TRAFFIC AND PARKING IMPACT ASSESSMENT

Proposed General Housing

7-9 Wattle Avenue, Orange

Prepared for: SARM Architects

N244021A (Version 1b)

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Motion Traffic Engineers Pty Ltd

Telephone: 940 33588

sydney@motiontraffic.com.au ACN 600201583

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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 General Housing at 7-9 Wattle Avenue in Orange.

Number 7 Wattle Avenue is a house. Number 9 is vacant land without any permanent structures in place.

This traffic report presents an assessment of the anticipated transport implications of the proposed General Housing, with the following considerations:

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

In the course of preparing this assessment, the proposed General Housing 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 GENERAL HOUSING

2.1. Location and Land Use

The proposed General Housing is located at 7-9 Wattle Avenue. Number 7 Wattle Avenue is a house. Number 9 is vacant land without any permanent structures in place.

The site is in a residential area overall. Cutcliffe Park and Cypress Park are located nearby and towards the south of the proposed site.

Orange High School is located on the north side of Coronation Drive, which is north of the proposed site. Kinross Wolaroi School PLC (Presbyterian Ladies College) Girls Boarding Campus is located approximately 450 metres west of the Wattle Avenue and Coronation Drive intersection. Calare Public School is located approximately 650 metres towards the south of intersection of Waratah Avenue with Wattle Avenue.

The site is within walking distance to Orange Town Centre (about a 12 minute walk away to the east)

Figures 1 and 2 show the location of the proposed General Housing from aerial and street map perspective respectively. Figure 2 also shows the location of the surveyed intersections in relation to the proposed General Housing.

Figure 3a and 3b shows a photograph of the site frontage taken from 7 and 9 Wattle Avenue respectively.

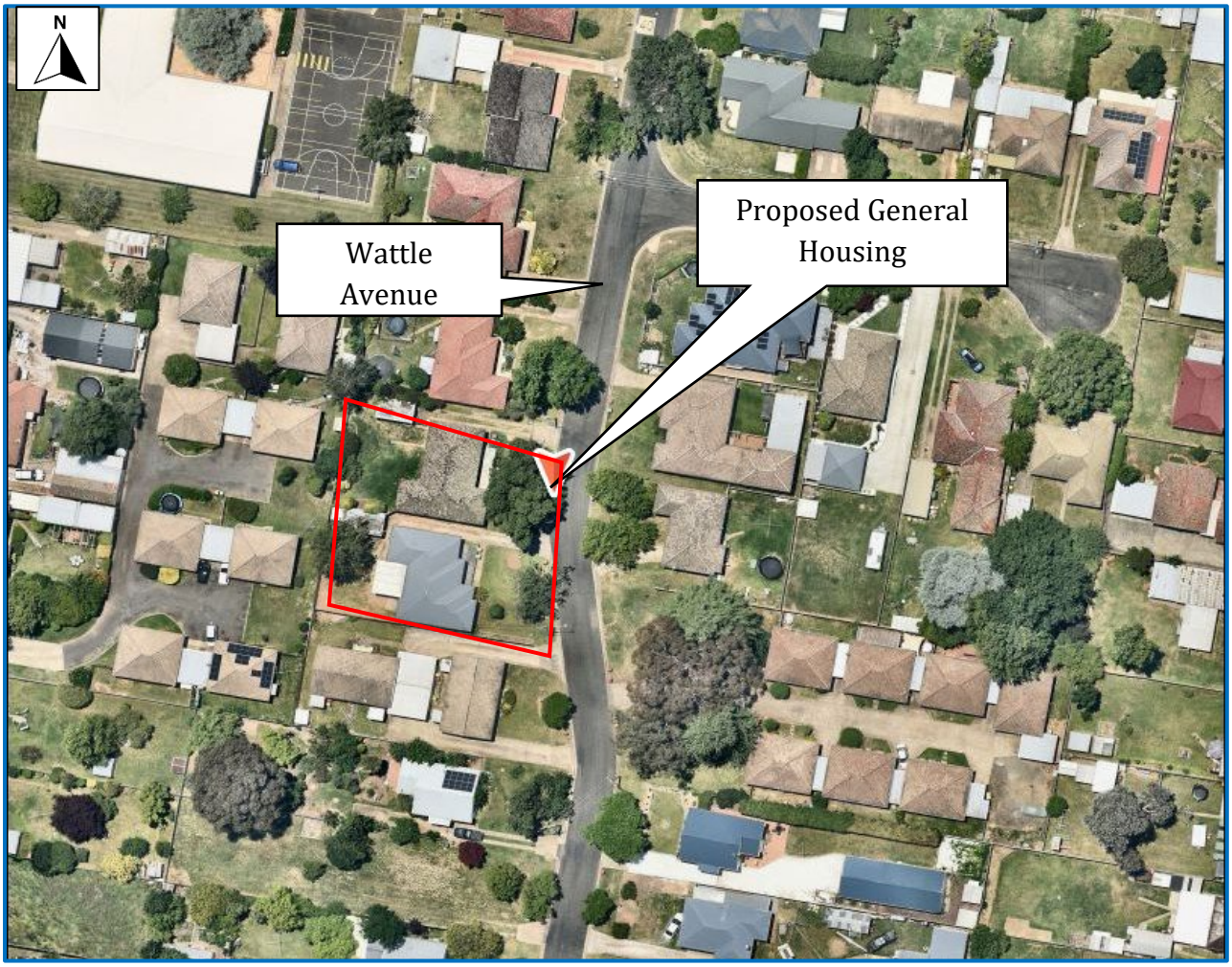

Figure 1: Location of the General Housing from Aerial View Perspective

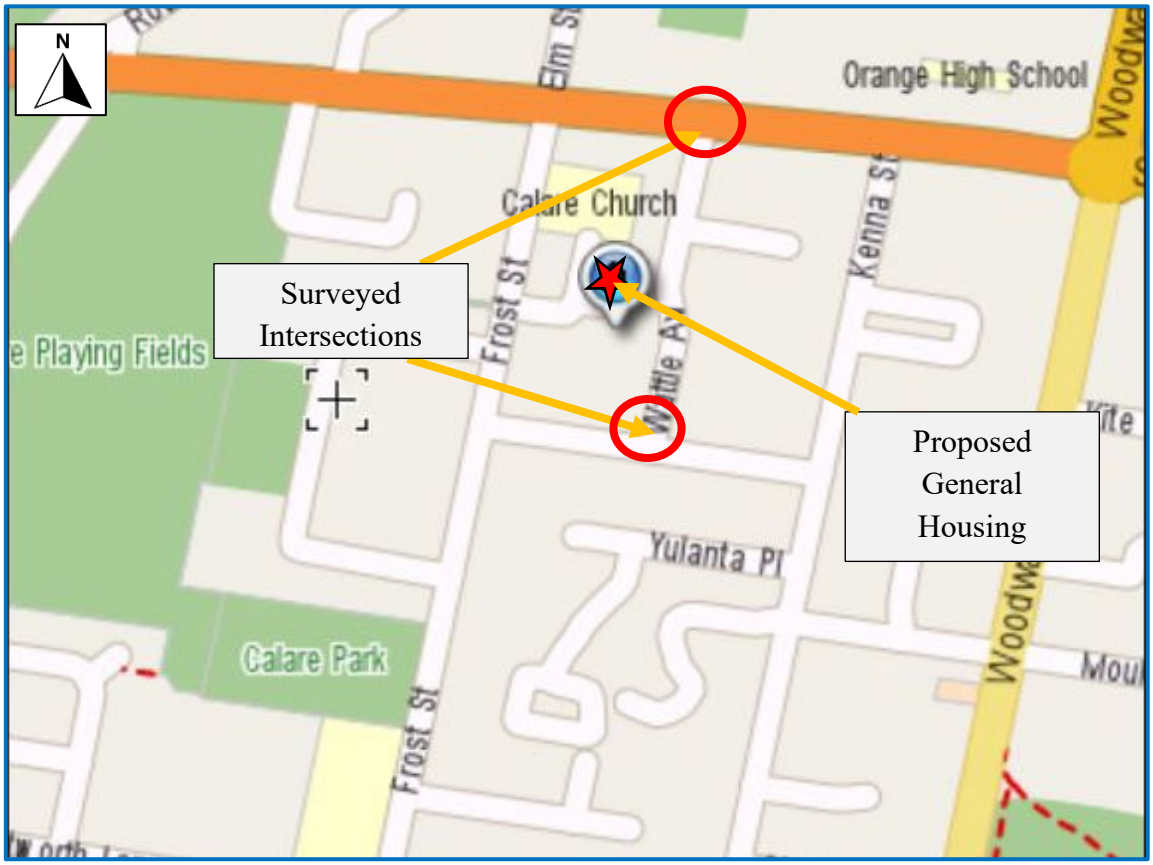

Figure 2: Location of the Proposed General Housing from Street Map Perspective in relation to Surveyed Intersections

Figure 3a: Photograph of 7 Wattle Avenue

Figure 3b: Photograph of 9 Wattle Avenue

2.2. Road Network

This section discusses the road network adjacent to the site.

Wattle Avenue is a two-way local road and a sing posted speed limit of 50km/hr. On-street parking is permitted on both sides of the road and is time unrestricted. Wattle Avenue is configured in the north-south direction, connecting Coronation Drive to Waratah Avenue. On-street parking with no time restriction is permitted on the intersection sides of the road. A school zone end with a speed limit signage of 40 km/hr is located on the road near intersections with Coronation Drive with Wattle Avenue. Figure 4a and 4b shows photographs of Wattle Avenue.

Figure 4a: Wattle Avenue Facing North from the site location

Figure 4b: Wattle Avenue Facing South from the site

Coronation Drive is a major collector road and runs from Orange Town Centre with one lane of traffic each way and a marked parking lane. Coronation Drive is configured east to west with a sign posted speed limit of 50 km/hr but is subject to a school zone speed limit of 40km/hr (8:00 - 9:30am and 2:30 – 4:00pm on school days) near Wattle Avenue. Figure 4c shows a photograph of Coronation Drive.

Waratah Avenue is a local road with one lane each way and has a default speed limit of 50 km/hr. Time un-restricted for on street parking is permitted on both sides of the road with no time restriction. Waratah Avenue is configured east to west which end at an intersection with Frost Street. Figure 4d shows a photograph of Waratah Avenue.

Figure 4c: Coronation Drive Facing East after the intersection of Wattle Avenue

Figure 4d: Waratah Avenue Facing East after the intersection of Coronation Drive with Wattle Avenue

2.3. Public Transport

The proposed General Housings is located 240 metres from a bus stop located at Coronation Drive. These bus stops are serviced by bus routes 584, 534 and 537.

These bus routes provide convenient transportation to many streets around orange including Summer Street, Orange ventral square , Frost Street, Endeavour Avenue and Tynan Street.

Overall, the site has a good access to the public transport. Figure 5 shows the public transport map with respect to the location of the site.

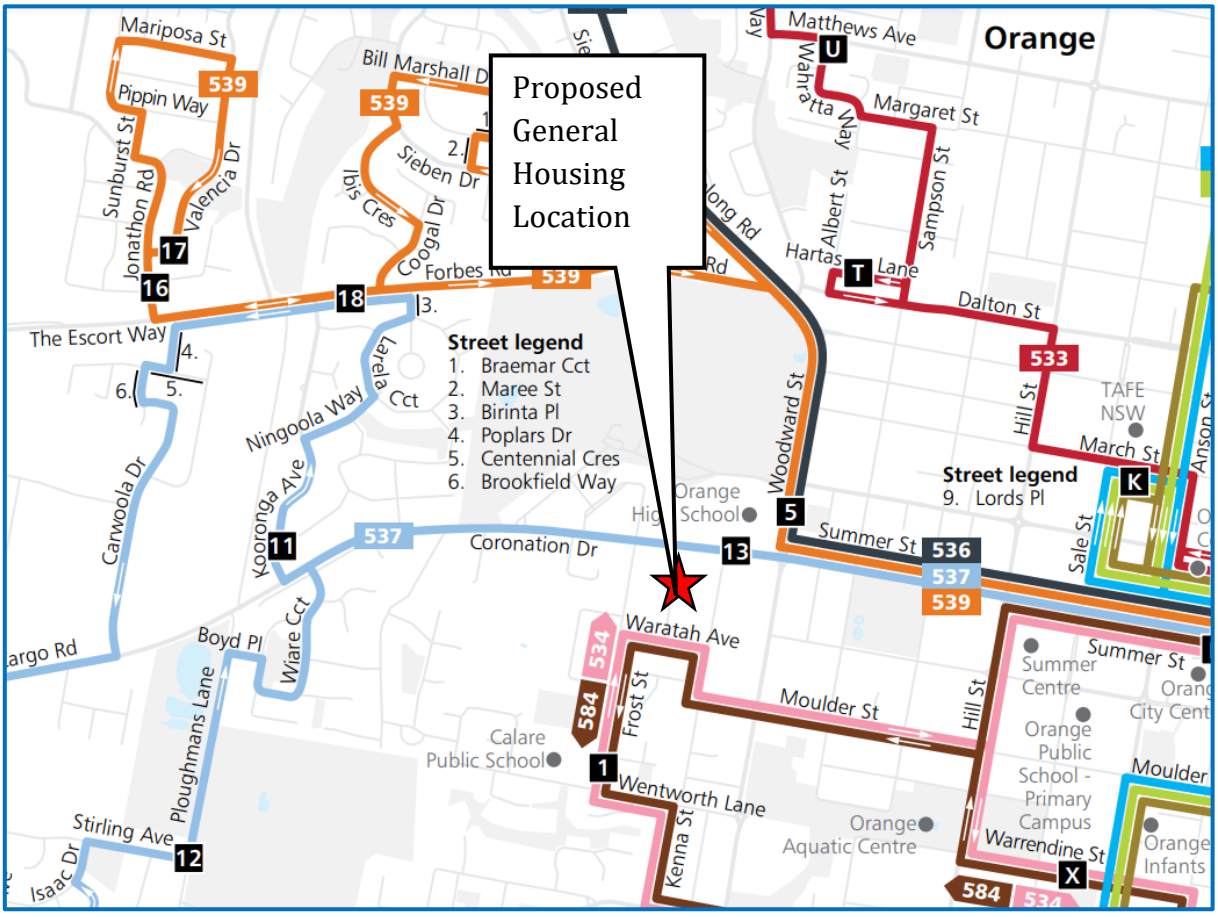

Figure 5: Location of the Proposed General Housing in Relation to Public Transport

2.4. Public Parking

The proposed General Housing is located within a residential on Wattle Avenue. Site investigation shows that there are vacant on-street parking opportunities (see Figure 4a and 4B) with a driver undertaking minimal circulation to find a vacant car space.

2.5. Intersection Description

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

- Priority Intersection of Coronation Drive with Wattle Avenue
- Priority intersection of Waratah Avenue with wattle Avenue

External traffic travelling to and from the residential development is likely to travel through one of the intersections above.

The priority intersection of Coronation Drive with Wattle Avenue is a three-leg intersection with all turn movements permitted. Drivers on Wattle Avenue need to give way to traffic on Coronation

Drive. Figure 7a presents the layout of the intersection using SIDRA 9.1– an industry standard intersection software program. Figure 7b presents an aerial view of this intersection.

The priority intersection of Waratah Avenue with wattle Avenue is a three-leg intersection with all turn movements permitted. Drivers on Wattle Avenue need to give way to traffic on Waratah Avenue Figure 8a presents the layout of the intersection using SIDRA 9.1. Figure 8b presents an aerial view.

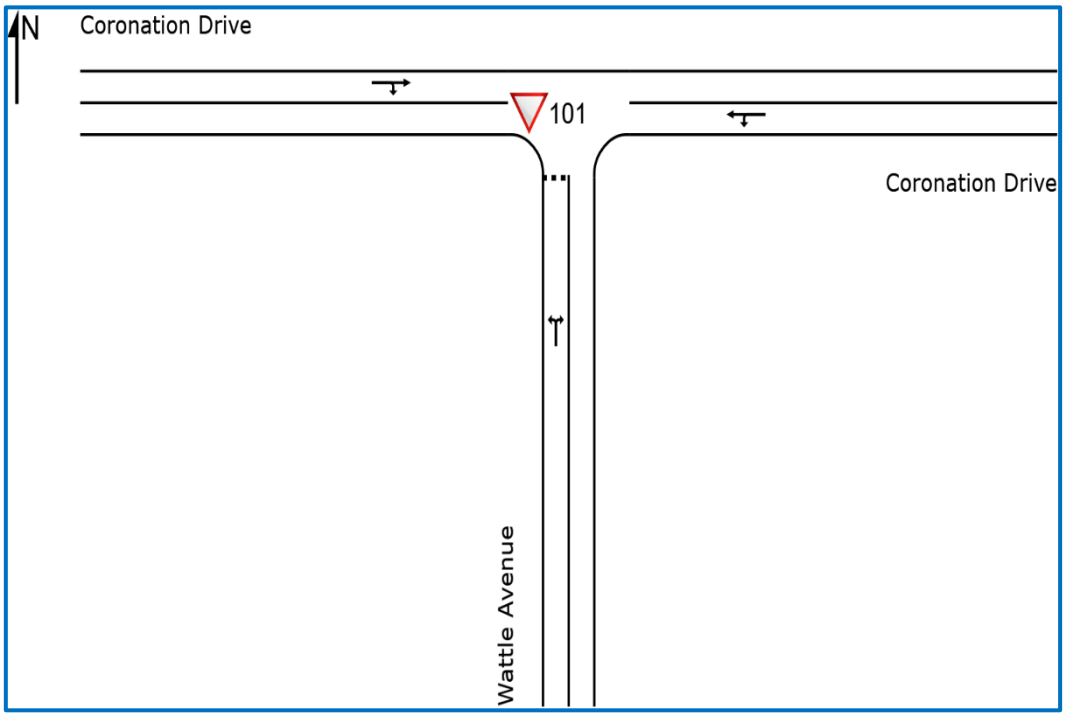

Figure 7a: Coronation Drive with Wattle Avenue (SIDRA)

Figure 7b: Aerial View

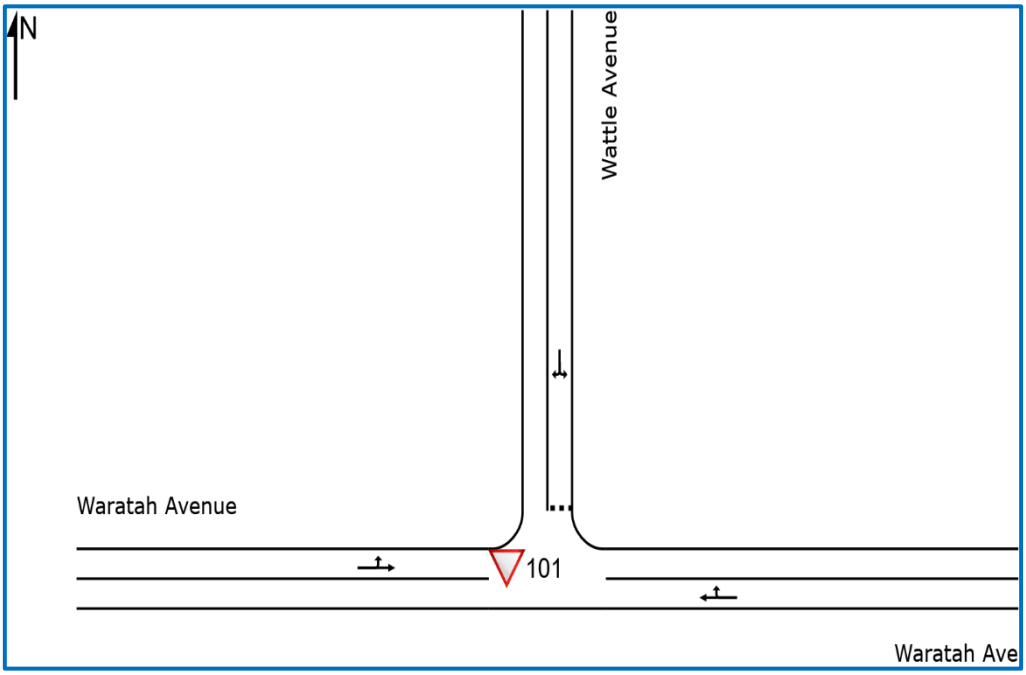

Figure 8a: Waratah Avenue with wattle Avenue (SIDRA)

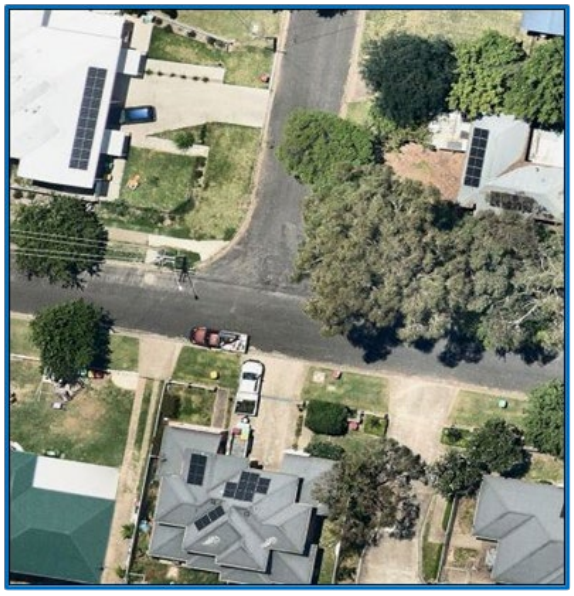

Figure 8b: Aerial View

2.6. Existing Traffic Volume

As 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 7:45 to 8:45 and the PM peak hour is 4:45 to 5:45. The traffic survey were undertaken during school term in 2024.

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

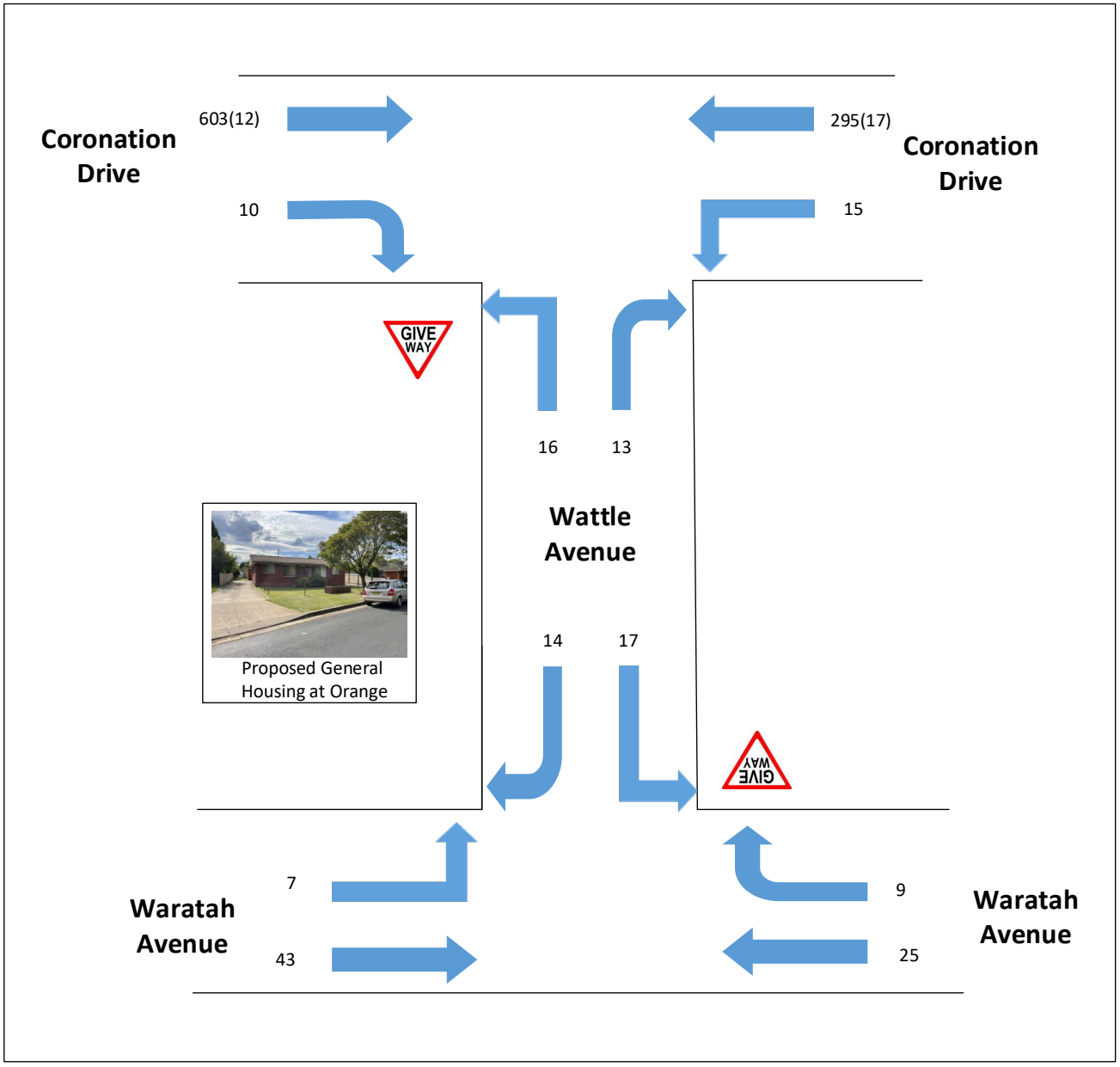

Figure 9a: Existing Weekday Traffic Volumes AM

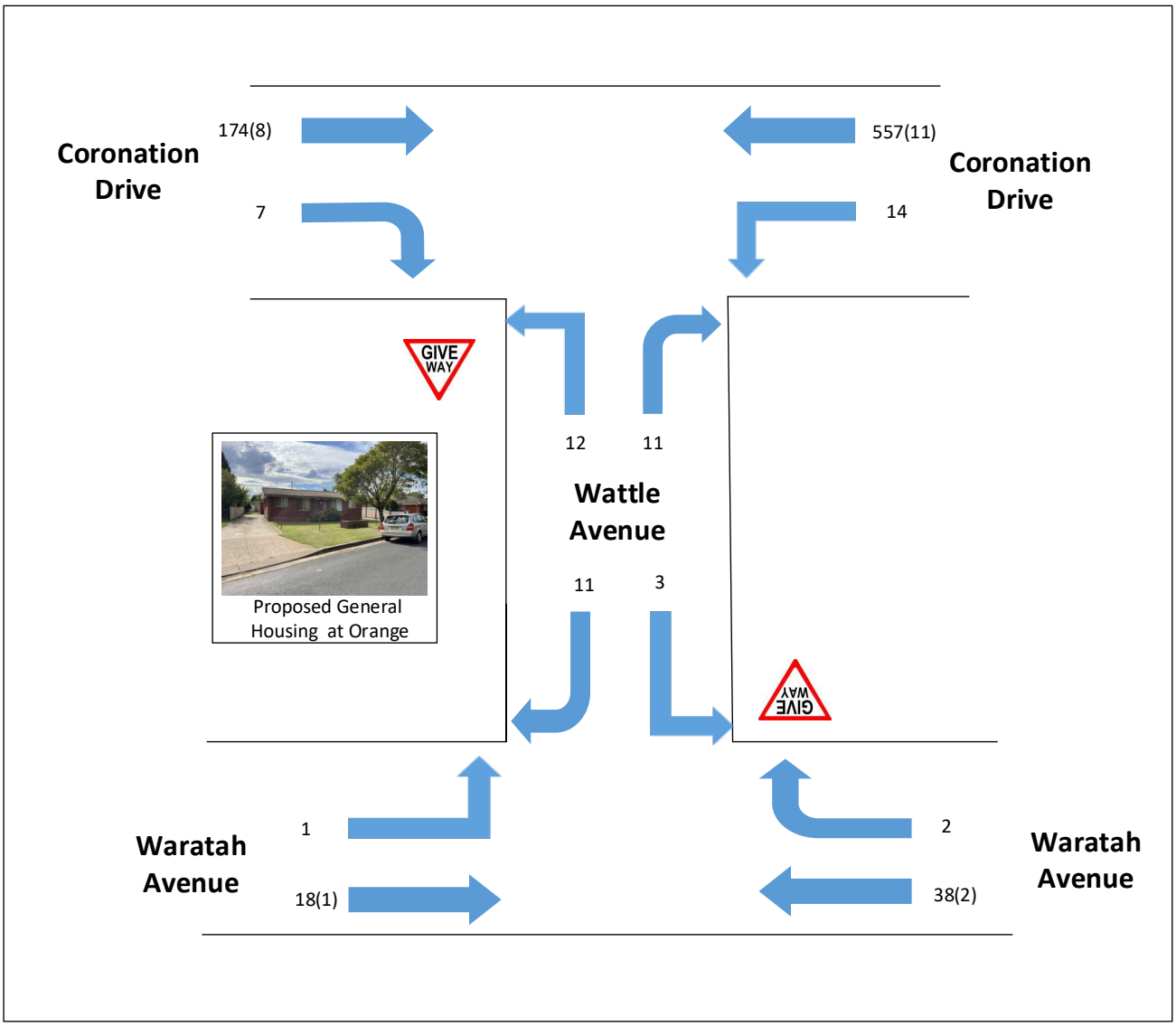

Figure 9b: Existing Weekday Traffic Volumes PM

2.7. Intersection Assessment with Existing Traffic

An intersection assessment has been undertaken for:

- Priority Intersection of Coronation Drive with Wattle Avenue
- Priority intersection of Waratah Avenue with wattle Avenue

The existing intersection operating performance was assessed using the SIDRA software package (version 9) 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
Wattle Avenue/ Coronation Drive *LoS* *AVD* *DS*	 N/A (Worst: A) 0.4 0.345	 N/A (Worst: A) 0.5 0.318
Wattle Avenue/ Waratah Avenue *LoS* *AVD* *DS*	 N/A (Worst: A) 1.9 0.027	 N/A (Worst: A) 1.1 0.024

Table 3: Existing Intersection Performances

As presented in Table 3, both intersections are currently operating at excellent conditions with spare capacity to accommodate additional traffic in both peak hours. The full results are presented in Appendix A.

2.8. Summary of Existing Conditions

The proposed General Housing has good access to public transport with the Orange Train Station nearby.

The two nearby intersections perform well with spare capacity.

There are vacant car spaces on Wattle Avenue with a driver undertaking minimal circulation to find a car space.

3.PROPOSED GENERAL HOUSING

A description of the development for which approval is now sought features the following elements:

- Demolition of existing dwellings
- Construction of a new General Housing

3.1. General Housing

- Two One Bedroom and Four-Two Bedroom Units on Ground Floor
- Two-One Bedroom and Two-Two Bedroom Units on First Floor
- A total of 10 units

3.2. Parking

Parking is provided on one basement level. Access and egress to the Ground level parking area are via a two-way driveway/ramp running off Wattle Avenue.

- 8 car parking spaces including 1 accessible space

A full scaled plan of the proposed General Housing is provided as part of the Development Application.

4. PARKING REQUIREMENTS

4.1. Car Parking

The Orange Development Control Plan 2004 does provide car park rates for residential developments (see PO 7.7-15) but not for the housing proposed for this project. There is no parking requirements for bicycle and motorcycles.

The parking requirements of the proposed General Housing in this project have been assessed in accordance with the *State Environmental Planning Policy (Housing) 2021,* which outlines minimum rates for each of the abovementioned types of parking facilities in an non-accessible area.

- 0.5 parking spaces for each dwelling containing one bedroom units
- 1 parking spaces for each dwelling containing two bedroom units

Table 4a below presents the minimum car parking requirement for the proposed General Housing based on the car parking rate listed above.

Land Use	Type	Number of Rooms/Units	Car Parking Rate	Car Spaces Required	Car Spaces Provided
General Housing	One Bedroom	4	0.5 spaces per one bedroom	2	8
	Two Bedroom	6	1 space per one bedroom	6	
Total				8	8

Table 4a: Summary of SEPP Car Parking Requirements

As presented in Table 4 above, the proposed General Housing complies with the *State Environmental Planning Policy (Housing) 2021*

5.TRAFFIC GENERATION AND IMPACT

5.1. Proposed Traffic Generation

The *NSW RTA Guide to Traffic Generating Developments* u does not publish trip generation rates for an General Housing as per this development.

A n assumption is made based on reference of number of car spaces considering each car space for equivalent number of trips in both AM and PM peak hours as follows.

- One trip per each car space

The trip generation rate is comparable to a parking provision of overall of 0.4 and 0.5 space per one bedroom and two bedroom units

Application of the above-mentioned rates to the proposed development results the peak hour trip generation presented in Table 5. Overall, the General Housing is a low trip generator.

Peak Hour	Use	Number of Units	Trip Generation Rate	Trips Generated
AM	General Housing	10	1 trip per each car space	10
PM			1 trip per each car space	10

Table 5: Trips generated by the proposed in weekday peak hours

The generated trips by the proposed General Housing are distributed using the following assumptions: 90 percent outbound and 10 percent inbound for the AM peak hour and presented in Table 6. The proposed General Housing is a low trip generator.

	Origin	Destination	Total
AM Peak Hour	9	1	10
PM Peak Hour	1	9	10

Table 6: Trip Distribution of the proposed affordable house for the weekday peak hours

5.2. Existing Traffic Volume with General Housing Traffic

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

The additional General Housing trips represent a small proportion of the existing traffic volumes.

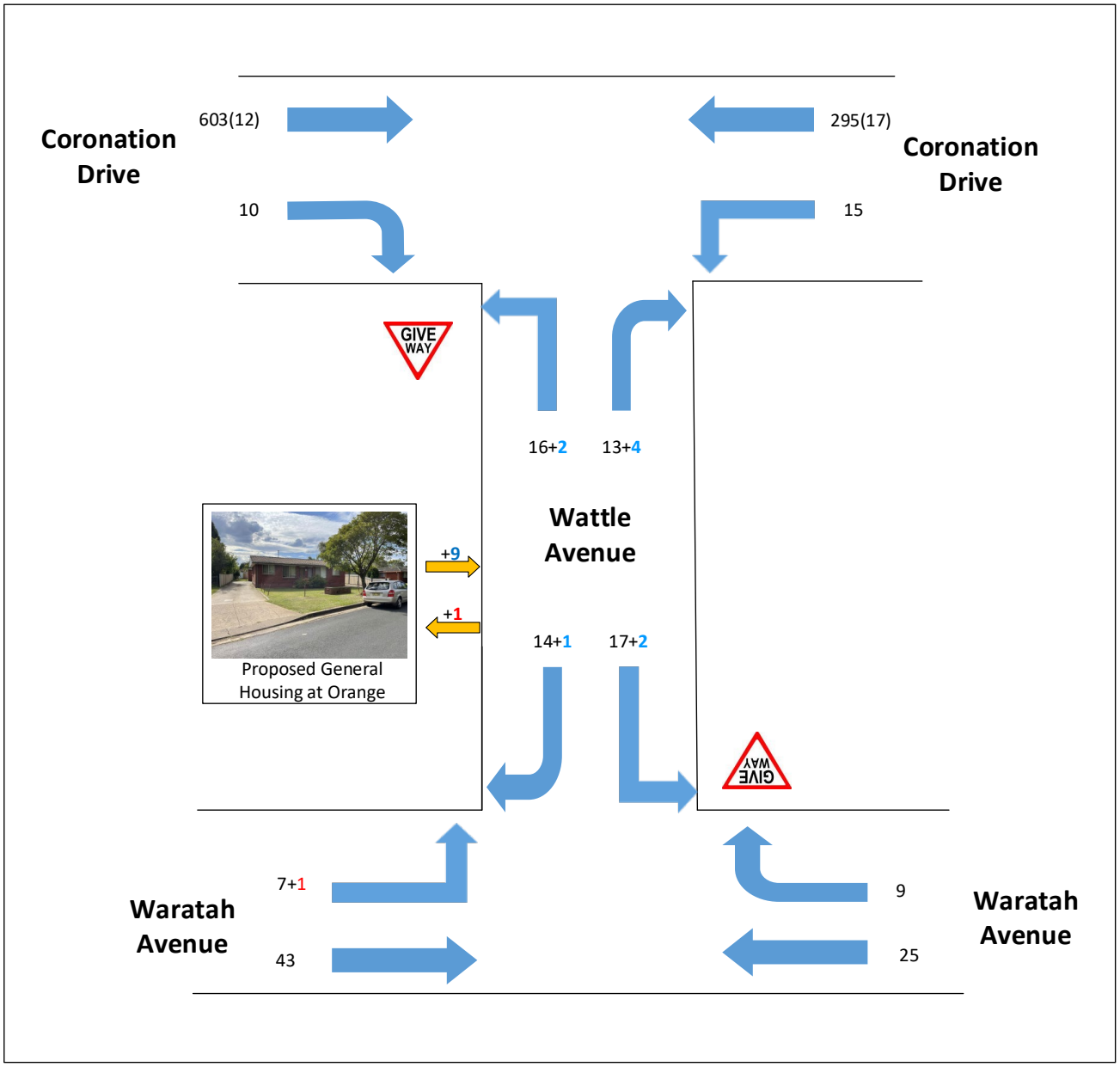

Figure 10a: Existing Weekday Traffic Volumes AM with General Housing Traffic

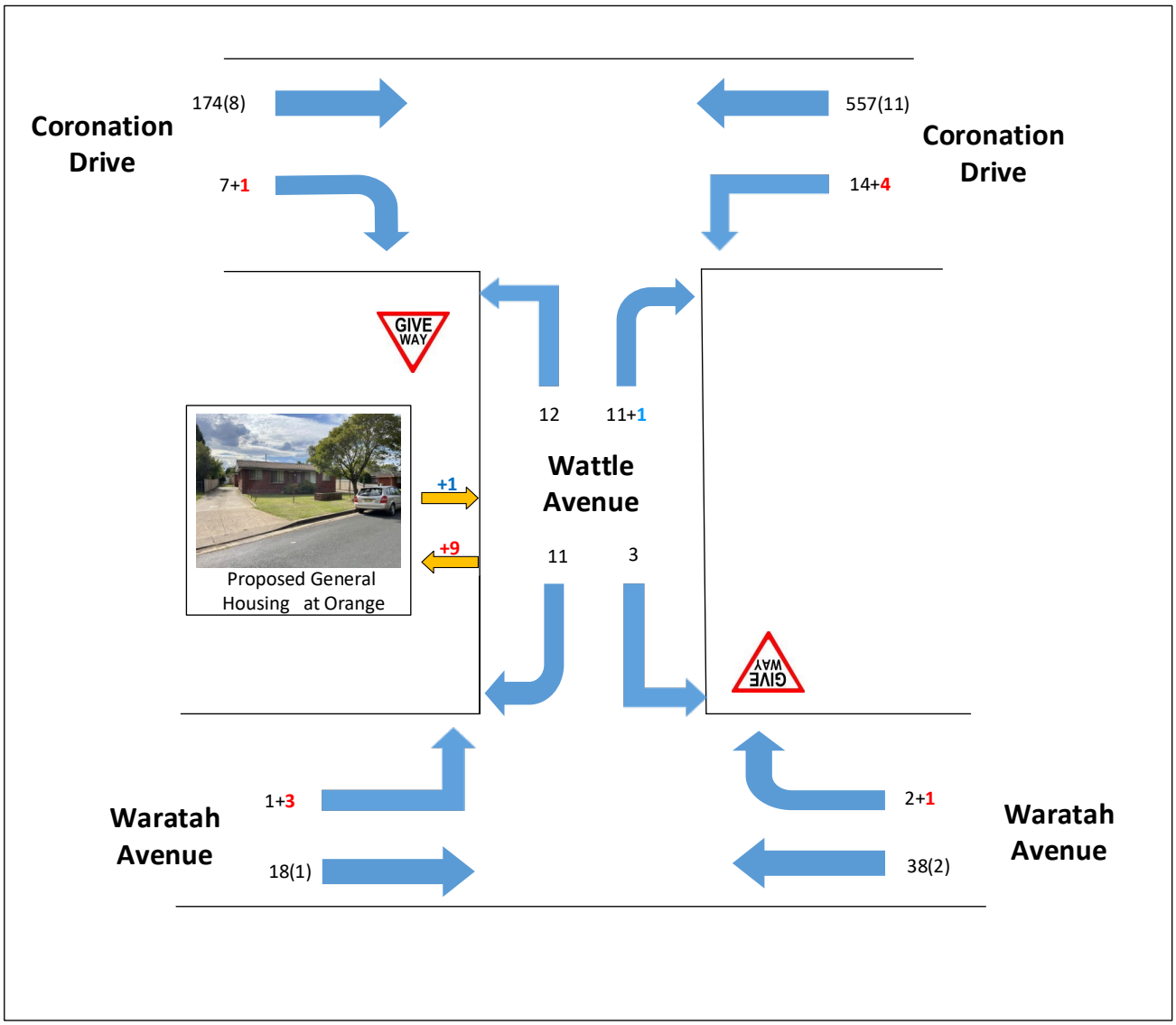

Figure 10b: Existing Weekday Traffic Volumes PM with General Housing Traffic

5.3.Traffic Impact Assessment

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

Intersection/ Performance criteria	Performance with Existing Traffic		Projected Performance with Existing and General Housing Traffic	
	AM Peak Hour Existing	PM Peak Hour Existing	AM Peak Hour Projected	PM Peak Hour Projected
Wattle Avenue / Coronation Drive *LoS* *AVD* *DS*	N/A (Worst: A) 0.4 0.345	N/A (Worst: A) 0.5 0.318	N/A (Worst: A) 1.4 0.345	N/A (Worst: A) 0.5 0.321
Wattle Avenue/ Waratah Avenue *LoS* *AVD* *DS*	N/A (Worst: A) 1.9 0.027	N/A (Worst: A) 1.1 0.024	N/A (Worst: A) 2.0 0.028	N/A (Worst: A) 1.2 0.04

Table 8: Projected intersection performance with General Housing traffic

As presented in Table 8 above, the additional trips generated by the proposed General Housing traffic 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 General Housing traffic.

The traffic impacts of the proposed General Housing traffic are therefore considered acceptable.

The full SIDRA results are presented in Appendix B for the existing conditions with the General Housing traffic.

6. CONCLUSIONS

This traffic impact assessment reports relates to a proposed General Housing at7-9 Wattle Street in Orange. Based on the analysis and discussions presented in this report, the following conclusions are made:

- The General Housing is located in a general residential zone with excellent access to public transport services. Vacant on-street parking spaces can be located on the residential streets nearby.
- The surrounding intersections currently operates at excellent level of services.
- The proposed General Housing complies with the *State Environmental Planning Policy (Housing) 2021* car parking requirements.
- The proposed General Housing is expected to generate low number of additional trips in both AM and PM peak hours
- The traffic impact of the proposed General Housing is therefore considered acceptable

There are no traffic engineering reasons why a development consent for the proposed General Housing at 7-9 Wattle Street in Orange, should be refused.

APPENDIX A

INTERSECTION ASSESSMENT FOR EXISTING TRAFFIC

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wattle Avenue														
1	L2	16	0	17	0.0	0.047	4.5	LOS A	0.2	1.1	0.48	0.63	0.48	37.2
3	R2	13	0	14	0.0	0.047	10.4	LOS A	0.2	1.1	0.48	0.63	0.48	36.9
Approach		29	0	31	0.0	0.047	7.2	LOS A	0.2	1.1	0.48	0.63	0.48	37.1
East: Coronation Drive														
4	L2	15	0	16	0.0	0.183	3.5	LOS A	0.0	0.0	0.00	0.02	0.00	40.0
5	T1	312	17	328	5.4	0.183	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	39.9
Approach		327	17	344	5.2	0.183	0.2	NA	0.0	0.0	0.00	0.02	0.00	39.9
West: Coronation Drive														
11	T1	615	12	647	2.0	0.345	0.0	LOS A	0.1	0.9	0.02	0.01	0.02	39.9
12	R2	10	0	11	0.0	0.345	5.4	LOS A	0.1	0.9	0.02	0.01	0.02	39.7
Approach		625	12	658	1.9	0.345	0.1	NA	0.1	0.9	0.02	0.01	0.02	39.9
All Vehicles		981	29	1033	3.0	0.345	0.4	NA	0.2	1.1	0.03	0.03	0.03	39.8

Table A1: Weekday Priority Intersection Performance of Coronation Drive with Wattle Avenue for the AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Waratah Ave														
5	T1	25	0	26	0.0	0.019	0.1	LOS A	0.1	0.4	0.07	0.14	0.07	49.0
6	R2	9	0	9	0.0	0.019	4.7	LOS A	0.1	0.4	0.07	0.14	0.07	48.0
Approach		34	0	36	0.0	0.019	1.3	NA	0.1	0.4	0.07	0.14	0.07	48.7
North: Wattle Avenue														
7	L2	14	0	15	0.0	0.024	4.7	LOS A	0.1	0.6	0.13	0.52	0.13	46.3
9	R2	17	0	18	0.0	0.024	4.8	LOS A	0.1	0.6	0.13	0.52	0.13	45.9
Approach		31	0	33	0.0	0.024	4.8	LOS A	0.1	0.6	0.13	0.52	0.13	46.1
West: Waratah Avenue														
10	L2	7	0	7	0.0	0.027	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	49.1
11	T1	43	0	45	0.0	0.027	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.6
Approach		50	0	53	0.0	0.027	0.6	NA	0.0	0.0	0.00	0.08	0.00	49.5
All Vehicles		115	0	121	0.0	0.027	1.9	NA	0.1	0.6	0.06	0.22	0.06	48.3

Table A2: Weekday Priority Intersection Performance of Waratah Avenue with wattle Avenue for the AM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wattle Avenue														
1	L2	12	0	13	0.0	0.036	7.1	LOS A	0.1	0.8	0.54	0.72	0.54	44.6
3	R2	11	0	12	0.0	0.036	9.2	LOS A	0.1	0.8	0.54	0.72	0.54	44.2
Approach		23	0	24	0.0	0.036	8.1	LOS A	0.1	0.8	0.54	0.72	0.54	44.4
East: Coronation Drive														
4	L2	14	0	15	0.0	0.318	4.7	LOS A	0.0	0.0	0.00	0.01	0.00	49.3
5	T1	568	11	598	1.9	0.318	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	49.8
Approach		582	11	613	1.9	0.318	0.2	NA	0.0	0.0	0.00	0.01	0.00	49.8
West: Coronation Drive														
11	T1	182	8	192	4.4	0.109	0.2	LOS A	0.1	0.7	0.06	0.02	0.06	44.4
12	R2	7	0	7	0.0	0.109	6.6	LOS A	0.1	0.7	0.06	0.02	0.06	43.4
Approach		189	8	199	4.2	0.109	0.4	NA	0.1	0.7	0.06	0.02	0.06	44.4
All Vehicles		794	19	836	2.4	0.318	0.5	NA	0.1	0.8	0.03	0.04	0.03	48.2

Table A3: Weekday Priority Intersection Performance of Coronation Drive with Wattle Avenue for the PM Peak Hour

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Waratah Ave														
5	T1	40	2	42	5.0	0.024	0.0	LOS A	0.0	0.1	0.01	0.03	0.01	49.8
6	R2	2	0	2	0.0	0.024	4.6	LOS A	0.0	0.1	0.01	0.03	0.01	48.8
Approach		42	2	44	4.8	0.024	0.2	NA	0.0	0.1	0.01	0.03	0.01	49.8
North: Wattle Avenue														
7	L2	3	0	3	0.0	0.011	4.6	LOS A	0.0	0.3	0.10	0.53	0.10	46.4
9	R2	11	0	12	0.0	0.011	4.8	LOS A	0.0	0.3	0.10	0.53	0.10	46.0
Approach		14	0	15	0.0	0.011	4.7	LOS A	0.0	0.3	0.10	0.53	0.10	46.1
West: Waratah Avenue														
10	L2	1	0	1	0.0	0.011	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.3
11	T1	19	1	20	5.3	0.011	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		20	1	21	5.0	0.011	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.8
All Vehicles		76	3	80	3.9	0.024	1.1	NA	0.0	0.3	0.02	0.12	0.02	49.1

Table A4: Weekday Priority Intersection Performance of Waratah Avenue with wattle Avenue for the PM Peak Hour

APPENDIX B

INTERSECTION ASSESSMENT FOR EXISTING TRAFFIC AND GENERAL HOUSING TRAFFIC

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wattle Avenue														
1	L2	18	0	19	0.0	0.051	3.4	LOS A	0.2	1.2	0.05	0.48	0.05	37.6
3	R2	19	0	20	0.0	0.051	8.7	LOS A	0.2	1.2	0.05	0.48	0.05	37.3
Approach		37	0	39	0.0	0.051	6.1	LOS A	0.2	1.2	0.05	0.48	0.05	37.5
East: Coronation Drive														
4	L2	312	17	328	5.4	0.192	3.5	LOS A	0.0	0.0	0.00	0.43	0.00	38.7
5	T1	15	0	16	0.0	0.192	0.1	LOS A	0.0	0.0	0.00	0.43	0.00	38.6
Approach		327	17	344	5.2	0.192	3.3	NA	0.0	0.0	0.00	0.43	0.00	38.7
West: Coronation Drive														
11	T1	615	12	647	2.0	0.345	0.0	LOS A	0.1	0.9	0.02	0.01	0.02	39.9
12	R2	10	0	11	0.0	0.345	5.4	LOS A	0.1	0.9	0.02	0.01	0.02	39.7
Approach		625	12	658	1.9	0.345	0.1	NA	0.1	0.9	0.02	0.01	0.02	39.9
All Vehicles		989	29	1041	2.9	0.345	1.4	NA	0.2	1.2	0.02	0.17	0.02	39.4

Table B1: Weekday Priority Intersection Performance of Coronation Drive with Wattle Avenue for the AM Peak Hour with General Housing Traffic

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] %	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Waratah Avenue														
5	T1	25	0.0	26	0.0	0.019	0.1	LOS A	0.1	0.4	0.08	0.14	0.08	49.0
6	R2	9	0.0	9	0.0	0.019	4.7	LOS A	0.1	0.4	0.08	0.14	0.08	48.0
Approach		34	0.0	36	0.0	0.019	1.3	NA	0.1	0.4	0.08	0.14	0.08	48.7
North: Wattle Avenue														
7	L2	19	0.0	20	0.0	0.026	4.7	LOS A	0.1	0.6	0.12	0.51	0.12	46.3
9	R2	15	0.0	16	0.0	0.026	4.8	LOS A	0.1	0.6	0.12	0.51	0.12	45.9
Approach		34	0.0	36	0.0	0.026	4.7	LOS A	0.1	0.6	0.12	0.51	0.12	46.2
West: Waratah Avenue														
10	L2	8	0.0	8	0.0	0.028	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	49.0
11	T1	43	0.0	45	0.0	0.028	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.5
Approach		51	0.0	54	0.0	0.028	0.7	NA	0.0	0.0	0.00	0.09	0.00	49.4
All Vehicles		119	0.0	125	0.0	0.028	2.0	NA	0.1	0.6	0.06	0.22	0.06	48.3

Table B2: Weekday Priority Intersection Performance of Waratah Avenue with wattle Avenue for the AM Peak Hour with General Housing Traffic

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Wattle Avenue														
1	L2	12	0	13	0.0	0.038	5.9	LOS A	0.1	0.9	0.54	0.70	0.54	40.5
3	R2	12	0	13	0.0	0.038	8.2	LOS A	0.1	0.9	0.54	0.70	0.54	40.2
Approach		24	0	25	0.0	0.038	7.0	LOS A	0.1	0.9	0.54	0.70	0.54	40.4
East: Coronation Drive														
4	L2	18	0	19	0.0	0.321	4.7	LOS A	0.0	0.0	0.00	0.02	0.00	49.3
5	T1	568	11	598	1.9	0.321	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	49.7
Approach		586	11	617	1.9	0.321	0.3	NA	0.0	0.0	0.00	0.02	0.00	49.7
West: Coronation Drive														
11	T1	182	8	192	4.4	0.110	0.2	LOS A	0.1	0.8	0.07	0.03	0.07	49.6
12	R2	8	0	8	0.0	0.110	7.6	LOS A	0.1	0.8	0.07	0.03	0.07	48.7
Approach		190	8	200	4.2	0.110	0.5	NA	0.1	0.8	0.07	0.03	0.07	49.6
All Vehicles		800	19	842	2.4	0.321	0.5	NA	0.1	0.9	0.03	0.04	0.03	49.4

Table B3: Weekday Priority Intersection Performance of Coronation Drive with Wattle Avenue for the PM Peak Hour with General Housing Traffic

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES [Total veh/h	HV] veh/h	DEMAND FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Waratah Avenue														
5	T1	40	2	42	5.0	0.024	0.0	LOS A	0.0	0.1	0.01	0.04	0.01	49.7
6	R2	3	0	3	0.0	0.024	4.6	LOS A	0.0	0.1	0.01	0.04	0.01	48.8
Approach		43	2	45	4.7	0.024	0.3	NA	0.0	0.1	0.01	0.04	0.01	49.7
North: Wattle Avenue														
7	L2	3	0	3	0.0	0.011	4.6	LOS A	0.0	0.3	0.10	0.53	0.10	46.4
9	R2	11	0	12	0.0	0.011	4.8	LOS A	0.0	0.3	0.10	0.53	0.10	46.0
Approach		14	0	15	0.0	0.011	4.7	LOS A	0.0	0.3	0.10	0.53	0.10	46.1
West: Waratah Avenue														
10	L2	4	0	4	0.0	0.013	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	49.0
11	T1	19	1	20	5.3	0.013	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.4
Approach		23	1	24	4.3	0.013	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
All Vehicles		80	3	84	3.8	0.024	1.2	NA	0.0	0.3	0.02	0.14	0.02	48.9

Table B4: Weekday Priority Intersection Performance of Wattle Avenue with Waratah Avenue for the PM Peak Hour with General Housing Traffic