TRAFFIC AND PARKING IMPACT ASSESSMENT

Proposed Re-zoning application to Commercial business

25 South Parade, Auburn NSW

Prepared for: Elias Kehdo

A221755N (Version 1c)

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1. INTRODUCTION

Motion Traffic Engineers was commissioned by Elias Kehdo to undertake a traffic and parking impact assessment of a re-zoning application to Proposed Commercial business at 25 South Parade in Auburn.

The site is currently as an eye doctor surgery with one doctor working servicing patients.

This traffic report presents an assessment of the anticipated transport implications of the Proposed Commercial business, with the following considerations:

- Background and existing traffic and parking conditions of the Commercial business site
- 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 Commercial business and;
- The transport impact of the Proposed Commercial business on the surrounding road network.

In the course of preparing this assessment, the Commercial business site 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 Commercial business site is located at 25 South Parade in Auburn. The site is located within walking distance to Auburn train station and is at the periphery to Auburn town centre. There is a nearby school (St John's Catholic School) and the St Joseph's Hospital and the Commercial business would be an "allied" activity in support of a "medical hub". The site is located in *General Industrial(IN1) zone. The report is part of a re-zoning submission.*

Figures 1 and 2 show the location of the Proposed Commercial business site from aerial and street map perspective respectively. Figure 2 also shows the location of the surveyed intersections in relation to the site.

Figure 3 shows a photography of the site frontage taken from South Parade.

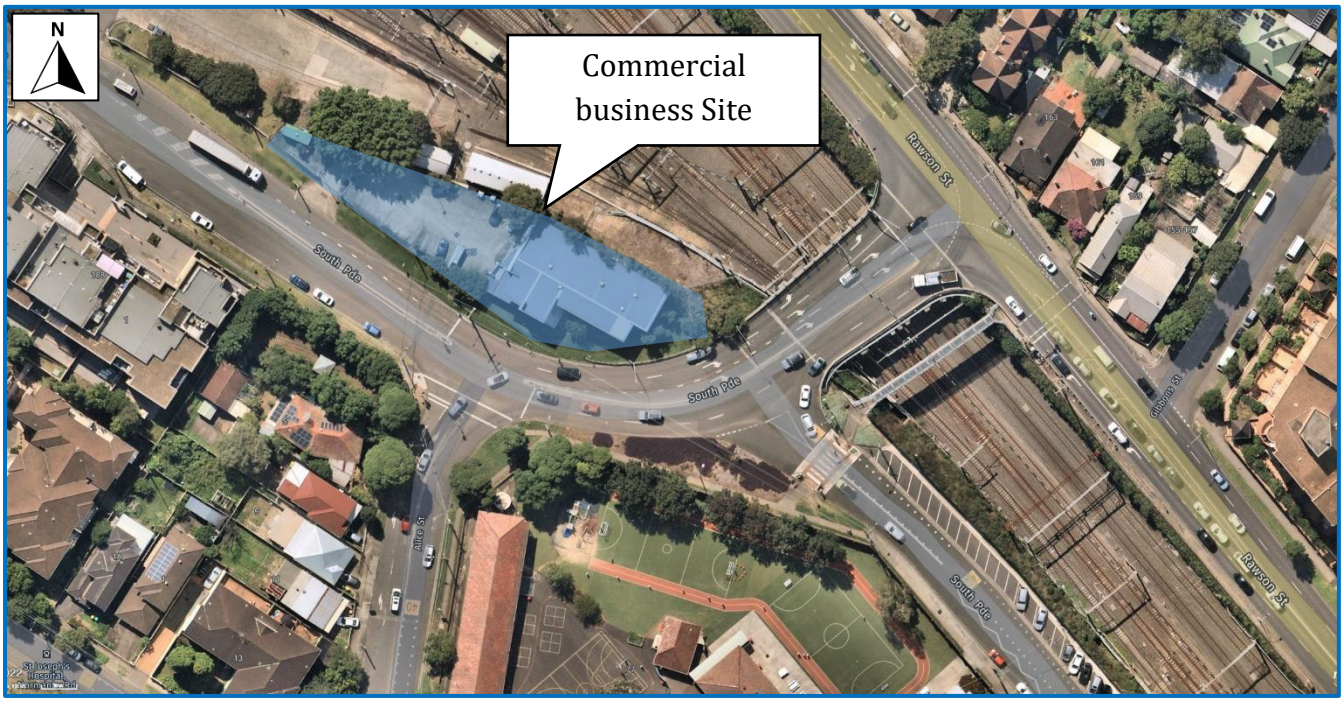

Figure 1: Location of the Proposed Commercial business site on Aerial

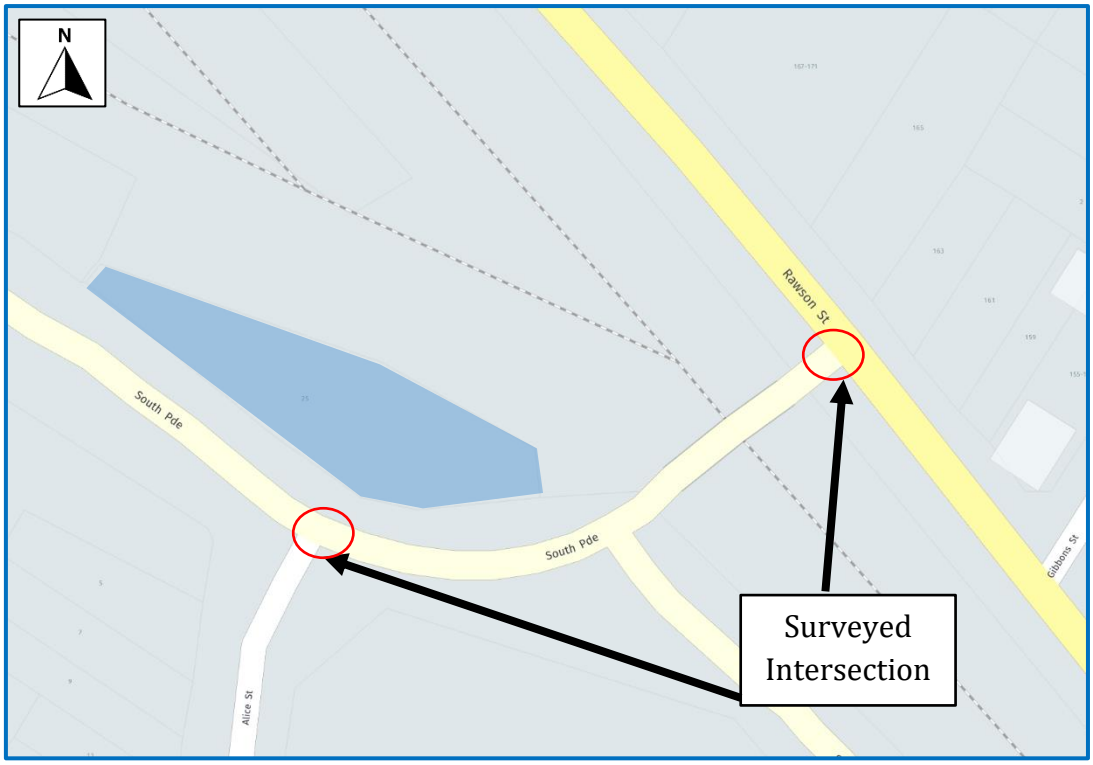

Figure 2: Location of the Proposed Commercial business site on Aerial

Figure 3: Photograph of the Site from South Parade

2.2. Pedestrian Crossings on South Parade

There are no pedestrian crossings on South Parade at the signalised intersection of South Parade with Alice Street as shown in Figure 3A. Currently it is not TfNSW policy of building new signalised intersections without pedestrian crossings.

In order to provide pedestrian safety and to encourage public transport use of any activity at the site, it is highly recommended that a pedestrian crossing on the western approach. The western approach of South Parade has lower traffic volumes than the eastern approach and would have better pedestrian safety,

Figure 3A: Photograph of the South Parade at the signalised intersection

2.3. Road Network

This section discusses the road network adjacent to the site.

South Parade is a major collector road with one lane each way at the midblock as expands to two lanes one way and three lanes other way between intersections with Alice Street and Rawson Street. The default speed limit is 50 km/hr. Time restricted on street parking of a various time limit is permitted on both side of the road during business hour. Figure 4a, 4b and 4c shows a photograph of South Parade.

Alice Street is local a collector road with two lanes towards South Parade, one lane away from South Parade. The default speed limit of 50 km/hr, school zone is located on the road thus during school

days on selected hours speed limit is 40 km/hr. Time restricted on street parking of one hour is permitted on both side of the road during business hour near the proposed Commercial business. Figure 4d shows a photograph of Alice Street.

Rawson Street is a sub-arterial road with two lanes of traffic on each way at the midblock and extra one right turn bay towards South Parade. The sign posted speed limit of 50 km/hr. On street parking is permitted on selective sections of this road. Figure 4e and 4f shows a photograph of Rawson Street.

Figure 4a: South Parade Looking West From intersection with Alice Street

Figure 4b: South Parade Looking towards intersection with Rawson Street

Figure 4c: South Parade towards Auburn Station from West

Figure 4d: Alice Street from intersection with South Parade towards South

Figure 4e: Rawson Street towards Auburn Station from West

Figure 4f: Rawson Street from East to West

2.4. Public Transport

The nearest bus stop is located less than 150 metres at Queen Street from the Proposed Commercial business on South Parade which is serviced by bus route 908. This bus route provide transport to suburbs including Yagoona, Birrong, Berala, Auburn, Merrylands, Guilford and South Granville. Figure 5a shows the bus route 908.

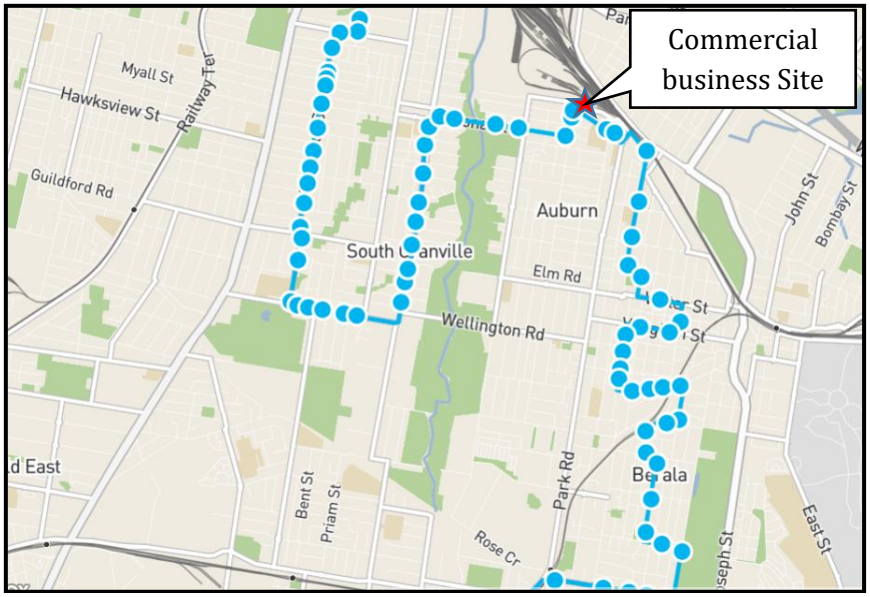

Figure 5a: Location of the Proposed Commercial business site in Relation to the bus route 908

Auburn Train Station and Bus Interchange is about 350 meters away from site at South Parade. From here, T1 North Shore & Western Line and T2 Inner West & Leppington Line operates to Northern and Western suburbs and Sydney City areas. Figure 5b shows the T2 Train Line map. Overall, the site has excellent access to public transport.

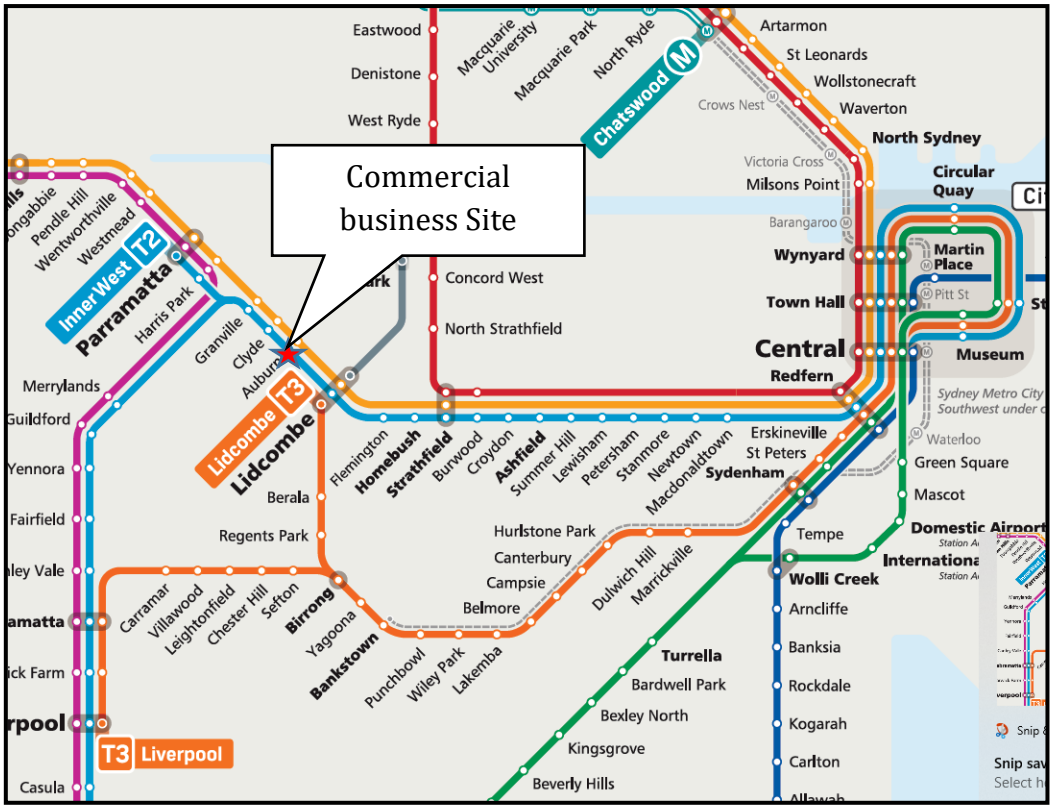

Figure 5a: Location of the Proposed Commercial business site in Relation to the Train network

2.5. Public Parking

On-street parking is available on South Parade west of Allice Street. There is more parking supply on the southern side of South Parade than on the northern side. The site visit showed a small number of vacant on-street car spaces near the proposed Commercial business.

2.6. Intersection Description

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

- Signalised intersection of South Parade with Alice Street
- Signalised intersection of Rawson Street with South Parade

External traffic travelling to and from the development is likely to travel through the intersection mentioned above.

The two intersections are “network” intersections in SIDRA.

The signalised intersection of South Parade with Alice Street is a three-leg intersection with all turn movements permitted. Except the right turn movement from South Parade into Alice Street.

pedestrians crossing is only provided on the south leg of the intersection. Figure 6a presents the layout of this intersection using SIDRA 9 – an industry standard intersection assessment software and Figure 6b represents the ariel view of the intersection.

The signalised intersection of Rawson Street with South Parade is a three-leg intersection with all turn movements permitted, Pedestrian crossings are provided only on the eastern leg of the intersection Figure 6c presents the layout of this intersection using SIDRA 9 and Figure 6d represents the ariel view of the intersection. The numbers on the lanes represent the length of short lanes in metres. The red lane represents the bus lane, and the green dashes lane represent the short right lane with parking.

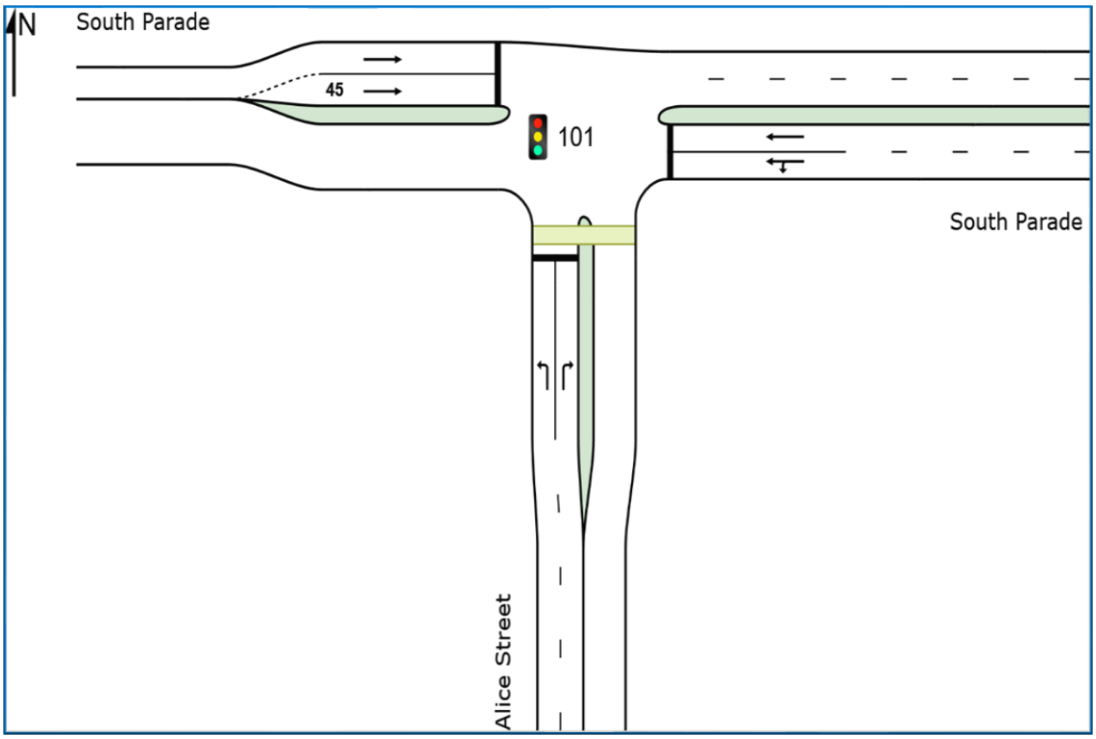

Figure 6a: Signalised intersection of South Parade with Alice Street (SIDRA)

Figure 6b: Signalised intersection of South Parade with Alice Street Aerial View

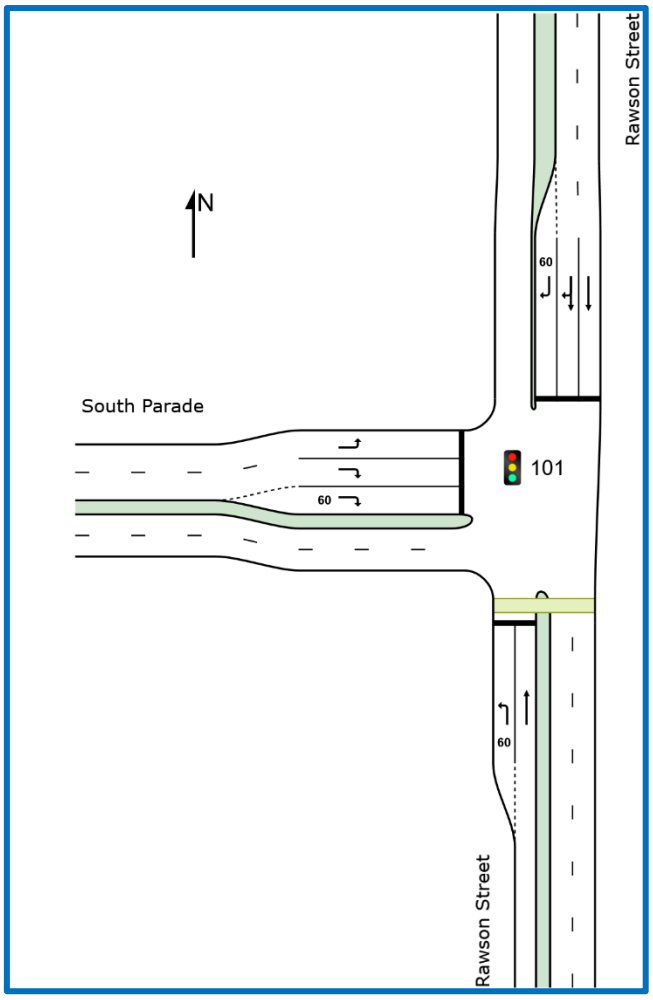

Figure 6c: Signalised intersection of Rawson Street with South Parade (SIDRA)

Figure 6d: Signalised intersection of Rawson Street with South Parade Aerial View

2.7. Existing Traffic Volume

As part of the traffic assessment, traffic counts have been undertaken at the above-mentioned intersections and the AM peak hours are identified accordingly. The AM peak hour is 8:00AM to 9AM and the PM peak hour is 5pm to 6pm. The traffic survey were undertaken on a weekday in April 2022. The following Figures present the traffic volumes in vehicles for the weekday peak hours. The bracketed numbers are trucks or buses. The un-bracketed numbers are cars.

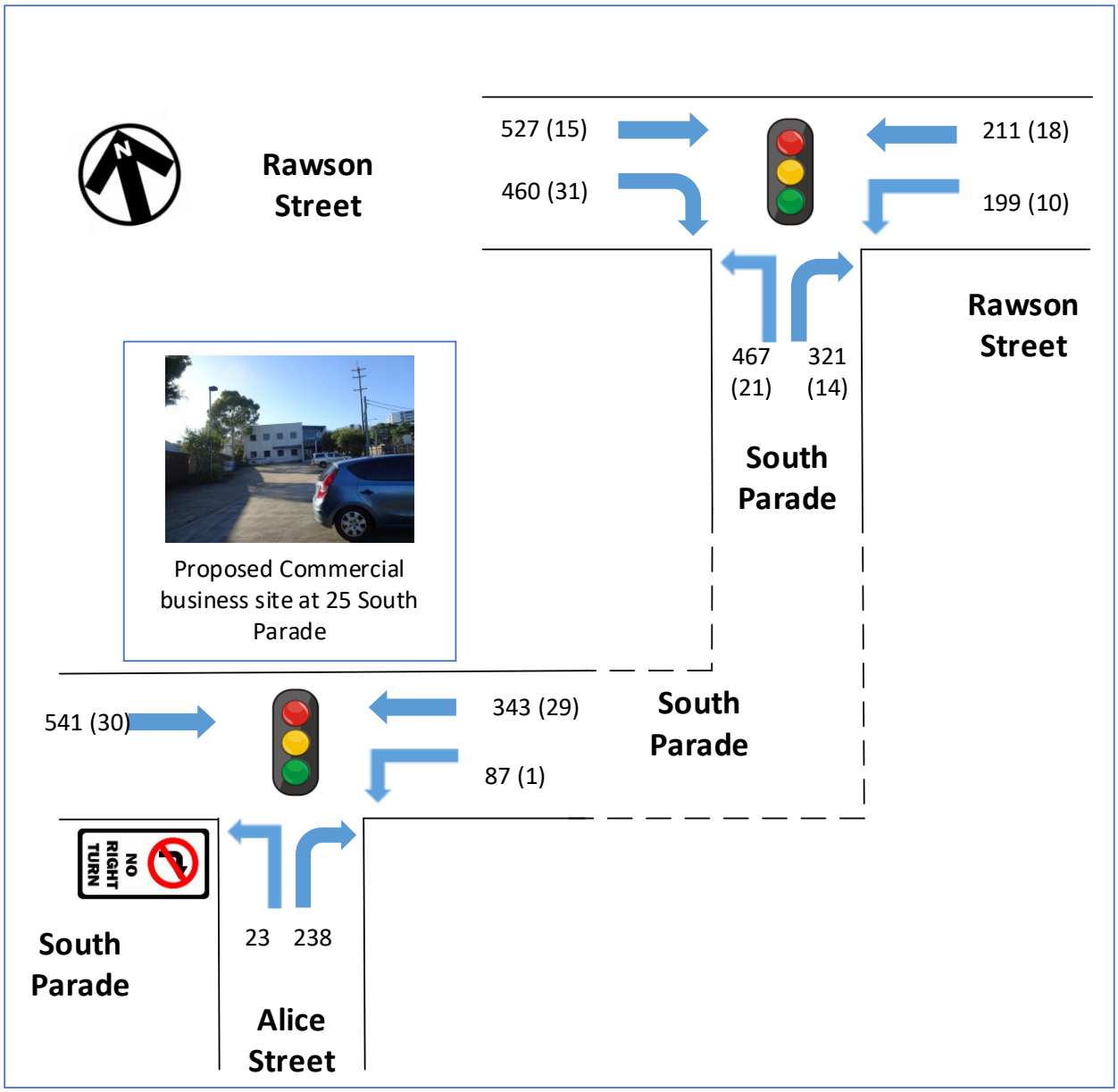

Figure 8a: Existing Weekday Traffic Volumes AM Peak Hour

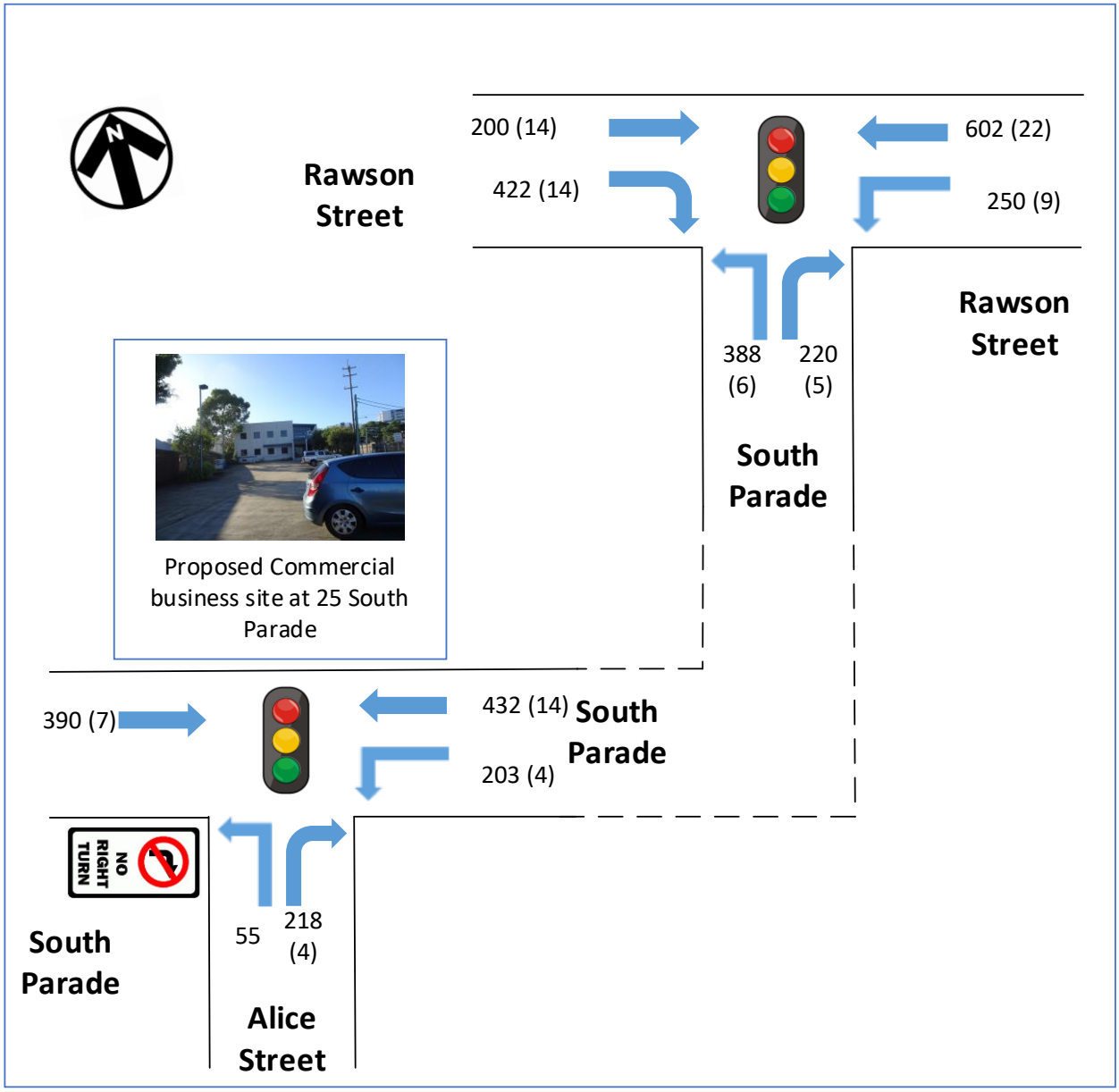

Figure 8b: Existing Weekday Traffic Volumes PM Peak Hour

2.8. Intersection Assessment with Existing Traffic

An intersection assessment has been undertaken for the:

- Signalised intersection of South Parade with Alice Street
- Signalised intersection of Rawson Street with South Parade

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 2.

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 2: 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 3: 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 intersection has been assessed as a single network and the results of the intersection analysis are as follows:

Intersection/ Performance criteria	AM Peak Hour Existing	PM Peak Hour Existing
South Parade /Alice Street		
LoS	A	B
AVD	5.8	10.1
DS	0.43	0.44
Rawson Street / South Parade		
LoS	B	C
AVD	20.4	23.4
DS	0.67	0.95

Table 4: Existing Intersection Performances

As presented in Table 4, the above mentioned intersection is currently operating at a good condition Overall, there is spare capacity to accommodate the additional traffic.

The full intersection results are presented in Appendix A.

2.9.Conclusion of existing conditions

The Proposed Commercial business is located in an area where there are a reasonable number of vacant car spaces on a weekday along South Parade and Alice Street.

The nearby intersection performs well with spare capacity to accommodate additional traffic.

The site has excellent access to public transport.

It is recommended that a pedestrian crossing is constructed on the western approach of the signalised intersection of South Parade with Alice Street to provide pedestrian access and safety.

In order to provide pedestrian safety and to encourage public transport use of any activity at the site, it is highly recommended that a pedestrian crossing on the western approach be constructed at the signalised intersection of South Parade with Alice Street. This is an existing infrastructure deficiency.

3.PROPOSED COMMERCIAL BUSINESS

A description of the re-zoning application for which approval is now sought features the following:

- Change zoning to allow for a medical premise and offices
- The total number of the consulting room is three rooms
- The total GFA of the office is approximately 520 m^2
- The expected operating hours for both offices and medical premise on weekday are 8:00AM–5:00PM and on Saturday from 8am to 12pm. Closed on Saturday and Sunday Public holidays.

If the re-zoning is approved, a separate Development Application with a detailed design will be submitted with compliance with Council's Local Environment Plan and Development Control Plan for all designing, planning and engineering.

3.1. Car Parking

An existing car park is located on the on the ground level. Access and egress to the ground level is via a two-way driveway runs off South Parade.

- 22 car spaces including one accessible parking space

4. PARKING REQUIREMENTS

4.1.Car Parking

The *Cumberland Development Control Plan 2021* stipulates minimum car parking rates for a medical premise and offices as follows:

- 3 spaces per consultant room for medical premise
- 1 space per 40m^2 GFA for offices

Table 4a below presents the minimum car parking requirement for the proposed medical premise and offices based on the car parking rates listed above

Use	Number Consulting rooms	Car parking rate	Car Spaces Required	Car Spaces Provided
Consultant room	3	3 spaces per consultant room	9	22
Offices	520	1 space per 40 m2	13	
Total			22	

Table 4: Summary of DCP Car Parking Requirements for a medical premise

As presented in Table 4 above, the proposed medical premise and offices complies with the minimum car parking requirement as required by the *Cumberland Development Control Plan 2021*.

Moreover, since the proposed medical premise is located within walking distance of Auburn train station it is estimated that the use of public transport will reduce the car parking requirements.

4.2.Accessible parking

The *Cumberland Development Control Plan 2021* does not outline the requirements of accessible parking area for a Commercial business/Medical premise. However, one accessible parking is provided.

4.3.Bicycle parking

Cumberland Development Control Plan 2021 states the following commercial (Businesses and office) bicycle rates as follows:

- 1 spaces per ten staff for staff bicycle spaces
- 1 space per 750m for visitors for areas more than 1,000m2

There is sufficient area at the ground level car park area to provide bicycle parking for staff and visitors for commercial and business premises.

5. TRAFFIC GENERATION AND IMPACT

Proposed Traffic Generation for Commercial business

The *NSW RTA Guide to Traffic Generating Developments 2002* outlines the trip generation rates for a medical premise/ Offices premise as follows

Medical premise

- 10.4 trips per 100m^2 for AM peak hour
- 8.8 trips per 100m^2 for PM peak hour
- The estimated consultant room size is 18m^2 per room and the total number of the consulting room is three rooms

Offices premise

- 2 trips per 100m^2 for AM and PM peak hour

Application of the above-mentioned trip rates to the proposed Commercial business results the peak hour trip generation presented in Table 5a and 5b below:

Peak Hour	Use	GFA(m2)	Trip Generation Rate (per 100m2)	Trip Generated
AM	Medical centre	54	10.4	6
PM			8.8	5

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

Peak Hour	Use	GFA(m2)	Trip Generation Rate (per 100m2)	Trip Generated
AM	Office	520	2	10
PM			2	10

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

5.1.Trip Distribution

The proposed Commercial business is a low trip generator in both AM and PM peak hours.

Table 6a shows the trip calculation from the proposed medical premise trips and distributed to the road network assuming 50 percent arrivals and 50 percent departure for the AM peak hour. The PM peak hour assumes 50 percent arrival and 50 percent departure

Table 6b shows the trip calculation from the proposed offices trips and distributed to the road network assuming and 80 percent departure for the offices and 20 percent arrivals. The PM peak hour assumes 20 percent arrival and 80 percent departure

Table 6c shows the total net trip calculation from the proposed Commercial business trips and distributed to the road network

	Peak Hour	Origin	Destination	Net Trips
Medical centre	AM	3	3	6
	PM	2	2	5

Table 6a: Summary of the proposed medical premise trip distribution

	Peak Hour	Origin	Destination	Net Trips
Office	AM	2	8	10
	PM	8	2	10

Table 6a: Summary of the proposed offices trip distribution

	Peak Hour	Origin	Destination	Net Trips
Commercial business	AM	5	11	16
	PM	11	4	15

Table 6a: Summary of the total trip distribution for the proposed Commercial business

5.2. Existing Traffic Volume with Commercial business traffic

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

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

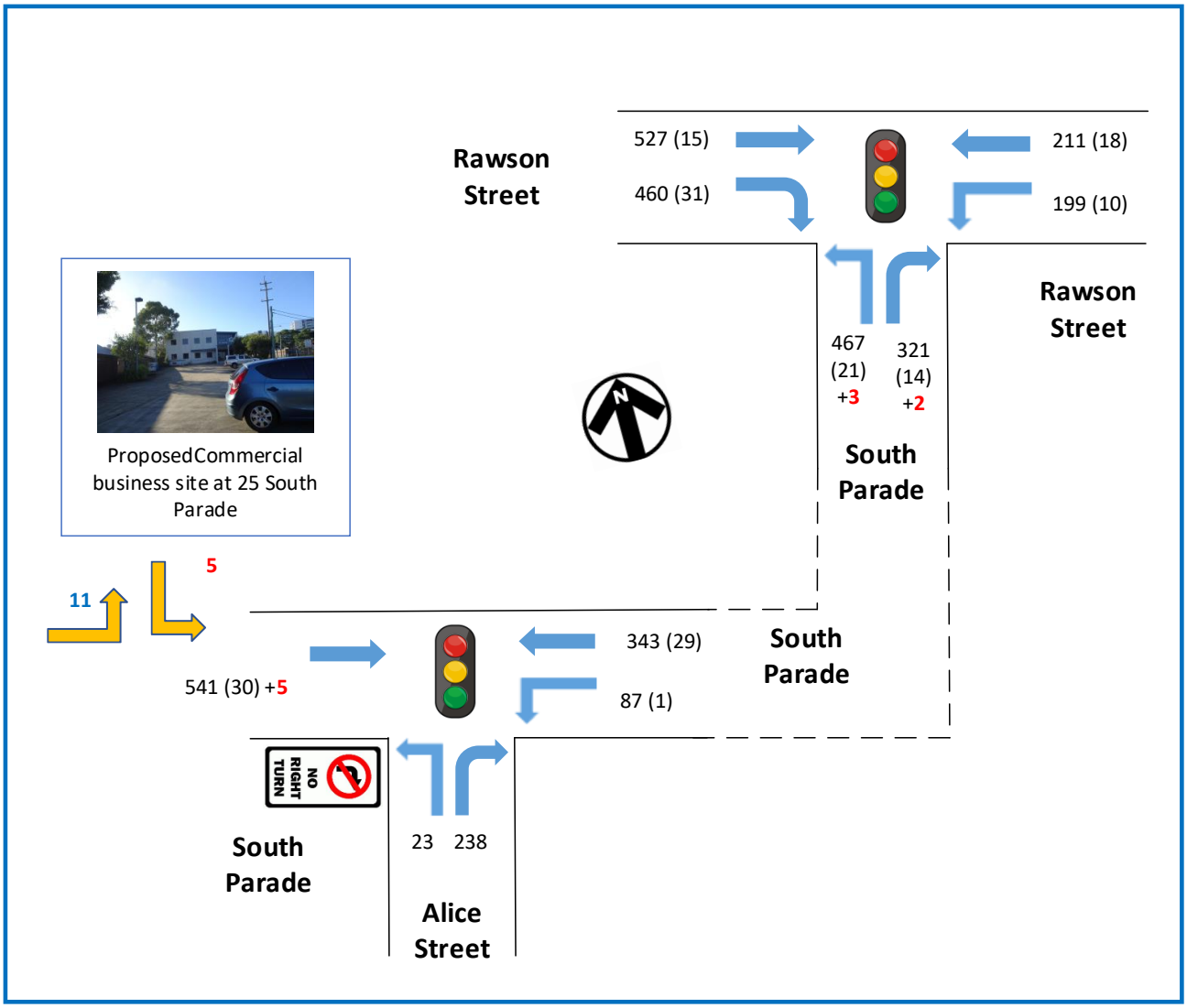

Figure 9a: Existing Weekday Traffic Volumes with Commercial business traffic AM Peak Hour

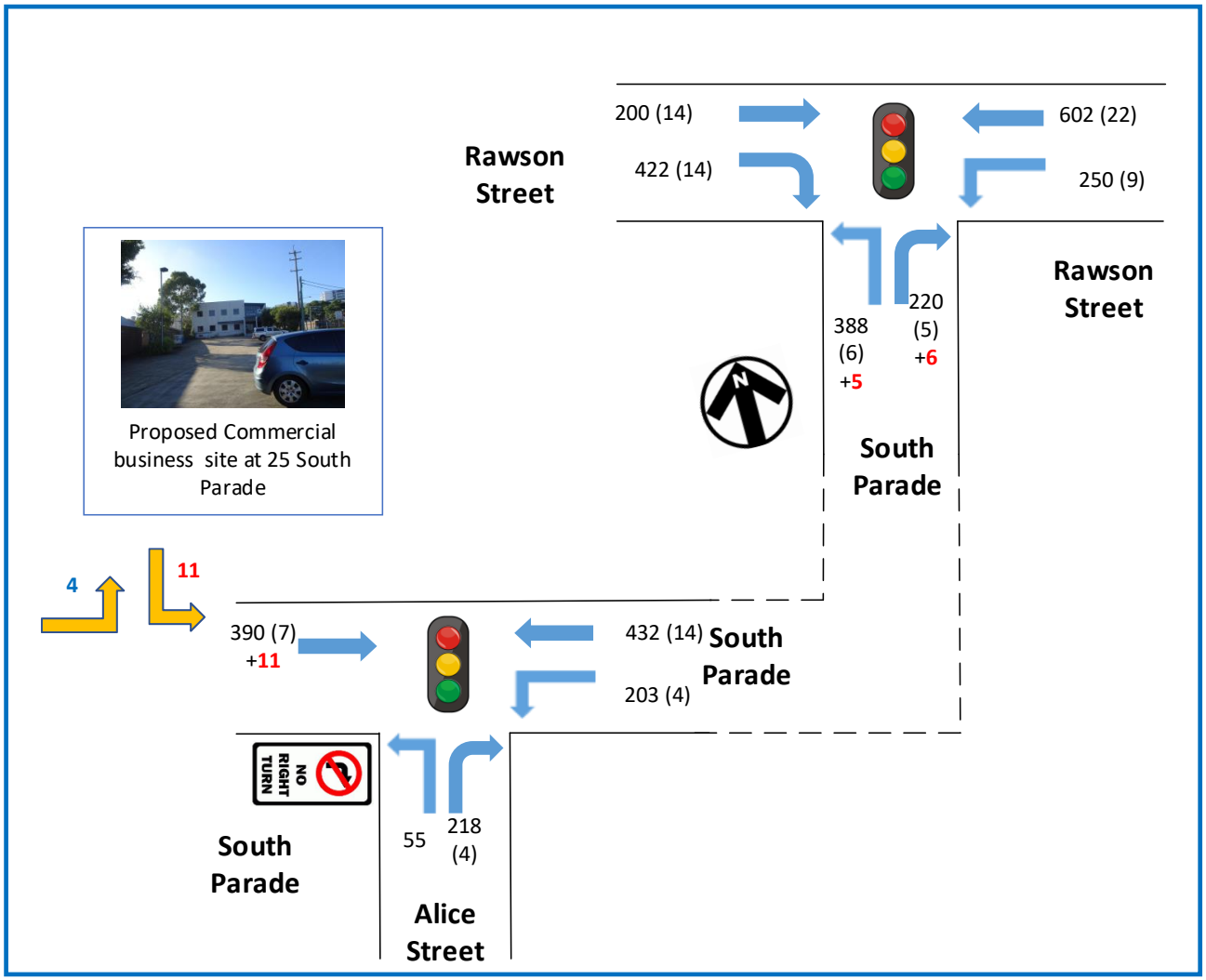

Figure 9b: Existing Weekday Traffic Volumes with Commercial business traffic PM Peak Hour

5.3. Traffic Impact

This section assesses the following intersections for the existing traffic with the Commercial business traffic. The intersections are assessed as a single network. The results of the intersection assessment are as follows:

Intersection/ Performance criteria	Performance with Existing Traffic		Projected Performance with Existing and Commercial business traffic	
	AM Peak Hour Existing	PM Peak Hour Existing	AM Peak Hour Projected	PM Peak Hour Projected
South Parade /Alice Street				
LoS	A	B	A	B
AVD	5.8	10.1	5.8	10.1
DS	0.43	0.44	0.43	0.44
Rawson Street / South Parade				
LoS	B	C	B	C
AVD	20.4	23.4	20.4	23.8
DS	0.67	0.95	0.68	0.95

Table 7: Projected intersection performance with d Commercial business traffic

As presented in Table 7 above, the additional trips generated by the proposed Commercial business 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 Commercial business traffic.

The traffic impacts of the proposed Commercial business are therefore considered acceptable.

The full SIDRA results are presented in Appendix B for the intersection assessment with the Commercial business traffic.

6. CONCLUSIONS

This traffic impact assessment reports relates to a proposed Commercial business for a re-zoning application at *25 South Parade in Auburn*. Based on the analysis and discussions presented in this report, the following conclusions are made:

- The Commercial business is located in a *General Industrial (IN1) zone* with excellent access to local public transport service. Vacant on-street parking spaces and a public car park can be located along South Parade and Alice Street.
- The two nearby intersections have good level of service with additional spare capacity
- In order to provide pedestrian safety and to encourage public transport use of any activity at the site, it is highly recommended that a pedestrian crossing on the western approach be constructed at the signalised intersection of South Parade with Alice Street. This is an existing infrastructure deficiency.
- The car parking requirements specified in the *Cumberland Development Control Plan 2021* can be met. The proposed car parking provisions are considered acceptable.
- The proposed Commercial business is expected to generate low number of additional trips in both AM and PM peak hours for a medical facility or commercial offices.
- 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 Commercial business are therefore considered acceptable.

There are no traffic engineering reasons why a re-zoning application for the proposed Commercial business at 25 South Parade, Auburn NSW should be refused.

APPENDIX A

INTERSECTION ASSESSMENT FOR EXISTING TRAFFIC

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Alice Street																
1	L2	All MCs	24	0.0	24	0.0		0.042	19.9	LOS B	0.3	2.1	0.72	0.67	0.72	30.6
3	R2	All MCs	251	0.0	251	0.0	*	0.433	22.5	LOS B	3.7	25.6	0.84	0.78	0.84	12.0
Approach			275	0.0	275	0.0		0.433	22.3	LOS B	3.7	25.6	0.83	0.77	0.83	14.9
East: South Parade																
4	L2	All MCs	93	1.1	93	1.1		0.086	4.3	LOS A	0.5	3.2	0.37	0.55	0.37	29.3
5	T1	All MCs	392	7.8	392	7.8	*	0.430	15.8	LOS B	5.8	43.2	0.88	0.65	0.88	34.6
Approach			484	6.5	484	6.5		0.430	13.6	LOS A	5.8	43.2	0.78	0.63	0.78	34.1
West: South Parade																
11	T1	All MCs	601	5.3	601	5.3		0.326	10.3	LOS A	3.3	24.4	0.65	0.56	0.65	36.8
Approach			601	5.3	601	5.3		0.326	10.3	LOS A	3.3	24.4	0.65	0.56	0.65	36.8
All Vehicles			1360	4.6	1360	4.6		0.433	13.9	LOS A	5.8	43.2	0.73	0.63	0.73	32.1

Table A1: Weekday Signalised Network Intersection Performance of South Parade with Alice Street for the AM Peak Hour

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Rawson Street																
1	L2	All MCs	220	4.8	220	4.8		0.619	29.8	LOS C	3.8	28.0	0.96	0.83	1.00	21.3
2	T1	All MCs	241	7.9	241	7.9	*	0.660	25.7	LOS B	4.3	32.0	0.97	0.85	1.04	34.7
Approach			461	6.4	461	6.4		0.660	27.7	LOS B	4.3	32.0	0.97	0.84	1.02	29.9
North: Rawson Street																
8	T1	All MCs	571	2.8	571	2.8		0.583	10.9	LOS A	7.2	51.3	0.74	0.66	0.74	42.1
9	R2	All MCs	517	6.3	517	6.3	*	0.678	29.9	LOS C	4.6	34.0	0.97	0.87	1.06	27.9
Approach			1087	4.5	1087	4.5		0.678	19.9	LOS B	7.2	51.3	0.85	0.76	0.89	35.5
West: South Parade																
10	L2	All MCs	514	4.3	514	4.3		0.458	14.7	LOS B	6.5	47.5	0.76	0.68	0.76	36.2
12	R2	All MCs	353	4.2	353	4.2	*	0.333	20.4	LOS B	2.3	16.5	0.74	0.74	0.74	28.2
Approach			866	4.3	866	4.3		0.458	17.0	LOS B	6.5	47.5	0.75	0.70	0.75	33.2
All Vehicles			2415	4.8	2415	4.8		0.678	20.4	LOS B	7.2	51.3	0.84	0.75	0.87	33.6

Table A2: Weekday signalised Network Intersection Performance of Rawson Street with South Parade for the AM Peak Hour

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Alice Street																
1	L2	All MCs	58	0.0	58	0.0		0.106	29.1	LOS C	1.1	7.9	0.76	0.71	0.76	26.3
3	R2	All MCs	234	1.8	234	1.8	*	0.432	32.1	LOS C	5.1	36.4	0.85	0.79	0.85	9.1
Approach			292	1.4	292	1.4		0.432	31.5	LOS C	5.1	36.4	0.83	0.77	0.83	14.1
East: South Parade																
4	L2	All MCs	218	1.9	218	1.9		0.139	3.5	LOS A	0.1	0.5	0.02	0.46	0.02	31.4
5	T1	All MCs	469	3.1	469	3.1	*	0.440	19.4	LOS B	10.1	72.6	0.86	0.58	0.86	32.2
Approach			687	2.8	687	2.8		0.440	14.3	LOS A	10.1	72.6	0.60	0.54	0.60	32.1
West: South Parade																
11	T1	All MCs	418	1.8	418	1.8		0.207	10.2	LOS A	3.0	21.2	0.52	0.44	0.52	36.9
Approach			418	1.8	418	1.8		0.207	10.2	LOS A	3.0	21.2	0.52	0.44	0.52	36.9
All Vehicles			1397	2.2	1397	2.2		0.440	16.7	LOS B	10.1	72.6	0.62	0.56	0.62	29.5

Table A3: Weekday Signalised Network Intersection Performance of South Parade with Alice Street for the PM Peak Hour

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Rawson Street																
1	L2	All MCs	273	3.5	273	3.5		0.342	32.0	LOS C	4.8	34.6	0.70	0.75	0.70	24.9
2	T1	All MCs	657	3.5	657	3.5	*	0.949	62.6	LOS E	23.8	171.8	1.00	1.24	1.39	26.3
Approach			929	3.5	929	3.5		0.949	53.6	LOS D	23.8	171.8	0.91	1.10	1.19	26.1
North: Rawson Street																
8	T1	All MCs	225	6.5	225	6.5		0.180	5.6	LOS A	2.2	16.2	0.39	0.33	0.39	45.6
9	R2	All MCs	459	3.2	459	3.2	*	0.901	58.8	LOS E	8.7	62.4	1.00	1.10	1.44	19.5
Approach			684	4.3	684	4.3		0.901	41.3	LOS C	8.7	62.4	0.80	0.85	1.09	25.9
West: South Parade																
10	L2	All MCs	415	1.5	415	1.5		0.516	27.6	LOS B	8.8	62.4	0.84	0.82	0.84	29.8
12	R2	All MCs	237	2.2	237	2.2	*	0.331	27.5	LOS B	2.1	14.9	0.67	0.71	0.67	24.7
Approach			652	1.8	652	1.8		0.516	27.6	LOS B	8.8	62.4	0.78	0.78	0.78	28.2
All Vehicles			2265	3.3	2265	3.3		0.949	42.4	LOS C	23.8	171.8	0.84	0.93	1.04	26.5

Table A4: Weekday signalised Network Intersection Performance of Rawson Street with South Parade for the PM Peak Hour

APPENDIX B

INTERSECTION ASSESSMENT WITH COMMERCIAL BUSINESS TRAFFIC

Vehicle Movement Performance																	
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed km/h
South: Alice Street																	
1	L2	All MCs	24	0.0	24	0.0		0.042	19.9	LOS B	0.3	2.1	0.72	0.67	0.72	30.6
3	R2	All MCs	251	0.0	251	0.0	*	0.433	22.5	LOS B	3.7	25.6	0.84	0.78	0.84	12.0
Approach			275	0.0	275	0.0		0.433	22.3	LOS B	3.7	25.6	0.83	0.77	0.83	14.9
East: South Parade																	
4	L2	All MCs	93	1.1	93	1.1		0.086	4.3	LOS A	0.5	3.2	0.37	0.55	0.37	29.3
5	T1	All MCs	392	7.8	392	7.8	*	0.430	15.8	LOS B	5.8	43.2	0.88	0.65	0.88	34.6
Approach			484	6.5	484	6.5		0.430	13.6	LOS A	5.8	43.2	0.78	0.63	0.78	34.1
West: South Parade																	
11	T1	All MCs	606	5.2	606	5.2		0.329	10.3	LOS A	3.4	24.6	0.65	0.56	0.65	36.7
Approach			606	5.2	606	5.2		0.329	10.3	LOS A	3.4	24.6	0.65	0.56	0.65	36.7
All Vehicles			1365	4.6	1365	4.6		0.433	13.9	LOS A	5.8	43.2	0.73	0.63	0.73	32.1

Table B1: Weekday Signalised Network Intersection Performance of South Parade with Alice Street for the AM Peak Hour with Commercial business Traffic

Vehicle Movement Performance																	
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Stop Rate	Eff. No. of Cycles	Aver. Speed km/h
South: Rawson Street																	
1	L2	All MCs	220	4.8	220	4.8		0.619	29.8	LOS C	3.8	28.0	0.96	0.83	1.00	21.3
2	T1	All MCs	241	7.9	241	7.9	*	0.660	25.7	LOS B	4.3	32.0	0.97	0.85	1.04	34.7
Approach			461	6.4	461	6.4		0.660	27.7	LOS B	4.3	32.0	0.97	0.84	1.02	29.9
North: Rawson Street																	
8	T1	All MCs	571	2.8	571	2.8		0.583	10.9	LOS A	7.2	51.3	0.74	0.66	0.74	42.1
9	R2	All MCs	517	6.3	517	6.3	*	0.678	29.9	LOS C	4.6	34.0	0.97	0.87	1.06	27.9
Approach			1087	4.5	1087	4.5		0.678	19.9	LOS B	7.2	51.3	0.85	0.76	0.89	35.5
West: South Parade																	
10	L2	All MCs	517	4.3	517	4.3		0.461	14.8	LOS B	6.6	47.9	0.76	0.68	0.76	36.2
12	R2	All MCs	356	4.1	356	4.1	*	0.336	20.4	LOS B	2.3	16.7	0.74	0.74	0.74	28.1
Approach			873	4.2	873	4.2		0.461	17.1	LOS B	6.6	47.9	0.75	0.70	0.75	33.2
All Vehicles			2421	4.7	2421	4.7		0.678	20.4	LOS B	7.2	51.3	0.84	0.75	0.87	33.6

Table B2: Weekday signalised Network Intersection Performance of Rawson Street with South Parade for the AM Peak Hour with Commercial business Traffic'

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Alice Street																
1	L2	All MCs	58	0.0	58	0.0		0.106	29.1	LOS C	1.1	7.9	0.76	0.71	0.76	26.3
3	R2	All MCs	234	1.8	234	1.8	*	0.432	32.1	LOS C	5.1	36.4	0.85	0.79	0.85	9.1
Approach			292	1.4	292	1.4		0.432	31.5	LOS C	5.1	36.4	0.83	0.77	0.83	14.1
East: South Parade																
4	L2	All MCs	218	1.9	218	1.9		0.139	3.5	LOS A	0.1	0.5	0.02	0.46	0.02	31.4
5	T1	All MCs	469	3.1	469	3.1	*	0.440	19.4	LOS B	10.1	72.6	0.86	0.58	0.86	32.2
Approach			687	2.8	687	2.8		0.440	14.3	LOS A	10.1	72.6	0.60	0.54	0.60	32.1
West: South Parade																
11	T1	All MCs	429	1.7	429	1.7		0.215	10.2	LOS A	3.1	22.1	0.52	0.44	0.52	36.8
Approach			429	1.7	429	1.7		0.215	10.2	LOS A	3.1	22.1	0.52	0.44	0.52	36.8
All Vehicles			1408	2.2	1408	2.2		0.440	16.7	LOS B	10.1	72.6	0.62	0.56	0.62	29.5

Table B3: Weekday Signalised Network Intersection Performance of South Parade with Alice Street for the PM Peak Hour with Commercial business Traffic

Vehicle Movement Performance																
Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %		Deg. Satn v/c	Aver. Delay sec	Level of Service	Aver. Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Rawson Street																
1	L2	All MCs	273	3.5	273	3.5		0.342	32.0	LOS C	4.8	34.6	0.70	0.75	0.70	24.9
2	T1	All MCs	657	3.5	657	3.5	*	0.949	62.6	LOS E	23.8	171.8	1.00	1.24	1.39	26.3
Approach			929	3.5	929	3.5		0.949	53.6	LOS D	23.8	171.8	0.91	1.10	1.19	26.1
North: Rawson Street																
8	T1	All MCs	225	6.5	225	6.5		0.180	5.6	LOS A	2.2	16.2	0.39	0.33	0.39	45.6
9	R2	All MCs	459	3.2	459	3.2	*	0.901	58.8	LOS E	8.7	62.4	1.00	1.10	1.44	19.5
Approach			684	4.3	684	4.3		0.901	41.3	LOS C	8.7	62.4	0.80	0.85	1.09	25.9
West: South Parade																
10	L2	All MCs	420	1.5	420	1.5		0.522	27.8	LOS B	9.0	63.6	0.85	0.82	0.85	29.7
12	R2	All MCs	243	2.2	243	2.2	*	0.340	27.9	LOS B	2.2	15.5	0.68	0.71	0.68	24.5
Approach			663	1.7	663	1.7		0.522	27.9	LOS B	9.0	63.6	0.79	0.78	0.79	28.1
All Vehicles			2277	3.2	2277	3.2		0.949	42.4	LOS C	23.8	171.8	0.84	0.93	1.04	26.5

Table B4: Weekday signalised Network Intersection Performance of Rawson Street with South Parade for the PM Peak Hour with Commercial business Traffic