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810 Pacific Highway, Gordon Mixed Use Development

Sterling Projects Solutions Pty Ltd

Transport Impact Assessment

SSD-101444458

For: Sterling Projects Solutions Pty Ltd

Site Address: **810 Pacific Highway, Gordon**



document control;

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1. Executive Summary

The proposed development, located at 810 Pacific Highway, Gordon, involves the demolition of the existing structure and construction of a mixed-use development comprised of shop top housing containing 180 apartments (including 38 affordable apartments), use of ground floor as an Aldi Supermarket and small retail suite, and associated basement parking.

This planning report has been prepared by ptc. to accompany a detailed State Significant Development Application for the development at 810 Pacific Highway, Gordon.

Access to the development is provided from Radford Place, the lesser road in the hierarchy of adjacent roads to the site. The southern driveway is used by service vehicles for access to the loading dock, whereas the northern driveway is used by light vehicles to access the basement carpark. The car and bicycle parking provision is spread over six basement levels, with additional bicycle parking at the ground level public domain for visitors of the site.

The site is located within the Gordon Town Centre within 400 metres catchment area of Gordon Train Station. The public transport network and frequency of services is found to be abundant in proximity to the site, which is expected to result in less reliance on private vehicles.

The proposed development has been assessed against the relevant Australian Standards including the AS2890 suite and found to be compliant with the minimum standards, or capable of being made to meet the minimum requirements of the standards.

The proposed development is found to meet the minimum requirements of the relevant Council DCP and SEPP (Housing) in relation to parking quantum.

In summary, the development is considered to be supportable from a parking and traffic perspective.

2. Project Description

This Transport Impact Assessment has been prepared by ptc. on behalf of Ecove Group Pty Ltd to accompany a State Significant Development Application (SSDA) (SSD-101444458) for a mixed-use development at 810 Pacific Highway, Gordon. The site is described as Lot 12 DP631351 and has a total area of 2,357m² and is located within the Gordon town centre, immediately north of the Gordon Centre and south of the Ku-ring-gai Council Chambers. The proposal delivers approximately 180 new dwellings (including affordable housing apartments), together with a full-line supermarket in a highly accessible location, contributing to both State and Council housing objectives while revitalising Gordon Town Centre.

The proposal is declared State Significant Development (SSD) pursuant to Schedule 1, section 26A of State Environmental Planning Policy (Planning Systems) 2021 (Planning Systems SEPP).

The site location is illustrated in Figure 1 below.



Figure 1: Site location (Source:Nearmap 2024)

2.1. Planning Context

In April 2024, the Department of Planning, Housing and Infrastructure (DPHI) identified the site as being located within a Transport Oriented Development (TOD) precinct. In parallel, Ku-ring-gai Council progressed a preferred planning framework for Gordon Town Centre, including proposed amendments to the Ku-ring-gai Local Environmental Plan 2015 (KLEP 2015). Following a Council-initiated legal process, legislative amendments removed access to TOD uplift for proposals that had not been submitted in June 2025. As part of the resolution of this legal process, Council formally endorsed its preferred planning framework for Gordon Town Centre on 5 June 2025. That framework was subsequently accepted by the Department, with minor amendments, and implemented through an amendment to the KLEP 2015 via the State Environmental Planning Policy Amendment (Ku-ring-gai Station Precincts) 2025, which commenced on 14 November 2025.

The proposed development responds to the amended KLEP 2015 and, in addition, seeks to utilise the floor space ratio and height incentives available under Chapter 2, Part 2, Division 1 of the State Environmental Planning Policy (Housing) 2021.

2.2. Land Use

With reference to the NSW Planning Portal Spatial Viewer, the land zoning for the site is Local Centre (E1) Zone and immediate surrounding areas is categorised as Infrastructure (SP2) Zone (Classified Road and Railway Infrastructure), High Density Residential (R4) Zone, Medium Density Residential (R3) Zone, Low Residential (R2) Zone and General Residential (R1) Zone.

The land use zonings in the vicinity are complex; this determines the existing local traffic generation has the following features:

1. Associated with the local centre and surrounding residential properties;
2. Vehicular traffic (private and public transport) is expected to be the predominant mode share for the transport activities; and
3. High traffic volumes.

The land zoning of the development site is illustrated in Figure 2 below.

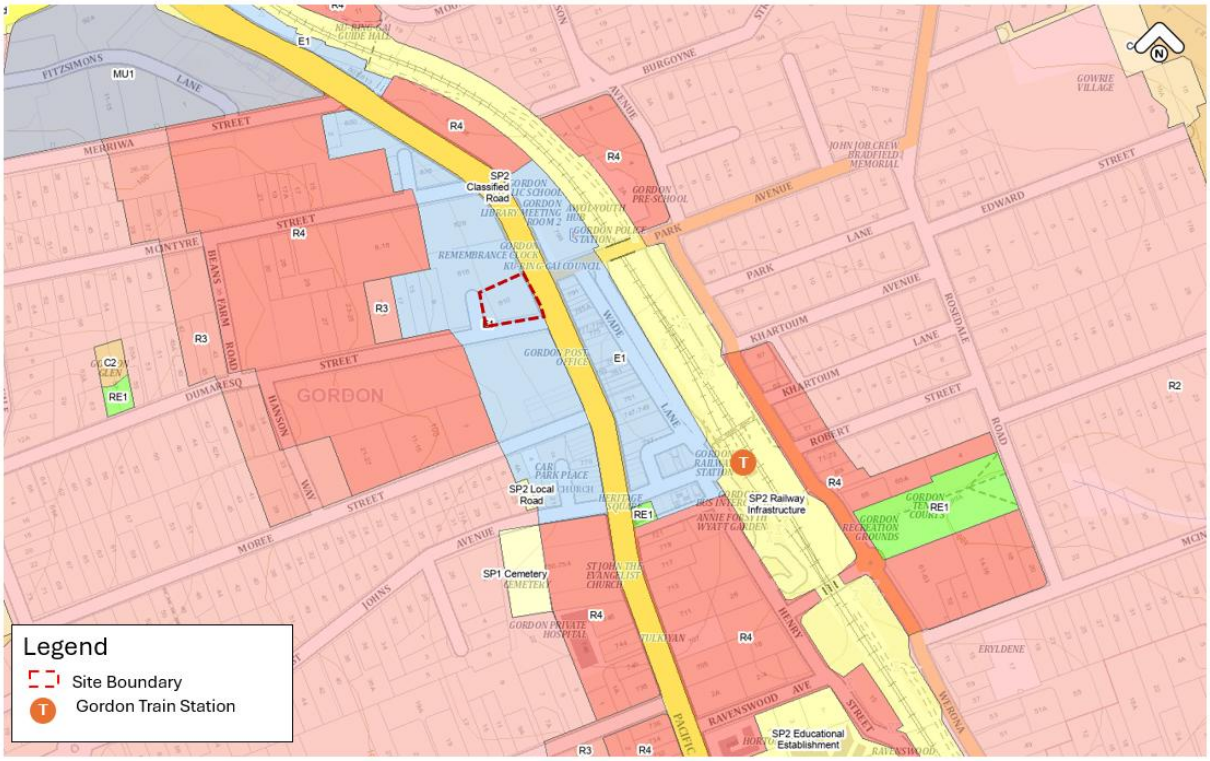


Figure 2: Land use map around the site (Source: NSW Planning Portal Spatial Viewer)

2.3. Planning Secretary's Environmental Assessment Requirements

This report has been prepared in response to the Secretary's Environmental Assessment Requirements (SEARs) issued for the project, which are presented in Table 1.

Table 1: SEARs Requirements

Item	Description	Section Reference
Transport	Provide a Transport Impact Assessment (TIA) in accordance with the processes and methodology recommended in the Guide to Transport Impact Assessment (GITA) published by TfNSW.	Responded to throughout this document
	If the construction of the development would cause interruptions to regular pedestrian and transport routes (including public transport, active transport or general traffic), a preliminary Construction Traffic (or Transport) Management Plan (CTMP) should be prepared as part of the TIA to mitigate any such impacts.	A separate CTMP is to be prepared and approved.

2.4. Purpose of this Report

This report aims to address the Transport Impact Assessment component of Item 9 of the Secretary's Environmental Assessment Requirements (SEARs) issued for the project on 9 December 2025, represented in the following sections:

Section 3 A description of the transport environment;

Section 4 Assessment of the proposed parking provision in the context of the relevant planning control requirements;

Section 5 Determination of the traffic activity associated with the development proposal, and the adequacy of the surrounding road network;

Section 6 Description of the access and car parking arrangements; and

Section 7 Conclusions.

3. Transport Environment

3.1. Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

4. **State Roads** Freeways and Primary Arterials (TfNSW managed)
5. **Regional Roads** Secondary or sub arterials (Council managed, part funded by State)
6. **Local Roads** Collector and local access roads (Council managed)

The subject site is located in Ku-ring-gai Council Local Government Area (LGA) and is serviced by a mix of state and local roads comprising the Town Centre grid, as presented in Figure 3. The direct access to the proposed construction site is provided by Dumaresq Street which is a local road connecting it to the Pacific Highway to east which is a state road.

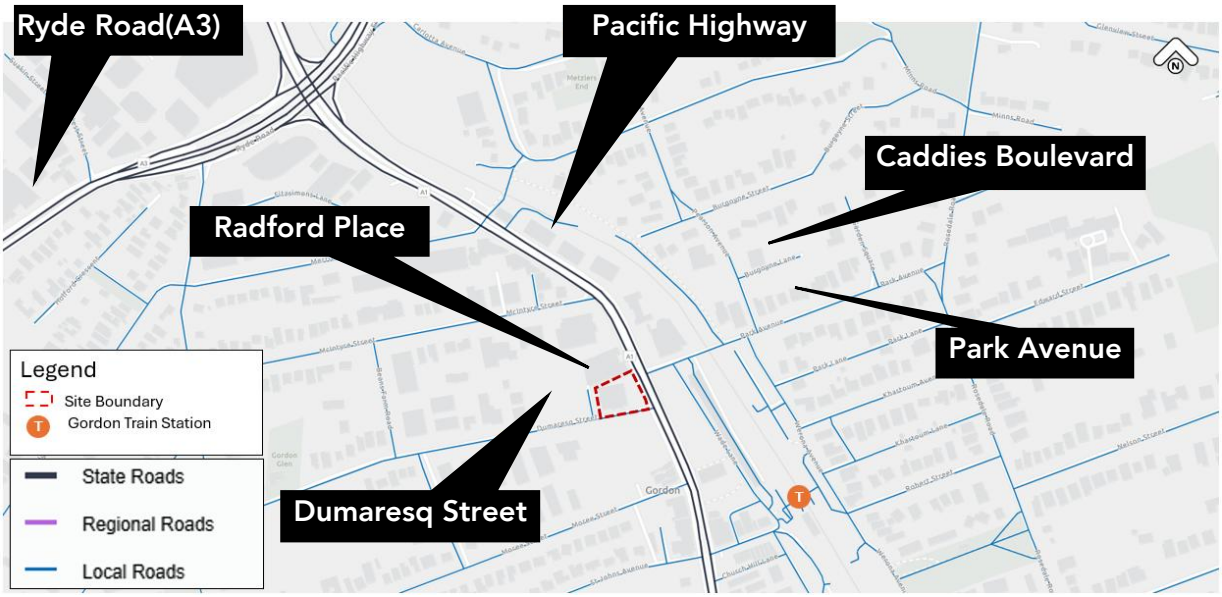


Figure 3: Road Hierarchy (Source: TFNSW State and Regional Roads)

The details of the existing immediate road network servicing the proposed construction site are analysed and summarised overleaf.

Table 2: Road network characteristics – Pacific Highway

Pacific Highway	
Road Classification	State Road
Alignment	North - South
Number of Lanes	3 lanes in each direction with turning lanes at multiple points
Carriageway Type	Divided
Carriageway Width	17 metres (adjacent to site)
Speed Limit	60km/h
School Zone	No
Parking Controls	No parking
Forms Site Frontage	Yes



Figure 4: Pacific Highway - southbound (Source: Google Map)

Table 3: Road network characteristics – Dumaresq Street

Dumaresq Street	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Divided
Carriageway Width	12 metres (adjacent to site)
Speed Limit	50km/h
School Zone	No
Parking Controls	Parking on both sides
Forms Site Frontage	Yes



Figure 5: Dumaresq Street- northbound (Source: Google Map)

Table 4: Road network characteristics – Park Avenue

Park Avenue	
Road Classification	Local Road
Alignment	East - West
Number of Lanes	1 lane in each direction
Carriageway Type	Divided
Carriageway Width	8.5 metres
Speed Limit	50km/h
School Zone	No
Parking Controls	Parking on both sides
Forms Site Frontage	No



Figure 6: Park Avenue - eastbound (Source: Google Map)

Table 5: Road network characteristics – Radford Place

Radford Place	
Road Classification	Local Road
Alignment	North – south (No through road)
Number of Lanes	1 Lane in each direction
Carriageway Type	Not Divided
Carriageway Width	8.5 metres
Speed Limit	10km/h
School Zone	No
Parking Controls	Parking on western side of the road
Forms Site Frontage	Yes



Figure 7: Radford Place - northbound (Source: Google Map)

3.2. Public Transport

The NSW Planning Guidelines for Walking and Cycling (2004) suggests that an 800m (10 minutes' walk) catchment is an acceptable walkable distance for accessing public transport. Furthermore, the document also suggests a distance of 1500m is a suitable catchment for cycling to public transport facilities and local amenities.

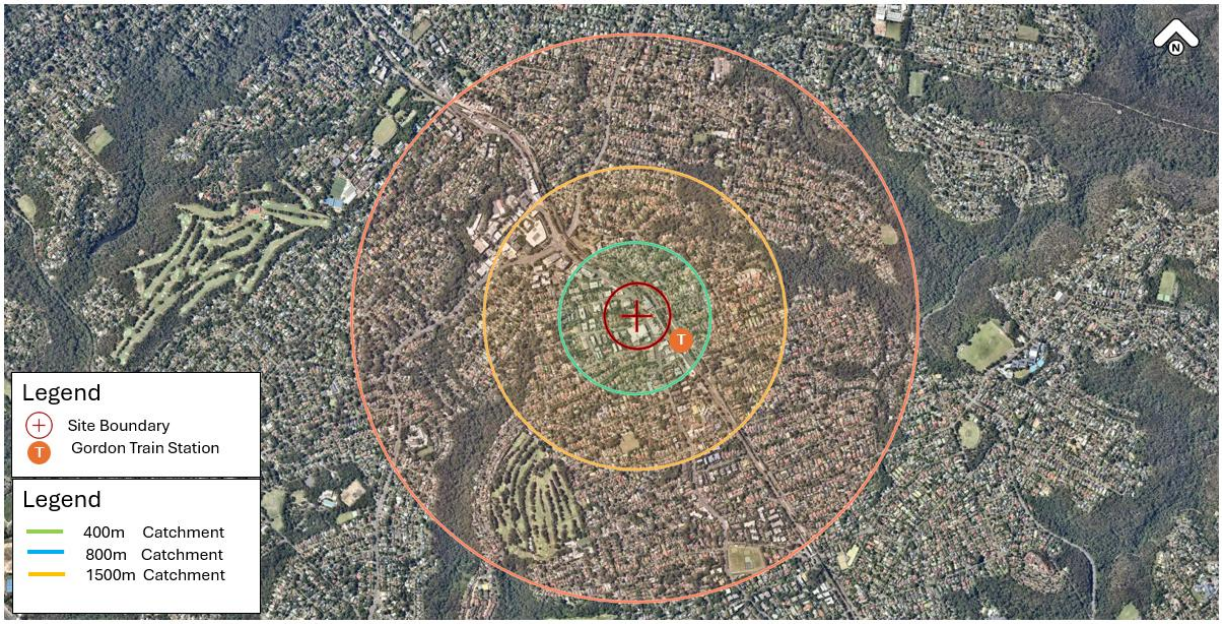


Figure 8: Walking catchment in vicinity of the site (Source: Nearmap)

3.2.1. Train Services

Gordon Train Station is located to the south-east of the site within 400m of walking distance. This station is serviced by T1 (North Shore and western Line) and T9 (Northern Line). The services provided by the station are summarised in Table 6.

Table 6: Train Service Summary: Gordon Station

Train Line	Route	Approximate Frequency
T1 (North Shore Line)	Berowra to City via Gordon	Every 3-6 minutes during peak hours Every 5-10 minutes during off-peak
T9 (Northern Line)	Hornsby to North Shore via City	Every 2 -15 minutes

More information regarding the most up-to-date times tables can be found at www.*transportnsw.info/documents/timetable* .

Figure 9 shows the respective locations of the Gordon Train Station in the Sydney Trains and Metro network.

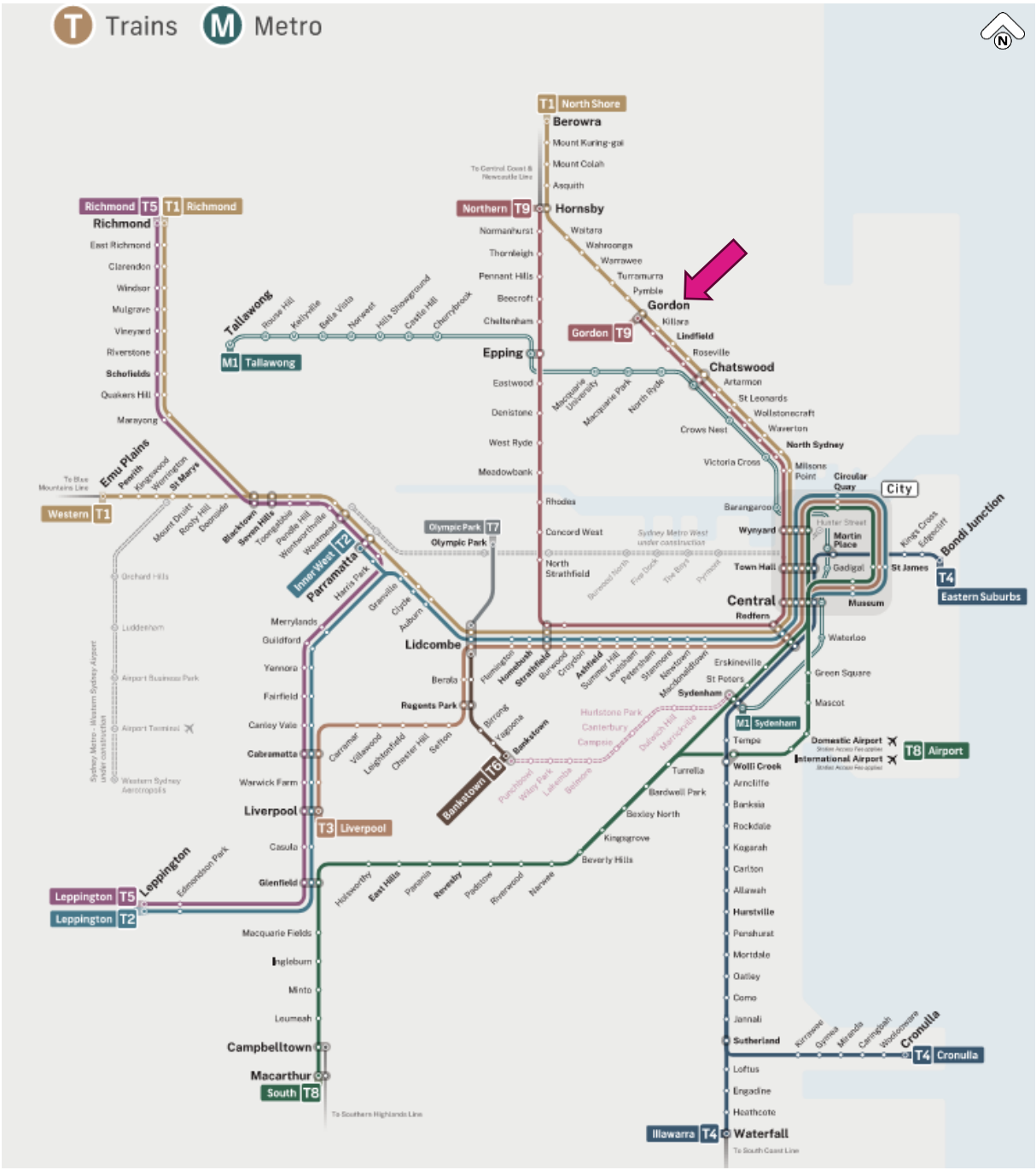


Figure 9: Sydney Trains and Metro Network (Source: TfNSW)

3.2.2. Bus Services

The site is well serviced by a reasonable number of bus services within walking distance along Pacific Highway and adjacent to Gordon Train Station. The available nearest bus stops and routes are illustrated in Figure 10 and summarised in Table 7 below.

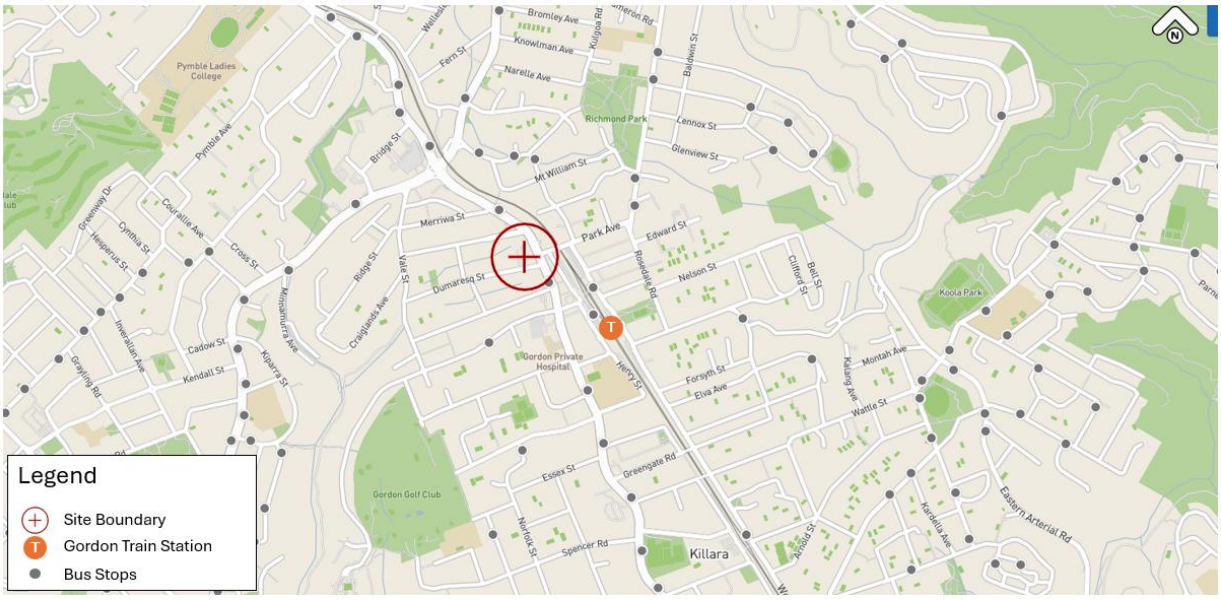


Figure 10: Bus Stops in the vicinity of the site (Source: TfNSW)

Table 7: Bus Service Summary

Routes	Direction	Timetable
195	Gordon to St Ives Chase (Loop Service)	Monday – Friday: Every 20-30 minutes Saturday: Every 30 - 60 minutes Sunday and Public Holidays: Every 60 minutes
196	Mona Vale to Gordon	Monday – Friday: Every 20 - 30 minutes Saturday: Every 60 minutes Sunday and Public Holidays: Every 60 minutes
197	Mona Vale to Macquarie University via Gordon	Monday – Friday: Every 15 - 30 minutes Saturday: Every 60 minutes Sunday and Public Holidays: Every 60 minutes
560	Gordon to West Pymble (Loop Service)	Monday – Friday: Every 20 - 30 minutes Saturday: Every 60 minutes Sunday and Public Holidays: Every 60 minutes
562	Gordon to Macquarie University	Monday – Friday: One service at 10:30 from Macquarie University to Gordon One service at 13:00 from Macquarie University to Gordon
582	St Ives Shopping Centre to Gordon	Monday – Friday: Every 10-30 minutes Saturday: Every 60 minutes Sunday and Public Holidays: Every 60 minutes

The timetables enlisted in the table will come to an effect from 3rd of March 2025. More information regarding the most up-to-date times tables can be found at www.*transportnsw.info/documents/timetable* .

Figure 11 below shows the bus routes that provides services in the vicinity of the site.

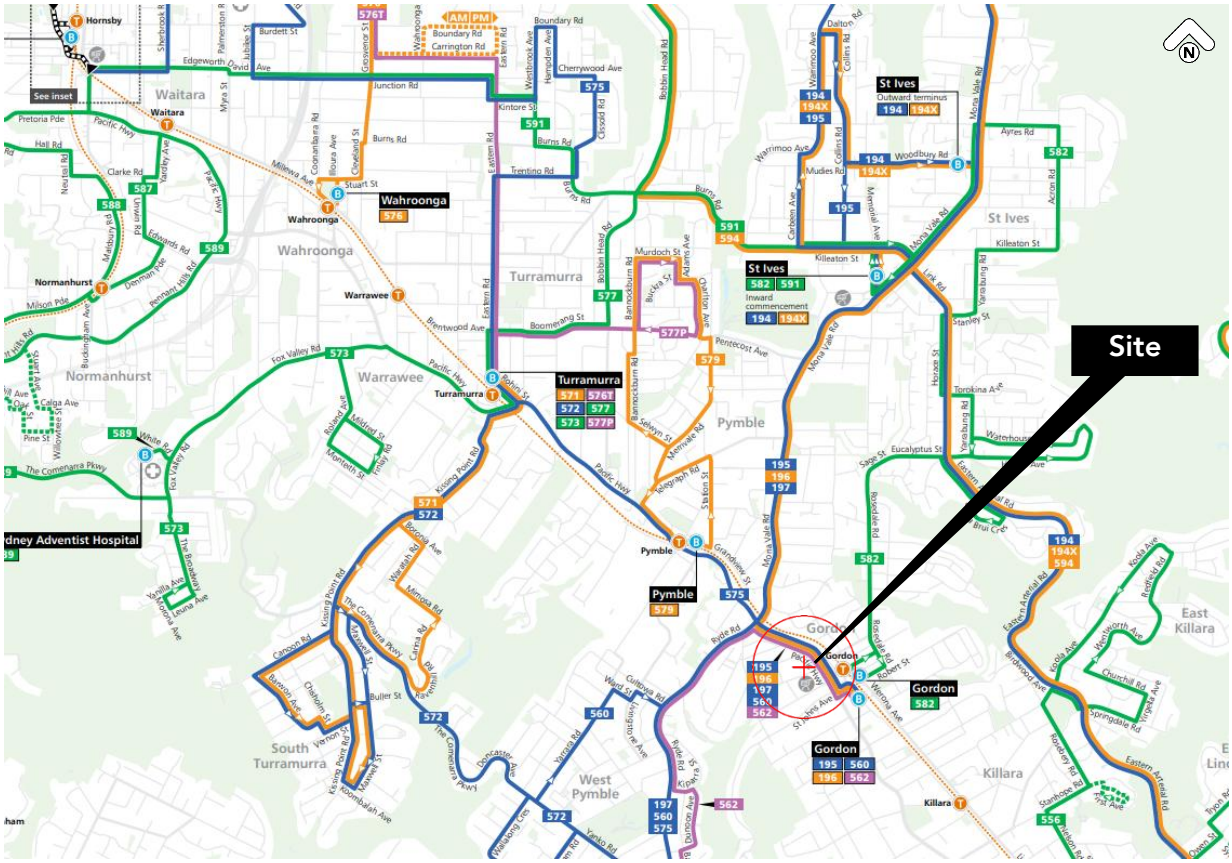


Figure 11: Bus Services in the vicinity of the site (Source: TfNSW)

3.3. Active Transport

The cycling network in the streets surrounding the site is presented in Figure 12. Typically, a catchment area of 1500 metres is deemed acceptable for cycling as per the *NSW planning Guidelines for Walking and Cycling (2004)*. Cycling to the site is deemed an acceptable mode of transport for those who live locally and can make use of the shared paths surrounding the site.

The vicinity of the site is reasonably less suitable for the cycling due to the existing grades of the road network and less cycling facilities. As such, cycling would not be a feasible method of transport for the construction workers and patrons.

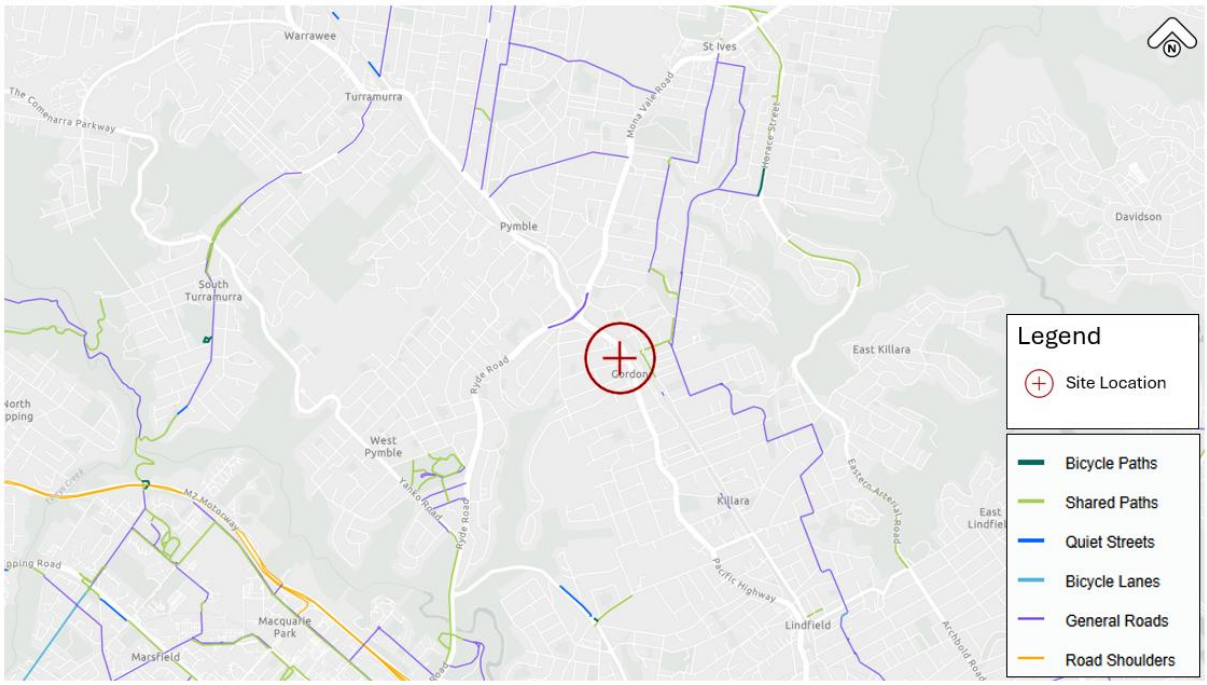


Figure 12: Existing Bicycle Network (Source: TfNSW)

In conclusion, there are substantial modes of transport other than private vehicle which can be utilised by construction workers in an effort to reduce the overall impact of the development construction traffic on the road network.

4. Parking Assessment

4.1. Planning Policy

The site is situated within the Local Government Area (LGA) of Ku-ring-gai Council, and as such is subject to the following planning documents for the required parking calculation.

- Ku-ring-gai Development Control Plan (DCP)
- Ku-ring-gai Local Environment Plan (LEP)
- State Environmental Planning Policy (Housing) 2021

4.2. Car Parking Requirements

4.2.1. Council Parking Requirements

The following policies and rates from the Ku-ring-gai Development Control Plan Part 8 Section 2 apply to the proposed development:

11. *The following car parking ranges apply to office, business premises and shops, where the development is within 400m walking distance of a train station entry and within a commercial centre:*

Premises	*Parking Space requirement*
Office and business premises	*1 space per 33m2 GFA to* *1 space per 45m2 GFA* *Suggested split:* *90% employee* *10% visitors*
Shops, including restaurants and cafes	*1 space per 26m2 GFA to* *1 space per 33m2 GFA*

16. *The following car parking requirements only apply to the residential component within 400m walking distance of a train station entry within mixed use developments. Car parking exceeding the requirements of the parking controls in this DCP will not be excluded from the Gross Floor Area as defined in the KLEP:*

Apartment Size	*Minimum number of parking spaces per dwelling*	*Maximum number of parking spaces per dwelling*
Studio	*0 spaces*	*0.5 spaces*
One bedroom	*0.6 spaces*	*1 space*
Two bedrooms	*0.9 spaces*	*1.25 spaces*
Three or more bedrooms	*1 space*	*2 spaces*

17. *Residential visitor parking is to be provided within the site at the rate of one space per 6 apartments or part thereof.*

18. *At least one visitor parking space is to comply with the dimensional and locational requirements of AS2890.6.*

19. *One visitor parking bay is to be provided with a tap, to make provision for on-site car washing.*
20. *At least one car share space is to be provided in the basement per 90 dwellings, or part thereof. Note: any proposed reduction in car parking on the basis of providing car share space/s is to be justified by the proponent through supporting studies.*

4.2.2. State Environmental Planning Policy (Housing) 2021 Parking Requirements

Section 19 of State Environmental Planning Policy (Housing) 2021 (SEPP) stipulates the parking requirement as below.

e) the following number of parking spaces for dwellings used for affordable housing—
   i. for each dwelling containing 1 bedroom—at least 0.4 parking spaces,
   ii. for each dwelling containing 2 bedrooms—at least 0.5 parking spaces,
   iii. for each dwelling containing at least 3 bedrooms— at least 1 parking space,

f) the following number of parking spaces for dwellings not used for affordable housing—
   i. for each dwelling containing 1 bedroom—at least 0.5 parking spaces,
   ii. for each dwelling containing 2 bedrooms—at least 1 parking space,
   iii. for each dwelling containing at least 3 bedrooms—at least 1.5 parking spaces,

Therefore, the parking rates from SEPP (Housing) 2021 has been used over Ku-ring-gai Council DCP requirement. The summary of the parking provision has been presented in Table 8:.

Table 8: Summary of the Parking Requirement

Land Use	Approved DA0610/17 Apartment Mix	Proposed SSDA-101444458 Apartment Mix	Additional Apartment			SEPP Parking Rates		SEPP Parking Requirement		Total Required Parking
			Market Apartment	Affordable Housing Apartment	Total	Market Housing[1]	Affordable Housing	Market Housing	Affordable Housing	
Residential										
1 Bedroom	8	44	26	10	36	1	0.4	26	4	30
2 Bedroom	39	76	12	25	37	1	0.5	12	12.5	24.5
3 Bedroom	8	57	44	5	49	1.5	1	66	5	71
4 Bedroom	0	3	3	0	3	2	1	6	0	6
Total	**55**	**180**	**85**	**40**	**125**			**110**	**21.5**	**131.5**
Existing Approved Parking (DA0610/17)										137
Total Parking Spaces										**268.5**
Proposed Parking Spaces										**269**

[1] Provision has been made for a minimum of 1 car parking space per market apartment for 1- and 2-bedroom apartments, 1.5 spaces per 3-bedroom apartment and 2 spaces per 4-bedroom apartment

The development proposing 1,836.7m^2 commercial/retail GFA. The required parking provision, on applying the Ku-ring-gai parking rates for shops, including restaurant and café is summarized in xx

Table 9: Summary of Supermarket Parking Provision

Land Use	GFA	Required Staff Parking		Required Bike Parking		Approved Parking (DA610/17)
		Minimum	Maximum	Minimum	Maximum	
Commercial/Retail	1,836.7m^2	1 space per 33m^2	1 space per 26m^2	56	71	68

The car parking requirements for the proposed development have been assessed based on the relevant controls for each land use within the proposal.

The development has been approved with 137 parking spaces under DA0610/17 out of which 68 were approved for commercial/retail component of the development and 9 spaces were approved for residential visitors. The development proposes 132 parking spaces for the additional apartments. Furthermore, there are adequate alternative car share spaces within close walking distance as shown in Figure 13. It is also noted that the site is within close proximity to the train station, which provides an alternate mode of travel to vehicle.

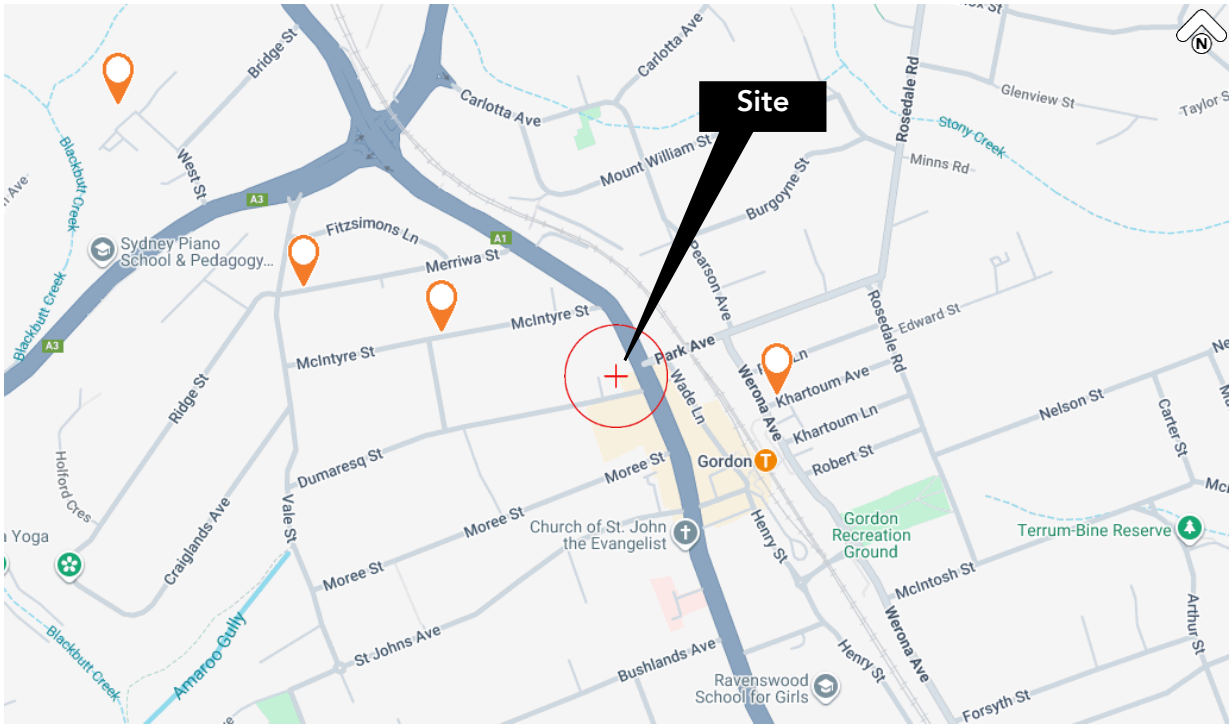


Figure 13: GoGet Car Share Surrounding the Site

In summary, the development is required to provide total car parking spaces of 269 including 137 spaces approved under DA0610/17. The development seeks to provide 269 parking spaces, which is in line with the SEPP (Housing) 2021 parking requirements.

4.2.3. Accessible Car Parking

Adaptable units are to be provided at a rate of 1 per 10. Given a total unit provision of 180, 18 are thus required to be adaptable. Aligned with this, there are 18 accessible parking spaces provided in

the basement car park for residential use. A further 2 accessible car spaces are provided within the basement associated with the non-residential uses.

4.3. Bicycle Parking Requirements

The following policies and rates from the Ku-ring-gai Development Control Plan Part 8 Section 3 apply to the proposed development for the bicycle parking provision:

1. *Where basement parking is provided, onsite secure bicycle parking spaces and storage is to be provided at the following rates for the retail and commercial component of the development:*

Staff	*Visitors*
1 bicycle parking space per 600sqm of gross floor area for staff – in the form of an individual locker or secure room as per AS2890.3.	*1 bicycle parking space per 2500sqm of gross floor area for visitors – in the form of a bicycle parking device or rack as per AS2890.3.*

2. *Where basement parking is provided, onsite secure bicycle parking spaces and storage is to be provided at the following rates for the residential component of the development:*

Residential	*Visitors*
1 bicycle parking space per dwelling within the residential car park area – in the form of an individual locker or secure room as per AS2890.3.	*1 bicycle parking space per 10 units within the visitor car park area – in the form of a bicycle parking device or rack as per AS2890.3.*

3. *Retail or commercial development is to provide employees with 1 shower cubicle with ancillary change rooms per 10 bicycle spaces, including a minimum of 1 shower each for both females and males. Signs to showers are to be provided at bicycle parking locations.*

Applying the above parking rated to the proposed development, the required bicycle parking for the proposed development is presented in Table 10.Table 10: Bicycle Parking Requirements

Table 11: Summary of Bike Parking Provision

Land Use	Number Units/GFA	Required Staff Parking	Required Bike Parking	Proposed Parking[2]
Residential				
Residential	180	1 space per unit	180	180
Residential Visitor	180	1 space per 10 car spaces	18	20
Non-Residential				
Retail	1,836.7m^2	1 space per 600m^2	3	3
Retail Visitor	1,836.7	1 space per 2,500m^2	1	1
Total			**202**	**204**

The proposed development is required to provide 180 class 1 residential bicycle spaces and 20 class 2 residential visitor bicycle spaces for the residential component of the development. For the non-residential component of the development, the development is required to provide 3 class 2 bike parking spaces and 1 class 3 retail visitor bicycle parking spaces.

[2] Bicycle parking number is rounded up to the nearest whole number.

The development proposes adequate bicycle parking spaces for the residential and non-residential component of the development in line with the requirement of Ku-ring-gai development control plan.

4.3.1. End of Trip Facility

Table 12: End of Trip Pacilities Requirements

Land Use	Number Spaces	Required EoT Facilities	Required EoT	Proposed EoT
Retail	3	1 shower cubicle with ancillary change rooms per 10 bicycle spaces, including a minimum of 1 shower each for both females and males. Signs to showers are to be provided at bicycle parking locations.	2 (1 male and 1 female)	2 (1 male and 1 female)

The proposed development is required to provide 2 shower cubicles (1 for male and 1 for female) with ancillary change rooms for retail staff.

The development proposes 1 male and 1 female shower cubical with change room on Basement 1 and Basement 2.

4.4. Motorcycle Parking Requirements

The Ku-ring-gai Development Control Plan does not stipulate any requirements of the motorcycle parking. Therefore, the development does not propose to provide any motorcycle parking space.

5. Traffic Impact Assessment

5.1. Key Intersections

The following key intersections surrounding the development site have been considered for traffic intersection surveys:

- Pacific Highway / Park Avenue
- Pacific Highway / Dumaresq Street
- Dumaresq Street / Radford Avenue

The intersections are illustrated in Figure 14 below.

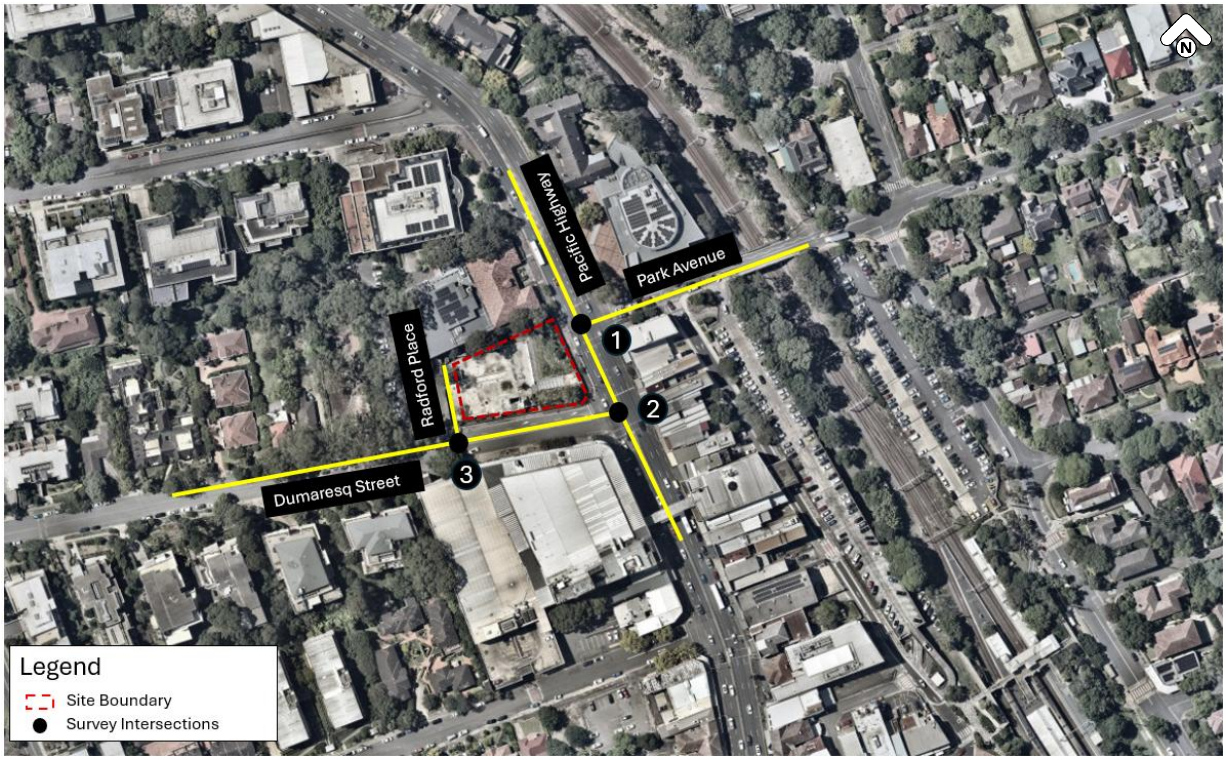


Figure 14: Surveyed Intersections

5.2. Existing Traffic Volumes

Traffic count surveys were undertaken on:

- 20/02/2025 (Thursday), outside of school holiday period between 6:30am – 9:30am and 3:30pm – 6:00pm, and
- 22/02/2025 (Saturday) between 10:00am – 2:00pm

at the intersections mentioned in Section 5.1. Survey data indicates the following peak periods:

20/02/2025, Thursday

- Network AM Peak Hour: 7:30am – 8:30am

- Network PM Peak Hour: 5:00pm – 6:00pm

22/02/2025, Saturday

- Network Peak Hour: 12:15pm – 1:15pm

Existing traffic volumes for above mentioned key intersections during the weekday morning, weekday afternoon and Saturday peak hours are presented in Figure 15 to Figure 17.

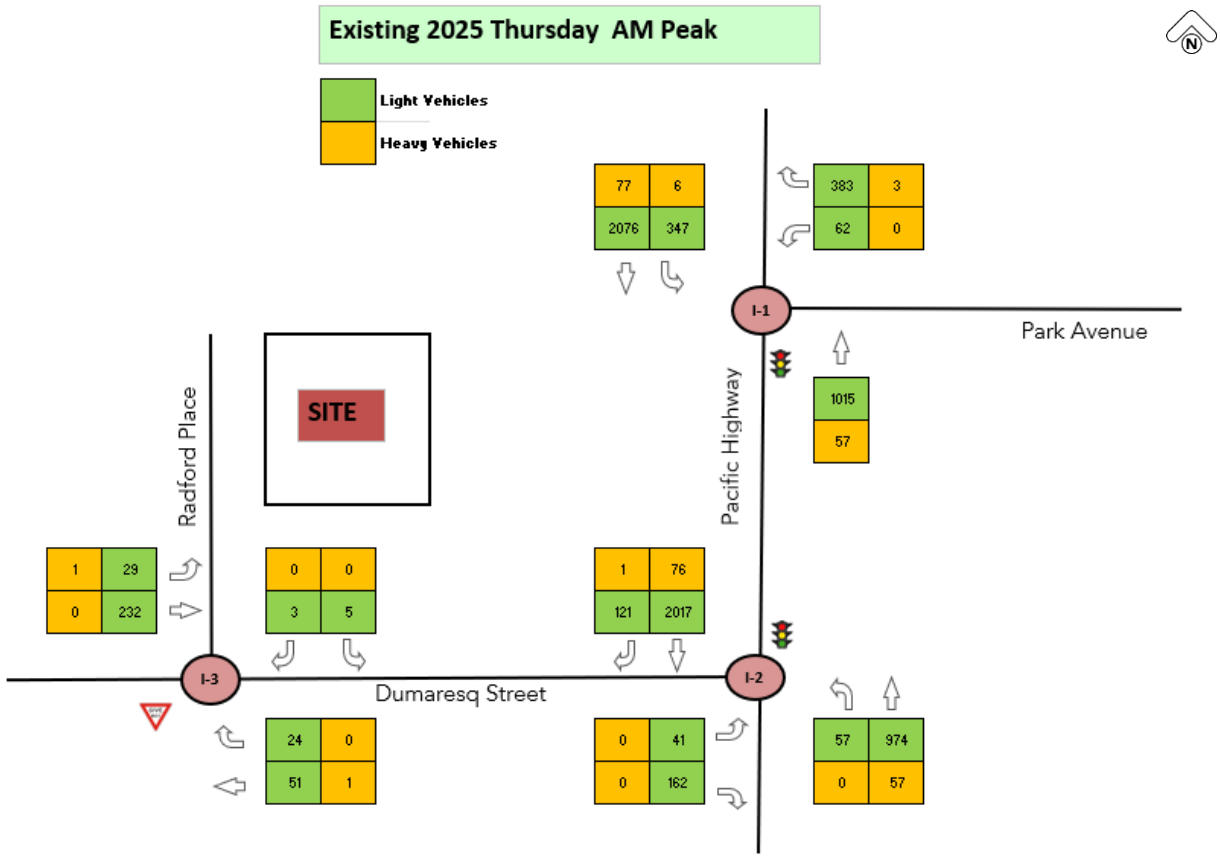


Figure 15: Existing Thursday Morning Network Peak Hour Traffic Volume

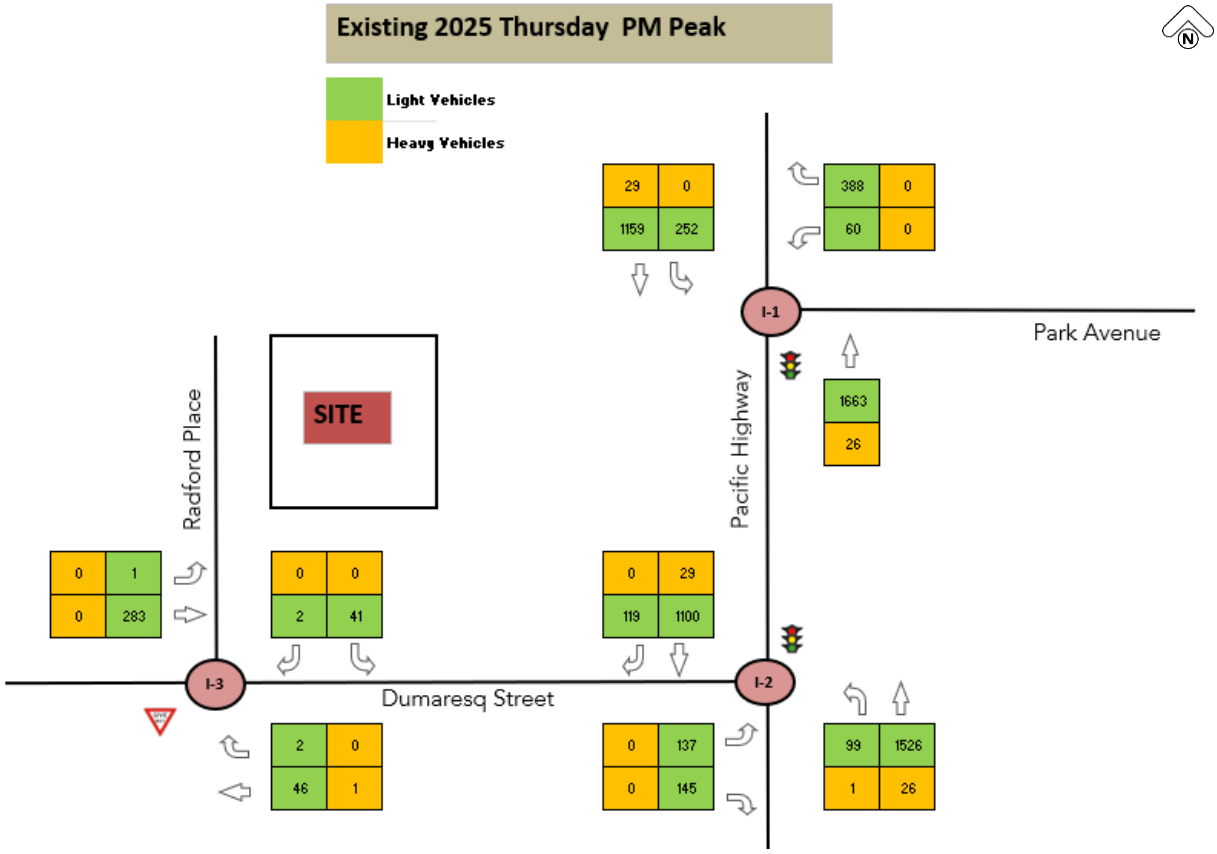


Figure 16: Existing Thursday Evening Network Peak Hour Traffic Volume

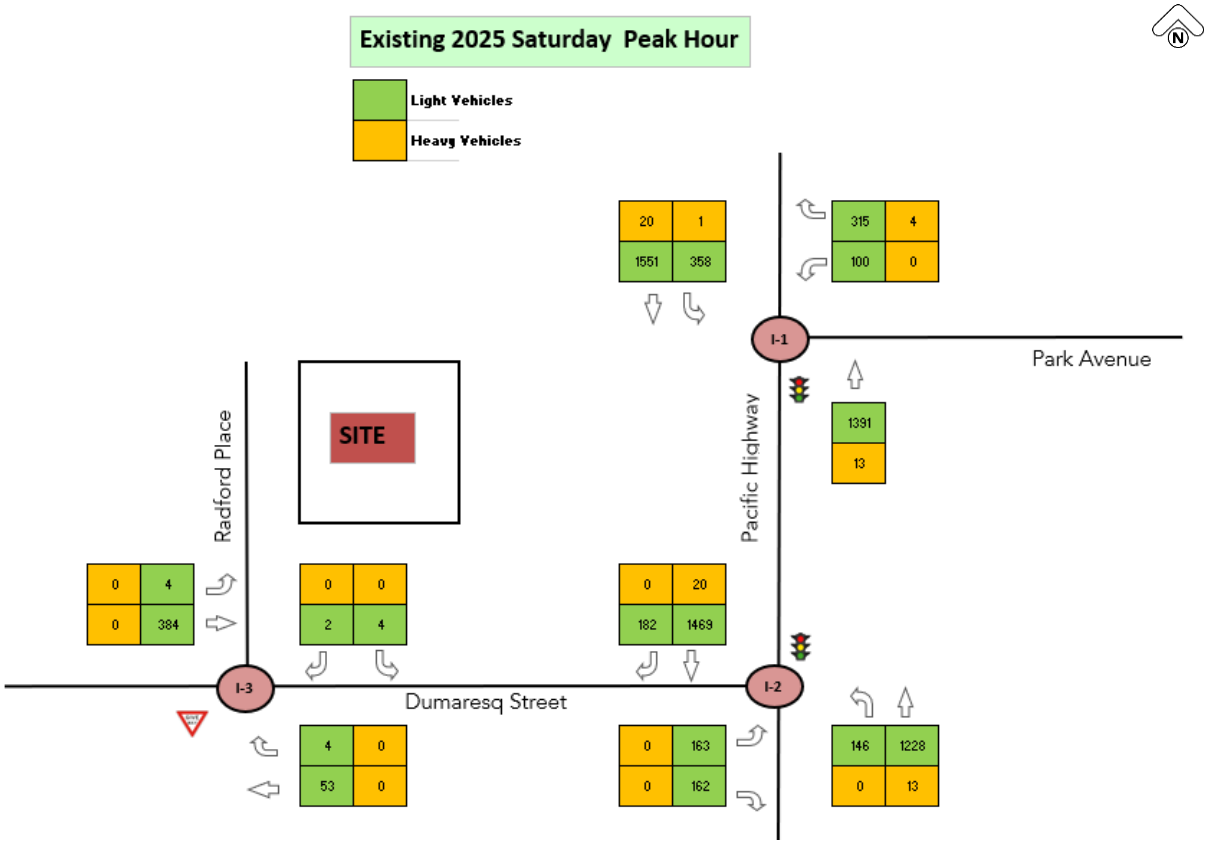


Figure 17: Existing Saturday Network Peak Hour Traffic Volume

5.3. Trip Generation

The traffic generation rates for the development are derived from the Guide to Transport Impact Assessment which are relevant to the proposed development in relation to the peak hour trip generation.

The trip generation for the mixed used development outlined in Guide to Transport Impact Assessment are as follows.

High Density Residential dwelling: High Public Transport Accessibility

Vehicle Trip Rates per Dwelling

- *0.19 trips per dwelling in AM*
- *0.15 trips per dwelling in PM*

Retail: Thursday

Vehicle Trip Rates per 100m² GFA

- *1.78 trips per 100m² AM*
- *3.71 trips per 100m² PM*

Retail: Saturday

Vehicle Trip Rates per 100m² GFA

- *4.61 trips per 100m² Peak Hour*

Commercial

Vehicle Trip Rates per 100m² GFA

- *1.69 trips per 100m² AM*
- *1.2 trips per 100m² PM*

5.3.1. Existing Traffic Generation

The existing building has been demolished, and the site was vacant at the time of the traffic surveys. Therefore, there is no existing vehicle trip generation.

5.3.2. Development Traffic Generation

Applying the trip generation rate described in section 5.3, the trip generation for the proposed development is illustrated in Table 13 and Table 14 for weekday and weekend respectively.

Table 13: Weekday Development Trip Generation

Land Use	No of Units / GFA	Peak Hour	Trip Generation Rate (per dwelling / per 100m² GFA)	Generated Trips[3]
Residential	180	AM	0.19 trips per dwelling	34
		PM	0.15 trips per dwelling	27
Retail	1,756m²	AM	1.78 trips per 100m² GFA	31
		PM	3.71 trips per 100m² GFA	65
Commercial	98 m²	AM	1.69 trips per 100m² GFA	2
		PM	1.2 trips per 100m² GFA	1
Total		**AM**		**67**
		PM		**93**

Table 14: Saturday Peak Hour Development Trip Generation

Land Use	No of Units / GFA	Trip Generation Rate (per dwelling / per 100m² GFA)	Generated Trips
Residential	180	0.19 trips per dwelling [4]	13 [5]
Retail	1,756m²	4.61 trips per 100m² GFA Peak Hour	81
Total			**94**

[3] Trip generation is rounded to nearest whole number.
[4] In lieu of a weekend vehicle trip generation rate for high density residential with high public transport accessibility, the higher weekday vehicle trip generation rate has been used.
[5] The average Sydney weekend car mode share for high density residential with high public transport accessibility has been applied to the total weekend trip generation (34 trips * 37% car mode share = 13 Saturday peak hour trips for residents)

5.4. Development Traffic Distribution

The development traffic is distributed to the surrounding road network on the basis of Journey to Work data adopted in the traffic assessment prepared for Council's Gordon Cultural Hub prepared by TMA and is represented in Table 15.

Table 15: Development Traffic Assignment

To/From	Retail %	Commercial & Residential %
East on Dumaresq Street	7%	0%
North on Pacific Highway	32%	60%
South on Pacific Highway	49%	40%
East on Park Avenue	12%	0%

Applying the above development traffic assignment percentage on the key intersections the development trip distribution is illustrated overleaf.

5.4.1. Weekday Morning Peak Hour Trip Distribution

The weekday morning peak hour development trip distribution is illustrated in Table 16 and Figure 18.

Table 16: Weekday Morning Peak Hour Trip Distribution

Land Use	Morning Peak	Outbound %	Inbound %	Outbound Trips	Inbound Trips
Residential	34	80%	20%	27	7
Retail	31	50%	50%	16	16
Commercial	2	20%	80%	0	2
Total	**67**			**43**	**25**

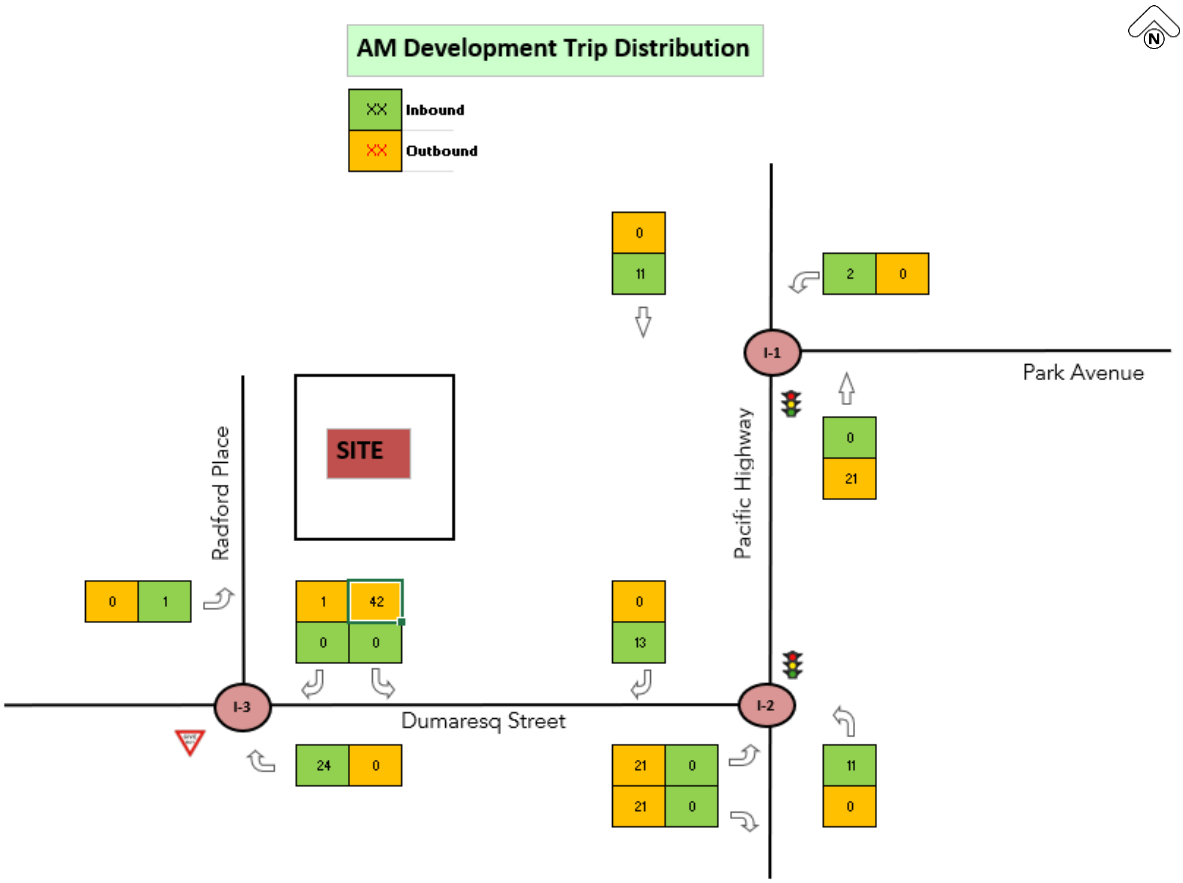


Figure 18: Weekday Morning Peak Hour Trip Distribution

5.4.2. Weekday Evening Peak Hour Trip Distribution

The weekday evening peak hour development trip distribution is illustrated in Table 17 and Figure 19.

Table 17: Weekday Evening Peak Hour Trip Distribution

Land Use	Evening Peak	Outbound %	Inbound %	Outbound Trips	Inbound Trips
Residential	27	20%	80%	5	22
Retail	65	50%	50%	32.5	32.5
Commercial	1	80%	20%	1	0
Total	**93**			**38.5**	**54.5**

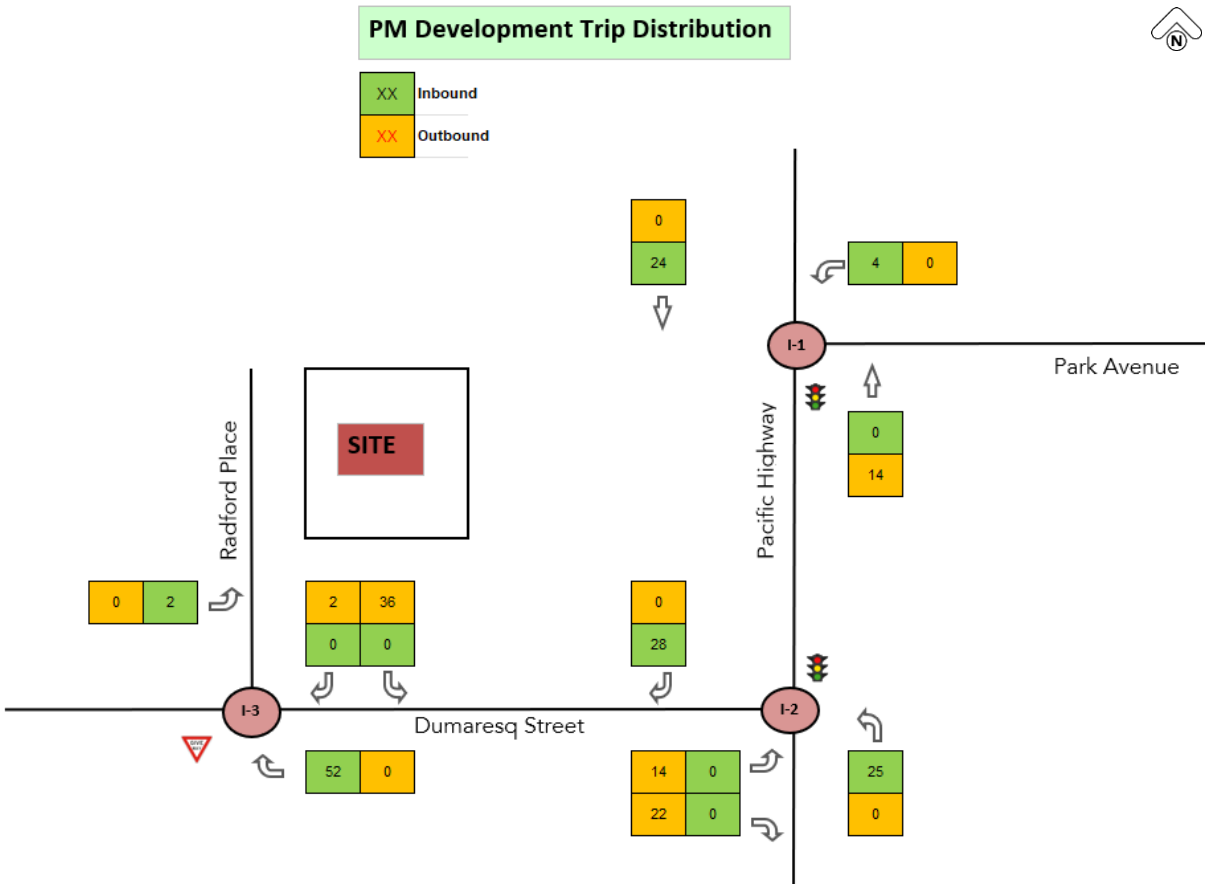


Figure 19: Weekday Evening Peak Hour Trip Distribution

5.4.3. Saturday Peak Hour Trip Distribution

The Saturday peak hour development trip distribution is illustrated in Table 18 and Figure 20.

Table 18: Saturday Peak Hour Trip Distribution

Land Use	Peak Hour	Outbound %	Inbound %	Outbound Trips	Inbound Trips
Residential	13	50%	50%	7	7
Retail	81	50%	50%	41	41
Total	**94**			**48**	**48**

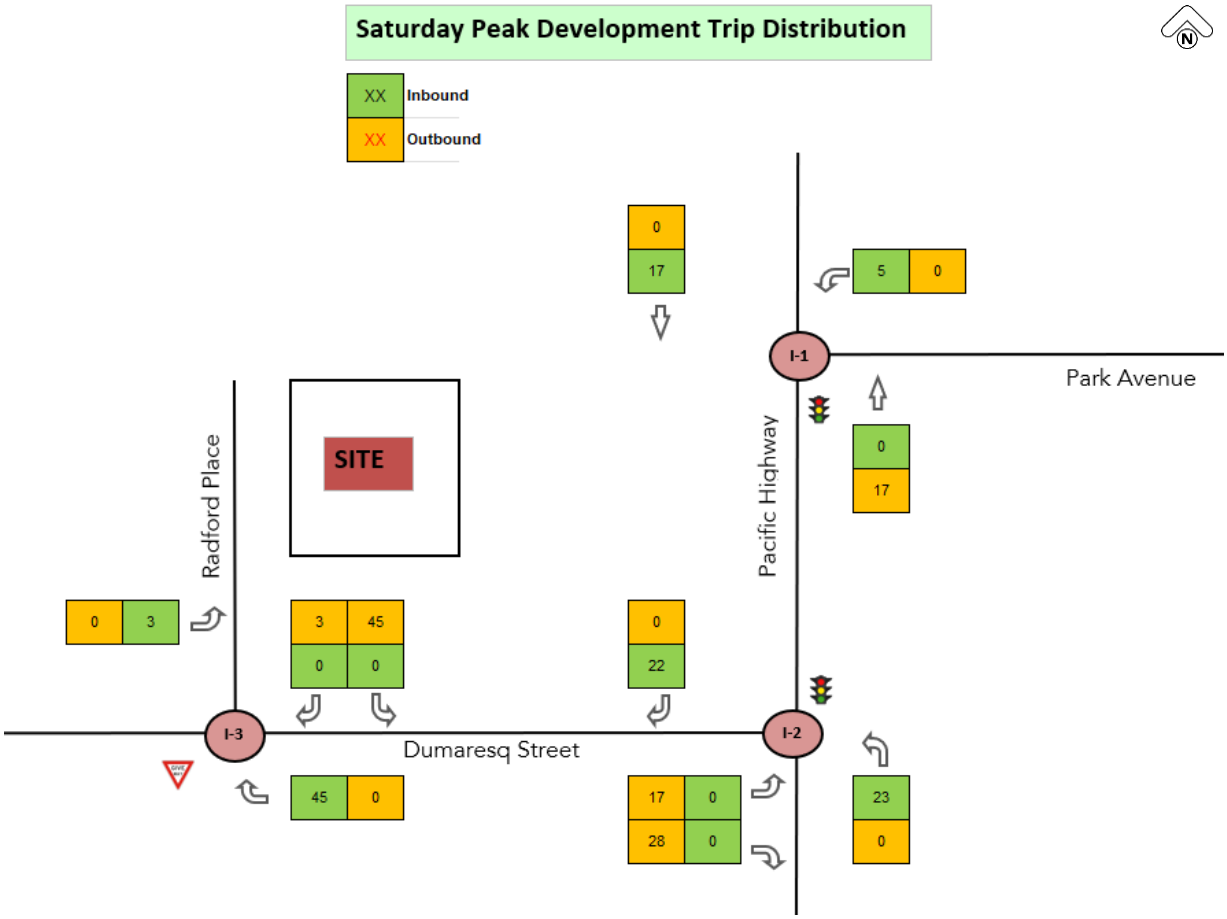


Figure 20: Saturday Peak Hour Trip Distribution

5.5. Modelling Scenarios

The following scenarios have been assessed in this report:

Scenario 1A: Existing AM Peak – The existing road network with the existing AM traffic volumes as observed in the traffic survey.

Scenario 1B: Existing PM Peak – The existing road network with the existing PM traffic volumes as observed in the traffic survey.

Scenario 1C: Existing Saturday Peak The existing road network with the existing Saturday traffic volumes as observed in the traffic survey.

Scenario 2A: Existing + Development AM Peak – The existing road network with the existing AM traffic volumes as observed in the traffic survey and extended 40m southbound right turn lane on Pacific Highway, with the addition of development AM traffic.

Scenario 2B: Existing + Development PM Peak – The existing road network with the existing PM traffic volumes as observed in the traffic survey and extended 40m southbound right turn lane on Pacific Highway, with the addition of development PM traffic.

Scenario 2C: Existing + Development Sat Peak – The existing road network with the existing Saturday traffic volumes as observed in the traffic survey and extended 40m southbound right turn lane on Pacific Highway, with the addition of development Saturday traffic.

5.6. Modelling Consideration for Dumaresq Street / Pacific Highway / Park Avenue

The TCS phase of the intersection of Dumaresq Street / Pacific Highway / Park Avenue is presented in Figure 21. As per the SCATS data obtained from TfNSW, the intersection is operating with:

7. phase A (through vehicles movement along Pacific Highway and Pedestrian movement across Dumaresq Street and Park Avenue),
8. phase B (through and right turn vehicle movement along Pacific Highway and with pedestrian movement across Park Avenue) and
9. phase C (turn movement from Dumaresq Street and Park Avenue into Pacific Highway and pedestrian movement across Pacific Highway)



Figure 21: Dumaresq Stereet / Pacific Highway / Park Avenue TCS Phases (Source TfNSW)

5.7. SIDRA Analysis

A volume analysis was performed using the SIDRA Intersection 9.1 software, a micro-analytical tool for individual intersection and whole-network modelling. The models are based on the collected traffic survey data. SIDRA provides a number of performance indicators outlined below:

10. Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g., 0.8=80% saturation)
11. Average Delay – The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.

12. 95% Queue Lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.

13. Level of Service (LoS) – This is a categorization of average delay, intended for simple reference. It is a good indicator of overall performance for individual intersections. The RMS adopts the following bands:

Table 19: Intersection Performance - Levels of Service

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

5.7.1. Existing Intersection Performance

The summary of the existing performance of the local road network is summarised in Table 20. A detailed breakdown of the SIDRA movement summaries is provided in Appendix 3.

Table 20: Intersection Performance: Existing Scenario

Intersection	Time	LoS	Average Delay (s)[6]	DoS (v/c)	Q95 (m)
Dumaresq Street / Radford Place	Thursday AM Peak	A	7.7	0.056	0.5
	Thursday PM Peak	A	7.7	0.024	0
	Saturday Peak	A	10.9	0.034	0.1
Dumaresq Street / Pacific Highway	Thursday AM Peak	A	10.1	0.546	98.6
	Thursday PM Peak	F	224.1	1.409	678.1
	Saturday Peak	B	18.9	0.712	157.0
Pacific Highway / Park Avenue	Thursday AM Peak	C	34.3	1.081	174.6
	Thursday PM Peak	B	25.7	0.988	92.4
	Saturday Peak	B	25.1	1.036	101.5

[6] For signalised intersections, the average performance indicators have been reported. For priority and roundabout intersections, the average delay of the worst movement is used to determine the LoS, DoS and Q95 (this typically right turns from the minor/side road).

5.7.2. Modified Intersection with Development

Condition 126 of the Consent (DA0610/17) as issued on 18 December 2018, stipulates:

126. Roads and Maritime Services conditions

To alleviate queuing on Pacific Highway southbound due to proposed development, the right turn bay shall be extended by 40 Metres at the full cost to the developer. It is further noted that all access to the site will be provided via the local road network from Radford Place.

1. *Roads and Maritime has previously acquired a strip of land for road along the Pacific Highway frontage of the subject property, as shown by blue colour on the attached Aerial – "X".*

   A strip of land has previously been dedicated as Public Road by private subdivision (DP768782), along the Pacific Highway frontage of the subject property, as shown by yellow colour on the attached Aerial - "X".

   All buildings and structures, together with any improvements integral to the future use of the site are to be wholly within the freehold property (unlimited in height or depth), along the Pacific Highway boundary.

   Additionally, the subject Property is within a broader investigation area to look at options to upgrade Pacific Highway at this location. The investigations have not yet advanced to the stage where options have been defined and accordingly it is not possible at this date to identify if any further part of the subject property would be required to accommodate this proposal however it is likely that the frontage of the site may be impacted in the future.

   The proposed extension of the right turn bay on Pacific Highway shall be designed to meet Roads and Maritime requirements and endorsed by a suitably qualified practitioner. The design requirements shall be in accordance with AUSTROADS and other Australian Codes of Practice.

   The certified copies of the civil design plans shall be submitted to Roads and Maritime for consideration and approval prior to the release of the Construction Certificate by the Principal Certifying Authority and commencement of road works.

   The developer is required to enter into a Works Authorisation Deed (WAD) for the abovementioned works. Please note that the WAD will need to be executed prior to Roads and Maritime assessment of the detailed civil design plans. Roads and Maritime fees for administration, plan checking, civil works inspections and project management shall be paid by the developer prior to the commencement of works.

As per the Condition outlined above, the right turn lane on southbound approach of Pacific Highway shall be extended by 40m as illustrated in Figure 22.

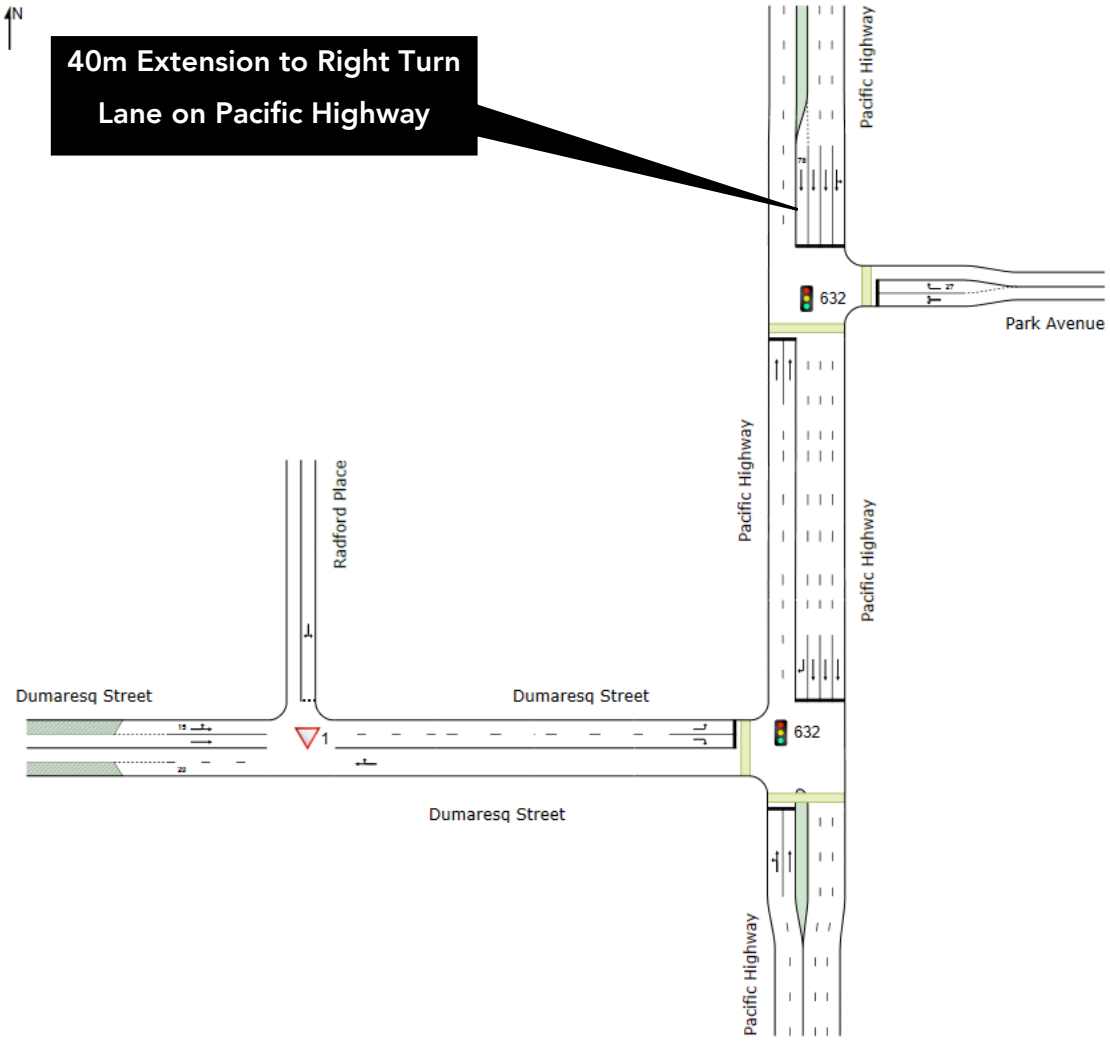


Figure 22: Extended Right Turn Lane on Pacific Highway North Approach

The development trips calculated in section 5.4 have been assigned to the key intersections. The performance of the key intersections is summarised in Table 21. A detailed breakdown of the SIDRA movement summaries is provided in Appendix 3.

Table 21: Intersection Performance: Existing Intersection with Development Trips

Intersection	Time	LoS	Average Delay (s)	DoS (v/c)	Q95 (m)
Dumaresq Street / Radford Place	Thursday AM Peak	A	7.5	0.084	0.9
	Thursday PM Peak	A	6.9	0.072	0.8
	Saturday Peak	A	9.2	0.098	1.1
Dumaresq Street / Pacific Highway	Thursday AM Peak	A	11.0	0.593	100.2
	Thursday PM Peak	F	292.7	1.563	722.6
	Saturday Peak	C	32.3	0.928	273.0
Pacific Highway / Park Avenue	Thursday AM Peak	C	33.5	1.106	142.9
	Thursday PM Peak	B	27.1	1.000	96.1
	Saturday Peak	B	20.5	0.927	87.8

The additional trips generated by the proposed development have no significant impact upon the intersection performance of Dumaresq Street / Pacific Highway / Park Avenue following the upgrade to the right turn bay on the southbound approach of Pacific Highway to Dumaresq Street.

5.8. Cumulative Developments Trips, Future Gordon Town Centre Development

The Gordon Cultural Hub Traffic Assessment prepared by Transport Modellers Alliance (TMA), in 2016 outlines the approved future developments (Refer Appendix 4).

The Gordon Town Centre will undergo road upgrades to support approved future development within the area in accordance with the S94 Contributions Plans. Out of these road upgrades, the Pacific Highway will be widened around Dumaresq Street to provide an additional northbound lane whilst the signalised intersection of Pacific Highway and Park Avenue will be removed, with Park Avenue being converted to a one-way carriageway facilitating eastbound movement only as illustrated in Figure 23.

These upgrades are expected to occur in the future, and as such, have not been assessed within this report. It is expected that the proposed upgrades (shown below) will provide additional road capacity.

The TMA report outlined that the anticipated developments in the Gordon Town Centre, including the development that is the subject of this report, could be satisfactorily handled by the proposed upgraded intersection.

The land required for the approved road upgrade has been dedicated, as required in Condition 125 of DA0610/17.

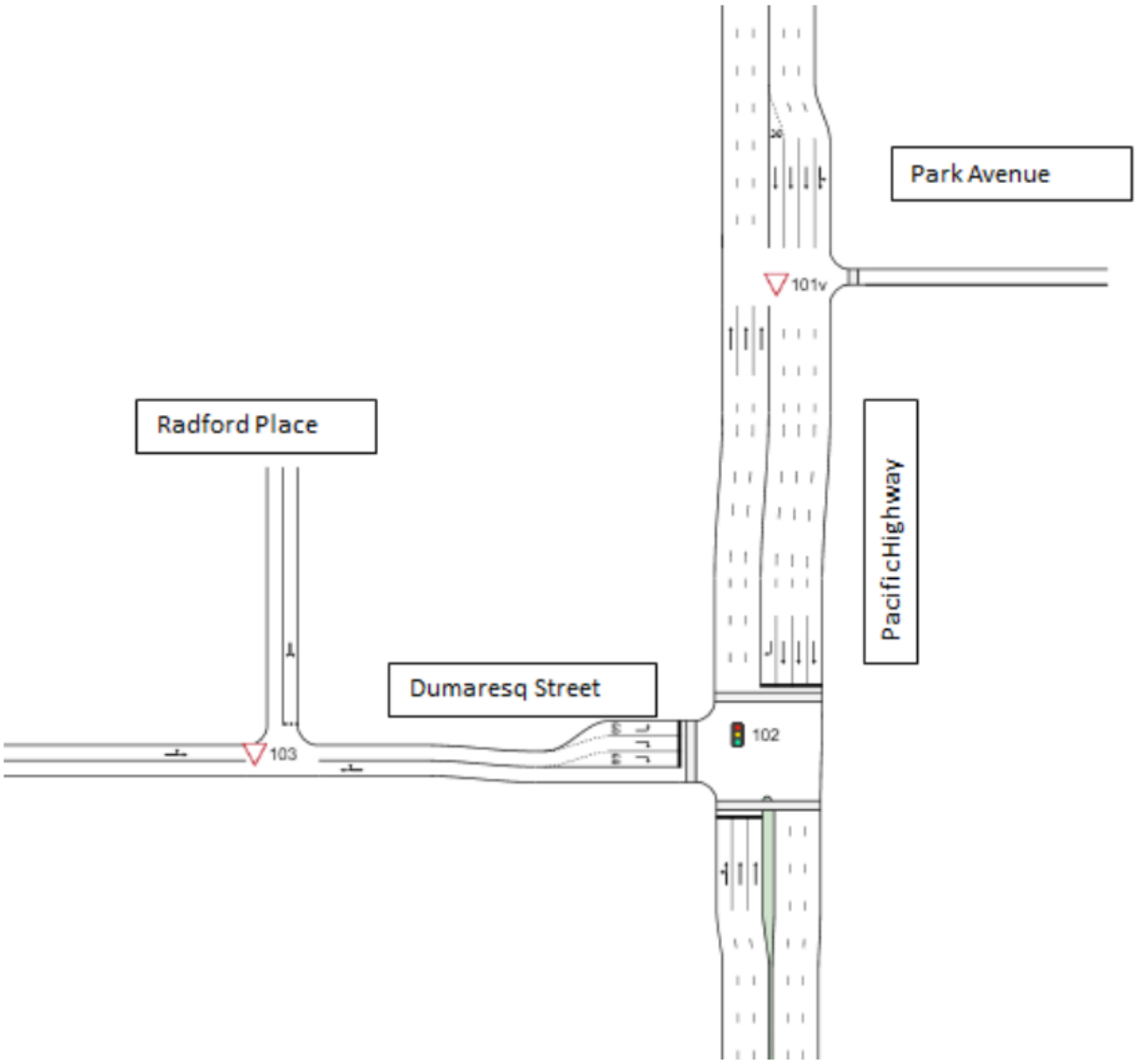


Figure 23: Future Upgrade to Dumaresq Street / Pacific Highway / Park Avenue Intersection

5.9. Comparison with Previous Traffic Assessment and Future Road Upgrade Considerations

This section has been prepared in response to the Department's request that the Transport Impact Assessment (TIA) compare traffic generation and other traffic-related matters against previous development applications for the site, and further clarify the relationship between the approved development, the proposed development and future upgrades on the Pacific Highway.

5.9.1. Comparison with Previous Traffic Assessment

Traffic and transport impacts associated with development of the site at 810 Pacific Highway, Gordon have been previously assessed as part of earlier development applications, including DA0610/17, for a mixed-use development incorporating an Aldi supermarket and residential apartments. While the scale of the current proposal differs from earlier schemes, the methodology, traffic generation rates and traffic distribution assumptions adopted in the current TIA remain consistent with, or more conservative than, those previously assessed, as outlined below.

5.9.2. Traffic Generation Rates

Residential Uses

The residential vehicle trip generation rates adopted in the current TIA are consistent with those applied in previous assessments and are sourced from TfNSW guidance for high-density residential development in areas with high public transport accessibility. The adopted rates are:

- AM peak hour: 0.19 vehicle trips per dwelling
- PM peak hour: 0.15 vehicle trips per dwelling

These rates are unchanged from earlier assessments. Any increase in total residential traffic generation in the current TIA is attributable to the increased number of dwellings, rather than any change in assumed travel behaviour.

Retail and Commercial Uses

Retail traffic generation in earlier assessments was based on RMS supermarket rates with explicit discounting applied to reflect the site's town centre location and opportunities for linked trips. The current TIA adopts retail traffic generation rates from the Guide to Transport Impact Assessment (GITA). These rates inherently account for:

- High public transport accessibility
- Town centre context
- Reduced private vehicle mode share

As a result, the weekday and Saturday peak hour retail traffic generation assessed in the current TIA is comparable to, and in some cases lower than, that previously assessed.

5.9.3. Existing Site Conditions and Background Traffic

At the time of the traffic surveys undertaken for the current TIA, the site was vacant following demolition of the previous building. Accordingly:

- No existing site traffic was deducted from the assessment
- All development traffic represents net new traffic generation

This approach is conservative when compared with earlier assessments, which applied offsets for existing land uses on the site.

5.9.4. Traffic Distribution and Assignment

Traffic distribution patterns adopted in the current TIA are consistent with those previously used and are based on:

- Journey-to-Work data
- The Gordon Cultural Hub Traffic Assessment prepared by Transport Modellers Alliance (TMA)

The proportions of traffic assigned to the Pacific Highway, Dumaresq Street and Park Avenue are therefore consistent with earlier assessments and reflect established travel patterns within the Gordon Town Centre.

5.9.5. Future Road Upgrades and Dedicated Land

As described in section 5.8, the road upgrade including addition of an extra lane on northbound Pacific Highway and Dumaresq Street, is required for the future development within the Gordon Town Centre, as outlined in Gordon Cultural Hub Traffic Assessment but is not required for this development.

The proposed development does not prejudge the delivery of the future intersection upgrade, as the future intersection upgrade footprint is accommodated wholly within the land already dedicated for this purpose.

The road upgrade that this development requires is the 40m extension of the right turn lane on southbound approach on Pacific Highway, as required by Condition 126 of the Consent (DA0610/17) and as described in section 5.7.2.

5.9.6. Relationship Between the Development and Future Upgrades

While earlier traffic assessments assumed delivery of the future road upgrades as part of their modelling, the current TIA adopts a more conservative approach by:

- Assessing development impacts primarily on the existing road network
- Including only a modest interim improvement (extension of the southbound right-turn lane on Pacific Highway)

5.9.7. Summary

In summary:

- Traffic generation rates adopted in the current TIA are consistent with previous assessments
- Differences in total traffic volumes reflect increased development scale, not altered assumptions
- Retail traffic generation is comparable to or lower than that previously assessed
- The future road upgrade has been appropriately acknowledged and aligned with the established site boundary

On this basis, the current proposal is consistent with prior traffic assessments for the site and remains supportable from a traffic and transport perspective.

6. Access and Car Park Assessment

The following sections present an assessment of the proposed development with reference to the requirements of *AS2890.1:2004 (Off-street car parking), AS2890.2:2018 (Off-street commercial vehicle facilities), AS2890.3:2015 (Bicycle Parking)* and *AS2890.6-2022 (Off-street parking for people with disabilities)* as well as industry best practice. This section is to be read in conjunction with the architectural plans provided by PBD Architecture (refer to Appendix 1) and the design assessment undertaken by ptc. (refer to Appendix 2).

6.1. Vehicular Access

The development proposes two vehicular access points via Radford Place. These are outlined below:

- Northern Driveway

  The access ramp from Radford Place has been designed as a two-way ramp accommodating a typical B99 vehicles. The access ramp width has been measured to be 6.10 metres wide plus 300mm wide kerbs provided on both sides.

  The grades of the access ramp have also been assessed in reference to AS2890.1. The ramps are to be maximum grade of 1 in 5 with vertical curve transitions on the sag and crest of the ramps. The ramps are to maintain a minimum 2.2m height clearance (additional clearance may be required at crests/sags along the ramp.

  Therefore, the proposed vehicular access is in line with AS2890.1.

- Southern Driveway

  The access driveway from Radford Place leads up to a turn table with 15m diameter from where the service vehicle can access the loading dock. The access driveway width has been measured to be 5.15 metres wide plus 300mm wide kerbs provided on both sides.

  The largest anticipated service vehicle accessing the proposed development is a 15.58m long Aldi Refrigerated Articulated Vehicle. A horizontal and vertical swept path assessment has been undertaken using a 15.58m AV which indicates that the proposed access driveway is able to accommodate one way traffic flow therefore is deemed appropriate on a performance basis.

  A dock booking system and Loading Dock Management Plan is necessary to manage the two-way movement of service vehicles.

To accommodate safe two-way movement of vehicles along Radford Place, the existing on-street parking will no longer be facilitated.

6.2. Car Parking Requirements

6.2.1. Typical Requirements

The land uses of the development have the following minimum parking space dimension requirements in accordance with AS2890.1 Section 1.4:

Class 1A (Residential, domestic and employee parking)

Minimum space width required:	2.4m

Minimum space length required:	5.4m
Minimum aisle width required:	5.8m

Class 3 (Short term city and town center parking)

Minimum space required:	2.6m
Minimum space length required:	5.4m
Minimum aisle width required:	5.8m [6.2m provided]

All car parking bays are to be within the following grades as per AS2890.1 Section 2.4.6:

Maximum grade parallel to paring angle:	1:20 (5%)
Maximum grade in any other direction:	1:16 (6.25%)
Minimum grade for covered carparking:	1:200 (0.5%)

All parking spaces (except accessible parking) and circulation aisles are to have a minimum headroom in accordance with AS2890.1 Section 5.3:

Headroom Requirement:	2.2m to lowest obstruction

Blind aisle extensions are required in all dead-end aisles, with the last space being widened by 300mm is bounded by a wall/fence. Car parking available to the public shall not have dead-end aisles that exceed 6 car spaces in length. Accessible Parking

All accessible parking is subject to the following minimum parking space dimension requirements in accordance with AS2890.6 Section 2.2:

Accessible Parking

Space Width:	2.4m
Space Length:	5.4m
Aisle Width:	5.8m
Shared Bay:	2.4m x 5.4m

All accessible shared bays are to be level with accessible parking spaces.

All accessible car parking bays and shared bays are to be within the following grades as per AS2890.6 Section 2.3:

Maximum grade in any direction:	1:40 (2.5%)
Minimum grade for covered car parking:	1:200 (0.5%)

Accessible parking spaces are to have the following minimum headroom in accordance with AS2890.6 Section 2.4:

Headroom Requirement:	2.5m over the parking space and shared bays

The development proposes the car spaces of minimum dimension 2.4m wide and 5.4m long with the shared dimension of 2.4m wide satisfy the requirement of AS2890.6.

6.2.2. Vehicle Circulation

Section 2.5.2 of AS2890.1:2004 outlines the layout design requirement of circulation aisle/roadway and ramps as following.

a. *Straight roadways and ramps as follow:*

   (i) One-way roadways or ramps ~~3~~.0 m minimum between kerbs (see also Item (c)).

   (ii) Two-way roadways or ramps ~~5~~.5 m minimum between kerbs (see also Item (c)).

   (iii) Double roadways or ramps where there are to be two parallel roadways or ramps, separated by a raised median or separator, each roadway or ramp shall be designed as a one-way roadway or ramp, and the median or separator shall be 600 mm minimum in width and between 125 mm and 150 mm in height, the preferred height being 125 mm.

   Where there is to be a kerb or barrier higher than 150 mm and closer than 300 mm from one edge of the roadway or ramp, the roadway or ramp shall be widened to provide a minimum of 300 mm clearance to the obstruction. If there is to be a high kerb or barrier on both sides, the width increase shall be sufficient to provide 300 mm on both sides.

c. *Intersections between circulation roadways and ramps, and with parking aisles shall be designed so that both the approach roadways and the intersection area are wide enough to accommodate turning vehicles and there is adequate intersection sight distance.*

   Intersection areas designed for use by one vehicle at a time shall be designed for use by the B99 vehicle. Areas in which it is necessary for two vehicles to pass one another shall be designed for a B85 vehicle to pass a B99 vehicle. In both cases areas shall be checked using single turn swept path templates for the B99 vehicle and the B85 vehicle, generated in accordance with Appendix B, Paragraph B3.1, which include the swept path clearances specified in Paragraph B3.2. The swept path clearances shall clear any kerbs at the boundary of the intersection area.

   NOTE: A B99 swept path template is used to check areas designed to be used by one vehicle at a time using outer lines on the template e.g. as shown in Figures B1 and B2, which incorporate both the manoeuvring and circulation clearances. Where there is to be provision for two vehicles to pass, B99 and B85 swept path templates with clearances incorporated are used in combination. The turn radii need not be the same.

   If a boundary of the intersection area is an obstruction such as a wall, barrier or kerb higher than 150 mm a further clearance of 300 mm shall be provided where the swept path template approaches the obstruction.

The carpark circulation aisle and ramp widths are designed as per the requirement of the AS2890.1:2004. The intersections between two traffic aisles are designed for use by one vehicle at a time and have been designed to accommodate a B99 in either direction.Two (B99) vehicles being able to pass within the approaching traffic aisles and has been verified with the swept path assessment (presented in Appendix 2).

Convex mirrors have also proposed for additional visibility and to warn them of the approaching vehicles.

6.3. Bicycle Parking

Bicycle parking design is to adhere to the requirements outlined in AS2890.3. The development is required to provide following bicycle parking provisions.

- Class A Residential Bicycle Parking

  Horizontal Space

Space Width:	0.5m
Space Length:	1.8m
Aisle Width:	1.5m
Height:	1.2m

  Vertical Space

Space Width:	0.5m
Space Length:	1.2m
Aisle Width:	1.5m
Height:	1.2m

Therefore, the bicycle parking spaces is in line with the requirement of AS2890.3.

6.4. Service Vehicle Parking

Access into the site for service vehicles is proposed from Radford Place (refer to 6.1). A loading dock has been provided within Ground Floor.

The proposed service vehicle provision comprises the following:

- 1 x AV bay accommodating vehicles up to 15.58m in length; and
- 1 x 8.8m MRV bay accommodating vehicles up to 8.8min length

A minimum vertical clearance of 4.5m is proposed within the loading dock and along the access driveway.

The proposed access arrangement allows heavy vehicles to enter and exit the site in a forward direction and has been verified with swept path assessment included in Appendix 2.

Where access is required by heavy vehicles, all grades are to comply with the provisions of Table 3.2 of *AS2890.2: 2018 Off-street Commercial Vehicle Facilities*. All access within the loading dock is to be designed for the largest design vehicle (i.e. 15.58m Aldi AV).

6.4.1. Waste Collection

Waste collection is proposed to be undertaken by a private waste contractor. This will allow for the use of a smaller refuse vehicle, when compared to the typical Council refuse truck. The proposed loading dock is able to accommodate waste collection vehicles up to 15.5m AV with a maximum body height of 4.3m.

7. Conclusion

The mixed used development at 810 Pacific Highway, Gordon has been assessed from a parking and traffic, design compliance, and traffic generation perspective. ptc. find that the proposed development meets the requirements outlined in the Ku-ring-gai Council DCP and SEPP (Housing), as well as the requirements of the relevant Australian Standards.

The development proposes parking in alignment with the rates specified in the Ku-rung-gai DCP and the SEPP (Housing) and as such is found to be acceptable in this regard.

The proposed development is not expected to generate any significant negative impact to the surrounding road network capacity based on SIDRA network analysis undertaken, and as such is found to be acceptable in this regard.

The vehicular access and car parking areas and loading dock have been assessed and found to comply, or be able to be made to comply, with the relevant Australian Standards, being the AS2890 suite.

Thus, the development is deemed to be supportable from a parking and traffic perspective.

Appendix 1. Architectural Plans

RENDERED BUILDING TILE ROOF
NO 818
KU-RING-GAI MUNICIPAL COUNCIL

SITE BOUNDARY 55.11m

SITE BOUNDARY 41.04m

SITE BOUNDARY 33.22m

SITE BOUNDARY 58.265m

EXISTING CONCRETE WALL EX. TOW RL 126.17

3m SITE SETBACK

DOOR ACCCESS

DOOR ACCESS

DOOR ACCESS

RL126.440

RL125.060

RL123.680

RL122.580

RL126.300

1:10
1,400 mm

RL126.440

LOUVRES

FHR

FH

PLANT / EQUIPMENT

PLANT / EQUIPMENT

GOODS HOIST

CUSTOMER LIFT 1/ GOODS LIFT BACKUP

CUSTOMER LIFT 2

STAIRS ABOVE

VARIED HEADROOM

WC

OFFICE

Aldi Signage

ALDI LOADING AREA
255.1 m²
RL 126,300

ROLLER DOOR

ALDI LOBBY
27.5 m²
RL 126,300

AUTOMATIC/SELF CLOSING DOOR

RL 126,300

CLEANERS SINK

FHR

CUSTOMER CAR PARK CORRIDOR

LIFT 1

LIFT 2

LIFT 3

ALDI
1,192.8 m²
RL 126,300

GROUND FLOOR

EL SUBSTATION

FHR

FH

Aldi Signage

Aldi Signage
RL 126,300

RL 127,000

AWNING ABOVE SHOWN ABOVE SHOWN

TROLLEY BAYS

692.27 TOW

1,200
RL 126,490

ACCESSIBLE PATHWAY FROM STREET

1:20
3,800 mm

2,700

LENGTH LANDING

RL 126,490

ALDI FORECOURT
RL 126,300

RL 126,490

EX. RL 126,320

AUTOMATIC SELF CLOSING DOOR

AUTOMATIC/SELF CLOSING DOOR

AIRLOCK

RL 125,040

EX. RL 126,120

RL 126,210

Aldi illuminated poster box & plinth

RL 125,800

EX. RL 125,960

RL 125,770

TOW 127.01

RL 125,100

SITE BOUNDARY 58.265m

EX. RL 125,610

EX. RL 123,930

EX. RL 124,770

EX. RL 125,120

EX. RL 126,740

MECH RISER

HYD

PUBLIC DOMAIN TO CIVIL DETAILS

PUBLIC DOMAIN TO CIVIL DETAILS

PUBLIC DOMAIN TO CIVIL DETAILS

LP

TP

SP

RADFORD PLACE

PACIFIC HIGHWAY

DUMARESQ STREET

11,918 | 7,600 | 3,050 | 7,950 | 7,400 | 2,850 | 4,000 | 10,750

11,850 | 7,600 | 3,050 | 7,950 | 7,400 | 2,850 | 4,000 | 10,750

5,200 | 4,070 | 3,885 | 3,000 | 6,950 | 7,150 | 1,300

EX. RL118,790

EX. RL118,680

EX. RL118,520

GENERAL NOTES:

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LEGEND:

AH	ACCESS HATCH
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
HL	HIGHLIGHT WINDOW
LV	LOURVERS
MV	MECHANICAL RISER TO FUTURE DETAIL
SK	SKYLIGHT
ST	STORAGE IN BASEMENT
STR	STORAGE ROOM
S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AW	AWNING (TO FUTURE DETAIL)
BA	BATTEN SCREENS
BK	BRICK FINISH
CONC	CONCRETE
GB	GLASS BALUSTRADE
MCx	METAL CLADDING TYPEx
MF	METAL FENCING
PC	PRECAST PANEL
PSx	PRIVACY SCREEN (TO FUTURE SELECTION)
Px	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	ROOF RIVER PEBBLES
SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

N

Scale Bar 1 : 100 @ A1

0 1 2 3 4 5m

CLIENT:
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Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW
2072 Australia

DRAWING TITLE:
Ground Floor Plan

DRAWING BY: AA, HK	CHECKED BY: KS	DATE: 17/12/2025
SCALE: 1:100@A1	DRAWING NO: **DA107**	ISSUE: **A**
PROJECT NO: 2432		

RENDERED BUILDING TILE ROOF
NO 818
KU-RING-GAI MUNICIPAL COUNCIL

PACIFIC HIGHWAY

RADFORD PLACE

DUMARESQ STREET

SITE BOUNDARY 55.11m

SITE BOUNDARY 41.04m

SITE BOUNDARY 58.265m

SITE BOUNDARY 33.21m

3m SITE SETBACK

STAIR PRESS INTAKE LOUVRE
TBC WITH LANDSCAPE DETAILS

EX. TOW RL 126.17

EXISTING CONCRETE WALL

EX. TOW RL 126.17

ex. RL 129.22

RL 123.680

RL 122.580

RL 121.480

EX. RL 119.360

EX. RL 119.510

RL 119.600

RL 119.500

RL 119.430

RL 119.109

RL 119.000

RL 118.984

RL 118.800

RL 118.796

RL 118.913

RL 119.101

RL 119.889

RL 119.700

RL 120.200

RL 118.520

EX. RL 118.600

EX. RL 118.520

EX. RL 118.850

EX. RL 120.200

EX. RL 120.800

EX. RL 122.300

EX. RL 122.79

EX. RL 123.120

EX. RL 124.800

STAIR PRESS

LOUVRES

FS1A

PUBLIC DOMAIN TO CIVIL DETAILS

OSD TANK BELOW TO STW ENG. DETAILS

PUMP AND CONTROL UNIT FOR GOODS LIFT

GOODS HOIST

CUSTOMER LIFT 1/ GOODS LIFT BACKUP

CUSTOMER LIFT 2

SWITCH ROOM
RL 121,470

ALDI LOADING AREA
444.9 m²
RL 121,470

ALDI PLANT ROOM
98.5 m²
RL 121,980

WEBFORGE MANUFACTURE DOOR
2.4m x 5.0m

LINE OF ROLLER SHUTTER BELOW

STAFF RM

WC

FHR

FH

RL 121,470

BASEMENT CARPARK ENTRY / EXIT

5,200

4,070

3,855

3,000

6,950

7,150

1,300

2,350
1:20

8,900
1:11.3

7,020
80M VC

8,920
80M VC

7,090
1:8.9

RAMP SECTION B

RAMP SECTION A

LOADING DOCK RAMP

ROLLER DOOR

COMPACTOR

EG

RL 120,200

2,000

RL 121,470

LIFT 1

LIFT 2

LIFT 3

EMERGENCY ACCESS DOOR

COMMS RISER

ALDI BIN ROOM

TURNTABLE
4.5m HEIGHT CLEARANCE
RL 120,200

15,000

16,500

LOADING ZONE
8.8 x 3.5m

15.5M ALDI TRUCK
16 X 3.5m
RL 120,200

LOADING DOCK
RL 121,470

FIRE HYD TANK
3.6m high

HYDRANT/ SPRINKLER PUMP ROOM
RL 120,200

HV
1,300
X
2,400

2,800

SUBSTATION CHAMBER 2
RL 118,900

HV
1,300
X
2,100

SUBSTATION CHAMBER 1
RL 118,800
4,600

MECH PLENUM

4,200

COMMERCIAL/ RETAIL
49.4 m²
RL 120,200

RETAIL BIN RM
5.2 m²

ACC WC

FIRE CONTROL ROOM
20.2 m²
RL 121,000

RL +122.050

FS

RESIDENTIAL WASTE ROOM
102.5 m²

BIN LIFTER

BOOSTER ASSEMBLY

BOOSTER ASSEMBLY

WATER METER

RL 123,120

MAIN SWITCH ROOM
RL 120,200

10,500

4,000

FIRE CORRIDOR
RL 120,200

FS2

STAIR PRESS

AWNING ABOVE

LINE OF BASEMENT BELOW

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LEGEND:

AH	ACCESS HATCH
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
HL	HIGHLIGHT WINDOW
LV	LOURVERS
MV	MECHANICAL RISER TO FUTURE DETAIL
SK	SKYLIGHT
ST	STORAGE IN BASEMENT
STR	STORAGE ROOM
S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AW	AWNING (TO FUTURE DETAIL)
BA	BATTEN SCREENS
BK	BRICK FINISH
CONC	CONCRETE
GB	GLASS BALUSTRADE
MCx	METAL CLADDING TYPEx
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Px	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	ROOF RIVER PEBBLES
SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

Scale Bar 1 : 100 @ A1

0 1 2 3 4 5m

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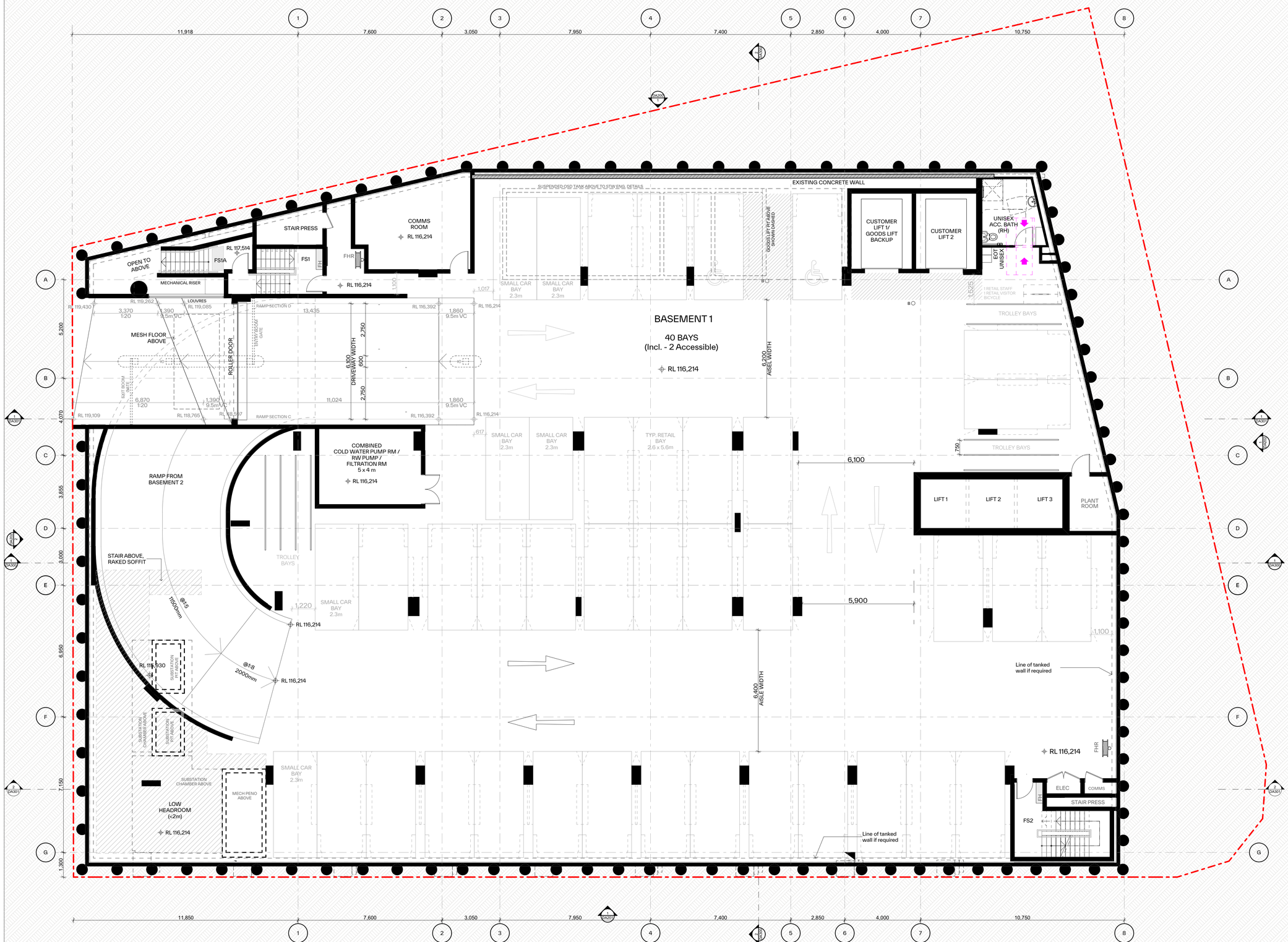
Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW
2072 Australia

DRAWING TITLE:
Loading Dock

DRAWING BY:	CHECKED BY:	DATE:
AA, HK	KS	17/12/2025
SCALE: 1:100@A1	DRAWING NO: **DA106**	ISSUE: **A**
PROJECT NO: 2432		



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FHR	FIRE HOSE REEL
FS	FIRE STAIRS
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S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

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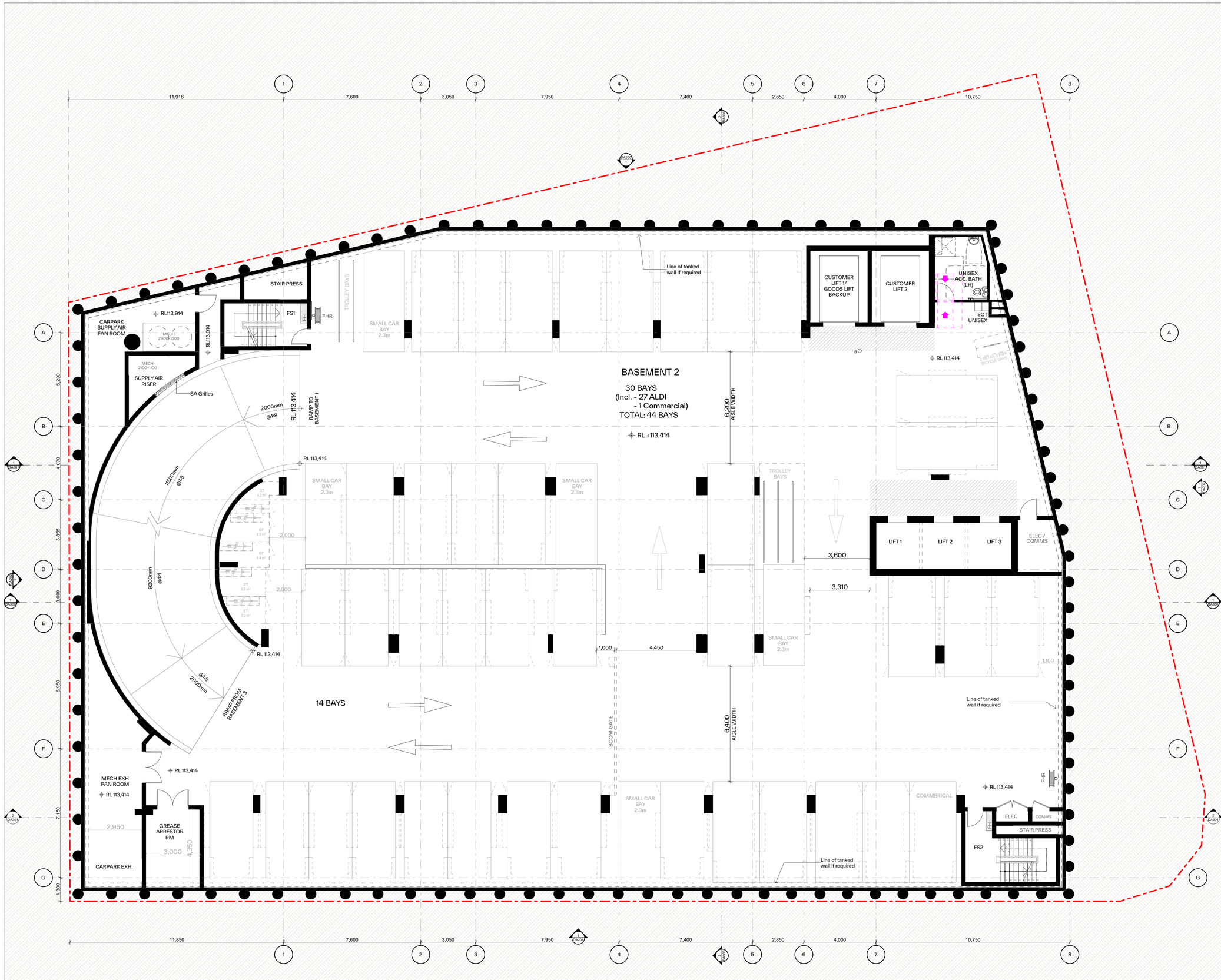
Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW 2072 Australia

DRAWING TITLE:
Basement 1

DRAWING BY:	CHECKED BY:	DATE:
AA, HK	KS	17/12/2025
SCALE: 1:100@A1	DRAWING NO: DA105	ISSUE: A
PROJECT NO: 2432		



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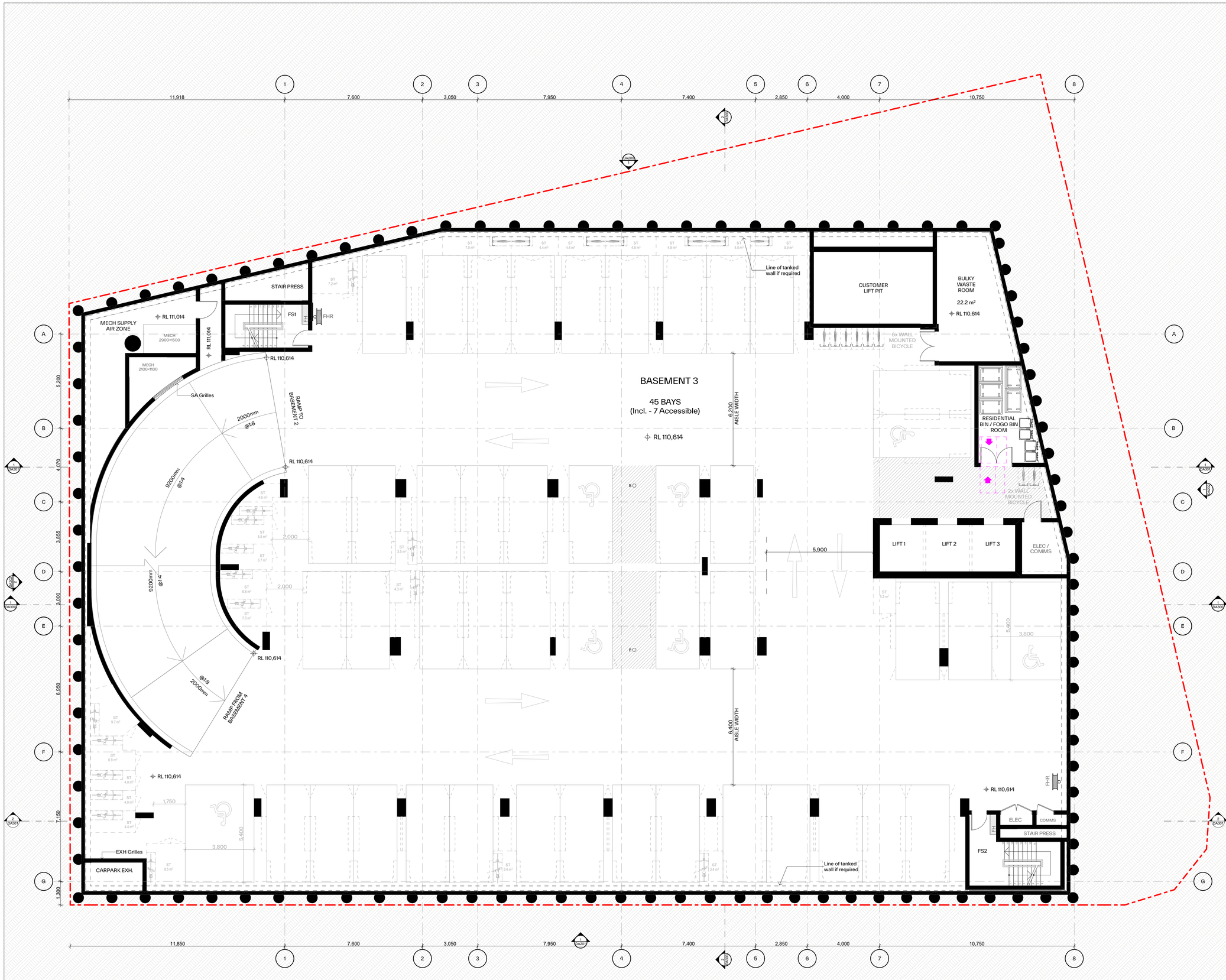
Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW 2072 Australia

DRAWING TITLE:
Basement 2

DRAWING BY: AA, HK	CHECKED BY: KS	DATE: 17/12/2025
SCALE: 1:100@A1	DRAWING NO: **DA104**	ISSUE: **A**
PROJECT NO: 2432		



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MATERIALS LEGEND:

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Scale Bar 1 : 100 @ A1

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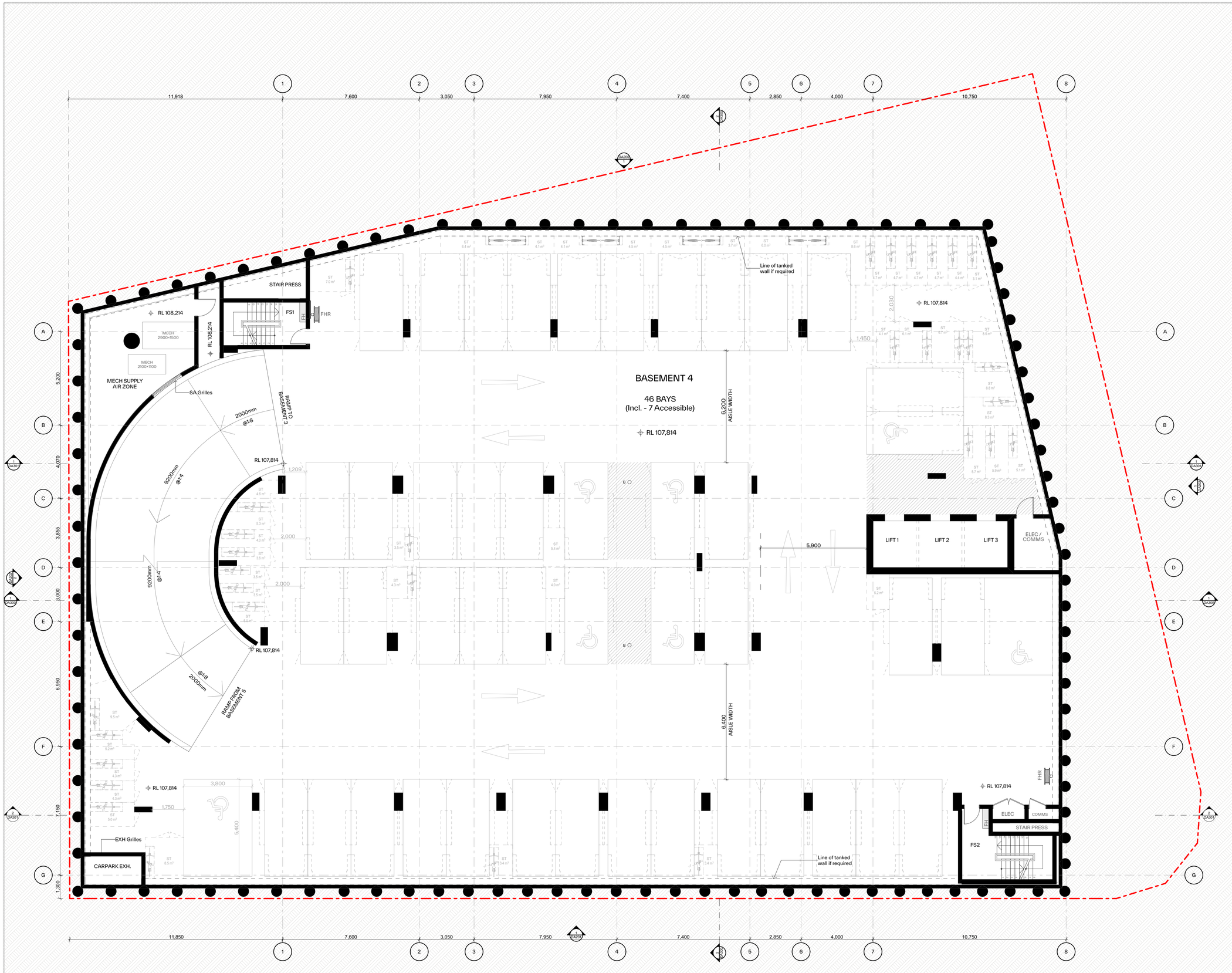
Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW
2072 Australia

DRAWING TITLE:
Basement 3

DRAWING BY: AA, HK	CHECKED BY: KS	DATE: 17/12/2025
SCALE: 1:100@A1	DRAWING NO: **DA103**	ISSUE: **A**
PROJECT NO: 2432		



GENERAL NOTES:

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- AREA SCHEDULES SUPPLIED ARE APPROXIMATE ONLY - FUTURE ALLOWANCE FOR VERTICAL SERVICE DUCTS, STRUCTURAL WALL SYSTEMS AND CONSULTANT INPUT WILL BE REQUIRED

LEGEND:

AH	ACCESS HATCH
CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
HL	HIGHLIGHT WINDOW
LV	LOURVERS
MV	MECHANICAL RISER TO FUTURE DETAIL
SK	SKYLIGHT
ST	STORAGE IN BASEMENT
STR	STORAGE ROOM
S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AW	AWNING (TO FUTURE DETAIL)
BA	BATTEN SCREENS
BK	BRICK FINISH
CONC	CONCRETE
GB	GLASS BALUSTRADE
MCx	METAL CLADDING TYPEx
MF	METAL FENCING
PC	PRECAST PANEL
PSx	PRIVACY SCREEN (TO FUTURE SELECTION)
Px	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	ROOF RIVER PEBBLES
SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

Scale Bar 1 : 100 @ A1

0 1 2 3 4 5m

N

CLIENT:

Ecove Group

pbd architects

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E - info@pbdarchitects.com.au
W - pbdarchitects.com.au

Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:

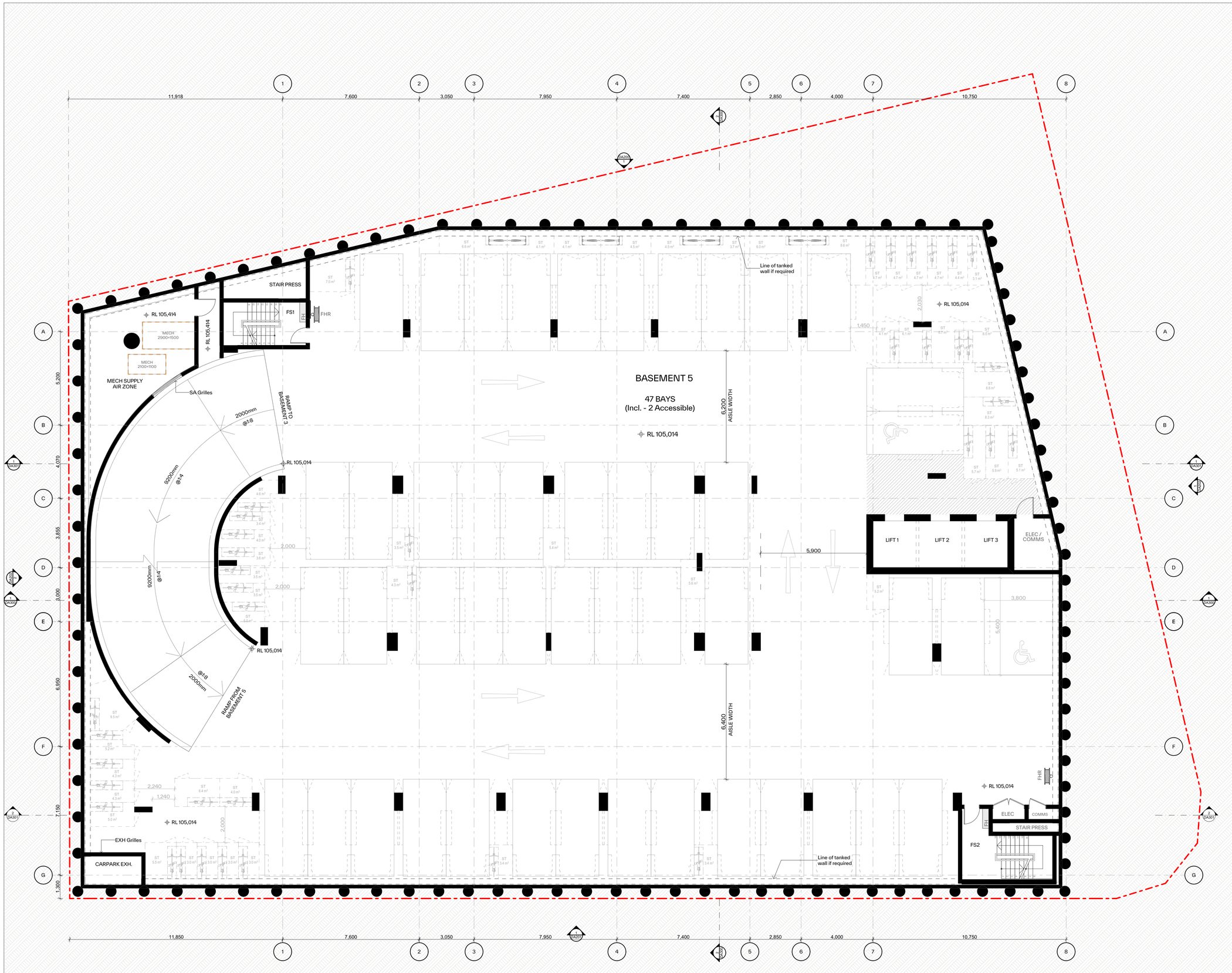
Proposed Mixed Use Development

810 Pacific Highway , Gordon Sydney NSW
2072 Australia

DRAWING TITLE:

Basement 4

DRAWING BY:	CHECKED BY:	DATE:
AA, HK	KS	17/12/2025
SCALE: 1:100@A1	DRAWING NO: DA102	ISSUE: A
PROJECT NO: 2432		



GENERAL NOTES:

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LEGEND:

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CU	A/C CONDENSER UNITS
FH	FIRE HYDRANT
FHR	FIRE HOSE REEL
FS	FIRE STAIRS
GC	GARBAGE CHUTE
HL	HIGHLIGHT WINDOW
LV	LOURVERS
MV	MECHANICAL RISER TO FUTURE DETAIL
SK	SKYLIGHT
ST	STORAGE IN BASEMENT
STR	STORAGE ROOM
S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AW	AWNING (TO FUTURE DETAIL)
BA	BATTEN SCREENS
BK	BRICK FINISH
CONC	CONCRETE
GB	GLASS BALUSTRADE
MCx	METAL CLADDING TYPEx
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RD	ROLLER DOOR
RP	ROOF RIVER PEBBLES
SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

Scale Bar 1 : 100 @ A1

0 1 2 3 4 5m

N

CLIENT:
Ecove Group

pbd architects

P - 02 9698 8140
E - info@pbdarchitects.com.au
W - pbdarchitects.com.au

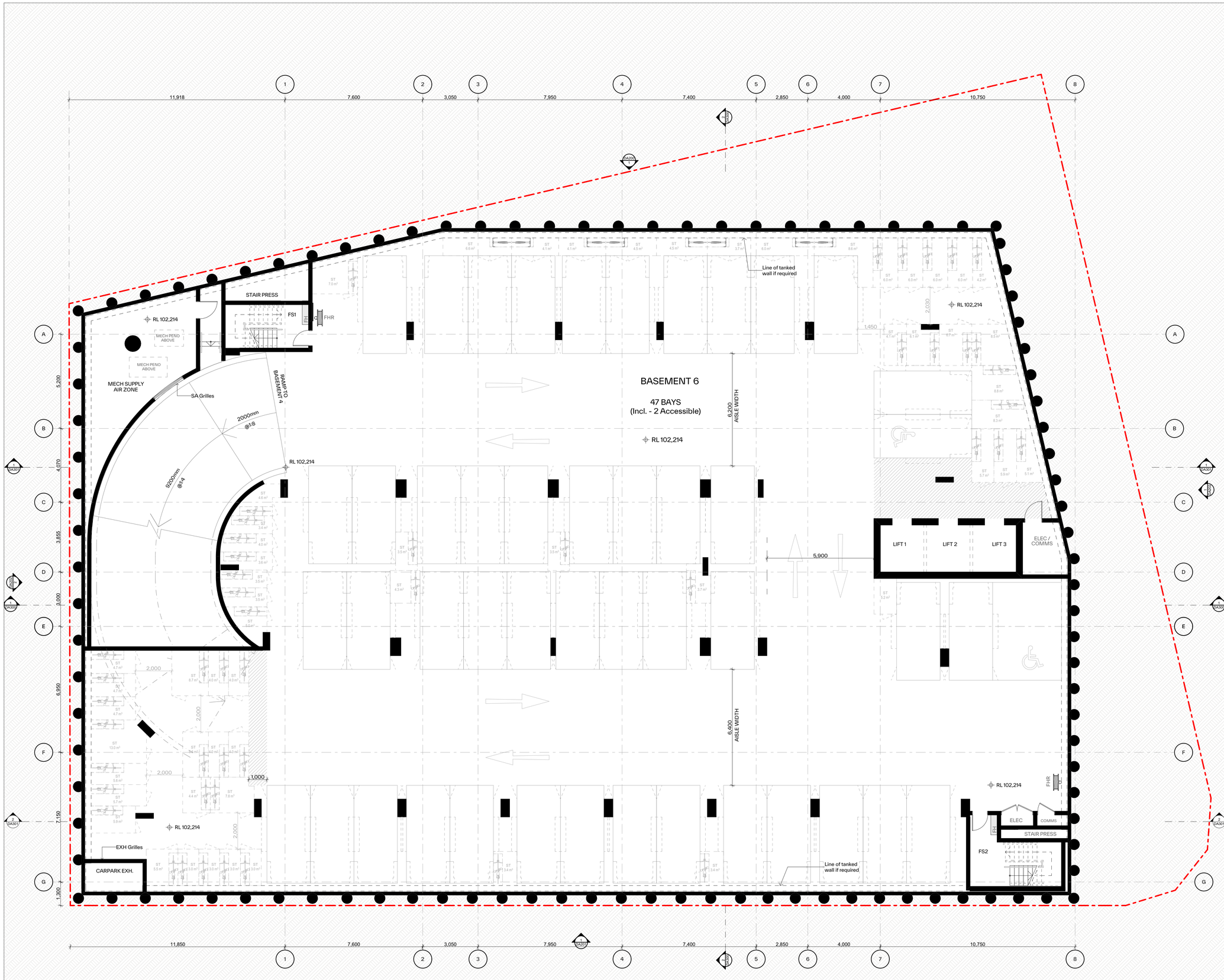
Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW
2072 Australia

DRAWING TITLE:
Basement 5

DRAWING BY:	CHECKED BY:	DATE:
AA, HK	KS	17/12/2025
SCALE: 1:100@A1	DRAWING NO: DA101	ISSUE: A
PROJECT NO: 2432		



GENERAL NOTES:

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LEGEND:

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SK	SKYLIGHT
ST	STORAGE IN BASEMENT
STR	STORAGE ROOM
S	STORAGE
HWU	HOT WATER UNITS

MATERIALS LEGEND:

AFG	ALUMINIUM FRAMED GLAZING
AW	AWNING (TO FUTURE DETAIL)
BA	BATTEN SCREENS
BK	BRICK FINISH
CONC	CONCRETE
GB	GLASS BALUSTRADE
MCx	METAL CLADDING TYPEx
MF	METAL FENCING
PC	PRECAST PANEL
PSx	PRIVACY SCREEN (TO FUTURE SELECTION)
Px	PAINT FINISH TYPEx
RD	ROLLER DOOR
RP	ROOF RIVER PEBBLES
SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

Scale Bar 1 : 100 @ A1

0 1 2 3 4 5m

N

CLIENT:
Ecove Group

pbd architects

P - 02 9698 8140
E - info@pbdarchitects.com.au
W - pbdarchitects.com.au

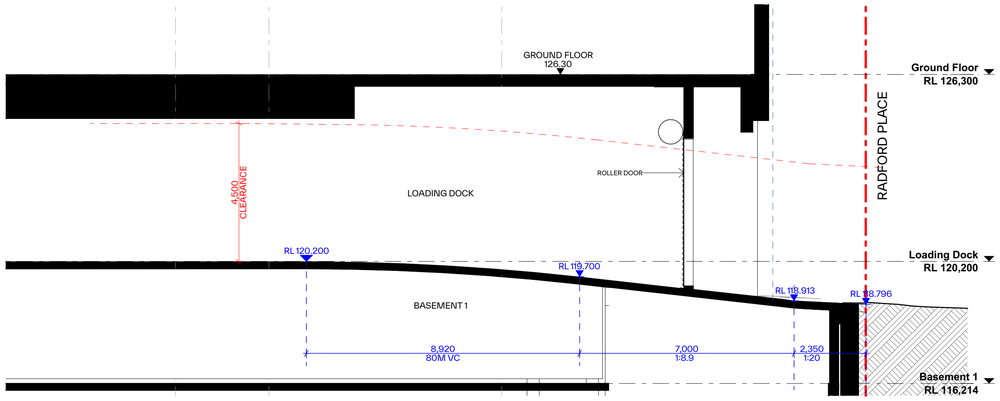
Level 2, 52 Albion Street,
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ABN 36 147 035 550
Nominated Architect:
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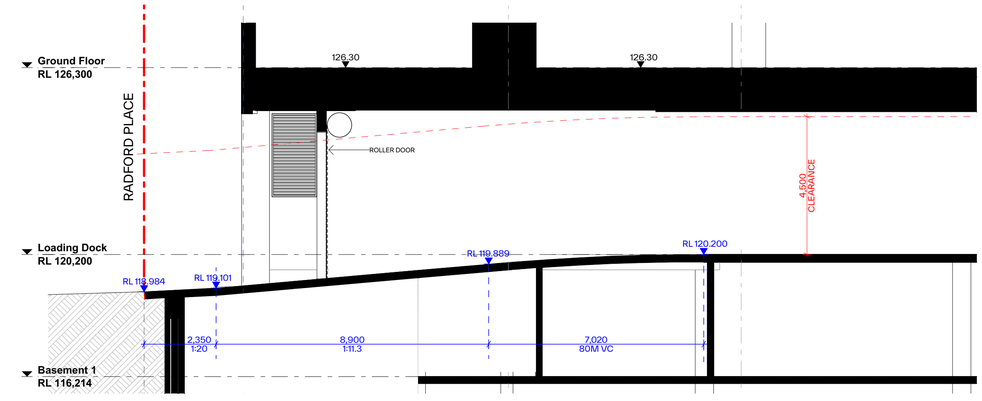
PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW 2072 Australia

DRAWING TITLE:
Basement 6

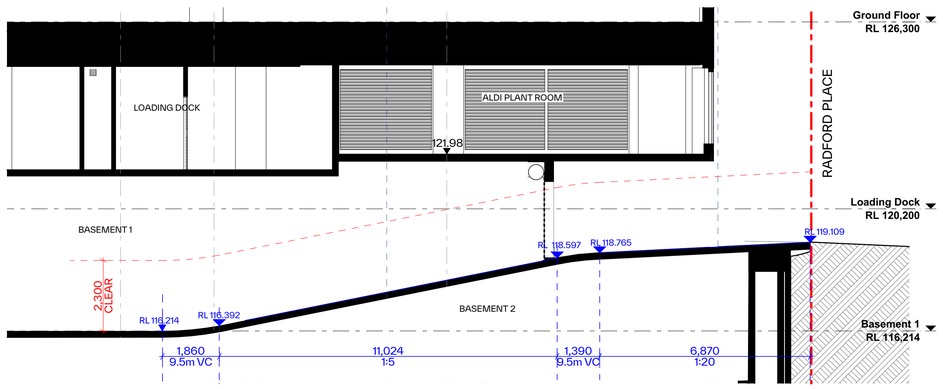
DRAWING BY: AA, HK	CHECKED BY: KS	DATE: 17/12/2025
SCALE: 1:100@A1	DRAWING NO: **DA100**	ISSUE: **A**
PROJECT NO: 2432		



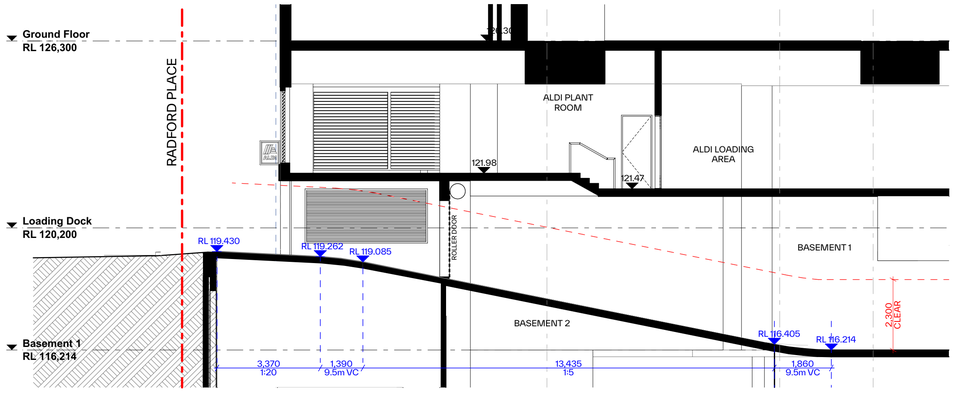
1 - LOADING DOCK RAMP - SECTION A
Scale 1:100



2 - LOADING DOCK RAMP - SECTION B
Scale 1:100



3 - BASEMENT RAMP - SECTION C
Scale 1:100



4 - BASEMENT RAMP - SECTION D
Scale 1:100

GENERAL NOTES:

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STR	STORAGE ROOM
S	STORAGE
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SCR	SCREEN TO ROOF EQUIPEMENTS

FINISHES TO BE READ IN CONJUNTION WITH FINISHES SCHEDULE

Issue	Date	Description
A	12/12/2025	Issue for SSDA Submission

CLIENT:
Ecove Group

pbd architects

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Level 2, 52 Albion Street,
Surry Hills NSW 2010

ABN 36 147 035 550
Nominated Architect:
Paul Buljevic NSW 7768

PROJECT:
Proposed Mixed Use Development
810 Pacific Highway , Gordon Sydney NSW 2072 Australia

DRAWING TITLE:
Sections - Driveways

DRAWING BY:	CHECKED BY:	DATE:
AA, HK	KS	17/12/2025
SCALE: 1:100@A1	DRAWING NO: DA302	ISSUE: A
PROJECT NO: 2432		

Appendix 2. ptc. Site Assessment

RENDERED BUILDING TILE ROOF
NO 818
KU-RING-GAI MUNICIPAL COUNCIL

PACIFIC HIGHWAY

SITE BOUNDARY

EXISTING CONCRETE WALL

EX. TOW RL 126.17

STAIR PRESS INTAKE LOUVRE TBC WITH LANDSCAPE DETAILS

STAIR PRESS

RL 123.680

RL 122.580

RL 121.480

LOUVRES

EX. RL 119.360

RL 119.600

EX. RL 119.510

RL 119.500

FS1A

RL 121.470

ALDI LOADING AREA
444.9 m²
RL 121.470

ALDI PLANT ROOM
98.5 m²
RL 121.980

LINE OF ROLLER SHUTTER BELOW

STAFF RM

WC

COMPACTOR

RL 120.200

LIFT 1

LIFT 2

LIFT 3

ALDI BIN ROOM

LOADING ZONE
8.8 x 3.5m

8.80

3.50

16.00

LOADING DOCK
RL 121.470

Copy of Aldi refrigerated Articulated Vehicle

GOODS HOIST

CUSTOMER LIFT GROUP

CUSTOMER LIFT 4

SWITCH ROOM
RL 121.470

RAMP SECTION A

8.89m 1:11.3

7.02m 80m vc

LOADING DOCK RAMP

2.35m
1:20

2.50

2.35m
1:20

7.00m 1:8.9

8.92m 80m vc

HYDRANT BOOSTER

RL 120.200

SUBSTATION
RL 118.900

SUBSTATION
RL 118.800

ACC WC

COMMERCIAL RETAIL
49.4 m²
RL 120.200

MECH PLENUM

FIRE CONTROL ROOM
20.2 m²
RL 121.000

HTT15-250 Turntable
15m turntable diameter
16.5m clearance diameter

min diameter required for 300mm vehicle clearance to structure

Ø16.50

BOOSTER ASSEMBLY

BOOSTER ASSEMBLY

BIN LIFTER

MAIN SWITCH ROOM
RL 120.200

FIRE CORRIDOR
RL 120.200

FS2

STAIR PRESS

SITE BOUNDARY

EX. RL124.800

EX. RL118.520

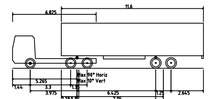
DUNMORE STREET

STREET

NOTES

NOT FOR CONSTRUCTION
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SWEPT PATHS
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



Copy of Aldi refrigerated Articulated Vehicle

Overall Length	15.585m
Overall Width	2.490m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.490m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	8.000m



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
12	12/01/26	UPDATED BASEMENT	CP	SW
11	02/12/25	UPDATED BASEMENT	SW	SW
10	08/09/25	updated boom gate	SW	SW
9	28/08/25	updated ramp	SW	SW
8	22/08/25	REVISED RAMP ASSESSMENT	SW	SW
6	06/08/25	UPDATED YEILD	SW	SW
5	31/07/25	UPDATED BASEMENT	SW	SW
4	25/07/25	169 UNIT ASSESSMENT	SW	SW
3	08/07/25	UPDATED SSDA REVIEW	SW	SW
2	20/06/25	171 UNIT INITIAL ASSESSMENT	SW	SW
1	30/05/25	ALT LIFT DEIGN	SW	SW

PROJECT
ALDI GORDON

DRAWING TITLE
Loading Dock & Turntable
180 Unit Assessment

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT	ECOVE
DRAWING #	ptcT-DWG-SK01
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

SSDA

REV 12

OUT OF HOURS
Entry - Roller Door controlled by LPR (residents) & intercom (visitors) at ground floor.
Exit - Roller Door controlled by LPR (residents) and intercom at B1 level (visitors).
All exiting vehicles to wait at B1 intercom until Roller Door opens.

NORMAL HOURS
Entry & Exit - Boom gate controlled by LPR (retail & residential/residential visitors).
Backup intercom/keypad provided on central island

Retail Class 3 - 40 Aldi spaces
(inc 2 x accessible & 6 small bay)
2 retail bicycle space

BASEMENT 1
40 BAYS
(Incl. 2 Accessible)

EXISTING CONCRETE WALL
COMMS ROOM
RL 116,214
STAIR PRESS
FS1
FS1A
MECHANICAL RISER
OPEN TO BELOW
RAMP SECTION D
RAMP SECTION C
ROLLER DOOR
6.10
DRIVEWAY WIDTH
2,750
6.20
AISLE WIDTH
COMBINED COLD WATER PUMP RM / RWT PUMP RM / FILTRATION RM 5.4 x 4 m
OUT OF HOURS All vehicles wait here until roller door opens
CUSTOMER GOODS LIFT BACKUP
CUSTOMER LIFT 2
UNISEX ACCESS BATH (1hr)
LIFT 1
LIFT 2
LIFT 3
PLANT ROOM
TROLLEY BAYS
SMALL CAR 2.5m
RETAIL 17.6m
Line w/ racking
5,900
6.10
6.40
HEIGHT
RAMP ABOVE
@1:5
1750mm
@1:8
2000mm
RL 116,214
ELEC
COMMS
STAIR PRESS
FS2
LOW HEADROOM (2.2m)
SWITCH ROOM
SWITCH DIAMOND ABOVE
MECH PLANT ABOVE
10,750
7,400
4,000
2,850
7,950
3,050
7,600
11,850
1,100
7,150
3,855
8,000
9,950
5,200
4,400

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B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.864m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
12	12/01/26	UPDATED BASEMENT	CP	SW
11	02/12/25	UPDATED BASEMENT	SW	SW
10	08/09/25	updated boom gate	SW	SW
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8	22/08/25	not used	SW	SW
6	06/08/25	not used	SW	SW
5	31/07/25	not used	SW	SW
4	25/07/25	not used	SW	SW
3	08/07/25	not used	SW	SW
2	20/06/25	not used	SW	SW
1	30/05/25	not used	SW	SW

PROJECT
ALDI GORDON

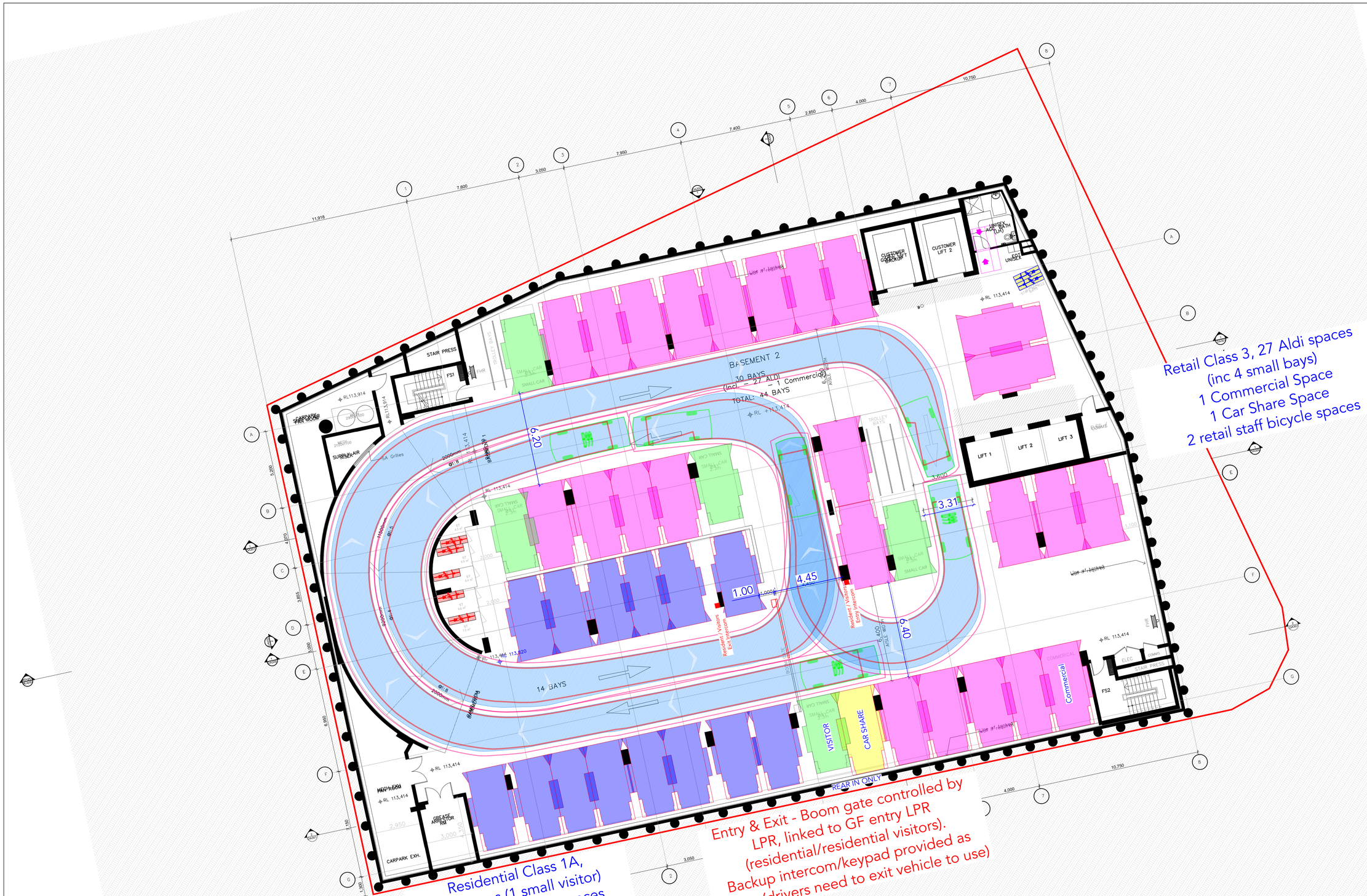
DRAWING TITLE
Basement 1
180 Unit Assessment

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT	ECOVE
DRAWING #	ptcT-DWG-SK10
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

SSDA

REV 10



NOTES

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B99 Vehicle (Realistic min radius) (2004)	
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Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.864m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

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11	02/12/25	UPDATED BASEMENT	SW	SW
10	08/09/25	updated boom gate	SW	SW
9	28/08/25	updated ramp	SW	SW
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3	08/07/25	UPDATED SSDA REVIEW	SW	SW
2	20/06/25	171 UNIT INITIAL ASSESSMENT	SW	SW
1	30/05/25	ALT LIFT DEIGN	SW	SW

PROJECT
ALDI GORDON

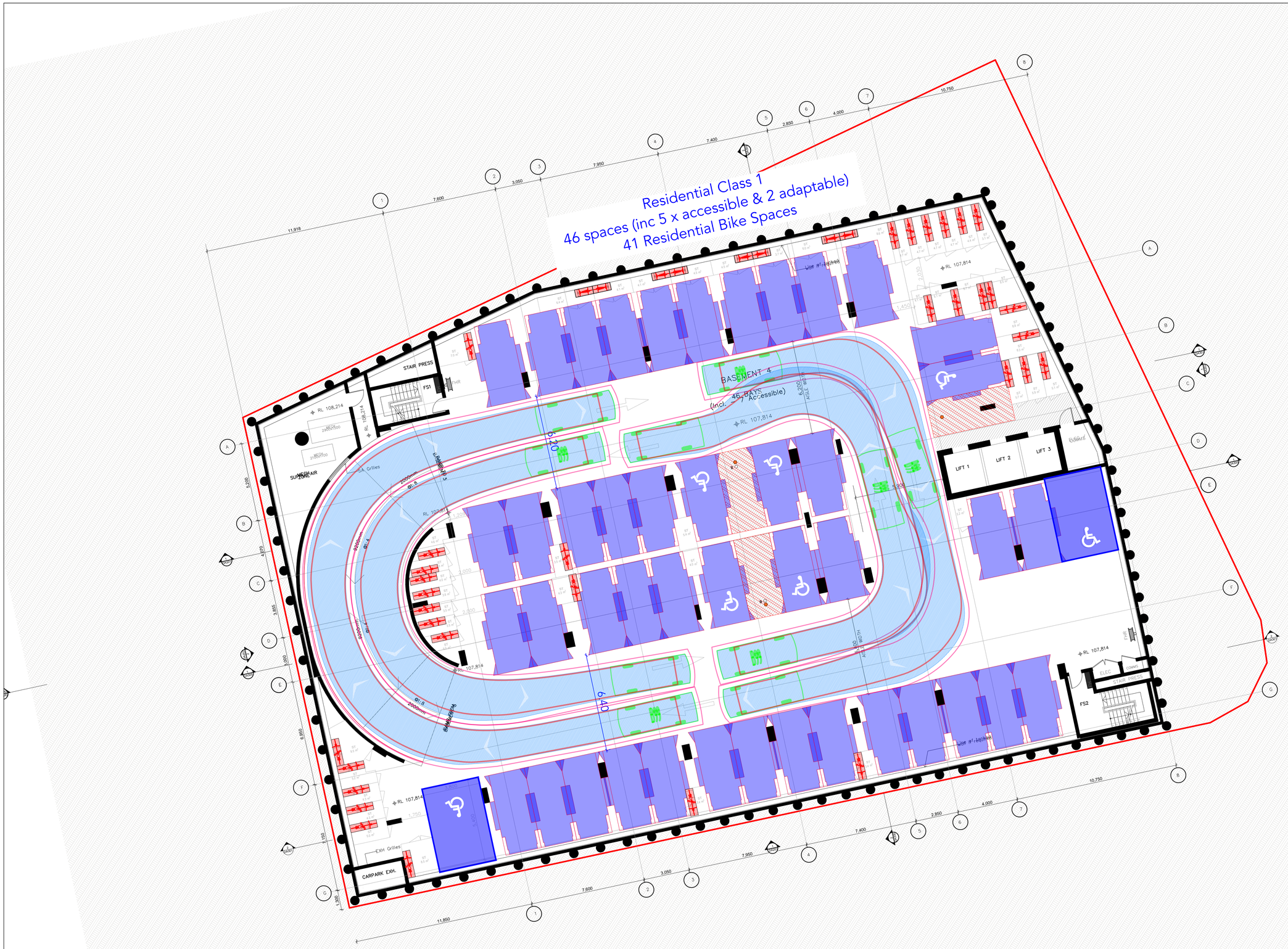
DRAWING TITLE
Basement 2
180 Unit Assessment

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT ECOVE
DRAWING # ptcT-DWG-SK03
PROJECT # 24-1172
SCALE 1 : 100 @ A1
1 : 200 @ A3
SSDA

REV 12


Residential Class 1
45 spaces (inc 5 x accessible & 2 adaptable)
30 Residential Bike Spaces
BASEMENT 3
(Incl. 45 BAYS 7 Accessible)
RL 110,614
6.20
6.40
STAIR PRESS
FS1
SUMP
SUMP PUMP
SUMP PUMP
RL 111,014
SUMP
RL 111,014
SUMP
RL 110,614
SUMP
SUMP
SUMP



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PROJECT
ALDI GORDON

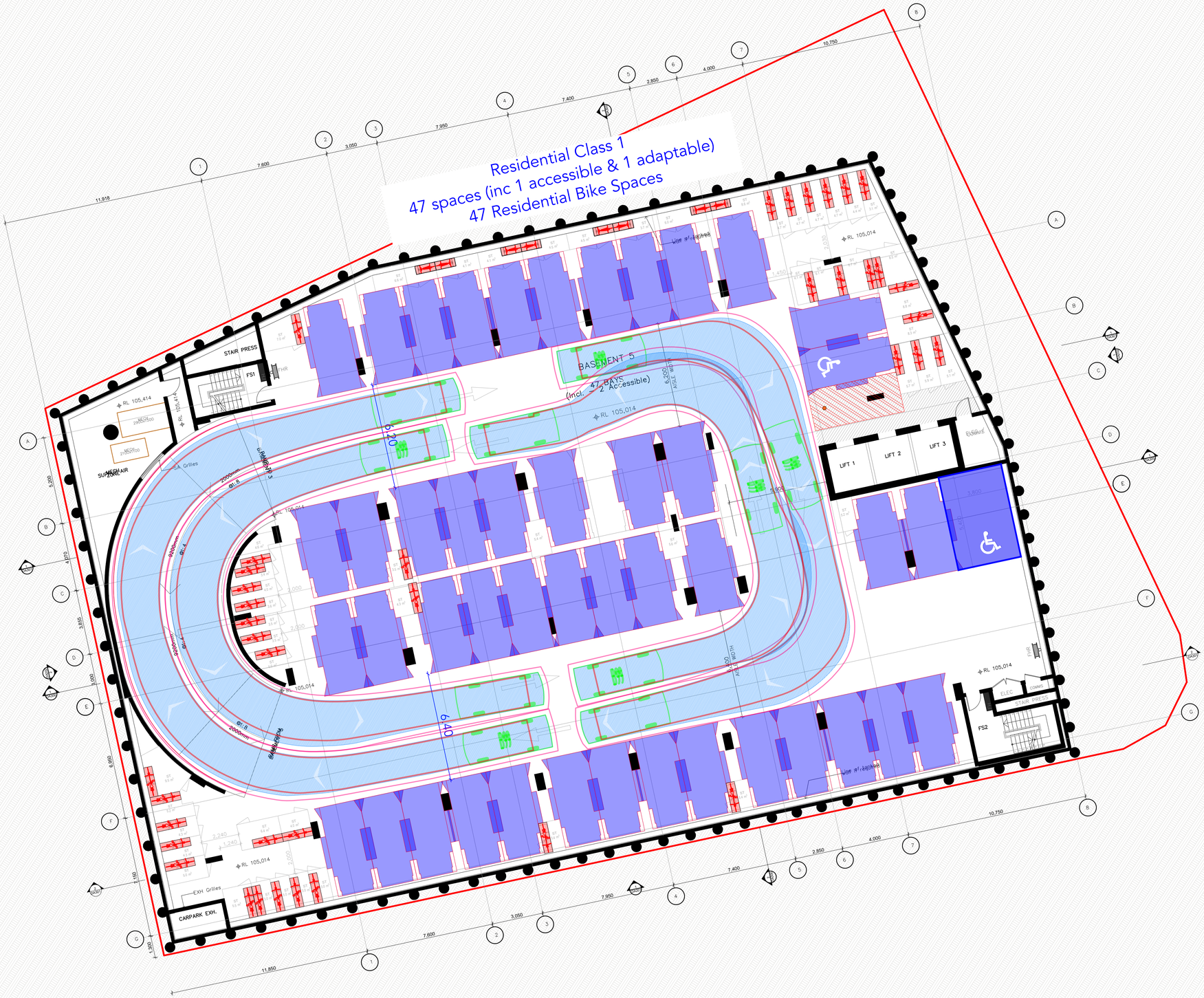
DRAWING TITLE
Basement 4
180 Unit Assessment

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT	ECOVE
DRAWING #	ptcT-DWG-SK05
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

SSDA

REV 12



NOTES

NOT FOR CONSTRUCTION
These drawings have been prepared for information only and are not issue for construction

SWEPT PATHS
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.864m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
12	12/01/26	UPDATED BASEMENT	CP	SW
11	02/12/25	UPDATED BASEMENT	SW	SW
10	08/09/25	updated boom gate	SW	SW
9	28/08/25	updated ramp	SW	SW
8	22/08/25	REVISED RAMP ASSESSMENT	SW	SW
6	06/08/25	UPDATED YEILD	SW	SW
5	31/07/25	UPDATED BASEMENT	SW	SW
4	25/07/25	169 UNIT ASSESSMENT	SW	SW
3	08/07/25	UPDATED SSDA REVIEW	SW	SW
2	20/06/25	171 UNIT INITIAL ASSESSMENT	SW	SW
1	30/05/25	ALT LIFT DEIGN	SW	SW

PROJECT
ALDI GORDON

DRAWING TITLE
Basement 5
180 Unit Assessment

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT	ECOVE
DRAWING #	ptcT-DWG-SK06
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

SSDA

REV 12



NOTES

NOT FOR CONSTRUCTION
These drawings have been prepared for information only and are not issue for construction

SWEPT PATHS
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.



B99 Vehicle (Realistic min radius) (2004)	
Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.864m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
12	12/01/26	UPDATED BASEMENT	CP	SW
11	02/12/25	UPDATED BASEMENT	SW	SW
10	08/09/25	updated boom gate	SW	SW
9	28/08/25	updated ramp	SW	SW
8	22/08/25	REVISED RAMP ASSESSMENT	SW	SW
6	06/08/25	UPDATED YEILD	SW	SW
5	31/07/25	UPDATED BASEMENT	SW	SW
4	25/07/25	169 UNIT ASSESSMENT	SW	SW
3	08/07/25	UPDATED SSDA REVIEW	SW	SW
2	20/06/25	171 UNIT INITIAL ASSESSMENT	SW	SW
1	30/05/25	ALT LIFT DEIGN	SW	SW

PROJECT
ALDI GORDON

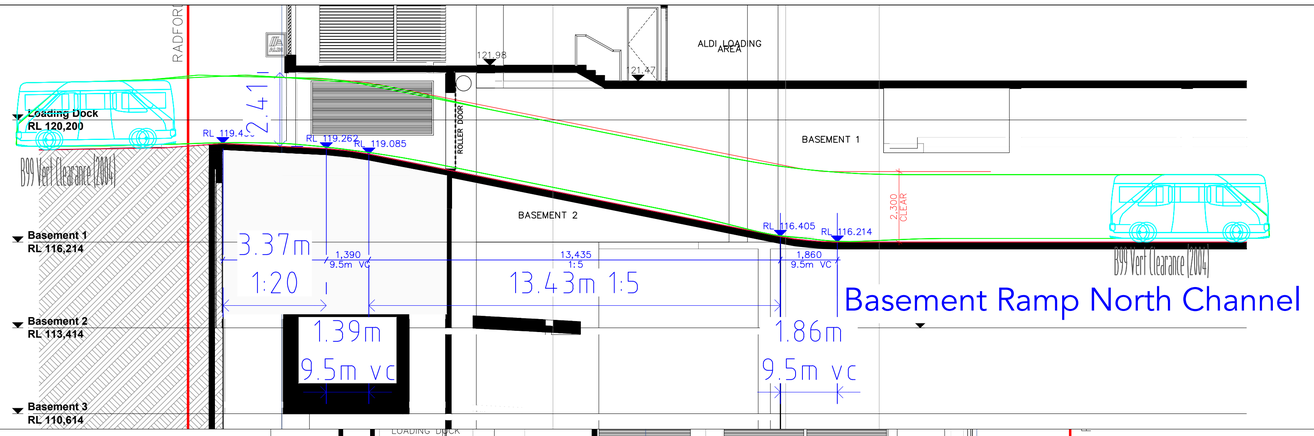
DRAWING TITLE
Basement 6
180 Unit Assessment

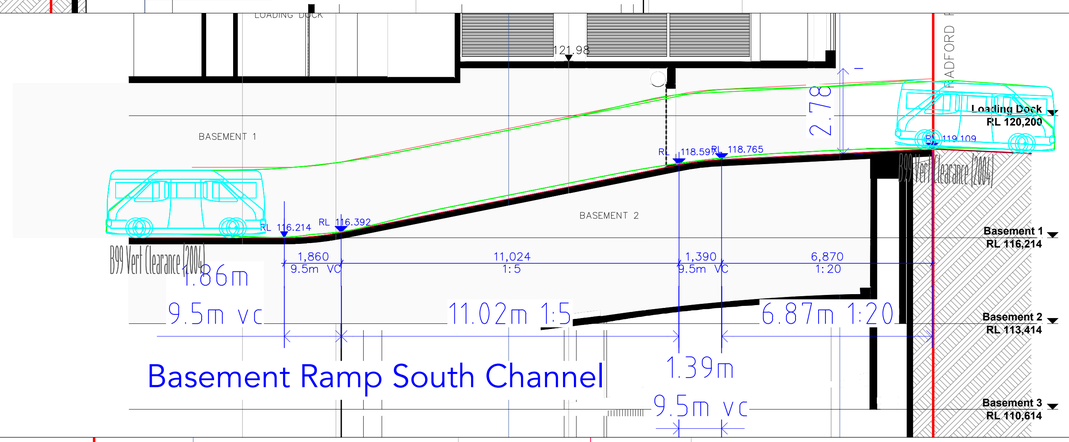
ptc.
Suite 502, 1 James Place
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t +61 2 8920 0800
ptcconsultants.co

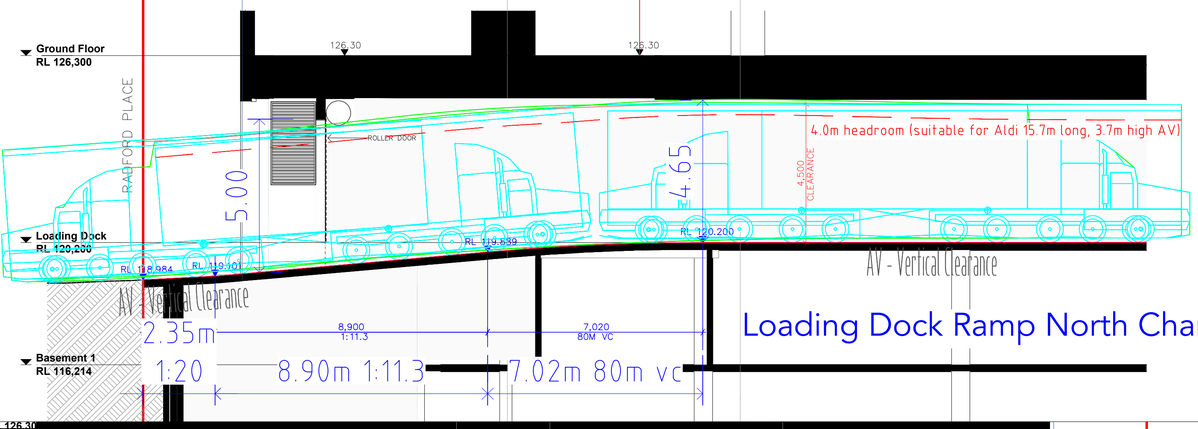
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DRAWING #	ptcT-DWG-SK07
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

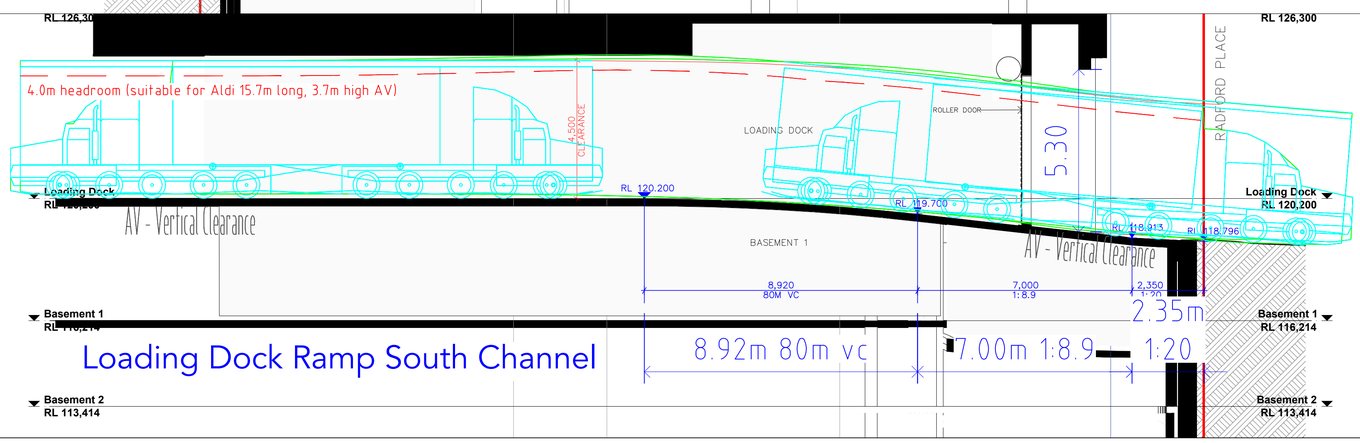
SSDA

REV 12







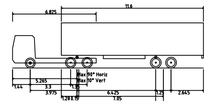


NOTES

NOT FOR CONSTRUCTION
These drawings have been prepared for information only and are not issue for construction

SWEPT PATHS
The turning paths illustrated in this drawing have been prepared using the Autotrack vehicle modelling software in conjunction with AutoCAD. The vehicle model was prepared by Analytico Pty Ltd based upon vehicle data provided by Austroads. While this modelling represents a conservative assessment of the vehicles ability, it is not possible to account for all vehicle types/characteristics or driver ability.

It should be noted that the vertical clearance assessment for the Loading Dock ramp has been undertaken utilising a 19m Articulated Vehicle, with a 4.5m headroom clearance and therefore is a more conservative assessment (than utilising the 15.585m Aldi AV, with a 3.7m vehicle height)
A vertical assessment for a 4.5m high HRV has been undertaken and this can be accommodated within the ramp grades and headroom



Copy of Aldi refrigerated Articulated Vehicle

Overall Length	15.585m
Overall Width	2.490m
Overall Body Height	3.681m
Min Body Ground Clearance	0.411m
Max Track Width	2.490m
Lock-to-lock time	6.00s
Wall to Wall Turning Radius	8.000m



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m

DRAWING KEY

REV	DATE	DESCRIPTION	DRAWN	REVIEWED
12	12/01/26	UPDATED BASEMENT	CP	SW
11	02/12/25	UPDATED BASEMENT	SW	SW
10	01/12/25	updated yield	SW	SW
9	28/08/25	updated ramp	SW	SW
8	22/08/25	REVISED RAMP ASSESSMENT	SW	SW
6	06/08/25	UPDATED YEILD	SW	SW
5	31/07/25	UPDATED BASEMENT	SW	SW
4	25/07/25	169 UNIT ASSESSMENT	SW	SW
3	08/07/25	UPDATED SSDA REVIEW	SW	SW
2	20/06/25	171 UNIT INITIAL ASSESSMENT	SW	SW
1	30/05/25	ALT LIFT DEIGN	SW	SW

PROJECT
ALDI GORDON

DRAWING TITLE
Loading Dock & Basement Ramp Assessment
180 Unit Development

ptc.
Suite 502, 1 James Place
North Sydney NSW 2060
t +61 2 8920 0800
ptcconsultants.co

CLIENT	ECOVE
DRAWING #	ptcT-DWG-SK08
PROJECT #	24-1172
SCALE	1 : 100 @ A1 1 : 200 @ A3

SSDA

REV 12

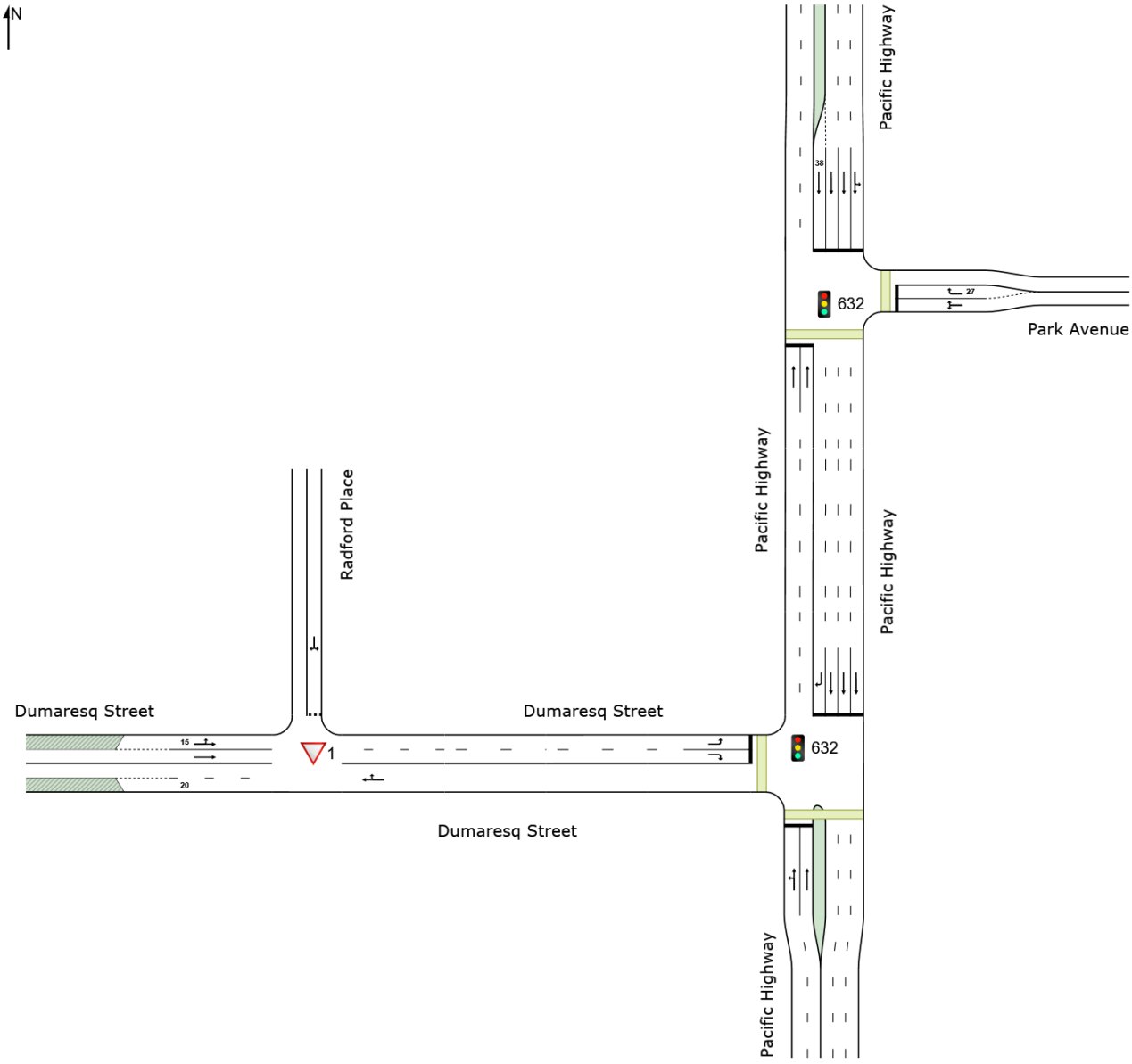
Appendix 3. SIDRA Results

NETWORK LAYOUT

Network: N101 [Existing Thursday AM Peak (Network Folder: Existing Thursday AM Peak)]

Network Existing AM Peak
Network Category: Existing Design
EQUISAT (Fixed-Time/SCATS) Coordinated
Common Control Group: CCG1 [1]

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽1	NA	1. Dumaresq Street / Radford Place AM
632	CCG1	2. Dumaresq Street / Pacific Highway AM
632	CCG1	3. Pacific Highway / Park Avenue AM

MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place AM (Site Folder: Existing - Thursday AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Thursday AM Peak (Network Folder: Existing Thursday AM Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	55	1.9	55	1.9	0.056	0.0	LOS A	0.1	0.5	0.23	0.27	0.23	47.2
6	R2	All MCs	25	0.0	25	0.0	0.056	7.7	LOS A	0.1	0.5	0.23	0.27	0.23	33.2
Approach			80	1.3	80	1.3	0.056	2.4	NA	0.1	0.5	0.23	0.27	0.23	45.6
North: Radford Place															
7	L2	All MCs	5	0.0	5	0.0	0.006	3.5	LOS A	0.0	0.1	0.22	0.48	0.22	24.1
9	R2	All MCs	3	0.0	3	0.0	0.006	3.8	LOS A	0.0	0.1	0.22	0.48	0.22	43.5
Approach			8	0.0	8	0.0	0.006	3.6	LOS A	0.0	0.1	0.22	0.48	0.22	39.4
West: Dumaresq Street															
10	L2	All MCs	32	3.3	32	3.3	0.079	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	41.7
11	T1	All MCs	244	0.0	244	0.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.05	0.00	49.4
Approach			276	0.4	276	0.4	0.079	0.5	NA	0.0	0.0	0.00	0.06	0.00	48.3
All Vehicles			364	0.6	364	0.6	0.079	1.0	NA	0.1	0.5	0.06	0.12	0.06	47.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [1]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Thursday AM Peak (Network Folder: Existing Thursday AM Peak)]

EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway AM]															
South: Pacific Highway															
1	L2	All MCs	57	0.0	57	0.0	0.531	24.7	LOS B	12.7	93.0	0.64	0.60	0.64	37.9
2	T1	All MCs	1031	5.5	1031	5.5	0.531	17.4	LOS B	13.4	98.6	0.64	0.59	0.64	38.1
Approach			1088	5.2	1088	5.2	0.531	17.7	LOS B	13.4	98.6	0.64	0.59	0.64	38.1
North: Pacific Highway															
8	T1	All MCs	2093	3.6	2089	3.6	0.546	1.1	LOS A	3.0	21.4	0.11	0.10	0.11	58.0
9	R2	All MCs	122	0.8	122	0.8	* 0.385	18.6	LOS B	2.5	17.9	0.55	0.71	0.55	7.3
Approach			2215	3.5	2210	3.5	0.546	2.1	LOS A	3.0	21.4	0.13	0.13	0.13	56.2
West: Dumaresq Street															
10	L2	All MCs	41	0.0	41	0.0	0.090	42.3	LOS C	1.3	8.8	0.77	0.70	0.77	6.4
12	R2	All MCs	162	0.0	162	0.0	0.517	60.7	LOS E	6.2	43.2	0.95	0.81	0.95	21.3
Approach			203	0.0	203	0.0	0.517	57.0	LOS E	6.2	43.2	0.92	0.78	0.92	19.7
All Vehicles			3506	3.8	3501	3.8	0.546	10.1	LOS A	13.4	98.6	0.33	0.31	0.33	44.9
Site: 632 [3. Pacific Highway / Park Avenue AM]															
South: Pacific Highway															
2	T1	All MCs	1072	5.3	1072	5.3	0.422	0.4	LOS A	0.7	5.5	0.04	0.03	0.04	59.2
Approach			1072	5.3	1072	5.3	0.422	0.4	LOS A	0.7	5.5	0.04	0.03	0.04	59.2
East: Park Avenue															
4	L2	All MCs	62	0.0	62	0.0	1.081	203.1	LOS F	14.1	99.4	1.00	1.34	1.89	9.0
6	R2	All MCs	386	0.8	386	0.8	* 1.081	199.1	LOS F	16.1	113.6	1.00	1.34	1.88	15.4
Approach			448	0.7	448	0.7	1.081	199.6	LOS F	16.1	113.6	1.00	1.34	1.88	14.6
North: Pacific Highway															
7	L2	All MCs	353	1.7	353	1.7	* 0.814	21.9	LOS B	19.3	138.1	0.78	0.78	0.79	42.1
8	T1	All MCs	2153	3.6	2153	3.6	0.814	18.8	LOS B	24.2	174.6	0.75	0.72	0.78	37.9
Approach			2506	3.3	2506	3.3	0.814	19.2	LOS B	24.2	174.6	0.75	0.72	0.78	38.8
All Vehicles			4026	3.6	4026	3.6	1.081	34.3	LOS C	24.2	174.6	0.59	0.61	0.70	32.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway AM]											
South: Pacific Highway											
P1	Full	221	64.2	LOS F	0.8	0.8	0.97	0.97	230.9	200.0	0.87
West: Dumaresq Street											
P4	Full	59	63.8	LOS F	0.2	0.2	0.96	0.96	230.5	200.0	0.87
All Pedestrians		280	64.1	LOS F	0.8	0.8	0.96	0.96	230.8	200.0	0.87
Site: 632 [3. Pacific Highway / Park Avenue AM]											
South: Pacific Highway											
P1	Full	208	64.2	LOS F	0.8	0.8	0.97	0.97	230.9	200.0	0.87
East: Park Avenue											
P2	Full	39	63.7	LOS F	0.1	0.1	0.96	0.96	230.4	200.0	0.87
All Pedestrians		247	64.1	LOS F	0.8	0.8	0.96	0.96	230.8	200.0	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place PM (Site Folder: Existing - Thursday PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Thursday PM Peak (Network Folder: Existing Thursday PM Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	49	2.1	43	1.8	0.024	0.0	LOS A	0.0	0.0	0.03	0.04	0.03	49.6
6	R2	All MCs	2	0.0	2	0.0	0.024	7.7	LOS A	0.0	0.0	0.03	0.04	0.03	39.9
Approach			52	2.0	45	1.7	0.024	0.3	NA	0.0	0.0	0.03	0.04	0.03	49.5
North: Radford Place															
7	L2	All MCs	43	0.0	43	0.0	0.045	3.5	LOS A	0.2	1.3	0.21	0.49	0.21	24.3
9	R2	All MCs	2	0.0	2	0.0	0.045	3.8	LOS A	0.2	1.3	0.21	0.49	0.21	43.5
Approach			45	0.0	45	0.0	0.045	3.5	LOS A	0.2	1.3	0.21	0.49	0.21	28.7
West: Dumaresq Street															
10	L2	All MCs	1	0.0	1	0.0	0.068	4.6	LOS A	1.0	6.9	0.00	0.00	0.00	42.7
11	T1	All MCs	244	0.0	244	0.0	0.068	0.0	LOS A	1.0	6.9	0.00	0.00	0.00	49.9
Approach			245	0.0	245	0.0	0.068	0.0	NA	1.0	6.9	0.00	0.00	0.00	49.9
All Vehicles			342	0.3	335	0.3	0.068	0.6	NA	1.0	6.9	0.03	0.07	0.03	49.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [632]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Thursday PM Peak (Network Folder: Existing Thursday PM Peak)]

EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway PM]															
South: Pacific Highway															
1	L2	All MCs	100	1.0	100	1.0	* 1.409	425.3	LOS F	81.1	575.4	1.00	2.46	2.95	4.1
2	T1	All MCs	1552	1.7	1552	1.7	1.409	415.3	LOS F	95.5	678.1	1.00	2.51	2.95	4.2
Approach			1652	1.6	1652	1.6	1.409	415.9	LOS F	95.5	678.1	1.00	2.50	2.95	4.2
North: Pacific Highway															
8	T1	All MCs	1129	2.6	1129	2.6	0.298	1.6	LOS A	1.7	12.2	0.10	0.09	0.10	57.2
9	R2	All MCs	119	0.0	119	0.0	* 0.660	72.4	LOS F	3.6	25.0	1.00	0.92	1.05	2.1
Approach			1248	2.3	1248	2.3	0.660	8.3	LOS A	3.6	25.0	0.19	0.17	0.19	46.8
West: Dumaresq Street															
10	L2	All MCs	137	0.0	137	0.0	0.525	51.1	LOS D	3.6	25.0	0.89	0.90	0.89	5.4
12	R2	All MCs	145	0.0	145	0.0	0.428	58.0	LOS E	5.3	37.4	0.93	0.79	0.93	21.9
Approach			282	0.0	282	0.0	0.525	54.6	LOS D	5.3	37.4	0.91	0.84	0.91	16.0
All Vehicles			3182	1.8	3182	1.8	1.409	224.1	LOS F	95.5	678.1	0.67	1.44	1.68	7.0
Site: 632 [3. Pacific Highway / Park Avenue PM]															
South: Pacific Highway															
2	T1	All MCs	1689	1.5	1231	1.5	0.476	2.0	LOS A	3.5	25.0	0.15	0.14	0.15	56.4
Approach			1689	1.5	1231	1.5	0.476	2.0	LOS A	3.5	25.0	0.15	0.14	0.15	56.4
East: Park Avenue															
4	L2	All MCs	60	0.0	60	0.0	0.988	139.3	LOS F	12.5	87.6	1.00	1.16	1.56	12.5
6	R2	All MCs	388	0.0	388	0.0	* 0.988	138.5	LOS F	13.2	92.4	1.00	1.16	1.55	20.3
Approach			448	0.0	448	0.0	0.988	138.6	LOS F	13.2	92.4	1.00	1.16	1.55	19.4
North: Pacific Highway															
7	L2	All MCs	252	0.0	252	0.0	0.358	16.9	LOS B	6.5	45.6	0.51	0.64	0.51	43.9
8	T1	All MCs	1188	2.4	1188	2.4	0.358	9.4	LOS A	7.4	52.6	0.44	0.41	0.44	45.9
Approach			1440	2.0	1440	2.0	0.358	10.7	LOS A	7.4	52.6	0.45	0.45	0.45	45.3
All Vehicles			3577	1.5	3119	1.8	0.988	25.7	LOS B	13.2	92.4	0.41	0.43	0.49	37.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway PM]											
South: Pacific Highway											
P1	Full	268	64.3	LOS F	1.0	1.0	0.97	0.97	231.0	200.0	0.87
West: Dumaresq Street											
P4	Full	79	63.8	LOS F	0.3	0.3	0.96	0.96	230.5	200.0	0.87
All Pedestrians		347	64.2	LOS F	1.0	1.0	0.97	0.97	230.9	200.0	0.87
Site: 632 [3. Pacific Highway / Park Avenue PM]											
South: Pacific Highway											
P1	Full	120	63.9	LOS F	0.5	0.5	0.96	0.96	230.6	200.0	0.87
East: Park Avenue											
P2	Full	160	64.1	LOS F	0.6	0.6	0.96	0.96	230.7	200.0	0.87
All Pedestrians		280	64.0	LOS F	0.6	0.6	0.96	0.96	230.7	200.0	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place Peak (Site Folder: Existing - Saturday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Saturday Peak (Network Folder: Existing Saturday Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing Design
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	57	1.9	57	1.9	0.034	0.0	LOS A	0.0	0.1	0.07	0.08	0.07	49.1
6	R2	All MCs	4	0.0	4	0.0	0.034	10.9	LOS A	0.0	0.1	0.07	0.08	0.07	38.3
Approach			61	1.7	61	1.7	0.034	0.8	NA	0.0	0.1	0.07	0.08	0.07	48.9
North: Radford Place															
7	L2	All MCs	4	0.0	4	0.0	0.006	3.8	LOS A	0.0	0.1	0.30	0.49	0.30	23.3
9	R2	All MCs	2	0.0	2	0.0	0.006	4.1	LOS A	0.0	0.1	0.30	0.49	0.30	43.3
Approach			6	0.0	6	0.0	0.006	3.9	LOS A	0.0	0.1	0.30	0.49	0.30	38.3
West: Dumaresq Street															
10	L2	All MCs	4	0.0	4	0.0	0.116	4.6	LOS A	1.6	10.9	0.00	0.01	0.00	42.6
11	T1	All MCs	404	0.0	404	0.0	0.116	0.0	LOS A	1.6	10.9	0.00	0.01	0.00	49.9
Approach			408	0.0	408	0.0	0.116	0.1	NA	1.6	10.9	0.00	0.01	0.00	49.8
All Vehicles			476	0.2	476	0.2	0.116	0.2	NA	1.6	10.9	0.01	0.02	0.01	49.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [632]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Existing Saturday Peak (Network Folder: Existing Saturday Peak)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 141 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway Peak]															
South: Pacific Highway															
1	L2	All MCs	146	0.0	146	0.0	* 0.712	32.6	LOS C	20.0	140.9	0.80	0.76	0.80	32.7
2	T1	All MCs	1241	1.0	1241	1.0	0.712	23.9	LOS B	22.2	157.0	0.80	0.74	0.80	33.3
Approach			1387	0.9	1387	0.9	0.712	24.9	LOS B	22.2	157.0	0.80	0.74	0.80	33.3
North: Pacific Highway															
8	T1	All MCs	1489	1.3	1486	1.3	0.382	1.9	LOS A	2.9	20.7	0.13	0.12	0.13	56.8
9	R2	All MCs	182	0.0	182	0.0	* 0.625	54.6	LOS D	3.6	25.0	1.00	0.97	1.00	2.7
Approach			1671	1.2	1668	1.2	0.625	7.6	LOS A	3.6	25.0	0.22	0.21	0.22	47.6
West: Dumaresq Street															
10	L2	All MCs	163	0.0	163	0.0	0.322	41.4	LOS C	3.6	25.0	0.81	0.76	0.81	6.5
12	R2	All MCs	162	0.0	162	0.0	0.504	60.8	LOS E	6.2	43.5	0.95	0.81	0.95	21.3
Approach			325	0.0	325	0.0	0.504	51.1	LOS D	6.2	43.5	0.88	0.78	0.88	16.5
All Vehicles			3383	1.0	3380	1.0	0.712	18.9	LOS B	22.2	157.0	0.52	0.48	0.52	36.2
Site: 632 [3. Pacific Highway / Park Avenue Peak]															
South: Pacific Highway															
2	T1	All MCs	1404	0.9	1404	0.9	0.531	0.8	LOS A	2.2	15.4	0.07	0.07	0.07	58.6
Approach			1404	0.9	1404	0.9	0.531	0.8	LOS A	2.2	15.4	0.07	0.07	0.07	58.6
East: Park Avenue															
4	L2	All MCs	100	0.0	100	0.0	1.036	171.6	LOS F	12.2	85.5	1.00	1.26	1.74	10.4
6	R2	All MCs	319	1.3	319	1.3	* 1.036	168.0	LOS F	14.3	101.5	1.00	1.26	1.71	17.5
Approach			419	1.0	419	1.0	1.036	168.8	LOS F	14.3	101.5	1.00	1.26	1.72	16.0
North: Pacific Highway															
7	L2	All MCs	359	0.3	359	0.3	0.535	18.2	LOS B	10.1	71.0	0.58	0.70	0.58	43.1
8	T1	All MCs	1571	1.3	1571	1.3	0.535	10.1	LOS A	13.4	94.6	0.51	0.48	0.51	44.6
Approach			1930	1.1	1930	1.1	0.535	11.6	LOS A	13.4	94.6	0.52	0.52	0.52	44.2
All Vehicles			3753	1.0	3753	1.0	1.036	25.1	LOS B	14.3	101.5	0.41	0.43	0.49	36.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)

Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway Peak]											
South: Pacific Highway											
P1	Full	268	65.4	LOS F	1.0	1.0	0.97	0.97	232.0	200.0	0.86
West: Dumaresq Street											
P4	Full	79	64.8	LOS F	0.3	0.3	0.96	0.96	231.5	200.0	0.86
All Pedestrians		347	65.2	LOS F	1.0	1.0	0.97	0.97	231.9	200.0	0.86
Site: 632 [3. Pacific Highway / Park Avenue Peak]											
South: Pacific Highway											
P1	Full	120	65.0	LOS F	0.5	0.5	0.96	0.96	231.6	200.0	0.86
East: Park Avenue											
P2	Full	160	65.1	LOS F	0.6	0.6	0.96	0.96	231.7	200.0	0.86
All Pedestrians		280	65.0	LOS F	0.6	0.6	0.96	0.96	231.7	200.0	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

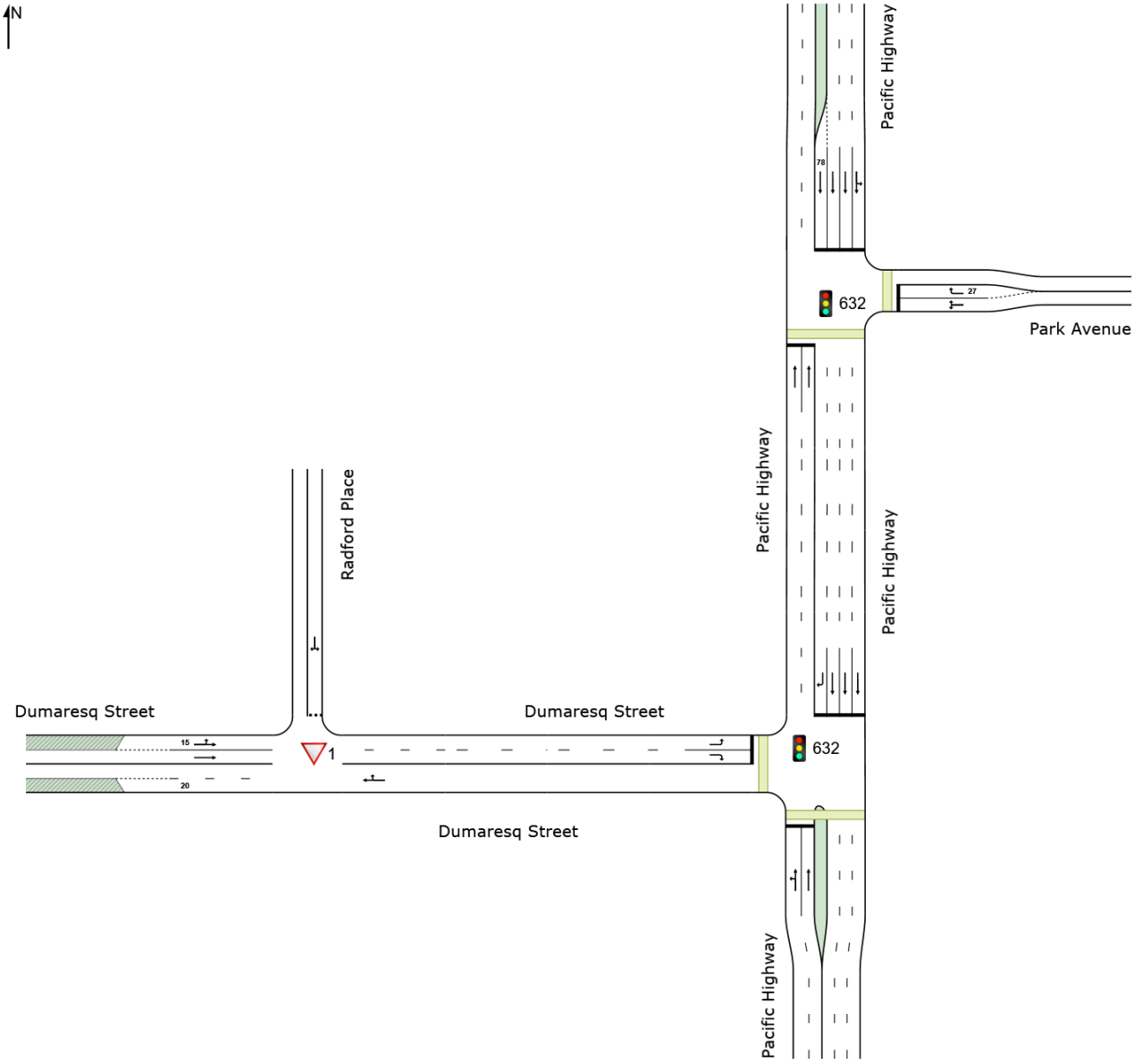
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NETWORK LAYOUT

Network: N101 [Modified Network + Developmet - Thursday AM Peak (Network Folder: Modified Network + Development - Thursday AM Peak)]

Network Existing AM Peak
Network Category: Existing Design
EQUISAT (Fixed-Time/SCATS) Coordinated
Common Control Group: CCG1 [1]

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
▽1	NA	1. Dumaresq Street / Radford Place - Weekday AM
632	CCG1	2. Dumaresq Street / Pacific Highway - Weekday AM
632	CCG1	3. Pacific Highway / Park Avenue - Weekday AM

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MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place - Weekday AM (Site Folder: Modified Intersection + Development - Thursday AM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Developmet - Thursday AM Peak (Network Folder: Modified Network + Development - Thursday AM Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing intersection with Developmet Trip
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	55	1.9	55	1.9	0.084	0.0	LOS A	0.1	0.9	0.28	0.38	0.28	46.3
6	R2	All MCs	51	0.0	50	0.0	0.084	7.5	LOS A	0.1	0.9	0.28	0.38	0.28	31.1
Approach			105	1.0	105	1.0	0.084	3.6	NA	0.1	0.9	0.28	0.38	0.28	43.0
North: Radford Place															
7	L2	All MCs	49	0.0	49	0.0	0.037	3.6	LOS A	0.1	0.4	0.21	0.51	0.21	26.0
9	R2	All MCs	4	0.0	4	0.0	0.037	3.9	LOS A	0.1	0.4	0.21	0.51	0.21	45.6
Approach			54	0.0	54	0.0	0.037	3.6	LOS A	0.1	0.4	0.21	0.51	0.21	32.7
West: Dumaresq Street															
10	L2	All MCs	33	3.2	33	3.2	0.085	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	41.8
11	T1	All MCs	244	0.0	244	0.0	0.085	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.4
Approach			277	0.4	277	0.4	0.085	0.6	NA	0.0	0.0	0.00	0.06	0.00	48.3
All Vehicles			436	0.5	435	0.5	0.085	1.7	NA	0.1	0.9	0.09	0.19	0.09	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [1]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Developmet - Thursday AM Peak (Network Folder: Modified Network + Development - Thursday AM Peak)]

EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway - Weekday AM]															
South: Pacific Highway															
1	L2	All MCs	69	0.0	69	0.0	0.537	24.8	LOS B	12.9	94.3	0.64	0.61	0.64	37.7
2	T1	All MCs	1031	5.5	1031	5.5	0.537	17.4	LOS B	13.7	100.2	0.64	0.59	0.64	38.0
Approach			1100	5.2	1100	5.2	0.537	17.9	LOS B	13.7	100.2	0.64	0.59	0.64	38.0
North: Pacific Highway															
8	T1	All MCs	2093	3.6	2088	3.6	0.546	1.1	LOS A	3.1	22.0	0.11	0.10	0.11	58.0
9	R2	All MCs	136	0.7	135	0.7	* 0.432	22.7	LOS B	3.4	23.8	0.65	0.75	0.65	6.1
Approach			2229	3.5	2223	3.5	0.546	2.4	LOS A	3.4	23.8	0.14	0.14	0.14	55.6
West: Dumaresq Street															
10	L2	All MCs	63	0.0	63	0.0	0.135	43.1	LOS D	2.0	13.7	0.77	0.71	0.77	6.3
12	R2	All MCs	184	0.0	184	0.0	0.593	61.8	LOS E	7.1	49.9	0.97	0.82	0.97	21.1
Approach			247	0.0	247	0.0	0.593	57.0	LOS E	7.1	49.9	0.92	0.79	0.92	19.0
All Vehicles			3575	3.7	3570	3.8	0.593	11.0	LOS A	13.7	100.2	0.35	0.32	0.35	43.9
Site: 632 [3. Pacific Highway / Park Avenue - Weekday AM]															
South: Pacific Highway															
2	T1	All MCs	1094	5.2	1094	5.2	0.430	0.4	LOS A	0.8	5.7	0.04	0.03	0.04	59.2
Approach			1094	5.2	1094	5.2	0.430	0.4	LOS A	0.8	5.7	0.04	0.03	0.04	59.2
East: Park Avenue															
4	L2	All MCs	64	0.0	64	0.0	1.106	222.7	LOS F	14.7	103.4	1.00	1.39	1.99	8.2
6	R2	All MCs	386	0.8	386	0.8	* 1.106	218.4	LOS F	17.1	120.6	1.00	1.39	1.97	14.2
Approach			450	0.7	450	0.7	1.106	219.0	LOS F	17.1	120.6	1.00	1.39	1.97	13.5
North: Pacific Highway															
7	L2	All MCs	353	1.7	353	1.7	* 0.781	20.5	LOS B	16.8	120.2	0.75	0.75	0.75	42.6
8	T1	All MCs	2165	3.6	2165	3.6	0.781	13.8	LOS A	19.8	142.9	0.70	0.66	0.71	40.8
Approach			2518	3.3	2518	3.3	0.781	14.8	LOS B	19.8	142.9	0.71	0.67	0.71	41.2
All Vehicles			4062	3.5	4062	3.5	1.106	33.5	LOS C	19.8	142.9	0.56	0.58	0.67	32.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway - Weekday AM]											
South: Pacific Highway											
P1	Full	221	64.2	LOS F	0.8	0.8	0.97	0.97	230.9	200.0	0.87
West: Dumaresq Street											
P4	Full	59	63.8	LOS F	0.2	0.2	0.96	0.96	230.5	200.0	0.87
All Pedestrians		280	64.1	LOS F	0.8	0.8	0.96	0.96	230.8	200.0	0.87
Site: 632 [3. Pacific Highway / Park Avenue - Weekday AM]											
South: Pacific Highway											
P1	Full	208	64.2	LOS F	0.8	0.8	0.97	0.97	230.9	200.0	0.87
East: Park Avenue											
P2	Full	39	63.7	LOS F	0.1	0.1	0.96	0.96	230.4	200.0	0.87
All Pedestrians		247	64.1	LOS F	0.8	0.8	0.96	0.96	230.8	200.0	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place - Weekday PM (Site Folder: Modified Intersection + Development - Thursday PM Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Development - Thursday PM Peak (Network Folder: Modified Network + Development - Thursday PM Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing intersection with Developmet Trip
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	49	2.1	41	1.7	0.072	0.0	LOS A	0.1	0.8	0.23	0.38	0.23	46.5
6	R2	All MCs	57	0.0	47	0.0	0.072	6.9	LOS A	0.1	0.8	0.23	0.38	0.23	31.5
Approach			106	1.0	88	0.8	0.072	3.7	NA	0.1	0.8	0.23	0.38	0.23	42.7
North: Radford Place															
7	L2	All MCs	81	0.0	81	0.0	0.099	3.6	LOS A	0.6	4.0	0.23	0.51	0.23	25.1
9	R2	All MCs	4	0.0	4	0.0	0.099	3.9	LOS A	0.6	4.0	0.23	0.51	0.23	46.7
Approach			85	0.0	85	0.0	0.099	3.6	LOS A	0.6	4.0	0.23	0.51	0.23	30.1
West: Dumaresq Street															
10	L2	All MCs	3	0.0	3	0.0	0.071	4.6	LOS A	1.2	8.1	0.00	0.02	0.00	42.7
11	T1	All MCs	244	0.0	244	0.0	0.071	0.0	LOS A	1.2	8.1	0.00	0.01	0.00	50.0
Approach			247	0.0	247	0.0	0.071	0.1	NA	1.2	8.1	0.00	0.01	0.00	49.8
All Vehicles			439	0.2	421	0.3	0.099	1.6	NA	1.2	8.1	0.09	0.19	0.09	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [632]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Development - Thursday PM Peak (Network Folder: Modified Network + Development - Thursday PM Peak)]

EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 139 seconds (CCG User-Given Phase Times)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway - Weekday PM]															
South: Pacific Highway															
1	L2	All MCs	126	0.8	126	0.8	* 1.563	560.3	LOS F	101.9	722.6	1.00	2.76	3.38	3.2
2	T1	All MCs	1552	1.7	1552	1.7	1.563	551.9	LOS F	101.9	722.6	1.00	2.83	3.38	3.2
Approach			1678	1.6	1678	1.6	1.563	552.5	LOS F	101.9	722.6	1.00	2.83	3.38	3.2
North: Pacific Highway															
8	T1	All MCs	1129	2.6	1129	2.6	0.298	1.7	LOS A	1.8	12.7	0.11	0.09	0.11	57.1
9	R2	All MCs	148	0.0	148	0.0	* 0.823	78.4	LOS F	3.6	25.0	1.00	1.03	1.20	1.9
Approach			1277	2.3	1277	2.3	0.823	10.6	LOS A	3.6	25.0	0.21	0.20	0.23	43.9
West: Dumaresq Street															
10	L2	All MCs	152	0.0	152	0.0	0.629	53.6	LOS D	3.6	25.0	0.91	0.94	0.92	5.2
12	R2	All MCs	168	0.0	168	0.0	0.502	59.1	LOS E	6.3	44.1	0.94	0.81	0.94	21.7
Approach			320	0.0	320	0.0	0.629	56.5	LOS E	6.3	44.1	0.93	0.87	0.93	15.8
All Vehicles			3276	1.7	3276	1.7	1.563	292.7	LOS F	101.9	722.6	0.68	1.61	1.91	5.4
Site: 632 [3. Pacific Highway / Park Avenue - Weekday PM]															
South: Pacific Highway															
2	T1	All MCs	1704	1.5	1162	1.5	0.449	2.6	LOS A	3.5	25.0	0.18	0.16	0.18	55.6
Approach			1704	1.5	1162	1.5	0.449	2.6	LOS A	3.5	25.0	0.18	0.16	0.18	55.6
East: Park Avenue															
4	L2	All MCs	64	0.0	64	0.0	1.000	145.8	LOS F	13.0	91.0	1.00	1.21	1.60	12.0
6	R2	All MCs	388	0.0	388	0.0	* 1.000	144.9	LOS F	13.7	96.1	1.00	1.21	1.59	19.6
Approach			452	0.0	452	0.0	1.000	145.0	LOS F	13.7	96.1	1.00	1.21	1.59	18.7
North: Pacific Highway															
7	L2	All MCs	252	0.0	252	0.0	0.350	16.7	LOS B	6.3	44.2	0.51	0.64	0.51	43.9
8	T1	All MCs	1213	2.4	1213	2.4	0.350	8.8	LOS A	7.2	51.1	0.44	0.41	0.44	46.0
Approach			1465	2.0	1465	2.0	0.350	10.2	LOS A	7.2	51.1	0.45	0.45	0.45	45.4
All Vehicles			3621	1.5	3080	1.8	1.000	27.1	LOS B	13.7	96.1	0.43	0.45	0.52	36.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway - Weekday PM]											
South: Pacific Highway											
P1	Full	268	64.3	LOS F	1.0	1.0	0.97	0.97	231.0	200.0	0.87
West: Dumaresq Street											
P4	Full	79	63.8	LOS F	0.3	0.3	0.96	0.96	230.5	200.0	0.87
All Pedestrians		347	64.2	LOS F	1.0	1.0	0.97	0.97	230.9	200.0	0.87
Site: 632 [3. Pacific Highway / Park Avenue - Weekday PM]											
South: Pacific Highway											
P1	Full	120	63.9	LOS F	0.5	0.5	0.96	0.96	230.6	200.0	0.87
East: Park Avenue											
P2	Full	160	64.1	LOS F	0.6	0.6	0.96	0.96	230.7	200.0	0.87
All Pedestrians		280	64.0	LOS F	0.6	0.6	0.96	0.96	230.7	200.0	0.87

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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MOVEMENT SUMMARY

Site: 1 [1. Dumaresq Street / Radford Place - Saturday Peak (Site Folder: Modified Intersection + Development - Saturday Peak)]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Development - Saturday Peak (Network Folder: Modified + Development - Saturday Peak)]

1. Dumaresq Street / Radford Place AM
Site Category: Existing intersection with Developmet Trip
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
East: Dumaresq Street															
5	T1	All MCs	57	1.9	57	1.9	0.098	0.0	LOS A	0.2	1.1	0.35	0.45	0.35	45.6
6	R2	All MCs	53	0.0	53	0.0	0.098	9.2	LOS A	0.2	1.1	0.35	0.45	0.35	29.6
Approach			109	1.0	109	1.0	0.098	4.5	NA	0.2	1.1	0.35	0.45	0.35	42.1
North: Radford Place															
7	L2	All MCs	52	0.0	52	0.0	0.079	4.0	LOS A	0.4	2.5	0.31	0.55	0.31	25.0
9	R2	All MCs	5	0.0	5	0.0	0.079	4.4	LOS A	0.4	2.5	0.31	0.55	0.31	47.3
Approach			57	0.0	57	0.0	0.079	4.0	LOS A	0.4	2.5	0.31	0.55	0.31	33.3
West: Dumaresq Street															
10	L2	All MCs	7	0.0	7	0.0	0.126	4.6	LOS A	1.5	10.7	0.00	0.02	0.00	42.6
11	T1	All MCs	404	0.0	404	0.0	0.126	0.0	LOS A	1.5	10.7	0.00	0.01	0.00	49.9
Approach			412	0.0	412	0.0	0.126	0.1	NA	1.5	10.7	0.00	0.01	0.00	49.7
All Vehicles			578	0.2	578	0.2	0.126	1.3	NA	1.5	10.7	0.10	0.15	0.10	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

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

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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CCG MOVEMENT SUMMARY

Common Control Group: CCG1 [632]

Output produced by SIDRA INTERSECTION Version: 9.1.3.210

Network: N101 [Modified Network + Development - Saturday Peak (Network Folder: Modified + Development - Saturday Peak)]

EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 141 seconds (CCG User-Given Cycle Time)

Vehicle Movement Performance (CCG)

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
Site: 632 [2. Dumaresq Street / Pacific Highway - Saturday Peak]															
South: Pacific Highway															
1	L2	All MCs	170	0.0	170	0.0	0.928	68.4	LOS E	27.7	194.9	1.00	1.07	1.22	20.0
2	T1	All MCs	1241	1.0	1241	1.0	* 0.928	52.9	LOS D	38.7	273.0	1.00	1.05	1.16	21.9
Approach			1411	0.9	1411	0.9	0.928	54.7	LOS D	38.7	273.0	1.00	1.05	1.17	21.7
North: Pacific Highway															
8	T1	All MCs	1489	1.3	1489	1.3	0.403	2.2	LOS A	3.3	23.6	0.14	0.13	0.14	56.1
9	R2	All MCs	205	0.0	205	0.0	* 0.723	69.5	LOS E	3.6	25.0	1.00	1.03	1.05	2.1
Approach			1694	1.2	1694	1.2	0.723	10.4	LOS A	3.6	25.0	0.25	0.24	0.25	44.1
West: Dumaresq Street															
10	L2	All MCs	181	0.0	181	0.0	0.389	37.1	LOS C	3.6	25.0	0.77	0.76	0.77	7.1
12	R2	All MCs	191	0.0	191	0.0	0.504	57.0	LOS E	7.1	49.9	0.93	0.81	0.93	22.2
Approach			372	0.0	372	0.0	0.504	47.3	LOS D	7.1	49.9	0.85	0.79	0.85	17.7
All Vehicles			3478	0.9	3478	0.9	0.928	32.3	LOS C	38.7	273.0	0.62	0.63	0.69	28.2
Site: 634 [3. Pacific Highway / Park Avenue - Saturday Peak]															
South: Pacific Highway															
2	T1	All MCs	1422	0.9	1422	0.9	0.566	1.1	LOS A	3.1	21.7	0.10	0.09	0.10	58.1
Approach			1422	0.9	1422	0.9	0.566	1.1	LOS A	3.1	21.7	0.10	0.09	0.10	58.1
East: Park Avenue															
4	L2	All MCs	105	0.0	105	0.0	0.927	118.2	LOS F	10.0	70.4	1.00	1.07	1.41	14.6
6	R2	All MCs	319	1.3	319	1.3	* 0.927	114.2	LOS F	12.0	84.6	1.00	1.06	1.38	23.2
Approach			424	0.9	424	0.9	0.927	115.2	LOS F	12.0	84.6	1.00	1.06	1.39	21.4
North: Pacific Highway															
7	L2	All MCs	359	0.3	359	0.3	0.548	20.6	LOS B	10.2	71.8	0.63	0.73	0.63	41.7
8	T1	All MCs	1589	1.3	1589	1.3	0.548	12.5	LOS A	12.4	87.8	0.56	0.52	0.56	42.2
Approach			1948	1.1	1948	1.1	0.548	14.0	LOS A	12.4	87.8	0.57	0.56	0.57	42.1
All Vehicles			3794	1.0	3794	1.0	0.927	20.5	LOS B	12.4	87.8	0.44	0.44	0.49	39.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

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

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

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

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

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

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance (CCG)											
Mov ID	Crossing	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE [Ped	Dist]	Prop. Que	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	sec		ped	m			sec	m	m/sec
Site: 632 [2. Dumaresq Street / Pacific Highway - Saturday Peak]											
South: Pacific Highway											
P1	Full	268	65.4	LOS F	1.0	1.0	0.97	0.97	232.0	200.0	0.86
West: Dumaresq Street											
P4	Full	79	64.8	LOS F	0.3	0.3	0.96	0.96	231.5	200.0	0.86
All Pedestrians		347	65.2	LOS F	1.0	1.0	0.97	0.97	231.9	200.0	0.86
Site: 634 [3. Pacific Highway / Park Avenue - Saturday Peak]											
South: Pacific Highway											
P1	Full	120	65.0	LOS F	0.5	0.5	0.96	0.96	231.6	200.0	0.86
East: Park Avenue											
P2	Full	160	65.1	LOS F	0.6	0.6	0.96	0.96	231.7	200.0	0.86
All Pedestrians		280	65.0	LOS F	0.6	0.6	0.96	0.96	231.7	200.0	0.86

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

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Appendix 4. Gordon Cultural Hub Traffic Assessment (produced by TMA)

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QMS-500-06

Technical note

Project: Gordon Town Centre Study
Note: Task 2 Working paper
Author: Tim Clark/Simon Kinnear/Victor Leung

Date: 05/05/2016
Ref: TN_GRD_160530.docx

1 Introduction

Transport Modellers Alliance was commissioned by PeopleTrans on behalf of Ku-ring-gai Council to develop, calibrate and validate a Commuter microsimulation model of Gordon Town Centre. The model was developed from an existing commuter model which has been subsequently expanded to incorporate the proposed development site. The development site is known as the Gordon Cultural Hub.

In order to test the traffic and transport implications of potential developments options the base models are modified to reflect expected future conditions. The types of changes to the base models that are required include:

1. Additional demands due to existing development approvals, which are expected to be taken up in the near-term,
2. Approved adjustments to the road network,
3. The increase in demands associated with each of the options under consideration for the town centre.

2 Method

2.1 GENERAL

The purpose of developing future demands for the traffic models in this study is to permit the testing and comparison of several land use options under consideration for the Gordon Cultural Hub. In order to achieve this, it is necessary to identify land use changes that are expected to occur in the medium term (within approximately 10 years), regardless of the proposed developments at the Gordon Cultural Hub.

For this scenario (Baseline Future) a set of demands are developed and the traffic situation is analysed, incorporating expected changes to the road network that may occur over the same period. This scenario, “Future Base Line”, provides and assessment comparison for the options.

For each of the proposed options for the Gordon Cultural Hub a set of traffic demands are developed over and above the future baseline demands. These are then analysed in the model (options models) and the results are compared with the baseline future models to identify possible impacts of each option.

2.2 APPROACH

2.2.1 Step one – land use changes

Identify land use changes likely to occur in the baseline situation and in each of the options. These have been provided by Ku-ring-gai Council.

To provide a broad reasonableness test, these changes are compared with land use projections prepared by the Bureau of Transport Statistics (BTS) for travel zones across Sydney. This test checks

that the land use scenarios to be tested in the models are not unrealistically high or low, in the context of the consistently prepared, Sydney wide predictions from BTS. This comparison is undertaken in Appendix A.

2.2.2 Step two – traffic generation estimates

Using standard traffic generation rates for different land uses and types within the study area, a set of likely traffic generations is estimated for each of the land use changes. Traffic generation rates are based on research undertaken by RTA/RMS of different types of land use and provide additional information, such as directional balance and temporal profiles of demand. Much of this research is focused on peak traffic generation and these largely coincide with the periods being modelled.

As part of producing incremental traffic generation, it is necessary to net out existing traffic generation especially where apartments are to be developed in existing residential areas. Similarly, the baseline future case contemplates some mixed use developments and residential developments that replace existing retail and commercial premises which currently generate traffic.

This process ensures that only the additional traffic generated by the proposed development is added to the model.

In addition consideration of other characteristics of the traffic is applied in the form of discounting traffic generation. The following three characteristics were considered:

- Linked Trips (trips on the network with multiple destinations),
- Pass-by (traffic that would have most likely already been on the network),
- Double counting (where some of the trips generated by residential development will also be trips to the retail development).

Mode choice is not considered as this effect is largely embodied in the traffic generation rates used.

2.2.3 Step three - traffic distribution

The spatial spread of trips within the network varies by type of trip. The three main types of distributions used are residential, retail/town centre activity, and commuter. In addition the base model contains traffic distributions based on existing activity. Where appropriate, distributions from aggregations of several zones of similar land-use in the existing models guide the traffic distributions. Commuter distributions are drawn from journey to work information from the Census of Population and Housing undertaken by Australian Bureau of Statistics (ABS). Retail/town centre activity distributions are based on a notional catchment, the details of which are in Appendix B.

3 Network Changes

In 2012 a number of proposed road traffic improvement were determined. These improvements have since been approved by RMS and the land has been acquired. These network changes shown in Appendix C form the base future network. Some notable changes include the widening of the Pacific Hwy, three new roundabouts and the conversion of parts of St Johns Avenue and Park Avenue into one way roads.

Apart from the network changes highlighted above, the right hand turn ban from Merriwa St to the Pacific Highway is introduced as shown in Figure 1. With the increase in capacity and subsequently volume along the Pacific Hwy gaps were no longer available in traffic and large queues would form along Merriwa Street as a result of right hand turning traffic.

Banning the right hand turn here also involved the re-distribution of trips to zone 40 from 28, 30, 35 and 37. These trips were re-assigned to zone 18 and 38 to 40 as this allows these trips to now access this sight.

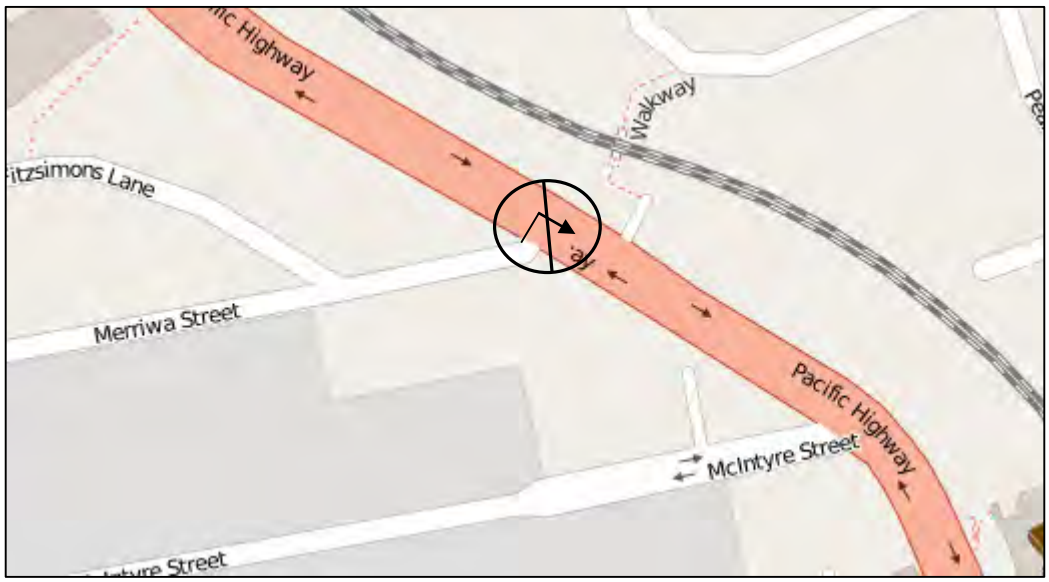


FIGURE 1 - RIGHT HAND TURN BAN

4 Baseline future land use development

4.1 ASSUMED DEVELOPMENTS

Ku-ring-gai council provided a list of all approved developments (Table 1). This included an additional 1738 dwellings, a total increase in retail floor area of 755 square meters and a decrease in commercial floor space of 129 square meters. The changes were compared to BTS predictions and it was established that the future scenario would fall under the medium term (2021 to 2026) horizon.

Land Use	Option 1
Retail	755 m² (GFA)
Commercial (Relocated to new site)	-129 m² (GFA)
Residential	1738 dwellings

TABLE 1 - ASSUMED DEVELOPMENT SCHEDULE FOR FUTURE BASELINE SCENARIO

The complete list of all assumed developments can be found in Appendix D.

4.2 TRAFFIC GENERATION

Changes in developments were used to calculate the medium term increase in trips using the "*RMS Guide to traffic Generating development"* and "*RMS Guide to traffic generating developments updated traffic surveys"*. The trips were then discounted to take into consideration linked trips. A discount rate of 30% was used as a large number of the retail and residential developments are located within walking distance and as such a large number of the retail trips are likely to be taken up by the new residents.

Mode share is largely taken into consideration within the trip generation rate however as previously mentioned linked trips were discounted by 30% (an increase over the more customary 20%) to account for the location of the new residential dwelling in relationship to the retail locations.

For the calibration hour PM trips increased by 12% (717 trips) and SA trips increased by 28% (1645 trips). Only Light Vehicle trips were considered as in the base models Heavy vehicles make up only 1% of trips in the PM peak and less than 1% of SA peak. A flat profile was also used as it was evident from the survey data that Gordon has a consistent peak time period.

Given the proximity of the new Bunnings to the Gordon site demand increases along the Pacific Hwy as a result of the new Bunnings site were also considered. According to the report "*Proposed Bunnings Development, Corner of Pacific Highway and Ryde Road Pymble, Assessment of Traffic and Parking Implications*" produced by Transportation, Traffic Planning Associates, during the PM peak, northbound traffic on the Pacific Highway will increase by 40 vehicles and southbound by 109. During the Saturday peak it was noted that northbound traffic on the Pacific Highway will increase by 78 vehicles and southbound by 118. These volumes were included as through trips on the Pacific Highway.

4.3 TRIP DISTRIBUTION

BTS travel zone explorers and Journey to Work information was used to generate distributions for the new trips. The model area encompasses three travel zones, TZ1701, TZ1703 and TZ1704 as shown in Figure 2.

Two main distributions were used to describe the new trips, commuter distributions and residential shopper distributions. Commuter distributions were calculated using the journey to work information that described where workers were coming from and traveling to. These destinations were then assigned to a corresponding external zone that represented the most likely exit point on the network. Retail shopper distributions were derived from the spread of population around the network (including new developments) to corresponding retail zones.

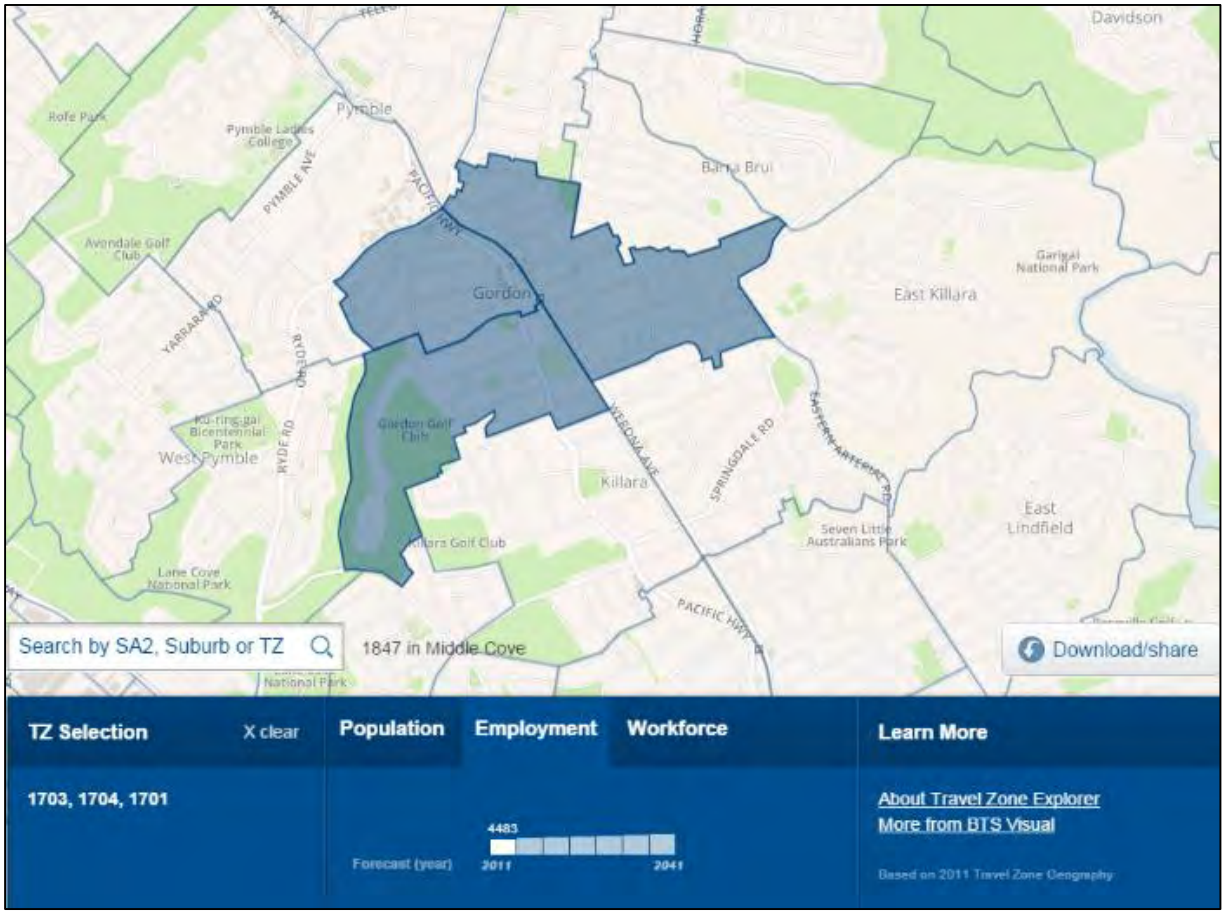


FIGURE 2 - BTS TRAVEL ZONES FOR GORDON

4.4 PEDESTRIAN GROWTH

As population dictates town centre activity the increase in pedestrian trips corresponds to the increase in population. As such pedestrian trips were increased by 21% resulting in an additional 520 and 455 pedestrian trips in the PM and SA peaks respectively.

4.5 MATRIX BUILD

The traffic generation, traffic distribution and pedestrian growth were brought together to generate future growth matrices. These matrices were then imported into the models and placed on-top of the existing matrices.

5 Future Baseline model results

The network results for Future baseline model is presented in Table 2, seed 86524 and 2849 is determined as the median seed for the future baseline PM and SAT model and the median seed result is reported in Table 3.

	Future Baseline - PM					Future Baseline - SAT				
Seed	560	28	7771	86524	2849	5321*	28	7771	86524	2849
VHT	546.65	482.21	499.24	489.64	481.88	616.79	614.44	552.31	610.55	613.14
VKT	9477.30	9559.05	9524.85	9505.57	9500.51	10601.92	10556.20	10645.98	10514.61	10508.34
Stops	18081	16030	16015	15648	15838	18276	18346	15994	17772	18059
Unreleased	156	129	152	158	136	280	281	197	287	267

TABLE 2 - NETWORK STATISTIC, FUTURE BASELINE MODEL

**Future Baseline SAT model has used seed value 5321 instead of 560 due to a pedestrian vehicle interaction lockup.*

			Future Baseline - PM				Future Baseline - SAT			
Intersection Name	Approach		LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)	LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)
Pacific Hwy / Ravenswood Ave	North	Pacific Hwy	D	44.1	15.49	48	C	38.57	12.8	53
	East	Ravenswood Ave	C	36.45	1.75	10	C	41.75	1.54	6
	South	Pacific Hwy	C	38.23	6.03	39	C	36.56	4.24	28
Pacific Hwy / St Johns Ave	North	Pacific Hwy	C	30.22	8.93	27	C	28.96	10.48	28
	East	St Johns Ave	D	45.62	5.47	20	E	60.11	6.94	25
	South	Pacific Hwy	C	33.19	8.64	36	C	38.57	12.8	53
Pacific Hwy / Moree St	North	Pacific Hwy	B	24.09	6.24	35	B	25.37	7.84	38
	South	Pacific Hwy	A	10.65	1.37	25	B	18	4.49	28
	West	Moree St	F	71.28	2.37	11	F	100.06	2.43	10
Pacific Hwy / Park Ave / Dumaresq St	North	Pacific Hwy	D	53.86	6.1	71	F	94.89	23.19	95
	South	Pacific Hwy	C	31.65	11.73	41	C	34.82	12.11	32
	West	Dumaresq St	D	45.63	5.26	21	F	76.86	12.66	26
Pacific Hwy / McIntyre St	West	McIntyre St	B	25.22	0.44	4	B	28.2	0.82	8
Pacific Hwy / Merriwa St	West	Merriwa St	C	29	0.26	4	A	8.22	0.05	1

TABLE 3 - FUTURE BASELINE - PM & SAT RESULTS

The future baseline model observations are as follows:

- Saturday peak generally encounters worse traffic performance than the PM peak.
- The proposed road upgrades, such as the removal of the Pacific Highway access on St Johns Avenue west approach and Park Avenue have caused significant delay on other side street accesses such as Moree Street, Dumaresq Street and St Johns Avenue (east approach).
- A southbound rolling queue is observed at the north of Park Avenue, mainly caused by the reduced traffic lanes resulting from the unrestricted street parking.

6 Options Land use develop

Four development options was considered in the Gordon Town Centre study. In these options, the development site is considered to be at the current Ku-ring-gai council office and the existing office will be relocated further to the north of Gordon town centre but still within the model extent.

The proposed development schedule of each option is summarised in Table 4.

Land Use	Option 1	Option 2	Option 3	Option 4
Cultural Hub	4000 m² (GFA)	4000 m² (GFA)	4000 m² (GFA)	4000 m² (GFA)
Supermarket	0	2000 m² (GFA)	3400 m² (GFA)	4200 m² (GFA)
Retail	520 m² (GFA)	1400 m² (GFA)	1400 m² (GFA)	1400 m² (GFA)
Residential	51 dwellings	51 dwellings	161 dwellings	166 dwellings
Commercial	0 m² (Relocated)	0 m² (Relocated)	0 m² (Relocated)	0 m² (Relocated)
Admin	3000 m² (GFA)	3000 m² (GFA)	3000 m² (GFA)	5000 m² (GFA)

TABLE 4 - PROPOSED DEVELOPMENT SCHEDULE FOR OPTION 1 TO 4

7 Results

7.1 DEVELOPMENT OPTION 1

The network statistic results have presented in Table 5, seed 5321 and 560 is determined as the median seed for the development option 1 model run with modelling results presented in Table 6.

	Development Option 1 - PM					Development Option 1 - SAT				
Seed	560	28	7771	5321*	2849	560	28	7771	86524	2849
VHT	476.78	482.27	516.27	501.56	512.14	645.61	538.77	584.32	666.73	681.45
VKT	9594.46	9641.38	9659.85	9698.26	9542.68	10597.45	10785.00	10690.46	10438.52	10538.85
Stops	15755	16425	16667	16776	16223	19348	16594	17607	19219	19792
Unreleased	137	126	166	166	148	291	179	236	331	311

TABLE 5 - NETWORK STATISTICS, DEVELOPMENT OPTION 1 MODEL

**Development Option 1 PM model has used seed value 5321 instead of 86524 due to a pedestrian vehicle interaction lockup.*

			Development Option 1 - PM				Development Option 1 - SAT			
Intersection Name	Approach		LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)	LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)
Pacific Hwy / Ravenswood Ave	North	Pacific Hwy	D	43.93	15.44	41	C	30.44	11.64	35
	East	Ravenswood Ave	C	36.12	1.89	10	C	41.9	1.55	10
	South	Pacific Hwy	C	38.15	6.06	40	C	42.48	6.09	38
Pacific Hwy / St Johns Ave	North	Pacific Hwy	C	29.81	8.66	29	C	30.33	11.32	29
	East	St Johns Ave	D	49.51	5.95	22	D	55.51	5.94	21
	South	Pacific Hwy	D	42.55	13.29	60	E	59.77	23.19	72
Pacific Hwy / Moree St	North	Pacific Hwy	B	24.81	6.77	37	C	29.93	10.29	38
	South	Pacific Hwy	A	12.11	1.92	24	B	18.6	4.56	28
	West	Moree St	F	77.37	2.27	10	F	147.15	4.47	11
Pacific Hwy / Park Ave / Dumaresq St	North	Pacific Hwy	E	60.94	8.69	78	F	113.64	28.84	102
	South	Pacific Hwy	C	33.23	12.51	39	C	33.4	11.05	30
	West	Dumaresq St	D	47.7	5.12	19	F	74.8	10.56	20
Pacific Hwy / McIntyre St	West	McIntyre St	B	28.17	1.05	10	B	28.23	1.33	10
Pacific Hwy / Merriwa St	West	Merriwa St	C	33.73	0.36	3	A	10.94	0.09	2

TABLE 6 - DEVELOPMENT OPTION 1 - PM & SAT RESULTS

7.2 DEVELOPMENT OPTION 2

The network statistic results have presented in Table 7, seed 560 and 28 is determined as the median seed for the development option 2 model run with modelling results presented in Table 8.

	Development Option 2 - PM					Development Option 2 - SAT				
Seed	560	28	7771	86524	5321*	560	28	5321*	86524	2849
VHT	553.52	522.52	598.05	507.90	589.54	717.34	768.16	851.48	729.87	798.13
VKT	9901.82	9860.27	9813.64	9776.34	9599.17	10623.50	10581.20	10388.21	10643.91	10521.49
Stops	18893	16670	20438	16686	18862	21923	23131	24651	21542	22837
Unreleased	145	139	167	159	223	337	339	408	355	397

TABLE 7 - NETWORK STATISTIC, DEVELOPMENT OPTION 2 MODEL

**Development Option 2 PM model has used seed value 5321 instead of 2849 due to a pedestrian vehicle interaction lockup.*

**Development Option 2 SAT model has used seed value 5321 instead of 7771 due to a pedestrian vehicle interaction lockup.*

			Development Option 2 - PM				Development Option 2 - SAT			
Intersection Name	Approach		LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)	LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)
Pacific Hwy / Ravenswood Ave	North	Pacific Hwy	D	48.78	18.05	52	C	34.35	13.65	36
	East	Ravenswood Ave	C	36.1	1.77	9	C	42.34	1.47	8
	South	Pacific Hwy	C	37.9	6.01	40	D	54.72	10.95	56
Pacific Hwy / St Johns Ave	North	Pacific Hwy	C	31.73	9.64	28	C	31.81	11.91	29
	East	St Johns Ave	D	48.12	6.42	22	E	57.85	6.77	21
	South	Pacific Hwy	D	53.96	19.44	74	F	81.58	34.25	77
Pacific Hwy / Moree St	North	Pacific Hwy	C	29.87	9.07	40	C	30.9	10.7	38
	South	Pacific Hwy	B	15.59	3.65	34	B	22.15	6.16	29
	West	Moree St	F	78.6	2.21	9	F	241.39	5.74	13
Pacific Hwy / Park Ave / Dumaresq St	North	Pacific Hwy	F	79.54	14.38	89	F	130.16	35.44	100
	South	Pacific Hwy	C	35.56	14.02	45	C	39.6	14.1	31
	West	Dumaresq St	D	53.08	6.13	20	F	102.5	14.76	23
Pacific Hwy / McIntyre St	West	McIntyre St	C	30.26	1.14	8	B	25.4	1.16	8
Pacific Hwy / Merriwa St	West	Merriwa St	C	35.09	0.36	5	A	9.93	0.06	1

TABLE 8 - DEVELOPMENT OPTION 2 - PM & SAT RESULTS

7.3 DEVELOPMENT OPTION 3

The network statistic results have presented in Table 9, seed 2849 and 7771 is determined as the median seed for the development option 3 model run with modelling results presented in Table 10.

	Development Option 3 - PM					Development Option 3 - SAT				
Seed	560	28	7771	5321*	2849	98812*	601027*	7771	86524	2849
VHT	635.56	542.54	592.36	501.56	551.18	847.99	800.03	816.97	794.35	824.33
VKT	9713.04	10000.81	9865.34	9698.26	9816.55	10600.51	10598.82	10529.95	10587.16	10614.72
Stops	20888	20188	18868	16776	18279	24972	24450	23117	23227	24410
Unreleased	187	132	246	166	190	383	346	494	527	384

TABLE 9 - NETWORK STATISTIC, DEVELOPMENT OPTION 3 MODEL

**Development Option 3 PM model has used seed value 5321 instead of 86524 due to a pedestrian vehicle interaction lockup.*

**Development Option 3 SAT model has used seed value 98812 instead of 560 and seed value 601027 instead of 28 due to a pedestrian vehicle interaction lockup.*

			Development Option 3 - PM				Development Option 3 - SAT			
Intersection Name	Approach		LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)	LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)
Pacific Hwy / Ravenswood Ave	North	Pacific Hwy	D	44.84	17.22	44	C	33.46	12.76	46
	East	Ravenswood Ave	C	38.3	2.13	8	C	42.34	1.49	7
	South	Pacific Hwy	C	40.32	6.45	40	E	64.6	17.23	72
Pacific Hwy / St Johns Ave	North	Pacific Hwy	C	32.89	11.01	28	C	28.82	10.15	28
	East	St Johns Ave	D	53.19	6.85	23	E	68.66	9.29	25
	South	Pacific Hwy	E	67.24	26.86	73	F	89.89	39.43	83
Pacific Hwy / Moree St	North	Pacific Hwy	C	35.98	12.62	37	B	26.59	8.51	38
	South	Pacific Hwy	B	20.24	6.06	33	B	24.4	7.17	32
	West	Moree St	E	61.13	1.69	9	F	355.56	8.58	13
Pacific Hwy / Park Ave / Dumaresq St	North	Pacific Hwy	F	76.13	13.6	74	F	101.83	24.73	98
	South	Pacific Hwy	C	41.09	17.84	44	C	42.1	14.81	32
	West	Dumaresq St	E	63.05	8.62	21	F	104.13	14.79	21
Pacific Hwy / McIntyre St	West	McIntyre St	C	32.64	1.26	10	B	24.45	1.04	10
Pacific Hwy / Merriwa St	West	Merriwa St	C	40.79	0.51	5	A	7.43	0.04	2

TABLE 10 - DEVELOPMENT OPTION 3 - PM & SAT RESULTS

7.4 DEVELOPMENT OPTION 4

The network statistic results have presented in Table 11, seed 86524 and 5321 is determined as the median seed for the development option 4 model run with modelling results presented in Table 12.

	Development Option 4 - PM					Development Option 4 - SAT				
Seed	560	28	7771	86524	2849	560	5321*	7771	86524	2849
VHT	641.14	576.65	544.59	615.55	619.95	963.94	847.03	772.98	748.25	909.16
VKT	9575.12	9949.04	10041.25	9867.55	9825.86	10289.00	10457.84	10820.71	10836.10	10475.71
Stops	19720	20698	17553	21683	21895	25731	24276	22875	22396	26049
Unreleased	226	170	204	191	164	482	390	430	362	541

TABLE 11 - NETWORK STATISTIC, DEVELOPMENT OPTION 4 MODEL

**Development Option 4 SAT model has used seed value 5321 instead of 28 due to a pedestrian vehicle interaction lockup.*

			Development Option 4 - PM				Development Option 4 - SAT			
Intersection Name	Approach		LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)	LOS	Avg Delay (Sec)	Avg Queue (Veh)	Max Queue (Veh)
Pacific Hwy / Ravenswood Ave	North	Pacific Hwy	D	44.98	16.23	47	C	32.41	12.09	40
	East	Ravenswood Ave	C	37.12	1.82	10	D	48	1.82	9
	South	Pacific Hwy	D	50.11	11.34	65	E	68.24	17.54	66
Pacific Hwy / St Johns Ave	North	Pacific Hwy	C	32.35	10.12	27	B	28.34	9.9	29
	East	St Johns Ave	D	46.33	6.08	24	E	66.38	8.82	26
	South	Pacific Hwy	F	75.2	32.11	104	F	82.72	35.24	83
Pacific Hwy / Moree St	North	Pacific Hwy	C	33.99	11.51	38	B	25.72	7.93	38
	South	Pacific Hwy	B	17.79	4.87	32	B	22.54	6.13	33
	West	Moree St	E	64.84	1.98	8	F	290.71	6.16	13
Pacific Hwy / Park Ave / Dumaresq St	North	Pacific Hwy	F	103.45	21.99	87	F	98.95	23.62	101
	South	Pacific Hwy	C	38.2	15.8	44	C	40.41	13.63	32
	West	Dumaresq St	E	60.23	7.82	21	F	99.36	14.17	23
Pacific Hwy / McIntyre St	West	McIntyre St	B	26.34	0.88	10	B	20.45	0.73	7
Pacific Hwy / Merriwa St	West	Merriwa St	C	35.06	0.41	4	A	7.84	0.06	2

TABLE 12 - DEVELOPMENT OPTION 4 - PM & SAT RESULTS

8 Conclusions

Based on the future baseline scenario and the four development options results, the following conclusions can be made:

- Traffic conditions during the PM peak are significantly better than during the Saturday peak.
- Southbound traffic queues, that form north of Park Avenue, are observed in all scenarios.
- Both the Future baseline and Development Options 1 and 2 are considered to operate within accepted delays during the PM peak. For Development Options 3 and 4, Pacific Highway traffic will have increased delays with both northbound and southbound operation at LoS E.
- The Moree Street (northbound) movement is given insufficient green time within the signal cycle time, which together with problematic signal coordination results in traffic queues back to the origin zone (extent of model network).
- The Saturday peak traffic operations demonstrate a consistently worse level of service and delay across the network (under all scenarios) than occurs during the Saturday peak.
- For all Saturday peak scenarios, traffic travelling in both directions on Pacific Highway experience extended queues with LoS E and LoS F operation for the northbound traffic at the intersection of Pacific Highway and St Johns Avenue and LoS F operation for southbound traffic at the intersection of Pacific Highway and Park Avenue.
- Based on the network statistics obtained from the models, the Saturday peak demonstrates some instability as a result of network congestion (this is evidenced by the variability in the VHT and number of unreleased vehicles between each seed value being run for the same scenario).

Appendix A – Land Use Comparison

Land use comparison - Gordon

1.0 Introduction

This appendix compares the land use projections published by Bureau of Transport Statistics (BTS), within TfNSW, with the land use projections that underlie the future baseline model prepared for Gordon.

2.0 BTS land use projections

Population projections start at national, state and capital city level, with series prepared by the Australian Bureau of Statistics (ABS). The current arrangement within NSW Government has the Department of Planning and Environment (DPE) allocate projected population to LGA-level spatial units. BTS subsequently take LGA-level population and household projections prepared by Department of Planning and Environment, and implement an allocation process that disaggregates the LGA-level variables to travel zones (TZ11). In addition, BTS prepare employment projections for the same small-area level, i.e., at TZ11. These are for jobs within an area, as opposed to resident workforce, which is generated from the population projections.

In the preparation of these estimates, BTS applies sophisticated demographic models, and their corporate experience dealing with projections and Census outcomes, which extends back decades. This results in population projections which are consistent across Sydney and are based on observed behaviour – hence they are rigorous, avoiding issues, such as double counting of activity.

Employment projections use a different approach and are more difficult to generate, with potentially large sources of variation in employment levels for a given population due to changes in levels and types of economic activity.

The following figure shows the travel zones covering Gordon town centre.

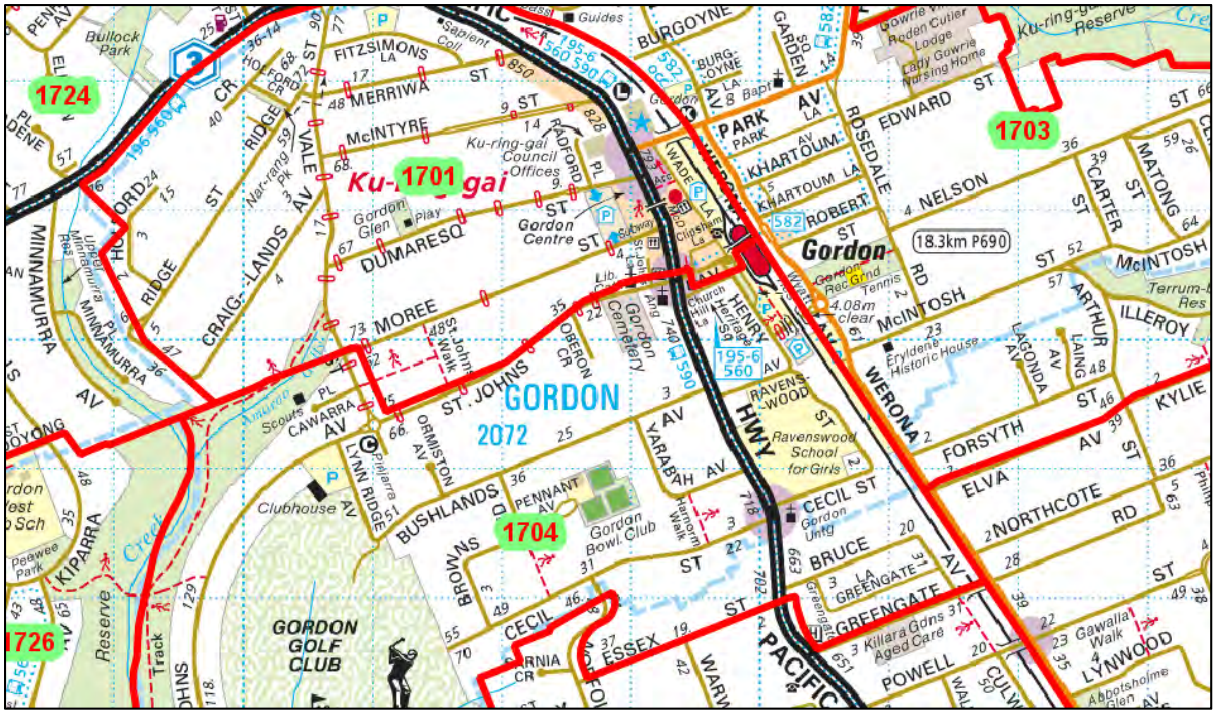


Figure 1 – Travel zones around Gordon town centre (TZ11 system)

It should be noted that any projection process, however rigorous, is limited in its ability to capture all material factors that could influence actual outcomes.

2.1 BTS population projections

Travel zones 1701, 1703 and 1704 all provide some coverage of the modelled area. These all fall within the larger spatial unit, statistical area level 2 (SA2), of Gordon-Killara SA2. The population projections for these zones and for Gordon-Killara SA2 are tabulated below.

Table 1 – Projected population levels for travel zones within Gordon-Killara SA2, with sub-total for travel zones in close proximity to town centre, 2011 to 2041

Travel Zone (TZ11)	2011	2016	2021	2026	2031	2036	2041
1700	1,261	1,280	1,307	1,341	1,376	1,411	1,445
1701*	1,993	2,975	3,734	3,884	4,012	4,127	4,233
1702	3,009	3,050	3,091	3,160	3,219	3,273	3,322
1703*	2,531	2,770	3,605	4,346	5,127	5,835	6,500
1704*	2,181	2,785	3,023	3,840	4,451	5,007	5,528
1705	2,679	2,852	3,013	3,296	3,544	3,774	3,993
1706	4,075	5,016	5,372	5,480	5,579	5,672	5,761
1707	1,933	1,949	1,973	2,005	2,034	2,060	2,084
*Subtotal - selected zones**	*6,705*	*8,530*	*10,362*	*12,070*	*13,590*	*14,968*	*16,262*
Gordon-Killara SA2	**19,662**	**22,676**	**25,118**	**27,353**	**29,342**	**31,157**	**32,869**

Incremental changes in each of these areas from 2016 to 2041 are tabulated below.

Table 2 – Incremental projected population levels for travel zones within Gordon-Killara SA2, with sub-total for travel zones in close proximity to town centre, from 2016 to future years to 2041

Travel Zone (TZ11)	2016 to 2021	2016 to 2026	2016 to 2031	2016 to 2036	2016 to 2041
1700	27	61	96	131	166
1701*	759	909	1,036	1,151	1,258
1702	41	111	170	223	272
1703*	836	1,577	2,357	3,066	3,731
1704*	238	1,055	1,667	2,222	2,744
1705	162	444	692	922	1,141
1706	356	464	563	656	745
1707	24	56	85	111	135
*Subtotal - selected zones**	*1,833*	*3,540*	*5,060*	*6,438*	*7,733*
Gordon-Killara SA2	**2,442**	**4,677**	**6,666**	**8,481**	**10,193**

2.2 BTS employment projections

This section provides a similar analysis of employment projections as the previous section did for population.

Table 3 – Projected employment (jobs) levels for travel zones within Gordon-Killara SA2, with sub-total for travel zones in close proximity to town centre, 2011 to 2041

Travel Zone (TZ11)	2011	2016	2021	2026	2031	2036	2041
1700	113	126	132	139	146	154	163
1701*	3,221	3,536	3,673	3,827	3,992	4,164	4,355
1702	259	283	295	308	322	337	353
1703*	558	610	648	685	722	761	801
1704*	703	764	812	863	915	969	1,026
1705	741	815	870	924	979	1,036	1,095
1706	645	717	752	789	828	869	914
1707	162	177	187	197	208	220	232
*Subtotal - selected zones**	*4,483*	*4,910*	*5,134*	*5,376*	*5,629*	*5,894*	*6,181*
Gordon-Killara SA2	**6,403**	**7,028**	**7,369**	**7,733**	**8,113**	**8,509**	**8,938**

Incremental changes in each of these areas from 2016 to 2041 are tabulated below.

Table 4 – Incremental projected employment (jobs) levels for travel zones within Gordon-Killara SA2, with sub-total for travel zones in close proximity to town centre, from 2016 to future years to 2041

Travel Zone (TZ11)	2016 to 2021	2016 to 2026	2016 to 2031	2016 to 2036	2016 to 2041
1700	6	12	20	27	37
1701*	138	292	456	629	819
1702	11	25	39	54	70
1703*	38	75	112	151	191
1704*	48	99	151	204	261
1705	55	109	164	221	280
1706	35	72	111	152	197
1707	10	20	32	43	55
*Subtotal - selected zones**	*224*	*466*	*719*	*984*	*1,271*
Gordon-Killara SA2	**341**	**704**	**1,085**	**1,481**	**1,910**

3.0 Future Baseline Scenario

Baseline future land use was prepared based on information provided by Ku-Ring-Gai Council for approved developments. These are listed below.

Table 5 – Baseline future land use scenario components

Land Use	Option 1
Retail	755 m^2 (GFA)
Commercial (Relocated to new site)	-129 m^2 (GFA)
Residential	1,738 dwellings

Source: Ku-Ring-Gai Council

4.0 Comparison of BTS projections and Future baseline scenario

4.1 Population

Conversion of dwellings to population is based on Census estimates for the SA2s of Gordon-Killara, Lindfield-Roseville and Pymble. The next table indicates the numbers of dwellings by dwelling structure in the three SA2s, based on aggregation to four main dwelling types of:

- Separate – separate dwellings
- Semi – semi-detached dwellings, including townhouses
- FUA – flats, units and apartments
- Other – including tents, boats and other forms of housing.

Table 6 – Aggregated dwelling structure distributions for SA2s around Study Area, 2011 Census

Dwelling structure	Gordon - Killara	Lindfield - Roseville	Pymble	Total
Separate	4,770	5,773	4,768	15,311
Semi	250	260	163	673
FUA	2,053	1,629	587	4,269
Other	0	0	0	0
NA	12	7	5	24
NS	10	28	0	38
Total	**7,095**	**7,697**	**5,523**	**20,315**

Source: ABS Tablebuilder, 2011 Census, Dwelling database

The above analysis indicates that flats units and apartments comprised a substantial proportion of the dwelling stock at the 2011 Census, accounting for just over 40% of dwellings in Gordon-Killara SA2.

The Census provides an estimate of the number of persons usually resident in each dwelling, coded to a scale from 1 to 7 and then 8 plus. This was used to estimate the number of persons by SA2 in each dwelling structure type, permitting the average number of persons per dwelling to be calculated. The results of this are in the next table.

Table 7 – Approximate average persons resident per dwelling by aggregated dwelling structure by SA2, 2011 Census

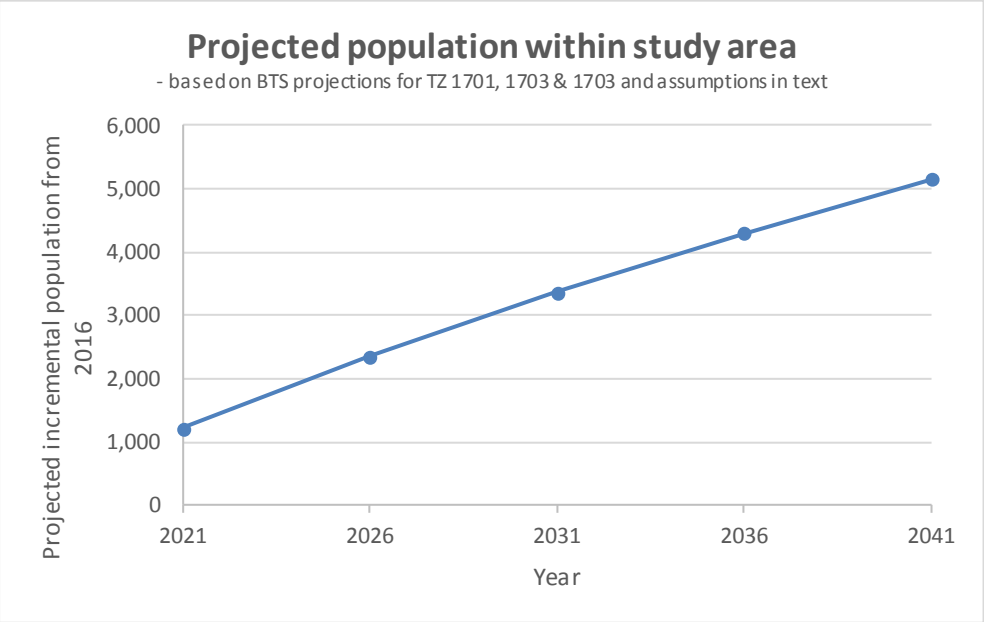
Dwelling structure	SA2s			
	Gordon - Killara	Lindfield - Roseville	Pymble	Combined SA2s
	Avg. per/dwelling	Avg. per/dwelling	Avg. per/dwelling	Avg. per/dwelling
Separate	2.94	2.98	2.95	2.95
Semi	2.01	1.74	1.77	1.85
FUA	1.63	1.67	1.71	1.66
Other	na	na	na	na
NA	na	na	na	na
NS	2.00	1.29	na	1.47
Total	**2.52**	**2.65**	**2.78**	**2.64**

The average number of persons per dwelling for FUAs in Gordon-Killara is a bit lower than the other SA2s, and this has been adopted as the likely average dwelling occupancy for planning purposes for the additional dwellings in the future baseline scenario. The actual outcome will depend on a

number of factors, such as target future market demographics and socio-economics, the actual size of dwellings, and a broad range of future parameters which are beyond the scope of this paper.

This suggests that the additional 1,738 dwellings (see Table 5) would likely accommodate around 2,700 to 3,000 persons. This compares with the BTS projections in the following manner:

- The zones of interest covering the town centre (TZ 1701, 1703 and 1704) extend beyond the town centre boundary;
- On the basis that there is a planning intention that additional dwellings will be located close to services and transport (i.e., in or near to existing town centres, such as Gordon), it is assumed that approximately two-thirds the additional dwellings for these zones would within the model area.



The above chart indicates that the population derived from approved dwellings of 2,700 to 3,000 is likely to occur sometime between 2025 and 2030.

In summary, the future baseline scenario is consistent with the BTS population projections and is likely to occur in the next ten to fifteen years.

4.2 Employment

The changes in floorspace are:

- Additional retail 755 sqm
- Reduced commercial 129 sqm

Typical retail employment rates are approximately 1 employee per 30 sqm; this varies depending on the nature of retail and a range of other factors. At 1 employee per 30 sqm the additional floorspace would have some 25 to 30 jobs associated with it.

Commercial floorspace has varying employee densities; for planning purposes here a rate of 1 employee per 20 sqm has been adopted. The reduction in commercial space would result in a loss of some 6 to 7 employees.

The net effect of this is that the future baseline scenario would have an increase in employees of about 20 to 25 jobs.

The BTS projections indicate some 220 additional jobs from 2016 to 2021 and 450 additional jobs from 2016 to 2026. If two-thirds of these jobs were to occur within the model area, this would be:

- 140 additional jobs from 2016 to 2021
- 300 additional jobs from 2016 to 2026

Likely future incremental associated with approved floorspace is below the BTS projections.

The difference in these projections could be partly explained by the potential for existing floorspace within the town centre to accommodate additional employees. The absolute difference between the two projections of just over 100 jobs at 2021 and 275 jobs at 2026 is considered to be small in the overall context of employment within the town centre, and is considered to be suitable.

5.0 Summary

The population projections prepared by BTS and those included in the Future Baseline Scenario are considered consistent and reflect a period some ten to fifteen years hence.

The employment projections are considered to be reasonably consistent, given that the differences in the absolute numbers are modest, at around 100 jobs in 2021 and 275 jobs in 2026.

Appendix B – Retail Catchment

Retail trip distribution

Retail trip distributions for a centre, such as Gordon, are influenced by the relative attractiveness of the centre's retail offer when compared with surrounding retail centres and the proximity to the centre. The following figure indicates the main retail centres in the surrounding sub-region.

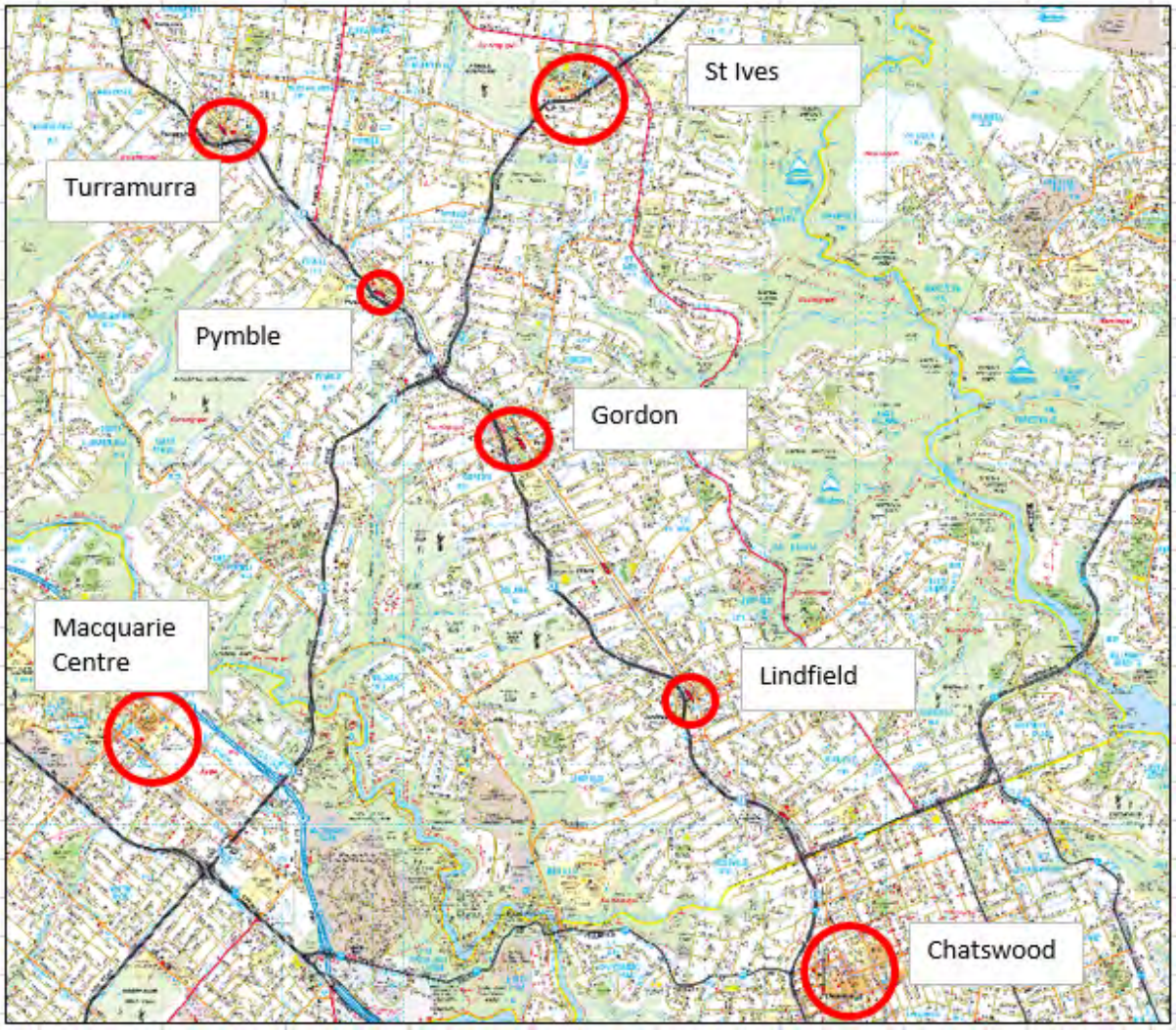


Figure 1 – Retail nodes in the sub-region

The above figure indicates that Gordon is in proximity to the sub-regional centres at Macquarie Centre (approximately 4km) and Chatswood (approximately 5km). St Ives and Turramurra are the next centres to the north of Gordon, approximately 3km distant, with Hornsby, another sub-regional centre, about 2km north of Turramurra. The scale of Chatswood and Macquarie Centre would tend to restrict (i.e., intercept) the retail trips from the south and south west. Similarly, St Ives and Turramurra would tend to reduce travel to Gordon for retail, from the north and north east of those two centres, simply by intercepting many of such trips.

The above figure is repeated below, highlighting accessibility barriers to the east and west of Gordon, that are likely to influence the shape of the retail catchment.

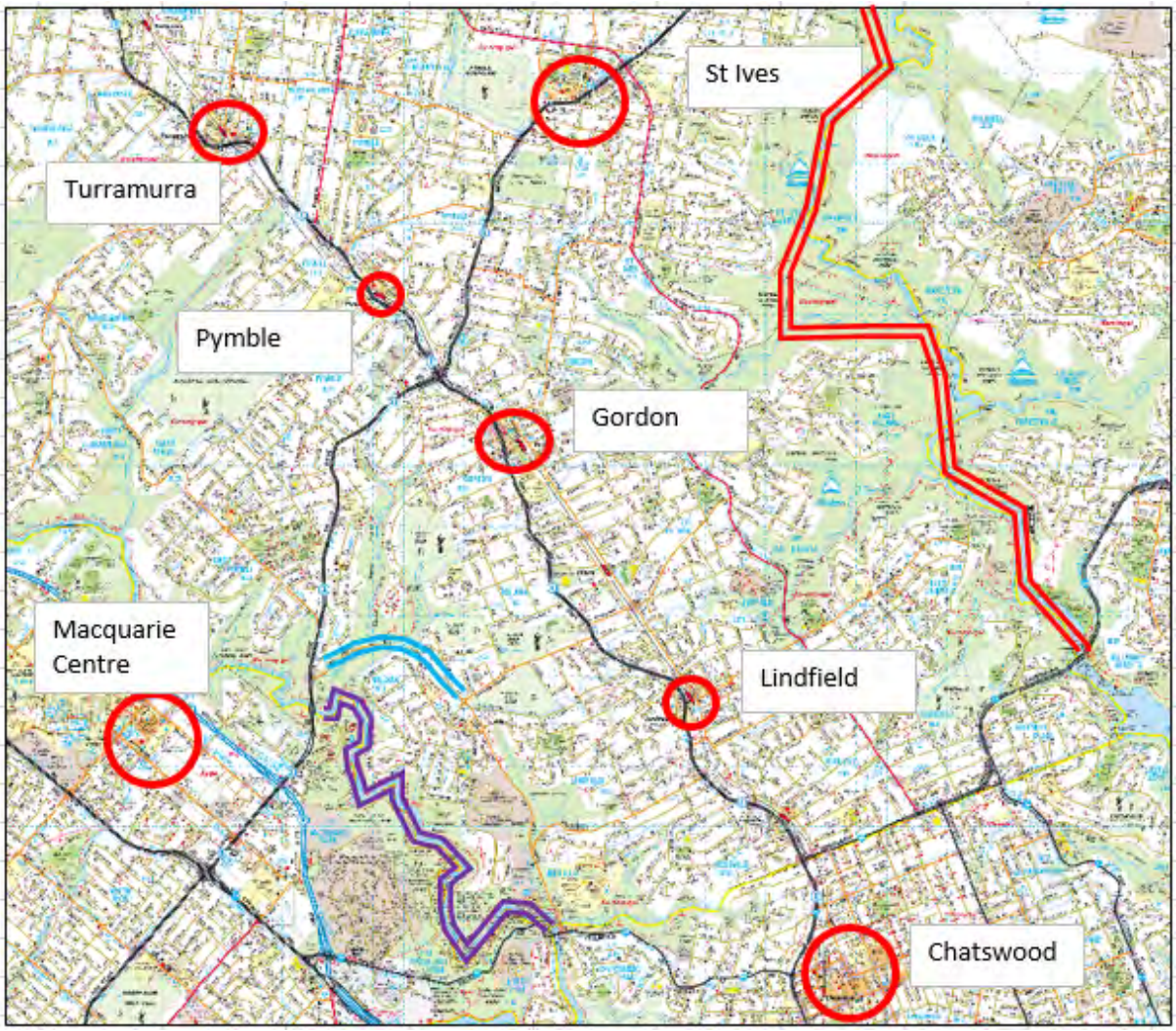


Figure 2 – Natural accessibility barriers around Gordon

Down the east side of the catchment, there is no road connection across Middle Harbour from Warringah Road at Roseville Bridge to as far north as Mona Vale Road (approximately 7.5 km, as the crow flies), as indicated by the red double line in the above figure. To the west there is no road crossing of the Lane Cove River between Fullers Bridge and Ryde Road, as shown by the double purple line. Further, there is no direct connection to Gordon from Lady Game Drive, between Ryde Road and Fiddens Wharf Road, indicated by the light blue double line.

In addition to the natural features, the rail line and major roads, such as the Pacific Highway and Mona Vale Road/Ryde Road act as barriers to movement.

For traffic modelling purposes the following notional retail catchment was selected based on the surrounding retail opportunities and accessibility barriers. There is likely to be some overlap with surrounding centres' catchments, partially as a result of traffic congestion around those centres at certain times of the day, such as Chatswood and Macquarie Centre, as well as congestion on the Pacific Highway, especially at the intersection with Mona Vale Road.

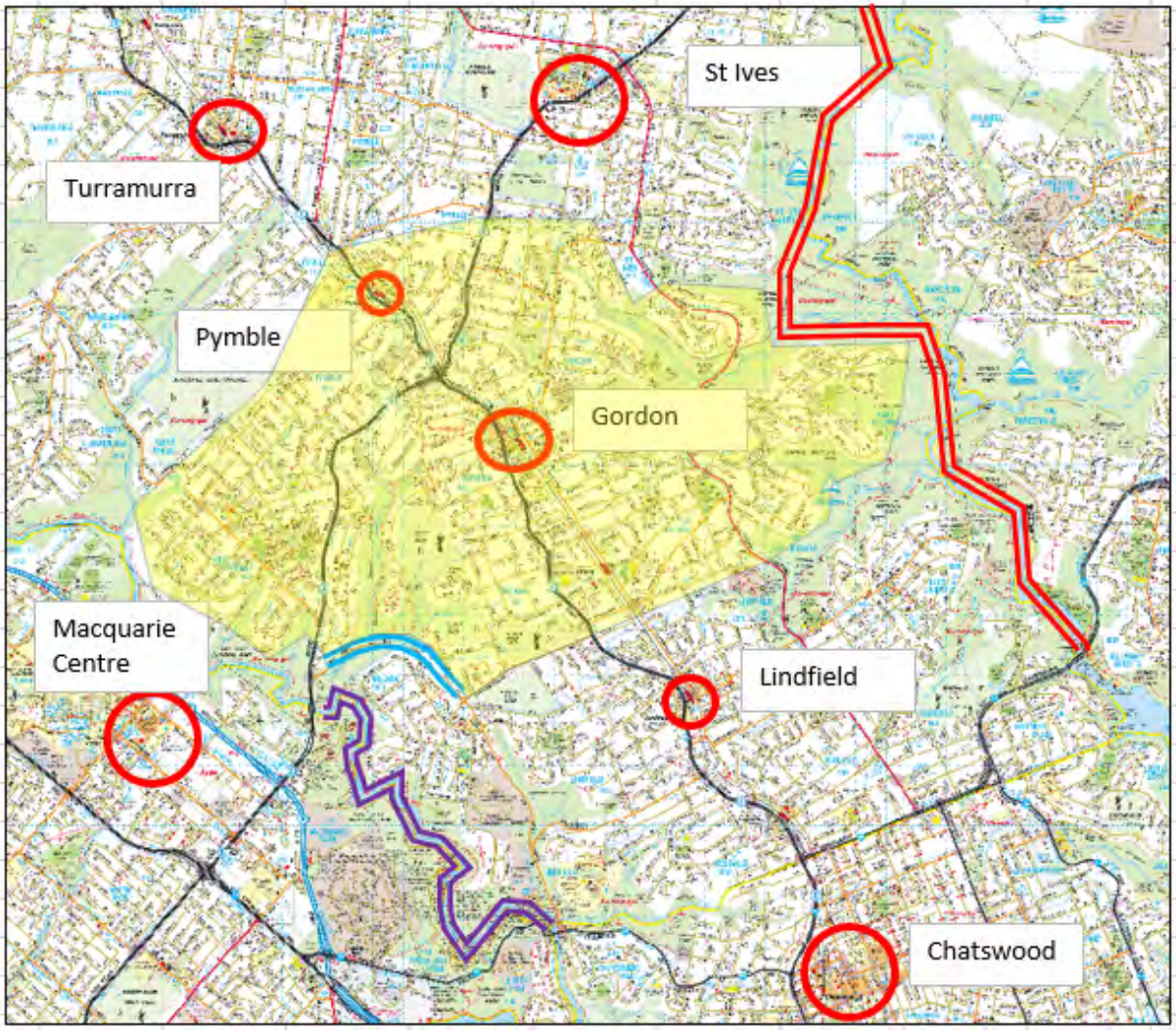


Figure 3 – Notional retail catchment for Gordon shown in yellow shading

In order to develop a retail traffic distribution, the travel zones within the catchment were allocated to particular approach roads to the traffic model and concept zones. The following sketch describes this concept and the table below draws together the mechanics of the process.

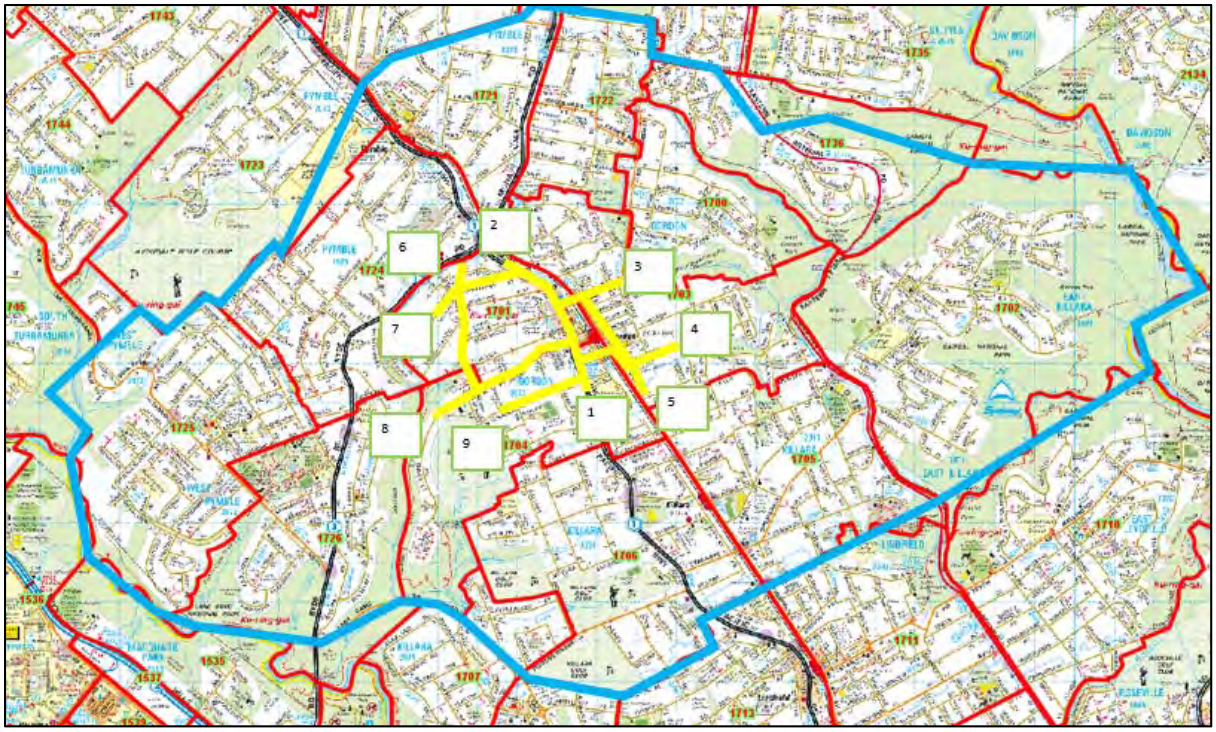


Figure 4 – Concept zones linking notional retail catchment areas with the traffic model network

Table 1 – Concept zones and their allocated travel zones and weights from within the notional retail catchment

Concept Zone Number	Concept Zone Name	Catchment Travel Zone (TZ11) Allocation	Catchment Travel Zone Weight
1	Pacific Highway south	1706	85%
		1704	10%
2	Pacific Highway north	1724	90%
		1721	100%
		1725	100%
		1726	100%
		1722	30%
3	Park Avenue east	1722	70%
		1700	100%
		1703	50%
4	Nelson Street east	1736	50%
		1703	50%
		1702	30%
5	Werona Avenue south	1736	50%
		1705	100%
		1702	70%
6	Vale Street north west	1724	10%
7	Ridge Street inner west	1701	50%
8	St Johns Avenue inner mid west	1704	15%
9	Bushlands Avenue inner south west	1704	75%
		1706	15%

Applying this scheme to the BTS population projections provides an indication of the likely population-based retail trip distribution and how it could change over the next fifteen years. This is tabulated below, with population values in the next table and proportions in the final table.

Table 2 – Notional retail catchment population weights

Concept Zone	Pop 2011	Pop 2016	Pop 2021	Pop 2026	Pop 2031
1	3,682	4,542	4,868	5,042	5,187
2	10,342	10,730	11,356	12,152	12,884
3	3,537	3,684	4,143	4,566	5,009
4	2,857	2,995	3,435	3,839	4,259
5	5,474	5,682	5,882	6,226	6,527
6	318	342	374	420	460
7	997	1,488	1,867	1,942	2,006
8	327	418	453	576	668
9	2,247	2,841	3,073	3,702	4,175
Total	**29,779**	**32,720**	**35,452**	**38,466**	**41,174**

The above table suggests that the population of the retail catchment could increase by around 10,000 persons over the next fifteen years, or about 1.5% per annum compound.

Table 3 – Notional retail trip distributions by year

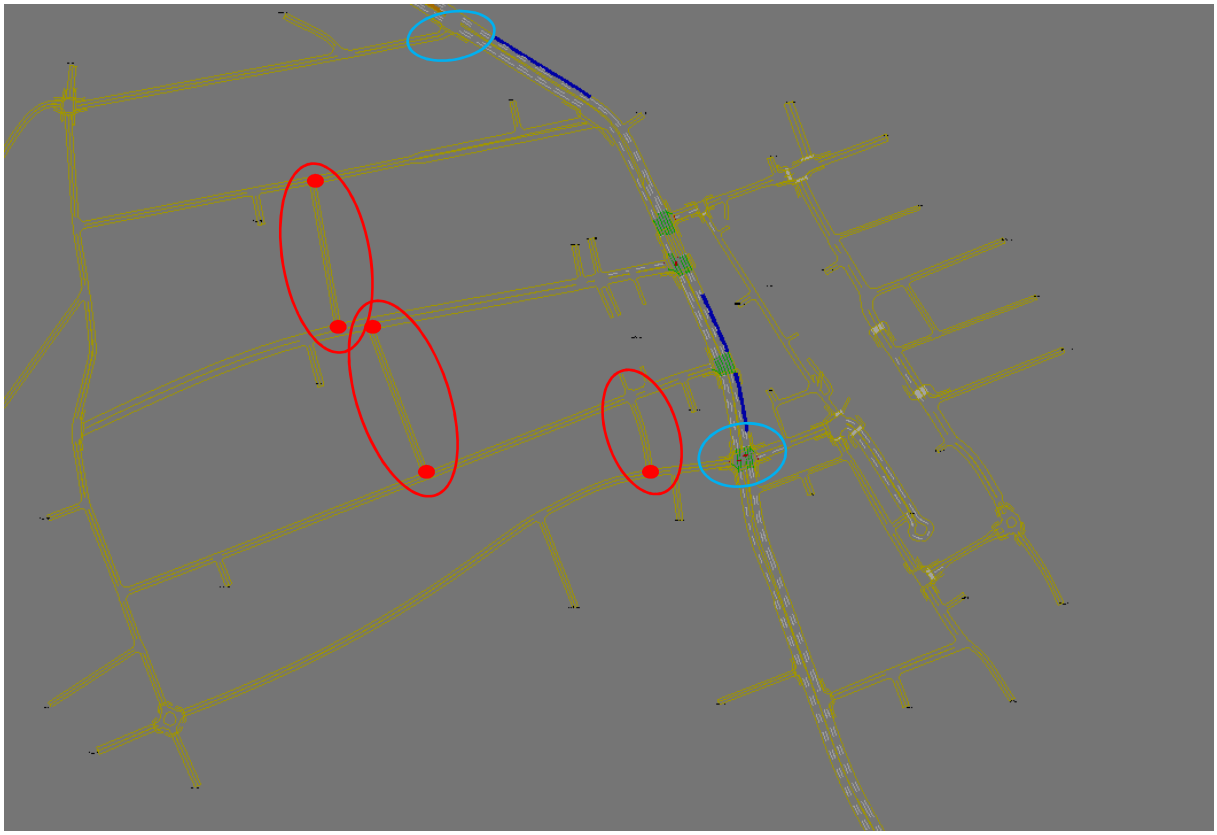
Concept Zone	% Pop 2011	% Pop 2016	% Pop 2021	% Pop 2026	% Pop 2031
1	12%	14%	14%	13%	13%
2	35%	33%	32%	32%	31%
3	12%	11%	12%	12%	12%
4	10%	9%	10%	10%	10%
5	18%	17%	17%	16%	16%
6	1%	1%	1%	1%	1%
7	3%	5%	5%	5%	5%
8	1%	1%	1%	1%	2%
9	8%	9%	9%	10%	10%
Total	**100%**	**100%**	**100%**	**100%**	**100%**

The above table indicates that there would be modest changes in the retail trip distribution over the medium term, as the distribution of population within the catchment changes.

Appendix C - Road Network Changes

Network Changes

A number of network infrastructure improvements have already been approved and will be included in the future base model network. The network changes assumed include the addition of three new road linking McIntyre Street to Dumaresq St, Dumaresq St to Moree St and Moree St to St Johns Ave. These three link roads will incorporate five additional priority controlled intersections.



As well as three additional link roads it had been agreed that RMS clear ways project will be considered, and as such all Pacific Hwy on street parking will be removed in all future models.

Apart from that, all right turning traffic is diverted to Dumaresq Street on the western side of Pacific Highway by banning right turn movements from both Merriwa Street and St Johns Avenue.

Appendix D – Assumed Developments

Future Baseline Development and Trip Generation

Zone 28	Use	Area (Sqm GFA)	PM Traffic Generation	Source	PM In	PM Out	Sat Traffic Generation	Source	Sat In	Sat Out	With Discounts PM In	PM Out	Sat In	Sat Out
773 Pacific Highway- note max retail FSR 2:1	Net Change in Retail	2253	95	4.2 per 100sqm GFA (RMS GTTGD)	47	47	241	10.7 per 100sqm GFA (RMS GTTGD)	121	121				
	Net change in Commercial	-1542	-19	1.2 per 100sqm GFA (RMS GTTGDUS)	-4	-15								
767 Pacific Highway (part of Gordon Centre)- note max retail FSR 2:1	Net Change in Retail	-404	-17	4.2 per 100sqm GFA (RMS GTTGD)	-8	-8	-43	10.7 per 100sqm GFA (RMS GTTGD)	-22	-22				
	Net change in Commercial	-964	-12	1.2 per 100sqm GFA (RMS GTTGDUS)	-2	-9								
755 Pacific Highway note max retail FSR 2:1	Net Change in Retail	1639	69	4.2 per 100sqm GFA (RMS GTTGD)	34	34	175	10.7 per 100sqm GFA (RMS GTTGD)	88	88				
	Net change in Commercial	-858	-10	1.2 per 100sqm GFA (RMS GTTGDUS)	-2	-8								
802-808 Pacific Highway (Gordon Ctr)	Net Change in Retail	7532	316	4.2 per 100sqm GFA (RMS GTTGD)	158	158	806	10.7 per 100sqm GFA (RMS GTTGD)	403	403				
	Net change in Commercial	-3568	-43	1.2 per 100sqm GFA (RMS GTTGDUS)	-9	-34								
784 Pacific Highway- note max retail FSR 2:1	Net Change in Retail	2475	104	4.2 per 100sqm GFA (RMS GTTGD)	52	52	265	10.7 per 100sqm GFA (RMS GTTGD)	132	132				
	Net change in Commercial	-771	-9	1.2 per 100sqm GFA (RMS GTTGDUS)	-2	-7								
	Total	5792			265	209			722	722	185	147	505	505

Zone 35	Use	Area (Sqm GFA)	PM Traffic Generation	Source	PM In	PM Out	Sat Traffic Generation	Source	Sat In	Sat Out
836 Pacific Highway	Net Change in Retail	1352	57		28	28	145		72	72
	Net change in Commercial	-811	-10		-2	-8				
842 Pacific Highway	Net Change in Retail	1827	77		38	38	195		98	98
	Net change in Commercial	-1370	-16		-3	-13				
	Total	998			62	46			170	170

Zone 37	Use	Area (Sqm GFA)	PM Traffic Generation	Source	PM In	PM Out	Sat Traffic Generation	Source	Sat In	Sat Out
836 Pacific Highway	Net Change in Retail	1300	55		27	27	139		70	70
	Net change in Commercial	-845	-10		-2	-8				
		455			25	19			70	70

With Discounts PM In	PM Out	Sat In	Sat Out
43	32	119	119
18	13	49	49

Development Option 1 (Land use Changes)

							with discounts		PM		SA	
Use	**Area (sqm)**	**Car Spaces**	**Rate PM**	**Rate SA**	**PM Generation**	**SA Generation**	**PM Generation**	**SA Generation**	**IN**	**OUT**	**IN**	**OUT**
Cultural Hub	4000	1 space per 45 sqm 89	0.5 spaces / hour	0.5 spaces / hour	45	45	45	45	23	23	23	23
Large Supermarket	0		10.35 PER 100sqm GFA	11.025 per 100sqm GFA	0	0	0	0	0	0	0	0
Retail	520		4.2 per 100sqm GFA	10.7 per 100sqm GFS	22	56	15	39	8	8	20	20
Residential	6955	51 Dwellings	0.15 per dwelling	0.15 per dwelling	8	8	8	8	6.4	1.6	4	4
Commercial	-10400		1.2 per 100m2 GFA	N/A	-125	0	-125	0				
Admin	3000		1.2 per 100m2 GFA	N/A	36	0	36	0	7	29		
					111	109	104	92				

Distribution assumptions

Cultural Hub, Large supermarket, and retail all follow the retil distribution based of the distribution of population arround the network
Residential trips will follow the residential distribution
Admin follows a comercial distribution (i.e where workers are coming from distribution)

Development Option 2 (Land use Changes)

							with discounts		PM		SA	
Use	**Area (sqm)**	**Car Spaces**	**Rate PM**	**Rate SA**	**PM Generation**	**SA Generation**	**PM Generation**	**SA Generation**	**IN**	**OUT**	**IN**	**OUT**
Cultural Hub	4000	1 space per 45 sqm 89	0.5 spaces / hour	0.5 spaces / hour	45	45	45	45	23	23	23	23
Large Supermarket	2000		10.35 PER 100sqm GFA	11.025 per 100sqm GFA	207	221	145	155	73	73	78	78
Retail	1400		4.2 per 100sqm GFA	10.7 per 100sqm GFS	59	150	41	105	21	21	53	53
Residential	6955	51 Dwellings	0.15 per dwelling	0.15 per dwelling	8	8	8	8	6.4	1.6	4	4
Commercial	-10400		1.2 per 100m2 GFA	N/A	-125	0	-125	0				
Admin	3000		1.2 per 100m2 GFA	N/A	36	0	36	0	7	29		
					355	424	275	313				

Distribution assumptions

Cultural Hub, Large supermarket, and retail all follow the retil distribution based of the distribution of population arround the networ
Residential trips will follow the residential distributior
Admin follows a comercial distribution (i.e where workers are coming from distribution

Development Option 3 (Land use Changes)

							with discounts		PM		SA	
Use	**Area (sqm)**	**Car Spaces**	**Rate PM**	**Rate SA**	**PM Generation**	**SA Generation**	**PM Generation**	**SA Generation**	**IN**	**OUT**	**IN**	**OUT**
Cultural Hub	4000	1 space per 45 sqm 89	0.5 spaces / hour	0.5 spaces / hour	45	45	45	45	23	23	23	23
Large Supermarket	3400		10.35 PER 100sqm GFA	11.025 per 100sqm GFA	352	375	246	263	123	123	132	132
Retail	1400		4.2 per 100sqm GFA	10.7 per 100sqm GFS	59	150	41	105	21	21	53	53
Residential	22135	161 Dwellings	0.15 per dwelling	0.15 per dwelling	24	24	24	24	19.2	4.8	12	12
Commercial	-10400		1.2 per 100m2 GFA	N/A	-125	0	-125	0				
Admin	3000		1.2 per 100m2 GFA	N/A	36	0	36	0	7	29		
					516	594	392	437				

Distribution assumptions

Cultural Hub, Large supermarket, and retail all follow the retil distribution based of the distribution of population arround the network
Residential trips will follow the residential distribution
Admin follows a comercial distribution (i.e where workers are coming from distribution)

Development Option 4 (Land use Changes)

							with discounts		PM		SA	
Use	**Area (sqm)**	**Car Spaces**	**Rate PM**	**Rate SA**	**PM Generation**	**SA Generation**	**PM Generation**	**SA Generation**	**IN**	**OUT**	**IN**	**OUT**
Cultural Hub	4000	1 space per 45 sqm 89	0.5 spaces / hour	0.5 spaces / hour	45	45	45	45	23	23	23	23
Large Supermarket	4200		10.35 PER 100sqm GFA	11.025 per 100sqm GFA	435	463	305	324	153	153	162	162
Retail	1400		4.2 per 100sqm GFA	10.7 per 100sqm GFS	59	150	41	105	21	21	53	53
Residential	22800	166 Dwellings	0.15 per dwelling	0.15 per dwelling	25	25	25	25	20	5	13	13
Commercial	-10400		1.2 per 100m2 GFA	N/A	-125	0	-125	0				
Admin	1000		1.2 per 100m2 GFA	N/A	12	0	12	0	2	10		
					576	683	428	499				

Distribution assumptions

Cultural Hub, Large supermarket, and retail all follow the retil distribution based of the distribution of population arround the network
Residential trips will follow the residential distribution
Admin follows a comercial distribution (i.e where workers are coming from distribution)