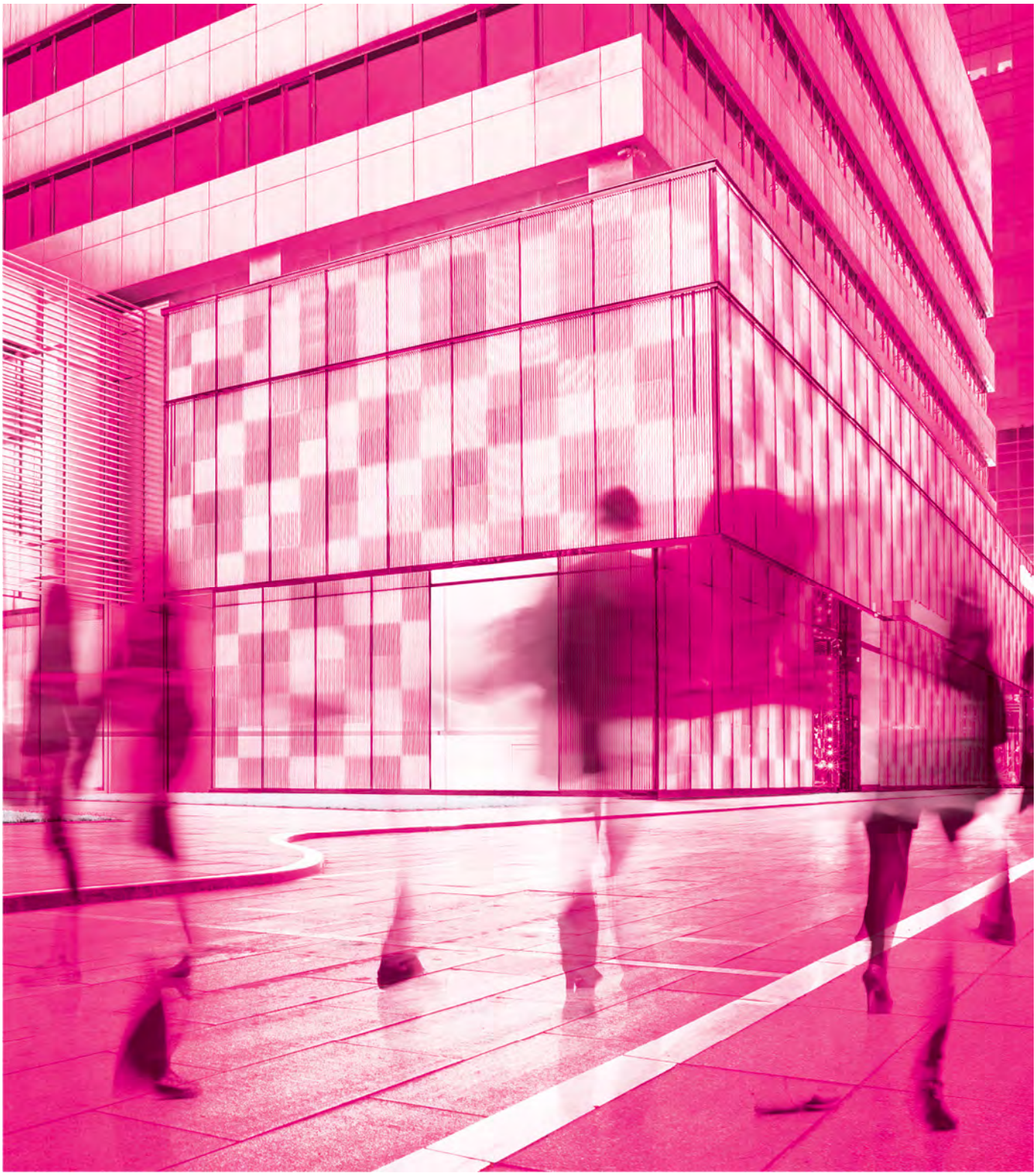

Traffic Impact Assessment;

St Edmunds College, Wahroonga

For St Edmund's College

5 December 2019

parking;
traffic;
civil design;
wayfinding;

ptc.

Document Control

St Edmunds College, Wahroonga, Traffic Impact Assessment

Issue	Date	Issue Details	Author	Reviewed	For the attention of
1	04/12/19	Draft	SH	AM	Toby James (Midson)
2	05/12/19	Final	SH	AM	Toby James (Midson)
3					

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Table of Contents

1. Introduction

1.1 Project Summary

ptc. has been engaged by St Edmund's College (the College) to prepare a Traffic and Parking Assessment to accompany a Development Application (DA) to Ku-ring-gai Council for the proposed alterations and additions to the College campus located at 60 Burns Road, Wahroonga.

This report sets out the methodology and findings of the study to assess the traffic, parking and the road network related considerations associated with the following proposal.

- Demolition of existing structures
- Retention of key facilities, such as pool, hospitality area, existing heritage listed building
- Renovation of existing buildings
- Additions to the rear of existing buildings to be retained, including new hall, new library, administration area, amenities, classroom
- Construction of a staff car park

The location of the College is illustrated in the following figure.

Figure 1 - Site Location

1.2 Purpose of this Report

This report presents the following considerations in relation to the Traffic and Parking assessment of the Proposal:

Section 2	A description of the project;
Section 3	A description of the proposal
Section 4	A description of the road network serving the development property, and existing traffic volumes through key local intersections;
Section 5	Staff Travel Characteristic with a description of the survey results;
Section 6	Student Travel Characteristic with a description of the survey results;
Section 7	Assessment of the existing and future traffic implications;
Section 8	Assessment of the proposed car park, vehicular access and internal circulation arrangements in relation to compliance with the relevant standards, and Council policies; and
Section 9	Conclusion and Recommendations.

2. St Edmund's College

2.1 Site Context

St Edmund's College is located at 60 Burns Road, Wahroonga, approximately 22 kilometres north of Sydney CBD. The College is bounded by Burns Road, Wahroonga Avenue and Braeside Street. The nearest railway station is Wahroonga Station, located approximately 1.2 km to the south-west.

The College is located within a predominantly residential area comprising a mixture of large established dwellings and educational institutions. Wahroonga Public School is located on the south-east side of Burns Road opposite to the College.

The aerial photograph in Figure 2 provides an overview of the area and context in relation to the surrounding land uses.

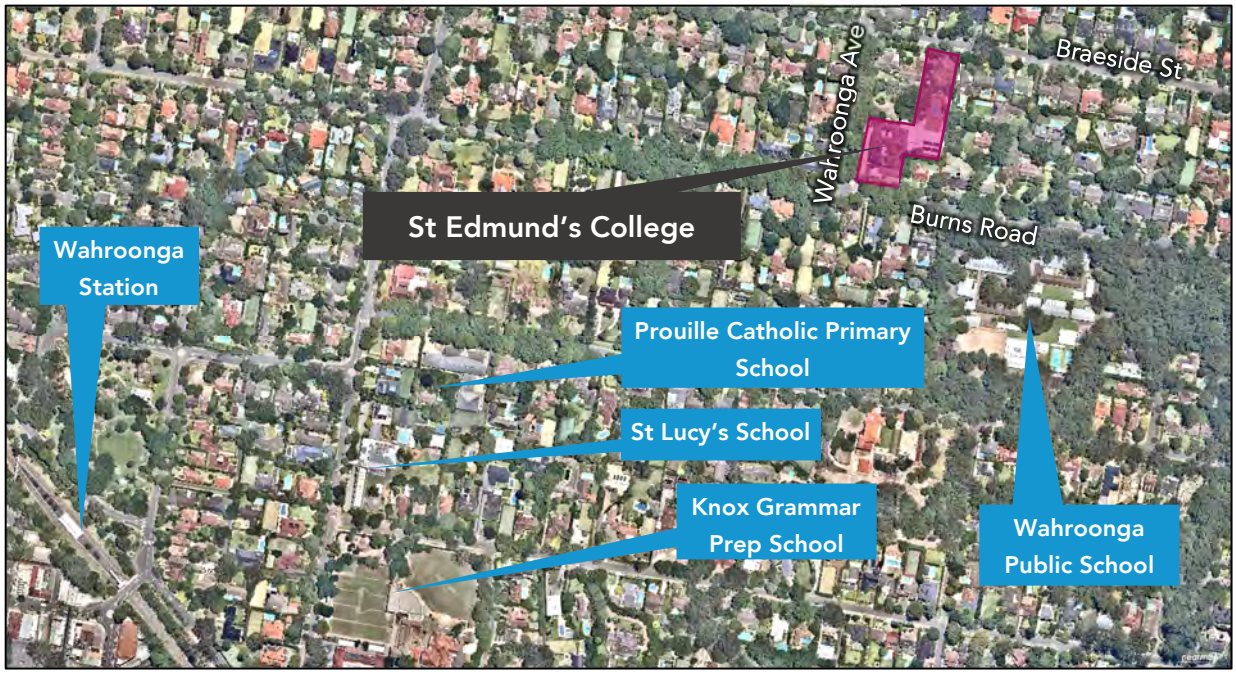


Figure 2 - St Edmund's College Context

2.2 Existing Operations

St Edmund's College is a co-educational special high school and caters for students with disabilities from Year 7-12. The following table summarises the existing capacity of the College.

Table 1 - Existing Capacity

Total student capacity	132
No. of staff	51
No. of FTE staff	46

Vehicular entry into the College is via an existing driveway at the intersection between Burns Road and Wahroonga Avenue, whilst exit is via an existing vehicular crossover along Wahroonga Avenue. This is shown in the following figures.

Figure 3 - Vehicular Entry

Figure 4 - Vehicular Exit

The College accommodates a range of different types of buildings and facilities that are used for curricular and non-curricular activities. The College layout in Figure 5 shows the existing facilities within the College.

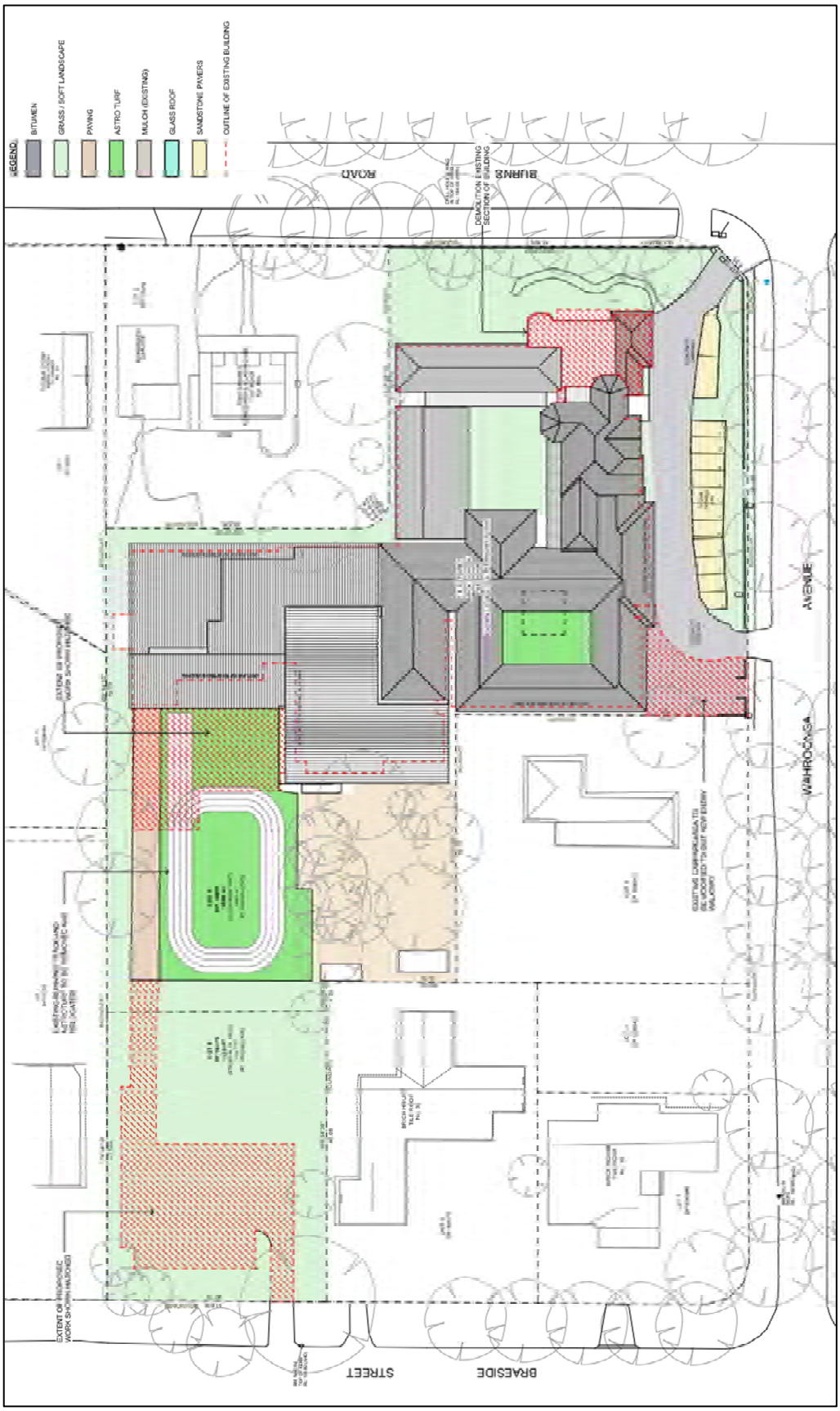


Figure 5 - Existing campus layout

3. Development Proposal

The scope of the works for the College will involve:

- Demolition of existing structures
- Retention of key facilities, such as pool, hospitality area, existing heritage listed building
- Renovation of existing buildings
- Additions to the rear of existing buildings to be retained, including new hall, new library, administration area, amenities, classroom
- Construction of a staff car park

As aforementioned, the school currently has a total capacity of 132 students. The proposed works will **not** involve increasing this existing capacity (i.e. student and staff numbers will remain the same).

No changes will be made to the existing on-site parking layout along the Wahroonga Avenue frontage.

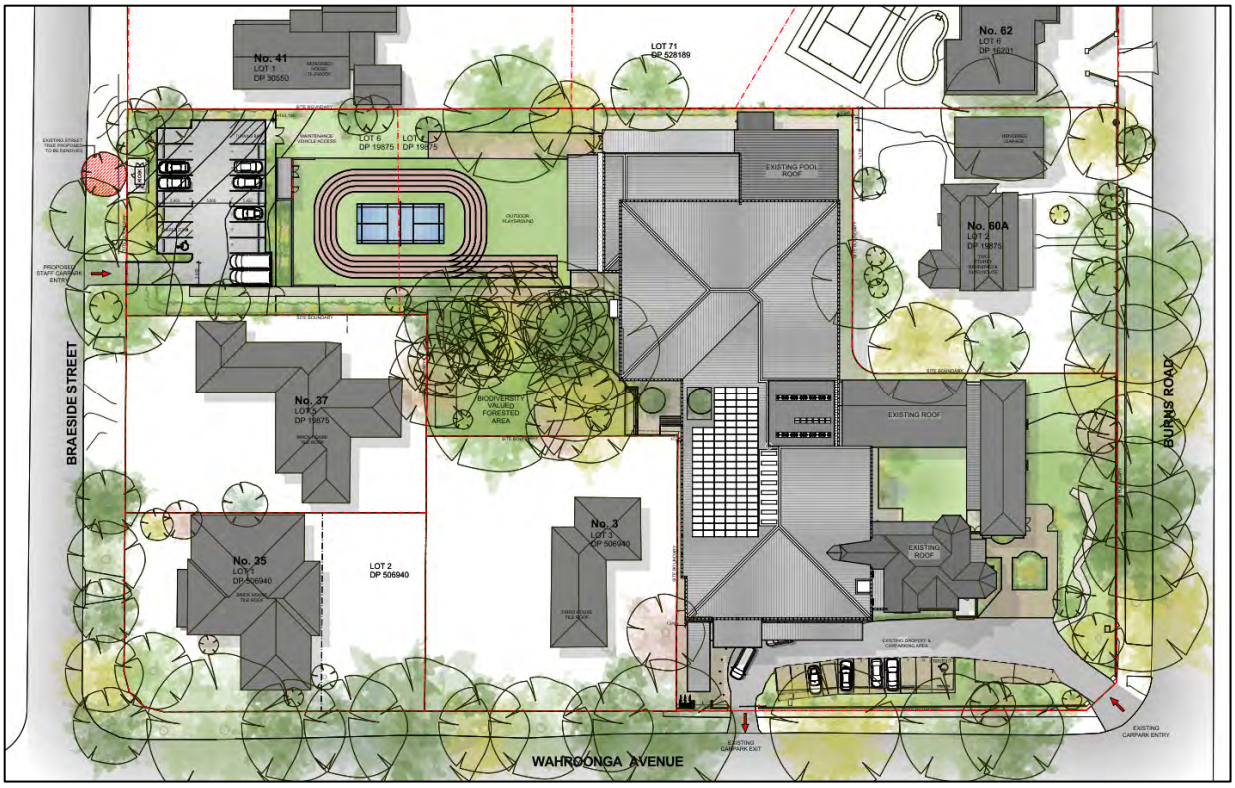


Figure 6 - Proposed campus layout

4. Existing Transport Facilities

4.1 Road Hierarchy

The College is located in Wahroonga to the east of the northern line railway and the Pacific Highway and in this regard, has reasonably good connections to the north shore arterial road network. However, connections to the west are somewhat limited by the North Shore Railway line, which acts as a barrier through the area.

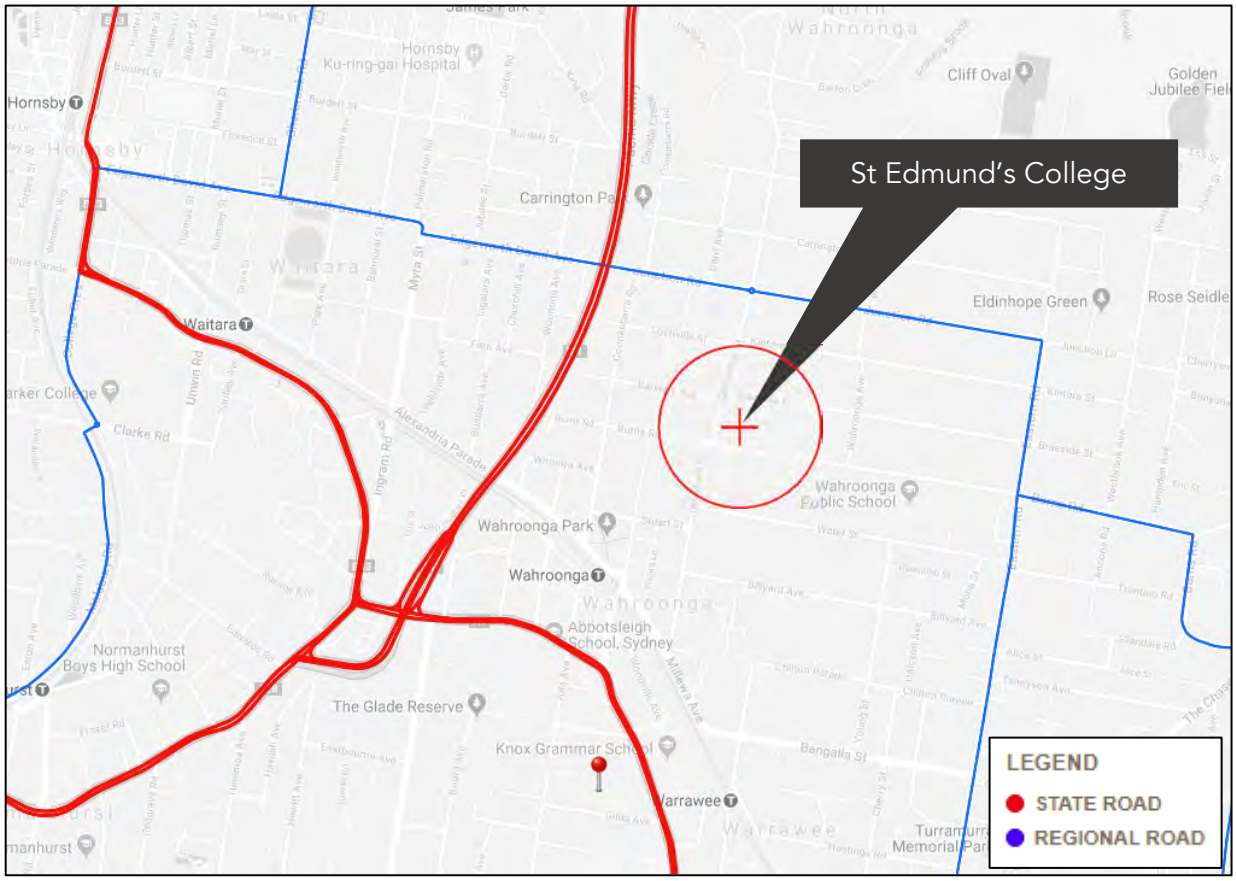


Figure 7 - Road Hierarchy

The NSW administrative road hierarchy comprises the following road classifications, which align with the generic road hierarchy as follows:

State Roads	- Freeways and Primary Arterials (RMS Managed)
Regional Roads	- Secondary or Sub Arterials (Council Managed, partly funded by the State)
Local Roads	- Collector and Local Access Roads (Council Managed)

The road network servicing the College includes:

Pacific Highway, which is classified as a State Road and follows a north–south alignment. Within the suburb of Wahroonga, the carriageway accommodates three (3) traffic lanes in each direction with auxiliary turning lanes at major intersections. During peak periods, clearway restrictions are implemented and a 40Kph School Zone is applied in addition to the normal 60Kph speed limit.

Eastern Road, which is classified as a Regional Road and provides a connection to the East Wahroonga Area and Junction Road, which provides an important alternative connection to Hornsby.

Burns Road, which is a Local Road parallel to the Junctions Road providing overhead crossing of the F3 Sydney-Newcastle motorway and connecting to Hornsby. Burns Road connects to Eastern Road/Burns Road intersection to the east providing strategic access to the College frontage and connects with the Eastern Road to the east. In the vicinity of the college the carriageway accommodates parking along both sides, with an undivided roadway able to accommodate two-way vehicles at low speed.

Wahroonga Avenue, which is a Local Road providing access between Burns Road and Braeside Street. The College's vehicle exit is located on Wahroonga Avenue. On-street parking is allowed on the eastern side of Wahroonga Avenue. Parking is prohibited on the western side during school peak time

Braeside Street, which is a Local Road also connecting Eastern Road to the east. Emergency vehicle access is available through the game on Braeside Street.

4.2 Surrounding Traffic Controls

The traffic controls in the vicinity of the college comprise a general 50kph speed limit and a 40kph school zone applicable to Burns Road, Wahroonga Avenue and Braeside Street. Other controls include a pedestrian crossing located on Burns Road near Wahroonga Avenue. This crossing is not managed by a traffic controller during school peak hours, due to the low volume of pedestrians crossing. The intersection is not subject to any STOP or GIVE WAY control, although it is clear to the motorists that Burns Road has priority over Wahroonga Avenue.

4.3 Public Transport

The nearest bus stop to the College is on Junction Road servicing by Route 575, 591 and 576.

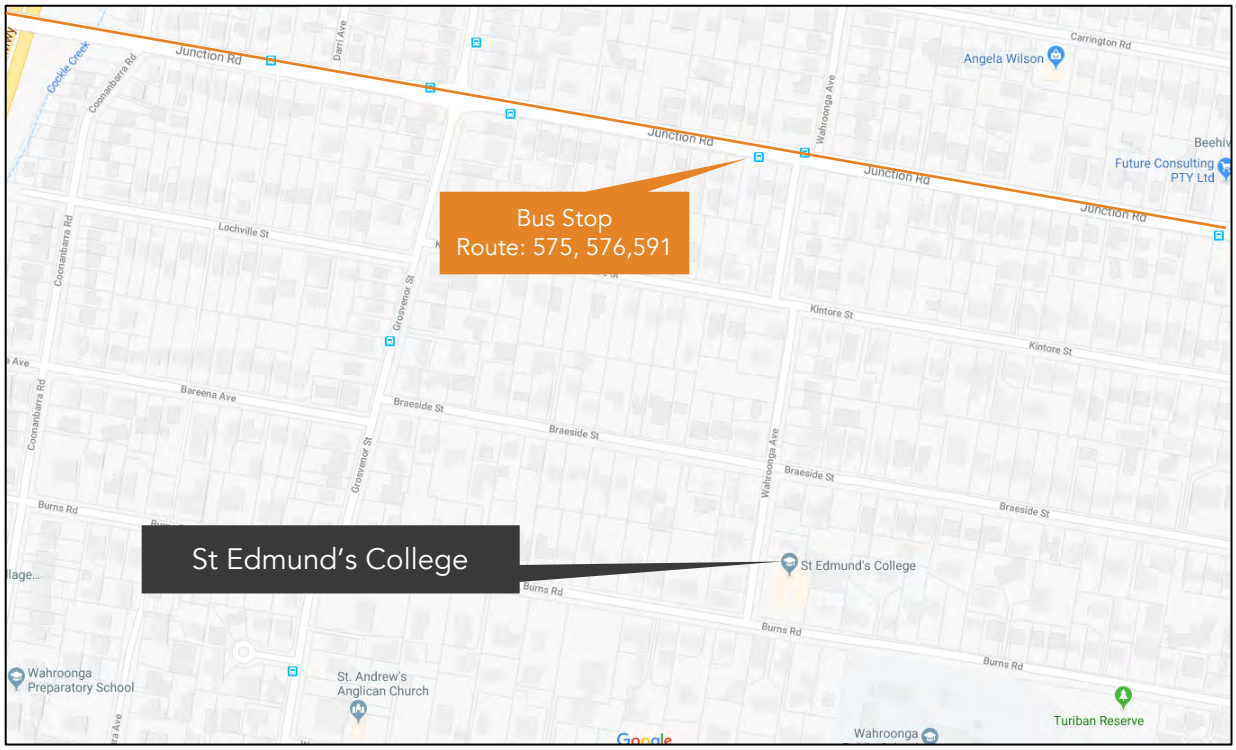


Figure 8 - Surrounding bus services

5. Existing Staff Travel Characteristics

In order to assess the future traffic activities associated with the College, it is important to understand the current travel characteristics such as the transport mode split, car occupancy rates and locations of drop-off/pick-up areas.

A survey has been undertaken by the College to understand the travel characteristics of their staff and the results of these surveys are set out in Section 5.1 and 5.2.

There is currently a total of 51 staff employed at the College, which includes 46 FTE staff.

5.1 Staff Survey Questions

The following questions have been included in the survey:

- How many days per week do you work onsite at St Edmund's?
- How do you usually travel to and from work on a Monday/ Tuesday/ Wednesday/ Thursday/ Friday?

5.2 Staff Survey Results

The detailed survey results are included in Attachment 4.

The survey had a 100% response rate (all 51 staff responded).

On average, approximately 41 staff drive and five staff walk or catch public transport to the College. It is noted that there are currently 13 parking spaces on-site. As such, due to the limited number of parking spaces, majority of the staff parking demand is absorbed by the on-street parking in the adjacent local roads.

The outcome of the survey indicates that the staff parking demand varies from 38 to 45 spaces from day to day. No staff is currently carpooling with other staff member. 2 or 3 staff are catching public transport and up to 8 staff walking to the College.

The detailed survey results are included in the Attachment 2.

6. Existing Student Travel Characteristics

There is currently a total of 124 students enrolled in the College.

Since the College is for students with disabilities, with a wide range of impairments, most students travel to and from the College by private taxi vans (organised by the College) and private passenger vehicles (i.e. parent drop-off/pick-up). It is noted that travel arrangements for students vary slightly from day to day.

However, the typical student travel mode is summarised in Table 2.

Table 2 - Existing Student Travel Mode

Mode	No. of Students
Private Taxi Vans	98
Dropped-off/picked-up by parent/guardian	18
Public/Active Transport	8

Drop-off and pick-up activities are all conducted on site in front of the building on Wahroonga Avenue with a single lane arrangement. A staff member is stationed at the main entrance during drop-off and pick-up periods to assist students into the College and monitor the drop-off and pick-up activities.

As aforementioned, vehicular entry and exit into the College is separated. Entry is via the existing driveway located at the corner of Burns Road and Wahroonga Avenue, whilst exit is via an existing driveway located along Wahroonga Avenue. The drop-off/pick-up area is approximately 60m in length, and is able to accommodate a maximum of 10 vehicles at any one time.

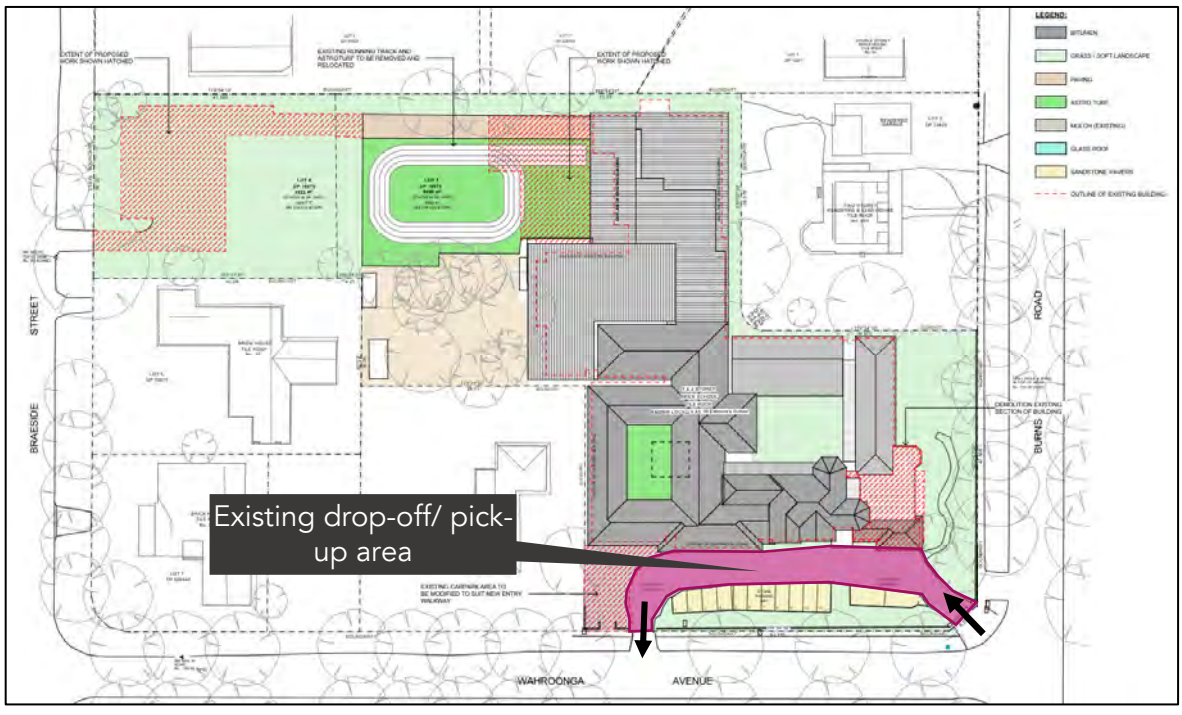


Figure 9 - Existing drop-off and pick-up facilities

7. Traffic Impact Assessment

7.1 Existing Traffic Conditions

7.1.1 Site Observations

A site inspection was undertaken by **ptc.** on Friday 22 March 2019 and indicated no major traffic issues with the local road network during the school peak periods.

The queue length observed at the intersection between Burns Road and Wahroonga Avenue was observed to be approximately three cars, but the queuing was discharged fairly quickly (less than 30 seconds).

The queuing along Burns Road was primarily a result of vehicles, travelling westbound along Burns Road, making the sharp right-turn manoeuvre into the College. These vehicles are required to give way to eastbound through traffic, and as such, there would be short queuing along the eastern leg of Burns Road/ Wahroonga Avenue intersection.

No accidents have been recorded in the past 5 years in proximity of the Burns Road/ Wahroonga Avenue intersection.

7.1.2 SIDRA Modelling

Intersection surveys have been undertaken by **ptc.** on Thursday 16 May 2019 (outside of school holiday period) at the intersections between Burns Road/ Wahroonga Road and Wahroonga Road/ College exit driveway. The surveys were undertaken during school peak periods (7:00am-9:00am & 2:30pm-4:30pm).

The surveyed intersections have been modelled with SIDRA Intersection 8.0 software, a micro-analytical tool for individual intersections and whole-network modelling. SIDRA provides a number of performance indicators outlined below:

- Degree of Saturation – The total usage of the intersection expressed as a factor of 1 with 1 representing 100% use/saturation. (e.g. 0.8=80% saturation)
- Average Delay- The average delay encountered by all vehicles passing through the intersection. It is often important to review the average delay of each approach as a side road could have a long delay time, while the large free flowing major traffic will provide an overall low average delay.
- Level of Service (LoS) - This is a categorization of average delay, intended for simple reference. The RMS adopts the following bands:
- 95% Queue Lengths (Q95) – is defined to be the queue length in metres that has only a 5-percent probability of being exceeded during the analysis time period. It transforms the average delay into measurable distance units.

Level of Service is a good indicator of overall performance for individual intersections, with each level summarised in Table 3.

Table 3 - Level of Service Definitions

Level of Service	Average Delay (secs/vehicle)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	<14	Good operation	
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity. At signals, incidents would cause excessive delays. Roundabouts require other control mode	At capacity, requires other control mode
F	>70	Extra capacity required	Extreme delay, major treatment required

A summary of the modelling results is presented in Table 4. Detailed results are attached in Attachment 3.

Table 4 - SIDRA Modelling Results for Existing Traffic Conditions

Intersection	Time	Level of Service	Average Delay (s)	Degree of Saturation (%)	95% Queue Length (veh)
Burns Road/ Wahroonga Avenue	AM Peak	A	4.6	0.069	1.8
	PM Peak	A	4.5	0.053	1.4
Wahroonga Avenue/ College Exit Driveway	AM Peak	A	3.8	0.025	0.6
	PM Peak	A	3.9	0.021	0.5

The modelling results in the above table indicates that there are no major traffic issues with the existing conditions. The intersections are performing at the highest level of service with minimal delays and queuing.

7.2 Development Traffic

On the basis that the development proposal does not involve increasing the student or staff numbers, there should be no material change in overall traffic generation at the site. Therefore, the development will have no adverse impact on the existing conditions of the surrounding road network.

7.3 Future Traffic Arrangement

The site observation on Friday 22 March 2019 between 8am and 9am indicated that the drop-off and pick-up arrangements is operating without any major impacts on the surrounding road network. Therefore, the College will continue to operate with the existing arrangements after the completion of the development.

In order to improve the traffic condition at the Burns Road/Wahroonga Avenue intersection and minimise the impact of the existing sharp right turn manoeuvres from Burns Road into the College's entry, a traffic

management advisory plan will be developed to notify the preferred route for accessing the College to drivers.

8. Proposed Parking Provision

8.1 Planning Policy Requirements

The relevant planning policy applicable to the development is the Ku-ring-gai DCP 2015 Part 23 which stipulates the following parking provisions for Colleges:

- 1 space per full time equivalent (FTE) employee;
- Provision for on-site set down / pick-up of students and a set down / pick-up management plan is required.

Based on the rates stipulated in the DCP, the College is required to provide 46 on-site parking spaces for the FTE staff.

8.2 Existing Parking Provision

Currently, there are approximately 13 on-site parking spaces and four (4) informal spaces for the private taxi vans.

8.3 Proposed Parking Provision

As stated earlier, the development proposes to provide 27 on-site parking spaces which includes the existing 13 spaces along the Wahroonga Avenue frontage and a new at-grade carpark with a capacity of 14 spaces which will accessed from Braeside Street. An additional two (2) spaces will be provided in the new staff car park which will be dedicated to the private taxi vans. The other two private taxi vans will be stored off-site.

The new at-grade car park will be restricted to staff parking and will allow access for emergency vehicles.

Although it is acknowledged that there will be a shortfall of 19 spaces, from the DCP requirements, the proposed parking provision is considered to be appropriate for the subject development.

As aforementioned, the development proposal will not involve the increase in student and staff numbers. As such, there will be no additional parking demand generated as a result of the development.

It is also evident that the DCP makes the assumption that all staff drive to work at a car usage ratio of 1:1, whereas the survey results (discussed in Section 5) indicates that only 80% of staff drive to the College and therefore the actual parking demand is in fact less than that stipulated by the DCP.

The new at-grade car park off Braeside Street will also provide a degree of balance between the College parking needs without compensating the College's open space requirements of the students and operational needs for meeting the DCP compliance.

It should also be noted that the existing site accommodates a limited number of staff parking spaces. As such, majority of the staff parking demand is currently absorbed by the on-street parking spaces in the adjacent local roads. The new at-grade car park will bring back a proportion of the staff parking on-site and relieve more spaces to local residents in the vicinity.

9. Access and Car Park Arrangement

9.1 Vehicular Access

Access to the College main entrance and drop-off/pick-up area will be retained via the driveway located at the Burns Road/ Wahroonga Avenue intersection, while exit will be via the existing driveway along Wahroonga Avenue.

Access into the new at-grade car park will be via a new driveway along Braeside Street. The driveway is proposed to be 3.0m wide which will allow one-way flow in/out of the car park. This is considered to be acceptable considering that the car park will be restricted to staff members. As such, it is expected that majority of vehicles will enter in the morning and exit in the afternoon. Demand for two-way flow at this driveway is expected to be minimal.

9.2 Drop-off/ Pick-up Area

The drop-off and pick-up area and the existing parking spaces along the Wahroonga Avenue will be retained, with the exception of the private taxi van spaces which will be replaced with the new main pedestrian entrance.

9.3 At-Grade Car Park Layout and Circulation

Table 1.1 of AS2890.1 presents a number of car park classifications applicable to different land-uses. As the car park will be restricted to staff, the parking arrangements have been assessed against the requirements of Class 1A (residential/employee) facilities.

The parking space dimensions and associated aisle width requirements for a Class 1A facility are as follows:

- Space: 2.4m x 5.4m
- Aisle width: 5.8m

The spaces provided are 2.5m x 5.4m which is wider than required and will provide more manoeuvring area. The aisle width is approximately 7.2m which is significantly wider than the minimum requirement.

Circulation within the at-grade car park will be two-way, whilst the drop-off/pick-up area will remain as one-way.

10. Operations of the new staff car park

As aforementioned, the new car park, accessible via Braeside Street, will be reserved for staff only and the private taxi vehicles.

As such, there will typically be two groups of vehicular movements each day:

- Staff arriving in the morning (typically between 7:00am and 8:00am)
- Staff leaving in the afternoon (typically between 3:30pm and 5:00pm)

A limited number of administrative staff are expected to remain at school and use the car park until approximately 6:30pm.

The staff car park may also be utilised approximately 6-8 times a year for evening events which are expected to finish by 9:00pm. The car park will continue to be reserved for staff during these events.

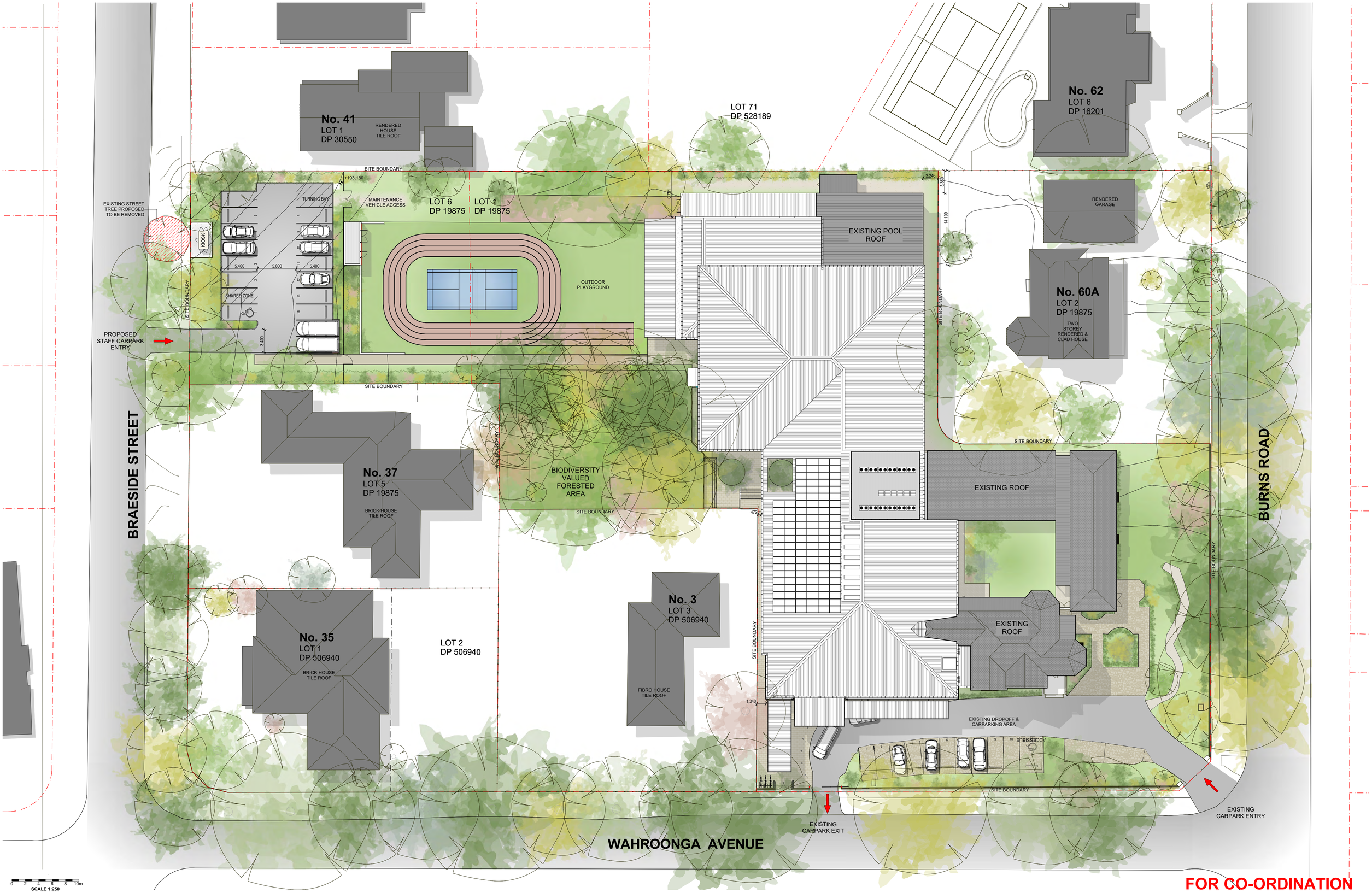
Staff members may also utilise the car park during Saturdays, between 8:00am and 1:00pm, for school related activities.

11. Conclusion & Recommendations

The following section outlines the findings throughout the course of study:

- The St Edmund's College proposes alterations and additions to the Wahroonga campus, including a new car park along Braeside Street;
- The proposal alternation and additional building would not intensify the use of the site, no additional traffic will be generated from the College after completion. The future traffic generated by the College will remain the current level and has no adverse impact on the surrounding road network;
- The development proposes 27 spaces available on-site comprising 14 spaces via a new at-grade carpark accessed from Braeside Street and 13 existing spaces along the Wahroonga Avenue frontage. Two (2) additional spaces will be provided in the new staff car park which will be dedicated to the private taxi vans. The other two private taxi vans will be stored off-site;
- The proposed new car park will improve the on-street parking condition and relieve more spaces to local residents and communities in the vicinity; and
- It is recommended that a traffic management advisory plan is developed to notify the preferred route for accessing the College to drivers, in order to improve the traffic condition at the Burns Road/Wahroonga Avenue intersection and minimise the impact of the existing sharp right turn manoeuvres from Burns Road into the College's entry.

Attachment 1 - Architectural Plans



FOR CO-ORDINATION

NOTE

The Builder shall check all dimensions and levels on site prior to construction. Notify any errors, discrepancies or omissions to the architect. Refer to written dimensions only. Do not scale drawings. Drawings shall not be used for construction purposes until issued for construction. This drawing reflects a design by Glendenning Szoboszlay Architects and is to be used only for work when authorised in writing by Glendenning Szoboszlay Architects.

All boundaries and contours are subject to survey drawing. All levels to Australian Height Data. It is the contractors responsibility to confirm all measurements on site and locations of any services prior to work on site.

St Edmund's COLLEGE midson

GLENDENNING SZOBOSZLAY ARCHITECTS

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F: (02) 9482 7201
E: admin@gsarchitects.com.au

Rev	Description	Date
02	DRAFT DA	2/12/2019
01	DESIGN DEVELOPED	26/11/2019

Drawn | Checked	MS | MG
Plot Date:	2/12/2019
Lot	LOT 1 & LOT 6
Plan Type	DP 19875 & DP 198725
Client	ST EDMUND'S COLLEGE
Site:	60 BURNS ROAD WAHROONGA NSW 2076

DRAWING TITLE :
SITE PLANS
PROPOSED SITE PLAN

DRAWING SCALE :
1:250 @ A1
1:500 @ A3

PROJECT NAME :
ST. EDMUNDS COLLEGE

PROJECT NUMBER :
1302

REVISION NO.
02

STAGE. **DA -**

DRAWING NO.
A-0401

BIMcloud: BIM2 - BIMcloud Basic for ARCHICAD 22/1302 St Edmunds College/1302 St Edmunds DA01 [V22]

Attachment 2 - Compliance Assessment

SITE BOUNDARY

EXISTING DROPOFF &
CARPARKING AREA

1 2 4 6 7 9 10 ACCESSIBLE

3696

SITE BOUNDARY

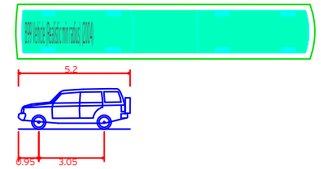
SITE BOUNDARY

Burns Road

Wahroonga Avenue

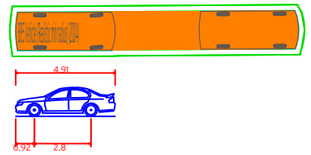
COMMENTS

A3



B99 Vehicle (Realistic min radius) (2004)

Overall Length	5.200m
Overall Width	1.940m
Overall Body Height	1.878m
Min Body Ground Clearance	0.272m
Track Width	1.840m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	6.250m



B85 Vehicle (Realistic min radius) (2004)

Overall Length	4.910m
Overall Width	1.870m
Overall Body Height	1.421m
Min Body Ground Clearance	0.159m
Track Width	1.770m
Lock-to-lock time	4.00s
Curb to Curb Turning Radius	5.750m

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ptcconsultants.co

REV	DATE	COMMENT	DRAWN	REVIEWED	REV	DATE	COMMENT	DRAWN	REVIEWED
3	03/12/19	FOR INFORMATION	SH	AM					
2	22/11/19	FOR INFORMATION	JJ/SH	SW					
1	24/05/19	FOR INFORMATION	SH	FL					

PROJECT:
St Edmund's College

DRAWING TITLE:
EXISTING DROP-OFF/PICK-UP AREA

CLIENT:	St Edmund's College
DRG. #:	PTC-001
PROJECT #:	2581
SCALE:	1 : 250

REV: 3

Braeside Street

No. 41
LOT 1
DP 30550

RENDERED
HOUSE
TILE ROOF

SITE BOUNDARY

+193,180

EXISTING STREET
TREE PROPOSED
TO BE REMOVED

KIOSK

TURNING BAY

MAINTENANCE
VEHICLE ACCESS

LOT 6
DP 19875

LOT 1
DP 19875

5400

5800

5400

5800

SHARED ZONE

SITE BOUNDARY

3366

3400

SITE BOUNDARY

E BOUNDARY

COMMENTS A3

PARKING BAY SPECIFICATIONS

TYPICAL CLASS 1A FACILITY

WIDTH: 2.4M
LENGTH: 5.4M

SHARED BAY WITH BOLLARD

WIDTH: 2.4M
LENGTH: 5.4M

TURNING BAY

WIDTH: 2.4M
LENGTH: 5.4M

ptc.

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REV	DATE	COMMENT	DRAWN	REVIEWED
3	03/12/19	FOR INFORMATION	SH	AM
2	22/11/19	FOR INFORMATION	JJ/SH	SW
1	24/05/19	FOR INFORMATION	SH	FL

PROJECT:
St Edmund's College

DRAWING TITLE:
PROPOSED NEW STAFF CAR PARK

CLIENT: St Edmund's College
DRG. #: PTC-002
PROJECT #: 2581
SCALE: 1 : 250

REV: 3

Attachment 3 - SIDRA Results

MOVEMENT SUMMARY

Site: [Existing Burns Rd / Wahroonga Ave / College Driveway AM]

Network: N101 [Existing AM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burns Road														
5	T1	183	0.6	183	0.6	0.128	0.3	LOS A	0.3	2.4	0.16	0.11	0.16	39.4
6	R2	27	3.8	27	3.8	0.128	4.5	LOS A	0.3	2.4	0.16	0.11	0.16	38.8
6b	R3	18	0.0	18	0.0	0.128	5.0	LOS A	0.3	2.4	0.16	0.11	0.16	38.8
Approach		228	0.9	228	0.9	0.128	1.1	NA	0.3	2.4	0.16	0.11	0.16	39.3
North: Wahroonga Avenue														
7b	L3	5	0.0	5	0.0	0.069	4.2	LOS A	0.3	1.8	0.28	0.51	0.28	23.7
7	L2	56	0.0	56	0.0	0.069	4.2	LOS A	0.3	1.8	0.28	0.51	0.28	36.9
9	R2	16	0.0	16	0.0	0.069	6.2	LOS A	0.3	1.8	0.28	0.51	0.28	36.0
Approach		77	0.0	77	0.0	0.069	4.6	LOS A	0.3	1.8	0.28	0.51	0.28	36.6
West: Burns Road														
10	L2	12	9.1	12	9.1	0.126	3.5	LOS A	0.0	0.0	0.00	0.06	0.00	39.6
10a	L1	25	0.0	25	0.0	0.126	2.5	LOS A	0.0	0.0	0.00	0.06	0.00	39.6
11	T1	207	0.0	207	0.0	0.126	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	39.8
Approach		244	0.4	244	0.4	0.126	0.4	NA	0.0	0.0	0.00	0.06	0.00	39.8
All Vehicles		549	0.6	549	0.6	0.128	1.3	NA	0.3	2.4	0.11	0.14	0.11	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Existing Wahroonga Ave / College Driveway AM]

Network: N101 [Existing AM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wahroonga Avenue														
2	T1	36	0.0	36	0.0	0.018	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		36	0.0	36	0.0	0.018	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
East: College Driveway														
4	L2	18	0.0	18	0.0	0.025	3.6	LOS A	0.1	0.6	0.14	0.47	0.14	24.5
6	R2	16	0.0	16	0.0	0.025	4.2	LOS A	0.1	0.6	0.14	0.47	0.14	34.7
Approach		34	0.0	34	0.0	0.025	3.8	LOS A	0.1	0.6	0.14	0.47	0.14	32.2
North: Wahroonga Avenue														
8	T1	56	0.0	56	0.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		56	0.0	56	0.0	0.029	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		125	0.0	125	0.0	0.029	1.0	NA	0.1	0.6	0.04	0.13	0.04	38.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Existing Wahroonga Ave / College Driveway PM]

Network: N102 [Existing PM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wahroonga Avenue														
2	T1	56	0.0	56	0.0	0.029	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		56	0.0	56	0.0	0.029	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
East: College Driveway														
4	L2	15	0.0	15	0.0	0.021	3.5	LOS A	0.1	0.5	0.13	0.48	0.13	24.6
6	R2	14	0.0	14	0.0	0.021	4.2	LOS A	0.1	0.5	0.13	0.48	0.13	34.7
Approach		28	0.0	28	0.0	0.021	3.9	LOS A	0.1	0.5	0.13	0.48	0.13	32.3
North: Wahroonga Avenue														
8	T1	48	0.0	48	0.0	0.025	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	40.0
Approach		48	0.0	48	0.0	0.025	0.0	NA	0.0	0.0	0.00	0.00	0.00	40.0
All Vehicles		133	0.0	133	0.0	0.029	0.8	NA	0.1	0.5	0.03	0.10	0.03	38.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

Site: [Existing Burns Rd / Wahroonga Ave / College Driveway PM]

Network: N102 [Existing PM Peak]

Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	Demand Flows Total veh/h	HV %	Arrival Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
East: Burns Road														
5	T1	152	4.2	152	4.2	0.101	0.2	LOS A	0.2	1.6	0.12	0.09	0.12	39.5
6	R2	31	0.0	31	0.0	0.101	4.2	LOS A	0.2	1.6	0.12	0.09	0.12	39.0
6b	R3	1	0.0	1	0.0	0.101	4.7	LOS A	0.2	1.6	0.12	0.09	0.12	39.0
Approach		183	3.4	183	3.4	0.101	0.9	NA	0.2	1.6	0.12	0.09	0.12	39.4
North: Wahroonga Avenue														
7b	L3	1	0.0	1	0.0	0.053	4.1	LOS A	0.2	1.4	0.25	0.50	0.25	23.8
7	L2	37	0.0	37	0.0	0.053	4.0	LOS A	0.2	1.4	0.25	0.50	0.25	37.0
9	R2	20	0.0	20	0.0	0.053	5.6	LOS A	0.2	1.4	0.25	0.50	0.25	36.1
Approach		58	0.0	58	0.0	0.053	4.5	LOS A	0.2	1.4	0.25	0.50	0.25	36.7
West: Burns Road														
10	L2	31	0.0	31	0.0	0.104	3.4	LOS A	0.0	0.0	0.00	0.10	0.00	39.3
10a	L1	13	0.0	13	0.0	0.104	2.5	LOS A	0.0	0.0	0.00	0.10	0.00	39.3
11	T1	158	0.7	158	0.7	0.104	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	39.7
Approach		201	0.5	201	0.5	0.104	0.7	NA	0.0	0.0	0.00	0.10	0.00	39.6
All Vehicles		442	1.7	442	1.7	0.104	1.3	NA	0.2	1.6	0.08	0.15	0.08	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Attachment 4 - Staff Survey Results

St Edmund's College Staff Transport Information

51 responses

Your name?

51 responses

- Jenny
- Jon
- Dan
- Claire
- Viv
- Bernadette
- Margriet
- Tiffany
- Marilyn
- Candice
- Cathy
- Peter
- Jacqueline
- Carl
- Karen
- Wendy
- Catherine
- Jane
- Brenden
- Sheena

Genevieve

Rebecca

Julie

Amanda

Paul

Tina

Diana

Car

Georgia

Tracey

Cherie

Terry

Katie

Teresa

Zoe

Victoria

Lisa

Jacqui

Julie

Brendon

Jacqueline

Annie

Rachel

Lynda

Lisa

Cathy

Janine

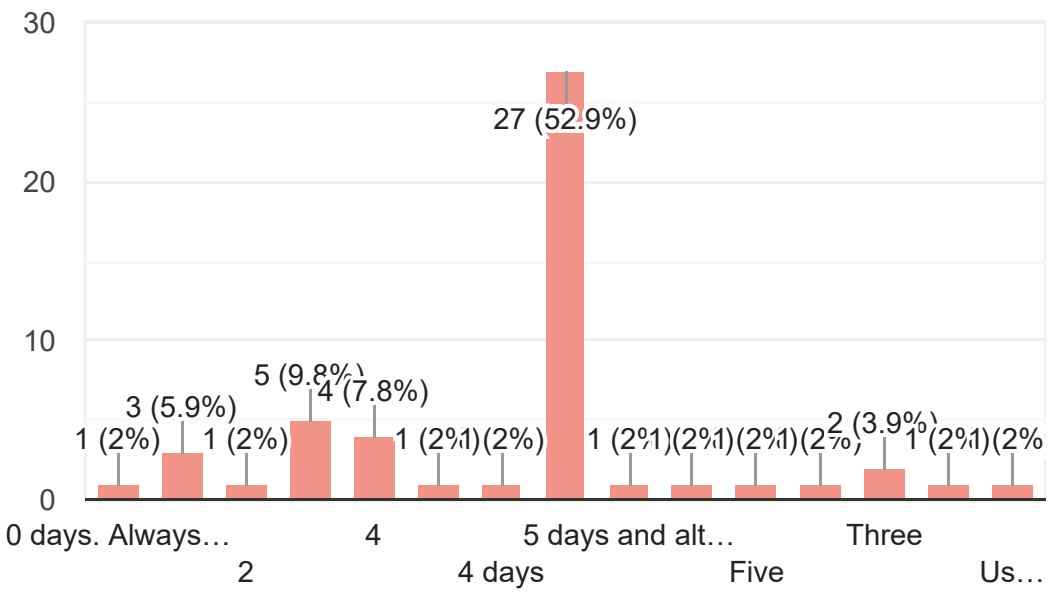
Ben

Mark

Sangeeta

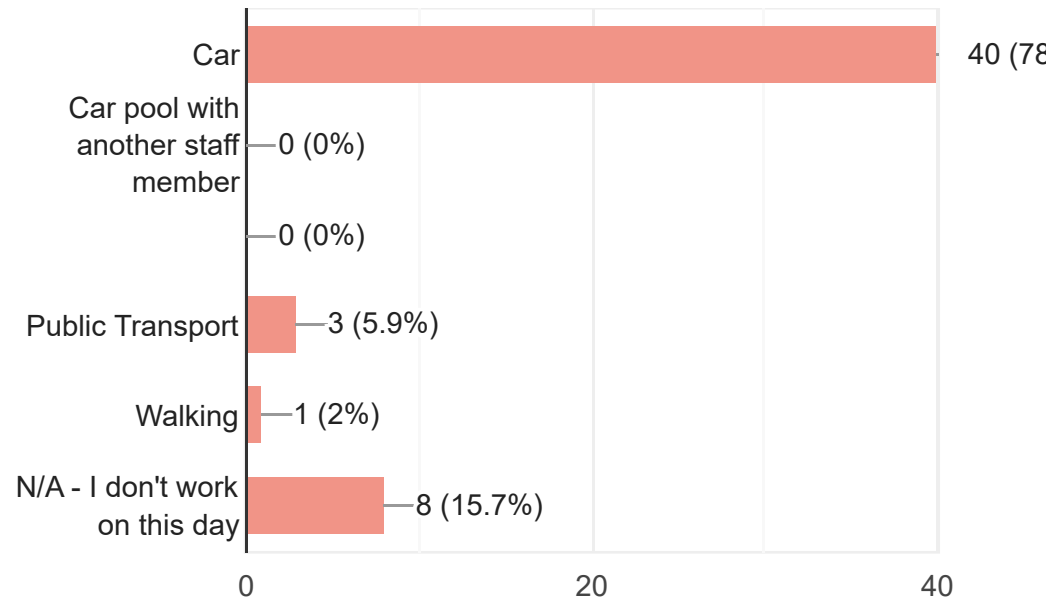
How many days per week do you work onsite at St Edmund's?

51 responses



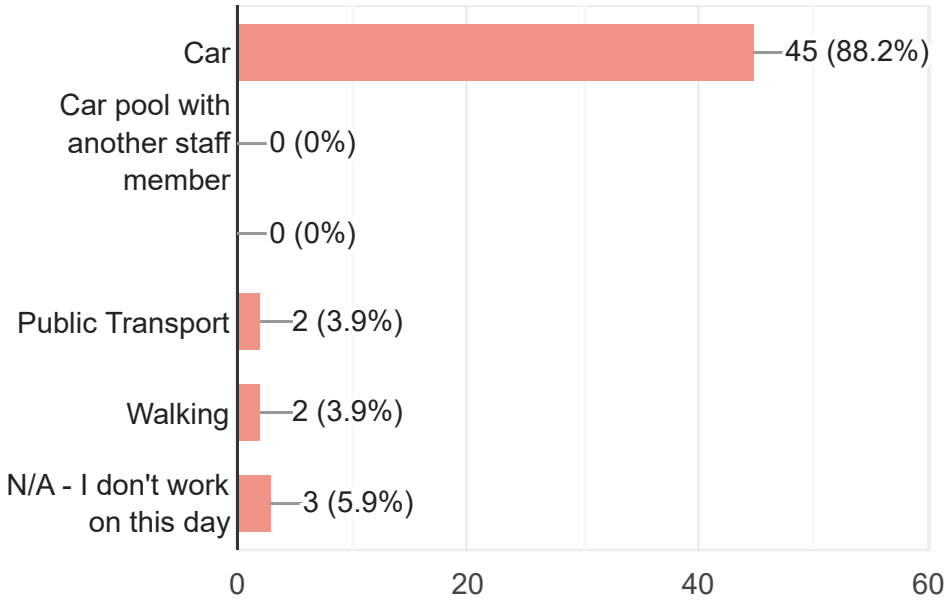
How do you usually travel to and from work on a Monday?

51 responses



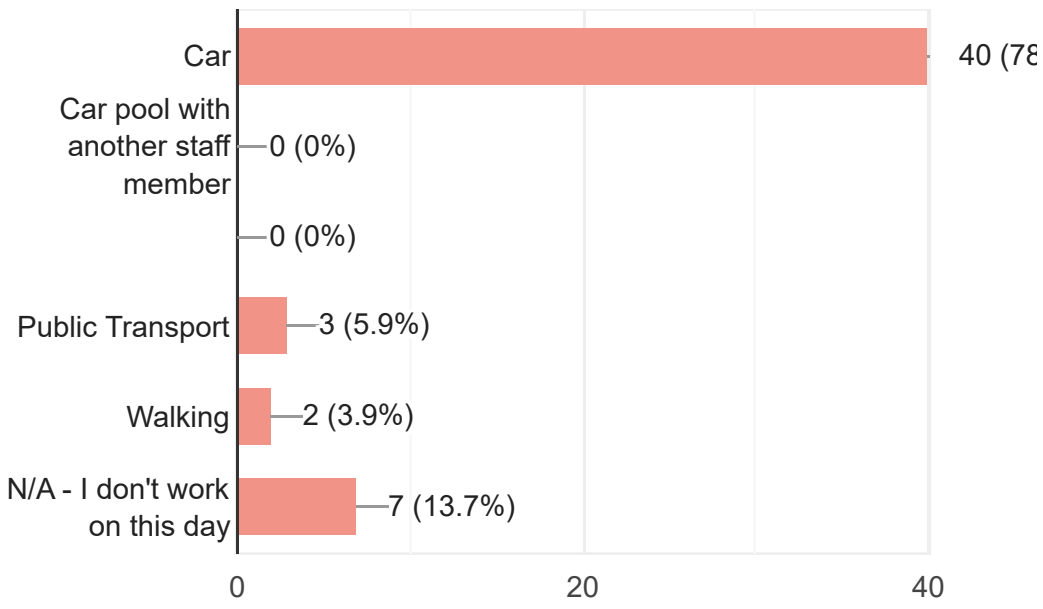
How do you usually travel to and from work on a Tuesday?

51 responses



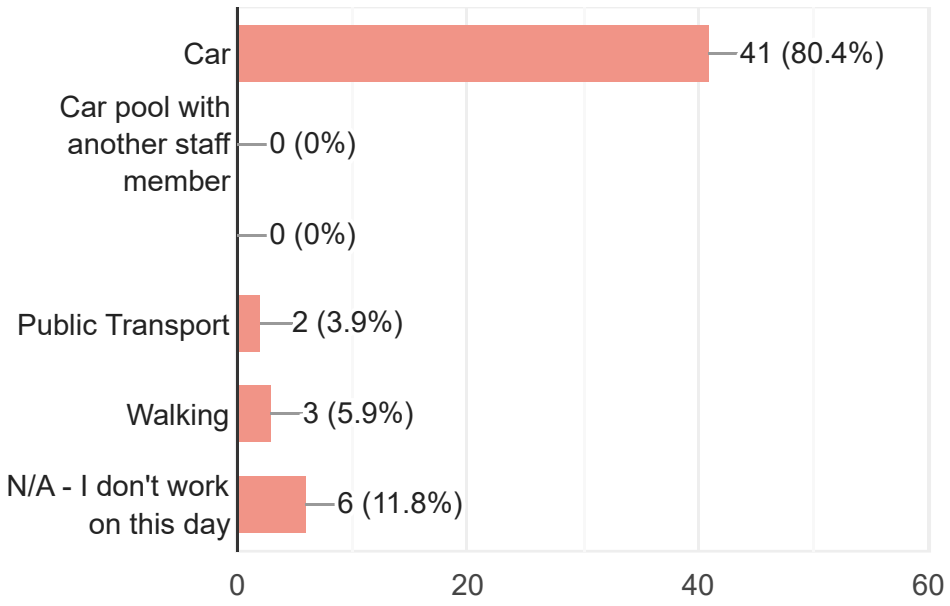
How do you usually travel to and from work on a Wednesday?

51 responses



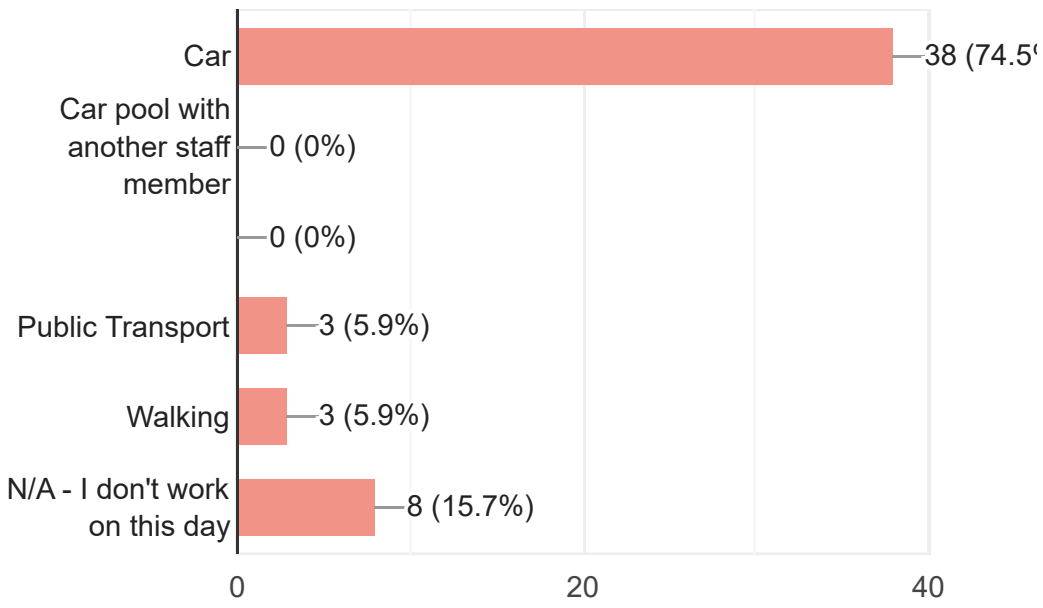
How do you usually travel to and from work on a Thursday?

51 responses



How do you usually travel to and from work on a Friday?

51 responses



Google Forms