TRAFFIC IMPACT ASSESSMENT

Adler Building Reconstruction - Emanuel School
20 Stanley Street, Randwick

Reference: 19.191r01v05
Date: January 2020

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1. INTRODUCTION

TRAFFIX has been commissioned by Emanuel School to undertake a traffic impact assessment (TIA) in support of a development application (DA) relating to the redevelopment of the 'Adler' building with Emanuel School located at 20 Stanley Street, Randwick. The development is located within the Randwick City Council Local Government Area (LGA) and will be assessed accordingly.

This report documents the findings of our investigations and should be read in the context of the Statement of Environmental Effects (SEE) prepared separately. The development is a minor development and does not require referral to the Roads and Maritime Services (RMS) under the provisions of State Environmental Planning Policy (Infrastructure) 2007.

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the proposed development
- Section 5: Assesses the parking requirements
- Section 6: Assesses traffic impacts
- Section 7: Discusses access and internal design aspects
- Section 8: Presents the overall study conclusions

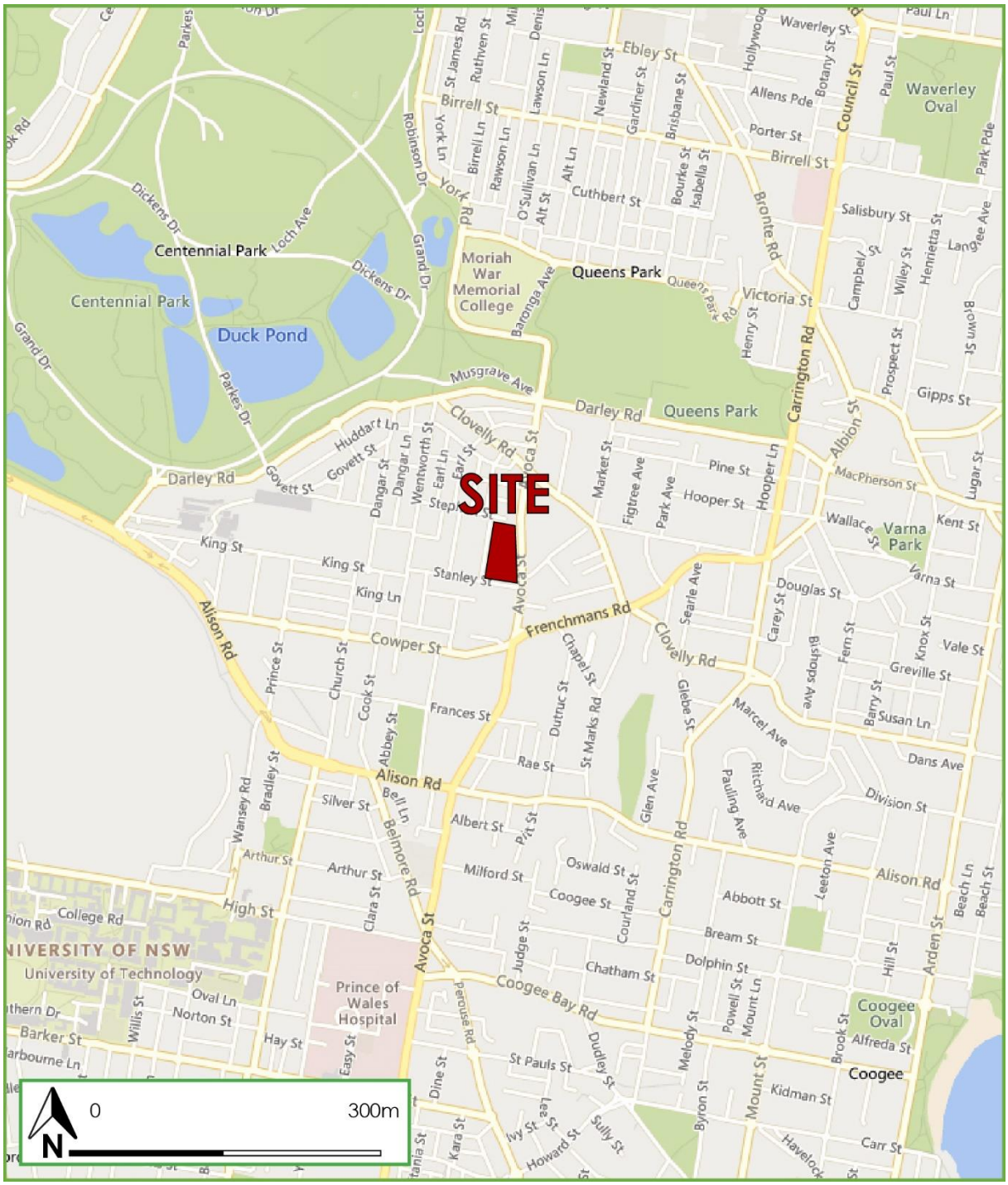


Figure 1: Location Plan

Figure 2: Site Plan

3. EXISTING TRAFFIC CONDITIONS

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in **Figure 3** with the following roads of particular interest:

- Avoca Street: an Unclassified Regional Roads (7330) that generally runs in a north-south direction between Darley Road in the north and Anzac Parade in the south. Within the vicinity of the site, Avoca Street is subject to a 60km/h speed zoning and accommodates one lane of traffic in either direction. School zone restrictions apply between the hours 8:00am - 9:30am and 2:30pm – 4:00pm on school days, reducing the speed limit to 40km/h. A no parking restriction applies between 7:30am-9:30am and 2:30pm-4pm along the western side of Avoca Street with supplementary 'School Drop-off Pick up Zone' signage.
- Stanley Street: a local road that generally runs in an east-west direction between Avoca Street in the east and Wentworth Street in the west. Within the vicinity of the site, Stanley Street is subject to a 50km/h speed zoning and accommodates a single lane of traffic in either direction. School zone restrictions apply between the hours 8:00am - 9:30am and 2:30pm – 4:00pm on school days, reducing the speed limit to 40km/h. A no parking restriction applies between 7:30am-9:30am and 2:30pm-4pm along the northern side of Stanley Street (adjacent school) with supplementary 'School Drop-off Pick up Zone' signage. A bus zone also applies adjacent the school between 7:30am-4pm on school days.
- Chepstow Street: a local road that generally runs in a north-south direction between Stephen Street in the north and Stanley Street in the south. Within the vicinity of the site, Chepstow Street is subject to a 50km/h speed zoning and accommodates a single lane of traffic in either direction. School zone restrictions apply between the hours 8:00am - 9:30am and 2:30pm – 4:00pm on school days, reducing the speed limit to 40km/h. Kerbside parking is generally permitted within the vicinity of the site.
- Stephen Street: a local road that generally runs in an east-west direction between Chepstow Street in the east and Wentworth Street in the west. Within the vicinity of the site, Stephen Street is subject to a 50km/h speed

zoning and accommodates a single lane of traffic in either direction. The eastern section of Stephen Street is subject to school zone restrictions between the hours 8:00am - 9:30am and 2:30pm – 4:00pm on school days, reducing the speed limit to 40km/h. Kerbside parking is generally permitted within the vicinity of the site.

The site is conveniently located with respect to the local and arterial road systems serving the region, with connections to the north and south using Avoca Street and Wentworth Street.

Figure 3: Road Hierarchy

3.2 Existing On-street / Off-street Parking

3.2.1 Off-Street Parking

The school currently provides 19 off-street parking spaces including 11 spaces under the science block and eight (8) spaces adjacent the Kormehl Centre (pre-school). The parking spaces are unallocated and on-site observations revealed that the current parking arrangements operated satisfactorily.

3.2.2 On-Street Parking

Local roads surrounding the school provide a number of on-street parking options for staff, parents and students. Kerbside parking restrictions include all-day parking, timed no parking, timed bus zones and no stopping.

Unrestricted on-street parking is available near the school at the following locations:

- Chepstow Street;
- Monmouth Street;
- Stanley Street;
- Stephen Street; and
- Market Street.

The following pick up and drop off parking restrictions are available adjacent the school:

- Avoca Street: Approximately 100m of 'No Parking 7:30am – 9:30am, 2:30pm-4:00pm School Days' with a supplementary 'School Drop Off Pick Up Zone' sign.
- Stanley Street: Approximately 16m of 'No Parking 7:30am – 9:30am, 2:30pm-4:00pm School Days' with a supplementary 'School Drop Off Pick Up Zone' sign.

Remaining sections of kerbside parking adjacent the school comprise unrestricted parking, no stopping restrictions and bus zones.

3.3 Transport - Buses

3.3.1 Public Bus Services

The existing public transport network operating in the locality is shown in **Figure 4**. Standard transport planning guidelines state that a development is advantageously located to benefit bus services if it is within 400 metres walking distance of a bus stop. It is evident that the site benefits from excellent bus services with 12 bus stops located within 400 metres of the site. These services provide connections to Sydney CBD and the Eastern suburbs. The bus routes servicing the area are shown in **Table 1** below:

Table 1: Bus Routes

Route Number	Route Name	Route Number	Route Name
314	Coogee to Bondi Junction via. Randwick Junction	X39	Clovelly to City Martin Place (Express Service)
316	Eastgardens to Bondi Junction via. Randwick Junction	X40	Clovelly to City Museum (Express Service)
317	Eastgardens to Bondi Junction via. Randwick Junction and Beauchamp Road	348	Wolli Creek to Bondi Junction
338	Clovelly to Central Railway Square	357	Mascot to Bondi Junction via. Kingsford and Randwick
339	Clovelly to City Gresham Street	400	Bondi Junction to Sydney Airport

In addition to these services, Bondi Junction Railway Station is located approximately 1.9 kilometres north of the site. This station provides services on the T4 – Eastern Suburbs and Illawarra Line, providing connections to the Sydney CBD.

3.3.2 School Bus Services

In addition to the numerous pubic bus services, the site is serviced by the 683E school bus which runs between Emanuel School and Watsons Bay. Utilisation of this bus service is discussed in further detail in **Section 4.3**.

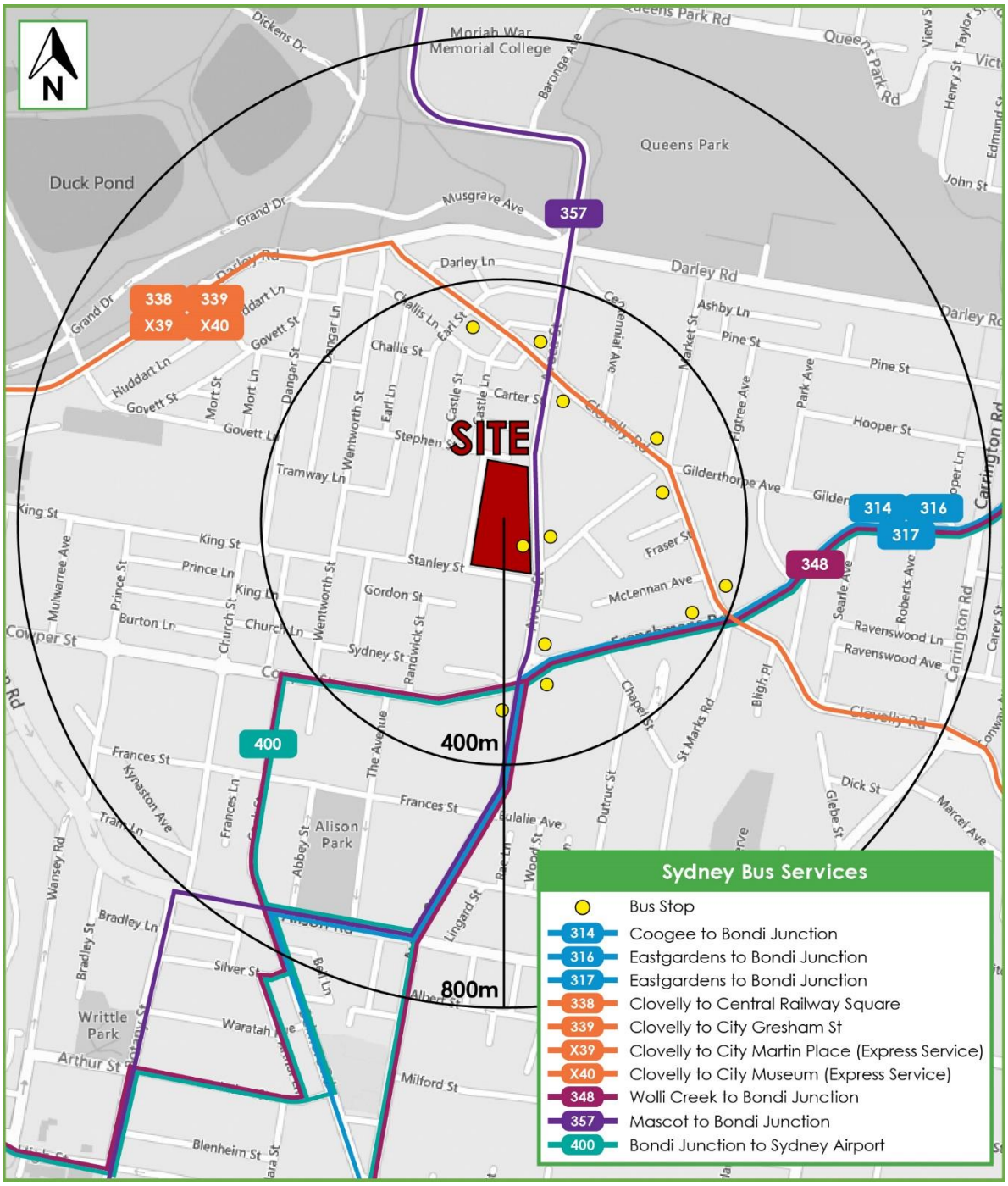


Figure 4: Public Transport Routes

4. EXISTING MANAGEMENT MEASURES

4.1 Existing Pedestrian Management

The school provides three (3) student pedestrian entry/exit points, including a gate on Avoca Street, a gate on Stanley Street (near Avoca Street) and a gate to Chepstow Street, near Stephen Street. All students are required to enter and leave the school through these points only and are not permitted to exit via the music block/Kornmehl car park due to pedestrian/car conflicts. Students will utilise the existing concrete footpaths adjacent the school to travel between the school grounds and the designated pick up and drop off areas along Stanley Street and Avoca Street. The following pedestrian facilities are also provided in the vicinity of the site to ensure safe pedestrian connections to the wider footpath network:

- A marked pedestrian crossing on Avoca Street, immediately north of Market Street.
- A raised pedestrian refuge on Stanley Street, at Avoca Street intersection.

4.2 Existing Traffic Management

The school currently takes a proactive approach to manage traffic along the Stanley Street and Avoca Street frontages and has devised a "Go With The Flow" (GWTF) scheme to manage student pick up and drop offs. In conjunction with the GWTF scheme, the school has also appointed a car concierge/traffic warden to assist with the GWTF process. The traffic warden will be present at the Stanley Street drop off/pick up area before school (7:30am to 8:30am) and at the Avoca Street drop off/pick up area after school (3:00pm to 4:00pm). The warden's primary role is to direct drivers towards the designated pick up and drop off zones, ensure drivers do not park in bus zones/no stopping restrictions and to report any drivers who continually violate parking restrictions. In the morning drop off period, drivers will make their way to the Avoca Street drop off area. Students will depart the vehicle and utilise the footpath along Avoca Street to enter via the Stanley Street entrance. During the afternoon pick up period, a duty teacher will marshal children at the Avoca Street exit gate. As parents/guardians arrive at the Avoca Street pick up area, the teacher inside the grounds will release the students and allow them to enter the vehicle from the kerb side only. This is done under the supervision of two (2) teachers who have radio contact with the teacher inside the school grounds. Parents/guardians are encouraged to remain in the vehicle during the pick

up period. The traffic warden will also be present to direct drivers to the pick-up area and to ensure parking restrictions are followed. If parents/guardians are unable to join the queue at the Avoca Street pick up area, parent are encouraged to loop around the block until space becomes available.

4.3 Existing School Travel Characteristics

4.3.1 Context

In order to assess existing travel characteristics of the school development, online travel mode questionnaire surveys were prepared by TRAFFIX and distributed by the school to all staff, parents/guardian (ELC & K to Year 6) and students (Year 7 to 12).

The online questionnaire was open for responses for an eight-day period from 23rd September 2019 to 1st October 2019. A sample rate of approximately 46% of students and 73% of staff was collected and completed. The survey included a range of questions which were primarily aimed to gain an understanding of average car occupancies and travel modes in the morning and afternoon school peak periods in order to understand the existing development characteristics. The key results of these surveys are discussed in the following sections.

4.3.2 Travel Mode Splits

Table 2 presents the existing staff travel modes, whilst **Table 3** and **Table 4** present the existing student travel modes during the AM and PM school peak periods. Travel mode data will be used in later sections to determine general travel characteristics of the existing educational development.

Table 2: Staff Travel Modes – AM and PM School Peak Periods

Travel Modes	AM Peak	PM Peak
By Car (as driver)	85.7%	85.7%
By Car (as passenger – dropped off/picked up)	1.9%	1.0%
By Car (as passenger – carpool with other staff who park at/near school)	0%	0%
Public Transport - Bus	4.8%	5.7%
Public Transport - Other	1.9%	1.9%
Cycle	1.9%	1.9%
Walk	3.8%	3.8%

Based on the above survey results; approximately 87% of staff utilise private vehicles to travel to/from the school with the remaining staff utilising other modes of transport (including public transport and walking).

Table 3: Student Travel Modes (ELC & K to Year 6) – AM and PM School Peak Periods

Travel Modes	AM Peak	PM Peak
By Car (as a passenger – dropped off by parent/guardian)	79.1%	67.7%
By Car (as driver)	0%	0%
By Car (as passenger – car pool with other student driving)	0%	1.3%
School Bus	12.0%	22.2%
Public Transport - Bus	5.1%	3.2%
Public Transport - Other	0%	0%
Cycle	0.6%	0.6%
Walk	3.2%	3.8%
Extra-Curricular activities on site	N/A	1.3%

Table 4: Student Travel Modes (Year 7 to12) – AM and PM School Peak Periods

Travel Modes	AM Peak	PM Peak
By Car (as a passenger – dropped off by parent/guardian)	50%	26%
By Car (as driver)	4.4%	4.4%
By Car (as passenger – car pool with other student driving)	2.4%	2.4%
School Bus	20.4%	42.4%
Public Transport - Bus	13.6%	12.8%
Public Transport - Other	0.8%	0.4%
Cycle	1.6%	1.6%
Walk	6.8%	9.6%
Extra-Curricular activities on site	N/A	0.4%

Tables 3 and 4 demonstrate that 79.1% of students between Preschool and Year 6 are dropped off by car in the morning and 67.7% picked up in the afternoon. 50% of students in Years 7-12 are dropped off in the mornings and 26% picked up in the afternoons.

A proportion of students between Preschool and Year 6, 17.09%, utilise bus transport in the morning, increasing to 25.31% in the afternoons. Students between the Year 7 and 12 showed a greater uptake in bus transport with 34% in the mornings and 55% in the afternoons.

4.3.3 Staff Travel

The results of the travel questionnaires completed by the staff at Emanuel School are outlined in the tables below. **Tables 5** to **9** present the surveyed travel mode shares, arrival and departure times of the existing staff and parking locations.

Table 5: Staff Travel Modes to Emanuel School

Travel Modes	Number of Staff (Average)	Proportion (AM Peak)
By Car (as driver)	118	85.7%
By Car (as passenger – dropped off/picked up)	3	1.9%
By Car (as passenger – carpool with other staff who park at/near school)	0	0%
Public Transport - Bus	7	4.8%
Public Transport - Other	3	1.9%
Cycle	3	1.9%
Walk	5	3.8%

Table 6: Staff Travel Modes from Emanuel School

Travel Modes	Number of Staff (Average)	Proportion (PM Peak)
By Car (as driver)	118	85.7%
By Car (as passenger – dropped off/picked up)	1	1.0%
By Car (as passenger – carpool with other staff who park at/near school)	0	0%
Public Transport - Bus	8	5.7%
Public Transport - Other	3	1.9%
Cycle	3	1.9%
Walk	5	3.8%

Table 7: Parking Location of Staff at Emanuel School

Parking Location	Number of Staff (Average)	Proportion
Within School Grounds	5	4.4%
Market Street	11	8.9%
Avoca Street	33	27.8%
Stanley Street	9	7.8%
Chepstow Street	21	17.8%
Stephen Street	13	11.1%
Monmouth Street	4	3.3%
Castle Street	3	2.2%
Other	20	16.7%

Table 8: Arrival Time of Staff at Emanuel School

Arrival Time	Number of Staff (Average)	Proportion
Prior to 7:00am	11	7.6%
7:00am – 8:00am	104	75.2%
8:00am – 9:00am	20	14.3%
9:00am – 10:00am	1	1.0%
After 10:00am	0	0%
Other	3	1.9%

Table 9: Departure Time of Staff at Emanuel School

Departure Time	Number of Staff (Average)	Proportion
Prior to 3:00pm	4	2.9%
3:00pm – 4:00pm	25	18.1%
4:00pm – 5:00pm	78	56.2%
5:00pm – 6:00pm	20	14.3%
6:00pm – 7:00pm	9	6.7%
After 7:00pm	1	1.0%
Other	1	1.0%

The key findings from the staff travel mode surveys are summarised below:

- 87% of staff drive a car in the AM and PM periods.
- 5% of staff utilise public transport to and from the school.
- 4% of staff walk to and from the school.
- 4% of staff park on the school property, whilst 96% park on the surrounding streets.
- For the purpose of reviewing trip arrival patterns, 75% of staff arrived at the school between the hours of 7:00am and 8:00am and 56% of staff leave the school between the hours of 4:00pm and 5:00pm.

4.3.4 Students – ELC & K to Year 6

The result of the travel questionnaires completed by parents of students in ELC to Year 6 at Emanuel School are outlined in the tables below. **Tables 10** to **14** present the surveyed travel mode shares, arrival and departure times of the existing students.

Table 10: ELC & K to Year 6 Travel Modes to Emanuel School

Travel Modes	Number of Students (Average)	Proportion (AM Peak)
By Car (as a passenger – dropped by parent/guardian)	293	79.1%
By Car (as passenger – car pool with other student driving)	0	0%
School Bus	46	0.0%
Public Transport - Bus	19	12.0%
Public Transport - Other	0	5.1%
Cycle	2	0.0%
Walk	12	0.6%
Other	0	3.2%

Table 11: ELC & K to Year 6 Travel Modes from Emanuel School

Travel Modes	Number of Students (Average)	Proportion (PM Peak)
By Car (as a passenger – picked up by parent/guardian)	251	67.7%
By Car (as passenger – car pool with other student driving)	5	1.3%
School Bus	82	22.2%
Public Transport - Bus	12	3.2%
Public Transport - Other	0	0%
Cycle	2	0.6%
Walk	14	3.8%
Other	0	0%
Extra-Curricular activities on site	5	1.3%

Table 12: Private Vehicle Occupancy of Students (ELC & K to Year 6) at Emanuel School

Private Vehicle Occupancy	AM	PM
	Proportion	Proportions
1	28%	31%
2 or more[1]	72% car sharing	69% car sharing

[1] Car occupancies of more than 2 may include students from Year 7 to 12.

Table 13: Arrival Time of Students (ELC & K to Year 6) at Emanuel School

Arrival Time	Number of Students (Average)	Proportion
Prior to 8:00am	75	20.3%
8:00am – 8:15am	269	72.8%
8:15am – 8:30am	7	1.9%
8:30am – 8:45am	2	0.6%
8:45am - 9:00am	7	1.9%
After 9:00am	0	0%
Other	9	2.5%

Table 14: Departure Time of Students (ELC – Year 6) at Emanuel School

Departure Time	Number of Students (Average)	Proportion
Prior to 3:00pm	0	0%
3:00pm – 3:15pm	21	5.7%
3:15pm – 3:30pm	19	5.1%
3:30pm – 3:45pm	276	74.7%
3:45pm – 4:00pm	28	7.6%
After 4:00pm	7	1.9%
After 4:00pm (Emanuel OOSH)	12	3.2%
Other	7	1.9%

The key findings of the student travel mode surveys for students in ELC & K to Year 6 are as follows:

- 79% of students get dropped off in the morning with 72% of these students arriving in the same vehicle in groups of 2 or more, and 68% of students get picked up in the afternoon with 68% of these students departing in the same vehicle in groups of 2 or more.
- 17% and 25% students utilise bus transport (school bus and public buses) in the morning and afternoon respectively.
- 4% of students walk or cycle to school in the morning and walk or cycle home in the afternoon.

4.3.5 Students – Year 7 to 12

The result of the travel questionnaires completed by a sample of students between Year 7 and 12 at Emanuel School are outlined in the tables below. **Table 15** to **19** present the surveyed travel mode shares, arrival and departure times of the existing students.

Table 15: Year 7 to 12 Travel Modes to Emanuel School

Travel Modes	Number of Students (Average)	Proportion (AM Peak)
By Car (as a passenger – dropped by parent/guardian)	229	50.0%
By Car (Student driving and parking at/near school)	20	4.4%
By Car (as passenger – car pool with other student driving)	11	2.4%
School Bus	93	20.4%
Public Transport - Bus	62	13.6%
Public Transport - Other	4	0.8%
Cycle	7	1.6%
Walk	31	6.8%
Other	0	0%

Table 16: ELC – Year 7 to 12 Travel Modes from Emanuel School

Travel Modes	Number of Students (Average)	Proportion (PM Peak)
By Car (as a passenger – picked up by parent/guardian)	119	26.0%
By Car (Student driving)	20	4.4%
By Car (as passenger – car pool with other student driving)	11	2.4%
School Bus	194	42.4%
Public Transport - Bus	58	12.8%
Public Transport - Other	2	0.4%
Cycle	7	1.6%
Walk	44	9.6%
Extracurricular Activities	2	0.4%
Other	0	0%

Table 17: Private Vehicle Occupancy of Students (Year 7 to 12) at Emanuel School

Private Vehicle Occupancy	AM	PM
	Proportion	Proportions
1	38%	26%
2 or more[1]	62% car sharing	74% car sharing

[1] Car occupancies of more than 2 may include students from ELC & K to year 6.

Table 18: Arrival Time of Students (Year 7 to 12) at Emanuel School

Arrival Time	Number of Students (Average)	Proportion
Prior to 8:00am	122	26.8%
8:00am – 8:15am	276	60.4%
8:15am – 8:30am	38	8.4%
8:30am – 8:45am	0	0%
8:45am - 9:00am	4	0.8%
After 9:00am	0	0%
Other	16	3.6%

Table 19: Departure Time of Students (Year 7 to 12) at Emanuel School

Departure Time	Number of Students (Average)	Proportion
Prior to 3:00pm	5	1.2%
3:00pm – 3:15pm	5	1.2%
3:15pm – 3:30pm	7	1.6%
3:30pm – 3:45pm	399	87.2%
3:45pm – 4:00pm	33	7.2%
After 4:00pm	4	0.8%
After 4:00pm (Emanuel OOSH)	2	0.4%
Other	2	0.4%

The key findings of the student travel mode surveys for students in Year 7 to 12 are as follows:

- 54% of students get dropped off or drive to school in the morning with 62% of these students arriving in the same vehicle in groups of 2 or more, and 30% of students get picked up or

drive themselves home in the afternoon with 74% of these students departing in the same vehicle in groups of 2 or more.

- 34% and 55% students utilise public transport (school bus and public buses) in the morning and afternoon respectively.
- 8% of students walk or cycle to school in the morning, and 11% students walk or cycle home in the afternoon.

4.4 Key Intersections

Three (3) key intersections have been identified in the vicinity of the site. These intersections are located at the junction of main thoroughfares that will be utilised by users associated with future developments.

4.4.1 Avoca Street and Stanley Street

Figure 5: Intersection of Avoca Street and Stanley Street (Source: NearMap)

It can be seen from **Figure 5** that the intersection of Avoca Street and Stanley Street is a three-legged priority intersection with Avoca Street having priority over Stanley Street. The main attributes of each approach are outlined below:

- Avoca Street (north and south legs)
  - The southbound approach provides a single through lane which allows for right turns onto Stanley Street.
  - The northbound approach provides a single through lane which allows for left turns onto Stanley Street.
- Stanley Street (west leg)
  - The eastbound approach provides a single lane which allows for left and right turns onto Avoca Street.

4.4.2 Stanley Street and Wentworth Avenue

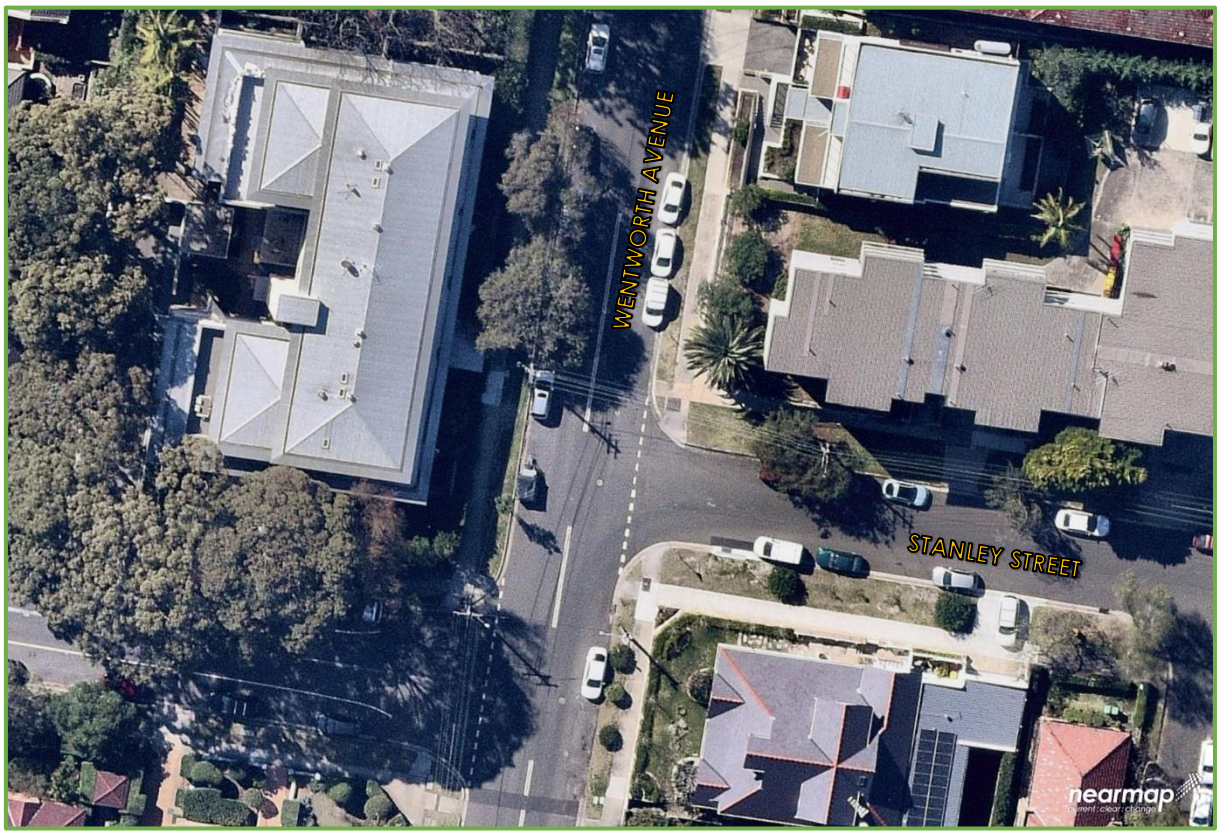


Figure 6: Intersection of Stanley Street and Wentworth Avenue (Source: NearMap)

It can be seen from **Figure 6** that the intersection of Stanley Street and Wentworth Avenue is a three-legged priority intersection with Stanley Street required to give way to Wentworth Avenue. The main attributes of each approach are outlined below:

- Wentworth Avenue (north and south legs)
  - The southbound approach provides a single through lane which allows for left turns onto Stanley Street.
  - The northbound approach provides a single through lane which allows for right turns onto Stanley Street.
- Stanley Street (east leg)
  - The westbound approach provides a single lane which allows for left and right turns onto Wentworth Avenue.

4.4.3 Stephen Street and Wentworth Avenue

Figure 7: Intersection of Stephen Street and Wentworth Avenue (Source: NearMap)

It can be seen from **Figure 7** that the intersection of Stephen Street and Wentworth Avenue is a three-legged priority intersection with Stanley Street required to give way to Wentworth Avenue. The main attributes of each approach are outlined below:

- Wentworth Avenue (north and south legs)
  - The southbound approach provides a single through lane which allows for left turns onto Stephen Street.
  - The northbound approach provides a single through lane which allows for right turns onto Stephen Street.
- Stephen Street (west leg)
  - The westbound approach provides a single lane which allows for left and right turns onto Wentworth Avenue.

5. DESCRIPTION OF PROPOSED DEVELOPMENT

A detailed description of the proposed development is provided in the Statement of Environmental Effects prepared separately. In summary, the development comprises the following components:

- Demolition of existing 'Adler' Building;
- Construction of a new 'Adler' building comprising:
  - 10 classrooms;
  - Collaborative spaces;
  - A staff room; and
  - Connection to the Design and Technology Building.
- Increase in student numbers from 785 (as approved) to 920 (2021 population forecast);
- Regularising 138 full time equivalent (FTE) staff; and
- No change to off-street parking provisions.

The proposed 'Adler' building development is considered a "like for like" replacement of the existing building and will simply provide students and staff an upgraded facility to conduct day to day teachings/operations.

The parking and traffic impacts arising from the development are discussed in **Section 5** and **Section 6**. Reference should be made to the plans submitted separately to Council which are presented at reduced scale in **Appendix B**.

6. PARKING REQUIREMENTS

6.1 School Population Overview

6.1.1 Current

The existing school population is 887 students comprising 60 Early Learning Centre students, 370 students between Kindergarten and Year 6 and 457 students between Year 7 and Year 12. In addition, the school currently operates with 138 full time equivalent (FTE) staff members, providing a generous staff/student ratio of 1:6.4 compared to the typical independent school ratio of 1:11.7 (source: The Australian Curriculum, Assessment and Reporting Authority).

6.1.2 Proposed

As mentioned above in **Section 5**, the school is seeking approval for a forecast (2021) student population of 920 students, representing an increase of 33 students above current operating levels. It should be noted that the proposed student population increase will not require any additional staff. This equates to a staff/student ratio of 1:6.6.

6.2 School Car Parking Overview

As mentioned in **Section 3.2.1**, the school currently provides 19 off-street parking spaces including 11 spaces under the science block and eight (8) spaces adjacent the Kormehl Centre (pre-school).

6.3 Car Parking Requirements

6.3.1 Staff Parking

The Randwick Comprehensive Development Control Plan (DCP) 2013, Part B, Section 3.2 requires parking for Educational Establishments to be provided at the rate of 0.7 spaces per staff. As mentioned above, existing school operations involve 138 FTE staff members which will not increase as a result of the proposed development. It is noted that that approximately 86% of staff currently travel to the school by car as a driver. The existing demand for on-street car parking spaces is considered acceptable for the following reasons:

- The DA does not propose to increase staff numbers above what is currently operating; thus, the on-street parking demands will not change existing parking (or traffic) conditions.
- The majority of staff (77%) leave the school between the hours of 3pm and 5pm, which is outside of the critical evening parking demand period. This suggests that the availability of on-street car parking will steadily increase over that period, freeing up parking for residents returning home from work.
- The existing on-site parking supply is more than is generally provided for public schools of a similar size throughout the Randwick Council LGA and more broadly within Sydney.

In summary, the existing and forecast demand for on-street parking spaces for staff is already accommodated by the surrounding roads and will not increase as a result of the proposed DA.

6.3.2 Parent/Student Parking

The Randwick (DCP) 2013, Part B, Section 3.2 does not provide a car parking rate for students. Parents/guardians dropping off and picking up students will continue to utilise the existing "go with the flow" scheme which operates satisfactorily along Avoca Street. Short term parking demands associated with parents/guardians parking near the school to walk their child/children into the grounds will remain unchanged in relation to existing conditions and should continue to operate satisfactorily.

6.4 Accessible Parking

Council's DCP states that all developments must provide accessible car parking for people with a disability as set out in the Building Code of Australia (BCA) and the relevant Australian Standard. The BCA requires a provision of one (1) space for every 100 car parking spaces or part thereof.

The development does not incorporate any additional parking on-site, therefore no accessible parking spaces are proposed. A compliant accessible parking space is currently provided under the science building which satisfies the BCA requirement.

6.5 Servicing Arrangements

This application does not propose an increase to the servicing demands of the existing school, as such the existing arrangements are to be maintained which have been operating adequately for the existing school and shall continue to be adequate upon completion of the proposed development.

6.6 Emergency Vehicle Access

This application does not propose amendments to the existing emergency vehicle access arrangements which service the school and are considered adequate for the existing and proposed development.

6.7 Motorcycle Parking

There is no increase in staff numbers associated with the development. Therefore, no motorcycle parking spaces are proposed as part of the development.

6.8 Bicycle Parking

The campus currently provides 15 bicycle spaces for staff and students. Council's DCP specifies that educational developments are to provide one (1) bike space per 10 car parking spaces. Additional parking is not proposed for the development; therefore, no additional bicycle parking is proposed. This is considered acceptable and in accordance with the DCP requirements.

6.9 Shuttle Bus Parking

The school currently operates a 7.73m long Fuso 'Rosa' bus which is currently utilised to transport student to and from external school activities. The bus is parked within the school grounds via the existing driveway access on Stanley Street. The proposed 'Adler' building and associated landscape works have been designed to allow the bus to enter the school grounds in a forward direction, turnaround within the site, and exit onto Stanley Street in a forward direction.

7. TRAFFIC AND TRANSPORT IMPACTS

7.1 Modelled Scenarios

7.1.1 Existing Scenario (2019)

As mentioned above, the proposed 'Adler' building will simply provide students and staff an upgraded facility and will not generate any additional vehicle trips. The existing student population is outlined below for reference:

- 60 Early Learning Centre students;
- 370 students between Kindergarten and Year 6;
- 457 students between Year 7 and Year 12; and
- 138 FTE staff.

As mentioned in **Section 5**, Emanuel School seeks to increase student numbers from the approved student population of 785 to the 2021 population forecast of 920. Traffic modelling has been conducted (as detailed in **Section 7.2**) to determine the traffic impacts of the existing operational population of 887 on nearby intersections, noting that a baseline (approved 785 population) cannot be assessed retrospectively. An assessment of the current population will be used to determine potential impacts of the proposed student increase on nearby intersections.

The existing vehicle trip generation of Emanuel School was captured within traffic surveys conducted on Monday 23 September 2019. These surveys reflect the current traffic conditions of the intersection of Avoca Street/Stanley Street, Stanley Street/Wentworth Street and Wentworth Street/Stephen Street during the morning and afternoon peaks. Detailed SIDRA Intersection analysis was conducted at the above intersection and is discussed in further detail in **Section 7.2**.

7.1.2 Future Student Populations (2020-21)

In addition to the above 2019 population, Emanuel School has forecasted student populations in the year 2020 and 2021 and are outlined in **Table 20** below:

Table 20: Forecasted Student Populations

Year	ELC	Kindergarten to Year 6	Year 7 to 12	Total
Current	60	370	457	887
2020	60	380	457	897
2021	60	390	470	920

In order to assess the traffic impacts of the forecasted population increases, travel mode and car occupancy data as detailed in **Section 4.3** was used. The key data points are reproduced in **Table 21** for ease of reference.

Table 21: Private Vehicle Occupancy Rates

Questionnaire Data	AM		PM	
	K to Year 6	Year 7 to 12	K to Year 6	Year 7 to 12
Travel Modes				
% Car Vehicle Trips	72%	54%	68%	30%
Car Occupancy Rates				
1 student	28%	38%	31%	26%
2 or more students	72%	62%	69%	74%

Application of the above percentages to the proposed 2021 student population (+20 K to Y6 and +13 Y7-12) results in the following vehicle trips:

- 18 vehicles per hour during the morning peak period; and
- 8 vehicles per hour during the afternoon peak period.

The above vehicle trips are clearly minor and will have minimal impacts to the surrounding road network or adjacent intersections, with an additional vehicle every three (3) minutes during the morning peak and an additional vehicle every seven (7) minutes during the afternoon peak. In addition, school finish times generally fall outside of the network peak period, thus afternoon traffic impacts will be negligible. Therefore, the above forecasted vehicle trips are considered minor and do not require further SIDRA analysis. The proposed student population increase (920 students by 2021) is considered supportable from a traffic planning perspective.

7.2 Peak Period Intersection Performance

Traffic surveys were undertaken of the intersections mentioned above, which are considered to be most critical in relation to the site. These counts were undertaken on 23 September 2019 during the network peak periods, being between 7:00am and 9:00am (Morning Peak Period) and 3:00pm and 6:00pm (Afternoon/evening peak period).

The traffic volumes in these surveys formed the existing 2019 case volumes for software modelling undertaken to assess intersection performance characteristics under existing traffic conditions. The SIDRA Intersection 8 model produces a range of outputs, the most useful of which are the Degree of Saturation (DoS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LoS) criteria. These performance measures can be interpreted using the following explanations:

DoS - the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LoS - this is a comparative measure which provides an indication of the operating performance of an intersection as shown in **Table 22** below.

Table 22: Intersection Performance Indicators (RMS)

Level of Service (LoS)	Average Delay per Vehicle (sec/veh)	Traffic Signals, Roundabout	Give Way and Stop Signs
A	Less than 14	Good Operation	Good Operation
B	15 to 28	Good with acceptable delays and spare capacity	Acceptable delays and space capacity
C	29 to 42	Satisfactory	Satisfactory but accident study required
D	42 to 56	Operating near capacity	Near capacity and accident study required
E	57 to 70	At capacity; at signals incidents will cause excessive delays. Roundabouts require other control mode	At capacity and requires other control mode
F	More than 70	Unsatisfactory and requires additional capacity	Unsatisfactory and requires other control mode or major treatment

A summary of the modelled results is provided below in **Table 23**. Reference should also be made to the detailed SIDRA outputs provided in **Appendix C** for individual lanes.

Table 23: Existing 2019 Intersection Performances

Intersection	Control	Period	Degree of Saturation	Average Delay (s)	Level of Service
Avoca Street and Stanley Street	Give Way	AM	0.305	13.2	A
		PM	0.472	14.7	B
Stanley Street and Wentworth Street		AM	0.062	5.5	A
		PM	0.046	5.2	A
Stephen Street and Wentworth Street		AM	0.050	5.2	A
		PM	0.038	5.0	A

As evident from the Table 23 above, the intersection of Avoca Street/Stanley Street, Stanley Street/Wentworth Street and Stephen Street/Wentworth Street all operate with LoS A or B under the existing 2019 scenario. These intersections clearly operate satisfactorily with the current student population of 887 and have spare capacity for any additional future population expansions as discussed in Section 7.1.2. As such, no external road upgrades are required to support the existing student population or forecasted student populations.

8. SUSTAINABLE TRAVEL PLANS

8.1 Green/Workplace Travel Plans

A comprehensive Green Travel Plan (GTP) and Workplace Travel Plan (WTP) can be developed for Emanuel School staff and students/parents, respectively. These plans are intended to encourage the use of public transport and alternative modes of transportation, with the primary objectives outlined as follows:

- Promote the use of sustainable transport methods, thus reducing congestion and pollution in the local area;
- Promote Emanuel School as an innovative and environmentally aware organisation; and
- Provide an active environment by encouraging healthier travel options for staff and students, such as walking and cycling.

A comprehensive GTP and WTP is considered to be an important part of managing the transport demand generated by the development. These plans would provide relevant transport and access information, including:

- Local bus facilities and network maps; and
- Local walking and cycling routes.

Accordingly, the development of a GTP and WTP is encouraged to promote alternative modes of transport, noting that these plans are generally more effective for new developments, prior to the establishment of regular travel habits. The main objective of a GTP is to reduce private vehicle usage, consequently the travel targets must be uniquely tailored to encourage alternative modes of transport and carpool schemes.

In this regard, a formal carpool scheme for staff should be considered to reduce the impact of private vehicle usage. The development of such a scheme would assist in actively reducing the reliance on private vehicle usage of the school.

8.2 Travel Demand Management

It is envisaged that the reductions in car-based travel modes to achieve any future nominated targets could be facilitated by the following travel demand management measures:

- A Transport Access Guide (TAG) is considered to be a useful travel tool to encourage travel by alternative means other than private cars. This TAG would illustrate the public transport routes operating in the locality and is envisaged to be distributed to staff and students of the school; and
- Car sharing schemes can be encouraged for both staff and students, reducing the reliance on private vehicles.

9. CONSTRUCTION TRAFFIC MANAGEMENT

A detailed Construction Traffic Management Plan (CTMP) will be prepared and submitted to Council, in response to any Conditions of Consent stipulated following approval of the DA. The below commentary addresses the overall management principles for the site during the construction process. It is noted that the preparation of a detailed CTMP requires significant input from the appointed builder and would heavily rely upon the construction methodology, which at this point cannot be confirmed.

The proposed development would however adhere to the general CTMP aspects as outlined below, which have been provided for information purposes.

9.1 Construction Vehicles

9.1.1 Truck Routes

The truck routes for the construction of the development would utilise the main arterial road serving the region, Anzac Parade. It is envisaged that trucks would travel along Avoca Street and Stanley Street to access the site.

A copy of the routes would be provided to all drivers prior to attending the site and all trucks serving the site will do so via the proposed route only. The proposed truck routes are recommended so that all vehicles are able to enter and egress the site in a forward direction, thereby ensuring no reverse manoeuvres on public roadways.

9.1.2 Truck Size and Volumes

The maximum permissible vehicle and frequency of construction deliveries will be documented at a later stage and within a detailed CTMP report. The anticipated truck volumes should be estimated and discussed during future Pre-CTMP stages.

As with the truck routes, it is emphasised that the majority of truck movements would be limited to outside school peak periods, as much as possible.

9.2 Contractor Parking

Contractors will be encouraged to utilise public transport or carpool to and from site, with limited on-site parking also envisaged to be provided. This on-site parking would, however, be prioritised to construction employees who carpool, in order to minimise the impact on the surrounding streets. This would be further detailed subject to the detailed CTMP, which will be undertaken at the CC stage.

9.3 Traffic Control Plans

Traffic Control Plans (TCP) will be designed in accordance with the RMS Traffic Control at Worksites Manual and AS 1742.3. The TCPs would primarily relate pedestrian control to ensure appropriate safety measures are implemented.

9.4 Swept Path Analysis

Swept Path Analysis of the largest permissible vehicle would be undertaken for each construction stage, demonstrating forward entry and egress movements during all construction stages. All entry and exit movements will be monitored by RMS certified traffic controllers.

Accordingly, it is anticipated that a standard condition of consent would be imposed requiring a site specific CTMP be provided for this DA. The CTMP will be designed in accordance with the above principles and the draft CTMP would be issued to Council at a later stage for consideration and review.

10. CONCLUSIONS

The following matters are noteworthy:

- TRAFFIX has been commissioned by Emanuel School to undertake a traffic impact assessment (TIA) in support of a development application (DA) relating to the redevelopment of the new 'Adler' building and student population increase. The school is located at 20 Stanley Street, Randwick.
- The subject site has good connections to the public transport network with reliable access to regular bus services. The site is located within 400 metres of 12 bus stops, providing staff and students connections to destinations such as Coogee, Bondi Junction, Clovelly, City Martin Place and Wolli Creek.
- The proposal seeks approval to construct a new three (3) level student learning hub to replace the existing 'Adler' building. The proposed development consists of 10 classrooms, collaborative spaces, a staff room and a new connection to the Design and Technology building. The proposal also seeks to increase the student population (and corresponding staff) from the approved 785 students to the 2021 forecasted population of 920 students.
- The existing and forecast demand for on-street parking spaces for staff is already accommodated by the surrounding roads and will not increase as a result of the proposed DA. The additional demand is considered acceptable due to the reasons discussed in **Section 6.1.1**.
- In order to determine existing travel characteristics of the school development, online travel mode questionnaire surveys were prepared by TRAFFIX and distributed by the school to all staff, parents/guardian (ELC & K to Year 6) and students (Year 7 to 12). This survey data is presented in **Section 4.3**.
- SIDRA intersection modelling was conducted at three (3) nearby and critical intersections to determine the traffic impacts of the existing student population. The SIDRA analysis demonstrated that the intersections operate satisfactorily with Level of Services of A or B during the morning and afternoon peak periods, with no external upgrades required.
- The assessment also assessed future student populations forecasts provided by the school. Travel mode survey data was used to determine the traffic impacts of these scenarios and

determined that they will have negligible impacts to the surrounding intersections and road network.

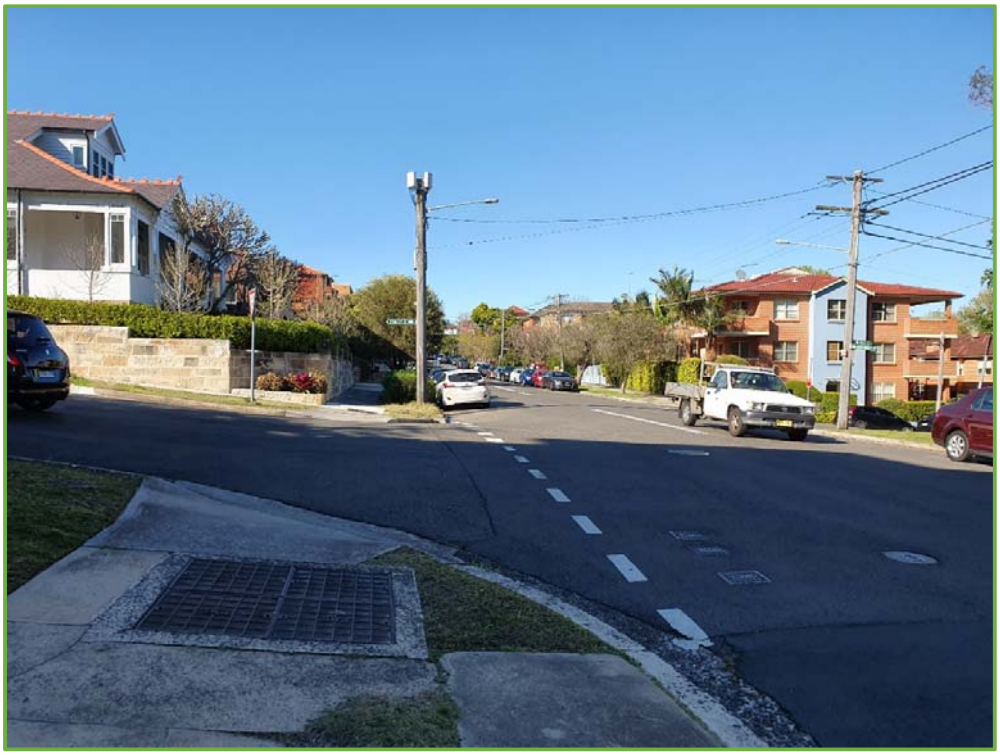
This traffic impact assessment therefore demonstrates that the subject application is supportable on traffic planning grounds. TRAFFIX anticipates an ongoing involvement during the development approval process.

APPENDIX A

Photographic Record

View looking south-east towards intersection of Avoca Street and Stanley Street

View looking north towards intersection of Avoca Street and Stanley Street



View looking south towards intersection of Wentworth Street and Stanley Street

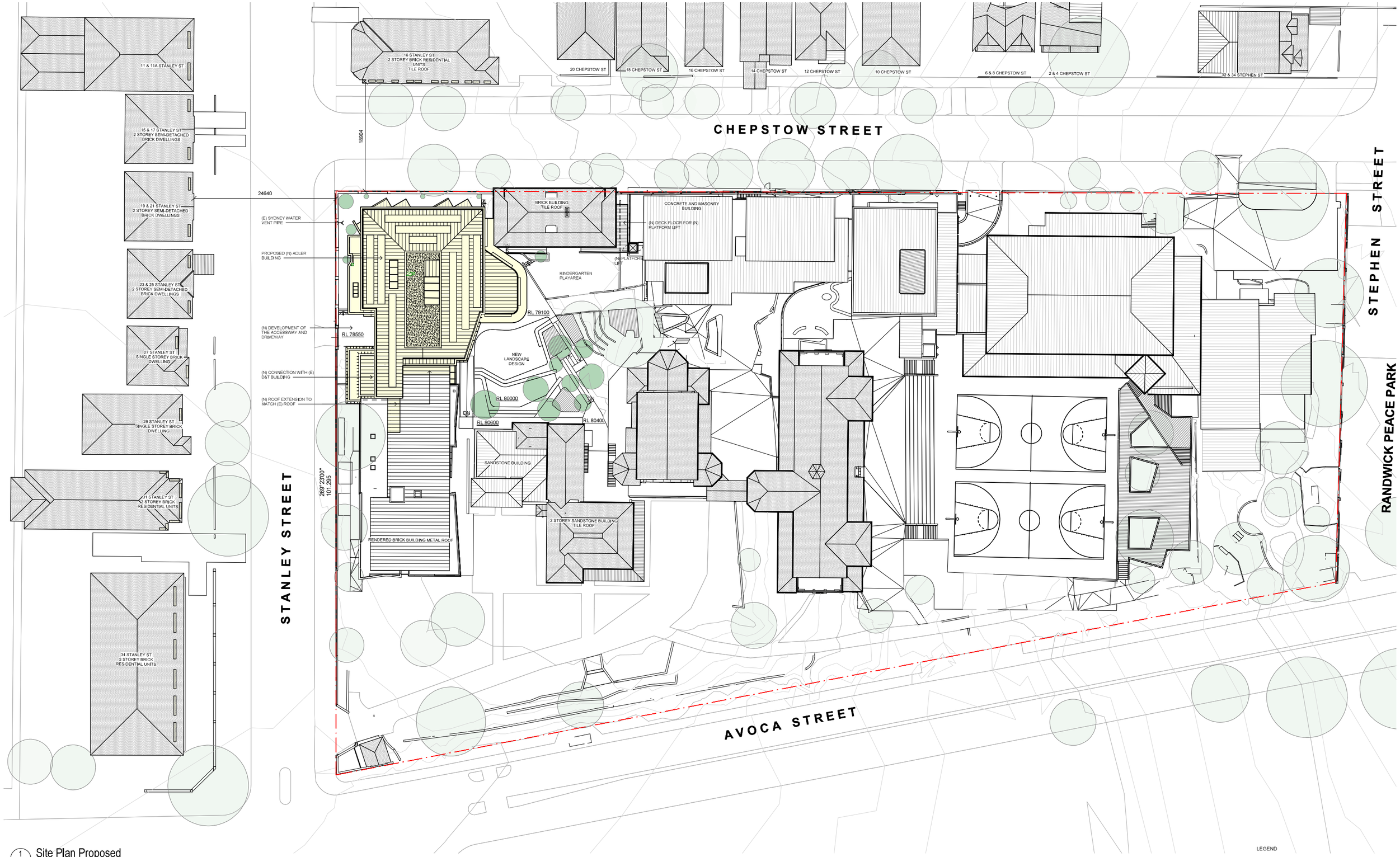
View looking north towards intersection of Wentworth Street and Stephen Street

View looking north along Avoca Street at Pick-Up/Drop-Off Zone

View looking east along Stanley Street adjacent to Emanuel School

APPENDIX B

Reduced Plans



1 Site Plan Proposed
1 : 250

LEGEND

WINDOW LOCATION ON ADJOINING LAND

CLIENT
EMANUEL SCHOOL
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Abbreviations

(AW)	ALUMINIUM WINDOW
(BW)	BLOCK WORK
(CFC)	COMPRESSED FIBRE CEMENT PREFINISHED
(E)	EXISTING
(N)	PROPOSED
(OFC)	OFF FORM CONCRETE
PV	PHOTOVOLTAIC

Rev	Date	Description	Checked

Rev	Date	Description	Checked	Auth.
A	11/12/19	Issued for DA Submission	AK	CP

NOT FOR CONSTRUCTION

Proj. Dir	Proj. Arch	Drawn
AK	AK	KS
Job No.	Sheet	Scale
190032		1 : 250

NSW Nominated Architects:
Robert Denton Reg. No. 5782
Alex Kibble Reg. No. 6015

Do not scale drawings. Verify all dimensions on site. Notify architect of all discrepancies.

10 20 30 40 50

Project
EMANUEL SCHOOL
ADLER BUILDING

Drawing Title
PROPOSED SITE PLAN

Drawing No. AR.DA.1102
Revision A

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APPENDIX C

SIDRA Outputs

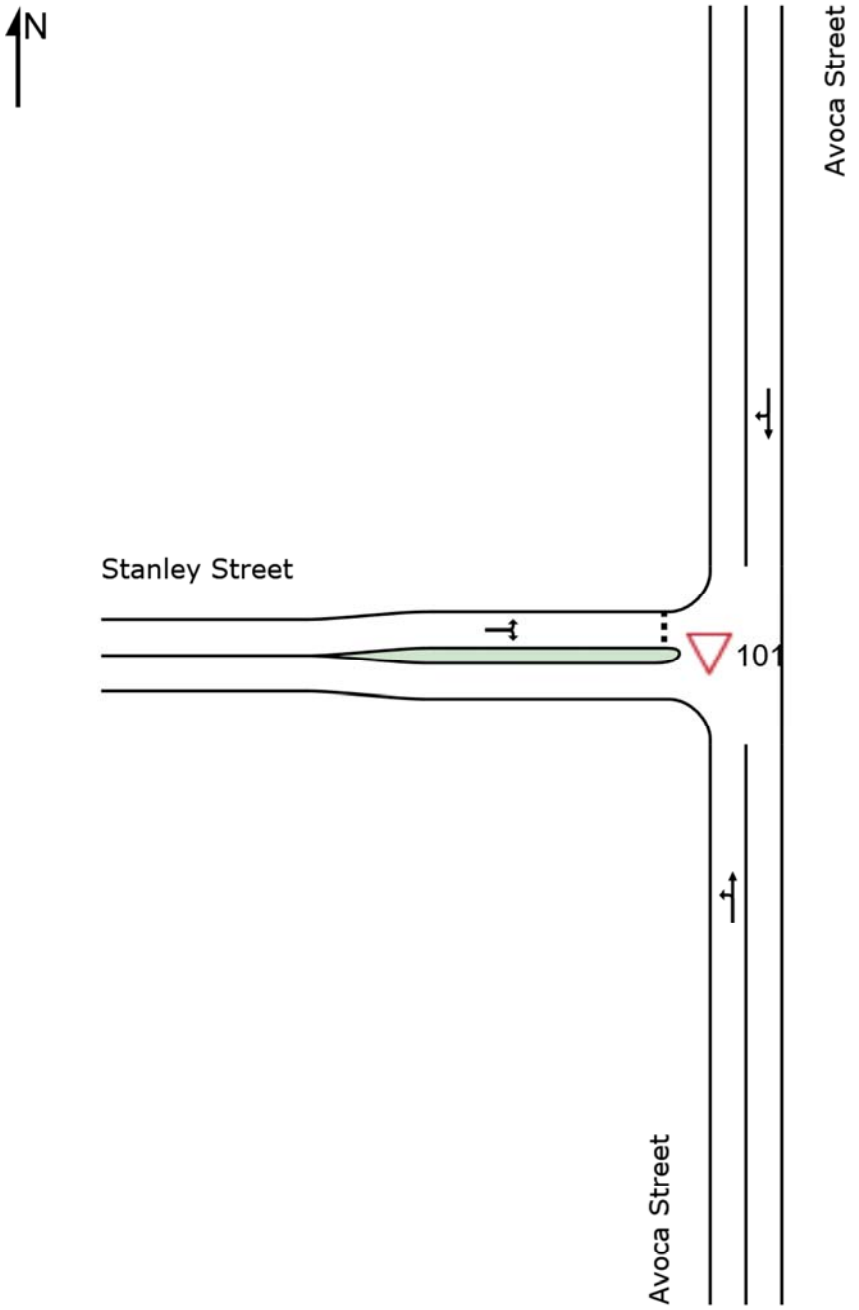
USER REPORT FOR SITE

Project: 19.191m01v01 Emanuel School **Template: Layouts**

Site: 101 [101_EXAM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Site Layout



USER REPORT FOR SITE

Project: 19.191m01v01 Emanuel School **Template: Movement Summary**

Site: 101 [101_EXAM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	43	0.0	0.277	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.5
2	T1	493	2.1	0.277	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.4
Approach		536	2.0	0.277	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.4
North: Avoca Street												
8	T1	367	1.7	0.305	1.4	LOS A	1.5	10.6	0.37	0.18	0.40	46.2
9	R2	118	0.0	0.305	7.7	LOS A	1.5	10.6	0.37	0.18	0.40	45.9
Approach		485	1.3	0.305	2.9	NA	1.5	10.6	0.37	0.18	0.40	46.1
West: Stanley Street												
10	L2	159	1.3	0.249	6.9	LOS A	1.0	7.0	0.55	0.76	0.57	42.4
12	R2	35	9.1	0.249	13.2	LOS A	1.0	7.0	0.55	0.76	0.57	38.9
Approach		194	2.7	0.249	8.0	LOS A	1.0	7.0	0.55	0.76	0.57	41.9
All Vehicles		1215	1.8	0.305	2.6	NA	1.5	10.6	0.24	0.21	0.25	46.5

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

Site: 102 [102_EXPM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles												
Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	31	0.0	0.201	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.5
2	T1	361	1.5	0.201	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.5
Approach		392	1.3	0.201	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.4
North: Avoca Street												
8	T1	435	98.3	0.472	2.0	LOS A	2.4	31.1	0.30	0.42	0.42	42.0
9	R2	71	100.0	0.472	11.9	LOS A	2.4	31.1	0.30	0.42	0.42	41.8
Approach		505	98.5	0.472	3.9	NA	2.4	31.1	0.30	0.42	0.42	41.9
West: Stanley Street												
10	L2	52	2.0	0.131	5.9	LOS A	0.4	3.1	0.51	0.69	0.51	41.7
12	R2	27	3.8	0.131	14.7	LOS B	0.4	3.1	0.51	0.69	0.51	38.5
Approach		79	2.7	0.131	8.9	LOS A	0.4	3.1	0.51	0.69	0.51	40.8
All Vehicles		976	51.8	0.472	2.6	NA	2.4	31.1	0.20	0.29	0.26	44.4

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

Site: 103 [103_PR2020AM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	43	0.0	0.281	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.6
2	T1	501	2.1	0.281	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.6
Approach		544	1.9	0.281	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.5
North: Avoca Street												
8	T1	367	1.7	0.306	1.5	LOS A	1.5	10.8	0.37	0.18	0.41	46.1
9	R2	118	0.0	0.306	7.8	LOS A	1.5	10.8	0.37	0.18	0.41	45.9
Approach		485	1.3	0.306	3.0	NA	1.5	10.8	0.37	0.18	0.41	46.1
West: Stanley Street												
10	L2	159	1.3	0.252	7.0	LOS A	1.0	7.1	0.56	0.76	0.58	42.3
12	R2	35	9.1	0.252	13.4	LOS A	1.0	7.1	0.56	0.76	0.58	38.8
Approach		194	2.7	0.252	8.1	LOS A	1.0	7.1	0.56	0.76	0.58	41.8
All Vehicles		1223	1.8	0.306	2.6	NA	1.5	10.8	0.24	0.21	0.25	46.5

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

Site: 104 [104_PR2020PM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	31	0.0	0.205	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.7
2	T1	368	1.4	0.205	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.7
Approach		399	1.3	0.205	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.6
North: Avoca Street												
8	T1	435	98.3	0.474	2.1	LOS A	2.4	31.6	0.30	0.43	0.43	41.9
9	R2	71	100.0	0.474	12.1	LOS A	2.4	31.6	0.30	0.43	0.43	41.7
Approach		505	98.5	0.474	4.0	NA	2.4	31.6	0.30	0.43	0.43	41.8
West: Stanley Street												
10	L2	52	2.0	0.132	5.9	LOS A	0.4	3.2	0.52	0.69	0.52	41.7
12	R2	27	3.8	0.132	14.8	LOS B	0.4	3.2	0.52	0.69	0.52	38.4
Approach		79	2.7	0.132	9.0	LOS A	0.4	3.2	0.52	0.69	0.52	40.7
All Vehicles		983	51.4	0.474	2.7	NA	2.4	31.6	0.20	0.29	0.26	44.4

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

Site: 105 [105_PR2021AM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	43	0.0	0.289	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.8
2	T1	517	2.0	0.289	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.9
Approach		560	1.9	0.289	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.8
North: Avoca Street												
8	T1	367	1.7	0.309	1.5	LOS A	1.6	11.2	0.38	0.18	0.42	46.0
9	R2	118	0.0	0.309	7.9	LOS A	1.6	11.2	0.38	0.18	0.42	45.8
Approach		485	1.3	0.309	3.1	NA	1.6	11.2	0.38	0.18	0.42	45.9
West: Stanley Street												
10	L2	159	1.3	0.258	7.1	LOS A	1.0	7.3	0.57	0.78	0.60	42.2
12	R2	35	9.1	0.258	13.8	LOS A	1.0	7.3	0.57	0.78	0.60	38.6
Approach		194	2.7	0.258	8.3	LOS A	1.0	7.3	0.57	0.78	0.60	41.7
All Vehicles		1239	1.8	0.309	2.7	NA	1.6	11.2	0.24	0.21	0.26	46.6

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

Site: 106 [106_PR2021PM_Avoca St and Stanley St]

Avoca Street and Stanley Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

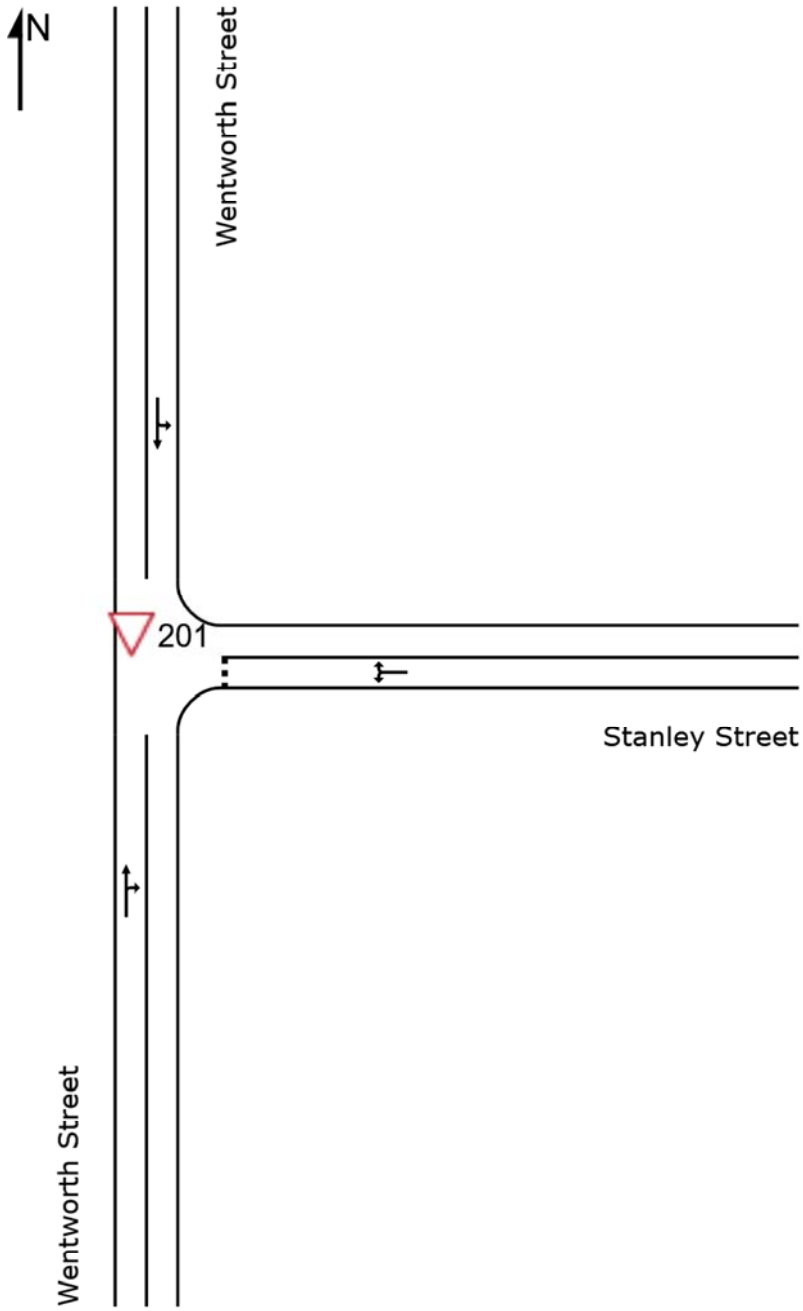
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Avoca Street												
1	L2	31	0.0	0.210	4.6	LOS A	0.0	0.0	0.00	0.04	0.00	48.9
2	T1	379	1.4	0.210	0.0	LOS A	0.0	0.0	0.00	0.04	0.00	49.9
Approach		409	1.3	0.210	0.4	NA	0.0	0.0	0.00	0.04	0.00	49.8
North: Avoca Street												
8	T1	435	98.3	0.476	2.2	LOS A	2.5	32.3	0.31	0.44	0.44	41.8
9	R2	71	100.0	0.476	12.4	LOS A	2.5	32.3	0.31	0.44	0.44	41.6
Approach		505	98.5	0.476	4.2	NA	2.5	32.3	0.31	0.44	0.44	41.7
West: Stanley Street												
10	L2	52	2.0	0.134	6.0	LOS A	0.4	3.2	0.52	0.70	0.52	41.6
12	R2	27	3.8	0.134	15.0	LOS B	0.4	3.2	0.52	0.70	0.52	38.4
Approach		79	2.7	0.134	9.1	LOS A	0.4	3.2	0.52	0.70	0.52	40.6
All Vehicles		994	50.8	0.476	2.7	NA	2.5	32.3	0.20	0.30	0.27	44.5

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

Site: 201 [201_EXAM_Stanley St and Wentworth St]

Stanley Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

Site Layout



Site: 201 [201_EXAM_Stanley St and Wentworth St]

Stanley Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Wentworth Street												
2	T1	64	0.0	0.055	0.2	LOS A	0.2	1.3	0.15	0.19	0.15	47.9
3	R2	34	0.0	0.055	5.0	LOS A	0.2	1.3	0.15	0.19	0.15	45.6
Approach		98	0.0	0.055	1.8	NA	0.2	1.3	0.15	0.19	0.15	47.3
East: Stanley Street												
4	L2	64	0.0	0.062	4.9	LOS A	0.2	1.7	0.19	0.52	0.19	43.3
6	R2	20	5.3	0.062	5.5	LOS A	0.2	1.7	0.19	0.52	0.19	44.8
Approach		84	1.3	0.062	5.0	LOS A	0.2	1.7	0.19	0.52	0.19	43.8
North: Wentworth Street												
7	L2	15	7.1	0.060	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	48.8
8	T1	99	0.0	0.060	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		114	0.9	0.060	0.6	NA	0.0	0.0	0.00	0.07	0.00	49.4
All Vehicles		296	0.7	0.062	2.3	NA	0.2	1.7	0.11	0.24	0.11	47.1

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

Site: 202 [202_EXPM_Stanley St and Wentworth St]

Stanley Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

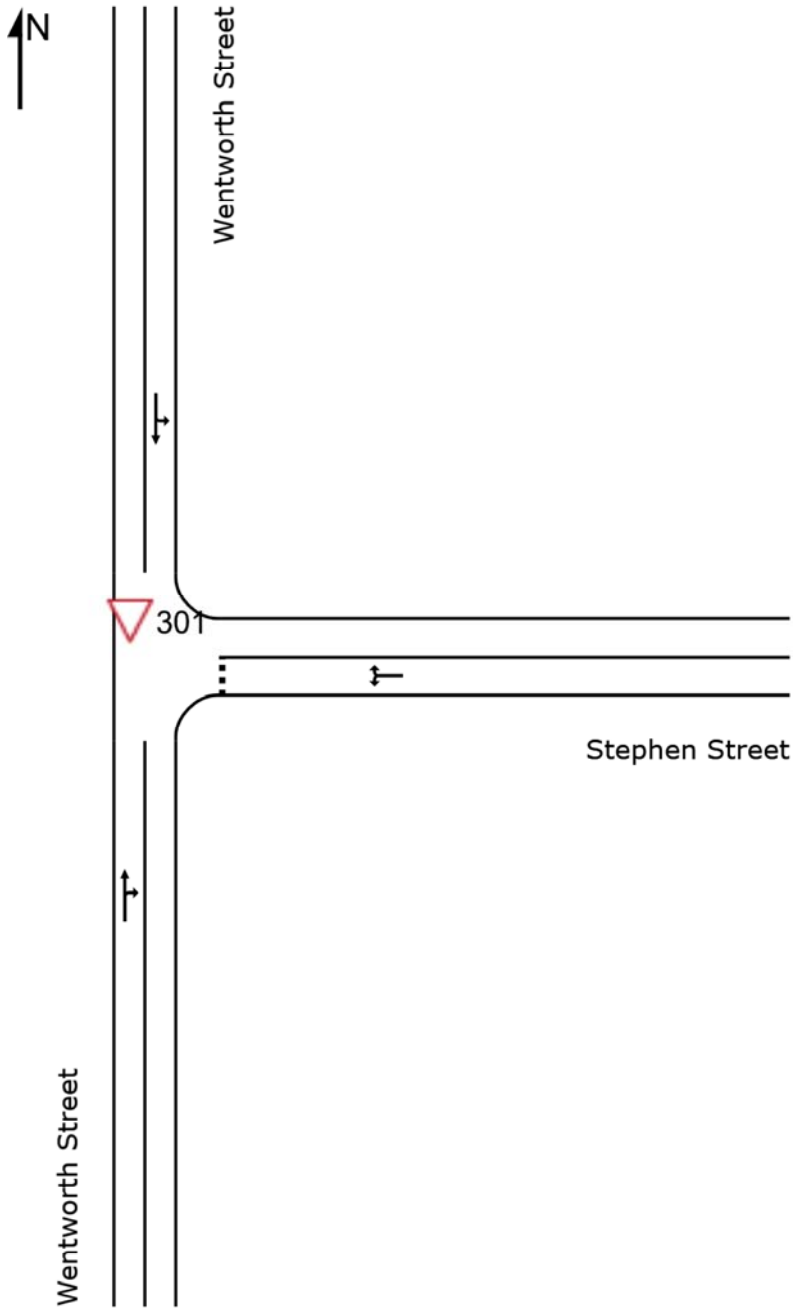
Movement Performance - Vehicles												
Mov ID	Turn	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate	Aver. No. Cycles	Average Speed km/h
South: Wentworth Street												
2	T1	36	0.0	0.030	0.1	LOS A	0.1	0.7	0.11	0.16	0.11	48.5
3	R2	15	21.4	0.030	5.1	LOS A	0.1	0.7	0.11	0.16	0.11	45.6
Approach		51	6.3	0.030	1.6	NA	0.1	0.7	0.11	0.16	0.11	47.8
East: Stanley Street												
4	L2	56	0.0	0.046	4.7	LOS A	0.2	1.3	0.15	0.51	0.15	43.5
6	R2	11	10.0	0.046	5.2	LOS A	0.2	1.3	0.15	0.51	0.15	44.8
Approach		66	1.6	0.046	4.8	LOS A	0.2	1.3	0.15	0.51	0.15	43.8
North: Wentworth Street												
7	L2	15	14.3	0.042	4.7	LOS A	0.0	0.0	0.00	0.10	0.00	48.5
8	T1	64	0.0	0.042	0.0	LOS A	0.0	0.0	0.00	0.10	0.00	49.3
Approach		79	2.7	0.042	0.9	NA	0.0	0.0	0.00	0.10	0.00	49.1
All Vehicles		196	3.2	0.046	2.4	NA	0.2	1.3	0.08	0.25	0.08	47.1

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

Site: 301 [301_EXAM_Stephen St and Wentworth St]

Stephen Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

Site Layout



Site: 301 [301_EXAM_Stephen St and Wentworth St]

Stephen Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Wentworth Street												
2	T1	66	1.6	0.050	0.1	LOS A	0.1	1.0	0.10	0.15	0.10	48.4
3	R2	25	0.0	0.050	4.8	LOS A	0.1	1.0	0.10	0.15	0.10	46.3
Approach		92	1.1	0.050	1.4	NA	0.1	1.0	0.10	0.15	0.10	47.9
East: Stephen Street												
4	L2	56	0.0	0.047	4.8	LOS A	0.2	1.3	0.17	0.51	0.17	43.4
6	R2	12	0.0	0.047	5.2	LOS A	0.2	1.3	0.17	0.51	0.17	45.1
Approach		67	0.0	0.047	4.9	LOS A	0.2	1.3	0.17	0.51	0.17	43.8
North: Wentworth Street												
7	L2	4	0.0	0.043	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
8	T1	79	0.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.8
Approach		83	0.0	0.043	0.2	NA	0.0	0.0	0.00	0.03	0.00	49.7
All Vehicles		242	0.4	0.050	2.0	NA	0.2	1.3	0.09	0.21	0.09	47.4

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

Site: 302 [302_EXPM_Stephen St and Wentworth St]

Stephen Street and Wentworth Street
Site Category: (None)
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	Turn	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	Aver. No. Cycles	Average Speed km/h
South: Wentworth Street												
2	T1	41	2.6	0.032	0.1	LOS A	0.1	0.7	0.10	0.16	0.10	48.3
3	R2	17	0.0	0.032	4.8	LOS A	0.1	0.7	0.10	0.16	0.10	46.2
Approach		58	1.8	0.032	1.4	NA	0.1	0.7	0.10	0.16	0.10	47.8
East: Stephen Street												
4	L2	39	0.0	0.038	4.7	LOS A	0.1	1.0	0.15	0.51	0.15	43.5
6	R2	15	0.0	0.038	5.0	LOS A	0.1	1.0	0.15	0.51	0.15	45.1
Approach		54	0.0	0.038	4.8	LOS A	0.1	1.0	0.15	0.51	0.15	44.1
North: Wentworth Street												
7	L2	7	0.0	0.038	4.6	LOS A	0.0	0.0	0.00	0.06	0.00	49.0
8	T1	65	0.0	0.038	0.0	LOS A	0.0	0.0	0.00	0.06	0.00	49.5
Approach		73	0.0	0.038	0.5	NA	0.0	0.0	0.00	0.06	0.00	49.5
All Vehicles		184	0.6	0.038	2.0	NA	0.1	1.0	0.07	0.22	0.07	47.4

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

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Reference: 19.191r02v03

25 June 2020

Emanuel School
C/- Sandrick Project Directions
Suite 412 Nexus Norwest
4 Columbia Court
BAULKHAM HILLS NSW 2153

Attention: Mr Jonathan Lau, Project Manager

Re: Emanuel School – Proposed Redevelopment
18-20 Stanley Street, Randwick
Request for Information

Dear Jonathan,

We refer to the subject property and proposed redevelopment of the Emanuel School at 18-20 Stanley Street, Randwick. TRAFFIX has been forwarded comments from Randwick City Council, Transport for New South Wales (TfNSW) and community responses in relation to the proposal as contained within Council letter (*Reference: DA/40/2020, dated 4 May 2020*).

Reference should be made to the Traffic Impact Assessment (TIA) report, which accompanied the Development Application (*Reference: 19.191r01v05, dated 24 January 2020*). TRAFFIX has reviewed all relevant comments and our responses to each issue are outlined below.

TfNSW Comments

The application was externally referred to Transport NSW for comment and/or recommendation who provided the following comments:

TfNSW has reviewed the submission and notes the proposed development seeks to amend the approved student numbers from 725, imposed by Condition 6 of DA/181/2009, to 920 and a new building. As such, TfNSW raises no objections, however, recommends that Council include the following requirements in any determination issued:

Road Safety Evaluation - TfNSW

"The applicant shall, both at the detailed designed stage and prior to commencement of the new school operations, conduct a Road Safety Evaluation (RSE, refer to NSW Centre for Road Safety Guidelines for Road Safety Audit Practices and Austroads Guide to Road Safety Part 6: Road Safety Audit) on all relevant sections of road utilised for bus and private vehicle pickup and drop-off. Appropriate road safety measures and/or traffic management measures shall be implemented based on the outcomes of the RSE."

TRAFFIX Response

A single Road Safety Evaluation (RSE) will be undertaken prior to Occupation Certificate in accordance with Austroads Guide to Road Safety Part 6: Road Safety Audit. A single RSE is considered appropriate noting the limited external works during the detailed design stage. The outcomes of the RSE will be used (as appropriate) in the preparation of a comprehensive Operational Transport and Access Management Plan (OTAMP), which is discussed in further detail below. A draft RSE condition is outlined below for consideration:

"A Road Safety Evaluation (RSE) must be conducted within six (6) months of the approval, in accordance with the NSW Centre for Road Safety Guidelines for Road Safety Audit Practices and Austroads Guide to Road Safety Part 6: Road Safety Audit. The RSE will should evaluate the following:

a) Conditions during school pick-up/drop-off periods along Avoca Street and Stanley Street;

b) Safe route options for pedestrians and cyclists;

c) Safe route options for bus pick-up/drop-off; and

d) Pedestrian crossings, local road network."

This is a matter that can therefore be conditioned.

Travel Mode Data - TfNSW

"Prior to commencement of new school operations, the proponent should provide additional data and the proposed student catchment area to determine the likely demands on the transport network (all modes). With particular regard to bus usage. Data should also be provided on existing and expected patronage by route. This data could be obtained by travel surveys of staff and students (existing and new enrolments). The student catchment area and travel data provided to TfNSW will assist with future service planning."

TRAFFIX Response

Reference should be made to the TIA report (Reference: 19.191r01v05, dated 24 January 2020) and more specifically Section 4.3, which outline travel mode surveys that were undertaken to determine the existing travel characteristics of staff and students of Emanuel School. Data relating to the school's catchment area will be submitted to TfNSW prior to Occupation Certificate.

Green Travel Plan - TfNSW

"As part of the ongoing operation of the school, a detailed Green Travel Plan (GTP), which includes target mode shares for both staff and students to reduce the reliance on private vehicles, shall be prepared. The GTP must be implemented accordingly and updated annually."

TRAFFIX Response

A detailed Green Travel Plan (GTP) is proposed to be prepared prior to Occupation Certificate, with the main objective to reduce the reliance on car drivers by promoting the use of sustainable transport methods. This GTP would involve:

- Review of existing public transport timetables, route information and bicycle network in the surrounding area;
- Review of existing travel mode data of the school to develop travel mode targets;
- Recommendation of initiatives and strategies in order to justify future travel mode targets; and
- Preparation of Transport Access Guide (TAG) highlighting all existing and proposed alternative transport facilities in the area that can be distributed to staff and students of the school.

A draft GTP condition is outlined below for consideration:

"The applicant must prepare a detailed Green Travel Plan (GTP) prior to Occupation Certificate. The GTP must incorporate the following:

a) *Clear targets for reduction in private car use by staff, senior students a, and parent drop-off and pick-p at the school;*

b) *Travel information for modes other than private vehicle; and*

c) *Measures to reduce private car use.*

The GTP is to be monitored and revised annually for the first three years and then from time to time as needed, from the date of implementation."

Bicycle Facilities - TfNSW

"It is recommended that to support and encourage active transport, bicycle parking facilities are provided within the development or close to it. Bicycle Parking should be provided in accordance with AS2890.3."

TRAFFIX Response

The development currently provides 15 bicycle parking spaces for staff and students. Additional on-site bicycle parking will be explored in further detail once a Green Travel Plan has been developed and travel mode targets are determined.

Pedestrian Safety - TfNSW

The proposed development will generate additional pedestrian movements in the area. Pedestrian safety is to be considered in the vicinity.

TRAFFIX Response

Pedestrian safety will be maintained at all times within the vicinity of the site, noting an Operational Transport and Access Management Plan can be prepared prior to Occupation Certificate. The OTAMP could include, but not limited to:

- Detailed pedestrian analysis including the identification of safe route options;
- Identification of bus stop locations, routes and level of service;
- Pick-up and drop-off management arrangements;
- Bus/coaches and service vehicle management; and
- Additional traffic management measures.

In addition to the above, the above mentioned RSE will identify potential risks to pedestrians in the locality. As such, any potential risks to pedestrians (if any) is envisaged to be addressed in the OTAMP.

Construction Pedestrian Traffic Management Plan - TfNSW

A Construction Pedestrian Traffic Management Plan (CPTMP) detailing construction vehicle routes, number of trucks, hours of operation, access arrangements and traffic control should be submitted to Council for approval prior to the issue of a Construction Certificate.

TRAFFIX Response

A detailed CPTMP report will be prepared prior to the issue of a Construction Certificate in response to any imposed condition within the DA Condition of Consent. The detailed CPTMP will comprise the following:

- Construction stages, duration and hours of operation;

- Truck size, routes, volumes and access arrangements for each construction stage; and
- Traffic control plans (TCPs) and swept path analysis of the maximum permissible vehicle.

Development Engineer Comments

The application was internally referred to Council's Development Engineer who provided the following comments and/or recommendations:

Traffic and Parking Assessment

Previous approvals for the subject development site have capped the student population at 785 (725 students plus 60 early learning centre spaces.

The current student population is 887 and 138 fulltime equivalent staff. In general terms the TPA states that the current traffic and parking arrangements work satisfactorily for the student population of 887 and 138 equivalent (FTE) staff members.

The onus should be on the applicant to demonstrate why Council should support the current student population and staffing levels before any consideration is made of a further increase in numbers. Part of the documentation to be provided to Council should include a detailed assessment of the current parking and traffic conditions. Given the staffing levels identified in the TPA, and the high use rate of private vehicles by staff, it is likely that staff parking relies significantly on local roads within walking distance of the school. This appears to be a common issue raised in submissions by local residents.

In summary – the current school population (including staff numbers) has never been the subject of a development application and assessment. The traffic and parking arrangements associated with the current school population have therefore not been assessed and no increase in student numbers should be considered until the detailed assessment of the current school operation has been completed and found to be supportable.

TRAFFIX Response

Staff and Student Population

The student and staff populations at the school have gradually increased over the past 6 years. The populations as reported and publicly made available via the 'MySchool' website are summarised in **Table 1** below:

Table 1: School Population between 2014 to Present

Year	ELC	K to 12	Staff (FTE teaching and non-teaching)
2014	60	729	122
2015	60	752	101
2016	60	777	106
2017	60	806	114
2018	60	827	116
2019	60	829	122
2020 (current)	60	827	138
Proposed	**60**	**860**	**138**

It can be seen from Table 1 that the school has had a gradual increase in student population, with an average increase of 26 students per year since 2014. As such, the proposed increase of 33 students is considered in line with historical trends and will allow the school to continue to provide a vital community need.

As discussed in the Statement of Environmental Effects, the NSW Planning Circular – Regulating expansion of schools provides guidance to consent authorities and applicants on the application of certain conditions of consent that regulate the expansion of schools. The Circular notes that many existing schools, such as Emanuel School, have conditions on development consents that currently limit the intensification of the school development through caps on both student and staff numbers. The Circular identifies that these cap conditions are an important tool to manage parking and traffic impacts but can be a major constraint on the growth of the school and the provision of essential school infrastructure. The School proposes a maximum student enrolment of 920 students which has been carefully considered having regard to population and enrolment forecasts. The School does not anticipate there will be an increase in current staff numbers at the school to support the student enrolment increase.

The traffic and parking impacts associated with the current and proposed populations are discussed in detail in the following sections.

Traffic Impacts of Current Population

Reference should be made to the TIA report (*Reference: 19.191r01v05, dated 24 January 2020*) and more specifically Section 7, where SIDRA intersection modelling was undertaken for the existing school with a population of 60 early learning centre students, 827 students and 138 staff. The results of this modelling have been summarised in **Table 2** below.

Table 2: Existing Intersection Performances

Intersection	Control	Period	Degree of Saturation	Average Delay (s)	Level of Service
Avoca Street and Stanley Street	Give Way	AM	0.305	13.2	A
		PM	0.472	14.7	B
Stanley Street and Wentworth Street	Give Way	AM	0.062	5.5	A
		PM	0.046	5.2	A
Stephen Street and Wentworth Street	Give Way	AM	0.050	5.2	A
		PM	0.038	5.0	A

It can be seen from Table 2 that the key surrounding intersections all generally operate with level of service (LoS) A, with the exception of Avoca Street/Stanley Street in the afternoon peak period that operates with a LoS B. Accordingly, these intersections all operate satisfactorily with the current student population of 887 and staff population of 138 FTE.

Traffic Impacts of Proposed Population

In addition to the above, Section 7.1.2 of the TIA assessed the proposal for a further increase of 33 students. Taking into consideration the travel mode splits and car occupancy rates determined through surveys, there will be an additional 18 vehicle trips in the morning peak period and eight (8) vehicle trips during the afternoon peak period. These trips would be distributed across the surrounding intersections and would have minimal impacts to the level of service, noting that the SIDRA modelling software program is not particularly sensitive to changes of this order and existing levels of service are expected to be maintained.

It should be noted that the school will be preparing a Green Travel Plan (GTP) and Travel Access Guide (TAG) in accordance with the recommendations of TfNSW. As discussed above, the GTP will be implemented to reduce the reliance on private vehicles for staff and students by promoting the use of sustainable transport methods. The GTP would involve reviewing existing public transport timetables, route information and bicycle network in the surrounding area, reviewing existing travel mode data of the school to develop travel mode targets and recommending initiatives and strategies in order to justify future travel mode targets. The GTP and TAG will be distributed to all staff and students of the school and could be reviewed periodically to ensure targets are being met.

Parking Impacts of Current Population

In order to determine the on-street parking capacity within the vicinity of the school, an on-street parking survey was conducted on Monday 15 June 2020 during the morning (6:00am to 10:00am) and afternoon (2:00pm to 6:00pm) peak periods at 15 minute intervals. The surveys were conducted on a standard school day with no excursions, majority of staff in attendance and clear weather. This survey comprised the following streets which were of particular concern to local residents:

- Castle Street, between Challis Lane and Stephen Street (33 spaces);
- Stephen Street, between Wentworth Street and Chepstow Street (54 spaces);
- Stanley Street, between Chepstow Street and Wentworth Street (60 spaces);
- Avoca Street, between Carter Street and Cowper Street (84 spaces);
- Chepstow Street, between Stephen Street and Stanley Street (50 spaces);
- Monmouth Street, between Stephen Street and Stanley Street (42 spaces);
- Waverly Street, between Stanley Street and Gordon Street (6 spaces);
- Market Street, between Avoca Street and the cul-de-sac (52 spaces);
- Ethne Street, between Market Street and the cul-de-sac (27 available spaces); and
- Astolat Street, between Avoca Street and the cul-de-sac (13 available spaces).

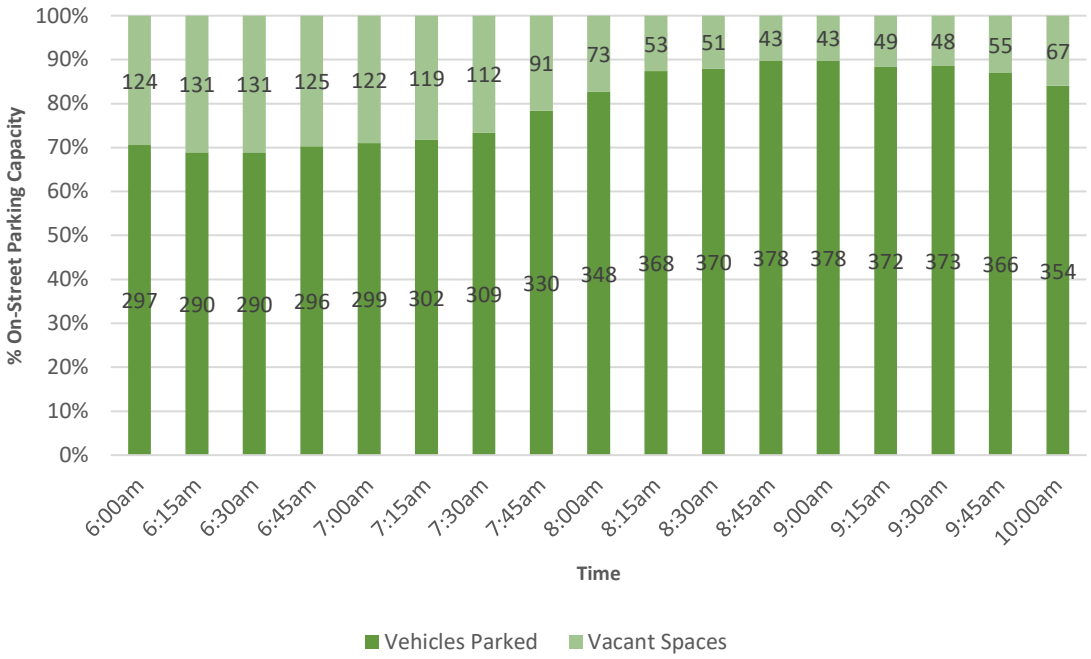
TOTAL **421 spaces**

It can be seen from the above, that the survey indicated a total capacity for 421 unrestricted on-street parking spaces. It is noted that these on-street parking surveys were undertaken during current COVID conditions. As such, these surveys are considered a conservative assessment noting there is significant reduction in travel demand generally and associated level of on-street parking in residential areas. The following points are relevant regarding COVID conditions:

- Increased number of parked vehicles with some residents still working from home;
- Increased number of staff, student and parent/guardian trips via private vehicles to avoid public transport;
- Increased number of senior students driving to school; and
- A decrease in vehicle trips away from place of residence in general.

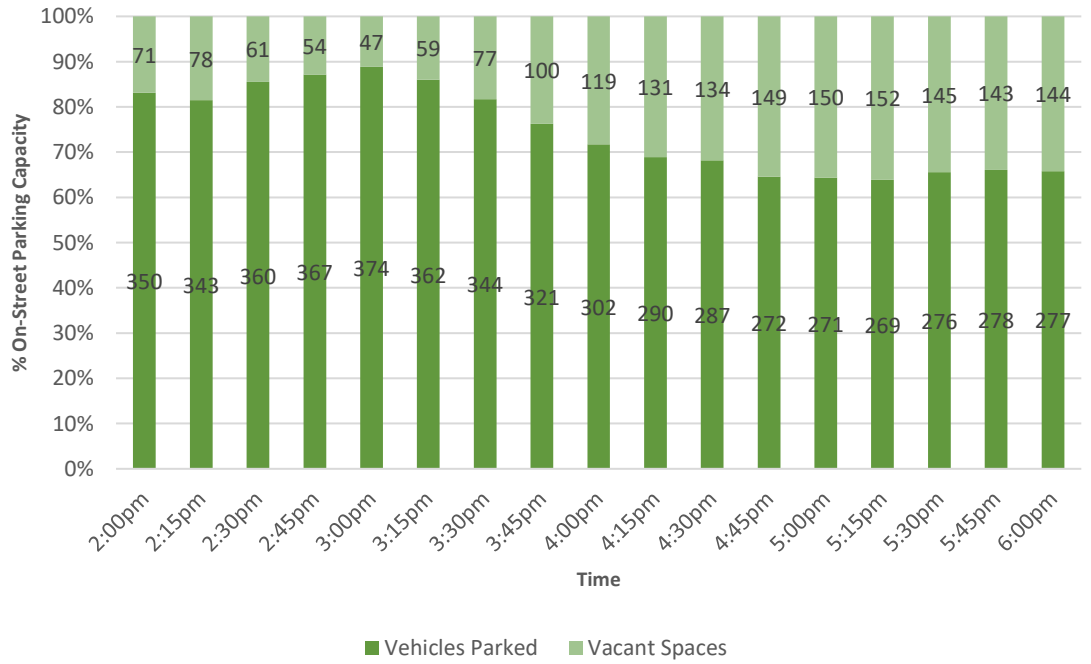
The overall survey results have been presented in **Chart 1** and **Chart 2** below for the morning and afternoon surveys.

Chart 1: On-Street Parking Capacity between 6:00am and 10:00am



It can be seen from Chart 1 that during the morning period, the on-street parking surveys identified spare capacity, with a maximum of 378 (89.8%) vehicles parked and 43 (10.2%) vacant spaces at 8:45am and 9:00am. On average, there were 336 (79.9%) vehicles parked and 85 (20.1%) vacant spaces.

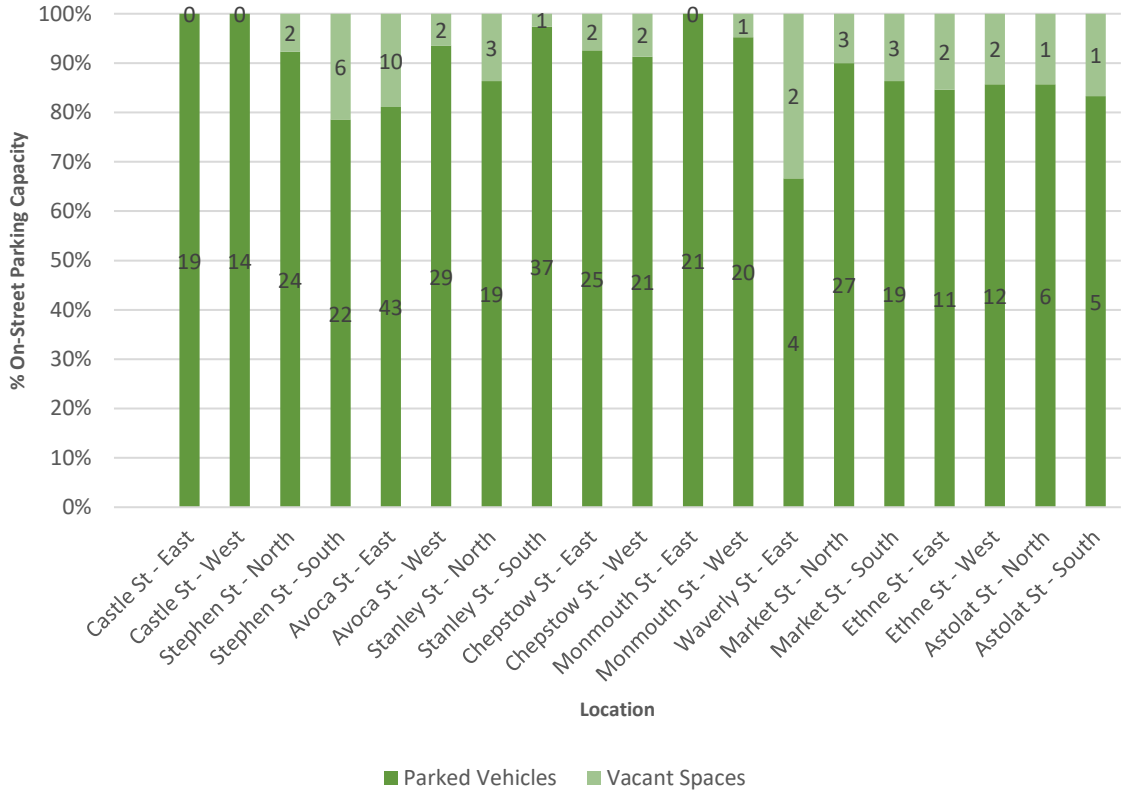
Chart 2: On-Street Parking Capacity between 2:00pm and 6:00pm



It can be seen from Chart 2 that during the afternoon period, the on-street parking surveys identified spare capacity, with a maximum of 374 (88.8%) vehicles parked and 47 (11.2%) vacant spaces at 3:00pm. On average, there were 314 (74.7%) vehicles parked and 107 (25.3%) vacant spaces.

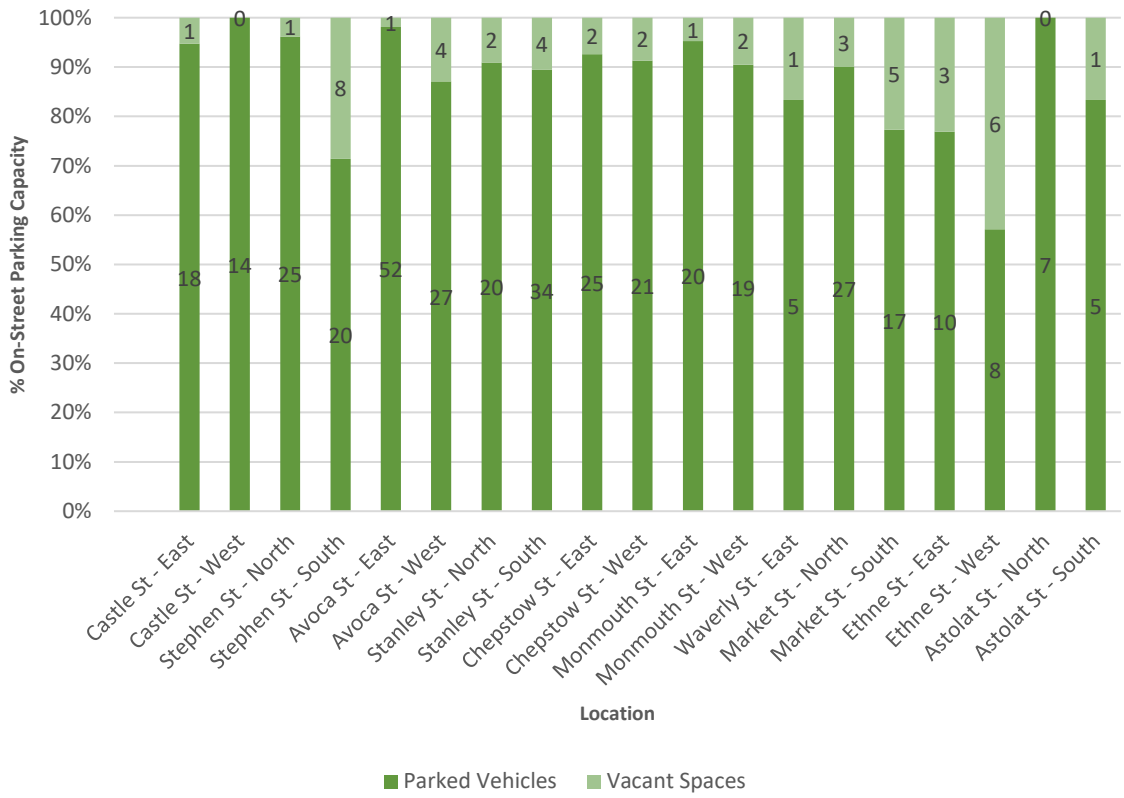
As identified by the overall parking surveys, the peak parking demands were identified at 9:00am during the morning peak period and 3:00pm during the afternoon peak period. These peak parking demands have been analysed in further detail and are summarised in **Chart 3** and **Chart 4** below for the morning and afternoon peak periods, respectively.

Chart 3: On-Street Parking Demand between 9:00-9:15am



It can be seen from Chart 3 the majority of surveyed streets were identified to have spare capacity, with Avoca Street providing 12 available on-street spaces, noting that only Castle Street was at full capacity. These results reflect general parking behaviour, noting that teachers/students will seek parking spaces in proximity to the school.

Chart 4: On-Street Parking Demand between 3:00-3:15pm



It can be seen from Chart 4 that all of the streets surveyed had spare capacity noting that Stephen Street and Ethne Street had nine (9) available on-street spaces each and Chepstow Street had four (4) available on-street spaces.

In summary, the parking surveys indicate that the demand for on-street parking increased steadily from 6am to 9am and decreased steadily from 3pm to 4:45pm. During the morning period, availability of on-street parking reduced from 131 spaces to 43 spaces, representing a demand of 88 parking spaces. During the afternoon period, availability of parking increased from 47 spaces to 149 spaces, representing an increased capacity of 102 spaces. These trends correspond to the school's start and finish times and reinforces the that fact that adequate on-street car parking is available for residents outside of school hours and during school holiday periods. It should be noted that the aforementioned demands cannot be entirely contributed to the school, noting the nearby St Margaret Mary's Primary School and the Mt St Joseph's Home.

Overall, the surveys confirmed approximately 10-11% free capacity in the survey area during morning and afternoon peak periods, representing approximately 45 car parking spaces. Streets near the school experienced the highest demand, however this was expected noting the general demand for parking near places of work. This would be the same for any school or place of work where staff utilise private vehicles to travel to/from work. The surveys were also undertaken during the COVID pandemic which has seen a large number of workers working from home and avoiding public transport. Overall trips away from home have also decreased generally. It is expected that once conditions begin to normalise post-COVID, the availability of parking within the area will improve above the levels surveyed.

Furthermore, it should be noted that Council have received no formal complaints within the last 2 years relating to school parking, traffic or congestion. The school has recorded eight (8) complaints over the last 3 years relating to parking, congestion and illegal parking which have reduced since the 'go with the flow' scheme was reviewed in June 2019 and May 2020. The May review saw the implementation of staggered departure times, which again will be reviewed to assess the effectiveness of the change.

Parking Impacts of Future Population

The proposal seeks to increase the student population by 33 students comprising of 20 kindergarten to Year 6 and 13 Year 7 to Year 12. No increase in staff population is proposed. Taking into consideration the travel mode splits and car occupancy rates determined through surveys, there will be an additional vehicle parked associated with senior students (6.8% student driving or carpooling with student driver) and 13 vehicles associated with kindergarten to Year 6 students.

It should be noted that a large proportion of kindergarten to Year 6 students will be dropped off/picked up on Avoca Street using the 'go with the flow' (GWTF) scheme. It is assumed 50% of kindergarten to Year 6 students will require the parent/caregiver to park and walk into the school grounds with the child. This results in a demand for approximately seven (7) on-street car parking spaces, including a single long term space and six (6) short term spaces. The additional demand for seven (7) spaces can easily be accommodated within the streets surrounding the school, noting that surveys have shown a spare capacity for approximately 45 spaces in the morning and afternoon peak periods. These impacts are considered minimal and are likely within the daily school population fluctuations.

In addition to the above, a comprehensive Operational Transport and Access Management Plan (OTAMP) will be prepared for the school prior to Occupation Certificate, which would detail the school's operational management arrangements for the pick-up and drop-off area, such as the GWTF scheme. This scheme is proposed to be retained and is considered a proactive approach to managing student drop off/pick up and works in conjunction with an appointed a car concierge/traffic warden. This traffic warden will be present at the Stanley Street drop off/pick up area before school (7:30am to 8:30am) and at the Avoca Street drop off/pick up area after school (3:00pm to 4:00pm). The warden's primary role is to direct drivers towards the designated pick up and drop off zones, ensure drivers do not park in bus zones/no stopping restrictions and to report any drivers who continually violate parking restrictions. Accordingly, the drop off/pick up arrangements are summarised as follows:

- During the morning drop off period, drivers will make their way to the Avoca Street drop off area. Students will depart the vehicle and utilise the footpath along Avoca Street to enter via the Stanley Street entrance; and
- During the afternoon pick up period, a duty teacher will marshal children at the Avoca Street exit gate. As parents/guardians arrive at the Avoca Street pick up area, the teacher inside the grounds will release the students and allow them to enter the vehicle from the kerb side only. This is done under the supervision of two (2) teachers who have radio contact with the teacher inside the school grounds. Parents/guardians are encouraged to remain in the vehicle during the pick-up period. The traffic warden will also be present to direct drivers to the pick-up area and to ensure parking restrictions are followed. If parents/guardians are unable to join the queue at the Avoca Street pick up area, parent are encouraged to loop around the block until space becomes available.

Furthermore, it should also be noted that TfNSW have requested that a Road Safety Evaluation be undertaken to evaluate the existing pick-up and drop-off arrangements. Recommendations of the RSE will be used to improve the school's pick-up and drop-off arrangements.

Submissions and Community Feedback

"Council has received a significant number of submissions in objection to the proposed development. The development, as proposed, shall result in adverse amenity impacts upon surrounding properties, and it has not been demonstrated that the proposal shall not result in any unreasonable impacts upon

the surrounding area with regards to traffic and parking. As such, the proposed development is inconsistent with the objectives of the SP2 zone and cannot be said to be in the public interest. As previously discussed, given the circumstances, Council is recommending mediation in this instance, with the aim of elevating some of the community concerns and coming to a resolution on certain matters of concern."

TRAFFIX Response

TRAFFIX has reviewed the community feedback and has summarised and responded to the primary concerns of the community, noting the following key issues in this document:

- Illegal parking and driving;
- Demand for on-street parking;
- Resident parking schemes;
- Traffic congestion;
- Pick-up and drop-off arrangements;
- Pedestrian safety; and
- Out of hours activity.

It should be noted that these issues are not unique to Emanuel School and are present at the majority of schools within Sydney. Nevertheless, we advise the following:

Illegal Parking and Driving

Community feedback has raised concerns pertaining to illegal parking (parking across driveways and ignoring no stopping/parking restrictions) and driving (speeding and illegal U-turns). Illegal parking and driving behaviour should directed to council's parking rangers and local police to enforce current NSW road rules.

Nevertheless, it should be emphasised that illegal driving behaviour is strongly discouraged by the school and as such, the school proposes to provide parents, carers and students additional education in the form of newsletters, brochure/pamphlets and information on the school website. This information would be provided on a monthly basis and would include, but not limited to:

- Contact details for the Randwick Council and NSW police to report any illegal parking/driving behaviour;
- Contact details for the school to assist in reporting illegal parking/driving behaviour;
- Details regarding the formal pick-up and drop-off areas along Avoca and Stanley Street;
- Details regarding the existing 'Go with the Flow' scheme along Avoca Street;
- Information material relating to parking restrictions:
  - 'No Parking' restrictions being two (2) minute duration for a car to stand and drivers to remain within three (3) metres of the vehicle, noting that this carries a $191 fine and 2-demerit points when disobeyed in a school zone (Rule 168-1, as per RMS guidelines); and
  - 'No Stopping' restrictions within school zones, which carry a $344 fine and 2-demerit points (Rule 167, as per RMS guidelines).
  - Double Parking which carries a $344 fine and 2-demerit points (Rule 189, as per RMS guidelines).

It is emphasised that the school strongly discourages illegal parking/driving and works with the community/Council's rangers/police to minimise issues during school pick-up and drop-off periods.

Demand for On-Street Parking

On-street car parking impacts are discussed above.

Resident Parking Schemes

Randwick Council describes resident parking schemes as the following:

"Randwick City Council operates a Resident Parking Scheme that gives parking priority on the street to residents who cannot park on their own property. The Resident Parking Scheme allows eligible residents to obtain a parking permit to park without time limits in a Resident Parking Zone, in their Area. Resident parking zones are identified by parking time limit signs which display additional wording such as "Permit Holders Excepted Area RA6".

Streets surrounding the school are located within the 'RA6' resident parking scheme area which is shown in **Figure 1** below.

Figure 1: RA6 Resident Parking Scheme Area
(Source Randwick Council)

As can be seen from the Figure 1, residents immediately surrounding the school do not have access to any resident parking zones. To provide context, Randwick Council conducts online surveys of each household within the respective parking scheme area every four (4) years to determine if new parking zones should be installed. Council has advised that an individual street requires 51% of residents to request for a residential parking zone for Council to consider installation of appropriate signage. That is, if 10 residents respond, and 6 are in favour of a resident parking zone, then Council will consider the installation of six (6) residential parking zone spaces along the street. As mentioned above, surveys are undertaken every four (4) years with the 'RA6' zone scheduled to be surveyed in September 2020. It is recommended that residents wanting a resident parking scheme in their street should respond to Council's survey in September.

Traffic Congestion

Please see response above relating to traffic impacts.

Pick-up and Drop-off Arrangements

Reference should be made to the TIA report (*Reference: 19.191r01v05, dated 24 January 2020*) and more specifically Section 4.2 that summarised the existing traffic management of the pick-up and drop-off area, including:

- 'Go with the Flow' (GWTF) scheme;
- Appointed car concierge/traffic warden, with the primary role to direct drivers towards designated pick-up and drop-off areas; and
- On-duty teacher to marshal children during the afternoon peak period, with another teacher managing the pick-up and drop-off area.

In addition to the above, a comprehensive Operational Transport and Access Management Plan (OTAMP) will be prepared for the school prior to Occupation Certificate, which would detail the school's operational management arrangements for the pick-up and drop-off area. It should also be noted that TfNSW have requested that a Road Safety Evaluation be undertaken to evaluate the existing pick-up and drop-off arrangements. Recommendations of the RSE will be used to improve the school's pick-up and drop-off arrangements.

Pedestrian Safety

As previously mentioned, an RSE is proposed to be undertaken at a later stage that would identify potential risks to pedestrians in the locality. As such, any potential risks to pedestrians (if any) is envisaged to be addressed (as appropriate) prior to Occupation Certificate.

Out of Hours Activities

The school conducts out of hours school activities on an infrequent basis that generally involve a minor proportion of the existing school population. Accordingly, in the lead up to any out of hours school activities, the school will undertake 'letter drops' for the neighbouring properties that provide the following information:

- Date and time of the event;
- Description of the event;
- Expected times of additional volumes of traffic in the area;
- Outline of measures taken to mitigate the impact of additional traffic;
- Contact details of event organiser or link to website for further information; and
- School contact information.

The 'letter drops' are undertaken on the following streets:

- Stanley Street
- Chepstow Street
- Monmouth Street
- Stephen Street (between Chepstow Street and Monmouth Street)
- Market Street (between Avoca Street and Ethne Avenue)
- Ethne Avenue
- Astolat Street
- Avoca Street (between Market Street and Frenchmans Road)

Conclusion

On the basis of the above, the proposed redevelopment of the Emanuel School at 18-20 Stanley Street, Randwick, in our view has addressed the parking and traffic impacts raised by Council, TfNSW and community feedback. Continued support is therefore given on traffic planning grounds.

We trust the above is of assistance and request that you contact the undersigned should you have any queries or require any further information.

Yours faithfully,

Traffix

Ben Liddell
Senior Engineer