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Transport and Accessibility Report Shore Physical Education Centre

for Shore School

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Revision Register

Rev	Date	Prepared By	Approved By	Remarks
01	16/05/16	AK	PY	For review
02	25/05/16	AK	PY	Following comments
03	12/07/16	AK	PY	Following comments

1.0 EXECUTIVE SUMMARY

This report provides a review assessment of the proposed Physical Education Centre located at Sydney Church of England Grammar (Shore) School in North Sydney. The proposed works include demolition of existing buildings and a swimming pool, construction of a new Physical Education Centre and additional landscaping.

This report covers the existing condition on the site and how the proposed development fits within a transport and accessibility framework. According to the Request for SEARs report completed by Robinson Urban Planning on the 15th of February 2016, the overall student numbers at the school campus are not expected to vary as a result of the development. There is an expectation of an increase of 2 staff members.

This report responds to the specific matters listed in the Secretary's Environmental Assessment Requirements (SEARs) dated 16th of March, 2016.

The main areas of attention of this study relate to:

- Transport and accessibility including active travel and public transport.
- Provision of parking and loading area facilities.
- On street parking demand.
- Traffic generation.
- Preliminary construction activity measures.

2.0 RESPONSE TO SECRETARY'S ENVIRONMENTAL ASSESSMENT REQUIREMENTS

Under Application Number SSD 7507 we have been provided with Secretary Environmental Assessment Requirements (SEARs). These have been issued on the 10th March 2016. Table 1 provides a response to the relevant SEARs.

Table 1: Response to Secretary's Environmental Assessment Requirements

No	Issue	Comments and References
5.1	The existing and proposed pedestrian and cycle routes and facilities within the vicinity of the site and to public transport facilities as well as measures to maintain road and personal safety in line with CPTED principles;	Pedestrian and cycle routes within the vicinity of the site will be maintained as the work extent is only within the school boundary. The school currently provides shower and change facilities within the campus. The proposed development includes an upgrade to existing facilities and the provision of increased change room areas, showers and lockers. Safety measures will be addressed in the detailed design phase. For further information refer to Sections 5.5.2 and 6.3.2.
5.2	An estimate of the total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and cycle trips;	As there is no proposed increase in students, Clause 104 of the Infrastructure State Environmental Planning Policy (Traffic Generating Developments) does not apply and there is no requirement for referral to Roads and Maritime Services. The Transport and Accessibility Impact Assessment prepared by Halcrow (October 2011) indicated that there is a relatively low incidence of private vehicle usage to the school as a whole (46%). This is not expected to change as a result of the development.
5.3	The adequacy of public transport to meet the likely future demand of the proposed development;	The project will not increase existing student numbers. It is anticipated that an additional two staff members will be required as a result of the development. Public transport to the campus is currently sufficient and it is not likely to be affected by the development. The availability of public transport to the area is discussed in further detail in Section 5.6. The Green Travel Plan prepared by GTA Consultants (April 2014) reinforces

No	Issue	Comments and References
		that public transport to the site is sufficient.
5.4	Impact of the proposed development on existing and future public transport infrastructure within the vicinity of the site;	As the development occurs wholly within the bounds of Shore school, it will not affect any public transport routes. As student numbers are not expected to change and there are only two additional staff anticipated, minimal demand will be generated on public transport routes in the vicinity of the site. Any additional demand generated by the upgraded sporting facilities is expected to occur during the weekend outside of peak hours.
5.5	Measures to promote travel choices that support sustainable travel, such as a location-specific sustainable travel plan, provision of end of trip facilities, green travel plans and wayfinding strategies;	Shore School has a current Green Travel Plan which was prepared in 2014. This can be found in Appendix A. There is also a current Transport Access Guide incorporating sustainable travel modes into the campus shown in Appendix B. The proposed works will not alter the current information within both the Transport Access Guide and Travel Plan.
5.6	The daily and peak (AM, PM and events) vehicle movements impact on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for upgrading or road improvement works (if required);	The development is not expected to increase student numbers across the campus and proposes a net increase of 38 car spaces. Approach intersections to the site are currently operating at a high level of service and this is not expected to change post development (see Section 7.0). The Transport and Accessibility Impact Assessment prepared by Halcrow (October 2011) also found that approach intersections were operating at a high level of service. As a result, an increase in traffic generation around the campus is not expected and no major road works are proposed. Refer to Section 6.5 for more information.
5.7	The proposed active transport access arrangements and connections to public transport services;	The development will not impact on the student numbers across the school campus as a whole, therefore current active transport networks are sufficient

No	Issue	Comments and References
		to accommodate the development. No additional impacts are anticipated on the networks. Active transport is discussed in further detail in Sections 5.5 and 6.3 and within the Green Travel Plan attached in Appendix A.
5.8	The proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and cycle networks;	Current car and bus pick-up/drop-off zones will not be negatively affected by the proposed development. Pedestrian safety measures will be addressed in the detailed design phase. Turning path checks have been completed for Hunter Crescent and the Bishopsgate Car Park entrance. These are found in Appendix C.
5.9	Identification of the intended users of the car park and assessment of the impacts of traffic generation arising from the use, including assessment of traffic volumes with reference to class timetabling, and use during and outside of school semesters, and how traffic generation will be managed holistically in relation to surrounding businesses and residences;	Shore has advised that the Bishopsgate Car Park will be restricted to staff and visitors during Monday to Friday. During weekends this parking provision will accommodate some demand from the sporting facilities within the school. This will occur outside of peak hours. The traffic impact of the development is covered in Section 6.5.
5.10	Identification of any buses that may be used for the transport of sports teams, their volumes, frequency and parking provision, and assessment of impacts on the local road network and traffic safety;	Shore currently has two bus zones for use by the school located on Mount Street and William Street. Shore has advised that the current bus frequency will not change. These will be unaffected by the proposed works. Refer to Section 5.6.1.
5.11	Proposed car and bicycle parking provision, including consideration of the availability of public transport and the requirements of the relevant parking codes and Australian Standards;	There will be a net increase onsite in car parking provision of 38 spaces. These spaces will be restricted to staff and visitors during Monday to Friday. During weekends this parking provision will accommodate demand from sporting facilities within the school. There are 8 bicycle parking spaces to be incorporated into the development in accordance with North Sydney Council's DCP. Refer to Section 6.2 and 6.3.
5.12	Service vehicle access, delivery and loading arrangements and estimated	The proposed development includes additional loading facilities as discussed

No	Issue	Comments and References
	service vehicle movements (including vehicle type and the likely arrival and departure times); and	in Section 6.6. Service vehicle access is limited as required by Shore's Facilities Management. Turning circle path checks for 8.8m medium rigid vehicles and 8m waste collector trucks have been conducted for the development and are included in Appendix C.
5.13	Traffic and transport impacts during construction and how these impacts will be mitigated for any associated traffic, pedestrian, cyclists, parking and public transport, including the preparation of a draft Construction Traffic Management Plan to demonstrate the proposed management of the impact.	Prior to construction a construction traffic management plan will need to be prepared by the chosen builder. This will need to include access to the site for construction activities. It will also include access around the site for the public including pedestrians and cyclists. A preliminary construction traffic management plan is located in Appendix D. This details recommended travel routes for construction vehicles and will be finalised when a builder is engaged and the staging of the works is determined.
5.14	<i>Relevant Policies and Guidelines:</i> • <i>Guide to Traffic Generating Developments (Roads and Maritime Services)</i> • <i>EIS Guidelines – Road and Related Facilities (DoPI)</i> • <i>Cycling Aspects of Austroads Guides</i> • <i>NSW Planning Guidelines for Walking and Cycling</i> • <i>Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development</i> • <i>North Sydney Integrated Traffic & Parking Strategy (10/1/15)</i>	These policies and guidelines have been reviewed as a part of the preparation of this transport and accessibility report.
6.4	Demonstrate that the development has been designed to promote the use of sustainable transport.	Public and active transport is readily available to the site and will not be negatively affected by the works. Shore School has a current Green Travel Plan and Transport Access Guide that will be unaffected by the development. There will be an improvement to existing cyclist end use facilities and an increase in available change rooms, showers and lockers on the campus. Pedestrian amenity within the campus will be improved by provision of an

No	Issue	Comments and References
		additional pathway from Blue Street to Hunter Crescent. This pathway will be between the proposed swimming pool and Multipurpose Sports Building. This is discussed in further detail in Section 6.3.2 and 6.4.

3.0 INTRODUCTION

3.0 Background

Taylor Thomson Whitting has been engaged by EMP Projects to give advice regarding transport and accessibility of the proposed Physical Education Centre development located at the Sydney Church of England Grammar School (Shore). The proposed building is located on Shore's main campus in North Sydney on Blue Street. In addition, the development includes 4 and 5 Hunter Crescent and 16 William Street.

This report responds to the specific matters listed in the Secretary's Environmental Assessment Requirements (SEARs) dated 10th of March 2016.

The main areas of attention of this study relate to:

- Transport and accessibility including active travel and public transport.
- Provision of parking and loading area facilities.
- Demand for on street parking.
- Traffic generation.
- Preliminary construction activity measures.

3.1 Scope of the Report

The report is divided into sections:

Section 1.0 gives an overview of the report.

Section 2.0 provides a detailed response to each of the project SEARs.

Section 3.0 includes background and the aim of the study.

Section 4.0 covers the strategic context of the site, including local and state requirements.

Section 5.0 covers the existing conditions at the site.

Section 6.0 covers the development of the Shore Physical Education Centre within a traffic and transport context.

Section 7.0 includes an assessment of the main approach intersections to the site pre and post development.

Section 8.0 provides a summary and conclusions.

3.2 Reference Documents

- Guide to Traffic Generating Developments (Roads and Maritime Services)
- EIS Guidelines – Road and Related Facilities (Department of Infrastructure and Planning)
- Cycling Aspects of Austroads Guides
- NSW Planning Guidelines for Walking and Cycling
- Austroads Guide to Traffic Management Part 12: Traffic Impacts of Development
- NSW State Environmental Planning Policy (Infrastructure) 2007
- North Sydney Council Development Control Plan 2013
- North Sydney Integrated Traffic & Parking Strategy (10 January 2015)
- Transport & Accessibility Impact Assessment prepared by Halcrow (4 October 2011)

- Request for SEARs prepared by Robinson Urban Planning (19 February 2016)
- Traffic Count Data collected by R.O.A.R. Data (7 April 2016)
- Shore School (North Sydney) Green Travel Plan prepared by GTA Consultants (22 April 2014)
- Email responses from Shore School via Kathy Dickson (14 April 2016)
- Meeting with Transport for New South Wales (TfNSW) (10 April 2016)

4.0 PLANNING CONTEXT

4.0 State Strategic Planning Policy and Plans

4.0.1 State Environmental Planning Policy (SEPP) (Infrastructure) 2007

The Infrastructure SEPP relates to traffic generating development. Schedule 3 of this SEPP stipulates that educational establishments need to be referred to the Roads and Maritime Services (RMS) given they generate “50 or more students”. As the proposed development will not impact on student numbers at the school, there is no formal requirement for referral to the RMS.

4.0.2 Planning Guidelines for Walking and Cycling

These guidelines relate to improved access and facilities for active travel modes. This planning has been incorporated within local policy such as the North Sydney Council Development Control Plan.

The key aim of this guideline is to integrate cycling and pedestrian paths within the development to those that already exist locally.

4.0.3 NSW Long Term Transport Master Plan 2012

This Master Plan aims to deliver “an integrated, modern transport system” by identifying key issues with regards to transport in NSW and a set of actions that can be used to address those challenges. The plan stresses the importance of maintaining access to public transport interchanges; this includes the area surrounding North Sydney Station.

4.0.4 Sydney’s Cycling Future 2013

This guideline focuses on promoting and increasing the rate of cycling for short duration trips by making it safer, more convenient and enjoyable. North Sydney is identified as a priority for increasing connectivity with regards to cycling to the CBD.

4.0.5 Sydney’s Walking Future 2013

Promoting walking as a transport mode and providing walking connections to public transport interchanges are key aims of this guideline. North Sydney is identified as a suburb with a high number of walking trips per day.

4.1 Local Planning and Policy

4.1.1 North Sydney Council Development Control Plan (DCP) 2013

Section 10 of the DCP stipulates the following:

- The maximum car parking rate for an educational establishment is 1 space per 6 staff members.
- Parking for motorcycles must be provided at the “*minimum rate of 1 space per 10 cars or part thereof*”.
- Disabled spaces are to be supplied at a rate of 1-2% of all non-residential parking.

The DCP does not stipulate the exact number of bicycle parking facilities to be provided for secondary educational establishments. It states that the Council will give consideration to the rates contained within the *Planning Guidelines for Walking and Cycling 2004*. These guidelines state that Primary and Secondary Schools shall provide bicycle parking at a rate of 3 to 5% of the number of staff.

According to the DCP, cycling end of use facilities are to be provided at the following rates:

- 1 personal locker for each bike parking space.
- 1 shower and change cubicle for up to 10 bike parking spaces.
- 2 showers and change cubicles for 11 to 20 or more bike parking spaces.
- 2 additional shower and change cubicles for each additional 20 bike parking spaces or part thereof.

Section 11 of the DCP provides traffic guidelines for development. This section only applies to development applications “which result in substantial traffic generation.” As there is a minimal increase in travellers to the school, there will be a negligible increase in trips to the site.

4.1.2 North Sydney Integrated Traffic & Parking Strategy 2015

This strategy was developed by North Sydney Council to address increasing traffic and parking demand in the area. The key aims of the strategy are:

- Improving traffic management;
- Encouraging sustainable transport; and
- Improving parking options and supply.

According to this strategy, Shore is located in an area of high parking demand.

5.0 EXISTING CONDITIONS

5.0 Site location

The proposed Physical Education Centre is located within the Shore Campus in North Sydney. The development will be located in the south-eastern corner of the Campus. The site also includes residential land at 4 and 5 Hunter Crescent and 16 William Street. Refer to Figure 1 for the location of the site.

The site is currently occupied by a 25 metre pool, gymnasium and three residential buildings.

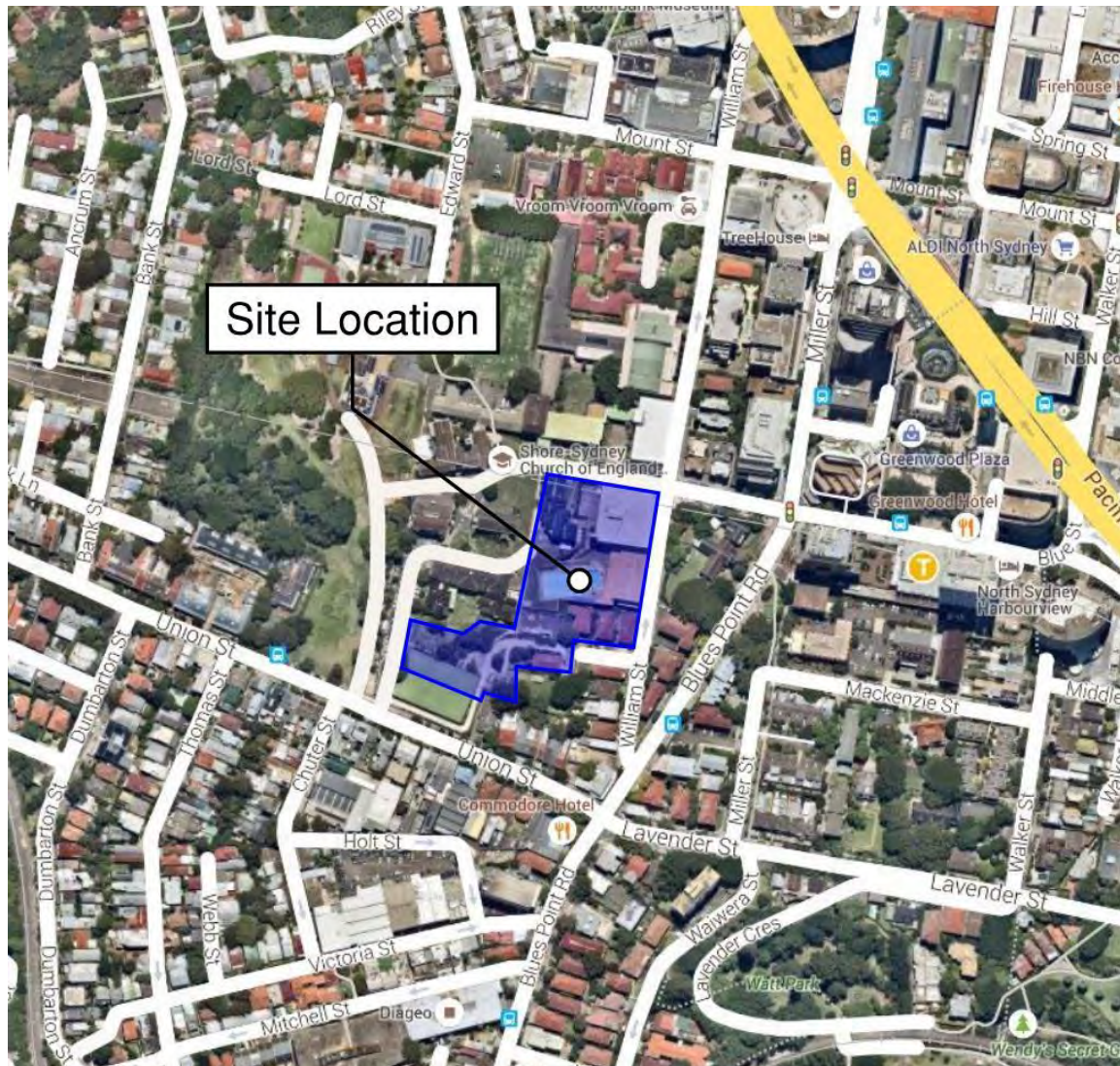


Figure 1: Site Location (Source: Nearmap)

5.1 Access to the Site

A pedestrian and vehicle access diagram has been prepared by Cox Richardson on the 21st of January, 2016. Refer to Figure 2.

Currently the primary pedestrian access to the site is via the school entrance on Blue Street adjacent to the site.

There is a pick up and drop off zone internal to the school along the southern boundary of the site near Hunter Crescent and Union Street. The zone is accessed by Union Street and Hunter Crescent. The Union Street entrance is one way only, while Hunter Crescent has an

entry and exit lane. The posted speed limit of this internal road is 5 kilometres per hour. Traffic movements are detailed in Figure 3.

Shore has advised that this drop off and pick up zone is used primarily by students within the preparatory school in years 5 and 6. Access to this zone is controlled by boom gates which allow access from 7am to 9am and 2:30pm to 5pm.

Primary vehicle access to the site is from Union Street at the southern boundary of the school.

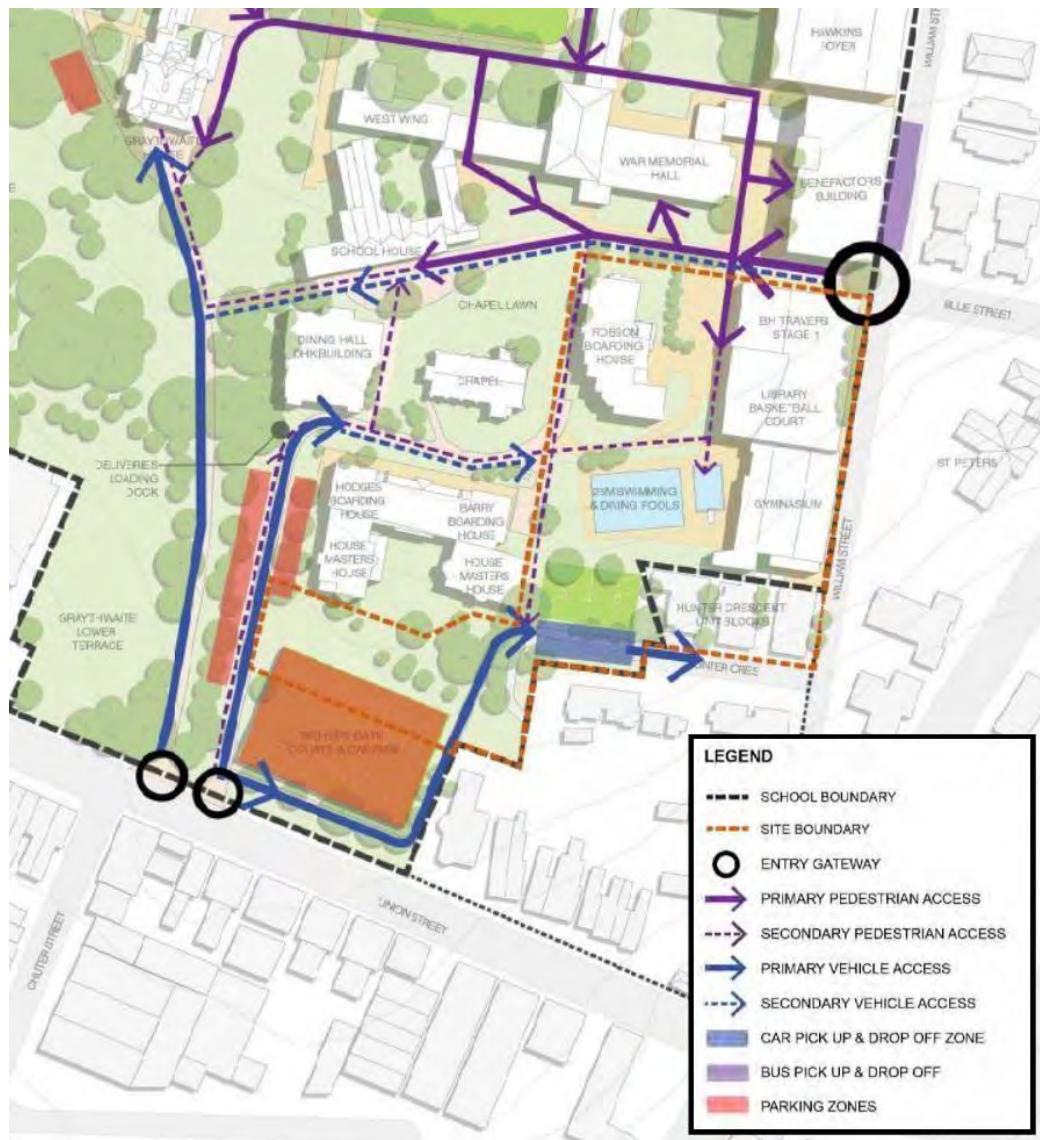


Figure 2: Pedestrian and Vehicle Access (Source: Cox Richardson January 2016)

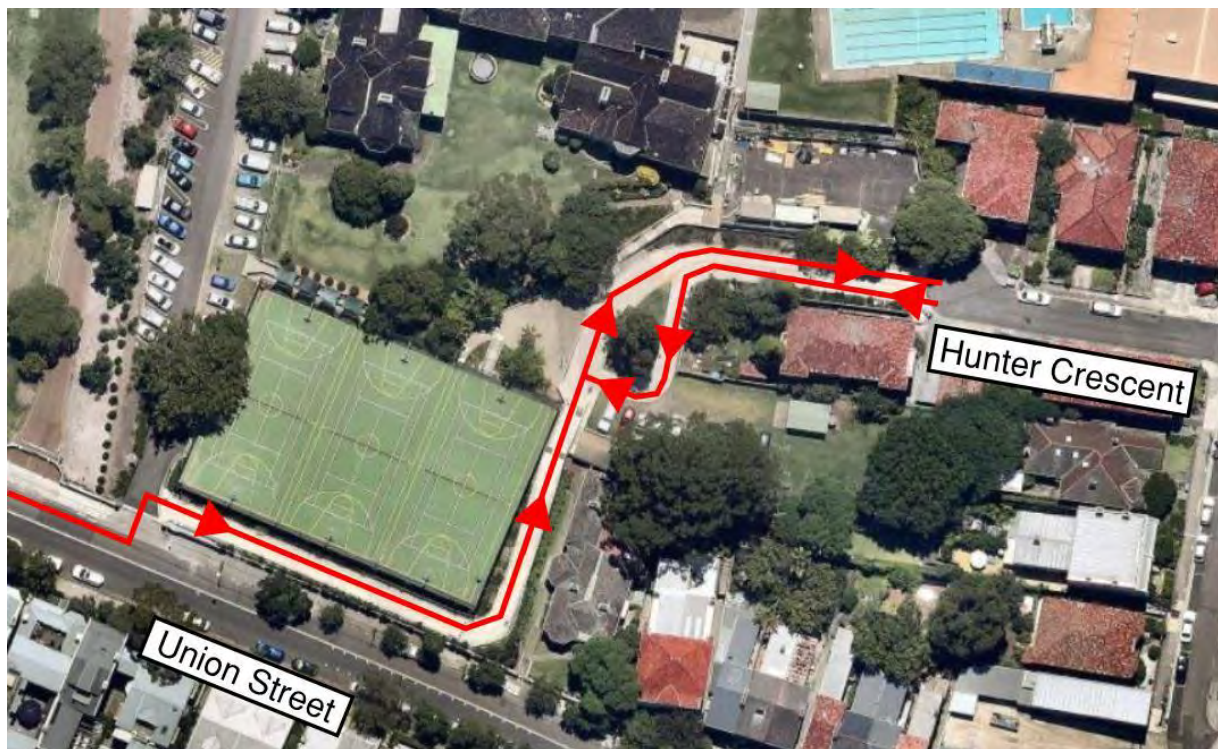


Figure 3: Drop Off/Pick Up Zone Internal Traffic Movements

5.2 Car Parking

There are three main parking areas located within the Campus accommodating 148 car parking spaces (refer to Figure 4):

- Centenary Car Park (50 spaces) which is restricted to staff and accessed via William Street in the north eastern corner of the Campus;
- Bishopsgate Car Park (68 spaces) located adjacent to Union Street, accessed by Gate 22 and restricted to staff;
- Unrestricted parking located near the entrance to Bishopsgate Car Park (23 spaces); and
- Parking located near the Graythwaite Building (6 visitor spaces and 1 caretaker space) which is accessed by Gate 1 on Union Street and used by staff and visitors.

Additionally, there are 41 spaces that have been approved as part of the recent Graythwaite Concept Plan. These have not yet been built and a further Development Application for detailed design (of the East Building) is required before construction can commence. They will be accessed by Gate 1 on Union Street.

Car parks that are restricted to staff only are accessed by remote controlled boom gates. Remotes are only issued to staff that are using these car parks.

There is no parking provision for students within the School.

Shore has advised that the Centenary Car Park is open for use by visitors during events in the Smith Auditorium located above the car park. Bishopsgate Car Park is also available for use by visitors during weeknights and weekends.

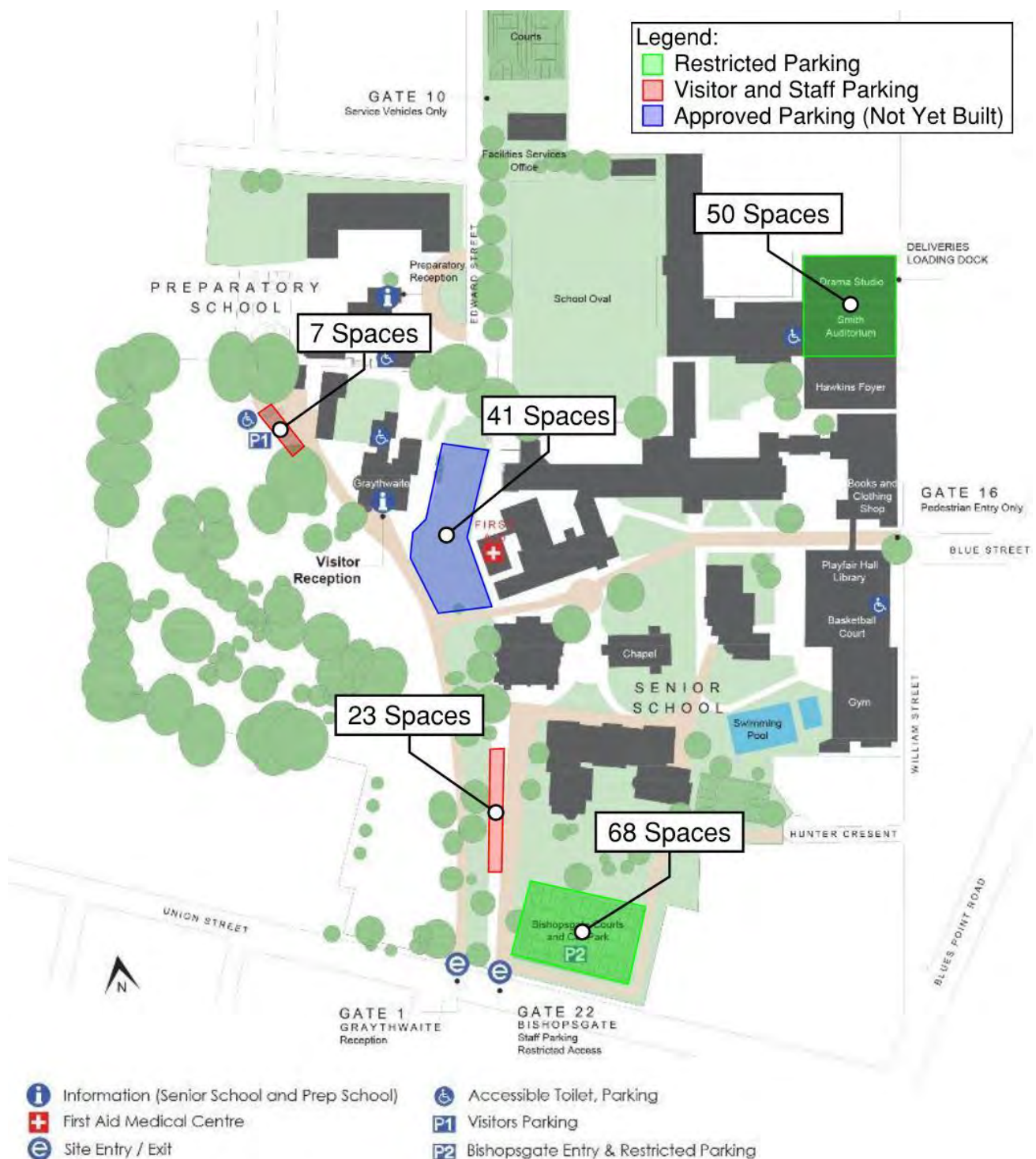


Figure 4: Off Street Parking Locations (Source: www.Shore.nsw.edu.au)

Limited short term parking spaces are available on surrounding streets to the school. According to the North Sydney Integrated Traffic and Parking Strategy 2015, metered parking is located on Mount Street, William Street and areas of Union Street.

5.3 Loading Access

Loading and service locations are at the following locations (refer to Figure 4):

- The maintenance building accessed via Gate 10 from Edward Street;

- A loading dock located in the Drama Theatre adjacent to William Street; and
- A loading dock located near the Dining Hall accessed via the Bishopsgate Car Park entrance from Union Street.

5.4 Active Travel

5.4.1 Pedestrian Movements

The pedestrian entrance into the school nearest to the site area is located at Gate 16 from Blue Street (as shown in Figure 4). This access point will be unaffected by the proposed development.

5.4.2 Cycling Facilities

The Campus is located near on-road cycling routes along Union Street, Blues Point Road, Lavender Street, Miller Street, Pacific Highway and Bay Road. Refer to Figure 5. The school does not provide any formal bicycle parking.

There are shower and change facilities currently within the school for use by cyclists. These facilities will be improved as part of the works.

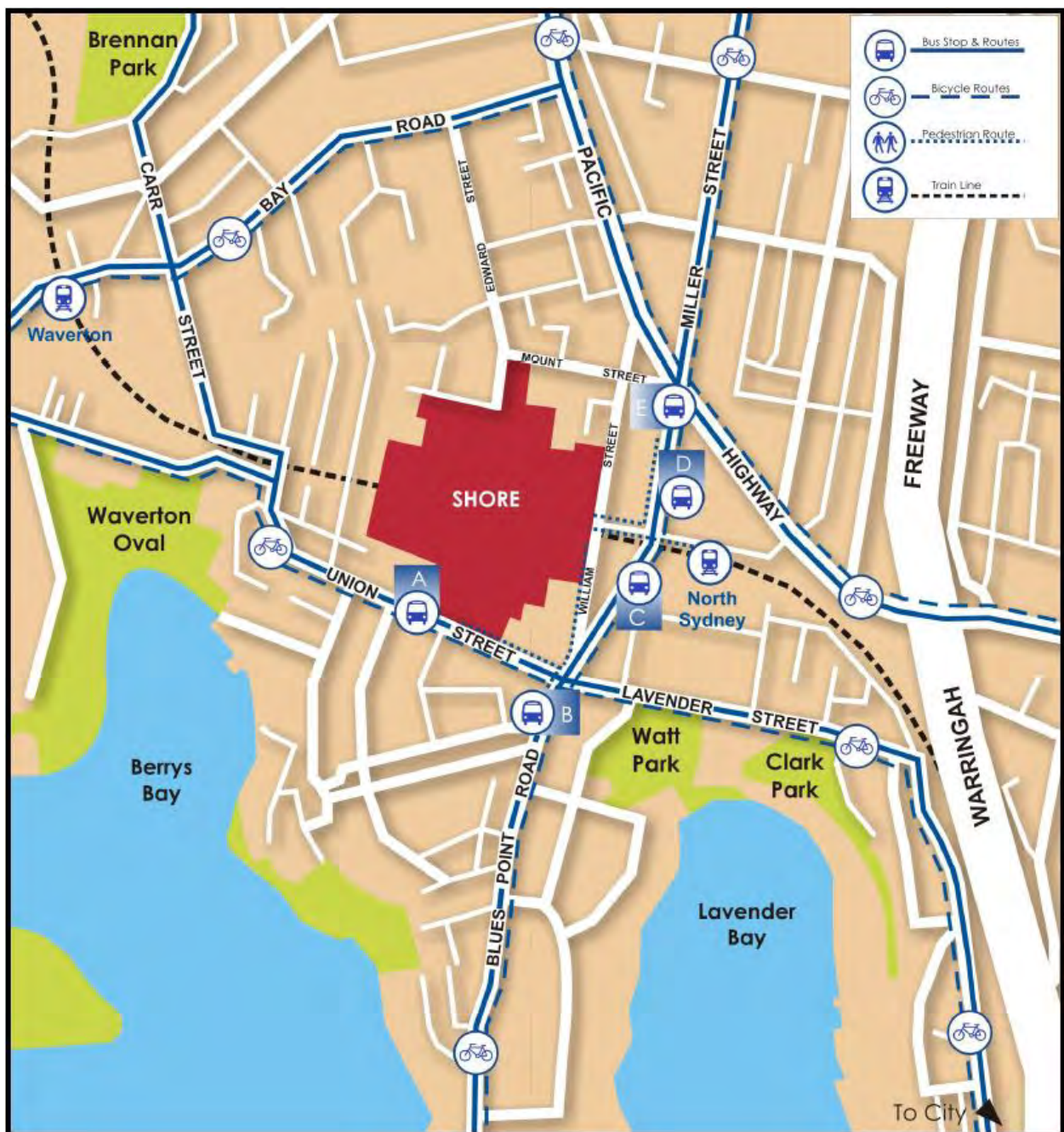


Figure 5: Public Transport and Active Travel Network (Source: Shore Transport Access Guide)

5.5 Public Transport

5.5.1 Bus Services

There are five main bus stops serviced by Sydney Buses located near the site as shown in Figure 5. The route numbers servicing these bus stops are detailed in Table 2.

Bus Stop	Bus Routes	Areas of Service	Frequency
A	265	McMahon's Point, Greenwich Wharf and Lane Cove	Every half hour during peak hours Every hour during off peak hours
B	265, 269	McMahon's Point, Kirribilli, Greenwich Wharf and Lane Cove	Every 15 minutes during peak hours Every half hour during off peak hours
C	168, 173, 183, 209, 227, 228, 230, 265, 287, 612X, 622, 653, E50, L78, L84	Balgowlah, Narrabeena, Narrabeen, East Lindfield, Mosman, McMahon's Point, Greenwich Wharf, Lane Cove, Ryde, Rouse Hill, Kellyville, Dural, West Pennant Hills, Manly, Dee Why and Mona Vale	Every 2 minutes during peak hours Every half hour during off peak hours
D	173, 209, 227, 228, 230, 265, 612X, 622, 653, E50, L87	Narrabeena, East Lindfield, Mosman, McMahon's Point, Greenwich Wharf, Lane Cove, Rouse Hill, Kellyville, Dural, West Pennant Hills, Manly, Newport	Every 5 minutes during peak hours Every half hour during off peak hours
E	252, 254, 261, 343, 286, 287, 290, 622, 653, M20	Lane Cove West, Riverview, City, Northwood, Kingsford, Rosebery, Denistone East, Ryde, Epping, Dural, West Pennant Hills, Gore Hill, Redfern	Every 2 minutes during peak hours Every half hour during off peak hours

Table 2: Bus Services (Source: Shore Transport Access Guide)

Additionally, there are two bus zones along the boundary of the Campus used by Shore:

- One is located along the southern kerbline of Mount Street between Edward Street and Wheeler Lane. This zone is used by Shore school buses transporting students from the North Sydney Campus to the Northbridge Campus. This restriction applies 10am to 4pm Monday to Saturday. This bus zone is used during the afternoon once on Monday and three times Tuesday to Thursday.
- The other is located on William Street along the western kerbline and to the north of the Blue Street entrance. This zone is operational between 2:30pm and 4pm during school days only. There are six bus services using this stop Monday to Thursday during the afternoon.

These school bus services are primarily used to transfer students to other locations for co-curricular activities such as sports practice at Shore's Northbridge campus.

4.6.3 Train Services

North Sydney Train Station is located approximately 160 metres walking distance to the east of the Campus. The station is serviced by the T1 North Shore and Northern Line connecting the Station to Central Station, Chatswood Station, Macquarie University and Hornsby. Train frequency is every 3 to 5 minutes during peak hours.

Waverton Train Station is located 800 metres to the north-west of the campus. It is also serviced by the T1 North Shore and Northern Line.

6.0 PROPOSED DEVELOPMENT

6.0 Scope of Proposed Development

The Physical Education Centre is Stage 2 of the “B.H. Travers Project”. Stage 1 of the project was completed in May 2000 and involved construction of the B.H. Travers Centre located directly to the north of the proposed site. Stage 2 proposes the following:

- Demolition of the existing swimming pool and buildings located within the south-eastern corner of the school campus, as well as residential buildings located at 4 and 5 Hunter Crescent and 16 William Street.
- Construction of the new Shore Physical Education Centre including a 50 metre indoor swimming pool, a multipurpose sporting complex, additional classrooms, loading facilities and new car parking spaces.
- Additional open spaces, courtyards and landscaping.
- Alterations to Stage 1 of the BH Travers Development.
- Additional car parking spaces.

There is an expected increase of two additional staff as a result of the development, while student numbers within the school will remain unchanged.

6.1 Car Parking

Shore has advised there are 257 full time and 72 part time staff members. This results in a total number of staff equal to 329. As discussed in Section 4.2.1, off street parking for educational establishments is to be provided at a rate of 1 space per 6 staff members. As the development results in an increase of 2 staff members, there will be a total of 331 staff post development. This results in a maximum allowable parking provision of 55 spaces in accordance with the DCP.

There is a proposal for 61 car parking spaces as a part of the development. A total of 54 spaces are proposed to be incorporated into an extension of the existing Bishopsgate Car Park. In addition, there is a proposal for 7 spaces to be built on the Ground Floor of the proposed Physical Education Centre.

Parking provision on site is currently 148 spaces. There will be a loss of parking provision on site of 23 spaces as located in Figure 6. These spaces are currently used by staff; however they are non-compliant with North Sydney Council and will be replaced by the Bishopsgate Car Park extension. This represents a net increase of 38 spaces within the school. See Table 3 for a summary of parking provision.

The proposed parking provision follows the onsite car parking policy identified within the Green Travel Plan prepared by GTA Consultants (refer to Appendix A) by providing dedicated staff parking and not permitting students to park onsite.



Figure 6: Proposed Effect on Parking of the Development

	Staff	Allowable Parking Provision ¹	Parking Provision	1 space per
Current	329	55	148	2.2 staff
Proposed	331	55	186	1.8 staff

Table 3: Proposed Parking Provision

Note: 41 spaces approved as part of the Graythwaite development are not included in this estimate.

¹In accordance with the North Sydney Council DCP.

6.1.1 Demand for Off Street Parking

As shown in Table 3, there is an increase in parking above the maximum allowable parking provision detailed in the North Sydney Council DCP. When considering the parking demand of the site there are a number of key factors to consider that are unique to Shore School.

Firstly, according to the Concept Plan prepared by Halcrow in 2011 for the Graythwaite Part 3A Development, *“it is estimated that some 70% of all staff drive to the school and park either on site or on street.”* This estimate was based on a staff survey conducted to determine the travel mode share of the staff within the Campus. Following this driving rate, the school will experience a demand of 181 staff driving to the school (based on a total of 259 full-time staff post development). Note that this does not include the additional 72 part time staff that can be assumed to also follow a 70% driving rate.

Shore has advised via Kathy Dickson that car parking within the school is *“full during the day.”* It is necessary for some staff to travel after teaching hours between Shore’s North Sydney and Northbridge campuses to coach sporting teams, resulting in the 70% rate of private vehicle use. This travel pattern will not change as a result of the development.

Additionally, Shore has advised that there are 14 staff members who currently live as

residents onsite to cater for students living within the campus. Since these staff members use the campus as a residency, there is a requirement for each of them to have a dedicated permanent parking space.

Thirdly, of the 7 spaces located outside of the Graythwaite Building there are 6 spaces that are reserved for visitors. These spaces cannot be used by staff travelling to the school. There are also two restricted spaces for the school nurse and doctor. Taking into account these restricted spaces, the proposed parking provision will be provided at a rate of 1 space per 1.9 staff.

The proposed car parking spaces will be restricted to staff and visitors Monday to Friday as advised by Shore. It is assumed that these additional spaces will be occupied by existing staff who currently are unable to park within the school grounds and those who are currently using the 23 non-compliant spaces that will be lost as a result of the development.

During the weekend, these spaces will also be used by those involved in sporting events within the school. These events occur largely outside of peak hours.

Therefore, the additional parking provision within the proposed development is justified from a demand viewpoint. This justification is reached through consideration to the travel mode of staff, the existence of residential staff and the existing restrictions to the current parking provision. A summary of this parking demand is shown in Table 4. Including the 6 visitor spaces, the total parking demand of the site is 203 spaces. Post development there will be a total of 186 spaces to cater to this demand.

The proposed parking will not cater fully to the parking demand experienced by the school. However, by providing an increase in parking provision onsite there will be decreased demand for on street parking in residential streets near to the school by staff travelling to Shore. A decrease in on street parking demand also provides local traffic benefits, reducing circulating traffic in local streets caused by searching for parking.

The school continues to encourage students to use the public transport network by restricting onsite parking to staff and visitors. This combination of public transport use by students and onsite parking for staff and visitors minimises the impact of staff related parking on the surrounding residential streets while still encouraging public transport use. Public transport is encouraged by the school through the provision of a current Green Travel Plan which can be found in Appendix A.

	Number of Staff	Parking Demand
Full-time Staff	259	181 spaces
Residential Staff	14	14 spaces
Medical Staff	2	2 spaces
Visitors		6 spaces
Total		203 spaces

Table 4: Parking Demand

The proposed extension to Bishopsgate Car Park will have access and egress points at the existing Gate 22 entrance and the Hunter Crescent access point. The additional spaces underneath the Physical Education Centre will be accessed by Hunter Crescent.

6.1.2 Motorcycle Parking

As discussed in Section 4.2.1, there must be 1 motorcycle space per 10 car parking spaces or part thereof according to North Sydney Council's DCP. As there is a net increase of 53 spaces proposed, the development requires 6 motorcycle spaces.

6.1.3 Disabled Parking

As discussed in Section 4.2.1, 1 to 2% of non-residential car parking spaces need to be designated for the disabled. This results in 1 to 2 disabled spaces required as part of the works.

6.2 Active Travel

The School has a current Green Travel Plan prepared by GTA Consultants dated the 22nd of April 2014. The plan covers detailed strategies to encourage walking, cycling, public transport and carpooling for travel to and from Shore School. These methods all support sustainable travel. The proposed works will not affect the information contained within this Plan. This Plan is attached in Appendix A.

6.2.1 Pedestrian Movements

Primary pedestrian access to the site is proposed to be via the existing Senior School central driveway. Pedestrians can access this area from the existing Blue Street entrance to the school.

The development is likely to improve pedestrian amenity by providing a new pedestrian pathway from Blue Street to Hunter Crescent. This pathway will be between the proposed swimming pool and Multipurpose Sports Building.

Pedestrian pathways surrounding the school will not be affected by the proposed works.

6.2.2 Cycling Facilities

The site is located near on-road cycle ways as discussed in Section 5.5.2. No works are proposed that will affect cyclist access to the school as the proposed works are contained within the school boundary.

Bicycle parking rates are to follow 3% of staff. As discussed in Section 6.2, there will be 331 staff working at the school post development. This results in a requirement of 8 bicycle parking spaces.

According to the floor plans (produced by Cox Richardson dated 12th of January, 2016), there will be cycling end use facilities provided as part of the works. Change rooms will be located on three levels of the Physical Education Centre.

- Level 1: an area approximately 235m² dedicated to changing facilities and 12 showers.
- Level 2: an area approximately 190m² dedicated to changing facilities, 8 showers and 80 small lockers.
- Level 3: upgrades to existing change room facilities and the provision of 40 small lockers.

As discussed in Section 4.2.1, North Sydney Council's DCP requires 1 locker per bicycle parking space and 1 shower and change cubicle for up to 10 spaces. Therefore, the proposed facilities will exceed the DCP requirements.

6.3 Public Transport

As discussed in Section 5.6, the site is located in an area of high frequency public transport

which will be unaffected by the proposed works.

Shore has developed a Green Travel Plan and Transport Access Guide to encourage public transport usage to the school and active travel modes. These can be found in Appendices A and B.

6.4 Traffic Impact of the Development

The proposal will have limited impact on the surrounding road network. The reasons for this are as follows:

- Given the baseline that this development will have a minimal effect on staff numbers and no effect on student numbers, there is little additional traffic generated by the development.
- According to the travel survey conducted by Halcrow in July 2010, approximately 46% of those travelling to the school do so by car with 70% of these travelling as a passenger. This is a relatively low rate of private vehicle usage and is likely due to the extensive public transport network near to the school.
- Although there is a proposed increase in parking at the development, these spaces will be primarily used by existing staff at the school who currently use the 8 spaces that will be lost as a result of the development and on street parking. During the weekend these spaces will be used by those attending sporting events, largely outside of peak hours. Additionally, the majority of these parking spaces will be incorporated into the development as an extension of the existing Bishopsgate Car Park and therefore will be accessed by the existing driveway from Union Street.
- The proposed development is wholly contained within the school boundary and as such will have no road closures or road changes external to the campus.

6.4.1 Peak Demand Activities

A meeting was held with Transport for NSW (TfNSW) on the 4th of May 2016 to consult the project. Shore advised that the largest event held within the campus is School Speech Day. As there is only an increase of two staff members, no increase in student numbers and there is no proposed change to the operation of School Speech Day as a result of the development, it can be assumed that the effect on the transport network of this peak demand activity will be unchanged.

Shore has also advised that other key demand activities include careers night and Basketball games during Saturdays. These activities are accommodated by the road network currently and it is expected that the proposed development will have limited impact on the anticipated traffic generation.

The School will also hold swim meets in the proposed development. These meets will be held for the Senior and Preparatory School and will occur on Fridays during the first school term, between 5:00pm and 7:00pm. As these will occur in the afternoon, many staff will have left the premises and parking will be available within the Bishopsgate Car Park. It is anticipated that 200 spectators will attend each of these swim meets and the parking demand generated will be largely met by the existing facilities at the School.

Currently, visitors arriving to Shore as part of the School Speech Day require use of overflow parking. Visitors during other peak activities can use off street parking locations within the School. As there is an increase in parking provision within the School as a result of the development, it is anticipated that during peak demand activities, there will be an increase in the parking supply onsite.

6.5 Loading Areas

Additional onsite loading facilities are proposed as part of the development. There will be a loading dock located within the Ground Floor of the Multipurpose Sporting Complex and accessed by Hunter Crescent. The location of this area is shown in Figure 7.

There will also be loading facilities located above the Bishopsgate Car Park extension. This will be accessed by the existing entrance to the school from Union Street.

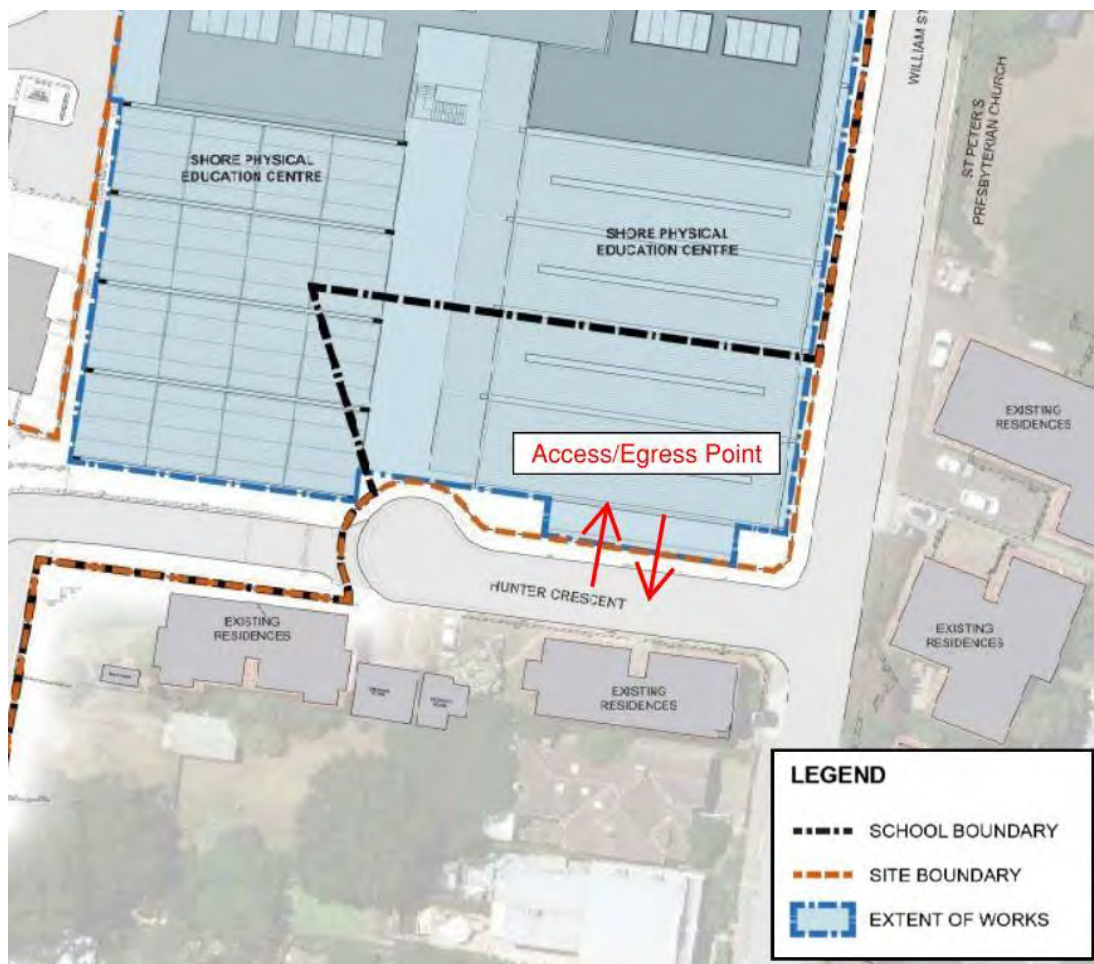


Figure 7: Proposed Loading Facility Access Point (Source: Cox Richardson Site Plan, January 2016)

It is anticipated that the number of deliveries and size of vehicles will not change significantly as a result of the development. Turning circle path checks for 8.8m medium rigid vehicles and 8m waste collector trucks have been conducted for the development and are included in Appendix C.

6.6 Construction Access

A draft Construction Traffic Management Plan (CTMP) has been prepared for the project and can be seen in Appendix C. A detailed and final CTMP will need to be prepared and approved prior to construction once a builder has been appointed and details are known about the staging of works.

7.0 INTERSECTION OPERATION

The term “level of service” for road capacity has been defined by Austroads as: “A qualitative measure describing operational conditions within a traffic stream and their perception by motorists and or passengers”. A level of service definition generally describes these conditions in terms of factors such as speed and travel time, freedom to manoeuvre, traffic interruptions, comfort, convenience and safety. In general there are six levels of service designated from A to F, with level of service A representing the best operating conditions (free flow) and level of service F the worst (forced or breakdown flow).

One-way hourly volumes for urban roads during peak hours and recommended level of service are shown in Table 5.

Level of Service	One Lane (vehicles/hour)	Two Lanes (vehicles/hour)
A: Good operation	200	900
B: Good operation	380	1400
C: Satisfactory	600	1800
D: Poor, but manageable	900	2200
E: At capacity	1400	2800

Table 5: Urban Road Peak Hour Flows per Direction (Source: RMS Guidelines 2002)

7.0 Traffic Count Survey

An existing traffic count was completed on Thursday the 7th of April, 2016 of the main three approach intersections near the school (see Figure 8):

- Blue Street & William Street
- Union Street & Chuter Street
- William Street & Hunter Crescent

This survey identified traffic and pedestrian volumes per hour for the given intersections and identified both the AM and PM demand peaks. From these counts, traffic volumes for AM and PM peak hours were found.

It is important to note that the traffic count survey was undertaken on the final day of the school term. This represents the worst case scenario as an additional 150 full time boarding students of the school were departing the school grounds during the afternoon peak.

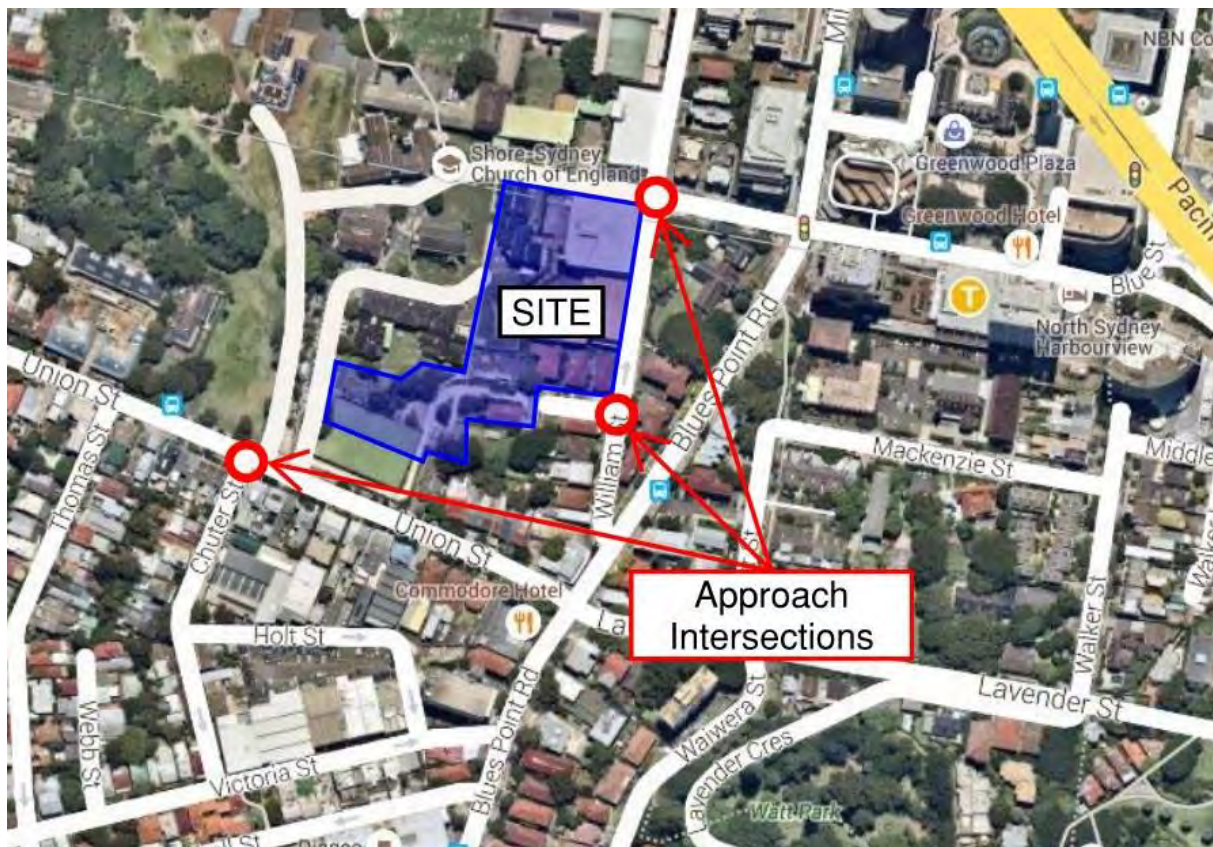


Figure 8: Main Approach Intersections

7.1 Pre Development Modelling

Satisfactory operation of an intersection would normally continue up to 42 seconds average delay per vehicle. At this Level of Service (LoS), operating speeds are still reasonable and acceptable delays are experienced. The recommended criteria for evaluating capacity of intersections are shown in Table 6.

Level of Service	Average Vehicle Delay (sec)
A: Good operation	Less than 14
B: Good with acceptable delays	28-42
C: Satisfactory	43-56
D: Operating near Capacity	57-70
E: At capacity	Over 70

Table 6: Criteria for Evaluating Capacity of an Intersection (Source RMS Guidelines 2002)

Sidra is a software package that models an intersection to determine how well it is performing under its demand. Its results take into account traffic volumes, pedestrian volumes, lane geometry, sign control and the nature of the intersection.

Sidra modelling was undertaken to determine the existing performance of the network at the three main approach intersections near the school in both the AM and PM peak. Existing

traffic and pedestrian volumes were sourced from the traffic count survey conducted in April 2016.

Modelling results indicate that the intersections currently operate at a high level of service as detailed in Table 7. The average vehicle delays for all three intersections during peak hours are less than 3 seconds. Detailed Sidra results can be found in Appendix D.

Intersection	Peak	Level of Service	Average Vehicle Delay (sec)
Blue Street & William Street	7:30-8:30am	A	2.9
	3:00-4:00pm	A	2.8
Union Street & Chuter Street	8:00-9:00am	A	0.6
	3:00-4:00pm	A	0.3
William Street & Hunter Crescent	7:45-8:45am	A	0.1
	3:00-4:00pm	A	0.9

Table 7: Sidra Modelling Results for the Main Approach Intersections

7.2 Post Development Modelling

As there are minimal changes to student and staff numbers as a result of the development (refer to Section 6.5), the approach intersections will maintain their high level of service after the proposed works have been completed.

Any traffic generated by the development will be largely outside of peak hours. Given the high performance of these intersections, the additional onsite parking would not generate significant traffic during peak hours to change the existing level of service and average vehicle delay. Additionally, 8 of the spaces provided by the Bishopsgate Car Park extension are expected to be used by existing parkers within the school as car parking spaces near to the extension will be lost as a result of the development (refer to Section 6.2).

It is anticipated the proposed loading dock location will have a minimal impact on the William Street and Hunter Crescent intersection. This is due to the low traffic volumes associated with this area and its existing high level of service.

8.0 CONCLUSIONS

This report has outlined the impacts of the Shore Physical Education Centre within a transport and accessibility framework and addressed the SEARs issued on the 10th of March 2016. It is anticipated that the number of students within the campus will not change and there will be an additional two staff members as a result of the development.

It is proposed that there be 61 created and 23 removed car parking spaces as a result of the development. This results in a net increase in parking provision onsite of 38 spaces. This increase in parking provision onsite is justified through consideration to the travel mode of staff, the existence of residential staff and the existing restrictions to the current parking provision. The restrictions that will be applied to the increase in parking provision align with sustainable travel measures detailed within Shore's current Green Travel Plan.

Shore has advised that the parking provided by the development will be restricted for use by existing staff and visitors during the week. During weekends those using sporting facilities at the school will also be able to occupy the spaces. This increase in parking provision is expected to reduce demand experienced within local streets for on street parking.

There are no proposed changes to pedestrian and cyclist access around the extent of the Shore school boundary. Within the school, pedestrian amenity is expected to increase with an improved north-south pedestrian pathway from Blue Street to Hunter Crescent. Cyclist end use facilities such as showers, lockers and change rooms will be improved as a result of the proposed development.

The Campus is well serviced by public transport with many routes and services. Shore school has a recent Green Travel Plan and Transport Access Guide. These will be unaffected by the proposed works.

As there is a minimal increase in staff and no increase in student numbers, there will be negligible traffic generation as a result of the development. Any traffic generated by the additional parking spaces is likely to occur during off peak hours. Approach intersections to the site currently operate at a high level of service during peak times and this is expected to be maintained post development. It is anticipated that the development can be incorporated into the existing road network.

There are two loading facilities proposed as part of the works. It is anticipated that the number of deliveries and size of vehicles will not change significantly as a result of the development. Turning circle path checks for 8.8m medium rigid vehicles and 8m waste collector trucks have been conducted for the development and are included in Appendix C.

A Preliminary Construction Traffic Management Plan has been prepared for the site. This plan has considered the movements required by construction vehicles as well as the movement of pedestrians and cyclists around the site. This plan will need to be finalised once a contractor is engaged and the staging of works is decided.

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APPENDIX A: SHORE GREEN TRAVEL PLAN



Shore School (North Sydney)
Green Travel Plan

transportation planning, design and delivery

Shore School (North Sydney)

Green Travel Plan

Issue: A 22/04/14

Client: Sydney Church of England Grammar School

Reference: 12s1321000

GTA Consultants Office: NSW

Quality Record

Issue	Date	Description	Prepared By	Checked By	Approved By	Signed
A	22/04/14	Issue A	Jason Rudd	Rebecca Lehman	Jason Rudd	Jason Rudd

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1. Introduction

1.1 Background

GTA Consultants was commissioned by the Sydney Church of England Grammar School (Shore School) to prepare a Green Travel Plan for the North Sydney Campus.

The preparation of a Green Travel Plan was a statement of commitment made by the Shore School as part of the Concept Plan and Stage 1 Project Application for the Graythwaite site (MP10_0149 & MP10_0150).

As the Concept Plan effectively integrates the Graythwaite site into the broader Shore School campus at North Sydney, this Green Travel Plan provides a whole of School approach to the management of travel demand for students, staff and visitors. The School at North Sydney provides both Preparatory School (Year 3-6) and Senior School (Year 7-12) facilities.

The aim of this Green Travel Plan is to reduce over time the environmental impact of travel to/ from and in association with the operation of the Shore School. In essence, the plan encourages more efficient use of motor vehicles as well as promoting alternatives to the single occupant motor car.

This plan comprises a list of strategies which will encourage walking, cycling, public transport and carpooling for travel to and from the Shore School and a shift away from the reliance on single occupant vehicle travel.

The plan recognises the following features of the Shore School:

- relatively high existing mode share to public transport usage, particularly for senior school students to and from School
- travel to and from the School is often part of a longer journey (ie. linked trips such as parents dropping students at School on the way to work or parents picking up students after work)
- particular needs of staff and participation in co-curricula activities
- duty of care responsibilities of the School for its students and staff.

The plan has been developed in consultation with Transport for NSW (TfNSW) and North Sydney Council (NSC). Key feature outcomes of the consultation included:

- The plan should be a “living document” with the various programs included in the plan to be reviewed and evaluated at periodic times as to their effectiveness.
- Setting of traditional mode share targets is not necessarily appropriate for the Shore School. Rather the evaluation of program effectiveness and modifying or changing their implementation as required.
- Benefits of regular dialogue between Shore School and NSC such that the travel demands of the School can be considered as part of the broader North Sydney area.

These features have been incorporated into this plan.

1.2 Objectives

The objectives of a Green Travel Plan are to reduce the impact of travel to and from a particular land use (in this case the Shore School) through a suite of policy suggestions and programs encouraging walking, cycling and public transport use.

This plan is site-specifically tailored to the Shore School's location and known existing travel behaviour.

This document:

- Reviews the public transport options in the area, nearby transport infrastructure, including footpaths, showers, change rooms and car parking, as well as the proposed bike parking and transport programs to be hosted by Shore.
- Analyses the existing travel patterns for the area.
- Outlines strategies to implement prior to occupancy and in the first six months of operation.
- Establishes the monitoring strategy to track performance of the policy and programs prepared as part of the Green Travel Plan.

1.3 Green Travel Plan Benefits

Australian employers are increasingly bearing the cost of congestion and according to the Bureau of Transport Economics this cost is set to nearly triple by 2015¹.

The aim of this plan is to implement travel behaviour which minimises the use of private motor vehicle travel to and from the Shore School at North Sydney.

Environmental and social benefits are common results of Green Travel Plans. Developing and implementing a travel plan can provide benefits for staff and students, including:

- Increased health and fitness
- Reduced stress
- Greater availability for visitors
- Happier, healthier more productive students and staff
- Green School image (with promotion).

1.4 References

In preparing this report, reference has been drawn from a number of background sources, including:

- Graythwaite, Concept Plan and Project Application – various Transport and Accessibility Impact Assessments
- Workplace Travel Plan guidance, Premier's Council for Active Living
http://www.pcal.nsw.gov.au/workplace_travel_plan
- The TDM Encyclopaedia Victoria Transport Policy Institute
<http://www.vtpi.org/tdm/tdm12.htm>
- Bureau of Transport Economics <http://www.btre.gov.au/>
- Local rail and bus information, <http://www.131500.com.au>
- Department of Planning and Infrastructure Guidelines for Walking and Cycling
<http://www.planning.nsw.gov.au/planning-guidelines-for-walking-and-cycling>
- Other documents as referenced in this report.

¹ <http://www.btre.gov.au/>

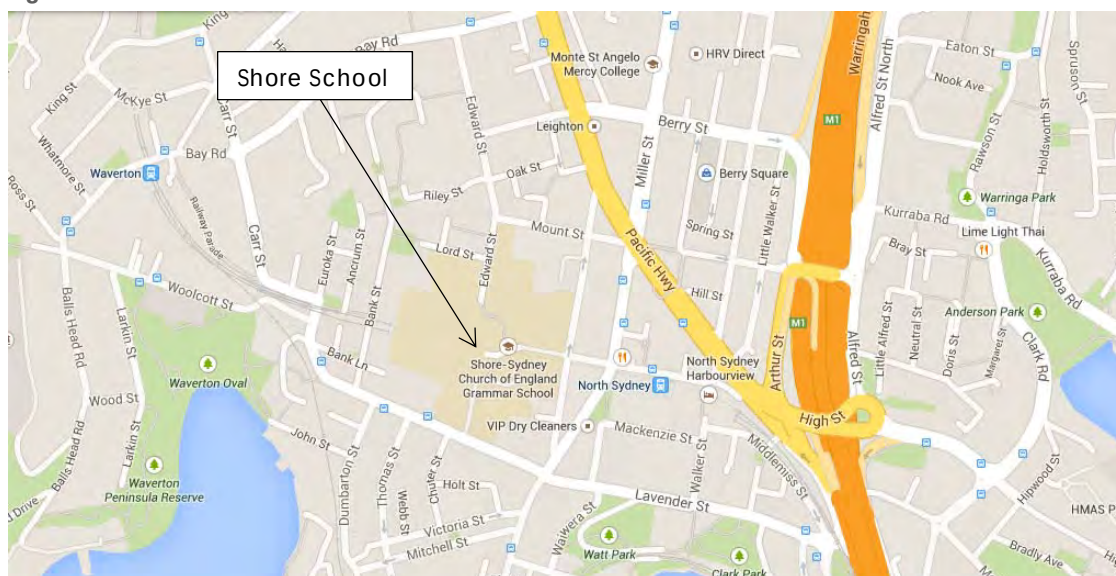
2. Background

2.1 Shore School (North Sydney) Site

The location of the Shore School including the Graythwaite site is shown in Figure 2.1.

The School has road frontages to William Street, Mount Street, Edward Street, Lord Street and Union Street.

Figure 2.1: Shore School Site Location



Source: Google Maps

The School is currently separated into the Senior School and the Preparatory School. While they are two separate sites, pedestrian linkages are provided along the Edward Street frontages. These linkages are important as the Preparatory School and Senior School share the use of a number of School facilities.

The restoration of Graythwaite House and the incorporation of the Graythwaite site will further enhance the pedestrian linkages between the Preparatory and Senior Schools.

The Shore School site is located within close proximity to the North Sydney transport interchange which provides good access to major rail and bus public transport networks. The main access to the School on William Street is located some 150 metres from the entrance / exit of the North Sydney railway station.

2.2 Available Transport Infrastructure

2.2.1 Public Transport

Train Services

Shore School is located within close proximity (approx. 160 metres) to the North Sydney railway station and transport interchange. North Sydney station lies on the North Shore and Western Line and the Northern Line. These lines provide high frequency services running between the City and the North Shore.

Bus Services

The Shore School site is located within close proximity to a wide range of local and regional bus services. Bus routes operate along the School's frontage to Union Street and along Blues Point Road, Miller Street and the Pacific Highway.

The bus services operating within the vicinity of the School are shown in Figure 2.2.

Figure 2.2: Public Bus Services



Source: www.131500.com

2.2.2 Other School Bus Services

Shore School operates after school 'school buses' which transfer students from North Sydney to other locations for co-curricula activities such as sports training. The primary movement of students on after school buses is to the School's main sporting fields at Northbridge.

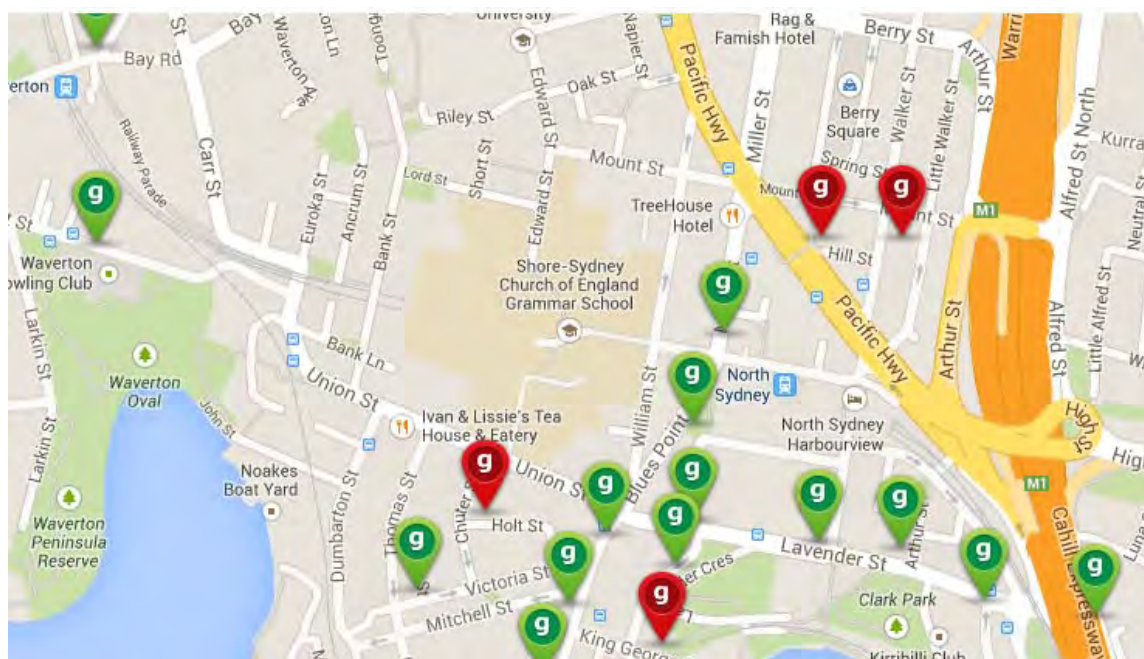
School buses currently depart the School via Mount Street bus stops. However, North Sydney Council has recently approved the use of William Street as a bus stop for after School buses which will split the traffic loads on these Streets.

2.2.3 Pedestrian Infrastructure

Pedestrian paths are provided along each of the School's frontages and along the routes between the School and North Sydney Station and other bus stops.

A pedestrian crossing at William Street south of Blue Street provides pedestrian priority for students and staff walking between the School and North Sydney Station. Signalised intersections on route to the station provide signalised pedestrian crossings on all approaches.

Figure 2.4: Go-Get Car Sharing Pod Locations



Source: www.goget.com.au

2.2.6 Car Parking

On Site Car Parking

Upon completion of the Stage 1 works at Graythwaite, the School will provide 158 formal on site car parking spaces. Stage 1 works included the provision of (6) visitor parking spaces and (1) disabled parking space. These spaces are primarily used by staff with limited visitor parking. No student on-site parking is permitted.

On Street Car Parking

The parking demand generated by the School is generally contained within the School, with staff having secure access to car parking. Student parking occurs in the streets surrounding the School.

It is noted that students and staff can legally park on street provided that they obey on street parking controls. However, the time restricted parking limits this opportunity.

2.2.7 School On Site Drop Off / Pick Up Facilities

Upon completion of Stage 1 works to the Graythwaite site, the School will operate two drop off and pick up facilities for Preparatory School students, namely:

- Edward Street facility (existing)
- New Union Street – Hunter Crescent facility (new approved facility)

2.3 Existing Transport Use

As part of the Concept Plan and Project Application for Graythwaite, a survey was undertaken in 2010 to determine the existing travel behaviour of both students and staff of the School.

A copy of the Travel Demand Survey is provided in Appendix A.

The surveyed (2010) modes of travel are presented in Table 2.1.

Table 2.1: Surveyed (2010) Travel Mode for Shore School (North Sydney)

Travel Mode	To School Trips (% of Mode Share)	From School Trips (% of Mode Share)
Car driver	14%	13%
Car passenger	32%	20%
Train	18%	18%
Bus	22%	27%
School bus to Northbridge for Sports	-	7%
Cycle	1%	0%
Walk	3%	3%
Live on site	10%	9%
Others	-	3%
Total	100%	100%

The results indicate that the highest mode choice is by private vehicle. The percentage of the students/staff travelling to School by private vehicle is about 46% and from school is about 33%.

The results shown above also indicate that there is a difference in the mode choice for the travel to and from School. The percentage of car travel is approximately 13% higher for travelling to School in the morning (46%) compared to the travelling from School in the afternoon (33%). This difference is contributed to by the increase in bus usage for the return journey home or to Northbridge for sports.

Of particular note is the very low mode share to walking and cycling. This is considered to be a reflection on the long distances travelled by students (and staff) to access the School. This will need to be considered when developing programs to promote cycling and walking as the potential population which has the ability to shift to these modes may be extremely limited.

3. Opportunities to Increase Green Travel Modes

3.1 Identifying Opportunities

Based on the transport network reviewed in Section 2 above, this section identifies the potential travel patterns to and from the School. This section builds on the public transport, walking and cycling networks already available around the premises. It also considers the on-site car parking provision and identifying transport modes which may be best suited to meet the travel demand for the site.

This guides the program selection in Section 4, to respond to available transport infrastructure and current travel patterns in the local area.

3.2 Analysis

Scenario 1: Business as usual

If no additional green travel actions are taken, it is likely that new students and staff would adopt travel patterns similar to existing behaviours. In this way, the current travel behaviour is a suitable proxy to identify future travel patterns.

Scenario 2: Wayfinding and student travel information

By targeting student and staff travel behaviour with quality information about transport options, the School has the potential to achieve increased public transport, walking and cycling use. Providing wayfinding and public transport information to new students and staff is an opportunity to demonstrate good transport practice and encourage students to adopt these travel modes whilst at the School.

Scenario 3: Proactive Initiatives

The School has the potential to proactively pursue initiatives to accommodate pedestrians, cyclists and public transport users. To achieve 'reach' travel targets, prototype projects and formalising existing initiatives may be required to minimise car use by staff, students and visitors.

A regular travel survey as has been undertaken would provide the School with a mechanism to evaluate the various incentives and initiatives implemented as part of this Green Travel Plan.

3.3 Target Modes of Travel

For the School to reduce private vehicle modes of travel, the most straightforward and achievable target modes should be addressed first. These will be transport areas that the School has the most influence to encourage or change.

i Increase public transport use.

- The School is within easy walking distance to high frequency train and bus services. The increased use of this mode is a viable option to encourage.

ii Increase car-pooling/ car share use.

- No formal car pooling system operates at the School at such time.

- The School has the ability to co-ordinate staff and to a lesser extent students via its contact lists such that car pooling can be encouraged.
- Staff could be informed of and encouraged to utilise nearby car sharing pods (the number of which is likely to continue increasing) as a viable alternative to car ownership for those requiring external trips as part of extra curricula activities.

iii **Increase walking, running and cycling to work for staff and to other destinations (e.g. errands, recreation, social) for resident students.**

- Ensure that there are suitable showers, bike storage facilities and lockers for staff and students that walk, run or cycle to work.
- Promote local bicycle facilities, shops and learn-to-ride or bike maintenance courses available through Sydney Cycleways to staff and students to encourage and facilitate an increase in cycling. This is a viable option to encourage.

Based on these target modes, Section 4 identifies programs to achieve travel behaviour through this plan.

These targets are measurable, through staff/student travel surveys. Using these metrics, the School can quickly track performance against the travel plan objectives; to recognise what programs are working and link program funding to results.

4. Action Plan

4.1 Green Travel Measures Already in Place

Shore School through its existing management of travel demand currently undertakes a number of green travel incentives. These include:

- Provision of School buses for transferring students to regular off site activities.
- Implementation of designated pedestrian routes between the School and public transport services with staff supervision.
- On site car parking policy:
 - Dedicated parking spaces for staff
 - No student parking permitted on site
 - Event management (including off site activities where public transport is hired).
- Parent community communication about travel procedures through a weekly newsletter (print and electronic).

Each of these measures should be retained and promoted as part of ongoing management of the School's travel demand.

4.2 Actions

The following actions are areas recommended for consideration. More detailed information about specific actions has been detailed in Appendix B.

Public Transport

- Provide information to staff and students relating to transport options, public transport services and timetables in the local area.
- Provide further incentives for students to catch public transport rather than drive or be driven to and from School. (It is noted that students already have access to discounted rail/bus passes and the proportion of Senior School public transport usage is relatively high, thus the effectiveness of such measures will need to be review after initial consideration).

Transport Programs

- Elect a staff/student representative to champion travel programs and initiatives within the School.
- Develop programs and initiatives to encourage travel by walking, cycling, public transport and carpooling/car sharing.

Walking and Cycling

- Encourage staff and students to walk or cycle to school or for local trips through providing wayfinding information.
- Maintain shower and locker facilities for students and staff.
- Provide secure on site bicycle storage facilities.

Carpooling

- Introduce a staff carpooling program.

- As part of Stage 2 (Graythwaite) consider allocating a proportion of existing on site parking to specifically dedicated carpool priority spaces. Encourage carpooling as an alternative to single occupant car travel wherever possible.

Car Sharing

- Encourage car sharing opportunities to staff and students through partnership with GoGet.

Communications Plan

- Utilise the existing School community communications to inform parents and staff of transport alternatives.
- Encourage staff and students to choose alternative modes of travel to car travel wherever possible with increased provision of information through the School communications, new starter information packs and through administrative procedures.
- Partner with surrounding education facilities to keep up to date with local transport initiatives and to collaboratively lobby for improved transport opportunities for staff and students.
- Liaise with North Sydney Council to seek efficiencies for travel management programs and minimise travel demand issues.

4.3 Monitoring and Review

In order for the Green Travel Plan to be effective it should be reviewed on a regular basis. It is important to ensure that the Green Travel Plan is meeting its objectives and having the intended impact on car use and transport choices for the staff, residents and visitors to the School.

It is recommended that the Plan be reviewed on a yearly basis, with updated staff and student travel demands surveys.

The Plan should be updated and changed to reflect changing travel demand circumstances.

Appendix A

Appendix A

Shore School Travel Demand Survey and 2010 Results

Appendix B

Action Plan

Transport Programs

Appendix B

Action	Checklist	Date Completed
Identify a staff member or student to complete travel coordinator duties involved in this plan (initially 1-2 hours per week to set up, then 1-2 hours per month in the subsequent year).		
Rerun the travel demand survey to gauge current travel patterns of staff and students and to identify those that may be interested in walking, cycling or using public transport / car-pooling to work (staff) and other destinations (students).		
Prepare a new student/ staff starter kit. Prepare maps: - showing public transport routes near the site - showing safe walking routes with travel time, to local facilities, such as shops, bus stops and local stations The transport access guide (TAG) to be produced in conjunction with this travel plan may be useful. Provide map, travel options and timetables: - on the School website - on the School notice board. - include in School community communications (ie. The Shore Weekly Record)		
Based on staff and student interest (from the survey): - link interested walk-to-work or ride-to-work staff and students with walking or cycling buddies - set up a car-pooling database to match rides and passengers		
Conduct 'Getting around Sydney' sessions as part of the induction for students.		
Further utilise existing social media opportunities to keep staff / students up to date with transport programs, initiatives and user groups.		
Include bus / train modes as preferred transport modes for any event / special occasion where students or transferred off site.		

Public Transport

Action	Checklist	Date Completed
Develop and maintain a map showing public transport routes to the School (i.e. a TAG).		
Put TAG up on Lampada with maps showing the main public transport routes to and from the School.		
Place information on the School website with links to appropriate external transport websites (e.g. 131500.com).		
Provide information about timetables for staff and administrative information.		

Walking

Action	Checklist	Date Completed
Identify employees living near work that may be interested in walking to work.		
Produce a map showing safe walking routes to and from the School with times, not distances, to local facilities, such as shops and public transport stops.		
Review the condition of existing footpaths and negotiate with North Sydney Council for improvements to footpaths used by staff and resident students.		
Have a few umbrellas handy at reception for rainy days – perhaps bearing the School logo.		
Take part in 'National Walk to Work Day'.		
Have some TravelSmart Get to Work days encouraging staff to attend and students to travel by alternative modes of transport.		

Cycling

Action	Checklist	Date Completed
Introduce student and staff bike parking facilities which are secure and weather proof.		
Monitor student and staff bike parking to ensure it remains well maintained, accessible and is used by staff and students.		
Provide bicycle parking for visitors in an easily accessible location. Ensure parking is clearly visible or provide signage to direct people to cycle bays.		
Establish an internal Bicycle Users Group (BUG). BUGs are formed by people who want to work together to improve facilities for cyclists and encourage cycling. The BUG could include both staff and students and expanded to include other nearby educational facilities or workplaces.		
Develop a 'bike buddy' scheme for inexperienced cyclists.		
Participate in annual events such as 'Ride to Work Day' and/ or sponsor entries to community bicycle events (e.g. Spring Cycle).		

Car-pooling

Action	Checklist	Date Completed
Set up a car-pooling database of likely users.		
Implement car-pool management activities to promote car-sharing.		
Liaise with car sharing providers (e.g. GoGet) to investigate the opportunity for a vehicle to be located along the School's frontage (i.e. William Street).		

Car Parking

Action	Checklist	Date Completed
Maintain car parking allocation policy.		
Maintain a policy of no student parking on site.		

Communications Plan

Action	Checklist	Date Completed
Develop a communications plan for sustainable transport initiatives which aims to aid in improving staff / student travel behaviour through information supply, feedback and support new programs and services adopted by the School.		
Create an online notice board for transport information and initiatives run by the School.		
Provide opportunities for staff and students to provide feedback about transport safety and programs run by the School. Feedback should be received by the School's sustainable transport representative.		
Keep Lampada and the website up to date, with helpful information for students and staff.		

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APPENDIX B: SHORE TRANSPORT ACCESS GUIDE



By Car: Shore provides limited onsite parking for visitors to the Graythwaite Building. Access to this parking is via Union Street. Short term parking is available on the surrounding streets including Union, William, Mount, Edward and Lord Streets.



By Train: The closest railway station is North Sydney station, on the T1 North Shore Line, approximately 160 metres from Shore. North Sydney station is serviced by regular trains to the City as well as the Northern suburbs.

Waverton station is located 800 metres from Shore and is also serviced by the T1 North Shore Line.

Go to www.sydneytrains.info for more information and timetables.



By Bicycle: Shore is accessible via a number of on-road cycling routes that travel through North Sydney and onto surrounding suburbs. Bicycle routes are shown on the included map.



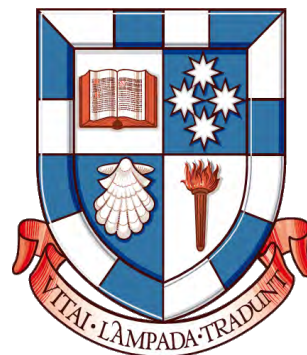
Walking: Shore is a 5 minute walk from North Sydney station. There are also public bus stops within a 5 minute walking distance on Blues Point Road and Miller Street.



Mobility Parking: Mobility parking spaces are provided within Shore grounds adjacent to the Graythwaite building.



MyZone Public Transport Tickets: MyBus and MyMulti tickets are available at selected local newsagencies, while MyTrain and MyMulti tickets are available at railway stations. Use MyBus and MyMulti tickets for discounted fares and access to prepay only bus services. Opal cards can be used at both North Sydney and Waverton Stations.



SHORE

CONTACT

SHORE

Blue Street
North Sydney NSW 2060
Australia

MAIN OFFICE HOURS

Monday-Friday, 8am-4pm

GENERAL ENQUIRIES

From Within Australia
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F: 02 9922 2689

International
T: +61 2 9923 2277
F: +61 2 9922 2689

Email: enquiries@shore.nsw.edu.au



SHORE

Sydney Church of England Grammar School

Transport Access Guide

How to get to Shore (North Sydney)

For further public transport information go to
www.transportnsw.info or call 131 500

They hand on the torch of life

Shore is located on Blue Street, North Sydney. Other access points include Union Street and William Street.

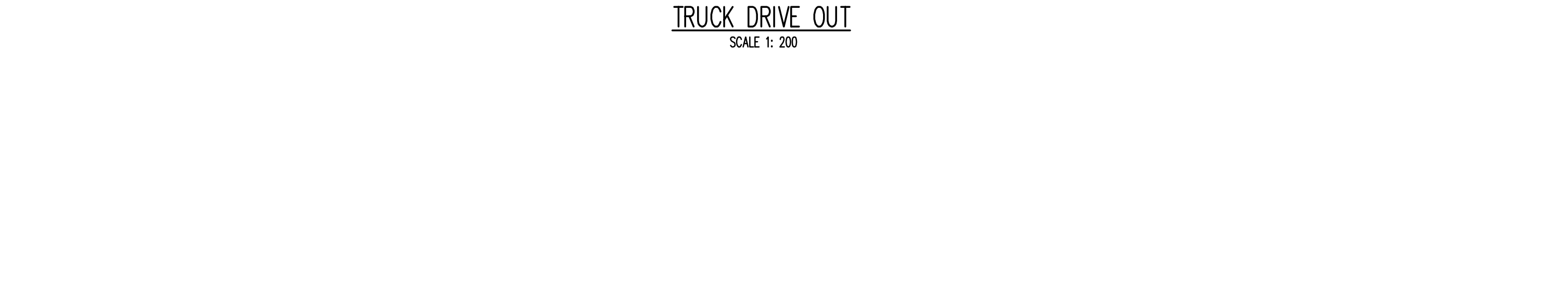
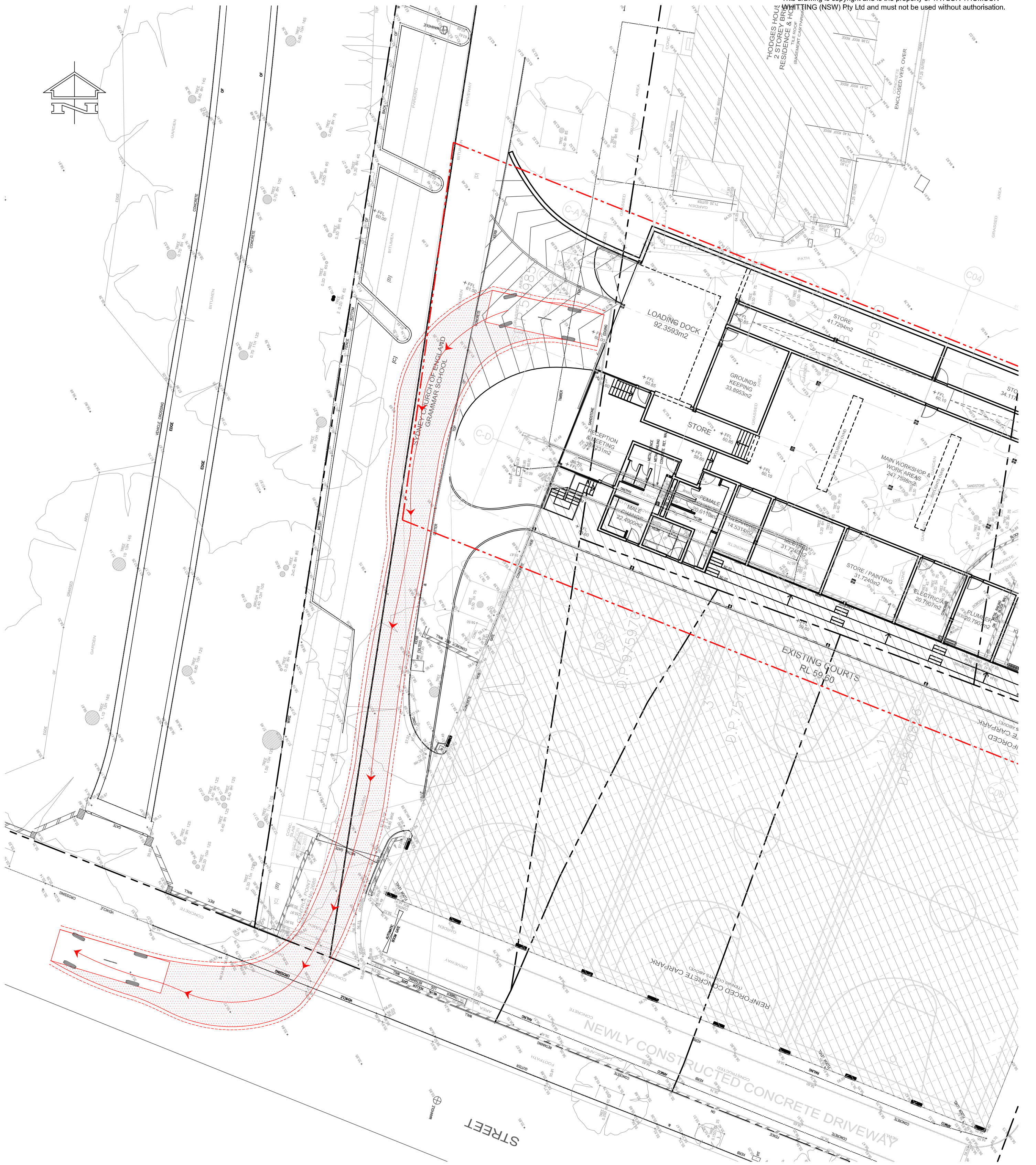
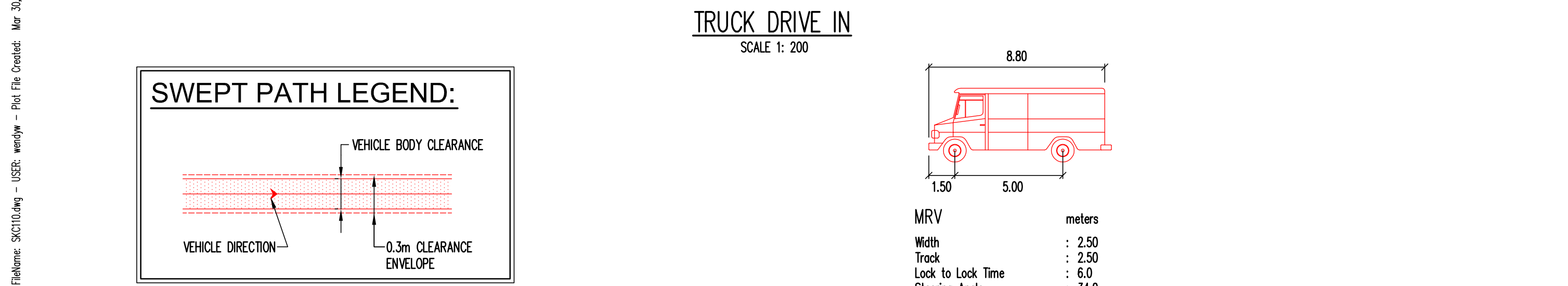
 **By Bus:** Shore can be easily accessed by a number of nearby bus stops. A stop is located directly outside the campus on Union street well stops are also located less than 5 minutes away on Blues Point Road and Miller Street. Buses service these stops very frequently on school days.

Go to the Transport Info website (www.transportnsw.info) for bus timetables and accessible bus services.

Bus Stop	Bus Stop Location Description	Frequency	Bus Routes
A	Union Street near Thomas Street	½ hour on peak 1 hour off peak	265
B	Blues Point Road near Union Street	15 mins on peak ½ hour off peak	265,269
C	Blues Point Road near Blue Street	2 mins on peak ½ hour off peak	168, 173, 183, 209, 227, 228, 230, 265, 287, 612X, 622, 653, E50, L78, L84
D	Miller Street near Blue Street	5 mins on peak ½ hour off peak	173, 209, 227, 228, 230, 265, 612X, 622, 653, E50, L87
E	Miller Street near Pacific Highway	2 mins on peak ½ hour off peak	252, 254, 261, 273, 286, 287, 290, 622, 653, M20



APPENDIX C: LOADING AREA TURNING PATH ASSESSMENT



Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date
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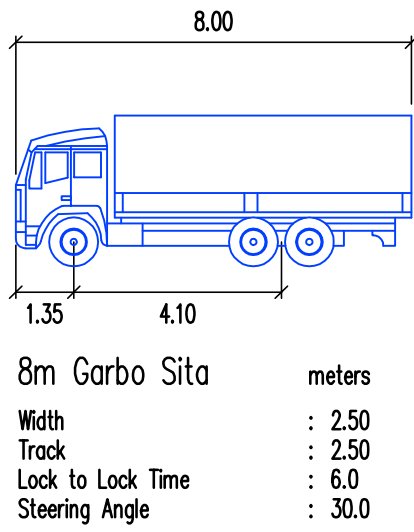
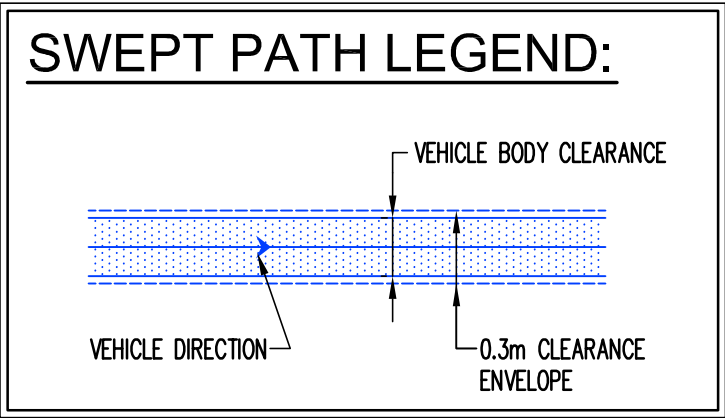
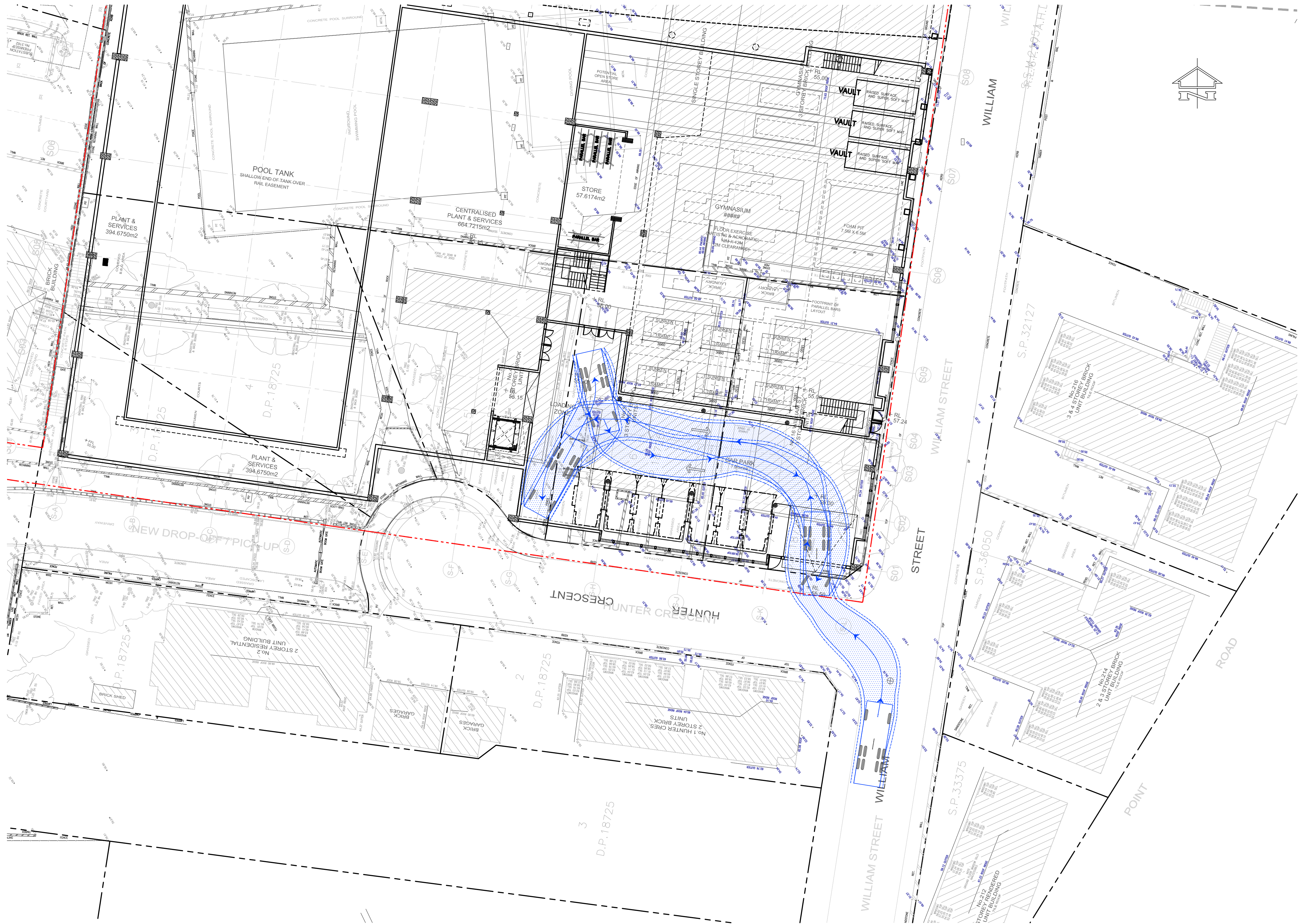
Client	SYDNEY CHURCH OF ENGLAND GRAMMAR SCHOOL BLUE ST, NORTH SYDNEY NSW 2060
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Project	SHORE SCHOOL PHYSICAL EDUCATION CENTRE NORTH SYDNEY
---------	---

Sheet Subject	BISHOPS GATE CAR PARK EXTENSION TURNING PATH
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Scale : A1 1:200	Drawn VWV	Authorised
Job No 141522	Drawing No SK110	Revision P1
Plot File Created: Mar 30, 2016 - 1:44pm		



TRUCK DRIVE IN AND OUT
SCALE 1: 200

PathName: SK120.dwg - User: wwh - Plot File Created: Mar 30, 2016 - 1:41pm

P1	CONCEPT	AK	WW	30.03.16					
Rev	Description	Eng	Draft	Date	Rev	Description	Eng	Draft	Date

Client
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GRAMMAR SCHOOL**
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Project
**SHORE SCHOOL
PHYSICAL EDUCATION CENTRE
NORTH SYDNEY**

Sheet Subject
**GYMNASTICS HALL TURNING
PATH**

Scale : A1 1:200	Drawn VWV	Authorised
Job No 141522	Drawing No SK120	Revision P1
Plot File Created: Mar 30, 2016 - 1:41pm		

CONCEPT

APPENDIX D: PRELIMINARY CONSTRUCTION TRAFFIC MANAGEMENT PLAN



Traffic



TaylorThomsonWhitting



Preliminary Construction Traffic Management Plan Shore Physical Education Centre

for Shore School

20 April 2016

141522 UT

Taylor Thomson Whitting (NSW) Pty Ltd Consulting Engineers ACN 113 578 377
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1.0 EXISTING SITE CONDITIONS

1.1 The Site

The objective of this report is to provide a preliminary construction traffic assessment of the Shore Physical Education Centre project, a part of Shore's North Sydney Campus.

The proposed Physical Education Centre is located within the Shore Campus in North Sydney. The development will be located in the south-eastern corner of the Campus, near the corner of Hunter Crescent and William Street. The site also includes residential land at 4 and 5 Hunter Crescent and 16 William Street. Refer to Figure 1 for the location of the site.

The site is currently occupied by a 25 metre pool, gymnasium and three residential buildings. The objective of the works is the following:

- Demolition of the existing 25 metre pool and associated structures located in the south-eastern corner of Shore Senior School and the residential flat buildings at 4 and 5 Hunter Crescent and William Street.
- Construction of new buildings including an Aquatic Centre, Multipurpose Sporting Complex, additional classrooms, alterations to existing facilities, 62 car parking spaces and loading facilities.
- Additional landscaping including tree removal and replacement.
- Vehicular access to the site is currently via Hunter Crescent and Union Street.

The Hunter Crescent access point has a two way entry and exit arrangement with a single lane entry and single lane exit. The posted speed limit along this point is 5 kilometres per hour. Access and egress is controlled by boom gates.

Hunter Crescent is a local no through road with 1 hour parking restrictions along the northern kerb side and a no parking restriction along the southern kerb side and at the end of the cul-de-sac, this is where the entrance to the site is located.

The Union Street access point has a two way entry and exit arrangement with no formal lane markings. Entry is via a left turn only movement.

Union Street is a local road with two way traffic flow and typical kerb side parking along the southern side with a 1 hour parking restriction. There is a no parking restriction directly opposite the entrance to the site.

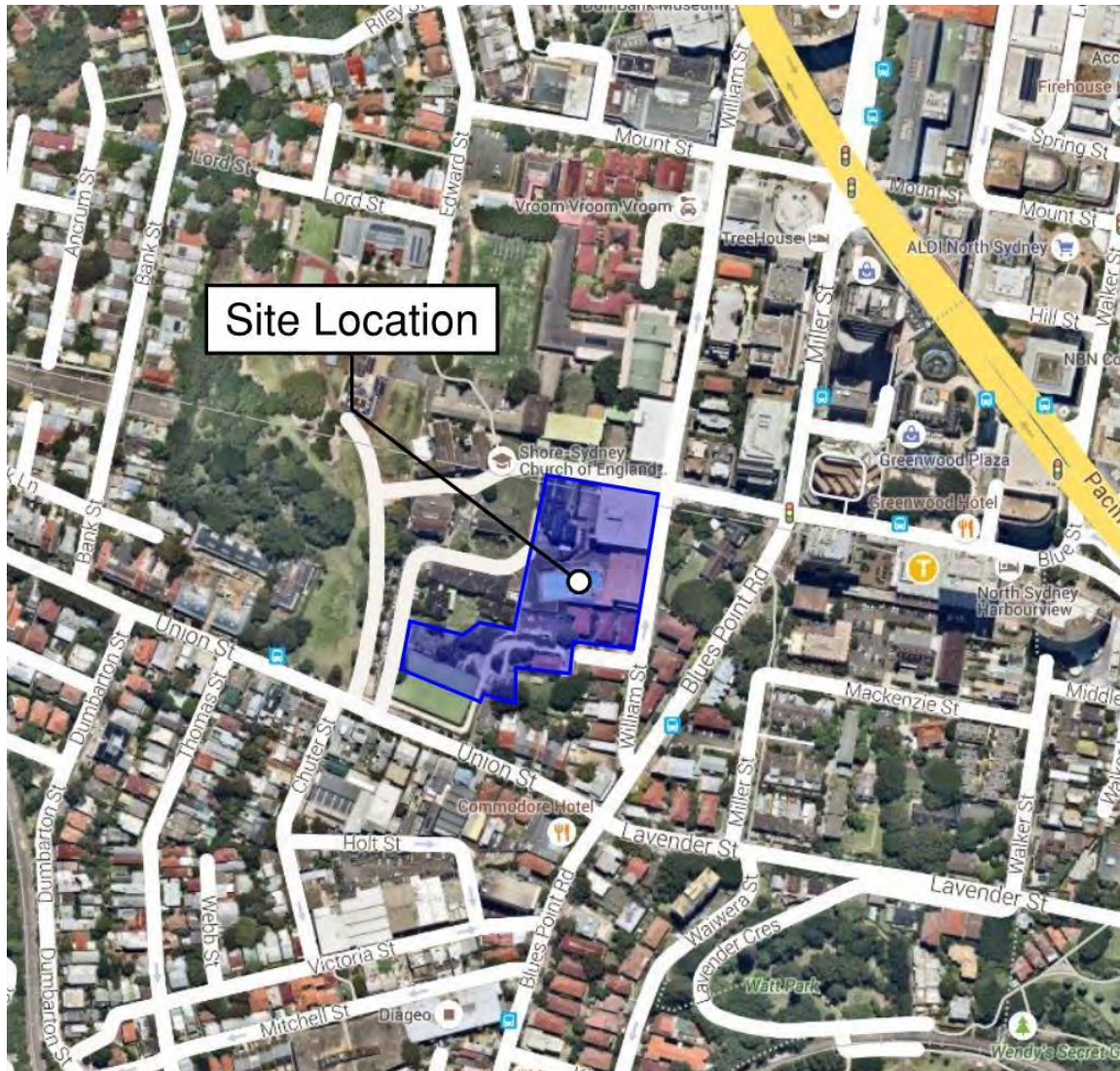


Figure 1: Site Location (Source: Nearmap)

1.2 Existing Parking

There are three main parking areas located within the Campus. There is a staff car park accessed via William Street in the north eastern corner of the Campus. Visitor and accessible parking is located near the Graythwaite Building and is accessed by Gate 1 on Union Street. Bishopsgate Car Park is located adjacent to Union Street, accessed by Gate 22 and restricted. Refer to Figure 2.

Shore Physical Education Centre – Transport and Accessibility Report

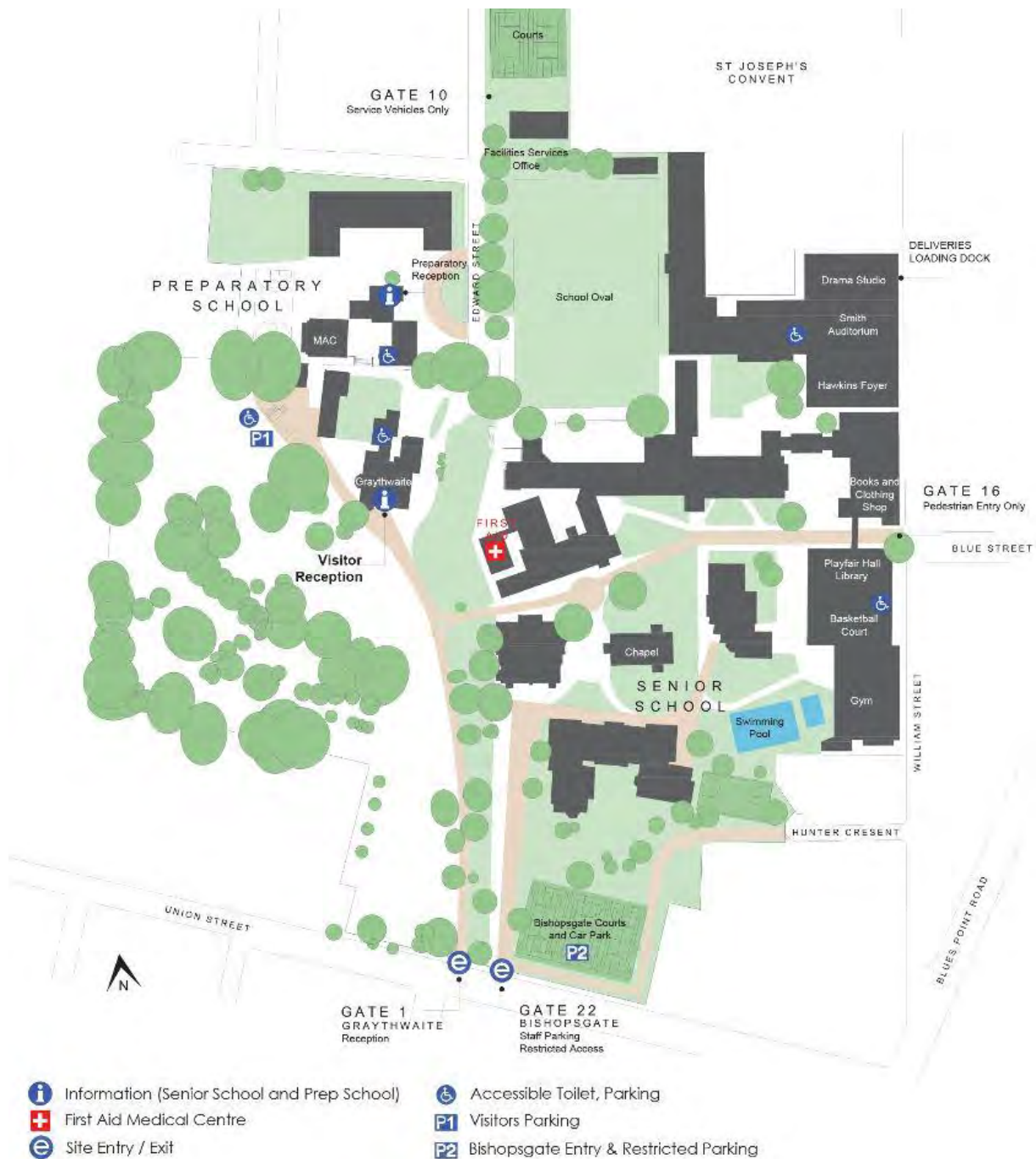


Figure 2: Off Street Parking Locations (Source: www.Shore.nsw.edu.au)

Limited short term parking spaces are available on surrounding streets to the school, generally with 1 hour restrictions between 8:30am to 6pm, Monday to Friday with exceptions for permit holders.

1.3 Access to the Site

A pedestrian and vehicle access diagram has been prepared by Cox Richardson on the 21st of January, 2016. Refer to Figure 3.

Currently the primary pedestrian access to the site is via the school entrance on Blue Street adjacent to the site.

There is a car park pick up and drop off zone along the southern boundary of the site near Hunter Crescent.

Primary vehicle access to the site is from Union Street at the southern boundary of the school.

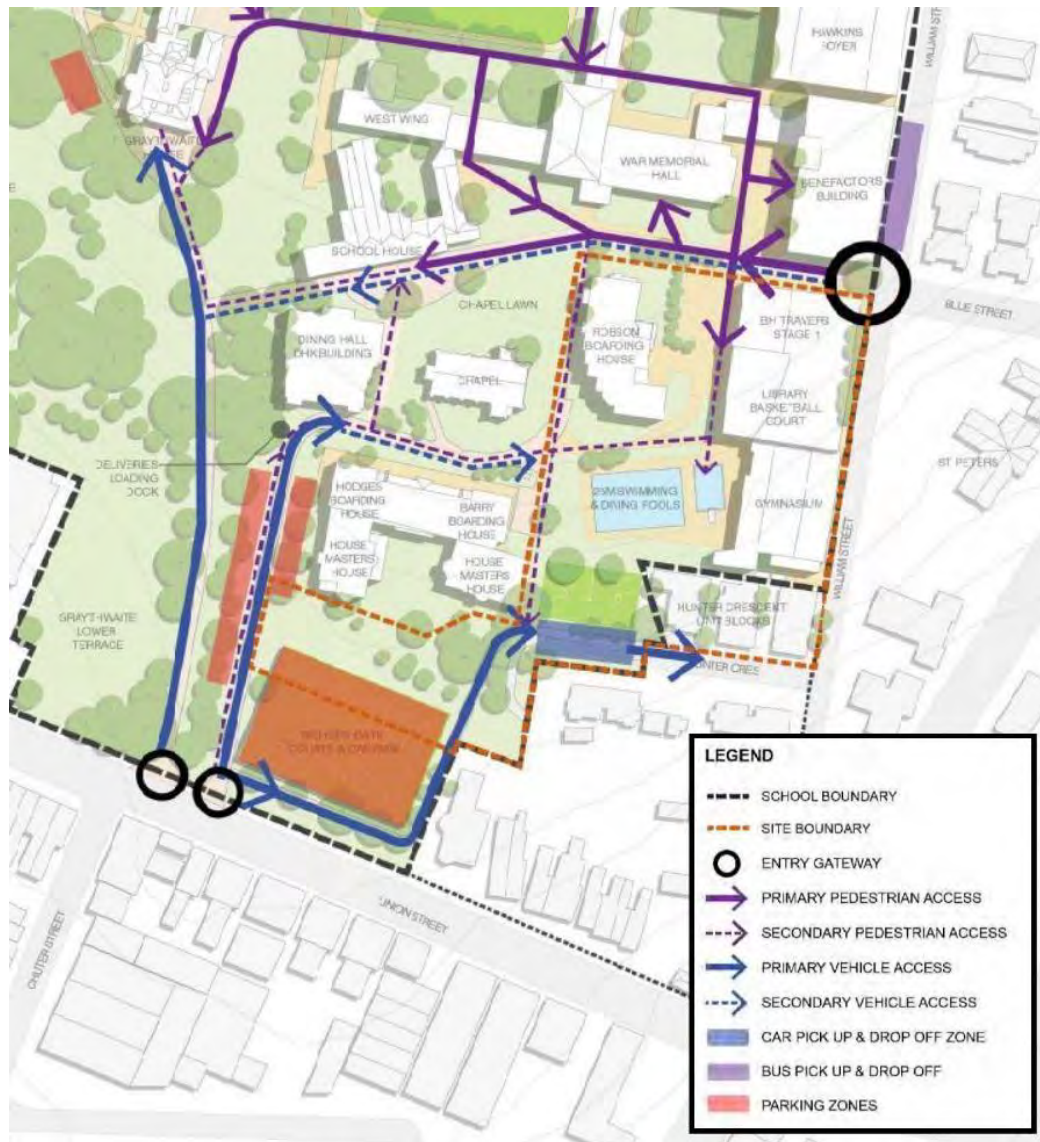


Figure 3: Pedestrian and Vehicle Access (Source: Cox Richardson January 2016)

1.4 Cyclist Facilities

The Campus is located near on-road cycling routes along Union Street, Blues Point Road, Lavender Street, Miller Street, Pacific Highway and Bay Road. Refer to Figure 4. There are shower and change facilities currently on the Campus for use by cyclists.

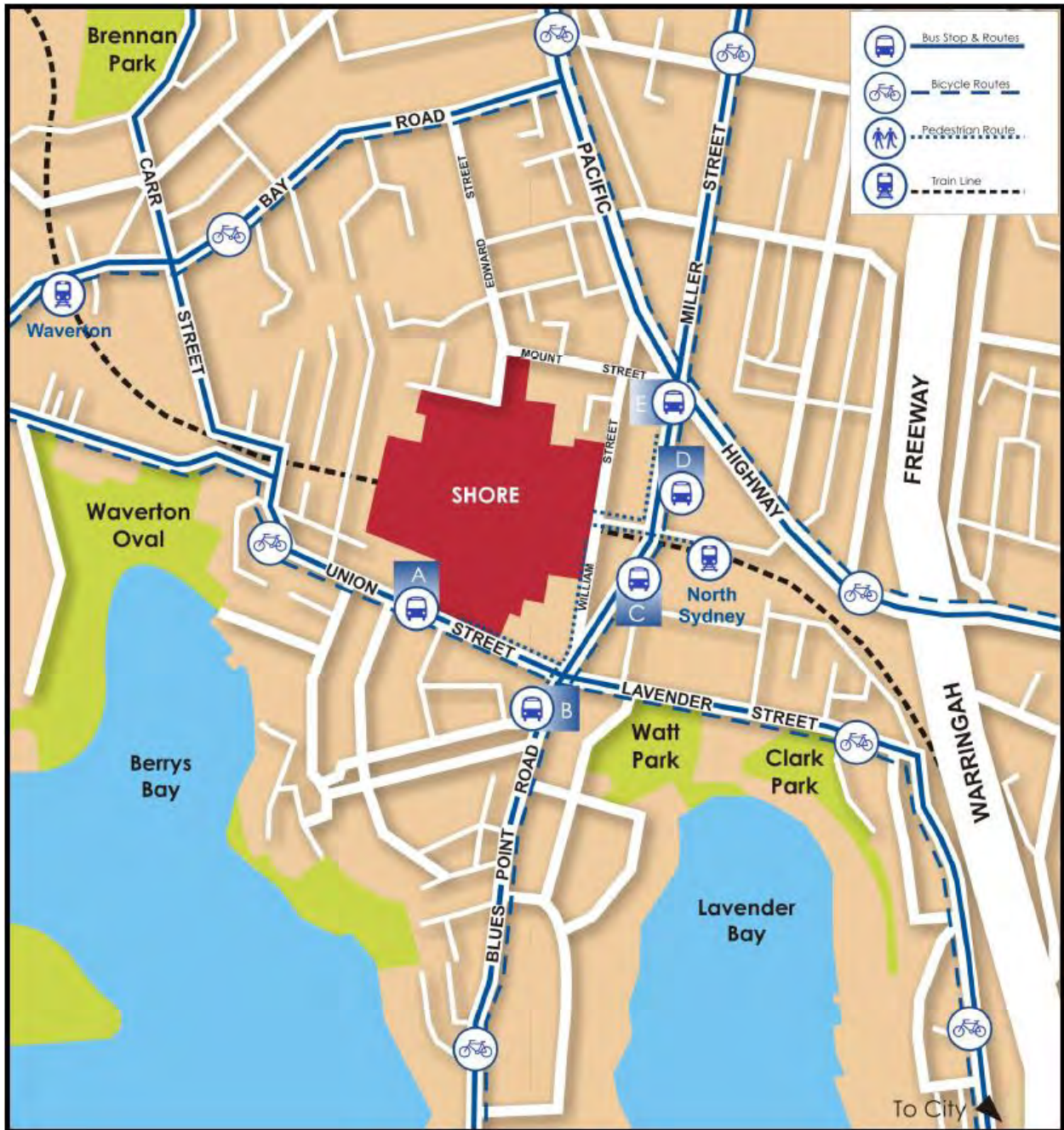


Figure 4: Public Transport and Active Travel Network (Source: Shore Transport Access Guide)

1.5 Other Facilities

There are several public transport facilities located within close proximity to the work site. These are discussed in the Shore Transport Access Guide which can be found in Appendix A of the Transport and Accessibility Report prepared by Taylor Thomson Whitting.

1.5.1 Bus Services

There are five main bus stops serviced by Sydney Buses located near the site as shown in Figure 4. The route numbers servicing these bus stops are detailed in Table 1.

Bus Stop	Bus Routes	Areas of Service	Frequency
A	265	McMahon's Point, Greenwich Wharf and Lane Cove	Every half hour during peak hours Every hour during off peak hours
B	265, 269	McMahon's Point, Kirribilli, Greenwich Wharf and Lane Cove	Every 15 minutes during peak hours Every half hour during off peak hours
C	168, 173, 183, 209, 227, 228, 230, 265, 287, 612X, 622, 653, E50, L78, L84	Balgowlah, Narrabeena, Narrabeen, East Lindfield, Mosman, McMahon's Point, Greenwich Wharf, Lane Cove, Ryde, Rouse Hill, Kellyville, Dural, West Pennant Hills, Manly, Dee Why and Mona Vale	Every 2 minutes during peak hours Every half hour during off peak hours
D	173, 209, 227, 228, 230, 265, 612X, 622, 653, E50, L87	Narrabeena, East Lindfield, Mosman, McMahon's Point, Greenwich Wharf, Lane Cove, Rouse Hill, Kellyville, Dural, West Pennant Hills, Manly, Newport	Every 5 minutes during peak hours Every half hour during off peak hours
E	252, 254, 261, 343, 286, 287, 290, 622, 653, M20	Lane Cove West, Riverview, City, Northwood, Kingsford, Rosebery, Denistone East, Ryde, Epping, Dural, West Pennant Hills, Gore Hill, Redfern	Every 2 minutes during peak hours Every half hour during off peak hours

Table 1: Bus Services (Source: Shore Transport Access Guide)

1.5.2 Train Services

North Sydney Train Station is located approximately 160 metres walking distance to the east of the Campus. The station is serviced by the T1 North Shore and Northern Line. Train frequency is every 3 to 5 minutes during peak hours.

Waverton Train Station is located 800 metres to the north-west of the campus. It is also serviced by the T1 North Shore and Northern Line.

2.0 PROPOSED TRAFFIC AND ASSOCIATED WORKS

The proposed works are anticipated to be undertaken in up to 2 stages, but may be completed in one stage.

Construction phases will be finalised by the contractor.

2.1 Access To/From the Worksite

The primary construction point is anticipated to be within the school boundary. There will be limitations on vehicle access in this area during student hours. There may be need for crane access which would be controlled out of school hours. Further details of these requirements will be finalised by the contractor.

Access to the site will be via the following designated route (Refer Figure 5 and Figure 6):

- Lavender Street
- Continue onto Union Street
- Right into the site
- Reverse within the site
- Left onto Union Street
- Left onto Blues Point Road
- Right onto Blue Street

This proposed route minimises impact on surrounding residential streets, minimises uncontrolled right turn movements and utilises existing signalised intersections. Access and egress could also be via Blue Street and Blues Point Road.

Additional site access may be via William Street. It is recommended that, to the maximum extent possible, materials delivered to or extracted from the site with larger vehicles be undertaken via Union Street as William Street only permits movement in a northerly direction. William Street also contains a pedestrian crossing that would be affected if it was used as a construction vehicle route.

There is no proposal to alter the phasing of signals or posted speed limits as a result of the works.

Shore Physical Education Centre – Transport and Accessibility Report

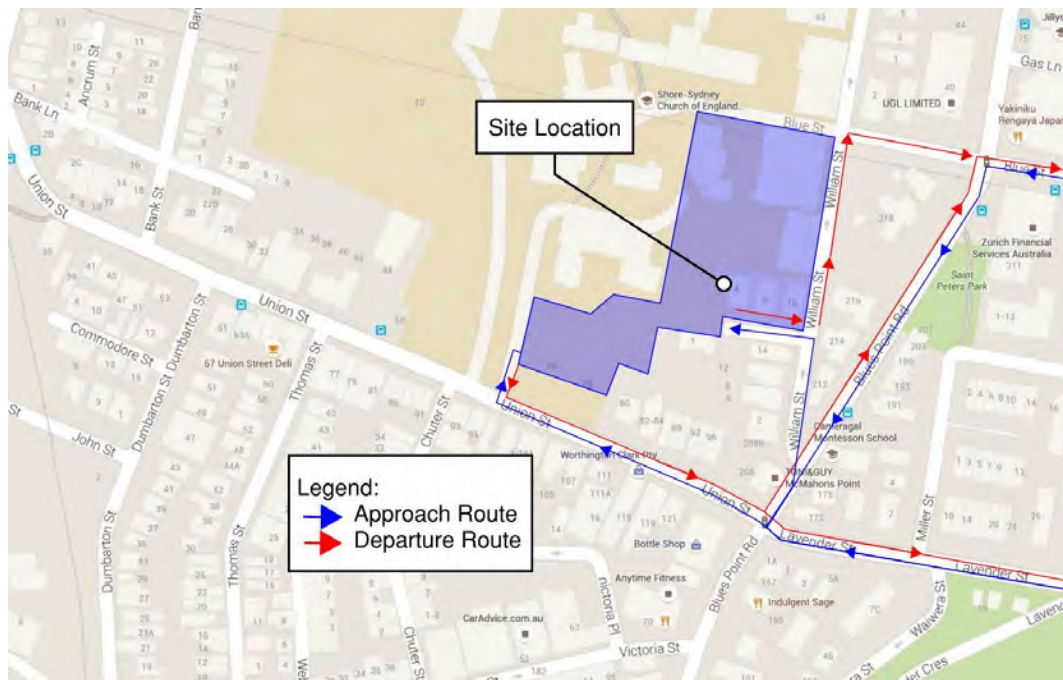


Figure 5: Construction Vehicle Routes

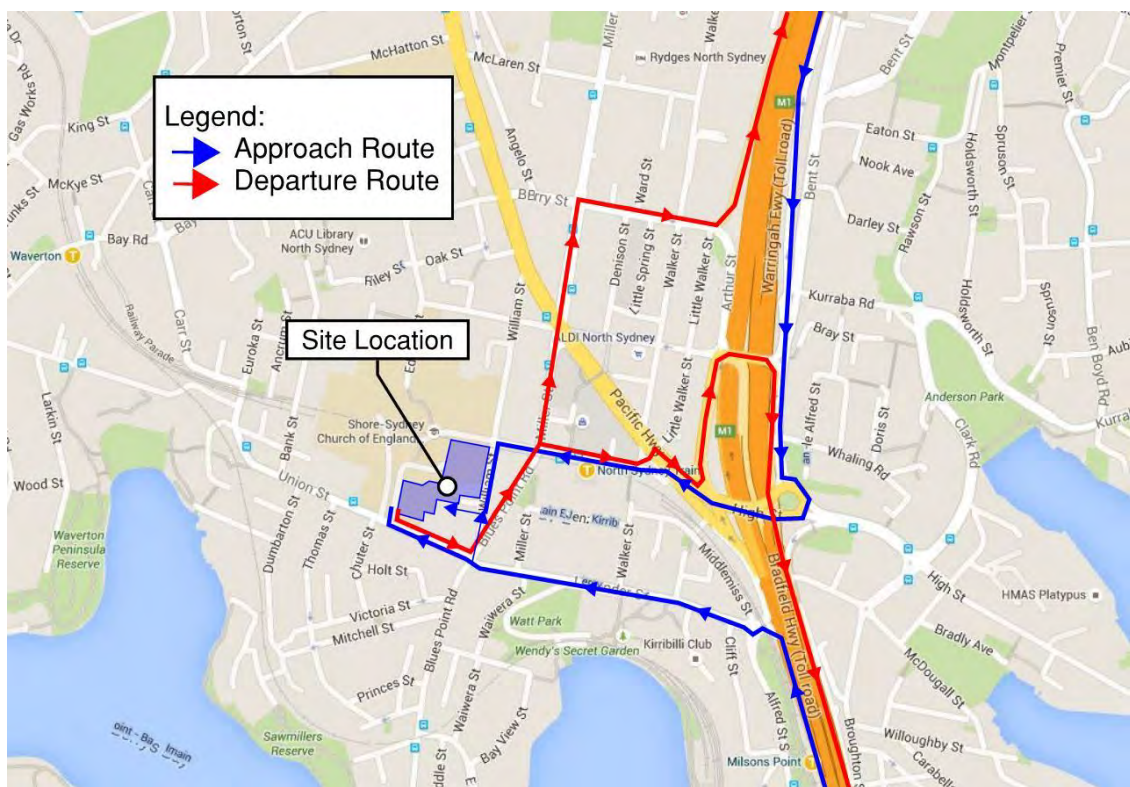


Figure 6: Broad Construction Vehicle Routes

2.2 Traffic Movements within and Around the Worksite

Trucks will access the site via the designated route outlined in Section 2.1.

2.3 Truck and Vehicle Volumes and Queuing Arrangements

Construction Vehicle queuing external to the proposed site will be minimised. Vehicles are not to queue in residential streets. Anticipated truck types to be used during the works include trucks, trailers, concrete pumps, concrete trucks and various delivery trucks.

Deliveries of materials to the site will be staggered to minimise the queuing of vehicles to be within the worksite. Vehicles are not to queue in restricted parking areas and in locations that will impede traffic flow.

2.4 Work Zone

A work zone may be required as part of the works. If a work zone is required approval will need to be obtained from North Sydney Council.

2.5 Pedestrian/Cycle Movements

It is recommended that truck movements within the school be supervised by traffic marshals into and out of the site to maintain pedestrian and cyclist safety.

2.6 Road Closures

The proposed works will not require any full road closure.

2.7 Crane Usage

The site may require use of a crane as part of the works. These will be located within the site for material loading and unloading.

2.8 Construction Employee Traffic Generation

The school will not be providing construction vehicle parking. It is anticipated that at peak times 137 staff will be required to complete the works (according to the SEARs Application prepared by Robinson Urban Planning). It is unlikely that they will be provided car parking within the school for this construction staff.

To minimise the required parking for workers, contractors will be encouraged to assist in the transportation of workers to the site.

As part of the site induction, the employees will be advised of the public transport options as outlined in Section 1.5 and encouraged to use these facilities or carpooling arrangements to decrease the number of employee vehicles.

2.9 Signposting

Temporary construction traffic related signposting is to be developed in accordance with AS 1742.3 – Traffic Control Devices for Works on Roads.

2.10 Methods of Communicating Traffic Changes

During the works, signs are to be erected warning motorists of construction traffic exiting and entering the site.

Traffic Control advance warning signage in accordance with Roads and Maritime Services' (RMS) guidelines is to be in place to notify motorists of roadworks and when traffic controllers are present.

Sign size is to be size "A" and is to be monitored throughout the works to ensure they are clearly visible.

As part of the site induction procedures, all contractors will be made aware of the Construction Traffic Management Plan and their responsibility to adhere to the plan.

2.11 Environmental Control

Vehicles are not to transport dust, dirt, or gravel from the worksite onto the sealed road networks. Vehicle wash areas in accordance with industry standards will be applied. Loads are to be covered.

Materials and spoil storage areas will be within the site for collection.

2.12 Monitoring of Traffic Control Plans (TCP)

During construction the contractor shall each morning, prior to work commencing, ensure all signage is erected in accordance with the TCP and clearly visible. Each evening, upon completion of work, the contractor is to ensure signage is either covered or removed as required.

Any variation to the layout of the TCP on site is to be recorded and certified by authorised RMS accredited personnel.

A review of TCP's can be undertaken as required in order to determine any potential need for future amendments.

2.13 Certificates and Approvals

Approval is to be obtained from North Sydney Council and other relevant authorities.

Approval needs to be obtained for items such as, but not limited to:

- Road Occupancy Approvals
- Traffic Control Plan Approvals
- Hoarding Approvals

Coordination needs to be undertaken with neighbouring properties to maintain access.

Only certified personnel will be used on site to implement, monitor and carryout the Traffic Control Plan.

2.14 Hours of Work

The site works will be undertaken during the times as specified in the conditions of consent for the works. These will be finalised once development approvals have been obtained.

Work outside of these designated hours will need approval by the relevant authorities.

2.15 Contact of Emergency Services

In an emergency related to a construction traffic incident on the public road network it will be the responsibility of the Site Manager to ensure that Emergency Services are notified. The emergency services include but are not limited to:

- Fire
- Ambulance
- Police

Phone “000” in cases of emergency.

Furthermore, it is the responsibility of the Site Manager to advise the Emergency Services of any restriction of vehicular access to the public and private areas (1) one week prior to its implementation.

2.16 Responsibilities

The Site Manager is responsible for, but not limited to:

- Implementing the Traffic and Pedestrian Management Plan and TCP's
- Informing contractors of the requirements of the Traffic and Pedestrian Management Plan
- Undertaking site inspections to ensure all signage is clearly visible and not damaged

Shore Physical Education Centre – Transport and Accessibility Report

- Monitoring the Traffic and Pedestrian Management Plan
- Report on Incidents
- Obtaining permits

APPENDIX E: SIDRA RESULTS

William Street and Blue Street

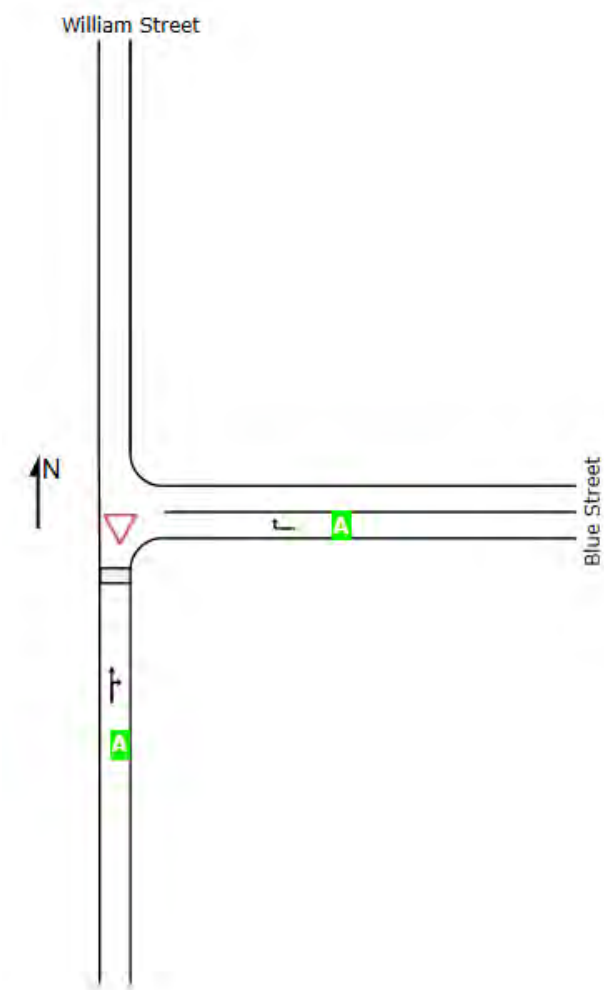
LEVEL OF SERVICE

▽ Site: William St & Blue St AM Peak 7:30-8:30am

Unsignalised pedestrian (Zebra) crossing across one-way road
Giveaway / Yield (Two-Way)

All Movement Classes

	South	East	Intersection
LOS	NA	NA	NA



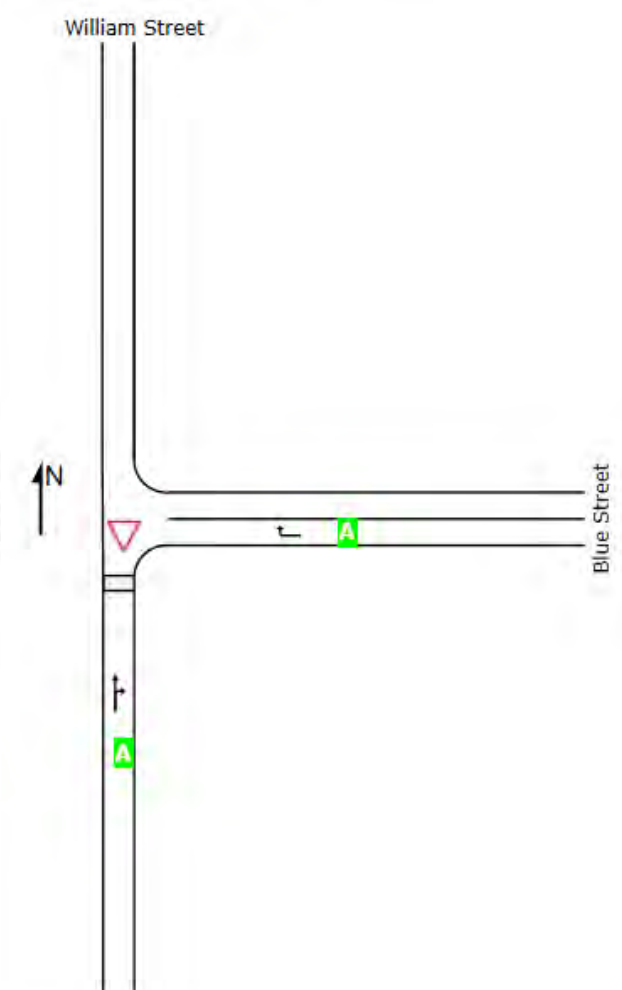
LEVEL OF SERVICE

▽ Site: William St & Blue St PM Peak 3-4PM

Unsignalised pedestrian (Zebra) crossing across one-way road
Giveaway / Yield (Two-Way)

All Movement Classes

	South	East	Intersection
LOS	NA	NA	NA



Chuter Street and Union Street

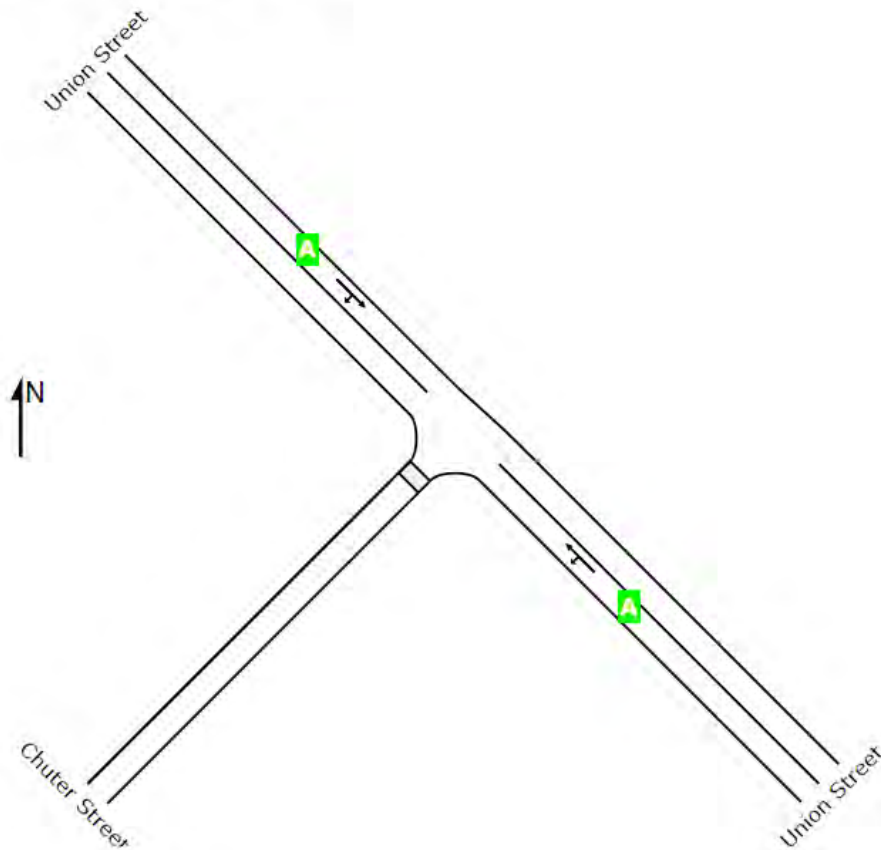
LEVEL OF SERVICE

▽ Site: Chuter St & Union St AM Peak 8-9am

Union Street
Giveaway / Yield (Two-Way)

All Movement Classes

	Southeast	Northwest	Intersection
LOS	NA	NA	NA



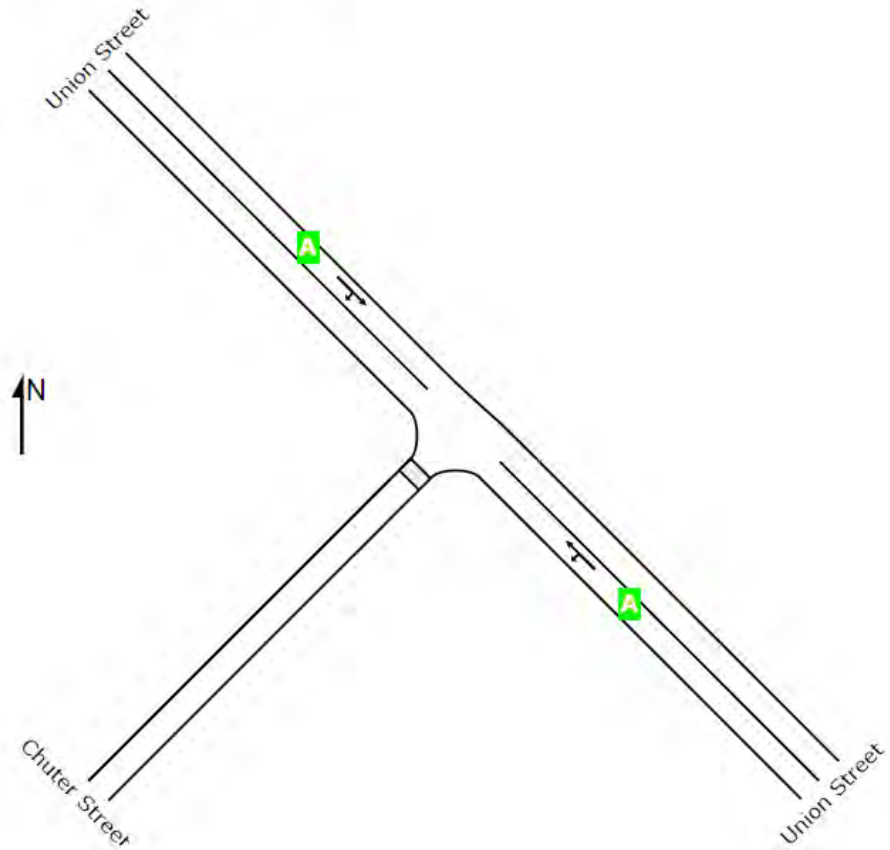
LEVEL OF SERVICE

▽ Site: Chuter St & Union St PM Peak 3-4pm

New Site
Giveaway / Yield (Two-Way)

All Movement Classes

	Southeast	Northwest	Intersection
LOS	NA	NA	NA



William Street and Hunter Crescent

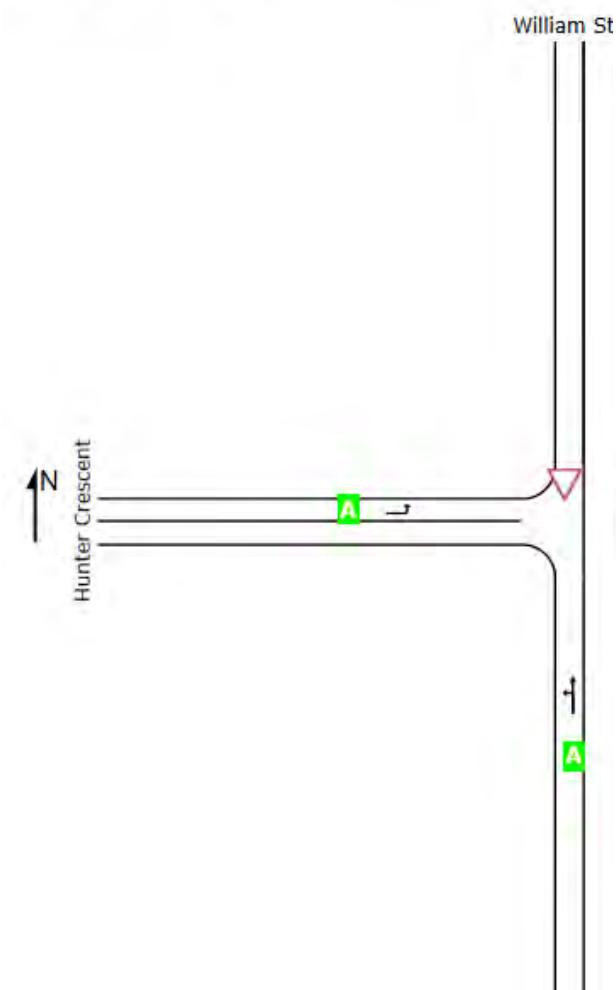
LEVEL OF SERVICE

▽ Site: William St & Hunter Cres AM Peak 7:45-8:45a

New Site
Giveaway / Yield (Two-Way)

All Movement Classes

	South	West	Intersection
LOS	NA	NA	NA



LEVEL OF SERVICE

▽ Site: William St & Hunter Cres PM Peak 3-4pm

New Site
Giveaway / Yield (Two-Way)

All Movement Classes

	South	West	Intersection
LOS	NA	NA	NA

