



TRAFFIC AND PARKING IMPACT ASSESSMENT

St Paul's Catholic Primary School

18 GARRETT STREET, MOSS VALE

Prepared for: Catholic Education Diocese of Wollongong

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1. INTRODUCTION

ML Traffic Engineers was commissioned by Catholic Education Diocese of Wollongong to undertake a traffic and parking impact assessment of proposed alterations and additions to the primary school at 18 Garrett Street in Moss Vale.

The site is currently occupied by St Paul's Catholic Primary School, which has 181 children, 21 staff occupying 17 roles. There is a property opposite the school that is used by the school as car parking by staff and parents.

The school starts formal teaching from 8:40am to 3:10pm. Children can be dropped off from 8:20am and are supervised until teaching starts.

The primary vehicle entrance to the school is on Garrett Street, with an additional external road access from Innes Road used for bus pick-up.

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

- ➔ Background and existing traffic and parking conditions of the site
- ➔ Assessment of the public transport network within the vicinity of the site
- ➔ Adequacy of car parking provision
- ➔ The projected traffic generation of the school and;
- ➔ The transport impact of the school on the surrounding road network.

In the course of preparing this assessment, the 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 SITE

2.1. Location and Land Use

The school is located at 18 Garrett Street, Moss Vale. The school is situated north of Moss Vale Train Station and Coles Moss Vale. Saint Paul's Parish Catholic Church is located next to the school. The immediate surroundings of the site consist of a mixture of residential areas.

Figures 1 and 2 show the location of the school 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 Garrett Street.



Figure 1: Location of the St Paul's Catholic Primary School on Aerial

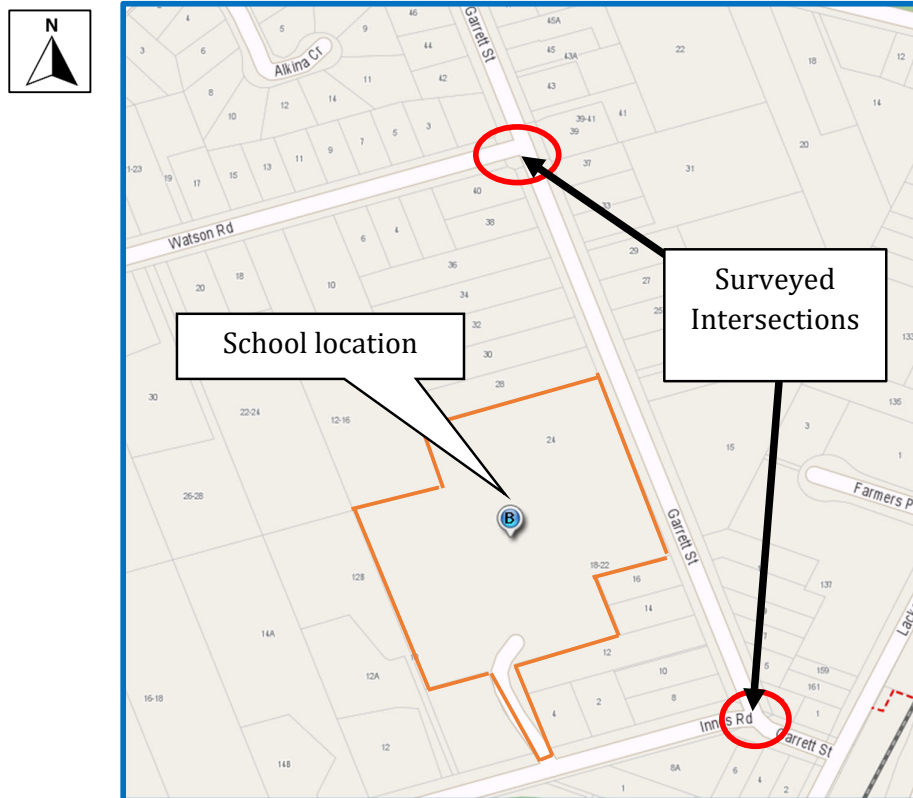


Figure 2: Location of the school on Aerial



Figure 3B: Photograph of the Primary School (Garrett Street frontage)

2.2. Road Network

This section discusses the road network adjacent to the school.

Garrett Street is a local road with one lane each way and runs from Park Road to the north and ends at Lackey Road to the southeast. School zone speed limit restriction of 40km/hr is enforced on school days near the school. The sign posted speed limit is 50km/hr. A bus zone is located adjacent to the school.

Car parking is permitted on eastern side adjacent to the school with two-minutes restrictions from 8am to 9:30am and 2:30pm-4pm on school days. On-street parking on the western side of the of Garrett is time un-restricted. Figure 4a shows a photograph of Castlereagh Street.

Watson Road is a local road with one lane each way and runs east-west from Watson Road to the east to Mile Street to the west. The default posted speed limit is 50km/hr. Time unrestricted on-street parking is permitted on both sides of the road. Figure 4b shows a photograph of Watson Road.

Innes Road is a local road with one lane each way and runs east-west from Garrett Street to the east to Berrima Road to the west. The sign posted speed limit is 50km/hr. School time speed limit restriction of 40km/hr is enforced on weekdays. On-street parking is provided in the form of a. Figure 4c shows a photograph of Thirlmere Way.



**Figure 4a: Garrett Street: Looking North
from the intersection with Innes Road**



**Figure 4b: Watson Road: Looking West
from the intersection with Garrett Street**



Figure 4c: Innes Road: Looking West from the intersection with Garrett Street

2.3.Public Transport

School Bus Service

Site observations confirmed that four school buses service the site during both morning drop-off and afternoon pick-up periods. A bus zone is provided to accommodate these movements adjacent to the school. The school bus zone ensures that bus operations are efficiently managed and do not impact on the availability or capacity of general on-street parking along Garrett Street.

Train Station

Moss Vale Train Station is located approximately 300 metres from the site (walking distance). The station is serviced by the Southern Highlands Line (SHL), providing regular connections to Moss Vale, Campbelltown, and Sydney. While the train station supports the potential for sustainable travel options, it is noted that students do not utilise the train for their daily travel to and from the school.

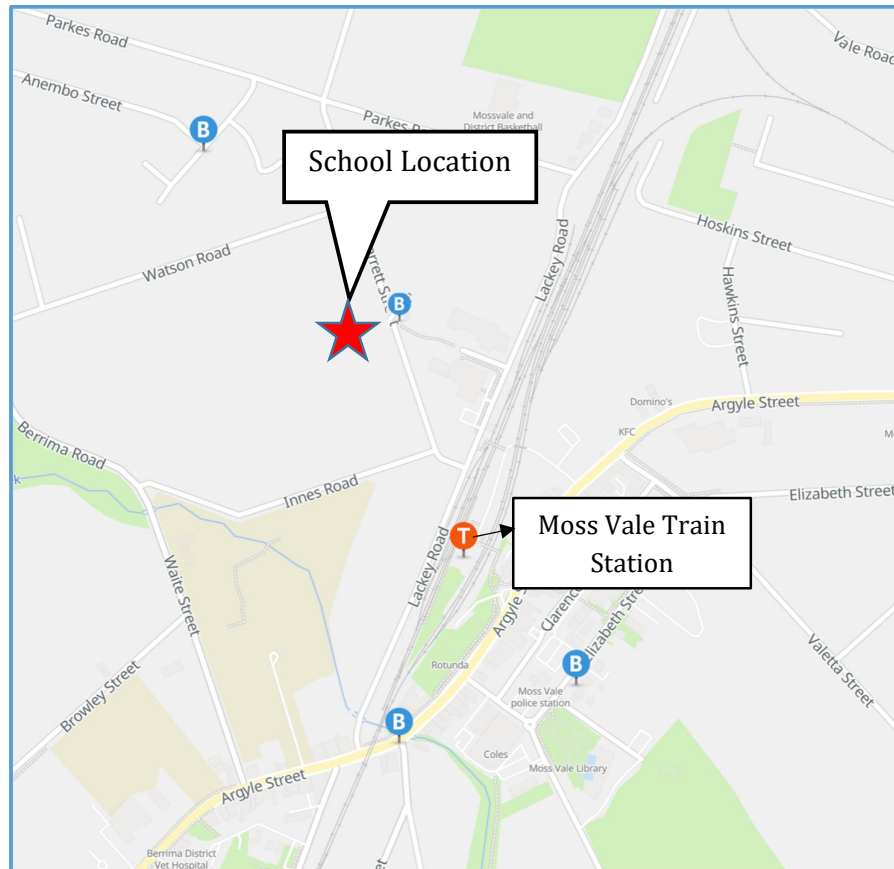


Figure 5: Location of the site in Relation to the Public Transport

2.4. Parking Conditions

On-street Parking

St Paul's Catholic Primary School is situated within a low-density residential area where on-street parking is generally permitted along Garrett Street. Parking is unrestricted on one side of the street, while the opposite side is subject to school zone time restrictions—allowing a maximum of two minutes parking between 8:00 a.m. to 9:30 a.m. and 2:30 p.m. to 4:00 p.m. on weekdays. These restricted sections function as designated drop-off and pick-up zones during school hours.



Figure 6: Parking restriction sign for school drop-off pick-up zone

Informal Off-Street Parking Area

The informal parking area is opposite the school on Garrett and is unconstructed, with no surface treatment or line marking, and functions as a makeshift lot that accommodates vehicles in an ad hoc manner without defined bays or access controls. Figure 1 shows a photograph of this parking.

This parking area is almost only used by staff parking in this area.



Figure 6: Informal Parking Area

2.5. Transport Mode Survey

A transport mode survey was conducted to identify how students at St Paul's Catholic Primary School travel to and from the school. Responses were collected from various year levels, and the data reveals a strong reliance on private vehicles. A total of 177 students were surveyed and represent almost all of the students who were at the school. Table 1 presents a tabulated result of the survey. The survey summary is as follows:

- 120 students (approx. 68%) arrive by car,
- 47 students (approx. 27%) travel by bus, and
- 10 students (approx. 6%) either walk or ride a bicycle to school.
-

Uqjfxjstr rfyj% ~tzwlwfij%	Mt r fs~% xyzijsyx% htr jyt% xhmttg~% hfwD%	Mt r fs~% xyzijsyx% htr jyt% xhmttg~% gzxD%	Mt r fs~% xyzijsyx% htr jyt% xhmttg~% fqrslaw wisl% grpjxD%
^jfw87%	78%	:	6%
^jfw89%	75%	;	6%
^jfw88%	69%	>	5%
^jfw87%	67%	66%	8%
^jfw86%	6=	;	7%
Prsijwlfwjjs%	78%	:	6%
^jfw86%	65%	:	7%
YTYFQ	675%	9<	65%

Table 1: Transport mode of the students

The survey results show a high percentage of travel by private car. There were no students travelling by train.

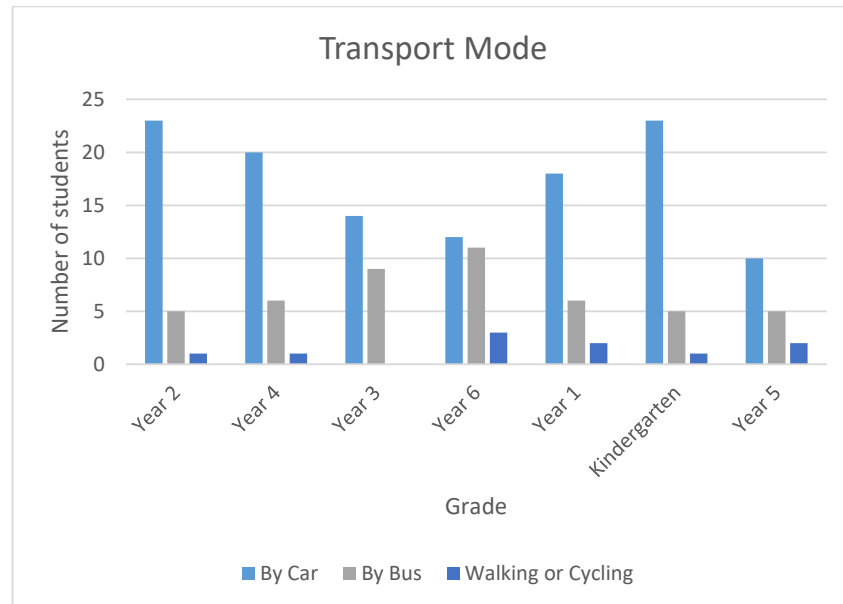


Figure 7: Transport mode of the students

2.6. Parking Survey

Parking surveys were conducted during the weekday morning drop-off period to assess on-street parking activity on Garrett Street. The parking survey was for the school drop hour and undertaken on March 26th 2025.

The school does not provide on-site parking for staff and parents within the school grounds. There is an informal parking area located across the road for staff parking. The informal parking lot is on the eastern side of Garrett Street near the school, as shown in Table 1 and Figure 8. Additionally, there is a separate access point to the school via Innes Road, which is used for school bus pick-up.

The parking event survey was conducted at the time when the children alighted the car with the results summarised in 10-minute interval between 8:00 a.m. and 9:00 a.m. along Garrett Street. Column 2 of the survey data records the number of parent cars involved in student drop-offs, while Column 3 captures staff parking events. The survey observed a total of 112 student and 14 staff drop-off events during this period.

Time Period	Number of Parents' Cars	Number of Staff
8:00-8:10	1	6
8:10-8:20	6	14
8:20-8:30	17	0
8:30-8:40	27	0
8:40-8:50	20	0
8:50-9:00	11	0
Total	82	20

Table 2: Parking Events of the School in AM peak hour

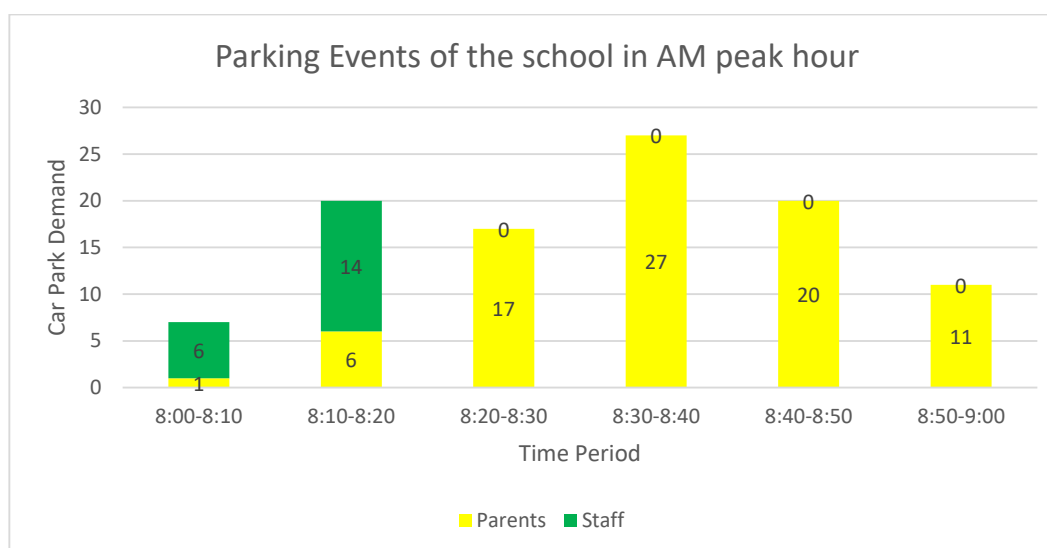


Figure 3: Parking Events of the School in AM peak hour

Each parking space can typically accommodate two vehicles during a 10-minute interval, as one vehicle leave, and another drive can occupy the car space approximately every five minutes. Based on this rate, one car space can have two parking events.

Table 3 presents the car parking between 8am to 9am for staff and parents car parking in ten minute periods. The majority of parents, except four, parked on-street. Four parents parked in the informal parking area.

Time Period	Number of Parents' Cars	Number of Staff
8:00-8:10	1	6
8:10-8:20	3	14
8:20-8:30	9	14
8:30-8:40	14	14
8:40-8:50	10	14
8:50-9:00	6	14

Table 3: Car Parking Demand of the school in the School Drop Off Hour

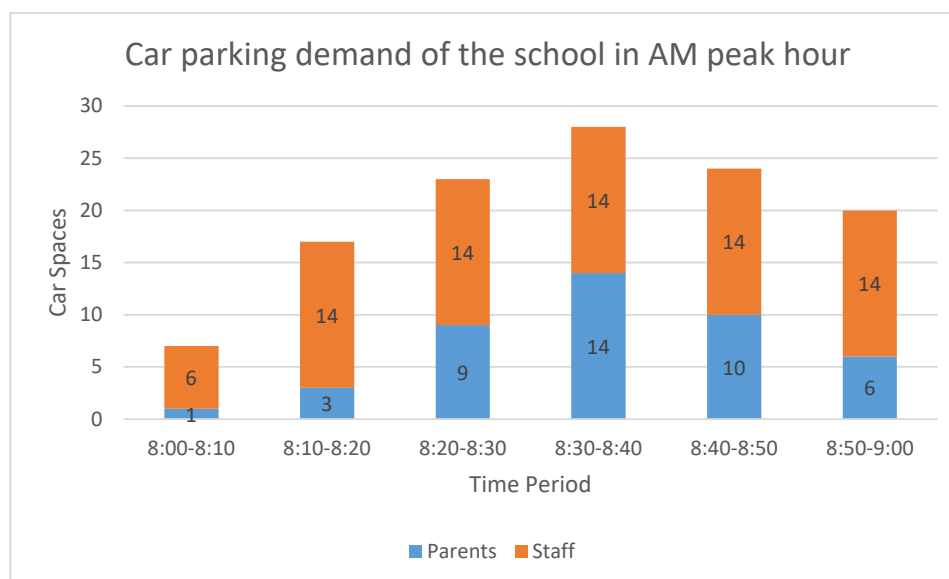


Figure 9: Parking demand of the school in AM peak hour

The parking survey observed that approximately 120 students were dropped off by car. According to the transport mode survey, an estimated 47 students travel to school by bus with four bus services in the AM peak hour, while 10 students walk or ride a bicycle.

2.7. Intersection Description

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

- ➔ Stop Intersection of Garrett Street with Innes Road
- ➔ Priority Intersection of Garrett Street with Watson Road

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

The stop intersection of Garrett Street with Innes Road is a three-leg intersection with all turn movements permitted. Drivers on Innes Road are required to give way to vehicles on Garrett Street. Figure 7a presents the layout of the intersection using SIDRA – an industry standard intersection software. Figure 7b presents an aerial view of this intersection.

The priority intersection of Garrett Street with Watson Road is a three-leg intersection with all turn movements permitted. Drivers on Watson Street need to give way to traffic on Garrett Street. Figure 7c presents the layout of the intersection using SIDRA. Figure 7d presents an aerial view of this intersection.

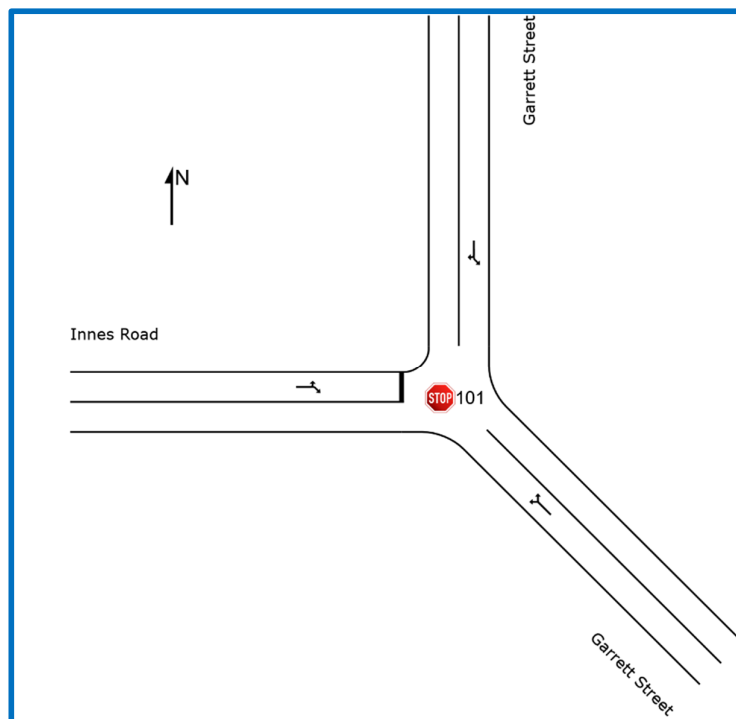


Figure 9a: Stop Intersection of Garrett Street with Innes Road (SIDRA)



Figure 9b: Stop Intersection of Garrett Street with Innes Road Aerial View

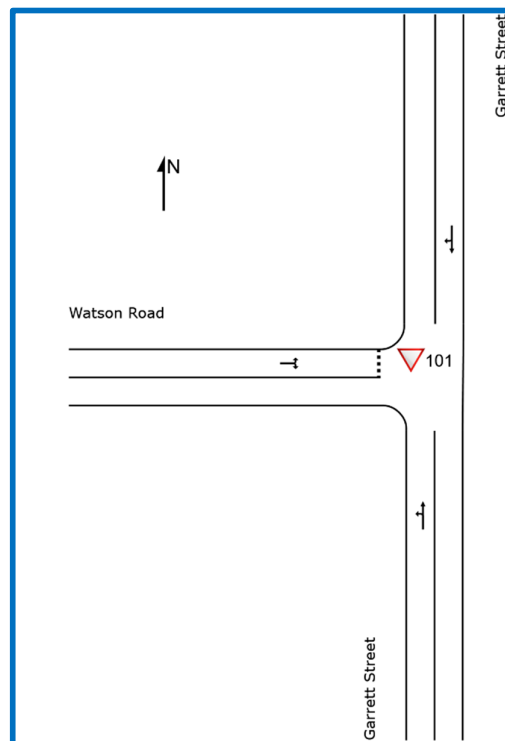


Figure 9c: Priority Intersection of Garrett Street with Watson Road (SIDRA)



Figure 9d: Priority Intersection of Garrett Street with Watson Road Ariel View

2.8. Existing Traffic Volumes

As part of the traffic assessment, traffic counts have been undertaken at the above-mentioned intersections and the school AM and PM peak hours are identified accordingly. The AM peak hour is 8:00 to 9:00 and the PM peak hour is 2:45pm to 3:45pm. The traffic survey was undertaken on the 26th March 2025.

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.

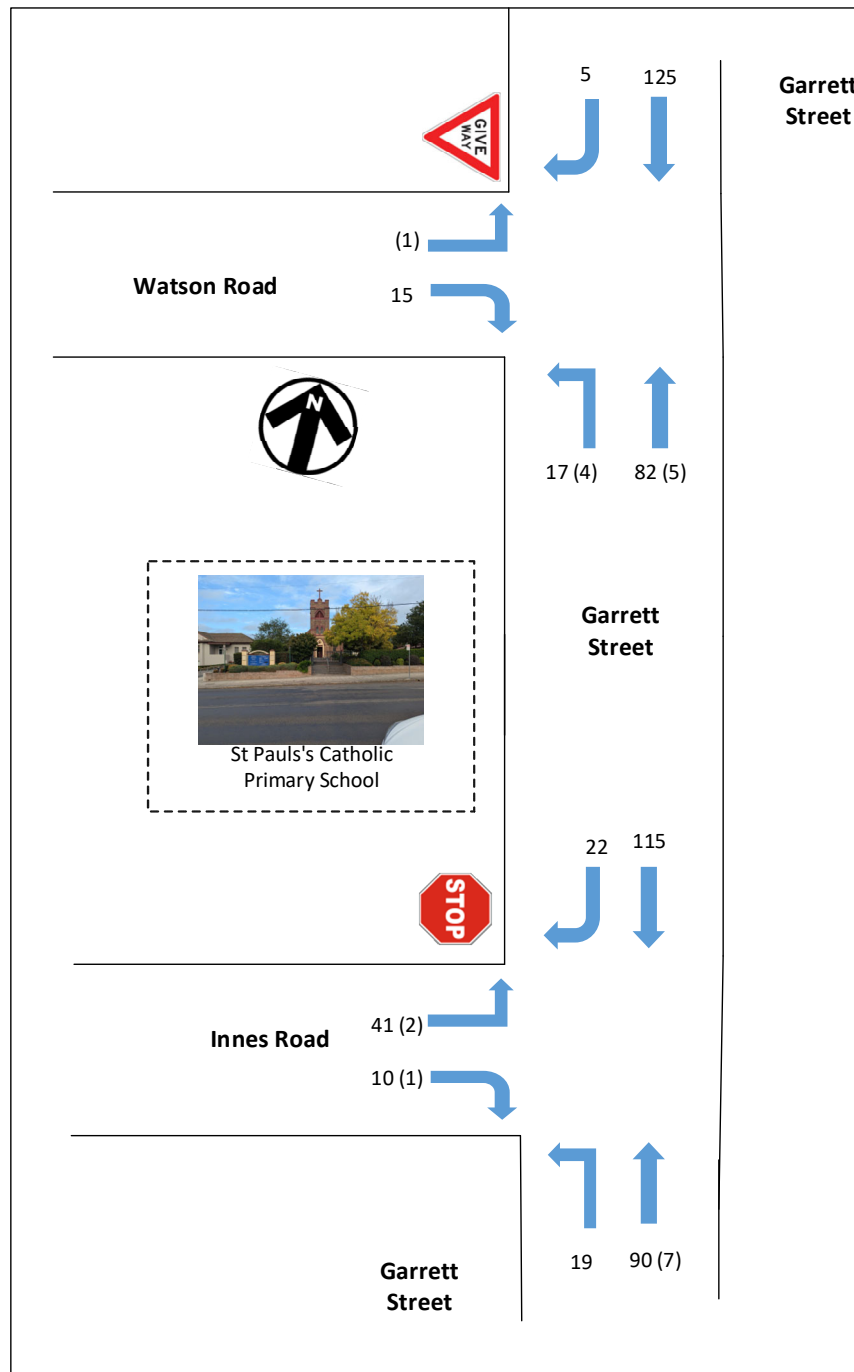


Figure 10a: Existing Weekday Traffic Volumes AM Peak Hour

2.9. Intersection Assessment with Existing Traffic

An intersection assessment has been undertaken for the:

- ➡ Stop Intersection of Garrett Street with Innes Road
- ➡ Priority Intersection of Garrett Street with Watson Road

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 3.

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 3: 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 4: 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
Garrett Street / Watson Road		
LoS	N/A (worse case A)	N/A (worse case A)
AVD	0.9	1
DS	0.065	0.072
Garrett Street / Innes Road		
LoS	N/ A (worse case A)	N/ A (worse case A)
AVD	4.7	5.2
DS	0.072	0.088

Table 5: Existing Intersection Performances

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

2.10.CONCLUSION OF EXISTING CONDITIONS

The St Paul's Catholic Primary has a high proportion of parents dropping off and picking via private car. The next most used transport mode is the school bus with four drop off and pick up in the morning and afternoon

On-site parking is not provided within the school.

Nearly all parents park on street. Staff park opposite the school in an informal parking area.

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

The site has good access to public transport.

3. PROPOSED ALTERATIONS AND ADDITIONS TO THE PRIMARY SCHOOL

The development application (DA 25/0261) seeks consent for alterations and additions to the existing school buildings at St Paul's Catholic Primary School, located at 18 Garrett Street, Moss Vale (Lot 11 DP 1174589). The proposed works are intended to modernise and improve existing infrastructure for equity and accessibility purposes.

The proposal does not involve any changes to student or staff numbers, nor does it include modifications to existing travel and parking arrangements.

The school has historically operated without on-site parking within Lot 11 DP 1174589. Current staff parking occurs on an informal lot across the road, located on Lot 3 DP 628461, which is not part of the development application. This arrangement has been in place for many years and will remain unchanged as part of this application.

As the proposed development does not impact parking supply, school population, or traffic generation, an assessment against the car parking requirements of Section 11 – Educational Establishments of the Moss Vale Township Development Control Plan is not considered necessary. The proposal is limited to building upgrades only and does not create additional parking demand.

4. CONCLUSIONS

This traffic impact assessment reports relates to St Paul's Catholic Primary School at 18 Garrett Street, Moss Vale. Based on the analysis and discussions presented in this report, the following conclusions are made:

- ➡ The school site is located in a low density area with good access to local public transport service
- ➡ The parking survey showed a high reliance of on-street parking on Garrett Street by parents and staff.
- ➡ The surrounding intersections currently operates at excellent level of services for the drop off and pick up hour with no noticeable queue, delays or congestion.
- ➡ The proposed alterations and additions to the school do not change the student and staff numbers and hence the travel to and from school or the parking available for staff or parents.

There are no traffic engineering reasons why a development consent for St Paul's Catholic Primary School at 18 Garrett Street, Moss Vale should be refused.

APPENDIX A

INTERSECTION ASSESSMENT FOR EXISTING 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					
South: Garrett Street																
1	L2	All MCs	22	19.0	22	19.0	0.057	4.7	LOS A	0.0	0.0	0.00	0.10	0.00	47.9	
2	T1	All MCs	92	5.7	92	5.7	0.057	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.5	
Approach			114	8.3	114	8.3	0.057	0.9	NA	0.0	0.0	0.00	0.10	0.00	49.2	
North: Garrett Street																
8	T1	All MCs	132	0.0	132	0.0	0.065	0.0	LOS A	0.0	0.3	0.02	0.02	0.02	49.8	
9	R2	All MCs	5	0.0	5	0.0	0.065	4.7	LOS A	0.0	0.3	0.02	0.02	0.02	48.6	
Approach			137	0.0	137	0.0	0.065	0.2	NA	0.0	0.3	0.02	0.02	0.02	49.8	
West: Watson Road																
10	L2	All MCs	2	50.0	2	50.0	0.017	5.4	LOS A	0.1	0.4	0.27	0.52	0.27	44.7	
12	R2	All MCs	16	0.0	16	0.0	0.017	5.4	LOS A	0.1	0.4	0.27	0.52	0.27	45.3	
Approach			18	5.9	18	5.9	0.017	5.4	LOS A	0.1	0.4	0.27	0.52	0.27	45.3	
All Vehicles			268	3.9	268	3.9	0.065	0.9	NA	0.1	0.4	0.03	0.09	0.03	49.2	

Table A1: Weekday Priority Intersection of Garrett Street with Watson Road 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. Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]					
			veh/h	%	veh/h	%				v/c	sec					
SouthEast: Garrett Street																
21a	L1	All MCs	20	0.0	20	0.0	0.070	4.0	LOS A	0.3	2.5	0.09	0.48	0.09	46.2	
23a	R1	All MCs	102	7.2	102	7.2	0.070	3.8	LOS A	0.3	2.5	0.09	0.48	0.09	46.2	
Approach			122	6.0	122	6.0	0.070	3.9	NA	0.3	2.5	0.09	0.48	0.09	46.2	
North: Garrett Street																
7a	L1	All MCs	121	0.0	121	0.0	0.072	3.9	LOS A	0.1	1.0	0.03	0.51	0.03	46.2	
9	R2	All MCs	23	0.0	23	0.0	0.072	4.6	LOS A	0.1	1.0	0.03	0.51	0.03	46.2	
Approach			144	0.0	144	0.0	0.072	4.0	NA	0.1	1.0	0.03	0.51	0.03	46.2	
West: Innes Road																
10	L2	All MCs	45	4.7	45	4.7	0.049	8.0	LOS A	0.2	1.4	0.23	0.92	0.23	44.2	
12a	R1	All MCs	12	9.1	12	9.1	0.049	9.2	LOS A	0.2	1.4	0.23	0.92	0.23	44.3	
Approach			57	5.6	57	5.6	0.049	8.3	LOS A	0.2	1.4	0.23	0.92	0.23	44.3	
All Vehicles			323	3.3	323	3.3	0.072	4.7	NA	0.3	2.5	0.09	0.57	0.09	45.9	

Table A2: Weekday Stop Intersection of Garrett Street with Innes Road 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. Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]					
			veh/h	%	veh/h	%				v/c	sec					veh
South: Garrett Street																
1	L2	All MCs	26	0.0	26	0.0	0.072	4.6	LOS A	0.0	0.0	0.00	0.10	0.00	48.2	
2	T1	All MCs	122	5.2	122	5.2	0.072	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.4	
Approach			148	4.3	148	4.3	0.072	0.8	NA	0.0	0.0	0.00	0.10	0.00	49.2	
North: Garrett Street																
8	T1	All MCs	102	1.0	102	1.0	0.053	0.0	LOS A	0.1	0.4	0.04	0.05	0.04	49.7	
9	R2	All MCs	7	0.0	7	0.0	0.053	5.0	LOS A	0.1	0.4	0.04	0.05	0.04	48.5	
Approach			109	1.0	109	1.0	0.053	0.4	NA	0.1	0.4	0.04	0.05	0.04	49.6	
West: Watson Road																
10	L2	All MCs	3	0.0	3	0.0	0.017	4.9	LOS A	0.1	0.4	0.27	0.53	0.27	45.3	
12	R2	All MCs	16	0.0	16	0.0	0.017	5.4	LOS A	0.1	0.4	0.27	0.53	0.27	45.3	
Approach			19	0.0	19	0.0	0.017	5.3	LOS A	0.1	0.4	0.27	0.53	0.27	45.3	
All Vehicles			277	2.7	277	2.7	0.072	1.0	NA	0.1	0.4	0.04	0.11	0.04	49.1	

Table A3: Weekday Priority Intersection of Garrett Street with Watson Road 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. Rate	Aver. No. of Cycles	Aver. Speed
			[Total	HV]	[Total	HV]				[Veh.	Dist]					
			veh/h	%	veh/h	%				v/c	sec					veh
SouthEast: Garrett Street																
21a	L1	All MCs	16	0.0	16	0.0	0.068	4.0	LOS A	0.3	2.3	0.06	0.48	0.06	46.3	
23a	R1	All MCs	104	4.0	104	4.0	0.068	3.8	LOS A	0.3	2.3	0.06	0.48	0.06	46.3	
Approach			120	3.5	120	3.5	0.068	3.8	NA	0.3	2.3	0.06	0.48	0.06	46.3	
North: Garrett Street																
7a	L1	All MCs	105	1.0	105	1.0	0.059	3.9	LOS A	0.1	0.6	0.02	0.51	0.02	46.2	
9	R2	All MCs	14	0.0	14	0.0	0.059	4.6	LOS A	0.1	0.6	0.02	0.51	0.02	46.2	
Approach			119	0.9	119	0.9	0.059	4.0	NA	0.1	0.6	0.02	0.51	0.02	46.2	
West: Innes Road																
10	L2	All MCs	55	3.8	55	3.8	0.088	8.0	LOS A	0.3	2.4	0.25	0.95	0.25	44.2	
12a	R1	All MCs	42	0.0	42	0.0	0.088	8.6	LOS A	0.3	2.4	0.25	0.95	0.25	44.4	
Approach			97	2.2	97	2.2	0.088	8.3	LOS A	0.3	2.4	0.25	0.95	0.25	44.3	
All Vehicles			336	2.2	336	2.2	0.088	5.2	NA	0.3	2.4	0.10	0.63	0.10	45.7	

Table A4: Weekday Stop Intersection of Garrett Street with Innes Road for the AM Peak Hour