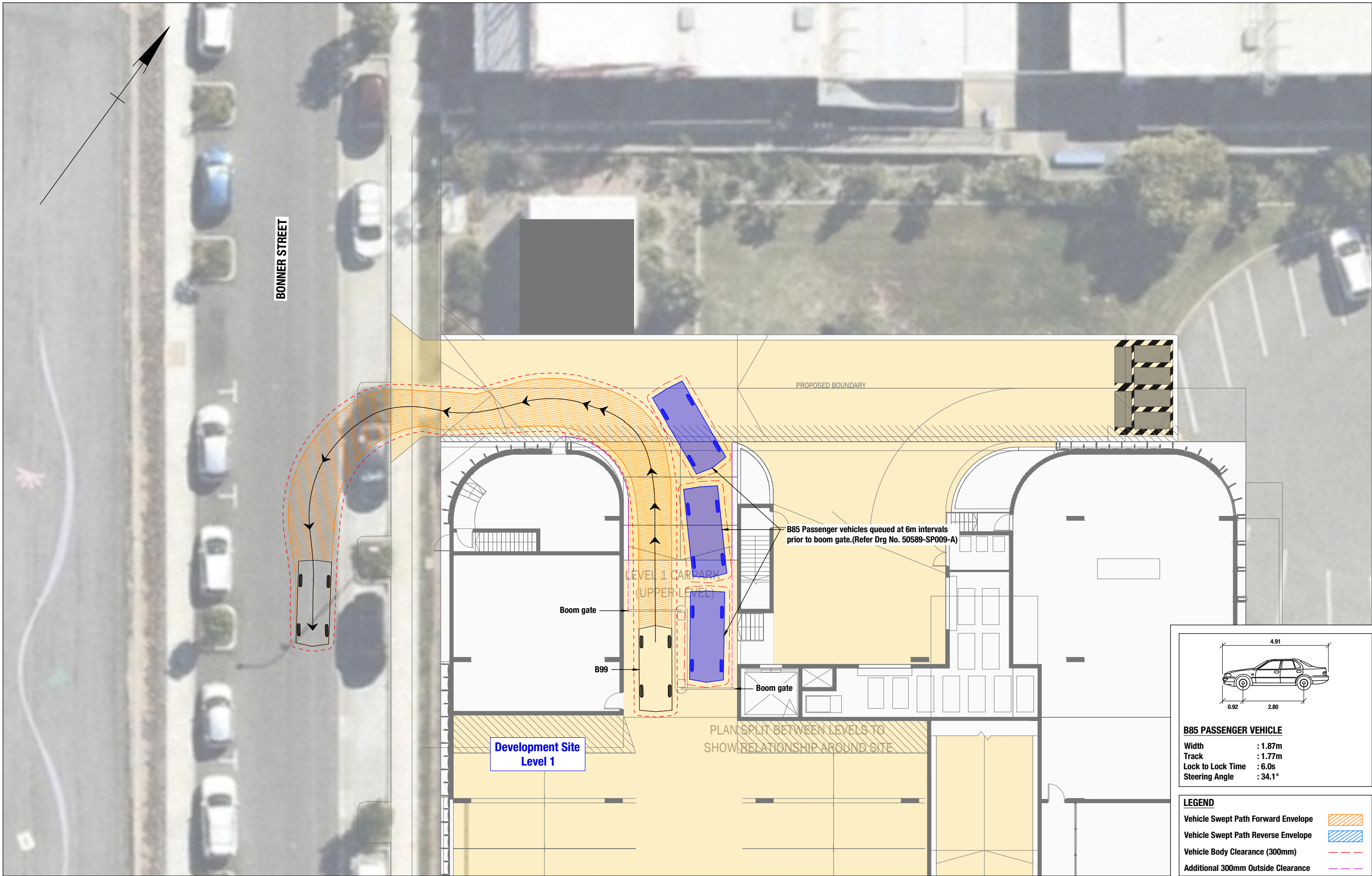
16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B99 PASSENGER VEHICLE
ENTRY MANOEUVRE TO CAR PARK VIA BOOM GATE**

Project No. 50589
Issue Date 10/08/22

Drawing No. 50589-SP009-A

Series No. 7 of 10



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0 1 2 3 4m

Engineering Certification

Greg Lerch

RPEQ Name Greg Lerch
RPEQ No. 07382
Date 10/08/22

16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

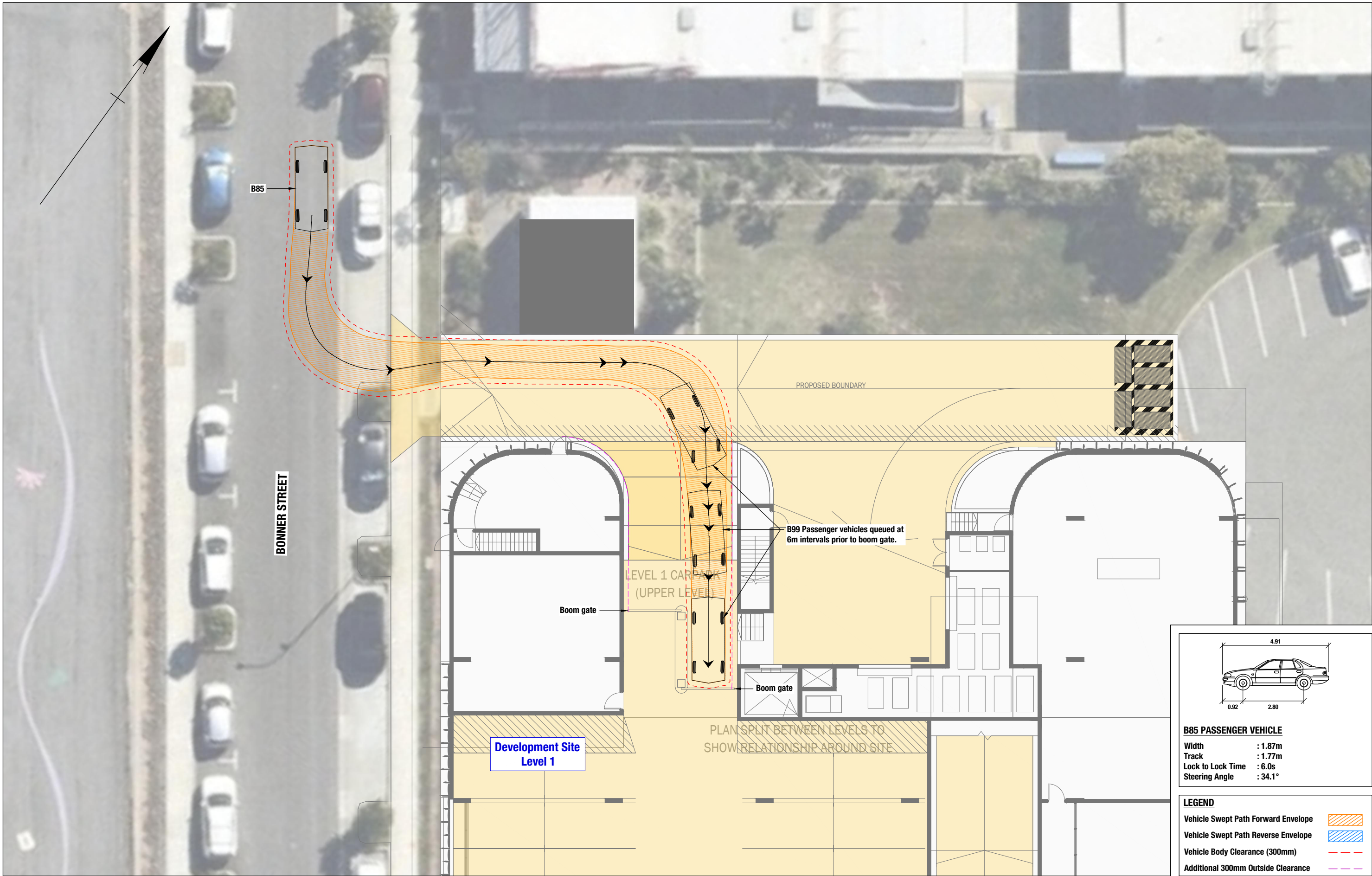
**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE FROM CAR PARK PASSING QUEUED B99s**

Project No.
50589

Issue Date
10/08/22

Drawing No.
50589-SP010-A

Series No. 8 of 10



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RPEQ No. 07382
Date 10/08/22

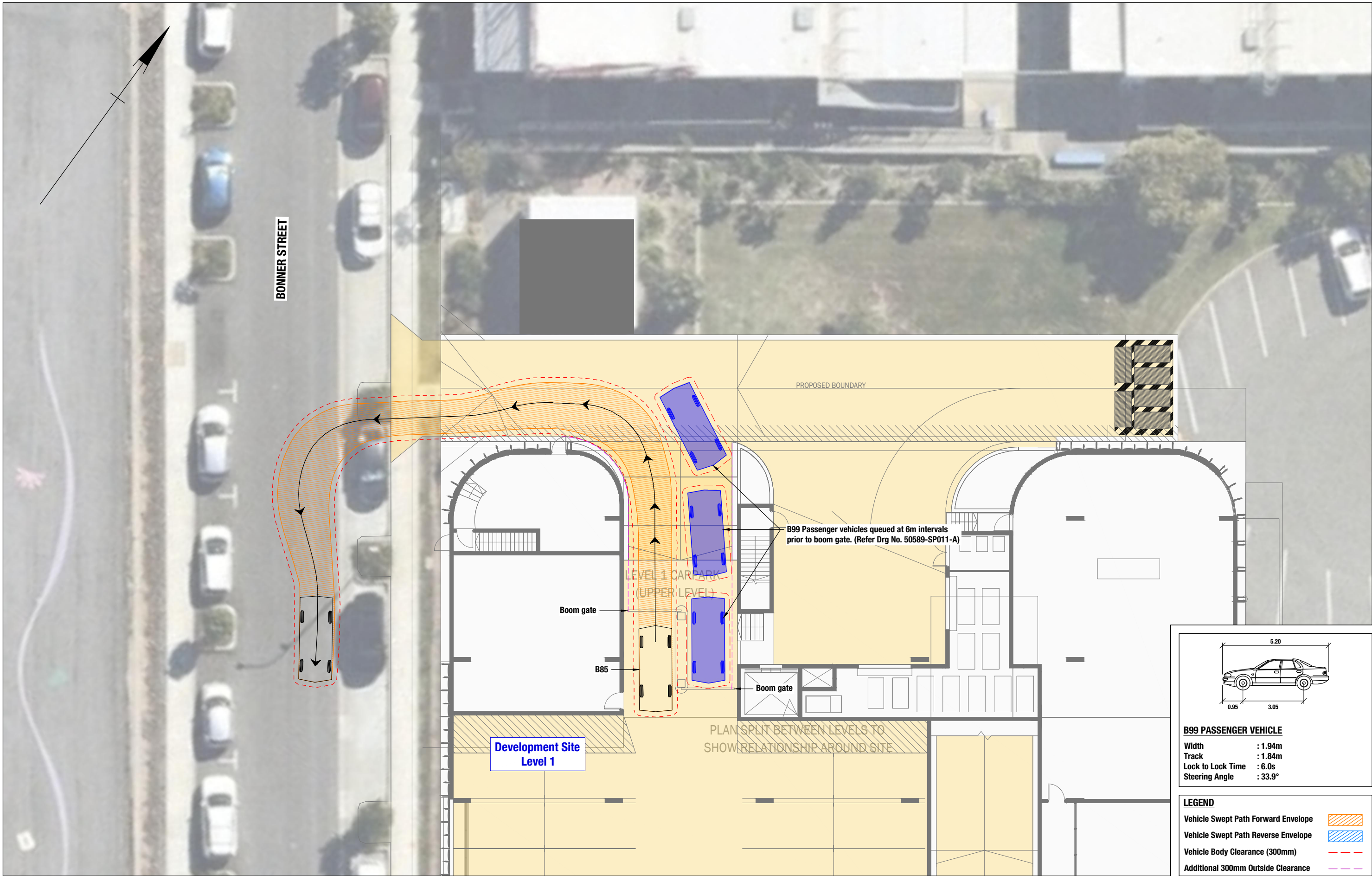
16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE TO CAR PARK VIA BOOM GATE**

Project No. 50589 Issue Date 10/08/22

Drawing No. 50589-SP011-A

Series No. 9 of 10



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Engineering Certification

Greg Lerch

RPEQ Name Greg Lerch
RPEQ No. 07382
Date 10/08/22

16 NEXUS WAY - SOUTHPORT
PROPOSED MIXED-USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B99 PASSENGER VEHICLE
EXIT MANOEUVRE FROM CAR PARK PASSING QUEUED B85s**

Project No. 50589 Issue Date 10/08/22

Drawing No. 50589-SP012-A

Series No. 10 of 10

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