

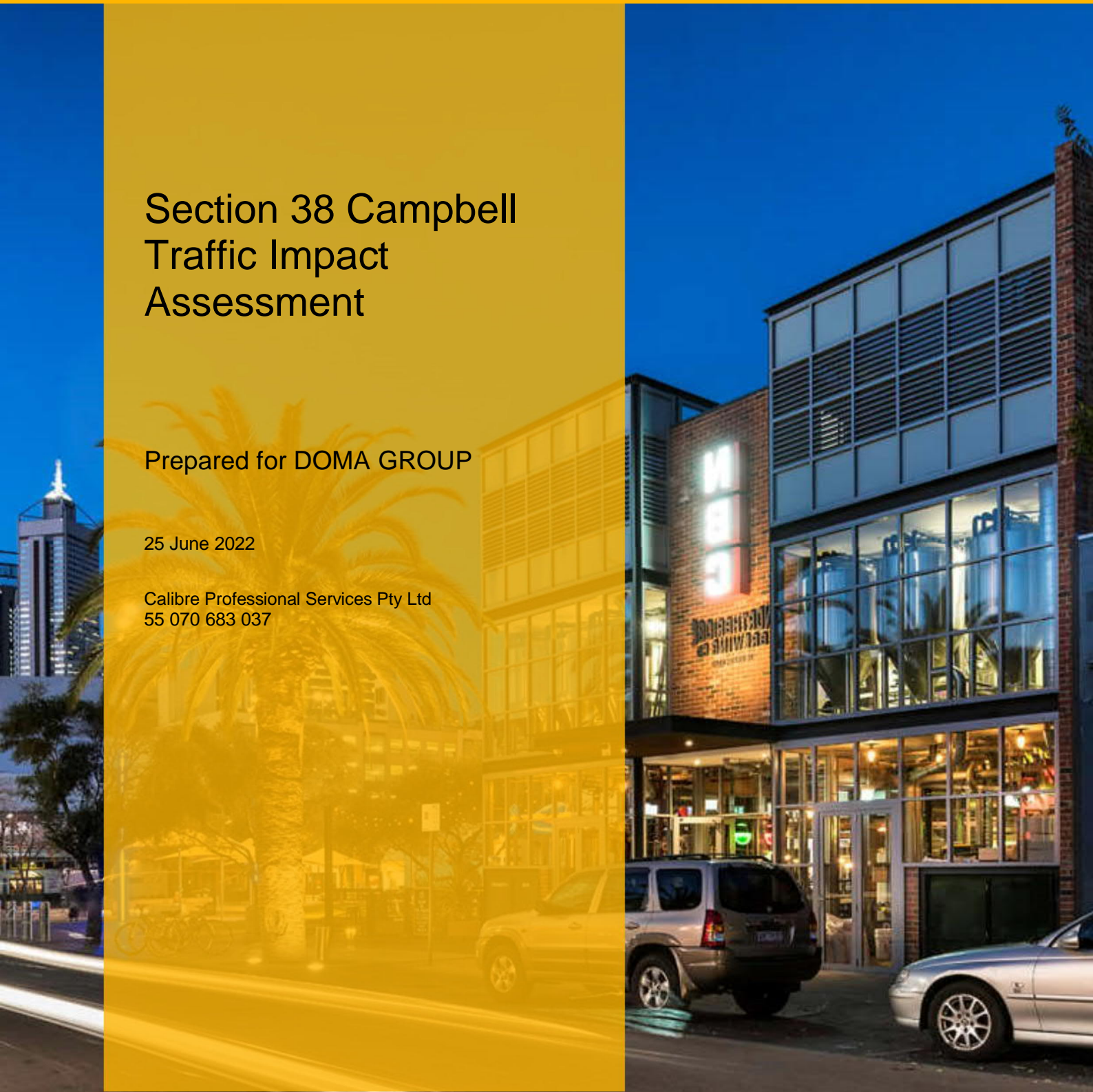
Report

Section 38 Campbell Traffic Impact Assessment

Prepared for DOMA GROUP

25 June 2022

Calibre Professional Services Pty Ltd
55 070 683 037



QUALITY ASSURANCE STATEMENT

TASK	NAME	SIGNATURE
Project Manager	Brendan Hogan	
Prepared by	Lewis De Liseo	<i>Lewis De Liseo</i>
Reviewed by	Nicholas Holmes	
Approved for Issue by	Brendan Hogan	<i>B. Hogan</i>

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1. Introduction

1.1 Background

Doma Group has reached out to Calibre to review a previous TIA prepared for the Section 38 Foothills area and produce an updated TIA report for the proposed development on Blocks 4 and 5 Section 38, Campbell to assess the impact of the additional Precinct 5 development. The proposed development includes a series of residential apartments and townhouses providing 254 private residences.

1.2 Purpose

This report will assess the expected additional traffic impact from the proposed precinct 5 development and assess where changes are warranted due to the increase in traffic generation and development layout resulting from precinct 5.

The report will include the following

- Existing traffic and parking conditions
- Suitability of the proposed design parking supply and layout
- Service vehicle requirements
- Pedestrian and bicycle requirements
- Traffic generation of the proposed development
- Assessment of the proposed site access
- Transport impact of the updated Precinct 5 development on the surrounding road network

2. Existing Conditions

2.1 Site

The subject site is located on the existing Block 4 and 5 of Section 38 in Campbell. The site has an area of approximately 39,855 m² and is bounded by Block 4 Section 63 Campbell to the north and east, Limestone Avenue to the west and Campbell High School to the south. Location of the subject site is shown in Figure 2.1.

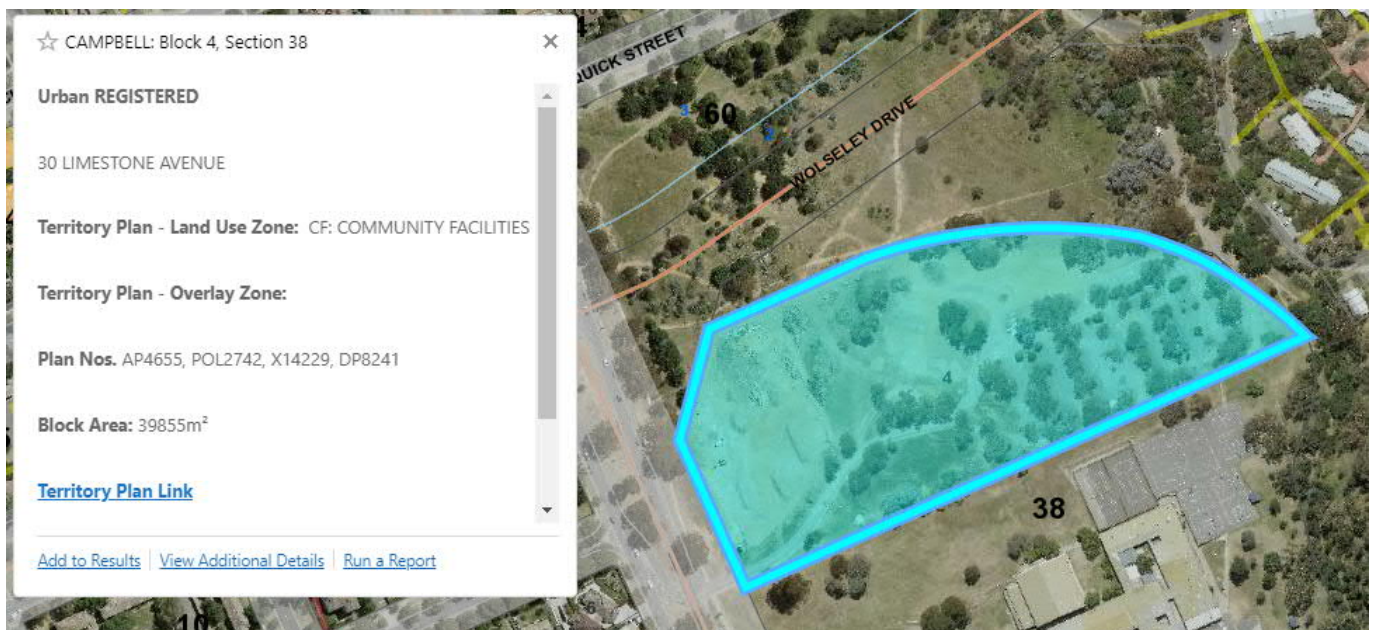


Figure 2.1 Block 4 Section 38 Project Site

Currently the site contains the previously occupied CSIRO building carpark. The previous CSIRO building headquarters has been removed to allow for development of the site. The site was abandoned in 2016 following the CSIRO move to Black Mountain. Access to the site is primarily from Limestone Avenue along a paved access road, there is a secondary access track to the eastern end of the site which connects to Hayley Street.

2.2 Road Network

Limestone Avenue is an arterial road That runs north to south Connecting to the ANZAC Parade roundabout to the south and terminating at the Limestone Avenue / Wakefield Drive / Majura Avenue Intersection to the North. Limestone Avenue services Ainslie, Braddon, Reid, and Campbell. It is primarily configured as two 2-lane carriageways approximately 7m in width separated by a median of varying width, approx. 30m at its widest. Limestone Avenue has multiple give way-controlled connections between its carriageways to provide through access at intersections and to provide drivers with the ability to turn around, Limestone Avenue has priority for each connection. Within the vicinity of the site access road there is the Ainslie Avenue/ Limestone Avenue Intersection, the Allambee Street / Limestone Avenue Intersection on the western carriageway, a dedicated Left turn auxiliary lane to facilitate safer turning movements into the project site and an egress ramp to allow access to either leg of Limestone Avenue. An Aerial image for the current configuration of Limestone Avenue in the vicinity of the project site can be seen below in Figure 2.2.

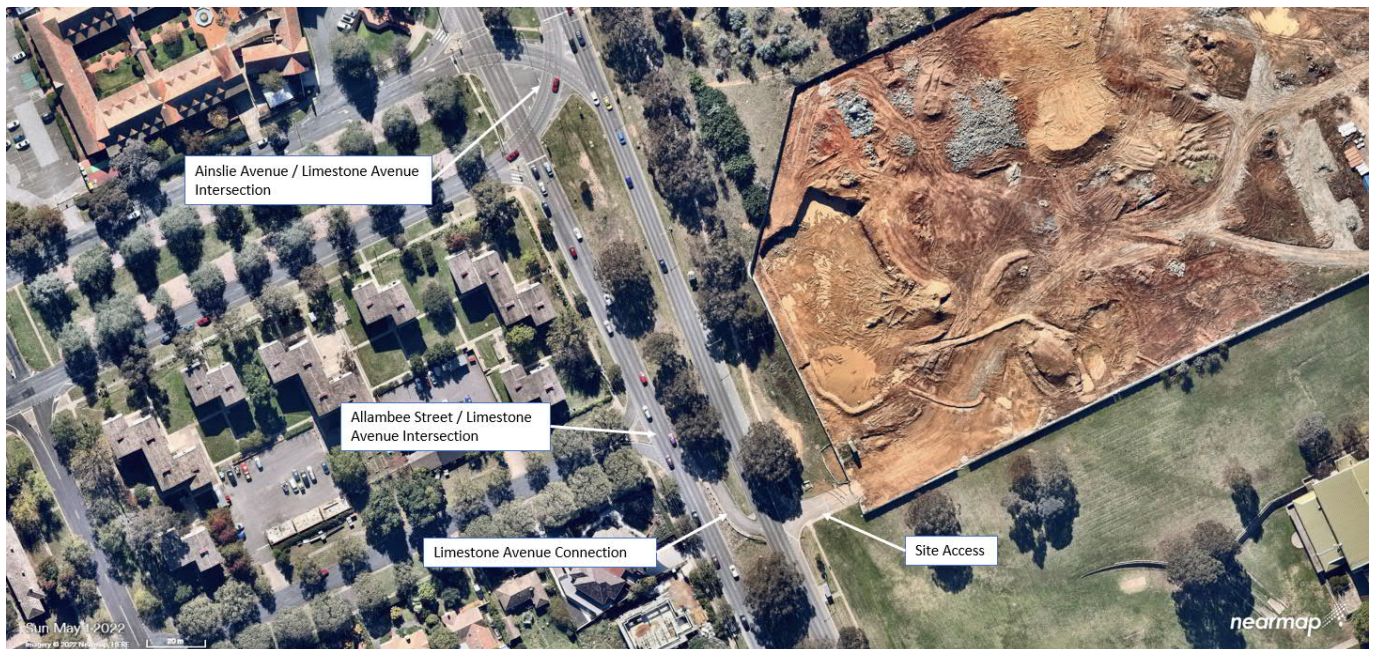


Figure 2.2 Limestone Avenue Aerial Layout

Quick Street is an access road which is located to the north of the site. The street is approximately 7.5m wide and consists of a single carriageway with a single lane in each direction. The road provides connectivity between Limestone Avenue and Hayley Street. Quick Street Connects to Limestone Avenue at an intersection with Batman Street, a connection is provided for through access to Batman Street and to facilitate a right hand turn onto the northern leg of Limestone Avenue.

Site Access is located off Limestone Avenue. The site access road is approx. 6.5m wide and consists of a single carriageway with a single lane in each direction. The street previously connected Limestone Avenue to the CSIRO site building/car park and the existing laneway from Hayley Street. The access road connection with Limestone Avenue remains however the road within the interior of Block 4 has been removed/covered as project works have started. A dedicated Left hand Auxiliary Lane provides access to the site access road from the southbound leg of Limestone Avenue. There is no left out lane for traffic leaving site onto Limestone Avenue. A dedicated one way egress ramp provides access to the northbound leg of Limestone Avenue for vehicles exiting the site. A shared approx. 2m path has an unsignalized crossing across the site access road. A bus stop pickup/drop off for the adjacent Campbell HS is located approx. 27m from the site access road.



Figure 2.3 Site Access Aerial Layout

Auxiliary Site Access is facilitated by a path located to the eastern end of the site. The Path connects to the existing at grade car park and to Hayley Street to the north of the site. The path is currently gated closed and does not provide public access. There are multiple dirt tracks and a connection between the existing carpark and the adjacent school's basketball courts that have been used in the past for informal pickup/drop off access for school students.

Signalised Mid-Block Pedestrian Crossing sits between Euree Street and Coranderrk Street providing safe foot traffic across both legs of Limestone Avenue. This crossing offers increased crossing safety and access to the local high school.

The following key intersections will be impacted by the proposed development, these are located in the immediate vicinity of the site

- Limestone avenue / Ainslie Avenue (Signalised Intersection)
- Limestone Avenue / Euree Street / Treloar Crescent (Un-signalised Intersections)
- Limestone avenue mid-block pedestrian crossing between – Euree Street and Coranderrk Street (Signalised intersection)

2.3 Crash Analysis

A previous detailed crash assessment was carried out along Limestone Avenue to capture trends in crash data adjacent to the site access road. An updated desktop analysis of crash data was carried out for the area directly surrounding Block 4 Section 38 to determine if changes in crash trends along Limestone Avenue have occurred since the previous crash data assessment and to make updates where required. A review of *Open Data Portal DataACT* Road Crash Heat Map was completed for the updated crash assessment.

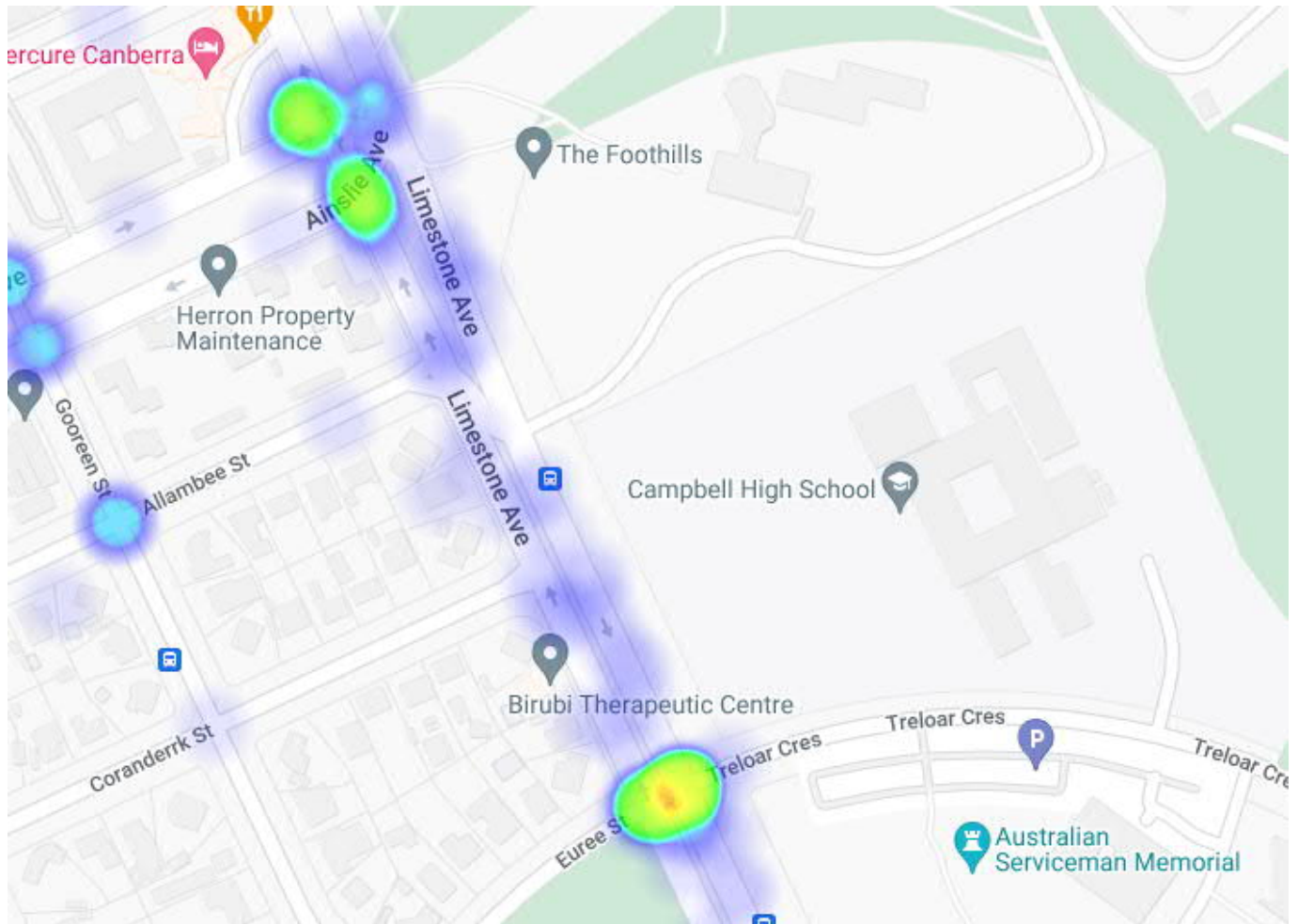


Figure 2.4 Crash Data Intensity Heatmap

The crash data available from *Open Data Portal DataACT* Road Crash Heat Map shows the majority of crashes occur at 2 points in the immediate road network adjacent to the project site. The two outstanding points are within the Ainslie Avenue Intersection and the Euree Street / Treloar Crescent / Limestone Avenue Intersection. There are individual crash instances along Limestone Avenue adjacent to the project site, the data indicates that the majority of these crashes were rear ending crashes as a result of queuing caused by abrupt stopping at the adjacent signalised intersections and the signalised pedestrian crossings. There is no clear correlation or intensity hotspot between the crash data and the site access road. The updated crash data is similar to the preliminary analysis and as such a more detailed crash analysis is not deemed appropriate.

2.4 Existing Car Parking

The current Block 4 Section 38 site contains an at grade existing parking lot that used to service the CSIRO building prior to its closure. The Current parking Lot is being utilised for site parking during the development and construction stages of the Section 38 Foothills project. This carpark is not being retained as the updated Precinct 5 is to be built in the occupied location.

2.5 Active Travel

A desktop review of the *Active Travel infrastructure Practitioners Tool* was carried out for the areas directly surrounding the Block 4 Section 38 site and their wider connected networks.

2.5.1 Public Transport

Public transport infrastructure is well established around the site with main on road cycling networks, a local community travel route and bus routes operating within close proximity to the site.

The bus route operating along Limestone Avenue and adjacent to the site is Route 54 Majura Park Loop. The Route 54 bus is a local bus route that operates between City Interchange and Majura Park via Reid and Campbell. This route runs at approximate half hour intervals between the hours of 5:40 AM and 9:00 PM on weekdays. The frequency of operation decreases on Saturday to hourly intervals, and even further on Sunday to 2-hourly intervals. The bus route conveniently connects at the City Interchange which provides access to a host of other service lines which connect across all of Canberra. An image of the public transport routes adjacent to the site can be seen in Figure 2.5.

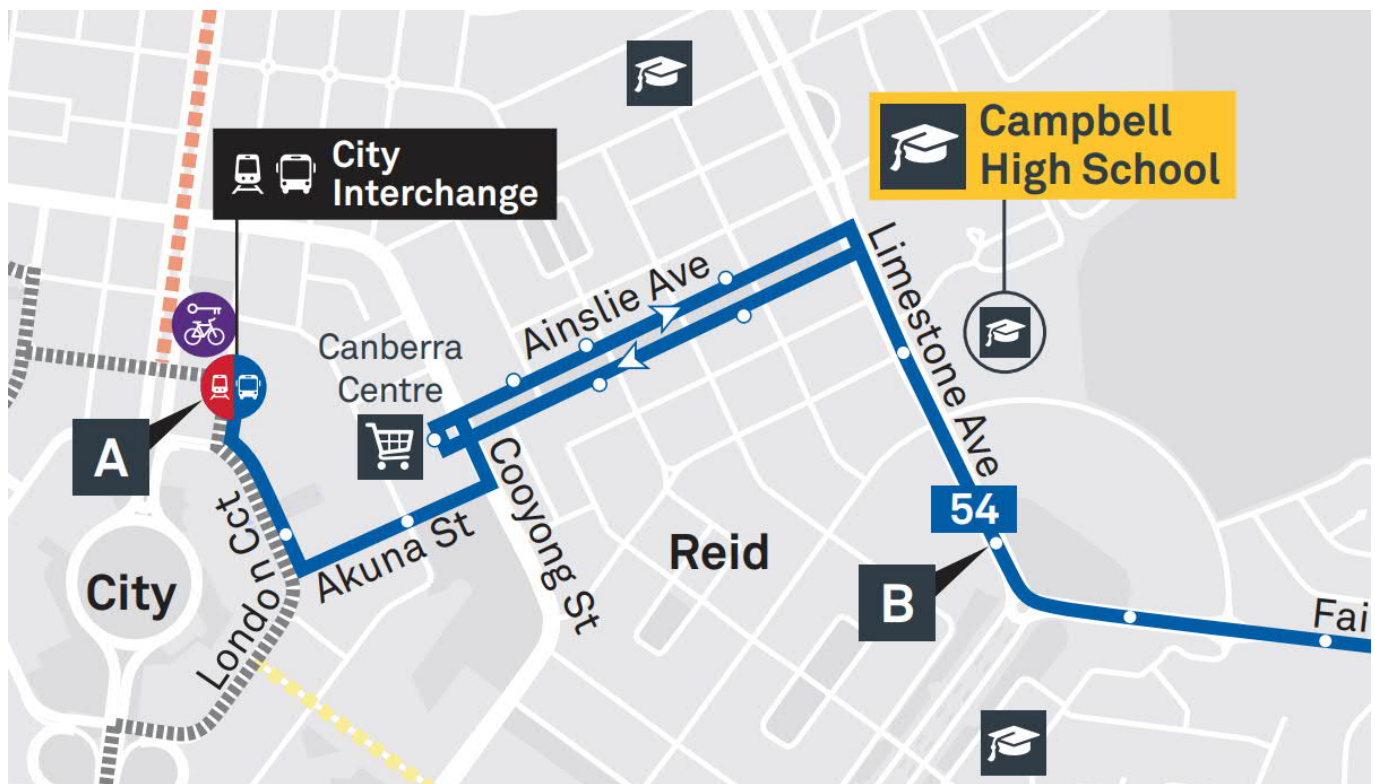


Figure 2.5 Public Transport Infrastructure Near the Site

2.5.2 Active Travel

A review of the Active Travel Infrastructure Practitioner Tool, shown in Figure 2.6, identified a number of strategic active travel routes and associated infrastructure within close proximity to the Site. The key network consists of the main on-road cycling routes, principal CBR community routes and main endorsed community routes.

Main on-road cycling routes are present along Limestone Avenue, and Ainslie Avenue. These routes are supported by cycle lanes along both edges of Ainsley Avenue and the northbound leg of Limestone Avenue, which vary in width from 1.5m to 2m, there are sections of Limestone Avenue which do not have dedicated on road cycling lane.

A principal cycle training route is located within close proximity to the site. The route runs along Limestone Avenue's northbound leg following the entire length of Limestone Avenue.

The final key routes within proximity to the site are the local endorsed community route that runs along Ainslie Avenue and the Local intended route that runs along Limestone Avenue adjacent to the site.

Along Limestone Avenue there are multiple unsignalized, unmarked pedestrian crossings as part of the minor path network within the Campbell area. The site access road has an unsignalised, unmarked pedestrian crossing which, due to its close proximity to the local Campbell High School is expected to see school student foot traffic.

There are multiple dirt tracks to the east of Block 4 Section 38 that connect to the Auxiliary site access track and a connection between the existing car park within the site. These were previously utilised by school students as the existing at grade carpark was used informally as a pick-up/drop off location for the adjacent high school.

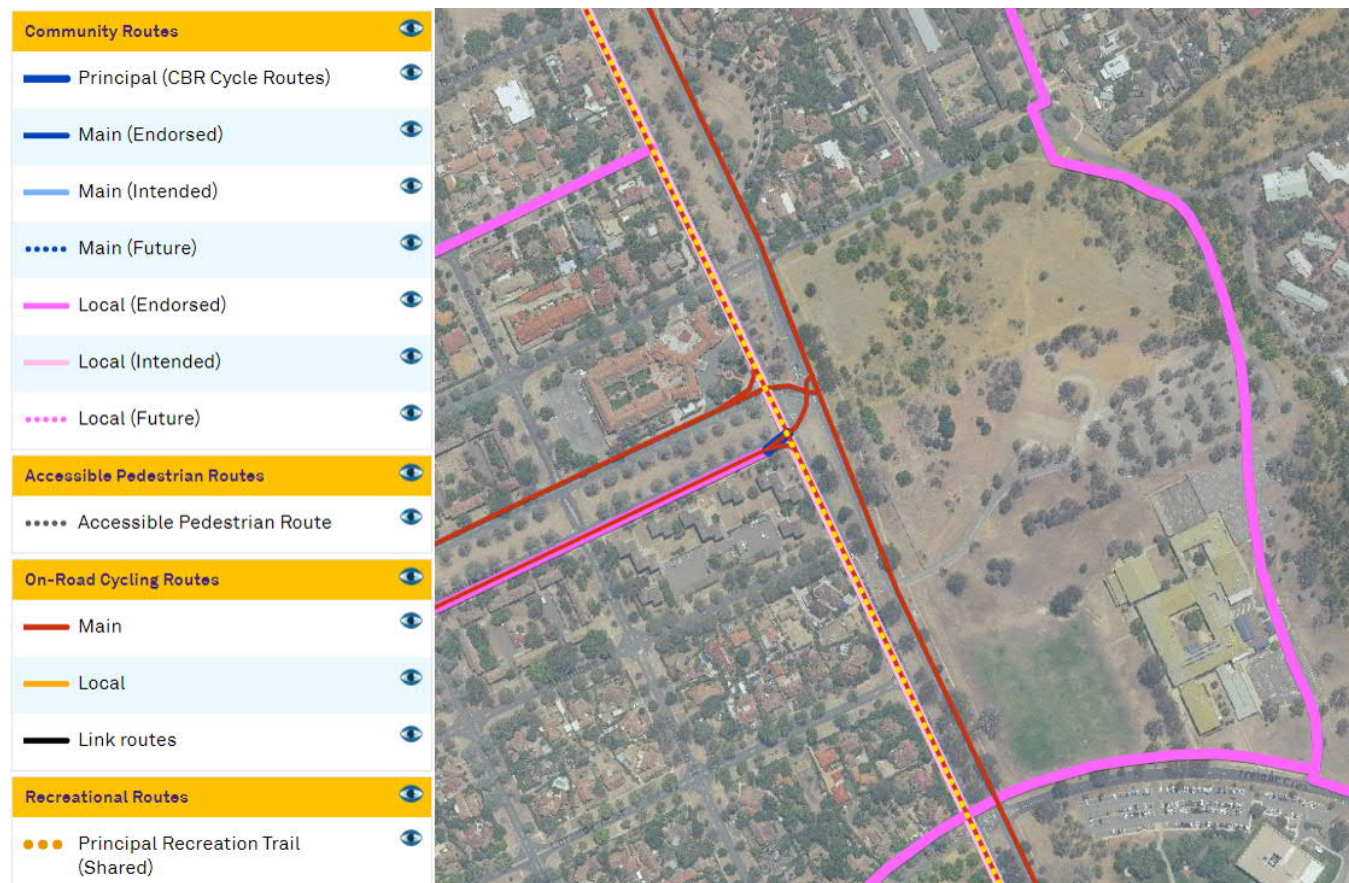


Figure 2.6 Active Travel Network Map – Campbell / Foothills Site

2.5.3 Euree Street / Coranderrk Street Signalised Pedestrian crossing

A signalised pedestrian crossing sits Mid-Block between Euree Street and Coranderrk Street providing safe foot traffic across both legs of Limestone Avenue. This crossing offers increased crossing safety and access to the local high school. The nature and use case of the crossing (for school student foot traffic) makes this crossing a key intersection when assessing traffic impact on the local road network.

2.5.4 Walkability Score

Depending on the intersection phasing and pedestrian delays crossing Limestone Avenue and Cooyong Street the subject site is about 15-20minutes walk from the Canberra Centre. The subject site has a walk score of 67 out of 100. This score indicates that the site is “somewhat walkable and that some errands can be accomplished on foot”. Points are awarded based on the distance to amenities in each category. Amenities within a 5-minute walk are given maximum points. A decay function is used to give points to more distant amenities, with no points given after a 30-minute walk. Walk Score also measures pedestrian friendliness by analysing population density and road metrics such as block length and intersection density.

The walking distance from the site in a 20-minute time frame can be seen in Figure 2.7

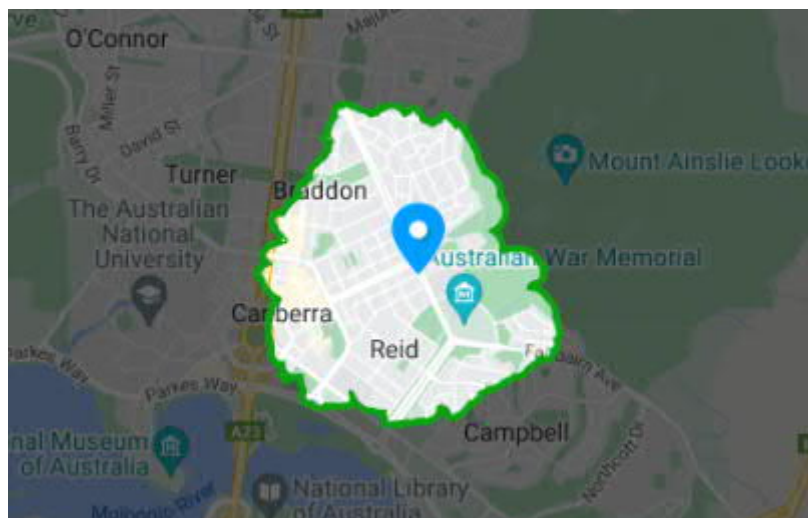


Figure 2.7 Site Walking Distance Within 20 Minutes

3. Development Proposal

3.1 Proposed Development

The original CSIRO building has been removed and the block cleared while retaining the original at grade carpark within Block 4 Section 38. The proposed development consists of 5 precincts including apartments buildings, townhouses, and a recreation area. There is basement parking beneath the apartment buildings and residential parking in the undercroft/garages for townhouses. The proposed development includes pedestrian and cyclist shared paths along with maintained community areas such as a park and tennis courts.



Figure 3.1 Proposed Development

The design outlines 254 residential dwellings split between the apartments and townhouses. A Recreation Area located on the ground floor of the west building for the use of residential guests (considered as ancillary residential use). The layout of Precinct 5 is shown below in Figure 3.2.



Figure 3.2 Precinct 5 Site Plan

Precinct 5 has been updated from its original design to include 8 new townhouses and a change in layout. The precinct includes 20, 2-bedroom 2 car space townhouses and 20, 2 bedroom 3 car space townhouses along a shared driveway/roadway that services each townhouse and joins into the wider development road network.

3.2 Vehicle Access

Primary vehicle access for the site is proposed to be via Limestone Avenue with secondary pedestrian access to site via Mary Street and the shared path to the eastern side of the block. The current site access is proposed to be retained, consisting of a 1 lane entry and exit with options for left out and right-out egress from site. The right-out movement involves crossing the southbound leg of Limestone Avenue and use of a graded egress ramp to access the northbound leg of Limestone Avenue. This traffic movement was assessed previously to determine the additional risk of the right-out movement and was deemed to be acceptable. A review of the site access options was not deemed necessary as the additional traffic generation from the updated Precinct 5 is not expected to impact site access in a meaningful way.

3.3 Car Parking

The proposed parking provision for the development contains 675 parking spaces, the breakdown of parking spaces includes:

- 168 parking spaces for apartments
- 438 parking spaces for townhouses
- 69 parking spaces for visitors

3.4 Pedestrian and Bicycle facilities

Shared pedestrian and cycle paths are proposed to be provided throughout the development. Key shared path linkages are planned for the north and south boundaries of the site. The layout for pedestrian and cyclist amenity will allow for east-west connectivity throughout the site. Hard stand and paved areas will also be used for pedestrian connectivity.

3.5 Waste Carting

Heavy vehicle access is proposed to be provided from Limestone Avenue; the developments internal roadway makes allowance for manoeuvring of a heavy/waste vehicles. Waste carting and truck service manoeuvring within the site is sufficient for access and removal of waste from the updated Precinct 5. Waste from Precinct 5 will be collected and transported to a central facility within the development by body corporate, from there it will be collected and disposed of along with waste generated from the other precincts. Other heavy vehicles servicing the recreational facilities and landscaped/garden areas will also access the site as described above.

4. Impact of Development

4.1 Traffic Volume Assessment

Traffic generation values for this report were sourced from two data sources to determine the existing traffic values of the site and surrounding road network. The data sources were:

- Traffic survey carried out by Trans Traffic Survey on Tuesday 15th November 2016 at the:
 - Ainslie Avenue / Limestone Avenue Intersection
 - Euree Street / Limestone Avenue / Treloar Crescent Intersection
- Scats Data Collected for the:
 - Ainslie Avenue / Limestone Avenue Intersection
 - Signalised Pedestrian Crossings between Coranderrk Street / Euree Street
 - Signalised Pedestrian Crossings between Euree Street / ANZAC Parade

Figure 4.1 Below outlines the extent of the traffic network being studied as part of this report.



Figure 4.1 Extent of Traffic Network

The traffic network being studied was chosen to better capture the area of greatest impact on local intersections resulting from the proposed development. The existing traffic volumes along Limestone Avenue and the connecting Ainslie Avenue indicate the Limestone Avenue / Ainslie Avenue Intersection will be of key concern when investigating the impact of the proposed development traffic generation on the surrounding traffic network. The Limestone Avenue / Euree Street / Treloar Crescent intersection is also expected to be impacted by the additional traffic generation of the proposed development.

4.2 Updated Traffic Counts

Additional SCATS traffic generation data was collected in August of 2018 for Limestone Avenue / Ainslie Avenue Intersection and for Limestone Avenue at the midblock between ANZAC Parade and Treloar Crescent. A review of the updated SCATS data showed negligible changes from the original traffic generation values. As a result, the previous generation values are considered to be appropriate for use.

Additional traffic generation data has not been sought to update the rates since the 2018 request. It is not felt to be required for an accurate interpretation of the intersection as the recent effects of COVID 19 have led to lower than expected growth in traffic generation values.

Updated traffic generation values from the development have been considered as a result of the additional townhouses added to the design, these have been factored in when assessing the impact on the local traffic network. The additional 8 townhouses proposed in the updated design are expected to generate relatively low traffic volumes compared to the overall development traffic generation and the current traffic volumes along Limestone Avenue. It is not expected that updates or changes to the base traffic data are required to assess the impact of the additional Precinct 5 traffic.

4.3 Traffic generation

The traffic generation for the proposed development site was determined using the environment and *Sustainable Development, Estate Development Code*. A trip rate of 0.6 vehicles per dwelling for peak hour rates was applied to the proposed development.

A summary of the development Trip generation is shown in Table 4.1 below:

Table 4.1 Development Trip Generation

Land Use	Rate	Yield	Peak Hour Traffic Generated
Original Design - Residential	0.6	244	146
Additional Residential	0.6	8	5

As the site has been abandoned by the CSIRO and is currently empty the traffic generated by the site is considered to be negligible and has not been included in the traffic analysis for the development.

As the design has evolved an additional 8 townhouses has been included. These values are reflected in the table above and increase the peak hour traffic by only 5 cars.

Previous analysis of the site conducted in 2016 was done at a considerably higher value than the current total traffic generation volume of 151 vph. The 2016 analysis utilise a generation rate approximately. 90 vph higher than the expected rate being used within this report, providing reassurance/confidence in the future operation of the traffic network as a result of the proposed development.

4.4 Trip Distribution

The trip distribution used to analyse the impact of the site generated traffic values was determined primarily through a review of the 2016 Australian Bureau of Statistics (ABS) journey to work data and the TCCS household travel survey. The trip distribution was calculated by treating Campbell as the trip destination for key areas within the ACT.

- Belconnen 33%
- Civic 13%
- Gungahlin 20%
- Woden/Tuggeranong 34%

There are several routes within the network that could link to broader destinations. The journey to work data shows the right turn movement out of the site as being higher than expected considering the existing volumes of vehicles on Limestone Avenue. The number of right turning vehicles is expected to fill the available holding space provided by the egress ramp, vehicles are likely to change their route from a right hand exit to left hand exit, rerouting around ANZAC Parade. We feel this justifies redistributing 50% of the right turn movements vehicles to a left turn onto Limestone Avenue when exiting the site. This left turn movement will facilitate the use of ANZAC Parade or continue through Reid to access the City. This redistribution is chosen as it is a reasonable representation of drivers altering their routes to achieve the lowest perceived delays when driving. As such an 80/20 split was used to determine left out/right out traffic values respectively. This matched the distribution previously accepted.

It is recommended that egress from site be retained as a single lane to reduce issues associated with sightlines of left turning vehicles being impeded by the traffic of right turning vehicles.

The Peak hour in and out trip distribution is shown in table below:

Table 4.2 In and Out Peak Hour Traffic Split

Land Use	Peak	Inbound	Outbound
Residential	AM	20%	80%
	PM	80%	20%

The in and out split was applied to the site generated traffic.

Background Traffic volume growth for the network was reviewed for the wider network. An assessment of the Canberra Strategic transport Model (CSTM) forecast for 2031 showed a 2.3% and 4.3% growth in traffic along Limestone Avenue for the AM and PM peaks respectively. This growth factor was applied to the traffic volumes across the network.

4.5 Traffic Network Impact

4.5.1 Intersection Impacts

The traffic generation from the additional townhouses in Precinct 5 was determined above in Table 4.1 to be 5vph extra during peak hours. Previous modelling and assessment carried out on the local road network showed a marginal negative impact on the operation of intersections adjacent to site. The addition of the original development showed an increase of 18m to queueing distance, and a maximum increase in delays of 1 second.

The intersection most impacted by the traffic generation of the development was Limestone Avenue / Ainslie Avenue Intersection. Previous SIDRA modelling showed the Limestone Avenue / Ainslie Avenue Intersection would perform at LOS A during AM and PM Peaks. The connecting side roads will operate at a range of LOS (D/E/F) however this is not a result of the development, rather a result of current conditions and prioritisations of the main through movement.

The impact of the development upon each key intersection is minimal, indicated by the LOS A of Limestone Avenue / Ainslie Avenue Intersection, the maximum increase in delays of 1 second and the 18m increase in queueing.

The Addition of the 5 additional vph generated by the updated Precinct 5 is expected to be minimal, causing negligible changes to delay times and queueing distances. An 80/20 split was used to determine left out/right out turning movements respectively and as such the additional vehicles will increase the left-out movement by 4vph and right out by 1vph. This equates to an increase in turning movement volumes of 4% for the Left-out movement and 3% for the right-out movement. These additional vph are minimal and their impact on the traffic network is expected to be negligible.

Additional updated modelling for future traffic networks is considered to be unnecessary due to the low volume of additional vehicles resulting in no notable increased impact on the local traffic network as a result of the Precinct 5 update.

5. Car Parking

5.1 Parking requirements

The parking provision for development projects are outlined in the Environment, Planning and Sustainable Development Directorate (EPSDD) *Parking and Vehicular Access General Code*. The code outlines the following parking requirements for residential developments within the Campbell area:

- 1 space per 1-bedroom dwelling.
- 1.5 spaces per 2-bedroom dwelling.
- 2 spaces per 3+ bedroom dwelling.
- 0.25 spaces per apartment for visitors (townhouse visitor parking inclusive in existing parking area).

Table 5.1 below outlines the required parking distribution for the development.

Table 5.1 Required parking Provisions Per EPSDD

Apartment Type	Number	Rate	Parking Requirement
1 Bedroom Dwelling	29	1	29
2 Bedroom Dwelling	132	1.5	198
3 Plus Bedroom Dwelling	91	2	182
Sub Total			409
Visitor*	252	0.25	69
TOTAL			478

The total parking required by the *Parking and Vehicular Access General Code* is 478 parking spaces. The current design provides 658 resident parking spaces, this includes under croft parking for townhouses and 168 basement parking spaces for apartments. There are 69 dedicated visitor parking spaces within the development, there is also areas of unmarked parking in townhouse driveways where visitors can park their car while visiting. The parking provision for residents and visitors exceeds the requirements outlined in the EPSDD PVAGC. As such, the current parking provision is deemed to be acceptable to provide parking for residents and visitors within the development. An outline of the parking provision for Precinct 5 is provided in Figure 5.1 below.

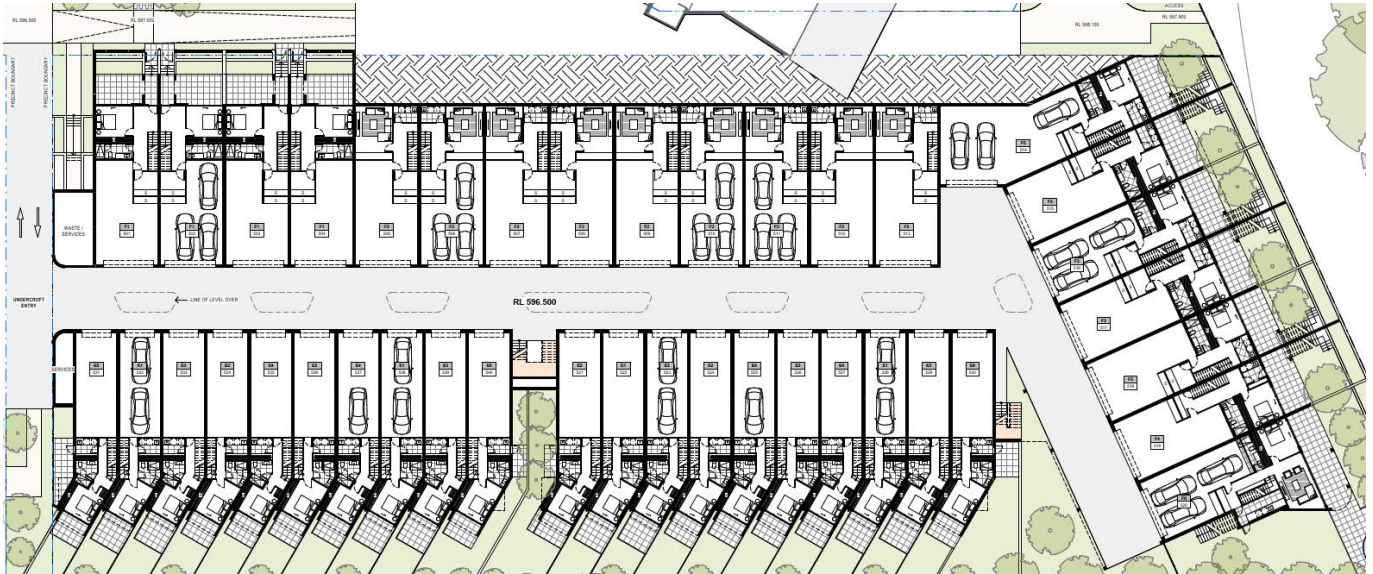


Figure 5.1 Outline of Precinct 5 Development Parking

5.2 Accessible Parking Requirements

Accessible parking will be provided within the development parking areas in accordance with the requirements set out in the *ACT Parking and Vehicular Access General Code*. The General Code outlines a 3% requirement for disability parking for the development to be compliant. 3% of the public parking provided within the development is 3 spaces (excluding proposed adaptable housing spaces). The exact location and implementation of the spaces will be determined through the continuing design resolution process.

5.3 Motorcycle Parking Requirements

Motorcycle parking requirements will be provided within the development parking areas in accordance with the requirements set out in the *ACT Parking and Vehicular Access General Code*. The General Code outlines a 3% requirement for motorcycle parking for the development to be compliant. 3% of the public parking provided within the development is 3 spaces.

5.4 Bicycle Parking Requirements

To determine the requirements for bicycle parking within this development, the *Bicycle Parking General Code* (BPGC) for the ACT was used to determine the required rates for bicycle parking needed for each land use.

The rates used to calculate the bicycle can be found below:

Apartments

- 1 per apartment for residents; and
- 1 per 12 apartments after the first 12 apartments for visitors and guest

Townhouses

- Nil for residents, assuming a suitable storage space for a bicycle is available within the dwelling itself; and
- Nil for visitors and guests, assuming storage of the bicycles within the dwelling for the duration of their stay

A summary of the bicycle parking requirements for the proposed development is presented in Table 5.2.

Table 5.2 Bicycle parking Requirements

Apartment Type	Bike parking Rates	Yield	Spaces	Visitor Spaces
Apartments	1 space/dwelling 1 space/12 dwellings after first 12 dwellings for guest	117 dwellings	117 spaces	9 spaces
Total				126 spaces

It is noted that for the non-visitor bicycle spaces, secure parking facilities such as individual bicycle lockers or locked bicycle enclosures are required for storage. For visitor bicycle parking, bicycle rails in areas of high passive surveillance are considered acceptable.

It is noted that the BPGC does allow for a reduction in the resident bicycle parking for apartment dwellings where a secure general-purpose storage space is provided for each resident. If the storage space is secure, suitably shaped, and accessible by bicycle, it can be utilised in the place of bicycle storage and a separate allowance does not need to be made.

5.5 Proposed Car Parking Review

The proposed layout and operation of the Precinct 5 parking arrangements have been reviewed at a high level to assess safety and feasibility. The review was undertaken on the design drawing PDF with reference to AS2980.2 Off Street Car Parking.

The assessment included a review of the following design aspects:

- Bay and Aisle Width
- Queuing
- Parking Garage Dimensions

The parking review indicated the proposed design meets the relevant standards set out in AS2980.2. The design is expected to operate in a satisfactory manner.

6. Conclusion

The investigation and findings within the report lead to the following conclusions:

- The parking requirements as per EPSDD PVAGC for the development is 478 parking spaces to accommodate the development parking use. 409 parking spaces required for residential parking and 69 parking spaces for visitor parking.
- The current design for onsite parking is sufficient to provide all parking requirements of the proposed design. The current parking on site offers 658 parking spaces.
- The existing site access for the site was assessed based on safety and capacity, it is recommended the existing site access arrangement as a left in, left out, right out be retained.
- A review of crash data did not identify any crashes associated with the site access turning movements and no trends indicating the site access existing layout is a high-risk movement.
- The site traffic generation is expected to be 151vph in the AM and PM peak
- There is adequate capacity in the surrounding road network to accommodate for the development traffic generation. Impacts on the local network and intersections are expected to be minimal with small effects on Queueing and delays. Additional traffic generation from the updated design of Precinct 5 is expected to have minimal impact on the traffic network with just 5 additional vehicles per hour against previous assessments.
- Provision for bicycle parking/facilities will be achieved on site through secure parking areas within the townhouses and apartment buildings, this is acceptable as per the Bicycle Parking General Code.

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Appendix A Precinct 5 Updated Drawings

Contact Us

Calibre Professional Services Pty Ltd
55 070 683 037

Level 6, 121 Marcus Clarke Street, Canberra, ACT 2601
GPO Box 261, Canberra, ACT 2601
+61 2 6211 7100

calibregroup.com