

PART 4 SPECIALIST REPORTS

- Traffic Report (including Driveways and Vehicular Crossings Code and Transport Code Assessments).
- Waste Management Plan (including Solid Waste Management Code Assessment).
- Stormwater Management Plan (including Healthy Waters Code Assessment).
- Acoustic Report

OTHER CHANGE TO MCU/2022/588

776 PACIFIC PARADE, CURRUMBIN
JOB – 2130201



Traffic and Transport Assessment

Proposed Mixed Use Development
776 Pacific Parade, Currumbin



19 December 2024

Prepared for:
John Fuglsang Developments Pty Ltd
Report: 50879-RP01-A

GELEON

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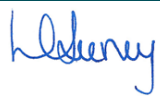
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Table of Contents

1.	Introduction	1
1.1	Project background	1
1.2	Development details	1
1.3	Applicable planning scheme	2
1.4	Scope.....	2
2.	Existing conditions	3
2.1	Road network.....	3
2.2	Public transport	3
2.3	Active transport	4
3.	Traffic impact assessment	6
3.1	Traffic generation	6
3.2	Traffic impacts.....	6
4.	Parking assessment	7
4.1	Car parking requirements.....	7
4.2	Car parking provision	7
4.3	Access and driveway conflict analysis.....	8
4.4	Bicycle parking.....	10
4.5	Alternative bicycle parking requirement.....	11
4.6	Bicycle parking provision.....	11
5.	Access and servicing assessment.....	12
5.1	Access arrangement	12
5.2	Sight distance assessment	12
5.3	Servicing	13
6.	Response to development codes	14
7.	Conclusion	14
8.	References	14

Figures

Figure 1.1	Locality plan
Figure 1.2	Plans of development – ground floor
Figure 2.2	Public transport in proximity to site
Figure 2.3.1	Active transport network
Figure 2.3.2	Principal cycle network
Figure 2.3.3	Priority route map
Figure 4.2	Car parking provision and allocation
Figure 4.3.1	Greatest conflict length – line of sight
Figure 4.3.2	Smallest conflict length – line of sight
Figure 5.2	Sight distance assessment
Figure 5.3	Existing on-street loading zone

Tables

Table 1.2	Development details
Table 2.1	Surrounding road network
Table 3.1	Development traffic generation rates
Table 4.1	Car parking requirements
Table 4.2	Car parking design requirement
Table 4.3	Poisson Distribution Analysis
Table 4.4	Bicycle parking requirements
Table 4.5	Bicycle parking requirements
Table 4.6	Bicycle parking design requirements
Table 5.2	Sight distance requirements
Table 5.3	Service vehicle requirements

Appendices

Appendix A	Plans of development
Appendix B	Swept path assessment
Appendix C	Development code responses

1. Introduction

1.1 Project background

Geleon has been engaged by John Fuglsang Developments Pty Ltd (the **Applicant**) to prepare a Traffic and Transport Assessment (TTA) to accompany a Minor Change Application to an existing Development Permit issued by City of Gold Coast Council (MCU/2022/588) to establish a mixed-use development, comprising multiple dwelling and shop land uses, at 776 Pacific Parade, Currumbin (Lot 1 on SP348547) (**Figure 1.1**). The existing 722m² site is currently occupied by a mixed-use development, comprising a food and drink outlet tenancy and a low-density residential dwelling.

A Traffic Impact Assessment report (File Ref: 50591-RP01-B) dated 4 April 2023 was previously prepared by Geleon and included as part of the original development application. This new report comprises revisions to the original report to account for changes to traffic and transport related matters arising from the *Minor Change*.



Figure 1.1 Locality plan

1.2 Development details

The development proposes multiple dwelling and shop land uses to establish a mixed-use development comprising one 1-bedroom unit, four 2-bedroom units, and a shop land use on the subject site. Access to and from the development is proposed via a one-lane, two-way vehicle crossing on Pacific Parade that will provide access to the ground floor level carpark.

Details of the proposed development are provided in **Table 1.2**, with the ground floor level shown in **Figure 1.2**. Relevant plans of development have been included in **Appendix A**.

Table 1.2 Development details

Land use	1-bedroom units	2-bedroom units	Gross floor area (GFA)	Total use area (TUA)
Multiple dwelling	1	4	-	-
Shop	-	-	26 m ²	20 m ²

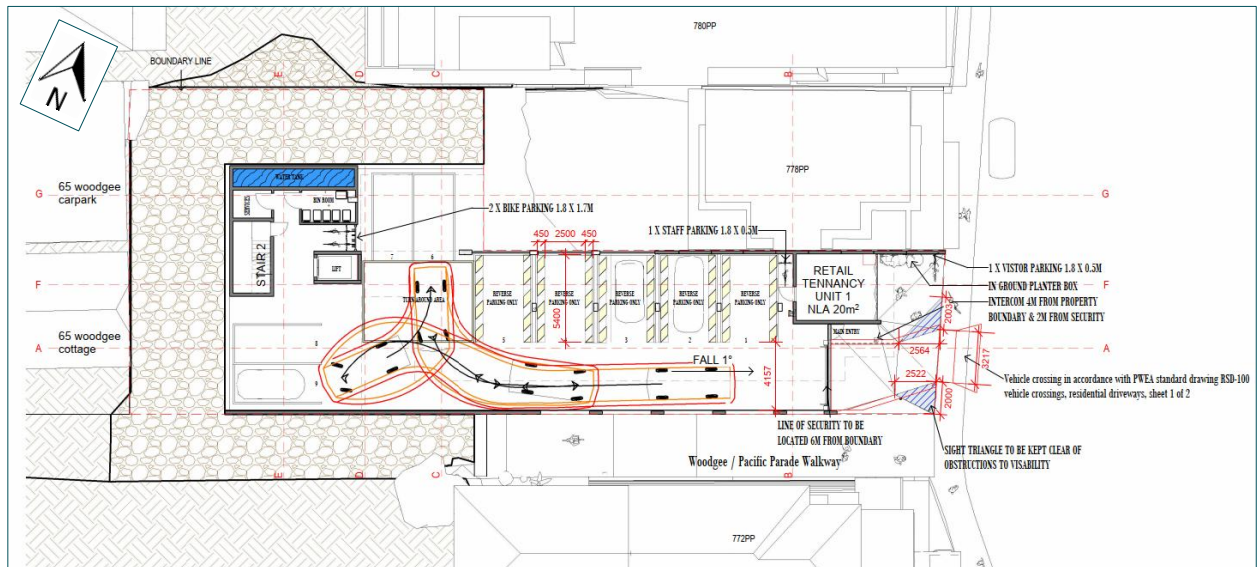


Figure 1.2 Plans of development – ground floor

1.3 Applicable planning scheme

The proposed development site falls under the jurisdiction of the City of Gold Coast (**Council**) and is governed by the *City Plan – Version 11 (February 2024)*.

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 and bicycle parking supply against relevant Council requirements
- review design of on-site traffic and transport operations against Australian Standards and Council's requirements
- assess site access and access configuration against Council requirements
- assess servicing arrangements, and
- complete Council development code templates to accompany the development application.

2. 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	Hierarchy	Footpath / bicycle lanes	On-street parking
Tomewin Street	Council	2	50km/h	Partially	Local collector	Footpaths both sides / bicycle lanes partially both sides	Formal and informal provision
Duringan Street	Council	2	40km/h	No	Local collector	Footpaths northern side / no bicycle lanes	Partial informal and formal provision
Pacific Parade	Council	2	40km/h	No	Local road	Footpaths both sides / no bicycle lanes	Formal and informal provision

2.2 Public transport

The development is located within walking distance (<400m) of four public transport stops (Stop ID's: 300244, 300245, 300246, and 300247). The closest stop, known as 'Pacific Parade at Currumbin Beach, Currumbin' (Stop ID: 300246) is located approximately 30m south of the development site (**Figure 2.2**). This stop is serviced by two public bus routes, known as '767' and '768', which have an average frequency of 60 minutes throughout the day.

Locations of all stops within proximity to the development site are provided in **Figure 2.2**.



Figure 2.2 Public transport in proximity to site

2.3 Active transport

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

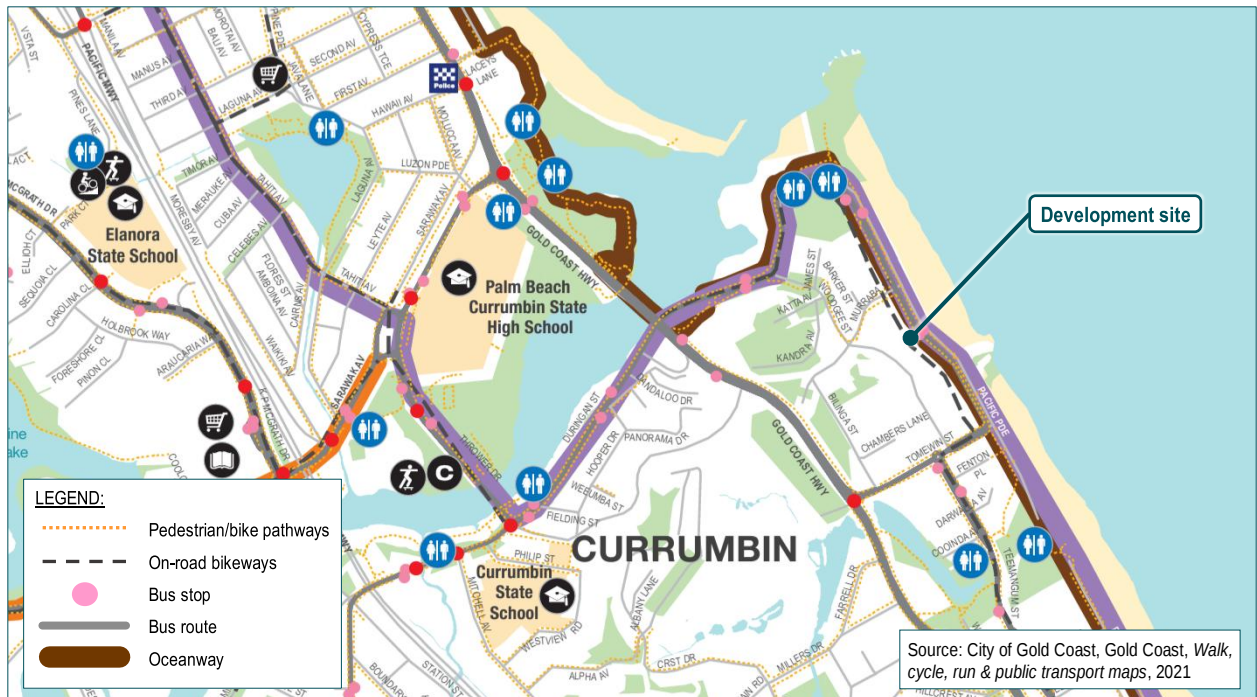


Figure 2.3.1 Active transport network

The subject site fronts Pacific Parade which forms part of TMR's *Southeast Queensland Principal Cycle Network* and includes provision of on road bicycle lanes. 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

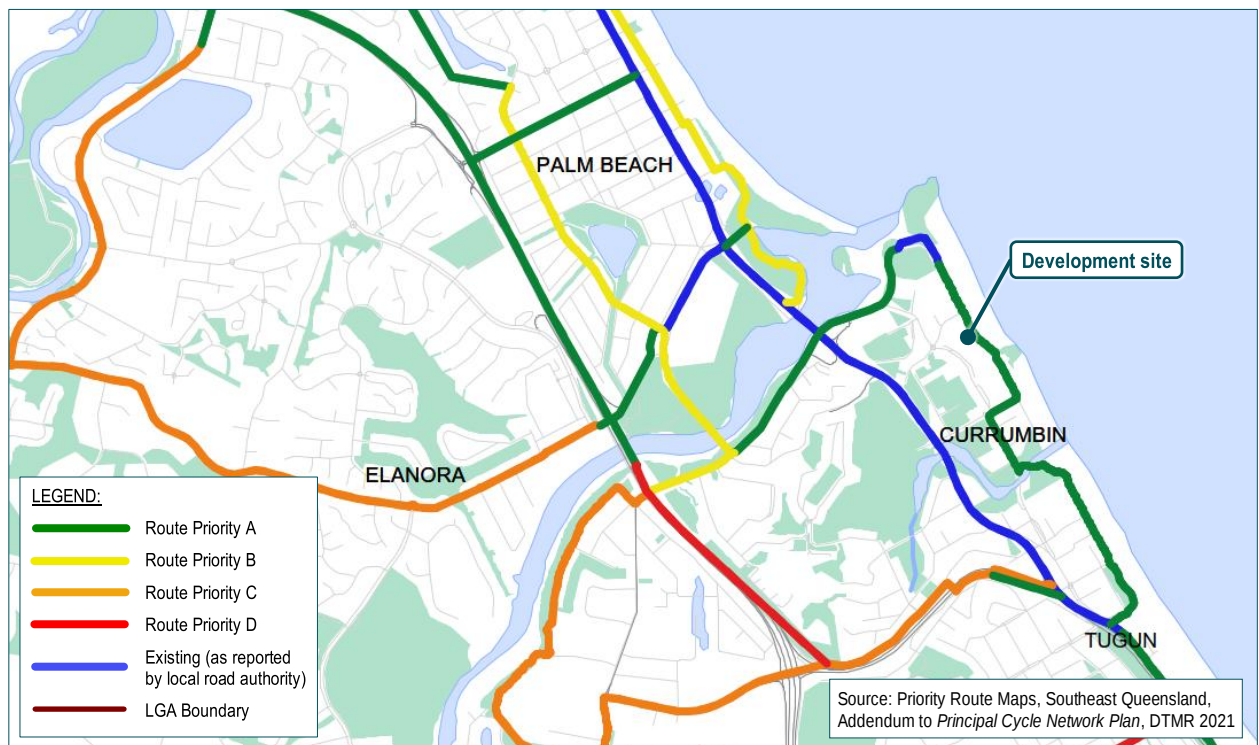


Figure 2.3.3 Priority route map

3. Traffic impact assessment

3.1 Traffic generation

The development site is currently occupied by a mixed-use development that generates traffic. Accordingly, traffic generation from the existing development has been taken into consideration when determining the net total in trip generation for the proposed development.

A review of Council's *City Plan – Transport code (V11)* has not identified traffic generation rates for the existing and proposed land uses. In lieu of Council specific traffic generation rates, traffic generation rates for the existing and proposed land uses have been based on the rates provided in the updated *RMS Guide to Traffic Generating Developments – Technical Direction (TDT 2013/04)* and RTA's *Guide to Traffic Generating Developments (GTGD)*.

A summary of the expected development traffic generation is shown in **Table 3.1**.

Table 3.1 Development traffic generation rates

Land use	Quantity	Peak period	Traffic generation rate	Traffic generation volume
Existing development				
Low density residential dwelling	1 dwelling	AM	0.71 trips per dwelling	1
		PM	0.78 trips per dwelling	1
Food and drink outlet (café bar and restaurant)	240 m² GFA	AM	5 trips per 100 m² GFA	12
		PM	5 trips per 100 m² GFA	12
Sub-total AM trips				13
Sub-total PM trips				13
Proposed development				
Multiple dwelling	8 car spaces	AM	0.35 trips per car space	3
		PM	0.26 trips per car space	3
Shop	26 m² GFA	AM	4.6 trips per 100 m² GFA	2
		PM	4.6 trips per 100 m² GFA	2
Sub-total AM trips				5
Sub-total PM trips				5
Total (net) AM peak hour trips				-8
Total (net) PM peak hour trips				-8

3.2 Traffic impacts

Given the geographical location of the development, all inbound and outbound development generated traffic will use Pacific Parade to turn into / out of the development. The total net traffic generation in the AM and PM peak hours is eight less trips when compared to the existing uses currently occupying the subject site.

It can be concluded that the proposed development will not create any worsening of traffic impacts when compared to what is already being generated on the subject site and therefore further traffic impact assessment is not warranted.

4. Parking assessment

4.1 Car parking requirements

The car parking requirements for the development have been calculated in accordance with the land use requirements stipulated in Council's *City Plan – Transport code (V11)* as shown in **Table 4.1**.

Table 4.1 Car parking requirements

Land use	Quantity	Component	Car parking rate	Car parking requirement
Multiple dwelling	1	1-bedroom unit	1 per 1-bedroom unit or dwelling	1
	4	2-bedroom units	1.25 per 2-bedroom unit or dwelling	5
	5 total	Visitor	where 5 to 6 dwellings, 2 for visitor parking	2
Sub-total multiple dwelling car parking requirement				8
Shop	20 m ² TUA	All	5 per 100m ² of TUA	1
Total car parking requirement				9

The minimum total car parking requirement for the development is nine car parking spaces, including six resident spaces, two visitor spaces and one space for the shop. With respect to the *National Construction Code (NCC) – Volume 1* requirement for People with Disabilities (PWD) accessible parking, the *Disability (access to Premises – Buildings) Standards 2010 of the Disability Discrimination Act 1992* stipulates that a designated PWD parking space need not be designated where there is a total of not more than five car parking spaces. This stipulation is in place so as not to restrict the use of the car parking spaces for only people with a disability. Given only one space is required for the shop land use (Class 6 building), which is less than the five-space limit, no PWD parking spaces are required to be provided for the shop land use. For the multiple dwelling land use (Class 2 building), there is no requirement to provide parking spaces for PWD.

4.2 Car parking provision

The development provides a total of nine car parking spaces comprising six resident spaces, one staff space, and two visitor spaces (**Figure 4.2**), which complies with the requirements stipulated in Council's *City Plan – Transport Code (V11)*.

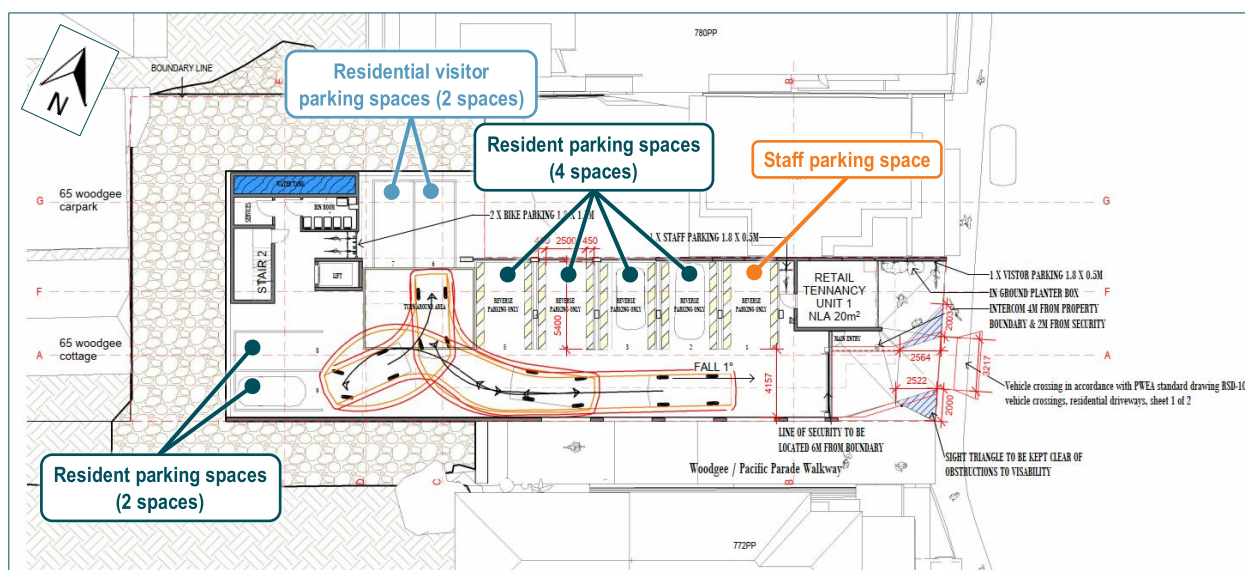


Figure 4.2 Car parking provision and allocation

Car parking design for the proposed development has been undertaken generally in accordance with Australian Standard AS2890.1 – *Parking Facilities*. **Table 4.2** shows design parameters for each user class in accordance with AS2890.1.

Table 4.2 Car parking design requirement

User class	Parking bay width (m)	Parking bay length (m)	Aisle width (m)	Use
1	2.4	5.4	6.2	Staff
1A	2.4	5.4	5.8	Residents
2	2.5	5.4	5.8	Visitors

Other specific design parameters relating to the parking and internal road layout design have been developed generally in accordance with Australian Standard AS2890.1 – *Parking Facilities* and Council's *City Plan – Transport code (V11)*.

Due to the narrow width of the site, only a 4.2m parking aisle width for car parking spaces 1 to 5 can be achieved while maintaining 5.4m long car parking spaces. Therefore, these parking spaces have been provided with a total width of 3.4m, however they will be line marked as 2.5m wide spaces to assist drivers with parking centrally in the space. As a result, parking spaces 1 to 5 will be allocated as reverse-in only and signed accordingly. Swept path sketches have been provided in **Appendix B** using AutoTURN software to demonstrate that a B85 design vehicle can perform a reverse entry manoeuvre into all spaces.

Regarding the staff parking space, staff of the tenancy will be given an access key / remote to utilise the ground floor carpark similar to the residents. Visitor parking is provided behind the line of security and therefore, to comply with PO02 of the Transport Code, an intercom connecting to the residential dwellings will be positioned on the right-hand side of the ground floor level driveway (**Appendix A**).

No turnaround bay is provided for the visitor parking area as there is sufficient space available for a vehicle to perform a turnaround manoeuvre and exit the development site in a forward gear if all visitor car parking spaces are occupied (**Appendix B**).

4.3 Access and driveway conflict analysis

Due to the narrow site frontage and proposed building configuration, the proposed driveway comprises a width of 3.22m at the property boundary and a 4.2m width inside the property. A width of 3.22m at the property boundary is a function of limited width along the Pacific Parade road frontage and the need to provide pedestrian sight triangles on either side of the driveway to ensure safe interaction between vehicles departing the site and pedestrians utilising the footpath provided in the road verge.

While it is acknowledged that the proposed width is at the lower end of the width range stipulated by AS2890.1 and does not allow for two vehicles to pass one another on the driveway, the width is considered acceptable when considering the following:

- the frontage road is not classified as an arterial or sub-arterial road
- there is sufficient line of sight between vehicles exiting the ground floor carpark and vehicles entering the development site from Pacific Parade
- the distance between a car departing the furthest car parking space and the property boundary is approximately 40m, and
- no commercial visitor parking on-site means that all users will be familiar with the constrained access and driveway configuration. Furthermore, all parking will be located behind a secure roller shutter, removing the normal visual clues associated with parking spaces thus reducing the likelihood of a visitor entering the driveway area and into the ground floor parking area.

Furthermore, a key consideration with respect to the potential for opposing vehicles to encounter one another when arriving to or departing from the development is the trip generating characteristics of the site. The proposed development will generate five trips in the AM peak hour and five trips in the PM peak hour. The volume of trips in and out of the site during peak hours are considered low (**Section 3.1**). On this basis, the likelihood of opposing vehicles encountering each other on the driveway is considered to be extremely low.

To support this supposition, vehicle arrival and departure behaviour has been assessed statistically using a Poisson distribution process to analyse the likelihood of conflicting traffic movements. A Poisson distribution is a discrete probability distribution for certain events that occur randomly in a given interval of time.

The probability P , of an event is given by:

$$P(X = x) = \frac{e^{-\mu} \mu^x}{x!}$$

where,

μ = mean number of events per interval (in this case, cars per hour)

X = the number of successes occurring in a given time interval

$x = 0, 1, 2, 3, 4 \dots$

In the context of this situation, the *Poisson* distribution provides a solution for the conflict probability of a departing vehicle encountering an arriving vehicle in any portion of the parking aisle to the property boundary (**Figure 4.3.1** and **Figure 4.3.2**).

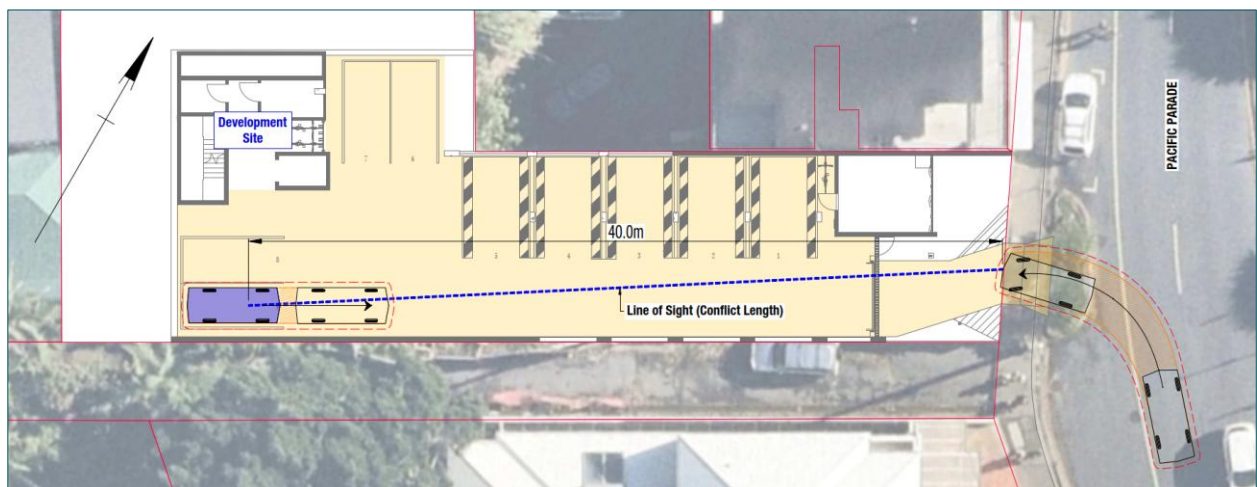


Figure 4.3.1 Greatest conflict length – line of sight

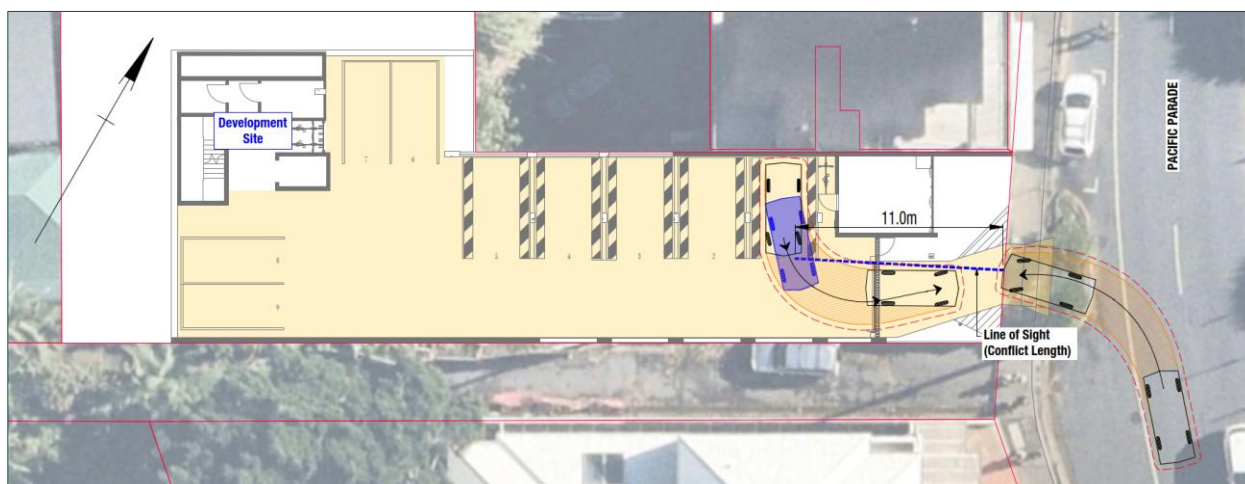


Figure 4.3.2 Smallest conflict length – line of sight

For the analysis, the 'number of movements' was equal to the total trips generated in the peak hour (i.e., five trips in the AM peak hour and five trips in the PM peak hour), and the 'arrival rate' was equal to the peak ingress traffic generation (i.e., three vehicles per hour 'IN' to the site in the AM peak hour, and two vehicles per hour 'IN' to the site in the PM peak hour).

Table 4.3 summarises the outcomes of this assessment:

Table 4.3 Poisson Distribution Analysis

Period	Conflict length	Operating speed (km/h)	Travel time through conflict (mins)	Number of movements (trips)	Arrival rate (cars/hr)	Probability of conflict
Furthest car parking space from the property boundary						
AM peak	40m	5	0.48	5	3	0.028117% (1 in 3,557)
PM peak	40m	5	0.48	5	2	0.012597% (1 in 7,939)
Nearest car parking space to the property boundary						
AM peak	11m	5	0.22	5	3	0.002164% (1 in 46,218)
PM peak	11m	5	0.22	5	2	0.000964% (1 in 103,761)

The above results demonstrate that the likelihood of two vehicles encountering each other on the driveway / vehicle crossing area is highly unlikely due to the low number of vehicle movements and the short parking aisle length / area of potential conflict. Therefore, provision of a one-lane, two-way parking aisle and driveway is considered appropriate for the proposed development and is not likely to result in worsening of operating conditions on the external road network.

4.4 Bicycle parking

Bicycle parking for the development has been calculated in accordance with the land use requirements stipulated in Council's *City Plan – Transport code (V11)* as shown in **Table 4.4**. There are no requirements for end of trip facilities for the proposed land use.

Table 4.4 Bicycle parking requirements

Land use	Quantity	Component	Bicycle parking rate	Parking requirement
Multiple dwelling	5 units	Resident - Class 2	1 per dwelling	5
		Visitor - Class 3	1 per 12 dwellings, to a maximum of 20 spaces	1
Shop	26m ² GFA	Staff - Class 2	1 per 100m ² TUA	1
		Visitor - Class 3	1 per 50m ² TUA	1
Total Class 2 spaces				6
Total Class 3 spaces				2
Total bicycle parking requirement				8

4.5 Alternative bicycle parking requirement

The bicycle parking rates stipulated by Council for the proposed land uses are considered onerous for the proposed development. The development therefore proposes to adopt more applicable bicycle parking rates previously approved by Council in higher density and more cycle friendly centre zones. For this assessment, the Austroads *Guide to Traffic Management – Part 11: Parking Management Techniques* have been adopted. On the above basis, the expected bicycle parking requirement for the proposed development is shown in **Table 4.5**.

Table 4.5 Bicycle parking requirements

Land use	Quantity	Component	Bicycle parking rate	Parking requirement
Multiple dwelling	5 units	Resident - Class 2	1 per 3 dwellings	2
		Visitor - Class 3	1 per 12 dwellings	1
Shop	20m ² TUA	Staff - Class 2	1 per 300m ² GFA	1
		Visitor - Class 3	1 per 500m ² GFA over 1000m ² GFA	-
Total Class 2 spaces				3
Total Class 3 spaces				1
Total bicycle parking requirement				4

4.6 Bicycle parking provision

The development provides a total of four bicycle parking spaces comprising two resident spaces (Class 2), one staff space (Class 2) and one visitor space (Class 3). This provision is considered appropriate for the expected bicycle parking demand and complies with the bicycle parking rates stipulated in Austroads *Guide to Traffic Management – Part 11: Parking* for parking rates previously approved by Council.

The resident and staff spaces will be located on the ground floor level behind the line of security. Resident spaces will be located at the rear of the carparking area and staff spaces adjacent to the shop tenancy. The visitor space will be provided at the front of the development within line of sight to the Pacific Parade road frontage (**Appendix A**). All spaces will be provided via horizontal floor mounted bicycle rails and will be appropriately signed in accordance with Council requirements. Bicycle parking for the proposed development has been designed to comply with AS2890.3 as shown in **Table 4.6**.

Table 4.6 Bicycle parking design requirements

User	Security Level	Min. Parking envelope width (m)	Min. Parking envelope length	Min. Aisle width (m)
Residents	B ¹	0.5	1.8	1.5
Staff	B ¹	0.5	1.8	1.5
Visitors	C ¹	0.5	1.8	1.5
Notes:				
1. Bicycle parking requirements based on a horizontal parking layout with floor mounted rails.				

5. Access and servicing assessment

5.1 Access arrangement

While it's acknowledged that the development composition comprises more than three dwellings and therefore requires that the vehicle crossing is designed in accordance with IPWEA *Standard Drawing RS-102 –Vehicle Crossings, Heavy Duty*, due to a constrained site frontage and the need to provide adequate provision for storage of waste containers at the front of the property, providing a 3.22m wide vehicle crossing with 1.5m wide wings while maintaining a 2m offset (2m offset to comply with pedestrian sight triangle requirements in accordance with AS2890.1) from the eastern property boundary is not possible. As outlined previously in **Section 3.0** of this report, the development is expected to generate no more than five vehicle trips in the AM and PM peak hours. On this basis and to achieve a functional outcome, it is considered appropriate that the vehicle crossing for this development is designed and constructed in accordance with IPWEA *Standard Drawing RS-100 – Vehicle Crossings, Residential Driveway* for a 3.22m wide vehicle crossing with 500mm wide splays on either side. The access will cater for all movements.

To accommodate the proposed access driveway, the development proposes the removal of existing street landscaping directly adjacent to the Pacific Parade frontage. This area of road will then be reinstated to Council requirements.

5.2 Sight distance assessment

A sight distance assessment has been undertaken in accordance with AS2890.1 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**. The required sight distance has been calculated based on a frontage road speed along Pacific Parade of 40km/h.

Table 5.2 Sight distance requirements

Frontage road	Vehicle speed assessed (km/h)	Sight distance requirement
Pacific Parade	40km/h	55m

Figure 5.2 shows the required sight distance and associated sight lines for vehicles travelling along Pacific Parade to vehicles departing the development site, demonstrating compliance with specified requirements.

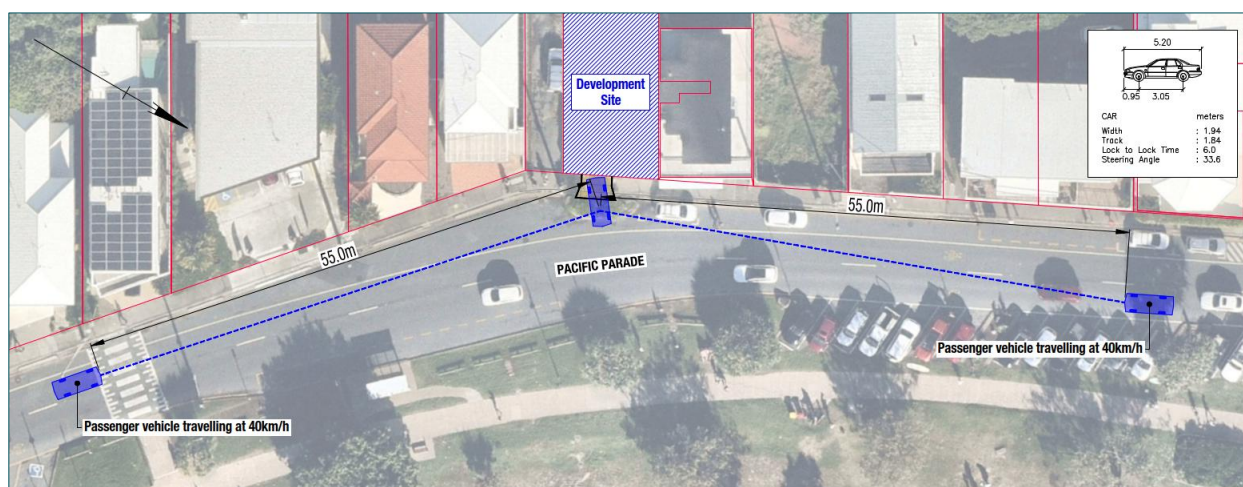


Figure 5.2 Sight distance assessment

5.3 Servicing

Council's *City Plan – Transport code (V11)* stipulates service vehicle requirements for the proposed development as shown in **Table 5.3**.

Table 5.3 Service vehicle requirements

Land use	Service vehicle requirement
Multiple dwelling (more than 3 dwellings)	Standing area for an MRV on-site
Shop	SRV

As a consequence of site constraints, an on-site standing area for an MRV and a dedicated loading bay for a SRV cannot be accommodated. Therefore, compliance with AO3 and PO3 of the Transport Code cannot be achieved. However, the proposed development can comply with the overall outcomes, specifically OO2(e)(ii) which states “A road network is provided that ensures development impacts on amenity caused by traffic and parking is consistent with the communities reasonable expectations for the intended use”.

The development proposes to utilise the existing loading zone located on Pacific Parade 35m north of the development site (**Figure 5.3**). It is understood that servicing for the previous development on the subject site (café / restaurant) occurred on-street and therefore the proposed development will not result in additional demand being placed on the existing on-street loading zone that wasn't already being catered for. It is also noted that the proposed development would likely generate less demand for servicing than the existing food and drink outlet, especially given it comprised a GFA of 240m² opposed to the proposed 26m² GFA shop land use and five residential units.

Based on the explanation provided above, it is considered that compliance with Council's *City Plan – Transport Code (V11)* is achieved considering the existing on-street loading zone will be available for servicing and is consistent with the decision notice for MCU/2022/588.



Figure 5.3 Existing on-street loading zone

6. Response to development codes

A detailed review of the proposed development against Council's *Driveways and vehicle crossings code (V11)* and *Transport code (V11)* is provided in **Appendix C**.

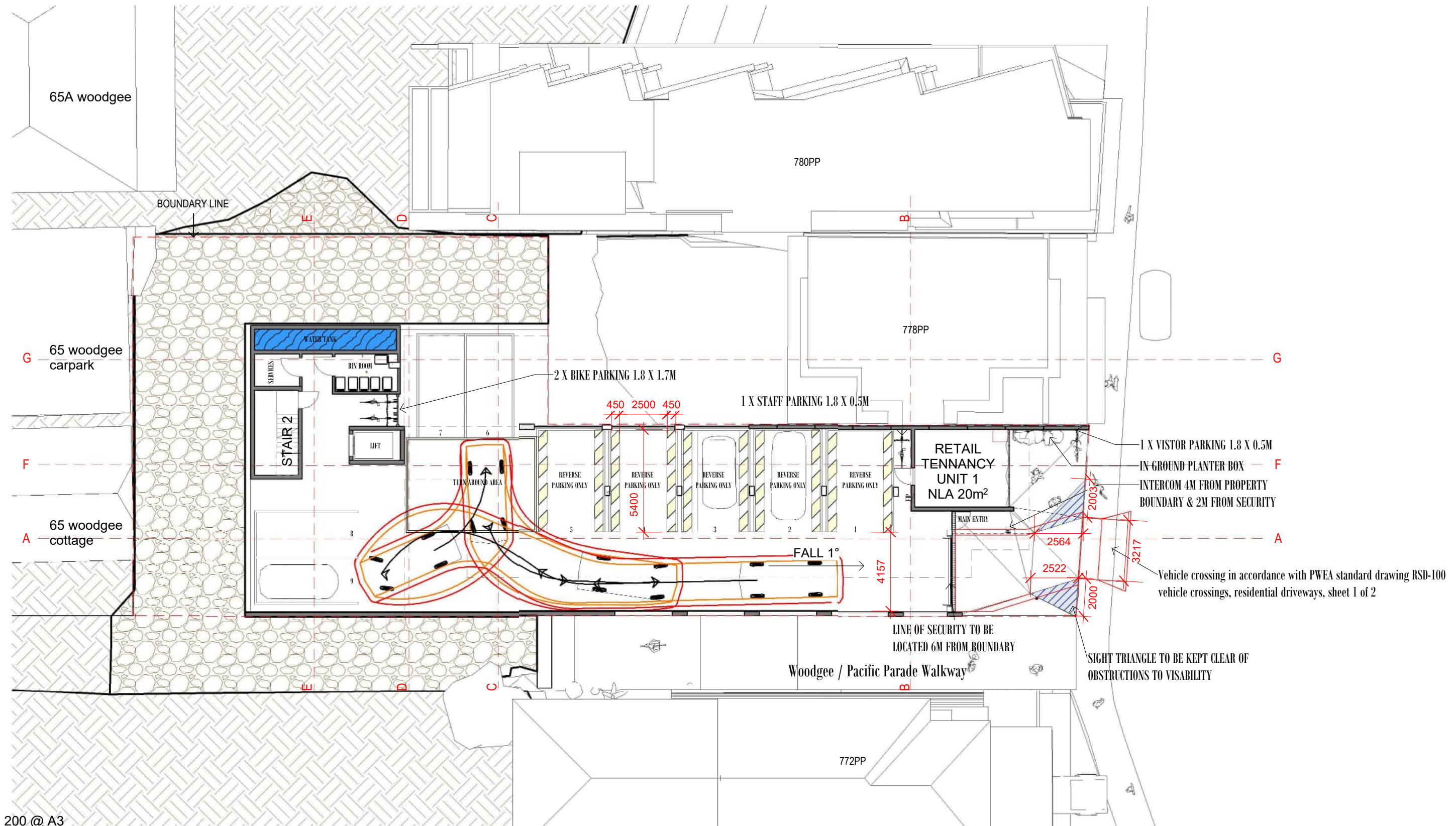
7. Conclusion

This report presents the findings related to assessment of traffic and transport related matters for a proposed development located at 776 Pacific Parade, Currumbin. Based on the assessment undertaken, 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.

8. References

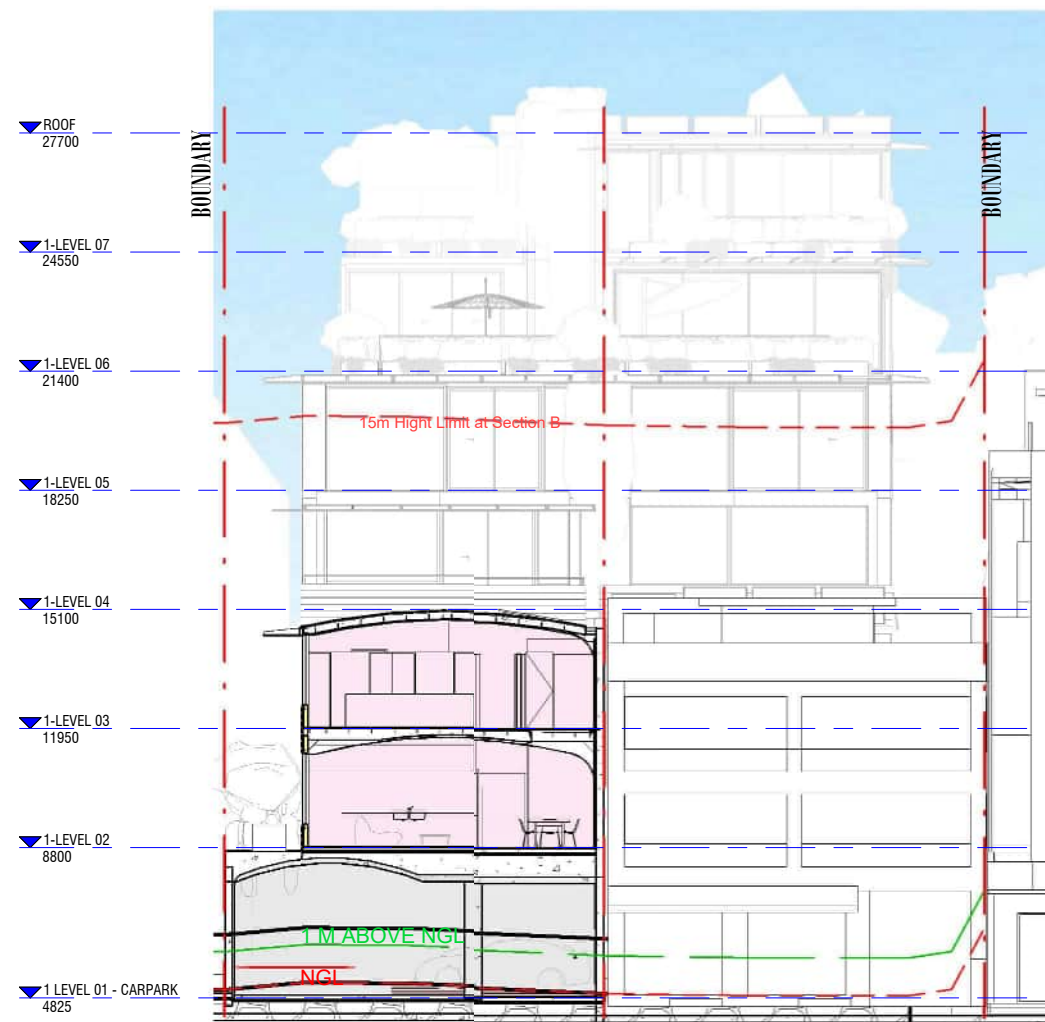
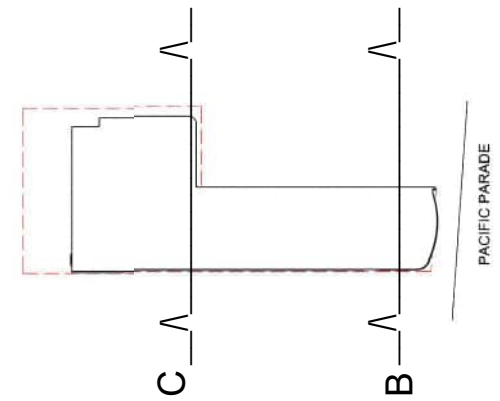
1. City of Gold Coast, *City Plan – Version 11 (February 2024)*, Gold Coast.
2. Queensland Government (Department of Transport and Main Roads), *Guide to Traffic Impact Assessment*, December 2018, Brisbane.
3. New South Wales Government (Roads and Maritime Services), *Guide to Traffic Generating Developments - Technical Direction (TDT2013/04)*, Sydney, 2014.
4. New South Wales Government (Roads and Traffic Authority), *Guide to Traffic Generating Developments – Issue 2.2*, 2002, Sydney.
5. Australian Building Codes Board, *National Construction Code (NCC) Volume 1*, May 2023.
6. Standards Australia/Standards New Zealand 2004, *AS2890.1: Off-street Car Parking Facilities*.
7. Standards Australia/Standards New Zealand 2015, *AS2890.3: Bicycle Parking*.

Appendix A Plans of development

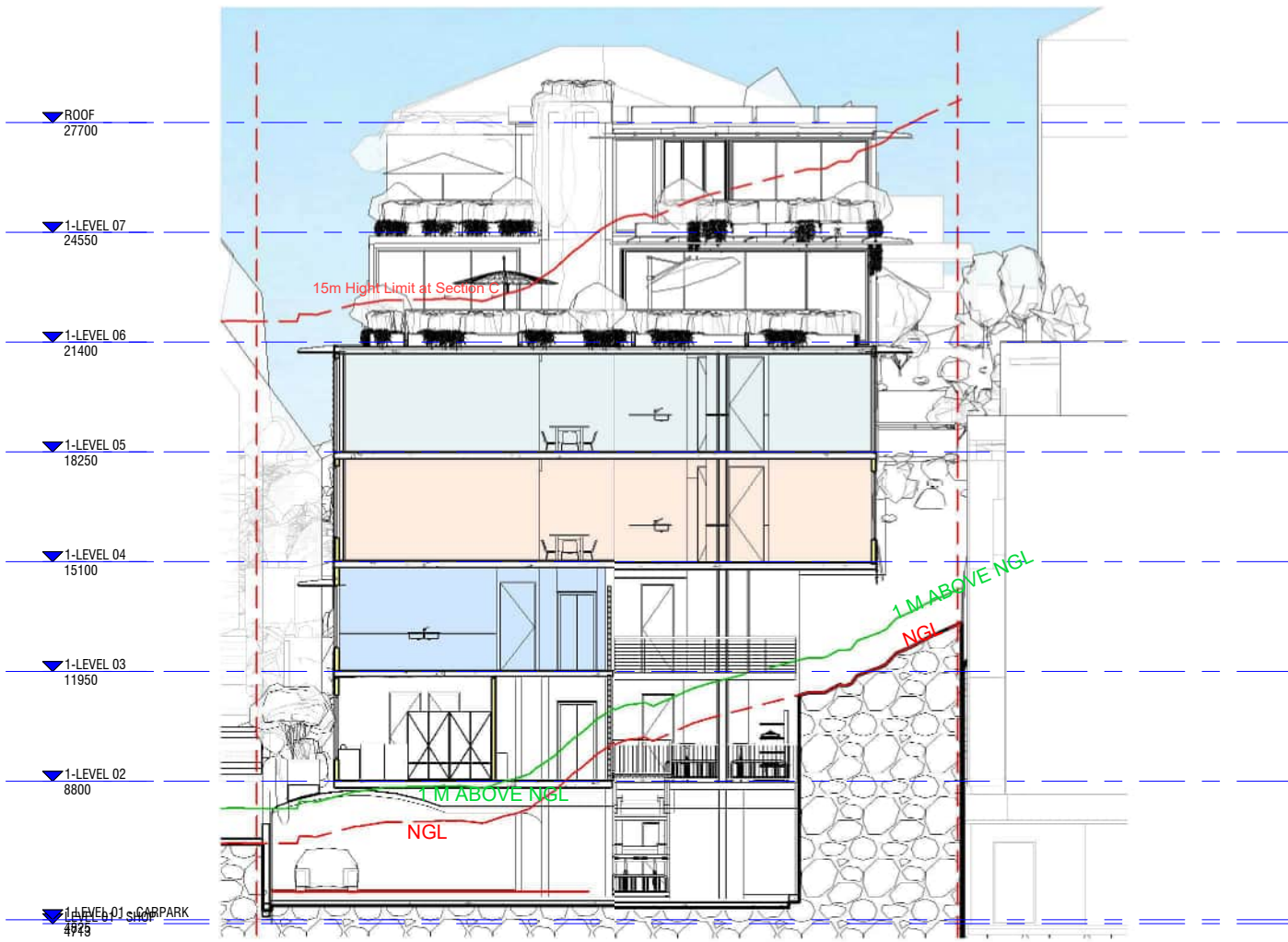


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level 01 carpark

frida beach



SECTION B



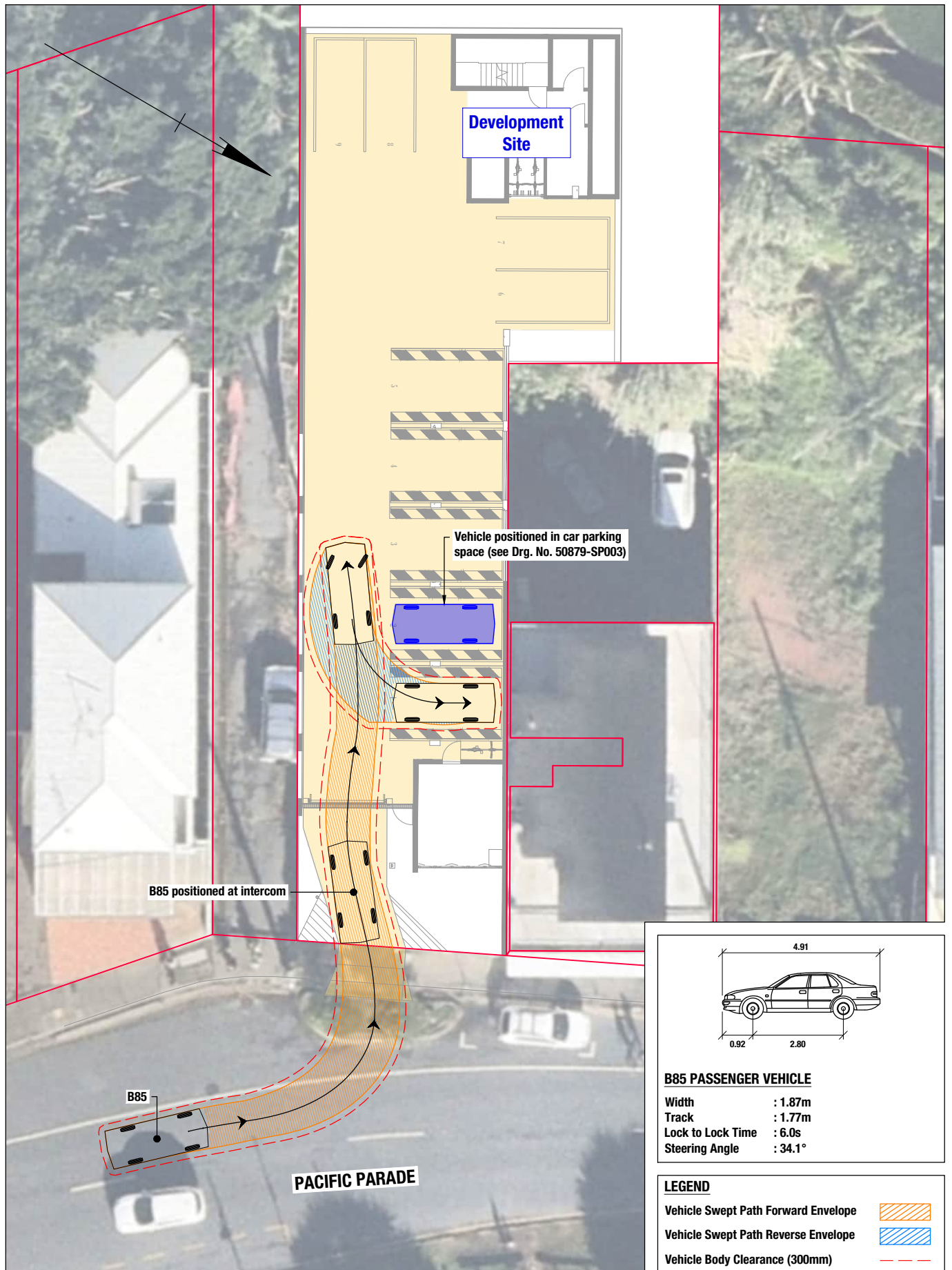
SECTION C

- BELOW GROUND & NON STOREY SPACE
- RETAIL TENNANCY
- GARAGE
- UNIT 2
- UNIT 3
- UNIT 4
- UNIT 5
- UNIT 6

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section B + C

frida beach

Appendix B Swept path assessment



GELEON

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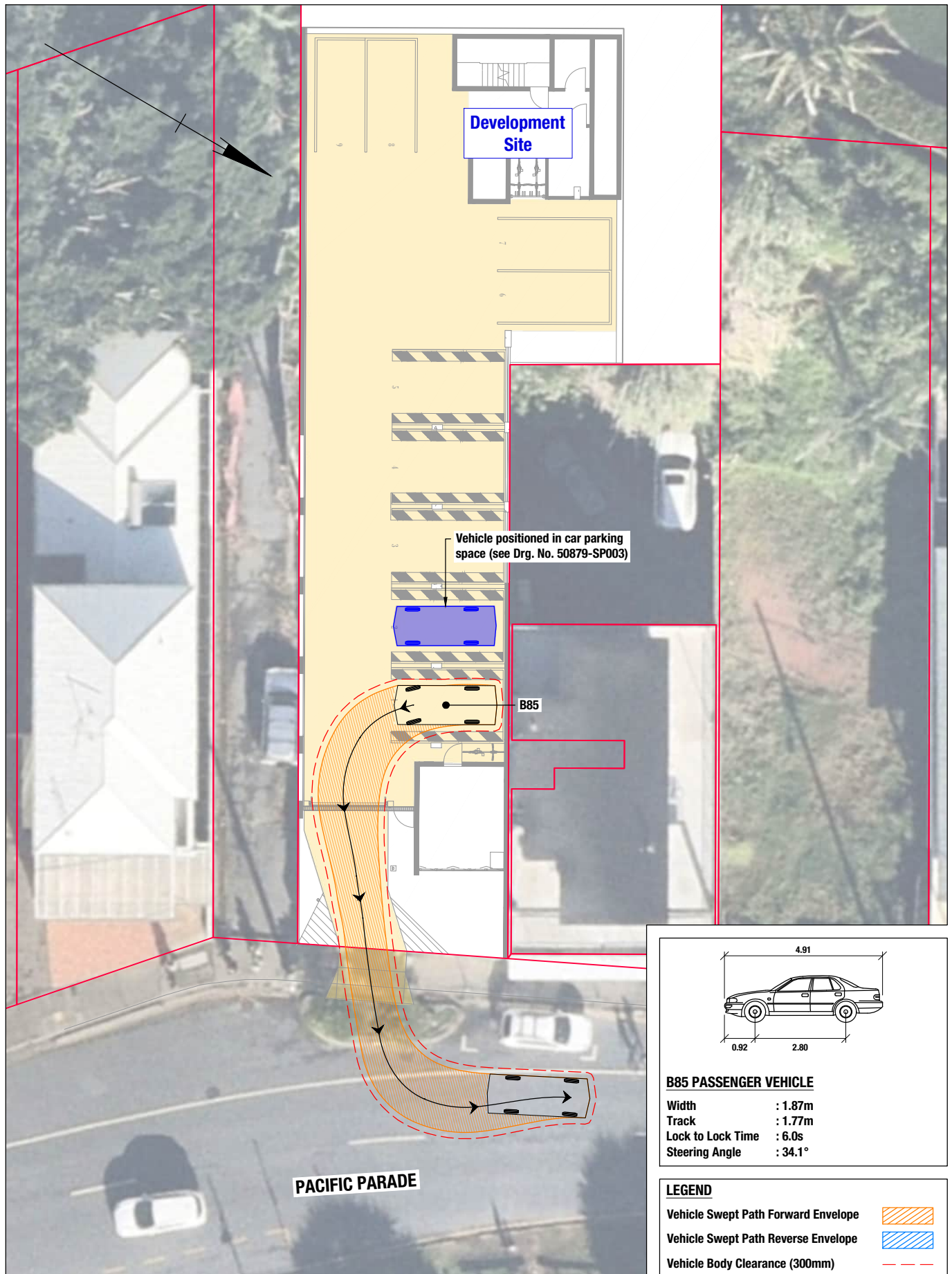
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP001-A**

Series No. 1 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
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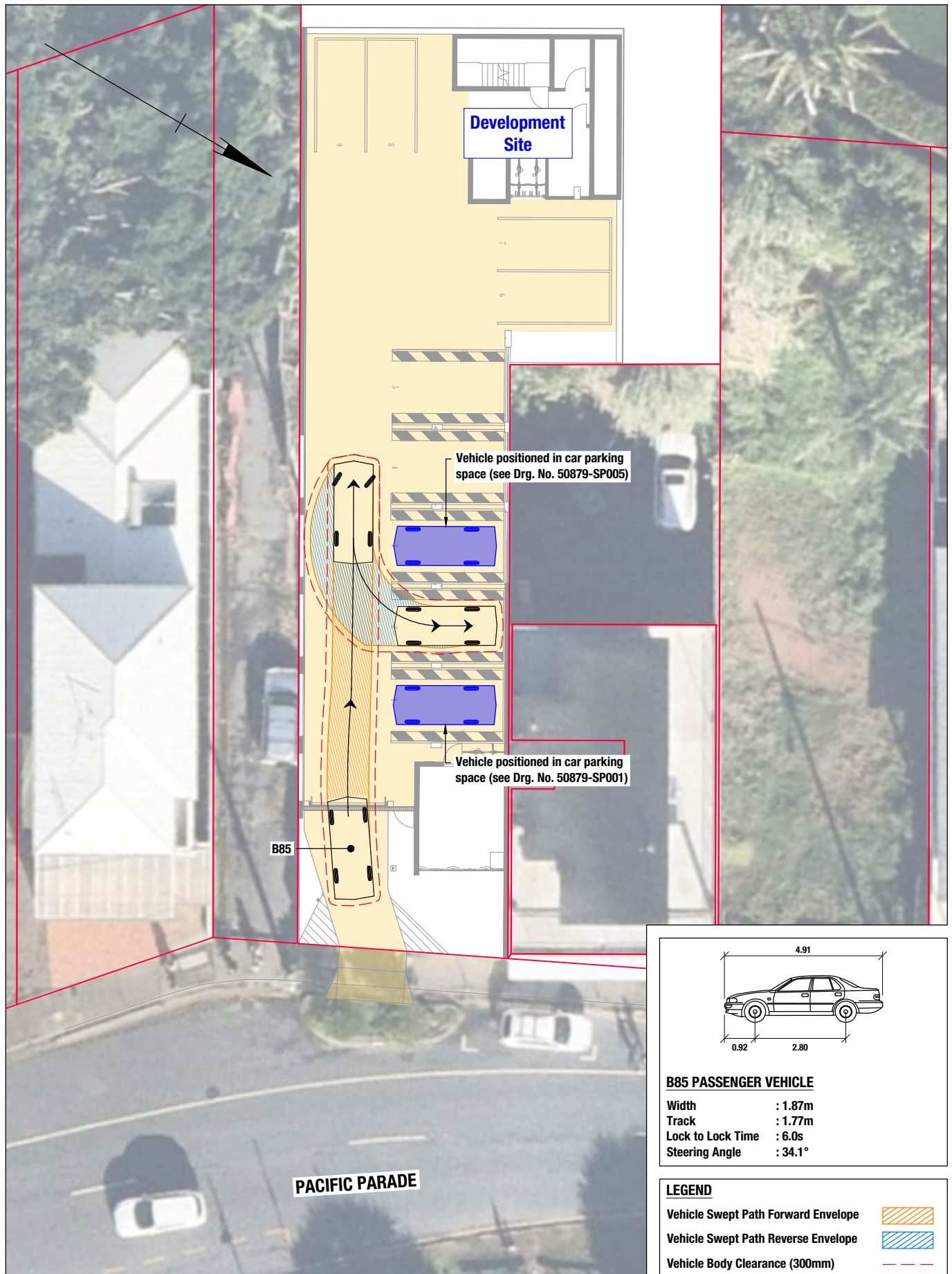
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT THE DEVELOPMENT**

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP002-A

Series No. 2 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

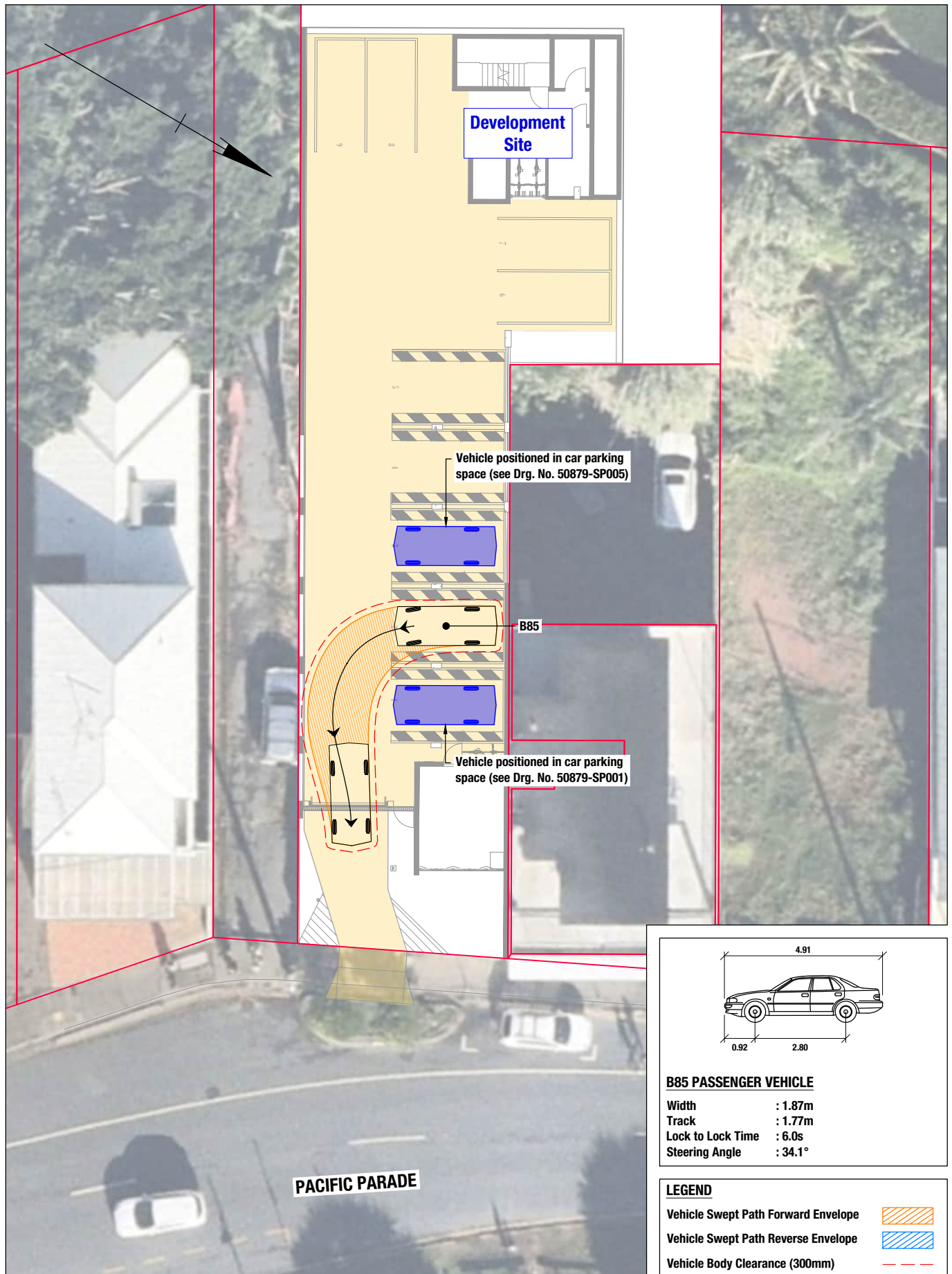
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP003-A**

Series No. 3 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

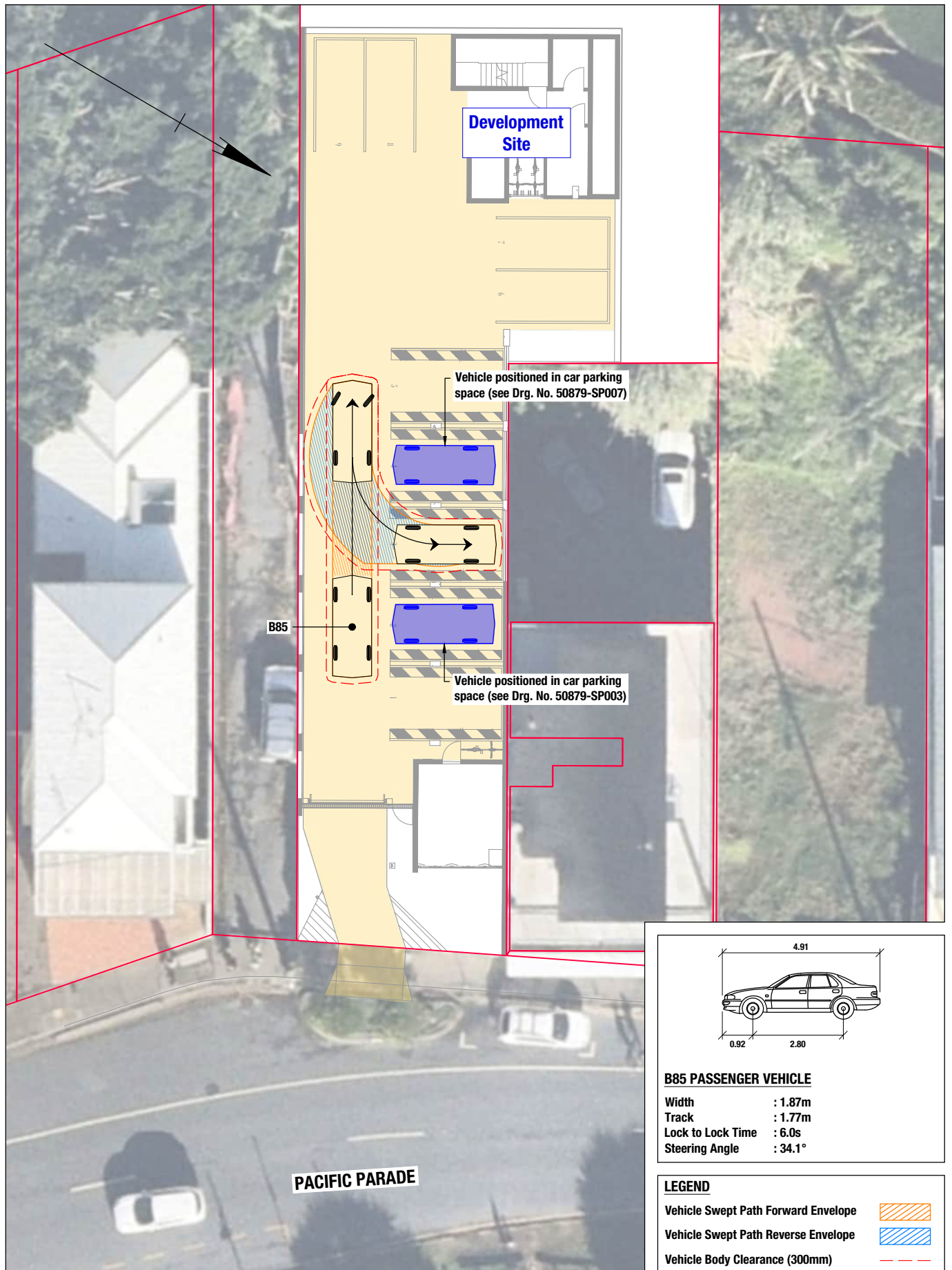
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP004-A**

Series No. 4 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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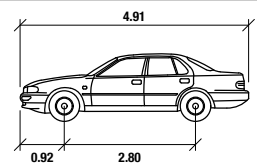
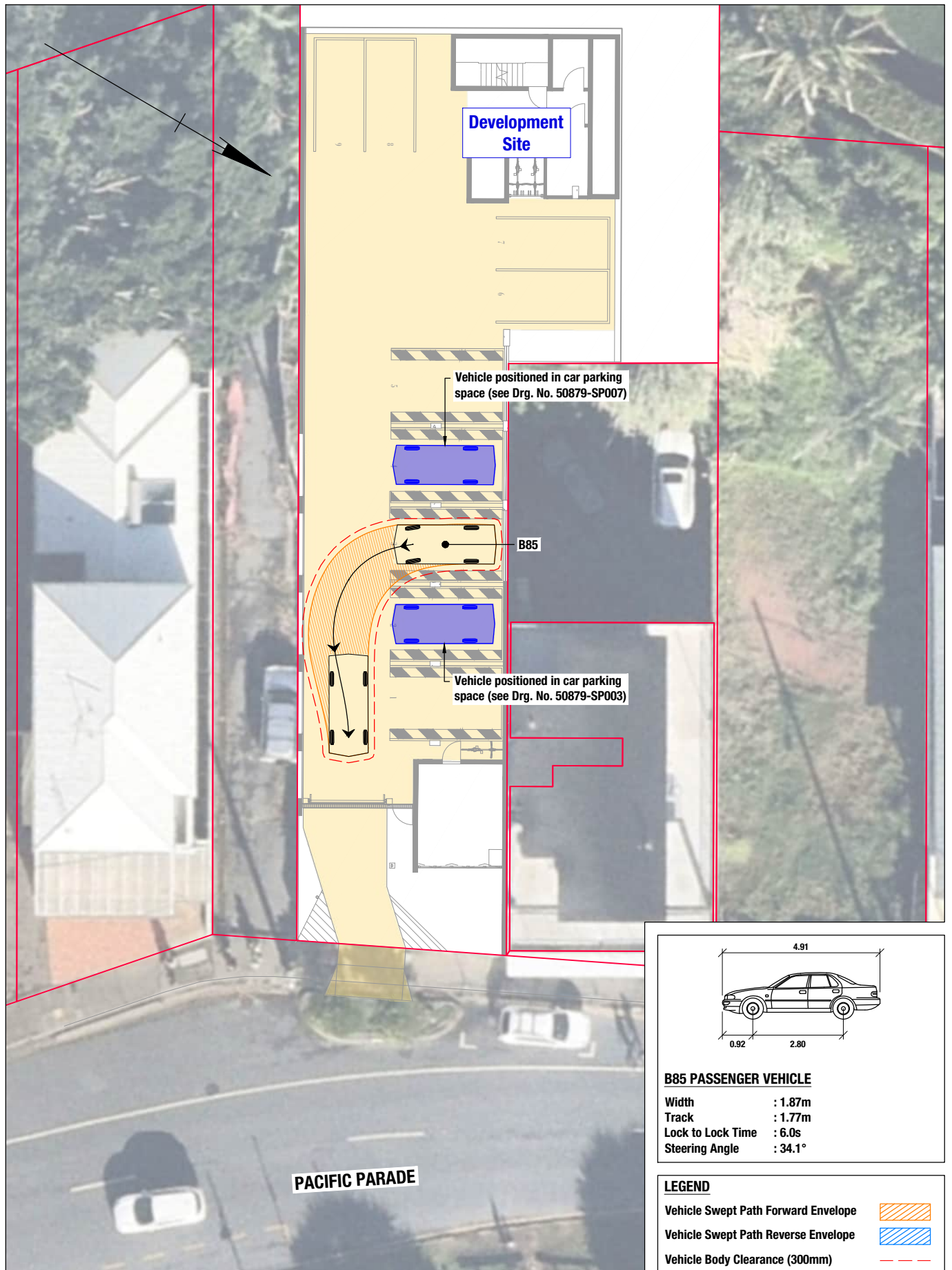
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP005-A**

Series No. 5 of 19



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) 

GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

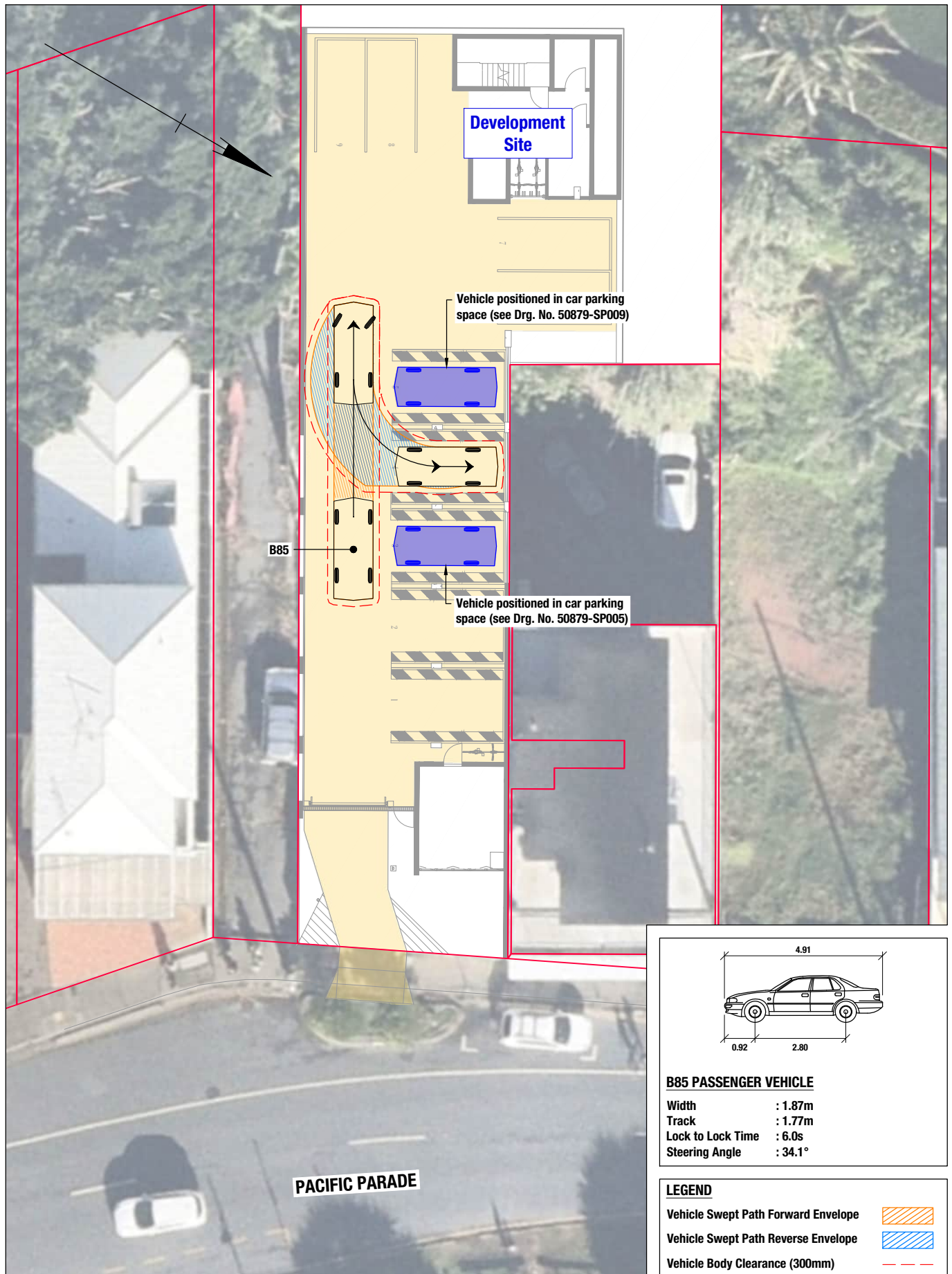
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP006-A**

Series No. 6 of 19



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)

GELEON

ABN 58 668 001 303
 Suite 12, Level 1, 3029 The Boulevard
 Emerald Lakes, Carrara
 PO Box 454 Nerang Qld 4211
 tel +61 7 5594 4473

0 1 2 3 4 5m

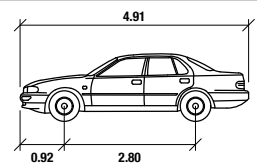
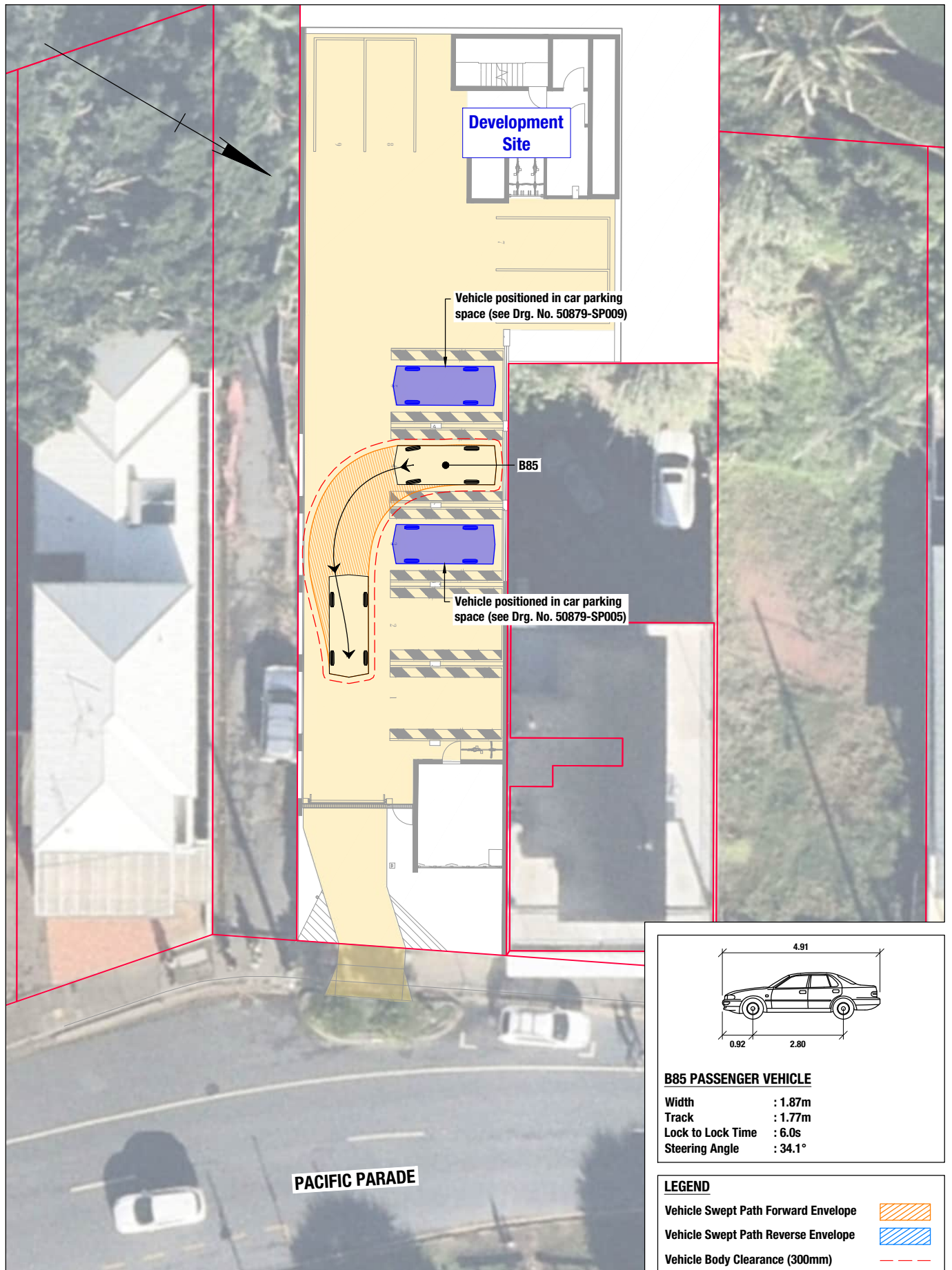
776 PACIFIC PARADE, CURRUMBIN
 PROPOSED MIXED USE DEVELOPMENT

SWEPT PATH ASSESSMENT
 B85 PASSENGER VEHICLE
 ENTRY MANOEUVRE INTO CAR PARKING SPACE

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP007-A

Series No. 7 of 19



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) 

GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

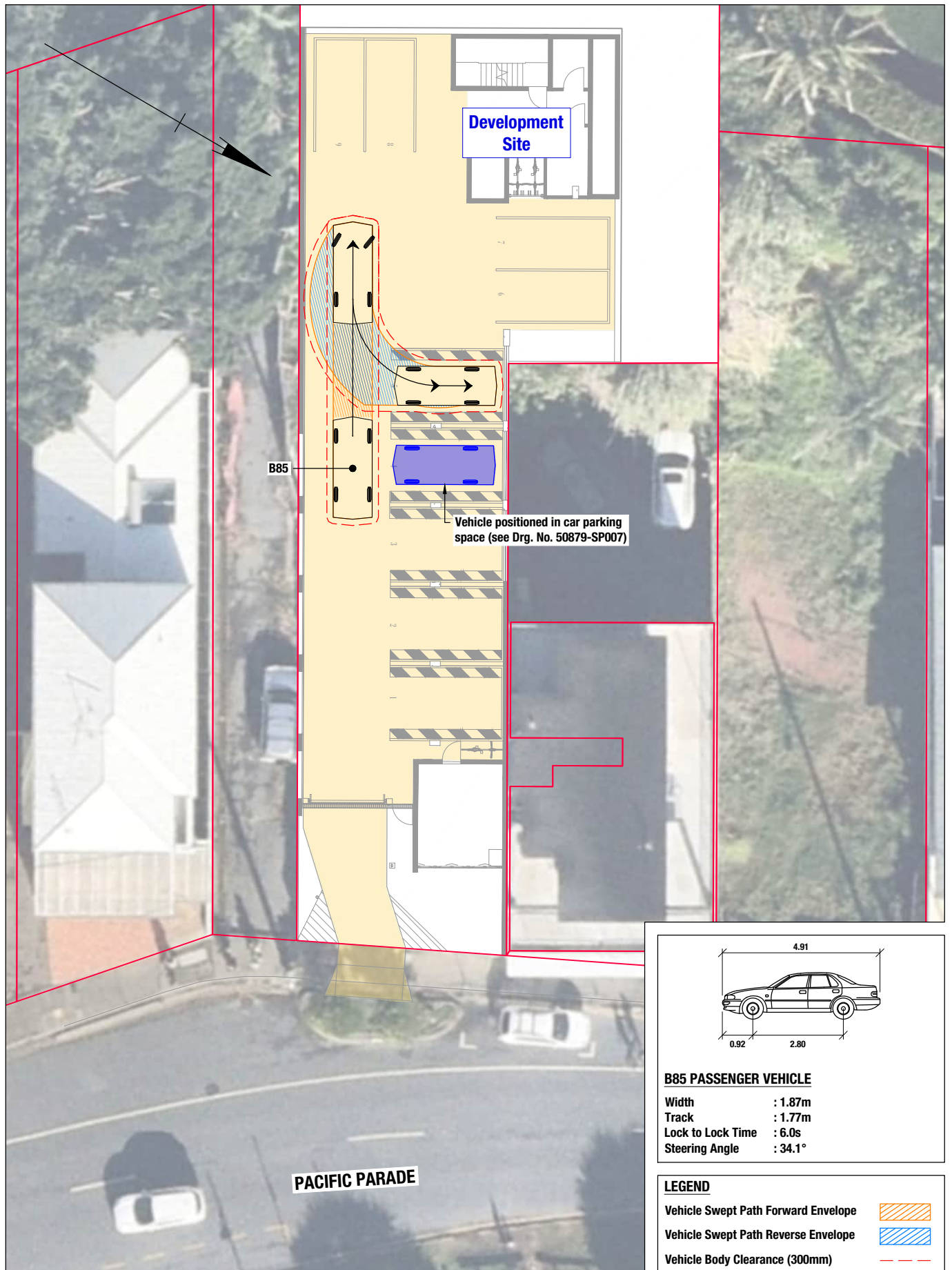
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP008-A**

Series No. 8 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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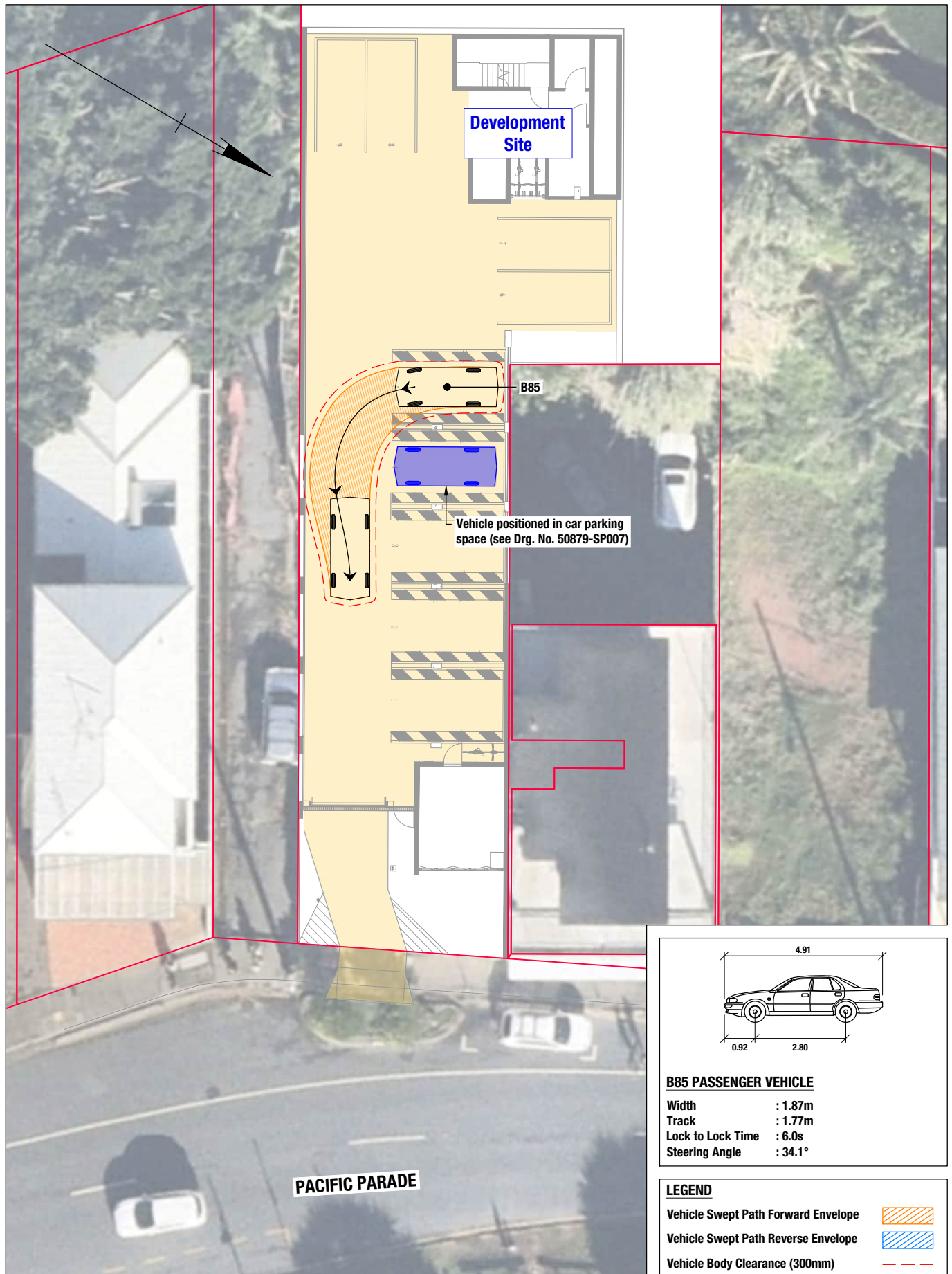
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP009-A

Series No. 9 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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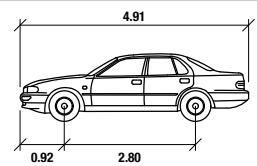
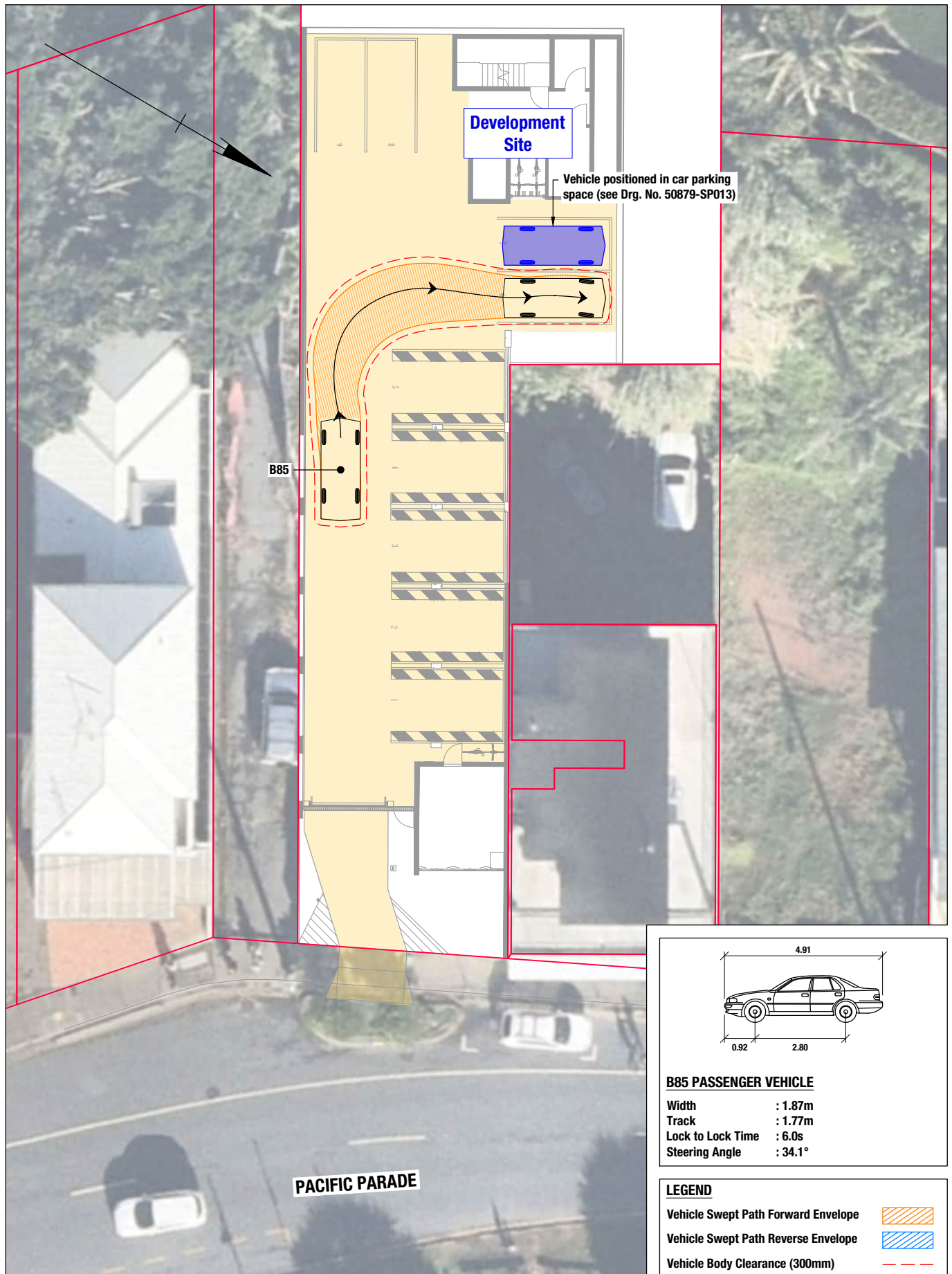
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP010-A**

Series No. 10 of 19



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) 

GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

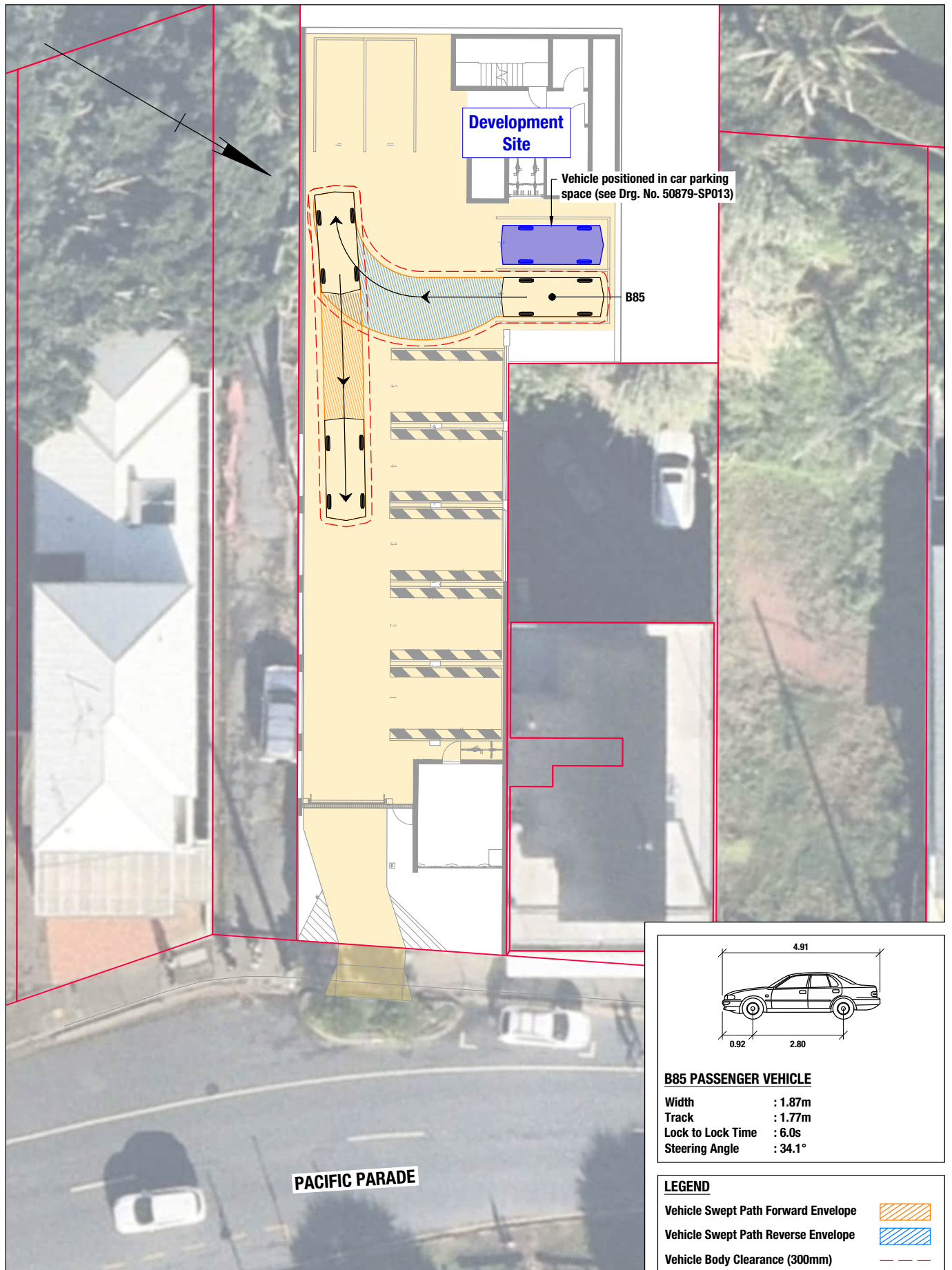
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP011-A**

Series No. 11 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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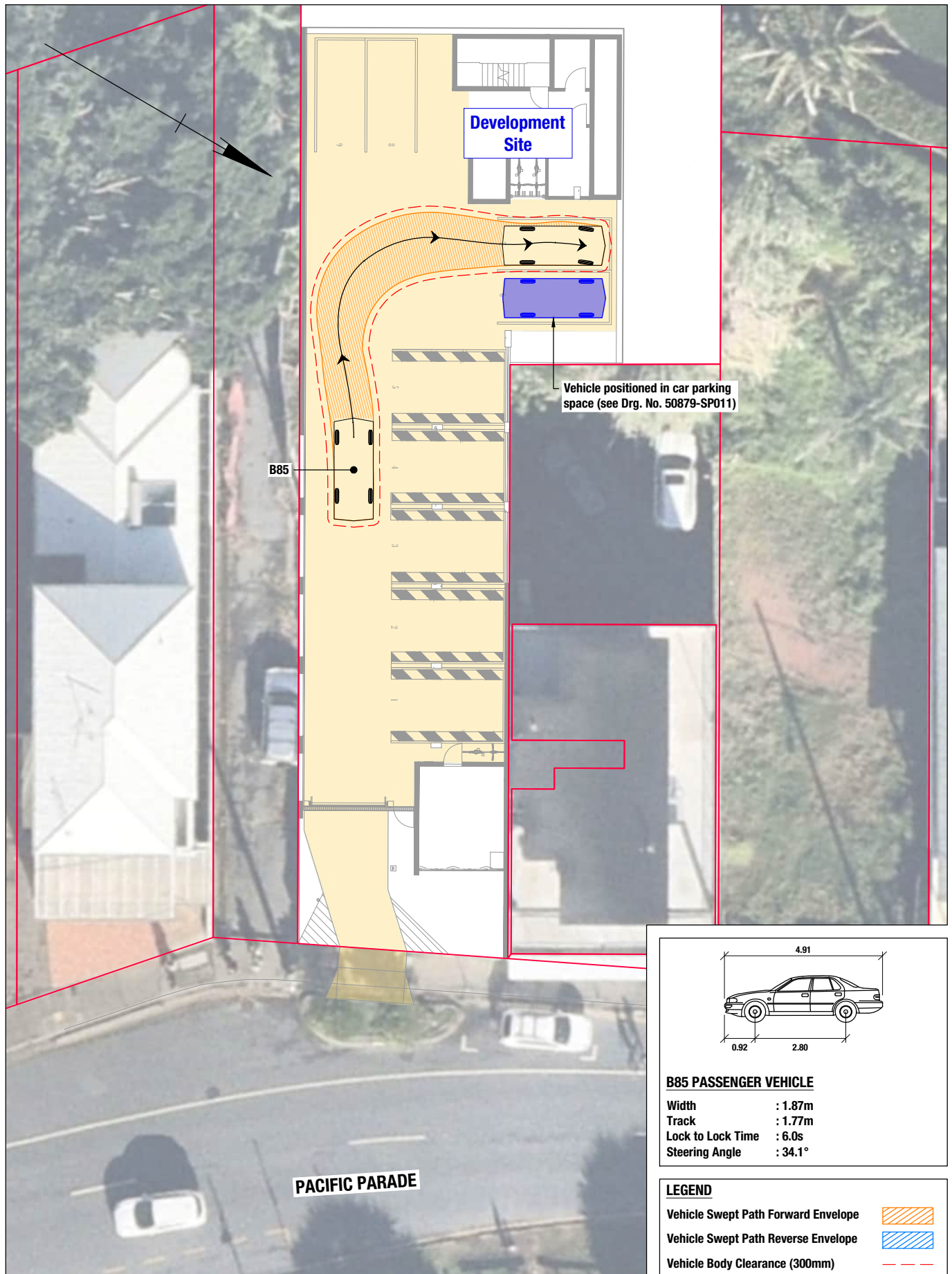
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT THE DEVELOPMENT**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP012-A**

Series No. 12 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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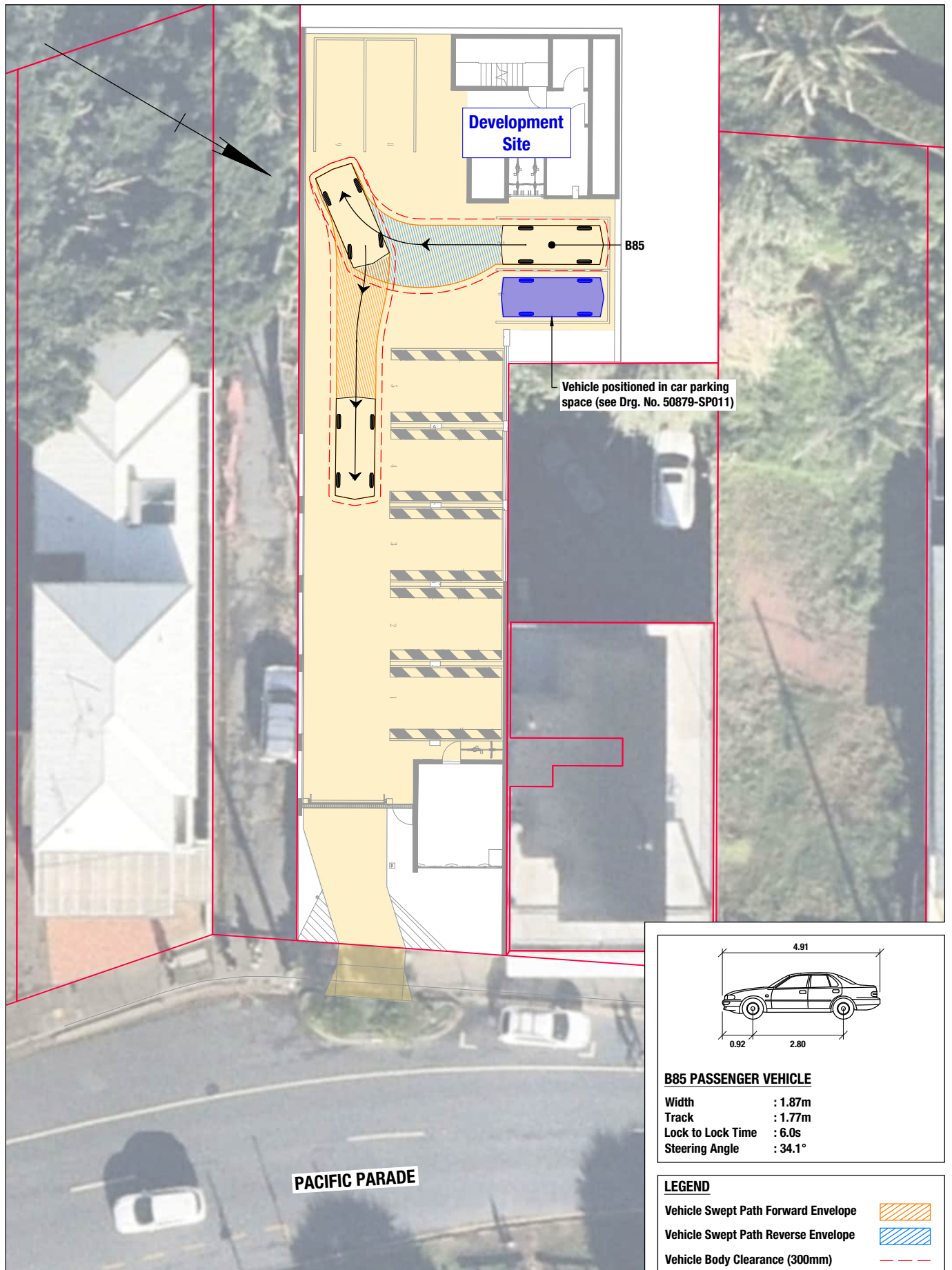
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP013-A**

Series No. 13 of 19



GELEON

ABN 58 668 001 303
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Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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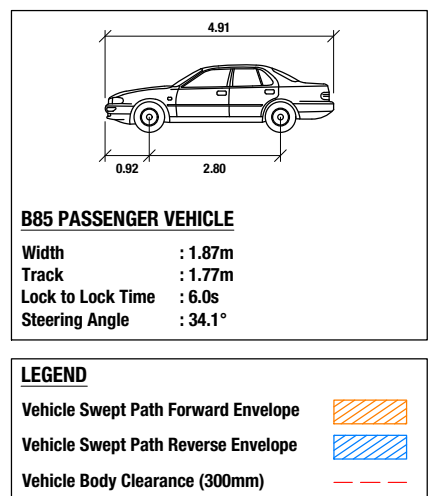
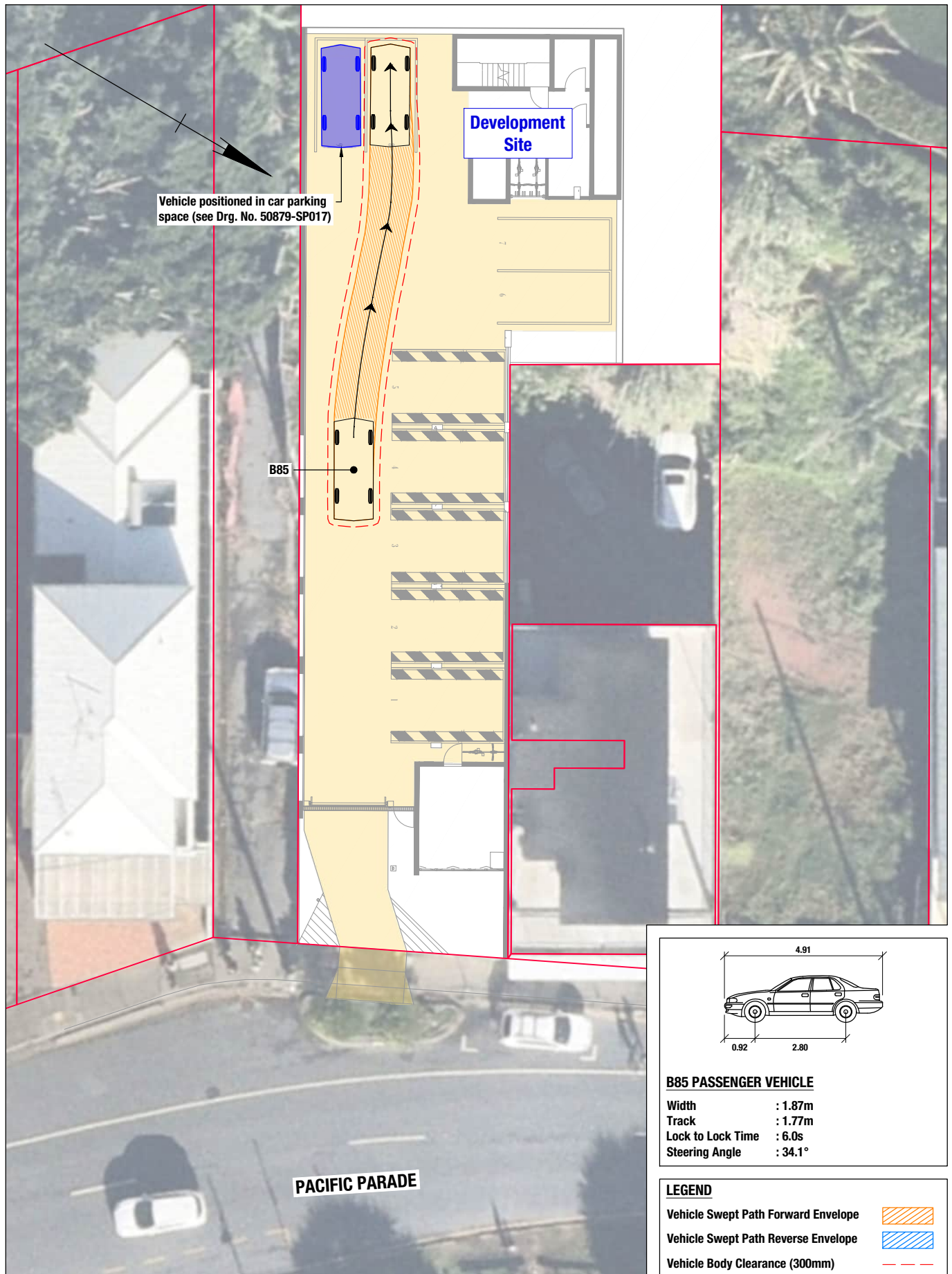
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP014-A**

Series No. 14 of 19



GELEON

ABN 58 668 001 303
 Suite 12, Level 1, 3029 The Boulevard
 Emerald Lakes, Carrara
 PO Box 454 Nerang Qld 4211
 tel +61 7 5594 4473

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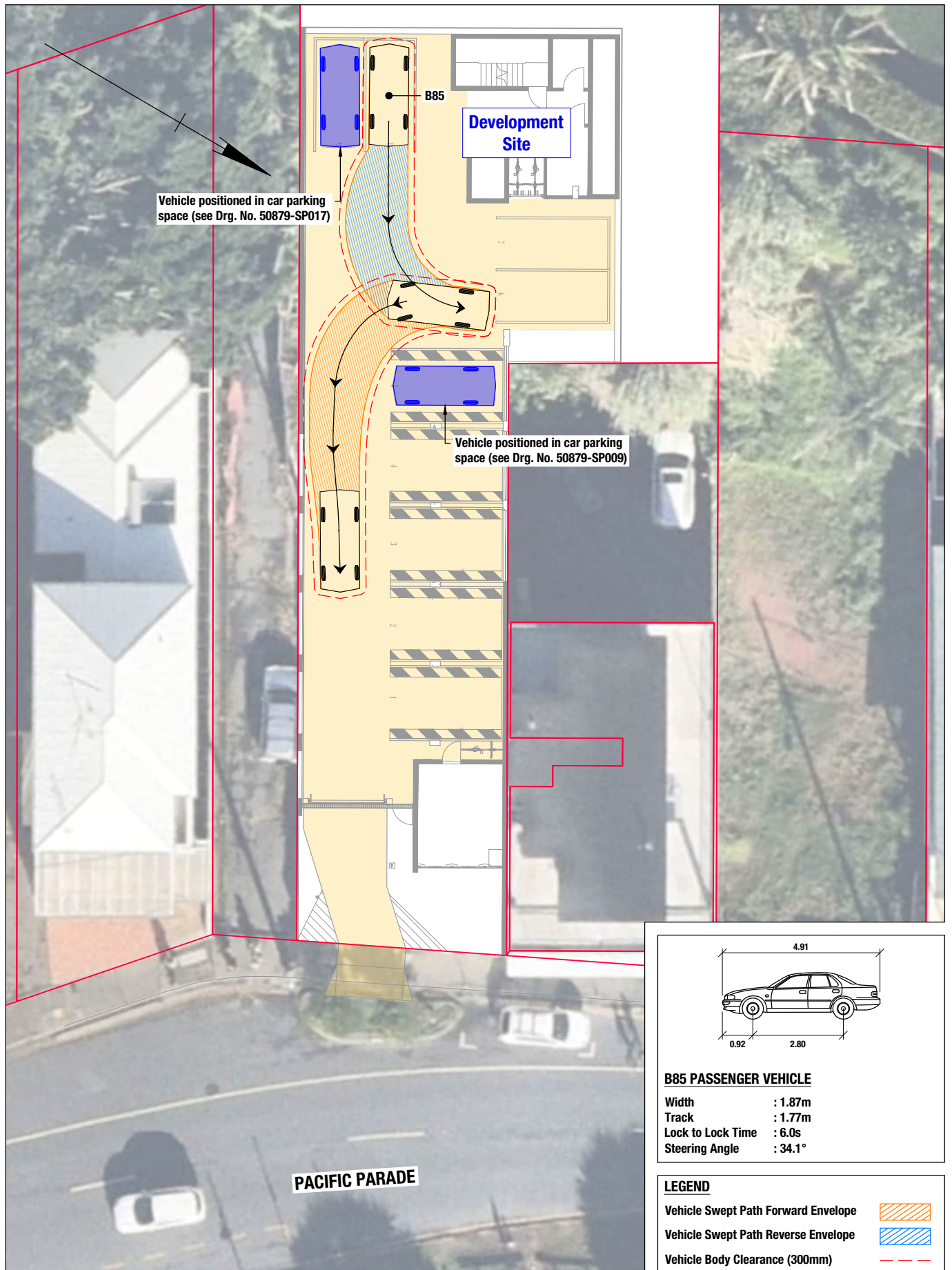
776 PACIFIC PARADE, CURRUMBIN
 PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
 B85 PASSENGER VEHICLE
 ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP015-A

Series No. 15 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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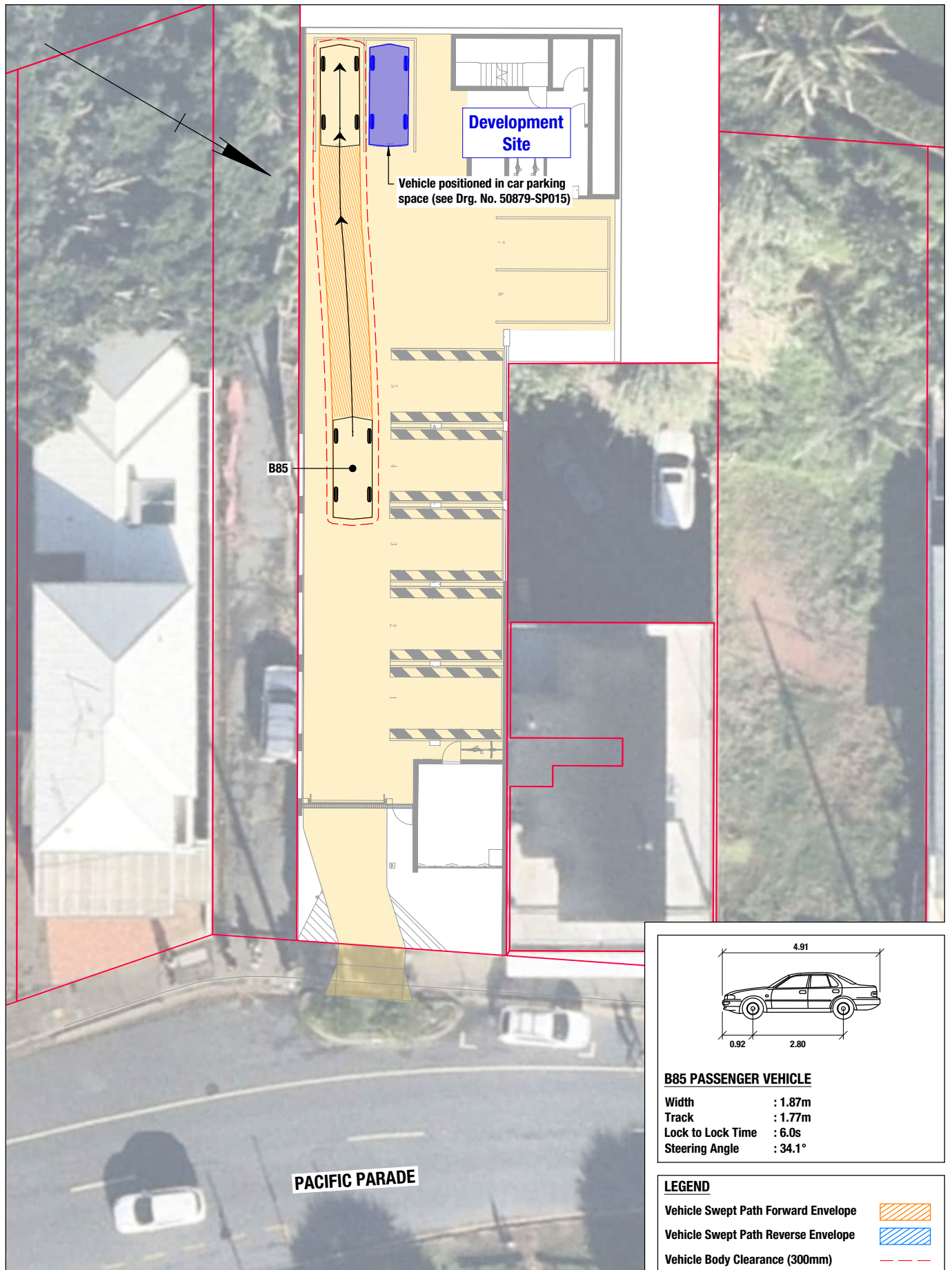
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP016-A

Series No. 16 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

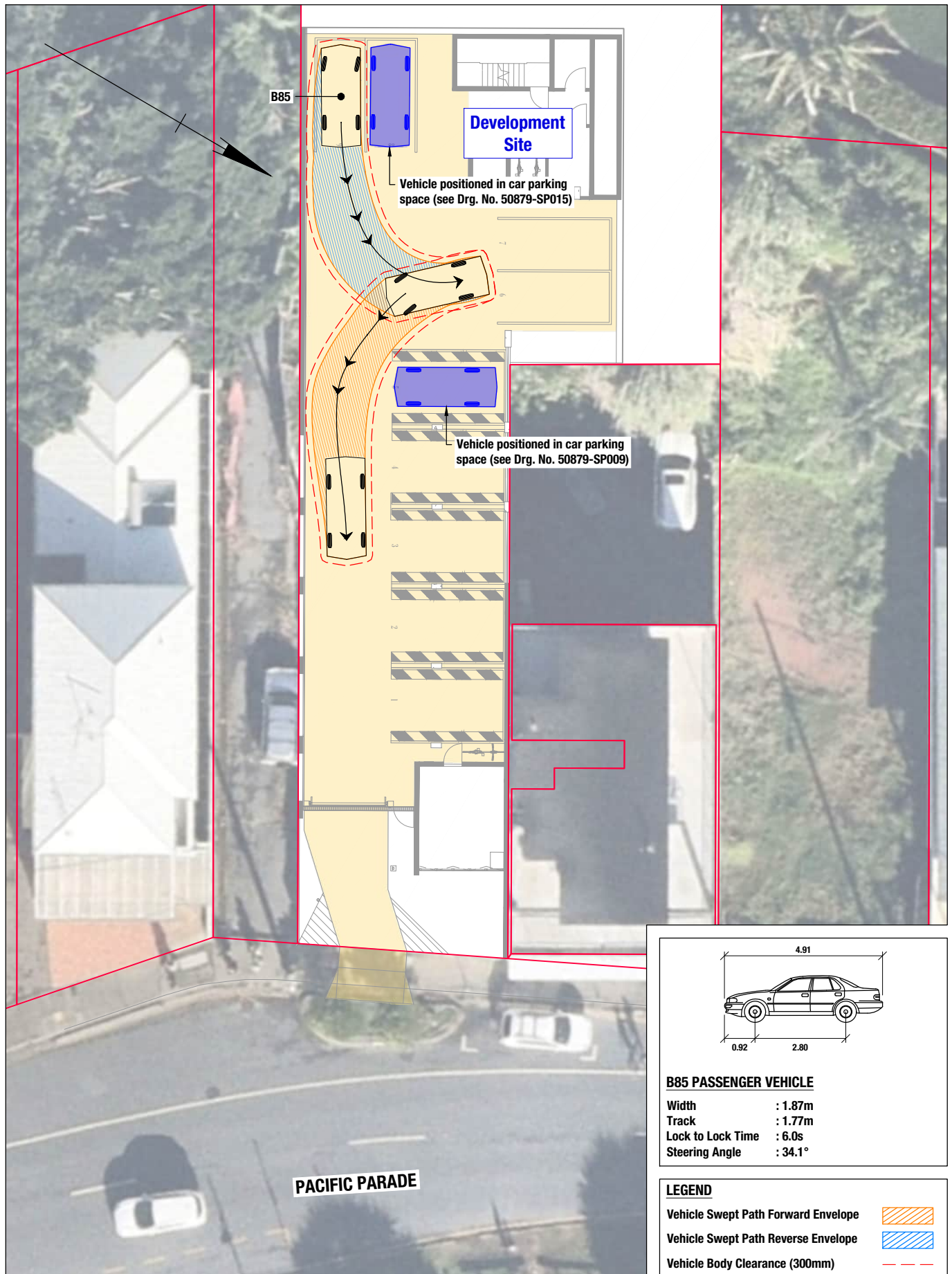
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
ENTRY MANOEUVRE INTO CAR PARKING SPACE**

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP017-A

Series No. 17 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

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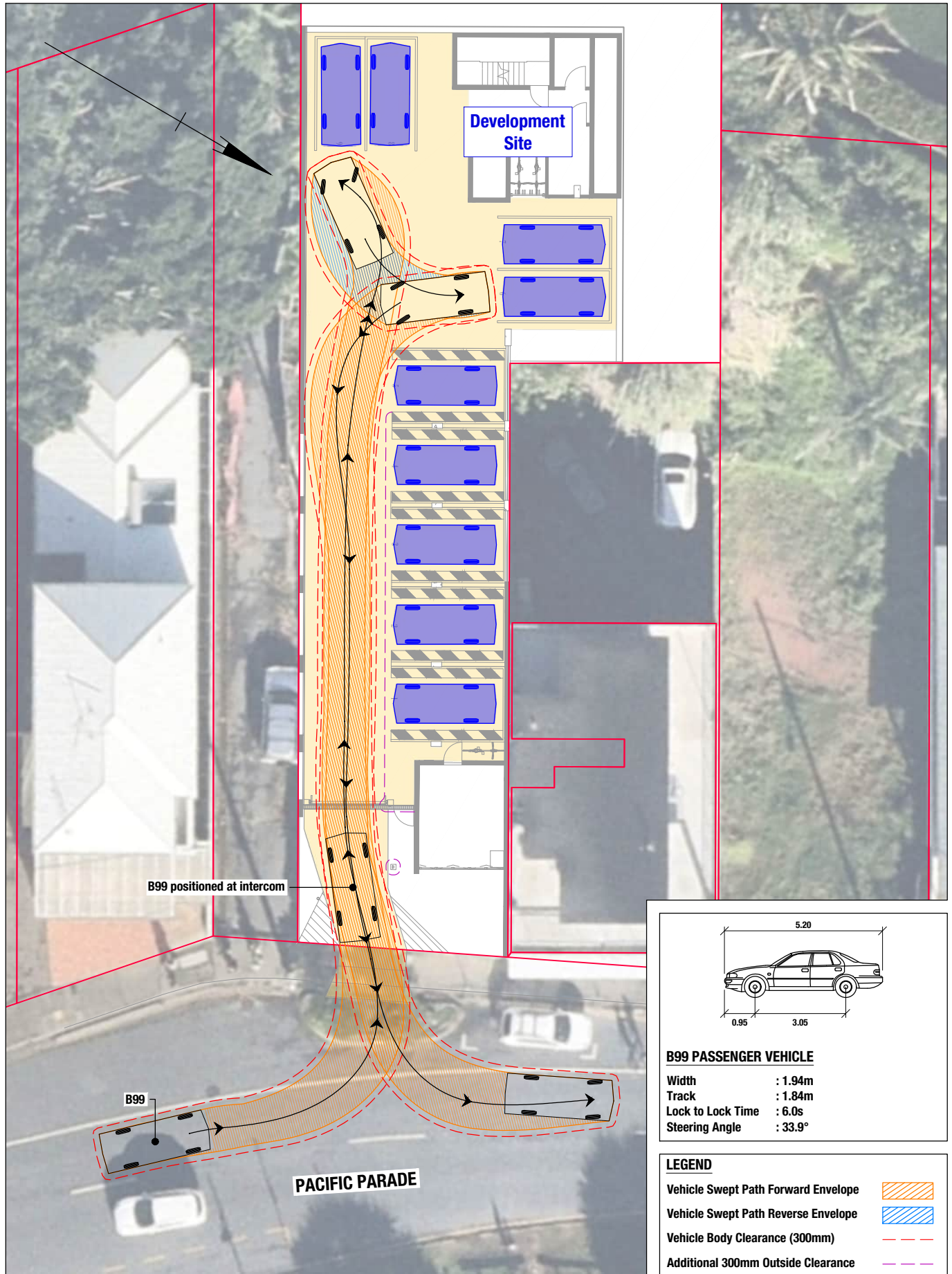
776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B85 PASSENGER VEHICLE
EXIT MANOEUVRE OUT CAR PARKING SPACE**

Project No. **50879** Issue Date **19/12/24**

Drawing No. **50879-SP018-A**

Series No. 18 of 19



GELEON

ABN 58 668 001 303
Suite 12, Level 1, 3029 The Boulevard
Emerald Lakes, Carrara
PO Box 454 Nerang Qld 4211
tel +61 7 5594 4473

0 1 2 3 4 5m

776 PACIFIC PARADE, CURRUMBIN
PROPOSED MIXED USE DEVELOPMENT

**SWEPT PATH ASSESSMENT
B99 PASSENGER VEHICLE
TURN AROUND MANOEUVRE**

Project No. 50879 Issue Date 19/12/24

Drawing No. 50879-SP019-A

Series No. 19 of 19

Appendix C Development code responses

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.2 Driveways and vehicle crossings code

9.4.2.1 Application

This code applies to assessing operational work for vehicle access works and material change of use for any development involving vehicle access works where indicated within **Part 5 Tables of assessment**.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

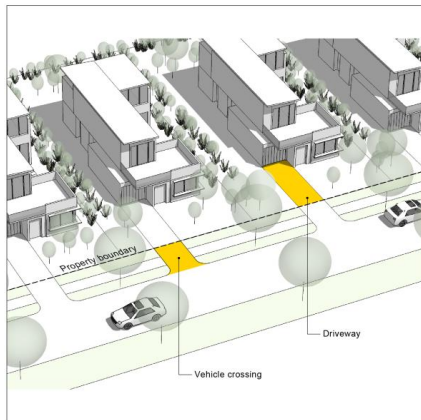


Figure 9.4.2-1

Illustration showing the driveway and vehicle crossing components of vehicle access works

9.4.2.2 Purpose

- (1) The purpose of the Driveways and vehicle crossings code is to provide design standards for the construction, repair or modification to a driveway and/or a vehicle crossing.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Vehicle crossings are designed to a standard in accordance with **SC6.12 City Plan policy – Land development guidelines** or with RPEQ certification to provide safe access for vehicles required to access the site from the edge of the road carriageway to the property boundary.
 - (b) Driveways provide safe access for all vehicles required to access the site from the property boundary to the on-site vehicle accommodation or standing area.
 - (c) Vehicle crossings avoid adverse impacts on City or utility infrastructure.
 - (d) Driveways and vehicle crossings are of an appropriate standard to meet the needs of the development.
 - (e) Vehicle crossings ensure that there is minimal loss of on-street car parking spaces.
 - (f) Driveways and vehicle crossings are designed and sited to maintain streetscape elements and retain space for the future planting of street trees.
 - (g) Vehicle crossings allow for the safety of all users of the existing and planned road and active transport networks.
 - (h) Driveways and vehicle crossings are designed such that vertical and horizontal alignments provide a continuous, smooth access of good rideability and clearance for all vehicles required to access the site.
 - (i) Driveways and vehicle crossings are designed and sited to mitigate stormwater drainage impacts.

9.4.2.3 Specific benchmarks for assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 9.4.2-2: Driveways and vehicle crossings code – assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Design			
PO1 The driveway is designed in accordance with the applicable requirements in AS2890:2009 – <i>Parking Facilities</i> .	AO1 No acceptable outcome provided.	COMPLIES WITH PO1 Due to the narrow site frontage and proposed building configuration, the proposed driveway comprises a width of 3.22m at the property boundary and a 4.2m width (wall to wall) inside the property until. A width of 3.22m at the property boundary is a function of limited width along the Pacific Parade road frontage and the need to provide pedestrian sight triangles on either side of the driveway to ensure safe interaction between vehicles departing the site and pedestrians utilising the footpath provided in the road verge. For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO2 Design of the vehicle crossing is certified by a RPEQ confirming compliance with: (a) <i>Disability Discrimination Act 1992</i> ; (b) Applicable requirements in <i>AS2890: 2009 – Parking Facilities</i> ; and (c) <i>QUDM (Queensland Urban Drainage Manual)</i> .	AO2 The vehicle crossing is designed in accordance with SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards .	COMPLIES WITH PO2 Due to the narrow site frontage and proposed building configuration, the proposed driveway comprises a width of 3.22m at the property boundary and a 4.2m width (wall to wall) inside the property until. A width of 3.22m at the property boundary is a function of limited width along the Pacific Parade road frontage and the need to provide pedestrian sight triangles on either side of the driveway to ensure safe interaction between vehicles departing the site and pedestrians utilising the footpath provided in the road verge. For further details in relation to the location and form of the proposed driveway, refer to Section 4.2 of	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets either the performance outcome or overall outcome	Internal use	
		Geleon Traffic and Transport Assessment Report 50879-RP01-A.		
PO3 The vehicle crossing avoids damage to utility services, pathways, kerbs, road pavement and seal and other city infrastructure.	AO3 Vehicle crossings are separated from:	COMPLIES WITH PO3 Vehicle crossings have been located to avoid damage to utility services, pathways, kerbs, road pavement and seal and other city infrastructure. A 1.0m clearance to the power pole is achieved. For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .		
	Instance			Minimum distance
	Traffic management devices and transport services, stormwater management devices, power supply services and telecommunication supply services			1m
	Water and sewerage service assets on the surface (including water meter enclosures, sewerage inspection or maintenance pits, fire hydrants and valves)			300mm (horizontal distance)

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use										
Maximum number of vehicle crossings													
PO4 The number of vehicle crossings are minimised to avoid loss of streetscape elements and on-street car parking spaces and to prevent adverse interference with: (a) the safety, capacity and operations of the existing or planned road network; and (b) cycleways or pedestrian footpaths.	AO4 The maximum number of vehicular crossings per site, for the following land uses, is as follows:	COMPLIES WITH AO4 One vehicle crossing is proposed from Pacific Parade. For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .											
	<table><tr><th>Land use</th><th>Maximum number of vehicle crossings</th></tr><tr><td>Dwelling house</td><td>1 OR 2 - when the road frontage at the kerb is at least 40m subject to achieving a minimum of 7m between the crossings</td></tr><tr><td>Dual occupancy Multiple dwelling</td><td>1 OR 2 - where the road frontage at the kerb is greater than 20m subject to achieving a minimum of 7m between the crossings</td></tr><tr><td>Non-residential use</td><td>2</td></tr></table>			Land use	Maximum number of vehicle crossings	Dwelling house	1 OR 2 - when the road frontage at the kerb is at least 40m subject to achieving a minimum of 7m between the crossings	Dual occupancy Multiple dwelling	1 OR 2 - where the road frontage at the kerb is greater than 20m subject to achieving a minimum of 7m between the crossings	Non-residential use	2		
	Land use			Maximum number of vehicle crossings									
	Dwelling house			1 OR 2 - when the road frontage at the kerb is at least 40m subject to achieving a minimum of 7m between the crossings									
	Dual occupancy Multiple dwelling			1 OR 2 - where the road frontage at the kerb is greater than 20m subject to achieving a minimum of 7m between the crossings									
	Non-residential use	2											
Note: the maximum number of vehicle crossings and separation distance is shown above unless otherwise approved in a current development approval.													
Separation distances													
PO5 Vehicle crossings are appropriately separated from other vehicle crossings and side property boundaries to prevent interference	AO5 Vehicle crossings are separated from:	COMPLIES WITH AO5 A separation of greater than 1m is achieved to the nearest vehicle crossing and greater than 1m from the side property boundaries. For further details in relation to the proposed vehicle											
	<table><tr><th>Instance</th><th>Minimum distance (m)</th></tr><tr><td>Vehicle crossings on adjoining</td><td>1m</td></tr></table>			Instance	Minimum distance (m)	Vehicle crossings on adjoining	1m						
	Instance			Minimum distance (m)									
Vehicle crossings on adjoining	1m												

Performance outcomes	Acceptable outcomes		Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
with: (a) the safety, capacity and operations of the existing or planned road network; (b) adjoining properties; and (c) cycleways or pedestrian footpaths.	properties		crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	Any side property boundary:			
	for residential development with approved built-to-boundary setback	0.5m		
	for all other developments	1m		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Location			
PO6 Vehicle access to a public roadway is safe and does not compromise the efficiency, function, convenience of use or capacity of the road network.	AO6.1 The location of the vehicle crossing to a public roadway is consistent with the applicable requirements in <i>AS/NZS 2890.1:2004 Parking facilities Part 1: Off-street car parking</i> and <i>AS 2890.2-2002 Parking facilities Part 2: Off-street commercial vehicle facilities</i> .	COMPLIES WITH AO6.1 The location of the vehicle crossing is consistent with <i>AS2890.1:2004</i> . For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO6.2 No new vehicle crossings are created on roads identified on the Functional road hierarchy as shown on the Zone maps or the Pacific motorway service road types overlap map .	COMPLIES WITH AO6.2 One (1) vehicle crossing is proposed from Pacific Parade which is not identified on the functional road hierarchy. For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO7 Driveways and vehicle crossings: (a) ensure existing street trees within the verge are retained; (b) provide an appropriate separation distance to existing street trees within the verge in accordance with <i>AS4970:2009 – Protection of trees on development site</i>; and (c) retain space for the future planting of street trees within the verge in accordance with SC6.13 City Plan policy – Landscape work. Note: The location of the driveway and vehicle crossing is considered at the design stage of the development.	AO7 No acceptable outcome provided.	COMPLIES WITH PO6 The development proposes one driveway, therefore minimising unnecessary damage to existing vegetation within the road verge and maximising the amount of retained space. For further details in relation to the proposed vehicle crossing, refer to the plans of development and Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Sight distances and lines			
PO8 Vehicle crossings are designed to provide safe travel for vehicles, cyclists and pedestrians.	AO8 Vehicle crossings are designed to provide sight distances and lines in accordance with <i>AS 2890.2-2002 Parking facilities Part 2: Off-street commercial vehicle facilities</i> .	COMPLIES WITH AO8 At the proposed access location, a site distance assessment has been undertaken in accordance with AS2890 requirements. The assessment found that Minimum Gap Sight Distance (MGSD) requirements can be achieved. For further details in relation to the sight distance assessment, refer to Section 5.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.13 Transport code

9.4.13.1 Application

This code applies to assessing a material change of use where indicated within **Part 5 Tables of assessment** unless the development is listed as accepted subject to requirements and is:

- (a) establishing in an existing lawful non-residential premises; and
- (b) involving:
 - (i) no building work (other than an internal fit-out); or
 - (ii) only minor building work; and
- (c) the development results in no loss of car parking spaces.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.13.2 Purpose

- (1) The purpose of the Transport code is to ensure transport needs associated with the development of land are met.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development ensures that:
 - (i) on-site access, parking and facilities, manoeuvring and servicing areas are designed to:
 - (A) meet the needs of the development;

- (B) result in a functional and efficient site layout that minimises impacts on surrounding areas and traffic movement;
 - (C) create a safe pedestrian and cyclist focussed environment; and
 - (D) promote a high quality public realm.
- (ii) the function and capacity of the road network is not compromised and impacts on amenity, safety and operation of existing and planned roads are appropriately mitigated.
- (b) An integrated transport system is provided that:
 - (i) is convenient, efficient and flexible, being able to accommodate major events and provide a high level of connectivity between all activity centres, urban neighbourhoods, mixed use and industrial areas, inclusive of all modes, including active transport networks;
 - (ii) supports well designed urban development, which is concentrated within activity centres and urban neighbourhoods, that is easy to access via frequent public transport, walking and cycling, thereby reducing the need to travel by car;
 - (iii) supports community and privately operated transport services as viable alternatives to the private car;
 - (iv) reduces congestion and car dependency and significantly increases levels of walking, cycling and public transport use; and
 - (v) ensures existing and future transport corridors are protected.
- (c) Active transport networks are provided that:
 - (i) are direct, safe, pleasant and comfortable to make walking and cycling an attractive alternative to the car;
 - (ii) ensure development within centres and urban neighbourhoods, including the light rail corridor have access to high quality active transport infrastructure including paths, bicycle parking and end of trip facilities;
 - (iii) are directly connected to local attractions and services;
 - (iv) are clear and easily accessed; and
 - (v) ensure the active transport infrastructure are completed in the early stages of development.
- (d) Public transport networks are provided that:
 - (i) are of a standard and quality to provide an attractive alternative to the car;
 - (ii) ensure district and regional level community uses are within walking distance of public transport facilities; and
 - (iii) are clear and easily accessed.
- (e) A road network is provided that:
 - (i) is developed and managed efficiently and meets the city's needs for the movement of people and goods, and can be safely shared by all users;

- (ii) ensures development impacts on amenity caused by traffic and parking is consistent with the community's reasonable expectations for the intended use;
- (iii) develops local road networks that are permeable and legible to facilitate a high level of connectivity, are safe and are shared with active and public transport;
- (iv) ensures developments are designed for safe and efficient waste collection, carried out with minimal disruption or impact to the road network; and
- (v) within the Coomera Town Centre area, provides an integrated network of predominantly public streets to ensure efficient movement of pedestrians, cyclists, vehicles and strong public transport connections that is guided by the indicative access and mobility outcomes in Figure 9.4.13-2 Coomera Town Centre Indicative Access and Mobility.
- (f) Major freight corridors and haulage routes:
 - (i) are protected from incompatible uses and ensure their safe and efficient operation.
- (g) Navigable waterways:
 - (i) support active and public transport facilities in waterfront locations for public water transport and enhance access to the city's waterways.

9.4.13.3 Specific benchmarks for assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 9.4.13-2: Transport code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Car parking and travel demand			
PO1 Development provides off-street car parking to accommodate the parking demand and allows for various modes of travel to reduce dependency on private vehicle usage. OR Where located in the Centre zone or the Southport Priority Development Area,	AO1 Off- street car parking spaces are provided in accordance with the identified relevant table as follows:	COMPLIES WITH AO1 The total car parking requirement for the development is nine spaces comprising six spaces for residents, two spaces for visitors, and one space for staff. The development proposes nine car parking spaces including six resident spaces, two visitor spaces, and one staff space and therefore complies with Council's parking requirements. For further details in this regard, refer to Section 4.0 of Geleon Traffic and Transport Assessment Report	

Performance outcomes	Acceptable outcomes		Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
development:			50879-RP01-A.	
(a) maximises the efficiency of car parking provided; (b) reduces congestion and car dependency; and (c) encourages alternative transport options such as walking, cycling and the use of public transport. Note: For an increase in scale or intensity of an existing lawful use, this PO and AO applies to the extent of the increase, provided existing car parking areas are not reduced or disturbed.	Location	Off-street car parking rate		
	Centre zone and High density residential zone where nominated in the Transport hub area in Figure 9.4.13-1: Transport hub area	Table 9.4.13-4: Car parking rates – Centre zone and High density residential zone – Transport hub		
	Centre zone not nominated in the Transport hub area in Figure 9.4.13-1: Transport hub area	Table 9.4.13-5: Car parking rates – Centre zone – outside Transport hub area		
	Special purposes zone – Special development area precinct – Southport Priority Development Area	Table 9.4.13-6: Car parking rates – Southport Priority Development Area		
	All other zones	Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO2 Car parking spaces for employees and visitors to the development are maximised and allow for efficient functioning of the site and surrounding traffic network.	AO2 Car parking spaces for employees and visitors to the development are accessible at all times and not restricted by allocation of spaces, gateways, doors or similar devices.	COMPLIES WITH PO2 The visitor and staff spaces will be located within the ground floor level carpark. An intercom connecting to the residential dwellings to allow visitors to access the visitor space will be positioned on the right-hand side upon entry of the internal driveway on the ground floor level. Regarding the staff parking space, staff of the tenancy will be given an access key to utilise the ground floor carpark similar to the residents. Visitors associated with the shop land use will not be permitted to utilise the on-site ground floor level carpark. For further details in this regard, refer to Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
Servicing			
PO3 Development accommodates the required design service vehicle (including waste collection) in accordance with: (a) Table 9.4.13-8: Service vehicle requirements ; and (b) Table 9.4.13-9: Minimum class of service vehicle ; and (c) <i>AS2890.2: Parking facilities Part 2: Off-street commercial vehicle facilities</i> to allow for: (i) loading and unloading of service vehicles wholly within the site; (ii) pathways from service areas to tenancies at a width and grade that allows for unimpeded manoeuvring of goods (i.e. clear of doors, gates or landscaping); (iii) waste collection vehicles to	AO3 No acceptable outcome provided.	COMPLIES WITH OO(E)(II) As a consequence of site constraints, an on-site standing area for an MRV and a dedicated loading bay for a SRV cannot be accommodated. The development proposes to utilise the existing loading zone located on Pacific Parade 35m north of the development site. It is understood that servicing for the previous development on the subject site (café / restaurant) occurred on-street and therefore the proposed development will not result in additional demand being placed on the existing on-street loading zone that wasn't already being catered for. It is also noted that the proposed development would likely generate less demand for servicing than the existing food and drink outlet, especially given it comprised a GFA of 240m ² opposed to the proposed 24m ² GFA shop land use and the five residential units.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
appropriately service the development; (iv) safe pickup and set-down of passengers on-site; (v) unobstructed access to off-street parking areas; and (vi) an efficient and safe traffic network.		For further details in this regard, refer to Section 5.3 of Geleon Traffic and Transport Assessment Report 50879-RP01-A.	
PO4 Development ensures that service vehicle routes to and from the development minimise impacts on residential safety and amenity.	AO4 No acceptable outcome provided.	Not applicable – no service vehicles are expected to access the site. For further details in this regard, refer to Section 5.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A.	
Public transport network			
PO5 Development that attracts large numbers of people, integrates the provision of on-site public transport facilities which are connected to: (a) adjoining uses; (b) the existing road network; (c) existing or future public transport facilities; and (d) public areas.	AO5.1 On-site public transport facilities (including stops) are integrated with the following land uses: (a) Air services; (b) Educational establishment (new and existing); (c) Hospital; (d) Major sport, recreation and entertainment facility; (e) Shop (2,000m² or greater); and (f) Tourist attraction.	Not applicable – the development does not attract a high proportion of people using high frequency public transport.	
	AO5.2 Development provides safe, attractive and convenient pedestrian and cycle pathways connected to: (a) adjoining uses; (b) the existing road network; (c) existing or future public transport	Not applicable – the development does not attract a high proportion of people using high frequency public transport.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	facilities; and (d) public areas.		
PO6 Development within 400m walking distance of a high frequency public transport stop or rail station provides attractive, safe and convenient linkages to this infrastructure.	AO6 No acceptable outcome provided.	Not applicable – the development is not located near any high frequency public transport stop or rail station.	
Active transport network			
PO7 Off-street bicycle parking and off-street end-of-trip facilities are provided to encourage active transport and are: (a) designed to meet the needs and volumes of pedestrians and cyclists; and (b) located in safe, convenient and highly accessible areas. Note: This PO does not apply to the following uses: • Dwelling house; • Dual occupancy; or • Multiple dwelling (where there are 3 dwellings)	AO7.1 Development provides off-street bicycle parking and off-street end-of-trip facilities in accordance with Table 9.4.13-10: Bicycle parking rates and Table 9.4.13-11: End-of-trip facilities for active travel users .	COMPLIES WITH AO7.1 The overall bicycle parking requirement for the development is eight spaces, including six Class 2 spaces and two Class 3 spaces. The development provides a total of four bicycle parking spaces comprising two residential spaces (Class 2), one staff space (Class 2) and one visitor spaces (Class 3). This provision is considered appropriate for the expected bicycle parking demand and complies with Austroads and parking rates previously approved by council. End-of-trip facilities are not required for multiple dwelling and shop land uses. For further details in this regard, refer to Section 4.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO7.2 Location of off-street, end-of-trip facilities are: (a) within 50m to off-street bicycle parking; and (b) clearly signed off-street bicycle parking areas.	Not applicable.	
	AO7.3 Signage indicating location of off-street bicycle parking is:	COMPLIES WITH AO7.3 Bicycle parking will be appropriately signed in accordance with the relevant Council requirements.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	(a) clearly identifiable within the site; (b) at ground level, external to buildings; and (c) in accordance with <i>AS2890.3: Parking facilities Part 3: Bicycle parking.</i>		
	AO7.4 Off-street bicycle parking areas are: (a) clear of pedestrian movement paths; (b) visible from the street to allow casual surveillance; (c) located clear of vehicle movement; (d) well lit; (e) protected from the weather; (f) connected from the road via direct pathways/ramps; and (g) in accordance with the cycling aspects of austroads and <i>AS2890.3: Parking facilities Part 3: Bicycle parking.</i>	COMPLIES WITH AO7.3 Refer to the plans of development and Section 4.6 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO8 Development provides pedestrian and cyclist pathways to all street frontages and set down areas, and: (a) allows for safe movement; (b) is convenient and direct; (c) is clearly identifiable; and (d) is clear of potential vehicle movements.	AO8.1 Development provides a pathway from the primary street frontage and car parking set-down areas, to connect to the main entry of the building. OR For development with 21 dwellings or more, a pathway is provided for each road frontage and car parking set-down area(s) to the main entry of the building.	COMPLIES WITH AO8.1 Pedestrian connectivity from Pacific Parade to the main entry of the buildings is provided. Refer to the plans of development.	
	AO8.2 Pathways are to be designed and constructed in accordance with AS <i>1428.1: Design for access and mobility</i>	COMPLIES WITH AO8.2 Pathways will be designed and constructed in accordance with these requirements.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	<i>Part 1: General requirements for access – New building work.</i>		
	AO8.3 Pathways are separated from vehicle movements.	COMPLIES WITH AO8.3 Refer to the plans of development.	
PO9 Public pathways are provided: (a) within the road reserve, adjacent to, and for the full length of, the sites road frontage; and (b) in accordance with SC6.12 City Plan policy – Land development guidelines . Note: This PO does not apply to the following uses: • Dwelling house; • Dual occupancy; or • Multiple dwelling (where there are 3 dwellings).	AO9 No acceptable outcome provided.	COMPLIES WITH PO9 Refer to the plans of development.	
PO10 Development contributes to the safe and efficient provision and operation of the bicycle and pedestrian network.	AO10.1 Pathways and on-road cycle lanes are designed and constructed in accordance with SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards .	COMPLIES WITH AO10.1 Refer to the plans of development.	
	AO10.2 Development does not remove or compromise existing on-road and off-road bicycle and pedestrian infrastructure and facilities.	COMPLIES WITH AO10.2 Refer to the plans of development.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Roads and freight			
PO11 Public roads including upgrades are designed to an appropriate standard and are designed to: (a) prevent the need for traffic calming devices to manage vehicle design speed; (b) deter through traffic if the roads function is primarily for access; and (c) create safe conditions for pedestrians and cyclists.	AO11 New roads and upgrades to roads are designed and constructed in accordance with SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards.	Not applicable – no new roads or upgrades are proposed.	
PO12 Corner lots include truncations at each roadway intersection to ensure the intersection and sight lines are safe and functional.	AO12.1 Corner lots are truncated at each roadway intersection by: (a) three equal chords of a 6m radius for non-industrial lots and are dedicated to Council as public road; or (b) three equal chords of a 8m radius for industrial lots and are dedicated to Council as public road.	Not applicable – the development is not a corner lot.	
	AO12.2 At roundabouts and intersections, corner truncations are wider to maintain verge widths and sight line requirements.	Not applicable – the development is not a corner lot.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO13 New intersections: (a) are safe and do not compromise the efficiency, function, convenience of use or capacity of the road network; (b) have verge areas that provide sufficient area for safe pedestrian and cycling movement; and (c) have sufficient area to provide essential services and infrastructure, including traffic management.	AO13 New intersections are designed and constructed in accordance with <i>Austrroads</i> and SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards .	Not applicable – no new intersections are proposed.	
Ingress and egress			
PO14 All vehicles enter and exit the site in a forward gear (restricted manoeuvring is allowed for service vehicles identified in Table 9.4.13-8: Service vehicle requirements). Note: This PO does not apply to the following uses: - Dwelling house; - Dual occupancy; or - Multiple dwelling (where there are 3 dwellings). Editor's note – Access to State controlled roads may require additional approvals in accordance with the <i>Transport Infrastructure Act 1994</i>	AO14 No acceptable outcome provided.	COMPLIES WITH PO14 All vehicles can enter and exit the site in a forward gear. For further details in this regard, refer to Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO15 Where identified on the functional road hierarchy (as shown on the zone maps in Schedule 2) and a lot has two or more road frontages, vehicle access is provided from the road with the least on-road traffic.	AO15 No acceptable outcome provided.	Not applicable – Pacific Parade is the sites only frontage which is not identified on Council's functional road hierarchy.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Integrated transport and land use			
PO16 Development: (a) does not compromise the function and capacity of the existing and planned road network; and (b) appropriately mitigates impacts on the safety and operation of the existing and planned road network. Note: A Traffic Impact Assessment is Council's preferred method of addressing the above Performance outcome particularly in the following instances: (a) when the development is identified as "any other use not listed in this table" or "any other undefined use" in Part 5 – Tables of assessment; (b) freight dependent development; or (c) site access is to a road identified on the Functional road hierarchy (indicated on the Zone maps in Schedule 2); (d) site access is from a road identified on the Pacific motorway service road types overlay map; (e) site access is within 100m of a signalised intersection; (f) site access is within 50m of a roundabout; or (g) a new intersection is proposed; (h) density outcomes in a Zone code are exceeded; or (i) development has the potential to increase existing background traffic (peak period	AO16 No acceptable outcome is provided.	COMPLIES WITH PO16 Refer to Section 3.0 of Geleon Traffic and Transport Assessment Report 50879-RP01-A which presents the findings of a traffic impact assessment on the external road network.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
or daily traffic movements) ≥ 5 percent.			
PO17 Development is not located in areas that compromise future transport corridors, including roads, public transport and active transport.	AO17 Land shown on the zone maps for the purposes of existing or future road network infrastructure, is to be dedicated to Council as public road.	Not applicable – the development is not located near any future transport corridors.	
PO18 Development within the Coomera Town Centre area provides an integrated network of predominantly public streets to ensure efficient movement of pedestrians, cyclists, vehicles and strong public transport connections. Note: Indicative access and mobility outcomes for the Coomera Town Centre area are identified on Figure 9.4.13-2.	AO18 No acceptable outcome provided.	Not applicable – the development is not located within the Coomera Town Centre area.	
General			
PO19 Continuous circulation aisles are provided within carparking areas to avoid the use of the road network when accessing areas within the development.	AO19.1 All off-street car parking modules and service areas are accessed by internal circulation aisles.	COMPLIES WITH AO19.1 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO19.2 Circulation aisles are not disconnected by car parking modules or service areas.	COMPLIES WITH AO19.2 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO19.3 All access driveways are linked by circulation aisles and free from parking manoeuvres.	COMPLIES WITH AO19.3 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	AO19.4 All vehicles can circulate throughout the site in a forward gear without performing reverse manoeuvres.	COMPLIES WITH AO19.4 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO20 Off street car parking areas: (a) provide a legible and efficient internal layout; (b) ensure the safety and security of users; (c) are clearly distinguishable from pedestrian paths and entry points; (d) are easily negotiated by vehicles and pedestrians including persons with a disability; (e) ensure that there are no disruptions to or queues onto the public road network; (f) provide sight distances from driveways to ensure visibility between vehicles on the driveway and pedestrians on the verge; (g) are designed, marked and maintained to the current relevant standard; and (h) promote driver expectations consistent with conventional road rules (e.g. keep to the left).	AO20.1 Off street car parking provided in accordance with AS 2890.1: <i>Parking facilities – Part 1: Off-street car parking</i> , AS 2890.2: <i>Parking facilities – Part 2: Off-street commercial vehicle facilities</i> , AS/NZS 2890.6: <i>Parking facilities Part 6: Off-street parking for people with disabilities</i> and AS 1428.1: <i>Design for access and mobility Part 1: General requirements for access – New building work</i> .	COMPLIES WITH AO20.1 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO20.2 Development does not provide pavement humps or raised platforms in queuing areas.	COMPLIES WITH AO20.2 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
	AO20.3 Development is designed so that vehicles do not reverse across marked pedestrian crossings.	COMPLIES WITH AO20.3 Refer to the plans of development and Section 4.2 of Geleon Traffic and Transport Assessment Report 50879-RP01-A .	
PO21 Any proposed porte-cocheres are designed to enable safe manoeuvring and access of vehicles on-site.	AO21 Any proposed porte-cocheres are designed to: (a) have a minimum vertical clearance of 4.5m; (b) accommodate vehicles entirely within the site, including the queuing of	Not applicable.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	vehicles; and (c) allow vehicles to circulate in a forward direction at all times.		
PO22 Staged development is planned, designed and constructed to ensure that for each stage: (a) sufficient car parking is provided; and (b) appropriate connections to active and public transport facilities are provided.	AO22 No acceptable outcome is provided.	COMPLIES WITH AO22 The development will be staged accordingly.	

Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area

This table sets out the minimum number of car parking spaces required according to the use applied for. Where the calculated number of car spaces is not a whole number, the number of car parking spaces required must be the next higher whole number.

Land use	Minimum number of off-street car parking spaces	
Adult store	5 per 100m ² of TUA (total use area)	
Agricultural supplies store	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Animal husbandry	1 per staff in addition to parking provided for the primary dwelling	
Animal keeping	1 per staff in addition to parking provided for the primary dwelling	
Bar	5 per 100m ² of TUA	
Brothel	1 per each room plus 1 per 2 staff	
Bulk landscape supplies	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Caretaker's accommodation	2	
Car wash	DIY car wash	0
	Hand-wash	1 per 2 staff

Land use	Minimum number of off-street car parking spaces	
Child care centre	1 per 4 children, which may be provided as a passenger set-down/pick-up area	
Club	6 per 100m ² of TUA	
Community care centre	14, plus 5 per 100m ² of TUA	
Community use	6 per 100m ² of TUA	
Crematorium	10 per 100m ² of TUA	
Cropping	1 per staff in addition to parking provided for the primary dwelling	
Dual occupancy	2 per dwelling	
Dwelling house	Dwelling house	1 per 1 bedroom dwelling
		2 per dwelling with 2 or more bedrooms
	Secondary dwelling where 80m ² or less	1
	Secondary dwelling where greater than 80m ²	2
Dwelling unit	2	
Educational establishment	Preparatory	1 per staff, plus 1 per 5 children enrolled which may be provided as a passenger set-down/pick-up area
	Primary	1 per staff
	Secondary	1 per staff plus 1 per 10 Year 12 students
	Before and after school care	1 per staff, plus 1 per 5 children enrolled which may be provided as a passenger set-down/pick-up area
	Tertiary and further education	To be determined upon submission of a Car Parking Assessment to Council
	In addition to the car parking requirements a set down/pick-up area is provided.	
Food and drink outlet	5 per 100m ² of TUA, plus queuing area for 10 vehicles for any drive-thru facility from the collection point	
Function facility	10 per 100m ² of TUA	
Funeral parlour	The greater of: (a) 1 per 10m ² of TUA; or (b) 1 per 2.5 persons, based on maximum occupancy	

Land use	Minimum number of off-street car parking spaces	
Garden centre	10, plus 1 space per 100m ² of TUA in excess of 3,000m ²	
Hardware and trade supplies	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Health care services	The greater of: (a) 1 per 20m ² of TUA; or (b) 2 per consulting room, plus 1 space per staff	
High impact industry	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Home based business	Bed and breakfast	1 per guest room in addition to parking provided for the primary dwelling
	Home office	1, in addition to parking provided for the primary dwelling
	Home based child care	0
	Home based business n.e.i.	2, in addition to parking provided for the primary dwelling
Hospital	0.8 per staff plus 1 per 2 beds	
Hotel	6 per 100m ² of TUA and 1 space per short term/serviced apartment plus queuing area for 10 vehicles for any drive-through facility from the collection point	
Indoor sport and recreation	Gymnasium (where 24hr and no classes)	1 per 20m ² of TUA
	Amusement parlour	5 per 100m ² TUA
	Squash or enclosed tennis court	6 per court
	Indoor cricket or other court game	20 per court
	Swimming pool or skating rink	15, plus 1 per 100m ² of TUA
	Any other operation	1 per 10m ² of TUA
Intensive animal industry	1 per staff in addition to parking provided for primary dwelling	
Intensive horticulture	1 per staff in addition to parking provided for primary dwelling	
Low impact industry	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Marine industry	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	

Land use	Minimum number of off-street car parking spaces	
Market	1 per 2 stalls	
Medium impact industry	Medium impact industry	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²
	Salvage Yard	0.7 per 100m ² of TUA, with a minimum of 5 spaces
Multiple dwelling	(a) 1 per 1 bedroom unit or dwelling; (b) 1.25 per 2 bedroom unit or dwelling; (c) 1.5 per 3 bedroom unit or dwelling; (d) 2 per 4 bedroom unit or dwelling; Plus: (a) where 3 to 4 dwellings, 1 for visitor parking; or (b) where 5 to 6 dwellings, 2 for visitor parking; or (c) where 7 to 9 dwellings, 3 for visitor parking; or (d) where 10 or more dwellings, 3 plus 1 per 10 dwellings for visitor parking thereafter Note: At least 50% of visitor parking to be provided in a single location	
Nightclub	5 per 100m ² of TUA	
Office	Office, if real estate agent	To be determined upon submission of a Car Parking Assessment to Council
	Office, if call centre	To be determined upon submission of a Car Parking Assessment to Council
	Office n.e.i	3 per 100m ² of TUA
Outdoor sales	Vehicle hire	3 per 100m ² of TUA plus 1 per 1.5 vehicles in the vehicle hire fleet and 1 on-site wash bay
	Motor vehicles sale yard	3 per 100m ² of TUA plus 0.5 per 100m ² of display area
Outdoor sport and recreation	Tennis court	4 per court
	Lawn bowls (stand-alone)	20 per green
	Swimming pool	15, plus 1 per 100m ² of TUA
	Golf course	The greater of: (a) 4 per hole, plus 3 per 100m ² of TUA of clubhouse; or (b) 6 per 100m ² of TUA of clubhouse

Land use	Minimum number of off-street car parking spaces	
	Football ground	50 per field
	Any other court game	20 per court
Permanent plantation	1 per staff in addition to parking provided for the primary dwelling	
Place of worship	1 per 2.5 persons, based on maximum occupancy	
Port services	Marina	(a) 0.6 per wet berth designed for boats 10m and under; (b) 0.8 per wet berth designed for boats between 10m and 15m; (c) 1 per wet berth designed for boats greater than 15m; (d) 0.2 per dry berth or swing mooring; plus (e) 0.5 per staff; (f) 1 per 50m ² TUA of ancillary activities associated with the marina.
Relocatable home park	Relocatable home park	1 per relocatable home plus 1 per 5 homes for visitors
Research and technology industry	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Residential care facility	1 per 2 beds for visitor car parking, and 1 per staff based on maximum residential occupancy Note: 50% of visitor parking to be provided in a single location	
Resort complex	1 per 4 dwellings	
Retirement facility	(a) 1 per independent living, self contained dwelling; plus (b) 1 per 4 independent living, self contained dwellings for visitor car parking; plus (c) 1 per staff based on maximum residential occupancy Note: 50% of visitor parking to be provided in a single location	
Roadside stall	4	
Rooming accommodation	Off-site Student accommodation	1 per 2 students, based on maximum occupancy plus 1 for a manager residence
	Hostel	1 per room, excluding communal areas, plus 1 for a manager residence
	Other	To be determined upon submission of a Car Parking Assessment to Council

Land use	Minimum number of off-street car parking spaces	
Rural industry	1 per staff in addition to parking provided for primary dwelling plus 1 visitor space	
Sales office	Sales office	5
	Display dwelling	0
Service industry	Service industry	5 per 100m ² of TUA
	Laundromat	5 per 100m ² of TUA
Service station	2, plus 5 per 100m ² of TUA	
Shop	5 per 100m ² of TUA	
Short-term accommodation	Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
	Other	1 per room plus 1 per managers residence
Showroom	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²	
Theatre	Stand-alone	To be determined upon submission of a Car Parking Assessment to Council
	Where part of a shopping centre	1 per 8 seats
Tourist attraction	Existing	To be determined upon submission of a Car Parking Assessment to Council
Tourist park	Caravan park	11 per 10 sites plus 1 per 10 sites for visitors
	Holiday cabins	1 per site or cabin plus 1 per 10 sites for visitors
Transport depot	To be determined upon submission of a Car Parking Assessment to Council	
Veterinary services	5 per 100m ² of TUA	
Warehouse	Warehouse	2 per tenancy or lot plus 1 per 50m ² of TUA up to and including 500m ² , and 1 per 100m ² of TUA over 500m ²
	Self storage sheds 0 – 3,000m² GLA	(a) 3 plus 1 for trailer (b) This rate includes staff parking requirements (c) All spaces are located beside or adjacent to the office administration building (d) Where storage units are proposed to be located in a multi-storey building and access to the units is via stairs or lifts, an additional 2 parking spaces are to be

Land use	Minimum number of off-street car parking spaces	
		provided behind a secured gate and at the entry to the building
	Self storage sheds 3,001m² - 6,000m² GLA	(a) 4 plus 1 for trailer (b) This rate includes staff parking requirements (c) All spaces are located beside or adjacent to the office administration building (d) Where storage units are proposed to be located in a multi-storey building and access to the units is via stairs or lifts, an additional 5 parking spaces are to be provided behind a secured gate
	Self storage sheds 6,001m² - 9,500m² GLA	(a) 5 plus 1 for trailer (b) This rate includes staff parking requirements (c) All spaces are located beside or adjacent to the office administration building (d) Where storage units are proposed to be located in a multi-storey building and access to the units is via stairs or lifts, an additional 5 parking spaces are to be provided behind a secured gate
	Self storage sheds ≥ 9,501m² GLA	To be determined upon submission of a Car Parking Assessment to Council
Wholesale nursery	10, plus 1 space per 100m ² of TUA in excess of 3,000m ²	
Winery	To be determined upon submission of a Car Parking Assessment to Council	
Any other land use or land use operation	To be determined upon submission of a Car Parking Assessment to Council	

Note: The Car sharing travel demand measure may be applied to reduce car parking requirements in accordance with Table 9.4.13-7: Travel demand measures.

Note: Tandem car parking spaces (limited to 2 vehicles parked one behind the other) can be counted as 2 spaces in the following instances:

- (a) the spaces are designated and signed for the occupants of the same dwelling or the same non-residential tenancy;
- (b) the minimum length of the tandem car space is 10.4m; and
- (c) the minimum length of a tandem garage (if proposed) is 11m.

Table 9.4.13-4: Car parking rates – Centre zone and High density residential zone – Transport Hub Area

This table sets out the minimum number of car parking spaces required according to the use applied for. Where the calculated number of car spaces is not a whole number, the number of car parking spaces required must be the next higher whole number.

Zone	Site proximity to a light rail station	Land use	Minimum number of off-street car parking spaces
Centre zone	Where the property boundary of a development directly adjoins a Light rail station platform	Non-residential	0
Centre zone	Within 400m walking distance	Residential – permanent/long-term accommodation	0.75 per unit or dwelling and 1 per 10 units or dwelling for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 100m ² of TUA
Centre zone	Within 800m walking distance	Residential – permanent/long-term accommodation	0.9 per unit or dwelling and 1 per 10 units or dwelling for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 75m ² of TUA
High density residential	Within mapped boundaries of the	Residential – permanent/long-term	1 per unit or dwelling and 1 per 10 units or dwelling for visitors

Zone	Site proximity to a light rail station	Land use	Minimum number of off-street car parking spaces
zone	Transport hub area	accommodation	
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
High density residential zone	Within 400m walking distance	Non-residential	1 per 100m ² of TUA
High density residential zone	Within 800m walking distance	Non-residential	1 per 75m ² of TUA

Note: Where 1 space is provided per unit or dwelling, there is no requirement to unbundle car parking.

Note: The Car sharing travel demand measure may be applied to reduce car parking requirements in accordance with Table 9.4.13-7: Travel demand measures.

Note: Tandem car parking spaces (limited to 2 vehicles parked one behind the other) can be counted as 2 spaces in the following instances:

- (a) the spaces are designated and signed for the occupants of the same dwelling or the same non-residential tenancy;
- (b) the minimum length of the tandem car space is 10.4m; and
- (c) the minimum length of a tandem garage (if proposed) is 11m.

Table 9.4.13-5: Car parking rates – Centre zone – outside Transport hub area

This table sets out the minimum number of car parking spaces required according to the use applied for. Where the calculated number of car spaces is not a whole number, the number of car parking spaces required must be the next higher whole number.

Centre zone	Land Use	Minimum number of off-street car parking spaces
Principal centre		
Coomera	Residential – permanent/long-term accommodation	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Residential – serviced and short-term accommodation	1 per 4 units
	Non-residential	1 per 100m ² of TUA
Specialist centre		
Bundall	Office	2.5 per 100m ² of TUA

Centre zone	Land Use	Minimum number of off-street car parking spaces
	Food and drink outlet, shop, service industry	2.5 per 100m ² of TUA
	Any other land use	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Varsity Central/ Bond University	Residential – permanent/long-term accommodation	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Residential – serviced and short-term accommodation	1 per 2 units, plus 1 for a manager residence
	Non-residential	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Bond University campus	Residential – serviced and short-term accommodation where on Lot 10 on SP148599	1 per 4 units, plus 1 for a manager residence
Varsity Station Village	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	1 per 100m ² of TUA
Biggera Waters (Harbour Town)	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	3.3 per 100m ² of TUA
Major centre		
Nerang	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	3.3 per 100m ² of TUA
Coolangatta	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	3.3 per 100m ² of TUA
Helensvale	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	1 per 100m ² of TUA
District centres		
Burleigh	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	3.3 per 100m ² of TUA
Oxenford	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area

Centre zone	Land Use	Minimum number of off-street car parking spaces
		Area
Ormeau	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	5 per 100m ²
Pimpama Old Pacific Highway, Pimpama	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Coomera City Centre Days Rd and City Centre Drive	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Hope Island Marina Quays Dr	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Runaway Bay Shopping Centre Cnr Morala and Lae Dr	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Ashmore City Cnr Southport-Nerang Rd and Currumburra Rd	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Ashmore Plaza Cotlew St	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Southport Park Shopping Centre Cnr Drury Av, Ferry Rd and Benowa Rd	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Q-Superstore Cnr Bermuda and Markeri St	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Mudgeeraba Village	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Treetops (Urbia)	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area

Centre zone	Land Use	Minimum number of off-street car parking spaces
Cnr Bermuda Street and Reedy Creek Rd		Area
West Burleigh Shopping Centre Reedy Creek Rd, Burleigh Waters	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Palm Beach	Residential	1 per unit or dwelling and 1 per 10 units or dwellings for visitors
	Non-residential	3.3 per 100m ² of TUA
The Pines Shopping Centre Cnr K P McGrath Dr and Guineas Creek	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area
Tugun	Residential	1 per unit or dwelling plus 1 per 10 for visitors
	Non-residential	3.3 per 100m ² of TUA
All other centres	All	Refer to Table 9.4.13-3: Car parking rates – all zones except Centre zone or Special purpose zone – Special development area precinct – Southport Priority Development Area

Note: The Car sharing travel demand measure may be applied to reduce car parking requirements in accordance with Table 9.4.13-7: Travel demand measures.

Note: Tandem car parking spaces (limited to 2 vehicles parked one behind the other) can be counted as 2 spaces in the following instances:

- (a) the spaces are designated and signed for the occupants of the same dwelling or the same non-residential tenancy;
- (b) the minimum length of the tandem car space is 10.4m; and
- (c) the minimum length of a tandem garage (if proposed) is 11m.

Table 9.4.13-6: Car parking rates – Southport Priority Development Area

This table sets out the minimum number of car parking spaces required according to the use applied for. Where the calculated number of car spaces is not a whole number, the number of car parking spaces required must be the next higher whole number.

Precinct	Site proximity to a light rail station	Land use	Minimum number of off-street car parking spaces
Precinct 1	Where the property boundary of a development directly adjoins a Light rail station platform	Residential – permanent/long term accommodation	0.75 per unit or dwelling and 1 per 10 units or dwelling for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings

Precinct	Site proximity to a light rail station	Land use	Minimum number of off-street car parking spaces
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	0
	Within 400m walking distance	Residential – permanent/long-term accommodation	0.75 per unit or dwelling and 1 per 10 units or dwelling for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 100m ² of TUA
	Outside 400m walking distance and within the boundaries of the precinct	Residential – permanent/long term accommodation	0.9 per unit or dwelling and 1 per 10 units or dwellings for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 75m ² TUA
Precinct 2	Within the boundaries of the precinct	Residential – permanent/long-term accommodation	0.9 per unit or dwelling and 1 per 10 units or dwellings for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 75m ² TUA
Precinct 3	Within 400m walking	Residential – permanent/long term accommodation	0.75 per unit or dwelling and

Precinct	Site proximity to a light rail station	Land use	Minimum number of off-street car parking spaces
	distance		1 per 10 units or dwellings for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 100m ² TUA
	Outside 400m walking distance and within the boundaries of the precinct	Residential – permanent/long term accommodation	0.9 per unit or dwelling and 1 per 10 units or dwellings for visitors. A minimum of 17.5% residential parking, excluding visitor, is to be unbundled and provided in a pooled parking arrangement.
		Residential – Short-term accommodation (not including Backpackers accommodation) and Rooming accommodation	1 per 4 units or dwellings
		Residential – Short-term accommodation if Backpackers accommodation	1 per 8 beds plus 1 for a shuttle bus
		Non-residential	1 per 75m ² TUA

Note: The Car sharing travel demand measure may be applied to reduce car parking requirements in accordance with Table 9.4.13-7: Travel demand measures.

Note: Tandem car parking spaces (limited to 2 vehicles parked one behind the other) can be counted as 2 spaces in the following instances:

- (a) the spaces are designated and signed for the occupants of the same dwelling or the same non-residential tenancy;
- (b) the minimum length of the tandem car space is 10.4m; and
- (c) the minimum length of a tandem garage (if proposed) is 11m.

Table 9.4.13-7: Travel demand measures

This table sets out the travel demand measures that can be applied to development. The indicative reduction of each travel demand measure is to be subtracted from the car parking requirement indicated in the tables: Table 9.4.13-3 to Table 9.4.13-6.

Travel demand measure	Indicative reduction to car parking rates
Car sharing	Each car share vehicle off-sets 5 spaces (equates to a relaxation of 4 spaces)
Unbundled parking	20% to 50% unbundled – 30% reduction in minimum rate
Motorcycle/motor scooter parking	Every 2 motorcycles spaces can replace 1 car space, up to 15% of the minimum parking requirement

Travel demand measure	Indicative reduction to car parking rates
Bicycle parking (where provided in excess of the requirement under relevant section of this code)	Every 6 bicycles offsets 1 car space, up to 15% of the minimum parking requirement
Any other travel demand measure Note: This travel demand measure only applies to assessable development	To be approved by Council

Table 9.4.13-8: Service vehicle requirements

Site area (m ²)	Service vehicle requirements
Less than 1,000m ²	Demonstrate that the development can accommodate the design service vehicle – in accordance with Table 9.4.13-9: Minimum class of service vehicle – a separate service bay is not required and restricted manoeuvring areas from a public roadway are allowed.
1,000m ² to < 2,000m ²	(a) Service bay to accommodate the design service vehicle in accordance with Table 9.4.13-9: Minimum class of service vehicle. (b) Restricted manoeuvring from a public roadway is allowed for a heavy rigid vehicle (HRV) and/or articulated vehicle (AV) is the design service vehicle. (c) Full on-site manoeuvring is required for all other classes of service vehicle (Van, SRV & MRV).
2,000m ² to <4,000m ²	(a) Service bay to accommodate the design service vehicle in accordance with Table 9.4.13-9: Minimum class of service vehicle. (b) Restricted manoeuvring from a public roadway is allowed for an articulated vehicle. (c) Full on-site manoeuvring is required for all other classes of service vehicle (Van, SRV, MRV, LRV, RCV & HRV).
4,000m ² and greater	(a) Service bay to accommodate the design service vehicle in accordance with Table 9.4.13-9: Minimum class of service vehicle. (b) Full on-site manoeuvring is required for all classes of service vehicle.

Editor's note – Restricted manoeuvring is designed as a single point reverse manoeuvre from the public roadway into the site to access a servicing area. This manoeuvre may be performed from the kerbside lane where it is clearly demonstrated that the design vehicle can achieve the manoeuvre to access the service area.

Table 9.4.13-9: Minimum class of service vehicle

Where waste collection is required to be provided for on-site, and the stated service vehicle in the table below is less than a Council refuse collection vehicle, then the development must be designed to cater for a waste collection vehicle in accordance with **SC6.15 City Plan policy – Solid waste management** (or as amended) and **SC6.12 City Plan policy – Land development guidelines, Section 2 – Transport network standards** (or as amended) as required.

Land use	Minimum class of service vehicle
Adult store	SRV
Agricultural supplies store	AV
Animal husbandry	AV
Animal keeping	Van
Brothel	Van

Land use	Minimum class of service vehicle
Bulk landscape supplies	AV
Caretaker's accommodation	Not applicable
Car wash	SRV
Child care centre	Van
Club	SRV
Community care centre	SRV
Community residence	Van
Community use	SRV
Crematorium	SRV
Cropping	Not applicable
Dual occupancy	Not applicable
Dwelling house	Not applicable
Dwelling unit	Not applicable
Educational establishment	SRV
Food and drink outlet	SRV
Food and drink outlet if: (a) a take away food premises; or (b) including a drive through facility	HRV
Function facility	MRV
Funeral parlour	SRV
Garden centre	HRV
Hardware and trade supplies	AV
Health care services	SRV
High impact industry	AV
Home based business	Not applicable
Hospital	AV

Land use	Minimum class of service vehicle
Hotel	HRV
Indoor sport and recreation	SRV
Intensive animal industry	AV
Intensive horticulture	AV
Low impact industry	AV
Marine Industry	AV
Market	Not applicable
Medium impact industry	AV
Multiple dwelling if: (a) 3 dwellings	Not applicable
Multiple dwelling if: (a) more than 3 dwellings	Standing area for an MRV on-site
Nightclub	SRV
Office	Van
Outdoor sales	AV
Outdoor sport and recreation	SRV
Permanent plantation	AV
Place of worship	SRV
Relocatable home park	Van
Research and technology industry	AV
Residential care facility	HRV
Resort complex	HRV
Retirement facility	HRV
Roadside stall	Not applicable
Rooming accommodation	SRV
Student accommodation	SRV

Land use	Minimum class of service vehicle
Hostel accommodation	SRV
Rural industry	AV
Sales office	Not applicable
Service industry	SRV
Service station	SRV and AV (fuel tanker)
Shop	SRV
Shop (GFA less than 400m ²)	SRV
Shop (GFA 400m ² - 1,500m ²)	HRV
Shop (GFA greater than 1,500m ²)	AV
Short-term accommodation	Coach
Showroom	AV
Tourist park	Coach
Tourist park if: (a) a caravan park	Van
Transport depot	AV
Veterinary services	Van
Veterinary hospital	MRV
Warehouse	AV
Warehouse if: (a) for self storage sheds	Not applicable
Wholesale nursery	AV
Any other land use	As determined upon submission of a Service vehicle assessment

Editor's note – A Van is a 99.8th percentile vehicle equivalent to the AS2890.1:2004 – *Parking facilities – Part 1: Off-street car parking* B99 vehicle or large car.

Editor's note – A Coach is an inter-city 12.5m tourist bus from *Austroroads*.

Table 9.4.13-10: Bicycle Parking Rates

This table sets out the minimum number of bicycle spaces required according to the use applied for. Where the calculated number of spaces is not a whole number, the number of bicycle spaces required is the next highest whole number.

Land use	Long and medium term off-street bicycle parking (staff and residents – Security level B)	Short term off-street bicycle parking (visitors – Security level C)	Additional end-of-trip facilities required (refer to Table 9.4.13-11: End of trip facilities for active travel users)
Adult store	1 per 100m ² TUA	1 per 50m ² TUA	No
Child care centre	1 per 10 staff	2 per centre	Yes
Club	1 per 25m ² TUA public bar area plus 1 per 100m ² public lounge and beer garden area	1 per 100m ² TUA	Yes
Educational establishment	1 per 3 students Year 4 and above plus 1 per 10 staff	N/A	Yes
Food and drink outlet	1 per 100m ² TUA	1 per 50m ² TUA	No
Health care services	1 per 8 consultation rooms	1 per 4 consultation rooms	Yes
High impact industry	1 per 800m ² TUA	N/A	No
Hotel	1 per 25m ² TUA public bar area plus 1 per 100m ² public lounge and beer garden area	1 per 100m ² TUA	No
Indoor sport and recreation	1 per 4 employees	1 per 200m ² TUA	Yes
Low impact industry	1 per 150m ² TUA	N/A	No
Medium impact industry	1 per 150m ² TUA	N/A	No
Multiple dwelling	1 per dwelling	1 per 12 dwellings, to a maximum of 20 spaces	No
Office	1 per 100m ² where within 800m walking distance to light rail station, otherwise 1 per	1 per 500m ² TUA	Yes

Land use	Long and medium term off-street bicycle parking (staff and residents – Security level B)	Short term off-street bicycle parking (visitors – Security level C)	Additional end-of-trip facilities required (refer to Table 9.4.13-11: End of trip facilities for active travel users)
	200m² TUA		
Rooming accommodation	1 per bedroom	N/A	No
Rooming accommodation if for a hostel	1 per 3 rooms	1 per 12 rooms	No
Residential care facility	1 per 5 beds	1 per 10 staff, based on maximum residential occupancy	No
Retirement facility	1 per dwelling	1 per 3 dwellings	No
Service industry	1 per 100m² TUA	1 per 50m² TUA	No
Service station	1 per 200m² TUA	2 per Service station	No
Shop	1 per 100m² TUA	1 per 50m² TUA	No
Short-term accommodation	1 per 40 dwellings	1 per 20 dwellings	No
Showroom	1 per 800m² TUA	1 per 200m² TUA	No
Warehouse	1 per 800m² TUA	1 per 200m² TUA	No
Waterfront industry	1 per 150m² TUA	N/A	No

Note: User Class as referred to and defined in AS 2890.3:2015 *Parking facilities Part 3: Bicycle parking*.

Table 9.4.13-11: End of trip facilities for active travel users

This table sets out the minimum number of end of trip facilities required according to the number of long-term bicycle spaces to be provided. Where the calculated number is not a whole number, the number required is the next highest whole number.

Number of long-term bicycle spaces to be provided	Number of lockers to be provided	Number of showers (within an associated change room) to be provided		Number of toilets to be provided	Number of wash basin stations (including mirrors, electrical outlet & counter top)
		Male	Female		
1-5	1.5 per bicycle space	1 shower and change room of unisex design		1	1
6-10	1.5 per bicycle space	1 plus change room	1 plus change room	1	2
11-20	1.5 per bicycle space	2 plus change room	2 plus change room	2	4
21-30	1.5 per bicycle space	3 plus change room	3 plus change room	2	6
31-40	1.5 per bicycle space	4 plus change room	4 plus change room	3	8
41-50	1.5 per bicycle space	5 plus change room	5 plus change room	1 per 3 showers required or part thereof	1 per shower
50+	1.5 per bicycle space	4 showers, plus 1 shower for each 10 bicycle spaces provided	4 showers, plus 1 shower for each 10 bicycle spaces provided	1 per 3 showers required or part thereof	1 per shower



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WASTE MANAGEMENT PLAN

776 PACIFIC PARADE, CURRUMBIN - SITE ADDRESS

LOT 1 ON SP348547 - LEGAL DESCRIPTION

MULTIPLE DWELLINGS & SHOP - PROPOSED USE

21/03/2025 – DATE & REVISION

JOHN FUGLSANG DEVELOPMENTS PTY LTD – CLIENT

JFD – DESIGNER

1.0 CITY PLAN EXTRACTS

1.1 SC6.16 CITY PLAN POLICY – SOLID WASTE MANAGEMENT

1.1.1. Appendix A – Waste generation rates and servicing frequency

Type of Premises	Estimated General Waste Generation	Estimated Recycling Generation	Notes on The Use of Container Type
Multiple dwelling (residential only) – 1 bedroom	80 L / dwelling / week	50 L / dwelling / week	Allow for separation of green waste. Consider separation and additional storage of cardboard, charity/hard goods, e-waste and hazardous waste.
Multiple dwelling (residential only) – 2 bedroom	100 L / dwelling / week	60 L / dwelling / week	
Shop < 100m2 floor area	50 L / 100m2 floor area / day	25 L / 100m2 floor area / day	

1.1.2 Appendix B – Waste Bin Types and Dimensions

Wheelie bins			
Wheelie bin Capacity (L)	Length (mm)	Width (mm)	Height (mm)
140	615	505	915
240	730	550	1060
360	865	650	1100

1.2 POLICY MEASUREMENTS AND REQUIREMENTS

1.2.1 Vehicle operating dimensions

Collection vehicle type	Travelling height (m)	Width (m)	Length (m)	Servicing Height (m)	Total Tonnage (max)	Turning Radius (m)
Side lift truck (Wheelie bins)	4.1	2.5	9.8	4.25	23	11.5 (wall to wall) 10.5 (kerb to kerb)

1.2.2 Servicing, bin storage points, and bin wash-down facility requirements

Design Element	Requirement
Wheelie bin and bulk bin servicing points	- Bin-carting route must allow bins to be easily manoeuvred and be devoid of steps or steep rises. - Bin-carting route must not extend through habitable parts of a building, or a food premises, and only occur through common property or publicly accessible locations. - Where site has frontage to a number of roads, the servicing occurs on the roadway of the lowest order where possible. - Positioned on a level pad. - Bins to be removed from and returned to the storage point.

2.0 WASTE MANAGEMENT PROPOSAL

2.1 CALCULATIONS

Use		Waste Generation	Recycling Generation
Multiple dwelling (residential only) – 1 bedroom	City Plan Requirement	80 L / dwelling / week	50 L / dwelling / week
	Development Demand – 1 unit	80 L / week	50 L / week
Multiple dwelling (residential only) – 2 bedroom	City Plan Requirement	100 L / dwelling / week	60 L / dwelling / week
	Development Demand – 4 units	400 L / week	240 L / week
Shop	City Plan Requirement	50 L / 100m2 floor area / day	25 L / 100m2 floor area / day
	Development Demand – 20m2 @ 7 days	70L / week	35L / week
TOTAL		550 L / week	325 L / week

2.2 PROPOSED BINS

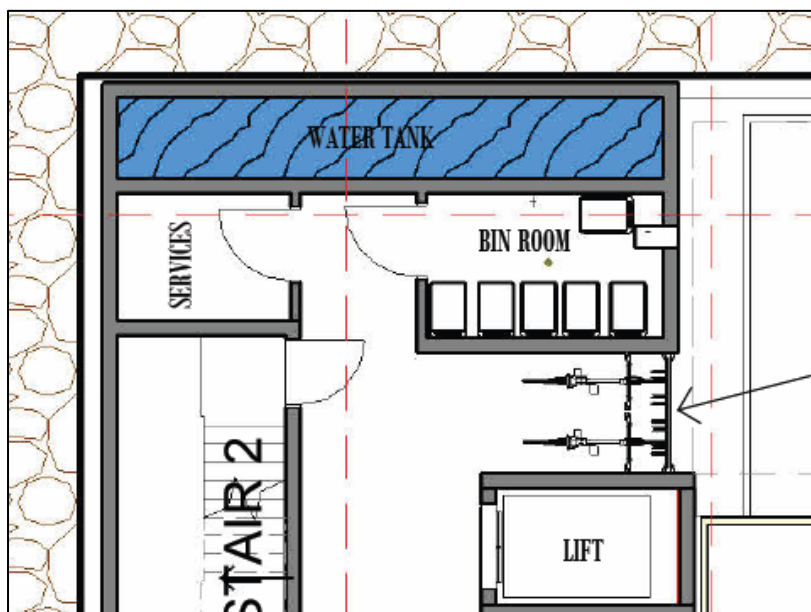
Waste Bin – wheelie bins	General Waste				Recyclable Waste			
	2 x 360L general waste wheelie bins				2 x 360L recycling wheelie bins			
	Bulk Bin Capacity (L)	Length (mm) (incl. pockets)	Width (mm)	Height (mm) (incl. wheels)	Wheelie bin Capacity (L)	Length (mm)	Width (mm)	Height (mm)
	360	865	650	1100	360	865	650	1100
	Once weekly collection with bins taken to kerb of Pacific Parade for collection				Fortnightly collection with bins taken to kerb of Pacific Parade for collection			

2.3 SUMMARY OF WASTE MANAGEMENT

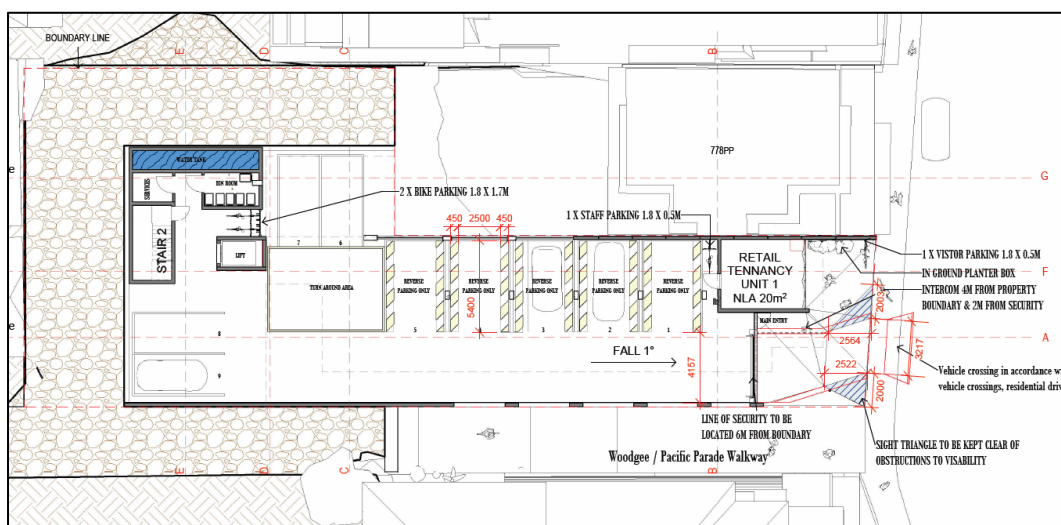
A summary of the waste management for the development is detailed below. Conditions of approval can reflect any waste management requirements if deemed necessary.

Item	Response
General waste generation	2 x 360L recycling wheelie bins
Recyclable waste generation	2 x 360L recycling wheelie bins
Bin location	Bins will be located within a dedicated bin area on ground level. The bin enclosure is within the building in a dedicated room.
Collection vehicles	Standard kerbside collection.
Collection Frequency	Once a week for general, once a fortnight for recyclable.

2.4 PROPOSAL PLAN EXTRACTS



Bin room detail.



Ground floor plan.

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.12 Solid waste management code

9.4.12.1 Application

This code applies to assessing material change of use for development requiring waste management where indicated within **Part 5 Tables of assessment**, unless the use is Caretaker's accommodation, Car wash, Community residence, Dwelling house, Dual occupancy, Environmental facility, Home based business, Landing, Major electrical infrastructure, Park, Parking station, Permanent plantation, Roadside stall, Sales office, Substation or Telecommunications facility.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.12.2 Purpose

- (1) The purpose of the Solid waste management code is to ensure development provides appropriate solid waste and recycling storage and servicing facilities.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Development provides waste and recycling storage and servicing points that are safe, convenient, efficient, appropriately sized, and minimise disruption to traffic.
 - (b) Waste and recycling storage and servicing facilities minimise risk to public health and the environment.
 - (c) The location and design of waste and recycling storage and waste servicing points protect the amenity of occupants and adjoining properties.
 - (d) Development provides suitable waste management measures in non-serviced areas.

9.4.12.3 Specific benchmarks for assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 9.4.12-1: Solid waste management code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Waste and recycling storage and bin wash-down facilities			
PO1 Development provides waste and recycling storage and servicing facilities that are safe, convenient, efficient, appropriately sized for the type and volume of waste generated.	AO1.1 Development includes waste storage points of sufficient size to accommodate the required number of waste and recyclable bins consistent with SC6.16 City Plan policy – Solid waste management .	COMPLIES The proposed waste storage arrangements comply with Council policies.	
	AO1.2 Waste and recycling storage points are located, designed and sized consistent with SC6.16 City Plan policy – Solid waste management .	COMPLIES The proposed waste storage arrangements comply with Council policies.	
	AO1.3 Development with a dwelling above the third storey include appropriate waste removal systems which incorporate: (a) waste chutes; (b) hoppers; and (c) separate waste storage rooms. Note: Waste removal system design is to be consistent with SC6.16 City Plan policy – Solid waste management.	NOT APPLICABLE No dwellings are located above the 3 rd storey.	
	AO1.4 Development that includes a	NOT APPLICABLE The proposal does not involve a commercial kitchen.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	commercial kitchen or generates clinical or related waste incorporate additional waste facilities consistent with SC6.16 City Plan policy –Solid waste management.		
PO2 Development provides a bin wash-down facility that maintains appropriate environmental health and amenity standards.	AO2 Development includes appropriately sized and located bin wash-down facilities consistent with SC6.16 City Plan policy –Solid waste management.	COMPLIES WITH CONDITIONS Conditions of approval can reflect any specific requirements of Council with regard to bin wash down.	
Amenity			
PO3 Waste and recycling storage and servicing points are appropriately located and designed for convenient and safe access by all users and to minimise the potential for nuisance to occupants of the development or adjoining properties.	AO3.1 Direct unobstructed paths exist between waste and recycling storage and servicing points and road frontages.	COMPLIES The proposal provides for suitable travel paths for waste containers.	
	AO3.2 Waste and recycling storage points are screened by solid fencing or vegetation to ensure they are not visible from a public place or sensitive land use.	COMPLIES The proposal provides for suitably screened waste storage areas.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Waste servicing			
PO4 Waste and recycling servicing points are appropriately located and designed to facilitate safe, unobstructed and efficient servicing of waste containers.	AO4 Waste and recycling servicing points are located, designed and sufficiently sized consistent with SC6.16 City Plan policy –Solid waste management . Note: Regulation of the access, stopping and manoeuvring of refuse collection vehicles are subject to meeting, Part 9.4.13 Transport code and associated City Plan guidelines.	COMPLIES The proposed waste storage arrangements comply with Council policies.	
Non-serviced areas			
PO5 Developments in non-serviced areas have appropriate solid waste management measures to adequately service the development. Note: For Commercial developments a Waste management plan, prepared in accordance with SC6.16 City Plan policy – Solid waste management, is Council's preferred method of addressing the above outcome.	AO5 No acceptable outcome provided.	NOT APPLICABLE The site is in an area serviced by waste collection.	



SITE BASED STORMWATER MANAGEMENT PLAN

Proposed Residential/Commercial Development
776 Pacific Parade, Currumbin
Lot 1 on SP348547

Prepared for:

JOHN FUGLSANG DEVELOPMENTS PTY LTD

Prepared By:

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Director
Cozens Regan Group Pty Ltd
RPEQ: 15735

Date:

July 2023

DOCUMENT CONTROL RECORD

Report Details

Client: John Fuglsang Developments Pty Ltd
Document Name: Site Based Stormwater Management Plan
Site Address: 776 Pacific Parade, Currumbin
Lot 1 on SP348547
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File Name: 220627_SWMP_REPORT_E

Issue	Rev	Approved	Date	Distributed to:	Qty.
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Final	D		03/02/25	MICHEL GROUP SERVICES	1
Final	E		25/02/25	MICHEL GROUP SERVICES	1

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Table of Contents

EXECUTIVE SUMMARY	4
1.0 INTRODUCTION.....	5
1.1 GENERAL INTRODUCTION.....	5
1.2 SCOPE OF PLAN.....	5
1.3 SITE LOCATION	5
1.4 SITE DESCRIPTION	6
1.5 DESCRIPTION OF DEVELOPMENT	7
2.0 SEDIMENT AND EROSION CONTROL.....	8
2.1 OBJECTIVES	8
2.2 POTENTIAL SEDIMENT GENERATION	8
2.3 CONSTRUCTION PHASE CONTROL MEASURES.....	8
2.4 MAINTENANCE.....	9
2.5 RESPONSES TO COMPLAINTS	9
2.6 MONITORING	9
3.0 STORMWATER QUALITY ASSESSMENT.....	10
3.1 WATER QUALITY TREATMENT TARGETS	10
4.0 STORMWATER QUANTITY	11
4.1 LAWFUL POINT OF DISCHARGE.....	11
4.2 OBJECTIVES	11
4.3 DETERMINATION OF AN INCREASE IN PEAK STORMWATER DISCHARGE	11
4.4 ON SITE DETENTION.....	13
5.0 RESPONSE TO COUNCIL CONDITIONS OF APPROVAL.....	14
6.0 QUALIFICATIONS	15
REFERENCES.....	16
Appendix A.....	17
Appendix B.....	18
Appendix C.....	19
Appendix D.....	20
Appendix E.....	21

EXECUTIVE SUMMARY

This report examines and evaluates options for Stormwater Management during the construction and operational phase for the proposed Residential/Commercial Development at 776 Pacific Parade, Currumbin.

The strategies proposed in this report will provide short- and long-term community benefits with an Environmentally Sensitive Design emphasis.

The Water Sensitive Urban Design objectives are met by:

Erosion and Sediment Control

Provision of sediment fencing and drainage structure protection.

Stormwater Quality

The proposed development does not trigger the thresholds specified in Schedule 6 – Land Development Guidelines, Table SC6.11.4.5.3.

Therefore, only compliance with the Queensland Development Code, specifically NMP 1.8 – Stormwater Drainage (Dated January 2008) is proposed.

This achieves best practice stormwater outcomes.

Stormwater Quantity

The lawful point of discharge has been determined as the existing kerb and channel in Pacific Parade.

The development will result in a minor increase in peak stormwater discharge due to an increase in impervious area and therefore On-Site Detention is proposed in the form of a 2kl above-ground detention tank.

1.0 INTRODUCTION

1.1 GENERAL INTRODUCTION

Cozens Regan Group Pty Ltd has been commissioned by John Fuglsang Developments Pty Ltd to prepare a Site Based Stormwater Management Plan for the Proposed Residential/Commercial Development at 776 Pacific Parade, Currumbin.

This Site Based Stormwater Management Plan is required to support a proposed Material Change of Use application to Gold Coast City Council.

The proposed area of works is shown on the architectural site plan contained in Appendix A.

1.2 SCOPE OF PLAN

In accordance with Councils' City Plan Version 6 – Healthy Waters Compliance Code and the Land Development Guidelines - Water Sensitive Urban Design, the matters which have been addressed within the scope of this report and the area to which they apply are described below.

- Erosion and Sediment Control
- Stormwater Quality
- Stormwater Quantity

Councils City Plan – Healthy Waters Code Assessment (Feb 2024) has been completed and is contained within Appendix F.

1.3 SITE LOCATION

The subject site comprises of one lot described as Lot 1 on SP348547 at 776 Pacific Parade, Currumbin. The site is bound by Pacific Parade to the East, existing residential properties to the North, South and West.

The subject site and approximate area of works is shown in Figure 1 below.



Figure 1 – Aerial Photograph (QLD Globe)

1.4 SITE DESCRIPTION

The site is currently a vacant lot covered with grass and vegetation.

The total site area is equal to 722m².

A detail survey has been provided which indicates the site falls towards Pacific Parade.

Levels on the site range from approximately RL 20.50 along the Western Boundary (from QLD Globe contours) to RL 4.60 along the Eastern Boundary (from survey).

Site drainage currently discharges via mixture of piped drainage and overland flow to the existing drainage system in Pacific Parade.

1.5 DESCRIPTION OF DEVELOPMENT

The proposed development incorporates the construction of a residential/commercial development. The development will require the construction of a building, access driveways, parking areas, stormwater, sewer, water supply and landscaping.

Refer Architectural Plans contained within Appendix A for more information regarding the proposed development.

2.0 SEDIMENT AND EROSION CONTROL

2.1 OBJECTIVES

The objectives of this erosion and sediment control plan are:

- a) To ensure that the water quality of the receiving waters is not worsened by the site development.
- b) Minimise sediment transport in surface water runoff during the construction and operational stages.
- c) Provide a monitoring and maintenance programme for implementation during the construction phase.

2.2 POTENTIAL SEDIMENT GENERATION

The development will result in one catchment from which sediment can be generated. The area to be disturbed is approximately 0.05 ha which is the entire site. While the potential exists for sediment to be generated during the construction phase, the potential sediment volume is dependent upon rainfall, site topography, the material type exposed, flow characteristics, and the construction practices and programme.

Control of the construction impacts is the primary objective for sediment and erosion control practices.

The management of erosion and sediment control for the development has been undertaken in accordance with Gold Coast City Council Planning Scheme – Land Development Guidelines and the referenced Best Management Practices for Sediment and Erosion Control.

Based on the expected potential for sediment generated, the provision of sediment fencing has been proposed along with a series of stormwater pit protection measures. These provisions are considered adequate to control the mobilisation of sediment.

The installation of pollution control devices in the operational phase will further decrease the potential sediment loading; however, the effect of these is ignored.

2.3 CONSTRUCTION PHASE CONTROL MEASURES

The works proposed to control erosion are:

- a) Erect sediment and dust fences at the lower perimeter of the site. Sediment fences to be included on site safety fence, including hessian or approved dust control cloth.
- b) Remove from the site any material which is not required for rehabilitation of disturbed areas.
- c) Preparation of building pad and removal of surplus material off site.
- d) Exposed soils and stockpiles are to be watered, as required, to minimise soil losses as a result of wind.
- e) Place geo-textile field gully inlet filters and drainage structure protection around entry points to the drainage system until the pavement is complete or until grass is established.
- f) Finalised earthworks to be top soiled and seeded/hydro-mulched or landscaped as directed.
- g) Construct buildings.
- h) Geo-textile filters to be replaced with mesh filters until landscaping is complete and stabilised.
- i) Maintain all sediment devices and other interim controls regularly. Including the removal of accumulated sediment.

- j) Remove sediment fences and inlet filters including accumulated sediment after the establishment of the landscaping and grass cover.

2.4 MAINTENANCE

The installation of erosion and sediment control devices requires maintenance of these devices to ensure their effectiveness in the control of potential environmental impact. Summary of the maintenance requirements for this project are detailed below.

The Contractor is responsible for the installation and maintenance of the sediment and erosion control measures during the construction phase and the defects liability period (normally six months).

Maintenance responsibilities for the establishment of vegetation, that is the requirement to irrigate the plants and grass used to generate ground cover lies with the Contractor initially but ultimately reverts to the owner once the defects liability period has expired.

Maintenance will require:

- a) Inspection of silt fences and drainage paths during construction and after any rainfall event.
- b) Clean out sediment build-up following each event that causes deposits.
- c) Clean up soil and sediment deposits promptly as they occur.
- d) Provide inlet protection where soil disturbance is to occur.

2.5 RESPONSES TO COMPLAINTS

Complaints during this type of construction usually relate to noise and dust. Generally, the complaint is made known to the Contractor, the Principal, the Superintendent and/or the Council.

The Contractor shall keep a record of all complaints identifying the nature of the complaint and any remedial action taken to address such complaint. The Contractor shall act as soon as possible to remedy the problem, if the complaint is considered valid and reasonable. A complaints record shall be made available by the contractor for regular inspection by the Superintendent. For the purpose of direction by others, the Contractor's details are to be supplied to Council prior to commencement of the works.

Complaints relating to dust shall require the Contractor to immediately water the exposed earth surfaces and any soil stockpile areas as well as haul roads to control dust. Such watering shall occur immediately after the complaint is registered with the Contractor. Watering should continue periodically until conditions suit, or the works are completed to a state that prevents dust transport.

2.6 MONITORING

The installation of the erosion and sediment control measures as detailed in this report and attached figures will ameliorate potential impact to water quality in the receiving waters. A monitoring program is proposed to ensure that the control measures achieve the desired goals. It is considered appropriate that only a visual monitoring program be required. Following rainfall events and prior to discharge water quality monitoring will be conducted on the any stored water to check suspended solids.

3.0 STORMWATER QUALITY ASSESSMENT

3.1 WATER QUALITY TREATMENT TARGETS

In reference to Schedule 6 – Land Development Guidelines, Table SC6.11.4.5.3, the proposed development does not exceed the majority of the triggers applicable to the generation of stormwater pollutants, specifically:

- The site does not exceed 850m²
- The development is for more than 3 dwellings
- The proposal is not for the construction of a road
- The proposal will not consist of 200m² or more of uncovered new or refurbished car park, inclusive of driveways

Therefore, it is deemed that the proposed development is not required to provide stormwater quality treatment as per the Land Development Guidelines.

The proposed development however will still be required to comply with the Queensland Development Code NMP 1.8 for stormwater quality.

To meet the objectives of the QDC NMP 1.8, the development shall ensure:

1. Roof water and surface must not cause a health risk to the occupants of a building or damage to adjoining land or buildings.

To comply with the above, roof and surface water will be conveyed to discharge to Pacific Parade which is considered the site's Lawful Point of Discharge and the works shall comply with AS3500.3.2.

2. The natural flow of surface water from the property or adjoining properties must not be altered so as to cause a health risk to the occupants of a building or damage to adjoining land or buildings, in the immediate area.

To comply with the above, overland flow from the site will be provided a clear free draining path of travel through the development layout to the lawful point of discharge.

4.0 STORMWATER QUANTITY

4.1 LAWFUL POINT OF DISCHARGE

In accordance with Section 3 of the Queensland Urban Drainage Manual all development must address the 3 Point Lawful Point of Discharge Test.

The criteria for determining the lawful point of discharge are:

(i) Will the proposed development alter the site's stormwater discharge characteristics in a manner that may substantially damage a third party property?

In the pre-developed state, the site currently discharges to Pacific Parade via a combination of piped and overland flow drainage to the existing drainage system in Pacific Parade. No inter-allotment drainage is known to exist at the rear of the property.

It is the objectives of this stormwater assessment to ensure that the proposed development will not alter the site's stormwater discharge characteristics in a manner that may substantially damage a third-party property and therefore the answer to this test is no and thus no further steps are required to obtain tenure for a lawful point discharge.

Regardless of the requirement to provide a Lawful Point of Discharge as per the QUDM LPD Test it is noted that the existing kerb in Pacific Parade is considered an appropriate Lawful Point of Discharge for this development.

4.2 OBJECTIVES

In accordance with the requirements of Gold Coast City Council – City Plan Version 9 the development is to ensure the following design objectives are met for stormwater quantity over the site.

All runoff from developed catchments is managed to ensure that property and infrastructure upstream or downstream is protected from impacts of flooding and meets with the following:

- 1) development does not adversely impact on land, drainage system or watercourse;
- 2) the flood behaviour of the whole catchment must not change as a result of the development; and
- 3) at the boundary of the development site or at nominated locations downstream of the development the following is achieved:
 - (a) no increase in peak flood flow rate for all events up to and including the 1% AEP (i.e. 100 year ARI) event;
 - (b) no increased in peak flood velocities;
 - (c) no increase in flood level for all events up to and including the 1% AEP (i.e. 100 year ARI) event;
 - (d) no material change in rate of flood rise; and
 - (e) stormwater outfall or discharge is located to avoid conflict with existing usage of downstream land or impact on existing waterway or drainage.

4.3 DETERMINATION OF AN INCREASE IN PEAK STORMWATER DISCHARGE

In accordance with QUDM Section 4 the rational method was adopted to calculate the peak stormwater discharges for the site to compare both the pre-developed and developed scenario.

Parameters adopted for use in the rational method calculation are in accordance with the Queensland Urban Drainage Manual and are highlighted below.

Table 4.3.1: Calculation of Initial Runoff Input Parameters

	PRE-DEV'T	POST-DEV'T	
Catchment area (ha)	0.072	0.072	Ha %
Impervious area (ha)	0.035	0.053	
Fraction impervious	48.5	73	
Intensity - 1 hr, 10 yr (mm/hr)	70.0		IFD: Currumbin
t _c existing (min.)	5.00		
t _c post-developed (min.)	5.00		

Table 4.3.2: Estimation of Peak Flows

ARI	Existing				Post development			
	C	I (mm/hr)	Q (m³/min)	Q (m³/s)	C	I (mm/hr)	Q (m³/min)	Q (m³/s)
1EY	0.64	119	0.92	0.015	0.68	119	0.97	0.016
0.5EY	0.68	135	1.10	0.018	0.72	135	1.17	0.019
20%	0.76	184	1.68	0.028	0.81	184	1.79	0.030
10%	0.80	218	2.10	0.035	0.85	218	2.23	0.037
5%	0.84	251	2.53	0.042	0.89	251	2.68	0.045
2%	0.92	296	3.27	0.055	0.98	296	3.49	0.058
1%	0.96	331	3.82	0.064	1.00	331	3.98	0.066

Table 4.3.3: Increase in Runoff

ARI	Increase (L/s)	Increase %
1EY	1	6.3%
0.5EY	1	5.9%
20%	2	6.6%
10%	2	6.3%
5%	3	6.0%
2%	4	6.5%
1%	3	4.2%

This peak stormwater discharge comparison was assessed for all AEP up to the 1% AEP. The highest yielding increase was 4l/s for the 2% AEP event.

Refer to Appendix C for more detailed peak stormwater discharge calculations.

The results from these calculations show in the unmitigated state that the proposed development will result in a minor increase in peak stormwater flows and therefore On-Site Detention is proposed. Refer Section 4.4 for more information.

4.4 ON SITE DETENTION

In order to meet the Gold Coast City Council and QUDM requirements of a 'no-worsening' affect to downstream stormwater infrastructure, the peak stormwater flows for the developed scenario are required to be reduced to that equal to or less than pre-developed conditions. This reduction in peak stormwater discharge is proposed to be met by providing an on-site stormwater detention system.

As the time of concentration is fairly short and the volume of detention being less than 10m³, the initial sizing of on-site detention requirements has been undertaken by a comparison of the four detention sizing equations (Culp, Boyd, Carrol and Basha) and adopting the highest yield.

The required detention storage volume is determined as **1.1m³** for the major event. This volume would be seen as less than the minimum required for On Site Detention to be practical and thus a conservative allowance of **2m³ (2kl)** is proposed to be provided within an above ground detention tank.

An orifice plate or weir arrangement will be required to be installed within the outlet structure of the proposed detention tank in order to restrict the rate of stormwater discharge to maintain pre-developed flows.

The abovementioned stormwater detention requirements if installed correctly will sufficiently attenuate stormwater flows to that equal of predevelopment levels and will mitigate any potential adverse effects on downstream/neighbouring infrastructure or property in accordance with the objectives of this section.

Refer to Appendix C for peak stormwater discharge and on-site detention basin sizing calculations. Refer also to Sketch Drawing 220627/SK02 for location and layout of Civil stormwater system, including the stormwater detention.

5.0 RESPONSE TO COUNCIL CONDITIONS OF APPROVAL

Gold Coast City Council requested the following amendments be made to / included in the Stormwater Management Plan as per Condition 4 of MCU/2022/588:

- i. Provide stormwater quality management measures addressing the Healthy Waters Code (Jan 2021) PO1/AO1.3.
- ii. Provide drawings and sections for the stormwater quality management measures with dimensions and levels.
- iii. Provide MUSIC modelling files used in the stormwater quality management assessment.
- iv. Provide an above-ground gravity draining stormwater tank addressing the Healthy Waters Code (Jan 2021) PO2/AO2.
- v. Provide drawings and sections of the detention tank with dimensions and levels.
- vi. Provide modelling files used in the stormwater quantity management assessment.
- vii. Provide external catchments stormwater management measures, demonstrate in drawings with flow arrangements and sections with levels.

Cozens Regan has addressed the above items within the updated Stormwater Management Plan as follows:

- i. As the proposed development does not the majority of the triggers the thresholds specified in Schedule 6 – Land Development Guidelines, Table SC6.11.4.5.3., water quality treatment is deemed not to be required and only compliance with the Queensland Development Code, specifically NMP 1.8 – Stormwater Drainage (Dated January 2008) is proposed. This achieves best practice stormwater outcomes.
- ii. As per item i. above
- iii. As per item i. above.
- iv. A min. 2kl above-ground detention tank has been proposed to restrict flows up to the Q100 event as per Healthy Waters Code (Jan 2021) PO2/AO2. An orifice plate has been designed to restrict flows accordingly. Please see Drawing 220627/SK02 for details.
- v. Please see Drawing 220627/SK02 for a long section of the proposed detention and stormwater system.
- vi. Please refer to Appendix D showing the calculations used to determine the required detention volume and orifice arrangement. As the time of concentration is fairly short and the volume of detention less than 10m³, the initial sizing of on-site detention requirements has been undertaken by a comparison of the four detention sizing equations (Culp, Boyd, Carrol and Basha).
- vii. Please refer to Civil Drawing 220627/SK03 for further details on the external catchments, noting that the external catchment flow is considered insignificant, and that the development does not alter the flow conditions of the runoff entering the site from external catchments. As such, maintaining the existing flow conditions through the western end of the site is considered an adequate management measure.

6.0 QUALIFICATIONS

This site-based stormwater management plan for 776 Pacific Parade, Currumbin has been prepared specifically for this development as requested by John Fuglsang Developments Pty Ltd. Our analysis and approach are limited to the scope stated at the beginning of the report. As such third parties are not authorised to utilise this report without the written approval and advice from Cozens Regan Group Pty Ltd.

Cozens Regan Group Pty Ltd relied on the following supplied information in preparation of this report:

- Detail Survey provided by Michel Group Services.
- Building and site layout supplied by MI Studios.
- Rainfall data for Southport supplied by the Bureau of Meteorology.

The accuracy of this report is dependent on the accuracy of the information supplied.

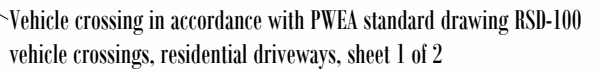
While Cozens Regan Group Pty Ltd has taken every precaution to ensure the accuracy of the assessment it should be noted that the catchment is ungauged and as such future observed flows may vary from that predicted.

REFERENCES

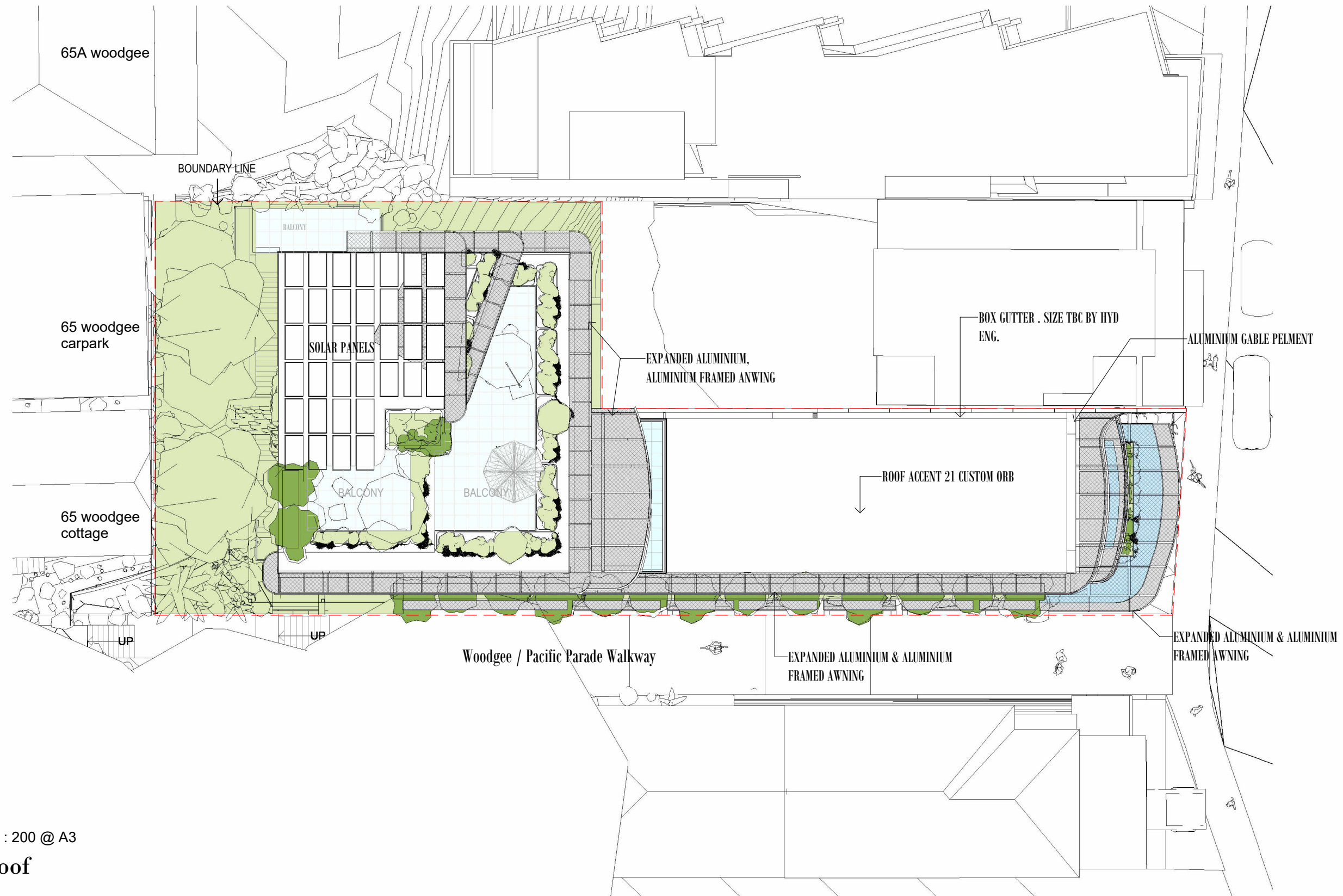
- Gold Coast City Council City Plan – Land Development Guidelines - Water Sensitive Urban Design (WSUD)
- Gold Coast City Council – Music Modelling Guidelines 2006
- Queensland Urban Drainage Manual 2016(Natural Resources and Water)
- Urban Stormwater – Queensland best practice environmental guidelines January 2009 (Environmental Protection Agency)
- Queensland Water Quality Guidelines Version 3 September 2009 (Department of Environment and Resource Management)
- Urban Stormwater Quality Planning Guidelines (Department of Environment and Resource Management 2010);
- Gold Coast City Council Plan – 9.4.5. Healthy Waters Code Feb 2024 – Code Template

Appendix A

ARCHITECTURAL SITE PLAN



frida beach



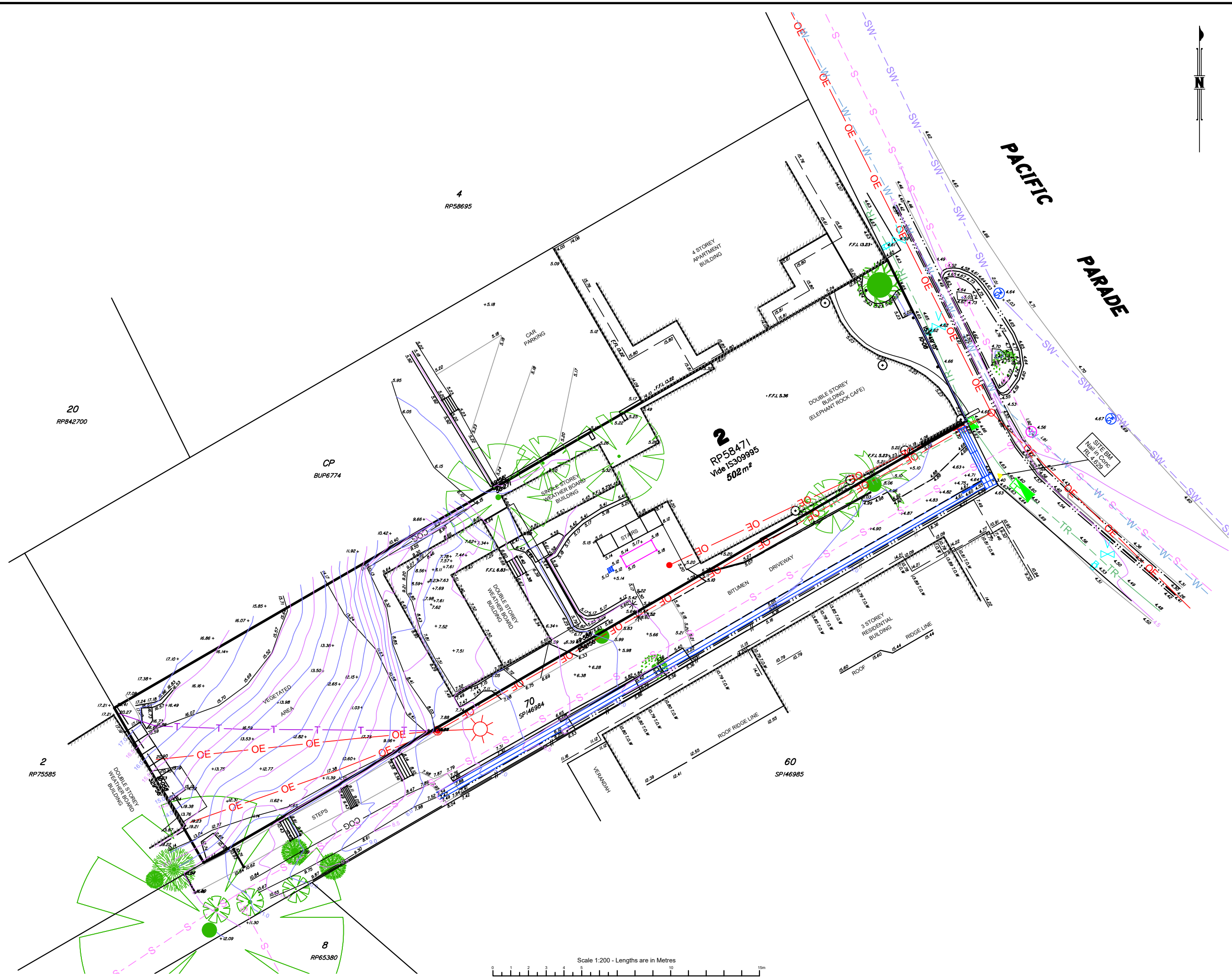
1 : 200 @ A3

roof

frida beach

Appendix B

DETAIL SURVEY



ISSUE	SUBJECT	BY	DATE
AMENDMENTS			

- NOTES & DISCLAIMERS
- This plan was prepared for JOHN FUGLSANG from a combination of field survey and existing records for the purpose of DESIGN and must not be used for any other purpose, particularly demolition, excavation or construction.
 - The title boundaries shown on this plan were surveyed as part of this survey and have been compiled from IS30995.
 - Services shown on this plan have been located where possible by field survey, if underground and not able to be so located, services have been plotted from the records (where available) of the relevant Authority and have been noted accordingly on this plan. They may therefore be incomplete and/or erroneous.
 - Refer to CAD files for additional information not shown on this plan for clarity purposes. Due to extensive detail, not all detail could be shown on the face of the plan.
 - Only significant trees/vegetation have been located and shown on this plan.
 - Contour interval is 0.5m.
 - This note is integral part of this plan.

LINETYPE LEGEND:

Overhead Electrical	OE
Stormwater Via. Records	SW
Sewer Via. Records	S
Water Via. Records	W
Telstra Via. Records	TR
Overhead Telstra	OE
Fence	---
Kerb Line	---
Edge of Bitumen	---
Linemarking	---
Top of Window	13.85 T.O.W

MICHEL
GROUP SERVICES
A.C.N. 061 750 132

Land & Hydrographic Surveying
Town Planning Services

23 Cotton Street
Nerang, QLD 4211

PO Box 2695
Nerang BC, QLD 4211

F 07 5500 4890
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PROJECT
776 PACIFIC PARADE CURRUMBIN

CLIENT
JOHN FUGLSANG

DRAWING TITLE
LEVEL AND FEATURE SURVEY PLAN OF LOT 2 ON RP 58471 776 PACIFIC PARADE CURRUMBIN

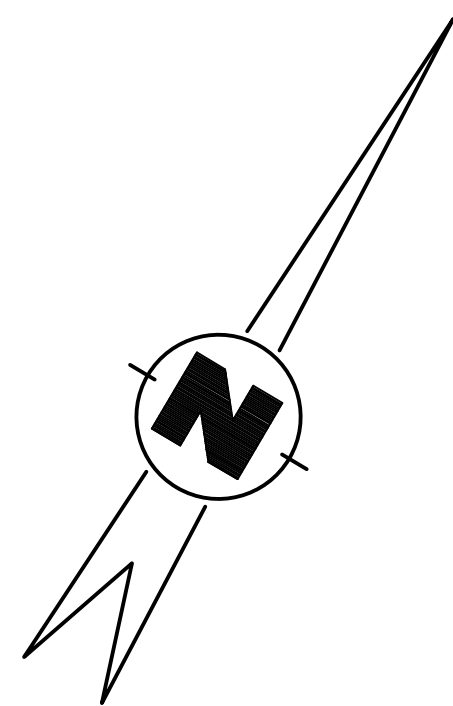
PARISH:	COUNTY:	
SCALE 1:200 @ A3	DATE 28/02/2022	DRAWN NDB
LEVEL DATUM AHD	LEVEL ORIGIN PM17393	ORIGIN RL 4.135
AZIMUTH MGA Vide IS30995	CO-ORD SYSTEM LOCAL	CO-ORD ORIGIN
EASTING	NORTHING	SURVEYOR DA
AUTOCAD FILE 21302-1	SURVEY FILE 21302	JOB No. 21302
CHECKED DA	QT GL	DATE IMAGED 6/3/2022

SHEET NUMBER 1 OF 1

PLAN No. **21302-1** ISSUE

Appendix C

CONCEPT ENGINEERING PLANS



2
RP75585

PROPOSED BUILDING
ROOF OUTLINE

CP
BUP6774

4
RP58695

4 STOREY
APARTMENT
BUILDING

SEDIMENT FENCE

2
RP58471
Wide IS309995

DOUBLE STOREY
BUILDING
(ELEPHANT ROCK CAFE)

PACIFIC PARADE

SHAKEDOWN AREA

70
SP146984

60
SP146985

8
RP65380

LEGEND

-  DENOTES TEMPORARY SILTATION CONTROL
-  DSP DENOTES DRAINAGE STRUCTURE PROTECTION
-  TEMPORARY CONSTRUCTION ACCESS SHAKEDOWN

IMPORTANT NOTE:



ALL UNDERGROUND SERVICES SHOULD BE LOCATED ONSITE BY RELEVANT AUTHORITIES BEFORE ANY WORK IS COMMENCED.

 UNDER QUEENSLAND LEGISLATION, THE GENERAL BIOSECURITY OBLIGATION REQUIRES ALL REASONABLE STEPS TO BE TAKEN TO PREVENT THE SPREAD OF FIRE ANTS.

ALL SUSPECTED SIGHTINGS OF FIRE ANTS MUST BE REPORTED WITHIN 24 HOURS OF THEIR DISCOVERY (PH: 13 25 23). THE MOVEMENT OF FIRE ANTS IS PROHIBITED. FAILING TO COMPLY MAY INCUR PENALTIES.

THE CONTRACTOR SHALL ACQUIRE THE NECESSARY PERMITS AND EDUCATION TO MOVE ORGANIC MATERIALS THAT MAY CONTAIN FIRE ANTS.

No.	DATE	ISSUE	REVISED	CHECKED
P3	17.02.25	PRELIMINARY ISSUE - NEW SITE LAYOUT	ZCL	TWN
P2	30.01.25	PRELIMINARY ISSUE - NEW SITE LAYOUT	ZCL	TWN
P1	07.23	ORIGINAL ISSUE	BAR	TWN

PRELIMINARY
NOT FOR CONSTRUCTION

SCALE A
SCALE B



1: 100

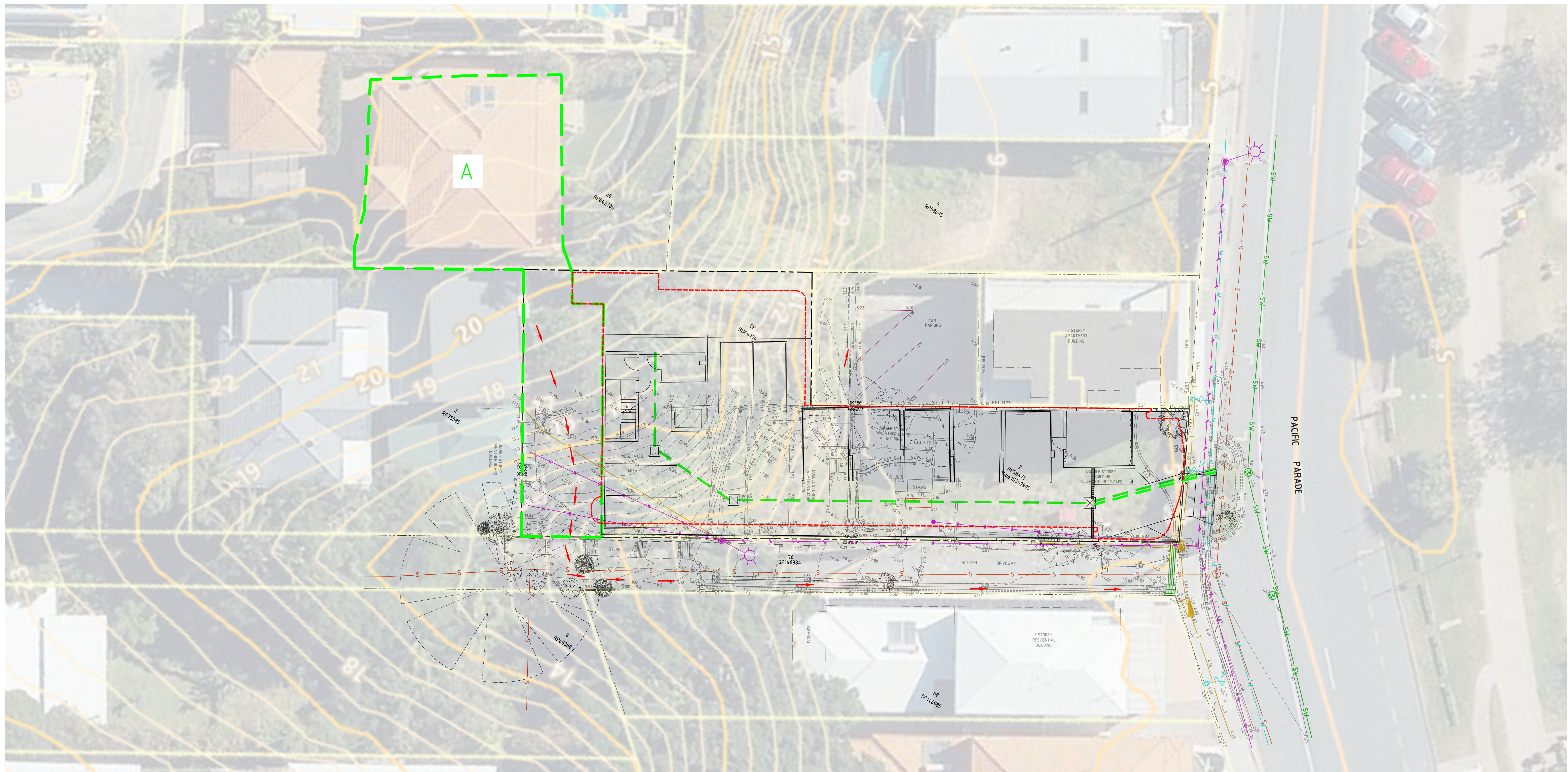


SUITE 7 ADVANCE BUSINESS CENTRE
39 LAWRENCE DRIVE NERANG
PO BOX 2711 NERANG QLD 4211
P: (07) 5578 4100
F: (07) 5578 4092
E: mail@cozreg.com.au
W: www.cozreg.com.au

DESIGNED BAR
DRAWN BAR
CHECKED TWN
APPROVED FOR AND ON BEHALF OF
COZENS REGAN GROUP PTY LTD
(IRPEQ No 15735)

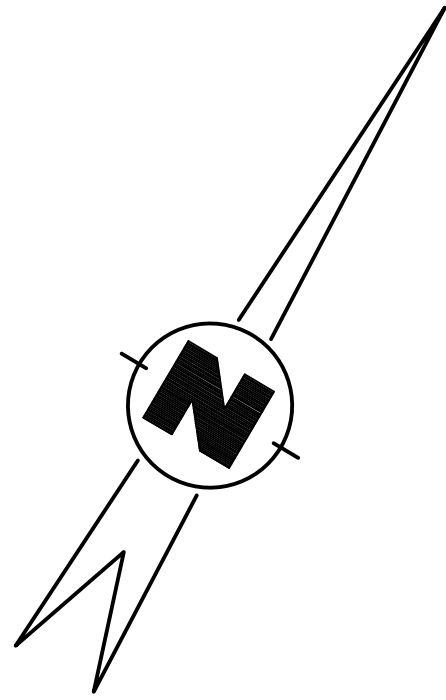
CLIENT JOHN FUGLSANG DEVELOPMENTS PTY LTD
PROJECT PROPOSED STORMWATER MANAGEMENT PLAN
776 PACIFIC PARADE, CURRUMBIN
CONCEPT EROSION AND SEDIMENT CONTROL PLAN

JOB NO. 220627
DRAWING NO. SK01
ISSUE P1P2P3



LEGEND

- 16.0--- EXISTING CONTOUR
- +15.76 EXISTING SURFACE LEVEL
- PROPOSED BUILDING ROOF OUTLINE
- PROPOSED BUILDING BASEMENT OUTLINE
- EXTERNAL CATCHMENT AREA
- EXISTING OVERLAND FLOW PATH TO BE MAINTAINED TO CATER FOR EXTERNAL CATCHMENT FLOWS
- RP BOUNDARY



1% AEP EXTERNAL CATCHMENT FLOW CALCS

CATCHMENT	CATCHMENT SIZE (Ha)	Fi	C(100)	Tc (min)	I (mm/hr)	Q (m3/s)
A	0.033	0.515	0.80	10	255	0.022

No.	DATE	ISSUE	REVISED	CHECKED
P2	17.02.25	PRELIMINARY ISSUE - NEW SITE LAYOUT	ZCL	TWN
P1	31.01.25	PRELIMINARY ISSUE	ZCL	TWN

IN ASSOCIATION WITH

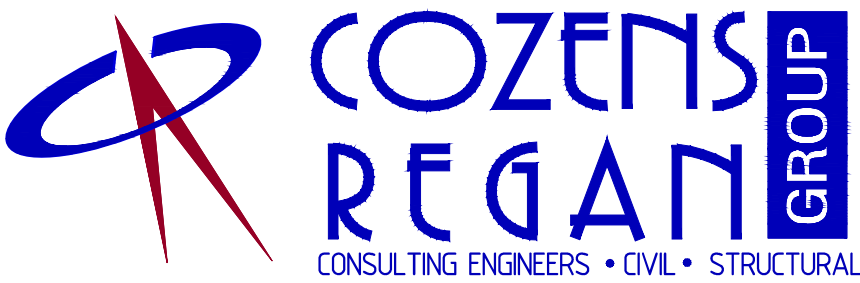
PRELIMINARY
NOT FOR CONSTRUCTION

SCALE A
SCALE B



DATUM AHD (U.N.O.)

SCALES SHOWN ARE AT A1 SIZE



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W: www.cozreg.com.au

DESIGNED ZCL
DRAWN ZCL
CHECKED TWN
APPROVED FOR AND ON BEHALF OF
COZENS REGAN GROUP PTY LTD
(IRPEQ No 157351)

CLIENT JOHN FUGLSANG DEVELOPMENTS PTY LTD
PROJECT PROPOSED STORMWATER MANAGEMENT PLAN
776 PACIFIC PARADE, CURRUMBIN
CONCEPT EXTERNAL CATCHMENT PLAN

JOB NO. 220627
DRAWING NO. SK03
ISSUE P1P2

Appendix D

RATIONAL METHOD PEAK DISCHARGE CALCULATIONS

Project Number: 220627
Description: Stormwater Quantity Assesment
Designed: ZCL 31/1/2025
Location: 776 PACIFIC PARADE, BILINGA

PRE-DEVELOPMENT tc	Major	
Standard Inlet time:	5.0	min
Friends Eqn:		
High point RL		m AHD
Low point RL		m AHD
Flow length:		m
Site slope	#DIV/0!	%
Hortons 'n'	0.05	
Overland flow travel time	#DIV/0!	min
Kerb and channel flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	%
Kerb travel time	#DIV/0!	min
Pipe flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	m
Pipe Size		mm
n		
Q	1.22	m3/s
Pipe travel time	#DIV/0!	min
Channel Flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	m
Hydraulic Radius	0.025	A/WP
n	0.03	
v	#DIV/0!	
Channel Travel Time	#DIV/0!	min
Calculated tc		min
Adopted tc	5.0	min

MAX 20 min. Refer QUDM 4.06.1

POST DEVELOPMENT tc.	Major	
Standard Inlet time:	5.0	min
Friends Eqn:		
High point RL		m AHD
Low point RL		m AHD
Flow length:		m
Site slope	#DIV/0!	%
Hortons 'n'	0.05	
Overland flow travel time	#DIV/0!	min
Kerb and channel flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	%
Kerb travel time	#DIV/0!	min
Pipe flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	m
Pipe Size		mm
n	0.013	
Q	0.20	m3/s
Pipe travel time	#DIV/0!	min
Channel Flow		
High point RL		m AHD
Low point RL		m AHD
Flow length		m
Slope	#DIV/0!	m
Hydraulic Radius	0.025	A/WP
n	0.03	
v	#DIV/0!	
Channel Travel Time	#DIV/0!	min
Calculated tc		min
Adopted tc	5.0	min

QUDM Eqn 4.06

QUDM Fig 4.10

FROM FLOW CHART

Refer QUDM 4.06.10

MAX 20 min. Refer QUDM 4.06.1

CALCULATION OF INITIAL RUNOFF - QUDM Section 4.00			
	PRE-DEV'T	POST-DEV'T	
Catchment area (ha)	0.072	0.072	
Impervious area (ha)	0.035	0.053	Ha
Fraction impervious	48.5	73	%
Intensity - 1 hr, 10 yr (mm/hr)	70.0		IFD: Currumbin
t _c existing (min.)	5.00		
t _c post-developed (min.)	5.00		

ESTIMATION OF PEAK FLOWS										
ARI/AEP	Existing				Post development				Difference in runoff	
	C	I (mm/hr)	Q (m³/min)	Q (m³/s)	C	I (mm/hr)	Q (m³/min)	Q (m³/s)	Increase (L/s)	Increase %
1EY	0.64	119	0.92	0.015	0.68	119	0.97	0.016	1	6.3%
0.5EY	0.68	135	1.10	0.018	0.72	135	1.17	0.019	1	5.9%
20%	0.76	184	1.68	0.028	0.81	184	1.79	0.030	2	6.6%
10%	0.80	218	2.10	0.035	0.85	218	2.23	0.037	2	6.3%
5%	0.84	251	2.53	0.042	0.89	251	2.68	0.045	3	6.0%
2%	0.92	296	3.27	0.055	0.98	296	3.49	0.058	4	6.5%
1%	0.96	331	3.82	0.064	1.00	331	3.98	0.066	3	4.2%

APPROX. PEAK FLOWS LESS THAN Q1				
ARI	% of Q1	Existing (L/s)	Post dev't (L/s)	% inc
1 mth	25%	3.8	4.1	6.3%
2 mth	40%	6.1	6.5	6.3%
3 mth	50%	7.6	8.1	6.3%
4 mth	60%	9.2	9.7	6.3%
6 mth	75%	11.4	12.2	6.3%
9 mth	90%	13.7	14.6	6.3%
12 mths (Q1)	100%	15.3	16.2	6.3%

SUMMARY			CHECKED	COMMENT
Item	Existing	Proposed		
Area Ha	0.072	0.072		
Imperv A	0.035	0.053		
Fi %	48.5%	72.8%		
tc mins	5.00	5.00		
10yr 1hr I	70.0	70.0		
C10	0.80	0.85		
C100	0.96	1.00		
Q10 m³/s	0.035	0.037		
Q20 m³/s	0.042	0.045		
Q50 m³/s	0.055	0.058		
Q100 m³/s	0.064	0.066		
Initial Vs	Ave (m³)	Max Est Vs (m³)		
Q10	0.5	0.9		
Q20	0.6	1.0		
Q50	0.9	1.4		
Q100	0.6	1.1		

INITIAL DETENTION SIZING

Written by OC 17/07/2009

Based on QUDM 5.05 'Flood-Routing for Small Basins - Initial Sizing'

Updated by TWN Jan 2013

Flood Event	Discharge Coeff. of Runoff		Rainfall Intensity		Qi (m3/s)	Qo (m3/s) (allowable outlet flow)	Vi Approx. Inflow Volume (m³) 4 * Qi * tc/ 3	Vi =	Ratio r = (Qi-Qo)/Qi	Culp (1948)	Boyd (1989)	Carroll (1990)	Basha (1994)	Average Vs	Maximum Estimated Vs		
	Existing Cy	Post-D'ment Cy	Existing I mm/hr	Post-D'ment I mm/hr													
										Vs m³/s	Vs m³/s	Vs m³/s	Vs m³/s				
1EY	0.64	0.68	119	119	0.016	0.015	6		0.06	0.1	0.4	0.2	0.3	0.2	0.4		
0.5EY	0.68	0.72	135	135	0.019	0.018	8		0.06	0.2	0.4	0.2	0.3	0.3	0.4		
20%	0.76	0.81	184	184	0.030	0.028	12		0.06	0.3	0.7	0.3	0.5	0.5	0.7		
10%	0.8	0.85	218	218	0.037	0.035	15		0.06	0.3	0.9	0.4	0.6	0.5	0.9		
5%	0.84	0.89	251	251	0.045	0.042	18		0.06	0.4	1.0	0.4	0.7	0.6	1.0		
2%	0.92	0.98	296	296	0.058	0.055	23		0.06	0.5	1.4	0.6	1.0	0.9	1.4		
1%	0.96	1.00	331	331	0.066	0.064	27		0.04	0.4	1.1	0.4	0.7	0.6	1.1		

Initial Sizing: QUDM (5.05.1)

Note: Initial sizing in above table does not allow for any run-off routing or relationship between catchment size and time of concentration

Appendix E

HEALTHY WATERS CODE ASSESSMENT (FEB 2024 ISS.)

City Plan code template

This code template supports the preparation of a development application against either the acceptable outcome(s) or performance outcome(s) contained in the code. Development assessment rules are outlined in **Section 5.3.3** of the City Plan.

Please note:

Note: In accordance with Section 2.1 of City Plan, an assessment against State interest - Water quality (policies 4 and 5) of the State Planning Policy 2017 is required as the Healthy water development code does not fully integrate this State interest. A response table for policies 4 and 5 have been included below.

For assessment against the overall outcomes, refer to the appropriate code.

Note: The whole of the planning scheme is identified as the assessment benchmark for impact assessable development. This specifically includes assessment of impact assessable development against this strategic framework. The strategic framework may contain intentions and requirements that are additional to and not necessarily repeated in zone, overlay or other codes. In particular, the performance outcomes in zone codes address only a limited number of aspects, predominantly related to built form. Development that is impact assessable must also be assessed against the overall outcomes of the code as well as the strategic framework.

9.4.5 Healthy waters code

9.4.5.1 Application

This code applies to assessing material change of use, reconfiguring a lot or operational work for development where indicated within:

- (1) **Part 5 Tables of assessment;** and
- (2) **Table 9.4.5.1-1: Development triggers for applying the Healthy waters code.**

Table 9.4.5.1-1: Development triggers for applying the Healthy waters code

Topic	Assessment triggers	Applicable assessment benchmarks
Erosion and sediment control	All development.	For accepted development subject to requirements: RO1, RO2
		For assessable development: PO1, PO2
Stormwater quality and	For residential land uses involving one or more of the following:	For accepted development subject to requirements:

Topic	Assessment triggers	Applicable assessment benchmarks
waterway stability	(a) 3 or more dwellings; or (b) a land area greater than 1,200m ² ; or (c) a newly constructed road (previously unformed road) exceeding 30m in total length; or (d) 200m ² or more of uncovered new or refurbished car park area including parking bays and circulation driveways; or (e) the creation of high polluting outdoor activities (including Bulk landscape supplies, Garden centres, Tourist parks, Transport depots, Warehouses and Wholesale nurseries).	RO3, RO5 For assessable development: PO3, PO4, PO8 – PO13
	For non-residential land uses involving one or more of the following: (a) a land area greater than 1,200m ² ; or (b) a newly constructed road (previously unformed road) exceeding 30m in total length; or (c) 200m ² or more of uncovered new or refurbished car park area including parking bays and circulation driveways; or (d) the creation of high polluting outdoor activities (including Bulk landscape supplies, Garden centres, Tourist parks, Transport depots, Warehouses and Wholesale nurseries).	For accepted development subject to requirements: RO4, RO5 For assessable development: PO3, PO4, PO8 – PO14
	For residential activities, development associated with the creation of 3 or more dwellings, resulting in either: (a) an increase in the total impervious area; or (b) an alteration of upstream conveyance or change to existing discharge location or condition.	For accepted development subject to requirements: RO3, RO6, RO7 For assessable development: PO5 – PO14
	For all other land uses, development that results in either: (a) an increase in the total impervious area; or (b) an alteration of upstream conveyance or change to existing discharge location or condition.	For accepted development subject to requirements: RO4, RO6, RO7 For assessable development: PO5 – PO14
Woongoolba flood mitigation catchment area	Development that is code or impact assessable, on land within the 'Woongoolba flood mitigation catchment area' on the Water catchments and dual supply system area overlay map .	For assessable development: PO15

This code does not apply in the following instances:

- (1) where the development involves internal works or minor building works to a lawfully established building; or
- (2) a sales office.

When using this code, reference should be made to **Section 5.3.2** and, where applicable, **Section 5.3.3**, in **Part 5**.

9.4.5.2 Purpose

- (1) The purpose of the Healthy waters code is to:
 - (a) protect the quality of the city's waters and watercourses by managing the impacts of development on quality and quantity of surface and ground water runoff; and
 - (b) ensure that development does not cause adverse impact on people and/or property.
- (2) The purpose of the code will be achieved through the following overall outcomes:
 - (a) Total water cycle management and water sensitive urban design (WSUD) principles are:
 - (i) implemented to contribute to biodiversity areas and green space values within the city and promote co-location of assets; and
 - (ii) integrated into the landscape so as to maintain watercourse health, biodiversity and ecosystems.
 - (b) Development avoids or minimises disturbance to existing landforms, surface drainage, watercourses and groundwater.
 - (c) Impacts to public health and safety hazards are minimised.
 - (d) Adverse impacts to people and/or property are prevented and stormwater is safely managed within urban areas.
 - (e) Development protects existing overland flow paths and watercourses of environmental value.
 - (f) Development limits the quantity of key pollutants discharged in stormwater to protect the quality of receiving waters.
 - (g) Development avoids adverse impacts to downstream properties or environmental value from stormwater peak discharge.
 - (h) Development avoids or minimises adverse impacts on the environmental values of receiving waters from the release and mobilisation of nutrients and sediments.
 - (i) The drainage capacity of the Woongoolba Flood Mitigation Scheme Area for rainfall events up to 1 in 10 year 72 hours is maintained (contained within the Scheme drains within a 4 day period) and this capacity is not to be eroded due to cumulative impact of development.

9.4.5.3 Specific benchmarks for assessment

PART B – ASSESSABLE DEVELOPMENT BENCHMARKS

Table 9.4.5-3: Healthy waters code – for assessable development

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
----------------------	---------------------	--	--------------

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Erosion and sediment control			
PO1 Stormwater discharge from a development site achieves the construction phase water quality objectives of SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	AO1 No acceptable outcome provided.	YES. Appropriate Erosion and Sediment Control measures have been proposed within the Stormwater Management Plan prepared by Cozens Regan Group in order to meet water quality objectives during construction.	
PO2 Erosion, sediment and dust is appropriately managed during the construction phase.	AO2 The level of risk for soil erosion and sediment pollution to the environment is determined by an erosion hazard assessment, completed by a suitably-qualified person in accordance with the criteria in Table 9.4.5-4: Erosion hazard assessment. Where the erosion hazard assessment has a risk score of: (a) less than or equal to 10: A deemed to comply report is prepared by a suitably qualified person for Council approval, including conceptual location and design drawings of each treatment measure in plan and section views, in accordance with the <i>Best Practice Erosion and Sediment Control: International Erosion Control Association, (IECA) 2008, Australasia Chapter 2008.</i> (b) greater than 10 or developments involving multiple stages of disturbance or more than 1.25 ha of land: (i) For material change of use or reconfiguring a lot, a conceptual erosion and sediment control plan (ESCP) is prepared by a	YES. The Erosion and Hazard Assessment table has been completed and returned a score of 10. All earthworks are to be carried out in accordance with the Erosion and Sediment Control Requirements as set out within the Erosion and Hazard Control Section of the Stormwater Management Plan prepared by Cozens Regan Group.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	suitably-qualified person for Council approval in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards, and the <i>Best Practice Erosion and Sediment Control: International Erosion Control Association (IECA) 2008, Australasia Chapter 2008</i>. (ii) For operational work, a detailed ESCP is prepared by a suitably-qualified person in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards, and <i>Best Practice Erosion and Sediment Control: International Erosion Control Association (IECA) 2008, Australasia Chapter 2008</i>. The ESCP is to detail appropriate treatment measures for the construction phase of development, demonstrating how the minimum design objectives in Table 9.4.5-5: Stormwater design objectives are achieved, including: (a) measures to ensure the release of sediment-laden stormwater for the nominated design storm are minimised when the design storm is exceeded; (b) detailed design, installation, construction, monitoring and maintenance requirements of all approved proprietary products in		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	accordance with local conditions and manufacturer's recommendations; and (c) details of how the ESCP aligns with the approved development staging plan.		
Stormwater quality			
PO3 Development appropriately manages stormwater quality to: (a) protect natural ecosystems; (b) protect water quality; (c) reduce runoff and peak flows; and (d) meet the water quality objectives and environmental values for Queensland waters. Note: Water quality objectives and environmental values for Queensland waters are contained within <i>Schedule 1 of the Environmental Protection (Water) Policy 2009</i>. Water quality objectives are locally specific and vary between and within river catchments. Note: A stormwater quality management plan prepared by a suitably qualified person in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards, is Council's preferred method for addressing this performance outcome.	AO3.1 For post developed sites, the following minimum pollutant reduction targets are achieved: (a) Gross pollutants (>5mm) – 90%; (b) Total Suspended Solids (TSS) – 80%; (c) Total Phosphorus (TP) – 60%; and (d) Total Nitrogen (TN) – 45%. AO3.2 For development on land less than 1.25ha, a deemed to comply solution for stormwater quality is achieved in accordance with Table 9.4.5-6: Stormwater quality deemed to comply solutions. AO3.3 For development on land greater than 1.25ha, a stormwater quality management plan is to be prepared by a suitably qualified person in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards, is required.	YES. As indicated in the Stormwater Management Plan prepared by Cozens Regan Group, the development does not require stormwater quality management and only compliance with the Queensland Development Code, specifically NMP 1.8 – Stormwater Drainage (Jan 2008) is proposed.	
Waterway stability			
PO4 In-stream erosion, downstream of urban	AO4 Post-development peak 0.632 Annual	N/A. Receiving environment is Pacific Parade.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
development is prevented by controlling the rate (or magnitude) and duration of sediment transporting flows.	Exceedance Probability (AEP) event discharge within receiving waterway is limited to pre-development peak 0.632 AEP event discharge and is in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.		
Stormwater quantity control			
PO5 Stormwater quantity management outcomes demonstrate no adverse impact on stormwater flooding or the drainage of properties external to the subject site.	AO5 The following is achieved external to the development site: (a) no increase in peak flood flow rate from the development site for all events up to and including the 1% AEP; (b) no increase in peak flood velocities from the development site for all events up to and including the 1% AEP; (c) no increase in peak flood level from the development site for all events up to and including the 1% AEP; and (d) stormwater outfalls or discharge is located to avoid conflict with existing usage of downstream land or impacts on existing watercourse or drainage.	YES. As indicated in the Stormwater Management Plan prepared by Cozens Regan Group, it is proposed to install a 2kl above-ground stormwater detention tank to restrict flows to the predevelopment level for up to and including the 1% AEP rainfall event. Stormwater is to be discharged into Pacific Pde and no adverse effects regarding increases in peak flood levels, flood velocities or impacts on existing downstream land is anticipated.	
Lawful point of discharge			
PO6 Development ensures the stormwater systems are designed to not cause actionable nuisance that would adversely affect adjoining (upstream or downstream) properties.	AO6 A lawful point of discharge must be identified and demonstrated that all discharge point/s from the development are in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and	YES. The lawful point of discharge is determined to be the kerb and channel in Pacific Parade.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	water sensitive urban design standards.		
Overland flow paths			
PO7 Development must not obstruct free open surface flow of stormwater through a site.	AO7 Overland flowing stormwater is allowed free open surface flow between the street and any waterway at the rear or sides of a property, in accordance with the provisions of the <i>Building Code of Australia</i> .	YES. The development does not obstruct overland flow and the unaffected existing drainage provisions will allow for the free flow of stormwater to Pacific Parade.	
Whole of life costs			
PO8 Stormwater infrastructure is designed and constructed to: (a) remain fit for purpose for the life of the development and maintains full functionality in the design flood event; (b) be cost effective to maintain; and (c) ensure no structural damage to existing stormwater infrastructure.	AO8 No acceptable outcome provided.	YES. Stormwater infrastructure has been designed to achieve all three items under PO8.	
Landscape integration			
PO9 Stormwater treatment devices and stormwater infrastructure are designed to: (a) integrate with the urban design and landscape outcomes of the development; (b) complement natural environments, wetlands and watercourses; (c) protect environmental values; (d) enhance visual amenity; and (e) incorporate CPTED principles in accordance with SC6.12 City Plan	AO9.1 Where stormwater treatment devices and stormwater infrastructure are integrated into public open space, a Statement of Landscape Intent is to be prepared by a suitably qualified person, for approval by Council. The plan is to demonstrate that the operation of stormwater infrastructure does not compromise the function of any co-located uses and reflect the design principles within SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	YES. Stormwater infrastructure has been designed to achieve all five items under PO9.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	Note: A Statement of landscape intent is to be prepared in accordance with SC6.13 City Plan policy – Landscape work.		
	AO9.2 Stormwater treatment devices are located offline to any upstream catchment. Note: This provision relates to the integration of stormwater treatment devices and stormwater infrastructure into the landscape. Development identified on the Environmental significance – wetlands and watercourse overlay map will still require assessment against the Environmental significance overlay code.		
	AO9.3 All stormwater outlets that are located adjacent to watercourses, creeks and drainage paths are aligned at a maximum of 45 degrees to the downstream direction of flow, and energy dissipation measures installed to minimise scour.		
Public safety			
PO10 Stormwater treatment devices and stormwater infrastructure minimise impacts on public health and safety.	AO10 All stormwater quantity control measures are designed in accordance with SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards.	YES.	
Maintenance access			
PO11 Maintenance access is provided for all stormwater management systems and considers:	AO11.1 All weather vehicle access is to be provided to inlet zones of the stormwater treatment systems in accordance with Table 9.4.5-7: Maintenance access	YES.	

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
(a) the type of vehicle or machinery needed to service particular assets; and (b) the need to ensure a safe working environment for maintenance personnel and the public.	requirements (slope).		
	AO11.2 Maintenance access is to be provided around the perimeter of all stormwater treatment systems in accordance with Table 9.4.5-8: Maintenance access requirements (size).		
	AO11.3 A maintenance buffer is provided around the perimeter of all stormwater treatment devices and adjoining private property equal to: (a) 1m in width; or (b) the width of a perimeter maintenance access, as delivered in AO11.2, plus 0.5m. The maintenance buffer is measured from the adjacent allotment boundary to the top of batter around the treatment measure. The maximum slope on the maintenance buffer is 1 in 10.		
Fauna movement			
PO12 Stormwater conveyance structures and channels are designed to ensure the safe movement of native fauna and provide for terrestrial and aquatic passage.	AO12.1 Stormwater drainage structures and channels minimise impacts on aquatic fauna and associated habitats and provide opportunities for beneficial habitat uses of structures in accordance with the <i>Department of Primary Industries and Fisheries – Fisheries guidelines for Fish-friendly structures (2006)</i> .	YES	
	AO12.2 Stormwater drainage structures allow for		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
	the safe movement of terrestrial fauna in accordance with: (a) the Queensland Government Fauna Sensitive Road Design Manual Volume 2: Preferred Practices; and (b) the Queensland Government Koala-Sensitive Design Guidelines.		

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
Wastewater management			
PO13 Development does not discharge wastewater to receiving waters or areas external to the site unless demonstrated to be the best-practice environmental management for that site and takes into consideration: (a) the applicable water quality objectives for the receiving waters; and (b) the potential adverse impact on ecosystem health of receiving waters.	AO13 Where the development involves the discharge of wastewater, a Wastewater Management Plan (WWMP) is prepared, demonstrating compliance with the performance outcome, by a suitably qualified person and submitted to the Council, detailing all of the following: (a) wastewater type; (b) climatic conditions; (c) water quality objectives; (d) best-practice environmental management; (e) waste management hierarchy; and (f) the WWMP provides for the management of wastewater in accordance with a wastewater management hierarchy that: (i) avoids wastewater discharge to watercourses; or (ii) if wastewater discharge to the environment cannot practicably be avoided wastewater discharge to watercourses is minimised through re-use, recycling, recovery and treatment for disposal to sewer, surface water and groundwater.	YES The development will be serviced by Council's public reticulation system.	
Dewatering management			
PO14 Dewatering occurs in accordance with an approved Dewatering management plan.	AO14 No acceptable outcome provided.	N/A	
Woongoolba flood mitigation catchment area			

Performance outcomes	Acceptable outcomes	Does the proposal meet the acceptable outcome? If not, justify how the proposal meets <u>either</u> the performance outcome or overall outcome	Internal use
PO15 In the Woongoolba flood mitigation catchment area, shown on the Water catchments and dual supply system area overlay map , peak outflow and its timing for Q2, Q5 and Q10 for rainfall events up to 72 hours does not change as a result of development.	AO15 No acceptable outcome provided.	N/A	

State Planning Policy July 2017

Policies	Demonstrate how the proposal meets the policy?	Internal use
State interest – water quality		
ASSESSMENT BENCHMARK 4 (POLICY 4): At the construction phase, development achieves the applicable stormwater management design objectives in table A (appendix 2) of the State Planning Policy.		
ASSESSMENT BENCHMARK 5 (POLICY 5): (5) At the post-construction phase, development: a) achieves the applicable stormwater management design objectives on-site, as identified in table B (appendix 2) of the State Planning Policy; or b) achieves an alternative locally appropriate solution off-site that achieves an equivalent or improved water quality outcome to the relevant stormwater management design objectives in table B (appendix 2) of the State Planning Policy.		

Table 9.4.5-3: Erosion hazard assessment

Controlling factor	Points	Score
Average slope of the whole site prior to operational works		
Slope less than 2%	0	
More than or equal to 2% but less than 5%	1	
More than or equal to 5% but less than 10%	2	
More than or equal to 10% but less than 15%	4	
More than or equal to 15%	5	High risk
Soil type (to be disturbed)		
Gravels and sandy soils	1	
Sandy loam	2	
Clays on flood plains	3	
Shallow soils on slopes	4	
Clays on slopes greater than 5%/imported fill or untested fill	5	High risk
Anticipated duration of site disturbance		
Duration less than 2 weeks	0	
More than 2 weeks but less than 3 months	2	
More than 3 months but less than 6 months	4	
More than 6 months	5	High risk
Anticipated erosive rainfall risk during site disturbance		
Low (monthly average rainfall less than 45 mm)	0	
Moderate (monthly average rainfall 46 - 100 mm)	1	
High (monthly average rainfall 101 - 225 mm)	2	
Very high (monthly average rainfall 226 - 1500 mm)	4	
Extreme (monthly average rainfall more than 1500 mm)	5	High risk

Controlling factor	Points	Score
Off-site sediment control (down-slope of the soil disturbance)		
Score 1 point if there is no purpose-built sediment trap (e.g. sediment basin, gross pollutant trap or purpose-built wetland).	1	
Run-off entering the site		
Score 1 point if stormwater run-off is not diverted from entering the site or away from soil disturbance.	1	
Extent of site disturbance		
Score 2 points if the building works requires reshaping of the ground surface.	2	
Total Score		
Note: High erosion risk - if score 11 or greater, or five for any factor.		

This Erosion Hazard Assessment form is adapted from the *Best Practice Erosion and Sediment Control, International Erosion Control Association (Australasia), IECA 2008 Appendix H - Building Sites, the Brisbane City Council Erosion Hazard Assessment Form and Attachment 2 to the QDC Draft Part 16 Erosion and Sediment Control.*

Table 9.4.5-5: Stormwater design objectives

Construction phase stormwater design objectives	Notes
Drainage control	
Design life and design storm of temporary drainage works: (1) Disturbed area open for less than 12 months - 1 in 2 ARI. (2) Disturbed area open for 12-24 months - 1 in 5 ARI. (3) Disturbed area open for more than 24 months - 1 in 10 ARI.	• ARI = Average Recurrence Interval (see Engineers Australia document Australian Rainfall and Runoff). • Design capacity excludes minimum 150mm freeboard. • A higher drainage design objective may be required for temporary drainage structures upslope of occupied properties. • A revised drainage design storm may be required if these design objectives are found to be impracticable.
Erosion control	
(1) Stage clearing and construction works to minimise the area of exposed soil at any one time. (2) Effectively cover or stabilise exposed soils prior to predicted rainfall. (3) Prior to completion of works for the development, and prior to removal of sediment controls, all site surfaces must be effectively stabilised using methods which will achieve effective short-term stabilisation. (4) Avoid or minimise large construction activities in the 'wet season'. (5) Divert water run-off from undisturbed areas around disturbed areas. (6) Use erosion risk ratings to determine appropriate erosion control measures.	• 'Wet season' means the high rainfall months, e.g. the four highest rainfall months. • For point 6, determine the erosion risk rating using local rainfall erosivity, rainfall depth, or soil loss rate or other acceptable method. A rating scale such as very low, low, moderate, high, extreme should be applied. Such ratings should reflect the local area. Example ratings may be shown in local council guidelines or detailed in best-practice guidelines.
Sediment control	
(1) Use soil loss rates to determine appropriate sediment control measures. (2) Direct runoff from exposed site soils to sediment controls that are appropriate to the extent of disturbance and level of erosion risk. (3) All exposed areas greater than 2500 metres must be provided with sediment controls which are designed, implemented and maintained to a standard which would achieve at least 80% of the average annual	• For point 1, surrogate determinations may be used such as monthly erosion or average monthly rainfall. • A commonly used design storm for basin sizing is 80th percentile five-day event. Depending on the settling characteristics of local soils, a higher 'operational' design storm can be achieved with chemical dosing operated in flow-through mode in a large storm with rainfall-activated auto-flocculent dosing, and advanced hydraulic efficiency features such as floating off-takes,

runoff volume of the contributing catchment treated (i.e. 80% hydrological effectiveness) to 50mg/L Total Suspended Solids (TSS) or less, and pH in the range (6.5–8.5).

and a sediment forebay.

- TSS = Total Suspended Solids. Turbidity measurements (e.g. 60 Nephelometric Turbidity Units (NTU)) could be used; however, for accuracy, a site-specific relationship should be developed between turbidity and TSS.

Table 9.4.5-6: Stormwater quality deemed to comply solutions

The following deemed to comply solutions are to be documented within a Stormwater quality management plan prepared by a suitably-qualified person in accordance with **SC6.12 City Plan policy – Land development guidelines, Section 4 – Stormwater drainage and water sensitive urban design standards**.

Development type			Stormwater treatment train		Land ownership ²
Land use	Scenario	Scale			
Residential	>2 lots up to 20 lots	N/A	Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Bio retention ³ @ 1.3% of impervious catchment area. ¹	Public and/or Private
			No Tanks	Bio retention ³ @ 1.8% of impervious catchment area. ¹	Public and/or Private
			Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Wetland @ 5% of impervious catchment area.	Public and/or Private
			No Tanks	Wetland @ 7% of impervious catchment area. ¹	Public and/or Private
	> 2 dwellings (Townhouse style up to 2 storeys	≤ 12,500m ²	Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Bio retention ³ @ 1.3% of impervious catchment area. ¹	Private
			No Tanks	Bio retention ³ @ 1.8% of impervious catchment area. ¹	Private
			Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Wetland @ 5% of impervious catchment area. ¹	Private
			No Tanks	Wetland @ 7% of impervious catchment area. ¹	Private

	High density multiple dwelling apartments (flats, high-rise)*	≤ 12,500m ²	Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Bio retention ³ @ 1.8% of impervious catchment area. ¹	Private
			No Tanks	Wetland @ 7% of impervious catchment area. ¹	Private
Commercial, Industrial and Retail (including retail at the bottom floors of high rise) ⁴	Commercial and/or Industrial uses	≤ 12,500m ²	Tank Volume per dwelling: • Detached 5 kl • Attached 3 kl	Gross pollutant management (GPT) + Bio retention ³ @ 1.8% of impervious catchment area. ¹	Public and/or Private
			No Tanks	Gross pollutant management (GPT) + Wetland @ 8% of impervious catchment area. ¹	Public and/or Private

¹For developments that results in an increase in less than 15% imperviousness (i.e. roof and ground level impervious), then stormwater management to focus on the impervious areas only.

²Ultimate owner of the device and responsible for maintenance.

³For bioretention basins larger than 800m², an inlet pond will be required.

⁴The City requires gross pollutant management for these land uses. It is preferred that these are located on private property, but in larger scale Reconfiguring a lot applications it is logical to have a single gross pollutant trap for the site. The City will not accept proprietary devices for nutrient management on public/City land.

Table 9.4.5-7: Maintenance access requirements (slope)

Treatment type	Access track slope	Material and width
Stormwater inflows where pipe is 450mm or greater (where there is no forebay or inlet pond)	1 in 4 or flatter	2.5m wide minimum Gravel or reinforced turf from inlet
Coarse sediment forebay	1 in 4 or flatter	2.5m minimum Reinforced concrete in accordance with <i>IPWEAQ standard drawing RS-051</i> Concrete paver (subject to City approval), cement treated gravel

		250mm thick may be accepted by the City through negotiation.
Inlet pond (wet) for retention or wetland Sediment basins	1 in 4 or flatter	3m wide Reinforced concrete in accordance with Heavy Vehicle Crossing Industrial (refer IPWEAQ standard drawing RS-051). Where this access crosses perpendicular to pedestrian paths, the path must be 200mm thick, double reinforced and 42MPa.
Proprietary devices	1 in 4 or flatter	Reinforced concrete in accordance with Heavy Vehicle Crossing Industrial (refer IPWEAQ standard drawing RS-051).

Table 9.4.5-8: Maintenance access requirements (size)

Treatment type	Size	Maintenance access requirements (all paths 1 in 10 cross fall or less and maximum 1 in 4 longitudinal grade)
Bioretention	< 500m ²	Access path to > 40% of perimeter. ≥ 0.75m wide. Grass, mulch, gravel or concrete suitable for access on foot. ¹
	≥ 500m ²	Access path to > 40% of perimeter. ≥ 2.5m wide. Reinforced grass, gravel or concrete for light vehicles. ¹ Remainder of perimeter as per < 500m ² bioretention.
Wetland	<1000m ²	Access path to > 40% of perimeter. ≥ 0.75m wide. Grass, mulch, gravel or concrete

		suitable for access on foot.
	≥ 1000m ² to < 5000m ²	Access path minimum 40% of perimeter. ≥ 2.5m wide. Reinforced grass, gravel or concrete for light vehicles. ¹ Remainder of perimeter ≥ 0.75m wide.
	≥ 5000m ²	Access path 100% of perimeter. ≥ 2.5m wide. Cement treated gravel 200mm or concrete for large vehicles.

¹ Determine access path treatment based on slope, maintenance vehicle and the surrounding landscape. For example, turf is not appropriate where the treatment system is located against conservation open space, and where revegetation for the treatment system complements the surroundings, the use of gravel or concrete is preferred.



Proposed Mixed-Use Development
776 Pacific Parade
Currumbin

ACOUSTIC REPORT



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John Fuglsang Developments

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TABLE OF CONTENTS

1.Introduction	5
2.Site Description	5
2.1 Site Location	5
2.2 Proposal	6
2.3 Acoustic Environment	6
3.Equipment	6
4.Receivers and Noise Monitoring	7
4.1 Receiver Locations.....	7
4.2 Unattended Ambient Noise Monitoring.....	8
5.Measured Noise Levels	9
5.1 Meteorological Conditions.....	9
5.2 Ambient Noise Levels.....	9
6.Noise Criteria.....	10
6.1 Environmental Noise Criteria.....	10
6.1.1 Acoustic Quality Objectives	10
6.1.2 Background Creep.....	10
6.1.3 Sleep Disturbance Criteria	11
6.2 Aircraft Noise Criteria.....	12
7.Environmental Assessment	13
7.1 Onsite Activities.....	13
7.1.1 Acoustic Quality Objectives	13
7.1.2 Background Creep.....	14
7.1.3 Sleep Disturbance	15
8.Aircraft Noise Assessment.....	16
8.1 Attended Aircraft Noise Measurements	17
8.2 Site coordinates	18
8.3 Aircraft noise levels - AS2021:2015	18
9.Recommendations.....	21
9.1 Onsite Activities.....	21
9.1.1 Background Music	21
9.1.1.1 Individual Speaker Source Sound Power Levels	21
9.1.2 Mechanical Plant	21
9.2 Aircraft Noise	22
9.2.1 Glazing.....	22
9.2.2 Wall construction	23
9.2.3 Roof/ceiling construction.....	24
9.2.4 Alternative Ventilation	24
10. Conclusion	24
11. Appendices	25
11.1 Development Plans.....	25
11.2 Noise Monitoring Charts	34

TABLE INDEX

<i>Table 1: Meteorological Conditions – Coolangatta QLD.....</i>	<i>9</i>
<i>Table 2: Measured ambient noise levels – all time periods.....</i>	<i>9</i>
<i>Table 3: Acoustic Quality Objectives at Noise Sensitive Properties.....</i>	<i>10</i>
<i>Table 4: Background creep noise limits</i>	<i>10</i>
<i>Table 5: Aircraft noise residential criteria.....</i>	<i>12</i>
<i>Table 6: Acoustic Quality Objective Noise Assessment, 1 hour</i>	<i>13</i>
<i>Table 7: Background Creep Assessment - Carpark Activity, 15 sec.....</i>	<i>14</i>
<i>Table 8: Maximum noise levels from site activities – Night-time.....</i>	<i>15</i>
<i>Table 9: Aircraft Noise Levels – Measurement Location A</i>	<i>17</i>
<i>Table 10: Distance coordinates - Arrivals.....</i>	<i>18</i>
<i>Table 11: Distance coordinates - Departures</i>	<i>18</i>
<i>Table 12: Aircraft noise levels - AS2021-2015.....</i>	<i>18</i>
<i>Table 13: Loudspeaker sound power levels</i>	<i>21</i>
<i>Table 14: Rw ratings for aircraft noise treatment.....</i>	<i>22</i>
<i>Table 15: Typical external wall construction</i>	<i>23</i>
<i>Table 16: Typical roof construction</i>	<i>24</i>

FIGURE INDEX

<i>Figure 1: Site Location</i>	<i>5</i>
<i>Figure 2: Receivers and Noise Monitor Locations</i>	<i>7</i>
<i>Figure 3: Site Location ANEF</i>	<i>12</i>
<i>Figure 4: Attended Aircraft Noise Measurement Locations</i>	<i>16</i>

1. Introduction

This report is in response to a request by John Fuglsang Development for an environmental and aircraft noise assessment of a proposed mixed-use development to be located at 776 Pacific Parade, Currumbin. To facilitate the assessment, previous unattended noise monitoring was conducted at a representative location of nearby sensitive receivers to determine the noise criteria for the site. Aircraft noise measurements were also done to determine noise impacts associated with Gold Cost Airport.

Noise from future onsite activities have been assessed to nearby sensitive receivers. Based on the outcomes of the assessment, recommendations for acoustic treatments and management controls are specified in this report.

2. Site Description

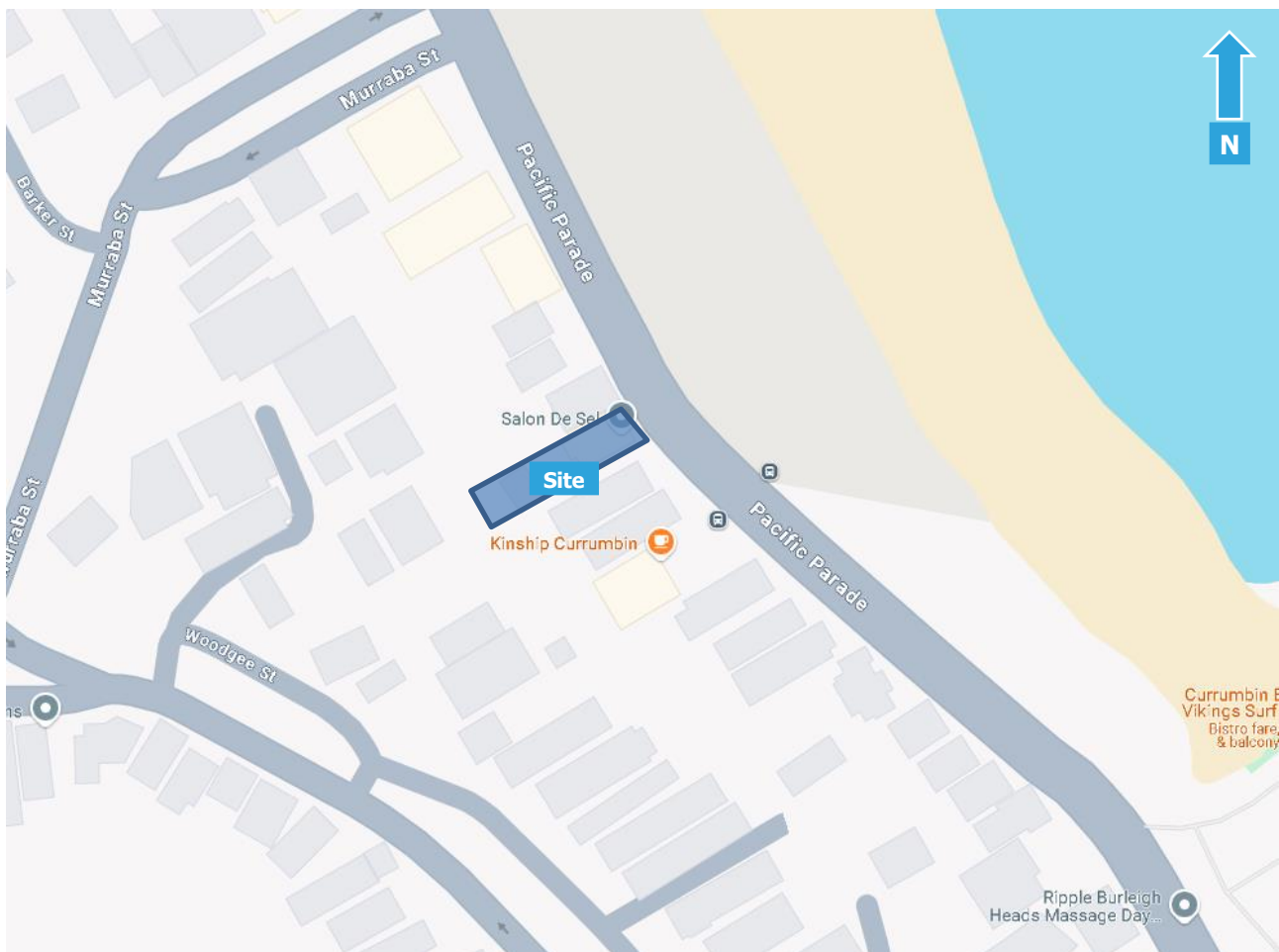
2.1 Site Location

The site is described by the following:

776 Pacific Parade, Currumbin
Lot 2 on RP58471

Refer to Figure 1 for site location.

Figure 1: Site Location



A site survey was conducted on 10 December 2024 and identified the following:

- a) The site is currently occupied by a two-storey commercial building.
- b) A 4 storey residential and commercial building bounds the site to the north.
- c) A 3 storey residential building bounds the site to the south.
- d) Residential uses are located to the west of the site.
- e) Pacific Parade bounds the site to the east, separating the proposed development from Currumbin Beach.

2.2 Proposal

The proposal is to redevelop the existing property as follows:

- Total site area of 502m²
- Carparking will be provided on Level 1 and will include 9 car bays.
- A commercial shop is to be located on Level 1. The operating hours of the shop will be 8am to 6pm.
- Level 2 includes a living/dining/kitchen, gym, media room of unit 2.
- Level 3 includes BC store, the upper bedroom floor of unit 2 and unit 3 which includes a bedroom and kitchen/living/dining area.
- Unit 4 is located on level 4 and includes a kitchen/living/dining, den and two bedrooms.
- Unit 6 is located across levels 5 and 6 and includes 2 bedrooms and kitchen/living/dining
- Site access will be via Pacific Parade.

Refer to the Appendices for development plans.

2.3 Acoustic Environment

The site and surrounding area are primarily affected by local traffic, surf and aircraft noise.

3. Equipment

The following equipment was used to record noise levels:

- Rion NL42 Environmental Noise Monitor
- Norsonic NOR140 Sound Level Meter
- BSWA Technology Co. Ltd Sound Calibrator

The Rion NL42 Environmental Noise Monitor and Norsonic NOR140 Sound Level Meter hold current NATA Laboratory Certification and were field calibrated before and after the monitoring period. No significant drift from the reference signal was recorded.

4. Receivers and Noise Monitoring

4.1 Receiver Locations

The nearest residential receiver locations were identified as follows;

1. A 4-storey residential and commercial building to the north of the site at 778 Pacific Parade.
2. A 2-storey residential building to the south of the site at 772 Pacific Parade.
3. A 2-storey residential building to the west of the site at 65 Woodgee Street.

These locations were selected as being representative of the nearest noise sensitive receivers to the proposed development. Refer to Figure 2 for these locations.

Figure 2: Receivers and Noise Monitor Locations



4.2 Unattended Ambient Noise Monitoring

A Rion NL42 environmental noise monitor was previously placed on site at 776 Pacific Parade to measure ambient noise levels. This location was chosen as it was considered representative of the ambient noise levels at the receivers. The monitor was located in a free field position with the microphone approximately 1.4 metres above ground surface level.

The noise monitor was set to record noise levels between 10 August 2022 and 17 August 2022. The environmental noise monitor was set to record noise levels in "A" Weighting, Fast response using 15 minute statistical intervals. Ambient noise monitoring was conducted generally in accordance with Australian Standard AS1055:2018 *Acoustics – Description and measurement of environmental noise*.

For the unattended noise monitoring location refer to Figure 2.

5. Measured Noise Levels

The following tables present the measured ambient noise levels from the unattended noise monitoring and meteorological conditions during the monitoring period. Any periods of inclement weather or extraneous noise were omitted from the measured data prior to determining the results.

5.1 Meteorological Conditions

Meteorological observations during the unattended noise monitoring survey were obtained from the Bureau of Meteorology website (<http://www.bom.gov.au/climate/data>), shown in Table 1 below.

Table 1: Meteorological Conditions – Coolangatta QLD

Day	Date	Rainfall (mm)	Wind			
			9am		3pm	
			Speed (km/h)	Direction	Speed (km/h)	Direction
Wednesday	10/08/22	0	19	SSW	22	SSE
Thursday	11/08/22	0	13	S	24	SE
Friday	12/08/22	0.4	4	WSW	20	N
Saturday	13/08/22	3.4	13	NW	15	NNW
Sunday	14/08/22	3.8	6	WSW	17	W
Monday	15/08/22	0.2	4	WSW	20	NE
Tuesday	16/08/22	0.2	7	WNW	17	NNE
Wednesday	17/08/22	0	20	SSW	17	SSE

5.2 Ambient Noise Levels

The ambient levels measured at the monitoring location are as follows;

Table 2: Measured ambient noise levels – all time periods

Day	Date	L90 dB(A)		
		Day	Eve	Night
Wednesday	10/08/22	58	58	57
Thursday	11/08/22	58	58	56
Friday	12/08/22	58	57	55
Saturday	13/08/22	57	58	57
Sunday	14/08/22	55	56	56
Monday	15/08/22	57	57	56
Tuesday	16/08/22	56	56	58
Wednesday	17/08/22	55	-	56
Overall value		57	57	56

Refer to the appendix for a graphical representation of the noise monitoring.

6. Noise Criteria

6.1 Environmental Noise Criteria

The noise criteria as applied by City of Gold Coast are as follows;

6.1.1 Acoustic Quality Objectives

Table 3 presents the acoustic quality objectives at noise sensitive receptors as detailed in Schedule 1 of the EPP (Noise) 2008.

Table 3: Acoustic Quality Objectives at Noise Sensitive Properties

Sensitive Receptor	Time of Day	Acoustic Quality Objectives, dB(A)		
		$L_{Aeq,adj,1hr}$	$L_{A10,adj,1hr}$	$L_{A1,adj,1hr}$
Dwelling (outdoors)	Day and Evening (7am – 10pm)	50	55	65
Dwelling (Indoors)	Day and Evening (7am – 10pm)	35	40	45
	Night (10pm – 7am)	30	35	40

6.1.2 Background Creep

The Background Creep criteria are as follows;

Time-varying noise:

$$L_{Aeq,adj,T} \leq \text{Ambient } L_{A90,T} + 5\text{dB(A)}$$

Steady-state noise:

$$L_{A90,T} \leq \text{Ambient } L_{A90,T}$$

The time period (T) is a time interval of at least 15 minutes, or if the noise continues for less than 15 minutes, the duration of the noise source.

Based on the results of ambient noise monitoring, the project specific background creep noise limits are shown in Table 4.

Table 4: Background creep noise limits

Time Period	Noise Level Limits SPL dB(A)	
	$L_{Aeq,T}$	$L_{A90,T}$
Day 7am – 6pm	62	57
Evening 6pm – 10pm	62	57
Night 10pm – 7am	61	56

6.1.3 Sleep Disturbance Criteria

Criteria for sleep disturbance under the WHO Guideline is addressed is as follows:

"As a rule for planning for short-term or transient noise events, for good sleep over 8 hours the indoor sound pressure level measured as a maximum instantaneous value should not exceed approximately 45 dB(A) $L_{A,(Max)}$ more than 10 or 15 times per night'.

'Where noise is continuous, the equivalent sound pressure level should not exceed 30 dB(A) indoors, if negative effects on sleep are to be avoided'."

6.2 Aircraft Noise Criteria

The site is located inside the ANEF25-30 noise contour for Gold Coast Airport as shown in Figure 3.

Figure 3: Site Location ANEF



Aircraft noise assessment is required as per City of Gold Coast Council Local Environment Plan 2014. Therefore, the site has been assessed under the current AS2021:2015 Acoustics - Aircraft noise intrusion - Building siting and construction.

The indoor design sound levels for residential developments are contained in Table 3.3 of AS2021:2015. This table has been reproduced as follows.

Table 5: Aircraft noise residential criteria

Building type and activity	Indoor design sound level dBA
Houses, home units, flats, caravan parks:	
Sleeping areas, dedicated lounges	50
Other habitable spaces	55
Bathrooms, toilets, laundries	60

7. Environmental Assessment

7.1 Onsite Activities

Noise associated with the development was assessed based on previous measurements of similar activities. The calculations assume that the nominated activities are located at the closest representative point within the development site to each receiver location. Any relevant shielding, building transmission loss or recommended acoustic barriers are taken into account for these activities.

7.1.1 Acoustic Quality Objectives

The average maximum noise source levels and predicted levels at the receiver locations are shown in Table 6. Note: L_{A10} and L_{A1} results are not shown in cases where the total duration of the events is less than the minimum time required e.g. $L_{A10(1hr)}$ requires noise events to occur for at least 360 seconds of an hour long period. L_{Aeq} results are not shown where the calculated total is less than 0dBA.

Table 6: Acoustic Quality Objective Noise Assessment, 1 hour

Receiver	Receivers																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						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*Correction due to tonality and impulsiveness as per AS1055:2018.

Exceedances of the acoustic quality objectives are predicted. However, as these criteria are already exceeded by the background noise levels, the impacts do not necessarily affect the acoustic amenity. Therefore, assessment to the background creep criteria is recommended.

7.1.2 Background Creep

Noise from carpark activities has been assessed to a background creep criterion of 15 seconds. The noise source levels and predicted levels at the receiver locations are shown as follows;

Table 7: Background Creep Assessment - Carpark Activity, 15 sec

Receiver	Receivers		Source Leq@1m dB(A)	Correction dB(A)*	Corrected Leq@1m dB(A)	No. of events per 15min Day	No. of events per 15min Eve	No. of events per 15min Night	Duration per event	Distance (m)	No Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Topo screening dB	Dist atten. @-6dB/dd	LAeq adj, T ext. dB(A) Day	LAeq adj, T int. dB(A) Day	LAeq adj, T ext. dB(A) Eve	LAeq adj, T int. dB(A) Eve	LAeq adj, T ext. dB(A) Night	LAeq adj, T int. dB(A) Night	LAeq 15 min Compliance			
	Description																					Day	Eve	Night	
	Criteria																					62	62	61	
1	Retail tenancy	75		75	1	1	1	900	5				-10			-14	51	41	51	41	51	41	Yes	Yes	Yes
	Retail background music	80		80	1	1	1	900	5				-10			-14	56	46	56	46	56	46	Yes	Yes	Yes
	Car door closure	75	2	77	1	1	1	60	5				-20			-14	31	21	31	21	31	21	Yes	Yes	Yes
	Car passby	69		69	5	3	2	15	8				-20			-19	19	9	17	7	15	5	Yes	Yes	Yes
	Car start	74	2	76	5	3	2	2	5				-20			-14	22	12	20	10	18	8	Yes	Yes	Yes
	BC Sports Store	70		70	1	1	1	900	24				-16			-28	26	16	26	16	26	16	Yes	Yes	Yes
	Total															57	47	57	47	57	47	Yes	Yes	Yes	
	Criteria																					62	62	61	
2	Retail tenancy	75		75	1	1	1	900	10				-10			-20	45	35	45	35	45	35	Yes	Yes	Yes
	Retail background music	80		80	1	1	1	900	10				-10			-20	50	40	50	40	50	40	Yes	Yes	Yes
	Car door closure	75	2	77	1	1	1	60	12				-20			-22	24	14	24	14	24	14	Yes	Yes	Yes
	Car passby	69		69	5	3	2	15	6				-20			-16	23	13	20	10	19	9	Yes	Yes	Yes
	Car start	74	2	76	5	3	2	2	12				-20			-22	15	5	13	3	11	1	Yes	Yes	Yes
	BC Sports Store	70		70	1	1	1	900	15				-16			-24	30	20	30	20	30	20	Yes	Yes	Yes
	Total															51	41	51	41	51	41	Yes	Yes	Yes	
	Criteria																					62	62	61	
3	Retail tenancy	75		75	1	1	1	900	45				-35			-34	6		6		6		Yes	Yes	Yes
	Retail background music	80		80	1	1	1	900	45				-35			-33	12	2	12	2	12	2	Yes	Yes	Yes
	Car door closure	75	2	77	1	1	1	60	10				-35			-20	10		10		10		Yes	Yes	Yes
	Car passby	69		69	5	3	2	15	15				-35			-24							Yes	Yes	Yes
	Car start	74	2	76	5	3	2	2	10				-35			-20	1						Yes	Yes	Yes
	BC Sports Store	70		70	1	1	1	900	10				-30			-20	20	10	20	10	20	10	Yes	Yes	Yes
	Total															21	11	22	12	22	12	Yes	Yes	Yes	

*Correction due to tonality and impulsiveness as per AS1055:2018.

On condition the recommendations in Section 9 are implemented, compliance is predicted for onsite activities in relation to the background creep criteria.

7.1.3 Sleep Disturbance

The maximum noise source levels and predicted impacts at the receiver locations are shown as follows;

Table 8: Maximum noise levels from site activities – Night-time

Receiver	Receivers	Source @1m dB(A)	Correction dB(A)*	Corrected dB(A)	Distance (m)	Inc Barrier (height (m))	Barrier screening dB	Building TL or shield dB	Buildingscreening dB	Dist atten. @-6dB/dd	L _{Amax} adj, T ext. dB(A)	L _{Amax} adj, T int. dB(A)	Complies L _{max} Yes/No
	Description												
	1. 778 Pacific Parade (N) 2. 772 Pacific Parade (S) 3. 65 Woodgee Street (W)												
	Criteria												45
	Retail tenancy	83		83	5			-10	-22	-14	37	27	Yes
1	Retail background music	82		82	5			-10	-22	-14	36	26	Yes
	Car door closure	79	2	81	5			-20	-22	-14	25	15	Yes
	Car passby	74		74	8			-20	-22	-18	14	4	Yes
	Car start	78	2	80	5			-20	-22	-14	24	14	Yes
	BC Sports Store	78		78	24			-16	-22	-28	12	2	Yes
	Retail tenancy	83		83	10			-10	-22	-20	31	21	Yes
	Retail background music	82		82	10			-10	-22	-20	30	20	Yes
	Car door closure	79	2	81	12			-20	-22	-22	17	7	Yes
	Car passby	74		74	6			-20	-22	-16	16	6	Yes
	Car start	78	2	80	12			-20	-22	-22	16	6	Yes
	BC Sports Store	78		78	15			-16	-22	-24	16	6	Yes
	Retail tenancy	83		83	45			-35	-22	-33	-7	-17	Yes
	Retail background music	82		82	45			-35	-22	-33	-8	-18	Yes
	Car door closure	79	2	81	10			-35	-22	-20	4	-6	Yes
	Car passby	74		74	15			-35	-22	-24	-7	-17	Yes
	Car start	78	2	80	10			-35	-22	-20	3	-7	Yes
	BC Sports Store	78		78	10			-30	-22	-20	6	-4	Yes

*Correction due to tonality and impulsiveness as per AS1055:2018.

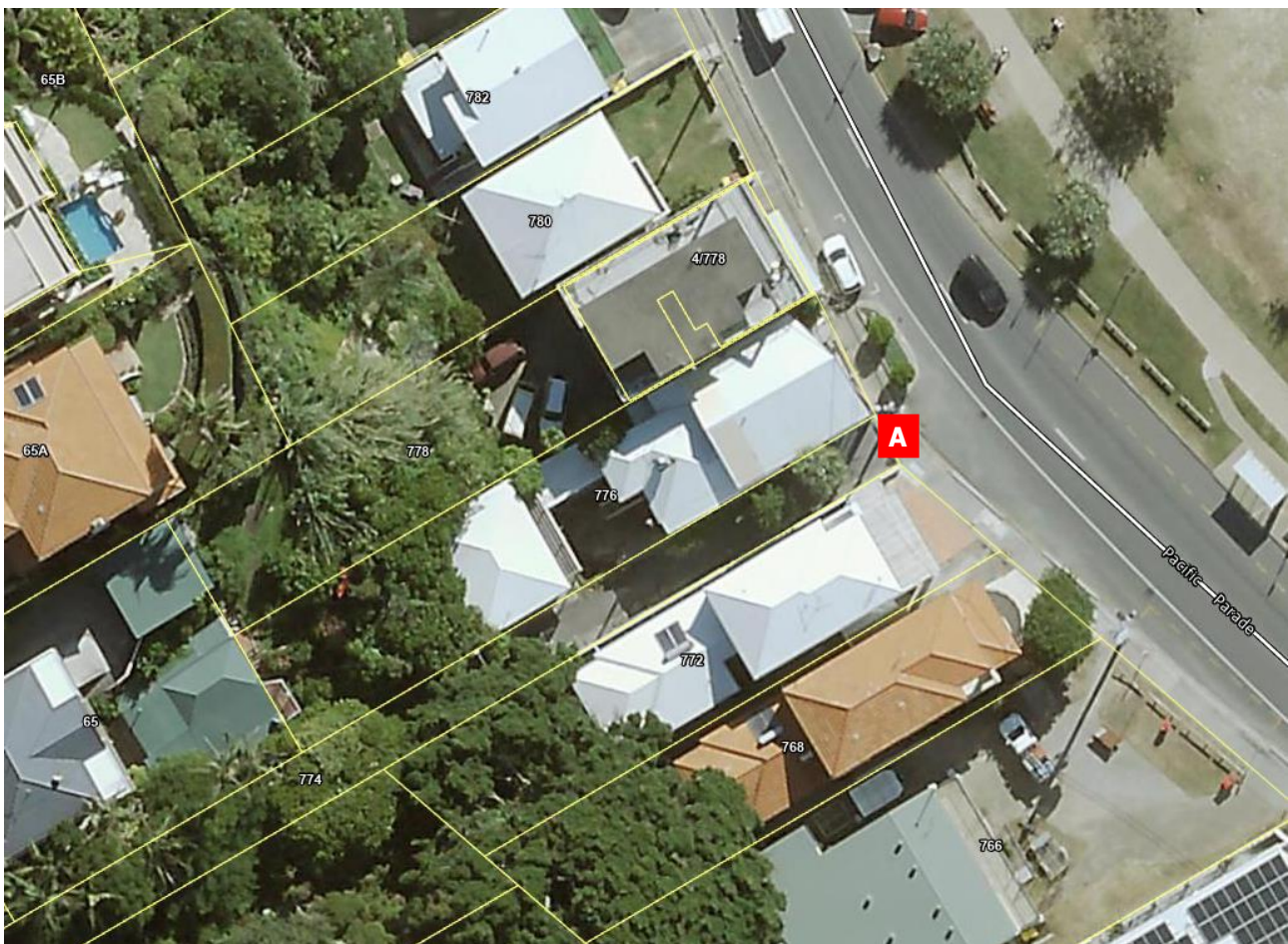
On condition the recommendations in Section 9 are implemented, compliance is predicted for onsite activities.

8. Aircraft Noise Assessment

As the proposed development is located within the ANEF25-30 overlay for Gold Coast Airport, aircraft noise was considered in the assessment. Aircraft noise levels were measured at a representative location near the site. Refer to Figure 4 for the measurement location.

The sound level meter was set to record noise levels in octave band, linear weighting, slow response, and broadband "A" weighting, slow response. The typical duration for each measurement was between 10 and 20 seconds. Aircraft noise measurements were conducted in accordance with Australian Standard AS2021:2015.

Figure 4: Attended Aircraft Noise Measurement Locations



Measurement Locations

Refer to the following section for the measured aircraft noise levels.

8.1 Attended Aircraft Noise Measurements

The noise levels for the various types of aircraft recorded at the measurement location are presented in Table 9.

Table 9: Aircraft Noise Levels – Measurement Location A

Date	Time 24h	Airline	Flight Number	Aircraft	Direction	Action	dBA Lmax slow	dB Lmax (slow) Octave band centre frequency (Hz)							
								63	125	250	500	1k	2k	4k	8k
17/08/22	1527	Jetstar	JQ492	Airbus A320	SE	Landing	75	71	67	69	70	68	67	60	41
17/08/22	1528	N/A	N/A	Cessna 172	SE	Landing	69	76	70	69	68	68	63	53	48
17/08/22	1532	N/A	N/A	Cessna 172	SE	Landing	67	73	65	65	63	63	61	55	49
17/08/22	1535	N/A	N/A	Diamond DA42	SE	Landing	69	76	70	69	68	68	63	53	48
17/08/22	1541	N/A	N/A	Cessna 172	SE	Landing	63	73	64	63	59	60	60	49	41
17/08/22	1551	Virgin	VA745	Boeing 737	SE	Landing	77	76	74	79	78	76	70	61	50
17/08/22	1620	Jetstar	JQ442	Airbus A320	SE	Landing	76	73	71	73	76	74	70	68	52
17/08/22	1626	Virgin	VA527	Boeing 737	SE	Landing	79	76	72	79	77	76	71	65	50
Maximum level in each octave band and corresponding total dBA							79	76	74	79	78	76	71	68	52

The maximum measured aircraft noise level was found to be 79dBA. The noise impacts have also been calculated in accordance with the procedure outlined in AS2021:2015. Refer to the following section for the calculations.

8.2 Site coordinates

Based on the location of the subject site in relation to the airport runway and relevant flight paths, the following dimensions have been determined in accordance with AS2021-2015;

Table 10: Distance coordinates - Arrivals

Description	Dimension (m)
	Runway 14 (to south)
DS, sideline distance	250
DL, landing distance	3,030
DT, takeoff distance	-
HS, elevation of site	6 to 14
HA, elevation of airport	7

Table 11: Distance coordinates - Departures

Description	Dimension (m)
	Runway 32 (to north)
DS, sideline distance	565
DL, landing distance	-
DT, takeoff distance	5,210
HS, elevation of site	6 to 14
HA, elevation of airport	7

Note that the arrivals glidepath is a straight line track, while the departures path uses a curved track. Therefore, the departures distance coordinates use the curved departure track methods as required in AS2021-2015.

8.3 Aircraft noise levels - AS2021:2015

Using the site coordinates, the noise levels for the various types of aircraft are calculated in accordance with AS2021:2015.

Table 12: Aircraft noise levels - AS2021-2015

Model	Representative aircraft	Noise level dBA L _{max} (slow)	
		Departure	Arrival
A319-115	Airbus A319-131	76	74
A320-231	Airbus A320-232	77	74
A321-231	Airbus A321-232	80	76
AVRO 146-RJ100	BAE146-200	76	75
BAE 146-100A	BAE146-200	76	75
BAE 146-200	BAE146-200	76	75
BAE 146-300	BAE146-200	76	75
BAE-125-1000B	BAE146-200	76	75
717-200	Boeing 717-200	72	71
737-3YO	Boeing 737-300	77	77
737-476	Boeing 737-400	79	77
737-7FE	Boeing 737-700	79	78
737-8FE	Boeing 737-800	82	78
Boeing	787-8 (Short haul)	73	76
Boeing	787-8 (Long haul)	75	76
CL-600-2B16	Bombardier CL600	60	70
390	Cessna CIT 2	73	68
500	Cessna CIT 2	73	68

Model	Representative aircraft	Noise level dBA Lmax(slow)	
		Departure	Arrival
501	Cessna CIT 2	73	68
525B	Cessna CIT 2	73	68
550	Cessna CIT 2	73	68
650	Cessna CIT 3	74	65
680	Cessna Citation 680	71	67
750	Cessna Citation X	67	69
510	Cessna Mustang 510	69	63
EMB-135LR	Embraer 145 ER	67	70
ERJ 170-100 LR	Embraer ERJ190	76	75
ERJ 190-100 IGW	Embraer ERJ190	76	75
FALCON 7X	Fokker 100	76	74
FALCON 900	Fokker 100	76	74
MYSTERE - FALCON 50	Fokker 100	76	74
G-IV	Gulfstream GIV	70	71
BD-700-1A11	Gulfstream GV	72	70
GV	Gulfstream GV	72	70
400A	Hawker 400	76	69
EMB-500	Learjet 35	77	69
35A	Learjet 35	77	69
36A	Learjet 35	77	69
45	Learjet 35	77	69
1900D	Beech 1900D	64	73
3206	Beech 1900D	64	73
DHC-6 SERIES 300	Bombardier Dash 6	69	76
EMB-110P1	Bombardier Dash 6	69	76
SA226-TC	Bombardier Dash 6	69	76
SA227-DC	Bombardier Dash 6	69	76
DHC-8-102	Bombardier Dash 8-100	57	65
DHC-8-202	Bombardier Dash 8-300	58	65
DHC-8-315	Bombardier Dash 8-300	58	65
DHC-8-402	Bombardier Dash 8-300	58	65
208B	Cessna 208	68	75
PC-12/47E	Cessna 208	68	75
B200C	Cessna CONQUEST II	64	69
C90	Cessna CONQUEST II	64	69
425	Cessna CONQUEST II	64	69
441	Cessna CONQUEST II	64	69
MU-2B-20	Cessna CONQUEST II	64	69
340	Convair 580	72	76
B300	Dornier 228-202	63	68
DO 228-202 K	Dornier 228-202	63	68
695-A	Dornier 228-202	63	68
ATR72-212A	Dornier 328-100	62	74
C-212-CC	Dornier 328-100	62	74
328-100	Dornier 328-100	62	74
EMB-120 ER	Embraer 120 ER	61	72
PA-32-300	Piper PA-42	66	68
PA-42-1000	Piper PA-42	66	68
340B	Saab 340	66	71
SD3-30	Short 330	66	71

Model	Representative aircraft	Noise level dBA Lmax(slow)	
		Departure	Arrival
500-U	Beech BARON 58P	69	69
690-A	Beech BARON 58P	69	69
58	Beech BARON 58P	69	69
76	Beech BARON 58P	69	69
B100	Beech BARON 58P	69	69
B50	Beech BARON 58P	69	69
D95A	Beech BARON 58P	69	69
337B	Beech BARON 58P	69	69
402C	Beech BARON 58P	69	69
404	Beech BARON 58P	69	69
421B	Beech BARON 58P	69	69
DA 42	Beech BARON 58P	69	69
PA-34-200T	Beech BARON 58P	69	69
PA-36-285	Beech BARON 58P	69	69
PA-44-180	Beech BARON 58P	69	69
PA-60-600	Beech BARON 58P	69	69
172N	Cessna 172R	60	54
182S	Cessna 182H	68	58
210E	Cessna 206H	74	67
210N	Cessna 206H	74	67
310R	Cessna 206H	74	67
U206F	Cessna 206H	74	67
AT-502	Generic 1-engine FP prop	61	59
GA10	Generic 1-engine FP prop	61	59
GA-8	Generic 1-engine FP prop	61	59
G520T	Generic 1-engine FP prop	61	59
PA-38-112	Generic 1-engine FP prop	61	59
AT-400	Generic 1-engine VP prop	67	67
AT-602	Generic 1-engine VP prop	67	67
AT-802A	Generic 1-engine VP prop	67	67
PA-46-310P	Generic 1-engine VP prop	67	67
PA-28R-201	Piper PA-28	63	52
B60	Piper PA-31	67	68
PA-31-350	Piper PA-31	67	68
PA-31T	Piper PA-31	67	68
Maximum noise level		82	78

It is noted that based on aircraft noise levels calculated as per AS2021-2015 methods, a maximum aircraft noise level of 82dBA is determined. Aircraft noise levels measured at the site were found to be up to 79dBA which is slightly lower than calculated values. Therefore, a maximum aircraft noise level of 82dBA is used for the purposes of a conservative assessment.

9. Recommendations

9.1 Onsite Activities

Compliance is predicted for general onsite activities on the condition the following recommendations are implemented:

- We recommend waste collection be conducted in accordance with the existing residential neighbours in the area to reduce the potential for disturbance.
- Any traversable drainage grates in the carpark driveway must be securely fastened.
- The driveway and carpark should have a surface coating or be constructed using materials that minimise tyre squeal.

9.1.1 Background Music

Based on the modelling, the background music in the retail tenancy would require a total sound power level that does not exceed 88dBA (80dBA SPL @ 1m) when measured 1m from the speakers. If a liquor licence is required, a full assessment should be conducted in accordance with the OLGR criteria.

9.1.1.1 Individual Speaker Source Sound Power Levels

The assessed noise levels specified in Section 7 are based on the overall total sound power level of all speakers. Therefore, if a number of separate speakers are desired, the total sound power will need to be divided between all the speakers. As a guide, Table 13 nominates specific sound power levels per speaker, dependent on the number of units.

Table 13: Loudspeaker sound power levels

Total number of loudspeakers	Change in dB level compared to one speaker	Maximum retail tenancy sound power level Leq dBA per speaker per venue
1	0	88
2	-3	85
3	-5	83
4	-6	82
5	-7	81
6	-8	80
7	-8	80
8	-9	79
9	-10	78
10	-10	78

9.1.2 Mechanical Plant

No information regarding mechanical services was available at the time of the assessment. We recommend that any new mechanical plant is designed to comply with the noise criteria stated in Section 6.1.2. An assessment by qualified acoustic consultant should be conducted prior to installation.

9.2 Aircraft Noise

Building treatments for aircraft noise were calculated using Australian Standard *AS2021:2015 'Acoustics – Aircraft Noise Intrusion – Building Siting and Construction'*. Based on a maximum noise level of 82dBA, the construction requirements for aircraft noise are as follows;

9.2.1 Glazing

The recommended minimum glazing requirements as a result of aircraft noise analysis are as follows;

- The minimum glass thickness specified shall not be reduced regardless of the R_w performance of the glass unless the glazier can provide a specific (non generic) NATA Test report specifying the proposed glazing system complies (the test report must be based on the same configuration proposed for the development). Note an estimation or calculated performance will not accepted.
- If compliance cannot be achieved with the minimum R_w ratings for the glass thickness nominated, then glazing system shall be upgraded until compliance is achieved.
- Glazing specified with acoustic seals requires a seal that has been tested with a glazing system or door to achieve an R_w in accordance with AS/NZS ISO 717.1, mohair or brush seals are not acceptable.
- The glazier shall provide NATA test reports on request to verify compliance with the minimum R_w ratings. Generic reports are not acceptable.

Table 14: R_w ratings for aircraft noise treatment

Unit	Floor	Location	R_w Ratings			Glazing	Acoustic seals
			Wall	Roof	Windows/Sliding door		
2	level 2	Media room	40	-	35	10.38 lam	yes
2	level 2	Kitchen/living/dining	40	-	32	10mm float	yes
2	level 2	Laundry	40	-	27	4mm float	yes
2	level 2	Shower	40	-	25	4mm float	yes
2	level 3	Bed 1	40	48	37	11.38 lam or 10.38 VLam	yes
2	level 3	Bed 1 ensuite	40	48	27	4mm float	yes
2	level 3	Bed 2	40	48	35	10.38 lam	yes
2	level 3	Bed 2 ensuite	40	48	32	10mm float	yes
3	level 3	Kitchen/living/dining	40	-	29	5mm tough	yes
3	level 3	Bed 1	40	49	34	10.38 lam	yes
3	level 3	Bed 1 ensuite	40	48	28	5mm tough	yes
3	level 3	Laundry	40	-	29	5mm tough	yes
4	level 4	Bed 1	40	-	35	10.38 lam	yes
4	level 4	Bed 1 ensuite	40	-	26	4mm float	yes
4	level 4	Bed 2	40	-	32	10mm float	yes
4	level 4	Bed 2 ensuite	40	-	30	6mm float	yes
4	level 4	Laundry	40	-	-	-	no
4	level 4	Den	40	-	-	-	no
4	level 4	Kitchen/living/dining	40	-	29	5mm tough	yes
5	level 5	Bed 1	40	-	35	10.38 lam	yes
5	level 5	Bed 1 ensuite	40	-	26	4mm float	yes
5	level 5	Bed 2	40	-	35	10.38 lam	yes
5	level 5	Bed 2 ensuite	40	-	29	5mm tough	yes
5	level 5	Laundry	40	-	-	-	no
5	level 5	Den	40	-	-	-	no
5	level 5	Kitchen/living/dining	40	-	30	6mm float	yes
6	Level 6	Bed 1	40	-	32	10mm float	yes

Unit	Floor	Location	Rw Ratings			Glazing	Acoustic seals
			Wall	Roof	Windows/Sliding door	Windows/sliding door	
6	Level 6	Bed 1 ensuite	40	-	29	5mm tough	yes
6	Level 6	Kitchen/living/dining	40	-	32	10mm float	yes
6	Level 6	Laundry	40	-	28	5mm tough	yes
6	Level 7	Bed 2	45	48	37	11.38 lam or 10.38 VLam	yes
6	Level 7	Bed 2 ensuite	45	48	29	5mm tough	yes

Other locations not specified in Table 14 will require 4mm float glass (Rw 22) for windows and 4mm toughened glass (Rw23) for sliding doors.

Also note that if the building design changes, such as changed layout or variation in window sizes/orientation etc, then new calculations should be conducted to determine the appropriate Rw ratings accordingly.

9.2.2 Wall construction

The minimum required acoustic rating of external walls is Rw45. Typical external wall constructions are provided in the table below.

Table 15: Typical external wall construction

Description	Cavity insulation	R _w rating
90mm steel stud with 10mm plasterboard internally	75mm insulation 11kg/m ³	40
1 layer of 9mm FC externally with minimum 92mm steel stud and 13mm fire-rated plasterboard internally.	50mm insulation 11kg/m ³	45
Conventional masonry construction with 10mm plasterboard internal	-	45

Note that these are not the only possible options for construction. Alternative construction recommendations would be possible provide that they meet the requirements of AS2021:2015.

9.2.3 Roof/ceiling construction

The minimum required acoustic rating for the roof/ceiling is Rw48. Typical roof/ceiling constructions are provided in the table below.

Table 16: Typical roof construction

Description	Cavity insulation	Minimum Rw rating
Pitched metal roof, with 60mm Anticon, 150mm purlins, 1 layer 13mm sound-rated plasterboard ceiling lining fixed to furring channels	215mm thick R3.5 fibreglass	48
Pitched metal roof, with 60mm Anticon, 150mm purlins, 1 layer 13mm sound-rated plasterboard ceiling lining fixed to furring channels	185mm thick R4.0 fibreglass	49
Concrete minimum 125mm thick	-	50

Note that these are not the only possible options for construction. Alternative construction recommendations would be possible provide that they meet the requirements of AS2021:2015.

9.2.4 Alternative Ventilation

To achieve the require internal noise levels, it would be necessary to close the façade doors and windows. Therefore, all bedrooms and living spaces would require the provision for alternative ventilation. To achieve this, mechanically assisted ventilation or air conditioning can be used.

Penetrations through the wall or ceiling shall not reduce the overall acoustic performance of the installed system.

10. Conclusion

An environmental and aircraft noise assessment was conducted for the proposed mixed-use development to be located at 776 Pacific Parade, Currumbin. Onsite activities and aircraft noise associated with Coolangatta airport have been assessed. Recommendations have been provided to achieve compliance with Gold Coast City Criteria.

If you should have any queries, please do not hesitate to contact us.

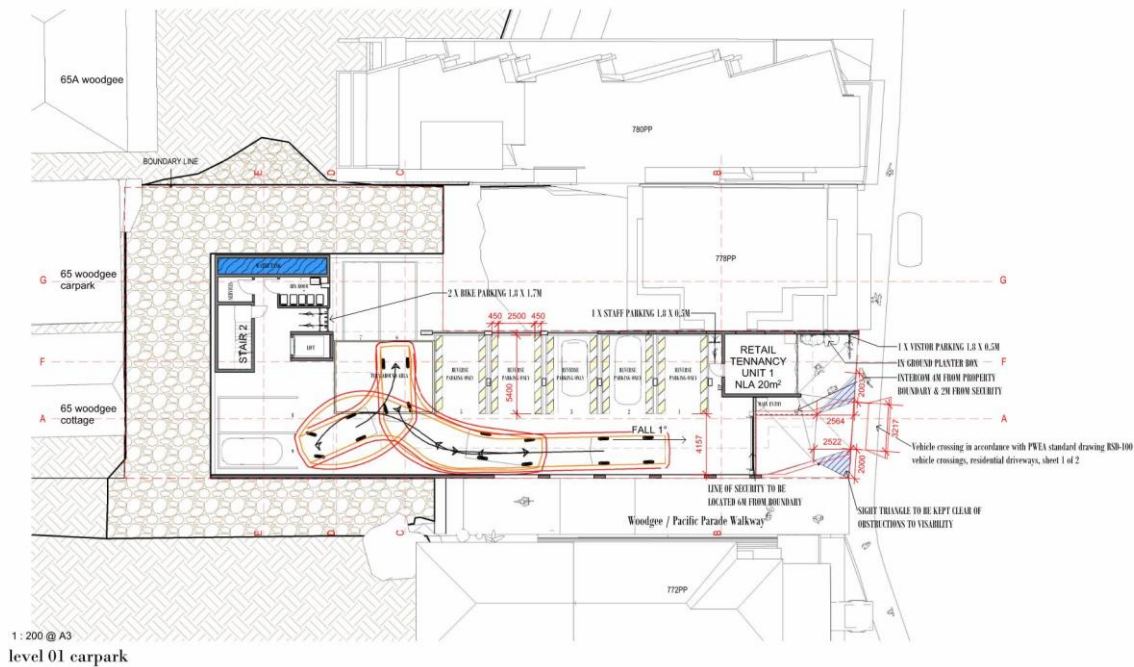
Report Prepared By



Kaitlyn Meldrum
Acoustic Consultant
acousticworks)))

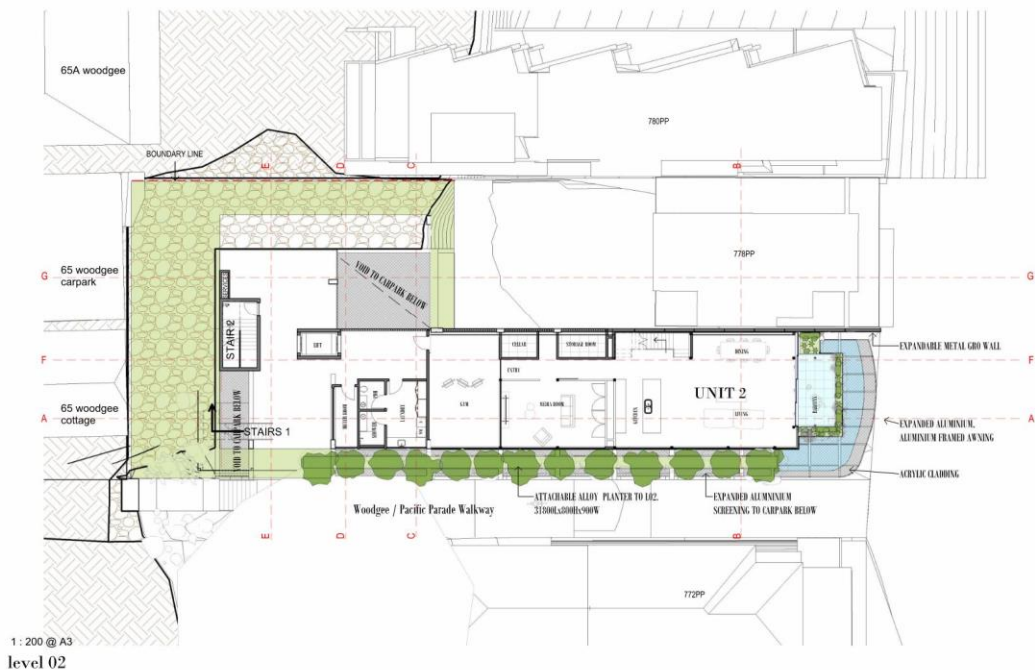
11.Appendices

11.1 Development Plans



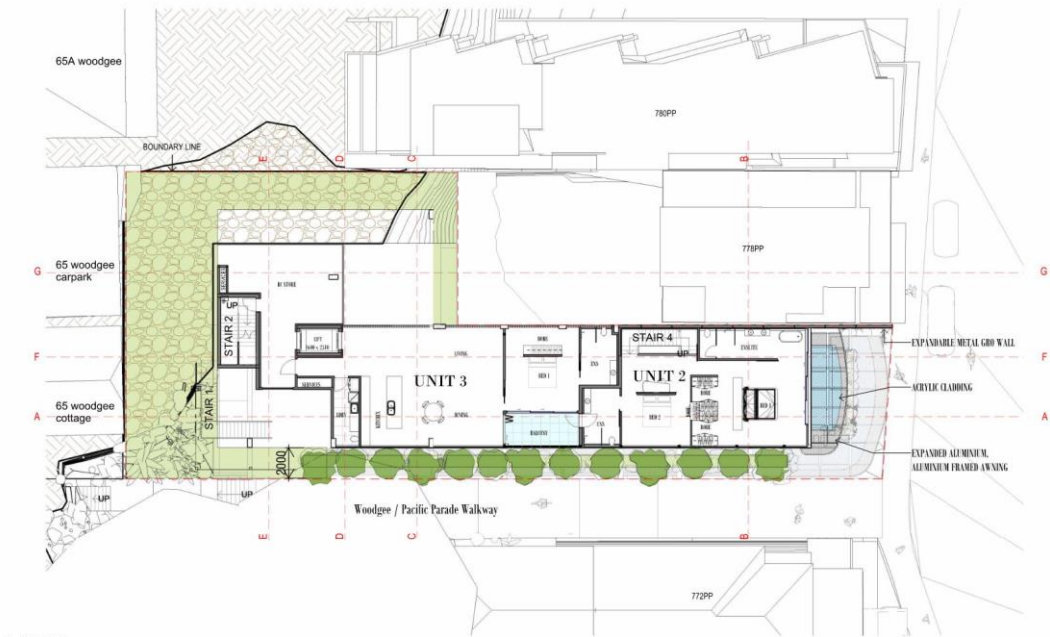
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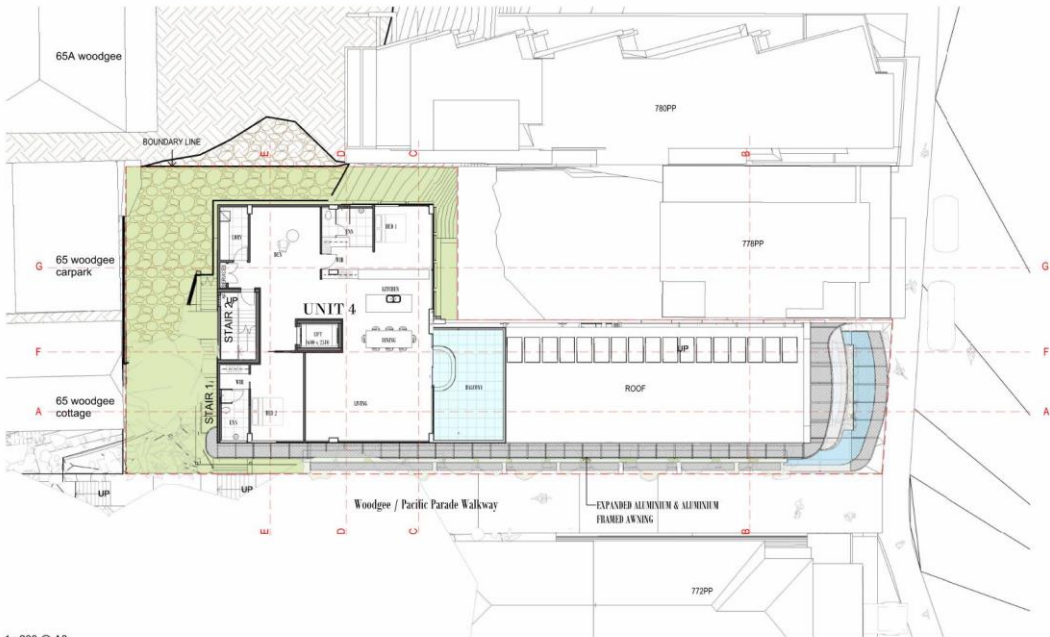
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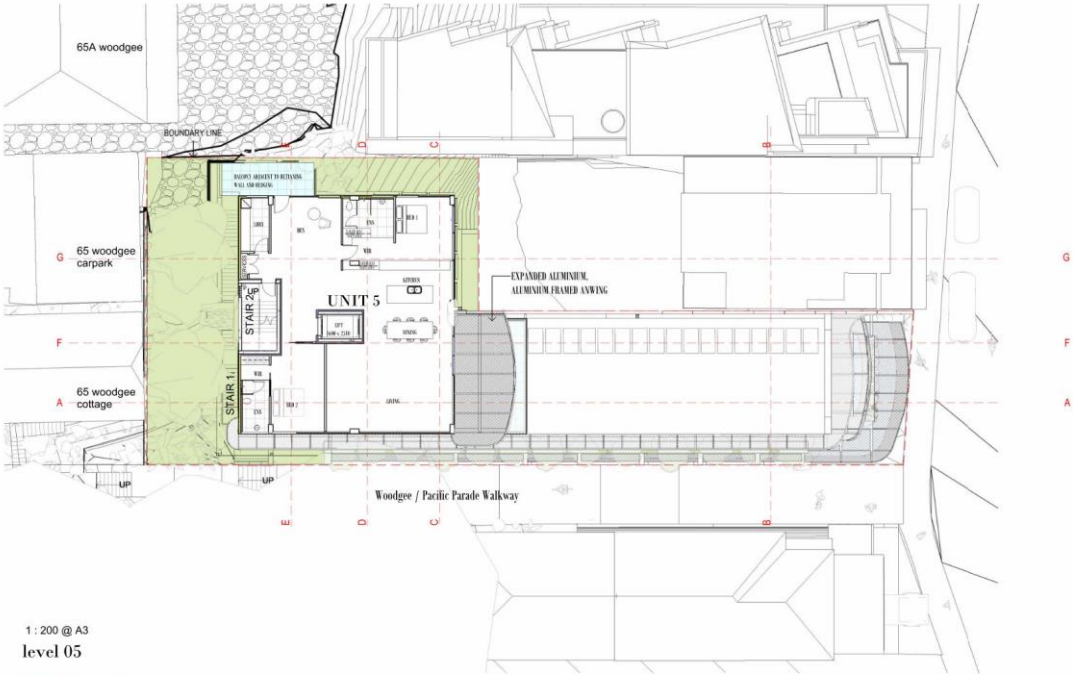
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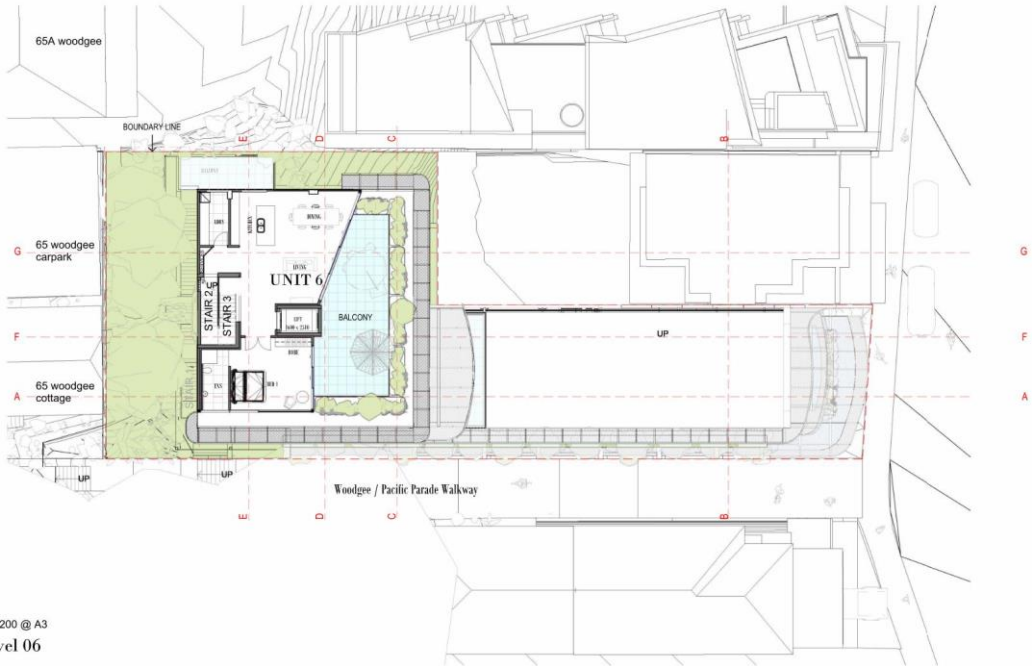


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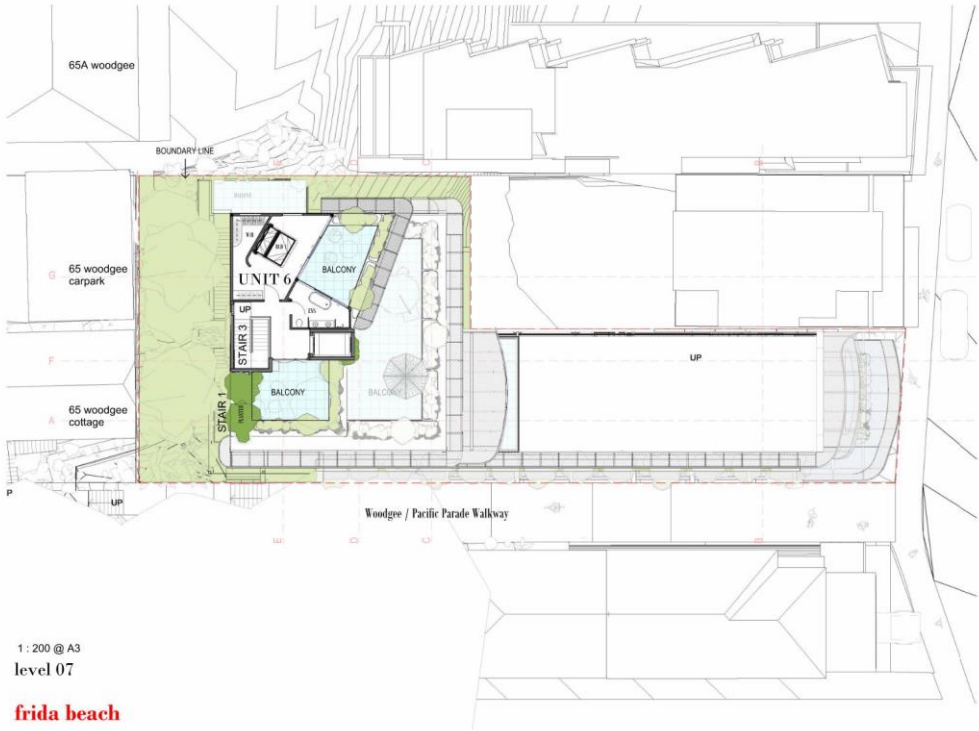
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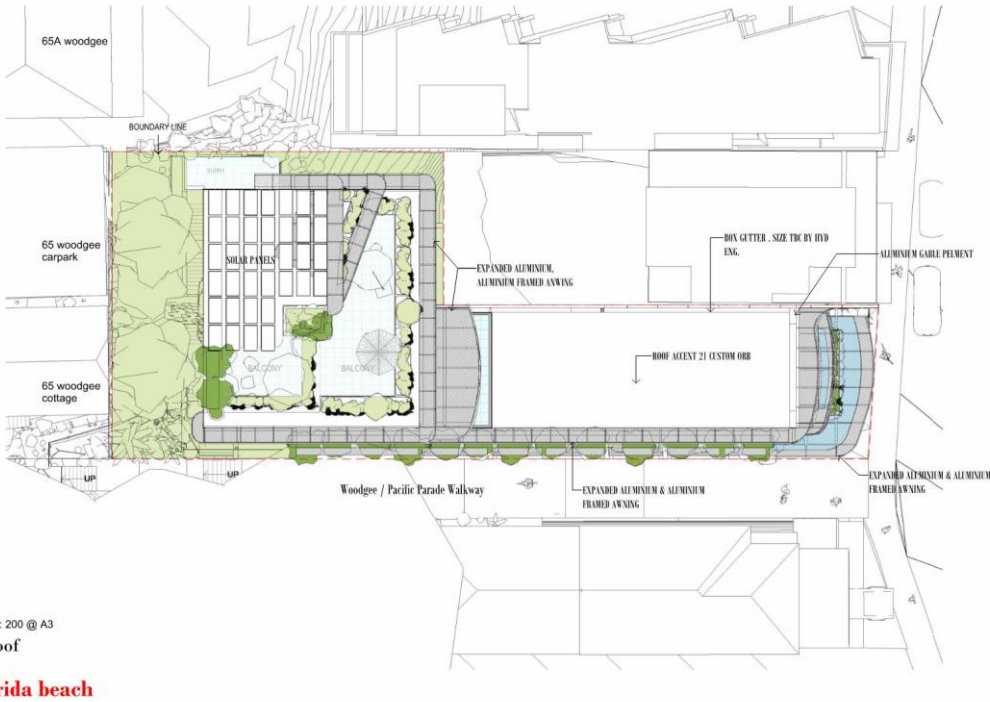
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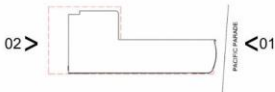
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13



14



01 Pacific Parade - East

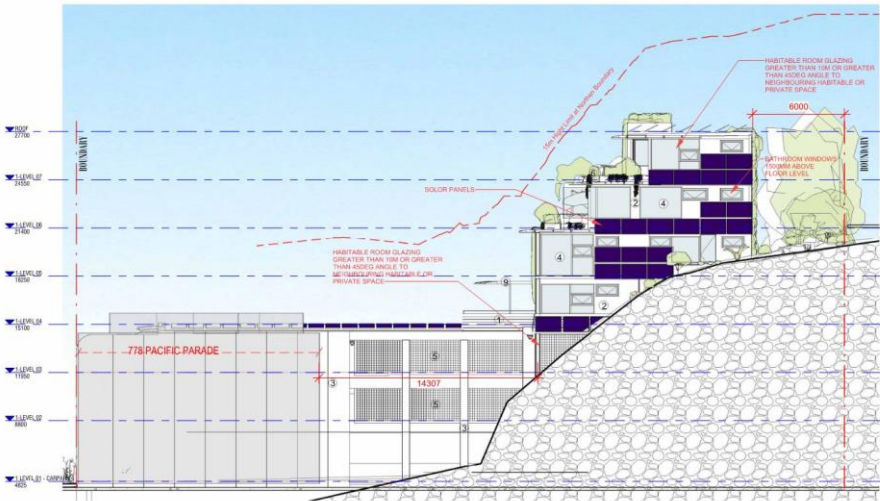
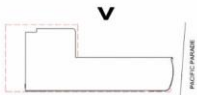


02 West

- Materials-**
- 1 weatherboards - y34 hue
 - 2 concrete - n32 hue, textured
 - 3 concrete - y34 hue
 - 4 glazing
 - 5 glass blocks translucent - fire rated
 - 6 glass balustrade
 - 7 Al planter boxes
 - 8 ceiling / grow wall - expanded Al
 - 9 canopy - trafficable expanded Al

1: 200 @ A3
elevations east + west

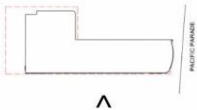
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- Materials**
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 - 2 concrete - n32 hue, textured
 - 3 concrete - y34 hue
 - 4 glazing
 - 5 glass blocks translucent - fire rated
 - 6 glass balustrade
 - 7 Al planter boxes
 - 8 ceiling / grow wall - expanded Al
 - 9 canopy - trafficable expanded Al

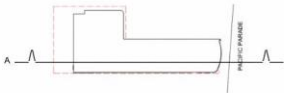
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elevation north

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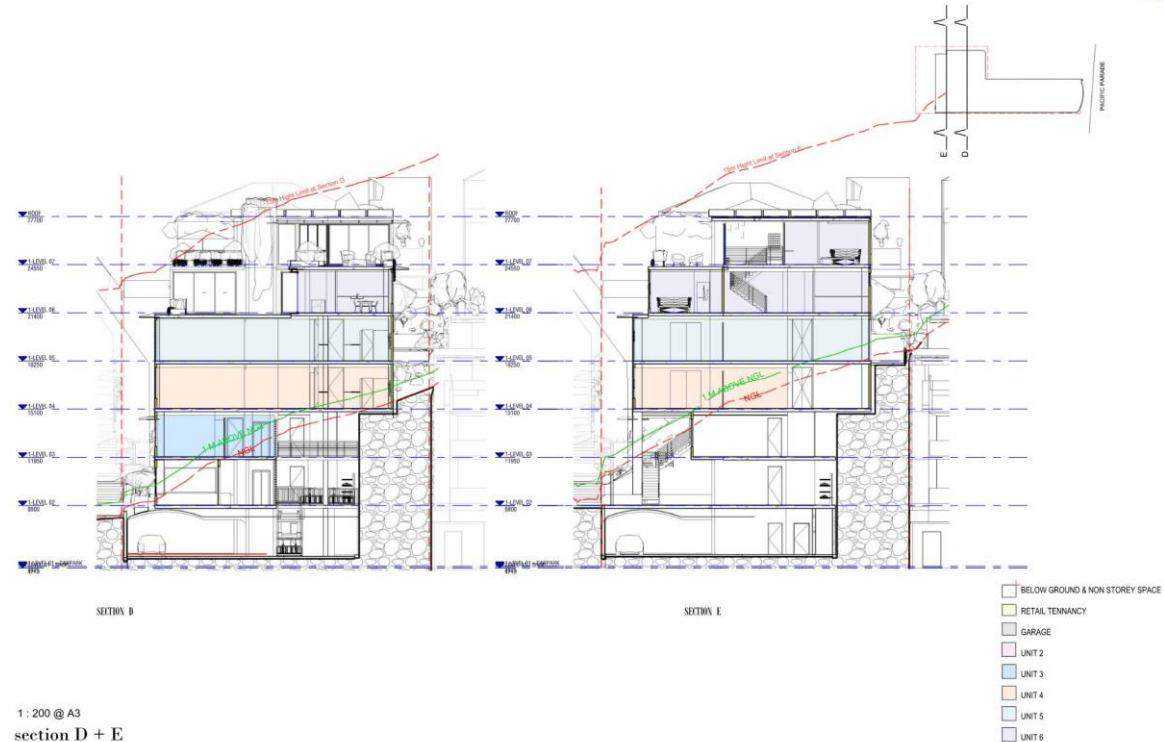
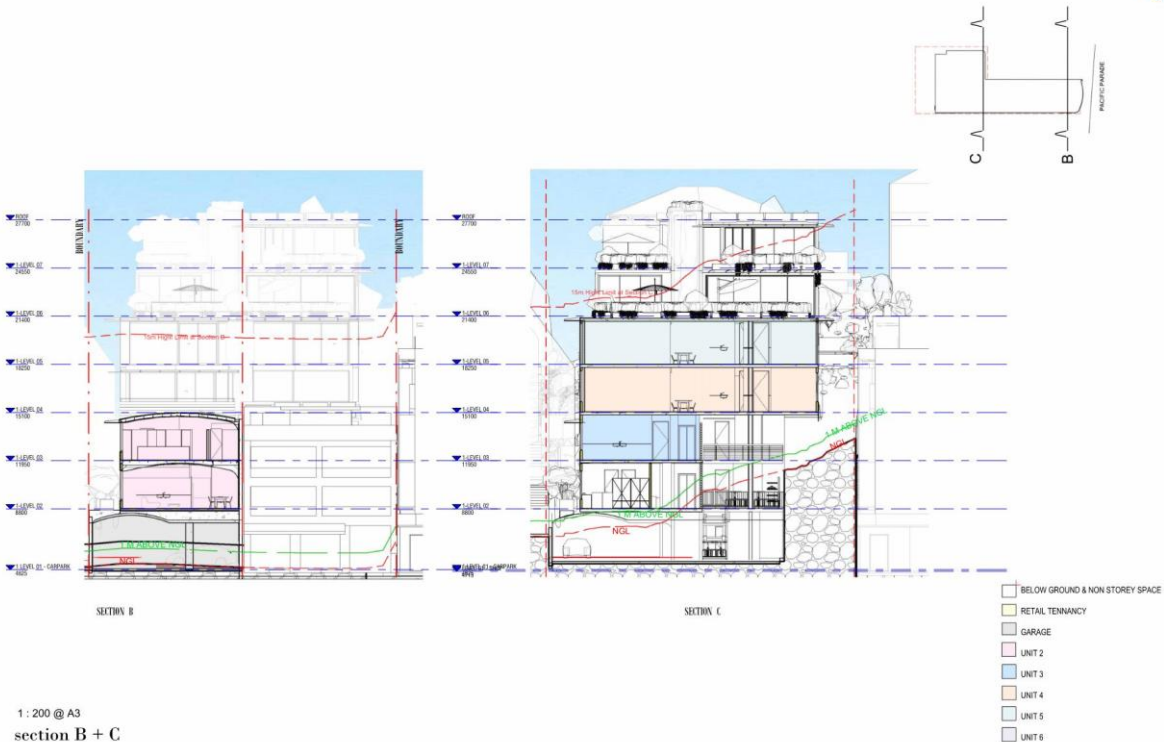
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elevation south
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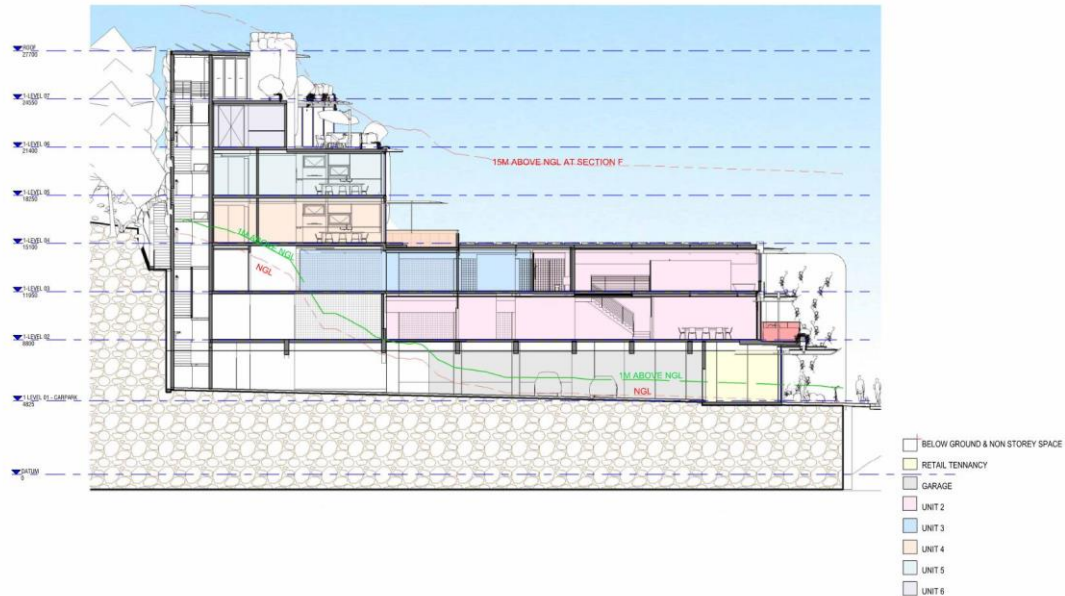
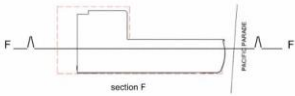
- Materials
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 - 2: concrete - n32 hue, textured
 - 3: concrete - y34 hue
 - 4: glazing
 - 5: glass blocks translucent - fire rated
 - 6: glass balustrade
 - 7: Al planter boxes
 - 8: ceiling / grow wall - expanded Al
 - 9: canopy - trafficable expanded Al



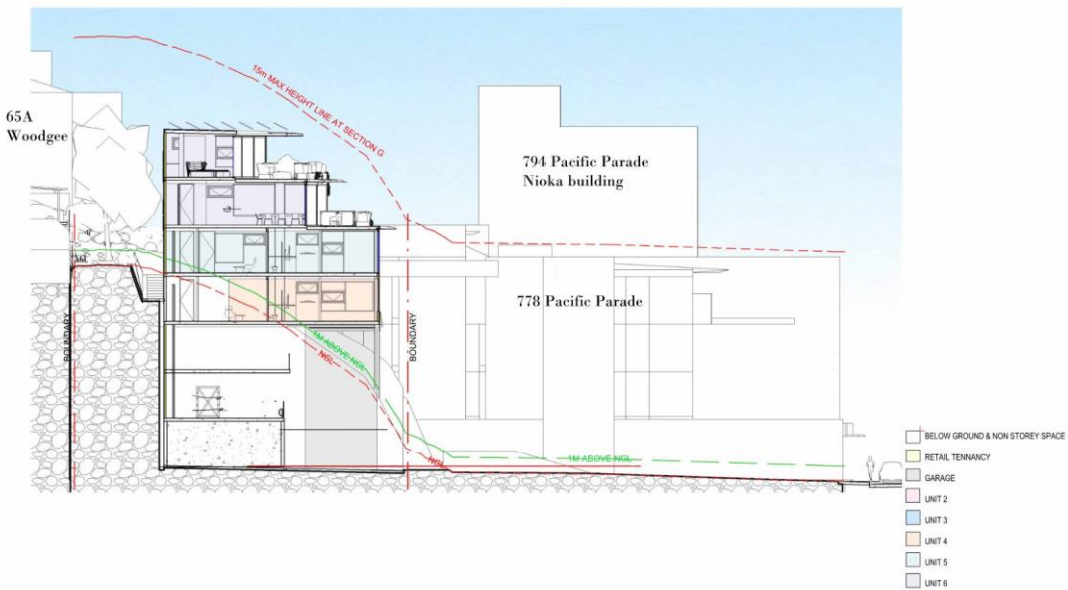
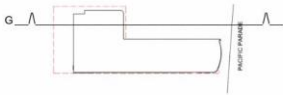
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section A
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- BELOW GROUND & NON STOREY SPACE
- RETAIL TENANCY
- GARAGE
- UNIT 2
- UNIT 3
- UNIT 4
- UNIT 5
- UNIT 6

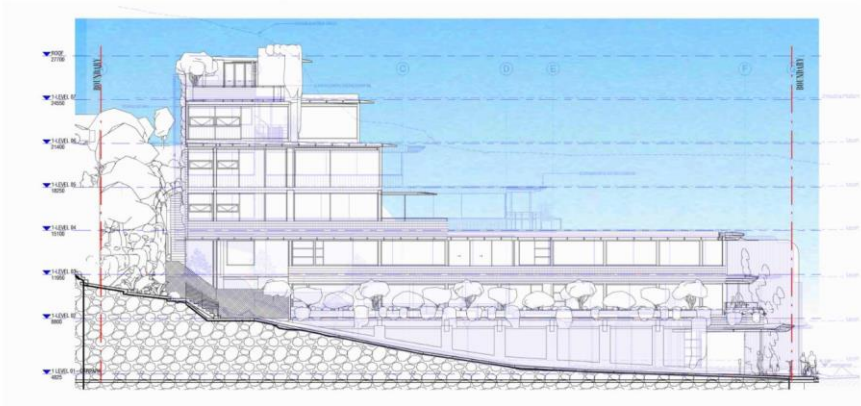




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1 : 200 @ A3
section G
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@ A3
Approved DA overlay

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11.2 Noise Monitoring Charts

