TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

OPERATIONAL TRANSPORT MANAGEMENT PLAN – 2026 TRAFFIC STUDY

St Catherine's School Sydney
26 Albion Street, Waverley

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CONTENTS

1. Introduction 1
2. Traffic Management Objectives 3
   - 2.1 Conditions of Consent 3
   - 2.2 2026 Results Summary 6
3. Overview of Site Operations 7
   - 3.1 Site and Location 7
   - 3.2 School Capacity 11
   - 3.3 On-street Unrestricted Parking 11
   - 3.4 On-street Bus Stops 12
   - 3.5 Site Access 14
   - 3.6 On-Site Car Parking 14
   - 3.7 School Drop-off/Pick-up 16
   - 3.8 Bicycle Parking and Active Travel 19
   - 3.9 School Bus Services 19
   - 3.10 School Opal Pass 21
   - 3.11 Travel Access Guide 22
   - 3.12 Major Events on Campus (Not in PAC) 22
   - 3.13 Approved Indicative Usage Profile 22
4. Establishing Baseline Data 23
   - 4.1 Travel Mode Surveys 23
   - 4.2 Travel Mode Survey Results 24
   - 4.3 Future Travel Strategies 29
5. Traffic Survey Analysis 31
   - 5.1 Context 31
   - 5.2 Survey Results (Tube Counts) 34
   - 5.3 Traffic Distribution 2026 (Intersection Counts) 46
   - 5.4 On-Street Parking 61
6. Ongoing Travel Strategies 69
   - 6.1 Context 69
   - 6.2 Public Transport Services 69
   - 6.3 Private Bus Services 70

6.4 On-site Staff Parking and Management 72
6.5 On-street Parking 73
6.6 Walking and Cycling Routes 76
6.7 Bicycle Parking Provision 78
7. Monitoring and Measurement 80
7.1 Roles and Responsibilities 80
7.2 Collecting and Collating Information 81
7.3 School Activity Information 82
8. Goal Setting 83
8.1 Staff Travel Targets 83
8.2 Student Travel Targets 84
9. Management Review 87
9.1 Surveys 87
9.2 Post Occupation 87
10. Special Events 88
10.1 Attendees for Events 88
10.2 Traffic Assessment 88
10.3 Travel Strategies 88
10.4 Traffic Management Strategies for Aquatic Centre and Major Events 89
11. Conclusion 92
Appendices
Appendix A: ARUP Traffic & Transport Assessment 2014
Appendix B: CCC Letter
Appendix C: Junior School Car Line Procedure Flyer (August 2024)
Appendix D: St Catherine's Major Events Schedule
Appendix E: St Catherine's School Travel Access Guide
Appendix F: Student Travel Mode Surveys
Appendix G: Staff Travel Mode Surveys

1. INTRODUCTION

TRAFFIX has been commissioned by St Catherine's School Sydney, to update the existing Operational Transport Management Plan (OTMP) for the approved State Significant Development (SSD-6339 determined 6 April 2016) of the school, which is located at 26 Albion Street, Waverley. The previous OTMP was dated 13 August 2025.

The SSD covers Stage 1A of the Masterplan. The OTMP has been prepared to address the proposed capacity increase of the school to accommodate 1,200 students and 212 staff by 2030, the management of traffic for capacity increases, and events in the Performing Arts and Aquatic Centre (PAC).

ARUP prepared the original traffic and transport assessment for the development in 2014, and this is provided in **Appendix A** for context. Prior to and during the construction of the PAC development, St Catherine's commissioned annual traffic surveys in the period 2016-2025, excluding 2020. In 2020, an annual traffic study was not conducted due to the impact of COVID-19 related restrictions and the associated impacts to public transport and private vehicle use. St Catherine's resumed the annual surveys in March 2021 with students attending the campus and in anticipation of the completed PAC project by the end of 2021. The PAC has been operational since April 2022. The 2026 surveys were generally conducted in the same manner as previous years. It is also noted that working from home and a general reduction in public transport use has had some influence on the 2021-2026 data.

The OTMP is a key workplace document that has legal standing. The process has been to identify potential hazards, assess their associated risks, and formulate proposed treatments to address these risks as documented within this OTMP. The OTMP should be referred to regarding transport management measures for St Catherine's School.

This OTMP and management measures are assessed based on updated survey data for 2026. The results of the 2026 Traffic Survey and this OTMP will be presented and discussed with the St Catherine's Community Consultative Committee (CCC), prior to formal submission to the Department of Planning, Housing and Infrastructure (DPHI).

As part of the ongoing consultation with the community via the CCC, this report acknowledges a number of concerns regarding the 2021 traffic surveys brought by the CCC via their letter dated 11 October 2021, provided in **Appendix B**. These concerns were discussed at a special

CCC meeting held on 22 October 2021 and adjustments were made to the 2022, 2023, 2024, 2025, and 2026 surveys to mitigate concerns (specifically the staff and student survey response rates).

The survey participation data can be found in Table 5 of this report and the Annual Survey Questions for students and staff are attached in **Appendices F** and **G**, respectively, as requested by the CCC.

The school has confirmed that it will continue to work with the CCC to improve annual traffic survey data, including an ongoing effort to maximise the staff and student participation rates in annual questionnaire surveys, where possible.

With the PAC commencing operations in April 2022, the 2022 OTMP addressed conditions of consent relating to the requirements prior to the occupation and use of the new facilities from the start of the 2022 school year. The additional conditions are contained in Schedule 3, Part D of the consent and are specifically Conditions A8(b), E2, E3, E4, and E7. The 2026 OTMP seeks to address the conditions of consent relating to the requirements of Schedule 3, Part F, Post Occupation, specifically Condition F2 requiring the school to undertake a review six (6) months after any student increase in numbers and then annually.

This report is structured as follows:

- Section 2: Traffic Management Objectives
- Section 3: Overview of Site Operations
- Section 4: Implement Travel Strategies
- Section 5: Establishing Baseline Data
- Section 6: Analysis of Traffic Surveys
- Section 7: Future Travel Strategies
- Section 8: Monitoring and Measurement
- Section 9: Future Travel Mode Goals
- Section 10: Management Review
- Section 11: Special Events
- Section 12: Conclusion

2. TRAFFIC MANAGEMENT OBJECTIVES

2.1 Conditions of Consent

The target audience of this plan are the staff, students, and visitors of the school and nearby residents. The aim of the annual review is to report the effectiveness of the measures detailed in the OTMP and to ensure that the increases in student/staff population results in "no increase in traffic" to/from the school. This OTMP continues to address several conditions contained within the Development Consent issued by the Minister of Planning dated 6 April 2016, notably condition A8 of Schedule 2, and conditions A8 a), A8 b), A9, A10, F2, F3, F4, and F5 of Schedule 3 as follows:

Schedule 2: Operational Transport Management Plan

> *A8. The applicant shall prepare an Operational Transport Management Plan (OTMP) for St Catherine's School. The plan must identify mode share targets for the proposed travel strategies that target a reduction in private vehicle trips and ensure no net increase in vehicle trips, as detailed in condition A8 of Schedule 3.*

Schedule 3: Operational Transport Management Plan

> *A8. The applicant must prepare and implement (within 3 months of its approval) an Operational Transport Management Plan (OTMP) for St Catherine's School in consultation with Council and the local community, which must identify mode share targets for the proposed travel strategies that target a reduction (and ensure "no increase") in private vehicle trips to the site (as compared to the figures provided in the EIS) the OTMP must be approved by the Secretary:*
>
> *a) Prior to the issue of any Construction Certificate and must include details regarding the travel strategies and interim tragic management measures (including details for management of the drop-off / pick-up zones, including training for supervising staff/ traffic controllers) and must be updated to the satisfaction of the Secretary.*

b) Prior to the issue of any Occupation Certificate for the RPAC and must include details regarding the travel strategies and the final traffic management measures (including details for management of the drop-off / pick up zones, including training for supervising staff / traffic controllers), and taking the monitoring results (required in condition A9) into account, and

c) Prior to any increase in student enrolment / staff numbers above 1050 students and 202 staff and taking the monitoring and road safety audit results (required in condition A9 and E2) into account.

A9. The OTMP must provide details for each of the travel strategies and must address the following matters for each of the travel strategies:

a) Objectives and targets;

b) Timing;

c) Responsibility;

d) Funding;

e) Implementation;

f) Monitoring regime to evaluate each strategy; and

g) Monitoring of whether the overall strategies are meeting the targeted reductions in private car trips

A10. The School must make the approved OTMP, any updated OTMP and the results of the monitoring and independent auditing conducted as part of the OTMP, publicly available on the school's website and available to the Community Consultative Committee.

F2. Independent traffic and on-street parking reviews (including travel behaviour analysis, on-street counts, review of any complaints received, review of issues raised in the quarterly meetings required by condition A7 and observation of all drop-off and pick-up areas) should be undertaken six months after any student increase or commencement of operations of the

RPAC and then annually to determine the effectiveness of the measures detailed in the Operational Transport Management Plan. A copy of the review is to be provided to the Secretary, and the Community Consultative Committee, including advice as to whether an update of the OTMP is required.

F3. If the review process for the Operational Transport Management Plan identifies that the mode share targets and the minimum requirement for "no increase in traffic" are not being met, the applicant shall update the Operational Transport Management Plan to reflect alternate measures that are effective in meeting the targets to the satisfaction of the Secretary. If alternate measures have not been effective in meeting the minimum requirements for "no increase in traffic" at the next annual review, a further traffic assessment shall be prepared in consultation with Council to:

a) Identify potential road upgrades that are required to maintain existing traffic efficiency; and

b) Provide evidence to support the proposed contribution to the road upgrade to be approved by the applicant.

In the event that there is any disagreement between the Council and the applicant on the road upgrade contribution to be provided by the applicant (whether it be the quantum or timing), the Secretary's decision shall be final.

F4. Until such time as the identified road upgrades have been completed in accordance with the approved OTMP and to the satisfaction of the Secretary, student enrolments must not exceed student enrolment numbers as identified in the previous annual review (required by condition F2 above).

F5. If the review process for the Operational Transport Management Plan identifies that the mode share targets are not being met, use of school facilities by external parties during normal school hours must cease and must not recommence until alternative measures have been demonstrated to be successful in promoting a shift in travel mode shares.

This OTMP highlights the measures undertaken by the school since the lodgement of the Development Application, the receipt of the development consent, subsequent approved modifications, the approval of the 2025 OTMP by DPIE on 17 September 2025; as well as proposed measures to meet the above conditions.

The primary objectives of the St Catherine's OTMP are as follows:

- Ensure the proposed development has no net increase in private vehicle trips to/from the school;
- Ensure the safety of staff and students, the public and those who will be impacted by traffic during site operations;
- Manage the safe and efficient 'drop-off' and 'pick-up' activities associated with school operations;
- Ensure that road users are aware of any proposed changed traffic conditions and that associated risks are identified and mitigated; and
- Ensure that the local road network will not be impacted by traffic generated due to the school's operation.

2.2 2026 Results Summary

In summary, a comparison of the 2026 questionnaire survey results with the 2014 ARUP baseline data demonstrates a minor increase in staff private vehicle trips, a reduction in student AM and PM private vehicle trips, and an increase in student car occupancy. These survey results demonstrate that there has been no net increase in private vehicle usage (when compared to the 2014 baseline data), satisfying Condition A8 of Schedule 2 of the condition of consent. The results are summarised in Table 10. As such, the initiatives implemented by the school are considered effective in reducing private vehicle trips, and continual implementation of these strategies is considered supportable from a traffic planning perspective.

3. OVERVIEW OF SITE OPERATIONS

3.1 Site and Location

The school is located in Waverley, approximately 5.5km south-east of the Sydney CBD. The site is irregular in shape and has an area of approximately 22,330m^2. The school has a north-eastern frontage to Bronte Road of approximately 33 metres and a south-eastern frontage to Leichhardt Street of approximately 55 metres. The school also has a southern frontage to Macpherson Street of approximately 165 metres and a western frontage to Albion Street of approximately 140 metres. The site is also bordered by residential developments in the north and south-eastern sides of the site.

The existing school operations offer education programmes for a variety of age groups, including the Junior School from Kindergarten to Year 6, the Senior School from Year 7 to Year 12, and a range of extra-curricular activities, also known as 'Beyond The Curriculum' (BTC).

The site location, site plan, and road hierarchy are presented in **Figures 1**, **2**, and **3** below.

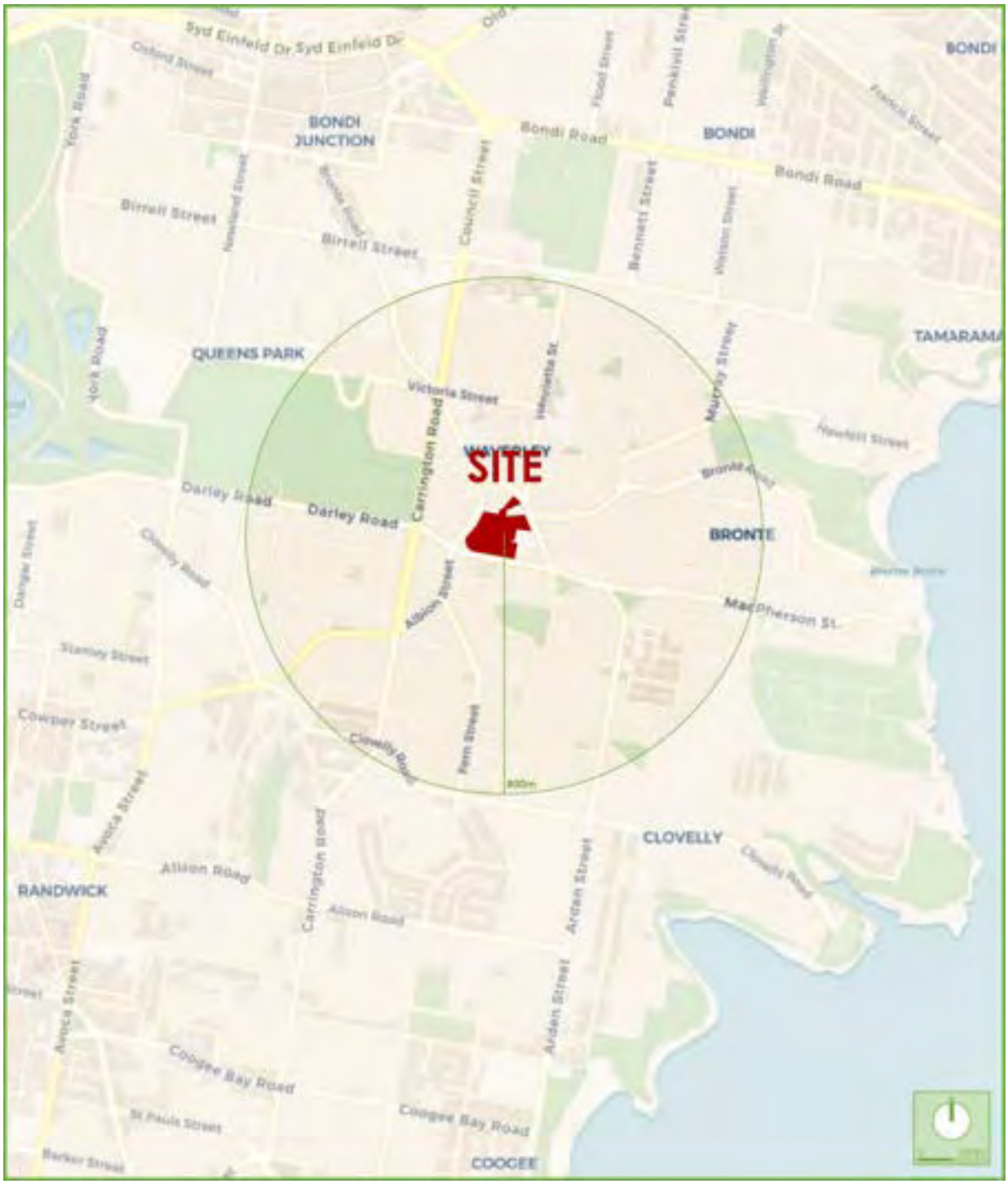

Figure 1: Location Plan

Figure 2: Site Plan

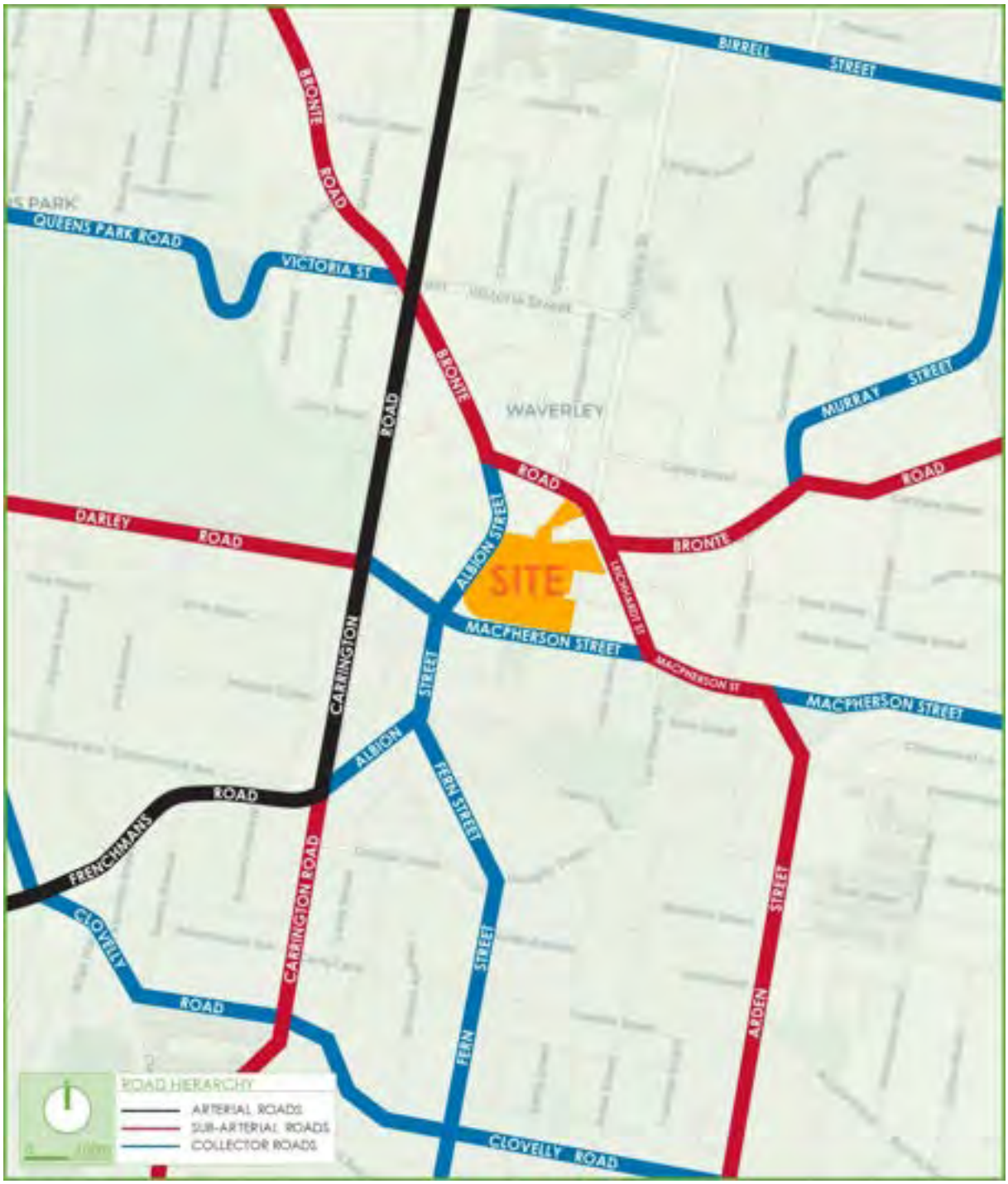

Figure 3: Road Hierarchy

3.2 School Capacity

The school population was capped until 1 January 2021 at 1,050 students from Kindergarten to Year 12. Currently, the cap is 1,140 students. Subject to development consent conditions being met, it is possible for the school to grow its capacity to 1,200 students by 2030 with student population projections shown in **Table 1**. Schedule 2, Condition A6 provides a breakdown of the student and staff population numbers under which student numbers may increase subject to the conditions of consent.

Table 1: Number of Staff and Students

Year	Students	Staff
2016 – 2020	1,050	202
2021	1,065	212
2022	1,080	212
2023	1,095	212
2024	1,110	212
2025	1,125	212
2026	1,140	212
2027	1,155	212
2028	1,170	212
2029	1,185	212
2030	1,200	212

3.3 On-street Unrestricted Parking

There are a number of unrestricted kerbside parking spaces surrounding the school along MacPherson Street, Leichhardt Street, and Bronte Road. These spaces are not line marked. These spaces are utilised by residents and visitors to the surrounding areas and members of the school community access these spaces at different times of the day and night. Reference should be made to The *St Catherine's School, Waverley Traffic and Transport Assessment by ARUP (2014)* provided at **Appendix A** for detailed baseline survey results.

The school is aware that Waverley Council periodically surveys its local residents about the introduction of timed parking schemes. A survey is underway across the Waverley LGA at the time of this report's preparation.

3.4 On-street Bus Stops

Bus Stops are currently provided for public use on Macpherson Street, Albion Street, and Leichhardt Street. These bus stops are serviced by the routes provided in **Table 2** below and shown within **Figure 4**:

Table 2: Existing Bus Services and Attributes

Route Number	Stop	Destination	Frequency
313	Carrington Road	Coogee, Bondi Junction	20 minutes
350	Albion Street	Sydney Domestic Airport, Bondi Junction	10 minutes
390X		La Perouse, Bondi Junction	8 minutes
379	Albion Street & Macpherson Street	North Bondi, Bronte	10 minutes
360	Leichhardt Street	Clovelly, Bondi Junction	20 minutes
362 (Saturday)		Coogee, Rose Bay	30 minutes

Figure 4: Public Transport

3.5 Site Access

The school has a number of access points for both vehicles and pedestrians. Vehicular access is provided from Albion Street via a two-way driveway at the site's southernmost point, and two (2) one-way entry and exit driveways further north. An entry/exit driveway is provided on Macpherson Street outside the Dame Joan Sutherland Centre and PAC and a service vehicle access point is also provided via Leichhardt Lane.

3.6 On-Site Car Parking

There are a total of 75 on-site parking spaces comprising the following:

- Nine (9) spaces within the southern Albion Street car park;
- 19 spaces within the St Johns car park; and
- 47 spaces in the Macpherson Street carpark, which is located under the Dame Joan Sutherland Centre and PAC.

The location of the above parking areas is presented in **Figure 5** below.

In addition to the above car parking, a single service vehicle space is located under the PAC.

Figure 5: On-site Car Parking

3.7 School Drop-off/Pick-up

The school provides drop-off and pick-up zones on Albion Street, Macpherson Street, and Leichhardt Street as shown in **Figure 6**. The school has assigned specific year groups to each drop-off / pick-up zone to ensure that the students are dropped off and picked up at the correct school entrance, and to spread drop-off and pick-up activity evenly across all available frontages. This managed approach minimises random driver behaviour and improves safety, however some drop-off and pick-up activities may occur outside the designated drop-off and pick-up zones.

A full-time traffic controller has been employed by the school since April 2017, and all current maintenance staff are certified SafeWork NSW traffic controllers. Currently there is a supervised drop-off and pick-up management system in place for the Leichhardt Street drop-off and pick-up zone. The school operates a car line to cater for the Junior School at this location, and a copy of the Junior school car line procedure is provided in **Appendix C** for reference. The Macpherson Street drop-off / pick-up area is supervised in the mornings and afternoons. The relocation of the Macpherson Street pedestrian crossing was completed in 2022; therefore, the length of the Macpherson Street drop-off and pick-up zone has increased with noticeable operational improvements. The Albion Street drop-off and pick-up zones are currently unsupervised.

A summary of the existing drop-off and pick-up locations is provided in **Table 3** below. The number of vehicles utilising each of the drop-off and pick-up facilities during the approved operational hours is monitored annually (commencing April 2018) and this data is presented in **Tables 16**, **17**, **18**, and **19**.

Table 3: Existing On-street Drop-off and Pick-up Arrangements

Street	Side	Restriction	Number of Spaces	Year Group
Albion Street	Eastern	No Parking 8:00am – 9:00am, 3:00pm – 4:15pm, School Days	1	Varies
	Western	No Parking 8:00am – 9:00am, 2:30pm – 4:00pm, School Days	5	
Macpherson Street	Northern (East of Pedestrian Crossing)	Kiss & Go: stay with your car 2-minute limit. No Parking 3:30pm – 6:00pm, School Days	3	5-12
	Northern (West of Pedestrian Crossing)	Kiss & Go: stay with your car 2-minute limit. No Parking 8:00am – 8:45am, 3:00pm – 4:00pm, School Days	14	5-12
	Southern	No drop-off and pick-up provision		
Leichhardt Street	Eastern	No drop-off and pick-up provision		
	Western	No Parking 7:45am – 9:00am, 2:30pm – 4:00pm, School Days	8	1-4

Figure 6: Existing Drop-off and Pick-up Zones

3.8 Bicycle Parking and Active Travel

In accordance with Condition B5 of Schedule 3, the school provides additional 100 bike parking spaces within the PAC development for use by students and staff. The school will monitor and encourage the usage of all bicycle parking spaces. Appropriate end of trip facilities are provided for cyclists.

As of 2023, the school adjusted its policies and allows senior school students to cycle to and from school. On-site bicycle parking and end-of-trip facilities are made available to all students that choose to cycle.

3.9 School Bus Services

St Catherine's School currently provides three (3) subsidised private bus services available to all students. Due to the ever-changing student demographic and parent demand, routes and stops are reviewed periodically with parents encouraged to contact the school if they would like to see stops added or removed. The bus routes have been implemented at considerable cost to the school to reduce private car travel generated by the school.

In 2025, the five (5) routes were consolidated into three (3) to match demand across the routes. This arrangement has been retained in 2026 to facilitate transportation needs of students.

The school provides an internal St Catherine's Transport page. The page provides parents with access to all the initiatives offered by the school. As mentioned above, three (3) separate routes, for use by students from Year 3 to Year 12 are currently advertised to parents via the portal, with details of the suburbs serviced presented below:

- STC1 Bondi Beach: Vaucluse, Rose Bay, Dover Heights, North Bondi, Bondi, Tamarama, and Bronte;
- STC2 Eastern Beaches: Malabar, Chifley, Little Bay, Botany, Pagewood, Maroubra, South Coogee, and Coogee; and
- STC3 Eastern Suburbs: Taren Point, Mascot, Rosebery, Eastlakes, Kensington, Maroubra, Hillsdale, Matraville, and Randwick.

Routes and utilisation are carefully monitored with data taken from the online bus booking form, and an electronic booking form developed internally. This data is used to adjust services, accordingly, based on demand.

The utilisation of the bus services during the AM arrival and PM departure periods for school terms in the period 2016-2026, excluding 2020 are demonstrated in **Figure 7** and **Figure 8** below based on the results of the Travel Modes Surveys and adjusted for the total school population.

Participation rates for bus services are monitored annually in order to adjust routes where possible to maximise their use.

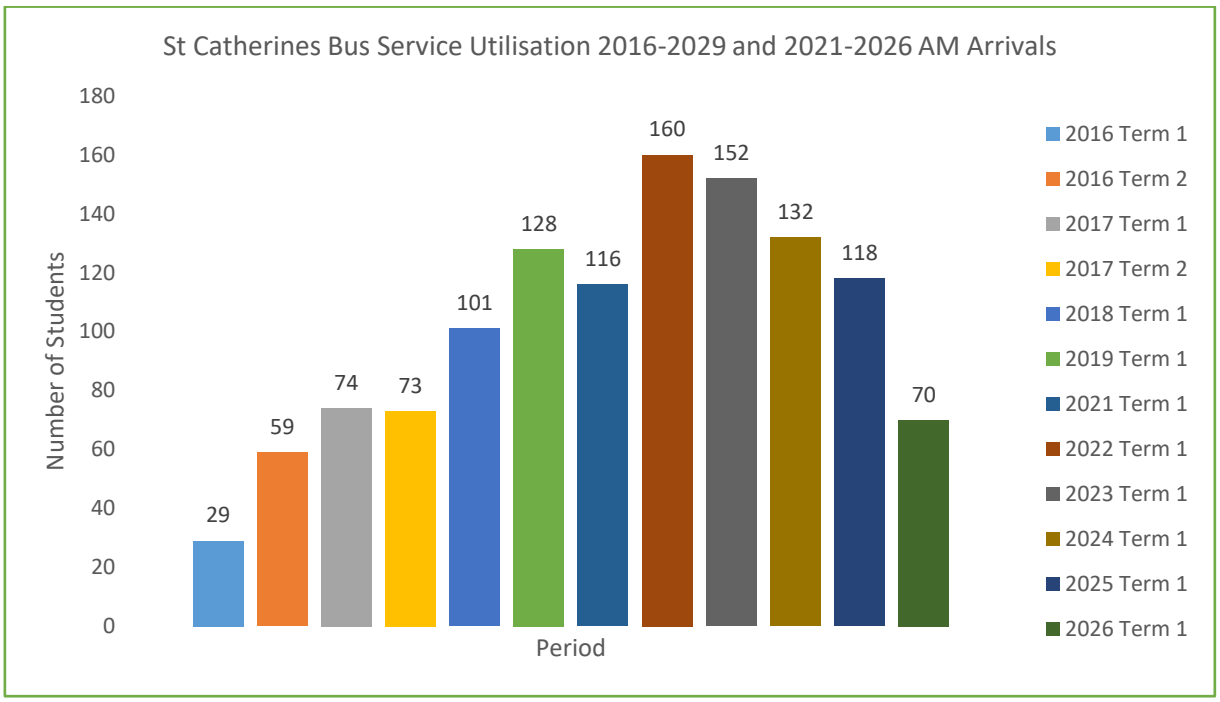

Figure 7: Bus Service Utilisation for AM arrivals in 2016-2019 and 2021-2026

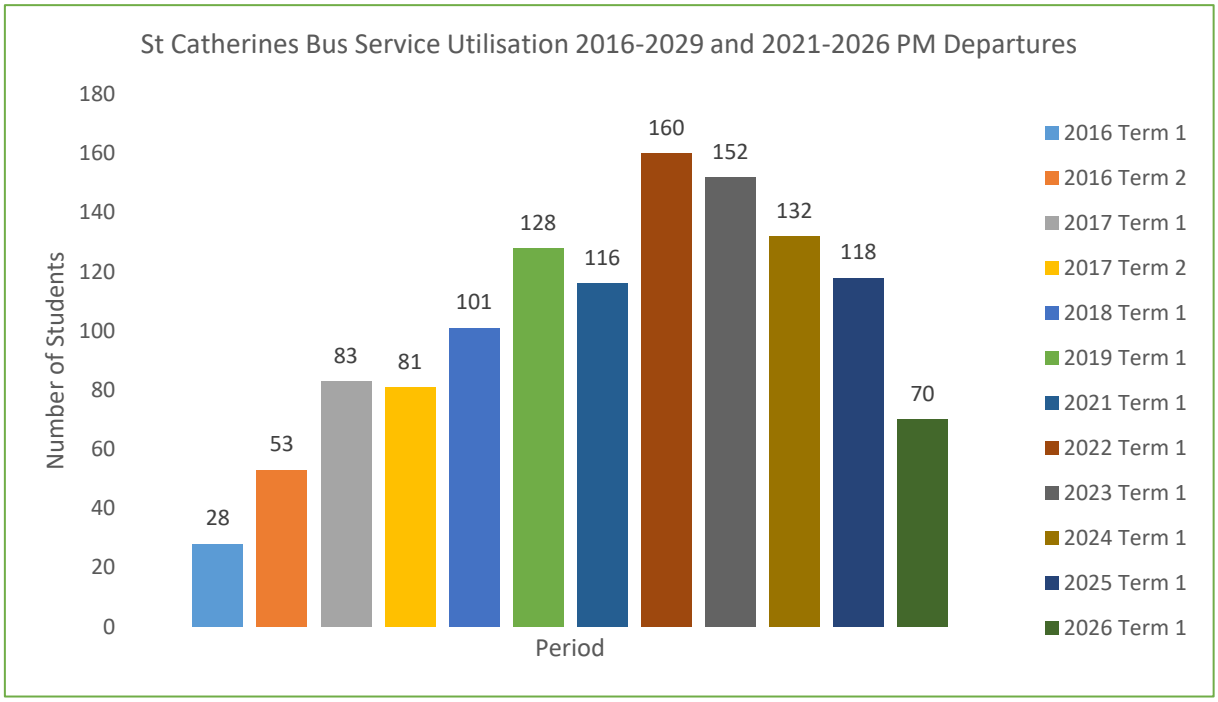

Figure 8: Bus Service Utilisation for PM departures in 2016-2019 and 2021-2026

3.10 School Opal Pass

Certain students may be eligible for a School Opal Pass. The pass allows for free travel for students on public transport between home and school on trains, buses, and ferries within the Opal network. Students are required to live a minimum distance from the school to be eligible for the School Opal Pass. The minimum distance requirements are provided in **Table 4** below.

Table 4: School Opal Card Requirements

Grade	Distance Requirement
Years K-2 infants	No requirement
Years 3-6 Primary	1.6km straight line distance or 2.3km walking or further
Years 7-12 Secondary	2.0km straight line distance or 2.9km walking or further

3.11 Travel Access Guide

A TAG has been developed by the school to distribute to staff, students, parents, and visitors. A copy of this document is provided in **Appendix E** for reference. The TAG provides relevant transport and access information and has been made available on both the internal and external websites of the school. Hard copies have also been distributed to staff and students.

3.12 Major Events on Campus (Not in PAC)

For existing major events held at the school (outside of the PAC), the St Johns Carpark is open for visitors and staff vehicles.

3.13 Approved Indicative Usage Profile

The OTMP addresses the utilisation of on-site car parking spaces for attendees of certain events in accordance with Schedule 3 Condition E7 of the development consent. The indicative usage profile for events in the aquatic centre and auditorium is provided within **Appendix D**.

4. ESTABLISHING BASELINE DATA

4.1 Travel Mode Surveys

In April 2014, ARUP undertook a travel mode survey of both the staff and students on site. The survey results as presented in the ARUP Traffic and Transport Assessment report dated 18 August 2014 established the existing mode share for both students and staff travelling to and from the site. The current student enrolments and staff employment is summarised in **Table 5** below.

TRAFFIX conducted further Travel Mode Surveys from 2017-2026 to obtain up to date survey information. The existing and updated travel mode splits for staff and students are provided in **Table 6** and **Table 7**, respectively. A copy of the 2026 TRAFFIX survey questionnaires are presented in **Appendix F** and **Appendix G.**

This section identifies current travel mode patterns for both students and staff at St Catherine's School. To enable this analysis, questionnaire surveys were distributed via the Survey Monkey website to staff and parents of school children between Monday 6 May 2026 and Tuesday 23 June 2026. This information is imperative to identifying the existing travel mode patterns and future impacts of the increase in student population.

The extended survey duration was maintained in 2026 in order to improve the response rates from staff and students. It is noted that the 2026 responses totalled 691 (K-Year 12 students) as compared with 579 in the 2014 surveys. In 2026, 92 full time and 21 part time staff responded to the travel surveys as compared to 86 full time and 17 part time staff who responded to the baseline 2014 travel surveys.

Table 5: Number of Students and Staff

Class	Count (Enrolment Records)	Count (Surveyed)	% (Surveyed)	2025 Response Rates
Full Time	148	92	62.2%	65.5%
Part Time	54	21	38.9%	35.2%
Casual	N/A	N/A	N/A	N/A
STAFF	**202**	**113**	**55.9%**	**57.4%**
Kindergarten	17	7	41.2%	60.0%
Year 1	23	10	43.5%	40.0%
Year 2	23	4	17.4%	45.5%
Year 3	45	17	37.8%	23.1%
Year 4	35	14	40.0%	44.9%
Year 5	99	32	32.3%	115.2%
Year 6	100	58	58.0%	95.1%
Year 7	110	82	74.5%	74.5%
Year 8	140	118	84.3%	81.5%
Year 9	138	105	76.1%	67.9%
Year 10	145	80	55.2%	64.7%
Year 11	119	82	68.9%	47.2%
Year 12	125	82	65.6%	74.8%
TOTAL STUDENTS	**1,119**	**691**	**61.8%**	**71.4%**

(Source: St Catherine's School Records and TRAFFIX Survey 2026)

Of the enrolled 202 staff and 1,119 students accounted for in the survey results, 113 staff and 691 students provided responses to the SurveyMonkey 2026 Travel Mode Questionnaire, resulting in a response rate of 55.9% and 61.8% among staff and students, respectively. The travel mode survey results are summarised in **Section 4.2** below.

It's noted that during the surveys of Years 5 and 6, data were duplicated by on-campus student responses and parent responses. This data set was deleted on discovery of the duplication, and the survey re-done by students on campus only.

4.2 Travel Mode Survey Results

4.2.1 Staff Modal Splits

Table 6 provides a comparison between baseline (2014 ARUP) and subsequent Staff Mode Travel Splits.

Table 6: 2014-2026 Staff Travel Mode Splits

Staff	Travel Mode Split (%)					
Year	Car Driver	Car Passenger	Public Transport	Walk	Cycle	Other
ARUP 2014	71%	3%	19%	5%	2%	0%
TRAFFIX 2017	70%	3%	16%	9%	2%	0%
TRAFFIX 2018	67%	3%	17%	8%	5%	0%
TRAFFIX 2019	67%	2%	19%	9%	2%	1%
2020	No travel mode surveys were conducted in 2020 due to COVID-19					
TRAFFIX 2021	70%	5%	10%	11%	2%	2%
TRAFFIX 2022	74%	4%	9%	8%	1%	5%
TRAFFIX 2023	72%	4%	10%	7%	1%	6%
TRAFFIX 2024	69%	2%	11%	10%	3%	5%
TRAFFIX 2025	76%	3%	6%	7%	3%	5%
TRAFFIX 2026	79%	1%	6%	5%	3%	6%
Variance 2014-2026 (% Points)	8%	-2%	-13%	0%	1%	6%

Source: ARUP and TRAFFIX Survey

Table 6 shows that the percentage of staff driving to the site has increased this year when compared with the 2014 baseline level, being 8% points higher. This indicates that approximately 160 staff drive to St. Catherine's School.

The number of respondents cycling to the site has increased by 1% point, respectively, which suggests a small proportion of staff live within active travel catchments.

The percentage of staff travelling to/from the site by public transport has decreased by 13% points, and this could be attributed to a number of factors including place of residence, access to public transport, convenience, before and after work commitments, and work requirements. It is noted that the proportion of staff using public transport has been relatively consistent from 2014 to 2019, with a noticeable drop-off after 2020.

4.2.2 Student Modal Splits (AM)

Table 7 provides a comparison between 2014 to 2026 Student Mode Travel Splits for the AM arrival of students.

Table 7: 2014-2026 Student Travel Mode Splits AM Arrivals

Students (AM)	Travel Mode Split (%)				
Year	Private Vehicle	Walk/Cycle	Bus Service St. Catherine's Bus	Public Transport	Other
ARUP 2014	60%	16%	4%	15%	5%
TRAFFIX 2017	55%	21%	7%	16%	0%
TRAFFIX 2018	54%	18%	8%	20%	0%
TRAFFIX 2019	51%	19%	10%	20%	0%
2020	No travel mode surveys were conducted in 2020 due to COVID-19				
TRAFFIX 2021	51%	19%	10%	20%	0%
TRAFFIX 2022	54%	16%	12%	16%	1%
TRAFFIX 2023	54%	16%	11%	17%	2%
TRAFFIX 2024	54%	14%	8%	21%	4%
TRAFFIX 2025	53%	15%	9%	19%	4%
TRAFFIX 2026	49%	19%	6%	21%	5%
Variance 2014-2026 (% Points)	-11%	3%	2%	6%	0%

Source: ARUP and TRAFFIX Survey

Table 7 shows that the proportion of students travelling by private vehicle in 2026 was less than the 2025 data (53%) and 11% points lower when compared against the 2014 baseline numbers. Furthermore, 49% (547) of students travelled to school by private vehicle during the AM Peak. An assessment against the 2014 baseline data is presented in Section 4.2.5 below.

The number of students travelling to the site by the St Catherine's private bus service decreased by 2% points from the 2014 baseline data. In addition, the number of students utilising public transport has seen an increase of 6% compared to the 2014 baseline data.

4.2.3 Student Modal Splits (PM)

Table 8 provides a comparison between 2014 to 2026 Student Mode Travel Splits for the PM departure of students.

Table 8: 2014-2026 Student Travel Mode Splits PM Departures

Students (PM)	Travel Mode Split (Percentage				
Year	Private Vehicle	Walk/Cycle	Bus Service St. Catherine's Bus	Public Transport	Other
ARUP 2014	46%	24%	7%	18%	5%
TRAFFIX 2017	45%	25%	7%	24%	0%
TRAFFIX 2018	43%	22%	9%	26%	0%
TRAFFIX 2019	42%	23%	10%	24%	0%
2020	No travel mode surveys were conducted in 2020 due to COVID-19				
TRAFFIX 2021	44%	23%	9%	24%	0%
TRAFFIX 2022	45%	21%	11%	22%	1%
TRAFFIX 2023	44%	21%	11%	22%	2%
TRAFFIX 2024	42%	20%	8%	26%	4%
TRAFFIX 2025	43%	21%	8%	24%	4%
TRAFFIX 2026	40%	23%	4%	28%	5%
Variance 2014-2026 (% Points)	-6%	-1%	-3%	10%	0%

Source: ARUP and TRAFFIX Survey

Table 8 shows that the number of students travelling home by private vehicle from the site decreased by 3% points when compared with 2025 surveys and decreased by 6% points in comparison with 2014 baseline numbers. If the sample surveyed is indicative of the population, it can be estimated that 448 students travel home from St Catherine's School by car. An assessment against the 2014 baseline data is presented in Section 4.2.5 below.

The number of students travelling from the site by public transport increased by 10% points (an additional 138 students). Additionally, the number of students travelling home by the St Catherine's private bus service decreased by 3% points when compared to 2014 baseline numbers.

In summary, it is evident from comparison of the ARUP 2014 and the TRAFFIX 2026 student travel mode splits shown in Table 7 and Table 8, that there is a reduction in private vehicle

usage and an increase in public transport usage. The reduction is significant and in the order of 11% points and 6% points in the AM and PM peak period, respectively.

4.2.4 Student Car Occupancy

Table 9 outlines the car occupancy results from the 2026 questionnaire survey.

Table 9: Private Vehicle Occupancy

Private Vehicle Occupancy (Number of students in vehicle)	AM		PM	
	No. of Students	No. of Vehicles	No. of Students	No. of Vehicles
1	329	329	321	321
2	171	86	141	71
3	42	14	29	10
4	9	2	19	5
5	7	1	0	0
SUM	558	432	510	407
Car Occupancy	**1.29**		**1.25**	

As seen from the above table, the travel mode surveys indicate a private vehicle occupancy rate of 1.29 students per vehicle in the morning drop-off period and 1.25 students per vehicle during the afternoon pick-up period.

It is highly noteworthy that 2014 surveys adopted a car occupancy rate of 1.2 students per vehicle based on observations. This is a relevant factor when determining the overall number of vehicles traveling to/from the site and that there is "no increase in traffic" when assessing against the 2014 baseline data.

4.2.5 2014 vs 2026 Private Vehicle Trips

Noting the travel mode splits and the car occupancies detailed above, the number of private vehicle trips can be calculated, and a comparison made between 2014 and 2026 data. A summary of the private vehicle trips is presented in Table 10 below:

Table 10: Private Vehicle Trips – 2014 vs 2026

Type	Number of Private Vehicle Trips			
	AM		PM	
	2014	2026	2014	2026
Staff	150[1]	160[1]	150[1]	160[1]
Students	498[2]	425[3]	403[2]	358[4]
Total Private Vehicles	**648**	**585**	**553**	**518**
Difference	**-63**		**-35**	

[1] Car occupancy of 1 staff per vehicle

[2] Car occupancy of 1.2 students per vehicle (ARUP assumption)

[3] Car occupancy of 1.29 students per vehicle

[4] Car occupancy of 1.25 students per vehicle

As can be seen from Table 10, there has been a combined reduction of 63 private vehicle trips in the AM and 35 in the PM periods when assessed against the 2014 baseline data. Therefore, there has not been a net increase in private vehicle trips to/from the site, meeting the DA Conditions.

4.3 Future Travel Strategies

A number of travel strategies have already been put into place to encourage active travel, reduce the reliance on private vehicle travel for staff and students and to minimise the traffic impacts from activities undertaken within the school campus. The 2014 ARUP report provided travel mode targets for staff and students to achieve no net increase in private vehicle trips to the school.

Table 11 identifies the student numbers required to use alternative modes of transport for the years 2014 to 2030 to ensure no net increase in traffic is generated as the student population increases.

Table 11: Student Population from 2014-2030

Year	Total Student Population	Students by Private Vehicle	Students by Private Bus	Other	Students by Public Transport	Students by Active Travel
2014	970	582	39	48	146	155
2018	1,020	550	82	0	204	184
2019	1,014	517	101	0	203	193
2020	No surveys conducted due to COVID-19					
2021	1,021	521	102	0	204	194
2022	1,021	550	124	12	167	167
2023	1,065	573	120	21	183	168
2024	1,110	599	78	44	233	156
2025	1,124	596	101	45	213	169
2026	1,119	547	64	53	231	224
2027	1,155	582	84	-	246	243
2028	1,170	582	104	-	261	223
2029	1,185	582	121	-	276	238
2030	1,200	582	130	-	291	197

NOTE: Travel mode percentages based on AM Peak Period which has a higher number of vehicle trips. Numbers coloured white are subject to approval.
The above numbers do not take into consideration the car occupancy rates, which impact the number of vehicles travelling to/from the school.

It can be seen in Table 11 that in 2030 when the school has a capacity of 1,200 students and under the circumstance that all non-private vehicle travel modes are utilised by new students equally, 130 students will be required to travel by private bus, 244 students by public transport and 244 students by active travel modes.

In addition, the student population increases have been divided evenly amongst all other modes of transport between 2027 and 2030. These figures are indicative and expected to be different in reality which has been the case between 2014 and 2026 as demonstrated above. Table 11 is to be updated each year to reflect the actual travel mode patterns of the student population.

5. TRAFFIC SURVEY ANALYSIS

5.1 Context

In order to measure the effectiveness of the OTMP and to have an accurate method of monitoring the condition of consent (Schedule 2, Condition A8) which states that "*The plan must identify mode share targets for the proposed travel strategies that target a reduction in private vehicle trips and ensure no net increase in vehicle trips, as detailed in condition A8 of Schedule 3*", traffic surveys in the form of automatic tube counts and peak period turning counts at the critical intersections surrounding the site were undertaken in March 2014 by ARUP and by TRAFFIX in the period 2016-2026, excluding 2020. The 2020 traffic surveys were not undertaken due to the COVID-19 pandemic restrictions in place in March 2020.

The results of the surveys are summarised in **Table 12** and presents the baseline data that will be used to assess the traffic impacts associated with the school's operations. The locations of the counters are shown in **Figure 9**. To maintain a consistent approach to the assessment, the same locations have been surveyed for one (1) week during the school term, and during one (1) week of the school holidays. The 2026 traffic survey considers the existing travel strategies that have been implemented to help identify any reductions in traffic volumes (when compared with the 2014 baseline) that has already been achieved.

The CCC was established for this project in December 2016 in accordance with the Development Consent. The committee determined that an additional tube count location on Bronte Road, between Henrietta Street and High Street, be conducted from 2018 onwards to determine the traffic entry of the street network at the intersection of Bronte Road and Leichhardt Street.

In summary, tube traffic counts were conducted on the following streets from 11 April to 17 April and 21 April to 28 April 2026. It is noted that the counts undertaken within the holiday period (11 April to 17 April) were compromised via vandalism and a parked vehicle. The holiday period was re-surveyed between 6 July and 12 July 2026.

- Albion Street (between Santa Marina Avenue and Macpherson Street);
- Macpherson Street (between Albion Street and Wills Avenue);
- Leichhardt Street (between Lugar Brae Avenue and Macpherson Street); and

- Bronte Road (between Prospect Street and Henrietta Street).

Turning movement counts were conducted during the AM and PM peak periods on Saturday 11 April, Sunday 12 April, Thursday 16 April, Thursday 23 April, Saturday 25 April, and Sunday 26 April 2026 at the following intersections:

- Macpherson Street / Leichhardt Street;
- Bronte Road / Albion Street;
- Bronte Road / Leichhardt Street; and
- Albion Street / Macpherson Street.

Surveys of the drop-off pick-up zones were undertaken during an AM and PM school peak periods on Wednesday, 6 May 2026 at:

- Both sides of Albion Street;
- The north side of Macpherson Street; and
- The west side of Leichhardt Street.

The tube counts completed in 2026 are consistent with similar counts conducted as part of the 2014 benchmark with the exception of Bronte Road, which was added in 2018.

For the 2026 surveys, on-street car parking surveys were undertaken between 6:00pm-10:00pm on Thursday 30 April, Saturday 2 May, Thursday 7 May, and Saturday 9 May 2026 within 300m (approx.) of the school. These surveys were also consistent with the 2025 surveys. These surveys were conducted to gain an understanding of the impacts of large events at the PAC, which occurred on the 30th April and 2nd of May 2026. The extent of the surveys is outlined in **Figure 33** in Section 5.4.

Figure 9: Location of Traffic Surveys

5.2 Survey Results (Tube Counts)

The detailed survey results of the annual traffic volume counts are provided in **Tables 12**, **13**, **14**, and **15** as well as **Figures 10**, **11**, **12**, and **13**.

5.2.1 School Term Hourly Volumes

The surveys show that there has been a moderate decrease (-16.3%) in traffic volumes during the AM (8:00am-9:00am) peak and a moderate decrease (-17.1%) in traffic volumes during the PM (3:00pm-4:00pm) peak surrounding the school when comparing to 2014 volumes.

When compared to the 2025 surveys there has been a minor decrease (-3.8%) in traffic volumes during the AM (8:00am-9:00am) school peak and a minor decrease (-2.1%) in traffic volumes during the PM (3:00pm-4:00pm) school peak.

The AM (9-10am) and PM (5-7pm) commuter peak periods have seen a moderate reduction in overall traffic volumes when compared to 2014 volumes. The AM commuter peak saw a decrease of -10.2% between 9am-10am. The PM reductions equate to a decrease of -19.8% between 5pm-6pm, and -34.6% between 6-7pm. Whilst the exact reasons for this is unclear, it may be a result of a number of factors, including the increase in people working from home, climate change awareness, reduced reliance on motor vehicles for certain activities, general traffic congestion, and parking limitations, which make vehicle use less convenient and a trend to increasing use of public transport. This decrease is consistent with the results of the 2025 surveys.

The weekend PM peak (12-1pm) has seen a minor decrease in overall traffic volumes, equating to a decrease of -6.6% when compared to 2014 volumes.

5.2.2 School Holidays Hourly Volumes

The surveys show that during the school vacation period, there has been a moderate decrease (-16.5%) in traffic volumes during the AM (8:00am-9:00am) peak and a moderate decrease (-10.8%) in traffic volumes during the PM (3:00pm-4:00pm) peak surrounding the school when comparing to 2016 volumes.

When compared to the 2025 surveys there has been a minor decrease (-0.8%) in traffic volumes during the AM (8:00am-9:00am) peak and a minor increase (1.8%) in traffic volumes during the PM (3:00pm-4:00pm) peak.

The weekday commuter AM peak period during the school vacation period has seen a notable reduction in overall traffic volumes when compared to 2016 volumes, equating to a decrease of -35.6% between 9am-10am. The weekday PM commuter peaks have seen a notable decrease (-36.6%) between 5-6pm and a significant decrease (-62.8%) between 6-7pm.

The weekend PM peak (12-1pm) during the school vacation period has seen a minor decrease in overall traffic volumes, equating to a decrease of -8.2% when compared to 2016 volumes.

Table 12: Average Mid-block Volumes 2014-2026 (School Term)

Location	Years of surveys compared		Weekday AM Peak (8am-9am)	Weekday AM Commuter Only Peak (9am-10am)	Weekday PM School Only Peak (3pm-4pm)	Weekday PM Commuter Only Peak (5pm-6pm)	Weekday PM Commuter Only Peak (6pm-7pm)	Weekend PM Peak (12pm-1pm)
Leichhardt Street	2014		1,181	910	1,170	1,215	1,102	1,234
	2016		1,094	955	1,057	1,151	1,055	1,196
	2017		1,138	1,193	1024	1,215	1,280	1,373
	2018		1,322	1,027	1,371	1,392	1,168	1,398
	2019		1,164	1,040	1,161	1,329	1,189	1,401
	2020		No mid-block counts were conducted in 2020 due to COVID-19					
	2021		1,125	1,014	1,194	1,302	1,205	1,202
	2022		1,152	937	1,086	1,212	994	1,321
	2023		1,124	893	1,146	1,216	1,020	1,340
	2024		1,132	899	1,134	1,073	958	1,361
	2025		1,047	924	1,102	1,088	954	1,274
	2026		1,092	880	1,040	1,066	884	1,328
	2014-2026	No.	-89	-30	-130	-149	-218	94
	2014-2026	%	-8.15%	-3.41%	-12.50%	-13.98%	-24.66%	7.08%
Albion Street	2014		660	568	766	722	746	677
	2016		681	555	625	624	609	677
	2017		604	664	776	611	567	717
	2018		757	591	755	746	653	744
	2019		717	601	714	744	678	445
	2020		No mid-block counts were conducted in 2020 due to COVID-19					
	2021		776	594	658	720	612	491
	2022		835	542	691	704	601	777

	2023		817	549	734	741	658	701
	2024		817	523	767	800	639	711
	2025		589	237	598	582	463	617
	2026		641	478	656	636	488	607
	2014-2026	No.	-19	-90	-110	-86	-258	-70
	2014-2026	%	-2.96%	-18.83%	-16.77%	-13.52%	-52.87%	-11.53%
Macpherson Street	2014		1,181	910	1,170	1,215	1,102	1,234
	2016		1,094	955	1,057	1,151	1,055	1,196
	2017		1,138	1,193	1,024	1,215	1,280	1,373
	2018		1,322	1,027	1,371	1,392	1,168	1,398
	2019		1,026	940	1,084	1,121	1,056	1,213
	2020		No mid-block counts were conducted in 2020 due to COVID-19					
	2021		992	980	1,021	961	746	979
	2022		1039	865	1,036	1063	856	1062
	2023		916	762	966	972	818	996
	2024		908	804	942	1000	730	975
	2025		917	831	1,007	976	785	1041
	2026		853	795	924	840	721	1040
	2014-2026	No.	-328	-115	-246	-375	-381	-194
	2014-2026	%	-38.45%	-14.47%	-26.62%	-44.64%	-52.84%	-18.65%
Bronte Road	2018		502	435	575	626	541	596
	2019		451	461	572	646	571	511
	2020		No mid-block counts were conducted in 2020 due to COVID-19					
	2021		543	464	615	633	585	561
	2022		597	463	587	637	485	620
	2023		662	505	653	724	602	640

	2024		607	460	613	688	593	610
	2025		444	355	472	519	457	555
	2026		518	394	531	565	466	521
	2018-2026	No.	16	-41	-44	-61	-75	-75
	2018-2026	%	3.09%	-10.41%	-8.29%	-10.80%	-16.09%	-14.40%
Overall	2014		2,956	2,420	3,140	3,072	2,911	3,113
	2016		2,797	2,392	2,639	2,749	2,559	2,933
	2017		2,863	2,923	2,639	2,866	2,906	3,211
	2018 (excluding Bronte Rd)		3,208	2,594	3,339	3,306	2,805	3,381
	2019 (excluding Bronte Road)		2,907	2,581	2,959	3,194	2,923	3,059
	2020		No mid-block counts were conducted in 2020 due to COVID-19					
	2021(excluding Bronte Road)		2,893	2,588	2,873	2,983	2,563	2,672
	2022(excluding Bronte Road)		3,026	2,344	2,813	2,979	2,451	3,160
	2023 (excluding Bronte Road)		2,857	2,204	2,846	2,929	2,496	3,037
	2024 (excluding Bronte Road)		2,857	2,226	2,843	2,873	2,327	3,047
	2025 (excluding Bronte Road)		2,553	1,992	2,707	2,646	2,202	2,932
	2026 (excluding Bronte Road)		2,541	2,197	2,682	2,564	2,163	2,921

Table 13: Average Mid-block Volumes 2016-2026 (School Holidays)

Location	Years of surveys compared	Weekday AM Peak(8am-9am)	Weekday AM Commuter Only Peak (9am-10am)	Weekday PM School Only Peak (3pm-4pm)	Weekday PM Commuter Only Peak (5pm-6pm)	Weekday PM Commuter Only Peak (6pm-7pm)	Weekend PM Peak (12pm-1pm)
Overall	2016	2,326	2,338	2,507	2,516	2,214	2,730
	2017	2,450	2,406	2,587	2,715	2,435	3,174
	2018 (excluding Bronte Rd)	2,567	2,482	2,657	2,780	2,315	3,034
	2019 (excluding Bronte Road)	2,559	2,382	2,773	2,826	2,546	3,164
	2021(excluding Bronte Road)	2,094	2,155	2,391	2,540	2,377	2,672
	2022(excluding Bronte Road)	2,028	2,141	2,505	2,384	1,801	2,681
	2023(excluding Bronte Road)	2,407	2,209	2,408	2,494	2,114	2,344
	2024(excluding Bronte Road)	2,263	2,185	2,329	2,417	1,983	2,712
	2025 (excluding Bronte Road)	2,013	2,062	2,120	2,110	1,847	2,677
	2026 (excluding Bronte Road)	1,997	2,063	2,158	1,932	1,689	2,365

Table 14: Total Daily Traffic Volumes per Day 2014-2026 (School Term)

Year of Survey	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Average Weekday	7 Day Average
2014	37,921	38,648	39,661	40,544	39,285	40,605	35,335	39,212	38,857
2016	34,477	35,934	36,138	37,854	38,705	38,169	29,792	36,620	35,865
2017	35,572	39,951	40,322	40,438	40,287	39,571	36,390	39,311	38,932
2018	39,326	40,052	41,850	43,290	44,133	41,342	37,784	41,728	41,110
2019	38,431	38,703	40,668	40,754	40,841	40,534	38,134	39,879	39,879
2020	No mid-block counts were conducted in 2020 due to COVID-19								
2021	35,391	37,497	41,293	42,510	27,432	29,161	24,393	36,825	33,954
2022	34,978	36,988	37,941	37,310	40,558	38,620	31,473	37,555	36,838
2023	33,981	35,005	37,798	36,588	39,619	39,401	30,083	36,598	36,068
2024	32,761	35,632	37,125	36,700	39,639	37,954	31,573	36,371	35,912
2025	30,988	33,097	32,196	32,747	37,335	37,750	32,002	33,273	33,731
2026	31,546	32,899	32,792	33,693	35,837	37,783	30,579	33,353	33,590

Table 15: Total Daily Traffic Volumes per Day 2016-2026 (School Holidays)

Year of Survey	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Average Weekday	7 Day Average
2016	32,964	33,410	35,438	34,516	35,784	32,594	32,134	34,421	33,833
2017	37,313	36,349	36,639	37,989	32,273	42,462	34,243	36,110	36,749
2018	35,544	35,094	36,410	37,863	38,123	36,247	33,579	36,606	36,122
2019	35,056	36,528	38,325	39,228	34,729	40,323	34,557	36,773	36,964
2020	No mid-block counts were conducted in 2020 due to COVID-19								
2021	27,106	32,933	34,634	35,860	37,844	35,355	30,854	33,676	33,512
2022	26,931	33,812	N/A*	34,132	33,761	32,461	29,667	33,676	31,794
2023	31,552	33,528	34,600	31,913	33,796	33,640	28,400	33,078	32,138
2024	28,848	33,628	32,828	34,368	30,227	36,918	28,564	31,980	32,197
2025	29,723	30,671	28,411	34,143	26,933	34,350	30,875	29,976	30,729
2026	26,455	27,718	29,171	28,210	30,657	30,149	25,918	28,442	28,325

*It is noted that Wednesday 27 April 2022 was the date that students returned to school and as such the data from this date has been excluded from the holiday volumes

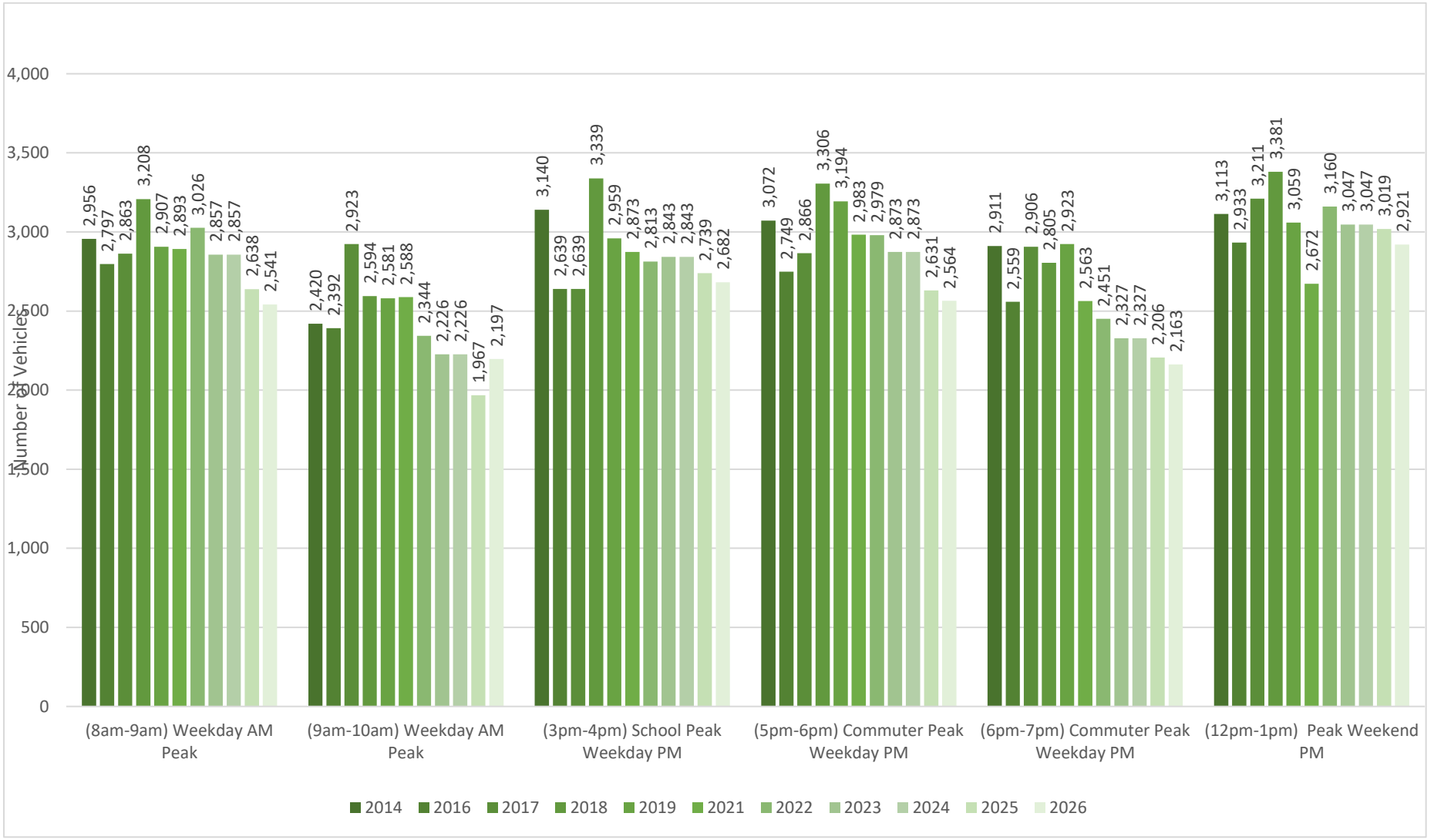

Figure 10: Hourly Traffic Volumes at Critical Times 2014-2026 (School Term)

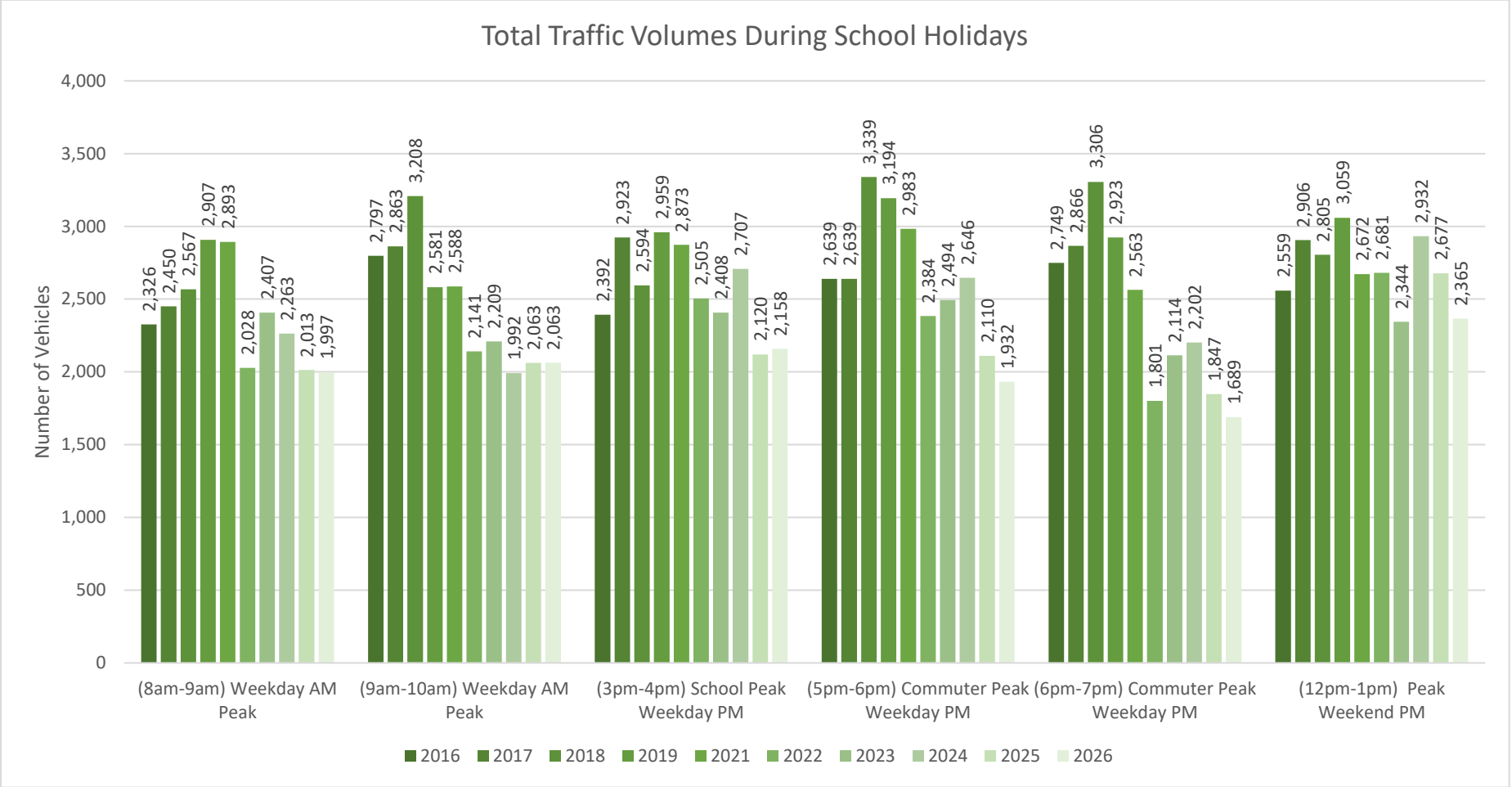

Figure 11: Hourly Traffic Volumes at Critical Times 2016-2026 (School Holidays)

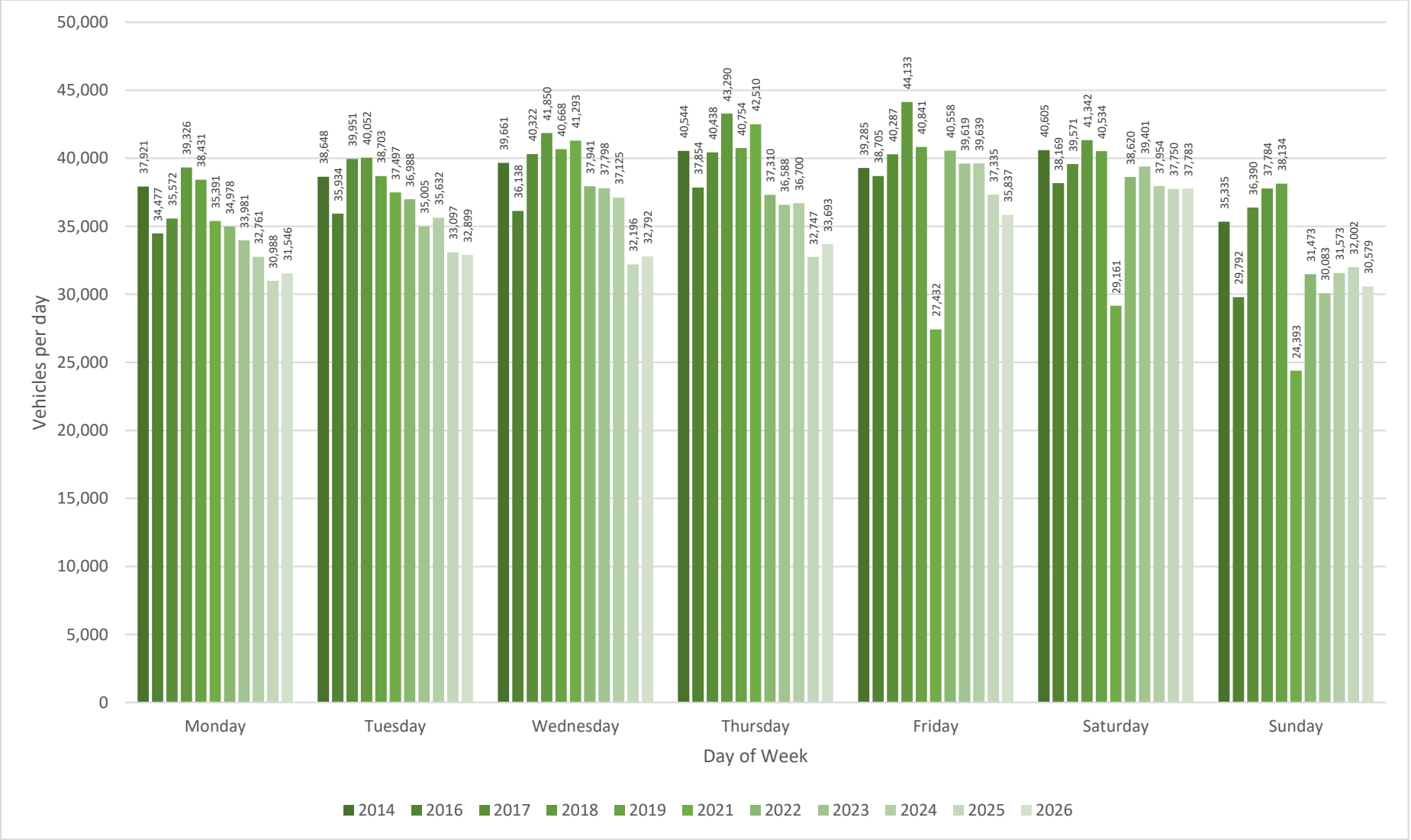

Figure 12: Daily Traffic Volume 2014-2026 (School Term)

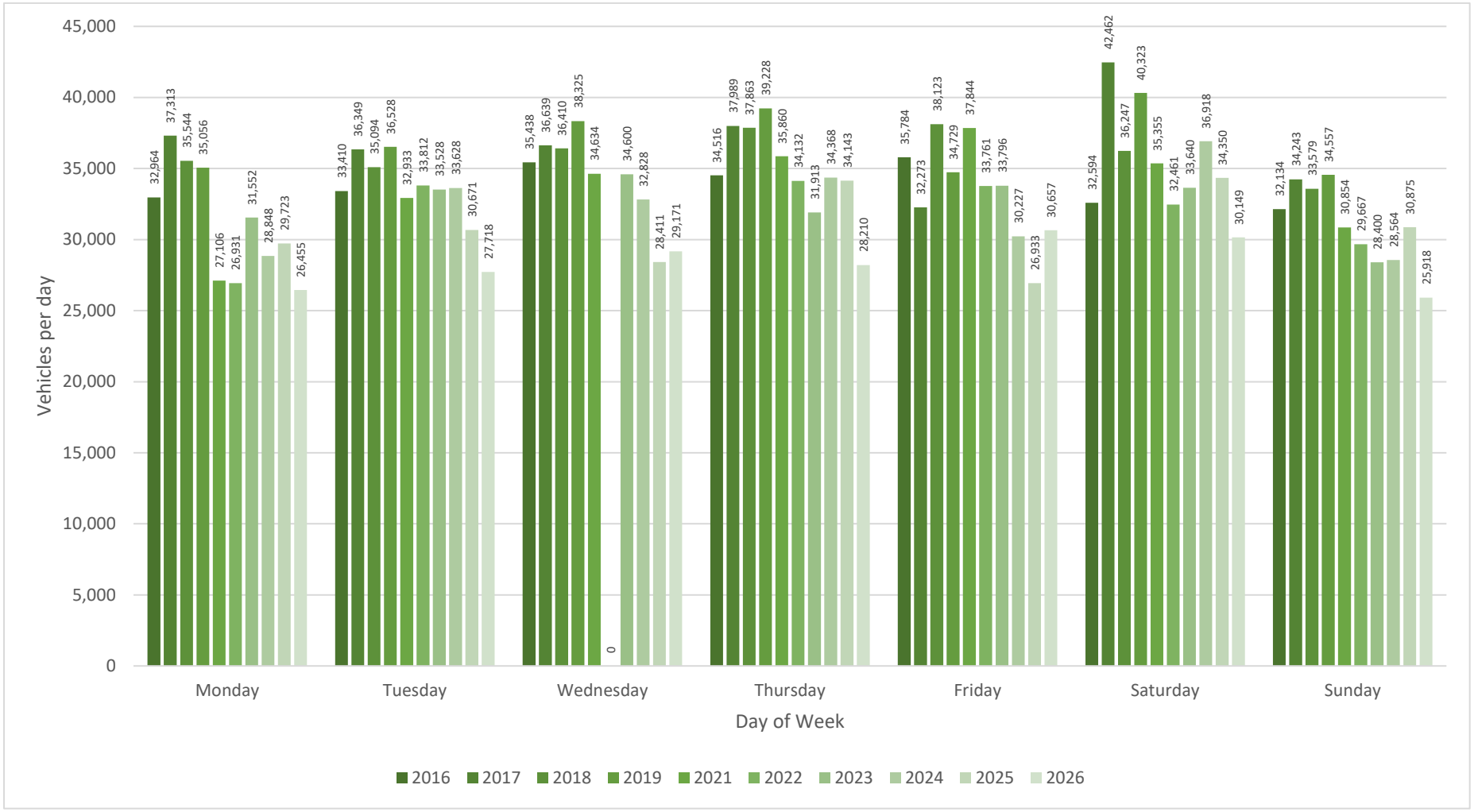

Figure 13: Daily Traffic Volume 2016-2026 (School Holidays)

5.3 Traffic Distribution 2026 (Intersection Counts)

5.3.1 Intersection Traffic Volumes

Figures 14 to **19** below present the hourly turning counts at each intersection during the respective weekday peak periods.

Figure 14: AM Peak (8-9am) Turning Counts during School Term

Figure 15: PM School Peak (3–4pm) Turning Counts during School Term

Figure 16: PM Peak (5–6pm) Turning Counts during School Term

Figure 17: AM Peak (8-9am) Turning Counts during School Holidays

Figure 18: PM School Peak (3–4pm) Turning Counts during School Holidays

Figure 19: PM Peak (5–6pm) Turning Counts during School Holidays

5.3.2 Difference in Term vs Holiday Intersection Volumes

Figures 20 to **22** below show the difference in a typical school term day and a typical school holiday during the AM peak (8:00am – 9:00am), the school PM peak (3:00pm – 4:00pm) and the commuter PM peak (5:00pm – 6:00pm). The numbers presented in the figures below are the school term volumes minus the school holiday volumes. The scale of impact of change is shown by darker shades of grey.

Figure 20: AM School Peak (8-9am) Turning Count Differences

Figure 21: PM School Peak (3-4pm) Turning Count Differences

Figure 22: PM Peak (5-6pm) Turning Count Differences

Each intersection experienced a moderate change in the volume of traffic between the school term and school holidays. The AM peak (8:00am – 9:00am) saw a reduction of 23.7% in the school holidays from the school term volumes. The school PM peak (3:00pm – 4:00pm) saw a reduction of 5.1% and the commuter PM peak (5:00pm – 6:00pm) saw a reduction of 8.1%. As with all school developments, this reduction during the school holiday period is expected due to vehicle movements associated with drop-off and pick-up.

5.3.3 Midblock Traffic Volumes

Figures 23 to **28** present the hourly midblock counts on each road during the respective peak periods.

Figure 23: AM Peak (8-9am) Mid-Block Counts during School Term

Figure 24: PM School Peak (3–4pm) Mid-Block Counts during School Term

Figure 25: PM Commuter Peak (5-6pm) Mid-Block Counts during School Term

Figure 26: AM Peak (8-9am) Mid-Block Counts during School Holidays

Figure 27: PM Peak (3-4pm) Mid-Block Counts during School Holidays

Figure 28: PM Commuter Peak (5–6pm) Mid-Block Counts during School Holidays

5.3.4 Difference in Term vs Holiday Midblock Volumes

Figures 29 to **31** below show the difference between midblock flows in a typical school term day and a typical school holiday during the AM peak (8:00am – 9:00am), the school PM peak (3:00pm – 4:00pm) and the commuter PM peak (5:00pm – 6:00pm). The numbers presented in the figures below are the school term volumes minus the school holiday volumes. A darker shade of grey indicates a greater difference between the school term and holiday counts.

Figure 29: AM Peak (8-9am) Midblock Count Differences (School Term vs. School Holidays)

Figure 30: PM Peak (3-4pm) Midblock Count Differences (School Term vs. School Holidays)

Figure 31: PM Peak (5-6pm) Midblock Count Differences (School Term vs. School Holidays)

It can be observed from Figures 29, 30, and 31 above that the traffic volumes along Leichhardt Street, Macpherson Street, Bronte Road, and Albion Street saw a moderate change in the volume of traffic between the school term and school holidays. The AM peak (8:00am – 9:00am) saw a reduction of 21.6%, the school PM peak (3:00pm – 4:00pm) saw a reduction of 17.4% and the commuter PM peak (5:00pm – 6:00pm) saw a reduction of 24.2% during the holiday period compared to the school term period.

This decrease is expected due to reduction of vehicle movements associated with student drop-off and pick-up movements. It is however noteworthy that this downward trend is also reflected in the commuter PM peak between 5:00pm and 6:00pm, suggesting that this is an overall network trend between the school term and school holidays traffic movements. As such, the school does not appear to be having a significant impact on traffic flows on the roads adjacent to the school.

5.3.5 Drop-off and Pick-up Zone Counts

The drop-off and pick-up parking zones surveyed are shown in **Figure 32**.

Figure 32: Drop-off and Pick-up Zones

The results of the conducted surveys are summarized in **Table 16** to **19** below.

Table 16: Drop-off and Pick-up Counts (Site 1 - Albion Street West)

AM Time	AM Drop-Off (vehicles)	PM Time	PM Pick-Up (vehicles)
7:00 – 7:15	1	2:30 – 2:45	0
7:15 – 7:30	3	2:45 – 3:00	0
7:30 – 7:45	2	3:00 – 3:15	1
7:45 – 8:00	13	3:15 – 3:30	8
8:00 – 8:15	18	3:30 – 3:45	6
8:15 – 8:30	15	3:45 – 4:00	1
8:30 – 8:45	2	4:00 – 4:15	1
8:45 – 9:00	1	4:15 - 4:30	1
Total	**55**	**Total**	**18**

Table 17: Drop-off and Pick-up Counts (Site 2 - Albion Street East)

AM Time	AM Drop-Off (vehicles)	PM Time	PM Pick-Up (vehicles)
7:00 – 7:15	3	2:30 – 2:45	0
7:15 – 7:30	3	2:45 – 3:00	0
7:30 – 7:45	6	3:00 – 3:15	0
7:45 – 8:00	19	3:15 – 3:30	9
8:00 – 8:15	18	3:30 – 3:45	3
8:15 – 8:30	15	3:45 – 4:00	0
8:30 – 8:45	0	4:00 – 4:15	2
8:45 – 9:00	0	4:15 - 4:30	1
Total	**64**	**Total**	**15**

Table 18: Drop-off and Pick-up Counts (Site 3 - Macpherson Street)

AM Time	AM Drop-Off (vehicles)	PM Time	PM Pick-Up (vehicles)
7:00 – 7:15	9	2:30 – 2:45	0
7:15 – 7:30	6	2:45 – 3:00	0
7:30 – 7:45	7	3:00 – 3:15	23
7:45 – 8:00	43	3:15 – 3:30	24
8:00 – 8:15	53	3:30 – 3:45	10
8:15 – 8:30	19	3:45 – 4:00	1
8:30 – 8:45	0	4:00 – 4:15	6
8:45 – 9:00	1	4:15 - 4:30	4
Total	**138**	**Total**	**68**

Table 19: Drop-off and Pick-up Counts (Site 4 - Leichhardt Street)

AM Time	AM Drop-Off (vehicles)	PM Time	PM Pick-Up (vehicles)
7:00 – 7:15	0	2:30 – 2:45	0
7:15 – 7:30	0	2:45 – 3:00	0
7:30 – 7:45	0	3:00 – 3:15	10
7:45 – 8:00	27	3:15 – 3:30	0
8:00 – 8:15	39	3:30 – 3:45	1
8:15 – 8:30	18	3:45 – 4:00	0
8:30 – 8:45	2	4:00 – 4:15	5
8:45 – 9:00	0	4:15 - 4:30	11
Total	**86**	**Total**	**27**

The 2026 surveys encapsulated a longer survey duration as per the 2025 surveys, with the morning survey period commencing at 7:00am and the evening surveys finishing at 4:30pm to

capture all drop-off and pick-up activities within these zones. It is noted that the surveys were undertaken prior to the signage changes along Albion Street.

The 2026 surveys found a general increase in use of drop-off pick-up locations, where a moderate increase of 13% and 25% was observed during the PM pick up at Site 1 – Albion Street West and Site 2 – Albion Street East, respectively. An increase of 23% and 32% was observed during the AM drop off at Site 3 – Macpherson Street and Site 4 – Leichhardt Street, respectively. The 2026 surveys found a minor decrease in drop-off on Albion Street in the AM period, ranging from 3-4% decreases at Sites 1 and 2

Overall, there is a minor increase in use of drop-off and pick-up in 2026 when compared to 2025, where there is a general uptake in overall usage of DOPU zones.

5.4 On-Street Parking

On-street parking surveys were conducted within an approximately 300m radius of the school during a period of performance nights (Thursday 30th April and Saturday 2nd May 2026) and on a typical non-performance night (Thursday 7th May and Saturday 9th May 2026). These surveys were conducted between 6:00pm and 10:00pm.

The extent of the on-street parking surveys is illustrated in **Figure 33** below.

Figure 33: On Street Parking Survey Extent

5.4.1 On-Street Parking Survey Results

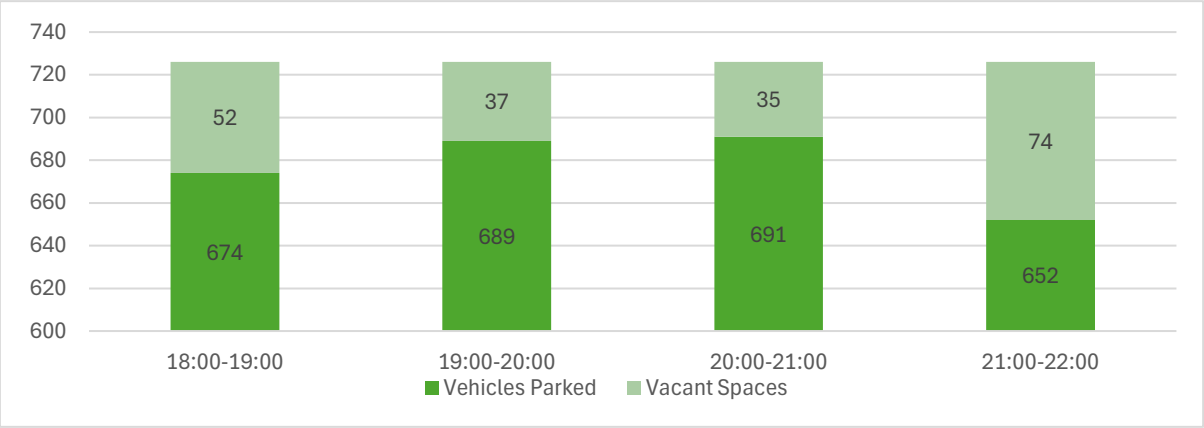

Figure 34: Thursday 30 April 2026 (Thursday Performance Night)

It can be seen from Figure 34 that the peak on-street parking capacity was identified between 8:00pm to 9:00pm with 691 vehicles parked (95.2%) and 35 vacant spaces (4.8%). On average, there were 677 vehicles parked (93%) and 50 vacant spaces (7%) between 6:00pm and 10:00pm.

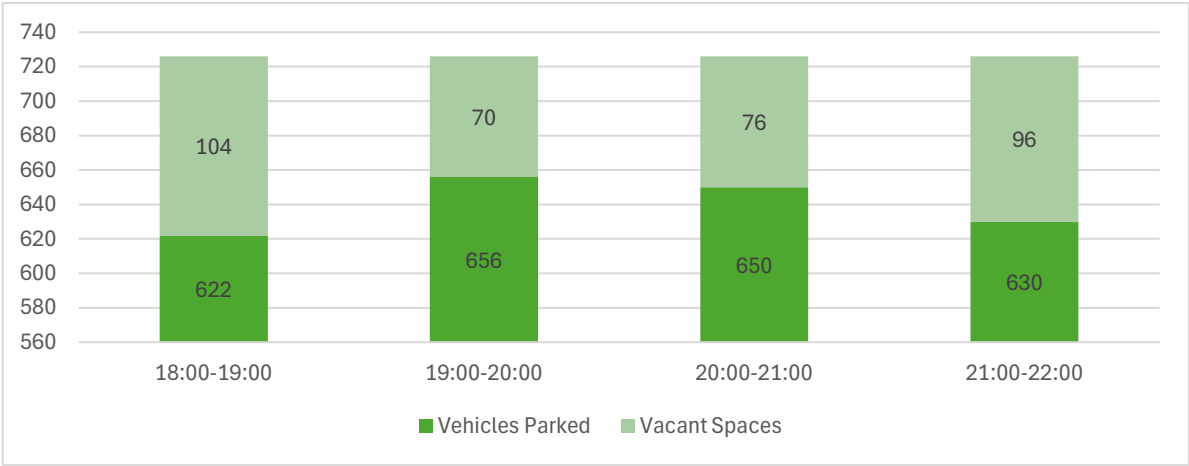

Figure 35: Saturday 02 May 2026 (Saturday Performance Night)

It can be seen from Figure 35 that the peak on-street parking capacity was identified between 7:00pm to 8:00pm with 656 vehicles parked (90.4%) and 70 vacant spaces (9.6%). On average, there were 640 vehicles parked (88.1%) and 87 vacant spaces (11.9%) between 6:00pm and 10:00pm.

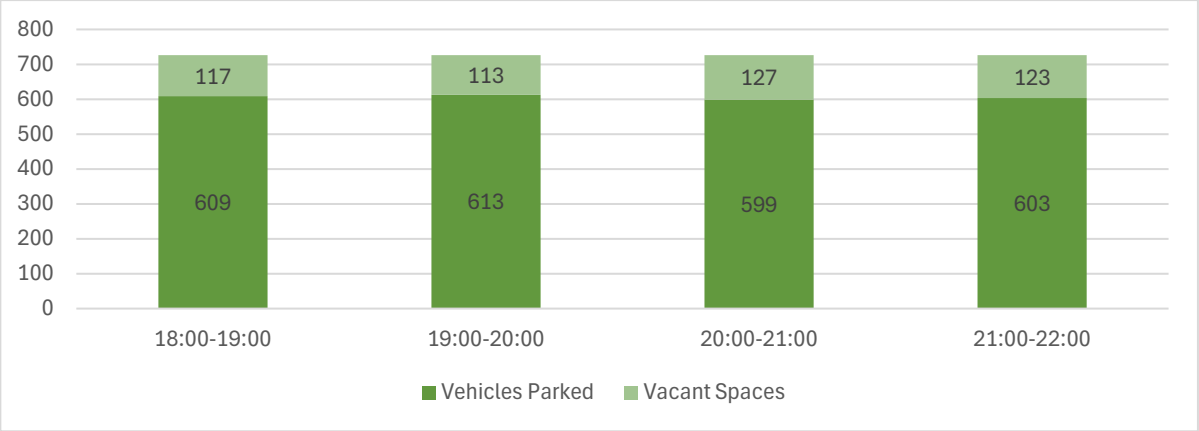

Figure 36: Thursday 07 May 2026 (Typical)

It can be seen from Figure 36 that the peak on-street parking capacity was identified between 7:00pm to 8:00pm with 613 vehicles parked (84.4%) and 113 vacant spaces (15.6%). On average, there were 606 vehicles parked (83.5%) and 120 vacant spaces (16.5%) between 6:00pm and 10:00pm.

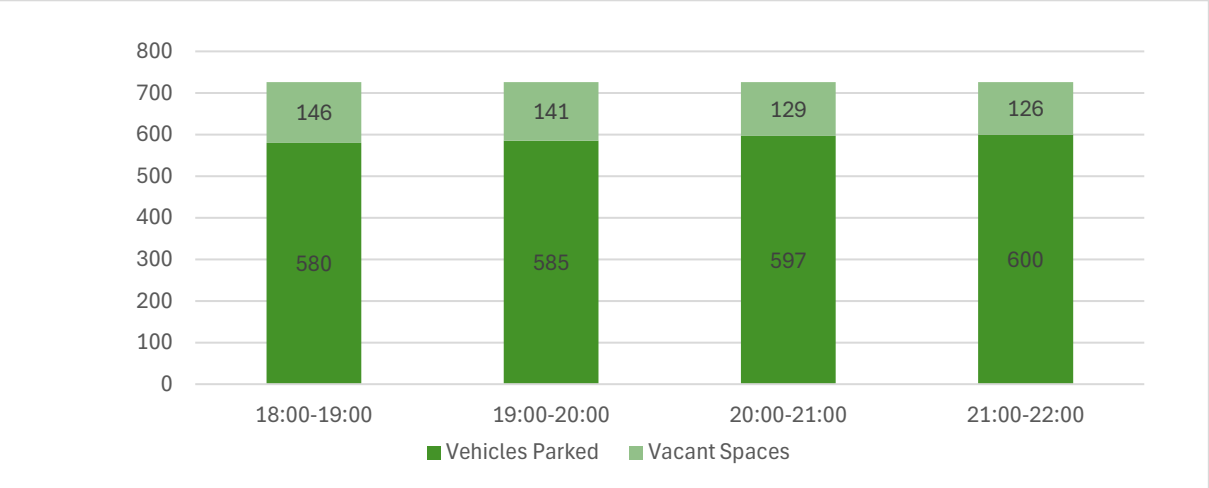

Figure 37: Saturday 09 May 2026 (Typical)

It can be seen from Figure 37 that the peak on-street parking capacity was identified between 9:00pm to 10:00pm with 600 vehicles parked (82.6%) and 126 vacant spaces (17.4%). On average, there were 531 vehicles parked (81.3%) and 136 vacant spaces (18.7%) between 6:00pm and 10:00pm.

5.4.2 Comparison with 2025 On-Street Parking Occupancy Results

Figures 38 to 41 show the difference in on-street parking surveys taken during a performance night on Thursday and Saturday and a typical Thursday and Saturday in 2025 to the 2026 results. The figures show the total number of parked vehicles only. The apparent decrease in parking supply in 2026 (61 spaces) is likely due to changes in kerbside restrictions within the survey area, road works (storage of construction materials), temporary works zones, and the exclusion of motorcycle parking spaces.

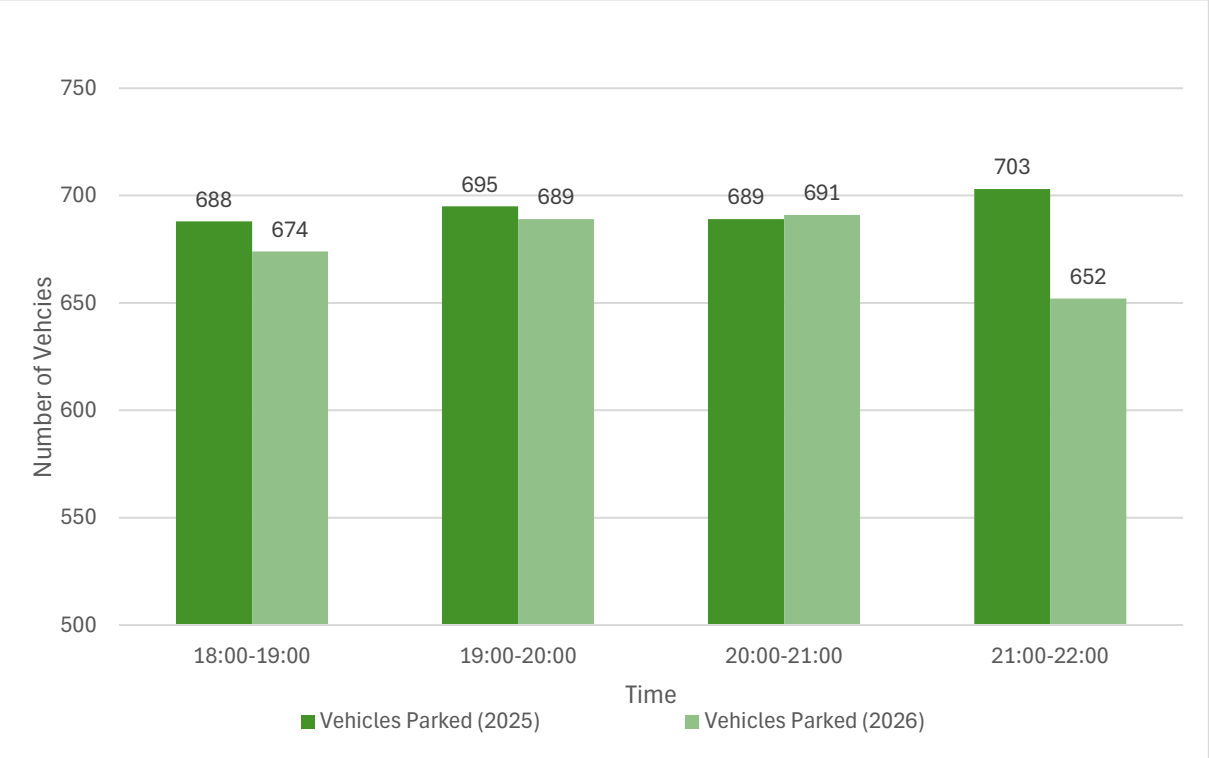

Figure 38: 2025-2026 Comparison Thursday (Event)

It can be seen from Figure 38 that the peak on-street parking capacity in 2025 was between 9:00pm to 10:00pm with 703 vehicles parked. In 2026 the peak on-street parking capacity was between 8:00pm to 9:00pm with 691 vehicles parked.

On average, in 2025 there were 694 vehicles parked, whilst in 2026 there were 677 vehicles parked.

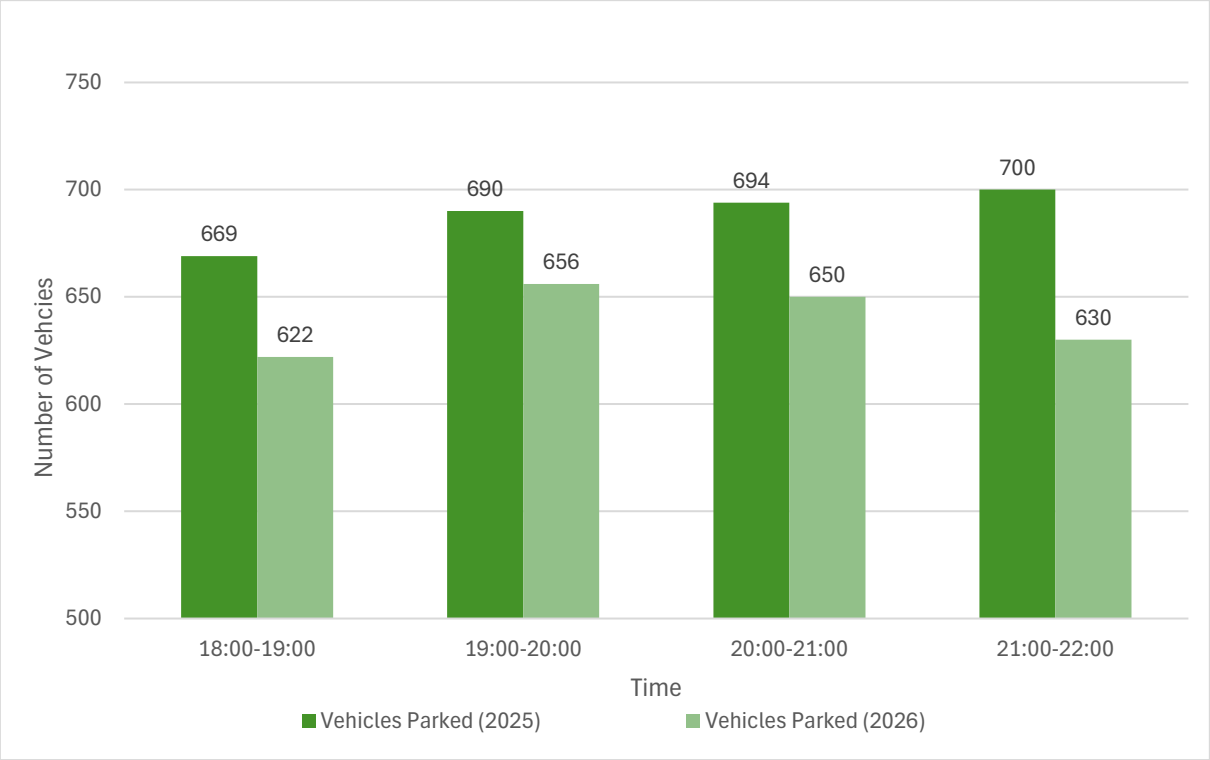

Figure 39: 2025-2026 Comparison Saturday (Event)

It can be seen from Figure 39 that the peak on-street parking capacity in 2025 was between 9:00pm to 10:00pm with 700 vehicles parked. In 2026 the peak on-street parking capacity was between 7:00pm to 18:00pm with 656 vehicles parked.

On average, in 2025 there were 688 vehicles parked, whilst in 2026 there were 640 vehicles parked.

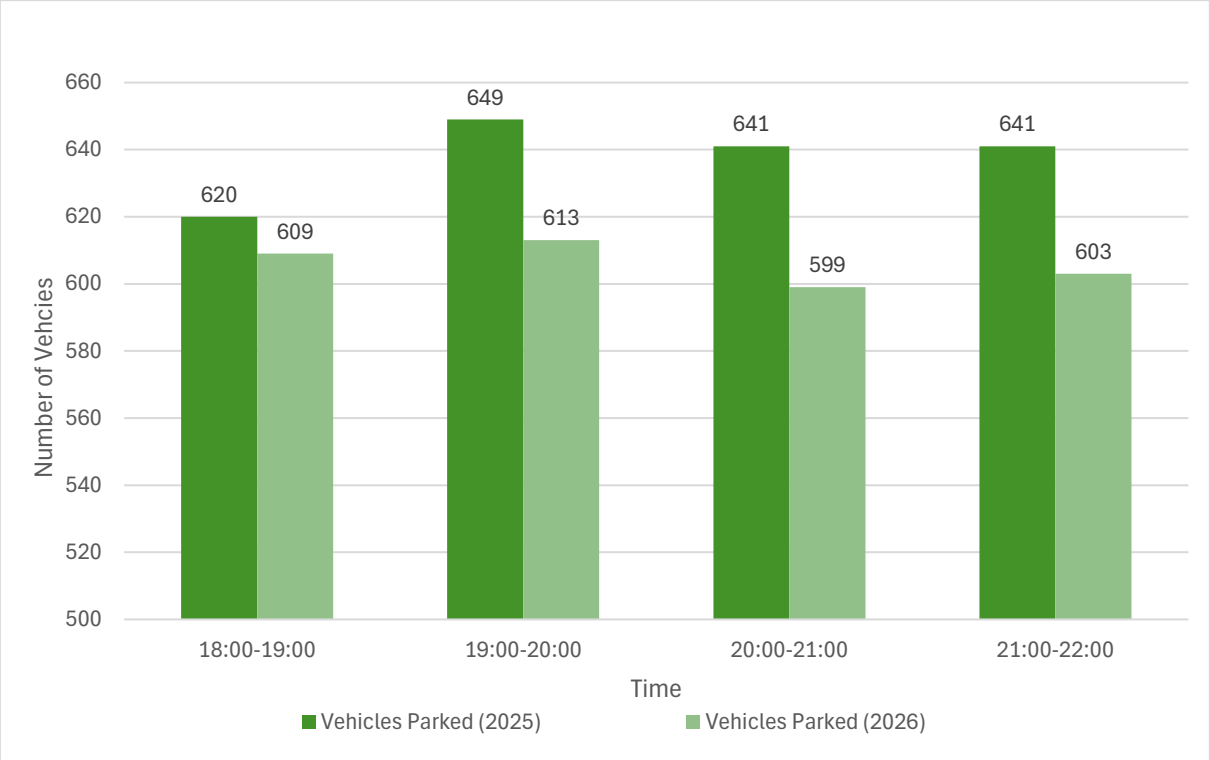

Figure 40: 2025-2026 Comparison Thursday (Typical)

It can be seen from Figure 40 that the peak on-street parking capacity in 2025 was between 7:00pm to 8:00pm with 649 vehicles parked. In 2026 the peak on-street parking capacity was between 7:00pm to 8:00pm with 613 vehicles parked.

On average, in 2025 there were 638 vehicles parked, whilst in 2026 there were 606 vehicles parked.

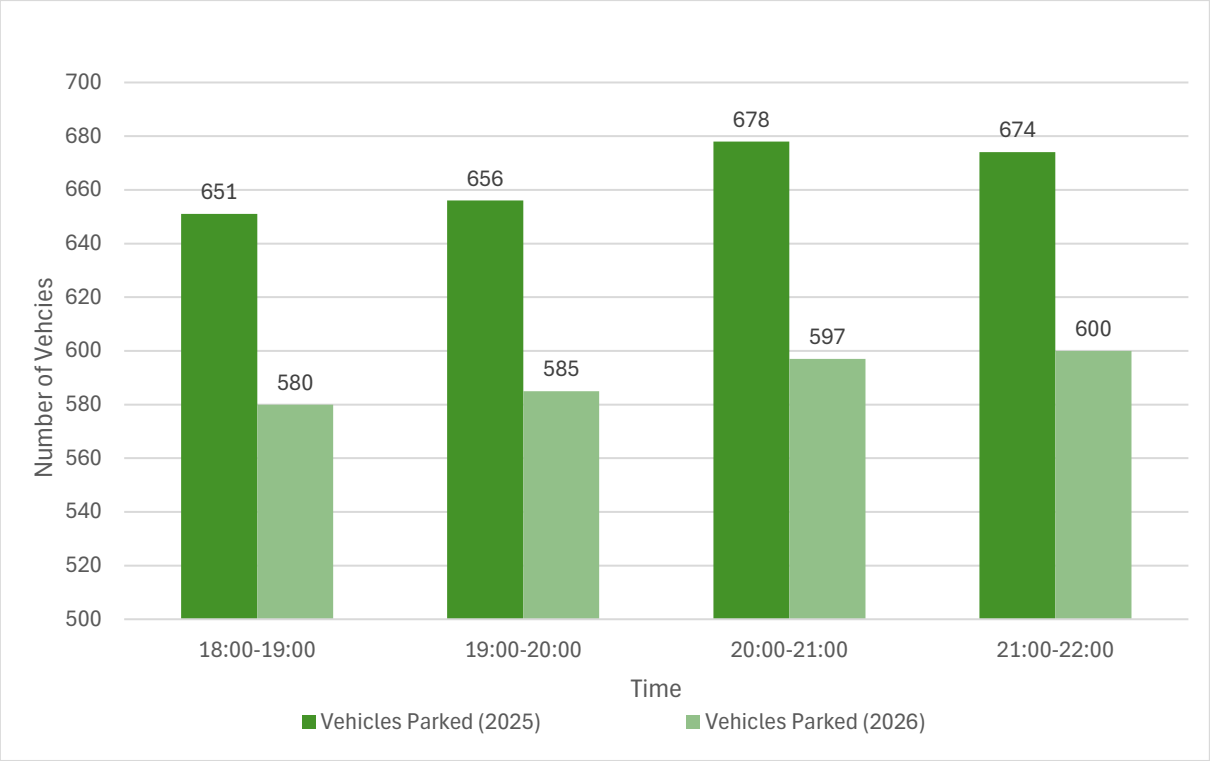

Figure 41: 2025-2026 Comparison Saturday (Typical)

It can be seen from Figure 41 that the peak on-street parking capacity in 2025 was between 8:00pm to 19:00pm with 678 vehicles parked. In 2026 the peak on-street parking capacity was between 9:00pm to 10:00pm with 600 vehicles parked.

On average, in 2025 there were 665 vehicles parked, whilst in 2026 there were 591 vehicles parked.

6. ONGOING TRAVEL STRATEGIES

6.1 Context

In order to achieve no net increase in private vehicle usage (as required by Condition A8, Schedule 3), a number of travel strategies have been put into place to encourage active travel, reduce the reliance on private vehicle travel for students, and to minimise the traffic impacts associated with school operations.

The following sections of the OTMP detail how these targets will be met by the completion of the expansion of the school in 2030.

6.2 Public Transport Services

6.2.1 Objectives and Targets

The School will encourage public transport usage for students, noting the multi-year trends which indicates that private bus usage is declining and public transport usage is increasing.

6.2.2 Timing

The school will continue to promote public transport options to students.

6.2.3 Responsibility

The School is responsible for implementing any targeted communication strategy to students regarding public transport options.

6.2.4 Funding

The school will fund any targeted communication strategy to students regarding public transport options.

6.2.5 Implementation

To support this increase in public transport patronage, the School will implement a targeted communication strategy to further encourage students and their families to utilise public transport as an alternative to private vehicle travel.

6.2.6 Strategy Monitoring

Student public transport usage will be monitored through the annual travel modes surveys.

6.2.7 Monitoring Targets

The results of the monitoring will be made publicly available on the school's website and also available to the CCC.

6.3 Private Bus Services

6.3.1 Objectives and Targets

The School intends to retain its private bus service; however, it is noteworthy that there has been a multi-year trend that indicates that the School's private bus service reached peak patronage during the COVID period, coinciding with the lowest levels of student public transport use. Since that time, public transport patronage has exceeded pre-COVID levels, whilst private bus patronage has continued to decline. Current patronage is approximately 70 students, with enrolments on the service expected to increase by around 20 students per year from 2027, reaching the proposed 130-seat capacity over time.

6.3.2 Timing

A total of three (3) of the bus services are available for students to use. Parents of prospective students are informed of the new service before the school term starts to ensure they have sufficient time to enrol their children.

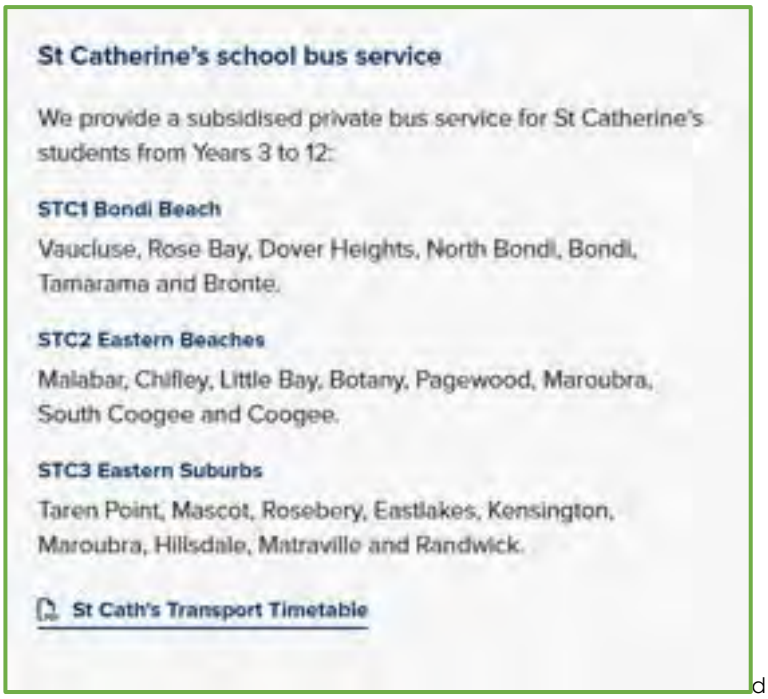

Figure 42: Overview of St Catherine's Bus Service Routes (Source: St Catherine's Website)

6.3.3 Responsibility

The School's Administration Manager is the central authority for the bus service. The school's administration staff are responsible for ensuring the operations of the services, including registration of students on the services and responding to general queries.

6.3.4 Funding

The heavy subsidisation of the bus service is funded from the school fees paid by all parents. As noted earlier, the school doubled the cost of the school bus services in 2024 to offset the heavy subsidisation by all parents.

6.3.5 Implementation

The School will implement a targeted communication strategy to further encourage students and their families to utilise the private bus service as an alternative to private vehicle travel.

6.3.6 Strategy Monitoring

As the bus operations are being managed by the school, monitoring of the uptake of this service can be easily achieved. Postcode and street data for students is available to the school via annual travel surveys for future route planning purposes, which will cover annual student intakes and departures. The bus routes are reviewed annually to ensure effective coverage of the entire school catchment areas and to optimise patronage.

6.3.7 Monitoring Targets

The results of the monitoring and independent auditing will be made publicly available on the school's website and also available to the CCC.

6.4 On-site Staff Parking and Management

6.4.1 Objectives and Targets

St Catherine's School has 75 off-street parking spaces. From ARUP's 2014 survey results (discussed in more detail in Section 4.1), it was established that 150 (out of the total 202) staff members were travelling to the site via private vehicle. This equates to 74% of staff. It is considered that the future increases in enrolments will require up to 212 staff.

In 2024 the school committed to building more car parking spaces on campus in any future capital development. The school also committed in 2024 to preferencing staff who applied for rental properties owned by the school. This allows for those staff to walk to school as all properties are next to the school.

6.4.2 Timing

Car parking spaces on site will continue to be dedicated to staff based on seniority, however active travel and public transport have been promoted by the school from the beginning of 2017. The opening of the PAC carpark in 2022 allowed the school to have more staff parking on site.

6.4.3 Responsibility

The development consent required the school to employ a Traffic Control Officer. The Traffic Control Officer began at the start of Term 2, 2017.

6.4.4 Funding

The school funds the Traffic Control Officer role. The school paid for a car parking system to display available spaces in the Macpherson Street car park. Additional car spaces on campus will be included in the cost of future capital developments.

6.4.5 Implementation

Onsite parking management is ongoing.

6.4.6 Monitoring

Allocation of onsite car parking and usage is monitored by the Traffic Control Officer.

6.5 On-street Parking

6.5.1 Objectives and Targets

The school currently provides marshalling areas for different year groups along Albion Street, Macpherson Street, and Leichhardt Street which are shown in **Figure 43** below. There are no proposed changes to the existing marshalling areas. Leichhardt Street will continue to be constantly supervised. Macpherson Street will continue to have the afternoon collection monitored, and the other areas will be marshalled on a needs basis to ensure efficient operation by the school's permanent part time Traffic Control Officer, who will also be responsible for managing all transport operation moving forward.

6.5.2 Timing

The school will regularly monitor on-street parking adjacent to the site.

6.5.3 Responsibility

The school recognises that communication and reinforcement of the appropriate traffic and parking behaviours require ongoing efforts. The school will continue to promote use of the designated drop-off and pick-up areas and will continue to provide staffing resources to manage and monitor the zone in line with the approved OTMP for Macpherson Street.

6.5.4 Funding

The continued provision of a School Crossing Supervisor on the Leichhardt Street crossing will be jointly funded by Waverley Council and Transport for NSW.

6.5.5 Implementation

As detailed within the supplementary OTMP prepared for Macpherson Street (Ref 16.226r10v01 dated 20 December 2022), the following measures are recommended to be undertaken:

- Continual monitoring of the drop-off and pick-up zone is recommended.
- Continual promotion to parents to utilise the designated drop-off and pick-up areas.
- Waverley Council's parking rangers are encouraged to monitor illegal parking within the drop-off and pick-up zone to ensure it operates satisfactorily.

6.5.6 Monitoring

Monitoring of the drop-off and pick-up efficiencies will be included in regular reports from the School's Traffic Control Officer to the Community Consultative Committee. Additionally, annual surveys will continue at the four (4) drop-off and pick-up zones which includes Macpherson Street.

Figure 43: Allocated Marshalling Areas for Drop-off and Pick-up

6.6 Walking and Cycling Routes

6.6.1 Objectives and Targets

Walking and cycling provide an alternative for staff and students to be more active and reduce reliance on private vehicles and congestion around school sites. The objective of providing walking and cycling routes to staff and students is to promote active travel and to encourage a mode shift in journey to work travel methods.

6.6.2 Timing

Walking and cycling routes have been provided in **Figure 44** of this OTMP. The available routes should be reviewed annually to ensure any changes or additions to routes in the local area are reflected.

6.6.3 Responsibility

The school's Chief Operating Officer is responsible for bringing any change to policies regarding cycling, to the school executive.

6.6.4 Funding

End of trip facilities are available to all staff and high school students wanting to cycle to/from the school.

Figure 44: Local Walking and Cycling Routes

6.6.5 Implementation

Walking and cycling routes are presented in this OTMP. A comprehensive Travel Access Guide (TAG) is considered to be the most effective travel planning measure to encourage travel by alternative means other than private car. The TAG provides relevant transport and access information that would be relayed to school employees. A TAG will continue to be distributed to staff members on staff days prior to the commencement of a semester and to new staff when starting employment with the school. The TAG is presented in **Appendix E**.

6.6.6 Monitoring

St Catherine's school has pedestrian entrances on Albion Street, Macpherson Street, and Leichhardt Street, all which provide footpaths on either side of the street, which ensure safe and efficient access to the site for pedestrians.

A signalised crossing is provided on Albion Street, to allow safe crossing for students. Two (2) pedestrian crossings are also provided, one (1) on Macpherson Street, and one (1) on Leichhardt Street. It is noted that the Leichhardt Street crossing is manned by a School Crossing Supervisor, provided conjointly by Waverley Council and Transport for NSW.

6.7 Bicycle Parking Provision

6.7.1 Objectives and Targets

The objective of providing bicycle parking is to see a mode shift from reliance on private vehicle usage to other modes of transport.

6.7.2 Timing

The school has provided an additional 100 bicycle parking spaces as part of the Stage 1 works in 2022.

6.7.3 Responsibility

It is the responsibility of the school to maintain the bicycle parking. A minimum of 100 bicycle parking spaces are provided as part of the PAC development. These spaces are located in the basement level of the PAC development and directly accessible from Macpherson Street.

6.7.4 Funding

The cost of maintaining the bicycle racks will be provided by the school.

6.7.5 Implementation

The required bicycle parking has been installed as part of the Stage 1 works in accordance with Schedule 3, Condition B5.

6.7.6 Monitoring

The school will publish the results of the travel mode / bicycle parking surveys on the school's website and provide the rates to the Community Consultative Committee. The Traffic Control Officer will regularly count the usage of bicycle racks provided as part of the PAC development.

7. MONITORING AND MEASUREMENT

A monitoring and review process for the OTMP will be led by the Chief Operating Officer of St Catherine's School to ensure that the OTMP reflects any changes to the public transport network and end-of-trip facilities related to the subject site. The maintenance of the OTMP is outsourced to a third party, in consultation with the CCC. The third party assesses the modal-split for staff and students accessing the site once operational and revisit the proposed targets if necessary.

Regular review of the success measures outlined in this plan should be undertaken to determine whether alternative or supplementary measures are necessary. A survey will be conducted by students and staff every 12 months to monitor the progress of targets as documented, which will be directed by the Chief Operating Officer, in consultation with the CCC. The survey will include (and will not be limited to) transport modal splits for both staff and students. This evaluation will provide a reliable overview of the areas in which the OTMP is operating effectively, and which areas require more attention. However, it is noted that the targets are primarily indicative, and the travel plan and targets will require on-going evaluation and fine-tuning. Revisions of this OTMP will consider any community feedback received by the school which relates to the objectives of the OTMP.

Since 2014, St Catherine's School has considered other transport initiatives which were unsuccessful. These initiatives included: a walking school bus, scooters and parent / student carpooling (discussed earlier). A walking school bus and scooters were considered to be too risky for the school to implement. When considering student safety, the school elected to pursue other initiatives first. Consequently, this OTMP has omitted details of these travel modes.

7.1 Roles and Responsibilities

Table 20 below identifies the roles and responsibilities in the delivery of this OTMP:

Table 20: Contact details for responsible personnel

Role	Person Responsible	Contact Details	Responsibilities
Traffic Control Officer	Traffic Control Officer	transport@stcaths.nsw.edu.au	Manage onsite car parking, including monitoring of usage. Responsible to ensure that on-site spaces are filled. This role is also responsible for managing the car line efficiency.
School Bus Operations	Administration Manager	admin@stcaths.nsw.edu.au	Central authority for bus service and new transport initiatives. Operations of daily bus services including registration of students and queries. Review of bus routes and student uptake.
Transport Initiatives	Chief Operating Officer	agrech@stcaths.nsw.edu.au	Monitoring and review of the St Catherine's OTMP. Directs completion of surveys, monitoring of operations and appoints third party to update OTMP annually.
School Crossing Supervisor	TfNSW School Crossing Supervisor		Assist children in safely crossing roads on their way to and from school.
Waverley Council Traffic Engineer	Waverley Council to provide.		Request and receive annual traffic reports from St Catherine's.

7.2 Collecting and Collating Information

Annual surveys will continue to be conducted with both staff and students to monitor travel modes. These surveys also include analysis of bicycle parking facilities, car occupancy rates, and utilisation of drop-off and pick-up zones. This information will continue to be reported annually with existing active travel incentives reviewed. An evaluation of the school's bus service will be conducted at this time which includes a financial evaluation to establish the benefits of additional services. Survey data can also be reviewed to establish alternate bus routes.

Survey distribution is the responsibility of St Catherine's School. The appointed third party hosts the electronic surveys and collates the results.

7.3 School Activity Information

Following the successful use of email updates used by the builder during construction, the school has continued this practice since the handover of the PAC.

All correspondence will include a school logo. The development consent imposes conditions on the school to publish an annual event calendar, as part of the opening of the PAC. The school has worked with the CCC to distribute its calendar of events from 2017. Just prior to the start of each term, the school emails scheduled major events at the school for the forthcoming term.

The school also advertises key events and access to the email list through quarterly advertisements through the local publication, "The Beast".

8. GOAL SETTING

8.1 Staff Travel Targets

The travel mode splits for staff in 2026 and the future targets for staff are provided in **Table 21**. The targets include a maintenance of existing private vehicle reliance for staff.

Table 21: 2026 Staff Travel Mode Splits and Future Targets

Travel Mode	2026 TRAFFIX Survey	2027 Future Targets	Target No. of Staff *
Car Driver	79%	79%	168
Car Passenger	1%	1%	2
Public Transport	6%	6%	13
Active Travel	8%	8%	17
Other	6%	6%	13

**Based on a future number of 212 staff.*

Source: ARUP, 2014 and TRAFFIX Surveys, May 2026

In addition to the above, Section 3.3.2 of the ARUP Travel Strategies Transport Report set targets to staff trips to be reduced by -43 trips to achieve 115 cars during both the AM and PM peak hours, resulting in improvements of the overall network performance and congestion on streets around the school. This equates to 52% of staff in 2030 travelling to the school via private vehicle only.

The predictions made by ARUP in 2014 did not consider the potential impacts of the changing demographics of the school's workforce, longer commutes undertaken by staff, or the reluctancy for staff to carpool, thus, the predictions made by ARUP will have to be revisited as the 2030 timeline approaches.

The 2025 OTMP noted the School's commitment to increasing the provision of on-site staff parking in response to the operational needs outlined above. The 2026 travel survey data further confirm the ongoing trend of staff requiring private vehicles to travel to and from the campus.

The School acknowledges that, as the composition of its workforce changes, an increasing proportion of staff are choosing to drive to work. While this trend is inconsistent with the broader

objective of minimising private vehicle trips associated with the School, it also reflects the practical travel needs of a changing workforce.

Accordingly, the School remains committed to balancing these operational requirements with its sustainable transport objectives. The School will continue to encourage staff who live within a reasonable distance of the campus to walk, cycle, or use public transport, while maintaining and strengthening initiatives that promote sustainable travel for students. This approach seeks to minimise the overall growth in private vehicle travel associated with the School while recognising that some increase in staff parking demand is unavoidable.

8.2 Student Travel Targets

The current travel modes are based on the student travel survey conducted by ARUP in 2014. The OTMP seeks to increase the use of alternate (non-private vehicle) transport for the site. The 2014 reliance upon car related transport to the school relates to approximately 60% of students (in the AM peak).

From the 2026 data, it is evident that this reliance on private vehicles has been reduced to 49%, an 11% improvement. With this in mind, it is envisaged that the subject OTMP will continue to encourage increased use of sustainable modes of transport, such as train, bus, bicycle and walking, and utilisation of the school bus service.

As detailed in Section 6 above, the School is committed to achieving no increase in private vehicle usage by 2030. It is noteworthy that there has been a multi-year trend that indicates that the School's private bus service reached peak patronage during the COVID period, coinciding with the lowest levels of student public transport use. Since that time, public transport patronage has exceeded pre-COVID levels, whilst private bus patronage has continued to decline.

The School intends to retain its private bus service, although the maximum seating capacity is proposed to reduce from 161 seats to 130 seats. Current patronage is approximately 70 students, with enrolments on the service expected to increase by around 20 students per year from 2027, reaching the proposed 130-seat capacity over time. To support this increase in patronage, the School will implement a targeted communication strategy to further

encourage students and their families to utilise the private bus service as an alternative to private vehicle travel.

With respect to public transport, the School will continue to promote the availability of Student Opal cards to eligible students to encourage ongoing high levels of public transport patronage.

Table 22 shows the mode splits in 2026 as per the survey results undertaken by TRAFFIX which demonstrates that the target for no private vehicle net increase from 2014 has been met and non-private vehicle mode shares have been utilised by students at the school. This will enable future potential expansion of the school to 2030 as planned. The breakdown of the baseline travel mode split, and proposed targets are shown in **Table 23**.

Table 22: Student Travel Existing Mode Splits

Travel Mode	Existing AM Peak Period		Existing PM Peak Period	
	No.	%	No.	%
Drop-off / Pick-up	548	49%	448	40%
Walk / Active Travel	213	19%	257	23%
School Bus	67	6%	45	4%
Public Transport	235	21%	313	28%
Other	56	5%	56	5%
Total	**1,119**	**100%**	**1,119**	**100%**

(Source: TRAFFIX 2026)

Table 23: Student Travel Mode Splits and Future Targets

Travel Mode	2014 Baseline AM Peak Period		Future 2030 AM Peak Period	
	No.	%	No.	%
Drop-off / Pick-up	582	60%	582	48.5%
Walk / Active Travel	155	16%	247	20.6%
School Bus	39	4%	124	10.3%
Public Transport	146	15%	247	20.6%
Other	48	5%	-	0%
Total	**970**	**100%**	**1,200**	**100%**

Travel mode percentages based on AM Peak Period which has a higher number of vehicle trips.

9. MANAGEMENT REVIEW

9.1 Surveys

The annual surveys have been distributed to all students and staff. A copy of the surveys distributed for the 2026 TRAFFIX survey has been included in **Appendix F** and **G** for students and staff, respectively. It is considered that the survey should only be updated if new trends develop and the original questions should be maintained to effectively assess the impacts of the OTMP. The surveys will be distributed, and results analysed by the appointed third-party. The results of the surveys will continue to be reported annually to the Community Consultative Committee with a copy of the report being published on the school's website and a copy provided to Council, if requested. The school will continue to encourage participation rates for the annual traffic surveys.

9.2 Post Occupation

In accordance with the conditions of the development consent (F2-F5), a review of traffic and parking activities has been completed after 6 months of operations of the PAC. The 2026 review has investigated traffic and parking impacts, independent traffic survey data, and the implementation and effectiveness of the OTMP following occupation for the PAC.

10. SPECIAL EVENTS

10.1 Attendees for Events

Reference is made to the approved indicative usage profile which is provided in **Appendix D**. The approved usage profile outlines the frequency, event hours, location of event and forecasted audience attendance.

10.2 Traffic Assessment

A Traffic and Transport Assessment was completed by ARUP date 18 August 2014. The findings of that report which are associated with this OTMP are summarised below. All events may be in accordance with the approved indicative usage profile for the development which is provided in **Appendix D**.

10.2.1 Event management

- Selected annual events held on-site will be staged in the Performing Arts Auditorium which will increase the capacity of events from 250 to 500. There are a number of new events also planned with a capacity of 500 that will be held in the Auditorium.
- Venues will be limited for external hire. External use of venues must be in accordance with the approved indicative usage scheme (**Appendix D**) and the conditions of consent.

10.2.2 Parking assessment

- A total site parking provision of 75 car spaces.

10.3 Travel Strategies

The DA conditions of consent (E7) require the OTMP to implement measures to ensure that the travel strategies outlined below are met for the aquatic centre or for major events held in the auditorium or hall.

- All car spaces within the Dame Joan Sutherland Centre and PAC basements (minimum 47) will be made available for aquatic centre users after 6pm on weekdays and all day during the weekend.

- All car spaces on site (minimum 75) will be made available to attendees of all major events held in the auditorium or hall where non-students are in attendance; and
- The aquatic centre is not available to external attendees when there is any evening or weekend event occurring on site.

10.4 Traffic Management Strategies for Aquatic Centre and Major Events

The school will implement the following strategies in order to comply with Condition E7:

1. The school's Director of Facilities will ensure that the entrance to the basement car park under the Dame Joan Sutherland Centre and PAC is open from 6pm on weekdays and all day during the weekend. In addition, a signalised car park management system was installed to manage internal traffic movements and advise visitors if there is spare capacity within the car park (47 spaces). This digital signage is visible to drivers approaching the car park entrance and provides sufficient information to advise visitors of the available parking. Condition E1 of the consent also states that "*vehicle access to and from the PAC must be undertaken by a left-in/left-out movement only. The applicant shall identify and adopt the necessary measures to implement this restriction and to prevent right turn movements.*". In response to Condition E1, "No Right Turn" signage has been installed within the bounds of the car park and has been installed on the westbound approach on Macpherson Street as part of the Macpherson Street crossing relocation works to advise drivers not to turn right into or from the development.

2. The school will ensure that a minimum of 75 car parking spaces will be made available to attendees of all major events held in the auditorium or hall where non-students are in attendance. The 75 on-site parking spaces comprises of 47 spaces under the Dame Joan Sutherland Centre, nine (9) spaces within the southern Albion Street car park and 19 spaces within the northern Albion Street car park. The location of the 75 parking spaces is presented in **Figure 45** below.

   The basement car park under the Dame Joan Sutherland Centre and PAC is managed by the signalised car park management system detailed above, whilst the at-grade car parks on Albion Street will be managed by an on-site traffic warden supplied by the

school. The traffic warden will provide clear signage near the entrance to the Albion Street car parks advising visitors that car parking is available. The traffic warden will direct visitors to available on-site parking as they arrive at the site. Should a particular car park reach capacity, the warden will then place "Car Park Full" signage at the entrance/exit to each car park. After the event, the traffic warden will remove the signage to allow visitors to exit the site. Attendees can be made aware of this provision through appropriate communication channels (newsletters, information packs etc.).

3. The school will schedule events to ensure that the aquatic centre is not available to external attendees when there is any major evening or weekend event occurring on-site.

Figure 45: On-site Parking for Major Events

11. CONCLUSION

The following is noteworthy:

- This OTMP has been commissioned by St Catherine's School Sydney for the State Significant Development (SSD-6339 determined April 2016) of the school located at 26 Albion Street, Waverley. The OTMP addresses the proposed increased capacity of St Catherine's School to accommodate a student population of 1,200 and 212 staff by 2030 and the management of traffic for events in the Aquatic Centre and Auditorium.
- Since the Development Application for the school was lodged in 2014, the school has implemented and monitored several strategies including 2016 carpooling, bicycle facilities, and encouragement of active travel, bus services, travel passes, and a travel access guide. Whilst all alternative travel modes will be promoted in the future, active travel and public transport are considered the most viable alternatives to travel by private vehicle. The travel mode data to date is presented in **Section 4** with future goals and objectives discussed within **Section 6** and **Section 8**.
- Travel mode surveys demonstrate a reduced reliance on private vehicles for students and a minor increase for staff when compared to the 2014 base line data. The percentage of staff travelling to/from the site by public transport has decreased by 13%, however, this may be attributed to a number of factors including place of residence, access to public transport, convenience, before and after work commitments, and work requirements.
- In addition, the travel mode surveys show that the current operations of the school do not result in any net increase in private vehicle trips (when compared to 2014), meeting the DA conditions which specify that the OTMP must identify mode share targets for the proposed travel strategies that target a reduction "*and ensure no net increase*" in private vehicle trips to the site. It is acknowledged that the school has on-going commitments to ensure future targets are met, and that there is no net increase in private vehicle usage by 2030.
- The 2026 surveys generally showed a decrease in background volumes during the critical peak hour periods for both the school term and the school holiday period when compared to 2014. For example, a decrease of 19.8% and 34.6% during the school term commuter peak periods (5-6pm and 6-7pm respectively) was observed, when compared to 2014 data. This minor to moderate decrease in commuter traffic is likely the result of changing

travel/work patterns with increased flexibility for working from home arrangements. Other factors could also include climate change awareness which has reduced reliance on motor vehicles for certain activities, general traffic congestion, and parking limitations which make vehicle use less convenient, and a trend to increasing use of public transport.

- Surrounding intersections and midblock locations experienced a moderate change in traffic volumes between the school term and school holiday periods. The reduced traffic during school holidays is expected due to vehicle movements associated with student drop-off and pick-up movements. However, the mid-block surveys also demonstrated a traffic volume decrease across the 8-9am, 3-4pm, and 5-6pm peak periods between the school term and school holidays, suggesting a general network downward trend over the school holiday period. As such, the school does not appear to be having a significant impact on traffic flows at intersections/mid-block locations around the site.
- Section 6 of the report outlines the future travel strategies regarding each travel mode utilised by staff and students to ensure future travel mode targets are met.
- It is envisaged that this OTMP will be reviewed as per the suggested OTMP review and management measures outlined in Section 9.
- Conditions A8 b); E2 a) b) and c); E4, E7, F2, F3, F4, and F5 have been addressed in this OTMP in accordance with the Condition of Consent.

APPENDIX A

ARUP Traffic & Transport Assessment 2014

St Catherine's School, Waverley

Traffic and Transport Assessment

001

Rev A | 18 August 2014

This report takes into account the particular instructions and requirements of our client.

It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 236045-00

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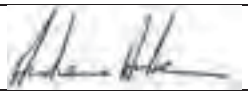
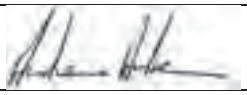
		Signature			

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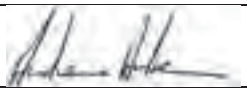
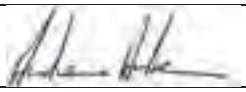
		Signature			
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Contents

			Page
1	**Introduction**		**1**
	1.1	Director General's Assessment Requirements	1
	1.2	Project background	2
	1.3	Scope of report	2
2	**Planning to address state polices and guidelines**		**3**
	2.1	NSW 2021	3
	2.2	Draft Metropolitan Strategy for Sydney 2031	3
	2.3	Sydney's Cycling Future (2013)	4
	2.4	Planning Guidelines for Walking and Cycling	4
	2.5	Sydney's Bus Future (2013)	5
3	**Existing conditions**		**6**
	3.1	Site location	6
	3.2	Description of the site	6
	3.3	Site access	7
	3.4	Existing traffic conditions	7
	3.5	Traffic safety	9
	3.6	Parking supply and demand	13
	3.7	Modal split	18
	3.8	Public transport	23
	3.9	Pedestrian / bicycle networks	25
	3.10	Other proposed developments	25
4	**St Catherine's School Campus Master Plan**		**26**
	4.1	Objectives	26
	4.2	The plan	26
	4.3	Student /staff increase	28
	4.4	Description of site access / parking / loading / bicycle facilities	28
5	**Stage 1 development**		**29**
	5.1	Description	29
	5.2	Proposed profile of use	29
	5.3	Car parking provision	32
	5.4	Proposed site accesses	33
	5.5	Bicycle facilities	33
	5.6	School bus parking	34
	5.7	Service vehicle access and waste collection	36

6 Transport impact assessment 37
6.1 School drop-off / pick-up zones 37
6.2 Car parking assessment 40
6.3 Traffic Assessment 44
6.4 Impact of generated traffic 48
6.5 Excursion Buses 50
6.6 Transport assessment 50

7 Travel demand measures 51

8 Recommended transport actions 53

9 Construction traffic management planning 54
9.1 Outline construction traffic management plan 54

10 Conclusions 58

Tables

Table 1: Director General's Assessment Requirements
Table 2 Traffic Survey Results – two-way hourly traffic flow
Table 3: Investigation of crashes at intersections by road user movements
Table 4: School finishing times
Table 5: Bus services
Table 6: School bus routes
Table 7: Indicative usage profile (existing and forecast)
Table 8: Aquatic Centre utilisation
Table 9: Proposed adjustments to drop-off/pick-up/zone allocation
Table 10: Annual events in the Performing Arts Auditorium
Table 11: Aquatic Centre car parking demand
Table 12: Mode split morning arrival
Table 13: Afternoon departure mode
Table 14: Level of Service criteria for intersections
Table 15: Results of traffic modelling

Figures

Figure 1: Site location
Figure 2: Existing site accesses
Figure 3: Traffic survey locations
Figure 4: Degree of crashes per year (2008-2013) on surrounding streets*
Figure 5: Crashes by time period
Figure 6: Crash types by road user movement categories
Figure 7: Crash investigation 2008 - 2013
Figure 8: School drop-off/pick-up zones

Figure 9: Existing off-street parking provision
Figure 10: Parking occupancy in surrounding streets
Figure 11: Comparison of 5 minute walk on-street parking survey areas
Figure 12: Available on-street spaces 7.30 – 8.00pm Saturday 3 May 2014
Figure 13: Available on-street spaces 2.30 – 3.00pm Sunday 11 May 2014
Figure 14: Available on-street spaces 7.30 – 8.00pm Tuesday 13 May 2014
Figure 15: Travel demand survey summary
Figure 16: Departure profiles
Figure 17: JTW Census data, 2011
Figure 18: JTW Visualiser (Travel Zone 524)
Figure 19: Staff postcode origins
Figure 20: Student postcode origins
Figure 21: Surrounding bus routes
Figure 22: School bus routes
Figure 23: Bicycle network
Figure 24: Campus Master Plan
Figure 25: Proposed access arrangements
Figure 26: RPAC Basement Car Park
Figure 27: Proposed off-street car parking
Figure 28: Proposed site accesses
Figure 29: Proposed bicycle facilities
Figure 30: Swept path of FUSO minibus at Gate 1
Figure 31: Proposed bin store
Figure 32: New school pedestrian access to Macpherson Street
Figure 33: Proposed adjustments to the zebra crossing in Macpherson Street
Figure 34: Approved trial adjustment to Bus Zone in Leichhardt Street
Figure 35: Albion Street southern car park
Figure 36: Albion Street northern car park
Figure 37: Peak flow proportions
Figure 38: Construction vehicle routes to site

Appendices

Appendix A

Parking Accumulation Surveys On-Street and Utilisation Of Drop-Off And Pick-Up Zones During Peak School Arrival and Departure Periods *by Lyle Marshall and Associates*

Appendix B

Travel survey results

Appendix C

SIDRA results

1 Introduction

Arup has been commissioned by St Catherine's School, Waverley (the School), to assist with the preparation of an Environmental Impact Statement (EIS) to accompany a Development Application (DA) for the School which is located at 26 Albion Street, Waverley.

The DA seeks concept approval for the School's Campus Master Plan and detailed design approval of the proposed Stage 1 works which comprise of a new Research, Performing Arts and Aquatic Centre (RPAC).

This report has been prepared to address Key Issue No. 6 Transport and Accessibility (refer below) as stated in the Director General's Environmental Assessment Requirements (DGRs) issued on 29 January 2014 – State Significant Development (SSD) 6339.

1.1 Director General's Assessment Requirements

Table 1: Director General's Assessment Requirements

Issue	Section
Construction traffic management planning	
Detail access arrangements at all stages of construction and measures to mitigate any associated pedestrian, cycleway, public transport or traffic impacts.	Section **9.1.3**
Details regarding car parking arrangements during construction, including the displacement of visitor and staff car parking. Alternative off-site arrangements should be made for staff and construction workers.	Section **9.1.4**
Operational traffic management planning	
Detail how the development has taken into consideration student and visitor travel patterns and contributes to the achievement of transport objectives contained in NSW 2021 and the draft Metropolitan Strategy for Sydney 2031, and Sydney's Bus Future (2013).	Chapter **2** *and* Section **4.1**
Provide details of the trip generation of the development by new staff and students at key stages of the development.	Section **6.1** *and* Section **6.2**
Assess the implications of the proposed development at key stages for non-car travel modes, including the accessibility of the site by public transport and potential implications from the proposed development for bus travel times and bus stop operation. Identify facilities or measures to increase non-car mode share for travel to and from the site, such as implementing a location-specific sustainable travel plan.	Section **3.8** *and* Chapter **7**
Provide details of the daily and peak vehicle movements likely to be generated by the development at the key stages of the development including the impact on nearby intersections and the need/associated funding for upgrading or road improvement works (if required).	Section **6.4**
Detail the proposed access and parking provisions associated with the proposed development, including compliance with the requirements of the relevant parking codes and Australian Standards (ie: turn paths, sight distance requirements, aisle widths; etc).	Section **6.6**
Detail the proposed service vehicle movements (including vehicle type and the likely arrival and departure times).	Section **5.5**

1.2 Project background

Lyle Marshall & Associates Pty Ltd recently completed a report titled *Parking Accumulation Surveys On-Street and Utilisation Of Drop-Off And Pick-Up Zones During Peak School Arrival and Departure Periods* (Appendix A). The report assesses existing parking conditions, the morning drop-off and afternoon pick-up arrangements, and then makes management recommendations that would improve traffic conditions around the site.

1.3 Scope of report

This transport report supports the development application (DA) for the redevelopment of the School. The transport assessment will be based on the current mode of travel for staff and students with targets set for achieving greater use of non-car travel modes for access.

Measures will be identified with the School that could be implemented as part of a location-specific sustainable travel plan to encourage non-car travel modes. This may also apply to events held at the School. There will also be measures required to educate and encourage improved drop-off and pick-up activity on the frontage roads.

2 Planning to address state polices and guidelines

2.1 NSW 2021

The New South Wales (NSW) 2021 is a ten-year plan developed by NSW government primarily aimed at *making NSW number one*. The document sets a framework to guide Government policy and decision making in the delivery of economic and community priorities. The framework is based on five (5) key strategies:

- Restoring economic growth;
- Return quality service for health, transport, education, police, justice and community service, with particular focus on customer service;
- Build infrastructure that drives the economy and improves people's lives;
- Strengthen our local environments and communities; and
- Restore accountability and transparency to government.

The five key strategies are embodied within the development objectives of the Campus Master Plan for the School. The key driver of the Campus Master Plan is to strengthen the local environment and community by delivering high quality educational outcomes and first class educational facilities. The plan also aims to contribute to the economic benefits for NSW and improve quality and choice though improvements to the quality of education and community facilities, among others.

The transport strategies of the State Plan are to:

- Reduce travel time;
- Grow patronage on public transport by making it an attractive choice;
- Improve customer experience with transport services; and
- Improve road safety.

NSW 2021 outlines that an integrated transport system is required to ensure different transport modes work together and that the interests of the travelling public are put first.

The design of the School aims to integrate and promote these strategies and promote the set goals and aspirations within the School community in order to contribute to the overall target to make NSW number one again.

2.2 Draft Metropolitan Strategy for Sydney 2031

The draft metropolitan strategy to 2031, replaces the Metropolitan Plan for Sydney 2036. This draft strategy will better align with the Long Term Transport Master Plan and the State Infrastructure Strategy released in 2012. It will form a key link to the various plans that have been developed including the short term Regional Action Plans and NSW 2021 Plan. The metropolitan draft strategy focuses on driving sustainable growth of Sydney to 2031, with focus on the following five outcomes:

- Balanced growth;
- A liveable city;
- Productivity and prosperity;
- Healthy and resilient environment; and
- Accessibility and connectivity.

The enhancement of school facilities and improvements to teaching and learning outcomes will respond to the future student attendance and improved educational standards.

2.3 Sydney's Cycling Future (2013)

Sydney's Cycling Future presents a new direction in the way we plan, prioritise and provide for cycling in Sydney. This supports the change in culture we are seeing in Sydney with more people choosing to ride a bike for transport. The overarching goal of Sydney's Cycling Future is to make cycling a safe, convenient and enjoyable transport option for short trips. This is particularly relevant to school trips, many of which are short distance from surrounding residential precincts.

The following principles will be used to guide the delivery of Sydney's Cycling Future:

- Ensure cycling initiatives are based on sound evidence
- Prioritise cost effective solutions
- Deliver in collaboration with partners
- Support a culture of cycling for transport

The plan for the future of bike riding looks at how local government areas may implement strategies including lowering speed limits on certain roads and installing new signage for cyclists at major locations (such as schools and public transport hubs).

Key aspects in which the School could integrate with and benefit from these initiatives include:

- Additional way finding signage, including distances to and from major hubs close to the School
- Development and testing of alternative bus shelter design to reduce obstacles for cyclists on bus corridors. Specific opportunities apply to the Albion Street and Macpherson Street frontages
- Increased mode share of cyclists if a greater number of end of trip facilities are provided including showers and lockers with bicycle parking.

2.4 Planning Guidelines for Walking and Cycling

The planning guidelines for walking and cycling were developed by the NSW Government to recognise the importance of walking and cycling in NSW cities. This report looks at how to increase mode share of walking and cycling, by improving security and public amenities.

In relation to the School, passive surveillance is encouraged in design of pedestrian and bicycle facilities, to increase safety. This generally applies to major walkways or further within school grounds where pedestrian flows are higher.

- Narrow pedestrian overpasses and underpasses should be avoided for security and connectivity reasons.
- Appropriate lighting should be provided (which cannot be vandalised) along major pedestrian and cycling routes, especially for routes to and from major transport nodes or hubs
- Internal roadways should be provided to link any cul-de-sacs or road ends to minimise the distances pedestrian need to walk.

The Master Plan incorporates the following features which enhance and extend these principles:

- Redistributed pedestrian entries to the campus on Albion Street and Macpherson Street
- Reconfigured pedestrian links between campus facilities
- Provision of bicycle racks, showers and lockers

2.5 Sydney's Bus Future (2013)

The Sydney's Bus Future document was released in December 2013. It is the key framework for improving and delivering better bus services throughout the Sydney metropolitan area. Bus services will be focused into three key routes:

- Rapid routes, which will use priority infrastructure, connect regionally throughout the city and have stops every 800m-1km
- Suburban routes, which will have stops every 400m and have mix of frequent 'turn up and go' and timetabled services
- Local routes which will complete the network using local streets

The School has been identified along a suburban route (Bondi to Burwood via Eastgardens). Key points relating to the School are as follows:

- Extra bus services could be implemented
- A focus is on improved journey times from point to point

These initiatives will assist both regular and school bus services.

3 Existing conditions

3.1 Site location

The School is located in Waverley, in Sydney's Eastern Suburbs on a site area of 22,327m^2 (as per DGR request report). The School is surrounded by Albion Street, Macpherson Street and Leichhardt Street / Bronte Road. Figure 1 shows the School location.

Figure 1: Site location

3.2 Description of the site

The School caters from Kindergarten to Year 12 day and boarding classes. It is both the oldest Anglican girls' school and the oldest independent girls' school in Australia.

The School is separated into a Junior School and Senior School, with 376 and 594 students enrolled respectively (taken from data in October 2013). There are no existing limits for student enrolment. The School also caters for up to 70 boarders and the boarders program is purposely limited in order to create 'extended family' lifestyle.

There are also currently 202 staff members consisting of 175 full-time and 27 part-time employees.

3.3 Site access

There is a number of vehicle and pedestrian separated accesses surrounding the School. The main vehicle accesses are located on Albion Street via three gates. On Albion Street, the northern two gates are one way, with Gate 3 an entry only and Gate 2 an exit only. The southernmost gate (Gate 1) is two-way with pedestrian access.

There are also further entry/exit locations surrounding the School to access various parts of the campus. These accesses generally provide pedestrian and vehicle access and include:

- Macpherson Street provides a vehicle and a pedestrian access to the Dame Joan Sutherland Centre (DJSC) with pedestrian access provided to the southern part of the School.
- Bronte Road provides an emergency pedestrian access only; and
- Leichhardt Street provides a number of pedestrian accesses to the Junior School.

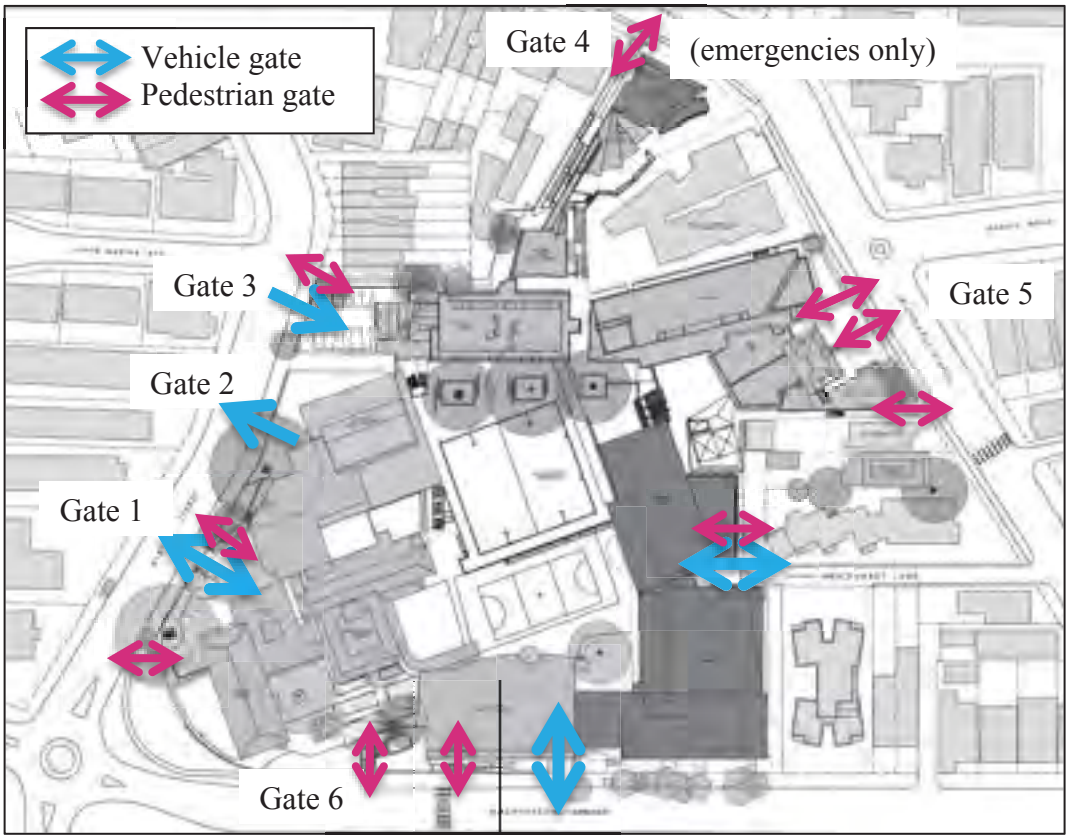

Figure 2: Existing site accesses

3.4 Existing traffic conditions

Bronte Road, Leichhardt Street and Macpherson Street provide regional routes for commuter traffic during the peak periods and general traffic all day. They are important streets in the functional road hierarchy for the area. Albion Street is also an important street for access from the residential areas to the south across to these regional routes.

Traffic surveys were undertaken in March 2014 during a typical Thursday and Saturday. Seven-day automatic tube counts were performed on Macpherson Street, Albion Street and Leichhardt Street. Intersection counts were performed at key intersections surrounding the site, including:

- Macpherson Street / Albion Street
- Macpherson Street / Leichhardt Street
- Bronte Road / Leichhardt Street
- Bronte Road / Albion Street.

The survey locations and shown in Figure 3 and the key results are presented in Table 2.

Figure 3: Traffic survey locations

Table 2 Traffic Survey Results – two-way hourly traffic flow

Peak Period	AM Peak (8am-9am)	PM School Peak (3pm-4pm)	PM Commuter Peak (5pm-6pm)	Weekend Peak (12pm-1pm)
Leichhardt Street (between Macpherson Street and Bronte Road)	1,173	1,180	1,253	1,277
Albion Street (between Macpherson Street and Bronte Road)	903	833	517	897
Macpherson Street (between Albion Street and Leichhardt Street)	1,138	1,190	1,131	1,282

The traffic flows recorded for each of the peak periods during the week indicate that the flows are fairly consistent between weekday and weekend peaks. The PM school and commuter peaks are also very similar in traffic flows.

The queuing of vehicles in Leichhardt Street and Macpherson Street during school drop-off and pick-up periods often extends into the travel lane thereby blocking and slowing the path of through traffic.

The speed limits on surrounding local roads are 50km/h, except during school hours. During 8:00am–9:30am and 2:30pm–4:00pm on school days, adjacent roads to the School have 40 km/h school zones in place.

3.5 Traffic safety

Crashes were analysed on the surrounding streets of the School over a five year period (from July 2008 – June 2013 inclusive). Overall, there were 45 crashes recorded, of which there were no fatalities, 28 injuries and 17 non-casualty (tow away) crashes. The data also indicates a fairly even distribution of crashes per year as shown in Figure 4.

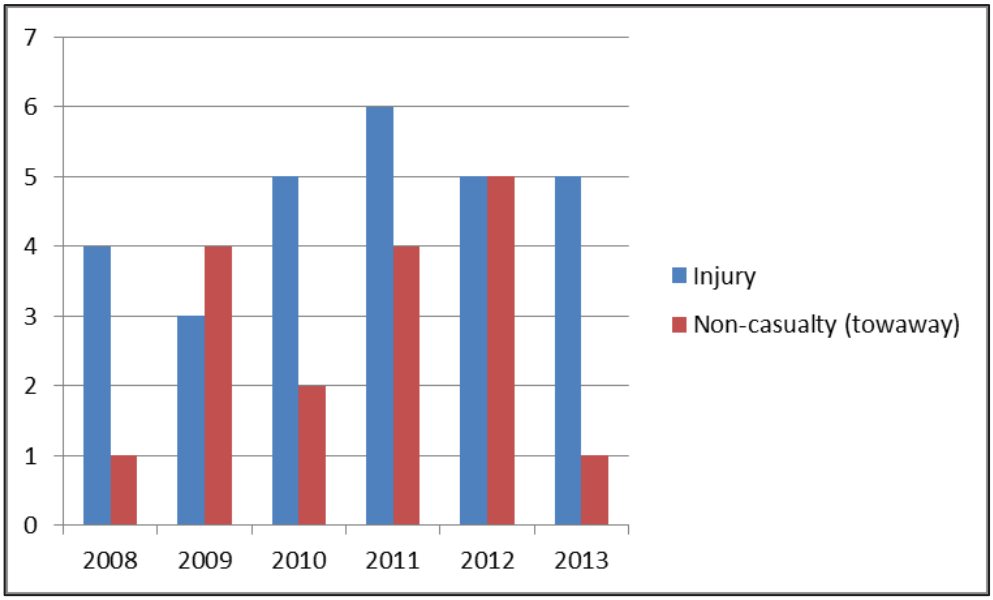

Figure 4: Degree of crashes per year (2008-2013) on surrounding streets*

**Note that 2008 and 2013 only had data for half of the year*

The crash data was sorted into hourly time periods (Figure 5). Crashes were more concentrated in the commuter peak periods. Interestingly, the highest recorded hourly time period was in the PM peak hour (6pm-7pm), which does not coincide with the School's key operating hours.

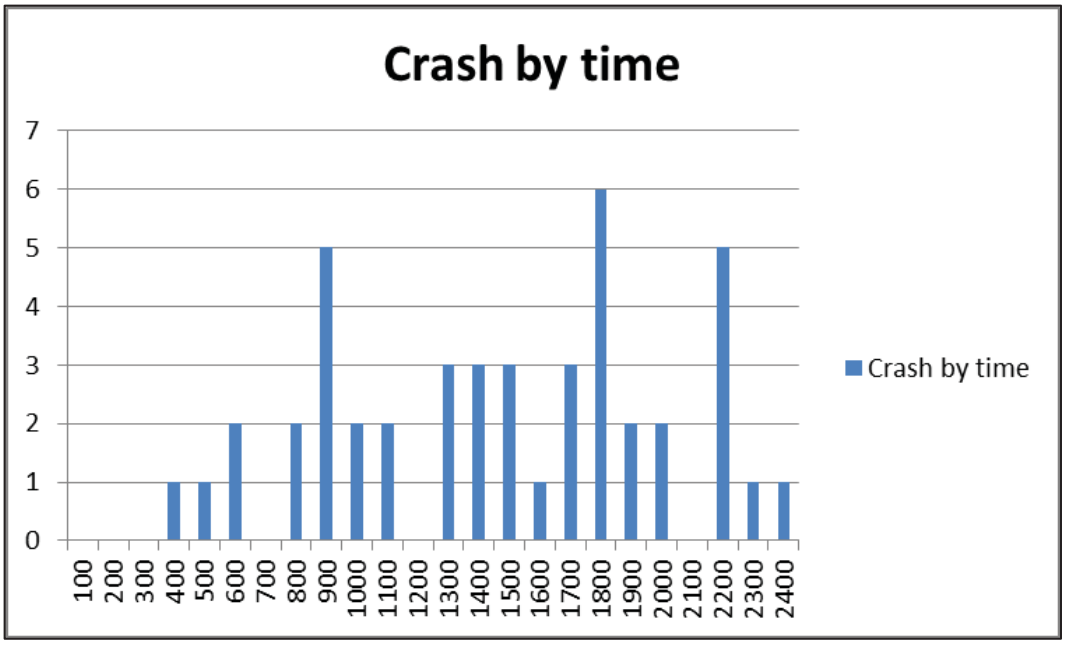

Figure 5: Crashes by time period

The crash data was classified into the various road user movement (RUM) codes to analyse crash clustering. The majority of crash types were recorded as vehicles from same direction, followed by pedestrian related crashes (Figure 6).

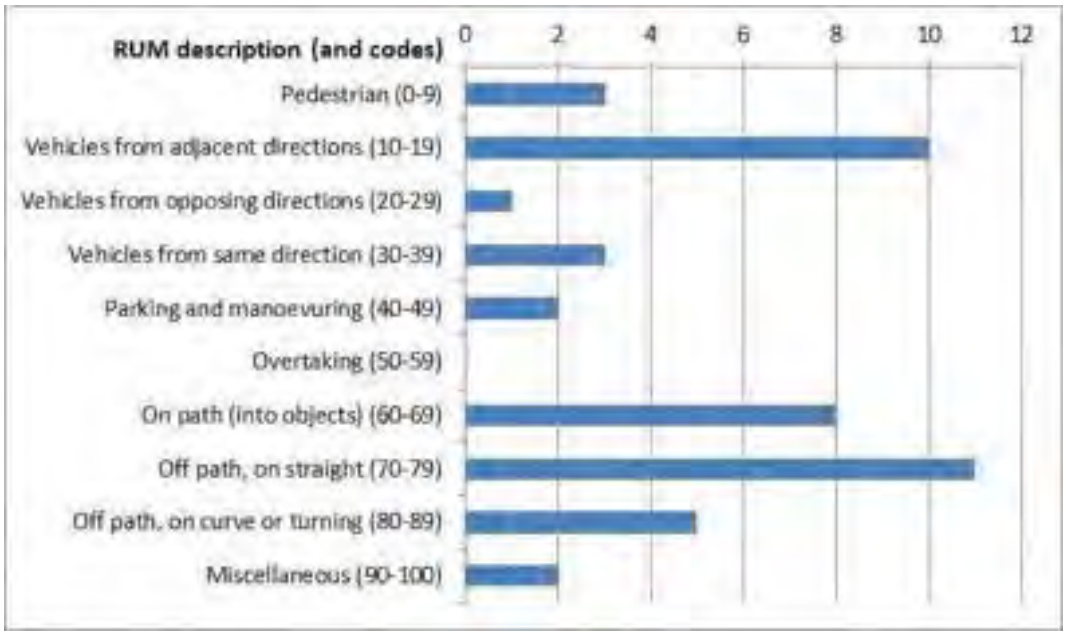

Figure 6: Crash types by road user movement categories

Crash clusters for the purposes of this study were defined as three or more crashes with the same RUM code, within 50m of each other. Crash clusters were focused around key intersections and are detailed in Table 3 and Figure 7.

Table 3: Investigation of crashes at intersections by road user movements

Primary street	Cross street	Adjacent cross traffic	Out of control	Off causeway into object	Same rear end	Opposite right through
Macpherson Street	Carrington Road	**2**	**2**		**6**	**5**
Macpherson Street	Albion Street	**3**	**1**			
Macpherson Street	Leichhardt Street	**4**		**4**		
Bronte Road	Albion Street	**2**	**3**		**3**	

There were also a number of crashes that involved a vehicle hitting a door, which occurred along Macpherson Street (2) and Albion Street (2).

There were 3 crashes that involved pedestrians recorded. One occurred at the zebra crossing on Macpherson Street, and two crashes occurred either side of the Bronte Road / Albion Street intersection.

Figure 7: Crash investigation 2008 - 2013

3.6 Parking supply and demand

3.6.1 On-street parking supply

All kerb space on the roads fronting the School provides unrestricted parking apart from the drop-off zones and bus zones. Restricted ½P zones begin further north on Albion Street and Bronte Road near the shopping district. The parallel spaces on-street are not line marked.

3.6.2 Short term pick-up and set-down areas

Students who are driven to the School have designated drop-off and pick-up areas on-street known as carlines. All these carlines are located in zones which are designated 'No Parking School Days' and vary in time restrictions. However, the zones are usually split into separate areas with a 'No Stopping' zone in-between (due to either a pedestrian crossing or access).

The car line locations (and time restrictions) are:

- the west side of Leichhardt Street between Bronte Road and Leichhardt Lane. (8.00am-9.00am / 2.30pm-4.00pm)
- the north side of Macpherson Street between Albion Street and the bus stop, (8.00am-9.15am / 2.45pm-4.15pm)
- the east side of Albion Street between the pedestrian signals and Santa Marina Avenue. (8.00am-9.00am / 3.00pm-4.15pm)

A teacher is on duty in the courtyard from 7.50am until classes commence at 8.20am allowing students to be dropped off early. Parents are advised that students should arrive at school by 8.15am. The gates are open during the afternoon between at 2.45pm and 4.00pm. Finishing times are staggered between year groups to help alleviate congestion around the School as shown in Table 4.

Table 4: School finishing times

Years	Finish time	Collection location
Kindergarten	2.45pm	Courtyard
Years 1 and 2	2.50pm	Leichhardt Street car line
Years 3 and 4	3.00pm	Leichhardt Street car line
Years 5 and 6	3.00pm	MacPherson Street car line
7-10	3.20pm	Macpherson/Albion
11-12	3.20pm	Macpherson/Albion

Senior School students have varying start and finish times depending on their choice of curriculum (i.e. whether they have extra-curricular activities). Classes nominally begin at 8.20am and finish as per Table 4. The majority of students were observed to arrive after 8.00am and leave the School gates after 3.30pm (which is supported by the travel surveys).

Junior School students were seated and marshalled into vehicles as they arrived on Leichhardt Street.

Figure 8: School drop-off/pick-up zones

3.6.3 Off-street parking provision

There are currently a total of 56 parking spaces within the School grounds. All other staff members and visitors park on-street or use alternative methods of travel.

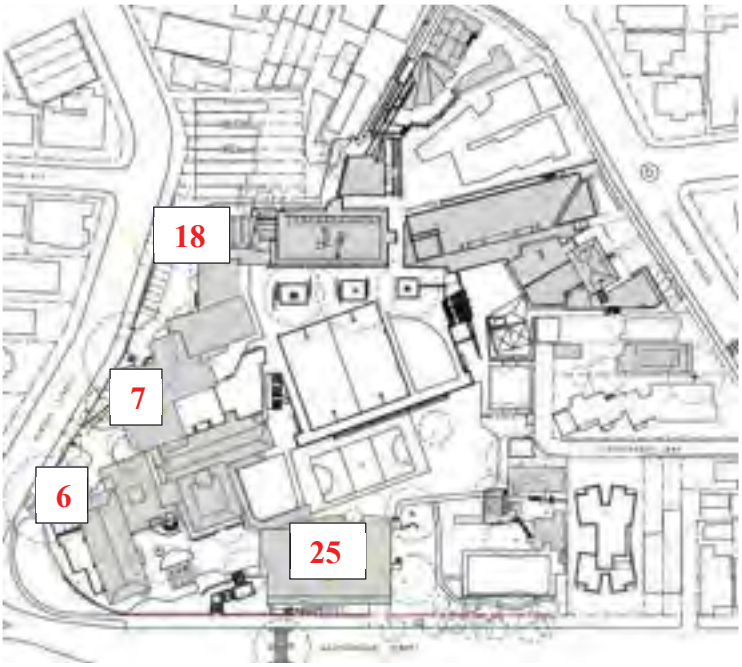

Figure 9: Existing off-street parking provision

3.6.4 Current on-street parking demand

Parking accumulation surveys were performed by Lyle Marshall and Associates in December 2013 to determine the extent of on-street parking occupancy. The on-street parking provision on the surrounding roads is generally unrestricted, with up to 560 parking spaces available within 5 minutes' walk. This reduces to approximately 460 spaces during the day when the time restrictions and school drop-off/pick-up zones are in operation.

Parking is heavily utilised in the surrounding streets, with occupancy around 90% in the morning dropping away to 75% occupancy in the afternoon and peaking again at approximately 90% after 9pm. Parking occupancy is summarised in Figure 10.

Parking is utilised by school staff during the day and by residents/visitors during the evenings and weekends. Students are also able to drive, but are not permitted to park on-site and are discouraged by the School to do so.

During the day, there is spare capacity for parking with occupancy between 80-90%; however during evenings, parking is utilised up to 95% occupancy by 10pm.

Figure 10: Parking occupancy in surrounding streets

Source: Lyle Marshall and Associates

Arup conducted further on-street parking occupancy surveys in three time periods to determine the availability of car parking within 5 minutes' walk of the new entrance to the School on Macpherson Street. The area and streets covered are shown in Figure 11. The area selected included streets further to the south when compared to the Lyle Marshall and Associates survey area.

Figure 11: Comparison of 5 minute walk on-street parking survey areas

The number of available on-street car parking spaces within 5 minutes' walk of the main entrance to the School is shown in Figure 12, Figure 13 and Figure 14.

- 7.30 – 8.00pm Saturday 3 May 2014 237 spaces
- 2.30 – 3.00pm Sunday 11 May 2014 152 spaces
- 7.30 – 8.00pm Tuesday 13 May 2014 204 spaces

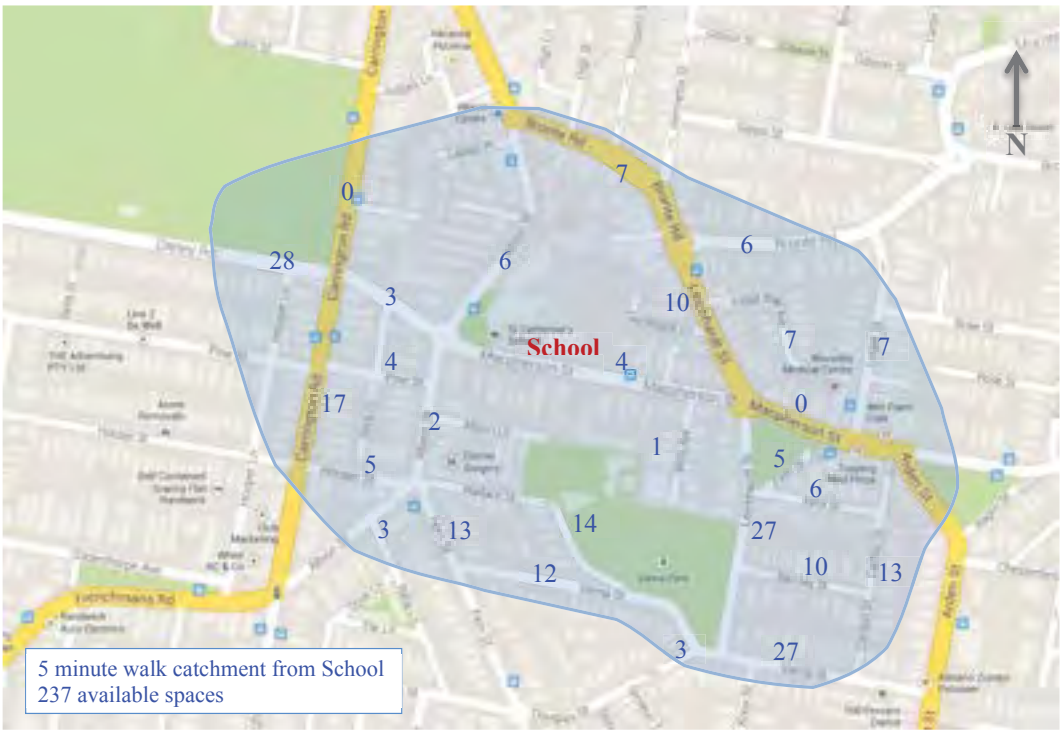

Figure 12: Available on-street spaces 7.30 – 8.00pm Saturday 3 May 2014

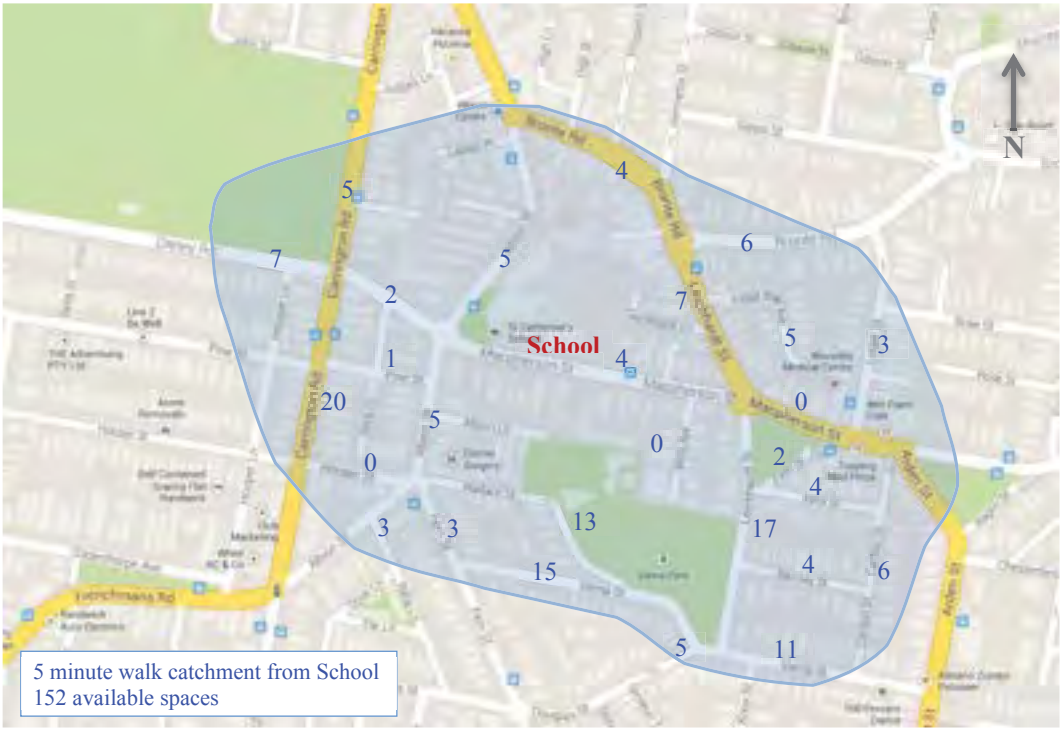

Figure 13: Available on-street spaces 2.30 – 3.00pm Sunday 11 May 2014

Figure 14: Available on-street spaces 7.30 – 8.00pm Tuesday 13 May 2014

3.7 Modal split

Travel demand surveys were completed in April 2014 by the School for both staff and students to recognise the current mode of transport to the School. The survey had a large number of responses from 579 students and 103 staff, representing more than half of the School. The results for staff and students are presented in Figure 15 and further detailed in Appendix B.

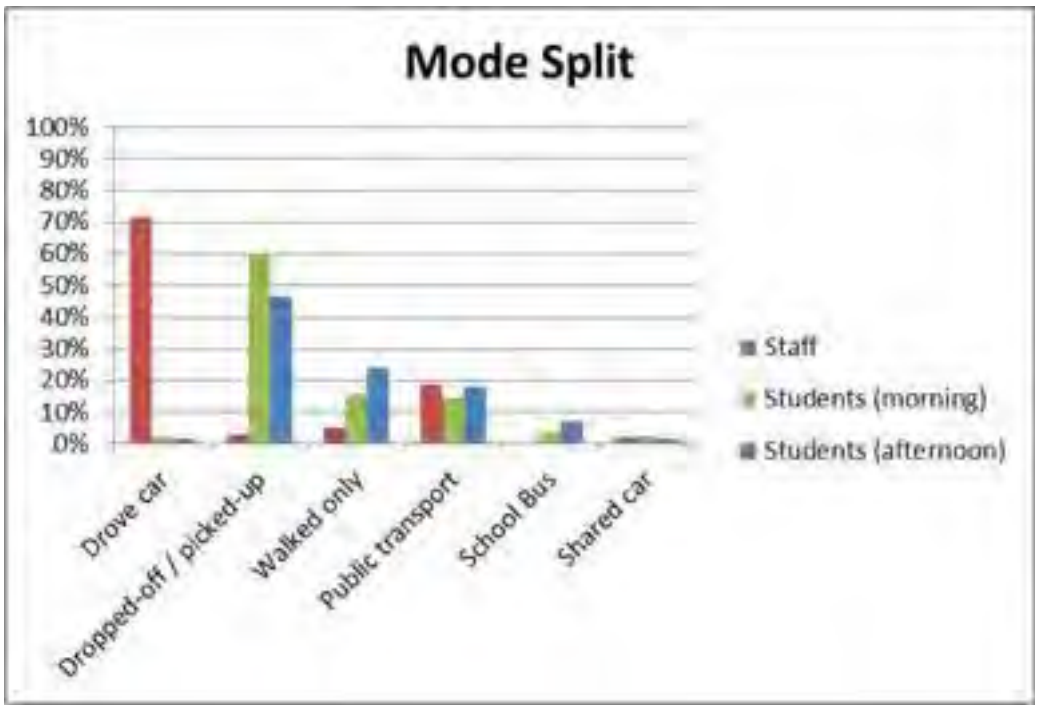

Figure 15: Travel demand survey summary

It was found that 71% of staff drove to the School with 3% as passengers. Public transport usage was approximately 19% and 5% walked to the School. Limited staff parking is available on the site and of the staff that drove, 61% of staff nominated that they park on-street.

For students, modes vary by arrival and departure. In the morning, 60% of students were dropped off at the School by car, decreasing to 46% being picked up from the School in the afternoon. As a result, there was a shift to walking in the afternoon, increasing from 16% to 24%; with slight increases to school bus usage (4% to 7%) and public transport (15% to 18%). No single student or staff member was recorded cycling to school.

The survey also asked students and staff when they normally arrive and depart the School. Departure profiles are shown in Figure 16. The majority of students arrive between 8.00am-8.20am (approximately 67%) and depart between 3.30pm-3.45pm (approximately 81%).

Comparably, staff members typically arrive between 7.30am-8.00am (35% for full-time and 30% for part-time). Full-time staff members depart fairly evenly between 4.00pm-6.00pm (approximately 20% recorded every half hour) and the majority of part-time staff departed before 4.00pm (44%). Interestingly, the departure peaks for students and staff do not coincide as shown below in the graph. (**note that school starts at 8.20am** with staggered finishing times up to 3.20pm).

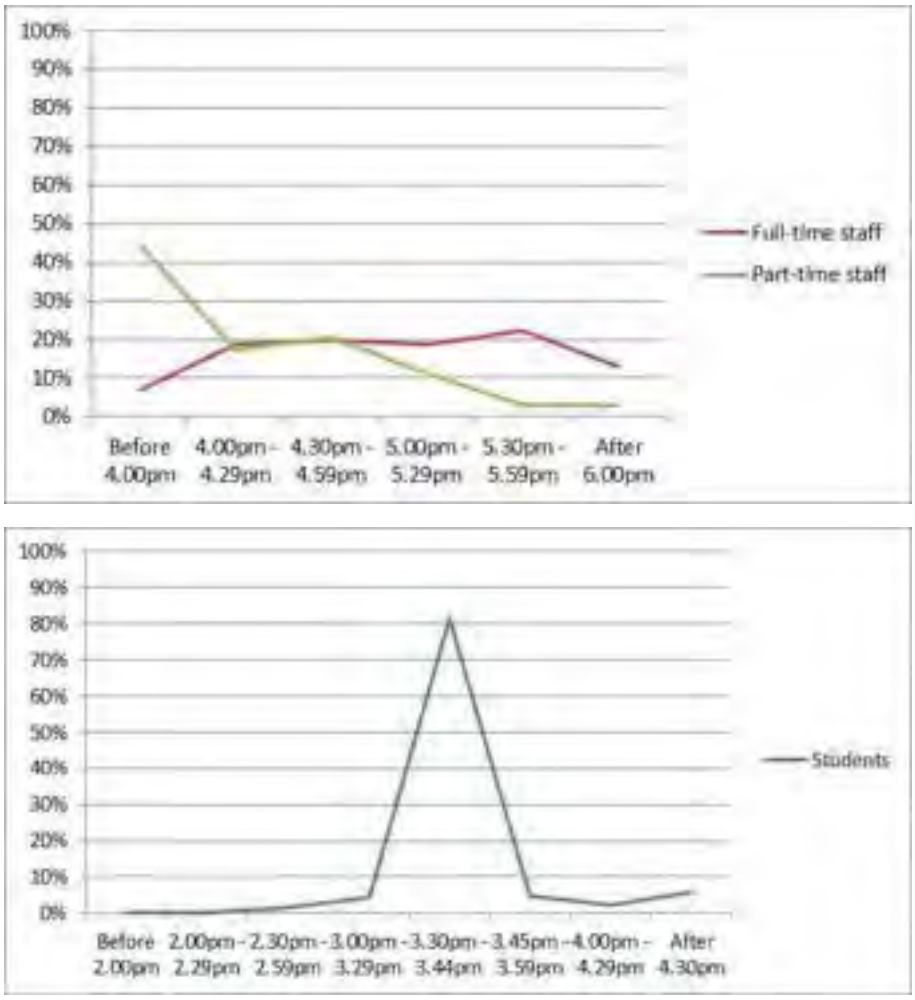

Figure 16: Departure profiles

The surveys also analysed staff and students (and parents) concerns and suggestions for improvements. The main comments provided were:

- Better organisation of drop off and pick up activity
- Possible on-site drop off/pick-up
- More staggered start/finish times
- Stop students driving to school
- Drop-off facilities going through bus stops and 'No Stopping' zones
- Junior School drop-off not sufficient on Leichhardt Street and may need to be expanded to Macpherson Street

3.7.1 Journey to Work 2011

The Journey to Work (JTW) census data 2011 has been reviewed for the Travel Zone (524) containing the School, which provides an indication of the mode share for staff. The modes of travel are shown in Figure 17 and the origins for the trips made to Zone 524 (highlighted in blue) are shown in Figure 18. The JTW data indicates that approximately 60% drove to work, with an additional 4% being a car passenger. Public transport usage is approximately 15% for train and 7% for buses. Walkers were high at 11%. These results are relatively consistent with the travel demand surveys completed by staff at the School.

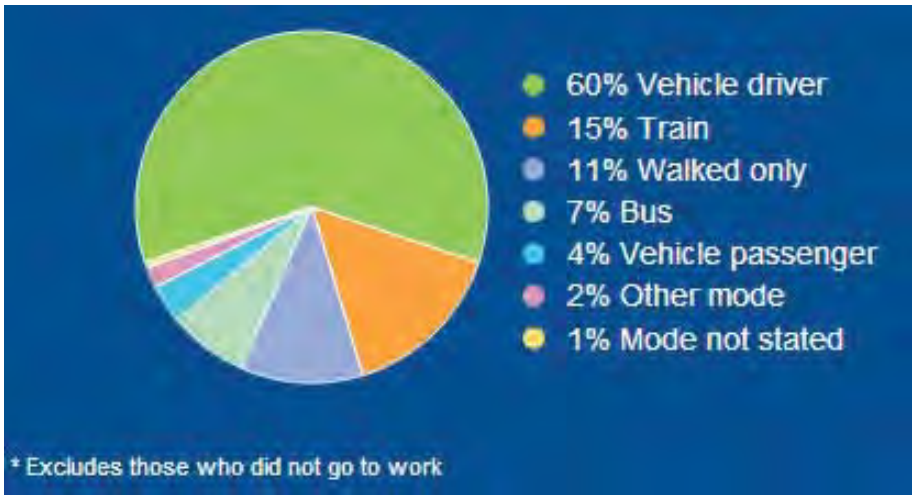

Figure 17: JTW Census data, 2011

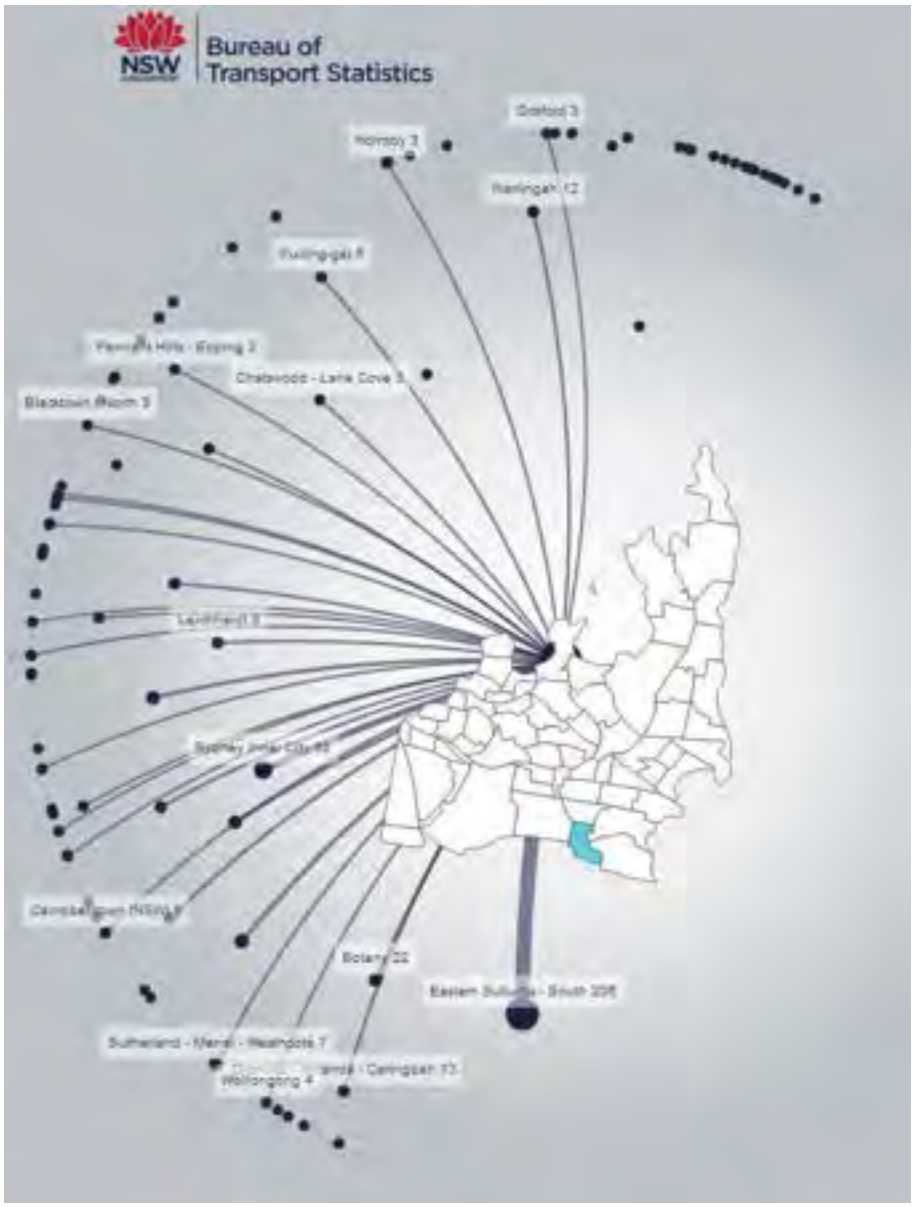

Figure 18: JTW Visualiser (Travel Zone 524)

3.7.2 Home locations of staff and students

Suburb data for students and staff has been plotted to indicate the accessibility to different modes of transport. Interestingly, more than 30% of staff and approximately 60% of students live within 1.5km of the School and could walk. The concentration of staff home location in the Sydney area is shown in Figure 19 and the student home locations are shown Figure 20. The vast majority of students and staff live in the eastern suburbs.

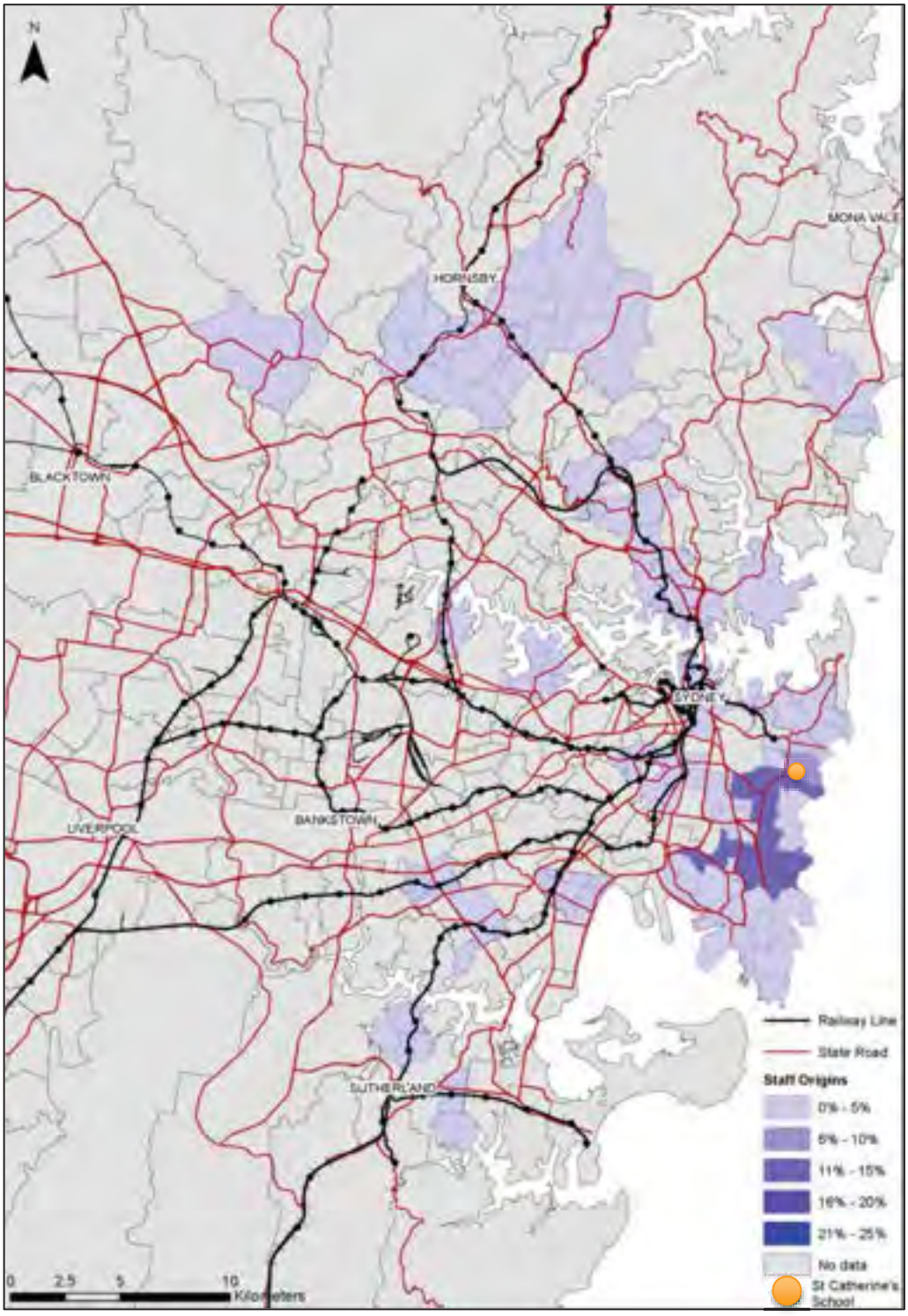

Figure 19: Staff postcode origins

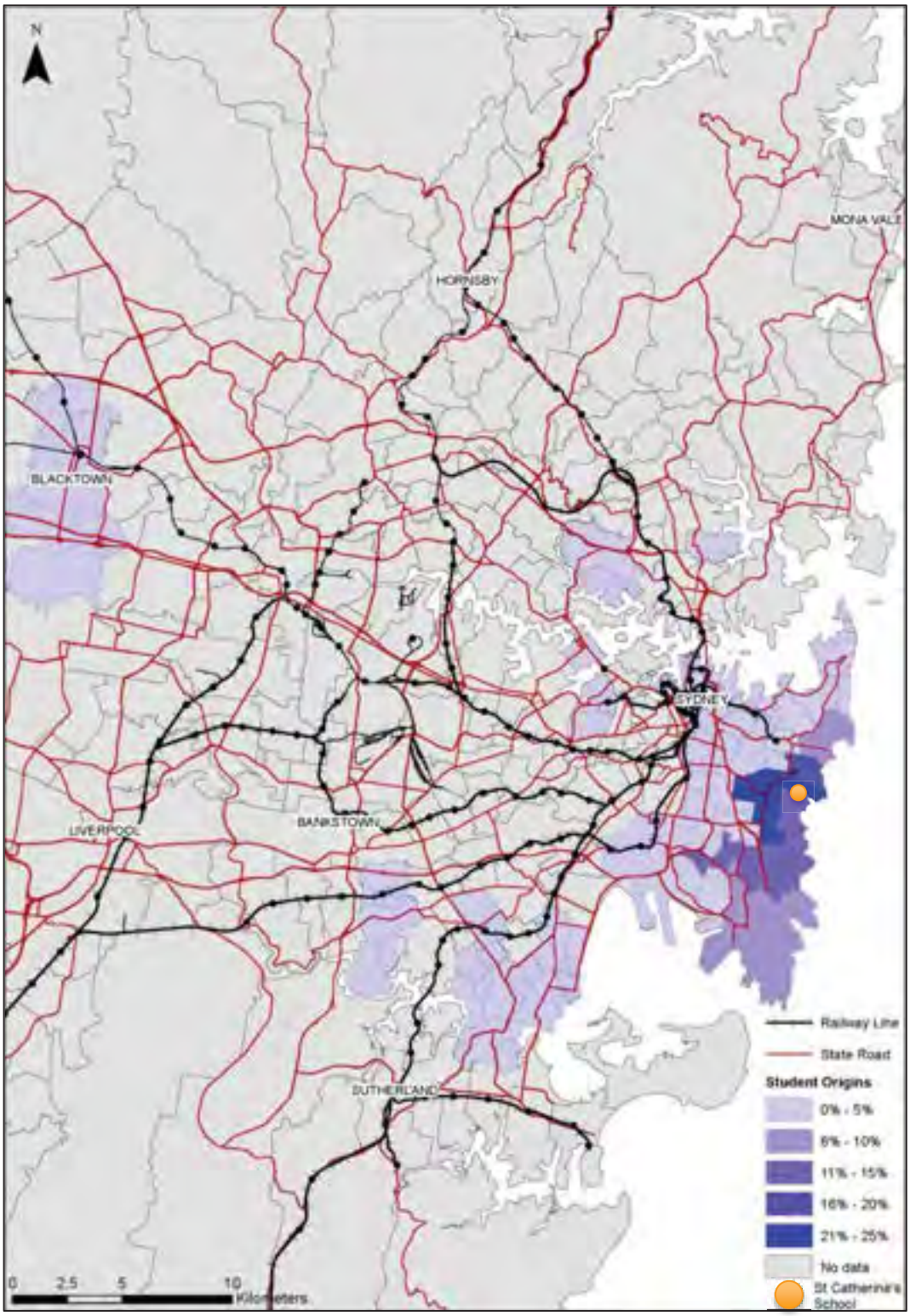

Figure 20: Student postcode origins

3.8 Public transport

3.8.1 General public buses

Public transport to the School, shown in Table 5, is available by bus from stops located on Macpherson Street, Albion Street and Leichhardt Street. Sydney Buses operates routes outlined in Figure 21. All buses (except route 378) listed below originate at Bondi Junction Station, providing good access to the T4 Eastern Suburbs Line.

Table 5: Bus services

Route Number	Stop	Destination	Frequency
313	Carrington Road	Coogee	2 per hour
314	Albion Street	Coogee	2 per hour
316	Albion Street	Eastgardens	2 per hour
317	Albion Street	Eastgardens	2 per hour
348	Albion Street	Wolli Creek	2 per hour
353	Albion Street	Eastgardens	2 per hour
360	Leichhardt Street	North Clovelly	2 per hour
378	Albion Street / Macpherson Street	Railway Square / Bronte Beach	Every 10 minutes
400	Albion Street	Burwood	Every 10 minutes
410	Albion Street	Rockdale	Every 10 minutes

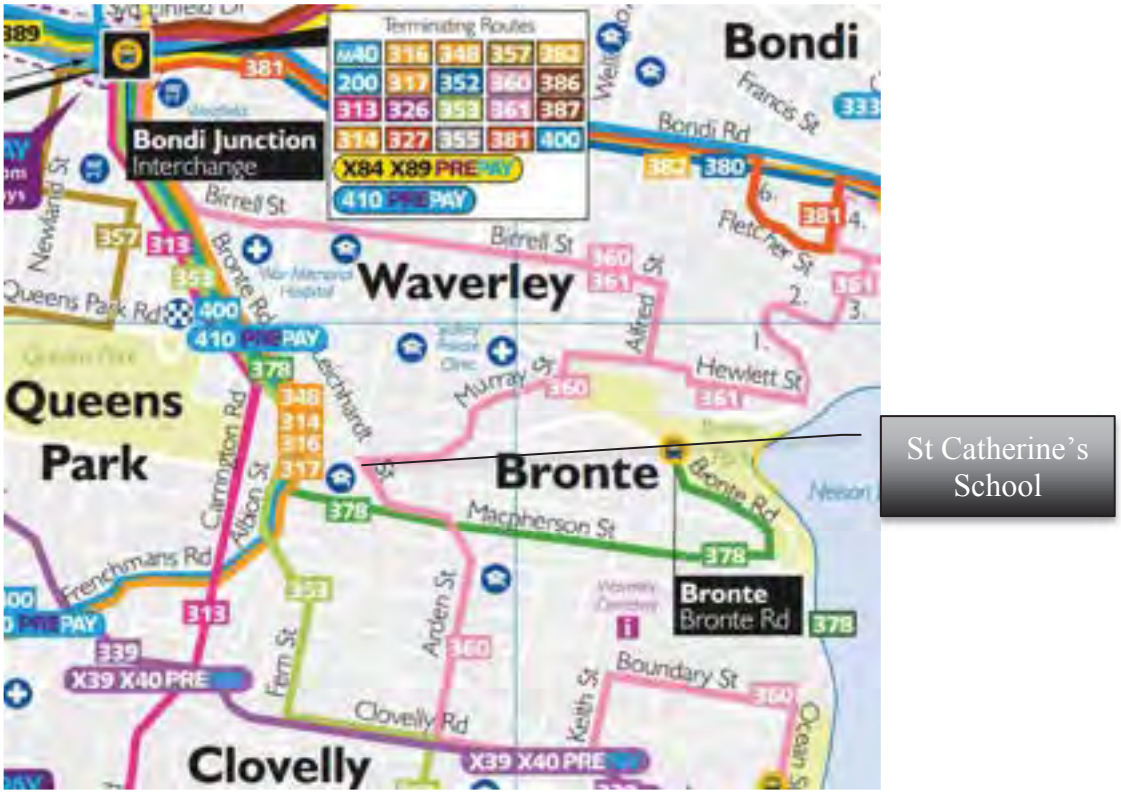

Figure 21: Surrounding bus routes

Source: Sydneybuses.info

3.8.2 School Buses

Additionally there are school services which operate from the Albion Street bus stops in the afternoon (between 3.30pm and 4.00pm). These routes are detailed in Table 6.

Table 6: School bus routes

Route Number	Origin	Destination	Departure Time
400	Waverley College	Eastgardens	3.35pm
604	St Clare's College	King St / Botany Rd	3.31pm
657	St Clare's College	Bunnerong St / Franklin St	3.31pm
661	Cranebrook School	Randwick Junction	3.42pm
662	Cranebrook School	Maroubra Junction	3.57pm

Figure 22: School bus routes

3.8.3 Minibuses

The School operates three minibus services. These are usually used during school hours to move students to events and excursions. They may also be used for after-school activities such as extra-curricular events and classes.

3.8.4 School bus charters

For larger events, buses are chartered with student pick-up and set-down occurring in Albion Street.

3.9 Pedestrian / bicycle networks

The surrounding streets have pedestrian footpaths either side of the road. Each street also has a mid-block pedestrian crossing. There is a signalised crossing on Albion Street, and a zebra crossing each on Leichhardt Street and Macpherson Street.

Cycling routes surrounding the site include nearby paths at Queens Park and on-road routes (mixed traffic). These are shown below in Figure 23.

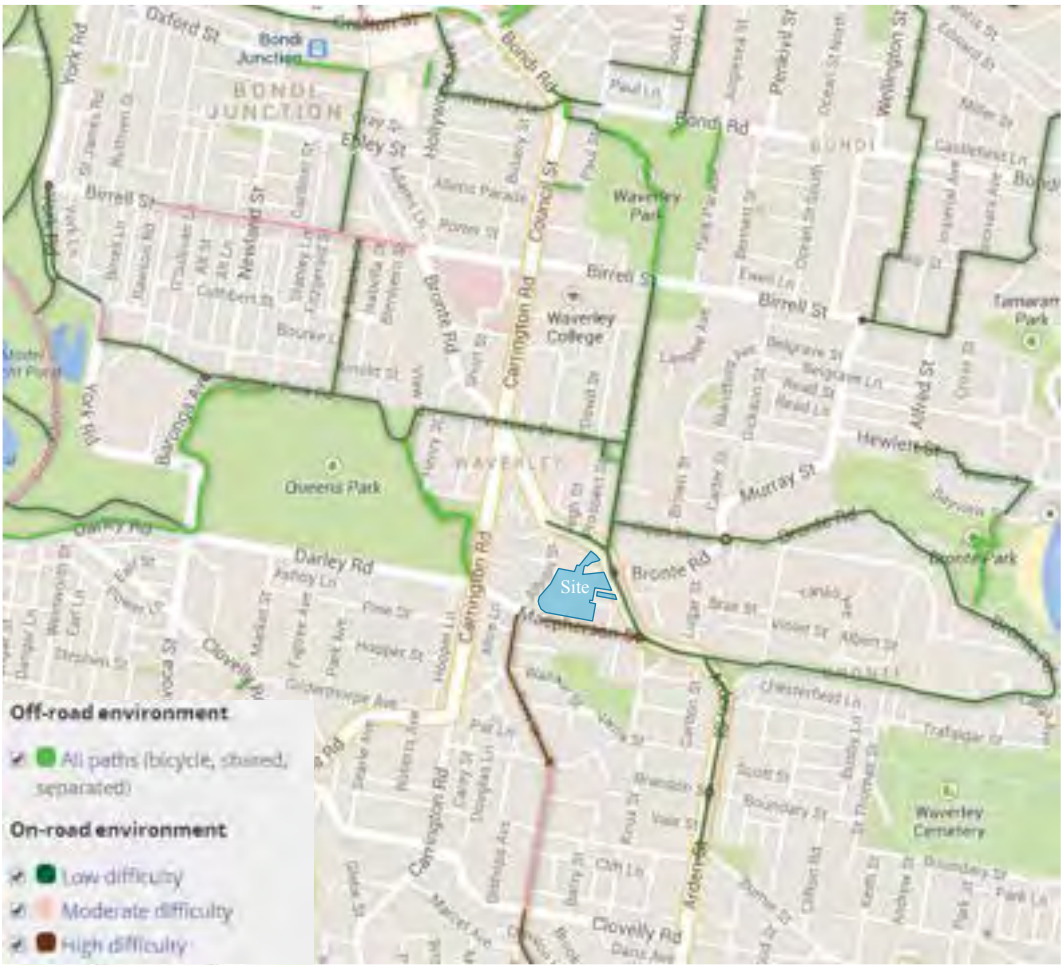

Figure 23: Bicycle network

3.10 Other proposed developments

A review of Waverley Council's DAs indicates that the only proposed development within close proximity to the School is a 60 place Child Care Facility at 23 Macpherson Street. This site is just to the east of the School on the southern side of Macpherson Street. The development will provide a drop off/pick up zone with time limited parking on Macpherson Street for the morning drop-off and afternoon pick-up times. This will occur on the opposite side of the street to the School's pick-up drop-off zone and will not impact on the operation of the zone.

4 St Catherine's School Campus Master Plan

4.1 Objectives

The School has identified the following objectives for the Campus Master Plan:

- Provide state-of-the-art facilities which complement the School's commitment to providing broad, challenging and vibrant education within a nurturing environment
- Enhance the current educational curriculum for Sport and Personal Development, Health and Physical Education by introducing an Aquatic Centre in place of the existing, aged outdoor pool
- Enhance the current educational curriculum for Performing Arts by providing a new state-of-the-art professional grade Performing Arts Auditorium which addresses the constraints of the existing "play-box theatre" within the DJSC (i.e. small spectator gallery, insufficient back-of-house facilities, inadequate size to accommodate school performances etc)
- Introduce the new Research, Performing Arts and Aquatic Centre (RPAC) which reflects a contemporary world-leading teaching and learning environment for staff and K-12 students, equipped with a broad variety of leading-edge and learning based technology within a diverse range of learning environments
- Ensure an efficient, adaptive reuse of residual spaces created by the development of new facilities to create a variety of education based precincts throughout the School campus
- Create new Junior School and Senior School entries off Albion Street and Leichhardt Street respectively, which are sympathetic to existing traffic conditions and provide a safe, accessible pedestrian link between Albion Street and Leichhardt Street for the School community
- Create a new, safe formal school entry from Macpherson Street directly to the Administration Building via the Museum, separating vehicle entry from pedestrian entry whilst emphasising the significance of the School's heritage
- Minimise dependency on external facilities to support the educational curriculum, as well as co-curricular and extracurricular activities offered by the School to the community.

4.2 The plan

The proposed Campus Master Plan comprises a number of new buildings, internal refurbishments and the reallocation of some internal spaces across the site. The primary new buildings (and associated demolition works) include:

- Demolition of the existing outdoor swimming pool and construction of a new multi-level building (i.e. the RPAC). The core facilities proposed within the RPAC include the new RPAC, Aquatic Centre and Multi-Purpose Hall, with pedestrian links to the existing DJSC and Jo Karaolis Sports Centre (JKSC).
- Demolition of the existing Jane Barker Hall (JBH) and construction of a new building.

- Demolition of the existing print room, reception and link building between Lenthall and the Administration Building (Level 6) and construction of new boarder's common room.

The Campus Master Plan also proposes:

- A total site Gross Floor Area (GFA) of 22,958m^2 which equates to a floor space ratio (FSR) of 1:1 (the existing/approved/commenced GFA on the site is 20,274m^2 which equates to a FSR of 0.9:1)
- A total of 75 car spaces (a net increase of 19 car spaces)

The Campus Master Plan is illustrated and explained in the *St Catherine's School, Waverley Master Plan* (November 2013) and *Gross Floor Space Calculation*, by Mayoh Architects.

Figure 24: Campus Master Plan

4.3 Student /staff increase

The School had an October 2013 enrolment of 970 students, with 202 employees (including 175 full time and 27 part time employees). The Campus Master Plan will provide the potential for up to:

- 14-16 additional students to be introduced progressively each year, starting at 2015 and ending at 2029 (i.e. increasing to a total of 1,200)
- 10 additional employees (approximately)

4.4 Description of site access / parking / loading / bicycle facilities

The School currently has numerous pedestrian entries, but there is no clear hierarchy or function of access points. The Campus Master Plan preserves and improves the pedestrian environment on the site by improving the clarity and function of the following key pedestrian access points:

- New formal pedestrian school entry from Macpherson Street
- New Senior School entry off Albion Street
- Junior School pedestrian entry from Leichhardt Street with a major internal student link to the Senior School entry from Albion Street.

Lifts are included in the RPAC and future new building on the JBH site to facilitate accessibility throughout the site. Other secondary entries will be retained or consolidated with proposed entries as shown in Figure 25 (for example the pedestrian entry to the DJSC will be consolidated with the New Performing Arts entry from Macpherson Street).

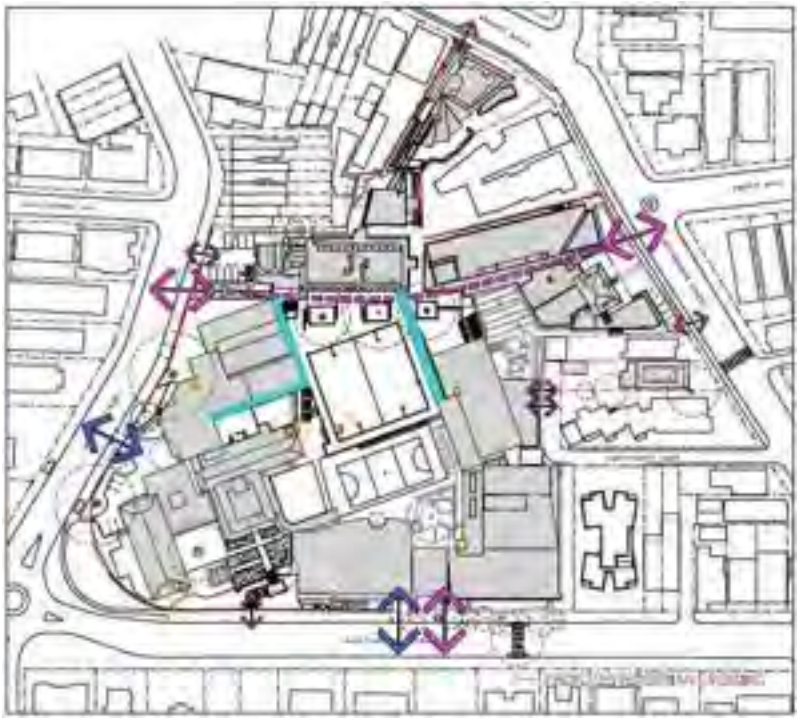

Figure 25: Proposed access arrangements

5 Stage 1 development

5.1 Description

The proposed SSD comprises the following:

Detailed design approval for RPAC which comprises:

(a) Demolition of the existing swimming pool, change rooms, portable class room

(b) Tree removal

(c) Construction of RPAC in the location of existing swimming pool and the approved commenced Indoor Sports Complex (DA 258/89) to include basement car parking, an Aquatic Centre with associated amenities, Multi-Purpose Hall, 500 seat Performing Arts Auditorium with associated amenities and RPAC.

(d) Landscaping of the site.

5.2 Proposed profile of use

5.2.1 Existing venues

The School currently holds a number of events/activities both internally and externally for the public. Current event venues and their capacities are outlined below:

- JKSC holding 1,000 attendance
- Isabel Hall Courtyard holds 600 standing attendance
- DJSC holds up to 250 attendance
- JBH holds up to 250 seated attendance
- Cloisters holds up to 120 attendance
- Nan Hind Centre holds up to 100 attendance

The RPAC development proposes to consolidate events from these existing facilities into the new facilities. It is also proposed to redevelop the JBH site in a future stage of the Campus Master Plan.

5.2.2 Existing profile of events/activities

There is an annual calendar of events and activities that are held in the various on-site venues. In addition to these, the School Musical event is held at NIDA Parade Playhouse, and occurs once a year periodically. A schedule of these existing events and activities and the potential future sports venue to be used is provided in Table 7. The events currently held in the JKSC will remain in this venue and there is no envisaged change in attendance. A number of the events that are moving into the new venues are envisaged to increase in size, although the majority will not change.

Table 7: Indicative usage profile (existing and forecast)

Event	Frequency (days p/yr)	Day of Week	Current indicative usage profile			Forecasted indicative usage profile			Change	Event Number for parking
			Hours	Existing facility where event is currently held	Estimated current attendance at event	Hours	New facility where event is proposed	Estimated forecasted attendance at event		
School Open Day	5	Weekday	9am - 11am	Dame Joan Sutherland	120 externals	9am - 11am	Performing Arts Auditorium	120 externals	0	120
School Open Night (Twilight Session - Term 1 and 4 only	3	Weekday	5.30pm - 7.30pm	Dame Joan Sutherland	120 externals	5.30pm - 7.30pm	Performing Arts Auditorium	120 externals	0	120
Rehersal Senior School Musical	5	Weekend	9am - 2pm	NIDA	60 students	10am - 1pm	Performing Arts Auditorium	60 students	0	0
Senior School Musical Event	2	Weekday	6.30pm - 9.30pm	NIDA - Parade Playhouse	659 audience with orchestra pit in use	6.30pm - 9.30pm	Performing Arts Auditorium	500 audience (school community	500	500
Senior School Musical Event	1	Saturday	NA	NA	NA	6.30pm - 9.30pm	Performing Arts Auditorium	500 audience (school community	500	500
Prep - St. Cath's Got Talent	2	Weekday	3pm - 6.30pm	Dame Joan Sutherland	60 students	3pm - 6.30pm	Performing Arts Auditorium	60 students	0	0
St. Cath's Got Talent Event	1	Weekday	6pm - 9pm	Dame Joan Sutherland	250 audience	6pm - 9pm	Performing Arts Auditorium	500 audience (school community	250	500
Prep - Trinity Evening	12	Weekday	3pm - 6.30pm	Dame Joan Sutherland	60 students	3pm - 6.30pm	Performing Arts Auditorium	60 students	0	0
Trinity Evening	1	Weekday	6pm - 10pm	Dame Joan Sutherland	250 audience	6pm - 10pm	Performing Arts Auditorium	500 audience (school community	250	500
Reherse BTC Showcase Event	11	Weekday	3pm - 6.30pm	Dame Joan Sutherland	60 students	3pm - 6.30pm	Performing Arts Auditorium	60 students	0	0
BTC Showcase Event	2	Weekday	6pm - 9pm	Dame Joan Sutherland	250 audience	6pm - 9pm	Performing Arts Auditorium	500 audience (school community	250	500
Infants Christmas Musical Rehersal	3	Weekday	9am - 5pm	Dame Joan Sutherland	130 students	9am - 5pm	Performing Arts Auditorium	130 students	0	0
Infants Christmas Musical	1	Weekday	9am - 12pm	Dame Joan Sutherland	250 audience	9am - 12pm	Performing Arts Auditorium	300 audience	50	300
Junior Musical Rehersal	2	Weekend	9am - 5pm	Dame Joan Sutherland	150 students	9am - 5pm	Performing Arts Auditorium	150 students	0	0
Junior Musical Rehersal	2	Weekday	During school hours	Dame Joan Sutherland	150 students	During school hours	Performing Arts Auditorium	150 students	0	0
Junior Musical	2	Weekday	6.30pm - 9.30pm	Dame Joan Sutherland	250 audience	6.30pm - 9.30pm	Performing Arts Auditorium	400 audience	150	400
Stage 2 Music Evening Rehersal	2	Weekday	During school hours	Dame Joan Sutherland	100 students	During school hours	Performing Arts Auditorium	100 students	0	0
Stage 2 Music Evening	1	Weekday	6.30pm - 9.30pm	Dame Joan Sutherland	250 audience	6.30pm - 9.30pm	Performing Arts Auditorium	300 audience	50	300
Stage 3 Music Evening Rehersal	2	Weekday	During school hours	Dame Joan Sutherland	150 students	During school hours	Performing Arts Auditorium	150 students	0	0
Stage 3 Music Evening	1	Weekday	6.30pm - 9.30pm	Dame Joan Sutherland	250 audience	6.30pm - 9.30pm	Performing Arts Auditorium	350 audience	100	350
Potential Use by Educational Establishment (Evening)	4	NA	NA	NA	NA	6.30pm - 9.30pm	Performing Arts Auditorium	500 audience	500	500
Potential Use by Educational Establishment (Matinee)	1	NA	NA	NA	NA	1.30pm - 4.30pm	Performing Arts Auditorium	500 audience	500	500
Amateur Societies Performance Evening	6	NA	NA	NA	NA	6.30pm - 9.30pm	Performing Arts Auditorium	500 audience	500	500
Amateur Societies Performance Matinee	2	NA	NA	NA	NA	1.30pm - 4.30pm	Performing Arts Auditorium	500 audience	500	500
Parent Breakfast - Junior School (K-6)	7	Weekday	7am - 9am	Jane Barker Hall	30 parents	7am - 9am	Multi-Purpose Hall	30 parents	0	0
Parent Breakfast - Senior School (7-12)	6	Weekday	7am - 9am	Jane Barker Hall	45 parents	7am - 9am	Multi-Purpose Hall	45 parents	0	0
Welcome Cocktail Party	1	Weekday	6pm - 9pm	Isabell Hall Wing Courtyard	600 externals (standing)	6pm - 9pm	Multi-Purpose Hall	600 externals (standing)	0	0
Old Girls Union - Annual 5yr Reunion	1	Weekday	6pm - 8pm	Cloisters*	60 externals	6pm - 8pm	Multi-Purpose Hall	60 externals	0	0
Allwell Scholarship Testing	1	Weekend	10am - 1pm	Dame Joan Sutherland	100 external students	10am - 1pm	Multi-Purpose Hall	100 external students	0	0
Kindergarten Parents DVD evening	1	Weekday	6pm - 9pm	Nan Hind Centre	100 parents	6pm - 9pm	Multi-Purpose Hall	100 parents	0	0
Old Girls Union - Mothers and Daughters Breakfast	1	Weekday	7.30am - 9.30am	Jane Barker Hall	60 (30/30 split)	7.30am - 9.30am	Multi-Purpose Hall	60 (30/30 split)	0	0
Old Girls Union - Jane Barker Luncheon	1	Weekday	10.30am - 1.30pm	Jane Barker Hall	80 externals	10.30am - 1.30pm	Multi-Purpose Hall	80 externals	0	0
Evening of Eminence - Junior School	1	Weekday	6pm - 8.30pm	Dame Joan Sutherland	160 parents	6pm - 8.30pm	Multi-Purpose Hall	250 externals	90	90
Creative Connections	1	Weekday	4.30pm - 8.15pm	Dame Joan Sutherland + Chapel	250 (yr 12 + parents + staff)	4.30pm - 8.15pm	Multi-Purpose Hall	250 (yr 12 + parents + staff)	0	0
Kindergarten Grandparents Morning	1	Weekday	8am - 11am	Nan Hind Centre	60 grandparents	8am - 11am	Multi-Purpose Hall	60 grandparents	0	0
Old Girls Union Year 12 Afternoon Tea	1	Weekday	2.30pm - 4pm	Jane Barker Hall	120 students (Yr 12)	2.30pm - 4pm	Multi-Purpose Hall	120 students (y12)	0	0
Blues Sports Breakfast	1	Weekday	7am - 9am	Jane Barker Hall	100 students	7am - 9am	Multi-Purpose Hall	100 externals	0	0
Kindergarten Orientation Day	1	Weekday	8am - 1pm	Jane Barker Hall	50 externals	8am - 1pm	Multi-Purpose Hall	50 parents	0	0
Orientation Day yr 4-11	1	Weekday	9am - 4pm	Dame Joan Sutherland	20 p/hr externals	9am - 4pm	Multi-Purpose Hall	20 p/hr external	0	0
Rowing Season Launch	1	Weekday	6pm - 10pm	Nan Hind Centre	100 parents	6pm - 10pm	Multi-Purpose Hall	100 external	0	0
Duke of Edinburgh Presentation Evening	1	Weekday	6pm - 9pm	Dame Joan Sutherland	90 parents	6pm - 9pm	Multi-Purpose Hall	90 parents	0	0
Yr 6 Graduation Dinner	1	Weekday	6pm - 9pm	Jane Barker Hall	250 (seated)	6pm - 9pm	Multi-Purpose Hall	250	0	0
Chairman's Thank You Cocktail Party	1	Weekday	6pm - 9pm	Cloisters*	80 (volunteers, parents etc.)	6pm - 9pm	Multi-Purpose Hall	80 (volunteers , parents etc)	0	0
HSC Results Event	1	Weekday	During school hours	Cloisters*	120 students (Yr 12)	During school hours	Multi-Purpose Hall	120 students (Yr 12)	0	0
Staff Christmas Lunch	1	Weekday	During school hours	Jane Barker Hall	200 (seated)	During school hours	Multi-Purpose Hall	200	0	0
Allwell testing Yr 4	1	Weekday	During school hours	Dame Joan Sutherland	50 external students	During school hours	Multi-Purpose Hall	50 external students	0	0
Boarders dance	1	Weekday	7pm - 10pm	Jane Barker Hall	300 external students and boarders	7pm - 10pm	Multi-Purpose Hall	300 external students and boarde	0	0
Boarder Parents Dinner	1	Weekday	6.30pm - 9.30pm	Magnolia Room	40 parents	6.30pm - 9.30pm	Multi-Purpose Hall	40 parents	0	0
Valedictory Dinner	1	Weekday	6.30pm - 9.30pm	Magnolia Room	120 (boarders + parents + staff)	6.30pm - 9.30pm	Multi-Purpose Hall	120 (boarders + parents + staff)	0	0
Boarders Xmas Dinner	1	Weekday	6.30pm - 9.30pm	Magnolia Room	140 (boarders + parents + staff)	6.30pm - 9.30pm	Multi-Purpose Hall	140 (boarders + parents + staff)	0	0
Parent Event	4	Weekday	NA	NA	NA	During school hours	Research Centre	50 parents	0	0
Book week activities	5	Weekday	During school hours	Senior/Junior Library	Students only	During school hours	Research Centre	Students + parental involvement	50	50
Boarders after school tutorials	Weekdays all year	Weekday	3.20pm - 9pm	Lenthall Building	70 students/tutors mix	3.20pm - 9pm	Research Centre	70 students/tutors mix	30	30
Speech Night Guest Supper	1	Weekday	5.30pm - 7.00pm	Reception Room	30 (parents + school council + staff)	5.30pm - 7.00pm	Board Room	30 (parents + school council + st	0	0

*Cloisters refers to the grass area west of the central artificial netball courts

LEGEND

Denotes new event to take place on the St Catherine's School site

Denotes existing event occuring on the St Catherine's School site where the attendance will increase

Students/staff only

5.2.3 Proposed Aquatic Centre

The proposed aquatic centre replaces the existing outdoor pool with two new indoor pools including a diving facility. The new pools will generate the majority of new activity as it is proposed to utilise both pools during weekends, and before/after school with Learn to Swim classes, squad swimming, diving and water polo (training and competition). Currently the diving program is held off-site at Waverley College pool and this will move to the new pool.

The anticipated utilisation of the aquatic centre is outlined in Table 8. The typical attendance at the aquatic centre will increase from 75 currently up to 250 at any one time when both Water Polo and Learn to Swim are occurring concurrently during the weekend.

Table 8: Aquatic Centre utilisation

Period	**Existing**			**Future**		
	Times	**Event**	**Attendance (per hour)**	**Times**	**Event**	**Attendance (per hour)**
	Outdoor Pool			**Main Pool**		
Before and after School	6.30am – 8.20am & 3.20pm – 6.30pm	Water Polo training	20	6.00am - 8.20am& 3.20pm – 8.00pm	Water Polo training	50
	5.00am – 8.20am& 3.20pm – 6.00pm	Squad Swimming	20		Squad Swimming	30
	6.00am - 8.20am	Diving (off-site at Waverley College)	20 students		Diving (on-site)	20 students
Weekday (school hours)	8.20am - 3.20pm	School Use Only	NA		School Use Only	NA
Weekend	7.30am - 2.00pm Sat Only	Water Polo	75	8.00am – 6.00pm Sat & Sun	Water Polo	150
	Outdoor Pool			**Shallow Pool**		
Weekday	3.20pm - 6.00pm	Learn to Swim	20	7.00am – 7.00pm	Learn to Swim	100
Weekend		NA		8.00am – 6.00pm	Learn to Swim	100
Total maximum attendance			**75**			**250**

5.2.4 Combined on-site activity

The various events and activities outlined in the preceding sections will be scheduled to minimise overlapping activity. For example, if a major event is to be held on a weekend in the Performing Arts Auditorium, then the Aquatic Centre activity will be scheduled to finish prior to the commencement of the major event.

5.3 Car parking provision

Additional basement car parking is proposed under the new RPAC building as shown in Figure 26. Access will be via a new internal connection from the existing basement parking area under the DJSC, hence utilising the existing two-way driveway on Macpherson Street. This will add 22 spaces to the existing 25 spaces, resulting in 47 car parking spaces in the basement. Basement car parking will be allocated for staff parking during the week but will be available for visitors to the RPAC building at weekends.

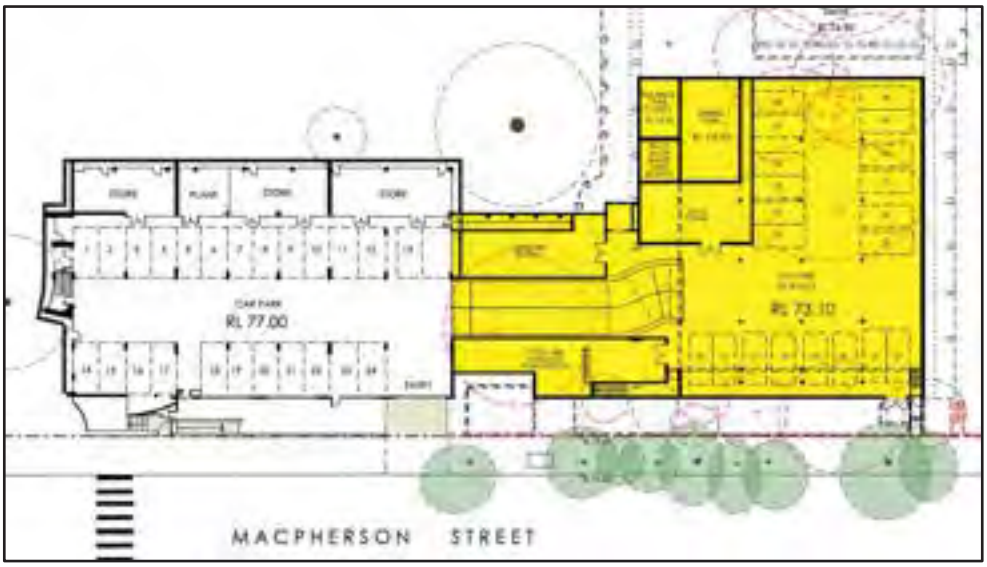

Figure 26: RPAC Basement Car Park

In addition, there will be parking space alterations in other areas of the campus, predominately along Albion Street. When the basement parking provision is included, this brings the total campus parking provision to 75 car spaces (a net increase of 19 spaces).

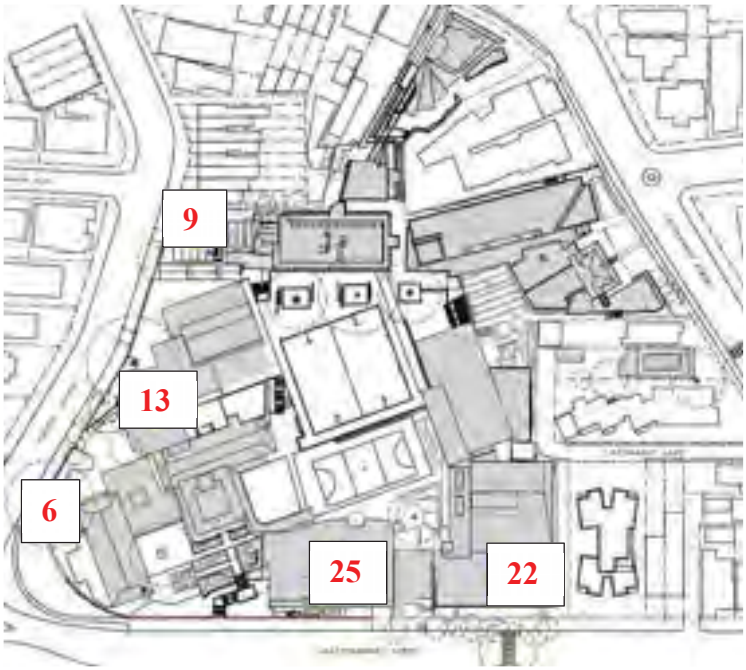

Figure 27: Proposed off-street car parking

5.4 Proposed site accesses

The campus will consolidate a number of entry/exit points so that access is more controlled into school grounds. This will provide an accessible through site link from Albion Street to Leichhardt Street for wet weather throughout the campus. Changes to the site accesses are shown below in Figure 28.

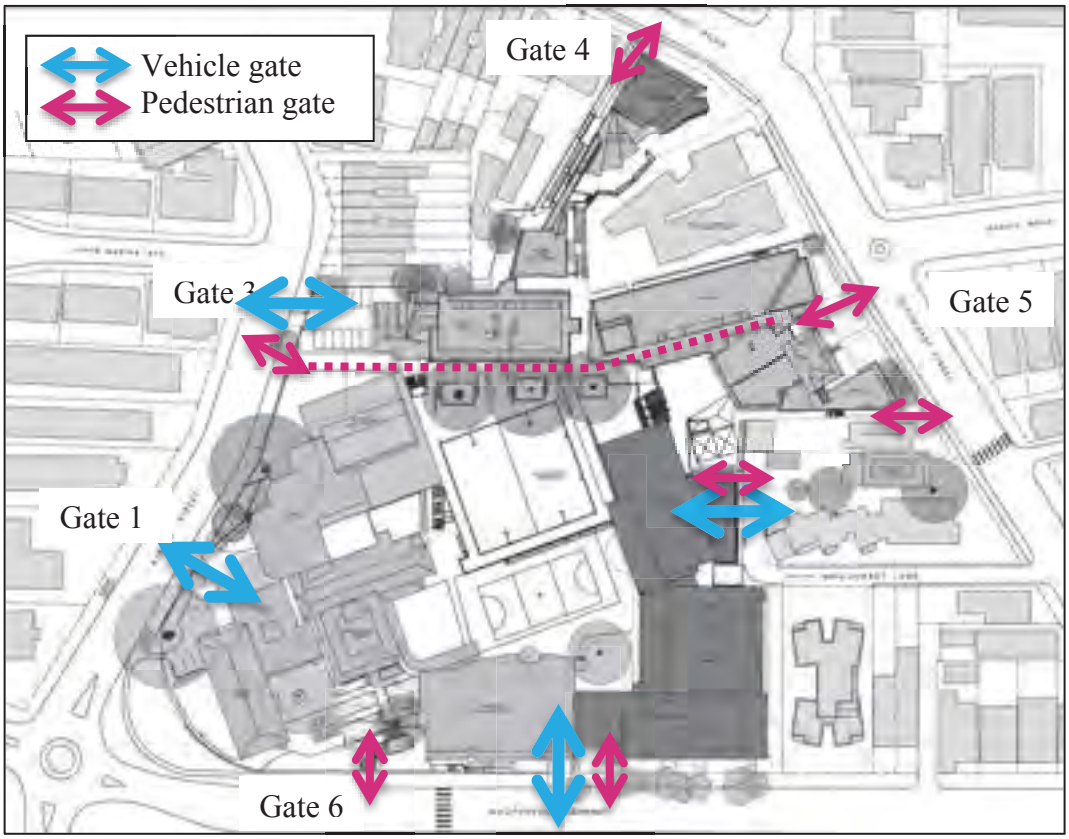

Figure 28: Proposed site accesses

5.5 Bicycle facilities

The School is proposing to provide bicycle facilities as part of the Campus Master Plan. Bicycle parking has been provided in accordance with the *NSW Planning Guidelines for Walking and Cycling 2004*. The School will provide (as shown in Figure 29):

- Six (6) staff bicycle racks with lockers and full bathroom including showers/toilets in the secure staff car parking area in Level 4 J Block (requires key to access); and
- Nine (9) visitor bicycle racks adjacent to the Level 6 Student Centre (in the St Johns Building), which is easily accessed from Albion Street.

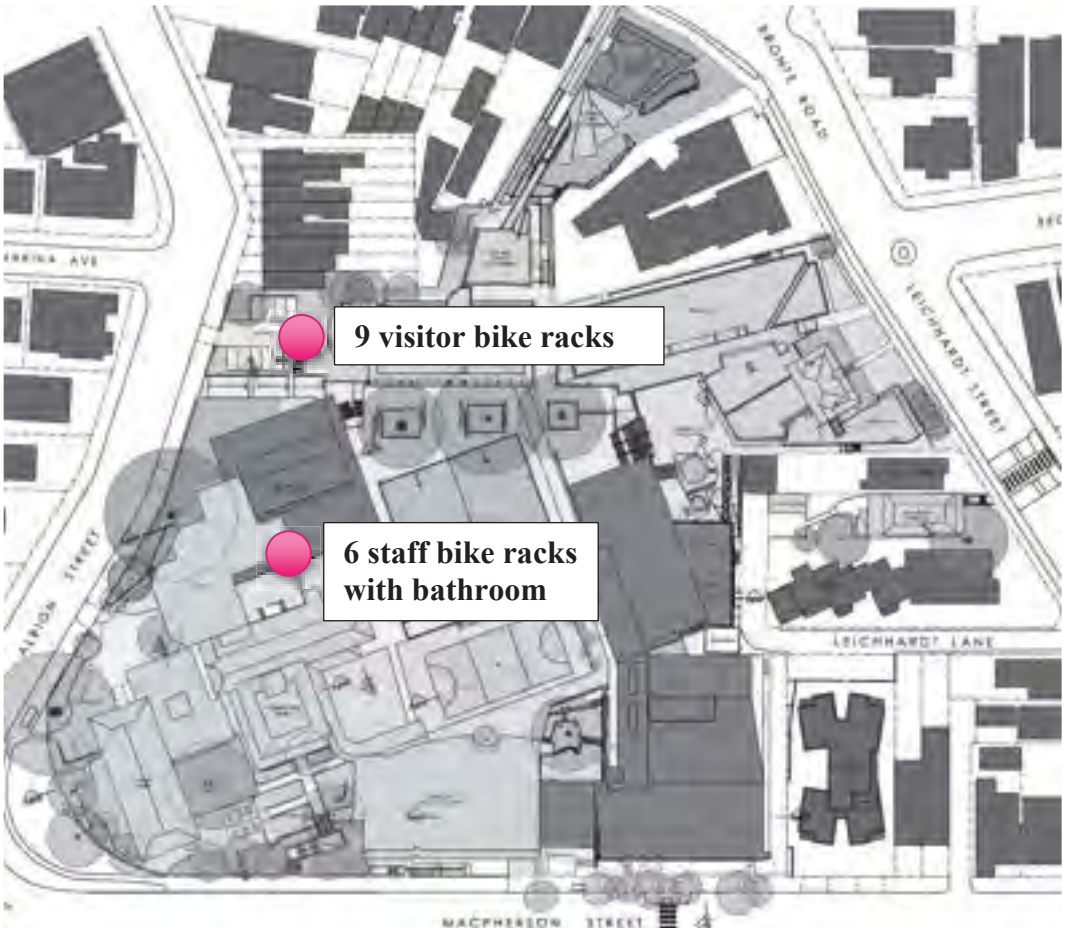

Figure 29: Proposed bicycle facilities

5.6 School bus parking

School bus parking currently occurs at a rear access on Leichhardt Lane, adjacent to a substation. Buses drive in a forward direction up the lane, and reverse into the access driveway, so that they are able to leave in a forwards direction.

From Stage 1 development up to when the Master Plan is finalised, it is proposed to relocate bus parking to Gate 1 at Albion Street. Buses are able to drive in and out of the site in a forwards direction. Once the Master Plan is finalised, buses may be able to move back to Leichhardt Lane via a new access. Buses will operate via the new access similarly to the existing access on Leichhardt Lane.

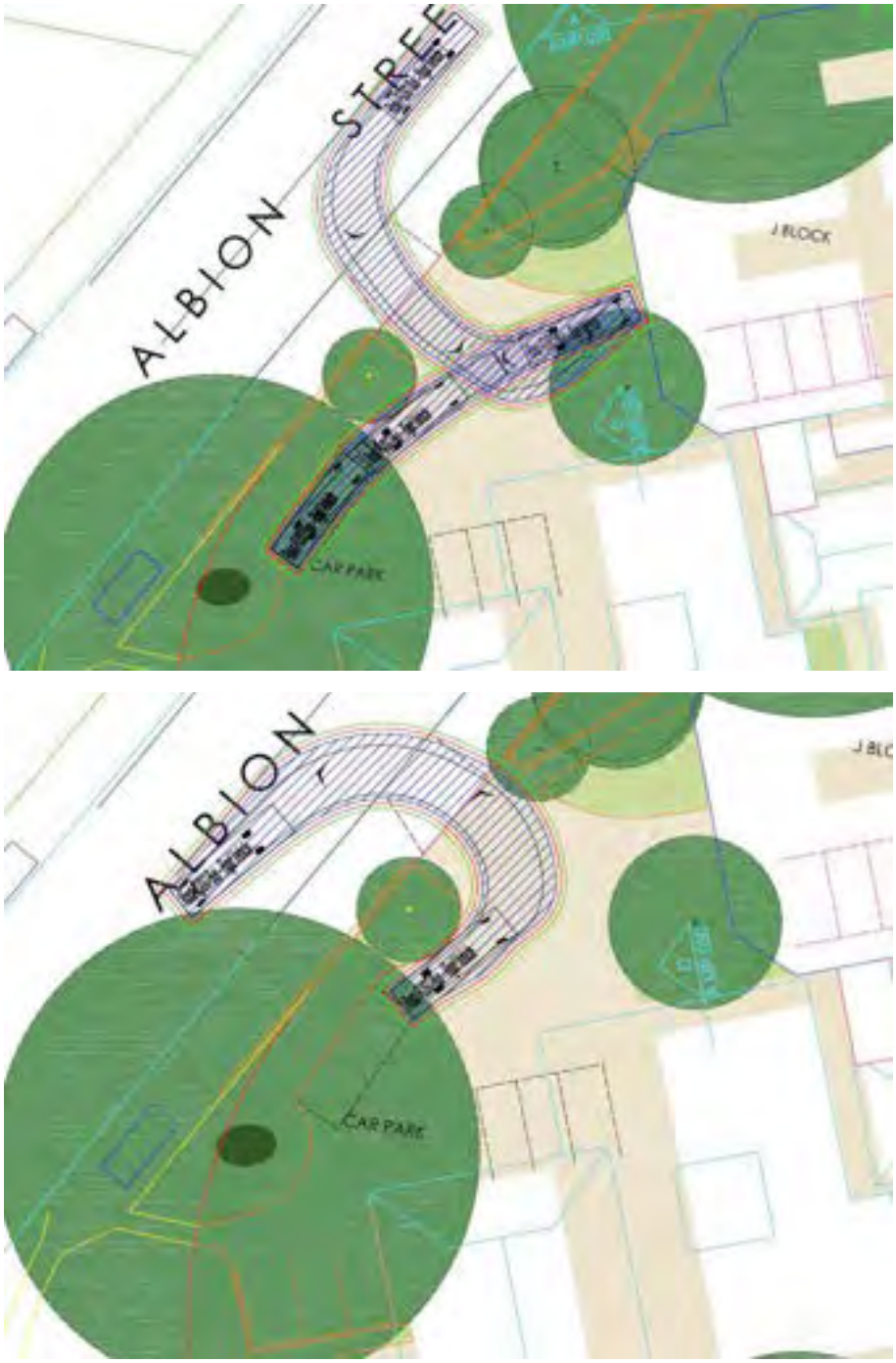

Figure 30: Swept path of FUSO minibus at Gate 1

5.7 Service vehicle access and waste collection

Council currently collects waste and recyclable materials in Leichhardt Lane. The Council truck reverses along Leichhardt Lane from Leichhardt Street before 7am, prior to school activity commencing and before commuter peak hours in Leichhardt Street. The bin store, shown in Figure 31 is proposed to be located adjacent to the Ausgrid substation which will provide direct access onto the lane for collection.

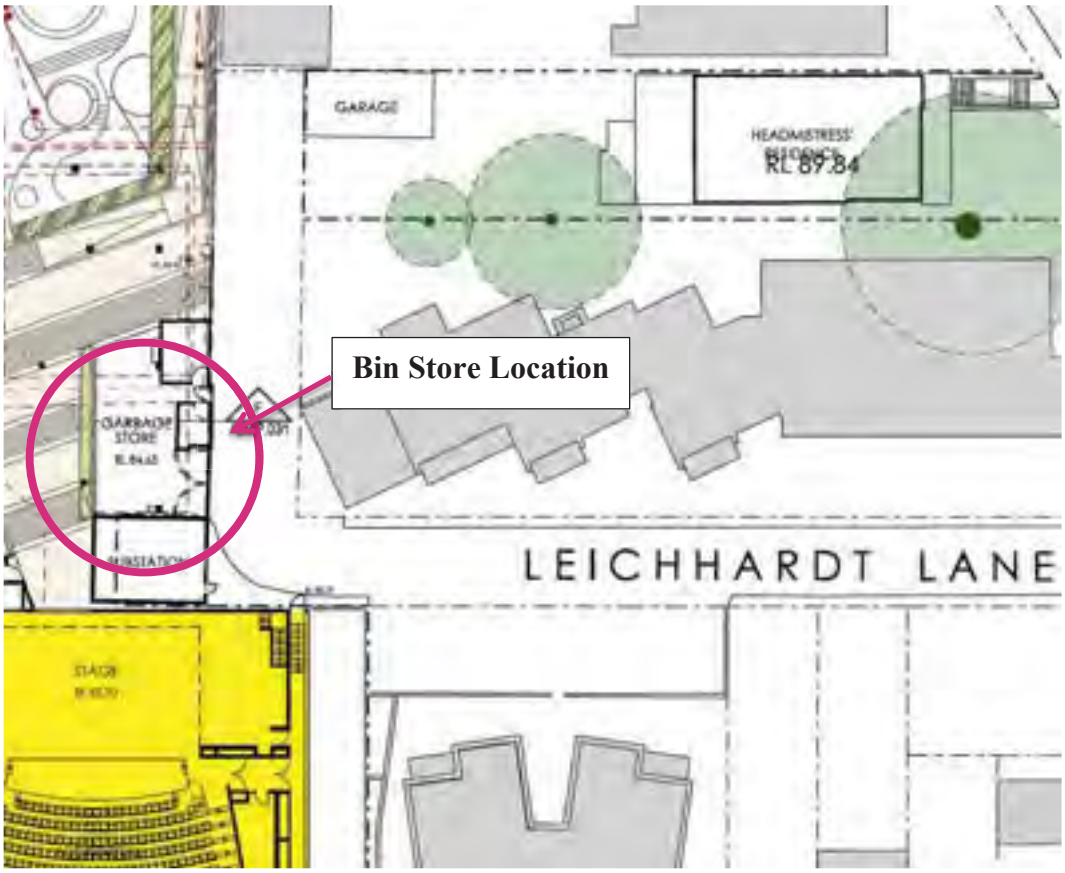

Figure 31: Proposed bin store

The main service vehicle access is Gate 1 from Albion Street. Service vehicles also access the site from Gate 3 for fire hydrants, bakery and canteen deliveries. Deliveries usually occur within the car parking area and will continue to do so under the new arrangements.

6 Transport impact assessment

6.1 School drop-off / pick-up zones

6.1.1 Future management strategy

Observations by Arup during the morning and afternoon drop-off/pick-up peaks indicate that many of the recommendations put forward by Lyle Marshall & Associates are warranted.

- Staff to be present in Leichhardt Street, Macpherson Street and Albion Street. Staff to be briefed and given written instructions for effective traffic management.
- Seek Council approval to rationalise the "No Parking" signposting to 8:00am to 9:00am and 2:30pm – 4:00pm in all Zones in Leichhardt Street, Macpherson Street and Albion Street. There is no requirement to have different time limits in the three streets.
- Queuing Bays to be marked and numbered in all Zones.
- Circular letter to be sent to all parents at the commencement of the School Year explaining the Road Rules applying to "No Stopping" Zones and instructions to be followed when dropping-off and picking-up students.
- With effective traffic management, the existing Drop-Off and Pick-Up Zones have sufficient queuing spaces for the busiest period.

Lyle Marshall & Associates suggested that the *No Parking zones be signposted for P5, which would allow parents to effectively park and leave their vehicles rather than having to wait in the vehicle and move on within 2 minutes*. Arup disagrees with this proposal; 'No Parking' signposting should be retained as it gives a sense of urgency to parents that they are not to stay too long. Arup agrees that the time restrictions should be changed to be consistent as often there are parked vehicles blocking the drop-off queues in the morning.

Enforcement is required for parents that infringe on 'No Stopping' zones. Observations noted that parents would often stop and block the through traffic on the surrounding streets and intersections by these actions. Stopping near crossings also affects safety of children crossing by reducing available sightlines. Parents will be advised to loop around the block until a queuing space is available. Traffic controllers employed by the School would allow for this to occur.

It is recommended that the School adopt a student registration system for the Junior School. This would require each car to display a number or the child's name on the windscreen to allow the traffic controllers to match children with their car as it approaches the pick-up area. This results in a quicker turnover of spaces in the pick-up zone.

6.1.2 Proposed school zone improvements

Macpherson Street

School access to the Macpherson Street school zone will be improved by the new pedestrian access to the School via the RPAC building as shown in Figure 32.

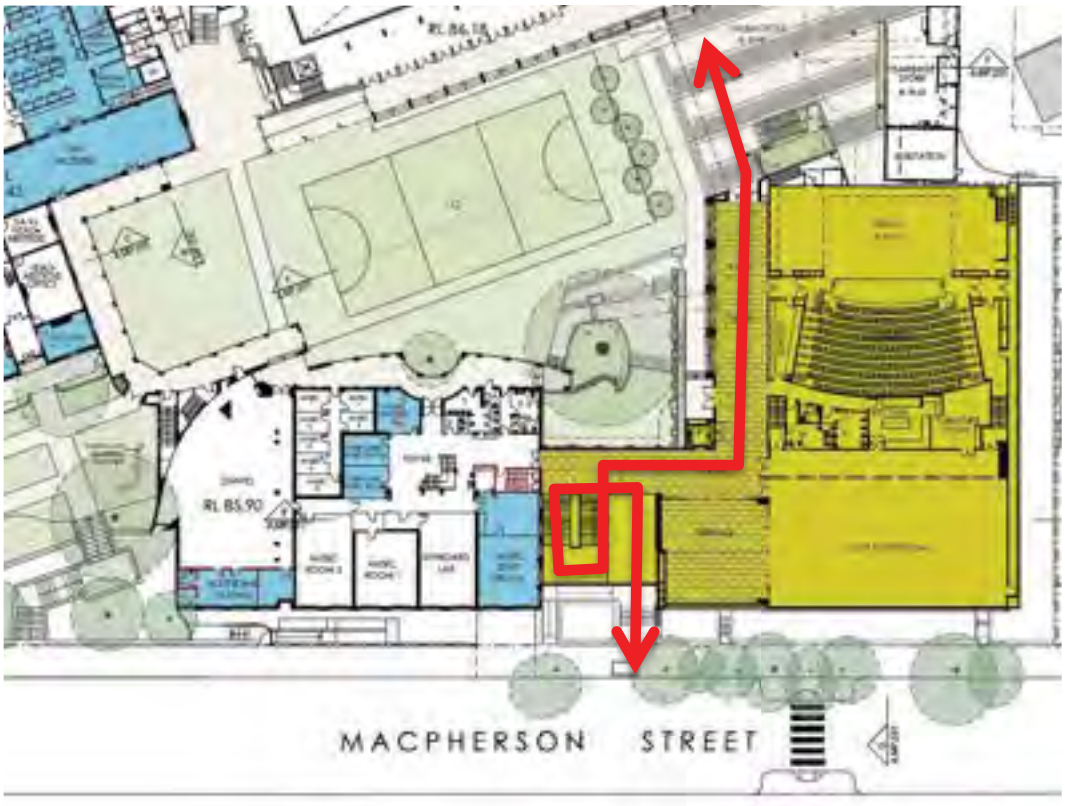

Figure 32: New school pedestrian access to Macpherson Street

With the School access being located further to the east, the existing drop-off/ pick-up zone will function more efficiently as it will encourage vehicles to proceed further east and hence reduce the occurrence of vehicle queuing back towards the Albion Street roundabout. Further improvements to the Macpherson Street school zone have been identified to provide a more efficient level of operation and to allow additional use by the School. These are shown in Figure 33 and include:

- Relocating the existing zebra crossing to the east to coordinate with the existing bus zones and to relate to the new school pedestrian access via the RPAC building.
- Building integrated kerb extensions on each side of the pedestrian crossing so that the crossing is better defined and complies with Roads and Maritime Services (RMS) guidelines for appropriate 'No Stopping' areas on approach and departure
- Relocating the kerbside bus zones, so that they are on the departure side of the zebra crossing (i.e. located after passing the crossing in the respective travel lane)
- Creating a continuous 'No Parking' drop-off/pick-up zone for up to 20 vehicles which will permit an efficient flow of vehicles.

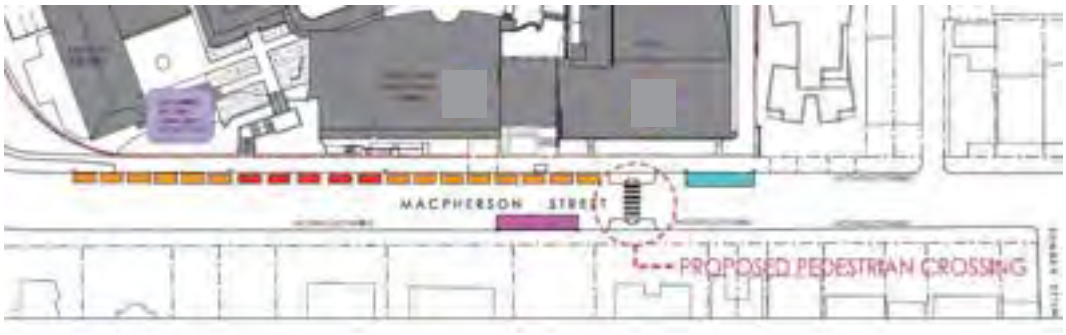

Figure 33: Proposed adjustments to the zebra crossing in Macpherson Street

With these improvements to the Macpherson Street No Parking zones, it is recommended that additional pick-up activity can occur here with use by Years 3-4 prior to Years 5-6 and Years 7-10. This adjustment is outline in Table 9.

Table 9: Proposed adjustments to drop-off/pick-up/zone allocation

Year	Existing		Proposed	
	Finish time	Pick-up location	Finish time	Pick-up location
K	2.45pm	Courtyard	2.45pm	Courtyard
1-2	2.50pm	Leichhardt Street	2.50pm	Leichhardt Street
3-4	3.00pm	Leichhardt Street	3.00pm	**Macpherson Street**
5-6	3.00pm	Macpherson Street	**3.15pm**	Macpherson Street
7-10	3.20pm	Macpherson/Albion Street	3.20pm	**Macpherson Street**
11-12	3.20pm	Macpherson/Albion Street	3.20pm	**Albion Street**

Leichhardt Street

Waverley Council has recently approved a trial adjustment to the location of the northbound bus zone in Leichhardt Street to improve bus operations. Figure 34 shows the approved location for the bus zone moving from south of Leichhardt Lane to north of the lane.

This has the advantage of creating one feeder queue for the Junior School Years 1-4 drop-off / pick-up. It is located to the south of the bus zone and cars will need to proceed north past the bus zone to join the drop-off / pick-up zone.

Former bus stop location	Approved adjustment of bus stop

Figure 34: Approved trial adjustment to Bus Zone in Leichhardt Street

Albion Street

No changes are proposed to the existing 'No Parking' zones in Albion Street which service the Senior School.

6.2 Car parking assessment

6.2.1 Off-street car parking areas

The basement car parking proposed under the new RPAC building, described in Section 5.3, will be accessed via a new ramp connection from the existing basement parking area under the DJSC. This will add 22 spaces to the existing 25 spaces resulting in 47 car parking spaces in the basement. The existing two-way driveway on Macpherson Street will be utilised for access meaning there will be no changes to the Macpherson Street frontage driveway. During design development the car park will be assessed for compliance against AS2890.1.

At-grade car parks accessed from Albion Street will be rationalised as shown in Figure 35 and Figure 36. There will be parking space alterations in other areas of the campus, predominately along Albion Street. When the basement parking provision is included, this brings the total campus parking provision to 75 car spaces (a net increase of 19 spaces).

The existing driveways on Albion Street will be maintained for access to these small car parking areas.

Figure 35: Albion Street southern car park

Figure 36: Albion Street northern car park

6.2.2 On-street car parking

Future parking demand is outlined in Section 3.6.4. There are a number of events and activities throughout the year that will increase car parking demand based on the new facilities.

Performing Arts Auditorium, the Multi Purpose Hall, RPAC and the JKSC

A number of annual events currently held in the DJSC that will be relocated into the Performing Arts Auditorium which will increase the capacity of the event from 250 to 500. There are a number of new events also planned with a capacity of 500 that will be held in the Performing Arts Auditorium. The annual events that will attract external visitation and the number of times they occur each year are outlined in Table 10.

The number of car parking spaces required has been calculated by applying an assumed car mode of 80% and car occupancy of 2.5 people. On this basis, a car parking demand of up to 160 cars is anticipated for the large capacity events. With car parking for 47 cars in the venue, approximately 113 cars would park on-street. The on-street car parking utilisation described in Section 3.6.4 indicates that there are in excess of 200 car spaces available within 5 minutes' walk of the venue between 7.30 and 8.00pm. At this time the majority of residents have returned home for the night and hence these spaces are available for occasional use by event attendees.

Table 10: Annual events in the Performing Arts Auditorium

Performing Arts Auditorium Events	Time	Frequency	Attendance	Car Parking
School Open Day	9.00am – 11.00am	5 days/year	120	38
School Open Night (Twilight Session)	5.30pm - 7.30pm	2 days/year	120	38
[t] Senior School Musical Event	5.30pm - 9.30pm	2 days/year	500	160
[t] Senior School Musical Event	6.30pm - 9.30pm	1 day/year	500	160
St. Cath's Got Talent Event	6.00pm – 9.00pm	1 day/year	500	160
Trinity Evening	6.00pm – 10.00pm	1 day/year	500	160
BTC Showcase Event	6.00pm – 9.00pm	2 days/year	500	160
Infants Christmas Musical	9.00am – 12.00pm	1 day/year	300	96
[t] Junior School Musical	6.30pm - 9.30pm	2 days/year	400	128
Stage 2 Music Evening	6.30pm - 9.30pm	1 day/year	300	96
Stage 3 Music Evening	6.30pm - 9.30pm	1 day/year	350	112
* Performance Evening	6.30pm - 9.30pm	4 days/year	500	160
* Performance Matinee	1.30pm - 4.30pm	1 day/year	500	160
Amateur Societies Performance Evening	6.30pm - 9.30pm	6 days/year	500	160
Amateur Societies Performance Matinee	1.30pm - 4.30pm	2 days/year	500	160

**This event may have potential use by another school*

[t] *These events occur every other year (not annually)*

The majority of other events to be held in the Performing Arts Auditorium, the Multi Purpose Hall, the RPAC and the JKSC already occur on-site and there is no planned change to the frequency or size of these events. The venue use will be scheduled so that events in the various venues do not overlap. This leaves limited opportunity for additional external hire of the venues to that currently programmed.

Aquatic Centre

The proposed Aquatic Centre replaces the existing Outdoor Pool with two new indoor pools including a diving facility. The new pools will generate the majority of new activity as it is expected to utilise both pools during weekends, and before/after school with Learn to Swim classes, squad swimming, diving and Water Polo (training and competition). Currently the diving program is held off-site at Waverley College pool and this will move to the new pool.

The anticipated utilisation of the aquatic centre is outlined in Section 5.2.3 and Table 8. The typical attendance at the aquatic centre will increase from 60 currently up to 250 at any one time when both Water Polo and Learn to Swim are occurring concurrently at the weekend. The anticipated car parking demand has been calculated based on anticipated car mode and car occupancy and is shown in Table 11. The maximum expected attendance is the total using the shallow pool and main pool during any expected time period. Note that events cannot occur simultaneously in the Main Pool.

Table 11: Aquatic Centre car parking demand

Period	Future		Cars /hour			Additional cars / peak hour		
	Time	Event	Attendance (per hour)	Mon-Fri	Sat-Sun	Additional attendance	Mon-Fri	Sat-Sun
Main Pool								
Before and after School (Weekdays)	6.00am - 8.20am & 3.20pm - 8.00pm	Water Polo training	50	41	0	30	25	0
		Squad Swimming	30	25	0	10	8	0
		Diving (on-site)	20	16	0	20	13	0
During school hours (Weekdays)	8.20am - 3.20pm	School Use Only	NA	NA	NA	0	NA	NA
Weekend	8.00am – 6.00pm Sat & Sun	Water Polo	150	0	68	75	0	34
Shallow Pool								
Weekday	7.00am – 7.00pm	Learn to Swim	100	45	0	100	45	0
Weekend	8.00am – 6.00pm	Learn to Swim	100	0	45	100	0	45
Total maximum attendance			**250**	**86**	**113**	**175**	**70**	**79**

Note: Car mode assumed as 90% for each event and occupancy assumed as 1.1 (for before and after school events) and 2.0 (for all day events)

The peak parking demand occurs at the weekend when 113 cars are anticipated. With car parking for 47 cars available in the venue during non-school times,

approximately 66 cars would park on-street. The on-street car parking utilisation described in Section 3.6.4 indicates that there are in excess of 150 car spaces available within 5 minutes' walk of the venue between 2.30pm and 3.00pm.

6.2.3 Alternative strategies for event car parking

A number of strategies could be investigated to reduce the reliance of on-street car parking for major events at the School. These could include:

- Operating a shuttle bus loop service within the Eastern Suburbs on a route with designated pick-up points. This would operate 2 or 3 times prior to the event to pick-up event attendees and later drop them on the same route.

6.3 Traffic Assessment

To undertake an assessment of likely travel for students and staff accessing the School, the transport survey data of students and staff attending the School has been considered and compared with supporting JTW Census data in 2011. All car activity for students is associated with drop-off in the morning and pick-up in the afternoon.

6.3.1 Mode split arrival and departure analysis

The existing mode split for student and staff arrival for each group is shown in Table 12. The projected staff increase of 10 has been applied to full-time workers, resulting in an additional 8 vehicles. The 70 students that board (live) at the School are predominantly from the Senior School and assumed to be removed from the total Senior School students.

The analysis indicates that 599 students are currently dropped off in the morning by car. The student demographic data indicates that 20% of students also have a sister attending the School. Therefore, a car occupancy factor of 1.2 has been applied to students (assuming all girls are driven to their drop off point) which results in a total of 496 car trips. A car occupancy factor of 1.2 is consistent with the observed student drop off and pick-up activity from the Lyle Marshall & Associates report. The same mode split and occupancy factor has been applied to the proposed future maximum student numbers across each student group. This results in an increase of 126 car trips, 30 public transport trips, 8 school bus trips and 34 walk trips.

Table 12: Mode split morning arrival

Morning Arrival	No.	Car			Public Transport		Walk		School Bus		Ride-share	
		%	No. People	No. Cars	%	No. People	%	No. People	%	No. People	%	No. People
Existing		*Car occupancy 1.2*						*Total students include 70 boarders with no travel*				
Junior School	376	80%	303	252	4%	14	10%	36	2%	9	4%	14
Senior School	524	57%	299	247	19%	100	18%	95	4%	21	2%	9
Total Students	**970**		**602**	**499**		**114**		**131**		**30**		**23**
Full-time staff	175	75%	131	131	17%	29	6%	11	-	-	2%	4
Part-time staff	27	71%	19	19	29%	8	0%	0	-	-	0%	0
Total Staff	**202**		**150**	**150**		**37**		**11**		**0**		**4**
Proposed		*Car occupancy 1.2*						*Total students include 70 boarders with no travel*				
Junior School	465	80%	375	311	4%	17	10%	45	2%	11	4%	17
Senior School	665	57%	379	314	19%	127	18%	120	4%	27	2%	12
Total Students	**1,200**		**754**	**625**		**144**		**165**		**38**		**29**
Full-time staff	185	75%	139	139	17%	31	6%	11	-	-	2%	4
Part-time staff	27	71%	19	19	29%	8	0%	0	-	-	0%	0
Total Staff	**212**		**158**	**158**		**39**		**11**		**0**		**4**
Increase of trips												
Students	230		152	126		30		34		8		6
Staff	10		8	8		2		0		0		0
Total	**240**		**160**	**134**		**32**		**34**		**8**		**6**

The existing mode split for student and staff departures for each group is shown in Table 13. The analysis indicates that 481 students are picked up in the afternoon by car. Given the car occupancy factor of 1.2, the car trips result in a total of 398 car trips. The same mode split has been applied to the proposed future student numbers across each student group. This result is an increase in 99 car trips, 39 public transport trips, 15 school bus trips and 53 walk trips. In the afternoon, more students use non-car modes to travel home than in the morning due to the morning drop-off time coinciding with the journey to work time and the afternoon having a range of after school activities.

Table 13: Afternoon departure mode

Afternoon Departure	No.	Car			Public Transport		Walk		School Bus		Ride-share	
		%	No. People	No. Cars	%	No. People	%	No. People	%	No. People	%	No. People
Existing		*Car occupancy 1.2*				*Total students include 70 boarders with no travel*						
Junior School	376	78%	293	242	4%	16	14%	51	4%	16	0%	0
Senior School	524	36%	188	156	26%	133	29%	152	7%	39	2%	12
Total Students	**970**		**481**	**398**		**149**		**203**		**55**		**12**
Full-time staff	175	75%	131	131	17%	29	6%	10	-	-	2%	5
Part-time staff	27	71%	19	19	29%	8	0%	0	-	-	0%	0
Total Staff	**202**		**150**	**150**		**37**		**10**		**0**		**5**
Proposed		*Car occupancy 1.2*				*Total students include 70 boarders with no travel*						
Junior School	465	78%	361	299	4%	20	14%	64	4%	20	0%	0
Senior School	665	36%	240	198	26%	168	29%	192	7%	50	2%	15
Total Students	**1,200**		**601**	**497**		**188**		**256**		**70**		**15**
Full-time staff	185	75%	139	139	17%	31	6%	10	-	-	2%	5
Part-time staff	27	71%	19	19	29%	8	0%	0	-	-	0%	0
Total Staff	**212**		**158**	**158**		**39**		**10**		**0**		**5**
Increase of trips												
Students	230		120	99		39		53		15		3
Staff	10		8	8		2		0		0		0
Total	**240**		**127**	**106**		**42**		**53**		**15**		**3**

6.3.2 Traffic generation

The predicted traffic generation for the increase of school and staff population as a result of the Master Plan has been calculated based on the rates in Table 12 and Table 13. Given the site has no on-site facilities for pick-up/drop-off, it is assumed that no extra trips are generated to/from the site itself for the purposes of the student increase. However, there is an anticipated increase in traffic generation on the surrounding road network due to drop-off and pick-up increases associated with the forecast future student and staff population increases.

Pick-up and drop-off traffic volumes observed (259 vehicles in the AM peak and 153 vehicles in the PM peak) in the Lyle Marshall & Associates report suggest that these figures may in fact be approximately double the amount of car trips actually generated during the peak drop-off and pick-up times. This may be due to a number of factors such as extracurricular activities, early drop-offs / late pick-ups, vehicles using nearby streets and varying travel patterns day to day. Therefore, it is estimated that the traffic flows in Table 12 and Table 13 are more than what would occur during a nominal day during the peak hours. Hence, the additional traffic flows from students have been decreased by a factor of 30% on the road network, resulting in a total school related increase of 102 cars in the AM peak hour and 80 cars in the PM peak hour.

Additionally, there will be increases resulting from the use of the proposed Stage 1 facilities and the regular events that are scheduled to occur. The majority of trips will occur due to use of the proposed Aquatic Centre. The events at the other facilities have not been assessed as they do not occur regularly and the larger events already occur on the road network. The assumed attendances and car occupancy from Table 11 indicate an additional 70 cars in each the AM and PM peak and an additional 79 cars in the weekend peak (12pm-1pm).

Therefore, there is an additional total of 172 cars in the AM peak hour (8am-9am), 150 cars in the PM 'school' peak hour (3pm-4pm) and 79 cars in the weekend peak hour (12pm-1pm).

6.3.3 Traffic distribution and assignments

It has been assumed that the additional cars are applied twice onto the existing flows outlined in Section 3.4 to account for the drop-off and pick-up nature of the trips. The flow distributions have been estimated from the resident locations of the travel surveys and the respective origins/destinations (outlined in Section 3.7.2). Staff and student distributions were remarkably similar during each peak, and have been assumed as the same distribution for this analysis. Figure 37 shows the distribution of additional school traffic on each frontage road and the peak flow proportions on the approach roads.

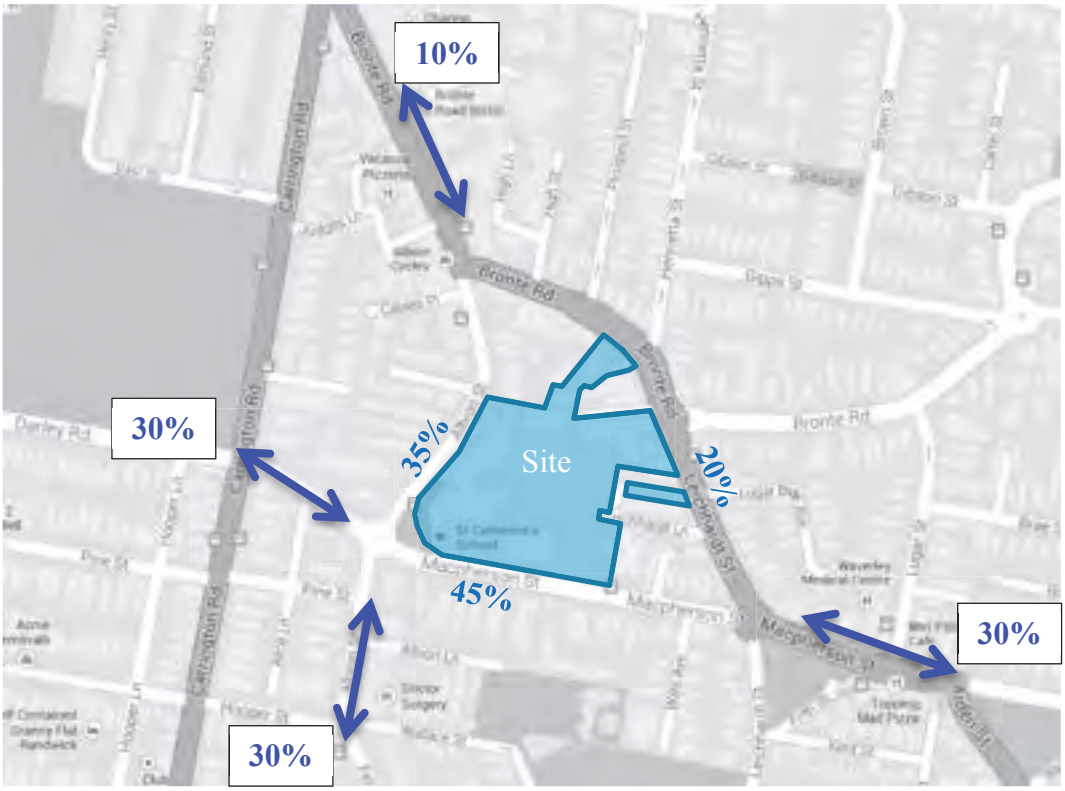

Figure 37: Peak flow proportions

For the purposes of this analysis, student car trips to the School were assumed to the nearest 'No Parking' zone as per the following:

- Trips from the east used both Leichhardt Street and Macpherson Street,
- Trips from the west used Macpherson Street
- Trips from the south used both Albion Street and Macpherson Street
- Trips from the north used both Albion Street and Macpherson Street.

The return trips that were picking up and dropping off were assumed to perform a u-turn at the following roundabout and head back to the same point of origin (except for Albion Street, where flows continued either north or south from the respective origins). It should be noted that the analysis has been conservative in that a number of u-turns have been assumed due to the increased student numbers, which utilise any spare capacity at the roundabouts. The existing traffic flows show that only a small proportion of the traffic currently perform these manoeuvres.

Additionally, all vehicle trips have been assumed to use the existing adjacent intersections to search for parking spaces in surrounding streets, which may not happen in reality. It was observed that parents would often park in surrounding streets to pick-up children.

6.4 Impact of generated traffic

6.4.1 Traffic modelling

In order to determine the road network impacts of the School, the traffic increases must be assessed with the increase of car trips by student and staff numbers, and the regular events scheduled. The surrounding intersections have been assessed using RMS approved Signalised & unsignalised Intersection Design and Research Aid (SIDRA) software. Two scenarios, existing and future were modelled in the AM, PM and Weekend peak hours.

Traffic conditions at this intersection is summarised in terms of:

- Level of Service (LoS);
- Degree of Saturation (DoS);
- Average Delay; and

In urban areas, the traffic capacity of the major road network is generally a function of the performance of traffic intersections. This performance is quantified in terms of the LoS, which is an index of the operational performance of traffic at an intersection and is based on the average delay per vehicle. LoS ranges from A = very good to F = highly congested conditions, as shown in Table 14.

Table 14: Level of Service criteria for intersections

LoS	Average Delay (seconds per vehicle)	Description
A	Less than 14	Good operation
B	15 to 28	Good with acceptable delays and spare capacity
C	29 to 42	Satisfactory
D	43 to 56	Operating near capacity.
E	57 to 70	At Capacity. At signals, incidents will cause excessive delays. Roundabouts may require other control mode
F	Greater than 71	Unsatisfactory with excessive queuing

Another common measure of intersection performance is the DoS, which provides an overall measure of the capability of the intersection to accommodate additional traffic. A DoS of 1.0 indicates that an intersection is operating at capacity. The desirable maximum degree of saturation for an intersection is 0.9.

6.4.2 Results and analysis

The modelling undertaken shows the overall impact of the Master Plan and Stage 1 development. The results of the scenarios tested are shown in Table 15. The detailed SIDRA outputs are provided in Appendix C.

Table 15: Results of traffic modelling

Intersection	Peak Period	Scenario	LoS	Delay (s)	DoS
Bronte Road / Albion Street	AM	Existing	A	7	0.62
		Future	A	8	0.66
	PM	Existing	A	9	0.76
		Future	A	9	0.77
	Weekend	Existing	A	10	0.79
		Future	A	10	0.80
Bronte Road / Leichhardt Street	AM	Existing	A	9	0.68
		Future	A	9	0.70
	PM	Existing	A	8	0.65
		Future	A	9	0.66
	Weekend	Existing	A	10	0.69
		Future	A	10	0.69
Macpherson Street / Leichhardt Street	AM	Existing	B	20	0.92
		Future	C	36	1.01
	PM	Existing	B	26	0.97
		Future	D	44	1.05
	Weekend	Existing	B	28	0.94
		Future	C	31	0.96
Macpherson Street / Albion Street	AM	Existing	B	18	0.87
		Future	C	31	0.98
	PM	Existing	C	34	0.97
		Future	E	60	1.06
	Weekend	Existing	B	24	0.91
		Future	C	28	0.94

The traffic modelling results indicate that the intersections on Macpherson Street (Albion Street and Leichhardt Street roundabouts) are operating near capacity under all scenarios. The existing PM peak hour conditions show the most impact; however, the roundabouts operate satisfactorily at all other times, given the adequate LoS and average intersection delay.

Given that the DoS for these intersections is already over 0.9 in the existing peak hours, the intersections are sensitive to small changes in traffic volumes. As a result of the forecasted additional school traffic, it is anticipated that there will be an increase in the overall average delay. Therefore, the modelling concludes that the additional traffic generated by the School will have a modest impact on the operation of the roundabout intersections along Macpherson Street.

It is important to note that school drop off and pick up generally is quite concentrated before the indicative start and finish time. While there may be a level of congestion experienced, this is usually short-term (i.e. over the course of 15 minutes) and the expected traffic flows would not cause considerable impacts to the overall peak hour of the local road network. Additionally, the PM commuter peak hour occurs after the School's PM peak hour, which actually has higher overall traffic volumes.

As stated in Section 6.3, the assignment of traffic has conservatively assumed that **all trips** utilise the existing adjacent intersections to the School. In reality, these vehicles may use surrounding streets to pick up and drop off children and would likely not cause congestion on these intersections due to limited capacity and time restrictions of the pick-up / drop-off kerb space at the School.

6.5 Excursion Buses

Both the Junior School and Senior School use Albion Street to pick-up and drop-off for excursions and camps. Normally most groups have 2 buses which will park between Gate 2 and Gate 3 on Albion Street in the School days Bus Zone. Very rarely is Macpherson Street used for buses due to parking restrictions. There are no changes proposed as part of the Master Plan.

6.6 Transport assessment

The proposal is considered to have minimal additional impacts on the operation of the local road network. Reasons for this include the following:

- Traffic movements at the key access points into the site operate efficiently;
- Additional traffic movements estimated are conservative as many of them would likely be vehicles already counted in the surveys or not additional due to sisters at the School already;
- The total forecast increase in peak hour traffic of 172 cars in the AM peak hour, 150 cars in the PM peak hour and 79 cars in the weekend peak hour is distributed onto the overall local road network;
- There are opportunities for a mode shift away from private vehicle travel, with the site located along key bus routes to Bondi Junction, and walking and cycling available;
- It is expected there will be minimal change in staff trips with only a minor increase in staff proposed at the School and only a minimal increase in car parking on the site;
- The roundabouts encourage parents to loop and turnaround, providing more efficiency for drop-off and pick-up activity (resulting in a more localised congestion rather than overall road network congestion); and
- School drop off and pick up generally is quite concentrated before the indicative start and finish time. While there may be a level of congestion experienced, this is usually short-term (i.e. over the course of 15 minutes) and the expected traffic flows would not cause considerable impacts to the overall peak hour of the local road network.

7 Travel demand measures

Travel demand management measures, such as Work Place Travel Plans (WPTP) and car pooling, can be implemented/expanded to ensure full information regarding future site sustainable access and public transport access options is available to all site users. This may also further reduce car trips to the site.

The suburb data for students plotted in Section 3.7.2 indicates that almost 40% of students live within 1.5km of the School and could walk or cycle.

7.1.1 Car Pooling

Car pooling is an effective measure to reduce the reliance on private vehicle access to the site. The School have indicated they have a 'ride-share' scheme which operates in a similar matter to carshare schemes (i.e. students or staff share a private vehicle to travel to the School). However, travel survey data indicates low usage by both students and staff (less than 2%). Possible ways to further encourage ride-sharing may include Staff registering their interest in car pooling by indicating where they live and their shift times to be matched with like travellers.

7.1.2 Work Place Travel Plan (WPTP)

The implementation of a WPTP would contribute to reducing parking demand, particularly for staff, and encourage other forms of transport to the site. The Premier's Council for Active Living (PCAL) describes the three key objectives for a WPTP as follows:

- To reduce the need to travel
- To improve non-car travel methods
- To ensure the most efficient use of car parking spaces

The WPTP should be tailored to suit the specific requirements of site users.

Framework objectives and measures for the preparation of a WPTP for the development include the following:

- Increase of travel choices for employees, with an emphasis on improving access by sustainable modes of transport;
- Encouragement of high mode share to sustainable modes from private vehicle usage;
- Reduce the number of car journeys associated with business travel by staff and visitors with communication technologies;
- Raising awareness of sustainable transport amongst staff with travel guides (online and print planners);
- Facilitation of the sustainable and safe travel of new employees;
- Utilising the close proximity via bus routes to the train station with train / bus reimbursement schemes and services tailored to suit employee's needs;
- Ensuring adequate end-trip facilities are provided at the site to enable staff and visitors to commute by active transport modes;

- Implementation of ride sharing and car sharing schemes; and
- Further encouragement of car pooling and off-peak travel

The development of the WPTP would be undertaken using the above framework, considering Waverley Council's objectives to encourage less traffic in the area and create pedestrian friendly precincts. With the appropriate framework in place, implementation of a detailed and targeted WPTP for the eventual occupants of the buildings will be more effective.

8 Recommended transport actions

Action	Description	Result
Rationalisation of the "No Parking" signposting.	All zones to be 8:00am to 9:00am and 2:30pm – 4:00pm in Leichhardt Street, Macpherson Street and Albion Street.	Improved legibility of "No Parking" in school zones.
Macpherson Street Drop-off / pick-up school zone.	Increase in length from 17 to 20 spaces. It is proposed to relocate the zebra crossing so that the vehicle queue is continuous which will result in improved operation.	Improved traffic flow.
Macpherson Street Drop-off / pick-up school zone.	The new school pedestrian access is moved to the east on Macpherson Street which will move it closer to the front of the school zone.	Encourages cars to move to the front of the queue.
Leichhardt Street Drop-off / pick-up school zone.	Relocated bus zone. This was approved at the 22 April 2014 Waverly Traffic Committee meeting.	Improved single queuing area for cars. This will improve behaviour of drivers.
Leichhardt Street Drop-off / pick-up school zone.	Consider relocating Years 3-4 pick-up from Leichhardt Street to Macpherson Street.	Reduces use of Leichhardt Street zone and hence improved traffic flow.
Management of school zones.	A staff member to be present in Leichhardt Street, Macpherson Street and Albion Street. Controllers to be briefed and given written instructions for effective traffic management.	Improved traffic flow and school zone safety.
Junior School student registration scheme.	This would require each car to display a number or the child's name on the windscreen to allow the traffic controllers to match children with their car as it approaches the pick-up area.	This results in a quicker turnover of spaces in the pick-up zone.
New car park under the RPAC Building.	This will add 22 spaces to the existing 25 spaces in the DJSC resulting in 47 car parking spaces.	These 44 spaces will be available for public use in the evenings and at weekends.
WPTP	Reduce use of private vehicle for staff access to the site	Reduced on-street car parking demand

9 Construction traffic management planning

9.1 Outline construction traffic management plan

9.1.1 Construction programme and construction traffic

Anticipated duration of construction activities is estimated below. As the project is in its preliminary stages, the following timeframes are approximate within an overall two year construction period and may vary considerably once a contractor is appointed.

Table 1: Estimated Construction Timeframe

Stage	Timeframe
Demolition and excavation works	3 months
Building construction	18 months
Fit-out works	3 months

9.1.2 Construction traffic

Construction routes

Construction activities at the School will generate vehicle trips primarily Albion Street and Macpherson Street. The main access roads will be via the state road network and vehicles will likely originate from this network. The majority of trips will likely be generated from the west and will access the site from the Eastern Distributor via Darley Road. Trips from the north may access the site via Carrington Road, while trips from the south may access the site via Frenchmans Road. These routes are shown in Figure 38.

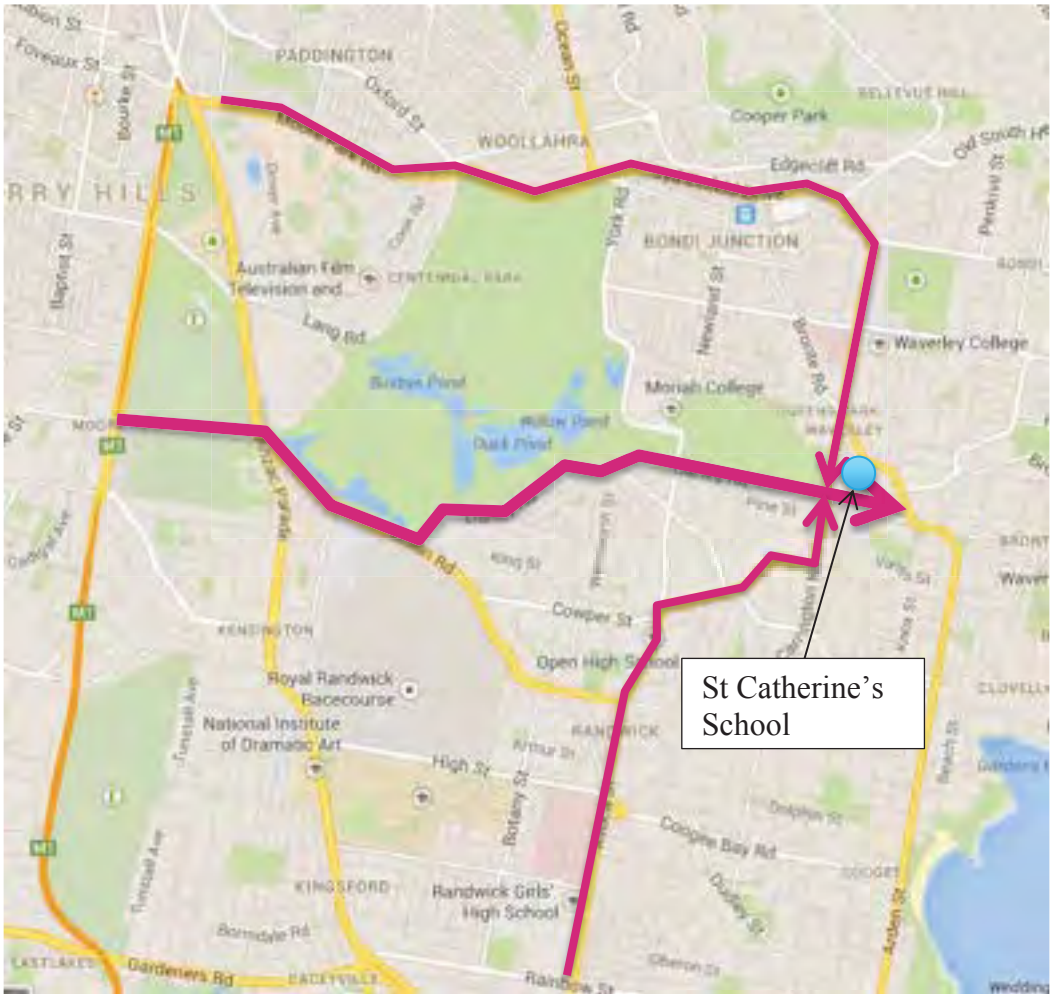

Figure 38: Construction vehicle routes to site

Vehicles that will access the site during construction will mainly comprise private vehicles for workers. Heavy vehicles including Articulated Vehicles (AV) such as precast delivery trucks and Heavy Rigid (HR) such as concrete trucks are also expected to access the site. These different types of vehicles may access the site at the same time.

Other heavy machinery plants such as cranes will have to be delivered to site in the preliminary stage. All heavy goods such as girders or machinery plants are likely to be delivered outside of peak traffic hours.

Construction traffic

Workers will generate additional traffic to the site. Typically each stage of the construction is likely to have a workforce of approximately 75 personnel, generating a potential 75 car trips (assuming everyone drives). However, construction workers generally start earlier and finish earlier than the commuter peak periods, and would likely not coincide with the School peak periods.

Heavy vehicle trips generated would be 2,700 over the span of the excavation and demolition period resulting in the order of 42 truck movements per day or four peak hour trips.

9.1.3 Cumulative impact of existing site and construction traffic

Road network impacts

The traffic generation of this magnitude is less than the amount of trips generated and assessed for the operational phase of the development and therefore the potential impacts are anticipated to be minimal.

It is anticipated that construction of the driveway laybacks on Macpherson Street may require possession of the northern kerbside parking lane. This would be required to occur outside of peak times and near existing drop-off zones to minimise the impact on parking.

Parking

There will be no room on the School site for parking of construction staff and trade vehicles associated with the construction of the development. On-street car parking will be utilised by workers who drive during various stages of construction.

Pedestrians

Pedestrians on Macpherson Street will be impacted from walking past the site during construction. Traffic controllers with appropriate accreditation will hold construction vehicles and allow pedestrians to cross these work areas. This arrangement is envisaged to be required only during construction of vehicular access to the RPAC site from Macpherson Street and subsequent restoration of the kerb. During all other phases of construction of RPAC, construction vehicles will be required to give way to pedestrians on entry and exit to the site.

9.1.4 Measures to ameliorate impacts

Mitigation measures would be adopted during the construction phase to ensure traffic movements have minimal impact on surrounding land uses and the community in general, and would include the following:

- Truck loads would be covered during transportation off-site
- Establishment and enforcement of appropriate on-site vehicle speed limits (20km/h), which would be reviewed depending on weather conditions or safety requirements
- Neighbouring properties would be notified of construction works and timing. Any comments would be recorded and taken into consideration when planning construction activities.
- All activities, including the delivery of materials would not impede traffic flow along local roads
- Materials would be delivered and spoil removed during standard construction hours
- Avoid idling trucks alongside sensitive receivers
- Deliveries would be planned to ensure a consistent and minimal number of trucks arriving at site at any one time

9.1.5 Driver code of conduct

Traffic Controllers will be used to stop traffic on the public street(s) to allow trucks to enter or leave the site. Where possible, vehicles must enter and exit the site in a forward direction. They must wait until a suitable gap in traffic allows them to assist trucks to enter or exit the site. The Roads Act does not give any special treatment to trucks leaving a construction site - the vehicles already on the road have right-of-way. Vehicles entering, exiting and driving around the site will be required to give way to pedestrians at all times.

9.1.6 Public transport services affected

The construction work will be focused on Macpherson Street. A works zone is proposed along the kerbside lane, where a bus zone is located. Therefore, the bus zone may need to be relocated slightly east to allow for the works zone. Bus routes would not be impacted by construction of the driveways.

9.1.7 Construction traffic provisions made for emergency vehicles, heavy vehicles, cyclists and pedestrians

Construction works and vehicle storage would be mainly confined to the site. As such, no additional specific provisions for emergency vehicles, heavy vehicles, cyclists or pedestrians have been identified on the surrounding road network.

10 Conclusions

This traffic and transport report assesses the proposed Campus Master Plan and Stage 1 works for St Catherine's School, Waverley. This report has been prepared to address Key Issue No. 6 Transport and Accessibility as stated in the Director General's Environmental Assessment Requirements issued on 29 January 2014 (SSD 6339).

Key conclusions resulting from this assessment are listed below.

Event management

- There are a number of annual events currently held in existing on-site facilities that will be relocated into the Performing Arts Auditorium which will increase the capacity of events from 250 to 500. There are a number of new events also planned with a capacity of 500 that will be held in the Performing Arts Auditorium.
- The majority of other events to be held in the Performing Arts Auditorium, the Multi Purpose Hall, the RPAC and the JKSC already occur on-site and there is no planned change to the frequency or size of these events; and
- The venue use will be scheduled so that events in the various venues do not overlap leaving limited opportunity for additional external hire of the venues to that currently programmed.

Parking assessment

- At-grade car parks accessed from Albion Street will be rationalised, and a new basement car park on Macpherson Street will bring the total campus parking provision to 75 car spaces (a net increase of 19 spaces);
- A car parking demand of up to 160 cars is anticipated for the large capacity events, with approximately 113 cars parking on-street, well within the existing on-street car parking availability of 200 car spaces (available within 5 minutes' walk of the School between 7.30 and 8.00pm);
- A number of strategies could be investigated to reduce the reliance of on-street car parking for major events at the School including operating a shuttle bus loop service within the Eastern Suburbs on a route with designated pick-up points; and
- On-street 'No Parking' zones will be amended with better management strategies for more efficient drop-off and pick-up activities to occur.

Traffic assessment

- Traffic movements at the key access points into the site currently operate efficiently;
- The roundabouts encourage parents to loop and turnaround, providing more efficiency for drop-off and pick-up activity (resulting in a more localised congestion rather than overall road network congestion);
- Additional traffic movements estimated are conservative as many of them would likely be vehicles already counted in the surveys or not additional due to sisters at the School already;

- It is expected there will be minimal change in staff trips with only a minor increase in staff proposed at the School and only a minimal increase in car parking on the site;
- There is a forecast increase in peak hour traffic of 172 cars in the AM peak hour, 150 cars in the PM peak hour and 79 cars in the weekend peak hour as a result of the Master Plan and Stage 1 development;
- Traffic modelling indicates that additional traffic generated by the School will have a modest impact on the operation of the roundabout intersections along Macpherson Street;
- There are opportunities for a mode shift away from private vehicle travel, with the site located along key bus routes to Bondi Junction, and walking and cycling available; and
- School drop off and pick up generally is quite concentrated before the indicative start and finish time. While there may be a level of congestion experienced, this is usually short-term (i.e. over the course of 15 minutes) and the expected traffic flows would not cause considerable impacts to the overall peak hour of the local road network.

Appendix A

Parking Accumulation Surveys On-Street and Utilisation Of Drop-Off And Pick-Up Zones During Peak School Arrival and Departure Periods
by Lyle Marshall and Associates

ST CATHERINES SCHOOL FOR GIRLS
WAVERLEY

PARKING ACCUMULATION SURVEYS ON-STREET AND UTILISATION OF DROP-OFF AND PICK-UP ZONES DURING PEAK SCHOOL ARRIVAL AND DEPARTURE PERIODS

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Report No.: 33/13

DECEMBER, 2013

CONTENTS

1.0 INTRODUCTION

- **1.1 Background**
- **1.2 Scope of Investigations and Report**

2.0 EXISTING ON-STREET PARKING SUPPLY

- **2.1 Time Restricted and Time Limit Parking Spaces**
- **2.2 Unrestricted Parking (No Time Limit) Spaces**

3.0 PARKING ACCUMULATION ON-STREET

- **3.1 Parking Accumulation in Time Restricted and Time Limit Parking Spaces**
- **3.2 Parking Accumulation in Unrestricted Parking Spaces**

4.0 STUDENTS DROPPED OFF BY VEHICLE IN AM ARRIVAL PERIOD AND PICKED UP BY VEHICLE IN PM DEPARTURE PERIOD

- **4.1 Leichhardt Street No Parking Zones**
- **4.2 Macpherson Street No Parking Zones**
- **4.3 Albion Street No Parking Zones**

5.0 SUMMARY

APPENDIX 1:

Table 1 **Signposted Parking Restrictions within 5-7 Minutes Walk of St. Catherine's School, Waverley – Blue, Green & Red Areas.**

Table 2 **Parking Accumulation Friday 25/10/13.**

Blue Area	**5:00pm to 10:00pm.**
Red Area	**8:00pm to 10:00pm.**
Green Area	**8:00pm to 10:00pm.**

Table 3 **Parking Accumulation:**

Blue Area	**10:00am – 2:00pm**	**Wed. 30/10/13.**
Red Area	**10:00am – 6:00pm**	**Mon. 28/10/13.**
Green Area	**10:00am – 6:00pm**	**Mon. 28/10/13.**

Table 4 **Parking Accumulation Wednesday 30/10/2013.**

Blue Area	**6:00am – 8:00am**
Red Area	**6:00am – 8:00am**
Green Area	**6:00am – 8:00am**

Table 5A **Student Drop-Off Leichhardt Street Area 2 Mon. 28/10/13, Area 1 Tues. 29/10/13.**

Table 5B **Student Pick-Up Leichhardt Street Area 2 Mon. 28/10/13, Area 1 Tues. 29/10/13.**

Table 6A **Student Drop-Off Macpherson Street Wed. 30/10/13.**
Table 6B **Student Pick-Up Macpherson Street Fri. 25/1013.**

Table 7A **Student Drop-Off Albion Street Mon. 28/10/13.**
Table 7B **Student Pick-Up Albion Street Mon. 28/10/13.**

1.0 INTRODUCTION

1.1 Background

St Catherine's School is embarking on a RPAC project to provide improved facilities for students in both curricular and extracurricular activities.

Redevelopment of the existing in ground swimming pool site adjacent to the Dame Joan Sutherland Centre fronting Macpherson Street is planned to provide a basement level Aquatic Centre containing a main pool and shallow pool, a 3 level Lyric Theatre with a spectator gallery to seat approximately 500 persons above the Aquatic Centre, a multifunction (256 seats) space adjacent to the theatre and a separate 2 level junior / senior combined Research Centre at the northern end of the above development.

It is understood that there will not be any increase in school enrolment and staff numbers. There are currently a total of 55 parking spaces within the school grounds.

1.2 Scope of Investigations and Report

The purpose of this study is to determine the availability and existing utilisation of parking spaces on-street within 5 to 7 minutes walking distance of St Catherine's School and to determine the number of students being dropped off and picked up by vehicle in No Parking Zones in Leichhardt Street, Macpherson Street and Albion Street and the degree of utilisation of each of these zones to provide a data base for assessment of the parking and traffic impacts of the proposed RPAC development.

The attached aerial plan prepared by Chase Burke Harvey Surveying and Land Development Consultants shows the features and details of various properties comprising St Catherine's School.

CAUTION: ONLY CLEARLY VISIBLE SERVICES OR UTILITIES STRUCTURES, ON OR ABOVE GROUND LEVEL, HAVE BEEN SURVEYED. **THE LOCATION OF ALL SERVICES OR UTILITY LINES/STRUCTURES SHOWN IN THIS DIAGRAM ARE APPROXIMATE ONLY.** YOU ARE ADVISED TO SEEK INFORMATION FROM THE RELEVANT SERVICE OR UTILITY AUTHORITY FOR ALL DETAILS OF DEPTH AND/OR LOCATION OF SERVICE OR UTILITY LINES/ STRUCTURES WHICH SUPPLY THE SUBJECT PROPERTY.

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THE SURVEY INFORMATION SHOWN IS FOR THE SPECIFIC PURPOSE AS INSTRUCTED BY THE CLIENT ONLY. IT SHOULD NOT BE USED FOR ANY OTHER PURPOSE WITHOUT PERMISSION OF CHASE, BURKE & HARVEY.

LEGEND:

- Subject Boundary
- Easement Boundary
- Fence
- Approx. Location Overhead Power Supply (OHP)
- Approx. Location Underground Water Mains (W)
- Approx. Location Underground Sewer Mains (S)
- Approx. Location Underground Telstra Line (T)
- Approx. Location Underground Gas Mains (G)
- Stormwater Pipe
- Top of Kerb
- Lip of Kerb
- Edge of Footpath
- Edge of Driveway
- Crown of Road Formation
- Edge of Bitumen
- Edge of Concrete
- Top of Retaining Wall
- Bottom of Retaining Wall
- Top of Bank (TB)
- Bottom of Bank (BB)
- Invert of Table Drain
- Top of Table Drain
- Edge of Garden
- Power Pole (PP)
- Power Box (PBOX)
- Service Pole (SP)
- Light Pole (LP)
- Hydrant (HYD)
- Water Meter (WM)
- Stop Valve (SV)
- Tap (TAP)
- Sewer Man Hole (SMH)
- Sewer Inspection Opening (SIO)
- Telstra Pit
- Gas Marker
- Street Sign
- Survey Station
- State Survey Mark
- Photo Aspect
- Canopy Height (109.69 CANOPY)
- Palm
- Tree (T-7X12)

NOTE: "T-7X12" Denotes a Tree with 0.7m Trunk Diameter & 12m Spread. Spread Notations are Approximate and are not Necessarily Symmetrical

AUTHORISED OFFICER

THIS PLAN TO BE READ IN CONJUNCTION WITH CBH REPORT WITH REFERENCE: 2010/167/5

DRAWING No: D 10167-5

CLIENT:	St Catherine's School
DATE OF SURVEY:	April - May 2012
DATE DRAWN:	May 2012
REF:	2010/167/5
SURVEY FILE:	10-1675MG

0 5 10 20 30 40 50

REDUCTION RATIO 1:500 @ A1 & 1:1000 @ A3

SURVEYED BY: I HARVEY, B BEAMAN & S CRAIG

DRAWN BY: I FEENEY | CHECKED BY: I HARVEY

LOT No.	560
SECTION	–
PLAN No.	DP 1138118
SUBURB	WAVERLEY
LGA	WAVERLEY
PARISH	ALEXANDRIA
COUNTY	CUMBERLAND

CONTOUR INTERVAL: -

DATUM: AHD
AUSTRALIAN HEIGHT DATUM

ORIGIN OF LEVELS: PM 26687

R.L.: 80.706

REV.	REVISION DETAILS	DATE
-	-	-

SURVEYING & LAND DEVELOPMENT CONSULTANTS
12 WINANI ROAD
ERINA N.S.W. 2250
Ph: (02) 4367 7334
Fax (02) 4365 2996
www.cbhsurvey.com.au

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CHASE BURKE HARVEY

Features, Levels and Details over Various Properties Collectively Known as "St. Catherines School for Girls", Albion Street, WAVERLEY

SHEET No. 1
No. of SHEETS: 6
DRAWING No: D 10167-5
REV: -

2.0 EXISTING ON-STREET PARKING SUPPLY

The parallel spaces on-street are not line marked. All driveways, No Stopping Zones, No Parking Zones, Bus Zones were measured and located in all streets in the area surveyed, as shown on **Sheet 1 of Drawing No. 1142-13**. A space length of **6** metres was adopted for intermediate spaces and **5.4** metres for unobstructed end spaces in accordance with **Figure 2.5 in AS/NZS 2890.1 - 2004**

2.1 Time Restricted and Time Limit Parking Spaces

The *time restricted parking spaces* within **5 – 7 minutes** *walking distance* of St. Catherine's School are as follows:-

- **Half hour** parking between **8:30am – 6:00pm** Monday to Friday and **8:30am – 12:30pm** Saturday.
- **Two hour** parking **8:30am – 6:00pm** Monday to Saturday *Authorised Residents Vehicles Excepted*.
- **One** Loading Zone space from **8:30am – 4:00pm** Monday to Saturday.
- 'No Parking School Days' Zones in Leichhardt Street, Macpherson Street and Albion Street that are used for 'drop-off' and 'pick-up' generally from **8:00am – 9:00am** and **2:30pm – 4:00pm**.
- No Parking **7:00am – 5:00pm** Monday to Saturday Leichhardt Lane – **6** spaces.

Outside the above time periods the spaces are available with *'no time limit' restrictions*.

The total number of these spaces is listed in **Table 2.1** and the locations are shown on **Sheet 1 of Drawing No. 1142-13**. This means that the number of spaces available for unrestricted parking *varies* throughout the day from **7:00am** to **6:00pm** and is a *maximum* of **94** from **6:00pm** to **6:00am** on weeknights and Saturday night and for *24 hours* on *Sunday*.

2.2 Unrestricted Parking (No Time Limit) Spaces

There are **463 spaces** with no time limit within **5 – 7** minute walking distance of St. Catherine's School. These locations and number of spaces are shown on **Sheet 1 of Drawing No. 1142 – 13** and the **Table 1** in **Appendix 1**.

The total number of spaces **available** for *unrestricted parking* is a *maximum* of **557** from **6:00pm** to **7:00am** *Monday to Saturday* and for *24 hours* on *Sunday*. The *minimum* number of spaces **available** for *unrestricted parking* is **463** from **8:00am** to **9:00am** and **2:30pm** to **4:00pm** on *Schooldays*.

TABLE 2.1 SUMMARY KERBSIDE PARKING RESTRICTIONS AND NUMBER OF PARKING SPACES

SPACES AVAILABLE FOR UNRESTRICTED PARKING																				
1/2P	NPSD	2P	NP	LZ	MONDAY TO FRIDAY								SATURDAY				SUNDAY	DIS	BZ	COUNCIL
8:30-6:00pm Mon to Fri 8:30-12:30 Sat	8.00-9.00am 2.30-4.00pm	8.30-6.00pm Mon to Sat ARVE	7.00-5.00pm Mon to Sat	8.30-4.00pm Mon to Sat	6:00 AM	7AM	8AM	8AM-9AM	9AM-2:30PM	4PM-5PM	5PM-6PM	6PM-MIDNIGHT	8:30AM-12:30PM	12:30PM-5PM	5PM-6PM	6PM-MIDNIGHT	24 HOURS	24 HOURS		
15	35	37	6	1	557	551	516	463	498	498	504	557	498	513	519	557	557	5	12	1

NOTE: The number of spaces available between 2:30pm and 4:00pm on Schooldays is also **463.**

LEGEND

NPSD	NO PARKING SCHOOL DAYS
ARVE	AUTHORISED RESIDENTS VEHICLES EXCEPTED
LZ	LOADING ZONE
NP	NO PARKING
DIS	DISABLED PARKING
BZ	BUS ZONE
MZ	MAIL ZONE
C	COUNCIL

3.0 PARKING ACCUMULATION ON-STREET

3.1 Parking Accumulation in Time Restricted and Time Limit Parking Spaces

Time Limit parking spaces were surveyed at *hourly intervals* from **6:00am** to **10:00pm** on school days in October 2013. The surveys were completed over a 3 day period, **25th, 28th and 30th** October.

The complete Survey Data is contained in **Tables** 2, **3** and **4** in **Appendix 1** and is summarised in **Table 3.1**.

The number of vehicles parked in the *half hour spaces* often *exceeded* the number of spaces calculated because many vehicles occupied *less* than **6** metres and some vehicles were parked *contrary to the signposted restrictions*. All spaces except the **6** 'No Parking spaces' in Leichhardt Lane were almost fully occupied, as shown in **Table 3.1**. **Peak** occupancy was **82** (87%) at **9:00pm**. If the **6 'No Parking'** spaces in Leichhardt Lane are *excluded*, the peak occupancy was **93%**.

The '**No Parking School Days Zones'** were not fully occupied between the signposted drop-off and pick-up times **9:00am** to **2:30pm**. The signposting may deter some drivers. The drop-off and pick-up spaces should be signposted **P5 Drop-Off** and **Pick-Up School Days 8:00 – 9:00am** and **2:30 – 4:00pm.**

3.2 Parking Accumulation in Unrestricted Parking Spaces

The *occupancy* at each hour from **6:00am** to **10:00pm** is shown in **Table 3.1** and ranged from a *minimum* of **367** vehicles at **5:00pm** (79.3%) to a *maximum* of **453** vehicles (97.8%). The *low occupancy* at **5:00pm** is due to *drivers who work* in the *area leaving* and *prior to* the *influx* of *residents returning home* from work.

TABLE 3.1 PARKING ACCUMULATION ON-STREET SCHOOL DAYS ST. CATHERINES SCHOOL

SIGNPOSTED PARKING SPACES	Number of Spaces	NUMBER OF VEHICLES												
		6AM	7AM	8AM	10AM	11AM	12	1PM	2PM	5PM	6PM	8PM	9PM	10PM
½ p 8:30 – 6:00PM Mon. to Fri. 8:30am – 12:30pm Sat.	15	10	15	19	18	19	16	16	19	12	16	15	15	14
NPSD 8:00 – 9:00am 2:30 – 4:00pm	35	14	15	8	17	15	28	15	17	16	28	24	28	24
2P 8:30 – 6:00pm Mon - Sat. ARVE.	37	28	35	37(1MB)	31	31	31	28	30	30	31	35	35	35
NP 7:00am – 5:00pm Mon. to Sat.	6	1	2	1	0	0	0	0	0	1	1			
LZ 8:30am – 4:00pm Mon. to Sat.	1	0	0	0	1	1	1	1	1	0	0	0	0	0
Disabled. 24/7	5	4	4	4	4	4	4	4	3	4	4	4	4	4
BZ Bus Zone 24/7	12(Bus Zones)													
Unrestricted No. Time Limit	463	440 (13MB)	431 (16MB)	430 (14MB)	422	418	424	410	392	367	403	436	445	453

Note: MB Motor Bike.

4.0 CHILDREN DROPPED OFF BY VEHICLE IN AM ARRIVAL PERIOD

4.1 Leichhardt Street No Parking Zones

There are **2** *"No Parking Zones"* on the eastern side of Leichhardt with a sign posted time restriction **8:00am – 9:00am** and **2:30pm – 4:00pm** School Days that are used to drop-off and pick-up students. These Zones are marked **1** and **2** and are separated by a marked *pedestrian crossing* with **"No Stopping"** restrictions **signposted** to the **north** and **south** of the **pedestrian crossing**. The **two Zones** are shown on **Sheet 1 of Drawing No. 1142 – 13**.

The full Survey results for **Drop-off** and **Pick-up** are in **Tables 5A** and **5B** in **Appendix 1**. The Summary follows:-

4.1.1 Morning 'Drop Off'.

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Dropped Off
1 *(2 spaces)*	8:07-8:08am	2	4	< 1 min	1	5
Drop-Off	8:07-8:17am			1 min	2	
				2 min	1	
2 (*5 spaces*)	8:02 am	7	107	< 1 min	78	135
	8:03 am	4		1 min	24	
	8:06 am	8		2 min	3	
	8:08 am	5		3 min	1	
	8:12 am	8		4 min	1	
	8:20 am	9				
	8:24 am	5				
	8:25 am	7				
Drop-off Period 8:00 – 8:40am						
TOTAL ZONES 1 AND 2			**111**			**140**

Car Occupancy: ***1.26 students / vehicle.***
Length of Stay ***≤ 2 minutes – 138 vehicles (98.6%).***

Comments:

- **Zone 1** *was under utilised*.
- **Zone 2** *Queues extended into "No Stopping" Zone on 5 occasions. Vehicles are not permitted to stop in a "No Stopping Zone – Infringement.*
- Queues could have been reduced by **2** if Zone 1 had been utilised with effective Traffic Management.

Recommendations:

1. Provide effective Traffic Management.

2. Seek Council approval to **change signposting** to **P5 8:00am to 9:00am** and **2:30 pm to 4:00pm**.

3. Mark out and number all queueing bays.

4.1 (Continued)

4.1.2. Afternoon 'Pick-Up'

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Picked Up
1 *(2 spaces)*	1	1	1	< 1 min	1	Est 1
Pick-Up	**3:25 -3:26PM**					
2 (*5 spaces*)	2:30-2:56 pm	4	68	< 30 secs	41	82
	2:58 pm	3		1 min	10	
	3:01 pm	4		2 min	4	
	3:02 pm	5		3 min	3	
	3:10 pm	7		5 min	1	
	3:11 pm	5		8 min	2	
	3:30 pm	3		10 min	1	
				16 min	1	
				25 min	2	
				28 min	1	
				29 min	1	
			Length of Stay ≤ 2 mins		**56 Vehicles**	**81.2%**
TOTAL ZONES 1 and 2			**69**			**83**

Car Occupancy: 1.20 students per vehicle.
Pick-Up Period 2:30 – 4:03pm.

Comments:

- Maximum length of stay in a "No Parking" Zone is 2 minutes.
- 12 vehicles overstayed the time limit – Infringement.
- 4 vehicles were queued after 4:00pm – Infringement.
- Zone 1 underutilised – With effective Traffic Management all queues would have been less than 5 vehicles.

Recommendations:

1. Provide effective Traffic Management.

2. Seek Council approval to change signposting (as for Morning Drop-Off).

3. Mark out Bays (as for Morning Drop Off).

4.2 Macpherson Street No Parking Zones

There are **3 "No Parking"** Zones on the northern side of Macpherson Street along the frontage of St. Catherine's School with a signposted *Time Restriction* **8:15 – 9:15am** and **2:45 – 4:15pm** Schooldays that are used to drop-off and pick-up students. The zones are marked **1**, **2** and **3** on **Sheet 1 of Drawing No. 1142-13**. Zones **1** and **2** are separated by a *marked pedestrian crossing* with **"No Stopping"** restrictions signposted to the east and west of the crossing.

The full Survey results for drop-off and pick-up are in **Tables 6A** and **6B** respectively in **Appendix 1**. The Summary follows with comments and recommendations.

4.2.1 Morning 'Drop-Off'

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Dropped Off
1 (*6 spaces*)	8:00-8:01am	5		< 1 min	55	5
	8:02am	3		1 min	21	
	8:03-8:04am	4		2 min	1	
	8:05-8:06am	3		3 min	1	
	8:07-8:08am	5				
	8:09-8:10am	4				
	8:12-8:13am	4				
	8:14am	5				
	8:20am	4				
	8:21-8:22am	6				
	8:23-8:24am	4				
	8:28-8:29am	4	78			98
Drop-Off Period 8:00 to 8:50am						
2 (*3 spaces*)	8:01-8:02am	1	3	< 1 min	1	5
				1 min	1	
				2 min	1	
Drop-off Period 8:00 – 8:45am						
3 (*7 spaces*)	8:00-8:06am	4	6	< 1 min	2	6
				7 min	1	
				8 min	1	
Drop-off Period 8:00 – 8:20am						
		TOTAL	**87**			**109**

Car Occupancy: ***1.26 students / vehicle.***
Length of Stay ***≤ 2 minutes – 81 vehicles (93.1%).***

Comments:

- Vehicles queued to roundabout in Albion Street on one occasion blocking traffic in roundabout.
- Traffic Controller who was managing traffic could have prevented problems by directing vehicles to Zones 2 and 3 that were underutilised.
- Vehicles queued in "No Stopping" Zone west of "No Parking" Zone – Infringement.
- There are adequate queueing spaces in Zones 1, 2 and 3 if properly managed.

4.2 (Continued)

Recommendations:

1. Traffic Controller(s) to be provided with a written '*set of instructions*' and be *briefed* so that they understand the instructions and are able to effectively manage the Drop-Off Zones.
2. Seek Council approval to change signposting to **P5 8:00** to **9:00am** and **2:30** to **4:00pm** Schooldays.
3. The current **8:15am** start time is too late as **41** vehicles (37.6%) had dropped-off students *before* **8:15am**. It is recommended that the hours be changed to **8:00 – 9:00am** and **2:30 – 4:00pm**, the same as in Leichhardt Street.
4. It is recommended that the queueing bays be '*marked* and *numbered*' in all **3 Zones**.

4.2.2 Afternoon 'Pick-Up'

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Dropped Off
1 *(6 spaces)*	2:30-3:07pm	7		1 min	20	5
	3:07-3:15pm	6		2 min	6	
	3:20-3:22pm	8		3 min	2	
	3:25-3:27pm	5		4 min	3	
	3:27-3:29pm	4		5 min	1	
	3:37-3:39pm	5		6 min	2	
	3:39-3:40pm	4		7 min	1	
				8 min	3	
	3:41-3:42pm	5	49	10 min	3	56
				11 min	1	
				21 to 40min	7	
	Pick Up Period 2:30 – 4:17pm (Only 3 Vehicles after 4:00pm)					
2 *(3 spaces)*	2:30-3:10pm	3	7	1 min.	1	9
				3 min	1	
				4 min	1	
				5 min	1	
				37 min	1	
				40 min	1	
				45 min	1	
	Pick-Up Period 2:30 – 3:30pm					
3 *(7 spaces)*	2:50–3:10pm	5	8	4 min	1	9
				13 min	1	
				27 min	1	
				29 min	1	
				30 min	1	
				40 min	2	
				46 min	1	
	Pick-Up Period 2:30 – 3:30pm					
	TOTAL		**64**			**74**

Car Occupancy: ***1.16 students / vehicle.***
Length of Stay ***≤ 2 minutes – 27 vehicles (42.2%).***

4.2 (Continued)

Comments:

- Vehicles queued to the roundabout between **3:00** to **3:30pm** blocking traffic in roundabout.
- Vehicles queued in **"No Stopping"** Zone west of **"No Parking"** Zone. Infringement.
- 6 vehicles were queued in **Zone 1** from **2:30pm** to **3:06pm** and infringed the **"No Parking"** *Time Limit of 2 minutes*.
- **Zones 2** and **3** were underutilised.
- Traffic Controller did not effectively manage the queued vehicles.
- There are adequate queueing spaces if properly managed.
- A total of **5** vehicles parked in **Zones 1**, **2** and **3** after **4:00pm**, did not pick up students and were still parked after **4:30pm** – Infringement.

Recommendations:

1. Same comment as for 'Drop-Off period'.

2. Same comment as for 'Drop-Off period'.

3. Only **3** vehicles picked up after **4:00pm**. Hence the **"No Parking"** Zone should be altered as stated under *Recommendation 3* in 'Drop Off' period to **2:30pm** to **4:00pm**. Parents arriving after **4:30pm** can legally park to pick-up students.

4. As for *Recommendation 4* in 'Drop-off' period.

5. *Circular letter* to be sent to all parents to explain the *Road Rules* pertaining to **"No Parking"** and **"No Stopping"** Zones and instructions concerning the need to move to another **queueing Zone** when the **first Zone** is 'parked out' and to *obey the instructions* of the *Traffic Controller*.

4.3 Albion Street "No Parking" Zones

There are **3** "No Parking" Zones on the eastern side of Albion Street numbered **1**, **2** and **3** along the frontage of St. Catherine's School and **3** "No Parking" Zones on the western side of Albion Street numbered **4**, **5** and **6** that are used to 'Drop-Off' and 'Pick-Up' students.

The signposted *Time Limit restrictions* are **8:00am – 9:15am** and **3:00 to 4:15pm** Schooldays on the eastern side and **8:00 – 9:00am** and **2:30 – 4:00pm** Schooldays on the western side.

4.3 (Continued)

All zones are north of a *signalised pedestrian crossing* with "No Stopping" restrictions signposted *before and after* the crossing on both sides of Albion Street.

The full Survey results for the drop-off and pick-up are in **Tables 7A** and **7B** respectively in **Appendix 1**. The summary follows with comments and recommendations.

4.3.1 Morning 'Drop-Off'

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Dropped Off
1 *(2 spaces)*	8:00-8:01am	3		< 1 min	18	
	8:09am	3		1 min	6	
	8:10am	5	27	2 min	2	27
				4 min	1	
	Drop-Off Period 7:59 to 9:00am					
2 *(2 spaces)*	8:00am	2		< 1 min	14	
	8:01am	2		1 min	2	
	8:15am	3	16			16
	Drop-Off Period 8:00 to 8:58am					
3 *(3 spaces)*	NOT USED					
4 *(1 spaces)*		1	8	< 1 min	7	
				2 min	1	8
Drop-off Period 8:00 – 8:59am						
5 (*2 spaces*)	NOT USED					
6 (*2 spaces*)	NOT USED					
		TOTAL	**51**			**51**

Car Occupancy: ***1.0 students / vehicle.***
Length of Stay ***≤ 2 minutes – 50 vehicles (98.0%).***

Comments:

- Vehicles queued past **Gate 2** for a short period.
- Traffic Controller required to direct vehicles into **Zone 3** when Zones **1** and **2** are fully occupied.
- No vehicles dropped-off *after* 9:00am.
- Zones **3**, **5** and **6** were *not used* for drop-off.
- Only **1** vehicle exceeded the time limit of *2 minutes* for parking in a "*No Parking"* Zone.
- There are more than adequate spaces in the Drop-Off. Zones.
- **2** vehicles parked in the drop-off Zones **2** and **3** after **9:00am** and did not drop off students.

` **4.3 (Continued)**

Recommendations:

1. A Traffic Controller to be present to manage the drop-off.

2. The current time limit of **9:15am** is not required and should be rationalised **8:00 to 9:00am** Schooldays.

3. Seek Council approval to change the signposting to **P5 8:00 – 9:00am** on Schooldays.

4. That the queueing Bays be '*marked and numbered*'.

4.3.2 Afternoon 'Pick-up'

Zone	Time Period	No. Vehicles in Queue	Total Vehicles	Length of Stay	No. of Vehicles	No. of Students Dropped Off
1 *(2 spaces)*	2:33-2:42pm	2		< 1 min	1	
	3:04-3:06pm	2		1 min	2	
	3:19-3:30pm	2	10	2 min	1	10
				5 min	2	
				9 min	1	
				11 min	1	
				15 min	1	
				24 min	1	
	Pick Up Period 2:29 – 3:51pm					
2 *(2 spaces)*	3:20-3:25pm	4	4	6 min.	1	4
				7 min	1	
				10 min	2	
	Pick-Up Period 3:19 – 3:31pm					
3 (*3 spaces*)	3:15–3:24pm	2	2	9 min	1	2
				17 min	1	
		Pick-Up Period 3:15 – 3:32pm				
4 (*1 spaces*)	3:24-3:30pm	1	1	6 min	1	1
		Pick-Up Period 3:24 – 3:30pm				
5	2:53-2:57pm	2	3	1 min	1	2
				4 min	1	
				9 min	1	
		Pick-Up Period 2:53 – 3:07pm				
6	2:30-2:31pm	1	1	1 min	1	0
	Pick-Up Period 2:30 – 2:31pm					
	TOTAL		**20**			**19**

Car Occupancy: ***1.0 students / vehicle.***
Length of Stay ***≤ 2 minutes – 6 vehicles (30%).***

4.3 (Continued)

Comments:

- 70% (14 vehicles) overstayed the *2 minute time limit* in a "No Parking" Zone. Infringement.
- Zone 2 was 'parked out' over a 5 minute period with 2 vehicles *parked in the Bus Zone*. Infringement.
- There was no Traffic Controller supervising the pick-up.
- No vehicles picked-up students after **3:51pm**

Recommendations:-

1. A Traffic Controller be present to supervise the pick-up.

2. Seek Council approval to change the signposting to **P5 2:30 – 4:00pm** Schooldays.

3, As for *Recommendation 4* in 'Drop-Off' period.

5.0 SUMMARY

- The purpose of the Study was to determine the availability and existing utilisation of parking spaces on-street within **5 – 7** minutes walk of St. Catherine's School and the number of students being 'dropped off' and 'picked up' by vehicles in *"No Parking' Zones **8:00 – 9:00am** and **2:30 – 4:00pm** Schooldays*.

Parking Supply:

- The total number of Time Limit and Time Restricted Parking spaces is **94**.
- The total number of unrestricted parking spaces is **463**.
- The total number of spaces available for unrestricted parking is a **maximum** of **557** from **6:00pm** to **7:00am** Monday to Saturday and for **24 hours** on **Sunday**.
- The **minimum** number of spaces available for unrestricted parking is **463** from **8:00am to 9:00am** and **2:30 to 4:00pm** on **Schooldays.**
- At **7:00am, 9:00am** – **2:30** and **5:00pm** Monday to Friday the number of spaces available for *unrestricted* parking is **551**, **498** and **504**.

Parking Demand:

- The number of vehicles parked in the unrestricted parking spaces *decreased* from **440** at **6:00am** to a *minimum* of **367** at **5:00pm** and then *increased* to **453** at **10:00pm** on **Schooldays** Monday to Friday.
- The **½ P** and **2P** *time restricted parking spaces* were almost fully 'parked out' from **6:00am** to **10:00pm**.
- There were some **18** to **20 spaces** vacant in the "No Parking" Zones schooldays before and after the **8:00 – 9:00am** and **2:30 – 4:00pm** school arrival and departure periods and only **7** to **11** spaces after **6:00pm**

School Drop-Off 8:00 – 9:00am:

- There are **2** *Drop-Off, Pick-Up **Zones*** (**7** spaces) in Leichhardt Street, **3 Zones** (16 spaces) in Macpherson Street and **6 Zones** (12 spaces) in Albion Street.
- **A total of 259 vehicles dropped off 300 students between 7:59am and 9:00am**. The number of students per vehicle was **1.26** in Leichhardt and Macpherson Streets and **1.0** in Albion Street.

COMMENTS:

Leichhardt Street:

Zone 1 was underutilised.

Zone 2 Queues extended into "No Stopping" Zones on 5 occasions. No Traffic Controller for supervision of drop-off.

5.0 (Continued)

Macpherson Street:

- Vehicles *queued* to roundabout on 1 occasion blocking traffic in roundabout.
- Vehicles *queued* in *"No Stopping" Zone*. Infringement.
- Traffic Controller could have *prevented problems by directing vehicles* into **Zones 2** and **3**.

Albion Street:

- Vehicles *queued* past **Gate 2** for a short period.
- Zones **3, 5** and **6** were not used.
- Only **1** vehicle *exceeded* the *2 minute time limit* in a "No Parking" Zone.

School Pick-Up 2:30 – 4:00pm

- A total of **153 vehicles** picked up **176 students** between **2:30pm and 4:17pm**. The number of students per vehicle was **1.20** in **Leichhardt** Street, **1.16** in **Macpherson** Street and **1.0** in **Albion** Street.

COMMENTS:

Leichhardt Street

- Zone 1 was underutilised.
- No traffic Controller to supervise pick-up.
- **12** vehicles overstayed the *2 minute* time limit – Infringement.
- **4** vehicles queued after **4:00pm**.

Macpherson Street

- Vehicles queued to roundabout between **3:00pm** and **3:30pm** blocking traffic in roundabout.
- Vehicles queued in "No Stopping" Zone. Infringement.
- **6** vehicles parked for longer than *2 minutes* between **2:30pm** and **3:06pm** in **Zone 1** – Infringement.
- There are *adequate queueing spaces* if properly managed.

Albion Street

- 70% (14 vehicles) overstayed the *2 minute* time limit. Infringement.
- **Zone 2** was 'parked out' for 5 minutes with **2** vehicles queued in the Bus Zone.
- No vehicles picked-up students after **3:51pm**.
- There was no *Traffic Controller* present.

5.0 (Continued)

RECOMMENDATIONS:

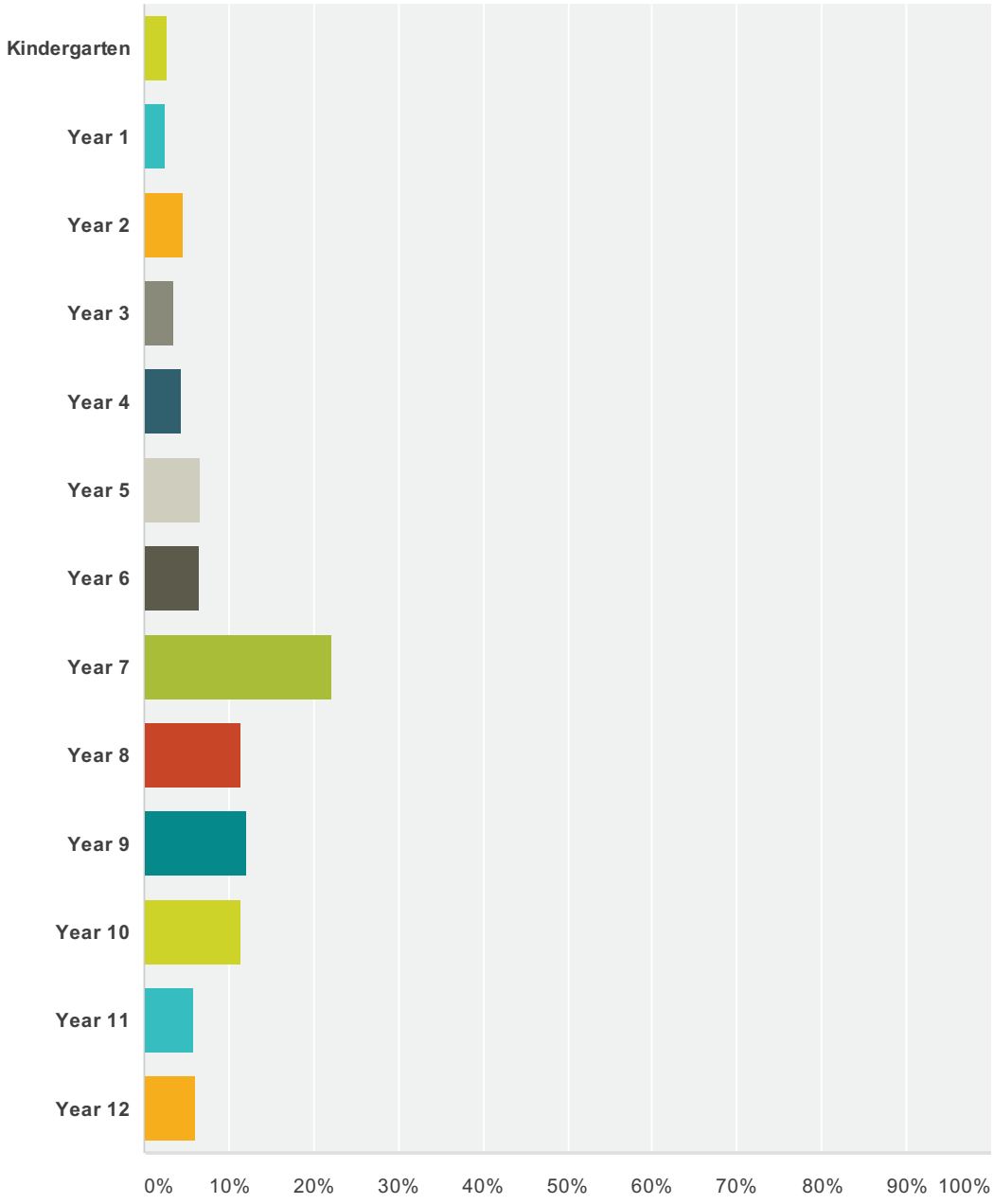
- A Traffic Controller with *RMS Blue Certificate accreditation* to be present in Leichhardt Street, Macpherson Street and Albion Street. Controllers to be briefed and given *written instructions for affective traffic management*.
- Seek Council approval to change the signposting from *"No Parking"* **to P5 8:00am to 9:00am and 2:30pm – 4:00pm** in ***all Zones*** *in Leichhardt Street, Macpherson Street* and *Albion Street*.
- The proposed signposting will be easier to understand.
- There is no requirement to have different time limits in the three streets.
- Queueing Bays to be **marked** and **numbered** in all **11 Zones**.
- *Circular letter* to be sent to all parents at the *commencement* of the School Year explaining the **Road Rules** applying to **"No Stopping" Zones** and instructions to be followed when *dropping-off and picking-up students*.
- With *effective* ***traffic management***, the **existing Drop-Off** and **Pick-Up Zones** have **sufficient queueing spaces** for the **busiest perio**d.

Appendix B

Travel survey results

Q1 What year are you currently attending?

Answered: 579 Skipped: 2

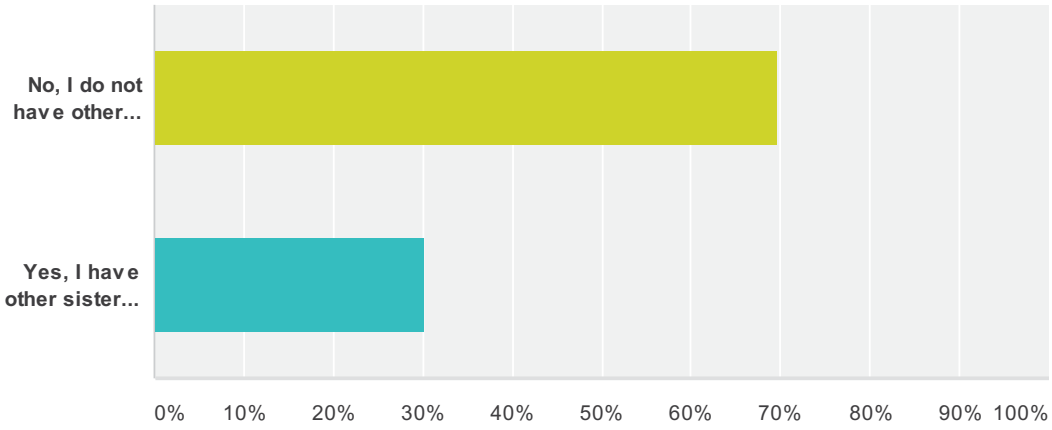


Answer Choices	Responses	
Kindergarten	**2.76%**	16
Year 1	**2.59%**	15
Year 2	**4.66%**	27
Year 3	**3.45%**	20
Year 4	**4.32%**	25
Year 5	**6.74%**	39

Year 6	**6.56%**	38
Year 7	**22.11%**	128
Year 8	**11.40%**	66
Year 9	**12.09%**	70
Year 10	**11.40%**	66
Year 11	**5.87%**	34
Year 12	**6.04%**	35
Total		**579**

Q2 Do you have any sisters that attend St. Catherine's School?

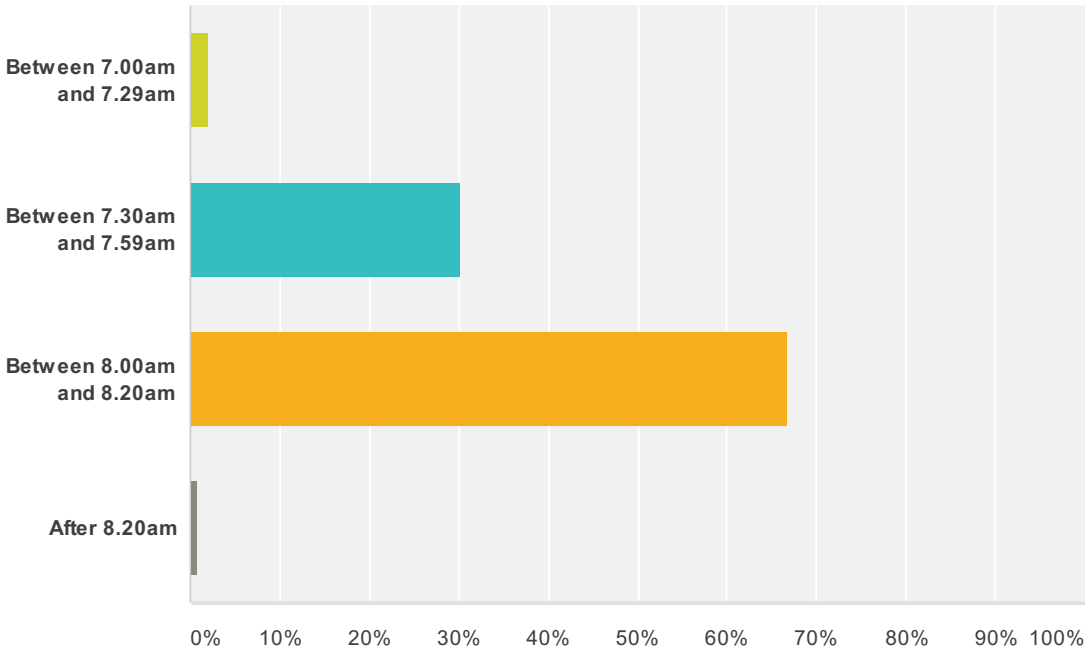
Answered: 576 Skipped: 5



Answer Choices	Responses	
No, I do not have other sisters attending	**69.79%**	402
Yes, I have other sisters attending (please indicate number of sisters)	**30.21%**	174
Total		**576**

Q3 On a typical day, what time would you normally arrive at school? (i.e. on a day that you do not have sports or other co/extracurricular activities BEFORE classes start)?

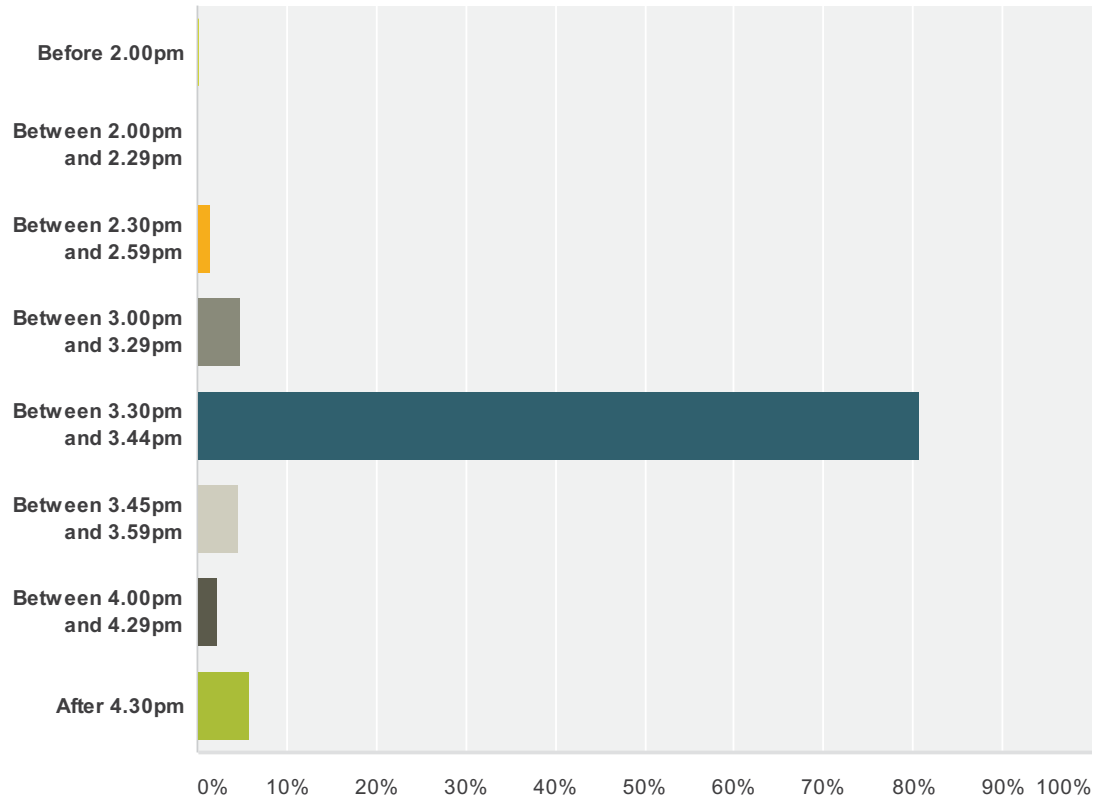
Answered: 565 Skipped: 16



Answer Choices	Responses	
Between 7.00am and 7.29am	**2.12%**	12
Between 7.30am and 7.59am	**30.27%**	171
Between 8.00am and 8.20am	**66.73%**	377
After 8.20am	**0.88%**	5
Total		**565**

Q4 On a typical afternoon when school has finished for the day, what time would you normally leave the school grounds? (i.e. on a day that you do not have sports or other co/extracurricular activities AFTER school)

Answered: 565 Skipped: 16



Answer Choices	Responses	
Before 2.00pm	0.18%	1
Between 2.00pm and 2.29pm	0.00%	0
Between 2.30pm and 2.59pm	1.42%	8
Between 3.00pm and 3.29pm	4.78%	27
Between 3.30pm and 3.44pm	80.88%	457
Between 3.45pm and 3.59pm	4.60%	26
Between 4.00pm and 4.29pm	2.30%	13
After 4.30pm	5.84%	33
Total		**565**

Q5 What postcode are you most likely to travel to school from in the morning? (This may be the suburb in which you live)

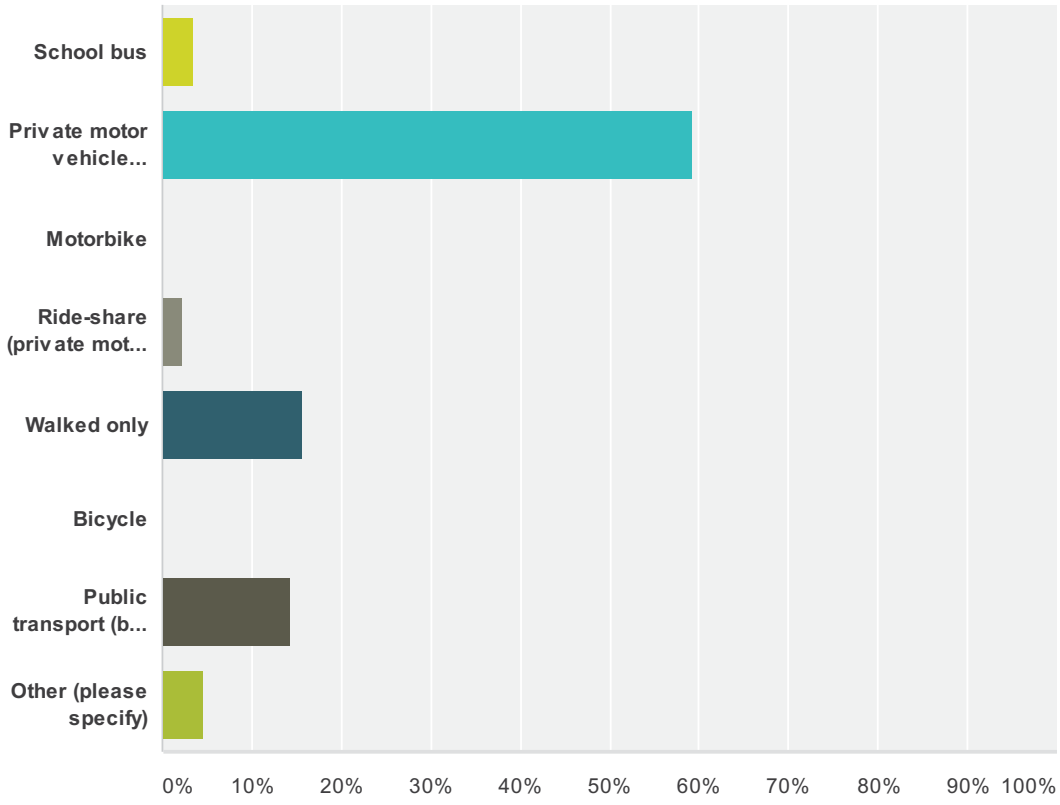
Answered: 559 Skipped: 22

Q6 What postcode are you most likely to travel to from school in the afternoon? (This may be the suburb in which you live)

Answered: 559 Skipped: 22

Q7 On a typical day, how are you most likely to arrive / travel to school?

Answered: 559 Skipped: 22



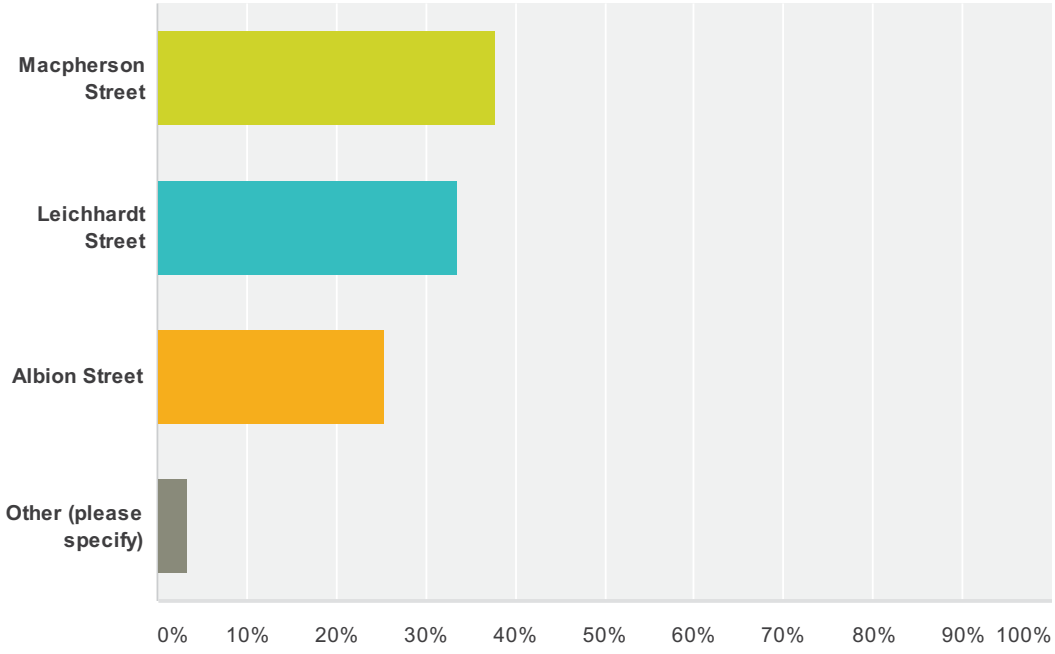
Answer Choices	Responses	
School bus	3.58%	20
Private motor vehicle (Dropped-off)	59.39%	332
Motorbike	0.00%	0
Ride-share (private motor vehicle)	2.33%	13
Walked only	15.56%	87
Bicycle	0.00%	0
Public transport (bus and or train)	14.49%	81
Other (please specify)	4.65%	26
Total		559

Q8 You indicated that you ride share to school, how many other St. Catherine's School students share the car? (Note: this could be your sister(s) and/or friend(s))

Answered: 13 Skipped: 568

Q9 When you get dropped off in the morning by a private motor vehicle, where are you most likely to get dropped off?

Answered: 331 Skipped: 250



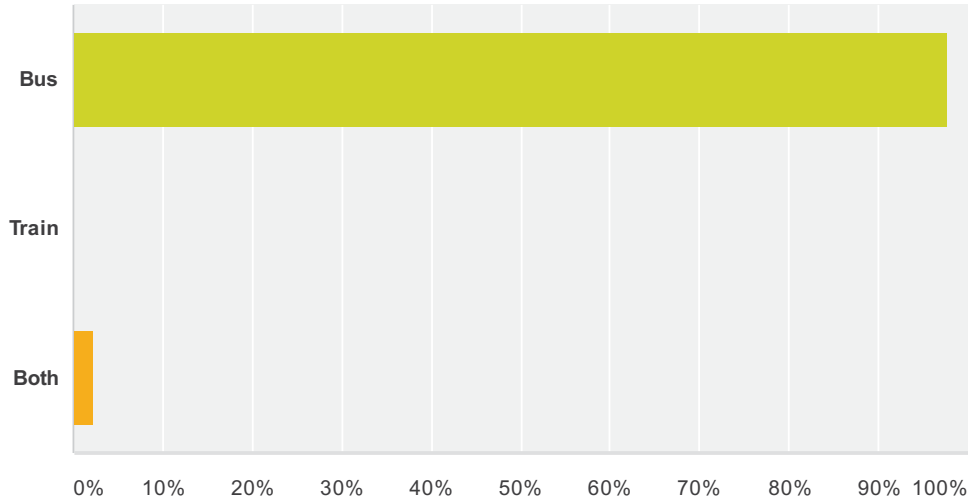
Answer Choices	Responses	
Macpherson Street	**37.76%**	125
Leichhardt Street	**33.53%**	111
Albion Street	**25.38%**	84
Other (please specify)	**3.32%**	11
Total		**331**

Q10 If you travel to school by private vehicle and your parent/caretaker parks in a nearby location before walking with you to the appropriate school entrance, where is your parent/caretaker most likely to park their car?

Answered: 188 Skipped: 393

Q11 Do you take a bus or train to school? (Please indicate if you take both)

Answered: 88 Skipped: 493



Answer Choices	Responses	
Bus	**97.73%**	86
Train	**0.00%**	0
Both	**2.27%**	2
Total		**88**

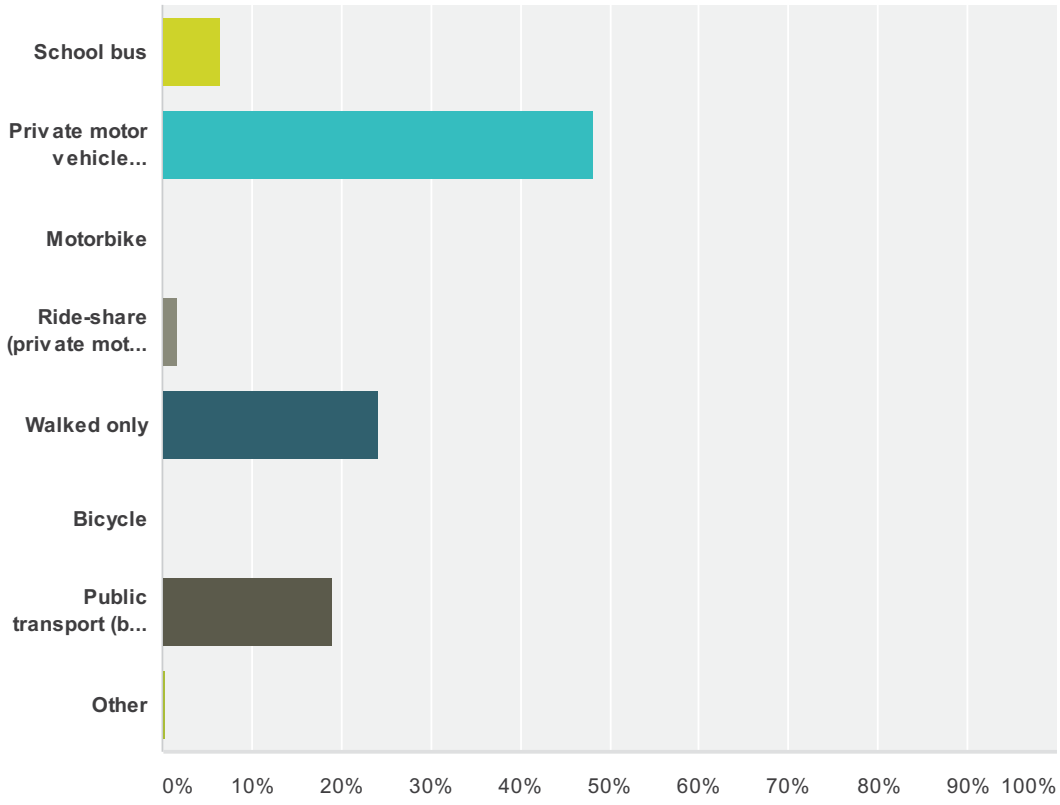
Q12 You indicated that you take both a train and bus to school; please provide details of the journey to school. If you take more than one train and bus, please indicate all of these below. Please indicate the departure and arrival details for each station/stop. (e.g. if you take the Western and Eastern Suburbs lines, then a 400 bus indicate the station you originally get on, transferred to and finally off from, as well as the bus stop you got on and off from. Also indicate the departure times from the stations/stop you get on.)

Answered: 78 Skipped: 503

Answer Choices	Responses	
Train departure station(s)	**24.36%**	19
Train line(s)	**24.36%**	19
Train departure time(s)	**24.36%**	19
Train arrival station	**24.36%**	19
Bus departure stop(s)	**97.44%**	76
Bus route number(s)	**98.72%**	77
Bus departure time(s)	**97.44%**	76
Bus arrival stop	**97.44%**	76

Q13 On a typical day, how are you most likely to travel home/depart from work?

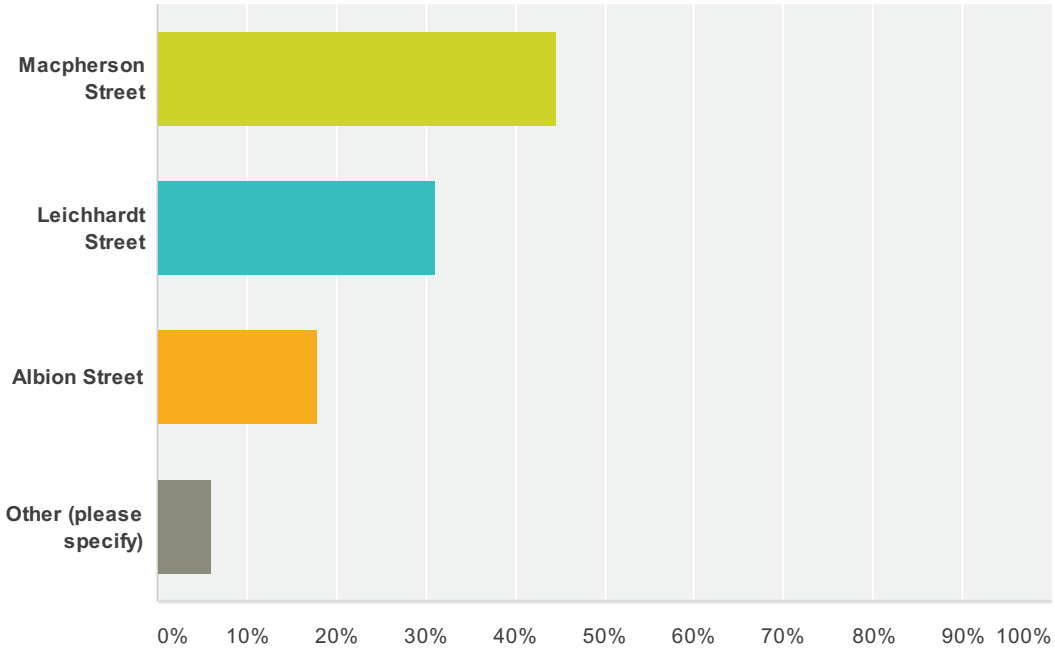
Answered: 552 Skipped: 29



Answer Choices	Responses	
School bus	**6.52%**	36
Private motor vehicle (Dropped-off)	**48.19%**	266
Motorbike	**0.00%**	0
Ride-share (private motor vehicle)	**1.63%**	9
Walked only	**24.28%**	134
Bicycle	**0.00%**	0
Public transport (bus and or train)	**19.02%**	105
Other	**0.36%**	2
Total		**552**

Q14 When you get picked up in the afternoon by a private motor vehicle, where are you most likely to get picked up?

Answered: 266 Skipped: 315



Answer Choices	Responses	
Macpherson Street	**44.74%**	119
Leichhardt Street	**31.20%**	83
Albion Street	**18.05%**	48
Other (please specify)	**6.02%**	16
Total		**266**

Q15 If you ride share home from work, how many other St. Catherine's School staff share the car?

Answered: 9 Skipped: 572

Q16 What is the primary reason you were taken by a private vehicle from school? i.e. If you do not walk home, cycle home, take the school bus home or take public transport home after school, what is the main reason for this?

Answered: 47 Skipped: 534

Q17 If you take public transport home from work, please provide details of the trip home including: - Location of bus stop(s) (departure and arrival) - Bus route number(s) - Time(s) and/or - Train station(s) (departure and arrival) - Train route(s) - Time(s)

Answered: 105 Skipped: 476

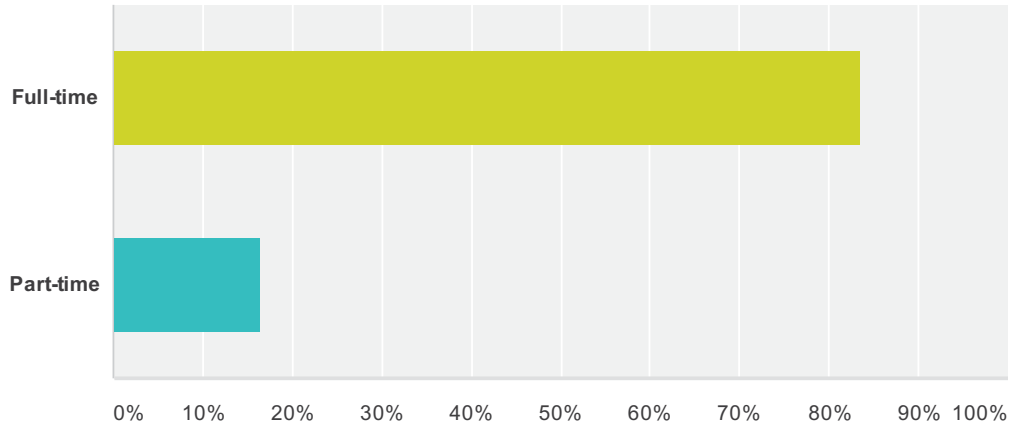
Q18 Do you or your parents have any suggestions to help reduce traffic congestion in and around St. Catherine's School in the morning or afternoon?

Answered: 318 Skipped: 263

St Catherine's School Travel Survey (for Staff)

Q1 Do you work full-time or part-time at St. Catherine's School?

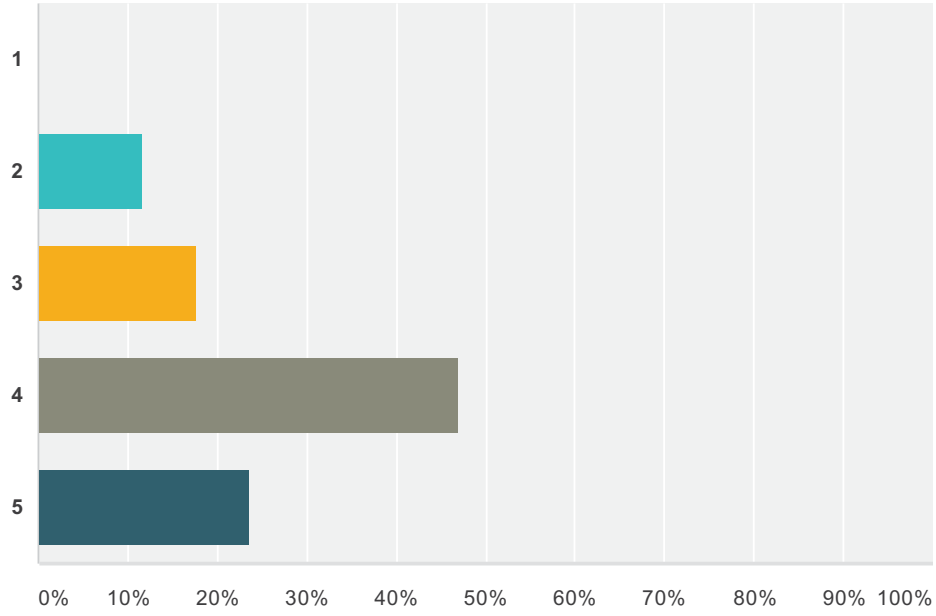
Answered: 103 Skipped: 0



Answer Choices	Responses	
Full-time	**83.50%**	86
Part-time	**16.50%**	17
Total		**103**

Q2 How many days per week do you attend St. Catherine's School for work purposes?

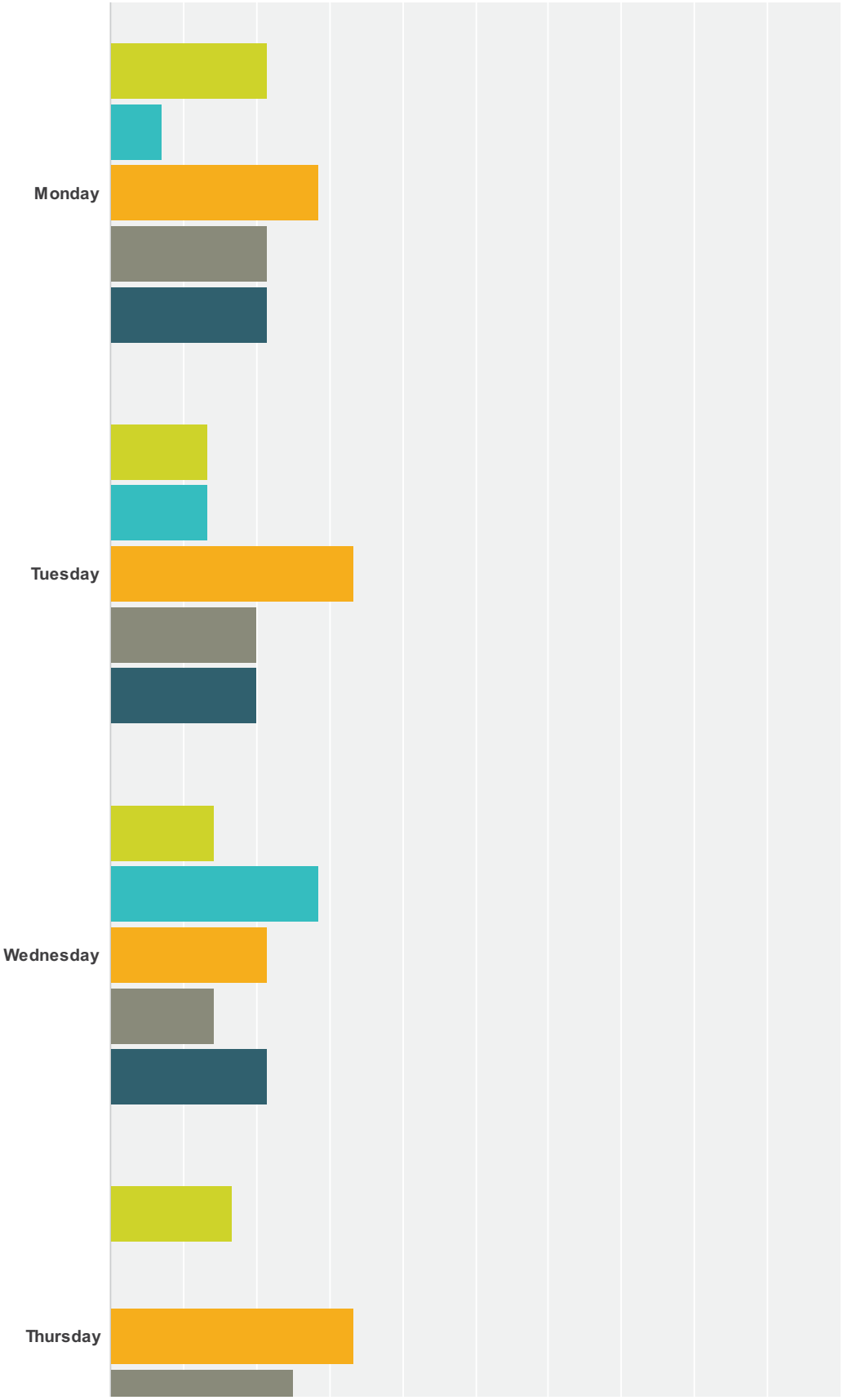
Answered: 17 Skipped: 86

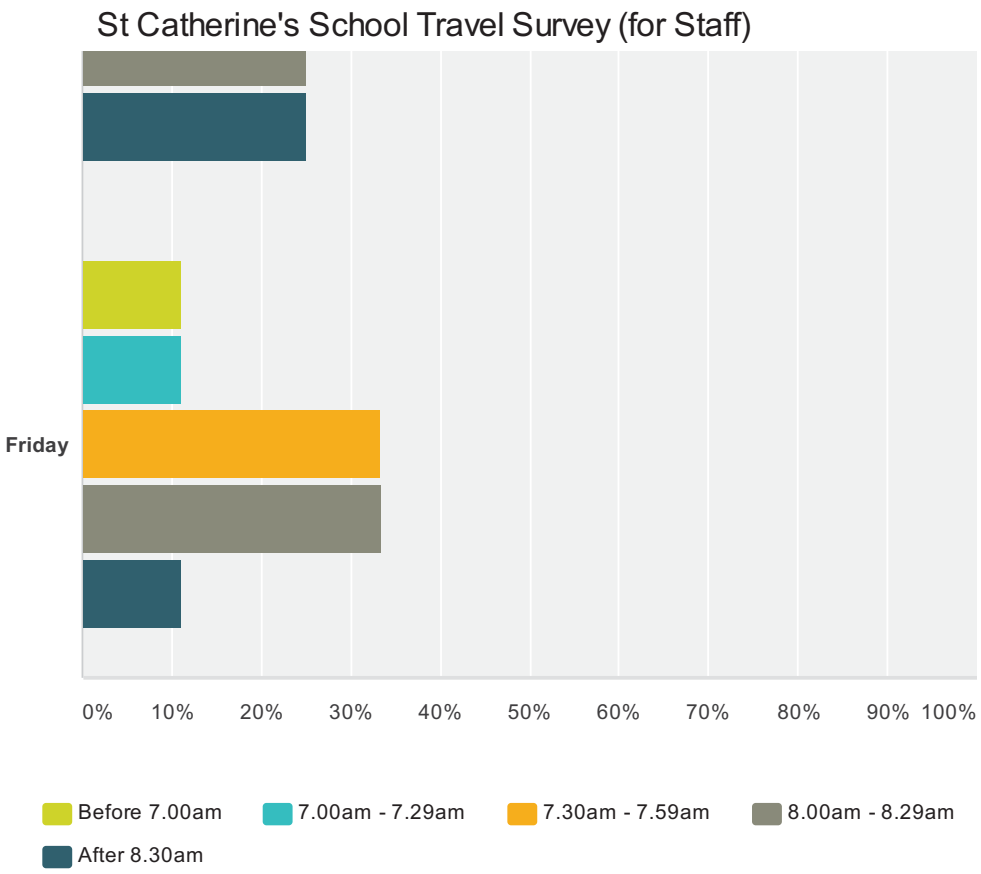


Answer Choices	Responses	
1	**0.00%**	0
2	**11.76%**	2
3	**17.65%**	3
4	**47.06%**	8
5	**23.53%**	4
Total		**17**

Q3 What days and times do you arrive/attend the school?

Answered: 17 Skipped: 86

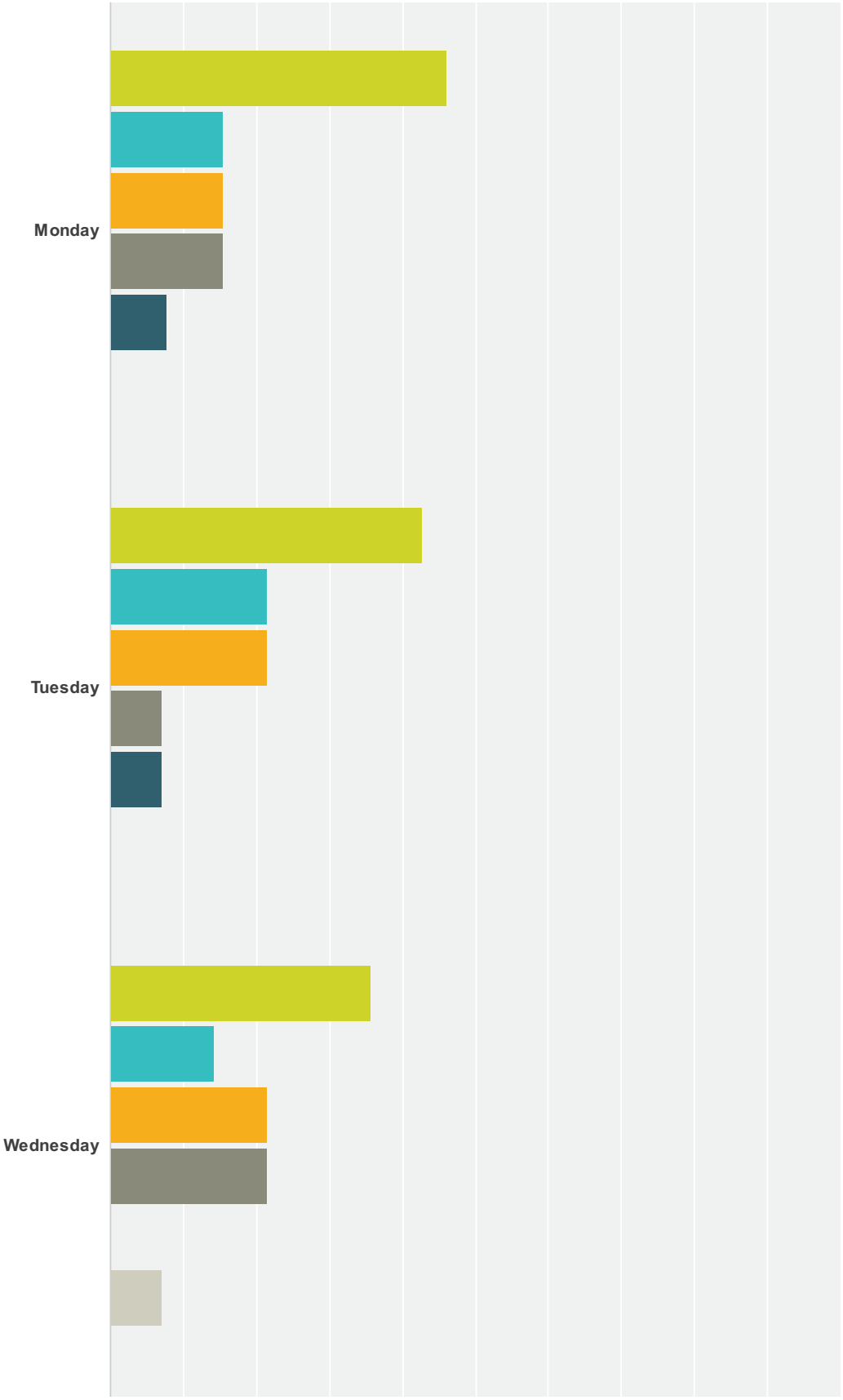


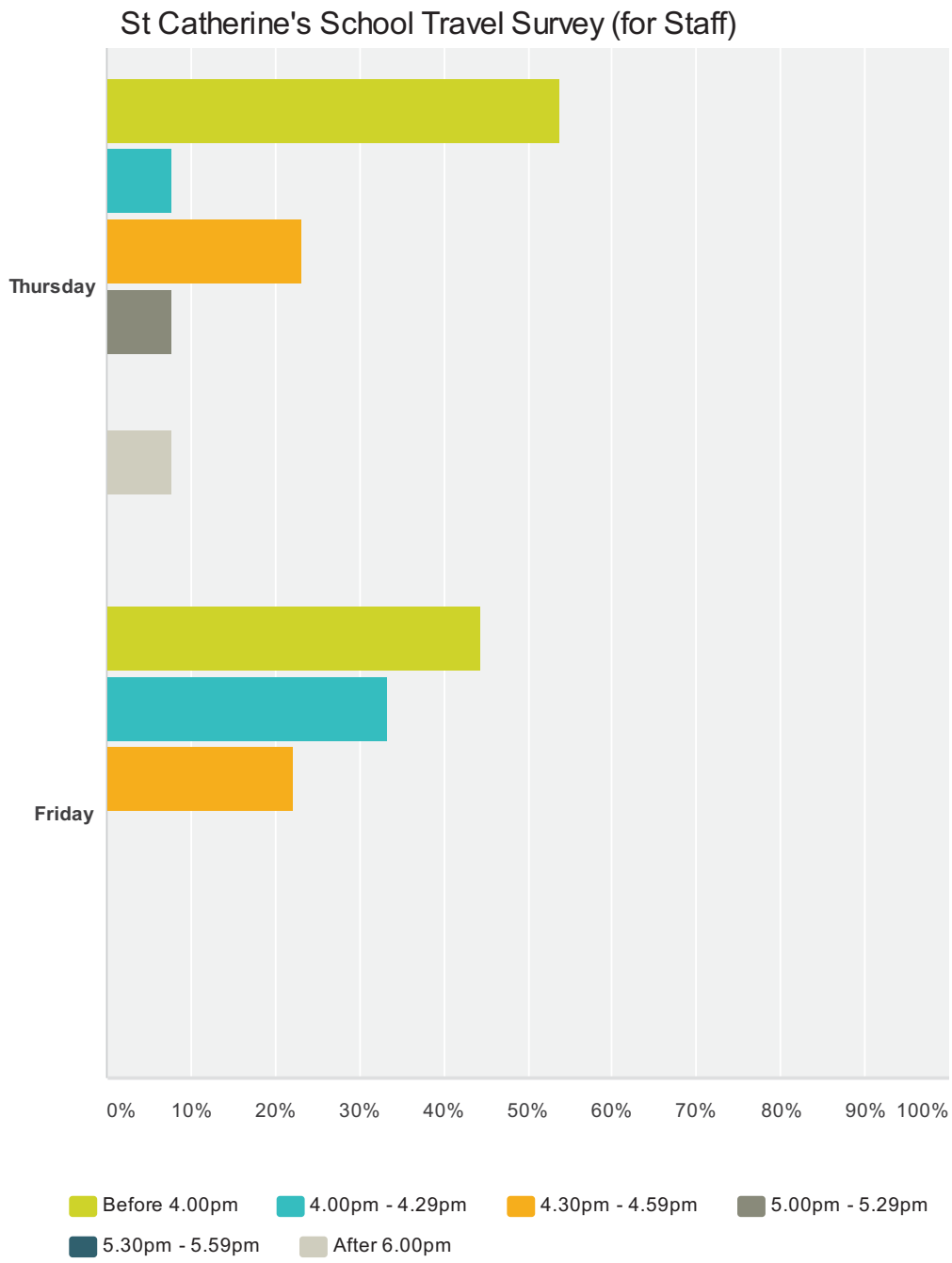


	Before 7.00am	7.00am - 7.29am	7.30am - 7.59am	8.00am - 8.29am	After 8.30am	Total
Monday	**21.43%** 3	**7.14%** 1	**28.57%** 4	**21.43%** 3	**21.43%** 3	14
Tuesday	**13.33%** 2	**13.33%** 2	**33.33%** 5	**20.00%** 3	**20.00%** 3	15
Wednesday	**14.29%** 2	**28.57%** 4	**21.43%** 3	**14.29%** 2	**21.43%** 3	14
Thursday	**16.67%** 2	**0.00%** 0	**33.33%** 4	**25.00%** 3	**25.00%** 3	12
Friday	**11.11%** 1	**11.11%** 1	**33.33%** 3	**33.33%** 3	**11.11%** 1	9

Q4 What days and times do you depart from the school?

Answered: 17 Skipped: 86

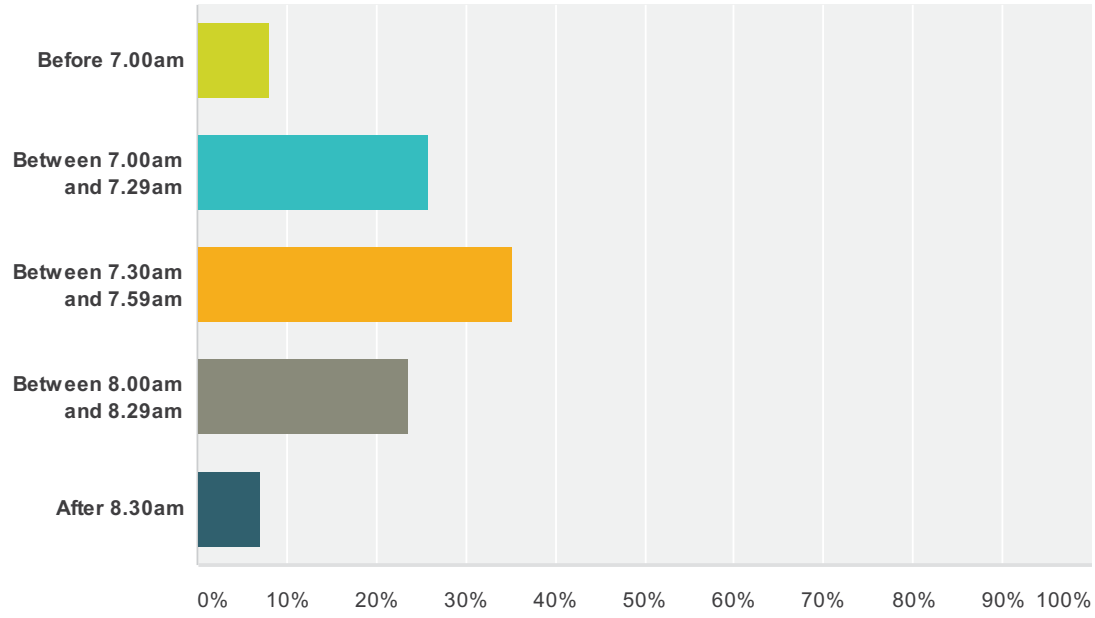




	Before 4.00pm	4.00pm - 4.29pm	4.30pm - 4.59pm	5.00pm - 5.29pm	5.30pm - 5.59pm	After 6.00pm	Total
Monday	**46.15%** 6	**15.38%** 2	**15.38%** 2	**15.38%** 2	**7.69%** 1	**0.00%** 0	13
Tuesday	**42.86%** 6	**21.43%** 3	**21.43%** 3	**7.14%** 1	**7.14%** 1	**0.00%** 0	14
Wednesday	**35.71%** 5	**14.29%** 2	**21.43%** 3	**21.43%** 3	**0.00%** 0	**7.14%** 1	14
Thursday	**53.85%** 7	**7.69%** 1	**23.08%** 3	**7.69%** 1	**0.00%** 0	**7.69%** 1	13
Friday	**44.44%** 4	**33.33%** 3	**22.22%** 2	**0.00%** 0	**0.00%** 0	**0.00%** 0	9

Q5 What time do you typically arrive at work?

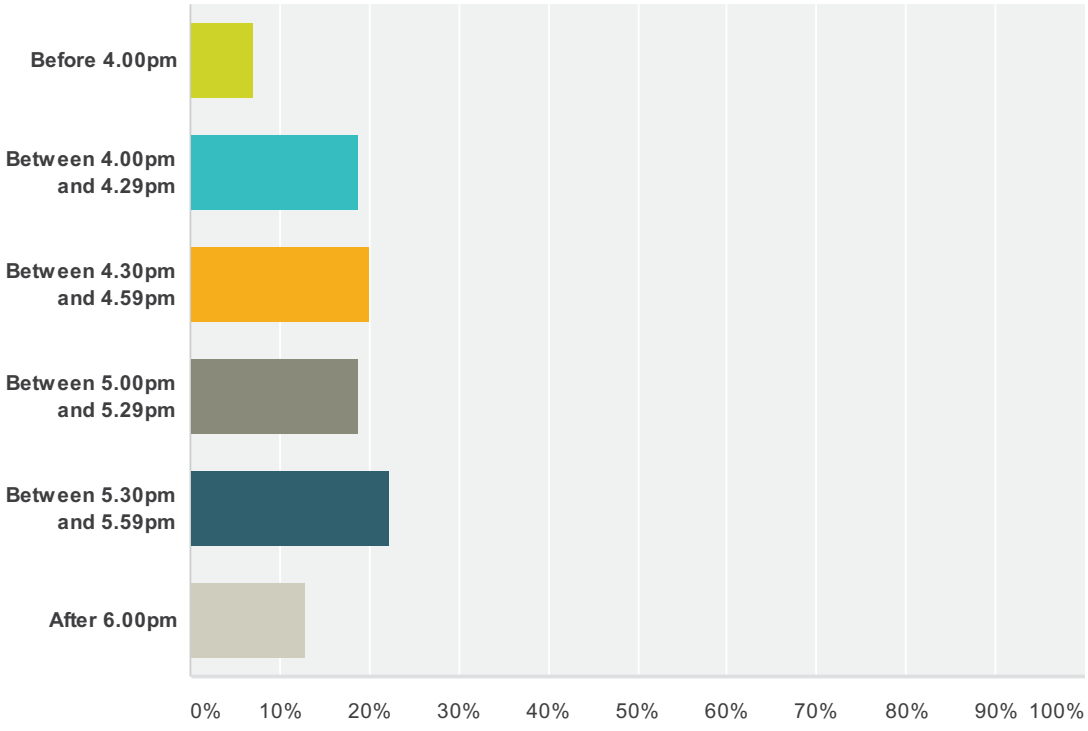
Answered: 85 Skipped: 18



Answer Choices	Responses	
Before 7.00am	**8.24%**	7
Between 7.00am and 7.29am	**25.88%**	22
Between 7.30am and 7.59am	**35.29%**	30
Between 8.00am and 8.29am	**23.53%**	20
After 8.30am	**7.06%**	6
Total		**85**

Q6 What time do you typically leave work?

Answered: 85 Skipped: 18



Answer Choices	Responses	
Before 4.00pm	**7.06%**	6
Between 4.00pm and 4.29pm	**18.82%**	16
Between 4.30pm and 4.59pm	**20.00%**	17
Between 5.00pm and 5.29pm	**18.82%**	16
Between 5.30pm and 5.59pm	**22.35%**	19
After 6.00pm	**12.94%**	11
Total		**85**

Q7 What postcode are you most likely to travel to school from in the morning? (This may be the postcode in which you live)

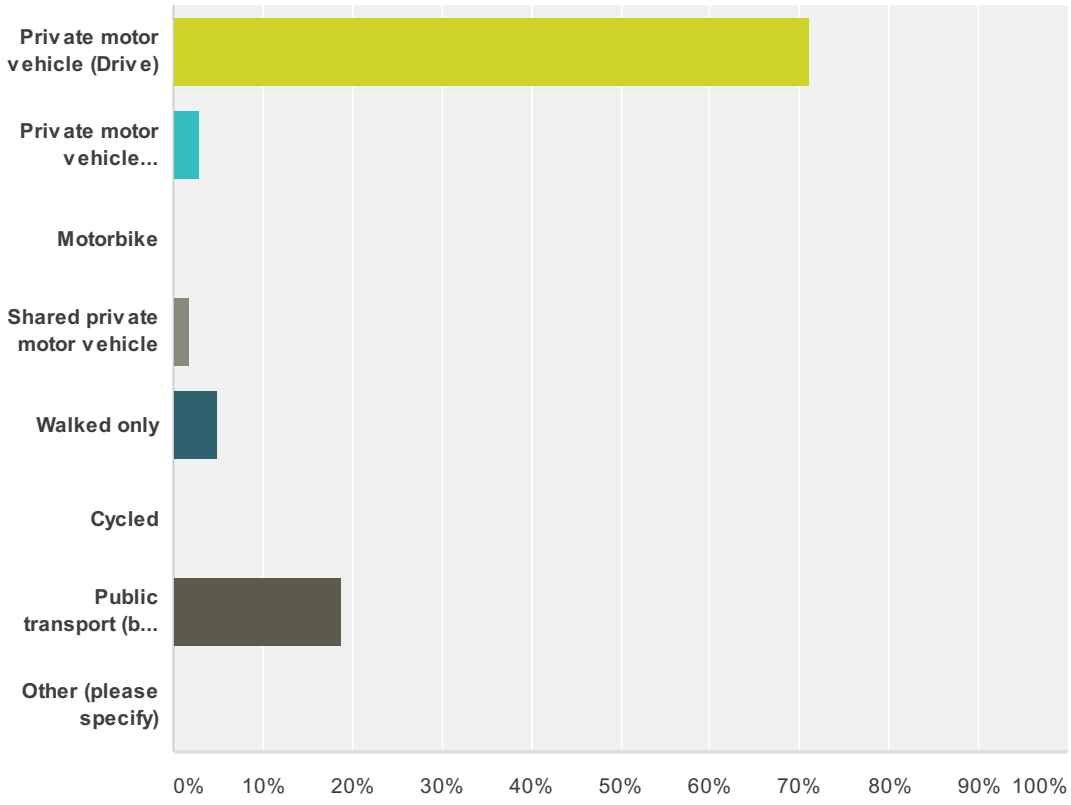
Answered: 84 Skipped: 19

Q8 What postcode are you most likely to travel to from school in the afternoon? (This may be the postcode in which you live)

Answered: 84 Skipped: 19

Q9 On a typical day, how are you most likely to arrive / travel to work?

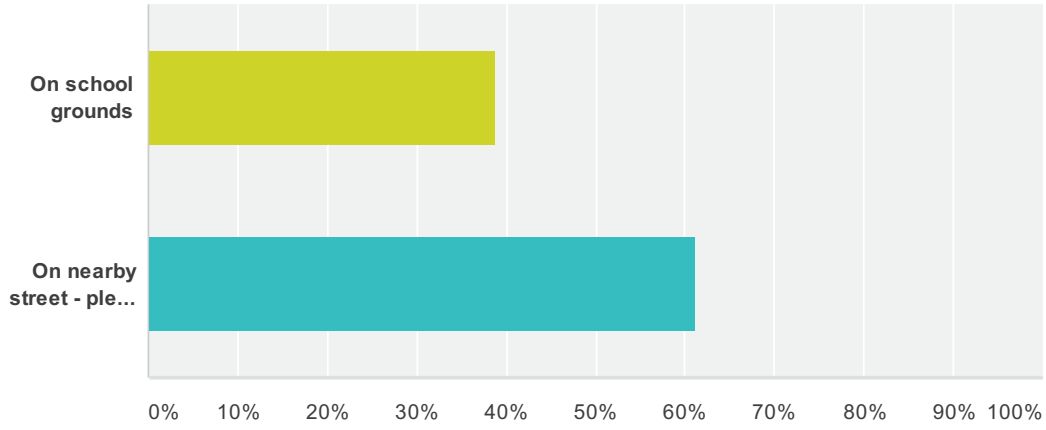
Answered: 101 Skipped: 2



Answer Choices	Responses	
Private motor vehicle (Drive)	**71.29%**	72
Private motor vehicle (Dropped-off)	**2.97%**	3
Motorbike	**0.00%**	0
Shared private motor vehicle	**1.98%**	2
Walked only	**4.95%**	5
Cycled	**0.00%**	0
Public transport (bus and or train)	**18.81%**	19
Other (please specify)	**0.00%**	0
Total		**101**

Q10 Where are you most likely to park?

Answered: 72 Skipped: 31



Answer Choices	Responses	
On school grounds	**38.89%**	28
On nearby street - please specify	**61.11%**	44
Total		**72**

Q11 You indicated that you ride share to work, how many other St. Catherine's School staff share the car?

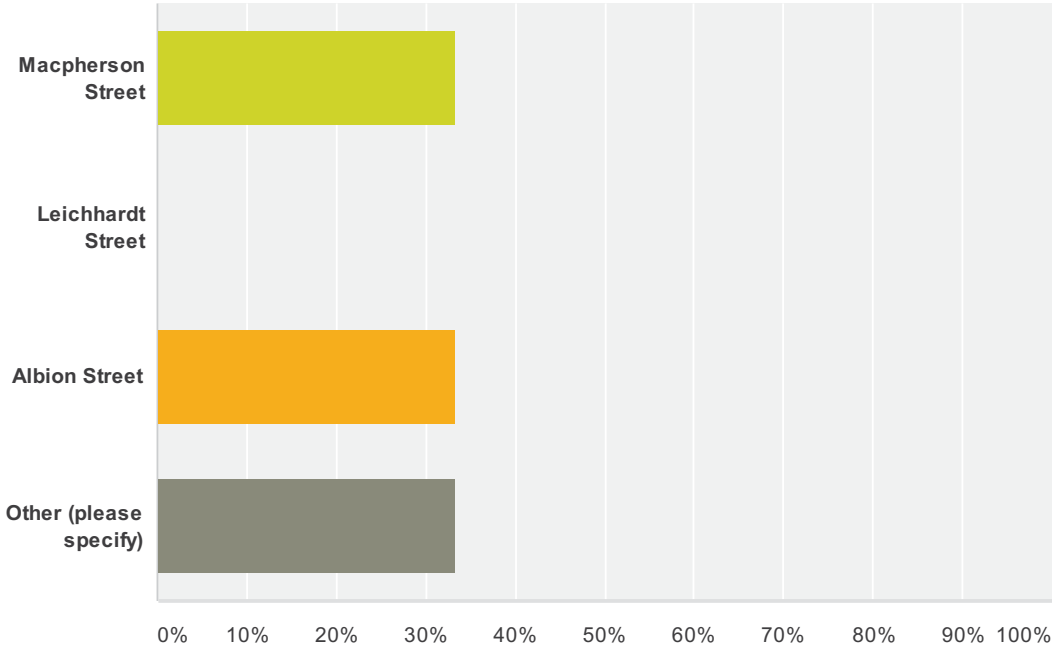
Answered: 2 Skipped: 101

Q12 What is the primary reason you drive/ride a private vehicle to work?

Answered: 74 Skipped: 29

Q13 When you get dropped off in the morning by a private motor vehicle, where are you most likely to get dropped off?

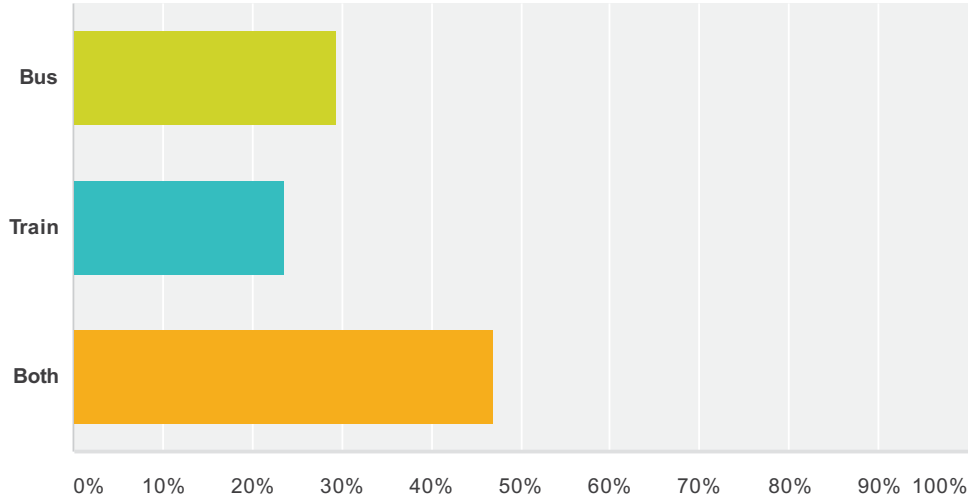
Answered: 3 Skipped: 100



Answer Choices	Responses	
Macpherson Street	33.33%	1
Leichhardt Street	0.00%	0
Albion Street	33.33%	1
Other (please specify)	33.33%	1
Total		3

Q14 Do you take a bus or train to work in the morning? (Please indicate if you take both)

Answered: 17 Skipped: 86



Answer Choices	Responses	
Bus	**29.41%**	5
Train	**23.53%**	4
Both	**47.06%**	8
Total		**17**

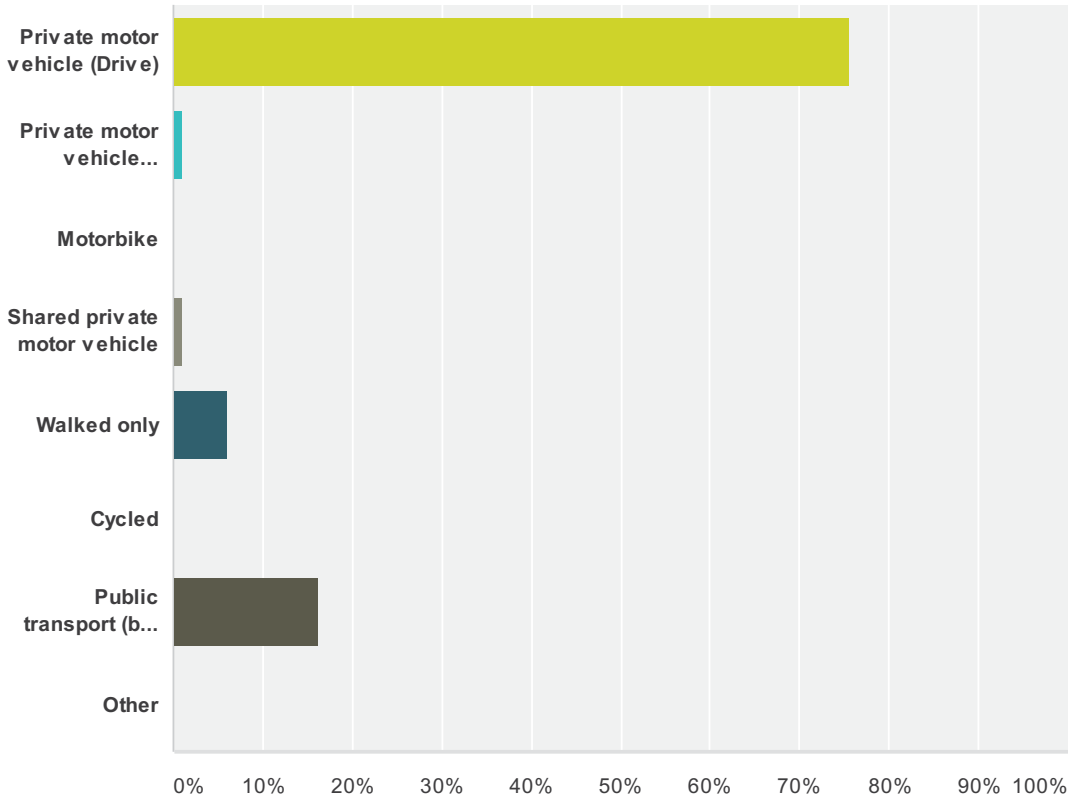
Q15 Please provide details of the bus and/or train journey to work. If you take more than one train and bus, please indicate all of these below. Please indicate the departure and arrival details for each station/stop. (e.g. if you take the Western and Eastern Suburbs lines, then a 400 bus indicate the station you originally get on, transferred to and finally off from, as well as the bus stop you got on and off from. Also indicate the departure times from the stations/stop you get on.)

Answered: 17 Skipped: 86

Answer Choices	Responses	
Train departure station(s)	**70.59%**	12
Train line(s)	**64.71%**	11
Train departure time(s)	**52.94%**	9
Train arrival station	**64.71%**	11
Bus departure stop(s)	**88.24%**	15
Bus route number(s)	**94.12%**	16
Bus departure time(s)	**76.47%**	13
Bus arrival stop	**88.24%**	15

Q16 On a typical day, how are you most likely to travel home/depart from work?

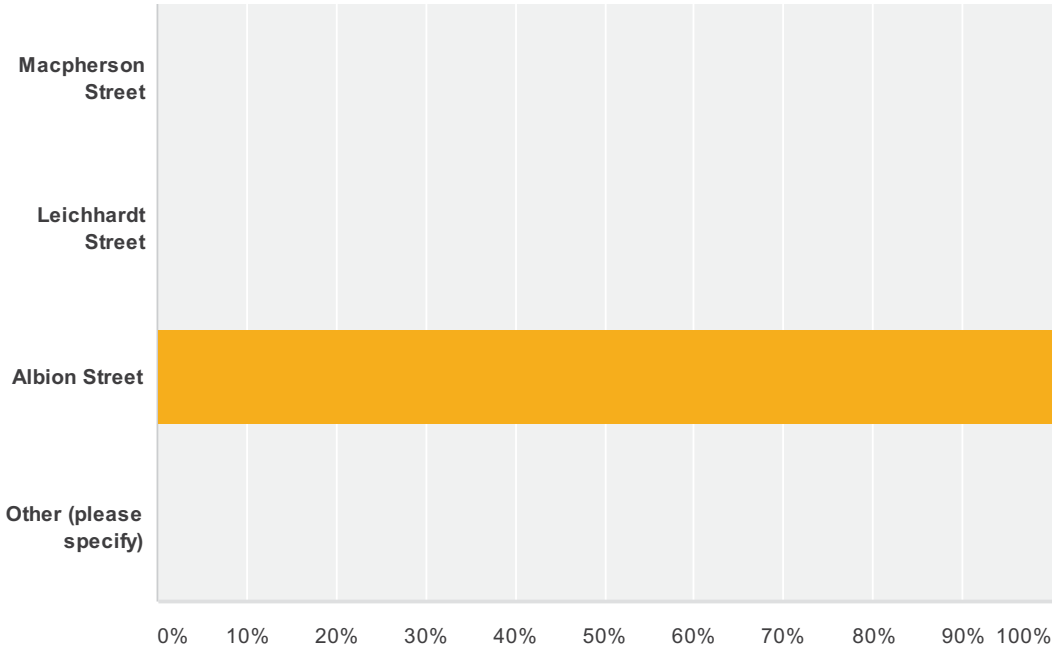
Answered: 98 Skipped: 5



Answer Choices	Responses	
Private motor vehicle (Drive)	**75.51%**	74
Private motor vehicle (Dropped-off)	**1.02%**	1
Motorbike	**0.00%**	0
Shared private motor vehicle	**1.02%**	1
Walked only	**6.12%**	6
Cycled	**0.00%**	0
Public transport (bus and or train)	**16.33%**	16
Other	**0.00%**	0
Total		**98**

Q17 When you get picked up in the afternoon by a private motor vehicle, where are you most likely to get picked up?

Answered: 1 Skipped: 102



Answer Choices	Responses	
Macpherson Street	**0.00%**	0
Leichhardt Street	**0.00%**	0
Albion Street	**100.00%**	1
Other (please specify)	**0.00%**	0
Total		**1**

Q18 If you ride share home from work, how many other St. Catherine's School staff share the car?

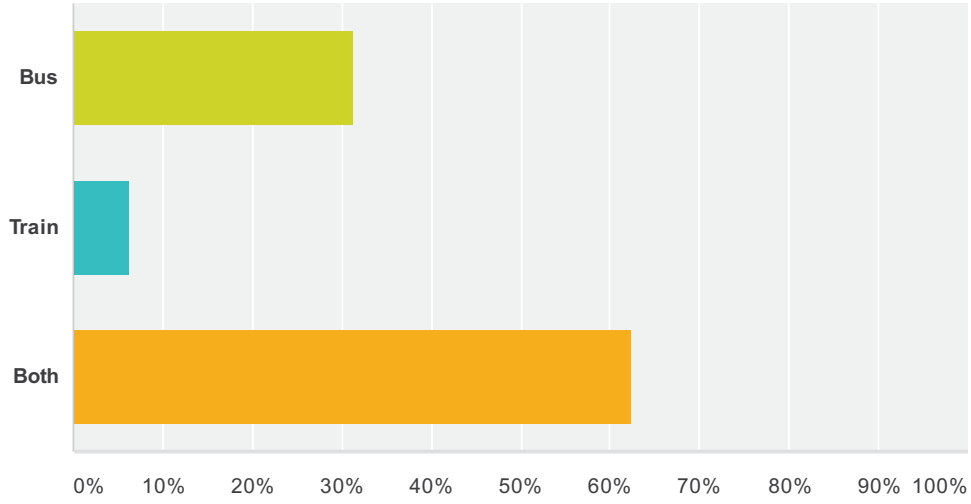
Answered: 1 Skipped: 102

Q19 What is the primary reason you drive/ride a private vehicle from work? (please indicate if same reason as you drive/ride to work)

Answered: 75 Skipped: 28

Q20 Do you take a bus or train from work in the afternoon? (Please indicate if you take both)

Answered: 16 Skipped: 87



Answer Choices	Responses	
Bus	**31.25%**	5
Train	**6.25%**	1
Both	**62.50%**	10
Total		**16**

Q21 Please provide details of the bus and/or train journey from work. If you take more than one train and bus, please indicate all of these below. Please indicate the departure and arrival details for each station/stop. (e.g. if you take the Western and Eastern Suburbs lines, then a 400 bus indicate the station you originally get on, transferred to and finally off from, as well as the bus stop you got on and off from. Also indicate the departure times from the stations/stop you get on.)

Answered: 16 Skipped: 87

Answer Choices	Responses	
Train departure station(s)	**68.75%**	11
Train line(s)	**68.75%**	11
Train departure time(s)	**56.25%**	9
Train arrival station	**68.75%**	11
Bus departure stop(s)	**87.50%**	14
Bus route number(s)	**87.50%**	14
Bus departure time(s)	**75.00%**	12
Bus arrival stop	**87.50%**	14

Q22 Do you have any suggestions to help reduce traffic congestion in and around St. Catherine's School in the morning or afternoon?

Answered: 55 Skipped: 48

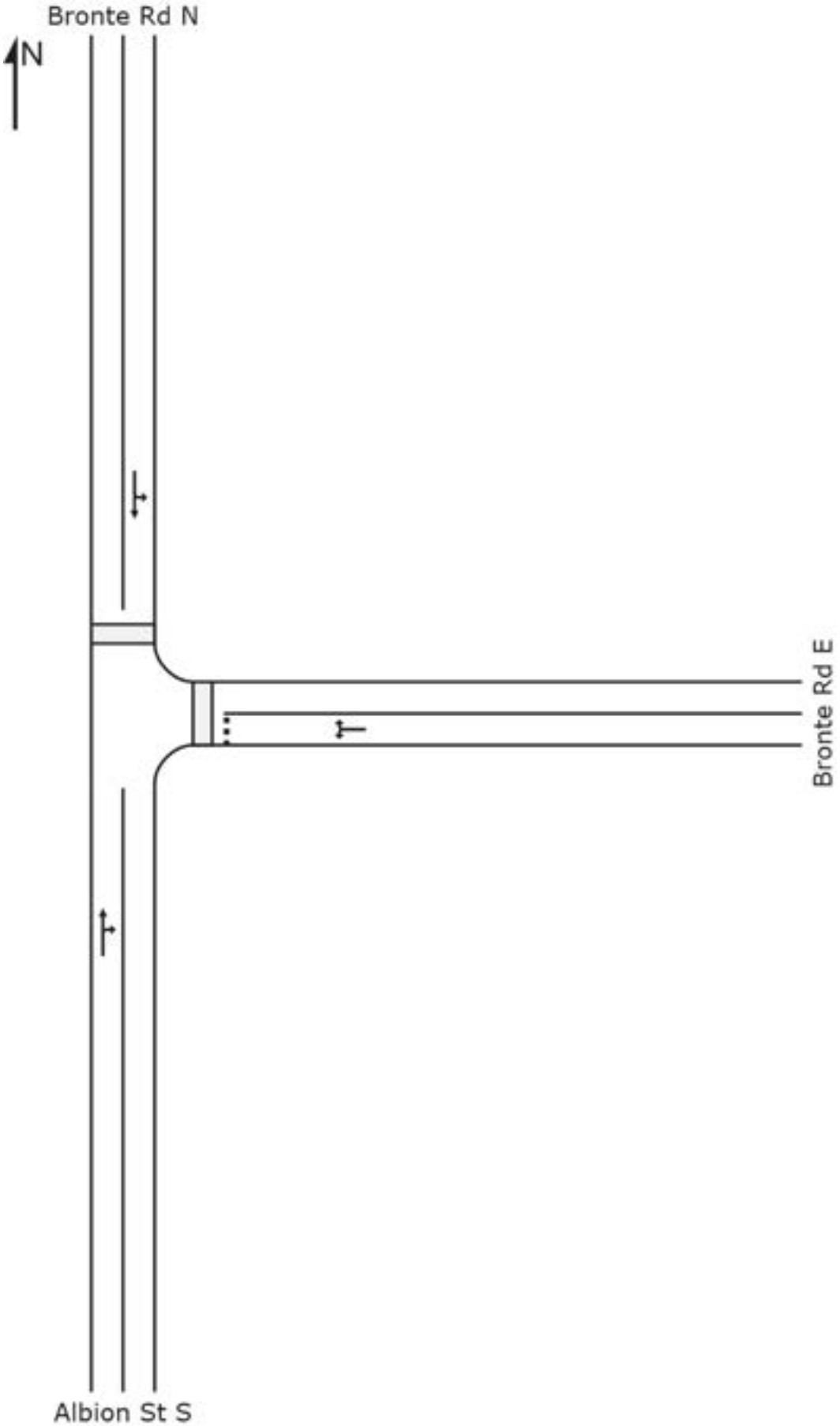
Appendix C

SIDRA results

SITE LAYOUT

Site: AM Existing

Albion St / Bronte Rd
Giveway / Yield (Two-Way)



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MOVEMENT SUMMARY

Site: AM Existing

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
2	T1	325	34.0	0.599	5.1	LOS A	5.8	48.3	0.56	0.74	53.2
3	R2	217	3.0	0.599	10.6	LOS A	5.8	48.3	0.56	0.74	51.2
Approach		542	21.6	0.599	7.3	NA	5.8	48.3	0.56	0.74	52.4
East: Bronte Rd E											
4	L2	126	0.0	0.281	7.8	LOS A	1.0	7.3	0.44	0.75	51.9
6	R2	167	2.0	0.281	7.7	LOS A	1.0	7.3	0.44	0.75	51.4
Approach		294	1.1	0.281	7.7	LOS A	1.0	7.3	0.44	0.75	51.6
North: Bronte Rd N											
7	L2	248	8.0	0.619	10.0	LOS A	6.4	54.6	0.59	0.73	51.8
8	T1	297	38.0	0.619	4.4	LOS A	6.4	54.6	0.59	0.73	53.4
Approach		545	24.3	0.619	7.0	NA	6.4	54.6	0.59	0.73	52.7
All Vehicles		1381	18.3	0.619	7.3	NA	6.4	54.6	0.55	0.74	52.3

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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MOVEMENT SUMMARY

Site: AM Future

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
2	T1	373	34.0	0.662	6.0	LOS A	7.5	62.6	0.59	0.80	52.6
3	R2	217	3.0	0.662	11.5	LOS A	7.5	62.6	0.59	0.80	50.7
Approach		589	22.6	0.662	8.1	NA	7.5	62.6	0.59	0.80	51.9
East: Bronte Rd E											
4	L2	126	0.0	0.298	8.0	LOS A	1.1	7.9	0.46	0.76	51.8
6	R2	172	2.0	0.298	8.0	LOS A	1.1	7.9	0.46	0.76	51.2
Approach		298	1.2	0.298	8.0	LOS A	1.1	7.9	0.46	0.76	51.4
North: Bronte Rd N											
7	L2	253	8.0	0.635	10.3	LOS A	6.9	58.6	0.60	0.74	51.7
8	T1	306	38.0	0.635	4.6	LOS A	6.9	58.6	0.60	0.74	53.3
Approach		559	24.4	0.635	7.2	NA	6.9	58.6	0.60	0.74	52.5
All Vehicles		1446	18.9	0.662	7.7	NA	7.5	62.6	0.57	0.77	52.0

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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MOVEMENT SUMMARY

Site: PM Existing

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
2	T1	289	34.0	0.555	5.3	LOS A	4.7	38.9	0.53	0.69	53.1
3	R2	169	3.0	0.555	10.8	LOS A	4.7	38.9	0.53	0.69	51.2
Approach		459	22.6	0.555	7.4	NA	4.7	38.9	0.53	0.69	52.4
East: Bronte Rd E											
4	L2	105	0.0	0.256	8.1	LOS A	0.9	6.5	0.50	0.79	51.7
6	R2	143	4.0	0.256	8.0	LOS A	0.9	6.5	0.50	0.79	51.1
Approach		248	2.3	0.256	8.0	LOS A	0.9	6.5	0.50	0.79	51.4
North: Bronte Rd N											
7	L2	265	2.0	0.759	12.9	LOS A	11.7	101.4	0.73	0.97	49.9
8	T1	379	45.0	0.759	7.4	LOS A	11.7	101.4	0.73	0.97	51.2
Approach		644	27.3	0.759	9.7	NA	11.7	101.4	0.73	0.97	50.7
All Vehicles		1352	21.1	0.759	8.6	NA	11.7	101.4	0.62	0.84	51.4

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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MOVEMENT SUMMARY

Site: PM Future

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
2	T1	327	34.0	0.606	6.0	LOS A	5.7	47.9	0.55	0.73	52.7
3	R2	169	3.0	0.606	11.5	LOS A	5.7	47.9	0.55	0.73	50.9
Approach		497	23.4	0.606	7.9	NA	5.7	47.9	0.55	0.73	52.1
East: Bronte Rd E											
4	L2	105	0.0	0.269	8.2	LOS A	1.0	6.9	0.52	0.80	51.6
6	R2	148	4.0	0.269	8.2	LOS A	1.0	6.9	0.52	0.80	50.9
Approach		254	2.3	0.269	8.2	LOS A	1.0	6.9	0.52	0.80	51.2
North: Bronte Rd N											
7	L2	271	2.0	0.771	13.3	LOS A	12.4	107.3	0.75	1.00	49.7
8	T1	384	45.0	0.771	7.7	LOS A	12.4	107.3	0.75	1.00	50.9
Approach		655	27.2	0.771	10.0	NA	12.4	107.3	0.75	1.00	50.4
All Vehicles		1405	21.4	0.771	8.9	NA	12.4	107.3	0.63	0.87	51.1

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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MOVEMENT SUMMARY

Site: WE Existing

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Albion St S											
2	T1	368	19.0	0.678	7.1	LOS A	7.4	57.9	0.60	0.84	52.0
3	R2	208	2.0	0.678	12.6	LOS A	7.4	57.9	0.60	0.84	50.2
Approach		577	12.9	0.678	9.1	NA	7.4	57.9	0.60	0.84	51.3
East: Bronte Rd E											
4	L2	58	0.0	0.212	8.2	LOS A	0.7	4.7	0.53	0.79	51.6
6	R2	134	2.0	0.212	8.1	LOS A	0.7	4.7	0.53	0.79	51.0
Approach		192	1.4	0.212	8.2	LOS A	0.7	4.7	0.53	0.79	51.2
North: Bronte Rd N											
7	L2	289	6.0	0.792	13.9	LOS A	13.4	107.8	0.77	1.06	49.5
8	T1	405	25.0	0.792	8.3	LOS A	13.4	107.8	0.77	1.06	50.9
Approach		695	17.1	0.792	10.6	NA	13.4	107.8	0.77	1.06	50.3
All Vehicles		1463	13.4	0.792	9.7	NA	13.4	107.8	0.67	0.94	50.8

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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MOVEMENT SUMMARY

Site: WE Future

Albion St / Bronte Rd
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Albion St S											
2	T1	373	19.0	0.685	7.3	LOS A	7.6	59.5	0.60	0.85	51.9
3	R2	208	2.0	0.685	12.8	LOS A	7.6	59.5	0.60	0.85	50.1
Approach		581	12.9	0.685	9.2	NA	7.6	59.5	0.60	0.85	51.2
East: Bronte Rd E											
4	L2	58	0.0	0.214	8.3	LOS A	0.7	4.8	0.53	0.80	51.6
6	R2	134	2.0	0.214	8.2	LOS A	0.7	4.8	0.53	0.80	51.0
Approach		192	1.4	0.214	8.2	LOS A	0.7	4.8	0.53	0.80	51.2
North: Bronte Rd N											
7	L2	289	6.0	0.797	14.1	LOS A	13.8	110.6	0.78	1.08	49.4
8	T1	409	25.0	0.797	8.4	LOS A	13.8	110.6	0.78	1.08	50.8
Approach		699	17.1	0.797	10.8	NA	13.8	110.6	0.78	1.08	50.2
All Vehicles		1472	13.4	0.797	9.8	NA	13.8	110.6	0.68	0.95	50.7

Level of Service (LOS) Method: Delay (RTA NSW).
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.

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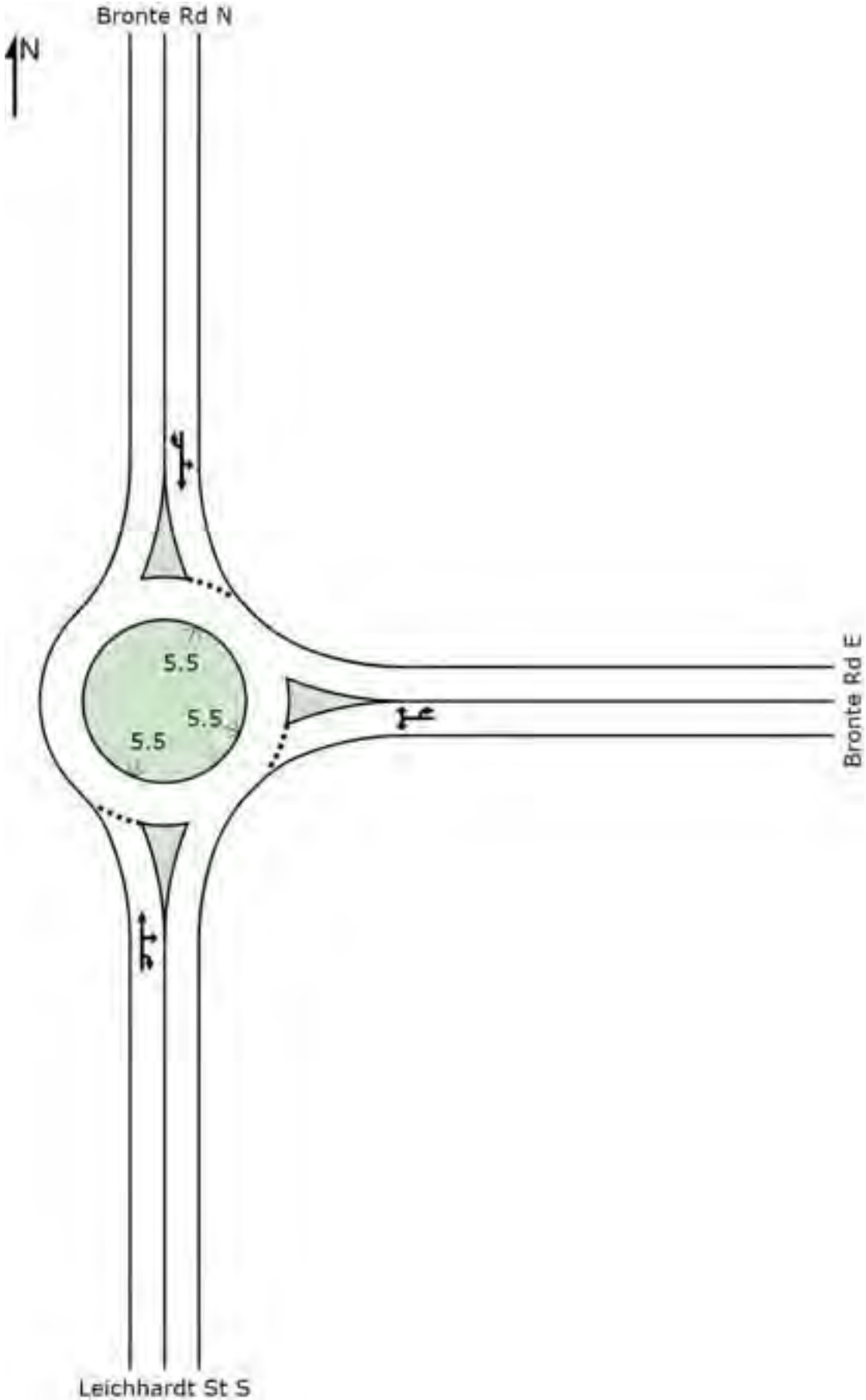
SITE LAYOUT

Site: AM Existing

Leichhardt St / Bronte Rd
Roundabout



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MOVEMENT SUMMARY

Site: AM Existing

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	192	1.0	0.579	6.1	LOS A	5.5	41.4	0.55	0.63	50.3
3	R2	451	13.0	0.579	8.9	LOS A	5.5	41.4	0.55	0.63	47.5
3u	U	24	0.0	0.579	10.1	LOS A	5.5	41.4	0.55	0.63	48.7
Approach		666	9.1	0.579	8.1	LOS A	5.5	41.4	0.55	0.63	48.4
East: Bronte Rd E											
4	L2	607	10.0	0.684	8.1	LOS A	7.5	56.2	0.74	0.70	47.4
6	R2	107	1.0	0.684	10.1	LOS A	7.5	56.2	0.74	0.70	49.9
6u	U	6	0.0	0.684	11.5	LOS A	7.5	56.2	0.74	0.70	48.7
Approach		721	8.6	0.684	8.5	LOS A	7.5	56.2	0.74	0.70	47.8
North: Bronte Rd N											
7	L2	119	6.0	0.387	9.5	LOS A	2.5	18.3	0.74	0.81	48.7
8	T1	154	3.0	0.387	8.9	LOS A	2.5	18.3	0.74	0.81	49.6
9u	U	14	0.0	0.387	12.8	LOS A	2.5	18.3	0.74	0.81	51.0
Approach		286	4.1	0.387	9.3	LOS A	2.5	18.3	0.74	0.81	49.3
All Vehicles		1674	8.0	0.684	8.5	LOS A	7.5	56.2	0.66	0.69	48.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: AM Future

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	196	1.0	0.599	6.2	LOS A	5.9	44.5	0.57	0.63	50.2
3	R2	458	13.0	0.599	8.9	LOS A	5.9	44.5	0.57	0.63	47.4
3u	U	38	0.0	0.599	10.1	LOS A	5.9	44.5	0.57	0.63	48.6
Approach		692	8.9	0.599	8.2	LOS A	5.9	44.5	0.57	0.63	48.4
East: Bronte Rd E											
4	L2	607	10.0	0.700	8.8	LOS A	8.1	60.8	0.77	0.73	46.8
6	R2	107	1.0	0.700	10.8	LOS A	8.1	60.8	0.77	0.73	49.4
6u	U	6	0.0	0.700	12.2	LOS A	8.1	60.8	0.77	0.73	48.1
Approach		721	8.6	0.700	9.2	LOS A	8.1	60.8	0.77	0.73	47.2
North: Bronte Rd N											
7	L2	119	6.0	0.403	9.7	LOS A	2.7	19.2	0.76	0.83	48.5
8	T1	158	3.0	0.403	9.1	LOS A	2.7	19.2	0.76	0.83	49.4
9u	U	14	0.0	0.403	13.1	LOS A	2.7	19.2	0.76	0.83	50.8
Approach		291	4.1	0.403	9.6	LOS A	2.7	19.2	0.76	0.83	49.1
All Vehicles		1703	7.9	0.700	8.8	LOS A	8.1	60.8	0.69	0.70	48.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: PM Existing

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	162	3.0	0.517	5.7	LOS A	4.7	34.2	0.45	0.61	50.4
3	R2	449	6.0	0.517	8.3	LOS A	4.7	34.2	0.45	0.61	48.1
3u	U	26	0.0	0.517	9.6	LOS A	4.7	34.2	0.45	0.61	48.9
Approach		638	5.0	0.517	7.7	LOS A	4.7	34.2	0.45	0.61	48.8
East: Bronte Rd E											
4	L2	569	13.0	0.650	8.2	LOS A	6.6	50.4	0.72	0.71	47.3
6	R2	83	1.0	0.650	10.1	LOS A	6.6	50.4	0.72	0.71	49.9
6u	U	7	0.0	0.650	11.5	LOS A	6.6	50.4	0.72	0.71	48.7
Approach		660	11.3	0.650	8.5	LOS A	6.6	50.4	0.72	0.71	47.7
North: Bronte Rd N											
7	L2	144	2.0	0.418	9.3	LOS A	2.8	19.4	0.73	0.81	49.0
8	T1	175	0.0	0.418	8.8	LOS A	2.8	19.4	0.73	0.81	49.9
9u	U	6	0.0	0.418	12.7	LOS A	2.8	19.4	0.73	0.81	51.1
Approach		325	0.9	0.418	9.1	LOS A	2.8	19.4	0.73	0.81	49.5
All Vehicles		1623	6.8	0.650	8.3	LOS A	6.6	50.4	0.62	0.69	48.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: PM Future

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	167	3.0	0.533	5.7	LOS A	5.0	36.2	0.46	0.61	50.4
3	R2	455	6.0	0.533	8.4	LOS A	5.0	36.2	0.46	0.61	48.1
3u	U	37	0.0	0.533	9.7	LOS A	5.0	36.2	0.46	0.61	48.8
Approach		659	4.9	0.533	7.8	LOS A	5.0	36.2	0.46	0.61	48.8
East: Bronte Rd E											
4	L2	569	13.0	0.664	8.7	LOS A	7.0	53.8	0.75	0.73	46.8
6	R2	83	1.0	0.664	10.7	LOS A	7.0	53.8	0.75	0.73	49.5
6u	U	7	0.0	0.664	12.0	LOS A	7.0	53.8	0.75	0.73	48.2
Approach		660	11.3	0.664	9.0	LOS A	7.0	53.8	0.75	0.73	47.2
North: Bronte Rd N											
7	L2	144	2.0	0.431	9.7	LOS A	2.9	20.7	0.75	0.83	48.8
8	T1	180	0.0	0.431	9.1	LOS A	2.9	20.7	0.75	0.83	49.6
9u	U	6	0.0	0.431	13.1	LOS A	2.9	20.7	0.75	0.83	50.9
Approach		331	0.9	0.431	9.4	LOS A	2.9	20.7	0.75	0.83	49.3
All Vehicles		1649	6.7	0.664	8.6	LOS A	7.0	53.8	0.63	0.70	48.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: WE Existing

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	112	1.0	0.586	6.2	LOS A	5.7	41.9	0.57	0.64	50.1
3	R2	562	8.0	0.586	8.9	LOS A	5.7	41.9	0.57	0.64	47.5
3u	U	1	0.0	0.586	10.1	LOS A	5.7	41.9	0.57	0.64	48.4
Approach		675	6.8	0.586	8.4	LOS A	5.7	41.9	0.57	0.64	48.0
East: Bronte Rd E											
4	L2	579	10.0	0.688	8.6	LOS A	7.9	59.4	0.78	0.72	47.0
6	R2	106	0.0	0.688	10.5	LOS A	7.9	59.4	0.78	0.72	49.6
6u	U	17	0.0	0.688	11.9	LOS A	7.9	59.4	0.78	0.72	48.3
Approach		702	8.2	0.688	9.0	LOS A	7.9	59.4	0.78	0.72	47.4
North: Bronte Rd N											
7	L2	183	0.0	0.566	12.8	LOS A	5.0	35.0	0.87	0.99	46.5
8	T1	197	0.0	0.566	12.3	LOS A	5.0	35.0	0.87	0.99	47.1
9u	U	12	0.0	0.566	16.3	LOS B	5.0	35.0	0.87	0.99	48.6
Approach		392	0.0	0.566	12.7	LOS A	5.0	35.0	0.87	0.99	46.9
All Vehicles		1768	5.9	0.688	9.6	LOS A	7.9	59.4	0.72	0.75	47.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
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MOVEMENT SUMMARY

Site: WE Future

Leichhardt St / Bronte Rd
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
2	T1	112	1.0	0.586	6.2	LOS A	5.7	41.9	0.57	0.64	50.1
3	R2	562	8.0	0.586	8.9	LOS A	5.7	41.9	0.57	0.64	47.5
3u	U	1	0.0	0.586	10.1	LOS A	5.7	41.9	0.57	0.64	48.4
Approach		675	6.8	0.586	8.4	LOS A	5.7	41.9	0.57	0.64	48.0
East: Bronte Rd E											
4	L2	579	10.0	0.688	8.6	LOS A	7.9	59.4	0.78	0.72	47.0
6	R2	106	0.0	0.688	10.5	LOS A	7.9	59.4	0.78	0.72	49.6
6u	U	17	0.0	0.688	11.9	LOS A	7.9	59.4	0.78	0.72	48.3
Approach		702	8.2	0.688	9.0	LOS A	7.9	59.4	0.78	0.72	47.4
North: Bronte Rd N											
7	L2	183	0.0	0.566	12.8	LOS A	5.0	35.0	0.87	0.99	46.5
8	T1	197	0.0	0.566	12.3	LOS A	5.0	35.0	0.87	0.99	47.1
9u	U	12	0.0	0.566	16.3	LOS B	5.0	35.0	0.87	0.99	48.6
Approach		392	0.0	0.566	12.7	LOS A	5.0	35.0	0.87	0.99	46.9
All Vehicles		1768	5.9	0.688	9.6	LOS A	7.9	59.4	0.72	0.75	47.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
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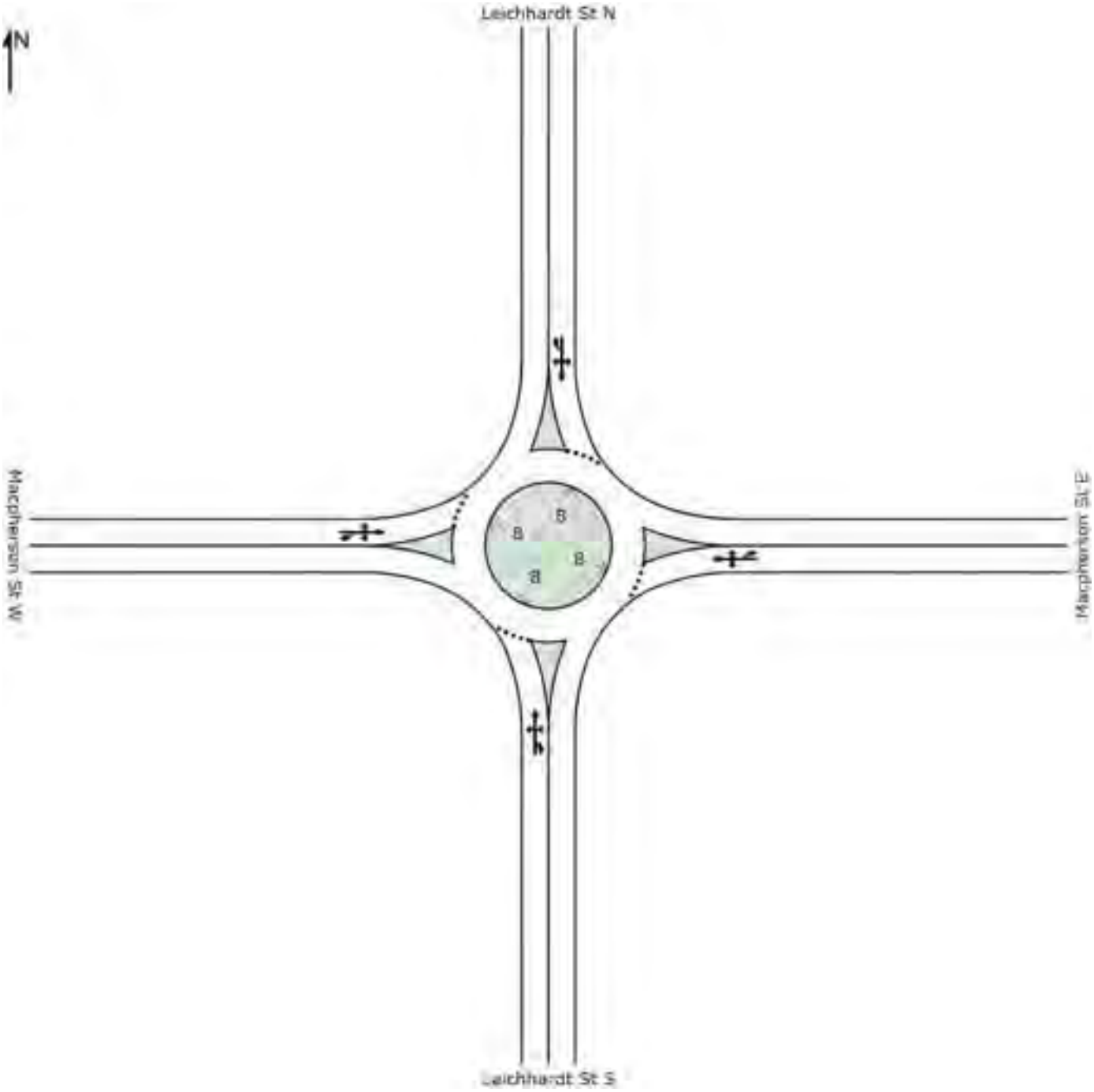
SITE LAYOUT

Site: AM Existing

Leichhardt St / Macpherson St
Roundabout



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MOVEMENT SUMMARY

Site: AM Existing

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	37	0.0	0.429	19.4	LOS B	3.3	23.1	0.98	1.05	34.8
2	T1	118	0.0	0.429	19.3	LOS B	3.3	23.1	0.98	1.05	43.0
3	R2	6	0.0	0.429	22.3	LOS B	3.3	23.1	0.98	1.05	40.3
3u	U	1	0.0	0.429	23.8	LOS B	3.3	23.1	0.98	1.05	40.7
Approach		162	0.0	0.429	19.5	LOS B	3.3	23.1	0.98	1.05	41.5
East: Macpherson St E											
4	L2	12	0.0	0.917	30.8	LOS C	19.8	151.5	1.00	1.50	33.5
5	T1	313	13.0	0.917	30.8	LOS C	19.8	151.5	1.00	1.50	28.2
6	R2	281	9.0	0.917	33.7	LOS C	19.8	151.5	1.00	1.50	36.3
6u	U	9	0.0	0.917	35.2	LOS C	19.8	151.5	1.00	1.50	34.0
Approach		615	10.7	0.917	32.2	LOS C	19.8	151.5	1.00	1.50	32.7
North: Leichhardt St N											
7	L2	327	9.0	0.851	15.0	LOS B	16.0	120.0	1.00	0.98	44.0
8	T1	49	0.0	0.851	14.8	LOS B	16.0	120.0	1.00	0.98	45.0
9	R2	400	9.0	0.851	17.8	LOS B	16.0	120.0	1.00	0.98	40.6
9u	U	19	0.0	0.851	19.2	LOS B	16.0	120.0	1.00	0.98	46.8
Approach		796	8.2	0.851	16.5	LOS B	16.0	120.0	1.00	0.98	42.6
West: Macpherson St W											
10	L2	243	5.0	0.659	12.1	LOS A	6.9	51.4	0.88	0.97	43.6
11	T1	229	10.0	0.659	12.0	LOS A	6.9	51.4	0.88	0.97	41.0
12	R2	17	1.0	0.659	14.8	LOS B	6.9	51.4	0.88	0.97	40.9
12u	U	22	0.0	0.659	16.4	LOS B	6.9	51.4	0.88	0.97	33.4
Approach		512	6.9	0.659	12.3	LOS A	6.9	51.4	0.88	0.97	42.2
All Vehicles		2084	8.0	0.917	20.3	LOS B	19.8	151.5	0.97	1.13	39.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: AM Future

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	37	0.0	0.478	24.2	LOS B	3.9	27.3	1.00	1.09	31.9
2	T1	118	0.0	0.478	24.1	LOS B	3.9	27.3	1.00	1.09	40.4
3	R2	6	0.0	0.478	27.0	LOS B	3.9	27.3	1.00	1.09	37.5
3u	U	1	0.0	0.478	28.5	LOS C	3.9	27.3	1.00	1.09	37.8
Approach		162	0.0	0.478	24.3	LOS B	3.9	27.3	1.00	1.09	38.8
East: Macpherson St E											
4	L2	12	0.0	1.012	64.9	LOS E	37.1	283.9	1.00	2.16	23.3
5	T1	335	13.0	1.012	64.9	LOS E	37.1	283.9	1.00	2.16	18.4
6	R2	303	9.0	1.012	67.8	LOS E	37.1	283.9	1.00	2.16	26.0
6u	U	9	0.0	1.012	69.2	LOS E	37.1	283.9	1.00	2.16	23.5
Approach		659	10.7	1.012	66.3	LOS E	37.1	283.9	1.00	2.16	22.4
North: Leichhardt St N											
7	L2	341	9.0	0.935	25.8	LOS B	25.4	190.0	1.00	1.25	38.2
8	T1	49	0.0	0.935	25.6	LOS B	25.4	190.0	1.00	1.25	38.9
9	R2	400	9.0	0.935	28.6	LOS C	25.4	190.0	1.00	1.25	34.2
9u	U	23	0.0	0.935	30.1	LOS C	25.4	190.0	1.00	1.25	41.1
Approach		814	8.2	0.935	27.3	LOS B	25.4	190.0	1.00	1.25	36.6
West: Macpherson St W											
10	L2	243	5.0	0.742	14.7	LOS B	9.4	69.3	0.95	1.08	41.4
11	T1	255	10.0	0.742	14.7	LOS B	9.4	69.3	0.95	1.08	38.5
12	R2	17	1.0	0.742	17.5	LOS B	9.4	69.3	0.95	1.08	38.4
12u	U	49	0.0	0.742	19.0	LOS B	9.4	69.3	0.95	1.08	30.5
Approach		564	6.7	0.742	15.2	LOS B	9.4	69.3	0.95	1.08	39.5
All Vehicles		2199	8.0	1.012	35.7	LOS C	37.1	283.9	0.99	1.47	31.3

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
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MOVEMENT SUMMARY

Site: PM Existing

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	31	0.0	0.214	14.4	LOS A	1.4	10.0	0.91	0.92	38.4
2	T1	45	0.0	0.214	14.3	LOS A	1.4	10.0	0.91	0.92	46.1
3	R2	11	0.0	0.214	17.2	LOS B	1.4	10.0	0.91	0.92	43.6
3u	U	1	0.0	0.214	18.7	LOS B	1.4	10.0	0.91	0.92	44.0
Approach		87	0.0	0.214	14.7	LOS B	1.4	10.0	0.91	0.92	43.6
East: Macpherson St E											
4	L2	8	0.0	0.847	20.2	LOS B	14.3	107.2	1.00	1.24	38.8
5	T1	327	10.0	0.847	20.2	LOS B	14.3	107.2	1.00	1.24	33.9
6	R2	269	7.0	0.847	23.2	LOS B	14.3	107.2	1.00	1.24	41.4
6u	U	17	0.0	0.847	24.6	LOS B	14.3	107.2	1.00	1.24	39.5
Approach		622	8.3	0.847	21.6	LOS B	14.3	107.2	1.00	1.24	38.0
North: Leichhardt St N											
7	L2	388	12.0	0.974	39.1	LOS C	32.1	238.5	1.00	1.57	32.9
8	T1	71	0.0	0.974	38.8	LOS C	32.1	238.5	1.00	1.57	33.5
9	R2	298	3.0	0.974	41.8	LOS C	32.1	238.5	1.00	1.57	28.9
9u	U	27	0.0	0.974	43.3	LOS D	32.1	238.5	1.00	1.57	35.9
Approach		784	7.1	0.974	40.2	LOS C	32.1	238.5	1.00	1.57	31.7
West: Macpherson St W											
10	L2	306	3.0	0.796	14.6	LOS B	12.0	89.0	0.99	1.05	41.6
11	T1	293	12.0	0.796	14.6	LOS B	12.0	89.0	0.99	1.05	38.6
12	R2	18	1.0	0.796	17.4	LOS B	12.0	89.0	0.99	1.05	38.6
12u	U	58	0.0	0.796	18.9	LOS B	12.0	89.0	0.99	1.05	30.6
Approach		675	6.6	0.796	15.0	LOS B	12.0	89.0	0.99	1.05	39.7
All Vehicles		2168	7.0	0.974	26.0	LOS B	32.1	238.5	0.99	1.29	35.6

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: PM Future

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	31	0.0	0.230	15.4	LOS B	1.6	10.9	0.93	0.94	37.6
2	T1	45	0.0	0.230	15.3	LOS B	1.6	10.9	0.93	0.94	45.4
3	R2	11	0.0	0.230	18.2	LOS B	1.6	10.9	0.93	0.94	42.8
3u	U	1	0.0	0.230	19.7	LOS B	1.6	10.9	0.93	0.94	43.2
Approach		87	0.0	0.230	15.7	LOS B	1.6	10.9	0.93	0.94	42.9
East: Macpherson St E											
4	L2	8	0.0	0.892	25.0	LOS B	18.0	134.9	1.00	1.36	36.3
5	T1	344	10.0	0.892	25.0	LOS B	18.0	134.9	1.00	1.36	31.1
6	R2	286	7.0	0.892	27.9	LOS B	18.0	134.9	1.00	1.36	39.0
6u	U	17	0.0	0.892	29.3	LOS C	18.0	134.9	1.00	1.36	36.9
Approach		656	8.3	0.892	26.3	LOS B	18.0	134.9	1.00	1.36	35.4
North: Leichhardt St N											
7	L2	394	12.0	1.052	83.2	LOS F	54.3	403.2	1.00	2.36	22.5
8	T1	71	0.0	1.052	82.9	LOS F	54.3	403.2	1.00	2.36	22.7
9	R2	298	3.0	1.052	85.9	LOS F	54.3	403.2	1.00	2.36	18.7
9u	U	33	0.0	1.052	87.4	LOS F	54.3	403.2	1.00	2.36	25.0
Approach		795	7.1	1.052	84.3	LOS F	54.3	403.2	1.00	2.36	21.3
West: Macpherson St W											
10	L2	306	3.0	0.870	19.5	LOS B	16.8	124.5	1.00	1.19	38.1
11	T1	318	12.0	0.870	19.5	LOS B	16.8	124.5	1.00	1.19	34.8
12	R2	18	1.0	0.870	22.3	LOS B	16.8	124.5	1.00	1.19	34.8
12u	U	80	0.0	0.870	23.8	LOS B	16.8	124.5	1.00	1.19	26.5
Approach		722	6.6	0.870	20.0	LOS B	16.8	124.5	1.00	1.19	35.8
All Vehicles		2260	7.0	1.052	44.3	LOS D	54.3	403.2	1.00	1.64	28.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: WE Existing

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	31	0.0	0.941	35.1	LOS C	23.6	176.7	1.00	1.60	26.3
2	T1	329	14.0	0.941	35.1	LOS C	23.6	176.7	1.00	1.60	34.7
3	R2	297	2.0	0.941	37.9	LOS C	23.6	176.7	1.00	1.60	31.9
3u	U	3	0.0	0.941	39.4	LOS C	23.6	176.7	1.00	1.60	32.2
Approach		660	7.9	0.941	36.4	LOS C	23.6	176.7	1.00	1.60	33.2
East: Macpherson St E											
4	L2	226	1.0	0.832	17.6	LOS B	13.8	98.7	1.00	1.16	40.9
5	T1	327	3.0	0.832	17.5	LOS B	13.8	98.7	1.00	1.16	36.5
6	R2	98	6.0	0.832	20.5	LOS B	13.8	98.7	1.00	1.16	43.4
6u	U	8	0.0	0.832	22.0	LOS B	13.8	98.7	1.00	1.16	41.6
Approach		660	2.7	0.832	18.1	LOS B	13.8	98.7	1.00	1.16	39.5
North: Leichhardt St N											
7	L2	83	5.0	0.753	20.4	LOS B	9.2	72.0	0.99	1.23	41.5
8	T1	298	20.0	0.753	20.5	LOS B	9.2	72.0	0.99	1.23	41.7
9	R2	52	1.0	0.753	23.2	LOS B	9.2	72.0	0.99	1.23	38.0
9u	U	21	0.0	0.753	24.7	LOS B	9.2	72.0	0.99	1.23	44.2
Approach		454	14.2	0.753	20.9	LOS B	9.2	72.0	0.99	1.23	41.5
West: Macpherson St W											
10	L2	109	1.0	0.890	37.6	LOS C	15.6	112.6	1.00	1.49	29.6
11	T1	309	5.0	0.890	37.5	LOS C	15.6	112.6	1.00	1.49	26.0
12	R2	34	0.0	0.890	40.4	LOS C	15.6	112.6	1.00	1.49	25.9
12u	U	3	0.0	0.890	41.9	LOS C	15.6	112.6	1.00	1.49	18.0
Approach		456	3.6	0.890	37.8	LOS C	15.6	112.6	1.00	1.49	26.9
All Vehicles		2229	6.8	0.941	28.1	LOS B	23.6	176.7	1.00	1.37	35.1

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: WE Future

Leichhardt St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Leichhardt St S											
1	L2	31	0.0	0.957	40.0	LOS C	26.1	194.9	1.00	1.70	24.6
2	T1	329	14.0	0.957	40.1	LOS C	26.1	194.9	1.00	1.70	32.9
3	R2	297	2.0	0.957	42.9	LOS D	26.1	194.9	1.00	1.70	30.1
3u	U	3	0.0	0.957	44.4	LOS D	26.1	194.9	1.00	1.70	30.4
Approach		660	7.9	0.957	41.3	LOS C	26.1	194.9	1.00	1.70	31.4
East: Macpherson St E											
4	L2	226	1.0	0.848	18.7	LOS B	14.8	106.2	1.00	1.19	40.2
5	T1	340	3.0	0.848	18.6	LOS B	14.8	106.2	1.00	1.19	35.7
6	R2	98	6.0	0.848	21.5	LOS B	14.8	106.2	1.00	1.19	42.8
6u	U	8	0.0	0.848	23.0	LOS B	14.8	106.2	1.00	1.19	41.0
Approach		673	2.7	0.848	19.1	LOS B	14.8	106.2	1.00	1.19	38.7
North: Leichhardt St N											
7	L2	83	5.0	0.766	21.4	LOS B	9.6	75.1	1.00	1.25	40.9
8	T1	298	20.0	0.766	21.5	LOS B	9.6	75.1	1.00	1.25	41.2
9	R2	52	1.0	0.766	24.2	LOS B	9.6	75.1	1.00	1.25	37.4
9u	U	21	0.0	0.766	25.7	LOS B	9.6	75.1	1.00	1.25	43.7
Approach		454	14.2	0.766	22.0	LOS B	9.6	75.1	1.00	1.25	40.9
West: Macpherson St W											
10	L2	109	1.0	0.915	42.7	LOS D	17.7	128.1	1.00	1.57	27.8
11	T1	322	5.0	0.915	42.6	LOS D	17.7	128.1	1.00	1.57	24.2
12	R2	34	0.0	0.915	45.5	LOS D	17.7	128.1	1.00	1.57	24.1
12u	U	3	0.0	0.915	47.0	LOS D	17.7	128.1	1.00	1.57	16.5
Approach		468	3.7	0.915	42.9	LOS D	17.7	128.1	1.00	1.57	25.1
All Vehicles		2255	6.7	0.957	31.1	LOS C	26.1	194.9	1.00	1.43	33.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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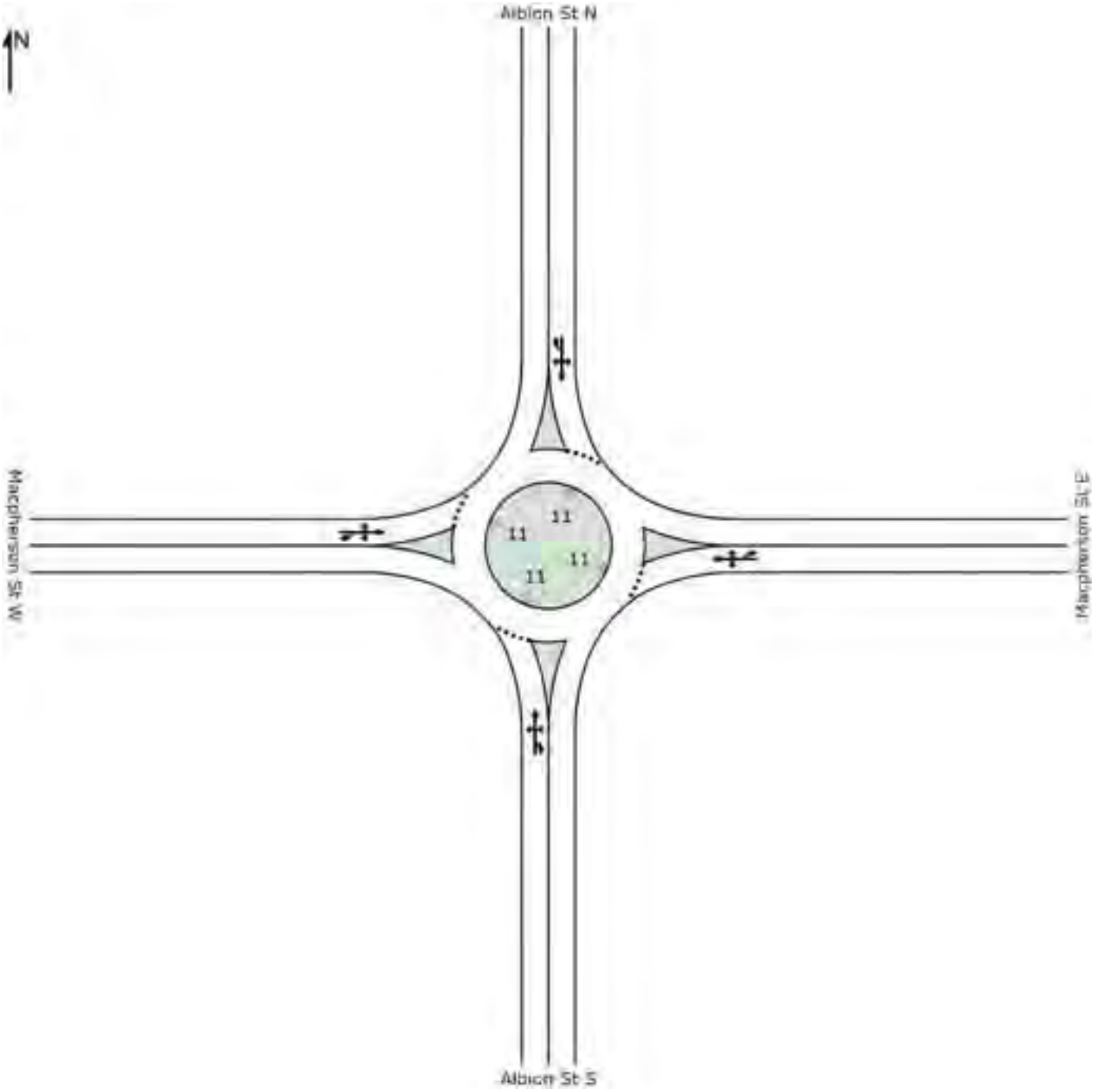
SITE LAYOUT

Site: AM Existing

Albion St / Macpherson St
Roundabout



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MOVEMENT SUMMARY

Site: AM Existing

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	38	0.0	0.864	25.4	LOS B	15.1	105.7	1.00	1.37	30.9
2	T1	333	0.0	0.864	25.6	LOS B	15.1	105.7	1.00	1.37	23.2
3	R2	199	0.0	0.864	29.0	LOS C	15.1	105.7	1.00	1.37	36.7
3u	U	1	0.0	0.864	30.7	LOS C	15.1	105.7	1.00	1.37	37.1
Approach		571	0.0	0.864	26.8	LOS B	15.1	105.7	1.00	1.37	28.5
East: Macpherson St E											
4	L2	242	0.0	0.866	17.5	LOS B	16.9	118.1	1.00	1.16	41.0
5	T1	403	0.0	0.866	17.7	LOS B	16.9	118.1	1.00	1.16	36.9
6	R2	120	0.0	0.866	21.1	LOS B	16.9	118.1	1.00	1.16	26.2
6u	U	18	0.0	0.866	22.8	LOS B	16.9	118.1	1.00	1.16	42.1
Approach		783	0.0	0.866	18.3	LOS B	16.9	118.1	1.00	1.16	36.7
North: Albion St N											
7	L2	77	0.0	0.522	8.2	LOS A	4.2	29.6	0.77	0.84	42.5
8	T1	268	0.0	0.522	8.4	LOS A	4.2	29.6	0.77	0.84	44.0
9	R2	68	0.0	0.522	11.8	LOS A	4.2	29.6	0.77	0.84	34.1
9u	U	27	0.0	0.522	13.5	LOS A	4.2	29.6	0.77	0.84	15.9
Approach		441	0.0	0.522	9.2	LOS A	4.2	29.6	0.77	0.84	40.8
West: Macpherson St W											
10	L2	73	0.0	0.513	11.9	LOS A	4.3	30.4	0.91	0.99	18.6
11	T1	215	0.0	0.513	12.0	LOS A	4.3	30.4	0.91	0.99	42.0
12	R2	32	0.0	0.513	15.4	LOS B	4.3	30.4	0.91	0.99	41.6
12u	U	3	0.0	0.513	17.1	LOS B	4.3	30.4	0.91	0.99	21.7
Approach		322	0.0	0.513	12.4	LOS A	4.3	30.4	0.91	0.99	36.5
All Vehicles		2117	0.0	0.866	17.8	LOS B	16.9	118.1	0.94	1.12	34.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: AM Future

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles											
Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	38	0.0	0.981	54.3	LOS D	29.4	206.1	1.00	1.91	20.7
2	T1	355	0.0	0.981	54.4	LOS D	29.4	206.1	1.00	1.91	16.4
3	R2	221	0.0	0.981	57.9	LOS E	29.4	206.1	1.00	1.91	26.1
3u	U	1	0.0	0.981	59.6	LOS E	29.4	206.1	1.00	1.91	26.3
Approach		615	0.0	0.981	55.7	LOS D	29.4	206.1	1.00	1.91	20.2
East: Macpherson St E											
4	L2	261	0.0	0.947	29.1	LOS C	27.4	192.1	1.00	1.47	34.6
5	T1	422	0.0	0.947	29.3	LOS C	27.4	192.1	1.00	1.47	29.8
6	R2	120	0.0	0.947	32.7	LOS C	27.4	192.1	1.00	1.47	22.0
6u	U	32	0.0	0.947	34.4	LOS C	27.4	192.1	1.00	1.47	35.4
Approach		835	0.0	0.947	29.9	LOS C	27.4	192.1	1.00	1.47	30.5
North: Albion St N											
7	L2	77	0.0	0.578	9.8	LOS A	5.2	36.7	0.84	0.93	40.7
8	T1	279	0.0	0.578	10.0	LOS A	5.2	36.7	0.84	0.93	42.1
9	R2	74	0.0	0.578	13.4	LOS A	5.2	36.7	0.84	0.93	31.9
9u	U	32	0.0	0.578	15.1	LOS B	5.2	36.7	0.84	0.93	15.2
Approach		461	0.0	0.578	10.8	LOS A	5.2	36.7	0.84	0.93	38.7
West: Macpherson St W											
10	L2	95	0.0	0.631	15.8	LOS B	6.3	44.4	0.98	1.12	17.0
11	T1	237	0.0	0.631	16.0	LOS B	6.3	44.4	0.98	1.12	38.5
12	R2	32	0.0	0.631	19.4	LOS B	6.3	44.4	0.98	1.12	38.1
12u	U	3	0.0	0.631	21.1	LOS B	6.3	44.4	0.98	1.12	20.0
Approach		366	0.0	0.631	16.3	LOS B	6.3	44.4	0.98	1.12	32.8
All Vehicles		2277	0.0	0.981	30.8	LOS C	29.4	206.1	0.96	1.42	27.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: PM Existing

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	24	2.0	0.926	35.3	LOS C	20.5	160.2	1.00	1.59	26.2
2	T1	281	27.0	0.926	35.7	LOS C	20.5	160.2	1.00	1.59	23.5
3	R2	268	1.0	0.926	38.9	LOS C	20.5	160.2	1.00	1.59	31.9
3u	U	14	0.0	0.926	40.6	LOS C	20.5	160.2	1.00	1.59	32.2
Approach		587	13.5	0.926	37.3	LOS C	20.5	160.2	1.00	1.59	28.0
East: Macpherson St E											
4	L2	213	2.0	0.966	41.8	LOS C	28.3	203.8	1.00	1.75	29.6
5	T1	346	3.0	0.966	41.9	LOS C	28.3	203.8	1.00	1.75	24.6
6	R2	96	9.0	0.966	45.4	LOS D	28.3	203.8	1.00	1.75	18.7
6u	U	37	0.0	0.966	47.0	LOS D	28.3	203.8	1.00	1.75	30.2
Approach		692	3.4	0.966	42.6	LOS D	28.3	203.8	1.00	1.75	25.7
North: Albion St N											
7	L2	75	9.0	0.850	26.6	LOS B	13.4	113.7	1.00	1.41	28.3
8	T1	340	34.0	0.850	26.8	LOS B	13.4	113.7	1.00	1.41	28.4
9	R2	75	1.0	0.850	30.2	LOS C	13.4	113.7	1.00	1.41	19.1
9u	U	13	0.0	0.850	31.9	LOS C	13.4	113.7	1.00	1.41	13.3
Approach		502	24.5	0.850	27.4	LOS B	13.4	113.7	1.00	1.41	27.0
West: Macpherson St W											
10	L2	87	1.0	0.741	20.4	LOS B	8.9	64.6	1.00	1.21	19.9
11	T1	278	6.0	0.741	20.6	LOS B	8.9	64.6	1.00	1.21	34.8
12	R2	25	1.0	0.741	23.9	LOS B	8.9	64.6	1.00	1.21	34.7
12u	U	25	0.0	0.741	25.6	LOS B	8.9	64.6	1.00	1.21	23.0
Approach		416	4.3	0.741	21.0	LOS B	8.9	64.6	1.00	1.21	31.6
All Vehicles		2197	11.1	0.966	33.6	LOS C	28.3	203.8	1.00	1.53	27.5

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: PM Future

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	24	2.0	0.993	57.8	LOS E	31.7	247.7	1.00	2.03	19.8
2	T1	298	27.0	0.993	58.3	LOS E	31.7	247.7	1.00	2.03	17.7
3	R2	285	1.0	0.993	61.4	LOS E	31.7	247.7	1.00	2.03	25.0
3u	U	14	0.0	0.993	63.1	LOS E	31.7	247.7	1.00	2.03	25.2
Approach		621	13.5	0.993	59.8	LOS E	31.7	247.7	1.00	2.03	21.6
East: Macpherson St E											
4	L2	231	2.0	1.056	89.5	LOS F	52.4	377.0	1.00	2.63	19.2
5	T1	364	3.0	1.056	89.6	LOS F	52.4	377.0	1.00	2.63	14.9
6	R2	96	9.0	1.056	93.1	LOS F	52.4	377.0	1.00	2.63	12.0
6u	U	47	0.0	1.056	94.7	LOS F	52.4	377.0	1.00	2.63	19.4
Approach		738	3.3	1.056	90.4	LOS F	52.4	377.0	1.00	2.63	16.2
North: Albion St N											
7	L2	75	9.0	0.922	39.9	LOS C	19.2	162.4	1.00	1.67	22.8
8	T1	347	34.0	0.922	40.1	LOS C	19.2	162.4	1.00	1.67	22.9
9	R2	82	1.0	0.922	43.5	LOS D	19.2	162.4	1.00	1.67	14.5
9u	U	18	0.0	0.922	45.2	LOS D	19.2	162.4	1.00	1.67	10.2
Approach		522	24.1	0.922	40.8	LOS C	19.2	162.4	1.00	1.67	21.5
West: Macpherson St W											
10	L2	104	1.0	0.850	31.1	LOS C	13.3	96.5	1.00	1.39	15.7
11	T1	295	6.0	0.850	31.3	LOS C	13.3	96.5	1.00	1.39	28.9
12	R2	25	1.0	0.850	34.6	LOS C	13.3	96.5	1.00	1.39	28.8
12u	U	25	0.0	0.850	36.3	LOS C	13.3	96.5	1.00	1.39	18.5
Approach		449	4.2	0.850	31.7	LOS C	13.3	96.5	1.00	1.39	25.7
All Vehicles		2331	10.8	1.056	59.8	LOS E	52.4	377.0	1.00	2.02	19.7

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: WE Existing

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	31	0.0	0.909	27.6	LOS B	19.7	147.5	1.00	1.44	29.6
2	T1	329	14.0	0.909	27.9	LOS B	19.7	147.5	1.00	1.44	26.6
3	R2	297	2.0	0.909	31.2	LOS C	19.7	147.5	1.00	1.44	35.3
3u	U	3	0.0	0.909	32.9	LOS C	19.7	147.5	1.00	1.44	35.7
Approach		660	7.9	0.909	29.4	LOS C	19.7	147.5	1.00	1.44	31.1
East: Macpherson St E											
4	L2	226	1.0	0.804	15.3	LOS B	12.4	88.5	1.00	1.11	42.5
5	T1	327	3.0	0.804	15.5	LOS B	12.4	88.5	1.00	1.11	38.6
6	R2	98	6.0	0.804	18.9	LOS B	12.4	88.5	1.00	1.11	27.2
6u	U	8	0.0	0.804	20.6	LOS B	12.4	88.5	1.00	1.11	43.7
Approach		660	2.7	0.804	16.0	LOS B	12.4	88.5	1.00	1.11	38.4
North: Albion St N											
7	L2	83	5.0	0.726	17.3	LOS B	8.4	66.2	0.97	1.19	34.1
8	T1	298	20.0	0.726	17.5	LOS B	8.4	66.2	0.97	1.19	34.6
9	R2	52	1.0	0.726	20.9	LOS B	8.4	66.2	0.97	1.19	24.6
9u	U	21	0.0	0.726	22.6	LOS B	8.4	66.2	0.97	1.19	16.9
Approach		454	14.2	0.726	18.1	LOS B	8.4	66.2	0.97	1.19	33.0
West: Macpherson St W											
10	L2	109	1.0	0.856	31.2	LOS C	13.6	98.5	1.00	1.40	15.6
11	T1	309	5.0	0.856	31.5	LOS C	13.6	98.5	1.00	1.40	28.9
12	R2	34	0.0	0.856	34.8	LOS C	13.6	98.5	1.00	1.40	28.8
12u	U	3	0.0	0.856	36.5	LOS C	13.6	98.5	1.00	1.40	18.5
Approach		456	3.6	0.856	31.7	LOS C	13.6	98.5	1.00	1.40	26.1
All Vehicles		2229	6.8	0.909	23.6	LOS B	19.7	147.5	0.99	1.28	32.4

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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MOVEMENT SUMMARY

Site: WE Future

Albion St / Macpherson St
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand 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 per veh	Average Speed km/h
South: Albion St S											
1	L2	31	0.0	0.939	34.0	LOS C	23.6	176.6	1.00	1.59	26.8
2	T1	336	14.0	0.939	34.3	LOS C	23.6	176.6	1.00	1.59	24.1
3	R2	303	2.0	0.939	37.6	LOS C	23.6	176.6	1.00	1.59	32.5
3u	U	3	0.0	0.939	39.3	LOS C	23.6	176.6	1.00	1.59	32.9
Approach		673	7.9	0.939	35.8	LOS C	23.6	176.6	1.00	1.59	28.4
East: Macpherson St E											
4	L2	233	1.0	0.834	17.3	LOS B	14.0	100.3	1.00	1.17	41.2
5	T1	334	3.0	0.834	17.4	LOS B	14.0	100.3	1.00	1.17	37.0
6	R2	98	6.0	0.834	20.9	LOS B	14.0	100.3	1.00	1.17	26.3
6u	U	8	0.0	0.834	22.5	LOS B	14.0	100.3	1.00	1.17	42.3
Approach		673	2.7	0.834	17.9	LOS B	14.0	100.3	1.00	1.17	37.1
North: Albion St N											
7	L2	83	5.0	0.756	19.1	LOS B	9.4	73.6	0.99	1.24	32.8
8	T1	304	20.0	0.756	19.3	LOS B	9.4	73.6	0.99	1.24	33.3
9	R2	58	1.0	0.756	22.6	LOS B	9.4	73.6	0.99	1.24	23.3
9u	U	21	0.0	0.756	24.3	LOS B	9.4	73.6	0.99	1.24	16.1
Approach		466	14.1	0.756	19.9	LOS B	9.4	73.6	0.99	1.24	31.7
West: Macpherson St W											
10	L2	116	1.0	0.897	38.5	LOS C	16.5	118.8	1.00	1.51	13.7
11	T1	316	5.0	0.897	38.7	LOS C	16.5	118.8	1.00	1.51	25.8
12	R2	34	0.0	0.897	42.1	LOS C	16.5	118.8	1.00	1.51	25.8
12u	U	3	0.0	0.897	43.8	LOS D	16.5	118.8	1.00	1.51	16.3
Approach		468	3.6	0.897	39.0	LOS C	16.5	118.8	1.00	1.51	23.2
All Vehicles		2280	6.7	0.939	27.9	LOS B	23.6	176.6	1.00	1.38	30.0

Level of Service (LOS) Method: Delay (RTA NSW).
Vehicle movement LOS values are based on average delay per movement
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
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.

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APPENDIX B

CCC Letter

Professor Roberta Ryan
Chairperson
St Catherine's Community Consultative Committee
roberta.ryan@newcastle.edu.au

11 October 2021

Dear Roberta,

As Chairperson of the Community Consultative Committee (CCC) for the St Catherine's Research, Performing Arts and Aquatic Centre (RPAC) development, we are writing to you regarding our concerns related to the St Catherine's Operational Transport Management Plan (OTMP) presented by Traffix at CCC meeting dated September 17th, 2021.

Our specific concerns relate to:

- Table 5 of the OTMP (Which we viewed from an email after the last meeting. (See attached)
- The collection of information from School Staff, Students and Parents
- Drop-off and pick-up zones, including illegal drop-off and pick-ups
- Survey questions

Community representatives have several concerns relating to the accuracy of the collection of data in the OTMP survey, and the impacts this inaccuracy will have on future planning and development surrounding St Catherine's School. The following expands on these concerns and outlines several recommendations for consideration.

- Table 5: It is clear from the attachment titled 'Table 5' sent by Warwick Smith, dated September 21st, that the number of participants in the survey was too low to ascertain an accurate picture of traffic conditions surrounding St Catherine's School. This is particularly apparent for numbers relating to the Junior School. For example, in Year 6 only 21 of 95 enrolments are surveyed, and for Year 4 only 17 of 49 enrolments. This is also evident in the low participation rate of staff. Given the importance of the survey for the future enrolments of the school, and for the confidence of the local community, it is important the information is accurate and reflective of conditions.

  Community representatives recommend another survey be conducted, with minimum 80% participation for parents and students.

  Community representatives recommend compulsory participation by all Staff of St Catherine's School.

  Community representatives recommend Table 5 be submitted with the OTMP Department of Planning as it demonstrates the scope of the sample for the survey, which forms the basis of the OTMP. It provides a better understanding of the results and their accuracy.

  Community representatives feel strongly these minimum requirements are possible for St Catherine's School to fulfil to ensure trust in the veracity of the survey data.

- Review of the Survey: According to the Development Consent by the Planning Assessment Commission (Schedule 3) Community Engagement A7. c) Review, it clearly states that the CCC is to

"Review the implementation and effectiveness of the Operational Transport Management Plan including the results of the monitoring conducted under the plan".

Community representatives reserve our right to review the OPTMP as stated above. We strongly believe the monitoring is not detailed or comprehensive enough to accurately demonstrate traffic conditions around St Catherine's School.

Drop-off and pick-up zones: Further in the OTMP conditions:

A8 b), prior to the issue of any Occupation Certificate the RPAC must include details regarding the travel strategies and the final traffic management measures (including details for the management of the drop-off pick-up zones, including training for supervising staff/traffic controllers) and taking the monitoring results (required in condition A9) into account. Additionally, according to A9, the OTMP must provide details for each of the travel strategies and must address the following matters for each of the travel strategies; objectives and targets; timing; responsibility; funding; implementation; monitoring regime to evaluate each strategy; and monitoring of whether the overall strategies are meeting the targeted reductions in private car trips.

It is clear from the survey results there are some issues monitoring pick-ups and drop-offs. For example, Table 7 on Page 38 of the Report (Drop-offs and pickups Counts Site 4 Leichhardt Street). This is the drop-off pick-up zone for Junior School students who are younger and less likely to take public transport or walk to school. In Table 7, the report details 6 drop-offs in the morning and 11 pick-ups in the afternoon. This is out of around 312 enrolments in the Junior School. And included in this report it details that around 60% of all students travel to school by car. When contrasted in this way we can clearly see there is inconsistency in these numbers. These results do not reflect local, lived experience, of what is occurring on Leichhardt Street. Most days the cars are backed to Macpherson Street with cars waiting to pull up, and staff are opening car doors to ensure the drop-offs are fast. Outside of these zones, there is consistent illegal drop-offs including parents pulling into residential driveways or stopping mid-traffic. It is clear from the traffic count, particularly in Bronte Road, there is a higher increase in traffic during school term, in an area where there are no official drop-off zones.

Community representatives recommend a multi-day, multi-week survey is conducted, to improve the accuracy of data, particularly relating to drop-off and pick-up zones, including illegal drop-off and pick-ups.

Community representatives recommend clarification on why these illegal drop offs are not included in the original OTMP.

- Survey questions: The OTMP report does not outline questions asked within the survey, impacting transparency and undermining trust.

Community representatives recommend the inclusion of survey questions in the OTMP report and disclosure of these question to community representatives on the CCC.

This matter is of the upmost importance to community representatives of the CCC and to local residents, especially the neighbours of St Catherine's School. We look forward to your swift reply, and engagement on solutions relating to the traffic conditions surrounding St Catherine's School.

Sincerely,

Danny Caretti – Resident and DA Rep for Charing Cross Precinct

Julie McAlpin - Convenor Charing Cross Precinct

Domenic Egan – Resident and Neighbour of St Catherine's School

Chelsea Hunnisett – Representative of Bronte Beach Precinct

Kate Marshall - Resident and member of Charing Cross Precinct

APPENDIX C

Junior School Car Line Procedure Flyer

St Catherine's School
Sydney

Junior school car line procedures

We aim to assist you to drop-off and pick-up your children safely and efficiently, so we ask for your support by following the procedures in this brochure.
In the morning, students in K-2 are encouraged to use the Leichhardt Street car line, and students in years 3-6 are to use the Macpherson Street car line.

Leichhardt Street

- Car line operates strictly from **7:50am – 8:15am and 3pm – 3:20pm only.**
  No supervision is offered before/after these times.
- There is space for two vehicles only. Parents should safely pull forward when requested by a staff member.
- Senior students are there to assist with the opening of car doors and help with belongings into and out of the car. No item is to be placed in the boot. Staff will be there to assist, supervise and for traffic control.
- Kindergarten students are collected from a teacher at the front gate or may use the Leichhardt Street car line.
- If you are collecting students from multiple years, please use the car line of the youngest student.
- After 3:20pm students will be taken to out of school hours care where they will need to be collected and signed out.
- **Do not join** the car line within the **NO STOPPING** zone immediately before/after the roundabout on Leichhardt St, it is illegal and heavy fines and loss of demerits apply.
- **DO NOT BLOCK** driveways and laneways.

Macpherson Street

- Car line operates strictly from **7:50am – 8:15am and 3pm – 3:15pm only**.
  No supervision is offered before/after these times.
- Staff will be there to assist, supervise and for traffic control. But students are expected to get in and out of their car unassisted.
- Drop-off near the aquatic centre entrance.
- Years 3-6 students will be picked up near the aquatic centre entrance.
- There is space for three vehicles only. Parents should safely pull forward when requested by a staff member. Follow the signage.
- **Do not join** the car line within the **NO STOPPING** zone immediately after the roundabout on Macpherson Street. It is illegal and heavy fines and loss of demerits apply.
- After 3:15pm students will be taken back to the junior school office. At 3.20pm students will be taken to out of school hours care where they will need to be collected and signed out.

Reminders

- K-2 students, please always display your visor sign.
- Stay in your vehicle.
- Never make a u-turn, always go with the flow.
- Please be courteous towards staff, they are there to assist.

If you are running late, you can contact the junior school office on 8305 6295, to make plans for your daughter to either go to OSHC or for you to collect your daughter on Leichhardt Street by 3.20pm.

Car line times - Leichhardt St
Drop-off 7.50am - 8.15am
Pick-up 3pm - 3.20pm
Car line times - Macpherson St
Drop-off 7.50am - 8.15am
Pick-up 3pm - 3.15pm

To avoid the car line completely, book a seat on the school bus via the transport tab on StCathsConnect.

For more information go to stcatherines.nsw.edu.au or email transport@stcaths.nsw.edu.au

Matt Cooney - Operations Officer/Traffic Controller
26 Albion St, Waverley NSW 2024
transport@stcaths.nsw.edu.au

August 2024

APPENDIX D

St Catherine's Major Events Schedule

ST CATHERINE'S SCHOOL

26 Albion St, Waverley
Stage 1 (RPAC) - Usage Profile
Revision 14
10/03/2017

OPERATING HOURS GENERALLY

	Mon. to Fri.	Sat. and Sun.
Auditorium	Must finish by 9:30pm (excl. Boarders dance)	
Aquatic Centre	6am to 8pm	8am to 6pm

LEGEND

Denotes new event to take place on the St Catherine's School site
Denotes existing event occuring on the St Catherine's School site where the attendance will increase

Event	Current indicative usage profile						Forecasted indicative usage profile					
	Day of Week	Frequency (days p/yr)	Hours	Existing facility where event is currently held	Duration of each session	Estimated current attendance at event (participants)	Day of Week	Frequency (days p/yr)	Hours	New facility where event is proposed	Duration of each session	Forecasted attendance at event (participants)
AQUATIC CENTRE												
Water Polo												
Water polo training (Term 1 and 4)	Weekdays	Everyday	7:00-800am 3:20-5:00pm	Outdoor Pool	1hr in the am 1 1/2 hr in the pm	30 p/session	Weekdays	4 days per week (AM) & every afternoon	6am - 8.00am & 3.30pm - 8pm	Aquatic Centre (Main Pool)	2hr session in the am 3 x 90 minute sessions in the pm	50 p/session
Water Polo (Term 1 and 4)	Saturday	Every Saturday throughout Term 1 and Term 4	7.30am - 12pm	Outdoor Pool	Approx. 45mins	22 p/session	Saturday	Every Saturday throughout Term 1 and Term 4	8am - 6pm	Aquatic Centre (Main Pool)	Approx. 45mins	44 p/session
Water Polo (Term 1 and 4) - Boys and Men's league	Sunday	NA	NA	NA	NA	NA	Sunday	Every Sunday throughout Term 1 and Term 4	8am - 6pm	Aquatic Centre (Main Pool)	Approx. 45mins	44 p/session
Winter Water Polo (Term 2 and 3)	Saturday	NA	NA	NA	NA	NA	Saturday	Every Saturday throughout Term 2 and Term 3	8am - 6pm	Aquatic Centre (Main Pool)	Approx. 45mins	44 p/session
Squad + Diving												
Squad swimming	Weekdays	2 days per week	6:00am - 8.00am 3.30pm - 6pm	Outdoor Pool	1 class of JS 45 mins (3:00-3:45) all St Caths girls twice per week. S.School 1 hour session twice per week 7-8:00am.	20 p/session	Weekdays	Every day	6am - 8.00am & 3.30pm - 8pm	Aquatic Centre (Main Pool)	2hr session in the am 3 x 90 minute sessions in the pm	40 p/session based on roughly 7 girls per lane with 6 lanes available
Diving program	Weekdays	1 day per week		Waverley College	1 hour before school	30 p/session	Weekdays	1 day per week	6am - 8.00am	Aquatic Centre (Main Pool)	2 hours	30 p/session
Diving program	Saturday	1 day per week		Waverley College	2 hours on weekend	30 p/session	Saturday	1 day per week	2:00pm-4:00pm	Aquatic Centre (Main Pool)	2 hours	30 p/session
Learn to Swim												
Learn to swim (weekdays) (6months to 5 yrs)	Weekdays	NA	NA	NA	NA	NA	Weekdays	Mon - Fri	9.30am to 2pm	Aquatic Centre (Shallow Pool)	30 minutes	24 p/session
Learn to swim (weekdays) (K-2 or +5 years)	Weekdays	Mon - Fri	7:30-8:10am 3:00-3:30pm 5:00-6:00pm	Outdoor Pool	30 minutes	4 p/session	Weekdays	Mon - Fri	7:30am to 8:00 am (St Cath's girls only)	Aquatic Centre (Shallow Pool)	30 minutes	24 p/session
Learn to swim (weekdays) (K-2 or +5 years)	Weekdays	Mon - Fri	7:30-8:10am 3:00-3:30pm 5:00-6:00pm	Outdoor Pool	30 minutes	4 p/session	Weekdays	Mon - Fri	4pm - 8pm	Aquatic Centre (Shallow Pool)	30 minutes	24 p/session
Learn to swim (weekends)	Weekends	NA	NA	NA	NA	NA	Weekends	Saturday and Sunday throughout the year	8am - 6pm	Aquatic Centre (Shallow Pool)	30 minutes	24 p/session
PERFORMING ARTS AND SOCIAL EVENTS												
School Open Day	Weekday	5	9am - 11am	Dame Joan Sutherland		120 externals	Weekday	5	9am - 11am	Performing Arts Auditorium		120 externals
School Open Night (Twilight Session - Term 1 and 4 only)	Weekday	3	5.30pm - 7.30pm	Dame Joan Sutherland		120 externals	Weekday	3	6.30pm - 8.30pm	Performing Arts Auditorium		120 externals
Rehersal Senior School Musical	Weekend	5	9am - 2pm	NIDA		60 students	Weekend	5	10am - 1pm	Performing Arts Auditorium		60 students
Senior School Musical Event	Weekday	2	6.30pm - 9.30pm	NIDA - Parade Playhouse		659 audience with orchestra pit in use	Weekday	2	6.30pm - 9.30pm	Performing Arts Auditorium		500 audience (school community)
Music Showcase	Weekday	1	7pm - 9pm	DJSC		220	Weekday	1	6.30pm - 9.30pm	Performing Arts Auditorium		500 audience (school community)
Prep - St. Cath's Got Talent	Weekday	2	3pm - 6.30pm	Dame Joan Sutherland		60 students	Weekday	2	3pm - 6.30pm	Performing Arts Auditorium		60 students
St. Cath's Got Talent Event	Weekday	1	6pm - 9pm	Dame Joan Sutherland		250 audience	Weekday	1	6.30pm - 9.30pm	Performing Arts Auditorium		500 audience (school community)
Prep - Trinity Evening	Weekday	12	3pm - 6.30pm	Dame Joan Sutherland		60 students	Weekday	12	3pm - 6.30pm	Performing Arts Auditorium		60 students
Trinity Evening	Weekday	1	6pm - 10pm	Dame Joan Sutherland		250 audience	Weekday	1	6.30pm - 9.30pm	Performing Arts Auditorium		500 audience (school community)
Reherse BTC Showcase Event	Weekday	11	3pm - 6.30pm	Dame Joan Sutherland		60 students	Weekday	11	3pm - 6.30pm	Performing Arts Auditorium		60 students
BTC Showcase Event	Weekday	2	6pm - 9pm	Dame Joan Sutherland		250 audience	Weekday	2	6.30pm - 9.30pm	Performing Arts Auditorium		500 audience (school community)
Infants Christmas Musical Rehersal	Weekday	3	9am - 5pm	Dame Joan Sutherland		130 students	Weekday	3	9am - 5pm	Performing Arts Auditorium		130 students
Infants Christmas Musical	Weekday	1	9am - 12pm	Dame Joan Sutherland		250 audience	Weekday	1	9am - 12pm	Performing Arts Auditorium		300 audience
Junior Musical Rehersal	Weekend	2	9am - 5pm	Dame Joan Sutherland		150 students	Weekend	2	9am - 5pm	Performing Arts Auditorium		150 students
Junior Musical Rehersal	Weekday	2	During school hours	Dame Joan Sutherland		150 students	Weekday	2	During school hours	Performing Arts Auditorium		150 students
Junior Musical	Weekday	2	6.30pm - 9.30pm	Dame Joan Sutherland		250 audience	Weekday	2	6.30pm - 9.30pm	Performing Arts Auditorium		400 audience
Stage 2 Music Evening Rehersal	Weekday	2	During school hours	Dame Joan Sutherland		100 students	Weekday	2	During school hours	Performing Arts Auditorium		100 students
Stage 2 Music Evening	Weekday	1	6.30pm - 9.30pm	Dame Joan Sutherland		250 audience	Weekday	1	6.30pm - 9.30pm	Performing Arts Auditorium		300 audience
Stage 3 Music Evening Rehersal	Weekday	2	During school hours	Dame Joan Sutherland		150 students	Weekday	2	During school hours	Performing Arts Auditorium		150 students
Stage 3 Music Evening	Weekday	1	6.30pm - 9.30pm	Dame Joan Sutherland		250 audience	Weekday	1	6.30pm - 9.30pm	Performing Arts Auditorium		350 audience
Parent Breakfast - Junior School (K-6)	Weekday	7	7am - 9am	Jane Barker Hall		30 parents	Weekday	7	7am - 9am	Multi-Purpose Hall		30 parents
Parent Breakfast - Senior School (7-12)	Weekday	6	7am - 9am	Jane Barker Hall		45 parents	Weekday	6	7am - 9am	Multi-Purpose Hall		45 parents
Welcome Cocktail Party	Weekday	1	6pm - 9pm	Isabell Hall Wing Courtyard		600 externals (standing)	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		600 externals (standing)
Old Girls Union - Annual 5yr Reunion	Weekday	1	6pm - 8pm	Cloisters*		60 externals	Weekday	1	6.30pm - 8.30pm	Multi-Purpose Hall		60 externals
Allwell Scholarship Testing	Weekend	1	10am - 1pm	Dame Joan Sutherland		100 external students	Weekend	1	10am - 1pm	Multi-Purpose Hall		100 external students
Kindergarten Parents DVD evening	Weekday	1	6pm - 9pm	Nan Hind Centre		100 parents	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		100 parents
Old Girls Union - Mothers and Daughters Breakfast	Weekday	1	7.30am - 9.30am	Jane Barker Hall		60 (30/30 split)	Weekday	1	7.30am - 9.30am	Multi-Purpose Hall		60 (30/30 split)
Old Girls Union - Jane Barker Luncheon	Weekday	1	10.30am - 1.30pm	Jane Barker Hall		80 externals	Weekday	1	10.30am - 1.30pm	Multi-Purpose Hall		80 externals
Evening of Eminence - Junior School	Weekday	1	6pm - 8.30pm	Dame Joan Sutherland		160 parents	Weekday	1	6.30pm - 9pm	Multi-Purpose Hall		250 externals
Creative Connections	Weekday	1	4.30pm - 8.15pm	Dame Joan Sutherland + Chapel		250 (yr 12 + parents + staff)	Weekday	1	4.30pm - 8.15pm	Multi-Purpose Hall		250 (yr 12 + parents + staff)
Kindergarten Grandparents Morning	Weekday	1	8am - 11am	Nan Hind Centre		60 grandparents	Weekday	1	8am - 11am	Multi-Purpose Hall		60 grandparents
Old Girls Union Year 12 Afternoon Tea	Weekday	1	2.30pm - 4pm	Jane Barker Hall		120 students (Yr 12)	Weekday	1	2.30pm - 4pm	Multi-Purpose Hall		120 students (y12)
Blues Sports Breakfast	Weekday	1	7am - 9am	Jane Barker Hall		100 students	Weekday	1	7am - 9am	Multi-Purpose Hall		100 externals
Kindergarten Orientation Day	Weekday	1	8am - 1pm	Jane Barker Hall		50 externals	Weekday	1	8am - 1pm	Multi-Purpose Hall		50 parents
Orientation Day yr 4-11	Weekday	1	9am - 4pm	Dame Joan Sutherland		20 p/hr externals	Weekday	1	9am - 4pm	Multi-Purpose Hall		20 p/hr external
Rowing Season Launch	Weekday	1	6pm - 10pm	Nan Hind Centre		100 parents	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		100 external
Duke of Edinburgh Presentation Evening	Weekday	1	6pm - 9pm	Dame Joan Sutherland		90 parents	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		90 parents
Yr 6 Graduation Dinner	Weekday	1	6pm - 9pm	Jane Barker Hall		250 (seated)	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		250
Chairman's Thank You Cocktail Party	Weekday	1	6pm - 9pm	Cloisters*		80 (volunteers, parents etc.)	Weekday	1	6.30pm - 9.30pm	Multi-Purpose Hall		80 (volunteers , parents etc)
HSC Results Event	Weekday	1	During school hours	Cloisters*		120 students (Yr 12)	Weekday	1	During school hours	Multi-Purpose Hall		120 students (Yr 12)
Staff Christmas Lunch	Weekday	1	During school hours	Jane Barker Hall		200 (seated)	Weekday	1	During school hours	Multi-Purpose Hall		200
Allwell testing Yr 4	Weekday	1	During school hours	Dame Joan Sutherland		50 external students	Weekday	1	During school hours	Multi-Purpose Hall		50 external students
Boarders dance	Weekday	1	7pm - 10pm	Jane Barker Hall		300 external students and bo	Weekday	1	7pm - 10pm	Multi-Purpose Hall		300 external students and boarders
Boarder Parents Dinner	Weekdays	1	6.30pm - 9.30pm	Magnolia Room		40 parents	Weekdays	1	6.30pm - 9.30pm	Multi-Purpose Hall		40 parents
Valedictory Dinner	Weekdays	1	6.30pm - 9.30pm	Magnolia Room		120 (boarders + parents + st	Weekdays	1	6.30pm - 9.30pm	Multi-Purpose Hall		120 (boarders + parents + staff)
Boarders Xmas Dinner	Weekdays	1	6.30pm - 9.30pm	Magnolia Room		140 (boarders + parents + st	Weekdays	1	6.30pm - 9.30pm	Multi-Purpose Hall		140 (boarders + parents + staff)
Parent Event	Weekday	4	NA	NA		NA	Weekday	4	During school hours	Research Centre		50 parents
Book week activities	Weekday	5	During school hours	Senior/Junior Library		Students only	Weekday	5	During school hours	Research Centre		Students + parental involvement
Boarders after school tutorials	Weekdays	Weekdays throughout the yr	3.20pm - 9pm	Lenthall Building		70 students/tutors mix	Weekday	Weekdays throughout the yr	3.20pm - 9pm	Research Centre		70 students/tutors mix
Speech Night Guest Supper	Weekday	1	5.30pm - 7.00pm	Reception Room		30 (parents + school council	Weekday	1	6.30pm - 8.00pm	Board Room		30 (parents + school council + staff)

Conditions of Consent Impacting Use

E5 a) all performing arts and social evening events (starting after 5pm) shall not commence until 6:30pm
E5 b) all performing arts and social evening events must finish by 9:30pm except for the annual boarders dance which shall finish by 10pm
E5 c) the inclusion of non-school student participants is limited to either the squad swimming or the water polo training evening sessions (from 6pm)
E5 d) 'learn to swim' for non-students on weekdays outside of school hours is only permitted after 4pm
E5 e) a minimum 15 minutes transition period shall be provided between scheduled sessions for each activity on weekends

F1) An up to date event schedule shall be maintained and must:
o a) identify the dates for all the annual events (excl. student only events), time of events and the number of attendees
o b) be displayed in a convenient and publicly accessible location or distributed to surrounding residents on an annual basis, including notification of any changes to events
o c) establish a notification process (e.g. letterbox drop or e-comm.) for informing surrounding residents within 1x week to a fornight before the event of the upcoming event

F8) The hours of operation for the aquatic centre shall be restricted to between:
o a) 6am and 8pm; Mondays to Fridays inclusive
o b) 8am and 6pm; Saturdays and Sundays
F9) the aquatic centre must not be used by external attendees when any evening or weekend events are being held in the auditorium hall

APPENDIX E

St Catherine's School Travel Access Guide

ST CATH'S TRANSPORT ACCESS GUIDE

NSW public bus service

There are currently five NSW public bus services available conveniently stopping within a close proximity to St Catherine's.

These high-frequency services include:

ROUTE	PUBLIC SERVICE	TIMETABLE
360	Leichhardt St, entrance via gate 8	view
379	Albion St, entrance via gate 3	view
379	Macpherson St, entrance via gate 6	view
350	Albion St, entrance via gate 3	view
390X	Albion St, entrance via gate 3	view

Routes are available Monday to Friday, every five to ten minutes.
Use the **NSW trip planner** to plan your route map.

OPAL CARDS
The school opal card allows eligible St Catherine's students free travel on public transport between their residence and school on trains, buses and ferries.
For further information please visit **www.opal.com.au**

St Catherine's bus service

The school provides a subsidised private bus service for St Catherine's students from Years 3–12. We offer three services Bondi Beach, Eastern Beaches and Eastern Suburbs. To register your daughter please visit **StCathsConnect_Transport.**

Train

Bondi Junction is the closest train station, connecting bus route 360, 379, 350 and 390X to St Catherine's School. Walking distance from Bondi Junction station to St Catherine's School is approximately twenty minutes.
Please **click here** to view routes and train timetables.

Parking

Pick-up and drop-off areas
There are dedicated pick-up and drop-off areas located in Leichhardt Street and Macpherson Street.

Staff and visitor parking
Parking is spread across the campus for those who are allocated a car space. There is only very limited all day parking in surrounding streets.
We strongly encourage public transport and/or active travel.

Cycling

Bicycle racks are located in the museum courtyard and in the PAC carpark.
End of trip facilities are available in the Aquatic Centre.
Please **click here** to view and download the cycling route map.

Walking

Main entrance to St Catherine's School is via Albion Street, approximate walking duration from bus stops available is between one to fourteen minutes.

Green Links Project

In partnership with Waverley Council, St Catherine's encourages students to use Green Links and walk to school as an alternative form of transport.
For further information please **click here.**

CRICOS Provider No. 02322K

St Catherine's School
Sydney

St Catherine's School
www.stcatherines.nsw.edu.au
stcaths@stcaths.nsw.edu.au
26 Albion Street Waverley
NSW 2024 Australia
+61 2 8305 6200

Our Story

There is so much to the story of St Catherine's School.
Scan the QR code to read and experience our wonderful School.

APPENDIX F

Student Travel Mode Surveys

St Catherine's School - 2026 Travel Survey (STUDENT or PARENT ON BEHALF)

Please complete within one (1) week of receiving this.

or parents guardians completing the survey on behalf of students please complete one survey for <u>each</u> student in the household

1. Please enter the <u>Street, Suburb and Postcode</u> you usually travel from to attend St Catherine's School

Street

Suburb

Postcode

2. hat school year are you currently in at St Catherine's School

- ○ indergarten
- ○ ear 1
- ○ ear 2
- ○ ear
- ○ ear
- ○ ear
- ○ ear 6
- ○ ear
- ○ ear
- ○ ear
- ○ ear 10
- ○ ear 11
- ○ ear 12

. Do you have any sisters also <u>attending St Catherine's School</u>

- ○ No
- ○ es. (please specify how many)

. hat time do you usually <u>arrive</u> at school each weekday

Note Tick One bo per Column

	ON	TUE	ED	THU	FRI	SAT	SUN
Before 00am	☐	☐	☐	☐	☐	☐	☐
00 - 2 am	☐	☐	☐	☐	☐	☐	☐
0 - am	☐	☐	☐	☐	☐	☐	☐
00 - 20am	☐	☐	☐	☐	☐	☐	☐
After 20am	☐	☐	☐	☐	☐	☐	☐
N A (boarding house etc.)	☐	☐	☐	☐	☐	☐	☐

. hat time do you usually depart from school each weekday

Note Tick One bo per Column

	ON	TUE	ED	THU	FRI	SAT	SUN
Before 2 00pm	☐	☐	☐	☐	☐	☐	☐
2 00 - 2 2 pm	☐	☐	☐	☐	☐	☐	☐
2 0 - 2 pm	☐	☐	☐	☐	☐	☐	☐
00 - 2 pm	☐	☐	☐	☐	☐	☐	☐
0 - pm	☐	☐	☐	☐	☐	☐	☐
00 - 0pm	☐	☐	☐	☐	☐	☐	☐
After 0pm	☐	☐	☐	☐	☐	☐	☐
N A (boarding house etc.)	☐	☐	☐	☐	☐	☐	☐

6. How do you travel to School, from home

Note Tick One bo per Column

	ON	TUE	ED	THU	FRI	SAT	SUN
alk only (from home to school)	☐	☐	☐	☐	☐	☐	☐
Car as passenger (Dropped-Off)	☐	☐	☐	☐	☐	☐	☐
St Catherine s Bus Service	☐	☐	☐	☐	☐	☐	☐
Public transport (Sydney Bus and or Sydney Train)	☐	☐	☐	☐	☐	☐	☐
Car as driver (for senior students with licence)	☐	☐	☐	☐	☐	☐	☐
Stay at the boarding house	☐	☐	☐	☐	☐	☐	☐
Cycle	☐	☐	☐	☐	☐	☐	☐
N A	☐	☐	☐	☐	☐	☐	☐

. If you travel to school as a passenger in a car, how many additional passengers (e cluding yourself) that are also St Catherine's Student(s), share the car ride to school

- ◯ 0, None
- ◯ 1
- ◯ 2
- ◯
- ◯

Comments

. If you travel to school as a passenger in a car, where are you usually dropped off

- ◯ acpherson Street (ITHIN designated drop-off pick-up one)
- ◯ Leichhardt Street (ITHIN designated drop-off pick-up one)
- ◯ Albion Street (ITHIN designated drop-off pick-up one)
- ◯ acpherson Street (OUTSIDE designated drop-off pick-up one)
- ◯ Leichhardt Street (OUTSIDE designated drop-off pick-up one)
- ◯ Albion Street (OUTSIDE designated drop-off pick-up one)
- ◯ arna Park
- ◯ Other (Please specify street and vicinity)

- ◯ ueens Park
- ◯ Fern Street
- ◯ ipps Street
- ◯ Pine Street
- ◯ Parent caretaker parks and walks you to the school entrance
- ◯ Do not travel to school by car

. If you travel to school as a passenger in a car, where is your secondary drop-off point

- ◯ acpherson Street (ITHIN designated drop-off pick-up one)
- ◯ Leichhardt Street (ITHIN designated drop-off pick-up one)
- ◯ Albion Street (ITHIN designated drop-off pick-up one)
- ◯ acpherson Street (OUTSIDE designated drop-off pick-up one)
- ◯ Leichhardt Street (OUTSIDE designated drop-off pick-up one)
- ◯ Albion Street (OUTSIDE designated drop-off pick-up one)
- ◯ arna Park
- ◯ Other (Please specify street and vicinity)

- ◯ ueens Park
- ◯ Fern Street
- ◯ ipps Street
- ◯ Pine Street
- ◯ Parent caretaker parks and walks you to the school entrance
- ◯ Do not travel to school by car

10. How do you travel home, from school

Note Tick One bo per Column

	ON	TUE	ED	THU	FRI	SAT	SUN
alk only	☐	☐	☐	☐	☐	☐	☐
Car as passenger (picked-up)	☐	☐	☐	☐	☐	☐	☐
St Catherine s Bus Service	☐	☐	☐	☐	☐	☐	☐
Public transport (Sydney Bus and or Sydney Train)	☐	☐	☐	☐	☐	☐	☐
Car as driver (for senior students with licence)	☐	☐	☐	☐	☐	☐	☐
Stay at the boarding house	☐	☐	☐	☐	☐	☐	☐
Cycle	☐	☐	☐	☐	☐	☐	☐
N A	☐	☐	☐	☐	☐	☐	☐

11. If you travel home from school as a passenger in a car, how many additional passengers (e cluding yourself) that are also St Catherine's Student(s), share the car ride home

- ◯ 0, None
- ◯ 1
- ◯ 2
- ◯
- ◯

Comments

12. If you travel home from school as a passenger in a car, where are you picked-up from in the afternoon

- ◯ acpherson Street (ITHIN designated drop-off pick-up one)
- ◯ Leichhardt Street (ITHIN designated drop-off pick-up one)
- ◯ Albion Street (ITHIN designated drop-off pick-up one)
- ◯ acpherson Street (OUTSIDE designated drop-off pick-up one)
- ◯ Leichhardt Street (OUTSIDE designated drop-off pick-up one)
- ◯ Albion Street (OUTSIDE designated drop-off pick-up one)
- ◯ Bronte Road
- ◯ arna Park
- ◯ ueens Park
- ◯ Fern Street
- ◯ ipps Street
- ◯ Pine Street
- ◯ Parent caretaker walks you from the school gate to the parked car
- ◯ Do not travel from school by car
- ◯ Other (Please specify street and vicinity)

1 . If you use the St Catherine s Bus Service to travel to and from school, please specify which bus route you use

- ◯ STC1 Bondi Beach
- ◯ STC2 Eastern Beaches
- ◯ STC Eastern Suburbs

1 . If you do not currently use the St Catherine s Bus Service, could you please tell us why (ultiple answers are accepted)

- ☐ I do not know about this bus service
- ☐ The bus service is too e pensive
- ☐ The bus service routes do no pass by my house or is not close enough
- ☐ y parent caretaker drops me off and picks me up to from school
- ☐ The timetable of the bus services does not suit my schedule (e.g. e tracurricular activities)
- ☐ The bus runs late to school
- ☐ Duration of the bus trip is too long

Other (please specify) or provide comments

1 . Have you caught the bus previously

- ◯ No
- ◯ es (if yes, specify why did you stop using the bus service)

16. If St Catherine's School e panded its e isting bus service to your suburb, would you consider using this service

- ◯ es
- ◯ No (please specify, why not)

1 . If you do not currently walk to school, could you please tell us why (ultiple answers are accepted)

- ☐ Carrying bag that is too heavy or too many items
- ☐ y parent guardian drops me off and or picks me up by car
- ☐ alking route is unsafe
- ☐ Hilly topography surrounding the school
- ☐ Too far to walk

Other (please specify) or provide comments

1 . hat would encourage you to walk, or take public transport to School (or reasons why you do not)

1 . ould any of the following encourage you to choose an alternative to the private car for your ourney to and from school (ultiple answers are accepted)

- ☐ Further discounted subsidised bus service
- ☐ House Points
- ☐ A mufti-day once a term
- ☐ Nothing

Other (please specify) or provide comments

St Catherine's School - 2026 Travel Survey (STUDENT or PARENT ON BEHALF)

Please complete within one (1) week of receiving this.

20. Thank you for participating in this survey. This information will be used to assist St Catherine's School study into reducing traffic congestion around the school particularly during the morning drop-off and afternoon pick-up periods.

If you have any further suggestions, we would love to hear your feedback.

We thank you for your valuable time and input.

Note: The aggregated data collected in this survey will be made public.

APPENDIX G

Staff Travel Mode Surveys

St Catherine's School

St Catherine's School - 6 Travel Survey (ST FF)

Please complete within one (1) week of receiving this.

lease note that there is no need to identify oneself when answering this survey.

1. Please enter the Street, Suburb and Postcode you typically travel to and from work (St Catherine's School)? (i.e. may be where you live)

Street

Suburb

Postcode

. On a typical day, how long does it take you to **travel to chool**?

- ◯ - 15 minutes
- ◯ 15 - minutes
- ◯ - 5 minutes
- ◯ 5 - 6 minutes
- ◯ 1 hour
- ◯ Other (please specify)

. On a typical day, how long does it take you to return home from School?

- ◯ - 15 minutes
- ◯ 15 - minutes
- ◯ - 5 minutes
- ◯ 5 - 6 minutes
- ◯ 1 hour
- ◯ Other (please specify)

. What is your mployment Type at St Catherine's School?

- ◯ Full-Time
- ◯ Part-Time
- ◯ Casual

5. What time do you usually arrive to school on the following weekdays? (For a typical week)

Note Tick One bo per Column

	MON	T	W D	TH	F I	S T	S N
Before 7 am	☐	☐	☐	☐	☐	☐	☐
7 - 7 am	☐	☐	☐	☐	☐	☐	☐
7 - 7 5 am	☐	☐	☐	☐	☐	☐	☐
8 - 8 am	☐	☐	☐	☐	☐	☐	☐
fter 8 am	☐	☐	☐	☐	☐	☐	☐
N/	☐	☐	☐	☐	☐	☐	☐

6. What time do you usually depart from school? (For a typical week)

Note Tick One bo per Column

	MON	T	W D	TH	F I	S T	S N
Before pm	☐	☐	☐	☐	☐	☐	☐
- pm	☐	☐	☐	☐	☐	☐	☐
- 5 pm	☐	☐	☐	☐	☐	☐	☐
5 - 5 pm	☐	☐	☐	☐	☐	☐	☐
5 - 6 pm	☐	☐	☐	☐	☐	☐	☐
fter 6 pm	☐	☐	☐	☐	☐	☐	☐
N/	☐	☐	☐	☐	☐	☐	☐

7. How many times per year are you re uired to attend an evening event in

	Number of vents
P C Theatre	
The Multi Purpose Hall	
The uatic Centre	

8. When attending evening events would you normally

- ◯ emain on Campus until the event has concluded?
- ◯ eave at your regular time and return to the campus prior to the event?

. If you do not remain on Campus, how would you normally travel to evening events?

- ◯ Car as driver alone
- ◯ Car as driver with passenger
- ◯ Car as passenger (dropped-off / picked-up)
- ◯ Public transport (Bus and/or Train)
- ◯ Cycle
- ◯ Walk only
- ◯ Motorbike
- ◯ Ta i/ ber
- ◯ N/ - (emain on campus)

1 . How do you travel between home and work? (For a typical week)

Note Tick One bo per Column

	MON	T	W D	TH	F I	S T	S N
Do not work this day	☐	☐	☐	☐	☐	☐	☐
Car as driver alone	☐	☐	☐	☐	☐	☐	☐
Car as driver with passenger	☐	☐	☐	☐	☐	☐	☐
Car as passenger (dropped-off / picked-up)	☐	☐	☐	☐	☐	☐	☐
Public transport (Bus and/or Train)	☐	☐	☐	☐	☐	☐	☐
Cycle	☐	☐	☐	☐	☐	☐	☐
Walk only	☐	☐	☐	☐	☐	☐	☐
Motorbike	☐	☐	☐	☐	☐	☐	☐
Ta i / ber	☐	☐	☐	☐	☐	☐	☐
N/	☐	☐	☐	☐	☐	☐	☐

11. If you travel to work by car as a driver (indicated in uestion 5, above), where do you most commonly park?

- ◯ Within School rounds/Property
- ◯ Macpherson Street
- ◯ Carrington oad
- ◯ Fern Street
- ◯ arna Park
- ◯ ueens Park
- ◯ Bronte oad
- ◯ ipps Street
- ◯ eichhardt Street
- ◯ On Other Nearby Street (kerbside parking).
  Please Specify (sub ect street, locality/nearest cross street)

1 . If you have indicated above in uestion 5, that you travel to/from work by car as driver with passenger , how many passenger(s) are also St Catherine's School staff member(s)?

- ◯ (None)
- ◯ 1
- ◯
- ◯
- ◯

Other (Comments)

1 . If you have indicated above in uestion 5, that you travel to/from work by car as passenger is the driver also a St Catherine's School staff member?

- ◯ es
- ◯ No

1 . What is your main reason for choosing the travel mode elected in uestion 5?

- ◯ Cheapest
- ◯ uickest
- ◯ nvironmentally-friendly
- ◯ ack of alternative
- ◯ ess stressful
- ◯ Habit
- ◯ Personal Safety
- ◯ Other commitments
- ◯ eliability

Other or Comments

15. Would any of the following encourage you to choose an alternative to the car (alone) on your commute? (Multiple answers are accepted)

- [ ] Discounted/subsidised public transport tickets (e.g. discounted or school funded Opal Cards)
- [ ] Improved Bicycle facilities, such as parking, showers and lockers
- [ ] Bicycle purchase discount scheme
- [ ] Financial measures such as monetary incentive for opting not to drive
- [ ] Discounted parking at Bondi Junction or local parking station
- [ ] Nothing

Other or Comments

16. If you do not currently walk or cycle to work, could you please tell us why? (Please rank by order of importance, with 1 being the main reason)

⇕	Carrying bag/items that is too heavy or too many
⇕	Walking or Cycling route is unsafe
⇕	Too far to walk
⇕	Too far to cycle
⇕	Family member/partner/friend/colleague drops me off or picks me up
⇕	Hilly topography surrounding the school
⇕	Not enough bike racks or showers at work

17. Please comment on what would encourage you to cycle or walk to work?

18. Thank you for participating in this survey. This information will be used to assist St Catherine's School study into reducing traffic congestion around the school particularly during the morning drop-off and afternoon pick-up periods.

If you have any further suggestions, we would love to hear your feedback.

We thank you for your valuable time and input.

Note: The aggregated data collected in this survey will be made public.