



15 – 17 Lupin Avenue and 82 Belmore Street, Fairfield East In-fill Affordable Housing Traffic Impact Assessment

Prepared for:

BlueCHP Limited

28 November 2024

The Transport Planning Partnership

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Client: BlueCHP Limited

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Quality Record

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V01	28/11/2024	Sokan Chhoun	Ashish Modessa	Wayne Johnson	

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1 Introduction

1.1 Background

BlueCHP (a registered social housing provider) is proposing an in-fill affordable housing development located at 15-17 Lupin Avenue and 82 Belmore Street, Fairfield East (Lot 1 & 2 DP1154467 and Lot 185 DP15560). The proposed development comprises a six-storey residential flat building with one level of basement car parking. A total of 39 dwelling units, with a combination of one-bedroom, two-bedroom and three-bedroom units.

The subject site is currently occupied by three lots of low-density residential dwellings, which will be demolished, and a six-storey residential flat building will be constructed in its place. The proposed residential flat building is to be developed in accordance with the In-fill Affordable Housing guidelines, stipulated in Part 2, Division 1 of the Housing SEPP (2021).

The Transport and Planning Partnership (TPPP) has prepared this transport impact assessment (TIA) report to accompany the revised application for submission to relevant authorities, including Fairfield City Council (Council).

1.2 Structure of the Report

The layout of the report is set out as follows:

- Chapter 2 discusses the existing conditions including a description of the site.
- Chapter 3 provides a brief description of the proposed development.
- Chapter 4 assesses the parking implications and requirements.
- Chapter 5 assesses the traffic generation and its implications.
- Chapter 6 presents the conclusion of the assessment.

2 Existing Conditions

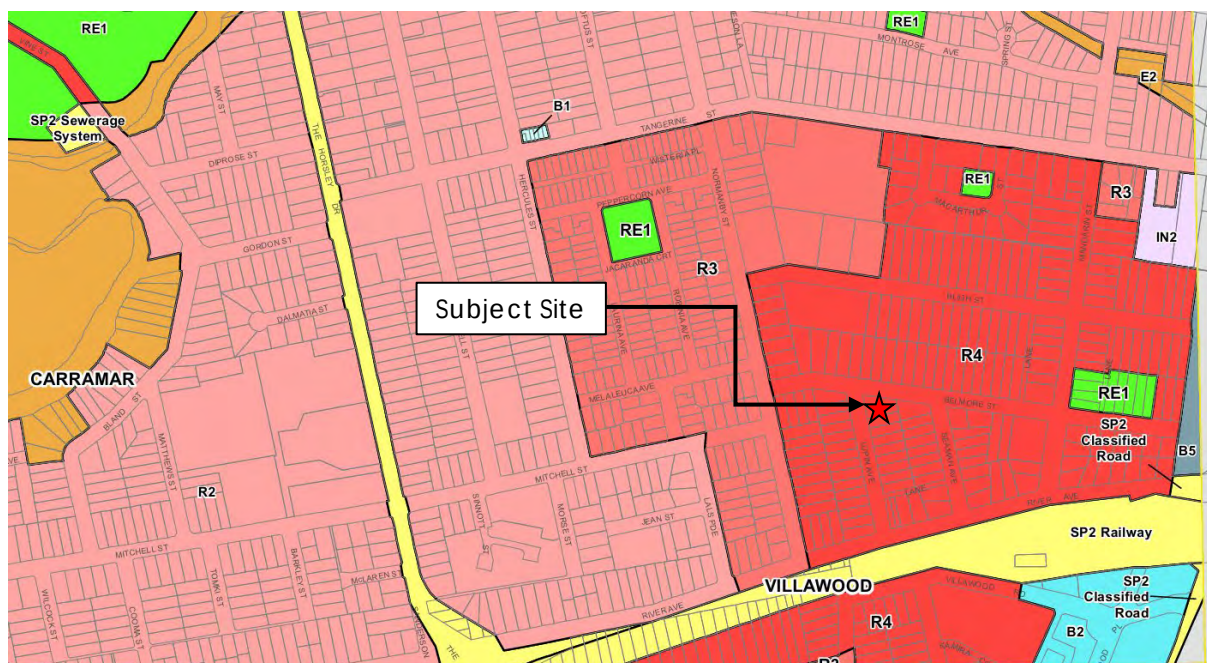
2.1 Site Context

The subject site is a corner lot located at 15-17 Lupin Avenue and 82 Belmore Street, Fairfield East, which falls within Fairfield City Council (Council). According to Fairfield Council's Local Environmental Plan (FLEP) 2013, the subject site is currently zoned as R4 – High Density Residential, which permits residential flat building land use. Figure 2.1 shows the land zoning of the subject site and the surrounding area.

The subject site is surrounded mostly by low density residential dwellings, most of which, are also zoned as R4 – High Density Residential. Villawood local centre (B2 – local centre) is located just south of Villawood train station, which is approximately 700m walking distance (9-minute walk) from the subject site.

The site is currently occupied by low-density residential dwellings, with frontage onto Lupin Avenue and Belmore Street. These dwellings will be demolished and a six-storey residential flat building with basement car parking will be constructed in its place.

Figure 2.1: Land Zoning of the Site



Source: Fairfield Local Environmental Plan 2013, last accessed on 25/11/2024

2.2 Surrounding Road Network

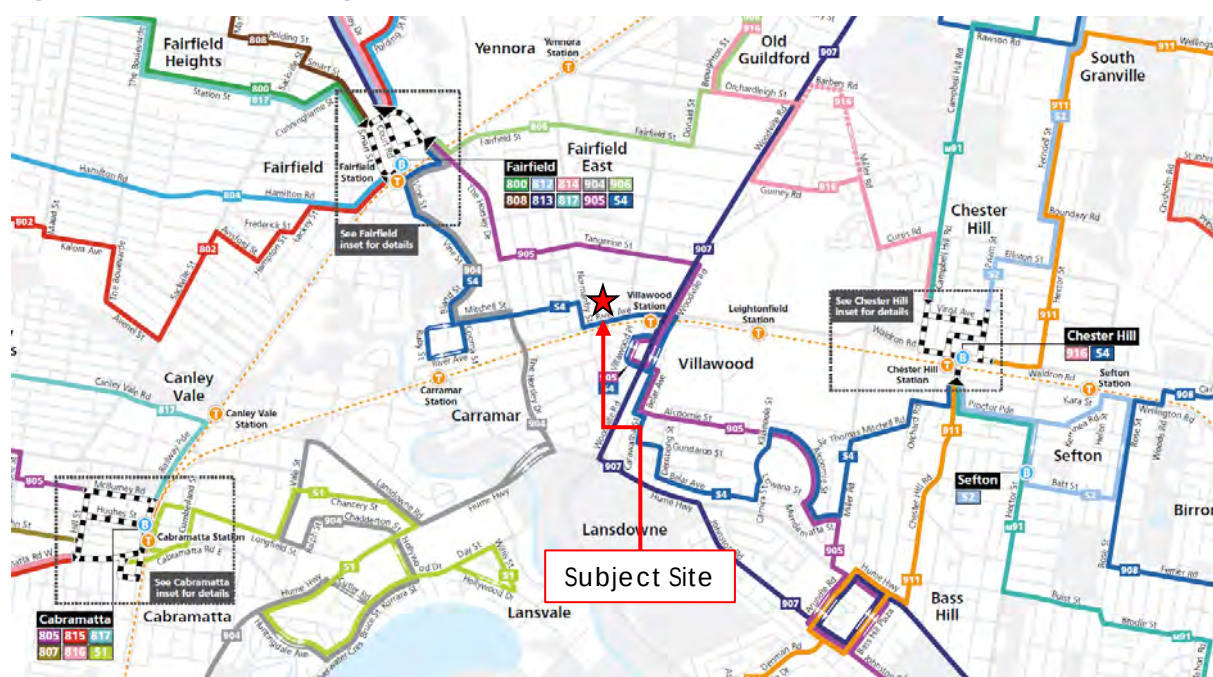
Lupin Avenue is a two-lane, two-way local road running generally in a north-south direction and under care and control of Fairfield City Council. It connects Belmore Street to the north and River Avenue to the south, both via priority-controlled intersections. Unrestricted parking is available on both sides of the road. The posted speed limit on Lupin Avenue is 50km/h.

Belmore Street is a two-lane, two-way road, running generally in an east-west direction and under care and control of Fairfield City Council. It connects with Normanby Street to the west via a priority-controlled intersection and Mandarin Street to the east via a priority-controlled intersection. Unrestricted parking is available on both sides of the road. The posted speed limit on Belmore Street is 50km/h.

2.3 Public Transport Infrastructure

Bus stops are located on Normanby Street and River Avenue. Bus route S4 – Chester Hill to Fairfield via Carramar and Villawood services the area, providing connection between Chester Hill and Fairfield via Carramar and Villawood. The service runs between 8:50am and 2:30pm each weekday, at a frequency of 40 – 80 minutes. The closest bus stop is located on River Avenue, just west of Lupin Avenue, which is a 180m walking distance (2-minute walk) from the subject site. The bus network around the subject site is illustrated in Figure 2.2.

Figure 2.2: Surrounding Bus Network



Source: Transit Systems Sydney, last accessed on 25/11/2024

Villawood train station is located to the south of the site, which is an approximately 700m walking distance (9-minute walk) from the subject site. This train station is serviced by T3 Bankstown Line, which runs between Sydney CBD and Liverpool via Bankstown with express services available. The train runs every 7 – 25 minutes in the peak periods and every 30 minutes during the off-peak period.

Based on the approximately 600m walking distance between the subject site and Villawood train station, the subject site meets the 'accessible area' requirements of the Housing SEPP 2021, which states that an accessible area means land:

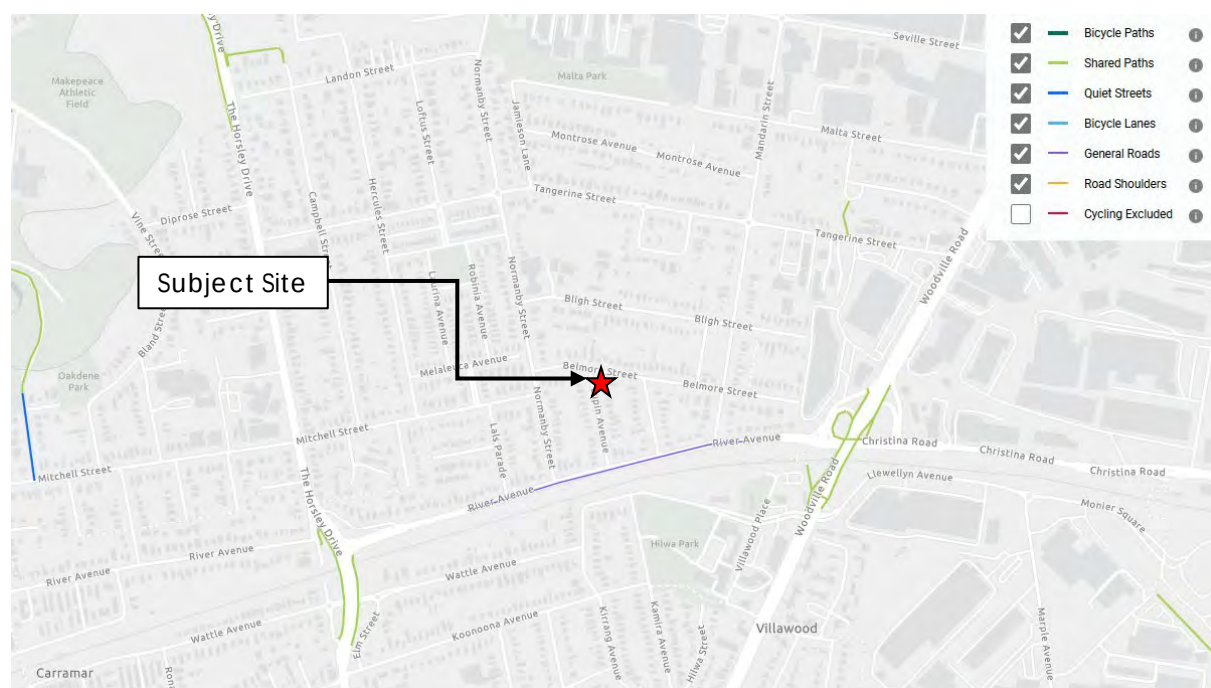
- (a) within 800m walking distance of a public entrance to a railway station or a wharf from which Sydney Ferries ferry service operates.

2.4 Pedestrian and Cyclist Infrastructure

Pedestrian footpaths are available along the entire western side and partially along the eastern side of Lupin Avenue, fronting the subject site. The pedestrian footpath discontinues on the eastern side, immediately north of the subject site. No pedestrian footpath is available on Belmore Street near the subject site, with the exception of the site frontage, where a footpath is provided.

There are no dedicated cycling facilities near the subject site. General mixed on-road cycling facilities, where a cyclist shares the road with general vehicles, is available on River Avenue. Figure 2.3 shows the cycling infrastructure around the subject site.

Figure 2.3: Surrounding Cycling Infrastructure



Source: TfNSW Cycleway Finder, last accessed on 25/11/2024

2.5 Existing Traffic Volume

As part of the original development application, automatic tube counts (ATC) were undertaken on Lupin Avenue and Belmore Street near the subject site for a period of one week (7 days) to record traffic flows 24 hours per day. The survey was conducted between 16 March 2023 and 22 March 2023 (inclusive) during the school term.

Table 2.1 presents the peak hourly traffic flows for Lupin Avenue and Belmore Street in each direction and the combined peak traffic volume. Detailed ATC survey data is attached in Appendix C.

Table 2.1: Belmore Street and Lupin Avenue Traffic Flows

Peak Period	Eastbound	Westbound	Two-way Traffic Flow
Belmore Street			
AM Peak Hour 9am – 10am	16	21	37
PM Peak Hour 3pm – 4pm	26	28	54
Lupin Avenue			
AM Peak Hour 8am – 9am	13	11	24
PM Peak Hour 3pm – 4pm	12	14	26

3 Proposed Development

3.1 Overview of the Proposal

The proposed development involves demolition of the existing residential dwellings at 15-17 Lupin Avenue and 82 Belmore Street, Fairfield East, and construction of a new six-storey residential flat building with basement car parking facilities in its place.

The proposed development comprises a total of 39 residential units. A breakdown of the development is as follows:

- 9 one-bedroom units
- 27 two-bedroom units
- 3 three-bedroom units.

It is proposed to provide one level of basement car parking with 28 car parking spaces including eight visitor spaces. The proposed ground floor site layout is shown in Figure 3.1, with a more extensive site layout contained in Appendix A.

Figure 3.1: Proposed Ground Floor Site Layout



Source: Loucas Architects, drawing no. Pn-21020-A-1000 Revision F dated 21/11/2024

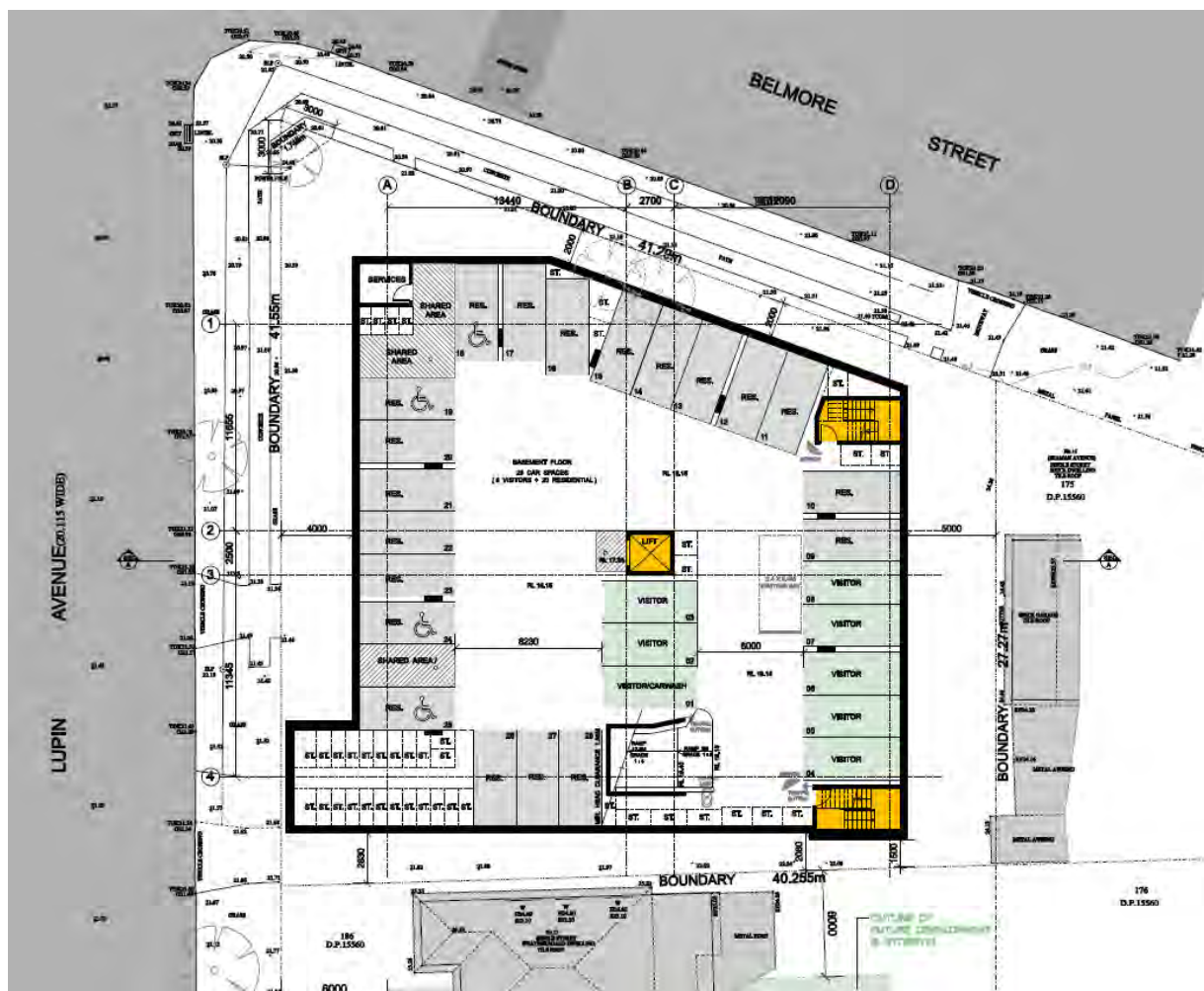
3.2 Proposed Access Arrangement

All existing vehicular driveways will be removed, with a new vehicular access driveway to be provided via Lupin Avenue, near the southern boundary of the site.

The proposed vehicular driveway is two-way with one lane in each direction, narrowing to a two-way, one lane ramp providing access to the single basement level. The car park layout shown in Figure 3.2. A combination of convex mirrors and stop/go traffic signal system is proposed in accordance with Council requirements.

Pedestrian access will be provided off Belmore Street.

Figure 3.2: Proposed Basement Layout



Source: Loucas Architects, drawing no. Pn-21020-A-900 Revision F dated 21/11/2024

4 Parking Assessment

4.1 Car Parking Requirements

The proposed development is to be undertaken pursuant to Part 2, Division 1 – In-fill Affordable Housing of the Housing SEPP 2021. Hence, the car parking requirements set out in the Housing SEPP applies and prevail Council's Development Control Plan (DCP).

Part 2, Division 1 of Housing SEPP states that for an in-fill affordable housing developed by a registered social housing provider, the following parking rate applies:

- For development on land in an accessible area – (within 800m walking distance of a public entrance to a railway station or a wharf from which Sydney Ferry services operates)
 - 0.4 parking spaces for each dwelling containing 1 bedroom
 - 0.5 parking spaces for each dwelling containing 2 bedrooms
 - 1 parking space for each dwelling containing 3 or more bedrooms

It is noted the proposed development is located approximately 600m walking distance from Villawood train station. Hence, it is classified an “accessible area,” as defined in Housing SEPP 2021, and discussed in Section 2.3.

The Housing SEPP does not specify any visitor parking requirements for in-fill affordable housing.

The car parking assessment of the subject site is summarised in Table 4.1.

Table 4.1: SEPP Car Parking Requirements

Bedroom Type	Yield	Car Parking Rate	Required Car Spaces	Proposed Provision
1-bedroom	9	0.4 parking spaces per dwelling	3.6	28
2-bedroom	27	0.5 parking spaces per dwelling	13.5	
3-bedroom	3	1 parking space per dwelling	3	
Total	39		20	

Based on the assessment shown in Table 4.1, the proposed development requires at least 20 car parking spaces, including accessible car parking.

It is proposed to provide 28 car parking spaces on a single basement car parking level which includes eight visitor spaces. Therefore, the proposed car parking provision not only satisfies the Housing SEPP requirements, however, also provides visitor parking, at a rate of almost 1 space per 4.9 dwellings which aides to limit the impact of the development on the surrounding road network.

4.2 Accessible Parking Requirements

The Housing SEPP does not stipulate any requirements for accessible car parking spaces. Reference is made to the Building Code of Australia (BCA), which the proposed development falls under Building Class 3. For Building Class 3, BCA recommends the accessible parking spaces to be calculated by multiplying the total number of parking spaces by the percentage of accessible units to the total number of units.

It is proposed to provide four accessible units, amongst a total of at 39 dwelling units, which represents 10% of the units. It is proposed to provide 4 accessible car parking spaces (one space per accessible unit) on-site which satisfies BCA requirements.

4.3 Bicycle Parking Requirements

The Housing SEPP and Council's DCP does not specify any bicycle parking requirements for in-fill affordable housing. However, Fairfield City Council's DCP 2024 (Chapter 12.3.3) states *"to encourage the use of bicycles, new developments should incorporate appropriate bicycle parking / storage facilities"*.

The proposed development provides storage cages in the car park. As part of ongoing design development prior to Construction Certificate, it is recommended that some if not all the cages (where practical) are designed to accommodate bicycles as per AS2890.3:2015. Any opportunity to provide the minimum four bicycle spaces required by the DCP in the form of bicycle racks in a dedicated area should also be considered.

4.4 Waste Collection

Council's DCP does not stipulate specific loading and service parking requirements for residential flat buildings. Clause 7.7 requires a loading area if the development is mixed-use or commercial.

The development will be 100% in-fill affordable housing and therefore it is understood that on-site loading is not strictly required unless kerbside collection is not suitable.

A performance review of proposed loading/unloading arrangements from a feasibility perspective is provided below:

- It is understood that there are several site constraints that limit the development opportunities of the site, with the size of the site being one of them. With 100% of the development is in-fill affordable housing, raising driveway overhead height, providing a longer ramp to accommodate waste vehicles and increasing the depth of excavation required to increase the basement height would all increase the cost of construction and introduce other complications from a structural perspective. The high cost of construction will make the development no longer viable for affordable housing.
- The site is limited in area, thus impacting the permissible gross floor area. If a ground level loading bay is provided, the site will lose most if not all the ground floor gross floor area to accommodate a suitable loading area in conjunction with the basement car park ramp. This would have significant visual impact on the surrounds with much of the street

frontages potentially being back-of-house service area thus impact street activation. The loss of apartments would also increase the cost per unit and further impact the viability to provide affordable housing.

- Any concerns of losing on-street parking to accommodate kerbside collection is also insignificant noting that to provide a driveway crossover suitable to accommodate service vehicles would itself result in the loss of on-street parking. There is limited competing demands for on-street parking along Lupin Avenue, with surrounding low-density residential dwellings likely to have their off-street parking space. Therefore, there is an abundance of unrestricted on-street parking available around the area. With the SEPP parking rates of 0.4-1 car space for each dwelling, the proposed development provides 28 car spaces, which is more than the requirement of 20 spaces, the provision including visitor parking which is not a requirement of the SEPP to provide for affordable housing. This aides the parking demand and reduces the likelihood that visitor parking would overflow into the surrounding roads.
- The proposed kerbside loading and servicing allows waste bins to be directly transported between the building and the service vehicle which is considered appropriate given the size of the development (39 apartments) and managing the viability for the affordable housing development. Whether it is formalised via signposted (and time-restricted) Loading Zones can be explored with Council.

4.5 Design Compliance Review

4.5.1 Vehicular Access Driveway/ Ramp

The subject site will be accessed via Lupin Avenue via a 6.6m wide driveway. The driveway has a maximum grade of 1:4. Swept path analysis of the proposed driveway has been undertaken and is provided in Appendix B.

The proposed access is classified as a Category 1 driveway in accordance with AS2890.1: 2004 Table 3.1 (i.e. access with frontage along a local road that serves between 25 and 100 parking spaces).

The proposed combined driveway width is 6.6m satisfies the AS2890.1: 2004 requirement.

The ramped section to the basement car parking narrows to 3.0m wide, providing a two-way, one-lane arrangement.

Australian Standards AS2890.1:2004 Clause 3.2.2. states that as a guide where there are more than 30 vehicle movements in a peak hour (in and out combined), driveways should allow for two vehicles to pass, i.e. a minimum width of 5.5m.

The development proposal comprises 39 apartments with the car park now comprising 28 car spaces. As detailed in Chapter 5, the development proposal is expected to generate approximately 6-7 vehicle trips per hour during the weekday peak periods based on high-density residential flat building traffic generation rates provided in Transport for NSW's technical direction TDT 2013/04a. This is considerably less than the 30 vehicles per hour provided in AS2890.1 where two vehicles passing is required on a driveway.

The expected level of traffic generation equates to on average one vehicle every eight to 10 minutes. Being a residential development, traffic flows during the weekday peak periods are tidal flow in nature; that is, mostly outbound in the morning and inbound in the afternoon. Typical inbound and outbound splits adopted for residential developments are 80 percent in the peak direction. This means, the development could have six vehicles in the peak direction and one vehicle in the opposing direction during the weekday peak hours.

The driveway basement from street level has been designed so that two-way vehicle can enter and exit at the same time at the site boundary, near the intercom. The driveway is designed so that upon entry, a vehicle can wait for an opportunity to enter the ramp to access the basement, subject to traffic signal operation.

Although access to basement level 1 can only accommodate one way of traffic at one time, the likelihood of two-way interaction on the proposed two-way one lane ramps is low and yet it is proposed to be managed using stop/go traffic signal system, convex mirrors and sufficient waiting area provided on the parking aisle which provides compliant aisle width.

Therefore, given the low turnover of the car park and familiar users (i.e. residents) primarily using it, the proposed arrangement is considered acceptable and a common arrangement for such residential car parks.

4.5.2 Car Park Arrangement

AS2890.1:2004 indicates that residential parking should be provided as Class 1A parking. The proposed basement car parking spaces satisfy the design requirements for 90-degree Class 1A which require a minimum width of 2.4m, a length of 5.4m, and an aisle width of 5.8m.

AS2890.6:2009 requires accessible parking spaces to be provided as 2.4m wide by 5.4m long with an adjoining shared area of equal dimensions. The accessible parking spaces comply with this requirement.

Table 4.2 identifies the characteristics of the proposed parking area with respect to the Australian Standards (AS2890.1-2004) and assesses whether the proposed parking area is compliant.

Table 4.2: Parking Design Requirement

Design Aspect	Council / AS 2890 Requirements	Proposed Provision	Compliance
Car parking space length:			
- Standard space	5.4m (min)	5.4m	Compliant
- Accessible space	5.4m (min)	5.4m	Compliant
Car parking space width:			
- Standard space	2.4m (min)	2.4m	Compliant
- Accessible space	2.4m (min)	2.4m	Compliant
Bicycle parking space width	Shall be in accordance with AS2890.3-1215		
Bicycle parking space length	Shall be in accordance with AS2890.3-1215		

5 Traffic Assessment

Transport for New South Wales (TfNSW) provides traffic generation rates for different land uses in their *Guide to Transport Impact Assessment (2024)*.

The TfNSW Guide (2024) categorises residential flat buildings, which contain 20 or more dwellings, as a high-density residential flat building. The TfNSW Guide (2024) stipulates the following weekday average trip generation for high-density residential flat buildings within high public transport accessibility areas of the Sydney metropolitan:

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

The above rates are considered appropriate for this In-Fill Affordable Housing development, considering the lower car parking provisions of the Housing SEPP.

By using the trip rates presented above, the proposed development of 39 residential units is anticipated to generate approximately 6-7 vehicle trips per hour during the weekday peak periods.

In addition, the TfNSW Guide (2024) indicates that low density residential dwellings generate 0.68-0.77 vehicle trips per dwelling during the weekday peak hours. Therefore, the existing three (3) dwellings on site are estimated to generate approximately 2-3 vehicle trips per hour during the weekday peak hours.

On this basis, the proposed development is anticipated to generate a net additional peak traffic of 4-5 vehicle trips.

The above traffic generation estimate is considered to be minimal and is not expected to have any impacts on the surrounding road network, especially considering the spare capacity of the frontage roads (Lupin Avenue and Belmore Street).

5.1 Environmental Capacity

Table 4.6 of TfNSW Guide to Traffic Generating Developments (2002) provides some guidance on typical environmental capacity of local residential streets. This information has been reproduced in Table 5.1.

Table 5.1: Environmental Capacity Performance Standards on Residential Streets

Road Class	Road Type	Maximum Speed (km/h)	Maximum Peak Hour Volume (vph)
Local	Access Way	25	100
	Street	40	200 environmental goal 300 maximum
Collector	Street	50	300 environmental goal
			500 maximum

Note: Maximum speed relates to the appropriate design maximum speeds in new residential developments. In existing areas maximum speed relates to the 85th percentile speed.

Traffic surveys were undertaken to record existing local traffic volumes along Lupin Avenue and Belmore Street, which is a two-lane, two-way undivided road.

A summary of the existing traffic volumes is summarised in Table 5.2.

Table 5.2: Traffic Volumes on Residential Streets for Environmental Capacity Performance

Survey Location	Road Type	Maximum Peak Hour Volume (vph)	Weekday Average (vph)	
			AM Peak Hour	PM Peak Hour
Lupin Avenue	Local Street	200 environmental goal 300 maximum	37 (9:00am-10:00am)	54 (3:00pm-4:00pm)
Belmore Street			24 (8:00am-9:00am)	26 (3:00pm-4:00pm)

Taking into consideration the above, Table 5.1 indicates that the environmental capacity of Lupin Avenue and Belmore Street is 200 vph (environmental goal), with a maximum of 300 vph in the peak hour. The existing traffic flows along Lupin Avenue and Belmore Street are generally in the order of 24 to 54 vph during the peak hour as shown in Table 5.2. It is expected that the proposed development would generate an additional 4-5 vph during the peak hour. Therefore, Lupin Avenue and Belmore Street would continue to operate well within its environmental capacity with the proposed development.

Based on the above, the proposed development is not expected to have any adverse traffic implications relating to residential amenity on Lupin Avenue and Belmore Street and other local roads.

6 Summary and Conclusion

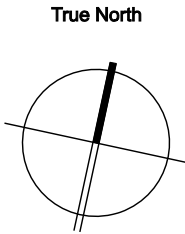
This transport impact assessment report presents the traffic and parking implications of the proposed six-storey residential flat building at 15-17 Lupin Avenue and 82 Belmore Street, Fairfield East. The key findings of the report are presented below:

- It is proposed to demolish the existing residential buildings at 15-17 Lupin Avenue and 82 Belmore Street and construct in its place a new six-storey residential flat building, which comprises a total of 39 dwelling units with a combination of one-bedroom, two-bedroom and three-bedroom dwelling units.
- Vehicular access to the site will be provided via a driveway off Lupin Avenue in accordance with AS2890.1-2004.
- A provision of 28 car parking spaces meets the minimum Housing SEPP car parking requirement of 20 spaces and provides eight visitor spaces to limit the impact of the development on the surrounding on-street parking.
- The proposed car parking spaces, accessible car spaces, and vehicular access layout complies with the design requirements specified in AS2890:2004.
- Traffic generation of the proposed development has been estimated using the rates stipulated in the TfNSW Guide 2024. Based on these rates, the proposed development is anticipated to generate between 6-7 vehicle trips per hour or a net additional 4-5 vehicle trips per hour during the weekday peak periods.
- The 24-hour and 7-day automatic tube count survey shows that Lupin Avenue and Belmore Street are currently operating below capacity and have spare capacity to accommodate additional traffic.
- The estimated trip generation is minimal and is not expected to have a significant impact on the surrounding local road network.

Overall, the traffic and parking aspects of the proposed development are considered to be satisfactory.

Appendix A

Proposed Site Layout Plan



ISSUE	REVISION DESCRIPTION	APPD	DATE
A	ISSUE FOR CLIENT APPROVAL	TL	11/02/2022
B	ISSUE FOR CLIENT APPROVAL	TL	18/04/2023
C	ISSUE FOR COORDINATION	HE	04/05/2023
D	ISSUE FOR COORDINATION	HE	30/05/2023
E	ISSUE FOR DA	HE	14/07/2023
F	AMENDMENTS TO COUNCIL	HE	01/02/2024
G	AMENDMENTS TO COUNCIL	HE	19/07/2024
H	AMENDMENTS TO COUNCIL	TL	15/11/2024

Client:

■

Level 3, Suite 309, 7-9 Gibbons St,
Redfern NSW, Australia

Tel: (02) 8052 9600
Email: admin@loucasarc.com.au

Architect:

LOUCAS ARCHITECTS

ABN 92 626 290 122

Level 3, Suite 309, 7-9 Gibbons St,
Redfern NSW, Australia

Tel: (02) 8052 9600
Email: admin@loucasarc.com.au

Nominated Architect:
Jim Apostolou 7490



L O U C A S
ARCHITECTS

Project Details:

RESIDENTIAL DEVELOPMENT

Project Address:

**15-17 LUPIN AVE & 82 BELMORE ST,
FAIRFIELD**

Drawing Title:

BASEMENT PLAN

Project Number: Pn-21020

Drawing Number: A-900

Drawing Status:	Issue:
AUTHORITY APPROVAL	F

Scale: 1:100 @A1 1:200 @A3

Date Printed:

21/11/2024

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ISSUE	REVISION DESCRIPTION	APPD	DATE
A	ISSUE FOR CLIENT APPROVAL	TL	11/02/2022
B	ISSUE FOR CLIENT APPROVAL	TL	18/04/2023
C	ISSUE FOR COORDINATION	HE	04/05/2023
D	ISSUE FOR COORDINATION	HE	30/05/2023
E	ISSUE FOR DA	HE	14/07/2023
F	AMENDMENTS TO COUNCIL	HE	01/02/2024
G	AMENDMENTS TO COUNCIL	HE	19/07/2024
H	AMENDMENTS TO COUNCIL	TL	15/11/2024

Client:

-

Level 3, Suite 309, 7-9 Gibbons St,
Redfern NSW, Australia
Tel: (02) 8052 9600
Email: admin@loucasarc.com.au

Architect:

LOUCAS ARCHITECTS
ABN 92 628 290 122
Level 3, Suite 309, 7-9 Gibbons St,
Redfern NSW, Australia
Tel: (02) 8052 9600
Email: admin@loucasarc.com.au
Nominated Architect:
Jim Apostolou 7490

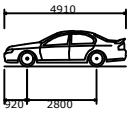
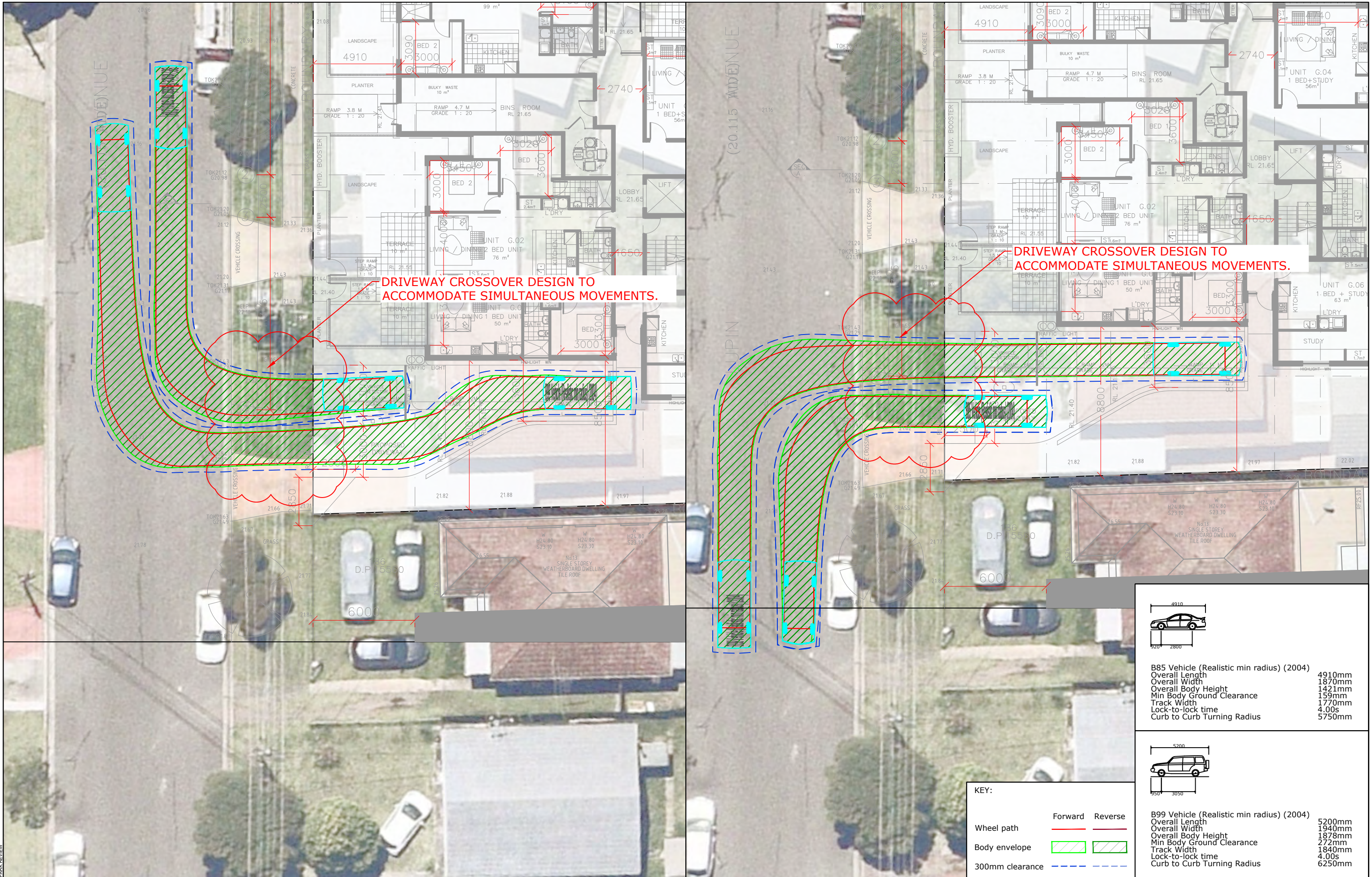
Project Details:

RESIDENTIAL DEVELOPMENT
Project Address:
**15-17 LUPIN AVE & 82 BELMORE ST,
FAIRFIELD**
Drawing Title:
GROUND FLOOR PLAN
Project Number:
Pn-21020
Drawing Number:
A-1000
Drawing Status:
AUTHORITY APPROVAL
Issue:
F
Scale: 1:100 @A1 1:200 @A3
Date Printed:
21/11/2024

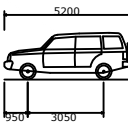
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Appendix B

Swept Path Analysis



B85 Vehicle (Realistic min radius) (2004)
Overall Length 4910mm
Overall Width 1870mm
Overall Body Height 1421mm
Min Body Ground Clearance 159mm
Track Width 1770mm
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 5750mm



B99 Vehicle (Realistic min radius) (2004)
Overall Length 5200mm
Overall Width 1940mm
Overall Body Height 1878mm
Min Body Ground Clearance 272mm
Track Width 1840mm
Lock-to-lock time 4.00s
Curb to Curb Turning Radius 6250mm

KEY:		
Wheel path	Forward	Reverse
Body envelope		
300mm clearance		

REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KR	AM	WJ	28/11/24

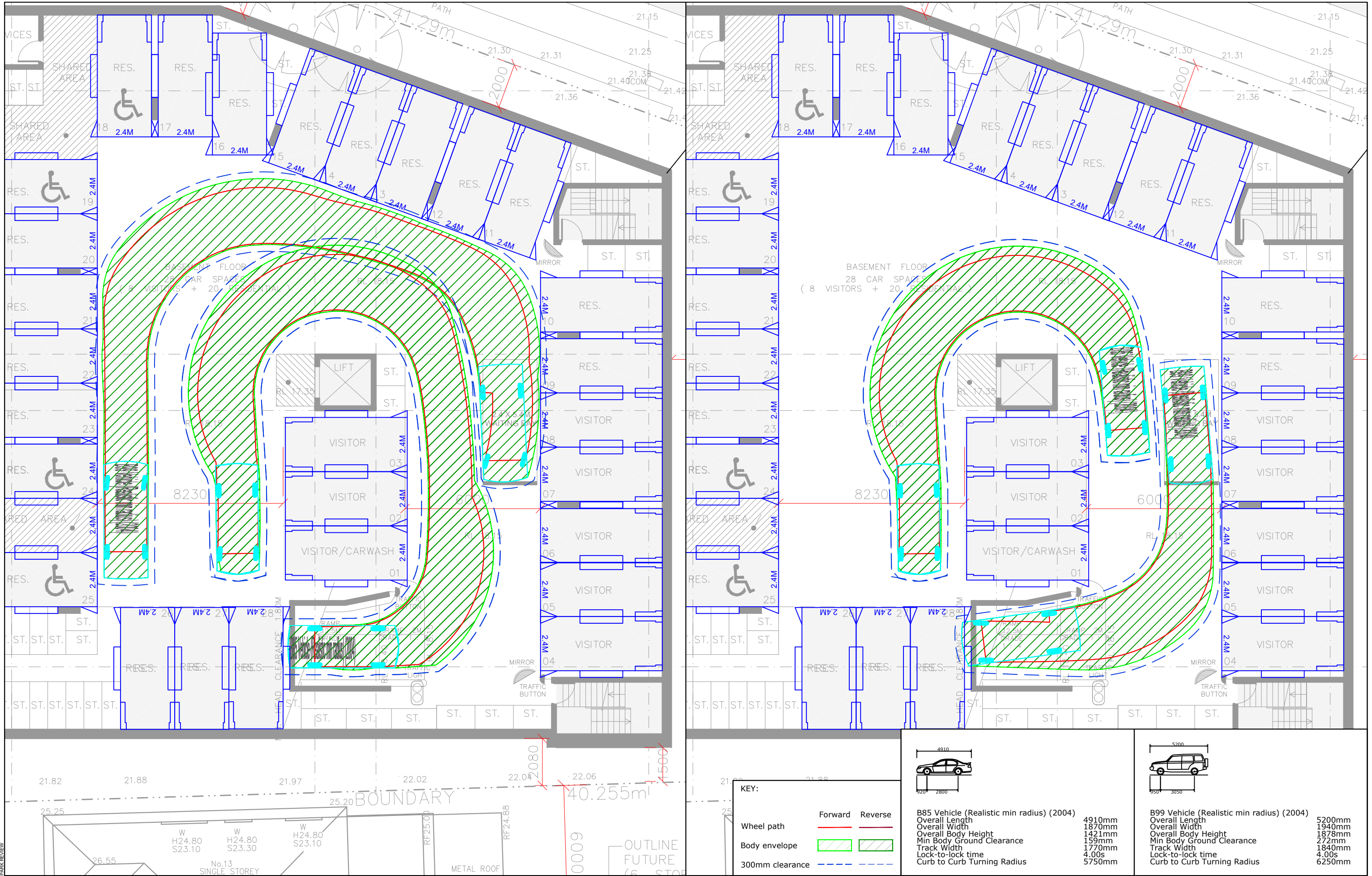


PROJECT
15-17 LUPIN AVENUE, FAIRFIELD EAST

TITLE
SWEPT PATH ANALYSIS - DRIVEWAY
AS2890.1 4.91m B85 VEHICLE & 5.2m B99 VEHICLE

DWG No. 23084CAD006 FIGURE 1	
DATE STAMP 28 NOVEMBER 2024	
PROJECT No. 23084	SCALE 1:200 @A3
REV. A	

Filename: 23084CAD006-241128-CAR PARK REVIEW



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KR	AM	WJ	28/11/24



PROJECT

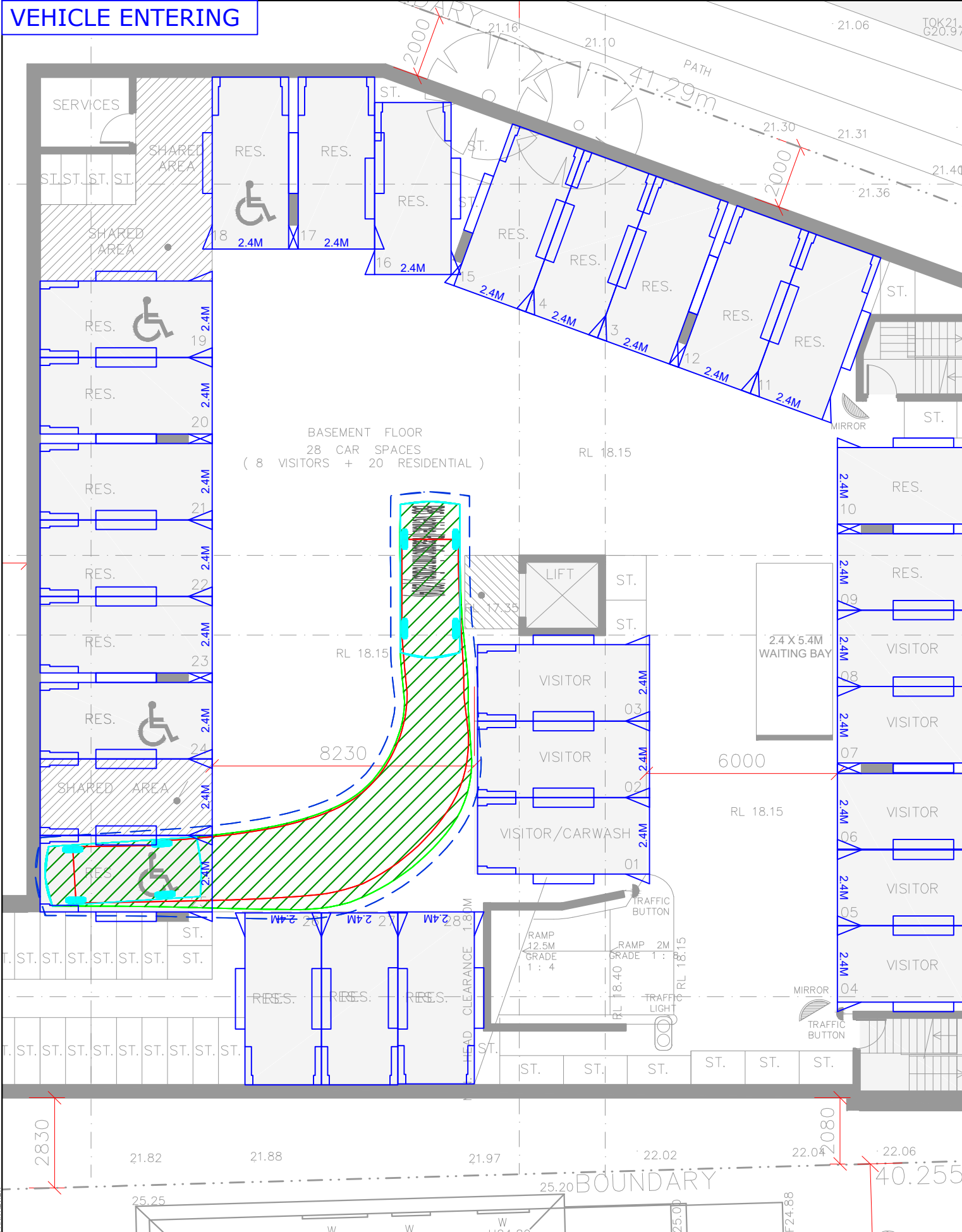
15-17 LUPIN AVENUE, FAIRFIELD EAST

TITLE

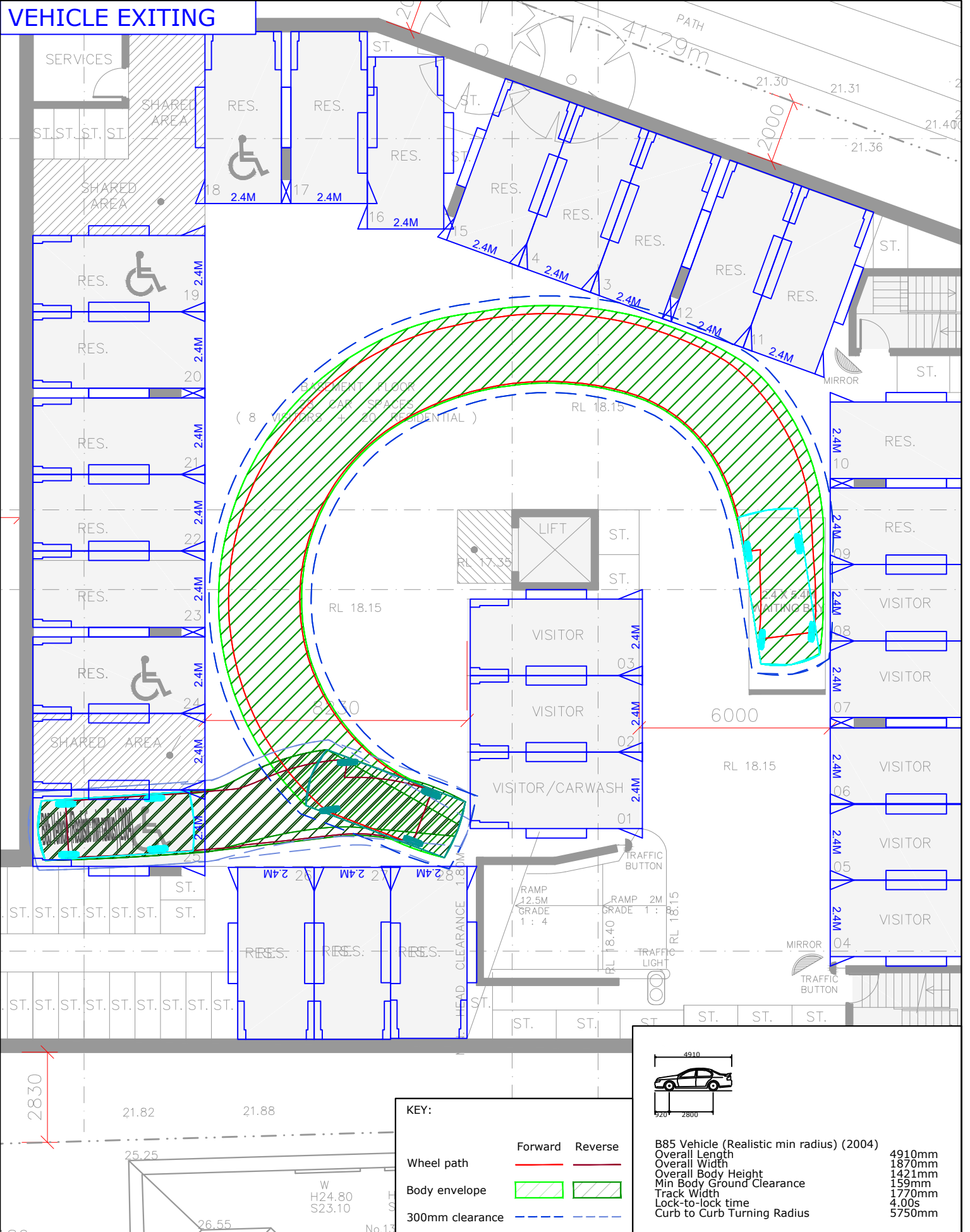
SWEPT PATH ANALYSIS - BASEMENT CIRCULATION
AS2890.1 4.91m B85 VEHICLE & 5.2m B99 VEHICLE

DWG No.	23084CAD006
FIGURE 2	
DATE STAMP	28 NOVEMBER 2024
PROJECT No.	23084
SCALE	1:150 @A3
REV.	A

VEHICLE ENTERING



VEHICLE EXITING



REV.	DESCRIPTION	DRAWN	CHECK	APP'D	DATE
A	ISSUE FOR DISCUSSION	KR	AM	WJ	28/11/24



PROJECT	
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TITLE

15-17 LUPIN AVENUE, FAIRFIELD EAST

SWEPT PATH ANALYSIS - BASEMENT CAR SPACE 1
AS2890.1 4.91m B85 VEHICLE

KEY:

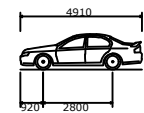
Wheel path

Body envelope

300mm clearance

Forward Reverse





B85 Vehicle (Realistic min radius) (2004)	4
Overall Length	10

Overall Length	4910mm
Overall Width	1870mm
Overall Body Height	1421mm

Overall Body Height	1421mm
Min Body Ground Clearance	159mm

Track Width	1770mm
Lock-to-lock time	4.00s

Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5750mm

DWG No.

23084CAD006

FIGURE 4

DATE STAMP

28 NOVEMBER 2024

PROJECT No.	
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PROJECT No.

SCALE

REV.

A

Appendix C

Automatic Tube Count Survey Data

Belmore St Traffic Survey Counts: EastBound

	Thu 16/03/23	Fri 17/03/23	Sat 18/03/23	Sun 19/03/23	Mon 20/03/23	Tue 21/03/23	Wed 22/03/23	Weekday Average (5-day)	7-Day Average	Peak Traffic
00:00:00	0	1	2	3	1	5	1	2	2	5
01:00:00	0	2	1	1	1	1	0	1	1	2
02:00:00	0	0	1	0	0	1	0	0	0	1
03:00:00	0	1	0	3	0	1	3	1	1	3
04:00:00	0	1	0	0	2	1	1	1	1	2
05:00:00	0	3	1	0	1	3	4	2	2	4
06:00:00	0	0	1	0	6	4	3	3	2	6
07:00:00	0	3	5	1	6	6	8	5	4	8
08:00:00	0	6	2	2	5	8	8	5	4	8
09:00:00	0	10	11	11	11	16	12	10	10	16
10:00:00	0	3	16	6	6	9	5	5	6	16
11:00:00	0	8	9	12	5	3	11	5	7	12
12:00:00	0	6	8	5	13	7	8	7	7	13
13:00:00	0	5	10	8	18	14	15	10	10	18
14:00:00	3	8	20	7	9	8	8	7	9	20
15:00:00	26	14	7	9	14	21	23	20	16	26
16:00:00	6	14	9	7	14	13	10	11	10	14
17:00:00	16	13	6	12	14	11	13	13	12	16
18:00:00	4	11	14	1	8	14	13	10	9	14
19:00:00	6	4	8	8	3	6	2	4	5	8
20:00:00	4	11	8	5	7	12	7	8	8	12
21:00:00	5	4	6	5	6	2	4	4	5	6
22:00:00	2	5	6	2	0	4	3	3	3	6
23:00:00	5	1	2	0	1	4	2	3	2	5
TOTAL	77	134	153	108	151	174	164	140	137	
								140	137	

Belmore St Traffic Survey Counts: WestBound

	Thu 16/03/23	Fri 17/03/23	Sat 18/03/23	Sun 19/03/23	Mon 20/03/23	Tue 21/03/23	Wed 22/03/23	Weekday Average (5-day)	7-Day Average	Peak Traffic
00:00:00	0	2	1	5	1	2	1	1	2	5
01:00:00	0	3	0	1	4	1	1	2	1	4
02:00:00	0	1	0	0	0	0	1	0	0	1
03:00:00	0	2	0	0	2	2	2	2	1	2
04:00:00	0	0	2	1	2	1	0	1	1	2
05:00:00	0	3	2	0	3	3	4	3	2	4
06:00:00	0	3	4	0	4	6	5	4	3	6
07:00:00	0	10	4	5	10	12	14	9	8	14
08:00:00	0	19	10	6	12	14	18	13	11	19
09:00:00	0	10	17	17	13	15	21	12	13	21
10:00:00	0	6	19	10	11	12	8	7	9	19
11:00:00	0	5	6	9	7	3	9	5	6	9
12:00:00	0	11	13	9	5	8	8	6	8	13
13:00:00	0	10	12	10	21	13	18	12	12	21
14:00:00	9	18	14	15	17	22	22	18	17	22
15:00:00	22	25	14	8	26	19	28	24	20	28
16:00:00	14	17	16	2	19	19	24	19	16	24
17:00:00	21	14	10	15	13	15	19	16	15	21
18:00:00	12	18	16	15	12	24	17	17	16	24
19:00:00	12	11	10	10	11	15	12	12	12	15
20:00:00	4	8	6	9	6	6	11	7	7	11
21:00:00	2	7	7	6	6	6	5	5	6	7
22:00:00	3	5	5	0	3	7	5	5	4	7
23:00:00	3	3	1	2	4	3	4	3	3	4
TOTAL	102	211	189	155	212	228	257	202	193	
								202	193	

Lupin Avenue Traffic Survey Counts: NorthBound

	Thu 16/03/23	Fri 17/03/23	Sat 18/03/23	Sun 19/03/23	Mon 20/03/23	Tue 21/03/23	Wed 22/03/23	Weekday Average (5-day)	7-Day Average	Peak Traffic
00:00:00	0	2	2	4	1	3	0	1	2	4
01:00:00	0	2	1	0	2	1	0	1	1	2
02:00:00	0	1	0	0	1	0	0	0	0	1
03:00:00	0	1	0	0	0	0	0	0	0	1
04:00:00	0	0	0	1	1	0	0	0	0	1
05:00:00	0	0	0	0	1	3	4	2	1	4
06:00:00	0	3	1	1	5	2	4	3	2	5
07:00:00	0	7	5	3	6	8	7	6	5	8
08:00:00	0	8	2	2	13	10	12	9	7	13
09:00:00	0	5	4	3	6	10	6	5	5	10
10:00:00	0	3	3	5	9	7	4	5	4	9
11:00:00	0	7	11	5	2	3	3	3	4	11
12:00:00	0	7	7	4	6	5	7	5	5	7
13:00:00	0	5	11	1	17	5	5	6	6	17
14:00:00	4	8	11	2	13	11	6	8	8	13
15:00:00	12	10	7	0	6	8	11	9	8	12
16:00:00	14	10	9	0	10	17	11	12	10	17
17:00:00	13	8	5	2	11	6	15	11	9	15
18:00:00	11	19	10	4	10	9	9	12	10	19
19:00:00	5	7	10	6	5	4	5	5	6	10
20:00:00	8	5	5	8	2	6	4	5	5	8
21:00:00	4	5	4	4	4	1	5	4	4	5
22:00:00	5	8	4	2	3	2	4	4	4	8
23:00:00	4	5	2	0	0	2	0	2	2	5
TOTAL	80	136	114	57	134	123	122	119	109	
								119	109	

Lupin Avenue Traffic Survey Counts: SouthBound

	Thu 16/03/23	Fri 17/03/23	Sat 18/03/23	Sun 19/03/23	Mon 20/03/23	Tue 21/03/23	Wed 22/03/23	Weekday Average (5-day)	7-Day Average	Peak Traffic
00:00:00	0	1	1	3	1	0	0	0	1	3
01:00:00	0	0	1	2	3	0	0	1	1	3
02:00:00	0	0	0	0	0	0	1	0	0	1
03:00:00	0	1	0	0	0	0	0	0	0	1
04:00:00	0	0	0	1	1	1	0	0	0	1
05:00:00	0	3	2	1	2	4	7	3	3	7
06:00:00	0	4	4	0	3	5	3	3	3	5
07:00:00	0	7	3	2	4	6	6	5	4	7
08:00:00	0	4	7	4	11	5	6	5	5	11
09:00:00	0	5	4	8	4	5	8	4	5	8
10:00:00	0	3	3	9	6	5	3	3	4	9
11:00:00	0	3	5	3	6	4	3	3	3	6
12:00:00	0	3	5	4	1	3	2	2	3	5
13:00:00	0	5	5	5	7	4	1	3	4	7
14:00:00	8	4	5	3	5	7	9	7	6	9
15:00:00	8	14	6	0	9	8	11	10	8	14
16:00:00	7	4	8	0	6	10	8	7	6	10
17:00:00	7	4	3	1	9	4	7	6	5	9
18:00:00	9	6	5	1	3	5	3	5	5	9
19:00:00	12	12	5	10	10	6	7	9	9	12
20:00:00	4	7	3	4	2	4	2	4	4	7
21:00:00	2	10	3	5	5	2	4	5	4	10
22:00:00	0	5	4	1	1	2	4	2	2	5
23:00:00	2	3	2	0	1	0	0	1	1	3
TOTAL	59	108	84	67	100	90	95	90	86	
								90	86	

The Transport Planning Partnership
Suite 402 Level 4, 22 Atchison Street
St Leonards NSW 2065

P.O. Box 237
St Leonards NSW 1590

02 8437 7800

info@tpp.net.au

www.tpp.net.au

Memorandum

To: Gareth Bird - Bluechp

From: Ashish Modessa

Date: 28 October 2024

TTPP REF: 23084

CC: Wayne Johnson

**RE: 15-17 LUPIN AVENUE, FAIRFIELD EAST
RESPONSE TO COUNCIL LETTER DATED 5 JUNE 2024**

As requested, please find herein The Transport Planning Partnership's (TTPP) responses to traffic and parking matters in Fairfield Council's letter dated 5 June 2024 in relation to a development application for 15-17 Lupin Avenue, Fairfield.

Loading Arrangements

Loading Facilities

Concern was previously raised that the proposal include a loading bay in order to service the proposed development. This has not been provided in the amended application. In accordance with Clause 7.7 of the Fairfield City Wide DCP 2013, a loading area is to be provided onsite in order to cater for the proposed development. This is therefore considered necessary in order to not rely on on-street parking spaces. Furthermore, the height of the driveway shall be sufficient to enable delivery/removalist trucks to enter and exit the site.

Council's DCP does not stipulate specific loading and service parking requirements for residential flat buildings. Clause 7.7 requires a loading area if the development is mixed-use or commercial.

The development will be 100% in-fill affordable housing and hence it is our view that this requirement does not apply. Therefore, it is our view that on-site loading is not strictly required unless kerbside collection is not suitable.

A performance review of proposed loading/unloading arrangements from a feasibility perspective is provided below:

- It is understood that there are several site constraints that limit the development opportunities of the site, with the size of the site being one of them. With 100% of the

development is in-fill affordable housing, raising driveway overhead height, providing a longer ramp to accommodate waste vehicles and increasing the depth of excavation required to increase the basement height would all increase the cost of construction and introduce other complications from a structural perspective. The high cost of construction will make the development no longer viable for affordable housing.

- The site is limited in area, thus impacting the permissible gross floor area. If a ground level loading bay is provided, the site will lose most if not all the ground floor gross floor area to accommodate a suitable loading area in conjunction with the basement car park ramp. This would have significant visual impact on the surrounds with much of the street frontages potentially being back-of-house service area thus impact street activation. The loss of apartments would also increase the cost per unit and further impact the viability to provide affordable housing.
- Any concerns of losing on-street parking to accommodate kerbside collection is also insignificant noting that to provide a driveway crossover suitable to accommodate service vehicles would itself result in the loss of on-street parking. There is limited competing demands for on-street parking along Lupin Avenue, with surrounding low-density residential dwellings likely to have their off-street parking space. Therefore, there is an abundance of unrestricted on-street parking available around the area. With the SEPP parking rates, of 0.4-1 car space for each dwelling, the proposed apartment provides 28 car spaces, which is more than the requirement of 37 spaces, the provision including visitor parking which is not a requirement of the SEPP to provide for affordable housing. This aids with the parking demands and reduces the likelihood that visitor parking would overflow into the surrounding roads.
- The proposed kerbside loading and servicing allows waste bins to be directly transported between the building and the service vehicle which is considered appropriate given the size of the development (39 apartments) and managing the viability for the affordable housing development. Whether it is formalised via signposted (and time-restricted) Loading Zones can be explored with Council.

One Way Traffic Arrangements

One Way Traffic Arrangement

Council has assessed the traffic statement prepared by TPPP Transport Planning dated 14 February 2024 and the justification proposed for the one – way traffic arrangement. The following issues are raised:

- 1. Proposed main access ramp to the basement relies on a signalised system to the basement and not considered acceptable for this type of development.*
- 2. The ramp on the southern end between the two basement levels does not allow for two way traffic. Occupants to go through two sets of traffic to enter and leave the site is not considered an acceptable arrangement.*

As previously advised, the access ramp and the internal driveways between the basement levels shall allow for simultaneous two way traffic.

Australian Standards AS2890.1:2004 Clause 3.2.2. states that as a guide where there are more than 30 vehicle movements in a peak hour (in and out combined), driveways should allow for two vehicles to pass, i.e. a minimum width of 5.5m.

The development proposal comprises 39 apartments with the car park now comprising 37 car spaces as a result of some changes proposed within the car park to improve circulation. As detailed in the Traffic Impact Assessment that accompanied the DA submission (TTPP, 2023), the development proposal is expected to generate approximately 6-7 vehicle trips per hour during the weekday peak periods based on high-density residential flat building traffic generation rates provided in Transport for NSW's technical direction TDT 2013/04a. This is considerably less than the 30 vehicles per hour provided in AS2890.1 where two vehicle passing is required on a driveway.

The expected level of traffic generation equates to on average one vehicle every eight to 10 minutes. Being a residential development, traffic flows during the weekday peak periods are tidal flow in nature; that is, mostly outbound in the morning and inbound in the afternoon. Typical inbound and outbound splits adopted for residential developments are 80 percent in the peak direction. This means, the development could have six vehicles in the peak direction and one vehicle in the opposing direction during the weekday peak hours.

The driveway basement from street level has been designed so that two-way vehicle can enter and exit at the same time at the site boundary, near the intercom. The driveway is designed so that upon entry, a vehicle can wait for an opportunity to enter the ramp to access the basement, subject to traffic signal will be provided.

Although access to basement level 1 can only accommodate one way of traffic at one time, the likelihood of two-way interaction on the proposed two-way one lane ramps is low and yet it is proposed to be managed using stop/go signal system, convex mirrors and sufficient waiting area on each parking aisle which provide compliant aisle widths. The northern circulation ramp of basement 1 is designed for two-way circulation within the car park reducing the extent of the stop/go signal system required. Swept path analysis demonstrating that 85th and 99th percentile vehicles can pass in opposing directions on the entry ramp and subsequent parking aisles are attached to this letter. Therefore, given the low turnover of the car park and familiar users (i.e. residents) primarily using it, the proposed arrangement is considered acceptable.

Some examples where one-lane, two-way driveways are provided for residential apartment developments include:

- 197 Walker Street, North Sydney: traffic flows are managed by traffic light priority system.

Figure 1: 197 Walker Street, North Sydney



- 203 Walker Street, North Sydney (Staff car park).
- 11 Hannah Street, Beecroft: driveway with one holding bay on entry and traffic signal system. This access is strictly for residential use only.

Figure 2: 11 Hannah Street, Beecroft



- 33 Martin Place, Mortdale

Figure 3: 33 Martin Place, Mortdale



Swept Paths of heavy vehicles

Swept Paths

Swept path models are to be provided illustrating how Council's standard heavy rigid waste collection vehicle will enter, service and exit the site. A 0.5m unobstructed clearance is required from all obstructions for the vehicle's ingress and egress manoeuvres. The model is to provide on-street parking on both sides of the road adjacent to the development to demonstrate unobstructed access during a 'business as usual' configuration.

As the development does not provide on-site loading or servicing, swept paths for heavy rigid waste vehicle entering, exiting the site are not applicable.