

TRAFFIC AND PARKING IMPACT ASSESSMENT

Proposed Senior Living Units

96-98 Brenan Street, Smithfield

Prepared for: SARM Architects

N233128A (Version 1b)

March 2024

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1.INTRODUCTION

Motion Traffic Engineers was commissioned by SARM Architects to undertake a traffic and parking impact assessment of a proposed senior living units at 96-98 Brenan Street at Smithfield.

The site is currently comprising of two unoccupied houses. The site has frontage to Brenan Street and to Stimson Street.

This traffic report presents an assessment of the anticipated transport implications of the proposed senior living units, with the following considerations:

- ➡ Background and existing traffic and parking conditions of the proposed senior living units
- ➡ Assessment of the public transport network within the vicinity of the site
- ➡ Adequacy of car, bicycle and motorcycle parking provision
- ➡ The projected traffic generation of the proposed senior living units and;
- ➡ The transport impact of the proposed senior living units on the surrounding road network.

In the course of preparing this assessment, the proposed senior living units and its environs have been inspected, plans of the development are examined, all relevant traffic and parking data have been collected and analysed.

2. BACKGROUND AND EXISTING CONDITIONS OF THE PROPOSED SITE

2.1. Location and Land Use

The proposed senior living units is located in a residential area with low density housing nearby. The site is located in *R3: Medium Density Residential Zone*.

Figures 1 and 2 show the location of the proposed senior living units from aerial and street map perspective respectively. Figure 2 also shows the location of the surveyed intersections in relation to the site. Figures 3a and 3b shows a photography of the site frontage taken from 96 and 98 Brennan Street respectively.



Figure 1: Location of the Proposed Senior Living Units on Aerial

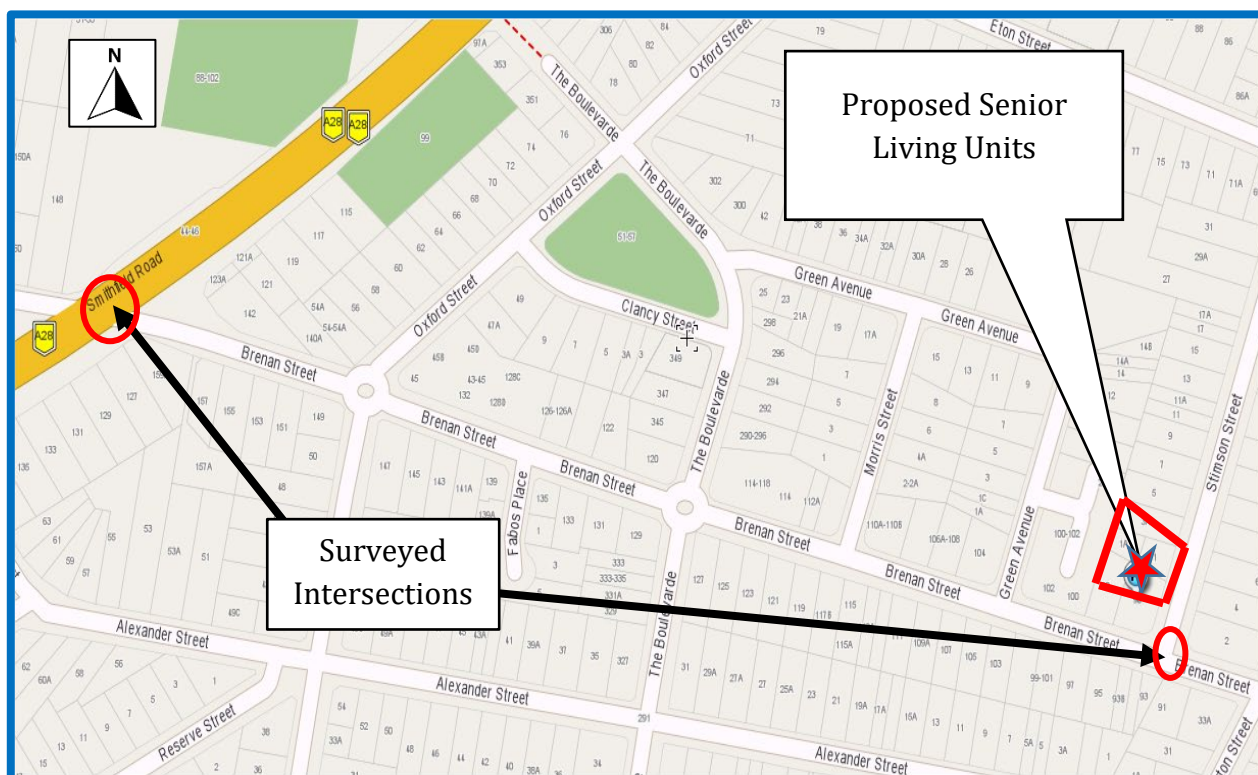


Figure 2: Location of the Proposed Senior Living Units on Street Map in relation to the Surveyed Intersections

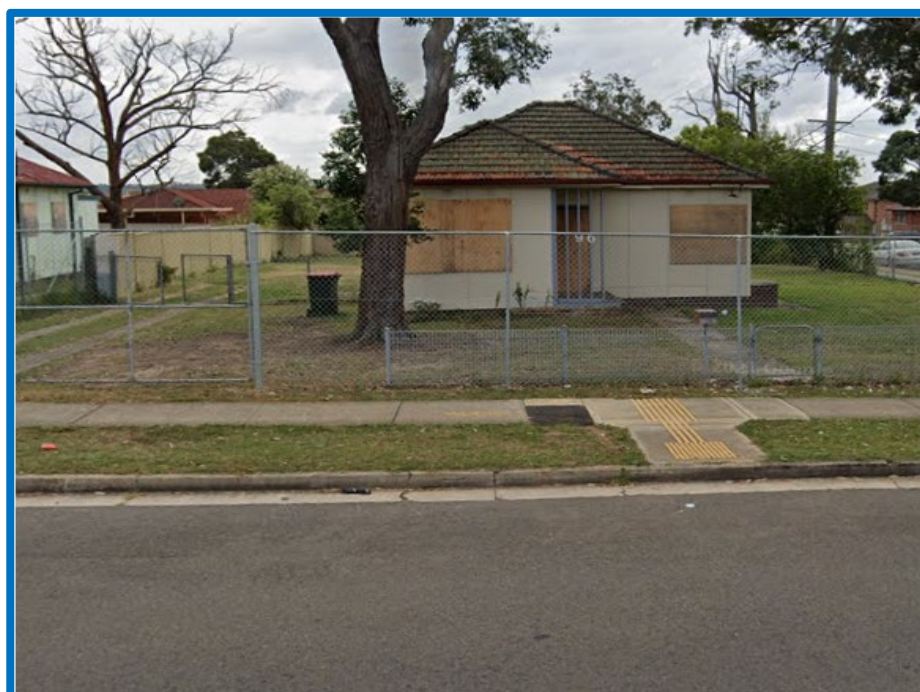


Figure 3: Photograph of the Proposed Senior Living Units Frontage from 96 Brenan Street



Figure 3b: Photograph of the Proposed Senior Living Units Frontage from the 98 Brenan Street



Figure 3c: Photograph of the Site frontage on Stimson Street

2.2. Road Network

This section discusses the road network adjacent to the proposed senior living units

Brenan Street is a minor collector road with one lane each way. The default speed limit is 50km/hr. Time unrestricted on-street parking is permitted on the both sides of the road. Figure 4a and 4b shows a photograph of Brenan Street.

Stimson Street is a local road with one lane each way. The default speed limit is 50km/hr. Time unrestricted on-street parking is permitted on the both sides of the road. Figure 4c shows a photograph of Stimson Street.

The Cumberland Highway (A28) is an arterial road and has three lanes each way at the midblock (near Brenan Street) with a speed limit of 60km/hr on a divided carriageway. On-street parking is not permitted on both sides on the road (near Brenan Street). A Figure 4d shows a photograph of the Cumberland Highway (A28).



Figure 4a: Brenan Street: Looking east
From the Proposed Senior Living Units Frontage,



Figure 4b: Brenan Street: Looking West from
the Proposed Senior Living Units Frontage



Figure 4c: Stimson Street: facing north after the intersection of Brenan Street and Stimson Street

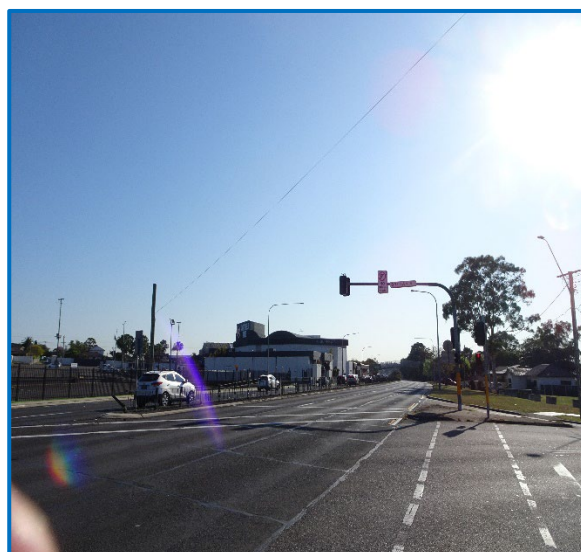


Figure 4d: Cumberland Highway (A28) facing north of the intersection of A28 and Brenan Street

2.1.Public Transport

There are bus services on Brenan Street.

The nearest bus stop is located just outside the proposed senior living units and is approximately 50 metres walking distance away. This bus stops are serviced by the 808 bus route which is located on either side of Brenan Street. These facilitate transport to Fairfield Railway Station including suburbs such as Smithfield, Prairiewood, Bossley Park, Abbotsbury, Edensor Park, Bonnyrigg and Mt Pritchard.

Overall, the site has good access to public bus transport network.

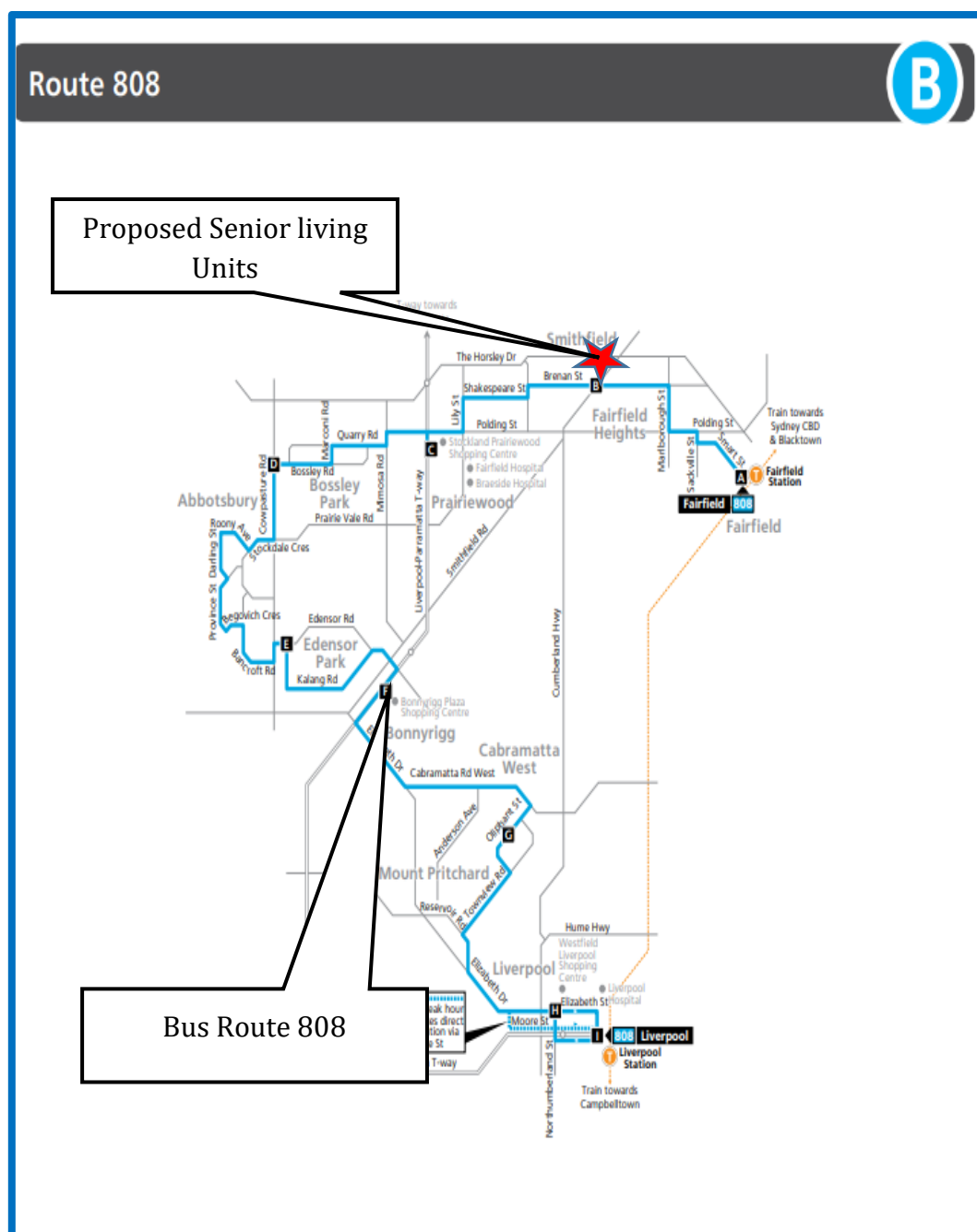


Figure 5: Bus Route 808 and Proposed Senior Living Units Location.

2.2.Public Parking

The proposed senior living units is located south-west of Fairfield train station within the Fairfield City Centre. On-street parking is available adjacent to the site on Brenan Street on both sides with no time restrictions

Site visits show that there are some vacant car spaces on Brenan Street with a driver requires minimal circulate to find a car space with minimal circulation.

.....

These on-street parking spaces can be utilised by visitors should any additional visitor parking demand arises.

2.3. Intersection Description

As part of the traffic impact assessment, the performance of two intersections were surveyed and assessed:

- ➡ Signalised intersection of Cumberland Highway (A28) with Brenan Street
- ➡ Priority intersection of Brenan Street with Stimson Street

External traffic travelling to and from the proposed senior living units is likely to travel through the intersections mentioned above.

The signalised intersection of The Cumberland Highway (A28) with Brenan Street is a four-leg intersection with all turn movements permitted except right turns. A left slip lane is provided for the left turn into Brenan Street. Pedestrian crossings are provided on all approaches. Figure 6a presents the layout of this intersection using SIDRA 9.1 (and industry standard intersection program software) and Figure 6b represents the aerial view of the intersection. The number on a lane represents the length of a short lane in metres.

The priority intersection of Brenan Street with Stimson Street is a three-leg intersection with all turn movements permitted. Drivers on Stimson Street need to give way to traffic on Brenan Street. Figure 6c presents the layout of this intersection using SIDRA 9.1 - and Figure 6d represents the aerial view of the intersection.

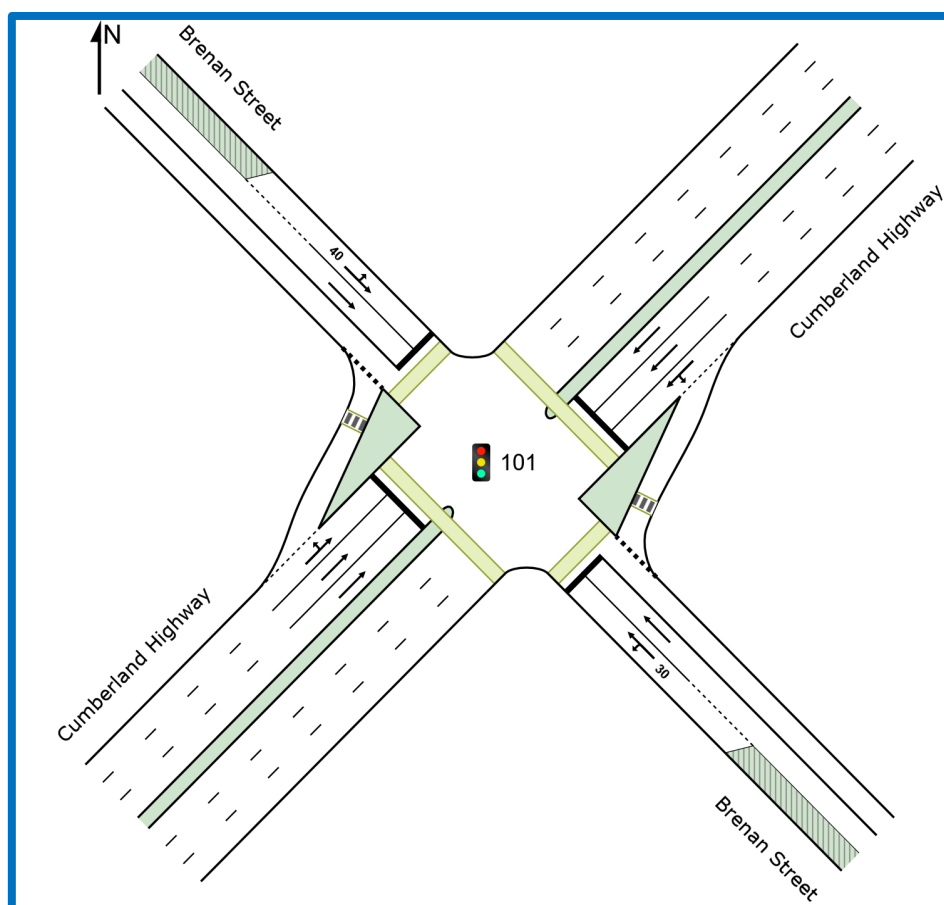


Figure 6a: Signalised Intersection of The Cumberland Highway (A28) with Brenan Street (SIDRA)



Figure 6b: Signalised Intersection of The Cumberland Highway(A28) with Brenan Street Aerial View

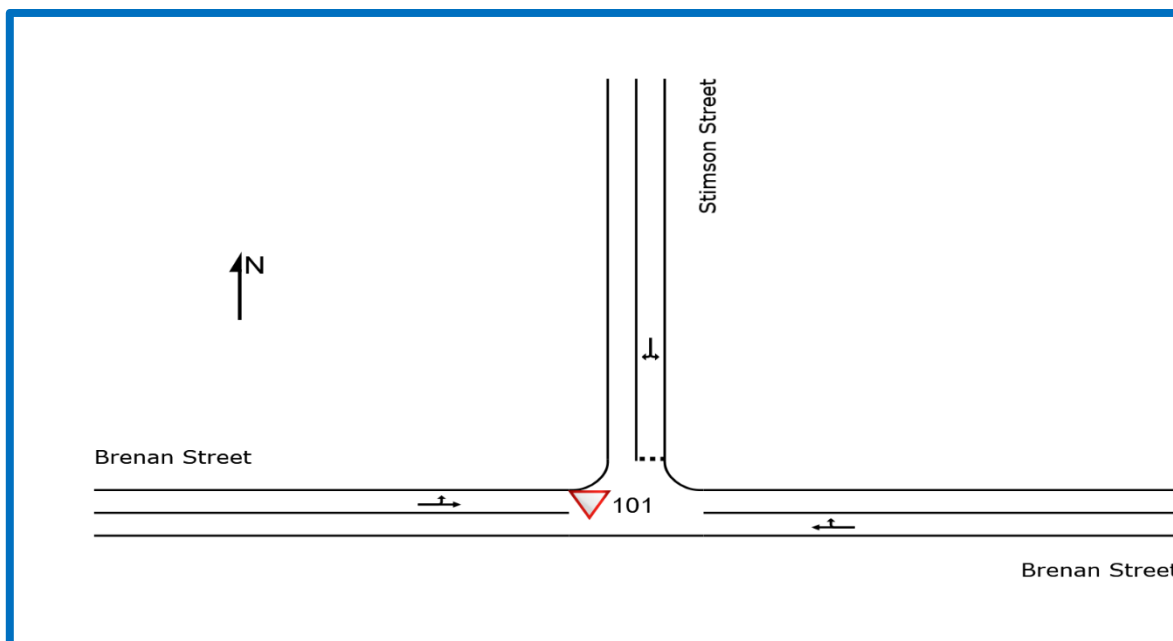


Figure 6e: Priority Intersection of Brenan Street with Stimson Street (SIDRA)



Figure 6f: Priority Intersection of Brenan Street with Stimson Street Aerial View

2.4. Existing Traffic Volume

As the part of the traffic assessment, traffic counts have been undertaken at the above-mentioned intersections and the AM and PM peak hours are identified accordingly. The AM peak hour is 8am to 9am and the PM peak hour is 5pm to 6pm. The traffic survey was undertaken in September 2023.

The following figures present the traffic volumes in vehicles for the weekday peak hours. The bracketed numbers are trucks or buses. The un-bracketed are cars.

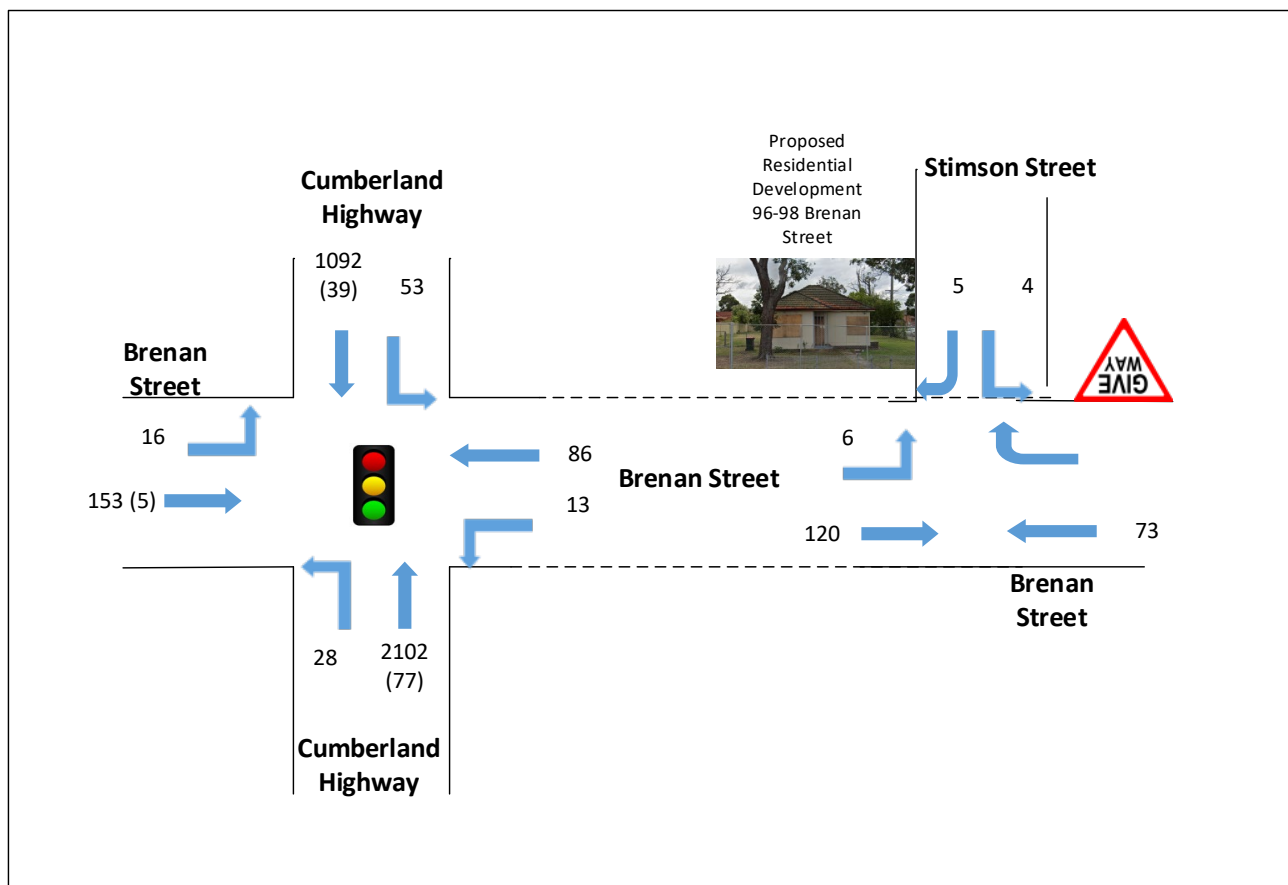


Figure 8a: Existing Weekday Traffic Volumes AM Peak Hour

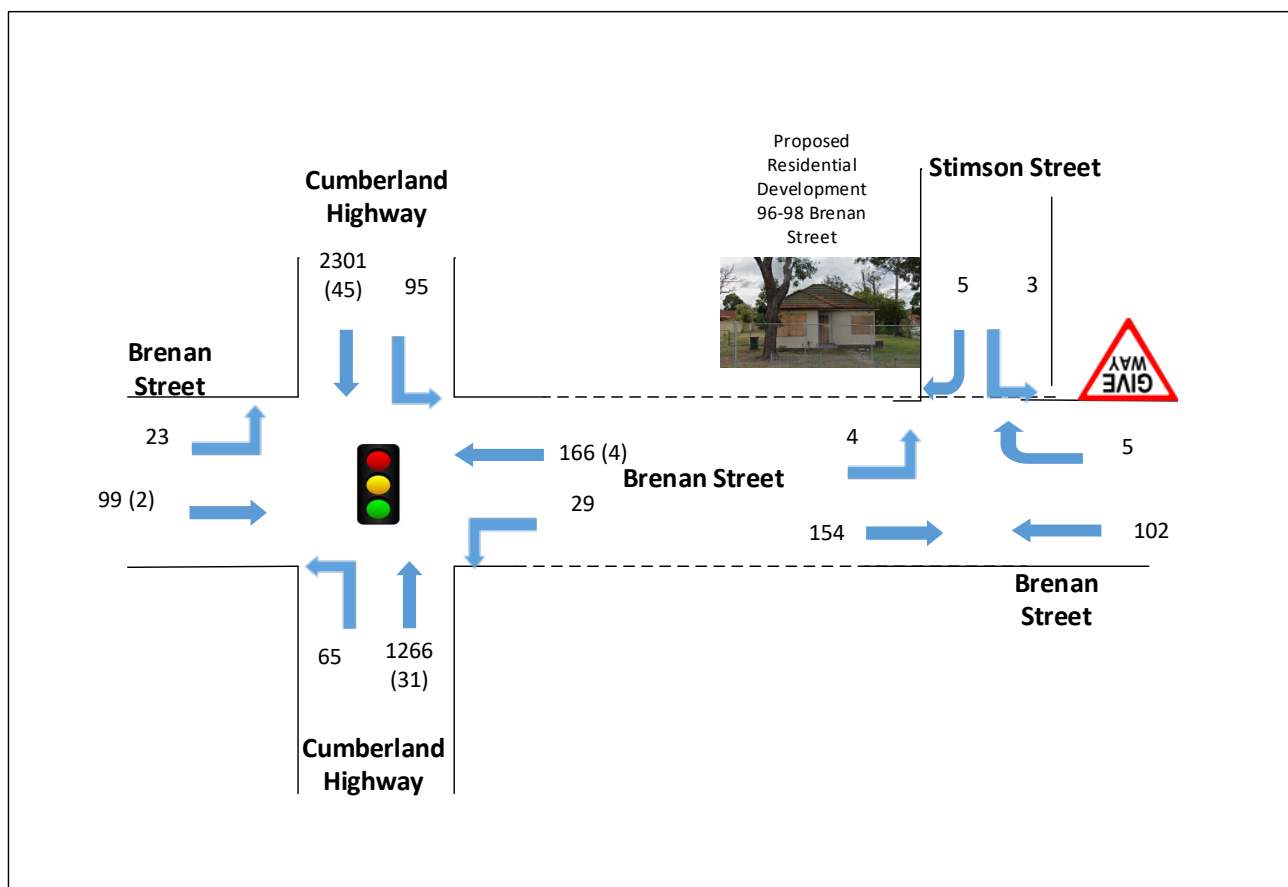


Figure 8b: Existing Weekday Traffic Volumes PM Peak Hour

2.5. Intersection Assessment with Existing Traffic

An intersection assessment has been undertaken for the:

- ➡ Signalised intersection of Cumberland Highway (A28) with Brenan Street
- ➡ Priority intersection of Brenan Street with Stimson Street

The existing intersection operating performance was assessed using the SIDRA software package (version 9.1) to determine the Degree of Saturation (DS), Average Delay (AVD in seconds) and Level of Service (LoS) at each intersection. The SIDRA program provides Level of Service Criteria Tables for various intersection types. The key indicator of intersection performance is Level of Service, where results are placed on a continuum from 'A' to 'F', as shown in Table 1.

LoS	Traffic Signal / Roundabout	Give Way / Stop Sign / T-Junction control
A	Good operation	Good operation
B	Good with acceptable delays and spare capacity	Acceptable delays and spare capacity
C	Satisfactory	Satisfactory, but accident study required
D	Operating near capacity	Near capacity & accident study required
E	At capacity, at signals incidents will cause excessive delays.	At capacity, requires other control mode
F	Unsatisfactory and requires additional capacity, Roundabouts require other control mode	At capacity, requires other control mode

Table 1: Intersection Level of Service

The Average Vehicle Delay (AVD) provides a measure of the operational performance of an intersection as indicated below, which relates AVD to LOS. The AVD's should be taken as a guide only as longer delays could be tolerated in some locations (i.e., inner city conditions) and on some roads (i.e., minor side street intersecting with a major arterial route). For traffic signals, the average delay over all movements should be taken. For roundabouts and priority control intersections (sign control) the critical movement for level of service assessment should be that movement with the highest average delay.

LoS	Average Delay per Vehicles (seconds/vehicle)
A	Less than 14
B	15 to 28
C	29 to 42
D	43 to 56
E	57 to 70
F	>70

Table 2: Intersection Average Delay (AVD)

The degree of saturation (DS) is another measure of the operational performance of individual intersections. For intersections controlled by traffic signals both queue length and delay increase rapidly as DS approaches 1. It is usual to attempt to keep DS to less than 0.9. Degrees of Saturation in the order of 0.7 generally represent satisfactory intersection operation. When DS exceed 0.9 queues can be anticipated.

The results of the intersection analysis are as follows:

Intersection/ Performance criteria	AM Peak Hour Existing	PM Peak Hour Existing
Cumberland Highway-Brenan Street		
LoS	A	A
AVD	12.1	12.8
DS	0.67	0.73
Brenan Street-Stimson Street		
LoS	N/A (Worst Case: A)	N/A (Worst Case: A)
AVD	0.4	0.4
DS	0.06	0.08

Table 3: Existing Intersection Performances

As presented in Table 3, both intersections are currently operating at good condition. Overall, there is spare capacity to accommodate the additional traffic. The full intersection results are presented in Appendix A.

2.6. Conclusion of existing conditions

The proposed senior living units are located in an area where there are vacant car spaces on weekdays and weekends along Brenan Street and Stimson Street.

All intersections are currently operating at good condition with spare capacity to accommodate additional traffic.

The site has good access to public bus transport.

3. PROPOSED SENIOR LIVING UNITS

A description of the proposed senior living units for which approval is now sought features the following elements:

- ➔ Demolition of existing houses
- ➔ Construction of senior living units

This proposed senior living units will have a vehicle access and egress from the and Stimson Street and one accessible car space via Brenan Street.

3.1. Senior Living Units

The proposed senior living units comprises of:

Ground Floor

- ➔ A total of 5 Units (Three- Two Bedroom and Two-One Bedroom Units)

First Floor

- ➔ A total of 5 Units (Three- Two Bedroom and Two-One Bedroom Units)

A total Gross Floor Area (GFA) of all the units is approximately 774 m² including lobby (GFA) at ground and first floor.

A total of six- two bedroom and four -one bedroom units is provided on the ground and first floor.

3.2. Parking

Parking is provided on the ground floor. Access and egress to the ground level is via a two-way driveway that runs off Stimson Street and Brenan Street.

- ➔ Ground Floor: 5 residential car spaces

A full scaled plan of the proposed residential development is provided as part of the Development Application.

4. PARKING REQUIREMENTS

4.1. Car Parking

The *Fairfield City Centre Development Control Plan 2021* does not stipulate the car parking rates for seniors living housing developments. However, the proposed seniors living housing development falls under State Environmental Planning Policy (Housing) 2021 (SEPP 2021). The *State Environmental Planning Policy (Housing) 2021* provides the following car parking rate for the proposed seniors living housing development as follows:

Senior Living Units

- ➡ 0.4 car space per each dwelling containing one-bedroom units
- ➡ 0.5 car space per dwelling containing two bedroom units

Table 4a below presents the minimum car parking requirement for the proposed senior living units based on the car parking rates listed above.

Use	Number of Units	Car Parking Rate per dwelling	Car Spaces Required	Car Spaces Provided
1 bedroom	4	0.4 space per unit	2	5
2 bedrooms	6	0.5 space per unit	3	
Total			5	5

Table 4a: Summary of SEPP 2021 Guide for Car Parking Requirements

The proposed seniors living units provides five car spaces versus five required.

Hence, the proposed seniors living complies with State Environmental Planning Policy (Housing) 2021.

Additional on-street car spaces can be found on Brennan Street which can be occupied by the visitors, should any parking demand arise.

5. TRAFFIC GENERATION AND IMPACT

5.1. Traffic Generation

The trip generation for different components of the proposed senior living units has been assessed.

The *NSW RTA Guide to Traffic Generating Developments 2002* outlines the trip generation rates for land use of the senior living units as follows.

Housing for Seniors

- ➔ 0.4 per dwelling/ unit for both AM and PM peak hour for one and two bedroom units

Application of the above-mentioned rates to different components of the proposed senior living units results the peak hour trip generation presented in Table 5a below. The proposed senior living units is a low trip generator.

Peak Hour	Use	Number of Units	Trip Generation Rate	Trip Generated
AM	Seniors living	10	0.4	4
PM			0.4	4

Table 5a: Trips generated by the Proposed Senior Living Units in weekday AM and PM peak hours

5.2. Trip Distribution

Application of the above-mentioned trip rates to different components of the proposed senior living units results the peak hour trip distribution presented in Table 6a.

The generated trips by the senior living units are distributed using the following assumptions: 90 percent outbound and 10 percent inbound for the AM, and vice versa for the PM peak Hour as presented in Table 6a.

The proposed senior living units are a low trip generator in both AM and PM peak hours.

Land-Use	Type	Peak Hours	Origin	Destination	Total
Senior Living Units	One and Two Bedroom	AM	3	1	4
		PM	1	3	4
Total		AM	3	1	4
		PM	1	3	4

Table 6a: Summary of Total Trip distribution AM and PM Peak Hour

5.3. Existing with Senior Living Traffic

The additional senior living units trips are assigned onto the local traffic network. The following figures present the future traffic volume with the senior living trips (in red for origin trips and blue for destination trips) for the weekday AM and PM peak hours.

The additional senior living trips represent a moderate proportion of the existing traffic volumes on Stimson Street.

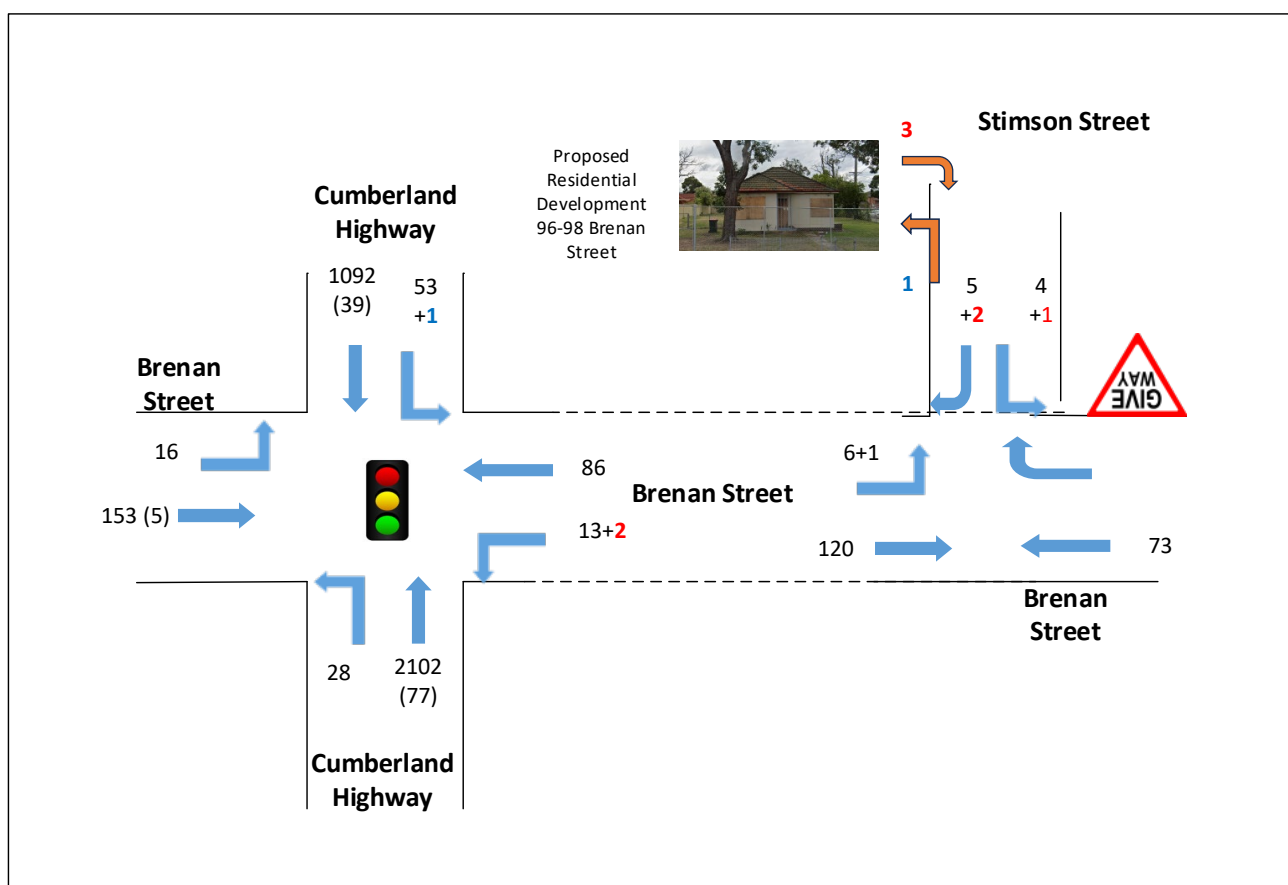


Figure 9a: Existing Weekday Traffic Volumes with Senior Living Units Traffic AM Peak Hour
Traffic and Parking Impact Assessment for Proposed Senior Living Units

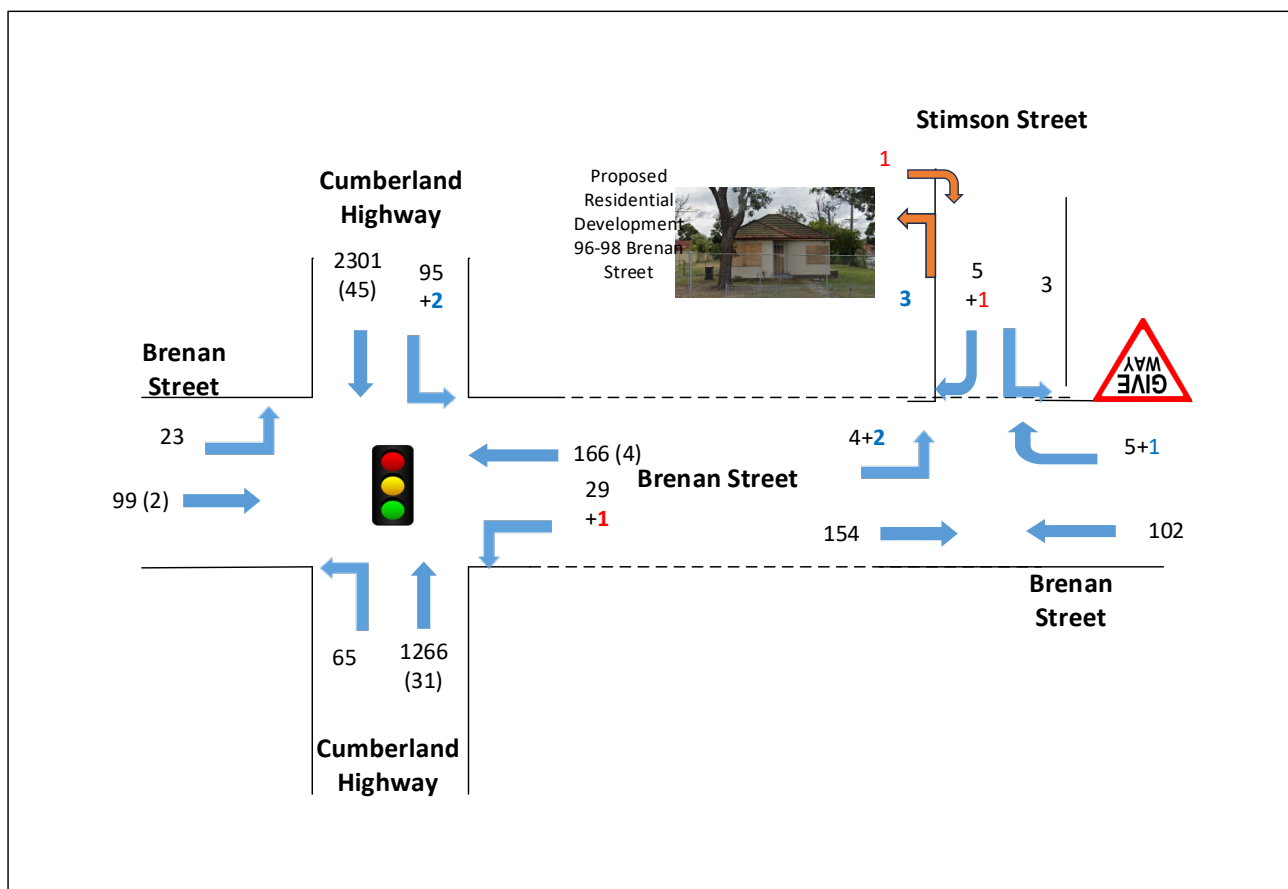


Figure 9b: Existing Weekday Traffic Volumes with Senior Living Units Traffic PM Peak Hour

5.4. Traffic Impact

This section assesses the following intersections for the existing traffic with the senior living traffic. The results of the intersection assessment are as follows:

Intersection/ Performance criteria	Performance with Existing Residential Traffic		Projected Performance with Existing a Senior Living traffic	
	AM Peak Hour Existing	PM Peak Hour Existing	AM Peak Hour Projected	PM Peak Hour Projected
Cumberland Highway- Brenan Street	A	A	A	A
<i>LoS</i>	12.1	12.8	12.1	12.8
<i>AVD</i>	0.67	0.73	0.67	0.73
<i>DS</i>				
Brenan Street-Stimson Street	N/A (Worst Case: A)	N/A (Worst Case: A)	N/A (Worst Case: A)	N/A (Worst Case: A)
<i>LoS</i>	0.4	0.4	0.5	0.4
<i>AVD</i>	0.06	0.08	0.07	0.08
<i>DS</i>				

Table 7: Projected intersection performance with Senior Living traffic

As presented in Table 7 above, the additional trips generated by the proposed senior living units have minimum impact on the intersection performances in both AM and PM peak hours. The LoS, AVD and DS of each intersection are not significantly affected by the addition of senior living units traffic.

The traffic impacts of the proposed senior living units are therefore considered acceptable.

The full SIDRA results are presented in Appendix B for the existing conditions with the senior living units traffic.

6. CONCLUSIONS

This traffic impact assessment reports relates to a proposed senior living units at *96-98 Brenan Street at Smithfield*. Based on the analysis and discussions presented in this report, the following conclusions are made:

- ➡ The senior living units are located in *R3: Medium Density Residential Zone* with good access to local public transport service. Vacant on-street parking spaces and a public car park are located along Brenan Street and Stimson Street.
- ➡ All the intersections perform well with existing traffic and has spare capacity to accommodate additional traffic.
- ➡ The minimum car parking requirements outlined in the *State Environmental Planning Policy (Housing) 2021* is met.
- ➡ The proposed senior living units are expected to generate low number of additional trips in both AM and PM peak hours.
- ➡ According to the intersection assessment, the additional trips can be accommodated in the nearby intersections without significantly affecting the performance of any turn movement, approach arm or the overall intersection. The traffic impacts of the proposed senior living units are therefore considered acceptable.

There are no traffic engineering reasons why a development consent for the proposed senior living units at *96-98 Brenan Street at Smithfield* should be refused.

APPENDIX A

INTERSECTION ASSESSMENT FOR EXISTING TRAFFIC

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %				[Veh. veh	Dist] m				
SouthEast: Brenan Street														
21	L2	13	0	14	0.0	0.054	38.9	LOS C	0.6	4.4	0.87	0.67	0.87	27.3
22	T1	86	0	91	0.0	0.269	36.0	LOS C	3.4	24.0	0.91	0.71	0.91	28.3
Approach		99	0	104	0.0	0.269	36.4	LOS C	3.4	24.0	0.91	0.70	0.91	28.1
NorthEast: Cumberland Highway														
24	L2	53	0	56	0.0	0.355	10.8	LOS A	4.8	34.6	0.42	0.44	0.42	51.8
25	T1	1131	39	1191	3.4	0.355	5.8	LOS A	8.2	59.0	0.43	0.39	0.43	62.3
Approach		1184	39	1246	3.3	0.355	6.1	LOS A	8.2	59.0	0.43	0.40	0.43	62.0
NorthWest: Brenan Street														
27	L2	16	0	17	0.0	0.096	39.3	LOS C	1.1	8.1	0.88	0.68	0.88	32.9
28	T1	158	5	166	3.2	★ 0.481	37.5	LOS C	6.3	45.1	0.95	0.76	0.95	27.8
Approach		174	5	183	2.9	0.481	37.6	LOS C	6.3	45.1	0.94	0.75	0.94	28.4
SouthWest: Cumberland Highway														
30	L2	28	0	29	0.0	0.674	13.3	LOS A	13.1	94.0	0.61	0.58	0.61	50.8
31	T1	2179	77	2294	3.5	★ 0.674	8.3	LOS A	22.2	160.1	0.62	0.57	0.62	60.2
Approach		2207	77	2323	3.5	0.674	8.4	LOS A	22.2	160.1	0.62	0.57	0.62	60.1
All Vehicles		3664	121	3857	3.3	0.674	9.8	LOS A	22.2	160.1	0.58	0.53	0.58	57.3

Table A1: Weekday Signalised Intersection Performance of Cumberland Highway (A28) with Brenan Street for the AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed	
		[Total veh/h	HV] veh/h	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m			km/h	
East: Brenan Street														
5	T1	73	0	77	0.0	0.040	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	49.9
6	R2	1	0	1	0.0	0.040	4.9	LOS A	0.0	0.0	0.01	0.01	0.01	49.0
Approach		74	0	78	0.0	0.040	0.1	NA	0.0	0.0	0.01	0.01	0.01	49.9
North: Stimson Street														
7	L2	4	0	4	0.0	0.008	5.9	LOS A	0.0	0.2	0.23	0.55	0.23	53.0
9	R2	5	0	5	0.0	0.008	6.1	LOS A	0.0	0.2	0.23	0.55	0.23	52.5
Approach		9	0	9	0.0	0.008	6.0	LOS A	0.0	0.2	0.23	0.55	0.23	52.7
West: Brenan Street														
10	L2	6	0	6	0.0	0.068	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
11	T1	120	0	126	0.0	0.068	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		126	0	133	0.0	0.068	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		209	0	220	0.0	0.068	0.4	NA	0.0	0.2	0.01	0.04	0.01	50.0

Table A2: Weekday Priority Intersection Performance of Brenan Street with Stimson Street for the AM Peak Hour

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%				v/c	sec				
SouthEast: Brenan Street															
21	L2	All MCs	29	0.0	29	0.0	0.079	38.0	LOS C	1.3	8.8	0.83	0.69	0.83	27.1
22	T1	All MCs	170	2.4	170	2.4 *	0.394	36.3	LOS C	7.0	50.3	0.90	0.73	0.90	28.2
Approach			199	2.0	199	2.0	0.394	36.5	LOS C	7.0	50.3	0.89	0.73	0.89	28.1
NorthEast: Cumberland Highway															
24	L2	All MCs	95	0.0	95	0.0	0.729	6.3	LOS A	18.4	130.4	0.70	0.68	0.70	44.7
25	T1	All MCs	2346	1.9	2346	1.9 *	0.729	12.3	LOS A	29.2	207.9	0.71	0.66	0.71	56.5
Approach			2441	1.8	2441	1.8	0.729	12.1	LOS A	29.2	207.9	0.71	0.66	0.71	56.2
NorthWest: Brenan Street															
27	L2	All MCs	23	0.0	23	0.0	0.056	37.7	LOS C	0.9	6.2	0.82	0.69	0.82	32.4
28	T1	All MCs	101	2.0	101	2.0	0.238	34.9	LOS C	4.1	29.2	0.86	0.68	0.86	28.7
Approach			124	1.6	124	1.6	0.238	35.4	LOS C	4.1	29.2	0.86	0.69	0.86	29.6
SouthWest: Cumberland Highway															
30	L2	All MCs	65	0.0	65	0.0	0.405	6.4	LOS A	7.0	50.2	0.49	0.50	0.49	48.3
31	T1	All MCs	1297	2.4	1297	2.4	0.405	8.8	LOS A	11.4	81.8	0.50	0.46	0.50	59.6
Approach			1362	2.3	1362	2.3	0.405	8.7	LOS A	11.4	81.8	0.50	0.46	0.50	59.0
All Vehicles			4126	2.0	4126	2.0	0.729	12.8	LOS A	29.2	207.9	0.65	0.60	0.65	54.2

Table A3: Weekday Signalised Intersection Performance of Cumberland Highway (A28) with Stimson Street for the PM Peak Hour

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%				v/c	sec				veh
East: Brenan Street															
5	T1	All MCs	102	0.0	102	0.0	0.056	0.0	LOS A	0.0	0.2	0.03	0.04	0.03	49.8
6	R2	All MCs	5	0.0	5	0.0	0.056	4.9	LOS A	0.0	0.2	0.03	0.04	0.03	48.3
Approach			107	0.0	107	0.0	0.056	0.3	NA	0.0	0.2	0.03	0.04	0.03	49.7
North: Stimson Street															
7	L2	All MCs	3	0.0	3	0.0	0.007	6.0	LOS A	0.0	0.2	0.27	0.56	0.27	52.1
9	R2	All MCs	5	0.0	5	0.0	0.007	6.3	LOS A	0.0	0.2	0.27	0.56	0.27	51.9
Approach			8	0.0	8	0.0	0.007	6.2	LOS A	0.0	0.2	0.27	0.56	0.27	52.0
West: Brenan Street															
10	L2	All MCs	4	0.0	4	0.0	0.081	4.6	LOS A	0.0	0.0	0.00	0.01	0.00	48.7
11	T1	All MCs	154	0.0	154	0.0	0.081	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	49.9
Approach			158	0.0	158	0.0	0.081	0.1	NA	0.0	0.0	0.00	0.01	0.00	49.9
All Vehicles			273	0.0	273	0.0	0.081	0.4	NA	0.0	0.2	0.02	0.04	0.02	49.9

Table A4: Weekday Priority Intersection Performance of Brenan Street with Stimson Street for the PM Peak Hour

APPENDIX B

INTERSECTION ASSESSMENT WITH SENIORS LIVING TRAFFIC

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%				v/c	sec				
SouthEast: Brenan Street															
21	L2	All MCs	15	0.0	15	0.0	0.040	37.5	LOS C	0.6	4.3	0.81	0.67	0.81	27.2
22	T1	All MCs	86	0.0	86	0.0	0.198	34.5	LOS C	3.4	23.8	0.85	0.67	0.85	28.9
Approach			101	0.0	101	0.0	0.198	34.9	LOS C	3.4	23.8	0.85	0.67	0.85	28.6
NorthEast: Cumberland Highway															
24	L2	All MCs	54	0.0	54	0.0	0.355	6.1	LOS A	5.8	41.6	0.47	0.48	0.47	48.0
25	T1	All MCs	1131	3.4	1131	3.4	0.355	8.4	LOS A	9.5	68.7	0.48	0.43	0.48	60.1
Approach			1185	3.3	1185	3.3	0.355	8.2	LOS A	9.5	68.7	0.48	0.44	0.48	59.6
NorthWest: Brenan Street															
27	L2	All MCs	16	0.0	16	0.0	0.069	37.9	LOS C	1.1	7.8	0.82	0.66	0.82	33.0
28	T1	All MCs	158	3.2	158	3.2 *	0.346	35.7	LOS C	6.1	43.6	0.88	0.72	0.88	28.4
Approach			174	2.9	174	2.9	0.346	35.9	LOS C	6.1	43.6	0.88	0.71	0.88	28.9
SouthWest: Cumberland Highway															
30	L2	All MCs	28	0.0	28	0.0	0.675	5.8	LOS A	15.1	109.0	0.66	0.62	0.66	47.8
31	T1	All MCs	2179	3.5	2179	3.5 *	0.675	11.3	LOS A	25.1	181.0	0.66	0.61	0.66	57.5
Approach			2207	3.5	2207	3.5	0.675	11.3	LOS A	25.1	181.0	0.66	0.61	0.66	57.3
All Vehicles			3667	3.3	3667	3.3	0.675	12.1	LOS A	25.1	181.0	0.62	0.56	0.62	55.2

Table B1: Weekday Signalised Intersection Performance of Cumberland Highway (A28) with Brenan Street for the AM Peak Hour with senior living traffic

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]					
			veh/h	%	veh/h	%				v/c	sec					
East: Brenan Street																
5	T1	All MCs	73	0.0	73	0.0	0.038	0.0	LOS A	0.0	0.0	0.01	0.01	0.01	0.01	49.9
6	R2	All MCs	1	0.0	1	0.0	0.038	4.6	LOS A	0.0	0.0	0.01	0.01	0.01	0.01	48.5
Approach			74	0.0	74	0.0	0.038	0.1	NA	0.0	0.0	0.01	0.01	0.01	0.01	49.9
North: Stimson Street																
7	L2	All MCs	5	0.0	5	0.0	0.010	5.9	LOS A	0.0	0.2	0.23	0.55	0.23	0.23	52.3
9	R2	All MCs	7	0.0	7	0.0	0.010	6.1	LOS A	0.0	0.2	0.23	0.55	0.23	0.23	52.0
Approach			12	0.0	12	0.0	0.010	6.0	LOS A	0.0	0.2	0.23	0.55	0.23	0.23	52.1
West: Brenan Street																
10	L2	All MCs	7	0.0	7	0.0	0.065	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	0.00	48.6
11	T1	All MCs	120	0.0	120	0.0	0.065	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	0.00	49.8
Approach			127	0.0	127	0.0	0.065	0.3	NA	0.0	0.0	0.00	0.03	0.00	0.00	49.7
All Vehicles			213	0.0	213	0.0	0.065	0.5	NA	0.0	0.2	0.02	0.05	0.02	0.02	49.9

Table B2: Weekday Priority Intersection Performance of Brenan Street with Stimson Street for the PM Peak Hour with senior living traffic

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]					
			veh/h	%	veh/h	%				v/c	sec					
SouthEast: Brenan Street																
21	L2	All MCs	30	0.0	30	0.0	0.079	38.0	LOS C	1.3	8.8	0.83	0.70	0.83	27.1	
22	T1	All MCs	170	2.4	170	2.4	0.396	36.3	LOS C	7.1	50.6	0.90	0.74	0.90	28.2	
Approach			200	2.0	200	2.0	0.396	36.6	LOS C	7.1	50.6	0.89	0.73	0.89	28.0	
NorthEast: Cumberland Highway																
24	L2	All MCs	97	0.0	97	0.0	0.729	6.3	LOS A	18.4	130.6	0.70	0.68	0.70	44.6	
25	T1	All MCs	2346	1.9	2346	1.9	0.729	12.3	LOS A	29.2	208.1	0.71	0.66	0.71	56.5	
Approach			2443	1.8	2443	1.8	0.729	12.1	LOS A	29.2	208.1	0.71	0.66	0.71	56.1	
NorthWest: Brenan Street																
27	L2	All MCs	23	0.0	23	0.0	0.056	37.7	LOS C	0.9	6.2	0.82	0.69	0.82	32.4	
28	T1	All MCs	101	2.0	101	2.0	0.238	34.9	LOS C	4.1	29.2	0.86	0.68	0.86	28.7	
Approach			124	1.6	124	1.6	0.238	35.4	LOS C	4.1	29.2	0.86	0.69	0.86	29.6	
SouthWest: Cumberland Highway																
30	L2	All MCs	65	0.0	65	0.0	0.405	6.4	LOS A	7.1	50.2	0.49	0.50	0.49	48.3	
31	T1	All MCs	1297	2.4	1297	2.4	0.405	8.8	LOS A	11.4	81.8	0.50	0.46	0.50	59.6	
Approach			1362	2.3	1362	2.3	0.405	8.7	LOS A	11.4	81.8	0.50	0.46	0.50	59.0	
All Vehicles			4129	2.0	4129	2.0	0.729	12.9	LOS A	29.2	208.1	0.65	0.60	0.65	54.2	

Table B3: Weekday Signalised Intersection Performance of Cumberland Highway (A28) with Brenan Street for the PM Peak Hour with senior living traffic

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Brenan Street															
5	T1	All MCs	102	0.0	102	0.0	0.056	0.0	LOS A	0.0	0.3	0.04	0.04	0.04	49.7
6	R2	All MCs	6	0.0	6	0.0	0.056	5.0	LOS A	0.0	0.3	0.04	0.04	0.04	48.3
Approach			108	0.0	108	0.0	0.056	0.3	NA	0.0	0.3	0.04	0.04	0.04	49.6
North: Stimson Street															
7	L2	All MCs	3	0.0	3	0.0	0.008	6.0	LOS A	0.0	0.2	0.27	0.56	0.27	52.1
9	R2	All MCs	6	0.0	6	0.0	0.008	6.3	LOS A	0.0	0.2	0.27	0.56	0.27	51.9
Approach			9	0.0	9	0.0	0.008	6.2	LOS A	0.0	0.2	0.27	0.56	0.27	52.0
West: Brenan Street															
10	L2	All MCs	6	0.0	6	0.0	0.082	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	48.6
11	T1	All MCs	154	0.0	154	0.0	0.082	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach			160	0.0	160	0.0	0.082	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
All Vehicles			277	0.0	277	0.0	0.082	0.4	NA	0.0	0.3	0.02	0.05	0.02	49.8

Table B4: Weekday Priority Intersection Performance of Brenan with Stimson Street for the PM Peak Hour with senior living traffic

CARPARK CERTIFICATION OF A PROPOSED RESIDENTIAL DEVELOPMENT

96-98 Brenan St in Smithfield

Prepared for: SARM Architects

N233128A (version 2a)

February 2024

1. INTRODUCTION

Motion Traffic Engineers was commissioned by SARM Architects to prepare a car park certification of a proposed residential development at 96-98 Brenan Street in Smithfield.

The main car parking area is provided on ground level with vehicle access and egress via Stimson Street. Three car spaces are provided and entry is forward in and forward out of the property.

A disabled parking has been provided at ground level with access via Brenan Street. Vehicle entry is forward in and reverse out (or vice versa). Council generally permits the reverse movement for a single car space on a local road.

Reference is made to AS2890.1 (2004) AS4299 (1995) and Council's Development Control Plan for compliance.

2. DRIVEWAY

The details of the proposed driveway from Stimson Street into the carpark from the perspective of the inbound movement for description purposes are as follows:

- The driveway is 3 metres wide at the property line.
- The ramp is 4 metres wide between kerbs.
 - 150mm wide kerbs are provided on both sides of the ramp
- Gradients along the centreline of the driveway is less than 5 percent

The details of the proposed driveway from Brenan Street into the disability car space from the perspective of the inbound movement for description purposes are as follows:

- The driveway is 3 metres wide at the property line.
- Gradients along the centreline of the driveway is less than 5 percent

3. CAR SPACES

The details of the car parking area is as follows:

Carpark access via Stimson Street

- The car parking aisle is 6.8 metres wide minimum.
- One 90-degree car spaces are 2.4 metres wide minimum, another is 3.2 metres wide and the one opposite the driveway is 2.7 metres wide.
- The disabled car is 2.4 metres with a shared zone of the same dimension
- The length of the car spaces are all 5.4 metres
- Blind aisle extension is provided

Carpark access via Brenan Street

- The accessible car space is 3.8 metres wide and 6.2 metres long.

4. SWEPT PATHS

A swept turning path analysis is performed using a B85 car with 4.9 metres in length and as set in the Australian Standards to confirm that vehicle movements are adequate.

The Swept Paths have been performed for all car spaces and show adequate manoeuvrability.

The swept paths are provided in the Appendix A of this report.

5. SIGHT DISTANCE

The car driver's vehicle sight distance requirement to enter the external road is stated in Figure 3.2 of AS2890.1.

The sight distance varies according to the speed of the external road. Brenan Street has a sign-posted speed limit of 50 km/hr.

The minimum vehicle sight distance required is 45 metres. Site measurements showed that the minimum sight distance looking left and right is met for Stimson Street and Brenan Street (if a driver leaves in a forward manner).

The pedestrian sight distance as set out in Figure 3.3 of AS2890.1 is met as well (and if a driver leaves in a forward manner for the car space on Brenan Street)

6. CONCLUSIONS AND RECOMMENDATIONS

The car parking area and driveway is in compliance with Australian Standards and Council's DCP.

APPENDIX A

Swept Paths

